

## **Section 4**

### **Proposed Design**

Report on Proposed Design  
Sustainability and Enterprise Green Communities  
Site Development Plans – 2 copies  
Utilities Plan  
Drawings

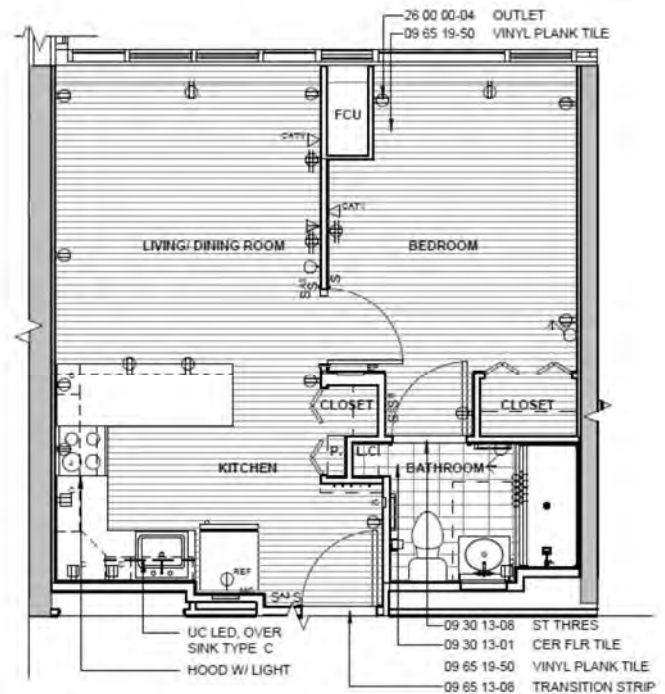


### REPORT ON PROPOSED DESIGN

The proposed project has three main elements of work: modernization of the tower, construction of a new community center with service program areas, and improvements to the landscape, traffic flow, and exterior. The modernization of the tower is anchored by the wrapping of the entirety of the envelope in a Curtainwall/Insulated Metal Panel system while enclosing the balconies and adding continuous insulation to the building. This improvement is for the purposes of exceeding energy efficiency requirements for the building while adding central air conditioning, eliminating the major sources of air and water infiltration, and restoring an aged and degraded façade.

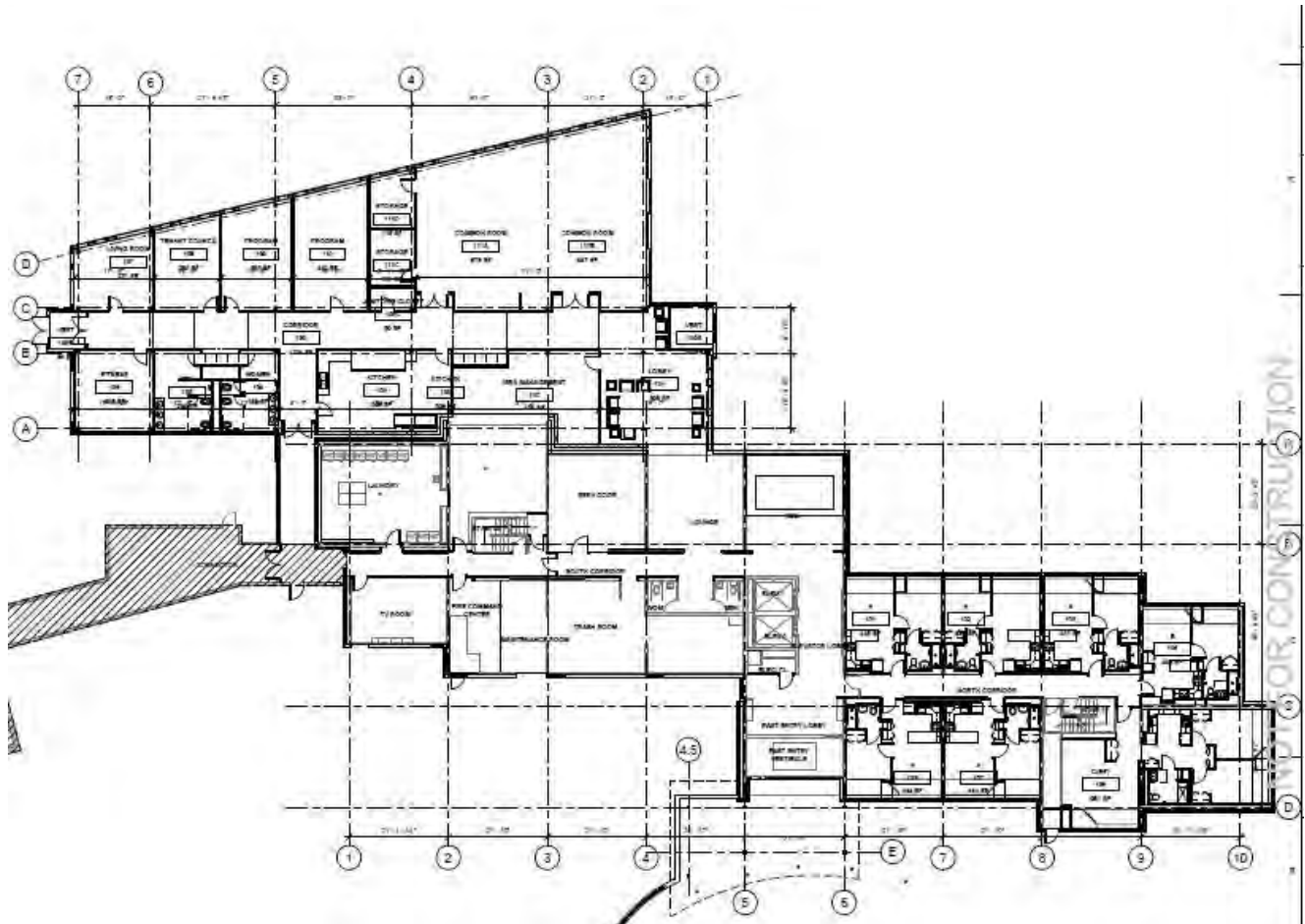


The interior improvements will include extensive demolition and abatement of the asbestos containing material (ACM) in the units, replacement of all finishes and fixtures, installation of 4-pipe vertical fan coil system with integrated ventilation, and reconfiguration of the spaces to account for the newly enclosed balcony areas. The major improvement of unit reconfiguration is the conversion of studios to one bedroom apartments which are greatly desired by prospective residents.



3 TYPE A UNIT FINISH PLAN & SCHEMATIC POWER  
1/4" = 1'-0"

The construction of the new community center will improve layout and services to the building residents while allowing for reclamation of several areas on the first floor for affordable housing units and also position the site for future affordable housing development and interaction with an enhanced greenway that is planning along the adjacent railroad right-of-way.



Site enhancements will primarily be centered on Lambert and Gore Streets along with improvements associated with the new community center building, bike storage, and an enhanced life safety generator installation. The Lambert Street entrance will be reconfigured with a new curb cut and pull off to create a true entrance to the building for residents and visitors while reducing illegal double parking on Lambert Street. The Lambert Street entrance will also be a necessary service enhancement to the development. Bike storage will be accomplished with a locked enclosure that blends in with the building along Gore Street and will provide 32 spaces which is sized according to resident needs based on the current approximately 10 bikes stored in the courtyard and the resident survey which indicated approximately 10 percent of the residents own a bike. Along with the improvements to the Lambert Street entrance, the project will include the installation of larger approximately 350KW emergency generator to meet current code requirements and provide a resilient place

of refuge for the residents and community that is powered for residents' medical equipment and tempered for their comfort in the event of an extended power outage. This project envisions a waiver from the Cambridge Noise Requirements for the generator installation due to the impracticality of meeting the requirement without a multi-story enclosure for a piece of equipment that runs only 20 minutes a week as part of its normal course of operation and only during emergencies. Below is a picture of a multi-story generator installation for a 150KW generator at grade at CHA's Temple Apartments designed to meet the noise requirements. Note the generator in the right of the photo rising over two stories.



The Millers River modernization is modeled to reduce the building energy intensity (as expressed in KBtu/sq ft) by over 50 percent, with a 40 percent reduction in water consumption. The building is modeled to exceed stretch code requirements while increasing resident comfort by providing central air conditioning and increased fresh air ventilation.

While the site is not optimal for a solar installation, the plans include a 125 kW Trigen system which will follow the buildings thermal load, with the waste heat providing domestic hot water in the winter and cooling in the





summer via an absorption chiller. The electricity generated from the Tri-gen unit will substantially offset the building load, while reducing local emissions and lowering operating costs. Each unit will have a fan coil unit delivering heating and cooling with individual (ERVs) energy recovery units providing fresh air directly to the unit, in addition to a common ERV for corridors and common spaces.

The building plans also include new exterior cladding which in addition the aesthetic improvements, will add insulation and air sealing, and eliminate the existing thermal bridging to the exterior. Resident units will include a large area of window glazing to increase daylight and livability in the small units.

The building will be certified via the Enterprise Green Communities program which requires the building to achieve energy savings of at least 15 percent above code, advanced water savings, as well as measures intended to support resident health and comfort such as low VOC products, increased ventilation, air sealing, and thoughtfully designed units and community spaces.

CHA is committed to energy reductions and development of on sight generation across our portfolio, the agency is part of the Department of Energy's Better Buildings Challenge with a commitment to reducing energy intensity by 20 percent by 2020. CHA has demonstrated prior success with the modernization of Lyndon Baines Johnson Apartments and the soon to be completed Frank J Manning Apartments in Central Square.



## **ENTERPRISE GREEN COMMUNITIES SUSTAINABILITY REPORTING PROGRAM COMPARISON**

The Millers River Apartment Revitalization will include a comprehensive rehabilitation of the existing 298 unit building. The building, which serves elderly and disabled residents, will seek Enterprise Green Communities Certification in order to meet the City of Cambridge's Sustainability requirements.

Enterprise Green Communities is a sustainability certification program designed specifically for affordable multi-family developments. The corresponding certification under the USGBC LEED certification program would currently be LEED v4 BD+C New Construction and Major Renovations. LEED is in the process of adapting their Multi-Family Mid-Rise (MFMR) LEED for Homes certification to include buildings that have more than 8 stories, but this process is not complete yet and thus the LEED v4 BD+C New Construction and Major Renovations pathway is the most comparable to Enterprise Green Communities certification.

LEED v4 and Enterprise have similar groupings (as per the attached chart) and many credits that are very similar. A full comparison of 2015 Enterprise Green Communities (EGC) Criteria and USGBC's LEED v4 for BD+C: New Construction and Major Renovation criteria is attached.

LEED v4 BD+C New Construction and Major Renovations and the 2015 Enterprise Green Communities Criteria (2015 Criteria) are similar sustainability certification programs. Comparable categories are covered, although each program includes distinct mandatory requirements and optional points that do not overlap.

Importantly, the 2015 EGC Criteria and LEED v4 New Construction and Major Renovation incorporate ASHRAE 90.1-2013 +10% (15% above 2010) performance targets for building energy performance standards, and feature criterion/points that focus on improving indoor air quality and health by considering material selection and ventilation strategies.

LEED v4 Leadership in Energy and Environmental Design (LEED) is a suite of rating systems developed by the United States Green Building Council (USGBC). LEED rating systems are applicable to buildings (including schools, residential, commercial) as well as neighborhoods. The LEED v4 for BD+C: New Construction and Major Renovation Design and Construction program focuses on whole buildings.

The LEED v4 for BD+C: New Construction and Major Renovation Design and Construction program is an updated framework designed around goal oriented impact categories in order to improve the residential built environment. Certification to all of the LEED rating systems is completed by the Green Building Certification Institute (GBCI). The LEED v4 for BD+C: New Construction and Major Renovation pathway applies to high-rise multi-family buildings (more than eight stories). These projects may be new construction or substantial rehabilitation.

LEED v4 BD+C New Construction and Major Renovations is, of course, less specific to most residential projects but is suited to a high-rise multi-family residential apartment building.



## Certification

Both Enterprise Green Communities and LEED v4 New Construction and Renovation offer checklists that must be followed by the project team. These checklists are used as planning tools for project teams interested in green building during the integrative design process to determine environmental and performance goals. If a builder or developer is interested in certification, both Enterprise and LEED have requirements for certification in their respective programs, which result in formal recognition. A comparison of the checklists for both programs is attached.

The Enterprise Green Communities Criteria are the framework for a two-step certification process. For Step 1, developers apply online during the design phase before construction starts. Project teams submit basic organizational and development information, a plan for criteria implementation, site plans and a context map, appropriate energy modeling information, and key project team member sign offs. Enterprise reviews the application within 30 days, and determines whether the project is approved to move to Step 2.

For Step 2, project teams submit final documentation online within 60 days of completing construction. Final documentation includes criteria compliance and cost reports, a utility release form, photos, and key project team member sign offs. Enterprise reviews and determines whether the project will be certified, and issues notification via email within 30 days.

To achieve Enterprise Green Communities Certification, all projects must achieve compliance with the criteria mandatory measures applicable to that construction type. New Construction projects must achieve 35 optional points, while Substantial Rehab and Moderate Rehab projects must achieve 30 optional points.

Certification through LEED requires registering a project with USGBC and submitting project documentation for certification. There are costs related to the LEED certification and registration process that are greater than those incurred in seeking Enterprise certification. The Millers River Apartments Revitalization project proposes to utilize the Enterprise Green Communities (EGC) Certification program in lieu of LEED. A comparison of the two programs is presented below. The Millers River Apartment Revitalization Project is designed to achieve EGC certification with a total of 116 Optional Points, the equivalent of LEED Gold or better. Note that LEED has a possible total of 110 points but projects rarely achieve all points. Achieving at least 80 points in LEED is equal to a Platinum rating which is the highest rating granted. Enterprise has many more mandatory requirements some of which would equate to points in LEED. In addition, Enterprise has a large pool of points for optional credits, so there is not a one-to-one correspondence in comparing point totals. Achieving Enterprise with its mandatory credits and 126 optional points would be at least equivalent to LEED Gold or better. (See attached documentation).



Category Comparison		LEED		Enterprise	
LEED CATEGORIES	EGC SECTION ALIGNMENT	Number of Prerequisites	Optional Points (max)	Number of Mandatory Credits	Optional Points (max)
LEED does not feature an Integrative Design category, but does include Integrative Process credit (2 points)	Integrative Design	n/a	2	4	36
Location and Transportation	Location + Neighborhood Fabric	n/a	16	5	47
Sustainable Sites	Site Improvements	1	10	5	17
Water Efficiency	Water Conservation	3	11	1	28
Energy and Atmosphere	Energy Efficiency	4	33	7	60
Materials and Resources	Materials	2	13	6	40
Indoor Environmental	Healthy Living Environment	2	16	8	60
LEED does not feature an Operations, Maintenance and Resident Engagement category, but does include several credits that address these topics.	Operations, Maintenance + Resident Engagement	n/a	n/a	5	11
Innovation	n/a	1	6	n/a	n/a
Regional Priority	n/a	n/a	4	n/a	n/a

LEED v4 BD+C: includes four levels of certification that a project may achieve through meeting the applicable prerequisites and optional credits for the project type. The certification tiers include: "Certified" at 40-49 points, "Silver" at 50-59 points, "Gold" at 60-79 points, and "Platinum" at 80+ Points.





M = MANDATORY  
# = OPTIONAL POINTS

## 2015 Enterprise Green Communities Criteria Checklist

This checklist provides an overview of the technical requirements within the Enterprise Green Communities Criteria. **To achieve Enterprise Green Communities Certification, all projects must achieve compliance with the Criteria mandatory measures applicable to that construction type. Additionally, New Construction projects must achieve 35 optional points, Substantial Rehab projects must achieve 30 optional points, and Moderate Rehab projects must also achieve 30 optional points.**

### 1. INTEGRATIVE DESIGN

YES  NO  MAYBE

M

#### 1.1a Goal Setting

Develop an integrative design process that works best for your project team and intentions. At minimum, document:

1. A statement of the overall green development goals of the project and the expected intended outcomes from addressing those goals.
2. A summary of the integrative process that was used to select the green building strategies, systems and materials that will be incorporated into the project.
3. A description of how progress and success against these goals will be measured throughout the completion of design, construction and operation to ensure that the green features are included and correctly installed.

YES  NO  MAYBE

M

#### 1.1b Criteria Documentation

Create design and construction documentation to include information on implementation of appropriate Enterprise Green Communities Criteria.

YES  NO  MAYBE

9

#### 1.1c Designing for Project Performance

Identify how the expected performance of your project compares to the actual performance of other projects in your portfolio and/or community.

YES  NO  MAYBE

M

#### 1.2a Resident Health and Well-Being: Design for Health

Identify potential resident health factors and design your project to address resident health and well-being by using the matrix provided on pages 22 and 23.

YES  NO  MAYBE

12

#### 1.2b Resident Health and Well-Being: Health Action Plan

At pre-design and continuing throughout the project life cycle, collaborate with public health professionals and community stakeholders to assess, identify, implement and monitor achievable actions to enhance health-promoting features of the project and minimize features that could present health risks. Specifically, create a Health Action Plan and integrate the selected interventions and a plan for monitoring and evaluating progress per the full criterion.

