FIVE CORNERS

CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN

SITE PLAN AND PUD REZONING FOR CITY COUNCIL

FIVE CORNERS AT ANN ARBOR
CITY OF ANN ARBOR REQUIRED SITE PLAN INFORMATION

UDC Required Site Plan Information

A. Required Site Plan Information

1. *Cover Sheet – The following general project information should be provided on the cover sheet of the plan set and all subsequent sheets as appropriate.*

a. *Project name, address or location, and type of site plan.*
FIVE CORNERS at Ann Arbor, 732 Packard Street, Ann Arbor, MI 48104; Site Plan for PUD Rezoning for City Council Approval.

b. *Petitioner and agent information, including name, address and contact information.*
Petitioner: Core Spaces, LLC. 1643 N. Milwaukee Ave., Chicago, IL 60647, 501-786-1736 Attn. Andrew Savoy
Agent: Midwestern Consulting LLC, 3815 Plaza Drive, Ann Arbor, MI 48108; Ph. (734) 995-0200; Attn. Scott W. Betzoldt.

c. *Statement of interest in the land, including conditions for sale or purchases of parcels such as deed restrictions, reservation of land for other uses, or other conditions which may have bearing on the total land Development.*
The property is under sales contract. A letter of authorization to submit the Site Plan has been provided.

d. *Vicinity map identifying the location of the Site within the City, including nearest major roads and significant features such as schools, shopping centers and parks.* **See Cover Sheet.**

e. *North indicator (pointing up or to the left) and drawing scale in bar graph form.* **Shown on all relevant sheets.**

f. *Legal description of the Site, including total acreage of the parcel(s) and total acreage of public or private roads contained in the legal description.* **See Existing Conditions and Survey Plan.**

g. *Sheet index and date of plan set.* **See Cover Sheet.**

h. *Required Statements - A brief written statement addressing the following concerns:*
i) Identification of associated applications such as annexation petition, rezoning petition, PUD Zoning District petition, Special Exception Use petition, planned project modification request, landscape modification request, or variance application. Identification of special circumstances associated with the application that require additional procedures or specific approvals such as Natural Features buffer area **A Site Plan application for PUD Rezoning is being proposed. A PUD is being sought for deviations to the area, height and placement regulations and landscape requirement modifications.**
ii) Proposed development program, including proposed land use, improvements, Floor Area or number of Dwelling Units and bedrooms, access and circulation, off-street parking, preliminary construction phasing and estimated completion time for each phase. **The proposed development is located in the C1A/R zoning district. The site has frontage on State Street and Packard Street. Both State and Packard Streets are urban mixed use thoroughfares. The project will consist of the removal of eight student rental homes, a shared use hardware/carryout restaurant, a three story as apartment building and an office building.**
Proposed Development Summary:
Two buildings: a 14 story apartment building fronting Packard Street and a 2 story commercial/retail structure fronting State Street.
387 dwelling units
441,096 sf floor area including the retail space
Building height: 116' to 180'
Storm water management: an underground tank at the southwest part of the site with a pumped discharge to City storm sewer in Packard Street.

A 3' wide public access easement will be provided along both frontages to allow installation of an eight foot wide sidewalk.
78 total parking spaces are provided including 4 barrier free underground and 4 surface spaces including 1 barrier free and 3 rideshare spaces.

Stormwater will be collected primarily through roof drains with limited surface collection. The roof conductors and surface drains will be routed to a detention chamber located in the access drive and parking area at the southwest portion of the site.
Proposed Phasing and Probable Construction Cost: **The development will be constructed in one phase, beginning on or before 8/5/2024, with completion on or before 6/7/2026. The estimated construction cost is $48,000,000.**
iii) Community Analysis
(a) Impact of proposed Development on public schools. **The units are apartments with studios, 1 to 5 bedrooms, and townhome units. The units are designed primarily for young professionals, faculty, visiting professors, and college students. The number of children living in the building is expected to be minimal so there will be virtually no impact on public elementary and high schools.**
(b) Relationship of intended use to neighboring uses. **The residential units will provide additional housing and interior parking very close to the University of Michigan Athletic Campus and Central Campus. The residents are likely to patronize existing restaurants, proposed retail, and other businesses in the nearby buildings, and may attend local churches. The proposed commercial use will provide services for the residences and for the neighborhood. Adjacent buildings include a mix of commercial and residential uses.**
(c) Impact of adjacent uses on proposed development. **Residents will likely patronize the businesses and institutions in the surrounding area.**
(d) Impact of proposed Development on the air and water quality, and on existing Natural Features of the Site and neighboring Sites. **There will be no significant impact on air and water quality is expected. There are 2 landmark trees proposed for removal.**
(e) Impact of the proposed use on historic Sites or structures which are located within an historic district or listed on the National Register of Historic Places. **The site is not within a historic district and the existing buildings are not historic structures.**
(f) Natural Features General Descriptions and Impacts. A brief summary of the Natural Features (Woodlands, Wetlands, Water Courses, Landmark Trees, Steep Slopes and Endangered Species Habitat) found on the Site. A detailed report of the quality, character and health of all existing Natural Features, and identification of all proposed impacts to them.
Endangered Species Habitat: **Natural Features on the site include 4 Landmark Trees noted below.**
100 Year Floodplain: **none on the site.**
Landmark Trees: **4, 2429-43" White Oak, 2430-35" White Oak, 2431-37" White Oak, 2432-44" White Oak.**
Steep Slopes: **none.**
Existing Watercourses: **none.**
Wetlands: **none.**
Woodlands: **none.**
iv) Traffic Statement: The number of vehicle trips per unit per peak hour and supporting documentation from the ITE Manual. **A Traffic Impact Assessment report has been submitted under separate cover.**
v) Public Sidewalk Maintenance Statement **See Cover Sheet, General Notes number 1.**

i. *Comparison Chart of Requirements and Existing and Proposed Conditions*
i) Zoning Classification. **Existing-C1A/R, Proposed-PUD**
ii) Lot Area. **1.27 acres, 55,507 square feet.**
iii) Total area of all Floors (measured from exterior faces of the exterior walls or from the center line of walls separating two Buildings), Floor Area and Floor Area Ratio (FAR), or Density.
441,096 sf gross including residential, leasing and amenity area; commercial/retail space.
iv) Open Space and Active Open Space. **25.2% / 13,999 sf Active open space; 4,545 sf / 8.2% provided (included in total open space area).**
v) Required Setbacks and Yards (front, side and rear).
Front (State and Packard St.): 5.0 feet & 5.25 feet. Side: North, 5.07'. Side (South): 10.19 feet
vi) Height and stories.
116' to 180', 14 stories.
vii) Off-street vehicle parking, including accessible and barrier free spaces.
Exterior: 4 spaces, 3 ride share + 1 barrier free van
Interior: 78 total: (4 barrier free, 74 standard spaces), (16 EV-I + 62 EV-C)
Total Vehicular Parking: 82 spaces provided.
viii) Bicycle parking, including class.
Class A: 329 spaces provided
Class C: 12 spaces provided
Total Bicycle Parking: 341 spaces provided.
ix) Notation of variances granted or proposed, planned project modifications approved or proposed.
PUD approval requested per development summary and possible landscape modification.

2. *Existing Conditions Plan– Drawings and written descriptions of the existing conditions of the Site must be included on the plans, including the following:*

a. *ALTA Land Survey.* **See Existing Conditions and Survey Plan.**
i) Exception: Where there are no existing public utilities on the Site, the Planning Manager may waive the requirement to provide an ALTA Land Survey for Site Plans for Administrative Approval or when the combination of existing conditions and proposed Development are so minor that preparing an ALTA Land Survey would be a significant financial hardship to the Applicant. In those cases, an existing conditions plan illustrating the boundaries of the Site, location of all structures and improvements, and any easements, prepared by a professional land surveyor must be provided. N/A.

b. *Existing and proposed contours extending 50 feet beyond the Site at a minimum interval of two feet.* **See Existing Conditions and Survey Plan, and Grading Plan.**

c. *If new City public sanitary sewer, water mains, Storm Water Management System, or streets are proposed in conjunction with a site plan, the plans must be referenced to the Ann Arbor Geodetic Reference System.* **The survey is referenced to the AAGRS (State Plane Coordinates, Michigan South Zone (2113).**

3. *Dimensional Layout Plan – Drawings and written descriptions of the proposed Development must be provided on the plans, demonstrating compliance with all applicable Development standards such as building area, height and placement, off-street parking, streets and access, including the following:* **See Dimensional Site Plan.**

a. *Existing and proposed Lot lines.* **Shown.**

b. *Minimum and maximum Required Setback Lines, including Established Front Building Line and required increases to the normal minimum side and rear setbacks, if applicable; existing and proposed Front, Side and Rear Yards.* **Shown.**

c. *Existing and proposed Buildings.* **See Existing Conditions and Survey Plan for existing buildings. See Dimensional Site Plan for proposed building.**

d. *Vehicle Parking Spaces, aisles and Driveways. Identify any "no parking" areas or fire lanes and indicate any proposed signage.* **See Dimensional Site Plan.**

e. *Bicycle parking, including detail of facilities.* **See Dimensional Site Plan and Architectural Plans, and Miscellaneous Notes and Details sheet.**

f. *Curb Cuts, drive Approaches and curb radii dimensions, including all Curb Cuts on the opposite side of the street from the Site. Dimension of all Fire Department access roads or lanes, if applicable, including width at hydrant, dead end lengths, turn-around location, turning radii, etc.* **See Dimensional Site Plan, Utility Plan and Fire Protection Plan.**

g. *Open Space and Active Open Space.* Minimum 10% required; 25.2% / 13,999 sf provided. Active 8.2% and 4,545 sf

h. *Natural features buffer.* **N/A.**

i. *Conflicting land use buffer.* **N/A.**

j. *Solid waste enclosure, including dimensioned detail.* **See Architectural Plans.**

k. *Perspective sketch of building showing Streetwall Height and Offset, if applicable.* **See Architectural Plans.**

4. *Natural Features Plan – Drawings and written descriptions identifying all Natural Features on the Site, proposed protection measures for avoiding disturbance to existing Natural Features, alternatives analysis, and proposed mitigation for any disturbed or removed Natural Features to determine compliance with applicable Development standards must be included on the plan, including the following:* See Natural Features Impact Statement on Existing Conditions and Survey Plan.

a. *Accurate location and description of all Natural Features within the Limits of Soil Disturbance and in an area extending 50 feet beyond the Limits of Soil Disturbance, including:*
i) Limits of Soil Disturbance. **See Grading Plan.**
ii) Boundary and description of any Endangered Species Habitat. **N/A.**
iii) Boundary and elevation of any 100-year floodplain. **N/A.**
iv) Location, species and Critical Root Zone and condition of Landmark Trees. **N/A.**
v) Location of all Steep Slopes and a cross section through the Site showing the proposed activity in relationship to the topography. **N/A.**
vi) Existing and proposed Watercourses showing depths, normal water levels, shore gradients, type of bank retention and shore vegetation. **N/A.**
vii) Boundary and character of all Wetlands. **N/A.**

b. *Boundary and basal area of any Woodland, with location, species and DBH of all trees six inches DBH or greater within the Woodland area.* **N/A.**

c. *Location and extent of required Natural Features buffer. Identification of any temporary or permanent activity (i.e. grading or disturbance) within the Natural Features buffer.* **N/A.**

d. *When any activity within the Natural Features buffer is proposed, a written justification responding to each general criteria for determining a proposed activity in the Natural Features buffer is in the public interest.* **N/A.**

e. *Protection measures for those existing Natural Features proposed to be protected as part of the Development, including protections from the construction of the Development.* **Tree protection will be provided for landmark trees to remain.**

f. *Identification of all Natural Features proposed to be impacted, disturbed, or removed by the Development, including the construction of the Development.* **Refer to sheet 12 Natural Features analysis.**

g. *Alternatives Analysis: When any Natural Features are proposed to be removed or disturbed, drawings and descriptions of at least two alternative plans that were prepared and considered but are not proposed which demonstrate and justify that the proposed Development limits the disturbance or removal of Natural Features on and adjacent to the Site to the minimum necessary to reasonably accomplish the permitted use.* **Alternative Analysis provided on sheet 11 of the plans.**

h. *Proposed mitigation measures: When any Natural Features are proposed to be removed or disturbed, proposed mitigation measures must be provided including:* **Two trees provided onsite due to limited space. The petitioner will provide in lieu payment to City tree fund**

i. *Written description of the mitigation program, identifying the type and appropriate quantity (i.e. basal area, square feet, caliper inches) of Natural Features removed or disturbed and the appropriate quantity of the mitigation proposed.* **See Sheet 8**

j. *Replacement calculations.* **See Sheet 8.**

k. *Location of proposed mitigation plantings.* **See Sheet 8.**

l. *Chart listing the proposed mitigation plantings, including botanical and common names, caliper sizes, root type and height.* **See Sheet 8.**

m. *Timing schedule for implementation of mitigation measures.* **See Sheet 8.**

n. *Notation and description of any proposed alternative mitigation measures.* **N/A.**

5. *Natural Features Overlay Plan – A drawing including the dimensional layout and the existing Natural Features on Site.* **See Sheet 12.**

6. *Landscape Plan – Drawings and written descriptions of proposed landscaping, screening and buffers demonstrating compliance with applicable Development standards such as interior landscaping of Vehicular Use Areas, Right-of-Way screening, conflicting land use buffers, and Natural Features mitigation in order to determine compliance with applicable Development standards must be provided on the plans, including the following:*

a. *Location, size and species of existing trees and vegetation, and Natural Features.* **See Existing Conditions and Survey Plan.**

b. *Location of light poles, refuse containers and enclosures, mechanical equipment and hydrants.* **See Dimensional Site Plan, Landscape Plan, and Architectural Plans.**

c. *Limits of Vehicular Use Area and notation of its size in square feet.* **See Landscape Plan.**

d. *Proposed locations of required landscaping, screening and buffers, street trees and plantings.* **See Landscape Plan. No buffer or screening is required. Proposed street trees are shown on the plan.**

e. *Table identifying Vehicular Use Area, interior landscape islands, Right-of-Way screening, conflicting land use buffer, and street tree planting requirements and proposed plantings and areas to satisfy requirements.* **Exterior parking is 6,600 square feet. Interior landscape is provided.**

f. *Proposed plant list, including caliper sizes, root type, height of material, botanical and common name, type and amount of mulch, ground cover and grasses.* **See Landscape Plan.**

g. *Notation of requested modifications if any.* **N/A.**

h. *Planting and staking details in accordance with the standards established by the PSA Administrator.* **See Miscellaneous Notes and Details sheet.**

i. *Specification for treatment of compacted soil on the entire Site.* **See Landscape Plan, Landscape Notes, number 9.**

j. *Specification for planting media in landscape areas.* **See Landscape Plan, Landscape Notes, number 12.**

k. *Irrigation plan or water outlets (hose bibs).* **See Landscape Plan, Landscape Notes, number 1. See also Architectural Plans.**

l. *Landscape maintenance program, including a statement that all diseased, damaged, or dead material shall be replaced in accordance with this Code by the end of the following planting season as a continuing obligation for the duration of the site plan.* **See Landscape Plan, Landscape Notes, number 2.**

m. *Identification of snow storage areas, including a statement that snow shall not be pushed onto interior landscape islands unless designed for snow storage.* **Indicated on sheet 5.**

n. *Berms, retaining walls, screen walls, fences, tree wells to preserve existing trees, culverts to maintain natural drainage patterns, or any other construction details necessary to resolve specific Site conditions.* **See Architectural Plans.**

7. *Utility Plan – Drawings and written descriptions of the existing and proposed public utilities serving the Site must be provided on the plans, including the following:*

a. *Location and size of existing and proposed public water, sanitary sewer and storm sewer mains and leads. Note invert elevations of storm and sanitary mains.* **See Existing Conditions and Survey Plan, and Utility Plan.**

b. *Location of existing and proposed fire hydrants. Indicate a 250-foot or 350-foot radius, as appropriate for the type of proposed Development, around each hydrant. Show and dimension hose lay to any external portion of a Structure via an approved fire route from any hydrant or combination of hydrants. Location of fire department connections (FDC) to Buildings. Dimension distance of the hose lay from the FDC to the nearest hydrant via an approved fire route (provide dimension following an actual hose laying route). Location of Knox Box, if applicable. Include a separate Fire Protection and Access Plan sheet if necessary for clarity.* **See Existing Conditions and Survey Plan, Utility Plan, and Fire Protection Plan.**

c. *Location of existing Public Utility easements, including liber and page number.* **N/A.**

d. *Location and dimension of proposed Public Easements. Notation that legal descriptions of proposed easements will be provided with construction drawings and engineering plan submittals as required.* **N/A.**

e. *Sanitary sewer flow mitigation calculations.* **See Utility Plan.**

f. *Location and notation of firewalls within existing or proposed Buildings, or notation that none are existing or proposed.* **There are no firewalls in the proposed building. The building is fully fire suppressed.**

8. *Grading and Soil Erosion Control and Storm Water Management Plan - Drawings and written descriptions demonstrating compliance with the applicable Development standards for Grading and soil Erosion controls must be provided on the plans, including the following:*

a. *Vicinity map showing location of Site and all adjacent properties within 500 feet of the Site boundaries showing relationship to any Watercourse.* See Vicinity Map on the Cover Sheet. **There are no Watercourses within 500 feet of the Site.**

b. *Soil investigation report, survey or profile of data regarding the nature, soil type, distribution, erodibility, and supporting ability of existing soils or rock on the Site in accordance with the United States Department of Agriculture soil survey standards. Soils* **Report has been submitted separately. One soil boring has been performed for purposes of infiltration capability. The soil boring logs is shown on sheet 13.**

c. *Existing and proposed topography at a maximum of two-foot contour intervals, elevations or similar slope descriptions, extending at least 50 feet beyond Site boundary. See* **Existing Conditions and Survey Plan and Grading Plan.**

d. *Location of any existing Structure or Natural Feature on the Site and on land extending at least 50 feet beyond the Site boundary lines.* **See Existing Conditions and Survey Plan and Grading Plan.**

e. *Location of proposed Structures or Development on the Site including physical limits of each proposed Earth Change and all proposed temporary and permanent soil Erosion and Sedimentation Control Measures.* **See Existing Conditions and Survey Plan, Grading Plan and Soil Erosion Control Plan.**

f. *Plans, section and construction –quality details of all soil Erosion and Sedimentation Control Measures, existing and proposed on-site drainage and dewatering facilities, retaining walls, cribbing, planting, anti-Erosion devices or other protective devices to be constructed in connection with, or as part of, the proposed work.* **See Soil Erosion Control Plan details. Dewatering of the site is not required.**

g. *Estimated total cost of the required controls during construction, including dust emission control.* **See Soil Erosion Control Plan, Soil Erosion Control Notes, number 11.**

h. *Estimated total cost of protecting all exposed oil surfaces from Erosion should construction discontinue.* **See Soil Erosion Control Plan, Soil Erosion Control Notes, number 12.**

i. *Estimate of the quantity of excavation and Fill involved.* **See Soil Erosion Control Plan, Soil Erosion Control Notes, number 14.**

j. *Amount of impervious area existing and proposed, and square footage of impervious area reconfigured to accommodate new improvements.* **Existing: 39,825 sf / 71.7%; proposed: 44,952 sf / 81.0%.** *If a Storm Water Management System is required, computations and design of the Storm Water Management System, such as:* **See Storm Water Management Calculations for the proposed detention chamber.**
i) Calculations used to derive the run-off coefficients. **See Basin Storm Water Calculations, W1.**
ii) Map showing the drainage area and land tributary to the Site and estimated runoff of the area served by any drain. **See Stormwater Management Plan.**
iii) Required storage volume calculations, including first flush, bankfull, and 100-year storm events. **See Basin Storm Water Calculations, W2-W13.**
iv) Calculations for the provided/proposed storage facility. **See Basin Storm Water Calculations, Detention Outlet Calculations.**
v) Required and proposed release rate calculations.
See Basin Storm Water Calculations, Detention Outlet Calculations.
vi) A plan for the continued maintenance of the permanent Storm Water Management System. **See Soil Erosion Control Plan, Storm Water Management System Permanent Maintenance Plan, Schedule and Cost Estimate.**
vii) Any other pertinent calculations as determined necessary by the PSA Administrator. **To be provided if required.**
viii) If an alternative method of storm water detention is proposed, a written description of the alternative method of storm water detention and a written explanation as to why the proposed alternative conforms to the Development standards of this Code. **N/A.**

i. *Timing and construction sequence of each proposed Earth Change, including: installation of temporary and permanent soil Erosion and Sedimentation Control Measures, striping and Clearing, rough Grading, installation and Stabilization of Storm Water Management Systems, construction of utilities, roads, infrastructure, and Buildings, final Grading and landscaping, and removal of temporary soil Erosion and Sedimentation Control Measures; identify all proposed phasing consistent with the approved site plan or final preliminary plat.* **See Soil Erosion Control Plan: Construction Sequence. (A Gannt chart has also been provided.**

m. *A program proposal for the continued maintenance of all permanent soil Erosion and Sedimentation Control Measures that remain after Project Completion, including: designation of the person or party responsible for the maintenance; maintenance responsibilities shall become part of any sales or exchange agreement for the land on which the permanent soil Erosion and Sedimentation Control Measures are located.* **See Soil Erosion Control Plan, Maintenance Program for Soil Erosion Controls.**

n. *Other information or data as may be required to demonstrate compliance, such as a soil Erosion control statement including:* **N/A.**
i) Consideration of alternative actions with evaluation of each. **N/A.**
ii) Description of probable adverse environmental effects that cannot be avoided **N/A.**
iii) Identification of any negative impact to Natural Features, including Woody Plants. **N/A.**
iv) Analysis of primary and secondary consequences of short-term uses of the environment in relation to the maintenance and enhancement of long-term productivity. Remedial, protective and mitigation measures are to be developed for any environmentally detrimental aspect. **N/A.**
v) If determined necessary by the Code Official, a hydrological study may be required where the Clearing, Grading, or addition of Impervious Surface is proposed within a floodplain not regulated by the MDEQ or unmapped flood prone areas or any lake, pond, Watercourse, or Wetlands. The study shall follow the format used by the MDEQ for hydraulic reports and shall demonstrate that the proposed activity complies with the review standards of this Code. **N/A.**

9. *Massing and Architectural Plans – Drawings and written descriptions of the massing, architectural design and details, and façade materials of proposed Buildings must be provided on the plans, including:*

a. *Dimensioned floor plans of each building Floor identifying areas excluded from Floor Area and excluded from FAR calculations.* **See Architectural Plans.**

b. *Vertical sections through the Site showing existing and proposed elevations.* **See Architectural Plans.**

c. *Dimensioned architectural design and details with labeled materials.* **See Architectural Plans.**

d. *Perspective renderings of the proposed Development.* **See Architectural Plans.**