YES  NO  MAYBE

M

#### 1.3a Resilient Communities: Design for Resilience *(New Construction and Substantial Rehab only)*

Given your project building type, location and expected resident population, identify a project characteristic that would most likely impact your project's ability to withstand an unexpected weather event or loss of power. Select at least one criterion from the given list that would help mitigate that impact, and incorporate this within your project plans and design. Include a short narrative providing your rationale for selecting this criterion above the others.



M = MANDATORY  
# = OPTIONAL POINTS

YES  NO  MAYBE

15

**INTEGRATIVE DESIGN** *(continued)*

**1.3b Resilient Communities: Multi-Hazard Risk/Vulnerability Assessment**

Carry out a Vulnerabilities Assessment and implement building elements designed to enable the project to adapt to, and mitigate, climate impacts given the project location, building/construction type and resident population.

SUBTOTAL OPTIONAL POINTS

**2. LOCATION + NEIGHBORHOOD FABRIC**

*New Construction:* All new construction projects must earn optional points under Criterion 2.8 Access to Public Transportation, **OR** earn 8 optional points through selecting one or more of the following:

- 2.7 Preservation of and Access to Open Space
- 2.9 Improving Connectivity to the Community
- 2.12 Access to Fresh, Local Foods
- 2.13 LEED for Neighborhood Development Certification
- 2.14 Local Economic Development and Community Wealth Creation

YES  NO  MAYBE

M

**2.1 Sensitive Site Protection**

Do not locate new projects, including buildings, built structures, roads or parking areas, on portions of sites that meet any of the following provisions:

1. Land within 100 feet of wetlands, including isolated wetlands or streams. Maintain or establish riparian buffer using native vegetation where possible. Bike and foot paths are allowed if at least 25 feet from the wetlands boundary.
2. Land on slope greater than 15%.
3. Land with prime soils, unique soils or soils of state significance per USDA designations.
4. Public parkland.
5. Land that is specifically identified as an existing habitat for any species on federal or state threatened or endangered lists.
6. Land that is within the Special Flood Hazard Areas (SFHA) as identified by FEMA on the Flood Insurance Rate Map.

YES  NO  MAYBE

M

**2.2 Connections to Existing Development and Infrastructure** *(Except for projects located on rural tribal lands, in colonias communities, or in communities with populations of less than 10,000)*

Locate the project on a site with access to existing roads, water, sewers and other infrastructure within or contiguous to (having at least 25% of the perimeter bordering) existing development. Connect the project to the pedestrian grid.

YES  NO  MAYBE

M

**2.3 Compact Development**

At a minimum, build to the residential density (dwelling units/acre) of the census block group in which your project is located.

YES  NO  MAYBE

5 or 7

**2.4 Compact Development**

Exceed the residential density (dwelling units/acre) of the census block group in which your project is located. Exceed by 2x for [5 points]; exceed by 3x for [7 points].



M = MANDATORY  
# = OPTIONAL POINTS

<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>LOCATION + NEIGHBORHOOD FABRIC</b> <i>(continued)</i></p> <p><b>2.5 Proximity to Services</b> Locate the project within a 0.5-mile walk distance of at least four, or a 1-mile walk distance of at least seven, of the listed services. For projects that qualify as Rural/Tribal/Small Town, locate the project within 5 miles of at least four of the listed services.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>2.6 Preservation of and Access to Open Space for Rural/Tribal/Small Towns</b> Set aside a minimum of 10% (minimum of 0.25 acre) of the total project acreage as non-paved open space for use by all residents <b>OR</b> locate the project within a 0.25-mile walk distance of dedicated public non-paved open space that is a minimum of 0.75 acres.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>6 max</b></p>	<p><b>2.7 Preservation of and Access to Open Space</b> Set aside a percentage of non-paved open space for use by all residents. 20% [2 points]; 30% [4 points]; 40% + written statement of preservation/conservation policy for set-aside land [6 points].</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>8 or 10</b></p>	<p><b>2.8 Access to Public Transportation</b> Locate projects within a 0.5-mile walk distance of transit services combined (bus, rail and/or ferry), constituting at least 60 or more transit rides per weekday, with some type of weekend ride option. [8 points]</p> <p>For projects that qualify as Rural/Tribal/Small Town, locate the project within a 5-mile distance of at least one of the following transit options: 1) vehicle share program; 2) dial-a-ride program; 3) employer vanpool; 4) park-and-ride; or 5) public-private regional transportation. [8 points]</p> <p><i>For an additional 2 points:</i> Locate the project along dedicated bike trails or lanes that lead to transit services or stations (bus, rail and ferry) within 3 miles.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>2 to 8</b></p>	<p><b>2.9 Improving Connectivity to the Community</b> Improve access to community amenities through at least one of the transit, auto or biking mobility measures listed.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>5 max</b></p>	<p><b>2.10 Passive Solar Heating /Cooling</b> Design and build with passive solar design, orientation and shading that meet specified guidelines.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>4</b></p>	<p><b>2.11 Brownfield Site or Adaptive Reuse Building</b> Rehabilitate an existing structure that was not previously used as housing or locate the project on a brownfield site.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>6</b></p>	<p><b>2.12 Access to Fresh, Local Foods</b> <i>Farmer's Market twice a month at Millers</i> Pursue one of three options to provide residents and staff with access to fresh, local foods, including neighborhood farms and gardens, community-supported agriculture, or proximity to farmers markets.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>4</b></p>	<p><b>2.13 LEED for Neighborhood Development Certification</b> Locate building(s) in a Stage 2 Pre-Certified or Stage 3 Certified Neighborhood Development.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>6 max</b></p>	<p><b>2.14 Local Economic Development and Community Wealth Creation</b> Demonstrate that local preference for construction employment and subcontractor hiring was part of your bidding process [2 points] <b>OR</b> demonstrate that you achieved at least 20% local employment [3 points] <b>OR</b> provide physical space for small business, nonprofits, and/or skills and workforce education [3 points].</p>

Bike lanes on CB street

SUBTOTAL OPTIONAL POINTS



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# = OPTIONAL POINTS

**3. SITE IMPROVEMENTS**

- |  |          |   |
|--|----------|---|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>M</b> | <p><b>3.1 Environmental Remediation</b></p> <p>Conduct an environmental site assessment to determine whether any hazardous materials are present on-site; mitigate any found.</p> |
|--|----------|---|
- |  |          |  |
|--|----------|--|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>M</b> | <p><b>3.2 Erosion and Sedimentation Control</b> <i>(Except for infill sites with buildable area smaller than one acre)</i></p> <p>Implement EPA's Best Management Practices for Construction Site Stormwater Runoff Control, or local requirements, whichever is more stringent.</p> |
|--|----------|--|
- |  |          |  |
|--|----------|--|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>M</b> | <p><b>3.3 Low-Impact Development</b></p> <p>Projects located on greenfields must meet the list of low-impact development criteria.</p> |
|--|----------|--|
- |  |          |  |
|--|----------|--|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>M</b> | <p><b>3.4 Landscaping</b></p> <p>If providing plantings, all should be native or adapted to the region, appropriate to the site's soil and microclimate, and none of the new plants is an invasive species. Reseed or xeriscape all disturbed areas.</p> |
|--|----------|--|
- |  |          |   |
|--|----------|---|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>M</b> | <p><b>3.5a Efficient Irrigation and Water Reuse</b></p> <p>If irrigation is used, install an efficient irrigation or water reuse system per the guidelines.</p> |
|--|----------|---|
- |  |               |  |
|--|---------------|--|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>4 or 8</b> | <p><b>3.5b Efficient Irrigation and Water Reuse</b> <i>A new system will be needed, which will be efficient.</i></p> <p>Install an efficient irrigation system equipped with a WaterSense-labeled weather-based irrigation controller (WBIC) <b>OR</b> at least 50% of the site's irrigation should be satisfied by reusing water.</p> |
|--|---------------|--|
- |  |               |   |
|--|---------------|---|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>4 or 8</b> | <p><b>3.6 Surface Stormwater Management</b></p> <p>Retain, infiltrate and/or harvest the first 1.0 inch of rain that falls <i>[4 points]</i> <b>OR</b> as calculated for a 24-hour period of a one-year (1) storm event, so that no stormwater is discharged to drains/inlets. <i>[8 points]</i> For both options, permanently label all storm drains and inlets.</p> |
|--|---------------|---|
- |  |          |   |
|--|----------|---|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>1</b> | <p><b>3.7 Reducing Heat-Island Effect: Paving</b></p> <p>Use light-colored, high-albedo materials and/or an open-grid pavement, with a minimum solar reflectance of 0.3, over at least 50% of the site's hardscaped area.</p> |
|--|----------|---|

SUBTOTAL OPTIONAL POINTS

**4. WATER CONSERVATION**

- |  |          |   |
|--|----------|---|
| <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE | <b>M</b> | <p><b>4.1 Water-Conserving Fixtures</b></p> <p>Install water-conserving fixtures in all units and any common facilities with the following specifications. <i>Toilets:</i> WaterSense-labeled and 1.28 gpf; <i>Urinals:</i> WaterSense-labeled and 0.5 gpf; <i>Showerheads:</i> WaterSense-labeled and 2.0 gpm; <i>Kitchen faucets:</i> 2.0 gpm; <i>Lav faucets:</i> WaterSense-labeled and 1.5 gpm</p> <p><b>AND</b> for all single-family homes and all dwelling units in buildings three stories or fewer, the static service pressure must not exceed 60 psi.</p> |
|--|----------|---|





M = MANDATORY  
# = OPTIONAL POINTS

YES  NO  MAYBE **6 max**

CHA's flow rates  
Toilets .08,  
Plumbing Fixtures -  
Showerheads at  
1.5gpm, Kitchens at  
1.5gpm, and

**WATER CONSERVATION** *(continued)*

**4.2 Advanced Water Conservation**

Reduce water consumption either by installing water-conserving fixtures in all units and all common space bathrooms with the following specifications: *Toilets: WaterSense-labeled and 1.1 gpf [1 point]; Showerheads: WaterSense-labeled and 1.5 gpm [1 point]; Kitchen faucets: 1.5 gpm and lav faucets: WaterSense-labeled and 1.0 gpm [1 point]*

**OR**

Reduce total indoor water consumption by at least 30% compared to the baseline indoor water consumption chart, through a combination of your choosing. *[6 points maximum]*

YES  NO  MAYBE **4**

**4.3 Leaks and Water Metering**

Conduct pressure-loss tests and visual inspections to determine if there are any leaks; fix any leaks found; and meter or submeter each dwelling unit with a technology capable of tracking water use. Separately meter outdoor water consumption.

YES  NO  MAYBE **4**

**4.4 Efficient Plumbing Layout and Design**

To minimize water loss from delivering hot water, the hot water delivery system shall store no more than 0.5 gallons of water in any piping/manifold between the hot water source and any hot water fixture.

YES  NO  MAYBE **6 max**

**4.5 Water Reuse**

Harvest, treat, and reuse rainwater and/or greywater to meet a portion of the project's total water needs: 10% reuse *[3 points]*; 20% reuse *[4 points]*; 30% reuse *[5 points]*; 40% reuse *[6 points]*

YES  NO  MAYBE **8**

**4.6 Access to Potable Water During Emergencies**

Provide residents with access to potable water in the event of an emergency that disrupts normal access to potable water, including disruptions related to power outages that prevent pumping water to upper floors of multifamily buildings or pumping of water from on-site wells, per one of the three options.

SUBTOTAL OPTIONAL POINTS

**5. ENERGY EFFICIENCY**

YES  NO  MAYBE **M**

**5.1a Building Performance Standard** *(New Construction: single-family and low-rise multifamily)*

Certify each dwelling unit in the project through the ENERGY STAR New Homes program.

YES  NO  MAYBE **M**

**5.1b Building Performance Standard** *(New Construction: mid-rise and high-rise multifamily, with some exceptions)*

Certify the project through the ENERGY STAR Multifamily High-Rise program (MFHR) **OR** follow the combined MFHR and LEED Commissioning Path outlined in the criterion.

*Exception:* Multifamily buildings that are four or five stories, in which all dwelling units have their own heating, cooling and hot water systems, should comply with Criterion 5.1a and certify each dwelling unit per ENERGY STAR Certified New Homes.



**M** = MANDATORY  
**#** = OPTIONAL POINTS

<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>ENERGY EFFICIENCY</b> <i>(continued)</i></p> <p><b>5.1c Building Performance Standard</b> <i>(Substantial and Moderate Rehab: single-family and low-rise multifamily)</i>                  For each dwelling unit, achieve a HERS Index score of 85 or less.   <i>Exception:</i> Substantial rehabs of buildings with walls made only of brick/masonry that are three stories or fewer and built before 1980, as well as moderate rehabs of buildings that are three stories or fewer and built before 1980, are permitted to instead achieve a HERS Index score of 100 or less for each dwelling unit.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>5.1d Building Performance Standard</b> <i>(Substantial and Moderate Rehab: mid-rise and high-rise)</i>                  Demonstrate that the energy performance of the completed building will be equivalent to ASHRAE 90.1-2010 using an energy model created by a qualified energy services provider per Appendix G.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>5 to 12</b></p> <p>Need to achieve 10% better than Ashre 2013 for City</p>	<p><b>5.2a Additional Reductions in Energy Use</b>                  Design and construct a building that is projected to be at least 5% more efficient than what is required of the project by Criteria 5.1a–d. (Projects receiving points in Criterion 5.2a may not receive points per Criterion 5.2b)</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>12</b></p>	<p><b>5.2b Advanced Certification: Nearing Net Zero</b>                  Certify the project in a program that requires advanced levels of building envelope performance such as PHIUS, Living Building Challenge and/or DOE Zero Energy Ready Home. (Projects receiving points in Criterion 5.2b may not receive points per Criterion 5.2a)</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>5.3 Sizing of Heating and Cooling Equipment</b>                  Size and select heating and cooling equipment in accordance with the Air Conditioning Contractors of America (ACCA) Manuals J and S or ASHRAE handbooks.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>5.4 ENERGY STAR Appliances</b>                  If providing appliances, install ENERGY STAR clothes washers, dishwashers and refrigerators. If appliances will not be installed or replaced at this time, specify that, at the time of installation or replacement, ENERGY STAR models must be used.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>5.5 Lighting</b>                  Follow the guidance for high-efficacy lighting controls and other characteristics for all permanently installed lighting fixtures in project dwelling units, common spaces and exterior</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p> <p><b>6</b></p>	<p><b>5.6 Electricity Meter</b>  <i>New Construction and Substantial Rehab</i>  <b>Moderate Rehab</b> <i>(Except for single-room occupancy and designated supportive housing dwelling units)</i>                  Install individual or submetered electric meters for all dwelling units.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>4</b></p>	<p><b>5.7a Photovoltaic/Solar Hot Water Ready</b>                  Orient, design, engineer, wire and/or plumb the development to accommodate installation of photovoltaic (PV) or solar hot water system in the future.</p>



M = MANDATORY  
# = OPTIONAL POINTS

YES  NO  MAYBE **10 max**

**ENERGY EFFICIENCY** *(continued)*

**5.7b Renewable Energy**

Install photovoltaic (PV) panels or other electric-generating renewable energy source to provide a specified percentage of the project’s estimated total energy demand or water heating energy demand. *(Projects may earn points through Criterion 5.7b or 5.8b, but not both.)*

	5%	10%	20%	30%	40%
Single-story/Single-family	—	—	6	8	10
2 to 3 stories	—	6	8	10	—
4 stories or more	6	8	10	—	—

YES  NO  MAYBE **8**

**5.8a Resilient Energy Systems: Floodproofing**

Conduct floodproofing, including perimeter floodproofing (barriers/shields), of lower floors. Design and install building systems as specified by the full criterion so that the operation of those systems will not be grossly affected in case of a flood.

YES  NO  MAYBE **4 to 8**

**5.8b Resilient Energy Systems: Islandable Power**

Provide emergency power through an islandable photovoltaic (PV) system or an efficient and portable generator that will offer at least limited electricity for critical circuits during power outages per one of the three options listed. *(Projects may earn points through Criterion 5.7b or 5.8b, but not both.)*

SUBTOTAL OPTIONAL POINTS

**6. MATERIALS**

YES  NO  MAYBE **M**

**6.1 Low/No VOC Paints, Coatings and Primers**

All interior paints and primers must have VOC levels, in grams per liter, less than or equal to the thresholds established by South Coast Air Quality Management District (SCAQMD) Rule 1113.

YES  NO  MAYBE **M**

**6.2 Low/No VOC Adhesives and Sealants**

All adhesives and sealants (including caulks) must have VOC levels, in grams per liter, less than or equal to the thresholds established by the South Coast Air Quality Management District Rule 1168.

YES  NO  MAYBE **3 max**

**6.3 Recycled Content Material**

Incorporate building materials that are composed of at least 25% post-consumer recycled content or at least 50% post-industrial recycled content. *[1 point]*

Building materials that make up at least 75% of their project component each receive *1 point*.

YES  NO  MAYBE **4 max**

**6.4 Regional Materials**

Use products that were extracted, processed and manufactured within 500 miles of the project for a minimum of 50%, based on cost, of the building materials’ value.