10. *Photometric Plan – Drawings and written descriptions of proposed lighting demonstrating compliance with the applicable Development standards, including:* **Provided.**

a. *Location, type and details of proposed lighting fixtures.* **Relocated/replaced streetscape lightpole locations are shown on the Dimensional Site Plan, Utility Plan and Landscape Plan.**

b. *Photometric diagram showing predicted maintained lighting levels of the proposed lighting fixtures.* **Provided**

11. *Traffic Impact Analysis – For proposed Developments that will generate more than three vehicle trips per unit per peak hour or 50 vehicle trips per peak hour, a traffic impact traffic impact analysis must be provided including the following:* **A Traffic Impact Assessment has been submitted under separate cover.**

a. *Existing traffic volumes passing on all streets abutting the proposed Development during the peak hour. Traffic from other new and proposed Developments in the area should be considered.*

b. *Existing peak hour turning movements of vehicular traffic at all public street intersections within 200 feet of the proposed Development, or those intersections that may be impacted by the proposed Development.*

c. *Projected peak our generation rate and peak hours of generation for the proposed Development.*

d. *Projected peak hour traffic movements as a result of the establishment of the proposed facility.*

e. *A capacity analysis for impacted intersections.*

f. *A statement of the total impact the projected generation will have on the existing level of service as determined and certified by a registered engineer.*

g. *A sketch plan showing all existing Driveways to public streets within 200 feet of the proposed Development and all on-street parking or loading areas.*

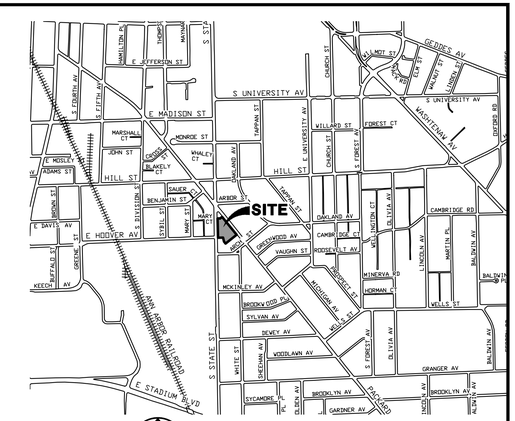
h. *Proposed Site access Driveways with a determination if a deceleration lane or taper is necessary based on current City warrant analysis standards, a determination if a left-turn by-pass lane is necessary based on a warrant analysis, and a sight distance study at the Site access Driveway.*

i. *A pedestrian circulation plan showing all possible points of conflict between motorized traffic and pedestrian/bicycle traffic on public streets and sidewalks within 200 feet of the proposed Development, or those intersections that may be impacted by the proposed Development.*

j. *A gap study for pedestrian or vehicular traffic may be required at non-signalized locations that may be impacted by the proposed Development. The traffic and/or parking impact analysis shall be reviewed by the Department of Transportation for completeness and accuracy. The analysis shall include a determination of the service volume and capacity of adjacent streets including the traffic from the new development. The methodology to be employed in determining street capacities shall conform to the 1985 edition of the Highway Capacity Manual, Special Report Number 209, or the latest revision thereof. Proposals that will contribute traffic to streets or intersections that are or will be as a result of this proposal at a level of Service D, E, or F as defined in the Highway Capacity Manual may be denied by Commission and Council until such time as necessary street or traffic improvements are scheduled for construction.*

DEVELOPMENT SUMMARY AND COMPARISON CHART

	C1A/R Permitted/Required	Comparison	Proposed
Site Area:	No Minimum	1.27 ac / 55,507 sf	1.27 ac / 55,507 ac
Lot Width	No Minimum	131.92 ft.	332.28 ft.
Zoning:	C1A/R	D1	PUD
Land Use:	Campus Bus. Resid. Dist.	Apartments/Parking	Apartments/Parking
Building Coverage Footprint	N/A	Up to 55,507 sf	32,041 sf
Floor Area:	N/A	221,284 sf (400%)	441,096 sf
Basement Parking:	N/A	N/A	36,858 sf
Floor Area Ratio:	Max. 300%	400%, 900% w/premiums	795%
Building Units	11 Structures/Units Unknown	N/A	387
Max Density (Units/Acre)	None	N/A	301
Min. Lot Area (sf) per Unit	2,175	N/A	145 sf
Min. Open Space %	None	N/A	13,999 sf (25.2%) Provided
Min. Actice Open Space	None	N/A	4,545 sf (8.2%)
Building Height:	None	180'	116' - 180'
Unit Types/No.s:		See architectural plans	See architectural plans
Vehicular Parking**:	None Req'd		
Total Vehicular Parking		None	78 incl. 4 BF (garage)
			16 EV-I + 62 EV-C
			1 BF + 3 rideshare (lot)
Bicycle Parking**:	1 space/5 units	1 space/5 units	329 CL. A; 12 CL. C
Total Required			
Setbacks:	Front: 10' Min.	Front Min. 0', Max. 1'	State St. - 5.0'
		30' Abutting Res. zoning	Packard - 5.25'
		30' Abutting Res. zoning	Rear - South- 10.19'
			Side - North - 5.07'
Impervious Surface		N/A	44,952 sf, 81.0%



VICINITY MAP
SCALE : NTS

OWNER/APPLICANT
CORE SPACES, LLC
1642 N. MIKWAUKEE AVE.
CHICAGO, IL 60647
ANDREW SAVOY
501–786–1736

ENGINEER/SURVEYOR/LANDSCAPE ARCH.
MIDWESTERN CONSULTING, LLC
3815 PLAZA DR.
ANN ARBOR, MI 48108
CONTACT: SCOTT BETZOLDT, PE
734–995–0200

ARCHITECT
DLR GROUP
333 WEST WACKER DRIVE, SUITE 850
CHICAGO, IL 60606
CONTACT: NATHAN CASTEEL
312–382–9980

J. BRADLEY MOORE & ASSOCIATES ARCHITECTS
4844 JACKSON ROAD, SUITE 150
ANN ARBOR, MI 48103
CONTACT: BRAD MOORE
734–930–1500

Sheet List Table

NOTES:
1. All sidewalks within the City shall be kept and maintained in good repair by the owner of the land adjacent to and abutting upon the same. Prior to the issuance of the final Certificate of Occupancy for this site, all existing sidewalks in need of repair must be repaired in accordance with City standards.
2. All work within the City of Ann Arbor covered by these plans shall be performed in complete conformance with the current City of Ann Arbor Public Services Department Standard Specifications and Details.
3. The omission of any current standard detail does not relieve the contractor from this requirement. The work shall be performed in complete conformance with the current public services standard specifications and details.
4. Sidewalks constructed in the public right-of-way and/or public paths shall meet all requirements and guidelines as set forth in the Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way published August 8, 2023. Note that many of the details concerning grades will need to be determined during the site plan stage in order to gain grading plan approval.
5. The owner agrees to use only landscape care products that have no phosphates.
6. State Street/Hoover Ave traffic signal to be reconstructed to a 4 way intersection to accommodate new driveway with cross walk.
7. A PUD site plan is being sought due to deviations from the area, height and placement requirements and landscape modification.

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

FIVE CORNERS

JOB No. **23204**

DATE: 1/26/23
SHEET 1 OF
CADD:
ENG: JCA
PM: SWB
TECH:
/23204CV1

1

REVISIONS:	REV. DATE
PER CITY REVIEW	4/10/23
PER CITY REVIEW	10/3/23
PER CITY REVIEW	2/1/24

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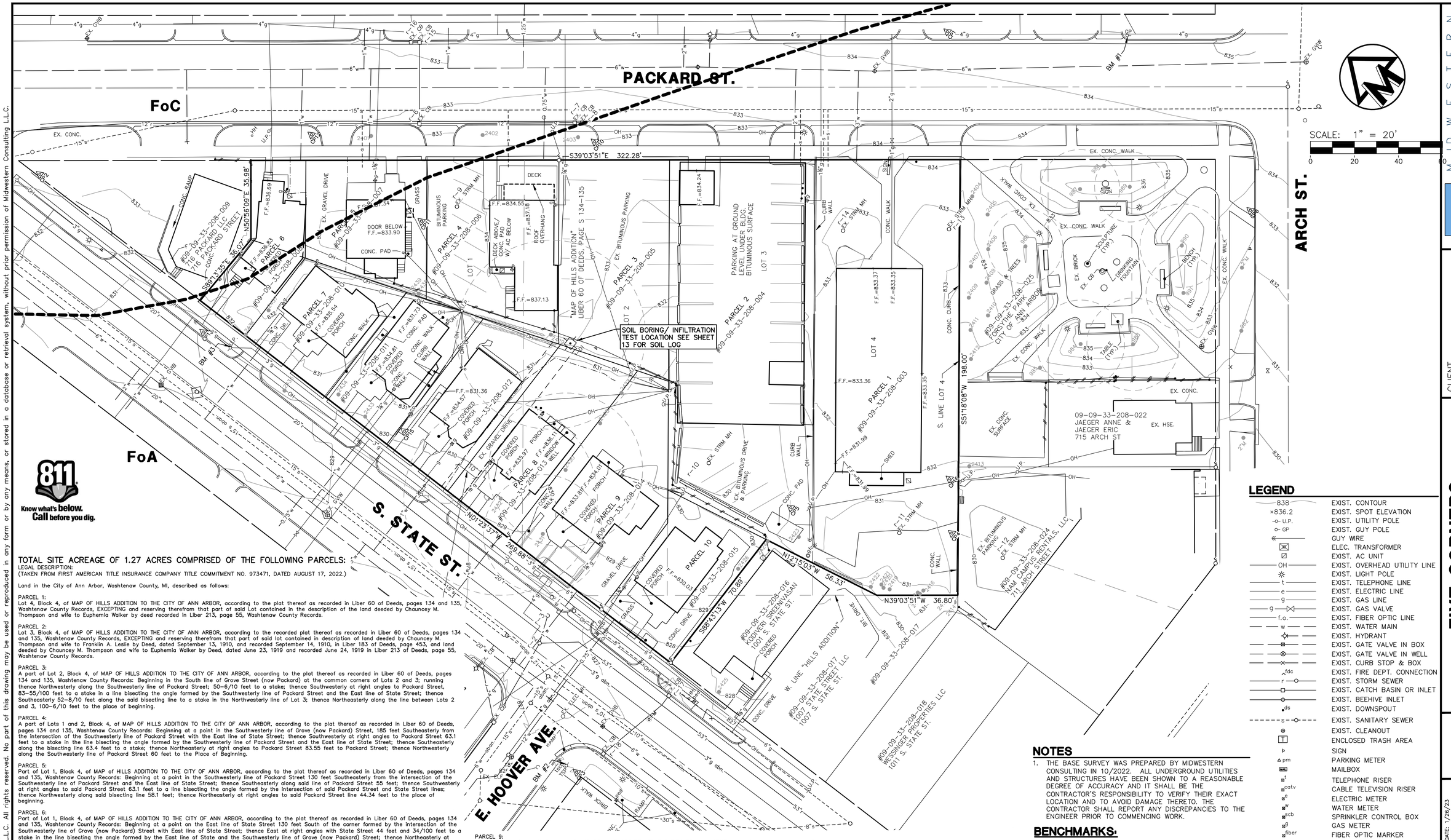
RELEASED FOR:	DATE

P.E. #



811 Know what's below. Call before you dig.

TOTAL SITE ACREAGE OF 1.27 ACRES COMPRISED OF THE FOLLOWING PARCELS:

LEGAL DESCRIPTION:
(TAKEN FROM FIRST AMERICAN TITLE INSURANCE COMPANY TITLE COMMITMENT NO. 973471, DATED AUGUST 17, 2022.)

Land in the City of Ann Arbor, Washtenaw County, MI, described as follows:

PARCEL 1:
Lot 4, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records, EXCEPTING and reserving therefrom that part of said Lot contained in the description of the land deeded by Chauncey M. Thompson and wife to Euphemia Walker by deed recorded in Liber 213, page 55, Washtenaw County Records.

PARCEL 2:
Lot 3, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the recorded plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records, EXCEPTING and reserving therefrom that part of said lot contained in description of land deeded by Chauncey M. Thompson and wife to Franklin A. Leslie by Deed, dated September 13, 1910, and recorded September 14, 1910, in Liber 183 of Deeds, page 453, and land deeded by Chauncey M. Thompson and wife to Euphemia Walker by Deed, dated June 23, 1919 and recorded June 24, 1919 in Liber 213 of Deeds, page 55, Washtenaw County Records.

PARCEL 3:
A part of Lot 2, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records: Beginning in the South line of Grove Street (now Packard) at the common corners of Lots 2 and 3; running thence Northwesterly along the Southwesterly line of Packard Street; 50-6/10 feet to a stake; thence Southwesterly at right angles to Packard Street, 83-55/100 feet to a stake in a line bisecting the angle formed by the Southwesterly line of Packard Street and the East line of State Street; thence Southeasterly 52-8/10 feet along the said bisecting line to a stake in the Northwesterly line of Lot 3; thence Northeasterly along the line between Lots 2 and 3, 100-6/10 feet to the place of beginning.

PARCEL 4:
A part of Lots 1 and 2, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records: Beginning at a point in the Southwesterly line of Grove (now Packard) Street, 185 feet Southeasterly from the intersection of the Southwesterly line of Packard Street with the East line of State Street; thence Southwesterly at right angles to Packard Street 63.1 feet to a stake in the line bisecting the angle formed by the Southwesterly line of Packard Street and the East line of State Street; thence Southeasterly along the bisecting line 63.4 feet to a stake; thence Northeasterly at right angles to Packard Street 83.55 feet to Packard Street; thence Northwesterly along the Southwesterly line of Packard Street 60 feet to the Place of Beginning.

PARCEL 5:
Part of Lot 1, Block 4, of MAP of HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records: Beginning at a point in the Southwesterly line of Packard Street 130 feet Southeasterly from the intersection of the Southwesterly line of Packard Street and the East line of State Street; thence Southeasterly along said line of Packard Street 55 feet; thence Southwesterly at right angles to said Packard Street 63.1 feet to a line bisecting the angle formed by the intersection of said Packard Street and State Street lines; thence Northwesterly along said bisecting line 58.1 feet; thence Northeasterly at right angles to said Packard Street line 44.34 feet to the place of beginning.

PARCEL 6:
Part of Lot 1, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records: Beginning at a point on the East line of State Street 130 feet South of the corner formed by the intersection of the Southwesterly line of Grove (now Packard) Street with East line of State Street; thence East at right angles with State Street 44 feet and 34/100 feet to a stake in the line bisecting the angle formed by the East line of State and the Southwesterly line of Grove (now Packard) Street; thence Northeasterly at right angles to Packard Street 44 feet and 34/100 feet to a stake in Packard Street line; thence Northwesterly along the Southwesterly line of Packard Street 25 feet; thence Southwesterly at right angles with Packard Street about 36 feet to said bisecting line above mentioned; thence Westerly to a point on the East line of State Street 26 feet North of the place of beginning; thence South along the East line of State Street 26 feet to the place of beginning.

PARCEL 7:
A part of Lot 1, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records: Commencing on the East line of State Street at a point 130 feet South of the intersection of the East line of State Street and the Southwesterly line of Packard Street and running thence South along the East line of State Street 46 feet; thence East at right angles with State Street 60.05 feet to a stake in the line bisecting the angle formed by the East line of State Street and the Southwesterly line of Packard Street; thence Northwesterly along said bisecting line 48.6 feet; thence West at right angles with State Street to the point of beginning.

PARCEL 8:
A part of Lots 1 and 2, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records: Beginning at a point in the East line of State Street, 246 feet South of the intersection of the East line of State Street and the Southwesterly line of Grove (now Packard Street) running thence South along the East line of State Street, 35 feet to a stake; thence East at right angles 95.84 feet to a stake in the line bisecting the angle formed by the East line of State Street and the Southwesterly line of Grove Street; thence Northwesterly along said bisecting line 36.96 feet; thence West at right angles to State Street, 83.91 feet to the place of beginning.

PARCEL 9:
A part of Lots 1 and 2, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records, described as: Beginning at an oak stake in the East line of State Street, 281 feet South of the intersection of the East line of State Street and the Southwesterly line of Grove now Packard Street; running thence East at right angles to the East line of State Street 95.84 feet to an oak stake in the line bisecting the angle formed by the East line of State Street and the Southwesterly line of Grove Street; thence Southeasterly along said bisecting line between 14.80 feet to a stake in the Southeasterly line of Lot 2; thence Southwesterly on the Southeasterly line of Lot 2, 64.43 feet; thence West 49.36 feet to the East line of State Street meeting the same at a right angle; thence North along the East line of State Street, 53 feet to the Place of Beginning.

PARCEL 10:
Beginning at the most Southerly corner of Lot 3, Block 4, of MAP OF HILLS ADDITION TO THE CITY OF ANN ARBOR, according to the plat thereof as recorded in Liber 60 of Deeds, pages 134 and 135, Washtenaw County Records, and running from thence West at right angles with State Street, 63 45/100 feet to the East line of State Street; thence North along the East line of State Street, 324/10 feet for a place of beginning; thence North along the East line of State Street, 40 feet; thence East at right angles with State Street, 50 feet to the Southeasterly line of Lot 2, Block 4; thence Northeasterly along said Southerly line of Lot 2, 15 feet; thence Southerly 50 feet to a point 71 feet East of the East line of State Street; thence West 71 feet to the place of beginning.

BEING SUBJECT TO:

33. Grant of Easement in favor of Comcast of the South, Inc. and the Covenants, Conditions and Restrictions contained in instrument recorded in Liber 4908, page 257, as to Parcel 2.

34. Terms and Conditions contained in Driveway Agreement as disclosed by instrument recorded in Liber 834, page 190, as to Parcel 8.

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

NOTES

1. THE BASE SURVEY WAS PREPARED BY MIDWESTERN CONSULTING IN 10/2022. ALL UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN SHOWN TO A REASONABLE DEGREE OF ACCURACY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.

BENCHMARKS:

#1 Set mag. nail on SW side of guy pole on N'ly side of Packard Street, 100± feet NW of Arch Street Intersection.
Elevation = 836.36 NAVD 88.

#2 T/Bolt on SE Corner of base of traffic signal pole at SW corner of State Street and Hoover Avenue.
Elevation = 827.29 NAVD 88.

#3 Set mag. nail on E. side of utility pole on East side of State Street at SW corner of 917 State Street.
Elevation = 831.86 NAVD 88.

GENERAL SOILS DESCRIPTION

BASED ON SOIL SURVEY OF WASHTENAW COUNTY MICHIGAN

FoA – FOX SANDY LOAM, 0 TO 2 PERCENT SLOPES
FoC – FOX SANDY LOAM, 6 TO 12 PERCENT SLOPES

LEGEND

838	EXIST. CONTOUR
×836.2	EXIST. SPOT ELEVATION
-o- U.P.	EXIST. UTILITY POLE
o- GP	EXIST. GUY POLE
←	GUY WIRE
☒	ELEC. TRANSFORMER
⊠	EXIST. AC UNIT
—— OH ——	EXIST. OVERHEAD UTILITY LINE
☼	EXIST. LIGHT POLE
—— t ——	EXIST. TELEPHONE LINE
—— e ——	EXIST. ELECTRIC LINE
—— g ——	EXIST. GAS LINE
—— g ——⋈——	EXIST. GAS VALVE
—— f.o. ——	EXIST. FIBER OPTIC LINE
— — w — —	EXIST. WATER MAIN
-ф-	EXIST. HYDRANT
—⊠—	EXIST. GATE VALVE IN BOX
—⊗—	EXIST. GATE VALVE IN WELL
—×—	EXIST. CURB STOP & BOX
^fdc	EXIST. FIRE DEPT. CONNECTION
—— r —o—	EXIST. STORM SEWER
——□——	EXIST. CATCH BASIN OR INLET
——●——	EXIST. BEEHIVE INLET
•ds	EXIST. DOWNSPOUT
- - - s -o- - -	EXIST. SANITARY SEWER
◎	EXIST. CLEANOUT
T	ENCLOSED TRASH AREA
Þ	SIGN
△ pm	PARKING METER
MAIL	MAILBOX
⊠t	TELEPHONE RISER
⊠catv	CABLE TELEVISION RISER
⊠e	ELECTRIC METER
⊠w	WATER METER
⊠scb	SPRINKLER CONTROL BOX
⊠g	GAS METER
⊠fiber	FIBER OPTIC MARKER
⊠ped	PEDESTRIAN CROSSING SIGNAL
⊠tscb	TRAFFIC SIGNAL CONTROL BOX
•	POST
—//—//—//—	FENCE
●	SINGLE TREE
⊕	SECTION CORNER
⊙ SB-1	SOIL BORING LOCATION
○ S	SET IRON PIPE
○ F	FOUND IRON PIPE
◎ S	SET MONUMENT
◎ F	FOUND MONUMENT
○ S	SET IRON ROD
○FIR	FOUND IRON ROD
△	CONTROL PT.
℄	CENTERLINE

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FIVE CORNERS

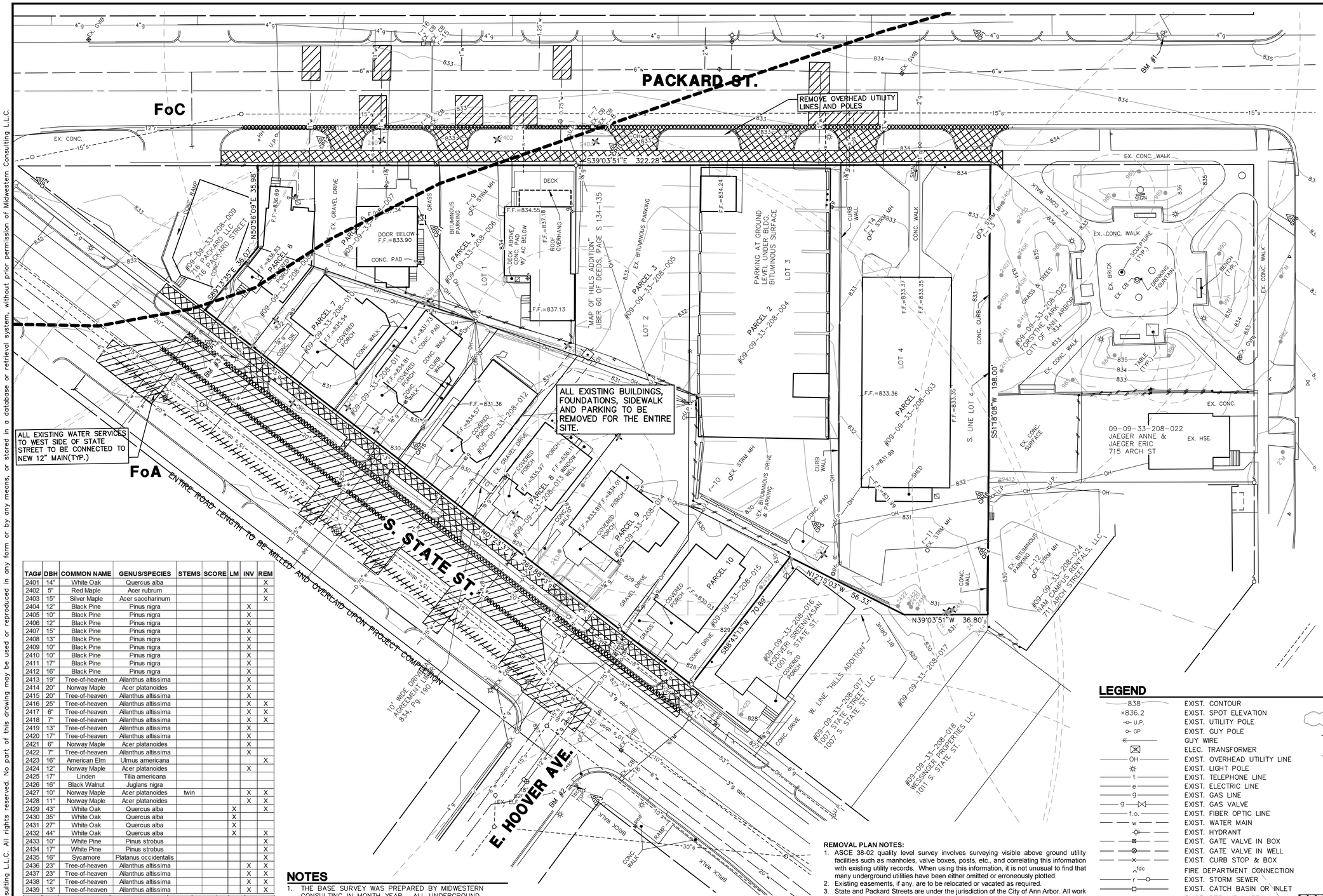
SITE PLAN
EXISTING CONDITIONS AND ALTA SURVEY PLAN

2

DATE: 1/26/23
SHEET 2 OF
CADD:
ENG: JCA
PM: SWB
TECH:
/23204EX1

JOB No. **23204**

REVISIONS:	REV. DATE
PER CITY REVIEW	4/10/23
PER CITY REVIEW	10/3/23
PER CITY REVIEW	2/1/24



SCALE: 1" = 20'

0 20 40 60

811 Know what's below. Call before you dig.

NOTES

1. THE BASE SURVEY WAS PREPARED BY MIDWESTERN CONSULTING IN MONTH YEAR. ALL UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN SHOWN TO A REASONABLE DEGREE OF ACCURACY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.
2. ADD ADDITIONAL NOTES AS NECESSARY (WOODLANDS, WETLANDS, FLOODPLAIN, ETC)

TAG#	DBH	COMMON NAME	GENUS/SPECIES	STEMS	SCORE	LM	INV	REM
2401	14"	White Oak	Quercus alba					X
2402	5"	Red Maple	Acer rubrum					X
2403	15"	Silver Maple	Acer saccharinum					X
2404	12"	Black Pine	Pinus nigra				X	
2405	10"	Black Pine	Pinus nigra				X	
2406	12"	Black Pine	Pinus nigra				X	
2407	15"	Black Pine	Pinus nigra				X	
2408	13"	Black Pine	Pinus nigra				X	
2409	10"	Black Pine	Pinus nigra				X	
2410	10"	Black Pine	Pinus nigra				X	
2411	17"	Black Pine	Pinus nigra				X	
2412	16"	Black Pine	Pinus nigra				X	
2413	19"	Tree-of-heaven	Ailanthus altissima				X	
2414	20"	Norway Maple	Acer platanoides				X	
2415	20"	Tree-of-heaven	Ailanthus altissima				X	
2416	25"	Tree-of-heaven	Ailanthus altissima				X	X
2417	6"	Tree-of-heaven	Ailanthus altissima				X	X
2418	7"	Tree-of-heaven	Ailanthus altissima				X	X
2419	13"	Tree-of-heaven	Ailanthus altissima				X	
2420	17"	Tree-of-heaven	Ailanthus altissima				X	
2421	6"	Norway Maple	Acer platanoides				X	
2422	7"	Tree-of-heaven	Ailanthus altissima				X	
2423	16"	American Elm	Ulmus americana					X
2424	12"	Norway Maple	Acer platanoides				X	
2425	17"	Linden	Tilia americana					
2426	16"	Black Walnut	Juglans nigra					
2427	10"	Norway Maple	Acer platanoides	twin			X	X
2428	11"	Norway Maple	Acer platanoides				X	X
2429	43"	White Oak	Quercus alba			X		X
2430	35"	White Oak	Quercus alba			X		
2431	27"	White Oak	Quercus alba			X		
2432	44"	White Oak	Quercus alba			X		X
2433	10"	White Pine	Pinus strobus					X
2434	17"	White Pine	Pinus strobus					X
2435	16"	Sycamore	Platanus occidentalis					X
2436	23"	Tree-of-heaven	Ailanthus altissima				X	X
2437	23"	Tree-of-heaven	Ailanthus altissima				X	X
2438	12"	Tree-of-heaven	Ailanthus altissima				X	X
2439	17"	Tree-of-heaven	Ailanthus altissima				X	X

TAG#	DBH	COMMON NAME	GENUS/SPECIES	STEMS	SCORE	LM	INV	REM
982	13"	Norway Maple	Acer platanoides				X	
983	21"	Honey Locust	Gleditsia triacanthos		21	X		
984	20"	Honey Locust	Gleditsia triacanthos		21	X		
985	10"	Black Pine	Pinus nigra				X	
986	17"	Honey Locust	Gleditsia triacanthos		20	X		
987	18"	Honey Locust	Gleditsia triacanthos		19	X		
988	15"	Sugar Maple	Acer saccharum					
989	16"	Honey Locust	Gleditsia triacanthos		20	X		
990	19"	Honey Locust	Gleditsia triacanthos		20	X		
991	17"	Honey Locust	Gleditsia triacanthos		20	X		

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

GENERAL SOILS DESCRIPTION

BASED ON SOIL SURVEY OF WASHTENAW COUNTY MICHIGAN

FoA – FOX SANDY LOAM, 0 TO 2 PERCENT SLOPES
FoC – FOX SANDY LOAM, 6 TO 12 PERCENT SLOPES

REMOVAL PLAN NOTES:

1. ASCE 38-02 quality level survey involves surveying visible above ground utility facilities such as manholes, valve boxes, posts, etc., and correlating this information with existing utility records. When using this information, it is not unusual to find that many underground utilities have been either omitted or erroneously plotted.
2. Existing easements, if any, are to be relocated or vacated as required.
3. State and Packard Streets are under the jurisdiction of the City of Ann Arbor. All work within the right-of-way is subject to a permit from the City.
4. All existing on-site easements, if any, are to be vacated or relocated as necessary per the proposed development plans.
5. All franchise utilities are to be removed by or per the party having jurisdiction.
6. One street trees is to be removed on Packard Street.
7. All site work is to comply with the City of Ann Arbor Standard Specifications available on line. www.a2gov.org/departments/engineering/Documents/Table of Contents.pdf
8. All existing on-site improvements are to be removed unless otherwise noted.
9. During demolition of the existing structures, the contractor will be responsible for identifying any existing footing drains that are connected to the sanitary sewer. These are to be verified on site by the City prior to removal. If footing drains for the existing buildings are connected to the sanitary sewer system, disconnection will be required in accordance with current City specifications. To schedule inspection, call the City of Ann Arbor Engineering Unit at (734) 794-6410. Disconnection of existing footing drains may be taken as a credit against required sanitary sewer flow mitigation.
10. All existing copper water service leads and sanitary sewer leads for each house to be demolished shall be disconnected from their respective mains.

LEGEND

- EXIST. CONTOUR
- EXIST. SPOT ELEVATION
- EXIST. UTILITY POLE
- EXIST. GUY POLE
- GUY WIRE
- ELEC. TRANSFORMER
- EXIST. OVERHEAD UTILITY LINE
- EXIST. LIGHT POLE
- EXIST. TELEPHONE LINE
- EXIST. ELECTRIC LINE
- EXIST. GAS LINE
- EXIST. GAS VALVE
- EXIST. FIBER OPTIC LINE
- EXIST. WATER MAIN
- EXIST. HYDRANT
- EXIST. GATE VALVE IN BOX
- EXIST. GATE VALVE IN WELL
- EXIST. CURB STOP & BOX
- FIRE DEPARTMENT CONNECTION
- EXIST. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- EXIST. BEEHIVE INLET
- EXIST. DOWNSPOUT
- EXIST. SANITARY SEWER
- EXIST. CLEANOUT
- SIGN
- TELEPHONE RISER
- CABLE TELEVISION RISER
- ELECTRIC METER
- WATER METER
- POST
- EXIST. BOLLARD
- FENCE
- GUARDRAIL
- SINGLE TREE
- TREE OR BRUSH LIMIT
- SECTION CORNER
- SOIL BORING LOCATION
- EXIST. TEST PIT LOCATION
- SET IRON PIPE
- FOUND IRON PIPE
- SET MONUMENT
- FOUND MONUMENT
- SET P.K.
- FOUND P.K.
- SET IRON ROD
- FOUND IRON ROD
- CONTROL PT.
- CENTERLINE
- PROPERTY LINE
- CONCRETE TO BE REMOVED
- BITUMINOUS TO BE REMOVED
- UTILITY TO BE ABANDONED
- CURB OR UTILITY TO BE REMOVED
- TREE TO BE REMOVED
- ITEM TO BE RELOCATED
- ITEM TO BE REMOVED

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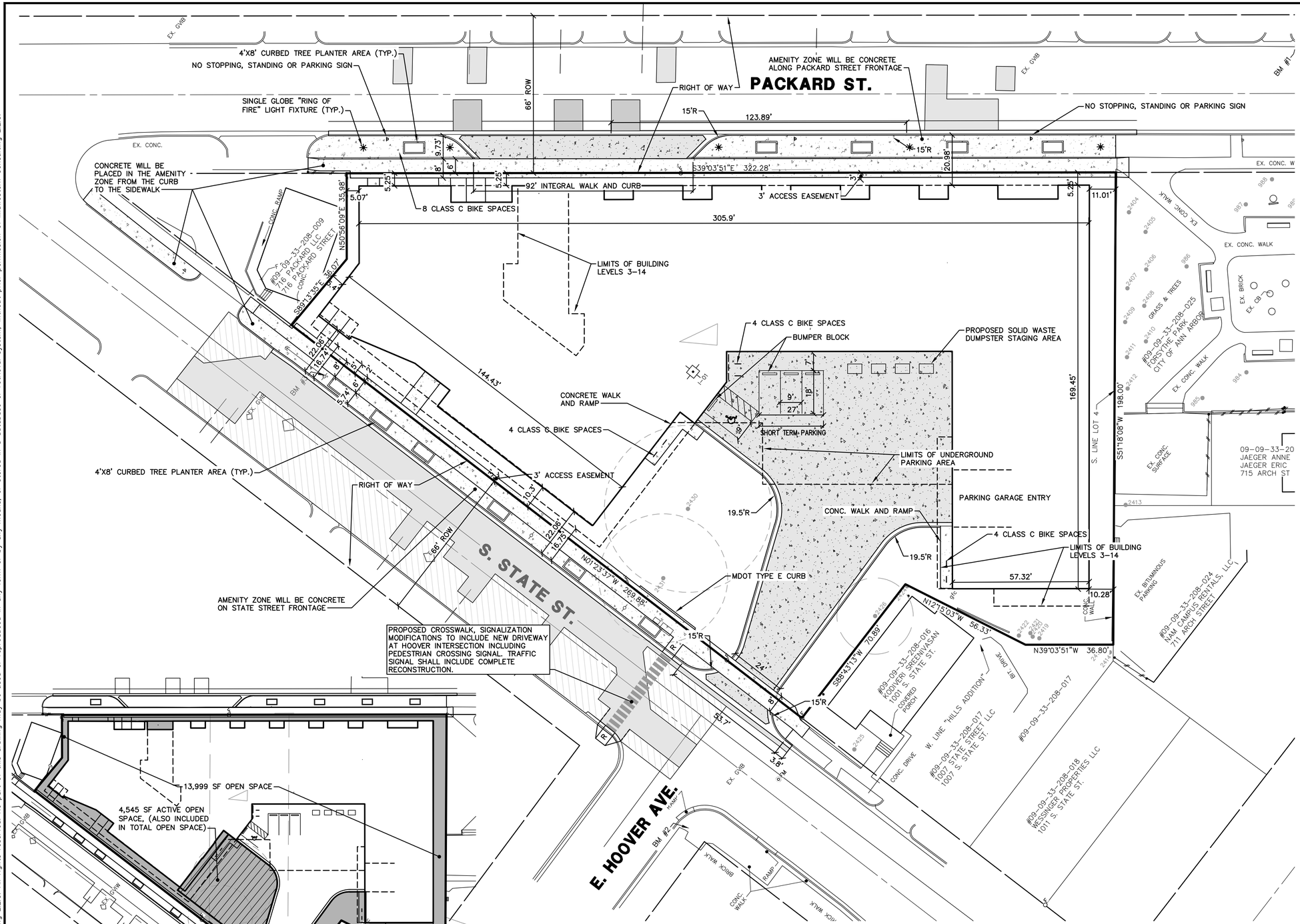
FIVE CORNERS
SITE PLAN
REMOVAL PLAN

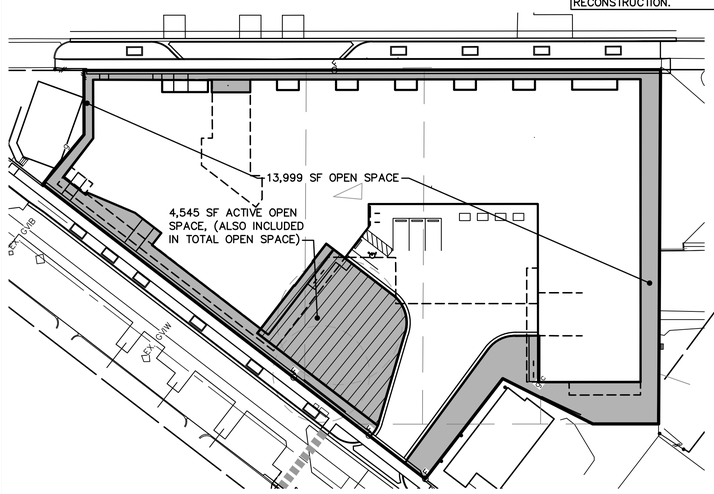
3

DATE: 1/26/23
SHEET 3 OF

REVISIONS:	REV. DATE	CADD:
PER CITY REVIEW	10/3/23	JCA
PER CITY REVIEW	1/5/24	ENG: JCA
PER CITY REVIEW	2/1/24	PM: SWB
		TECH:

JOB No. 23204 /23204RM1





OPEN SPACE PLAN

SCALE 1"=40'

OPEN SPACE
TOTAL SITE AREA = 55,507 SF
OPEN SPACE = 13,999 SF
OPEN SPACE =25.2 %

ACTIVE OPEN SPACE
(INCLUDED IN OVERALL) = 4,545 SF
ACTIVE OPEN SPACE =8.2%

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

SCALE: 1" = 20'

0 20 40 60

811 Know what's below. Call before you dig.

LEGEND

- BARRIER FREE SIDEWALK RAMP
- PROP. CURB & GUTTER
- PROP. BITUMINOUS PAVEMENT
- PROP. CONCRETE PAVEMENT
- PROP. HEAVY DUTY CONCRETE
- PROP. 1.5" MILL AND OVERLAY
- SIGN
- PROP. SINGLE LIGHT
- PROP. VEHICLE CHARGING STATION

NOTES

1. ALL CLASS A BIKE PARKING SPACES ARE LOCATED WITHIN THE BUILDING.
2. ALL PAVEMENT REPLACEMENT TO MEET CITY STANDARD SPECIFICATIONS. SAWCUT ALL REMOVAL LIMITS.
3. ALL CURB DIMENSIONS ARE TO BACK OF CURB.
4. ALL RADII DIMENSIONS ARE TO FACE OF CURB.
5. AS A STREET CUT MORATORIUM IS IN EFFECT FOR PACKARD(2026) AND SOUTH STATE(2028) STREETS, SPECIAL RESTORATION METHODS WILL BE REQUIRED. REFER TO CITY STANDARD SPECIFICATIONS DIVISION i, SECTION 1H.
6. NO FOOTINGS ARE PROPOSED WITHIN THE PUBLIC ROW. AND NO TEMPORARY EARTH RETENTION SYSTEM IS ANTICIPATED TO ENCROACH INTO THE PUBLIC ROW. IT IS UNDERSTOOD ANY ENCROACHMENT INTO THE ROW WILL REQUIRE A LICENSING AGREEMENT WITH THE CITY OF ANN ARBOR.

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FIVE CORNERS
SITE PLAN
DIMENSIONAL SITE PLAN

4

JOB No. 23204

REVISIONS:	REV. DATE
PER CITY REVIEW	10/3/23
PER CITY REVIEW	10/31/23
PER CITY REVIEW	2/1/24
PER CITY REVIEW	

DATE: 1/26/23
SHEET 4 OF
CADD:
ENG: JCA
PM: SWB
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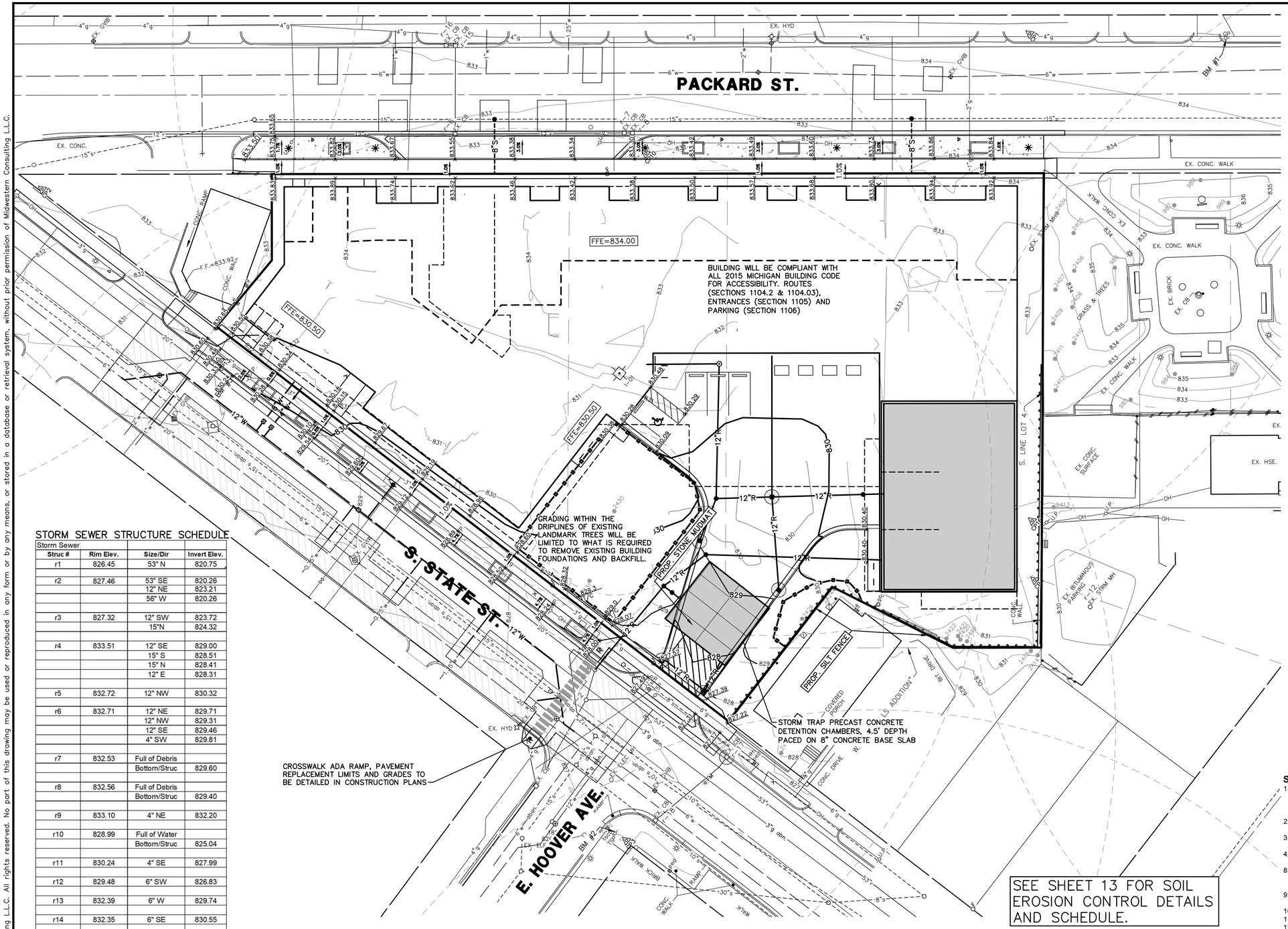

STORM SEWER STRUCTURE SCHEDULE

Storm Sewer			
Struc #	**Rim Elev.**	**Size/Dir**	**Invert Elev.**
r1	826.45	53" N	820.75
r2	827.46	53" SE	820.26
		12" NE	823.21
		56" W	820.26
r3	827.32	12" SW	823.72
		15"N	824.32
r4	833.51	12" SE	829.00
		15" S	828.51
		15" N	828.41
		12" E	828.31
r5	832.72	12" NW	830.32
r6	832.71	12" NE	829.71
		12" NW	829.31
		12" SE	829.46
		4" SW	829.81
r7	832.53	Full of Debris	
		Bottom/Struc	829.60
r8	832.56	Full of Debris	
		Bottom/Struc	829.40
r9	833.10	4" NE	832.20
r10	828.99	Full of Water	
		Bottom/Struc	825.04
r11	830.24	4" SE	827.99
r12	829.48	6" SW	826.83
r13	832.39	6" W	829.74
r14	832.35	6" SE	830.55
r15	832.79	8" SE	830.24
		12" NW	829.94
		12" SW	829.79
r16	832.80	12" SE	830.00
r17	826.54	12" W	824.09
r18	826.17	12"E	824.17

SCALE: 1" = 20'

0 20 40 60

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LEGEND

838	EXIST. CONTOUR
838	PROP. CONTOUR
×836.2	EXIST. SPOT ELEVATION
36.60	PROP. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
	GUY WIRE
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
	PROP. LIGHT POLE
t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
	PROP. GATE VALVE IN WELL
	EXIST. CURB STOP & BOX
	PROP. CURB STOP & BOX
FDC	PROP. FIRE DEPARTMENT CONNECTION
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	PROP. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	PROP. BEEHIVE INLET
RD	PROP. ROOF DRAIN
	END SECTION
DS	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
	EXIST. CLEANOUT
	PROP. CLEANOUT
	C/L OF DITCH
	DRAINAGE DIRECTION
	SIGN
	SINGLE TREE
	FENCE
	SILTFENCE
	LIMITS OF DISTURBANCE
	CONSTRUCTION FENCE
FF	FINISH FLOOR ELEVATION
GF	GARAGE FLOOR ELEVATION
BFF	BASEMENT FINISH FLOOR ELEVATION

SOIL EROSION CONTROL NOTES

1. All soil erosion control measures shall comply with the current City of Ann Arbor ordinances, Washtenaw County standards and specifications for soil erosion and sedimentation control, and State of Michigan "Soil Erosion and Sedimentation Control Act – P.A. 347".
2. Prior to commencing earthmoving operations, the grading contractor shall install the temporary catch basin filter(s) shown on the plans.
3. The removal of trapped sediment and the cleanout or replacement of clogged storm may be necessary after each storm event during the project.
4. Only upon stabilization of all disturbed areas may the temporary gravel filters be removed. All storm sewers must be also cleaned of all sediment.
8. All inlets and catch basins will have sediment filters installed after their construction. These filters will be maintained until all areas around the structure have been stabilized.
9. The Contractor will maintain all necessary soil erosion control devices until soil stabilization has occurred.
10. Appropriate emergency access will be provided during construction.
11. The estimated cost of soil erosion control measures is $4000.
12. The estimated cost to protect all soil surfaces from erosion should construction discontinue is $3000.
13. External streets will be immediately cleaned of any tracked mud following each mud-tracking occurrence.
14. Estimated project earthwork is 6,000 CYD excavation and 1,000 CYD fill. This number is an estimate only and should not be used for construction or estimating purposes.
15. Dewatering operations during construction, if necessary, must be done per City requirements including sediment control and disposal.
16. Final locations and dimensions of the mud tracking mat and concrete washout area are to be determined by the contractor subject to City approval.