Select any or all of these options (each material can qualify for *1 point*):

- Framing materials
- Exterior materials (e.g., siding, masonry, roofing)
- Flooring materials
- Concrete/cement and aggregate material
- Drywall/interior sheathing materials

often achieve concrete and framing, sometimes cabinets, counters, LED light fixture



M = MANDATORY  
# = OPTIONAL POINTS

YES  NO  MAYBE

1

**MATERIALS** *(continued)*

**6.5 Certified, Salvaged and Engineered Wood Products**

For at least 25% of all structural wood products, by cost or value, commit to using either FSC-certified, salvaged products or engineered framing materials without urea formaldehyde.

YES  NO  MAYBE

M

**6.6 Composite Wood Products that Emit Low/No Formaldehyde**

All composite wood products must be certified as compliant with California 93120 Phase 2 **OR**, if using a composite wood product that does not comply with California 93120 Phase 2, all exposed edges and sides must be sealed with low-VOC sealants, per Criterion 6.2.

YES  NO  MAYBE

M

**6.7a Environmentally Preferable Flooring**

Do not install carpets in building entryways, laundry rooms, bathrooms, kitchens/kitchenettes, utility rooms or any rooms built on foundation slabs. Where installed, all carpet products must meet the Carpet and Rug Institute’s Green Label or Green Label Plus certification for carpet, pad and carpet adhesives. Any hard surface flooring products must be either ceramic tile or solid unfinished hardwood floors, or meet the Scientific Certification System’s FloorScore program criteria (including pre-finished hardwood flooring).

YES  NO  MAYBE

6

**6.7b Environmentally Preferable Flooring: Throughout Building**

Use non-vinyl, non-carpet floor coverings throughout each building in the project.

YES  NO  MAYBE

M

**6.8 Mold Prevention: Surfaces**

Use materials that have durable, cleanable surfaces throughout bathrooms, kitchens and laundry rooms. Materials installed in these rooms should not be prone to deterioration due to moisture intrusion or encourage the growth of mold.

YES  NO  MAYBE

M

**6.9 Mold Prevention: Tub and Shower Enclosures**

Use moisture-resistant backing materials such as cement board, fiber cement board or equivalent per ASTM #D3273 behind tub/shower enclosures. Projects using a one-piece fiberglass tub/shower enclosure are exempt from this requirement.

YES  NO  MAYBE

12 max

**6.10 Asthmagin-Free materials**

Do not install products that contain ingredients that are known to cause or trigger asthma. Key products to avoid are:

- *Insulation:* Do not use spray polyurethane foam (SPF) or formaldehyde-containing fiberglass batts. [4 points]
- *Flooring:* Do not use flexible vinyl (PVC) roll or sheet flooring or carpet-backed with vinyl with phthalates. Do not use fluid applied finish floors. [4 points]
- *Wall coverings:* Do not use wallpaper made from vinyl (PVC) with phthalates or site-applied high-performance coatings that are epoxy or polyurethane based. [4 points]
- *Composite wood:* Use only ULEF products for cabinetry, subflooring and other interior composite wood uses. [4 points]

Possible 8? insulation, wallcoverings, or composite wood

YES  NO  MAYBE

5

**6.11 Reduced Heat-Island Effect: Roofing**

Use an ENERGY STAR–certified roofing product for 100% of the roof area **OR** install a “green” (vegetated) roof for at least 50% of the roof area and ENERGY STAR–certified roofing product for the remainder of the roof area.





M = MANDATORY  
# = OPTIONAL POINTS

YES  NO  MAYBE **M or 6 max**

**MATERIALS** *(continued)*

**6.12 Construction Waste Management**

Commit to following a waste management plan that reduces non-hazardous construction and demolition waste through recycling, salvaging or diversion strategies through one of the three options. Achieve optional points by going above and beyond the requirement.

YES  NO  MAYBE **3**

**6.13 Recycling Storage**

Provide separate bins for the collection of trash and recycling for each dwelling unit and all shared community rooms (if applicable).

Additionally, in multifamily buildings, provide at least one easily accessible, permanent and dedicated indoor area for the collection and storage of materials for recycling. In single-family homes, points will be accrued only if curb-side recycling pickup is available.

Collected materials should include, at a minimum, paper, cardboard, glass, metals and plastics.

SUBTOTAL OPTIONAL POINTS

**7. HEALTHY LIVING ENVIRONMENT**

YES  NO  MAYBE **M 12 max**

**7.1 Ventilation**

**Each unit will have individual ventilations system with energy recovery.**

*New Construction and Substantial Rehab*  
*Moderate Rehab*

For each dwelling unit, in full accordance with ASHRAE 62.2-2010, install a local mechanical exhaust system in each bathroom [4 points], a local mechanical exhaust system in each kitchen [4 points], and a whole-house mechanical ventilation system [4 points].

For each multifamily building of four stories and more, in full accordance with ASHRAE 62.1-2010, install a mechanical ventilation system for all hallways and common spaces [3 points].

For all project types, in addition to the above requirements:

- All systems and associated ductwork must be installed per manufacturer’s recommendations.
- All individual bathroom fans must be ENERGY STAR labeled, wired to turn on with the light switch, and equipped with a humidistat sensor, timer or other control (e.g., occupancy sensor, delay off switch, ventilation controller).
- If using central ventilation systems with rooftop fans, each rooftop fan must be direct-drive and variable-speed with speed controller mounted near the fan. Fans with design CFM 300-2000 must also have an ECM motor.

YES  NO  MAYBE **M**

**7.2 Clothes Dryer Exhaust**

Clothes dryers must be exhausted directly to the outdoors using rigid-type ductwork (except for condensing dryers, which must be plumbed to a drain).



**M** = MANDATORY  
**#** = OPTIONAL POINTS

<b>HEALTHY LIVING ENVIRONMENT</b> <i>(continued)</i>	
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b> <b>7.3 Combustion Equipment</b></p> <p>For new construction and rehab projects, specify power-vented or direct vent equipment when installing any new combustion appliance for space or water heating that will be located within the conditioned space.</p> <p>In Substantial and Moderate Rehabs, if there is any combustion equipment located within the conditioned space for space or water heating that is not power-vented or direct vent and that is not scheduled for replacement, conduct initial combustion safety testing per the given guidelines.</p> <p>Install one hard-wired carbon monoxide (CO) alarm with battery backup function for each sleeping zone, placed per National Fire Protection Association (NFPA) 720.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE <b>9 or 11</b>	<p><b>7.4 Elimination of Combustion Within the Conditioned Space</b></p> <p>No combustion equipment may be used for cooking (to include, but not limited to ranges, cooktops, stoves, ovens) as part of the building project [9 points] <b>OR</b> no combustion equipment may be used as part of the building project [11 points].</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b> <b>7.5 Vapor Retarder Strategies</b></p> <p>Install vapor barriers that meet specified criteria appropriate for the foundation type.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b> <b>7.6 Water Drainage</b> <i>(For all New Construction projects and those Rehab projects that include replacing particular assemblies called out below)</i></p> <p>Provide drainage of water away from walls, windows and roofs by implementing the list of techniques.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b> <b>7.7 Mold Prevention: Water Heaters</b></p> <p>Provide adequate drainage for water heaters that includes drains or catch pans with drains piped to the exterior of the dwelling.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b> <b>7.8 Radon Mitigation</b></p> <p>For New Construction in EPA Zone 1 areas, install passive radon-resistant features below the slab and a vertical vent pipe with junction box within 10 feet of an electrical outlet in case an active system should prove necessary in the future. For Substantial Rehab projects in EPA Zone 1, test and mitigate per the specified protocols.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b> <b>7.9 Garage Isolation</b></p> <ul style="list-style-type: none"> <li>• Provide a continuous air barrier between the conditioned space and any garage space to prevent the migration of any contaminants into the living space. Visually inspect common walls and ceilings between attached garages and living spaces to ensure that they are air-sealed before insulation is installed.</li> <li>• Do not install ductwork or air handling equipment in a garage.</li> <li>• Fix all connecting doors between conditioned space and garage with gaskets or otherwise make substantially airtight with weather stripping.</li> <li>• Install one hard-wired carbon monoxide (CO) alarm with battery backup function for each sleeping zone of the project, placed per National Fire Protection Association (NFPA) 720.</li> </ul>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b> <b>7.10 Integrated Pest Management</b></p> <p>Seal all wall, floor, and joint penetrations with low-VOC caulking or other appropriate nontoxic sealing methods to prevent pest entry.</p>



**M** = MANDATORY  
**#** = OPTIONAL POINTS

<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>9</b></p>	<p><b>HEALTHY LIVING ENVIRONMENT</b> <i>(continued)</i></p> <p><b>7.11a Beyond ADA: Universal Design</b> <i>(New Construction)</i>                  Design a minimum of 15% of the dwelling units (no fewer than one) in accordance with ICC/ANSI A117.1, Type A, Fully Accessible guidelines. Design the remainder of the ground-floor units and elevator-reachable units in accordance with ICC/ANSI A117.1, Type B.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>7 or 9</b></p>	<p><b>7.11b Beyond ADA: Universal Design</b> <i>(Substantial and Moderate Rehab)</i>                  Design a minimum of 10% of the dwelling units (one, at minimum) in accordance with ICC/ANSI A117.1, Type A, Fully Accessible guidelines. <i>[7 points]</i></p> <p><i>For an additional 2 points:</i> Design the remainder of the ground-floor units and elevator-reachable units with accessible unit entrances designed to accommodate people who use a wheelchair.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>7.12 Active Design: Promoting Physical Activity Within the Building</b>                  Situate at least one building stairway per the criterion to encourage use <b>OR</b> emphasize at least one strategy inside the building designed to increase frequency and duration of physical activity per the criterion.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>10</b></p>	<p><b>7.13 Active Design: Staircases and Building Circulation</b>                  A staircase must be accessible and visible from the main lobby as well as visible within a 25-foot walking distance from any edge of lobby. Ensure that no turns or obstacles prevent visibility of or accessibility to the qualifying staircase from the lobby, and that the staircase is encountered before or at the same time as the elevators.</p> <p>From the corridor, accessible staircases should be made visible by: Providing transparent glazing of at least 10 square feet (1 square meter) at all stair doors or at a side light <b>OR</b> providing magnetic door holds on all doors leading to the stairs <b>OR</b> removing door enclosures/ vestibules.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>9</b></p>	<p><b>7.14 Interior and Outdoor Activity Spaces for Children and Adults</b>                  Provide an on-site dedicated recreation space with exercise or play opportunities for adults and/or children that is open and accessible to all residents; see criterion for specifics.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>M</b></p>	<p><b>7.15 Reduce Lead Hazards in Pre-1978 Buildings</b> <i>(Substantial Rehab)</i>                  Conduct lead risk assessment or inspection to identify lead hazards, then control for these per EPA or state/ local laws and requirements.</p>
<p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE</p> <p><b>10</b></p>	<p><b>7.16 Smoke-Free Building</b>                  Implement and enforce a no-smoking policy in all common and individual living areas, and within a 25-foot perimeter around the exterior of all residential projects.</p>

\_\_\_\_\_  
 SUBTOTAL OPTIONAL POINTS



M = MANDATORY  
# = OPTIONAL POINTS

8. OPERATIONS, MAINTENANCE + RESIDENT ENGAGEMENT	
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b>   <b>8.1 Building Operations &amp; Maintenance (O&amp;M) Manual and Plan</b> <i>(For all multifamily projects)</i></p> <p>Develop a manual with thorough building operations and maintenance guidance and a complementary plan. The manual and plan should be developed over the course of the project design, development and construction stages, and should include sections/chapters addressing the list of topics.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b>   <b>8.2 Emergency Management Manual</b> <i>(For all multifamily projects)</i></p> <p>Provide a manual on emergency operations targeted toward operations and maintenance staff and other building-level personnel. The manual should address responses to various types of emergencies, leading with those that have the greatest probability of negatively affecting the project. The manual should provide guidance as to how to sustain the delivery of adequate housing throughout an emergency and cover a range of topics, including but not limited to:</p> <ul style="list-style-type: none"> <li>• communication plans for staff and residents</li> <li>• useful contact information for public utility and other service providers</li> <li>• infrastructure and building “shutdown” procedures</li> </ul>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b>   <b>8.3 Resident Manual</b></p> <p>Provide a guide for homeowners and renters that explains the intent, benefits, use and maintenance of their home’s green features and practices. The Resident Manual should encourage green and healthy activities per the list of topics.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b>   <b>8.4 Resident and Property Staff Orientation</b></p> <p>Provide a comprehensive walk-through and orientation for all residents, property manager(s) and buildings operations staff. Use the appropriate manuals (see Criteria 8.1, 8.2, 8.3) as the base of the curriculum, and review the project’s green features, operations and maintenance procedures, and emergency protocols.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>M</b>   <b>8.5 Project Data Collection and Monitoring System: 100% Owner-Paid Utility Accounts; 15% Tenant-Paid Utility Accounts</b></p> <p><i>For rental properties:</i> Collect and monitor project energy and water performance data for 100% of owner-paid utilities and 15% of tenant-paid utilities for at least 5 years. This data must be maintained in a manner that allows staff to easily access and monitor it, enabling them to make informed operations and capital planning decisions. Also allow Enterprise access to this data.</p> <p><i>For owner-occupied units:</i> Collect and monitor energy and water performance data in a manner that allows for easy access and review and provides the ability to influence home operations. Also allow Enterprise access to this data.</p>
<input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> MAYBE	<p><b>7 or 11</b>   <b>8.6 Project Data Collection and Monitoring System: Greater than 15% Tenant-Paid Utility Accounts</b></p> <p>Collect and monitor project energy and water performance data for at least 5 years. This data must be maintained in a manner that allows staff to easily access and monitor it, enabling them to make informed operations and capital planning decisions. Also allow Enterprise access to this data. 16–60% of units [7 points]; 60–100% of units [11 points].</p>

SUBTOTAL OPTIONAL POINTS

TOTAL OPTIONAL POINTS



Project Name: Millers River Apartments

Date: 6/27/2018



LEED v4 for BD+C: New Construction and Major Renovation  
Project Checklist



Y	Mayb e	N	Credit/PR #	Credit Description	Possible Points	Expected Points	Credit #	Impact	Credit Description
1			Credit	Integrative Process	1	9	1.1a		Goal Setting
16	4	4	<b>Location and Transportation</b>		16	28			<b>Location + Neighborhood Fabric</b>
4	4		LT01	LEED for Neighborhood Development Location	8				
		1	LT02	Sensitive Land Protection	1				
		2	LT03	High Priority Site	2				
5			LT04	Surrounding Density and Diverse Uses	5	7	2.4		Compact Development
						6	2.12		Access to Fresh, Local Foods
5			LT05	Access to Quality Transit	5	3	2.9		Improving Connectivity to the Community
			LT06			10	2.8		Access to Public Transportation
1			LT07	Bicycle Facilities	1		2.9		Improving Connectivity to the Community
1			LT08	Reduced Parking Footprint	1	2	2.7		Preservation of and Access to Open Space
		1	LT09	Green Vehicles	1				
2	2	6	<b>Sustainable Sites</b>		10	6			<b>Site Improvements</b>
Y			Prereq	Construction Activity Pollution Prevention	Required		3.2		Erosion and Sedimentation Control (Except for infill sites with buildable area smaller than one acre)
	1		SS01	Site Assessment	1		3.1		Environmental Remediation
		2	SS02	Site Development - Protect or Restore Habitat	2		3.4		Landscaping
1			SS03	Open Space	1		2.7		Preservation of and Access to Open Space
	1	2	SS04	Rainwater Management	3				
1		1	SS05	Heat Island Reduction	2	5	6.11		Reduced Heat-Island Effect: Roofing
						1	3.7		Reducing Heat Island Effect: Paving
		1	SS06	Light Pollution Reduction	1				
8	1	2	<b>Water Efficiency</b>		11	6			<b>Water Conservation</b>

Project Name: **Millers River Apartments**

Date: **6/27/2018**



**LEED v4 for BD+C: New Construction and Major Renovation**  
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Y	Mayb e	N	Credit/PR #	Credit Description	Possible Points	Expected Points	Credit #	Impact	Credit Description
Y			Prereq	Outdoor Water Use Reduction	Required		3.5b		Efficient Irrigation and Water Reuse
Y			Prereq	Indoor Water Use Reduction	Required	Mandatory	4.1		Water-Conserving Fixtures
Y			Prereq	Building-Level Water Metering	Required				
I		I	WE01	Outdoor Water Use Reduction	2		3.5b		Efficient Irrigation and Water Reuse
6			WE02	Indoor Water Use Reduction	6	6	4.2		Advanced Water Conservation
I	I	I	WE03	Cooling Tower Water Use	2				
I			WE04	Water Metering	1	Mandatory	8.5		Project Data Collection and Monitoring System: 100% Owner Paid Utility Accounts, 15% Tenant Paid Utility Accounts
<b>15</b>	<b>4</b>	<b>12</b>	<b>Energy and Atmosphere</b>		<b>33</b>		<b>10</b>		<b>Energy Efficiency</b>
							1.1c		Designing for Project Performance
Y			Prereq	Fundamental Commissioning and Verification	Required				
Y			Prereq	Minimum Energy Performance	Required	Mandatory	5.1d		Building Performance Standard: Substantial and Moderate Rehab: mid-rise and high-rise multifamily
						Mandatory	5.4		ENERGY STAR Appliances