STORM WATER MANAGEMENT SYSTEM PERMANENT MAINTENANCE PLAN, SCHEDULE, AND COST ESTIMATE

MAINTENANCE PLAN BUDGET

Annual inspection of system for sediment accumulation	$350.00
Removal of sediment accumulation every two (2) years, as needed	$600.00
Inspect for floatables and debris annually and after major storms	$300.00
Removal of floatables and debris annually and after major storms	$600.00
Inspect system for erosion annually and after major storms	$300.00
Re-establish permanent vegetation on eroded slopes, as needed	$200.00
Clean drives semiannually	$250.00
Total Annual Budget	**$2,600.00**

PERMANENT MAINTENANCE TASKS AND SCHEDULE

	Components					
	Drives and Walks	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Castings	Detention Chambers	Schedule
Inspect for sediment accumulation	X					
		X	X		X	annually
Removal of sediment accumulation						every 2 years, as needed
		X	X		X	
Inspect for floatables and debris						
		X	X	X	X	annually
Cleaning of floatables and debris						
		X	X	X	X	annually
Clean streets	X					semi-annually

MAINTENANCE PROGRAM FOR SOIL EROSION CONTROLS

1. During construction it will be the Contractor's responsibility to maintain the soil erosion control measures. Following construction the Owner shall be responsible for maintaining the permanent soil erosion control measures. Maintenance responsibilities shall become part of any sales or exchange agreement for the land on which the permanent SESC measures are located.

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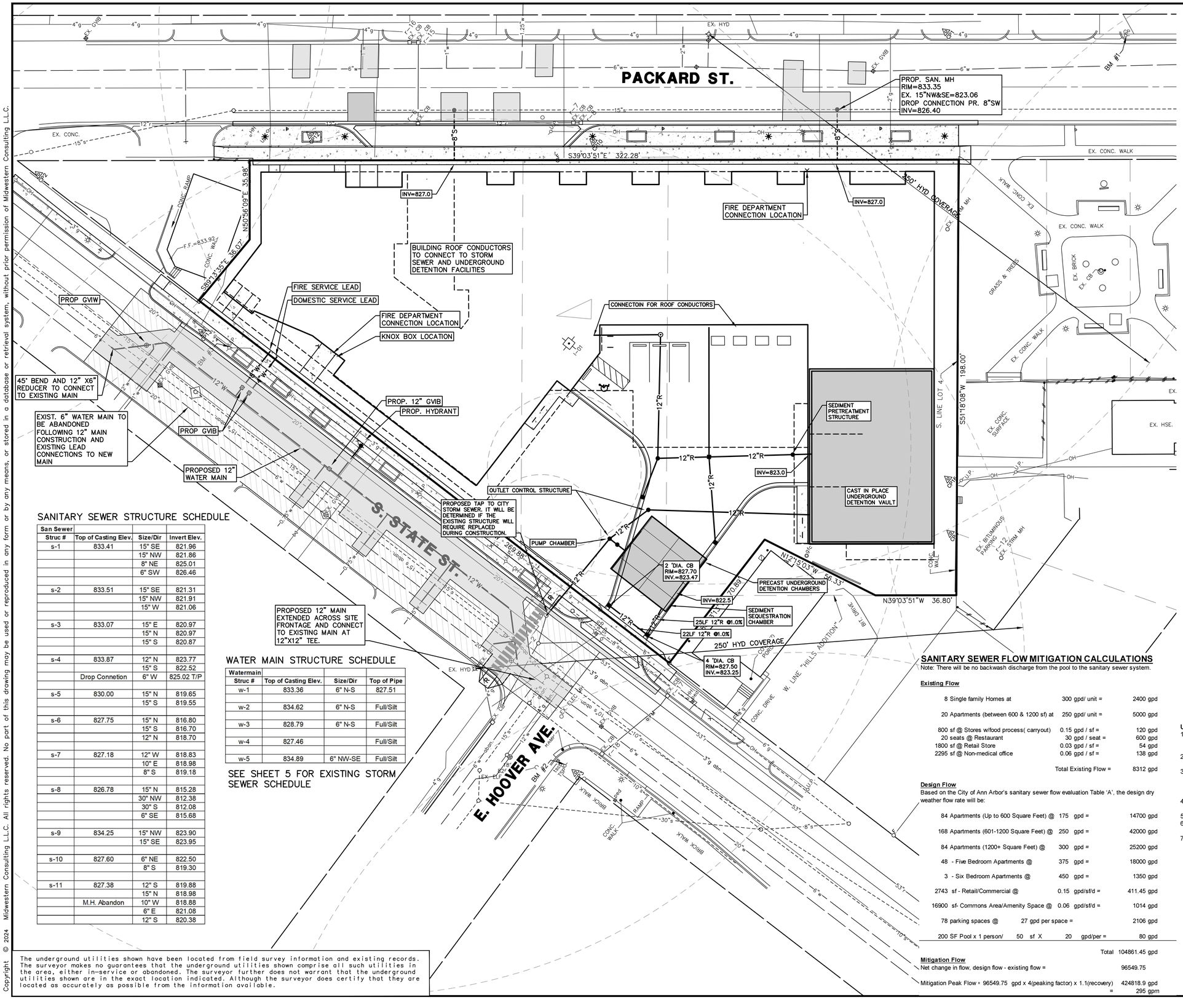
FIVE CORNERS
SITE PLAN
GRADING AND SOIL EROSION CONTROL PLAN

5

DATE: 1/26/23
SHEET 5 OF
CADD:
ENG.: JCA
PM.: SWB
TECH:
23204GP1

REVISIONS:	REV. DATE
PER CITY REVIEW	10/3/23
PER CITY REVIEW	2/1/24
PER CITY REVIEW	

JOB No. 23204



SANITARY SEWER STRUCTURE SCHEDULE

San Sewer Struc #	Top of Casting Elev.	Size/Dir	Invert Elev.
s-1	833.41	15" SE	821.96
		15" NW	821.86
		8" NE	825.01
		6" SW	826.46
s-2	833.51	15" SE	821.31
		15" NW	821.91
		15" W	821.06
s-3	833.07	15" E	820.97
		15" N	820.97
		15" S	820.87
s-4	833.87	12" N	823.77
		15" S	822.52
	Drop Conneton	6" W	825.02 T/P
s-5	830.00	15" N	819.65
		15" S	819.55
s-6	827.75	15" N	816.80
		15" S	816.70
		12" N	818.70
s-7	827.18	12" W	818.83
		10" E	818.98
		8" S	819.18
s-8	826.78	15" N	815.28
		30" NW	812.38
		30" S	812.08
		6" SE	815.68
s-9	834.25	15" NW	823.90
		15" SE	823.95
s-10	827.60	6" NE	822.50
		8" S	819.30
s-11	827.38	12" S	819.88
		15" N	818.98
	M.H. Abandon	10" W	818.88
		6" E	821.08
		12" S	820.38

WATER MAIN STRUCTURE SCHEDULE

Watermain Struc #	Top of Casting Elev.	Size/Dir	Top of Pipe
w-1	833.36	6" N-S	827.51
w-2	834.62	6" N-S	Full/Silt
w-3	828.79	6" N-S	Full/Silt
w-4	827.46		Full/Silt
w-5	834.89	6" NW-SE	Full/Silt

SEE SHEET 5 FOR EXISTING STORM SEWER SCHEDULE

SANITARY SEWER FLOW MITIGATION CALCULATIONS

Note: There will be no backwash discharge from the pool to the sanitary sewer system.

Existing Flow

8	Single family Homes at	300 gpd/ unit =	2400 gpd
20	Apartments (between 600 & 1200 sf) at	250 gpd/ unit =	5000 gpd
800	sf @ Stores w/food process(carryout)	0.15 gpd / sf =	120 gpd
20	seats @ Restaurant	30 gpd / seat =	600 gpd
1800	sf @ Retail Store	0.03 gpd / sf =	54 gpd
2295	sf @ Non-medical office	0.06 gpd / sf =	138 gpd
		Total Existing Flow =	8312 gpd

Design Flow

Based on the City of Ann Arbor's sanitary sewer flow evaluation Table 'A', the design dry weather flow rate will be:

84	Apartments (Up to 600 Square Feet) @	175	gpd =	14700 gpd
168	Apartments (601-1200 Square Feet) @	250	gpd =	42000 gpd
84	Apartments (1200+ Square Feet) @	300	gpd =	25200 gpd
48	- Five Bedroom Apartments @	375	gpd =	18000 gpd
3	- Six Bedroom Apartments @	450	gpd =	1350 gpd
2743	sf - Retail/Commercial @	0.15	gpd/sf/d =	411.45 gpd
16900	sf- Commons Area/Amenity Space @	0.06	gpd/sf/d =	1014 gpd
78	parking spaces @	27	gpd per space =	2106 gpd
200	SF Pool x 1 person/ 50 sf X	20	gpd/per =	80 gpd
			Total	104861.45 gpd

Mitigation Flow

Net change in flow, design flow - existing flow = 96549.75

Mitigation Peak Flow = 96549.75 gpd x 4(peaking factor) x 1.1(recovery) = 424818.9 gpd = 295 gpm

SCALE: 1" = 20'

0 20 40 60

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LEGEND

838	EXIST. CONTOUR
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×836.2	EXIST. SPOT ELEVATION
36.60×	PROP. SPOT ELEVATION
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	GUY WIRE
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t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
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w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
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	FENCE
	SILTFENCE
	LIMITS OF DISTURBANCE
	CONSTRUCTION FENCE
FF	FINISH FLOOR ELEVATION
GF	GARAGE FLOOR ELEVATION
BFF	BASEMENT FINISH FLOOR ELEVATION

UTILITY PLAN NOTES:

1. Domestic water and fire suppression water services are to tap into the proposed 12" water main in State Street. It is anticipated booster pumps will be required for the project. Final determination will occur during the detailed design phase.
2. The sanitary sewer leads will tap into the existing sanitary main in Packard Street. The existing sanitary sewer leads will be abandoned.
3. It is unknown if footing drains for the existing buildings are connected to the sanitary sewer system, disconnection will be required in accordance with current City specifications. The contact person to schedule inspection of footing drain connections, if any, is Amy Ponsock who can be reached at 734 794-6410, extension 43622.
4. The proposed storm detention tanks primarily drain by metered discharge and pump outlet. An emergency overflow to continue to the State Street storm sewer.
5. No firewalls are proposed within the building.
6. Pool backwash water is to be de-chlorinated and routed to the storm detention chamber.
7. The proposed building's sump pump will discharge to the storm water management system.

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FIVE CORNERS
SITE PLAN
UTILITY PLAN

6

JOB No. 23204

REVISIONS:	REV. DATE:
PER CITY REVIEW	10/3/23
PER CITY REVIEW	2/1/24
PER CITY REVIEW	

DATE: 1/26/23
SHEET 6 OF
CADD:
ENG.: JCA
PM.: SWB
TECH:
23204UP1

MAIN SITE Basin Stormwater Calculations

W1 - Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Rational Method Variables

Cover Type	Soil Type	Area (sft)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building		44,240	1.02	0.95	0.96
Pavement			0.00	0.95	0.00
Grass	A		0.00	0.15	0.00
Grass	B	4,300	0.10	0.25	0.02
Grass	C		0.00	0.30	0.00
Grass	D		0.00	0.45	0.00
Water Surface			0.00	1.00	0.00
Total		48,540	1.11		0.99

Weighted C = (Sum(C)x(Area))/(Area Total)= 0.89

NRCS Variables (Pervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Grass	A	0	0.00	49	0.00
Grass	B	4,300	0.10	69	0.07
Grass	C	0	0.00	79	0.00
Grass	D	0	0.00	84	0.00
Total		4,300	0.10		0.07

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 69

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Building		44,240	1.02	98	1.00
Pavement		0	0.00	98	0.00
Water Surface		0	0.00	98	0.00
Total		44,240	1.02		1.00

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 98

W2 - W2 - First Flush Runoff Calculations (Vff)

A. Vff = 1" x 1"/12" x 43560 sf/ac x A x C where A= 1.11 and where C= 0.89

Vff = 1" x 1"/12" x 43560 sf/ac x 1.11 x 0.89 = 3,600 cf

W3 - W3 - Pre-Development Bankfull Runoff Calculations (Vbf-pre)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Pre-Development CN (Good Cover Woods, Type B Soils) CN= 58
C. S = (1000 / CN) - 10 S= 7.241 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.100 in
E. Total Site Area excluding "Self-Crediting" BMPs 48,540 sft
F. Vbf-pre = Q x (1/12) x Area Vbf-pre = 404 cft

W4 - Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Pervious Cover CN From Worksheet 1 CN= 69
C. S = (1000 / CN) - 10 S= 4.493 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.354 in
E. Pervious Cover Area from Worksheet 1 4,300 sft
F. Vbf-per-post = Q x (1/12) x Area Vbf-per-post = 127 cft

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.122 in
E. Impervious Cover Area from Worksheet 1 44,240 sft
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 7,822 cft

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations (V100-per-post)

A. 100 year / 24 hour storm event: P= 5.11 in
B. Pervious Cover CN From Worksheet 1 CN= 69
C. S = (1000 / CN) - 10 S= 4.493 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.038 in
E. Pervious Cover Area from Worksheet 1 4,300 sft
F. V100-per-post = Q x (1/12) x Area V100-per-post = 730 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations (V100-imp-post)

A. 2 year / 24 hour storm event: P= 5.11 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 4.873 in
E. Impervious Cover Area from Worksheet 1 44,240 sft
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 17,965 cft

W8 - Time of Concentration (Tc-hrs)

A. Assume 15-minute minimum time of concentration Tc= 0.25 hr

W9 - Runoff Summary & On-Site Infiltration Requirement

A. Summary from Previous Worksheets
First Flush Volume (Vff) 3,600 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre) 404 cft
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post) 127 cft
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post) 7,822 cft
Total BF Volume (Vbf-post) 7,949 cft
Pervious Cover Post-Development 100-Year Volume (V100-per-post) 730 cft
Impervious Cover Post-Development 100-Year Volume (V100-imp-post) 17,965 cft
Total 100-Year Volume (V100) 18,695 cft
B. Determine Onsite Infiltration Requirement
Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume
Total Post-Development Bankfull Volume (Vbf-post) 7,949 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre) 404 cft
Bankfull Volume Difference 7,545 cft
Infiltration Requirement (Vinf) 7,545 cft

W10 - Detention/Retention Requirement

A. Q_P = 238.6 Tc^-0.82 743.63 cfs/(in x sq. mi)
B. Total Site Area excluding "Self-Crediting" BMPs 1.11 ac
C. Q100 = Q100-per + Q100-imp 6.911 in
(from W6 and W7, respectively)
D. Peak Flow (PF) = Q_P x Q100 x Area / 640 8.95 cfs
E. Delta = PF - 0.15 x Area (ac) 8.78 cfs
[0.15 x Area (ac)] 0.17 cfs
F. Vdet = Delta / PF x V100 18,346 cft
Required Detention not including infiltration credit or penalty.
Sediment Forebay Volume Required (5% of V100) 935 cft

W11 - Determine Applicable BMPs and Associated Volume Credits

Onsite soil testing has indicated the ground water table is too high to provide infiltration. The 20% penalty will be accounted for in the required volumes.

W13 - Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Min Infiltration Requirement (Vinf)	7,545 cft
Designed/Provided Infiltration Volume	0 cft
% Minimum Required Infiltration Provided	0 %
Total Calculated Detention Volume, Vdet	18,346 cft
Net Required Detention Volume	18,345 cft
(Vdet - Designed/Provided Infiltration Volume)	

B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved.

% Required Infiltration NOT Provided	100.0 %
(100% - % Minimum Required Infiltration Provided)	
Net % Penalty (20% x % Required Infiltration NOT Provided)	20.0 %
Total Required Detention Volume, including penalty	**22,015 cft**
[(100% + Net % Penalty) x Net Required Detention Volume)]	

Detention Outlet Calculations

A. Required Detention Volumes (Reduced by 6-hour infiltration)

Storm Event	Req'd Volume	less	Infil. Credit	=	Final Volume
First Flush	3,600 cft	-	0 cft	=	**3,600** cft
Bankfull	7,949 cft	-	0 cft	=	**7,949** cft
100 -year	18,346 cft	-	0 cft	=	**18,346** cft
100-year + Req'd Penalty	22,015 cft	-	0 cft	=	**22,015** cft
Forebay Volume Required (5% of 100-yr)				=	**917** cft

B. Detention Volumes Provided

StormTrap footprint of 4137 sf yields a net area of 90 % w/structure 3723 sft

Elevation	Area (sft)	Depth (ft)	Volume (cft)	Cum. Volume (cft)
822.5	3,723	0	0	0
823.0	3,723	0.5	1,862	1,862
824.0	3,723	1	3,723	5,585
825.0	3,723	1	3,723	9,308
826.0	3,723	1	3,723	13,032
827.0	3,723	1	3,723	16,755
828.0	3,723	1	3,723	20,478
828.5	3,723	0.5	1,862	22,340
			Total Volume =	22,340

Storage Elevation Calculation

First Flush Elevation (Xff)= (826.0 - 823.0) / (Xf - 823.0) = Xff = 823.47 ft
(13,032 - 1,862) / (3,600 - 1,862)

Bankfull Elevation (Xbf)= (827.0 - 824.0) / (Xbf - 824.0) = Xbf = 824.63 ft
(16,755 - 5,585) / (7,949 - 5,585)

100-Year Elevation (X100)= (828.5 - 828.0) / (X100 - 828.0) = X100 = 828.41 ft
(22,340 - 20,478) / (22,015 - 20,478)

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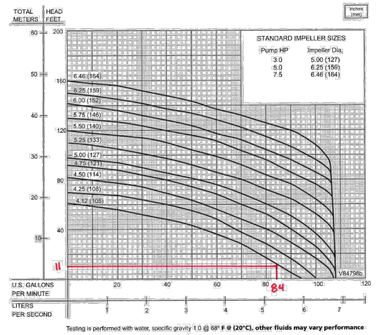


Testing is performed with water, specific gravity 1.0 @ 68° F @ (20°C), other fluids may vary performance

DISCHARGE PUMP CURVE

ENTRY AREA Basin Stormwater Calculations

W1 - Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Rational Method Variables

Cover Type	Soil Type	Area (sft)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building			0.00	0.95	0.00
Pavement		3,950	0.09	0.95	0.09
Grass	A		0.00	0.15	0.00
Grass	B	3,020	0.07	0.25	0.02
Grass	C		0.00	0.30	0.00
Grass	D		0.00	0.45	0.00
Water Surface			0.00	1.00	0.00
Total		6,970	0.16		0.10

Weighted C = (Sum(C)x(Area))/(Area Total)= 0.65

NRCS Variables (Pervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Grass	A	0	0.00	49	0.00
Grass	B	3,020	0.07	69	0.05
Grass	C	0	0.00	79	0.00
Grass	D	0	0.00	84	0.00
Total		3,020	0.07		0.05

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 69

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Building		0	0.00	98	0.00
Pavement		3,950	0.09	98	0.09
Water Surface		0	0.00	98	0.00
Total		3,950	0.09		0.09

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 98

W2 - W2 - First Flush Runoff Calculations (Vff)

A. Vff = 1" x 1"/12" x 43560 sf/ac x A x C where A= 0.16 and where C= 0.65

Vff = 1" x 1"/12" x 43560 sf/ac x 0.16 x 0.65 = 378 cf

W3 - W3 - Pre-Development Bankfull Runoff Calculations (Vbf-pre)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Pre-Development CN (Good Cover Woods, Type B Soils) CN= 58
C. S = (1000 / CN) - 10 S= 7.241 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.100 in
E. Total Site Area excluding "Self-Crediting" BMPs 6,970 sft
F. Vbf-pre = Q x (1/12) x Area Vbf-pre = 58 cft

W4 - Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Pervious Cover CN From Worksheet 1 CN= 69
C. S = (1000 / CN) - 10 S= 4.493 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.354 in
E. Pervious Cover Area from Worksheet 1 3,020 sft
F. Vbf-per-post = Q x (1/12) x Area Vbf-per-post = 89 cft

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.122 in
E. Impervious Cover Area from Worksheet 1 3,950 sft
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 698 cft

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations (V100-per-post)

A. 100 year / 24 hour storm event: P= 5.11 in
B. Pervious Cover CN From Worksheet 1 CN= 69
C. S = (1000 / CN) - 10 S= 4.493 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.038 in
E. Pervious Cover Area from Worksheet 1 3,020 sft
F. V100-per-post = Q x (1/12) x Area V100-per-post = 513 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations (V100-imp-post)

A. 2 year / 24 hour storm event: P= 5.11 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 4.873 in
E. Impervious Cover Area from Worksheet 1 3,950 sft
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 1,604 cft

W8 - Time of Concentration (Tc-hrs)

A. Assume 15-minute minimum time of concentration Tc= 0.25 hr

W9 - Runoff Summary & On-Site Infiltration Requirement

A. Summary from Previous Worksheets
First Flush Volume (Vff) 378 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre) 58 cft
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post) 89 cft
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post) 698 cft
Total BF Volume (Vbf-post) 788 cft
Pervious Cover Post-Development 100-Year Volume (V100-per-post) 513 cft
Impervious Cover Post-Development 100-Year Volume (V100-imp-post) 1,604 cft
Total 100-Year Volume (V100) 2,117 cft
B. Determine Onsite Infiltration Requirement
Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume
Total Post-Development Bankfull Volume (Vbf-post) 788 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre) 58 cft
Bankfull Volume Difference 730 cft
Infiltration Requirement (Vinf) 730 cft

W10 - Detention/Retention Requirement

A. Q_P = 238.6 Tc^-0.82 743.63 cfs/(in x sq. mi)
B. Total Site Area excluding "Self-Crediting" BMPs 0.16 ac
C. Q100 = Q100-per + Q100-imp 6.911 in
(from W6 and W7, respectively)
D. Peak Flow (PF) = Q_P x Q100 x Area / 640 1.28 cfs
E. Delta = PF - 0.15 x Area (ac) 1.26 cfs
[0.15 x Area (ac)] 0.02 cfs
F. Vdet = Delta / PF x V100 2,077 cft
Required Detention not including infiltration credit or penalty.
Sediment Forebay Volume Required (5% of V100) 106 cft

W11 - Determine Applicable BMPs and Associated Volume Credits

Onsite soil testing has indicated the ground water table is too high to provide infiltration. The 20% penalty will be accounted for in the required volumes.

W13 - Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Min Infiltration Requirement (Vinf)	730 cft
Designed/Provided Infiltration Volume	0 cft
% Minimum Required Infiltration Provided	0 %
Total Calculated Detention Volume, Vdet	2,077 cft
Net Required Detention Volume	2,077 cft
(Vdet - Designed/Provided Infiltration Volume)	

B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved.

% Required Infiltration NOT Provided	100.0 %
(100% - % Minimum Required Infiltration Provided)	
Net % Penalty (20% x % Required Infiltration NOT Provided)	20.0 %
Total Required Detention Volume, including penalty	**2,493 cft**
[(100% + Net % Penalty) x Net Required Detention Volume)]	

Detention Outlet Calculations

A. Required Detention Volumes (Reduced by 6-hour infiltration)

Storm Event	Req'd Volume	less	Infil. Credit	=	Final Volume
First Flush	378 cft	-	0 cft	=	**378** cft
Bankfull	788 cft	-	0 cft	=	**788** cft
100 -year	2,077 cft	-	0 cft	=	**2,077** cft
100-year + Req'd Penalty	2,493 cft	-	0 cft	=	**2,493** cft
Forebay Volume Required (5% of 100-yr)				=	**104** cft

B. Detention Volumes Provided

StormTrap footprint of 950 sf yields a net area of 87 % w/structure 827 sft

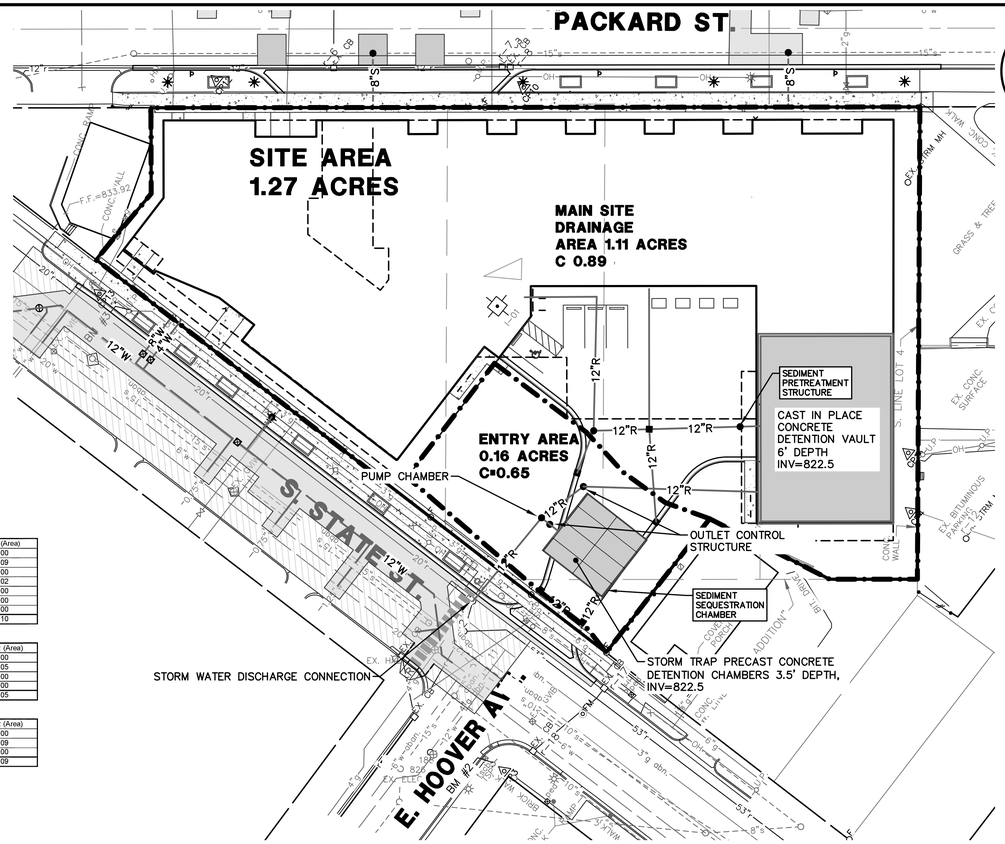
Elevation	Area (sft)	Depth (ft)	Volume (cft)	Cum. Volume (cft)
822.5	827	0	0	0
823.0	827	0.5	413	413
824.0	827	1	827	1,240
825.0	827	1	827	2,066
826.0	827	1	827	2,893
			Total Volume =	2,893

Storage Elevation Calculation

First Flush Elevation (Xff)= (825.0 - 822.5) / (Xf - 822.5) = Xff = 822.96 ft
(2,066 - 0) / (378 - 0)

Bankfull Elevation (Xbf)= (826.0 - 823.0) / (Xbf - 823.0) = Xbf = 823.45 ft
(2,893 - 413) / (788 - 413)

100-Year Elevation (X100)= (826.0 - 825.0) / (X100 - 825.0) = X100 = 825.52 ft
(2,893 - 2,066) / (2,493 - 2,066)



STORMWATER MANAGEMENT SYSTEM NARRATIVE

The stormwater management system at the Five Corners Apartment Building will consist of two underground vault system with no infiltration due to high groundwater conditions. Storm waters from the roof and yard areas around the site will be piped into the larger chamber constructed within the building basement level. The second area will collect the driveway area. Both detention areas will discharge through an outlet control structure before being routed to the pump chamber. The system will use a duplex pumped system with a maximum discharge not to exceed the allowable discharge of the site, 0.19 cfs or 85 gpm. The pump discharge from the chambers into the public storm sewer is necessary as there are existing utilities in the roadway preventing gravity drainage from the lower elevations of the chambers. The pumps and controls will be connected to the emergency backup generator circuit in the event of a power outage. The emergency overflow can be by gravity as it can flow unobstructed at that elevation. Storm water will flow from the storage chambers through metered holes calculated to pass only the allowable discharge rate into a pump chamber. The pumps can only discharge as much flow as the metered holes allow into the pump chamber- thus not exceeding the allowable discharge specified in the calculations. The pumps that have been selected do not exceed the allowable discharge of 0.19 cfs (85 gpm).

PUMP CALCULATION

Elevation head 5 feet
Allowable pumping rate 0.19 cfs (85 gpm)
Friction head (2" pvc forcemain, 85 gpm, 45 feet long) = 9.2 feet/100 feet of pipe
Fitting losses 20 feet

9.2/100(45+20) = 5.98 feet of head

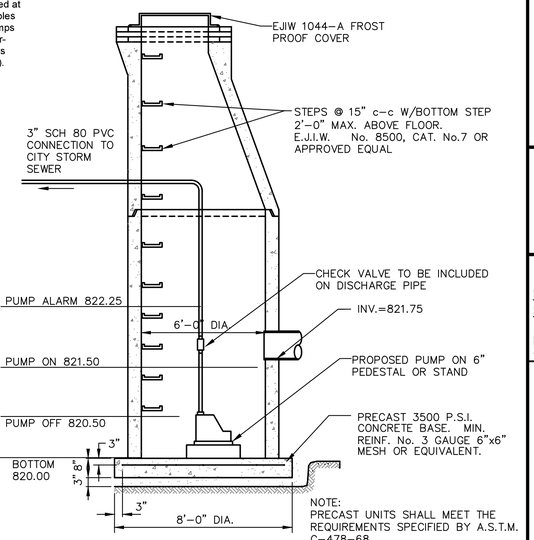
Total Dynamic Head = 5 + 5.58 = 10. 58 Say 11 feet.

A Barnes Series SGV, 3 HP, 4.12" impeller has been selected that delivers approximately 84 gpm at 11 feet of TDH.

Storm Water Pump Chamber Notes

1. The detention chambers, pump chamber and all penetrations into each shall be waterproofed and water tight.
2. The MEP designer shall specify the pumps and controls for the pump chamber. Controls shall be located in a secure area. A visible and audible alarm shall be provided on a separate circuit from the pumps. The pumps shall be on a separate circuit from each other.
3. The pump system shall consist of a duplex, submersible system with controls for:
   - Lead pump on/off
   - Lag pump on/off
   - High water alarm

   The lead and lag pump shall alternate run cycles. The alarm shall be located near the chamber and labeled with a sign 'Detention Chamber High Water Level Alarm'
4. Two access castings such as an East Jordan Iron Works #1044A shall be located in the roof of the pump chamber in close proximity to a wall of the detention chamber below. Steps or a ladder shall be provided for entry into the chamber.
5. The detention chamber walls and the pump chamber metering wall shall be designed to withstand nine feet of hydraulic pressure.
6. The discharge piping and the forcemain shall be secured from movement in the pump chamber and manhole.
7. The pumps specified by the MEP will be required to deliver 85 GPM under 11 feet of total dynamic head.
8. Designs, specifications and product selections will be forwarded to the civil engineer for review and approval.



DUPLEX PUMP CHAMBER DETAIL

NOT TO SCALE

LEGEND

838	EXIST. CONTOUR
838	PROP. CONTOUR
36.60x	EXIST. SPOT ELEVATION
36.60x	PROP. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
	GUY WIRE
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
	PROP. LIGHT POLE
t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
	PROP. GATE VALVE IN WELL
	EXIST. CURB STOP & BOX
	PROP. CURB STOP & BOX
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	PROP. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	PROP. BEEHIVE INLET
RD	PROP. ROOF DRAIN
s	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
	PROP. CLEANOUT
	SIGN
	LIMITS OF DISTURBANCE

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FIVE CORNERS

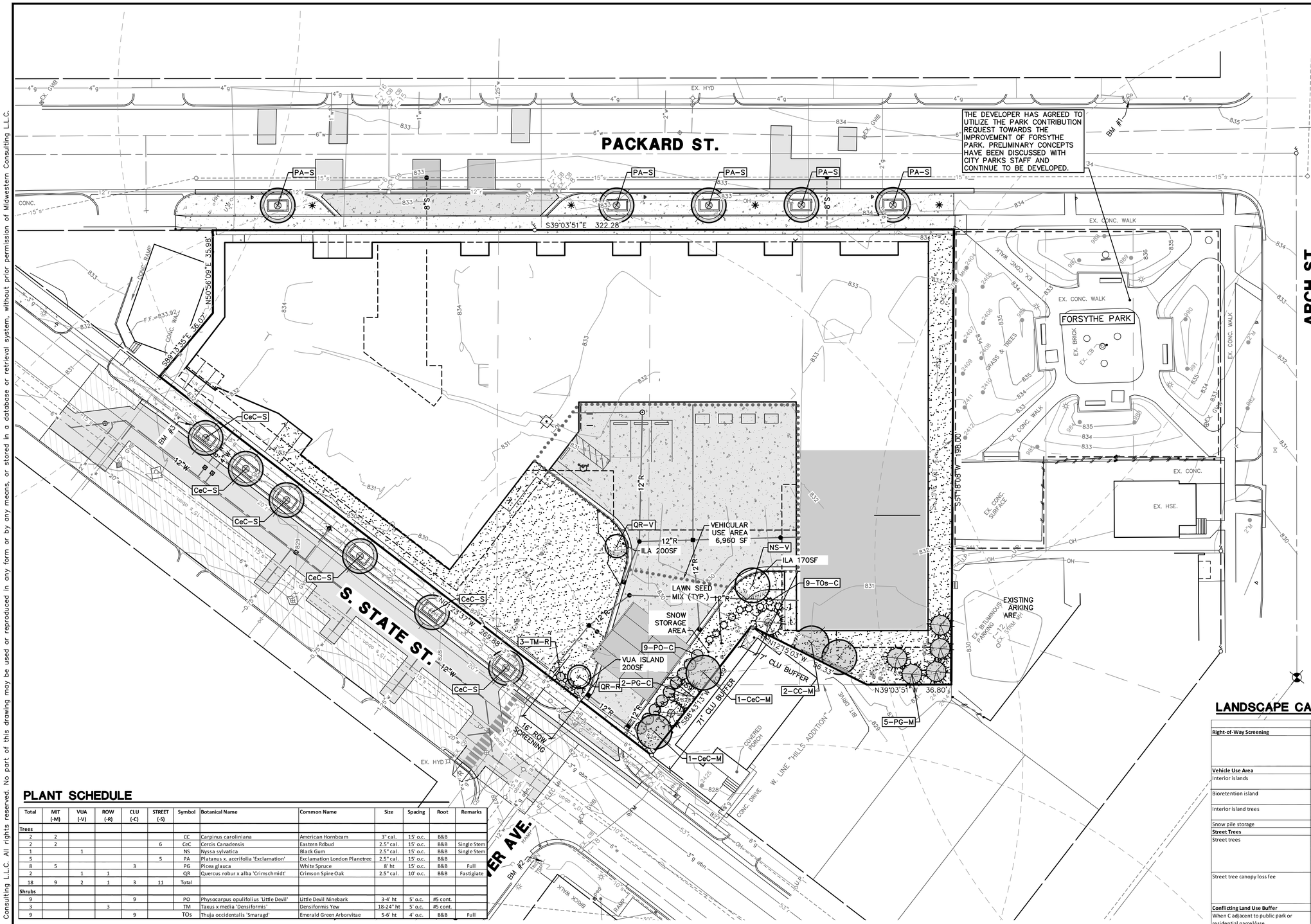
SITE PLAN
STORM WATER MANAGEMENT PLAN

7

DATE: 1/26/23
SHEET 7 OF
CADD:
ENG.: JCA
PM.: SWB
TECH:
23204DA1

REVISIONS:	DATE
PER CITY REVIEW	10/3/23
PER CITY REVIEW	2/1/24
PER CITY REVIEW	

JOB No. 23204



LANDSCAPE LEGEND

- PROPOSED CANOPY TREE (INTERIOR VUA)
- PROPOSED CANOPY TREE (RIGHT-OF-WAY SCREEN)
- PROPOSED CANOPY TREE (CONFLICTING LAND USE BUFFER)
- PROPOSED EVERGREEN TREE (CONFLICTING LAND USE BUFFER)
- PROPOSED CANOPY TREE (MITIGATION)
- PROPOSED STREET TREE
- PROPOSED DECIDUOUS SHRUBS
- PROPOSED EVERGREEN SHRUBS
- EXISTING TREE TO REMAIN
- PROPOSED LAWN AREA
- PROPOSED EDGING
- VEHICULAR USE AREA LIMITS

SCALE: 1" = 20'

0 20 40 60

811 Know what's below. Call before you dig.

PLANT SCHEDULE

Total	MIT (-M)	VUA (-V)	ROW (-R)	CLU (-C)	STREET (-S)	Symbol	Botanical Name	Common Name	Size	Spacing	Root	Remarks
Trees												
2	2					CC	Carpinus caroliniana	American Hornbeam	3" cal.	15' o.c.	B&B	
2	2				6	CeC	Cercis Canadensis	Eastern Rdbud	2.5" cal.	15' o.c.	B&B	Single Stem
1		1				NS	Nyssa sylvatica	Black Gum	2.5" cal.	15' o.c.	B&B	Single Stem
5					5	PA	Platanus x. acerifolia 'Exclamation'	Exclamation London Planetree	2.5" cal.	15' o.c.	B&B	
8	5			3		PG	Picea glauca	White Spruce	8' ht	15' o.c.	B&B	Full
2		1	1			QR	Quercus robur x alba 'Crimschmidt'	Crimson Spire Oak	2.5" cal.	10' o.c.	B&B	Fastigiate
18	9	2	1	3	11	Total						
Shrubs												
9				9		PO	Physocarpus opulifolius 'Little Devil'	Little Devil Ninebark	3-4' ht	5' o.c.	#5 cont.	
3			3			TM	Taxus x media 'Densiformis'	Densiformis Yew	18-24" ht	5' o.c.	#5 cont.	
9				9		TOs	Thuja occidentalis 'Smaragd'	Emerald Green Arborvitae	5-6' ht	4' o.c.	B&B	Full

LANDSCAPE CALCULATIONS

	Required	Proposed
Right-of-Way Screening		
	10ft when VUA viewed from ROW 1 tree per 30lf; continuous hedge/screen 30inches in ht 16ft / 30ft = 1 tree and shrubs	1 tree and 3 shrubs proposed
Vehicle Use Area		
Interior islands	1:20sf ratio for islands 6,960 sf / 20 = 348sf islands	370 sf proposed
Bioretention island	if >750sf island required; 50% bioretention	Not applicable - Required interior landscape area less than 750sf
Interior island trees	1 tree per island; 1 tree per 250sf required island area; 370sf / 250sf = 2	2 trees proposed
Snow pile storage	Identify locations on plan	Identified on Landscape Plan
Street Trees		
Street trees	1 tree per 45lf frontage minus curb cuts 245lf / 45lf = 6 trees (State) 211lf / 45lf = 5 trees (Packard)	State: 6 trees proposed Packard: 5 trees proposed
Street tree canopy loss fee	total dbh removed - caliper replacement trees x $244 per inch 50in removed - 27.5in replaces= 22.5in x $244 = $5,490	$12,200 to City Tree Fund *
Conflicting Land Use Buffer		
When C adjacent to public park or residential parcel/use	15ft wide; 1 tree per 15lf, 50% evergreen; continuous screening 4ft high 78lf / 15lf = 4 trees and screening (south)	Varying width buffer 3 trees proposed, 1 tree existing (#2426), 18 shrubs proposed
Tree Mitigation		
	50% dbh of LM trees removed 87 inches x 0.5 = 43.5 inches 43.5 inches / 2.5 = 18 trees required	9 trees provided on site due to limited area = 9 x 2.5 = 22.5 inches provided $5,246 to City Tree Fund * ((43.5in - 22.5in) x $244 = $5,246)
Outdoor Refuse/Recycling		
	6ft high opaque wall or fence	Not applicable - Provided, See site plan

* When applying for a grading permit, a ROW Street Tree Permit will also be required. There is no cost for this permit. Include the project number on the application. The Canopy Loss Fee will be invoiced through that permit.

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FIVE CORNERS
SITE PLAN
LANDSCAPE PLAN

8

DATE: 1/26/23
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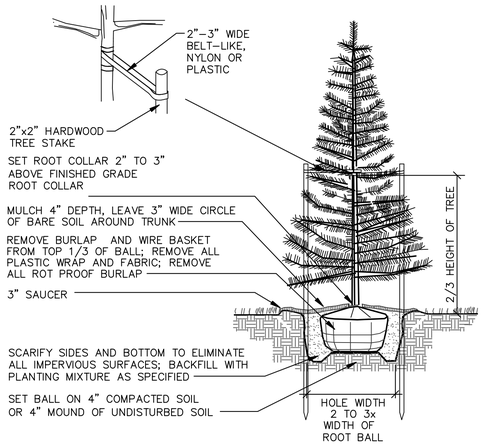
PER CITY REVIEW	10/3/23
PER CITY REVIEW	1/17/24
PER CITY REVIEW	2/1/24

JOB No. 23204

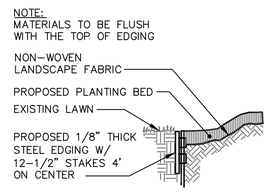
NOTE: A: STAKING IS ONLY REQUIRED IF THE SITE IS WINDY OR THE TREES ARE GREATER THAT 3" CALIPER. IF TREES MUST BE STAKED, THE STAKED SHALL BE REMOVED IN ONE YEAR.