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LEED v4 for BD+C: New Construction and Major Renovation  
Project Checklist



Y	Mayb e	N	Credit/PR #	Credit Description		Possible Points	Expected Points	Credit #	Impact	Credit Description
						Mandatory		5.5		Lighting
Y			Prereq	Building-Level Energy Metering	Required					
Y			Prereq	Fundamental Refrigerant Management	Required					
		6	EA01	Enhanced Commissioning	6	Mandatory		8.4		Resident and Property Manager Orientation
14	2		EA02	Optimize Energy Performance	18		10	5.2a		Additional Reductions in Energy Use

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LEED v4 for BD+C: New Construction and Major Renovation  
Project Checklist



Y	Mayb e	N	Credit/PR #	Credit Description	Possible Points	Expected Points	Credit #	Impact	Credit Description
		1	EA03	Advanced Energy Metering	1	Mandatory	8.5		Project Data Collection and Monitoring System: 100% Owner Paid Utility Accounts, 15% Tenant Paid Utility Accounts
	2		EA04	Demand Response	2	Mandatory	1.3a		Resilient Communities: Design for Resilience (New Construction & Substantial Rehab only)
		3	EA05	Renewable Energy Production	3				
1			EA06	Enhanced Refrigerant Management	1				
		2	EA07	Green Power and Carbon Offsets	2				
8	2	3	<b>Materials and Resources</b>		13		11		<b>Materials</b>
Y			Prereq	Storage and Collection of Recyclables	Required		3	6.13	Recycling Storage for Multifamily Project
Y			Prereq	Construction and Demolition Waste Management Planning	Required		1	6.3	Recycled Content Material
2		3	MR01	Building Life-Cycle Impact Reduction	5				
2			MR02	Building Product Disclosure and Optimization - Environmental Product	2				
1	1		MR03	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2		1	6.4	Regional Material
1	1		MR04	Building Product Disclosure and Optimization - Material Ingredients	2				
2			MR05	Construction and Demolition Waste Management	2		6	6.12	Construction Waste Management (Minimum requirements for all projects. Optional points are available for projects that go beyond mandatory.)
14	1	0	<b>Indoor Environmental Quality</b>		16		26		<b>Healthy Living Environment</b>
Y			Prereq	Minimum Indoor Air Quality Performance	Required	Mandatory	12	7.1	Ventilation (Mandatory for New Construction and Substantial Rehab)

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Y	Maybe	N	Credit/PR #	Credit Description		Possible Points	Expected Points	Credit #	Impact	Credit Description
						Mandatory		6.2		Low / No VOC Adhesives and Sealants
Y			Prereq	Environmental Tobacco Smoke Control	Required		10	7.16		Smoke-Free Building
2			IAQ01	Enhanced Indoor Air Quality Strategies	2	Mandatory		1.2a		Resident Health and Wellbeing: Design for Health
			IAQ02				4	6.10		Asthma-free Materials
3			IAQ03	Low-Emitting Materials	3	Mandatory		6.2		Low / No VOC Adhesives and Sealants
						Mandatory		6.6		Composite Wood Products that Emit Low / No Formaldehyde
						Mandatory		6.7a		Environmentally Preferable Flooring
1			IAQ04	Construction Indoor Air Quality Management Plan	1	Mandatory		6.8		Mold Prevention: Surfaces
			IAQ05			Mandatory		6.9		Mold Prevention: Tub & Shower Enclosures
2			IAQ06	Indoor Air Quality Assessment	2			7.1		Ventilation (Optional for Moderate Rehab)
	1		IAQ07	Thermal Comfort	1					
2			IAQ08	Interior Lighting	2					
2			IAQ09	Daylight	3					

Project Name: Millers River Apartments

Date: 6/27/2018



LEED v4 for BD+C: New Construction and Major Renovation  
Project Checklist

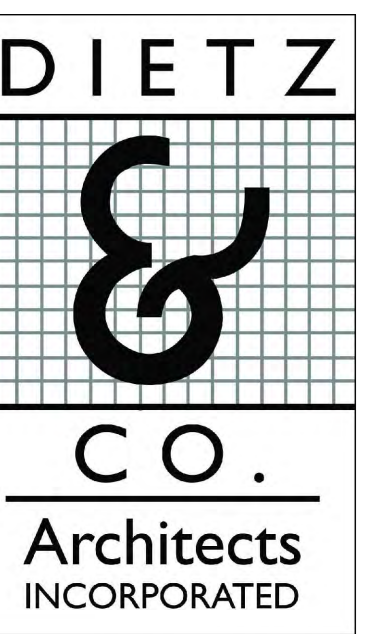
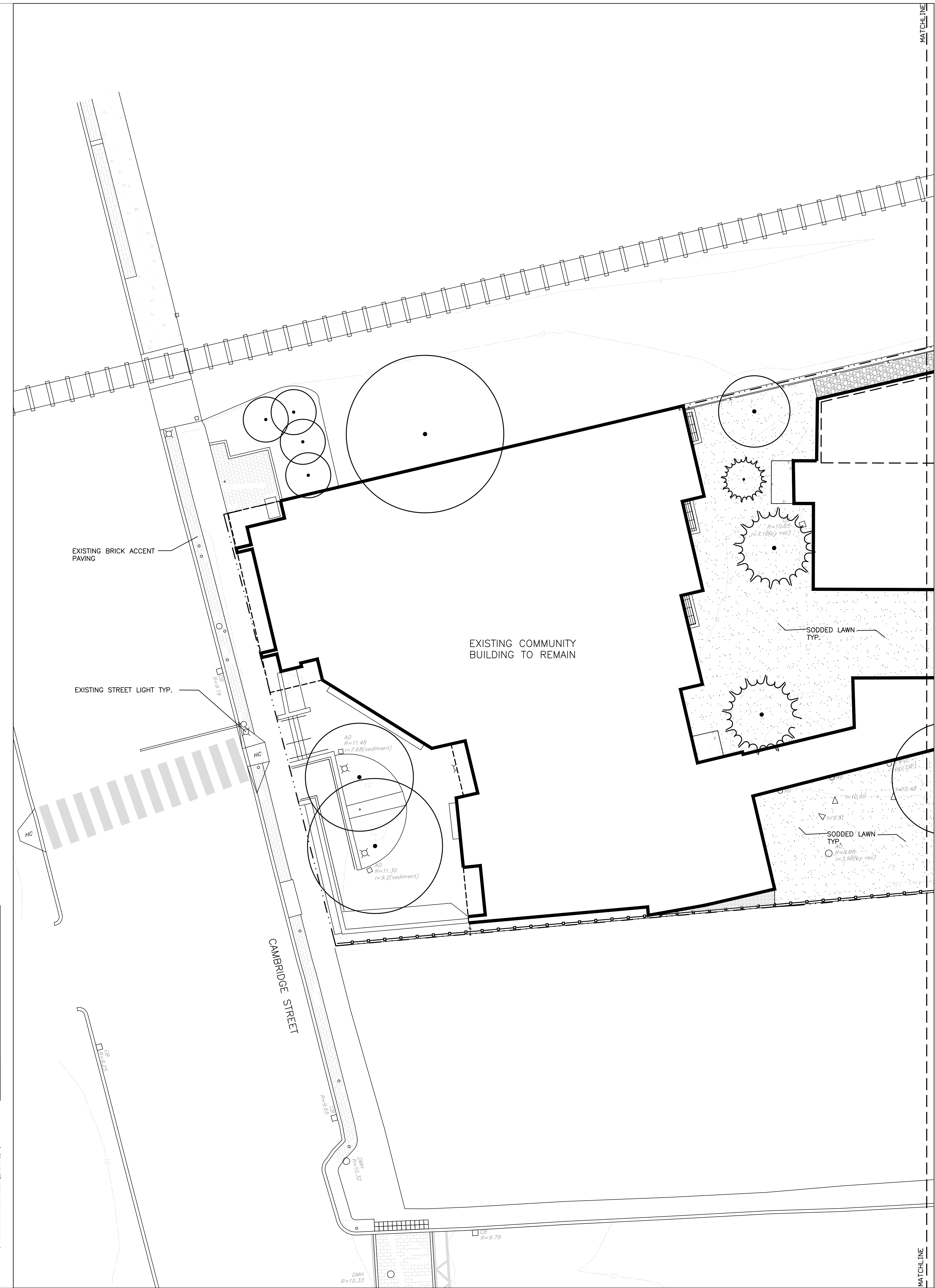
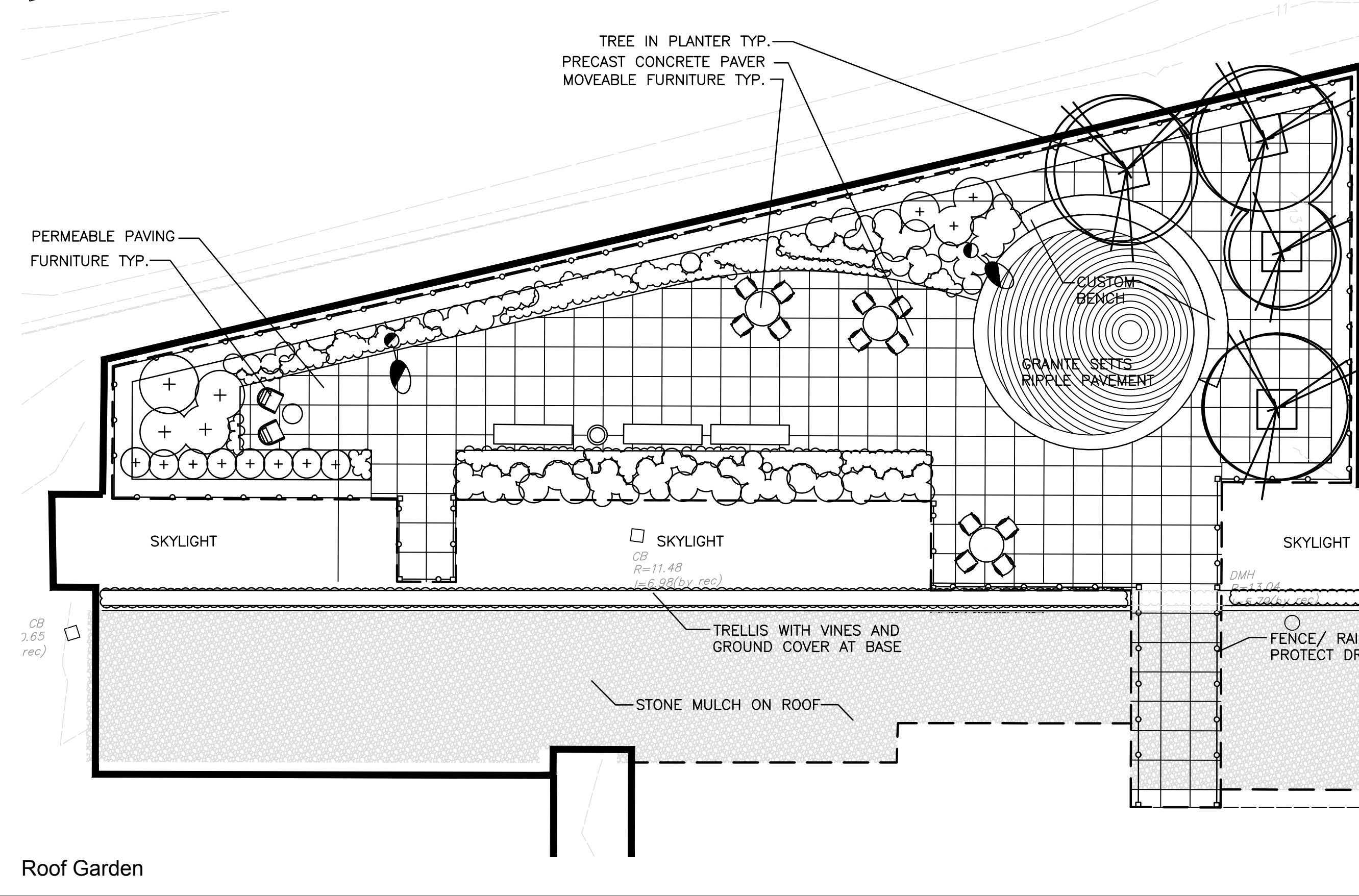


Y	Maybe	N	Credit/PR #	Credit Description	Possible Points	Expected Points	Credit #	Impact	Credit Description	
I			IAQ10	Quality Views	1					
I			IAQ11	Acoustic Performance	1					
4	I	I	<b>Innovation</b>		6					
3	I	I	Credit	Innovation	5					
I			Credit	LEED Accredited Professional	1					
2	2	0	<b>Regional Priority</b>		4					
I			RP01	Regional Priority: Specific Credit	1	Mandatory	8.1		Building Maintenance Manual (all multifamily projects)	
						Mandatory	8.3		Resident Manual	
I			RP02	Regional Priority: Specific Credit	1	Mandatory	1.3a		Resilient Communities: Design for Resilience (New Construction & Substantial Rehab only)	
I			RP03	Regional Priority: Specific Credit	1	Mandatory	7.12		Active Design: Promoting Physical Activity within the Building	
I			RP04	Regional Priority: Specific Credit	1	Mandatory	8.2		Emergency Management Manual (all multifamily projects)	
							26		Other Enterprise Points (See checklist)	
70	17	28	<b>TOTALS</b>	Possible Points:	110					
			Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110				25	<b>Meet all Mandatory Credits</b>		
							122	<b>Earn Additional Points in Optional Credits</b>		
			<b>LEED Gold Certification</b>				147	<b>Total Expected Mandatory Credits and Optional Points</b>		



**LEGEND - PROPOSED MATERIALS**

KEY	SYMBOL
BITUMINOUS CONCRETE PEDESTRIAN PAVING	(X/XX)
BITUMINOUS CONCRETE VEHICULAR PAVING	(X/XX)
BITUMINOUS CONCRETE VEH. PERVIOUS PAVING	(X/XX)
CONCRETE PEDESTRIAN PAVING	(X/XX)
CONCRETE VEHICULAR PAVING	(X/XX)
PRECAST CONCRETE PAVER PED. ON GRADE	(X/XX)
PRECAST CONCRETE PAVER PED. ON ROOF	(X/XX)
GRANITE PAVERS ON ROOF	(X/XX)
STONE MULCH	(X/XX)
NEW CONCRETE CURB	(X/XX)
NEW GRANITE CURB	(X/XX)
NEW TRASH RECEPTACLE	(X/XX)
NEW WOOD BENCH	(X/XX)
NEW SS BOLLARD	(X/XX)
NEW GUARD RAIL	(X/XX)
NEW 6' CHAIN LINK FENCE	(X/XX)
NEW METAL SCREEN	(X/XX)
EXISTING TREE TO REMAIN	(X/XX)
EVERGREEN TREE PLANTING	(X/XX)
DECIDUOUS TREE PLANTING	(X/XX)
FLOWERING TREE PLANTING	(X/XX)
SHRUB/GROUND COVER PLANTING	(X/XX)
SODED LAWN	(X/XX)



55 FRANK B MURRAY STREET, SUITE 201  
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CONSULTANT  
 Pressley Associates  
 Landscape Architects  
 219 Parker St  
 Amherst College, MA 01007  
 T: 417-868-1954  
 www.pressleyinc.com

STAMP

NOT FOR CONSTRUCTION

CAMBRIDGE HOUSING AUTHORITY  
**MILLERS RIVER APARTMENTS  
 REVITALIZATION**  
 15 LAMBERT STREET, CAMBRIDGE, MA 02141

NO.	DATE	DESCRIPTION
06/11/18		COMPREHENSIVE PERMIT SUBMISSION
06/24/18		100% SCHEMATIC DESIGN SUBMISSION
09/20/18		50% SCHEMATIC DESIGN SUBMISSION

PROJECT NO: 17029  
 DRAWN BY: GF SF  
 CHKD BY:

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SHEET TITLE  
**MATERIALS  
 PLAN**