EVERGREEN TREE PLANTING DETAIL

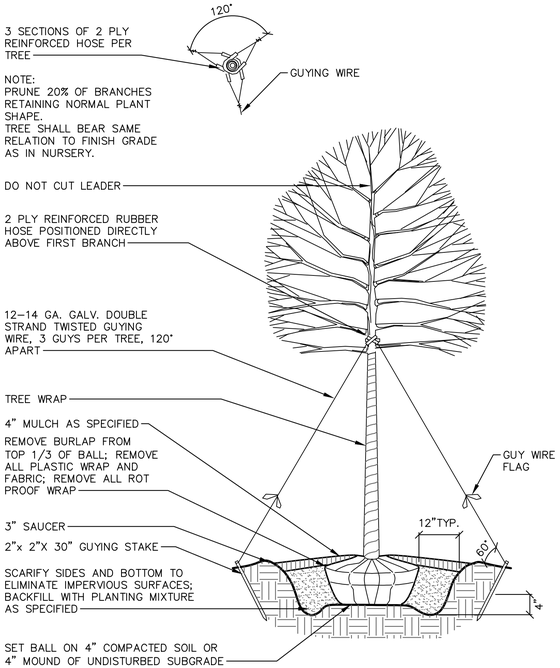
NOT TO SCALE

NOTE:
MATERIALS TO BE FLUSH WITH THE TOP OF EDGING



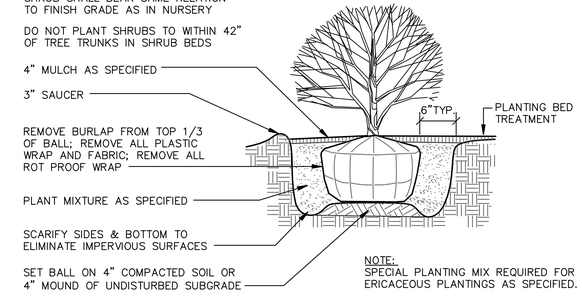
STEEL EDGING DETAIL

NOT TO SCALE



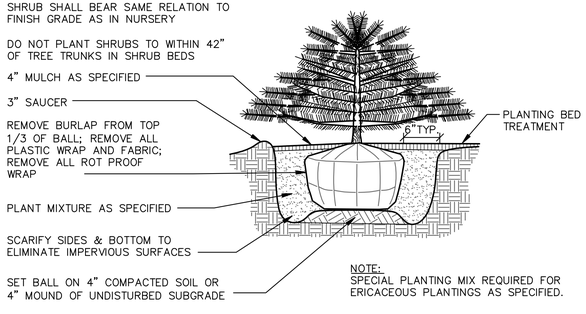
DECIDUOUS TREE - PLANTING DETAIL

SCALE : NTS



SHRUB PLANTING DETAIL

NOT TO SCALE



EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

LANDSCAPE NOTES

1. For any plant quantity discrepancies between the plan view and the plant schedules, the plant schedule shall take precedence.
2. Plant materials shall be selected and installed in accordance with standards established by the City of Ann Arbor.
3. In-ground automatic irrigation shall be provided for all landscaped planting or water outlets shall be provided within 150 feet of all required plantings.
4. All diseased, damaged or dead material shown on the site plan as proposed plantings shall be replaced by the end of the following growing season.
5. Restore disturbed areas with a minimum of four (4) inches of topsoil and then seed/ fertilize/mulch.
6. All disturbed areas not to be seeded with seed mixes identified on the Landscape Plan shall be lawn areas. Fertilizer for the initial installation of lawns shall provide not less than one (1) pound of actual nitrogen per 1,000 sq ft of lawn area and shall contain not less than two percent (2%) potassium and four percent (4%) phosphoric acid.
   Lawn (turfgrass) seed mix shall consist of:
   - 15% Rugby Kentucky Bluegrass
   - 10% Park Kentucky Bluegrass
   - 40% Ruby Creeping Red Fescue
   - 15% Pennifine Perennial Ryegrass
   - 20% Scaldis Hard Fescue

   Seed shall be applied at a rate of five pounds (5 lbs) per 1000 sq ft. Mulch within 24 hours with two (2) tons of straw per acre, or 71 bales of excelsior mulch per acre. Anchor straw mulch with spray coating of adhesive material applied at the rate of 150 gals. / acre.
7. After the first growing season, only fertilizers that contain NO phosphorus shall be used on the site.
8. All seeded areas with slopes less than 1:3 (one vertical foot for every 3 horizontal feet) shall be mulched with straw mulch at the rate of two (2) bales per 1,000 square feet. All seeded areas with slopes greater than 1:3 shall be seeded and biodegradable erosion control blanket North American Green SC150, or equivalent, shall be applied with biodegradable stakes.
9. Deciduous plants shall be planted between March 1 and May 15 and from October 1 until the prepared soil becomes frozen. Evergreen plants shall be planted between March 1 and June 1 and from August 15 to September 15.
10. All planting beds are to receive four (4) inches of shredded hardwood bark mulch.
11. All trees to be located a minimum of 10 feet from public utilities.
12. All single trunk, deciduous trees shall have a straight and a symmetrical crown with a central leader. One sided trees or those with thin or open crowns shall not be accepted.
13. All evergreen trees shall be branched fully to the ground, symmetrical in shape and have not been sheared in the last three (3) growing seasons.
14. All compacted subgrade soils in proposed landscape areas shall be tilled to a minimum 12-inch depth prior to placement of topsoil, geotextile fabric, or other planting media as specified.
15. Proposed trees will be planted a minimum of 15 feet apart.
16. Planting Soil: Existing, in-place or stockpiled topsoil. Supplement with imported topsoil as needed. Verify suitability of existing surface soil to produce viable planting soil. Final approval of soil composition shall be provided by the landscape contractor. Remove stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix surface soil with the following soil amendments to produce planting soil:
    a. Ratio of Loose Compost to Topsoil by Volume: 1:4.
    b. Weight of Lime per 1000 Sq. Ft.: Amend with lime only on recommendation of soil test to adjust soil pH.
    c. Weight of Sulfur or Aluminum Sulfate per 1,000 Sq. Ft.: Amend with sulfur or aluminum sulfate only on recommendation of soil test to adjust soil pH.
    d. Volume of Sand: Amend with sand only on recommendation of Landscape Architect to adjust soil texture.
    e. Weight of Slow-Release Fertilizer per 1,000 Sq. Ft.: Amend with fertilizer only on recommendation of soil test to adjust soil fertility.
17. Snow storage areas are located along the edges and corners of parking areas as shown on the plan.
18. All species deviations must be approved in writing by the City of Ann Arbor prior to installation.
19. The City of Ann Arbor has adopted an ordinance limiting phosphorus in fertilizer. To assist in compliance with the State mandated TMDL for phosphorus within the Middle Huron River basin. Applications of fertilizer beyond the initial topsoil and seeding shall be a fertilizer with no phosphorus.

Maintenance:

1. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.
2. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
3. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
4. Contractor shall warranty all plant material and trees to remain alive and be in healthy, vigorous and like new condition for the specified period from installation to Substantial Completion. The entire Landscaping Project, including but not limited to: plants (perennials), trees, shrubs, mulches, shrubs, etc are to be under Warranty for One Year after Substantial Completion date of the Project. At the end of the specified One Year Warranty period the Owner's Representative will inspect plant material for compliance. Contractor shall replace, in accordance with the drawings and specifications, all plants, trees, shrubs, etc or as determined by the Owner's Representative, are in an unhealthy or unsightly condition. Warranty shall not include damage or loss of plants, trees, and shrubs caused by fires, floods, freezing rains, lightning storms, or winds over 75 miles per hour, acts of vandalism or negligence on the part of the owner, or any other incident beyond landscape contractor's control.
5. Watering: The contractor shall keep seed moist for optimum plant growth (1" of total water per week, including rainfall) until the grass and/or flowers are four (4) inches high typical.
6. Protection from traffic and erosion in newly seeded areas is the responsibility of the contractor. Safety fences and/or silt fence with appropriate signage may be used at the contractor's expense until the grasses and flowers are fully established.
7. Erosion shall be repaired by the contractor.
8. Turf installations shall meet the following criteria as determined by Owner:

a. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
b. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
c. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

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FIVE CORNERS

SITE PLAN
LANDSCAPE NOTES AND DETAILS

9

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JOB No. 23204

REVISIONS:	REV. DATE
PER CITY REVIEW	4/10/23
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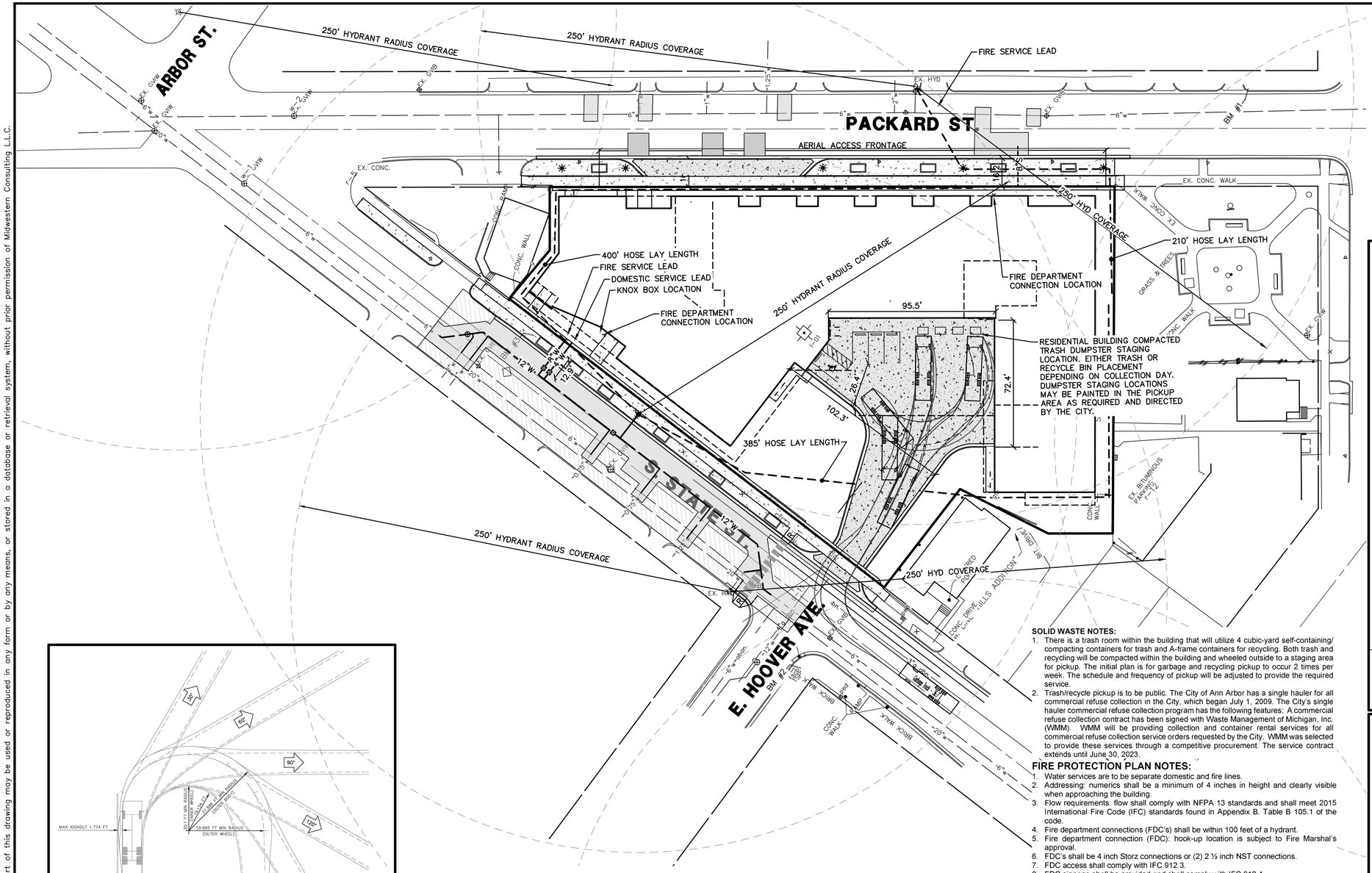
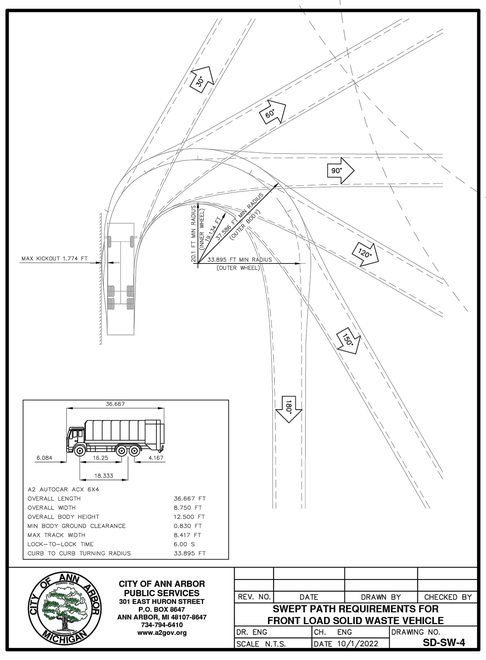
PER CITY REVIEW	2/1/24
PER CITY REVIEW	





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REV. NO.	DATE	DRAWN BY	CHECKED BY

SWEPT PATH REQUIREMENTS FOR FRONT LOAD SOLID WASTE VEHICLE

DR. ENG	CH. ENG	DRAWING NO.
SCALE N.T.S.	DATE 10/1/2022	SD-SW-4

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

SOLID WASTE NOTES:

1. There is a trash room within the building that will utilize 4 cubic-yard self-containing/ compacting containers for trash and A-frame containers for recycling. Both trash and recycling will be compacted within the building and wheeled outside to a staging area for pickup. The initial plan is for garbage and recycling pickup to occur 2 times per week. The schedule and frequency of pickup will be adjusted to provide the required service.
2. Trash/recycle pickup is to be public. The City of Ann Arbor has a single hauler for all commercial refuse collection in the City, which began July 1, 2009. The City's single hauler commercial refuse collection program has the following features: A commercial refuse collection contract has been signed with Waste Management of Michigan, Inc. (WMM). WMM will be providing collection and container rental services for all commercial refuse collection service orders requested by the City. WMM was selected to provide these services through a competitive procurement. The service contract extends until June 30, 2023.

FIRE PROTECTION PLAN NOTES:

1. Water services are to be separate domestic and fire lines.
2. Addressing: numerics shall be a minimum of 4 inches in height and clearly visible when approaching the building.
3. Flow requirements: flow shall comply with NFPA 13 standards and shall meet 2015 International Fire Code (IFC) standards found in Appendix B. Table B 105.1 of the code.
4. Fire department connections (FDC's) shall be within 100 feet of a hydrant.
5. Fire department connection (FDC): hook-up location is subject to Fire Marshal's approval.
6. FDC's shall be 4 inch Storz connections or (2) 2 ½ inch NST connections.
7. FDC access shall comply with IFC 912.3.
8. FDC signage shall be provided and shall comply with IFC 912.4.
9. Fire protection alarm and detection system shall be in compliance with all applicable codes adopted by the City of Ann Arbor, including NFPA 72, 2007 edition and all other referenced standards.
   a. A horn strobe device shall be installed above the FDC and shall activate upon sprinkler water flow.
   b. Emergency responder radio coverage shall comply with 2015 IFC Section 510.
   c. Emergency voice/alarm communications system shall comply with 2015 IFC Section 907.6.2.2.
   d. Occupant notification appliances shall activate throughout the notification zones upon sprinkler water flow.
   e. Place signage on Fire Suppression System Control Room door (IFC 2015 Section 509.1) if applicable.
10. Knox Box emergency access system with keys to access the building, the Fire Suppression System Control Room (if applicable), an elevator key, and any other keys to areas that may be relevant during emergencies will be required. Knox Box with proper keys shall be in place prior to issuance of Certificates of Occupancy for the buildings.
11. The Knox Box shall be mounted no higher than 6 feet from grade in an approved location on the exterior for emergency access to the building as well as access to the Fire Suppression System Control Rooms if applicable.
12. Construction sequencing
    a. Hydrants must be in service and approved during construction.
    b. Hydrants providing protection coverage for the building must be in service and approved by both engineering and fire departments before the fire department will support permit issuance for new construction phase and before combustible materials are placed on the job site.
    c. Storage areas for construction materials must be approved so as not to interfere with fire/emergency site access.
    d. If site access is to be restricted during construction, Knox Box locks for gates are to be provided.
13. No firewalls will be constructed within the building.
14. Booster pumps will be provided on the domestic water service and the fire suppression water service leads. The pumps shall meet 2015 IFC standards, Section 914.3.1.2.
15. No separate Fire Suppression System Control Room is required.

Solid Waste Site Services:

- **990 bedrooms** x .365 cy = **362 total cy per month generated** (numbers include misc. building amenity areas too.)
- **Weekly volume of estimated at 84 cy (28 cy compacted),** pickup plan could accommodate up to 90cy (30cy compacted) if needed.
  - **Trash pickup plan includes up to 90 cy (30 cy compacted) per week.**
    - Compaction at 3:1
    - (5) 3-yard steel compactor containers (1 under chute, 4 for pickup days)
  - Recycling pickup plan includes up to 45 cy per week -
    - Uncompacted
    - (4) 3-yard poly containers (1 under chute and 3 for pickup day)
  - At this time there is no program for multifamily compost collection. In the future when available compost estimates are: Compost pick up 1x per week. Pickup plan includes up to 96g per week. Coordination will occur as service availability changes.

Hauling:

- Building Maintenance staff to stage dumpsters for pickup
  - Concrete Staging Area of at least 10'-0"x20'-0" will be provided.
  - Waste Caddy or sim to be provided to assist building maintenance staff in container movement (if needed).
- Frequency
  - Trash - Three times a week (Schedule to be determined by City)
    - (4) containers per pickup (assuming trash and recycling in separate trucks at different times).
  - Recycling - twice a week (Schedule to be determined by City)
    - (3) containers per pickup
    - Recommended
      - Less storage duration of odorous materials
      - Less time truck is blocking drive area
      - Less area/containers count is needed in trash room

811 Know what's below. Call before you dig.

SCALE: 1" = 30'
0 30 60 90

1. MAINTAIN A CLEAR SPACE DIRECTLY IN FRONT OF THE SOLID WASTE ENCLOSURE. THE CLEAR SPACE SHALL BE A MINIMUM OF FIFTY (50) FEET LONG BY THE WIDTH OF THE INSIDE DIMENSION (I.D.) OF THE ENCLOSURE WALLS PLUS FOUR (4) FEET ON EACH SIDE. A MINIMUM VERTICAL CLEARANCE OF AT LEAST TWENTY-FIVE (25) FEET MUST BE PROVIDED ABOVE THIS AREA.
2. INGRESS AND EGRESS ROUTES MUST BE DEVELOPED BASED ON SOLID WASTE SWEPT PATH REQUIREMENTS PER SD-SW-4. A MINIMUM HORIZONTAL CLEARANCE OF FOUR (4) FEET FROM THE EDGE OF THE SWEPT PATH AND A MINIMUM VERTICAL CLEARANCE OF AT LEAST FIFTEEN (15) FEET MUST BE PROVIDED ALONG THE ENTIRE SOLID WASTE COLLECTION ROUTE.
3. PROVIDE TEN (10) FEET MINIMUM HORIZONTAL CLEARANCE FROM SOLID WASTE ENCLOSURE TO MAJOR ELECTRICAL EQUIPMENT, ABOVE GROUND UTILITY SERVICES, AND EDGE OF OVERHEAD OBSTRUCTIONS SUCH AS TREE BRANCHES, BALCONIES, AND OVERHANGS.
4. IF FORWARD ACCESS TO THE PUBLIC STREET IS NOT AVAILABLE FOR THE SOLID WASTE VEHICLE, THE SITE DEVELOPMENT LAYOUT MUST ACCOMMODATE A TURN-AROUND LOCATION MEETING REQUIREMENTS WITHIN SOLID WASTE REFERENCE SPECIFIC TURN-AROUND DETAIL (SD-SW-5) AND ACCEPTABLE TO THE PSAA.
5. FOR SITES THAT CANNOT ACCOMMODATE A TURN-AROUND, THE FOLLOWING ADDITIONAL REQUIREMENTS MUST BE MET:
   - 5.1. SOLID WASTE VEHICLES MUST BE ABLE TO SERVICE DUMPSTERS WITHOUT IMPEDING THE PUBLIC STREET OR SIDEWALK.
   - 5.2. THE COLLECTION LOCATION SHALL BE CLEARLY DELINEATED AND NOT HAVE A SLOPE GREATER THAN 2% IN ANY DIRECTION.
   - 5.3. BOLLARDS OR ADEQUATE CLEAR SPACE MUST BE PROVIDED BEHIND THE LIFT POINT SO THE DUMPSTERS ARE NOT PUSHED INTO ANY BUILDING OR ACCESS ROUTE.
   - 5.4. ALL SWEPT-PATH CLEARANCE AND VERTICAL CLEARANCE REQUIREMENTS PREVIOUSLY IDENTIFIED SHALL BE PROVIDED.
   - 5.5. SOLID WASTE VEHICLE BACK-UP DISTANCES MUST BE LESS THAN 30' ALONG SERVICING ROUTE.
6. GATES ON BIN ENCLOSURES SHALL OPEN A MINIMUM OF 120 DEGREES FROM THE CLOSED POSITION. THE GATES SHALL NOT IMPEDE ON THE REQUIRED BIN ENCLOSURE OPENING WIDTH, SHALL NOT BLOCK ADJACENT PARKING SPOTS, AND NOT BE IMPEDED BY ADJACENT CURBS OR LANDSCAPING.
7. GATES SHALL BE DESIGNED TO BE FREE STANDING WITHOUT CENTER POLE DESIGN. IF CENTER POLE DESIGN IS NECESSARY, 12 INCHES SHALL BE ADDED TO THE MINIMUM INTERIOR WIDTH OF THE ENCLOSURE.
8. GATE DESIGN SHALL INCLUDE A RELIABLE MEANS TO SECURE THE DOOR IN BOTH THE OPEN AND CLOSED POSITIONS.

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SOLID WASTE GENERAL NOTES

DR. ENG	CH. ENG	DRAWING NO.
SCALE N.T.S.	DATE 10/1/2022	SD-SW-6A

9. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF NO PARKING SIGNS ALONG THE SOLID WASTE INGRESS/EGRESS ROUTE TO ENSURE THE ROUTE REMAINS FREE OF VEHICLES.
10. REFER TO ASSOCIATED STANDARD DETAILS SD-SW-1 AND SD-SW-2 FOR REQUIREMENTS ON SINGLE AND DOUBLE WIDE SOLID WASTE BIN ENCLOSURE LAYOUT AND DESIGN CRITERIA. THE CITY SHALL HAVE THE ABILITY TO MODIFY OR INTERPRET THESE DETAILS AS NECESSARY TO ACCOMMODATE THE CITY OR CITY CONTRACTOR'S NEEDS FOR SOLID WASTE PICK-UP.
11. SOLID WASTE EQUIPMENT ACCESS ROADS AND SERVICE AREA SURFACES SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF COLLECTION VEHICLES WEIGHING UP TO 66,000 LBS GROSS VEHICLE WEIGHT (GVW) AND SHALL BE PROVIDED WITH AN APPROVED SURFACE SO AS TO PROVIDE ALL WEATHER DRIVING CAPABILITIES. PROPERTY OWNER SHALL BE RESPONSIBLE FOR ALL SNOW AND ICE REMOVAL REQUIRED FOR SAFE ACCESS.
12. FOR SITES THAT CANNOT ACCOMMODATE A STANDARD DUMPSTER ENCLOSURE, THE DUMPSTERS MAY BE ROLLED OUT OF A BUILDING OR ALTERNATE ENCLOSURE BY THE PROPERTY OWNER TO AN APPROVED COLLECTION LOCATION.
13. SOLID WASTE COLLECTION LOCATIONS MUST BE LOCATED WITHIN THE BOUNDARIES OF THE PROPERTY UNLESS AN APPROPRIATE EASEMENT IS OBTAINED.

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ANDREW SAVOY
501-786-1736

FIVE CORNERS

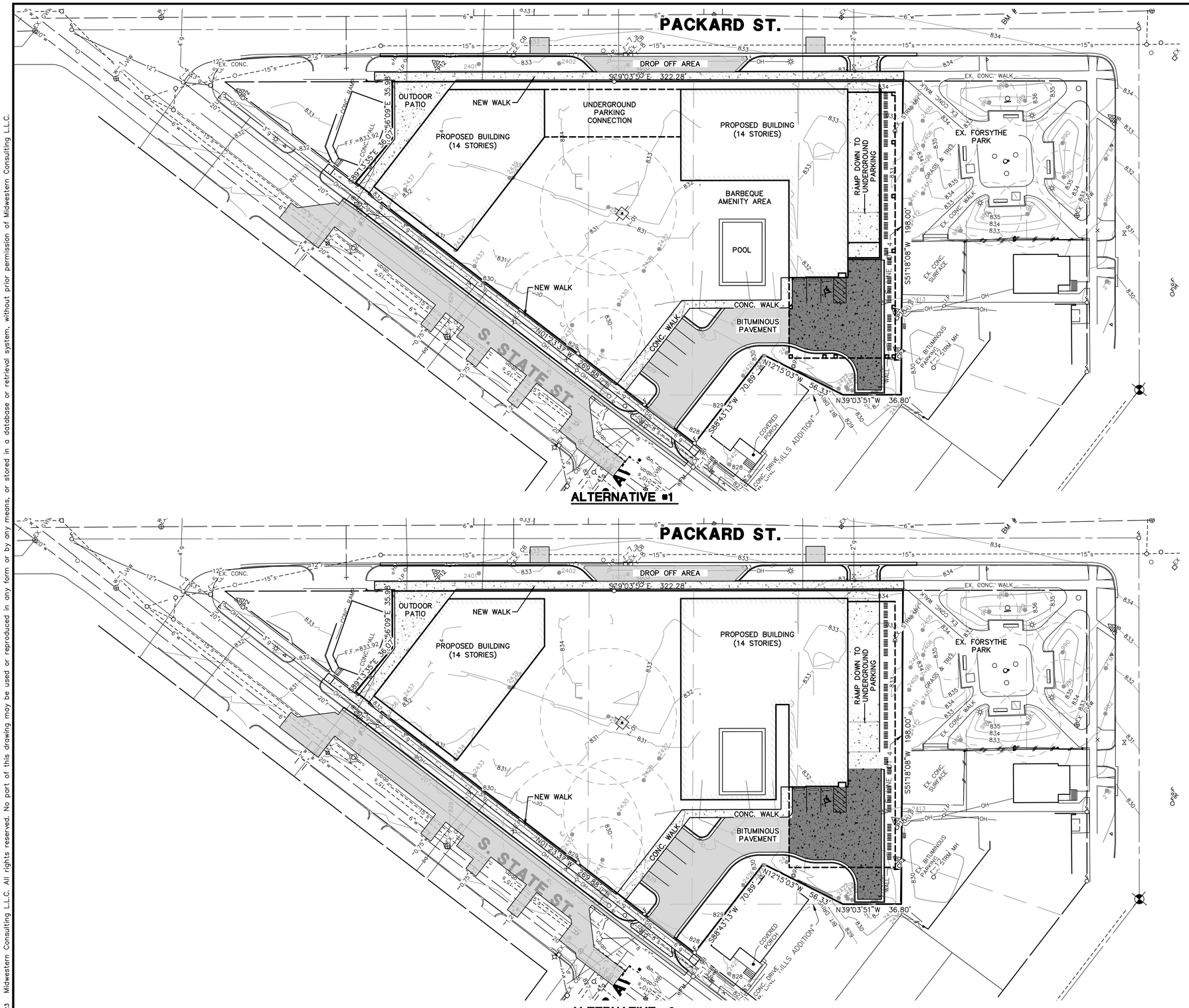
SITE PLAN
FIRE PROTECTION AND SOLID WASTE MANAGEMENT PLAN

10

DATE: 1/26/23
SHEET 10 OF
CADD:
ENG: JCA
PM: SWB
TECH:
/23204FP1

REVISIONS:	REV. DATE
PER CITY REVIEW	10/5/23
PER CITY REVIEW	2/1/24
PER CITY REVIEW	

JOB No. 23204



SCALE: 1" = 30'

0 30 60 90

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NOTES

ALTERNATIVE #1

Description: Alternative #1 examined the development potential of the property by Utilizing two different buildings located both north and south of the clustering of landmark trees.

Findings:

- Building geometry efficiency requires a certain width of a building to allow for a central hallway with units off to both side thus allowing a window to the exterior for units on both sides of the hall. This minimum width is approximately 60'.
- Utilizing the minimum width results in two un-connected buildings fitting on the site.
- To get the requisite number of parking spaces, the two building's underground parking areas would need to be connected underground because the north building is not long enough to facilitate a ramp of its own.
- This concept would not allow for the detached two story commercial.
- This concept would provide approximately 15-20% fewer units due to inefficient design and use of the land.

Discussion:

- Two un-connected buildings are highly inefficient resulting in lower numbers of units and higher construction and rent costs.
- The underground connection of the two underground parking areas is very expensive and provides no parking benefit resulting in inefficiencies and higher construction and rent costs.
- Employing two buildings would prohibit sharing of certain building systems creating higher construction and rent costs.
- Attempts to recover lost units would result in a higher building heights that would produce more shade on the existing trees.

ALTERNATIVE #2

Description: Alternative #2 examined if it would be feasible to create a second parallel wing of the same width to make up for lost units and elimination of the expensive underground parking connection.

Findings:

- This geometry results in a separation of only 10 feet between what would likely be 16 story buildings.
- This option would move the building 60' closer to the landmark trees.
- The smaller north building does not have a footprint large enough to accommodate a ramp for underground parking.
- This concept does not provide a meaningful amount of additional useable space for a free standing commercial component.
- The parallel wing would sit over the area where the underground detention lies therefor prohibiting additional parking in that area.
- Creation of this wing would predicate removal of the proposed pool.

Discussion:

- The two parallel wings would be too close to be acceptable by building and fire codes. Making this code compliant would require the removal of units on one side of the hallway of the parallel wing making it less efficient and more costly.
- The presence of the trees precludes running storm sewer from the north building to the underground detention tanks located in the basement of the parallel wing. The north building would need its own detention system.
- The parallel wing would not be able to add any additional parking due to storm water detention tanks located below.
- Employing two buildings would prohibit sharing of certain building systems creating higher construction and rent costs.
- Attempts to recover lost units would result in a higher building heights that would produce more shade on the existing trees.
- Moving the building closer to the trees would result in higher periods of shade.

COMMENTS ON PROPOSED DESIGN

The proposed design recognizes that there are landmark trees being preserved and that there are landmark tree losses due to the proposed design. We feel these design impacts are acceptable in light of the following information.

- The trees to remain are in an urban environment currently and apparently have acclimated to it. Pavement and gravel on this property and the parcel they are located on covers a significant amount of their existing critical root zone. In some cases, pavement exists right to the base of the trees.
- Some of the trees to be removed have grown immediately beside and into the existing foundations and would likely suffer after the disturbance of foundation removal
- The trees to remain are located a significant distance from the building walls and will receive an adequate amount of sunlight.

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

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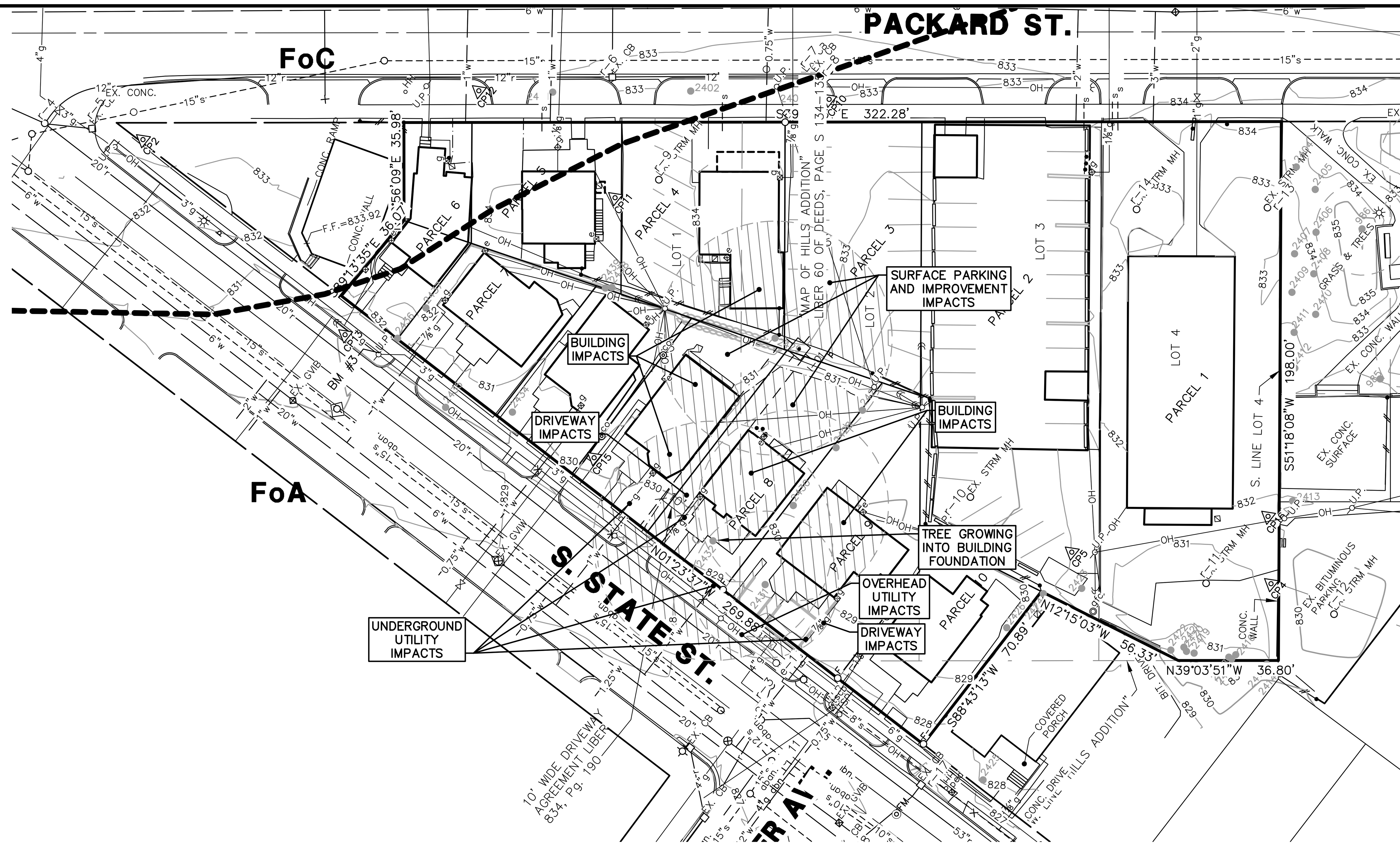
FIVE CORNERS
SITE PLAN
ALTERNATIVES ANALYSIS

11

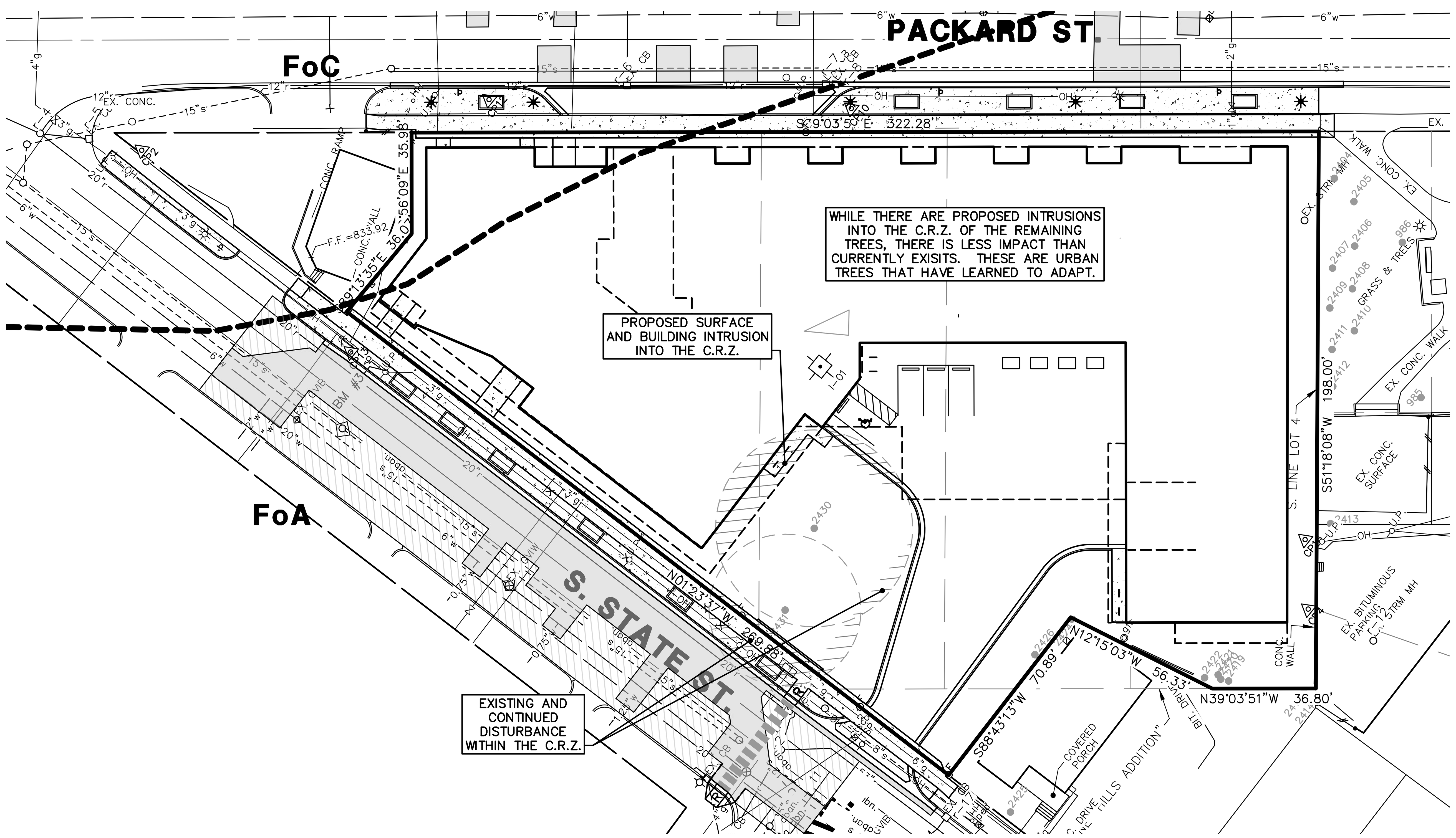
DATE: 1/26/23
SHEET 11 OF
CADD:
ENG.: JCA
PM.: SWB
TECH:
23204AA1

JOB No. 23204

REVISIONS:	REV. DATE
PER CITY REVIEW	10/31/23
PER CITY REVIEW	



NATURAL FEATURES PLAN



NATURAL FEATURES OVERLAY PLAN

SCALE: 1" = 30'
0 30 60 90

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Natural Features Inventory and Impact

The site does not contain any 100 year floodplains, steep slopes, watercourses, wetlands or endangered species habitat. The site does contain four landmark trees for which the critical root zones are highly impacted by the existing site structures and foundations, paved surfaces, overhead utility lines, and gravel parking areas. Landmark trees include tree #2429, 43" White Oak, #2430, a 35" White Oak, #2431, a 37" White Oak, and #2432, a 44" White Oak.

The existing trees have been assessed by an arborist and the feeling is that two of the trees will most likely not survive the demolition of the existing site features, buildings and foundations and required grading. Two of the existing trees while also impacted, have greater chances of survival and they are proposed to be saved. These two trees are located an adequate distance away from the proposed building will be afforded an acceptable amount of sunlight.

TAG#	DBH	COMMON NAME	GENUS/SPECIES	STEMS	SCORE	LM	INV	REM
2401	14"	White Oak	Quercus alba					
2402	5"	Red Maple	Acer rubrum					
2403	15"	Silver Maple	Acer saccharinum					X
2404	12"	Red Pine	Pinus resinosa					
2405	10"	Red Pine	Pinus resinosa					
2406	12"	Red Pine	Pinus resinosa					
2407	15"	Red Pine	Pinus resinosa					
2408	13"	Red Pine	Pinus resinosa					
2409	10"	Red Pine	Pinus resinosa					
2410	10"	Red Pine	Pinus resinosa					
2411	17"	Red Pine	Pinus resinosa					
2412	16"	Red Pine	Pinus resinosa					
2413	19"	Tree-of-heaven	Ailanthus altissima				X	
2414	20"	Norway Maple	Acer platanoides				X	
2415	20"	Tree-of-heaven	Ailanthus altissima				X	
2416	25"	Tree-of-heaven	Ailanthus altissima				X	X
2417	6"	Tree-of-heaven	Ailanthus altissima				X	X
2418	7"	Tree-of-heaven	Ailanthus altissima				X	X
2419	13"	Tree-of-heaven	Ailanthus altissima				X	
2420	17"	Tree-of-heaven	Ailanthus altissima				X	
2421	6"	Norway Maple	Acer platanoides				X	
2422	7"	Tree-of-heaven	Ailanthus altissima				X	
2423	16"	American Elm	Ulmus americana					X
2424	12"	Norway Maple	Acer platanoides				X	
2425	17"	Linden	Tilia americana					
2426	16"	Black Walnut	Juglans nigra					
2427	10"	Norway Maple	Acer platanoides	twin			X	X
2428	11"	Norway Maple	Acer platanoides				X	X
2429	43"	White Oak	Quercus alba			X		X
2430	35"	White Oak	Quercus alba			X		
2431	27"	White Oak	Quercus alba			X		
2432	44"	White Oak	Quercus alba			X		X
2433	10"	White Pine	Pinus strobus					X
2434	17"	White Pine	Pinus strobus					X
2435	16"	Sycamore	Platanus occidentalis					
2436	23"	Tree-of-heaven	Ailanthus altissima				X	X
2437	23"	Tree-of-heaven	Ailanthus altissima				X	X
2438	12"	Tree-of-heaven	Ailanthus altissima				X	X
2439	13"	Tree-of-heaven	Ailanthus altissima				X	X

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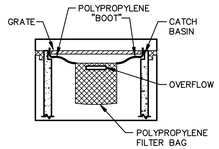
FIVE CORNERS
SITE PLAN
SITE ANALYSIS NATURAL FEATURES AND OVERLAY PLAN

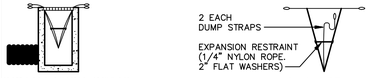
12

JOB No. 23204
DATE: 1/26/23
SHEET 12 OF
CADD:
ENG: JCA
PM: SWB
TECH:
23204SA1

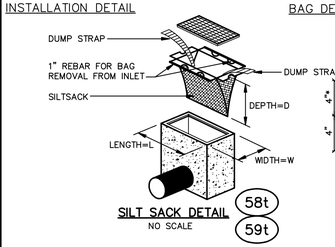
REVISIONS:	REV. DATE
PER CITY REVIEW	4/10/23
PER CITY REVIEW	10/3/23



NOTE:
TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL PAVED CATCH BASINS OR STORM INLETS. INLET FILTER TO BE SIMILAR TO "STREAMGUARD" AS MANUFACTURED BY STORMWATER SERVICES CORPORATION (206-767-0441) OR "SILTSACK" AS MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS, INC.; (800-448-3636). CLEAN FILTER AS NEEDED.

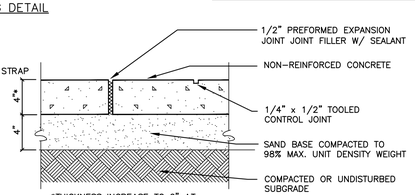


INSTALLATION DETAIL BAG DETAIL



SILT SACK DETAIL
NO SCALE

58t
59t



*THICKNESS INCREASE TO 6" AT DRIVE CROSSINGS

CONCRETE WALK DETAIL
NO SCALE

CONSTRUCTION SEQUENCE	OPERATION TIME SCHEDULE BEGINNING JULY 2024												
	2024					2025			2026				
	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY
SESC PRE-GRADING MEETING													
INSTALL AND MAINTAIN SOIL EROSION CONTROL MEASURES AS REQUIRED													
BUILDING DEMOLITION													
UTILITY INSTALLATION AND SITE DEMOLITION													
MASS EXCAVATION													
FOUNDATION CONSTRUCTION													
BUILDING CONSTRUCTION													
FINAL GRADE SITE													
PLACE MULCH AND SEEDING													
FINAL CLEAN-UP & REMOVAL OF SOIL EROSION CONTROLS													

Estimated Construction Sequence
7/1/2024 thru 7/31/2026

1. Inventory Site: 7/1/2024 (2 weeks)
   - SESC pre-grading meeting
   - Identify construction limits and define site access
   - Install construction fencing as required to secure site
2. Building Demolition: 7/15/2024 (6 weeks)
   - Install silt fence
   - Demolish buildings and associated utilities
3. Utility Installation and Site Demolition: 8/26/2024 (4 weeks)
   - Install all soil erosion control measures
   - Demolish site amenities; including interior site curb and gutter and pavement as required
   - Install water main and water main leads
   - Install sanitary sewer lead
   - Install storm sewer leads from ROW onto site
   - A wet or dry standpipe shall be installed per 3311.1 of the Michigan Building Code. The standpipe can be permanent or temporary with a permanent or temporary FDC provided. Connections for hose operations shall be 2 ½" NST.
4. Mass Excavation: 9/23/2024 (4 weeks)
   - Maintain existing controls
   - Excavate for foundation/basement
5. Foundation Construction: 10/21/2024 (8 weeks)
   - Pour footings and foundation walls
   - Install underground detention chambers
   - Install site storm sewer and inlets, sack all active inlets
   - Maintain existing controls; install permanent controls within five (5) days after final grading or final grade change
   - Driveway curb and first course asphalt to be installed prior to issuance of vertical building permit
6. Building Construction: 12/16/2024 (60 weeks)
   - Maintain existing controls; install permanent controls within five (5) days after final grading or final grade change
   - Construct building above grade
   - Complete roof and plumb roof drains to detention chambers
7. Fine Grade the Site, install Sidewalk, Curb and Gutter, Final Street Paving and continue Building Construction: 4/12/2026 (8 weeks)
   - Maintain existing controls
   - Install Sidewalk, Curb and Gutter and Final Street Paving
   - Plant trees and landscape items
8. Follow-Up After the Site is Stabilized: 6/7/2026 (1 week)
   - Remove construction fence and install new fencing
   - Remove catch basin silt sacks
   - Remove sediment from detention chambers and storm sewer system
   - Clean up debris
9. Finalize Building Construction: 6/9/2025 (1 week)
   - Maintain permanent soil erosion control measures
   - Remove construction fencing
   - Prior to the first Certificate of Occupancy, all Life Safety Systems shall be completed, tested and approved.
   - A 'Knox Box' emergency responder access system shall be installed prior to the first Certificate of Occupancy. Forms for the Knox Box are available thru Fire Prevention.
   - Provide as-built certification of the storm water detention system.

STORM WATER MANAGEMENT SYSTEM PERMANENT MAINTENANCE PLAN, SCHEDULE, AND COST ESTIMATE

MAINTENANCE PLAN BUDGET

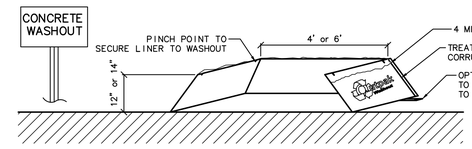
Annual inspection of system for sediment accumulation	$350.00
Removal of sediment accumulation every two (2) years, as needed	$600.00
Inspect for floatables and debris annually and after major storms	$300.00
Removal of floatables and debris annually and after major storms	$600.00
Inspect system for erosion annually and after major storms	$300.00
Re-establish permanent vegetation on eroded slopes, as needed	$200.00
Clean drives semiannually	$250.00
Total Annual Budget	**$2,600.00**

PERMANENT MAINTENANCE TASKS AND SCHEDULE

	Components					
	Drives and Walks	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Castings	Detention Chambers	Schedule
Inspect for sediment accumulation	X	X	X		X	annually
Removal of sediment accumulation		X	X		X	every 2 years, as needed
Inspect for floatables and debris		X	X	X	X	annually
Cleaning of floatables and debris		X	X	X	X	annually
Clean streets	X					semi-annually

NOTE: ALL CONCRETE PAVEMENT TO BE SEALED WITH ONE APPLICATION OF A TRANSPARENT CURING COMPOUND APPLIED AT A RATE OF 1 gal. per 200 sq. ft..