**L401**



NO.	DATE	DESCRIPTION
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04/20/18		50% SCHEMATIC DESIGN SUBMISSION

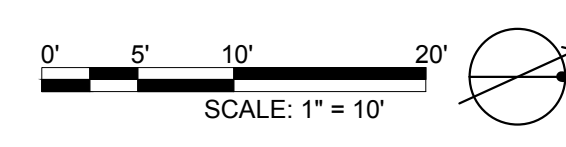
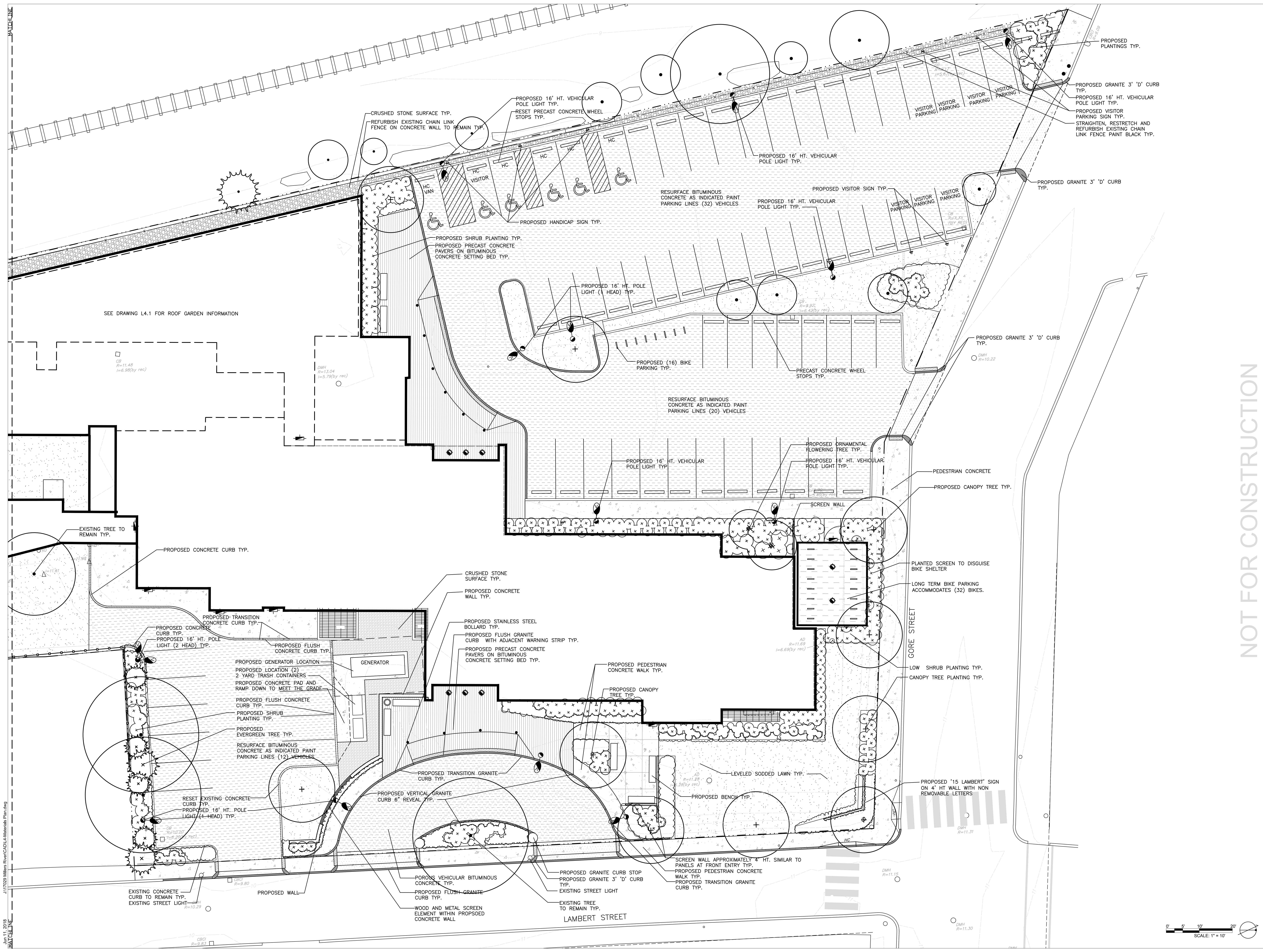
PROJECT NO: 17029  
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SHEET TITLE

**MATERIALS  
PLAN**

**L402**



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User: JCS



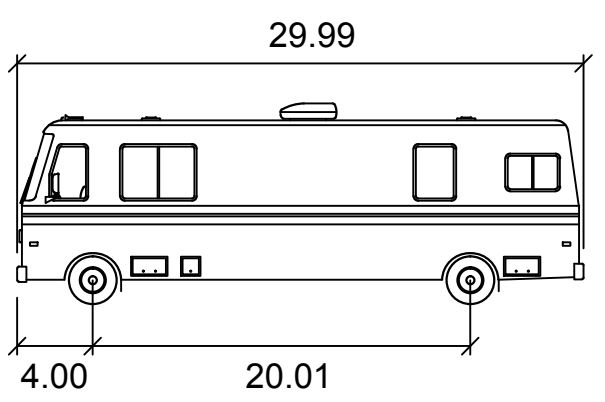
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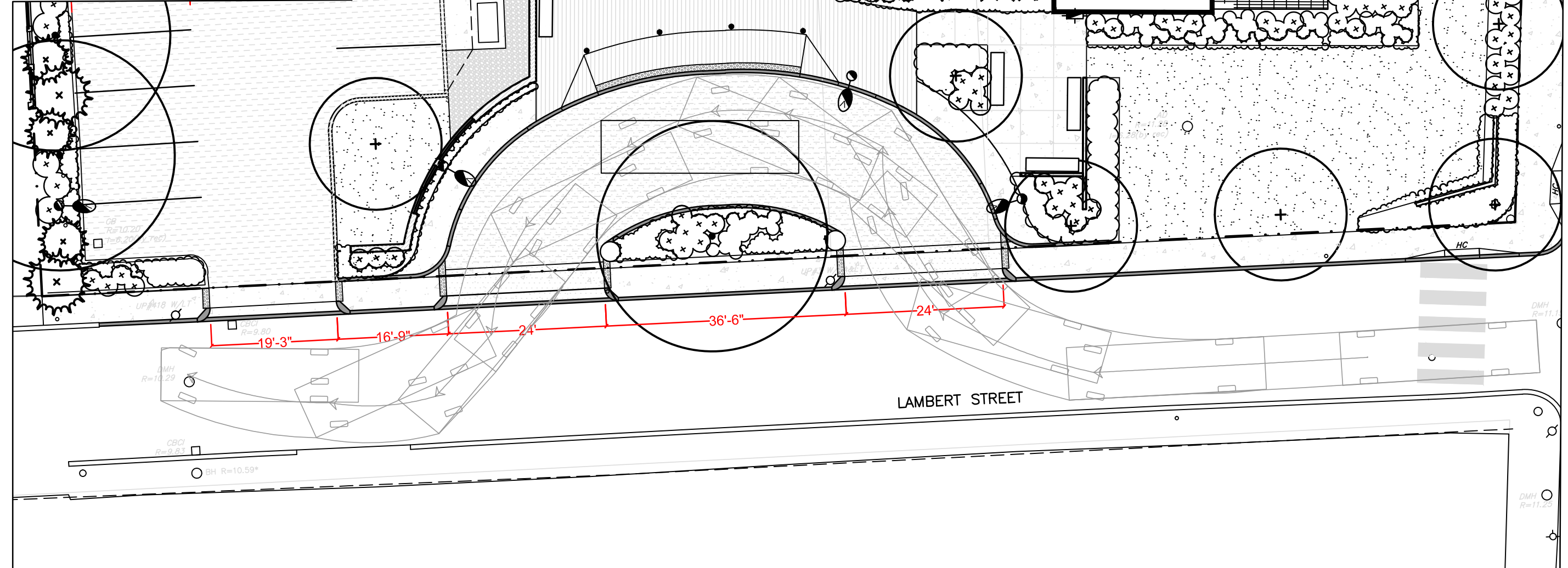
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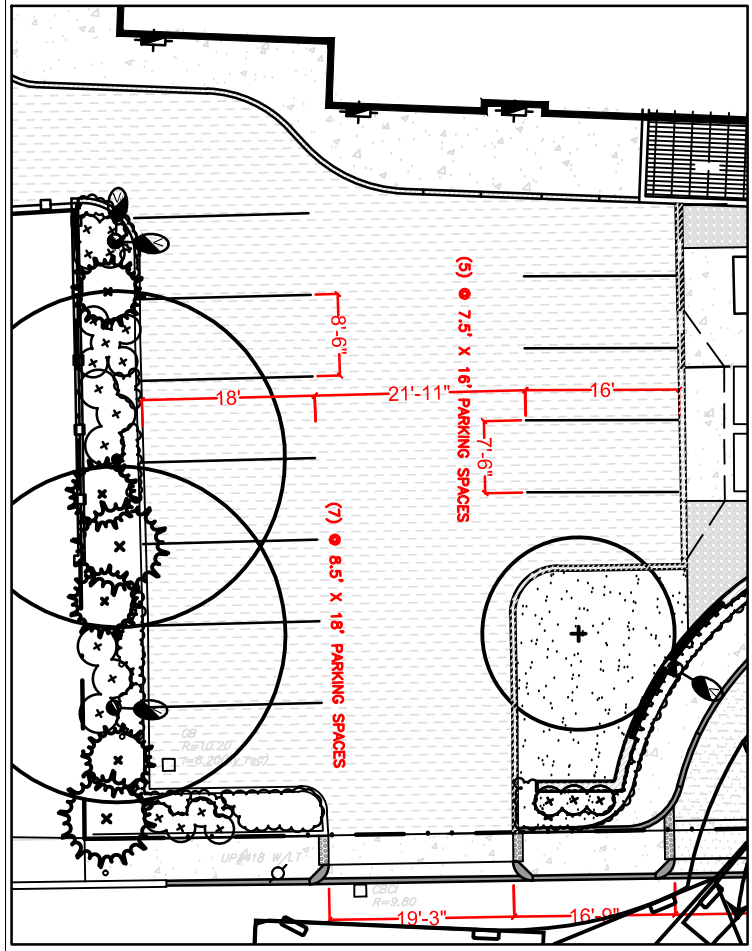
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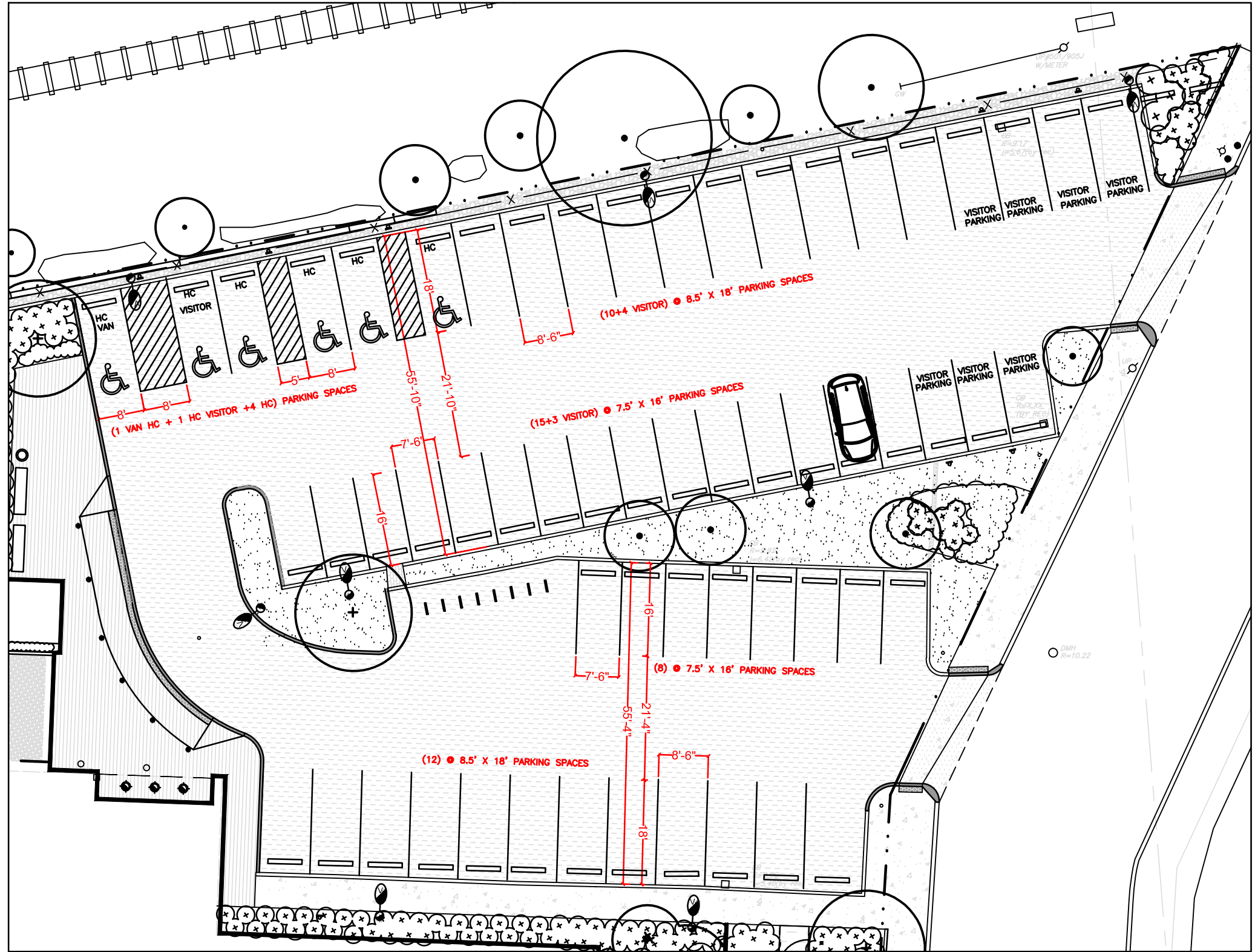
LAMBERT ST ENTRY CURB CUT DIAGRAM  
SCALE 1/16"=1'-0"



	PROP.
HANDICAP PARKING	4
VAN ACCESSIBLE HANDICAP	1
HANDICAP VISITOR	1
8.5' X 18' PARKING (EXCL. VIS.)	29
7.5' X 16' PARKING (EXCL. VIS.)	28
VISITOR PARKING	7
<b>TOTAL PARKING SPACE</b>	<b>70</b>

EXISTING CONDITIONS:  
 (7) HANDICAP SPACES AND (66) PARKING SPACES.

**PARKING SPACE DIAGRAM**  
 SCALE 1" = 20'



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CAMBRIDGE HOUSING AUTHORITY  
**MILLERS RIVER APARTMENTS**  
 REVITALIZATION  
 15 LAMBERT STREET, CAMBRIDGE, MA 02141

NO.	DATE	DESCRIPTION
05/11/18		COMPREHENSIVE PERMITS SUBMISSION
05/14/18		100% CONSTRUCTION DOCUMENTS
05/04/18		100% SCHEMATIC DESIGN SUBMISSION
04/20/18		50% SCHEMATIC DESIGN SUBMISSION

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SHEET TITLE



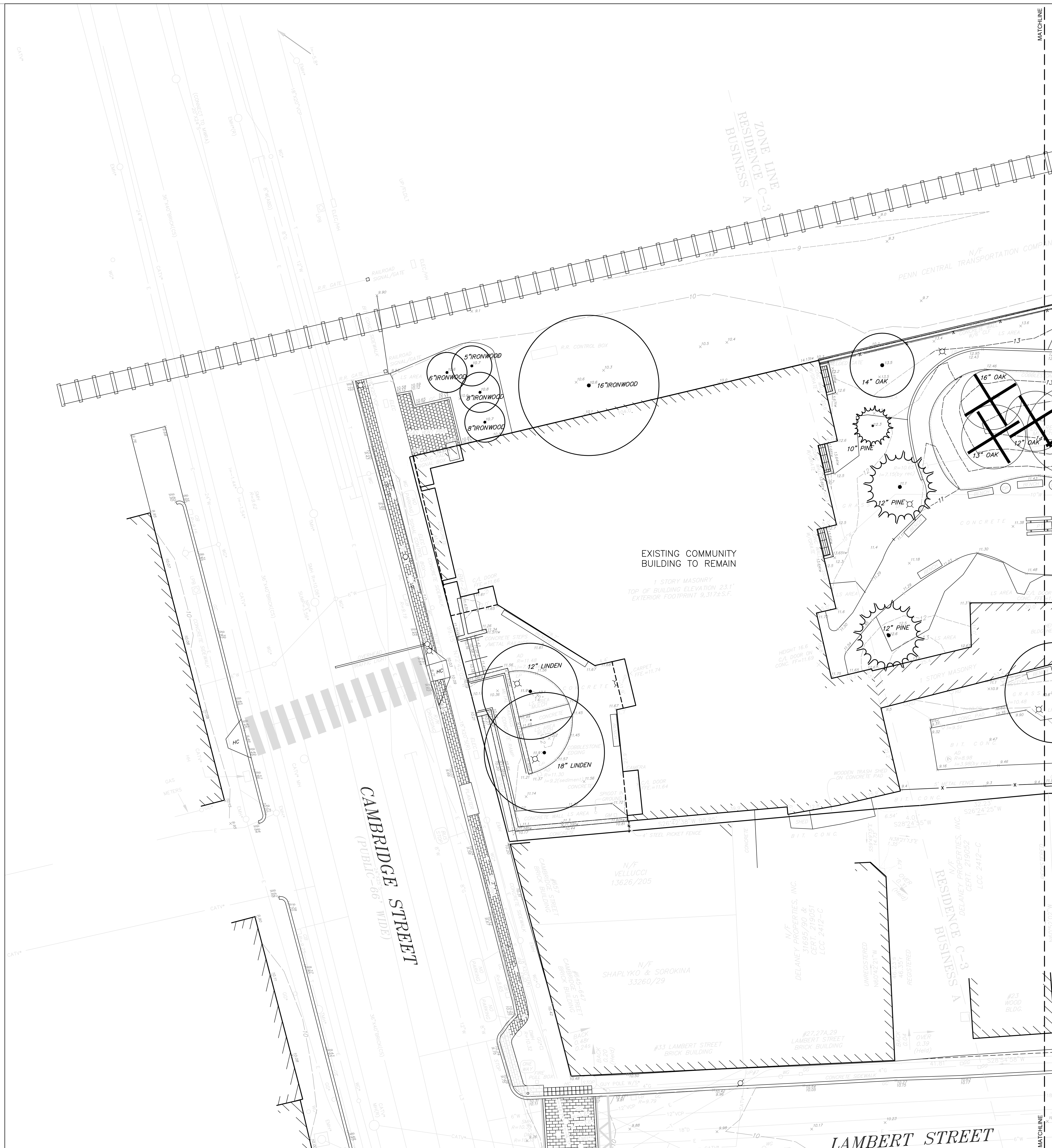
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05/04/18		100% SCHEMATIC DESIGN SUBMISSION
04/20/18		90% SCHEMATIC DESIGN SUBMISSION

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SHEET TITLE  
**EXISTING TREE  
 REMOVAL**

**L101**



**EXISTING TREE REMOVAL-  
 COURTYARD/ NEW COMMUNITY CENTER**

QTY	CALIPER INCHES	SPECIES
(3)	14"	OAK
(2)	16"	OAK
(2)	13"	OAK
(3)	12"	OAK
(1)	8"	OAK
(1)	4"	RIVER BIRCH
TOTAL CALIPER INCHES OF TREE REMOVED IN COURTYARD: 148"		

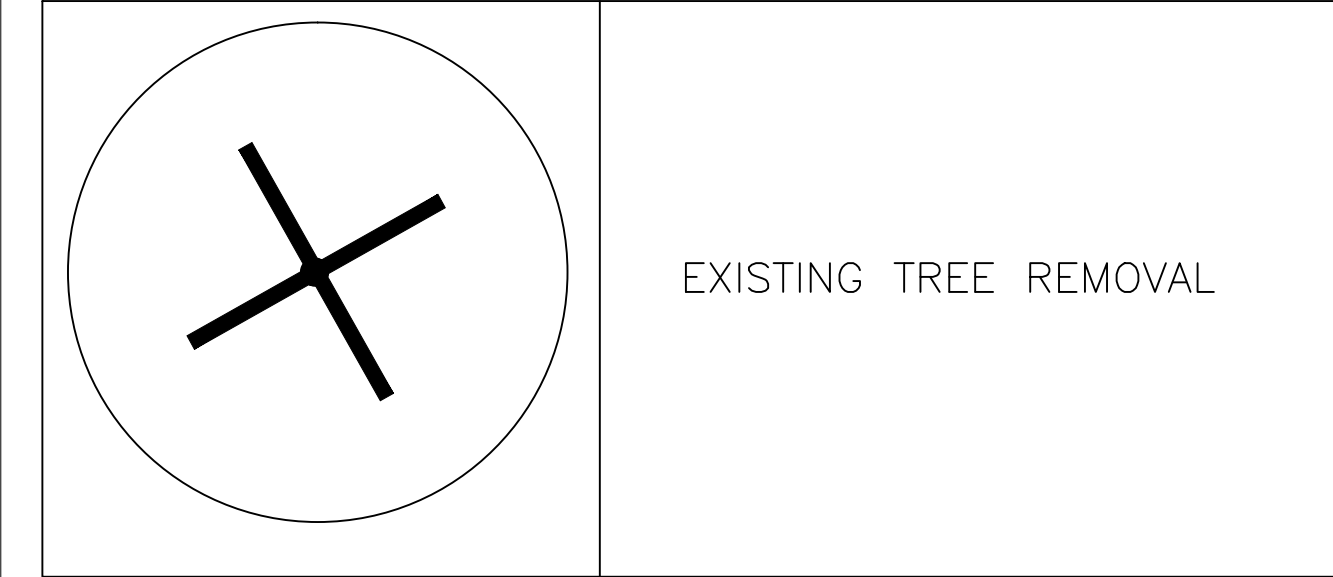
**EXISTING TREE REMOVAL- PARKING LOT**

QTY	CALIPER INCHES	SPECIES
(2)	12"	OAK
(1)	24"	LINDEN
(1)	12"	LINDEN
(2)	8"	LINDEN
TOTAL CALIPER INCHES OF TREE REMOVED IN PARKING LOT: 76"		

**EXISTING TREE REMOVAL- LAMBERT ST**

QTY	CALIPER INCHES	SPECIES
(1)	28"	SYCAMORE
(2)	26"	SYCAMORE
(2)	24"	SYCAMORE
(1)	19"	SYCAMORE
(1)	14"	LINDEN
(1)	15"	LINDEN
(1)	16"	LINDEN
TOTAL CALIPER INCHES OF TREE REMOVED ON LAMBERT ST:192"		

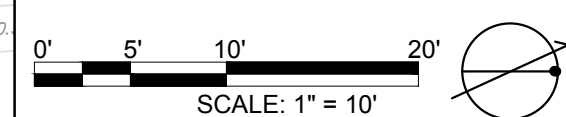
**TREE REMOVAL LEGEND**



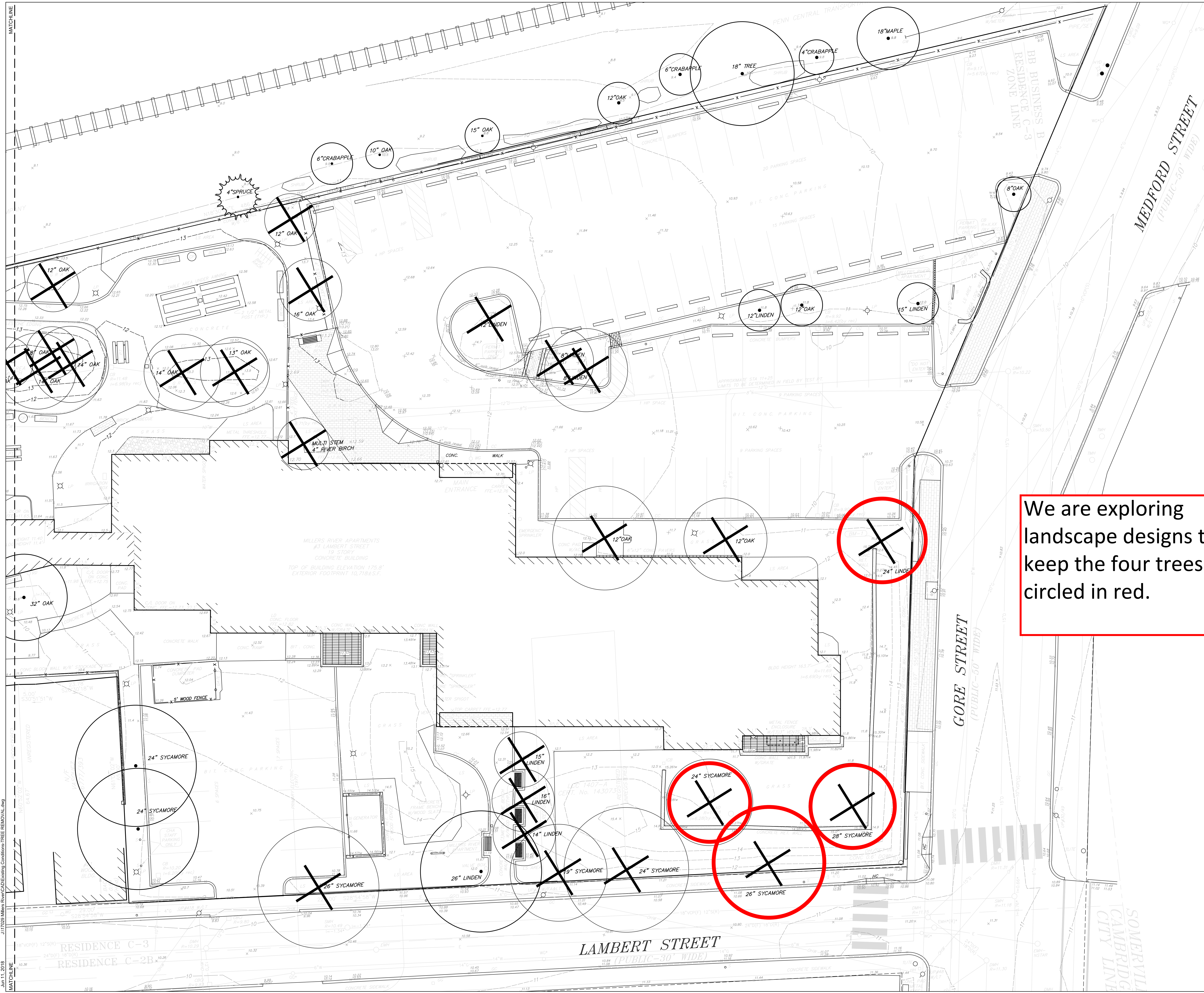
TOTAL CALIPER INCHES OF TREES REMOVED ON ENTIRE  
 SITE : 416", REFER TO L5.1 FOR TOTAL CALIPER INCHES  
 OF PROPOSED TREES

Jun 11, 2018 J:\17029 Millers River\CAD\Civil\Tree Removal.dwg

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We are exploring landscape designs to keep the four trees circled in red.

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CAMBRIDGE HOUSING AUTHORITY  
**MILLERS RIVER APARTMENTS  
REVITALIZATION**  
15 LAMBERT STREET, CAMBRIDGE, MA 02141

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04/20/18		50% SCHEMATIC DESIGN SUBMISSION

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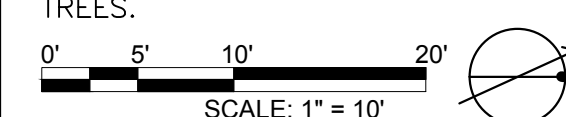
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SHEET TITLE

EXISTING TREE  
REMOVAL

L102

REFER TO SHEET L1.1 FOR  
LEGEND AND TOTAL CALIPER  
INCHES OF TREE REMOVED.  
REFER TO L5.1 FOR TOTAL  
CALIPER INCHES OF PROPOSED  
TREES.







Amelanchier arborea  
Serviceberry



Cercidiphyllum japonica  
Katsura tree



Pinus strobus 'Fastigiata'  
Fastigate white pine



Halesia  
Silverbell



Crataegus cruss-galli  
Thronless Hawthorn



Platanus acerifolia  
London Planetree



Cercis canadensis  
Redbud



Chionanthus virginicus  
Fringetree



Cladrastis lutea  
Yellowwood



Myrica pensylvanica  
Northern Bayberry



Ilex glabra  
Inkberry



Ilex verticillata  
Winterberry



Viburnum dentatum  
Arrowwood



Viburnum plicatum f. tomentosum  
Doublefile Viburnum



Buxus sempervirens  
Boswood



Euonymus radicans  
Spreading Euonymous



Fothergilla gardenii  
Dwarf Fothergilla



Azalea sp.  
Azalea



Comptonia peregrina  
Sweetfern



Deutzia gracilis 'nana'  
Dwarf deutzia



Campsis radicans  
Cow itch vine



Epimedium youngianum 'niveum'  
White barrenwort



Epimedium sulphureum  
Yellow barrenwort



Hosta sieboldiana  
Blue hosta



Hakonechloa macra  
Green weeping love grass



Hemerocallis happy return  
Yellow repeat daylily



Geranium bikovo  
Bikovo Geranium



Tricyrtis empress  
White toad lily



Geranium macrorrhizum bevan's  
Bevan geranium



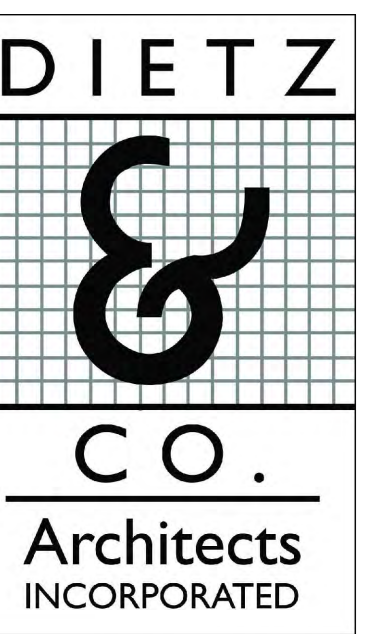
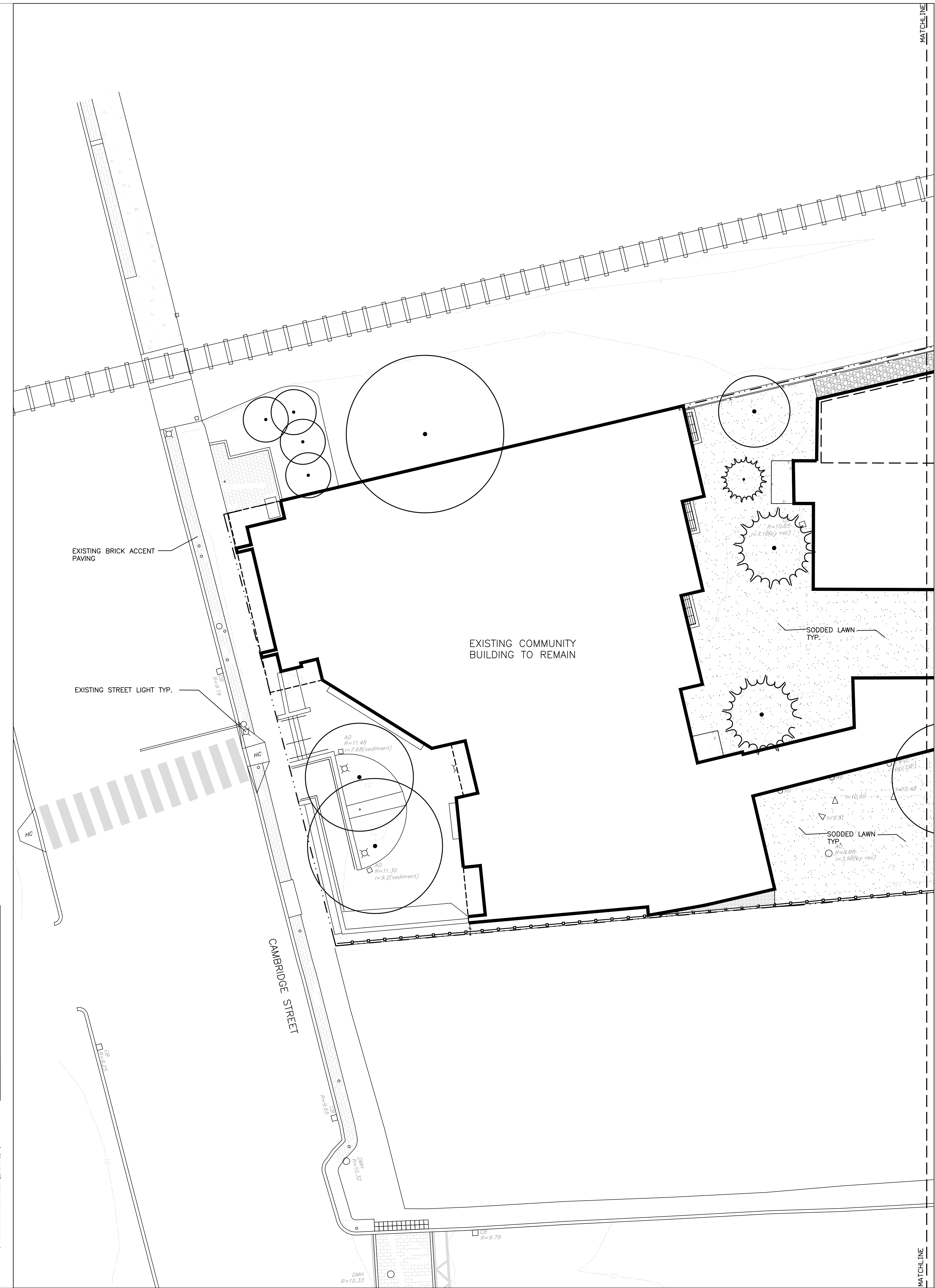
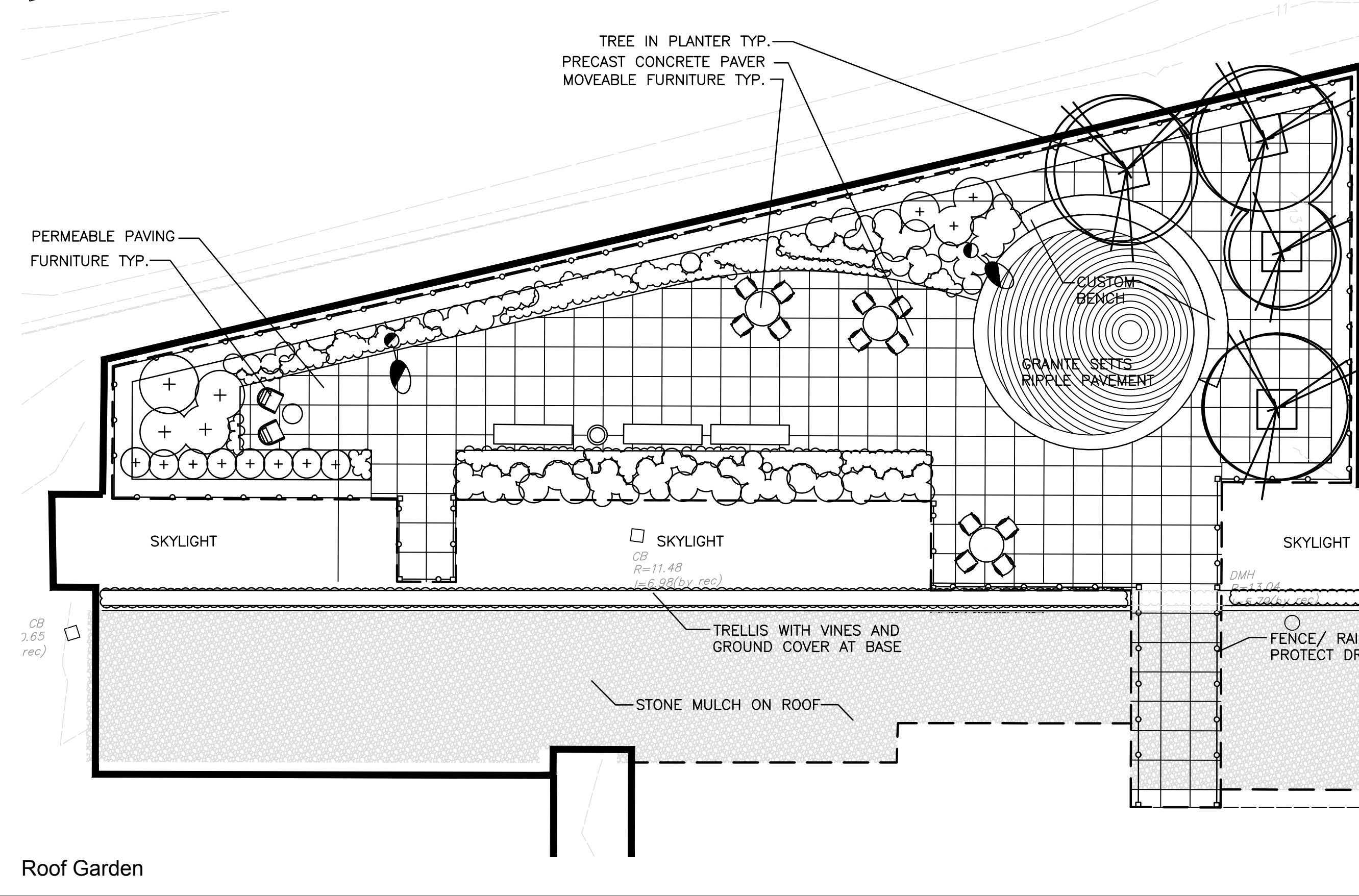
Polystichum acrostichoides  
Christmas Fern