PROP. HEAVY DUTY CONCRETE DETAIL
NOT TO SCALE

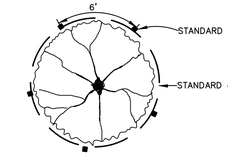


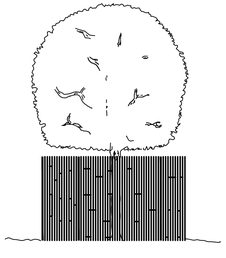
NOTES:

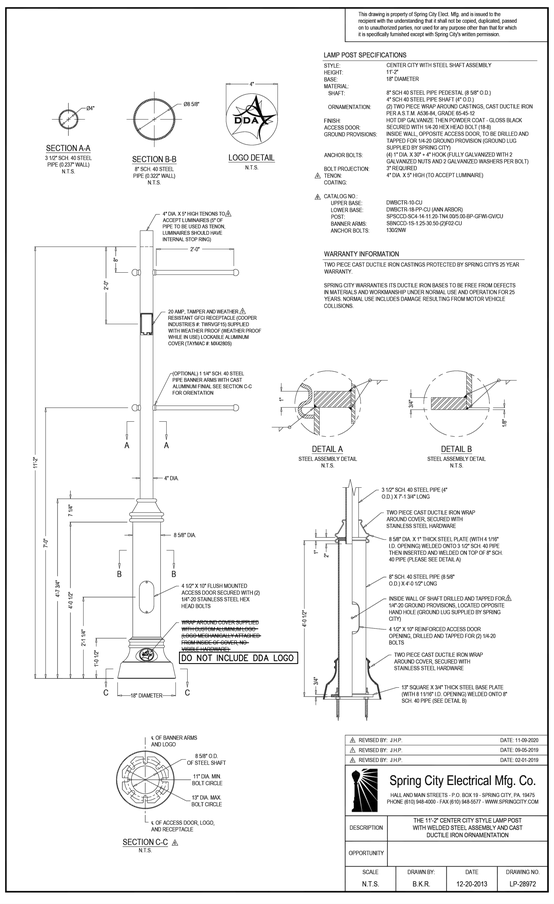
1. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON THIS PROJECT.
2. SIGNS SHALL BE PLACED AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT.
3. THE CONCRETE WASHOUT AREA WILL BE REPLACED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE AND OTHER LIQUID WASTE.
4. WASHOUT RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
5. DO NOT MIX EXCESS AMOUNTS OF FRESH CONCRETE OR CEMENT ON-SITE.
6. DO NOT WASH OUT CONCRETE TRUCKS INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.
7. AVOID DUMPING EXCESS CONCRETE IN NON-DESIGNATED DUMPING AREAS.
8. LOCATE WASHOUT AREA AT LEAST 50' (15 METERS) FROM STORM DRAINS, OPEN DITCHES, OR WATERBODIES.
9. WASH OUT WASTES INTO THE OUTPACK WASHOUT AS SHOWN WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED OF PROPERLY.

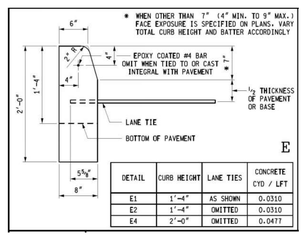
OR APPROVED EQUAL

CONCRETE WASHOUT SYSTEM
NOT TO SCALE









DETAIL	CURB HEIGHT	LANE TIES	CONCRETE CYD / LFT
E1	1'-4"	AS SHOWN	0.0310
E2	1'-4"	OMITTED	0.0310
E4	2'-0"	OMITTED	0.0477

MDOT TYPE E CURB
NO SCALE

Project Name: Proposed 5 Corners Development
Project Location: Packard Street and State Street Ann Arbor, Michigan
G2 Project No. 223932
Latitude: N/A Longitude: N/A

Soil Boring No. I-01
G2 CONSULTING GROUP

SUBSURFACE PROFILE / SOIL SAMPLE DATA

ELEV. (ft)	PROFILE	GROUND SURFACE ELEVATION: 832.5 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/ 6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Bituminous Pavement (3 1/2 inches)	0.3						
		Fill: Dark Brown Gravelly Sand Aggregate Base (6 inches)	0.8						
		Very Loose Brown Sand with trace silt and gravel	3.5	S-01	1 2 2	4			
827.5		Loose Brown and Gray Clayey Sand with trace gravel	5	S-02	2 2 3	5			
		Hard Gray Silty Clay with trace sand and gravel; frequent sand seams	6.0	S-03	5 6 9	15	15.0		9000*
822.5			9.5	S-04A S-04B	5 7 7	14			
		Medium Compact Gray Sand with trace silt and gravel	10 15	S-05	6 8 11	19			
812.5			20	S-06	5 6 7	13			
		Medium Compact Gray Gravelly Sand with trace silt	22.0						
807.5		End of Boring @ 25 ft	25.0 25	S-07	5 7 7	14			
802.5			30						

Total Depth: 25 ft
Drilling Date: January 17, 2023
Inspector: T. Hesse
Contractor: Xterra Drilling
Driller: B. Hanson

Drilling Method:
2-1/4 inch inside-diameter hollow-stem auger

Water Level Observation:
12 feet during drilling operations; 10-1/2 feet upon completion

Notes:
Borehole collapsed at 15 ft after auger removal
* Calibrated Hand Penetrometer

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings; topped with cold-patch asphalt

Figure No. 1

Lumecon

Thirty-Five West
LED Decorative

Catalog Number:
Project:
Comments:
Prepared By: Date:

Description

The Thirty-Five West decorative post-top utilizes our patented thermal integrated trim ring for maximize heat dissipation. Available in three wattage outputs, it is able to replace 100W-250W fixtures one-for-one. Each model delivers superior lumen output to illuminate your next downtown lighting project.

Performance Data

Model	Watts	Equiv	Delivered Lumens	Efficacy
Thirty-Five West L35W - 1 (Type V)	54W	100W HID	3,878 Lm	72 LPW
Thirty-Five West L35W - 2 (Type V)	84W	175W HID	5,953 Lm	72 LPW
Thirty-Five West L35W - 3 (Type V)	118W	250W HID	8,426 Lm	72 LPW

Dimensions & Weights

Model	Ring Diameter	Globe Diameter	Weight
L35W	23.56"	18.75"	35.35 lbs.

Technical Specifications

Input Voltage: 120-277V or 347-480V

Light Distribution: LEDs are mounted to the inside of the fixture trim ring which serves as a heat sink to ensure optimal heat dissipation. This type of mounting allows for a Type 5 light distribution pattern.

Globe: Our two-piece acrylic lens post top features precise prisms achievable only through injection molding. The prisms provide pleasing daytime "prismatic sparkle" and provide exceptional uniformity, light distribution and efficiency for nighttime performance. The globe carries a 20 year warranty which includes resistance to yellowing as we define as having a yellowness index of less than 7.

A cutoff light lid and a diffuser panel option are available to help limit the amount of uplight emitted from the fixture. The cutoff light lid is a solid polished reflector that virtually eliminates light to the upper globe, while the diffuser panel is a frosted panel that allows for 30% uplight to provide a pleasing glow to the upper section of the fixture.

Fitter/ Base: Fitter option compatible with an 8" globe neck size and is designed to slip fit a 4" OD pole.

Effective Projected Area (EPA): 0.65 ft²

Color Temperature: 2700K WW, 3000K CW, 4000K NW (standard), 5000K CW.

LED Lifetime: All LED's are rated for a minimum of 100,000 hours of continuous operation at ambient temperatures from -40°F/-40°C to 95°F/35°C.

Color Rendering Index (CRI): Minimum of 80 or higher.

Dimming: 0-10V standard dimming capability.

Surge Protection: Thermally protected 20kA/ 40kV varistor type surge suppressor is included and meets ANSI C136.2-2015: Extreme Level. Also meets IEC61643-11 Class II / EN61643-11 Type 2, and US Dept of Energy MSSLC Model Spec for surge protection. The device is wired in series with the luminaires input power in order to interrupt power to the luminaire when consumed, protecting the LED power supply and circuit boards from additional electrical surges.

Lumecon ETD™ System: The enhanced thermal dissipation system engines are thermally bonded to provide maximum thermal dissipation to the exterior of the fixture to ensure long life. To protect the light engine panel from moisture and corrosion, the LED light engine panel is uniformly coated with a UV stabilized acrylic polymer resin that meets MIL and ASTM dielectric standards, UL, and IPC standards for flammability, moisture resistance and thermal shock.

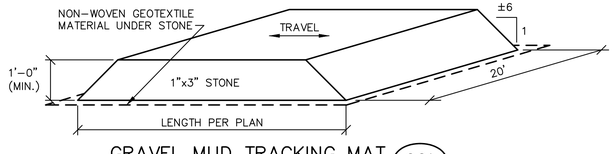
Manufacturing Origin: US Manufactured and Assembled.

Buy American: Meets Buy American requirements within the ARRA.

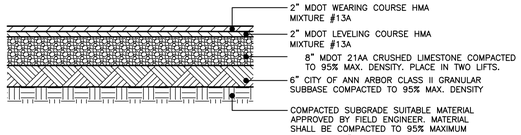
Warranty: 10 Year L70 performance based warranty. For full warranty terms, please visit our website: www.lumecon.com

20kA SURGE PROTECTION | NARC NATIONAL ASSOCIATION OF ELECTRICAL DISTRIBUTORS

Sheet L35W_121818



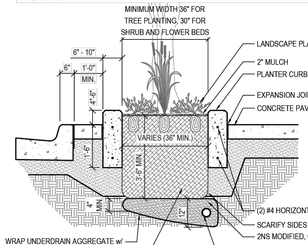
GRAVEL MUD TRACKING MAT (60t)
NOT TO SCALE



ONSITE BITUMINOUS PAVEMENT SECTION
BITUMINOUS REPAIR IN THE ROW SHALL MATCH EXIST. SECTION
NOT TO SCALE

NOTES:

1. CONTRACTOR TO EXCAVATE ENTIRE PLANTING AREA. EXISTING SOIL MATERIAL TO BE DISPOSED OF OFF-SITE AT NO ADDITIONAL COST TO OWNER
2. RAISED PLANTER MAY INTEGRATE A PLANTER BOX WALL PER ANN ARBOR DOWNTOWN STREET DESIGN MANUAL, ON SIDEWALK SIDE. IN SUCH CASES, WALL WIDTH SHALL BE 12"-16" AND WALL HEIGHT SHALL BE 15"-22".
3. LENGTH OF PLANTER WITH CURB MAY VARY; MUST MEET SOIL VOLUME REQUIREMENTS IN ANN ARBOR DOWNTOWN STREET DESIGN MANUAL FOR TREE PLANTING.
4. NO UTILITIES SHALL BE PERMITTED IN THE RAISED PLANTER AMENITY ZONE. SEE DDA SIDEWALK CROSS SECTION FOR COMMUNICATIONS OR ELECTRICAL CONDUIT ALLOWABLE LOCATION.



CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

REV. NO.	DATE	DRAWN BY	CHECKED BY

DDA RAISED PLANTER WITH CURB

DR. SMITHGROUP CH. DRAWING NO. SD-DDA-11
SCALE 3/4"=1'-0" DATE 07/28/2023

MIDWESTERN CONSULTING
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CHICAGO, IL 60647
ANDREW SAVOY
501-786-1736

FIVE CORNERS
SITE PLAN
MISCELLANEOUS DETAILS

13

DATE: 1/26/23
SHEET 13 OF
CADD:
ENG: JCA
PM: SWB
TECH:
23204DT1

REV.	DATE
1	10/13/23
2	2/1/24

JOB No. 23204

REVISIONS	REV. NO.	DR.BY	CH. BY	DATE

PUBLIC SERVICES DEPARTMENT
CITY OF ANN ARBOR

TREE PROTECTION

DR. BY	DF/SMJ	CH. BY	CSS	DRAWING NO.
SCALE	NONE	DATE	11-6-92	SD-M-1
SIGN				SHEET NO. ____ OF ____

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Lumens Per Lamp	Light Loss Factor	Wattage
	B	2	Lithonia Lighting	DSX0 LED P4 30K 80CRI TFTM	D-Series Size 0 Area Luminaire P4 Performance Package 3000K CCT 80 CRI Forward Throw	LED	9908	0.9	93.04
	C	1	Lithonia Lighting	DSX0 LED P4 30K 80CRI BLC4	D-Series Size 0 Area Luminaire P4 Performance Package 3000K CCT 80 CRI Type 4 Extreme Backlight Control	LED	7283	0.9	93.04

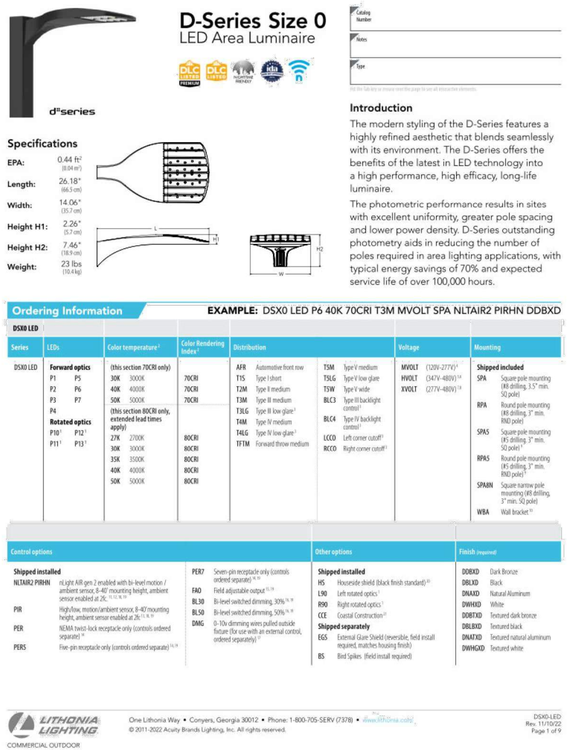
City of Ann Arbor Lighting Notes:

1. All lights to comply with City of Ann Arbor – Unified Development Code Section 5.25 for Outdoor Lighting
2. The light fixtures specified are 70cri and 3000k for all fixtures
3. All lighting to be downward directed or adequately shielded to prevent off site glare.
4. Luminaires for above grade/vertical targets must be partially shielded.
5. Any façade illuminance must be provided from above and may not exceed 5 footcandles.
6. All decorative and landscape illumination must be off between midnight and 6:00am.

FOR DEMONSTRATION OF SITE LIGHTING ONLY, ADDITIONAL STREET LIGHTING WILL BE PROVIDED ALONG STATE AND PACKARD STREET FRONTAGES.

Statistics

Description	Symbol	Avg	Max	Min	Avg/Min	Max/Min
OVERALL	+	0.3 fc	6.3 fc	0.0 fc	N/A	N/A
PARKING	✳	1.8 fc	5.5 fc	0.3 fc	6.0:1	18.3:1
PROPERTY LINE	+	0.0 fc	0.3 fc	0.0 fc	N/A	N/A



D-Series Size 0
LED Area Luminaire

Specifications
EPA: 0.44 ft² (0.04 m²)
Length: 26.18" (66.5 cm)
Width: 14.06" (35.7 cm)
Height H1: 2.26" (5.7 cm)
Height H2: 7.46" (18.9 cm)
Weight: 23 lbs (10.4 kg)

Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications, with typical energy savings of 70% and expected service life of over 100,000 hours.

Ordering Information — EXAMPLE: DSX0 LED P6 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature	Color Rendering Index	Distribution	Voltage	Mounting
DSX0 LED	Forward optics: P1 P5 P2 P6 P3 P7 P4 — Rotated optics: P10 P12 P11 P13	(this section 70CRI only): 30K 3000K, 40K 4000K, 50K 5000K — (this section 80CRI only, extended lead times apply): 27K 2700K, 30K 3000K, 35K 3500K, 40K 4000K, 50K 5000K	70CRI, 70CRI, 70CRI, 80CRI, 80CRI, 80CRI, 80CRI, 80CRI	AFR Automotive front row; T1S Type I short; T2M Type II medium; T3M Type III medium; T3LG Type III low glare; T4M Type IV medium; T4LG Type IV low glare; TFTM Forward throw medium; TSM Type V medium; TSLG Type V low glare; TSW Type V wide; BLC3 Type III backlight control; BLC4 Type IV backlight control; LCCO Left corner cutoff; RCCO Right corner cutoff	MVOLT (120V-277V); HVOLT (347V-480V); XVOLT (277V-480V)	Shipped included: SPA Square pole mounting (4@ drilling, 3.5" min. SQ pole); RPA Round pole mounting (4@ drilling, 3" min. RND pole); SPA5 Square pole mounting (4@ drilling, 3" min. SQ pole); RPA5 Round pole mounting (4@ drilling, 3" min. RND pole); SPABN Square narrow pole mounting (4@ drilling, 3" min. SQ pole); WBA Wall bracket

Control options		Other options		Finish (required)	
Shipped installed: NLTAIR2 PIRHN nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc; PIR High/low, motion/ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc; PER NEMA twist-lock receptacle only (controls ordered separate); PERS Five-pin receptacle only (controls ordered separate)	PER7 Seven-pin receptacle only (controls ordered separate); FAO Field adjustable output; BL30 Bi-level switched dimming, 30%; BL50 Bi-level switched dimming, 50%; DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)	Shipped installed: HS Houseside shield (black finish standard); L90 Left rotated optics; R90 Right rotated optics; CCE Coastal Construction — Shipped separately: EGS External Glare Shield (reversible, field install required, matches housing finish); BS Bird Spikes (field install required)		DDBXD Dark Bronze, DBLXD Black, DNAXD Natural Aluminum, DWHXD White, DDBTXD Textured dark bronze, DBLBXD Textured black, DNATXD Textured natural aluminum, DWHGXD Textured white	

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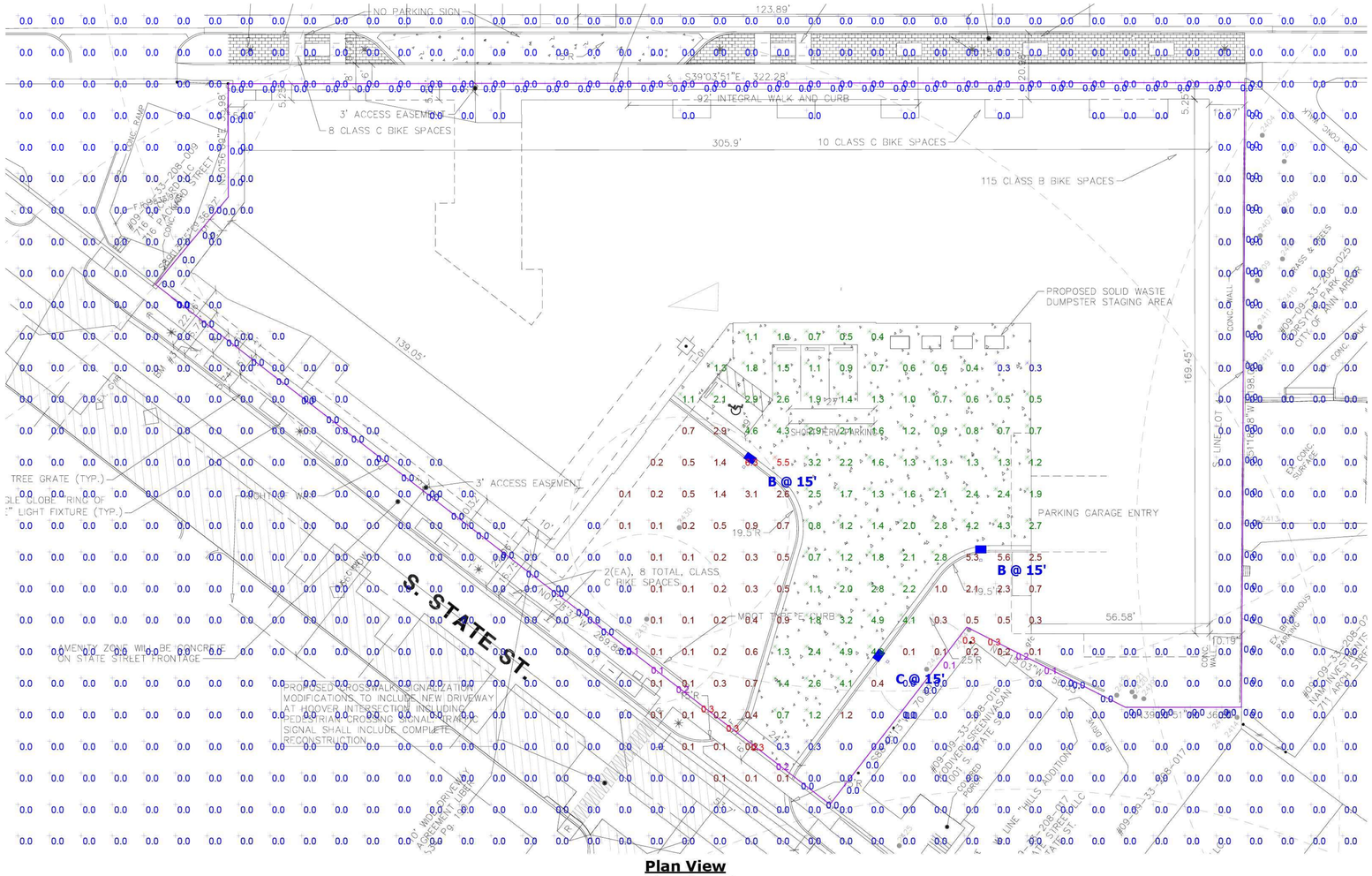
DSX0 LED Rev. 11/10/22 Page 1 of 9



Plan View
Scale - 1" = 20ft

General Note

1. SEE DRAWING FOR LUMINAIRE MOUNTING HEIGHT.
2. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 3' - 0"
3. LIGHTING ALTERNATES REQUIRE NEW PHOTOMETRIC CALCULATION AND RESUBMISSION TO CITY FOR APPROVAL.

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.

FOR ORDERING INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

GBA

FIVE CORNERS
PHOTOMETRIC PLAN
PREPARED FOR: MIDWESTERN CONSULTING
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer
DP/DS/KB
Date
01/25/2023
rev. 10/3/2023
Scale
Not to Scale
Drawing No.
#23-11018 V2
1 of 1