## Millers River Apartment Landscape Materials Board- Planting



**LEGEND - PROPOSED MATERIALS**

KEY	SYMBOL
BITUMINOUS CONCRETE PEDESTRIAN PAVING	(X/XX)
BITUMINOUS CONCRETE VEHICULAR PAVING	(X/XX)
BITUMINOUS CONCRETE VEH. PERVIOUS PAVING	(X/XX)
CONCRETE PEDESTRIAN PAVING	(X/XX)
CONCRETE VEHICULAR PAVING	(X/XX)
PRECAST CONCRETE PAVER PED. ON GRADE	(X/XX)
PRECAST CONCRETE PAVER PED. ON ROOF	(X/XX)
GRANITE PAVERS ON ROOF	(X/XX)
STONE MULCH	(X/XX)
NEW CONCRETE CURB	(X/XX)
NEW GRANITE CURB	(X/XX)
NEW TRASH RECEPTACLE	(X/XX)
NEW WOOD BENCH	(X/XX)
NEW SS BOLLARD	(X/XX)
NEW GUARD RAIL	(X/XX)
NEW 6' CHAIN LINK FENCE	(X/XX)
NEW METAL SCREEN	(X/XX)
EXISTING TREE TO REMAIN	(X/XX)
EVERGREEN TREE PLANTING	(X/XX)
DECIDUOUS TREE PLANTING	(X/XX)
FLOWERING TREE PLANTING	(X/XX)
SHRUB/GROUND COVER PLANTING	(X/XX)
SODED LAWN	(X/XX)



55 FRANK B MURRAY STREET, SUITE 201  
SPRINGFIELD, MA 01103  
(413) 733 - 6798

CONSULTANT  
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219 Parker St  
Springfield, MA 01103  
T: 417-868-1954  
www.pressleyinc.com

STAMP

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CAMBRIDGE HOUSING AUTHORITY  
**MILLERS RIVER APARTMENTS  
REVITALIZATION**  
15 LAMBERT STREET, CAMBRIDGE, MA 02141

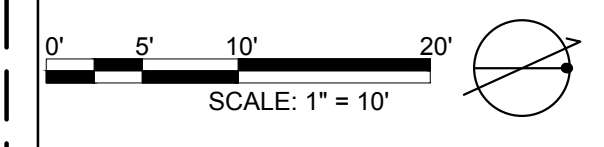
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06/24/18		100% SCHEMATIC DESIGN SUBMISSION
09/20/18		50% SCHEMATIC DESIGN SUBMISSION

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SHEET TITLE  
**MATERIALS  
PLAN**

**L401**





NO.	DATE	DESCRIPTION
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05/04/18		100% SCHEMATIC DESIGN SUBMISSION
04/20/18		50% SCHEMATIC DESIGN SUBMISSION

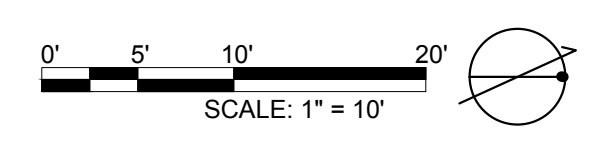
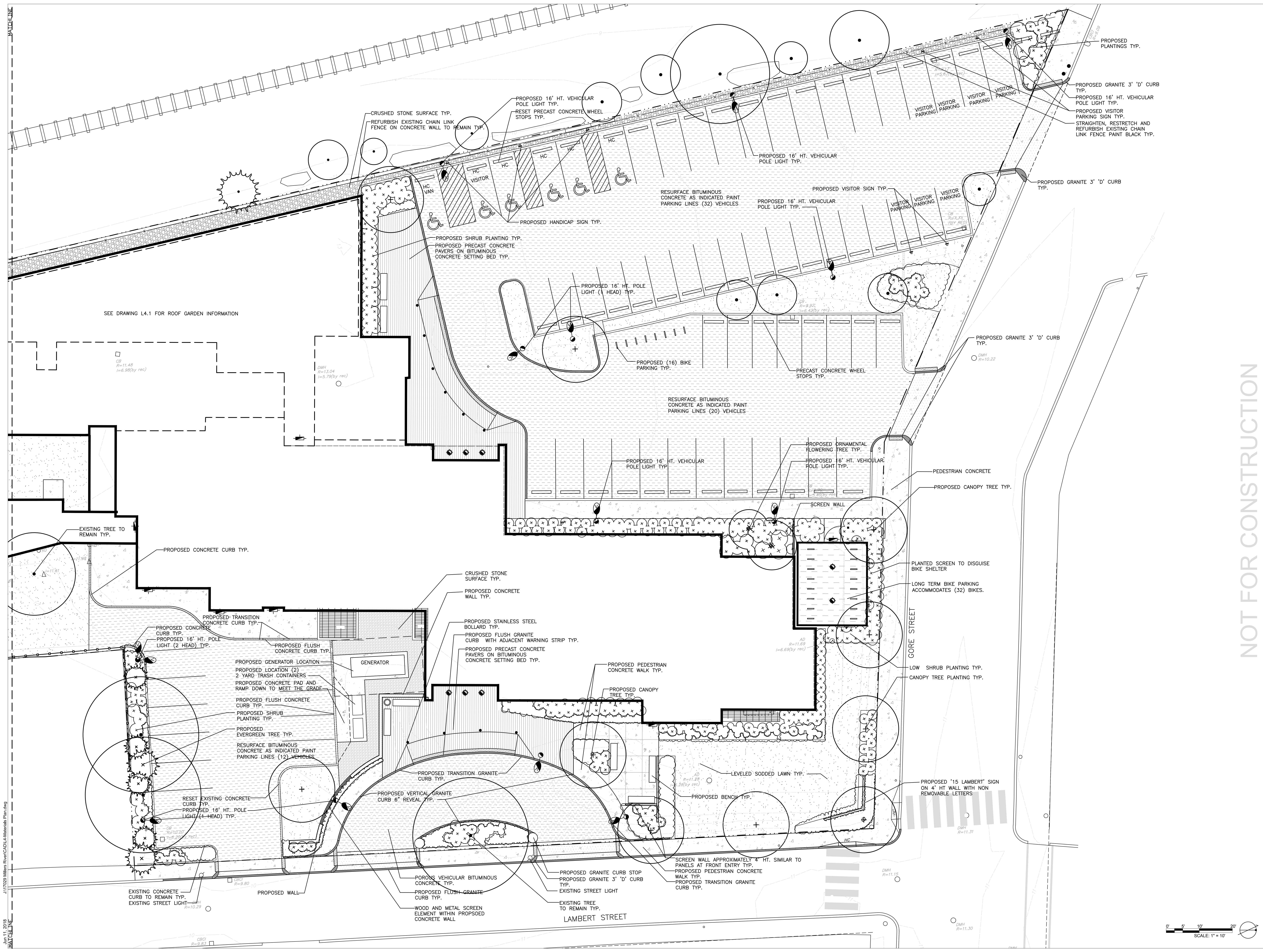
PROJECT NO: 17029  
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SHEET TITLE

MATERIALS  
PLAN

L402



J:\17029 Millers River\CAD\L4-Materials Plan.dwg  
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User: JAC

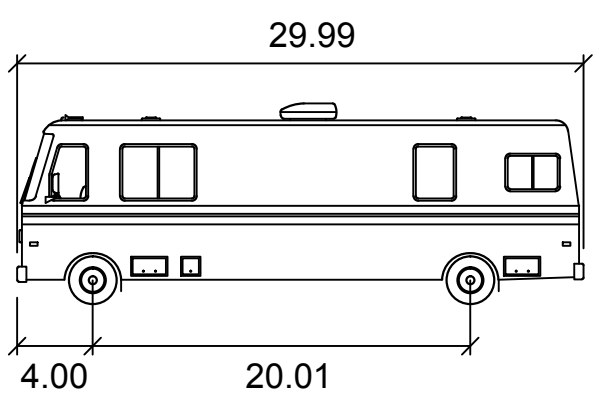


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05/18/18		100% CONSTRUCTION DOCUMENTS
05/04/18		100% SCHEMATIC DESIGN SUBMISSION
04/20/18		100% SCHEMATIC DESIGN SUBMISSION

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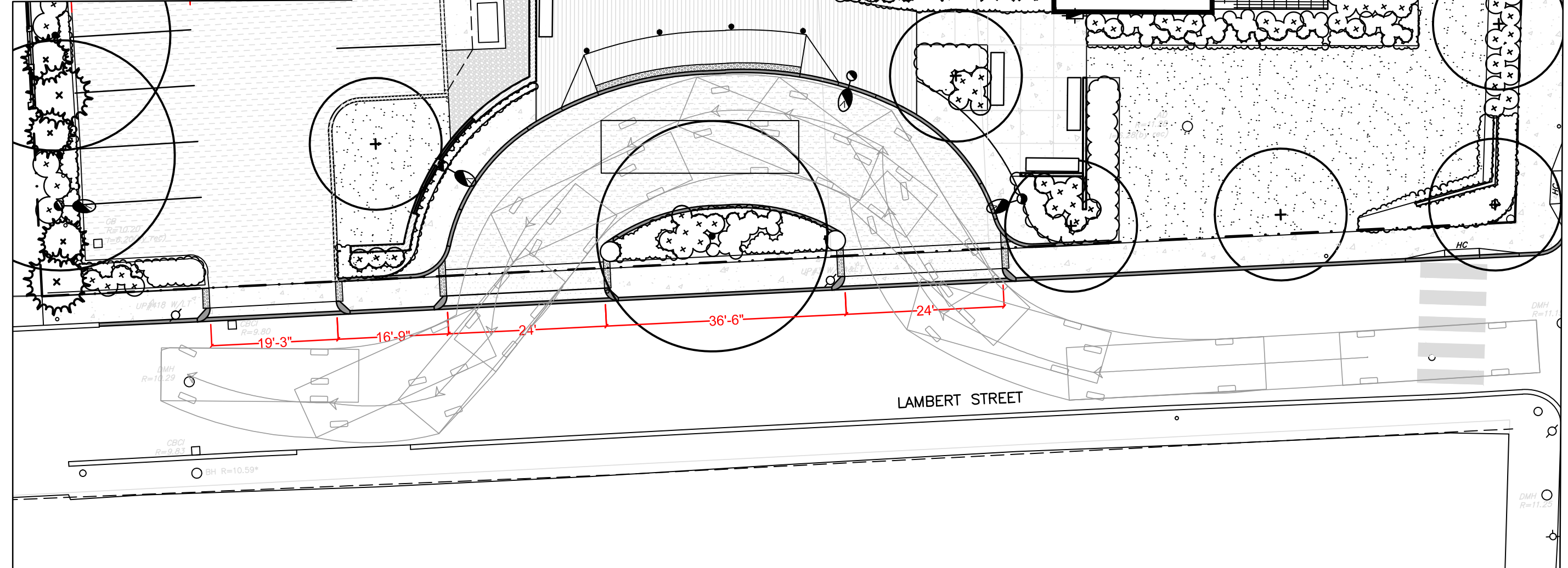
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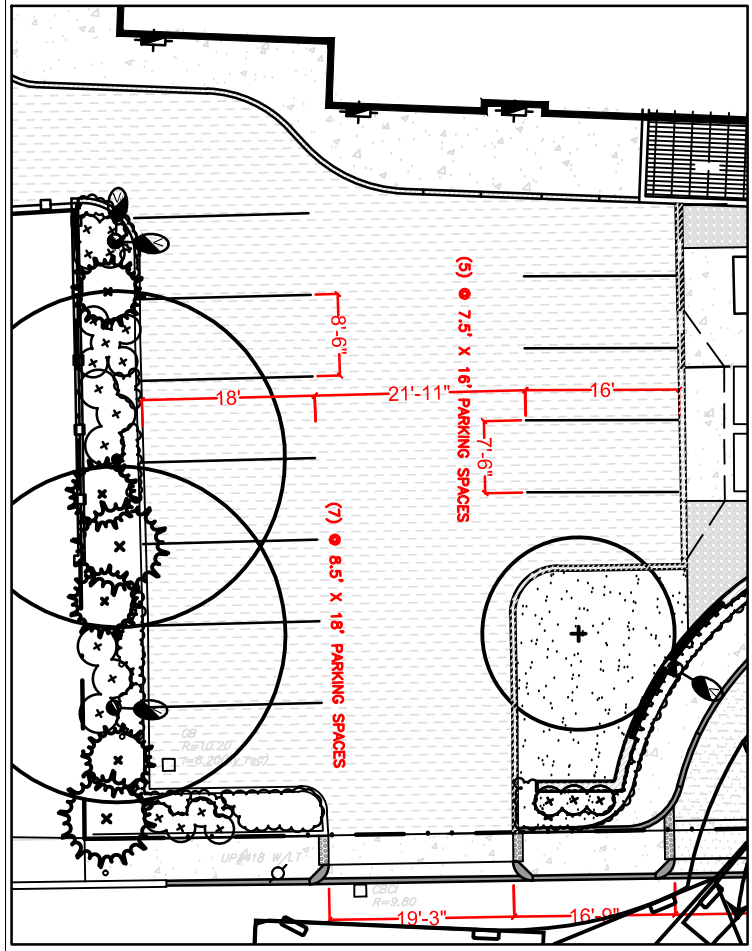
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LAMBERT ST ENTRY CURB CUT DIAGRAM  
SCALE 1/16"=1'-0"

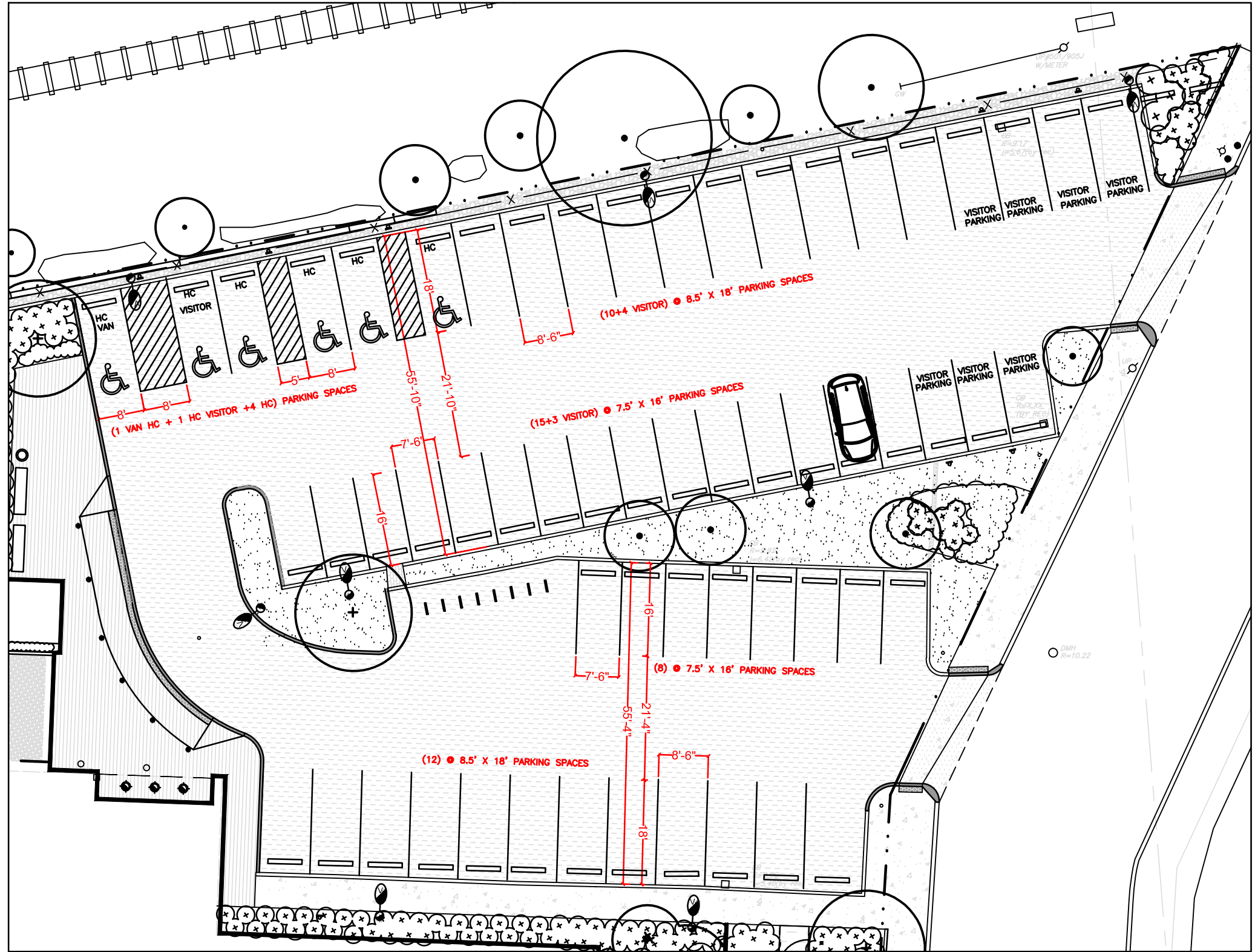
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	PROP.
HANDICAP PARKING	4
VAN ACCESSIBLE HANDICAP	1
HANDICAP VISITOR	1
8.5' X 18' PARKING (EXCL. VIS.)	29
7.5' X 16' PARKING (EXCL. VIS.)	28
VISITOR PARKING	7
<b>TOTAL PARKING SPACE</b>	<b>70</b>

EXISTING CONDITIONS:  
 (7) HANDICAP SPACES AND (66) PARKING SPACES.

**PARKING SPACE DIAGRAM**  
 SCALE 1" = 20'



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CAMBRIDGE HOUSING AUTHORITY  
**MILLERS RIVER APARTMENTS  
 REVITALIZATION**  
 15 LAMBERT STREET, CAMBRIDGE, MA 02141

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SHEET TITLE

Jun 11, 2018 J:\17029 millers river\cadd\sheet\Plan.dwg



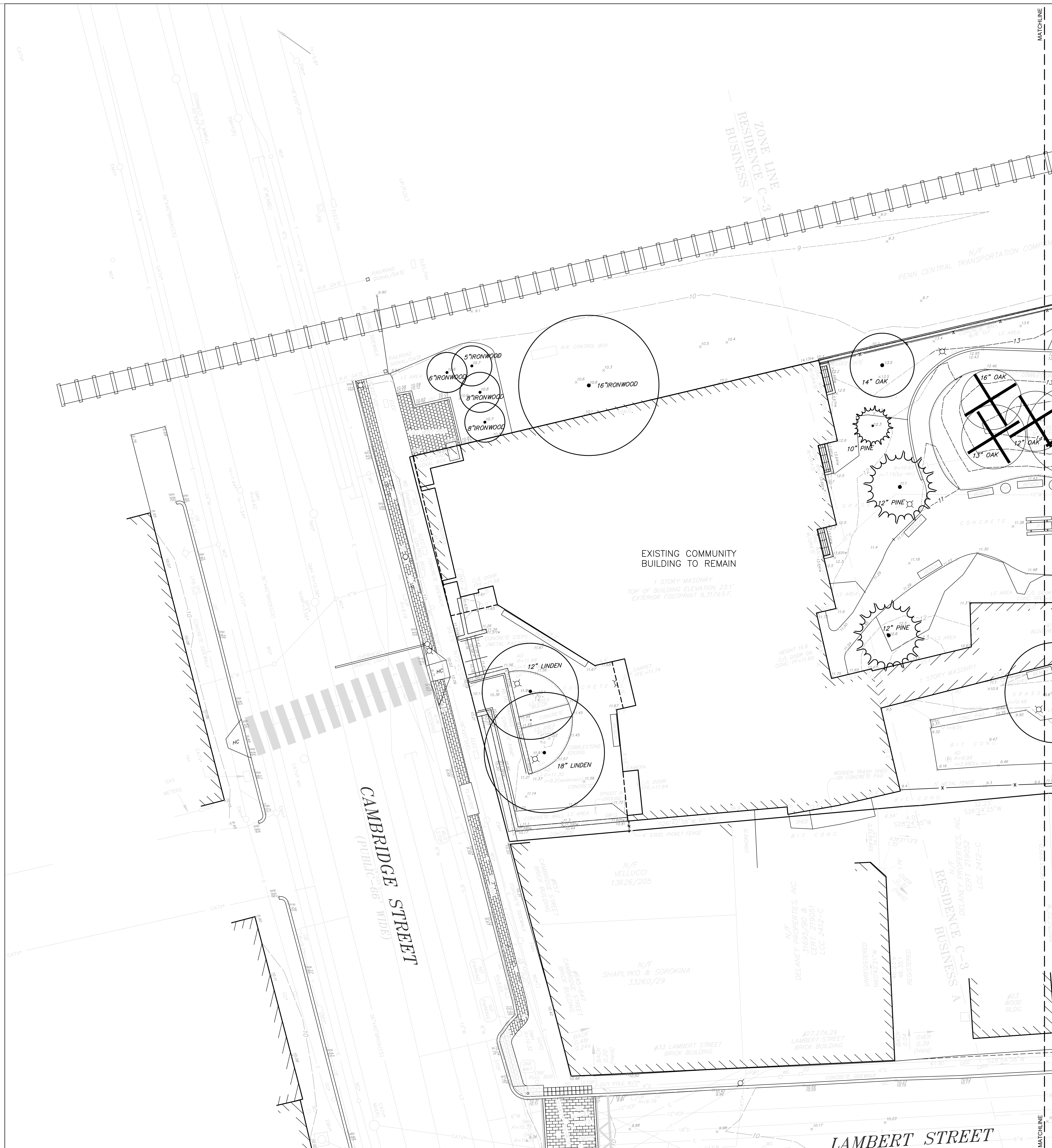
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04/20/18		90% SCHEMATIC DESIGN SUBMISSION

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SHEET TITLE  
**EXISTING TREE  
 REMOVAL**

**L101**



**EXISTING TREE REMOVAL-  
 COURTYARD/ NEW COMMUNITY CENTER**

QTY	CALIPER INCHES	SPECIES
(3)	14"	OAK
(2)	16"	OAK
(2)	13"	OAK
(3)	12"	OAK
(1)	8"	OAK
(1)	4"	RIVER BIRCH
TOTAL CALIPER INCHES OF TREE REMOVED IN COURTYARD: 148"		

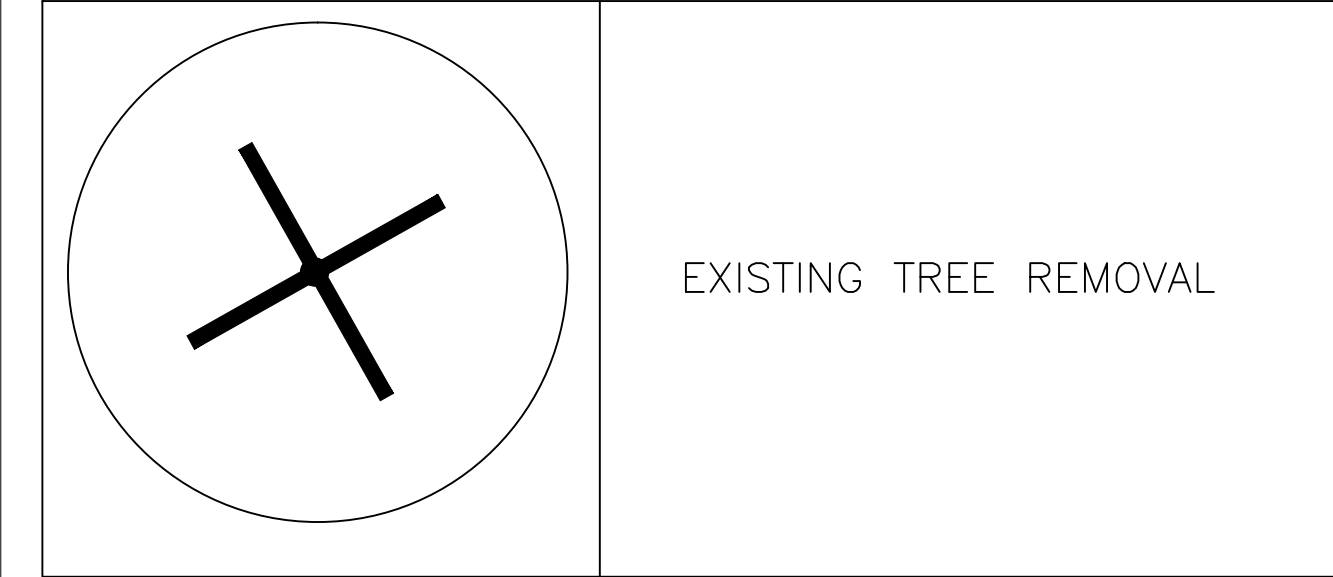
**EXISTING TREE REMOVAL- PARKING LOT**

QTY	CALIPER INCHES	SPECIES
(2)	12"	OAK
(1)	24"	LINDEN
(1)	12"	LINDEN
(2)	8"	LINDEN
TOTAL CALIPER INCHES OF TREE REMOVED IN PARKING LOT: 76"		

**EXISTING TREE REMOVAL- LAMBERT ST**

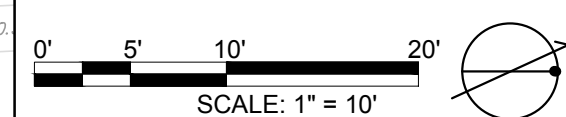
QTY	CALIPER INCHES	SPECIES
(1)	28"	SYCAMORE
(2)	26"	SYCAMORE
(2)	24"	SYCAMORE
(1)	19"	SYCAMORE
(1)	14"	LINDEN
(1)	15"	LINDEN
(1)	16"	LINDEN
TOTAL CALIPER INCHES OF TREE REMOVED ON LAMBERT ST:192"		

**TREE REMOVAL LEGEND**



TOTAL CALIPER INCHES OF TREES REMOVED ON ENTIRE  
 SITE : 416", REFER TO L5.1 FOR TOTAL CALIPER INCHES  
 OF PROPOSED TREES

NOT FOR CONSTRUCTION











Amelanchier arborea  
Serviceberry



Cercidiphyllum japonica  
Katsura tree



Pinus strobus 'Fastigiata'  
Fastigate white pine



Halesia  
Silverbell



Crataegus cruss-galli  
Thronless Hawthorn



Platanus acerifolia  
London Planetree



Cercis canadensis  
Redbud



Chionanthus virginicus  
Fringetree



Cladrastis lutea  
Yellowwood



Myrica pensylvanica  
Northern Bayberry



Ilex glabra  
Inkberry



Ilex verticillata  
Winterberry



Viburnum dentatum  
Arrowwood



Viburnum plicatum f. tomentosum  
Doublefile Viburnum



Buxus sempervirens  
Boswood



Euonymus radicans  
Spreading Euonymous



Fothergilla gardenii  
Dwarf Fothergilla



Azalea sp.  
Azalea



Comptonia peregrina  
Sweetfern



Deutzia gracilis 'nana'  
Dwarf deutzia



Campsis radicans  
Cow itch vine



Epimedium youngianum 'niveum'  
White barrenwort



Epimedium sulphureum  
Yellow barrenwort



Hosta sieboldiana  
Blue hosta



Hakonechloa macra  
Green weeping love grass



Hemerocallis happy return  
Yellow repeat daylily



Geranium bikovo  
Bikovo Geranium



Tricyrtis empress  
White toad lily



Geranium macrorrhizum bevan's  
Bevan geranium



Polystichum acrostichoides  
Christmas Fern

## Millers River Apartment Landscape Materials Board- Planting



NOT FOR CONSTRUCTION

MILLERS RIVER APARTMENTS REVITALIZATION

CAMBRIDGE HOUSING AUTHORITY 15 LAMBERT STREET, CAMBRIDGE, MA 02141

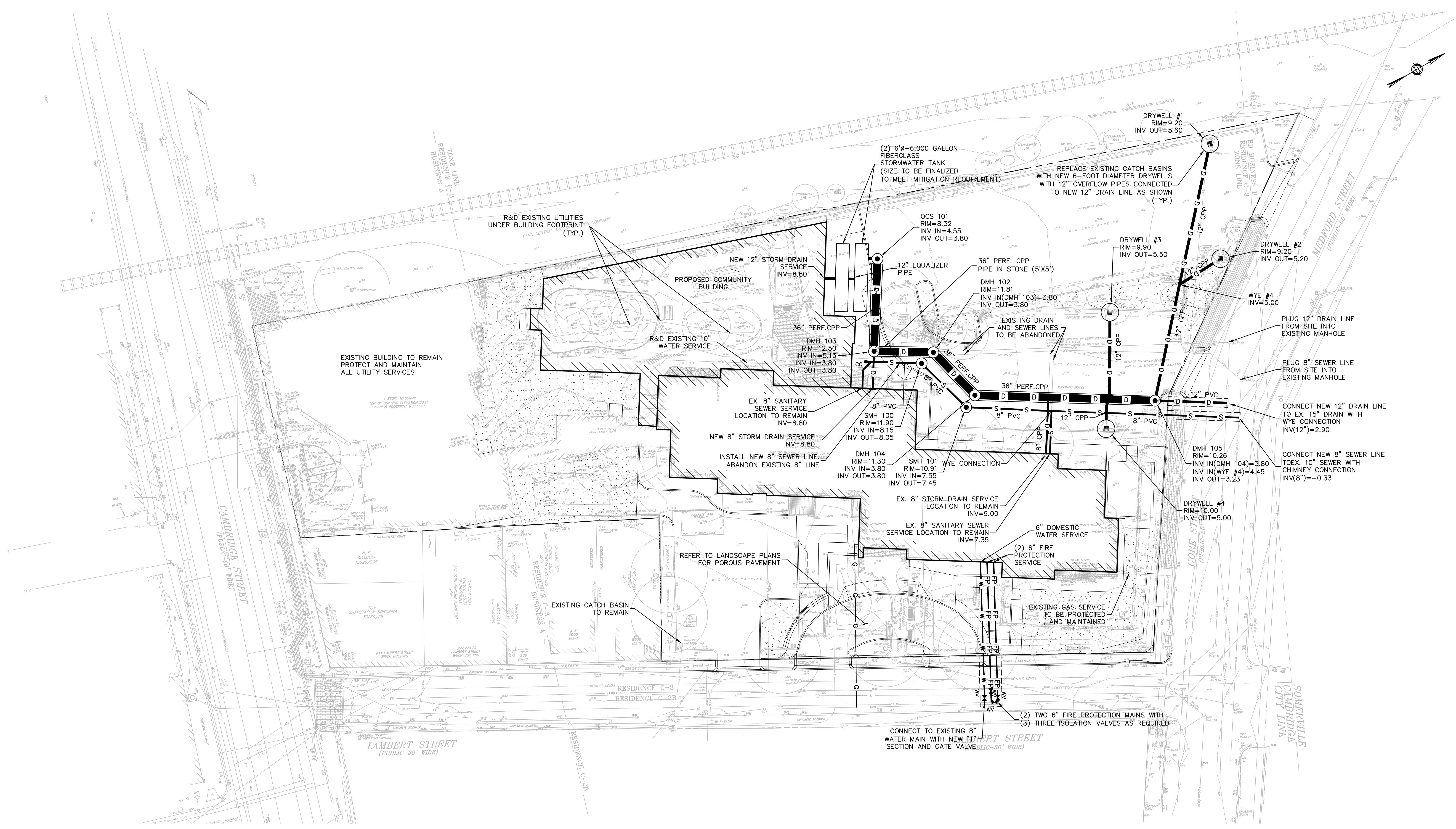
Table with 4 columns: NO., DATE, DESCRIPTION, and a blank column. Rows include: 06/25/18 COMPREHENSIVE PERMIT APPLICATION, 08/04/18 100% SCHEMATIC DESIGN SUBMISSION, 04/20/18 50% SCHEMATIC DESIGN SUBMISSION.

PROJECT NO. 21726 DRAWN BY: MRD CHKD BY: AAG

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SHEET TITLE SITE UTILITY PLAN

C100



NOTE: 1. SEE SHEET C000 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS

