

The background of the cover is a painting of a lush green forest. A path or clearing leads from the bottom left towards the center, where a body of water is visible. Several trees with dense green foliage are scattered throughout the scene, with some in the foreground and others in the background. The overall style is impressionistic, with visible brushstrokes and a vibrant color palette dominated by various shades of green.

Northern Michigan University Landscape Master Plan

October 2006

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INTRODUCTION

This Campus Landscape Master Plan was initiated in 2005 following one of the driest growing seasons on record. Even with extensive irrigation and the tremendous efforts of grounds crews it became a losing battle to maintain the well manicured campus landscape in a healthy condition. The current landscape image, at least in developed areas of campus, is rather formal with lawn covering the majority of the ground plane. Extensive tree plantings in the 1960's and 1970's now provide older areas of campus with an attractive, well-developed tree canopy. In areas of recent construction tree plantings were also made, however the canopy has not developed to the point where it matches the characteristics of older areas of campus. The outlying areas of campus, as well as several pockets scattered throughout have a very natural character. These are remnants of and examples of the natural northern forest. These three general landscape types are represented on the 358 acres covered by this plan. However, their relationship to each other does not create a uniform rhythm across campus.



GOALS

The goal of this plan is to provide a framework for re-defining the campus landscape to establish a rhythm that reflects the image of Northern Michigan University....."Northern Naturally". At the same time the selection of plant material throughout campus should take advantage of reducing the investment in manpower and materials required to keep the campus landscape in a healthy, vibrant and visually appealing condition. This plan addresses the landscape from a botanical perspective. Hardscape features and pedestrian amenities are also a critical component of the landscape and are addressed in the 1995 Campus Master Plan.

The central campus of Northern Michigan University is very large, at 358 acres. This gives a very spacious feel to campus yet it requires a significant investment in labor and material to maintain the plantings in a healthy condition. The concept of a landscape master plan for the University began primarily as an effort to reduce landscape maintenance costs. However, the aesthetic quality of campus grounds is very important; not only in its role in campus image, but also as it relates to recruitment efforts. Existing campus building architecture is very attractive, yet it is the landscape that gives 'life' to the campus image. As this plan evolved, the goal began to re-define itself by putting aesthetics on equal importance with safety and maintenance. The master plan then becomes a framework to guide future landscape improvements that will enhance the aesthetic appeal of campus in a way that can be efficiently and effectively maintained in an attractive form. The use of native materials in the landscape to expand and enhance the natural setting of campus in the larger context of the northern forest becomes the link that ties the 358 acres together visually. While initial maintenance will be required to establish new plantings, the use of site characteristics in plant selection will reduce maintenance efforts over the long term. As the recommendations unfold, special attention to aesthetics, maintenance and pedestrian and motorist safety also remains a constant feature of the landscape.



SITE ANALYSIS

The area covered in this plan is essentially all of the University property within the City of Marquette. Areas immediately adjacent to buildings are typically landscaped in a traditional formal way. Plantings are predominantly ornamental in nature with shrubs, shade trees and turf. Landscape detail is specially developed in conjunction with Campus Gateway signage and at areas immediately adjacent to new building construction such as Whitman Hall, New Science and West Science Buildings, and Art and Design.

In general, the predominant vegetation is turf grass. Where turf exists in conjunction with a well-developed tree canopy the result is a very dignified formal appearance. This landscape characteristic is quite labor intensive to maintain the turf in a healthy attractive condition. In areas where no tree plantings exist or where the tree plantings have not yet developed a canopy, the landscape looks “bare” and lacks interest. These



lawn areas are also difficult to maintain in an attractive condition and require considerable irrigation and weed control. Where sufficient irrigation and weed control are not practiced, the turf quickly becomes spotty exposing bare soil.



The University has developed a number of irrigation wells strategically across campus. This allows frequent, effective irrigation without the cost association with irrigating from a municipal water source. With the amount of turf on campus, even this efficient system can become taxed beyond its limits when drought conditions exist over an extended period.

The Topography of Campus varies from Lake Superior at elevation

603 to a high point of 695 at the academic mall. Generally speaking the grade change is gradual. The academic campus sits on a plateau that drops off steeply to the north and the northeast from the academic mall. Where pedestrian access has been developed in these directions, the grade has been moderated along walkways; however steep side-slopes remain along the walkway edges. Steep slopes also exist between the Whitman Building and Fair Avenue. These slopes make maintenance of turf areas difficult.

The soils found on campus are classified by type as indicated in Appendix A. The predominant type is Udipsamments-Urban Land Complex. In very general terms for much of the campus landscape, the soil tends to be sandy with high silt content. The tight nature of the soil in areas near the south end of the academic mall and the area east of Parking lot 21 result in the soil holding moisture to the point that specific attention to plant selection is required. Other areas with excessive soil moisture are quite localized. New planting schemes should be based on detailed analysis of soils in the immediate area. For the most part however the sandy nature of the soils results in a droughty growing environment. Where informal naturalized plantings are developed, amendment of the soils is not a requirement. Selection of plant material will address any growing limitations of the soil.



RECOMMENDATIONS

The Campus Master Plan (1995) makes specific recommendations regarding the campus landscape. The recommendations following are intended to enhance and improve the campus landscape in a way that augments the experience of students, faculty and visitors, while at the same time controlling maintenance and upkeep costs. This plan makes a significant departure from those earlier recommendations. This is in part due to escalating costs for labor, fuel and material needed to maintain the landscape, but also due to changing attitudes toward the role of nature in the urban landscape. A recommended plant palette is included as Appendix 'B'.

The “New American Garden” movement has become a groundswell for including native plants in both formal and informal settings. However, native species are not recommended to the exclusion of well adapted cultivars. The interest in nature by the general populous and Northern Michigan University’s setting in the “North Woods” makes for a perfect opportunity to develop the campus landscape along these lines.

The concepts and recommendations that are presented here are not new. Early luminaries of the profession of landscape architecture in America such as Jens



Jensen (1860-1951) and others professed the use of native plants almost to the exclusion of all others. The recommendations that follow here do not profess such a “hard line” towards plant selection. Instead, the planting theory of another pioneer landscape architect, Warren Manning, (1886-1954) forms the basis of these recommendations.

Manning understood that there were just too many nursery introductions with great merit to exclude them.

A 'formal landscape' setting is the first of three themes discussed in this plan. Nearly all of the campus currently falls in this category. A formal landscape is one that is composed of nursery plants that are typical in a commercial urban setting. The landscape around renovated West Science and the New Science Building is an example. The plant species such as *Taxus* sp., *Syringia* sp., *Hosta*, sp. and any number of perennial cultivars and turf grass define this formal landscape. The entries, or gateways, to campus at Tracy Street, Kaye Avenue and Hardin Drive are appropriate settings for a formal landscape as are the areas adjacent to educational and faculty buildings. These areas require a level of maintenance effort that includes the



operation and maintenance of irrigation systems, fertilization and weed control effort in addition to cutting back dormant perennials. The dignified mission of the University almost demands some level of formal landscape in these areas and it is recommended that these formal landscapes remain. As new structures are constructed on campus they should also receive the same landscape treatment directly adjacent to the buildings. Likewise, as plant material reaches the end of its growth cycle, it should be replaced with new vigorous specimens.

Areas removed from the immediate area of formal sites should begin to include low maintenance plantings. These would include typical nursery cultivars such as *Taxus* sp., *Juniperus* sp. and groundcovers. These will provide a nice foundation planting that can provide a transition to less formal low maintenance landscape elements and will reduce the level of mowing currently required while improving the appearance of the buildings. An example of where this approach will provide a benefit to the appearance of a structure is along the northeast façade of the Don H. Bottum University Center. There are a small number of shrubs planted along this façade between the building and the adjacent sidewalk. The shrubs are spaced far apart with mostly turf filling the space. A thick planting of shrubs to nearly fill this space will reduce the mowing and the shrubs will choke out weeds. A narrow strip of turf grass immediately adjacent to the sidewalk adds a level of formality appropriate to these areas of campus. These

grass strips should be scaled to match the width of maintenance equipment. For example if the lawn mower cutting width is 42 inches, the turf border should be planted at increments of 30" – 38" wide so that it can be cut in full passes. Grass borders that are only slightly greater than increments of 42" do not significantly add to the visual affect and consume more energy for maintenance than is necessary.



Foundation plantings reduce turf maintenance and inhibit weed growth. Coniferous species provide winter interest. Deciduous species with decorative bark, berries and/or decorative branch architecture are appropriate for these locations.



A low maintenance landscape is achieved through the careful selection of plant material, well adapted to the specific growing conditions of the site. This is accomplished in formal settings as described above. The low maintenance landscape is accomplished in less formal settings through the use of native plant materials and appropriate cultivars.

In areas where a more natural setting is appropriate, plants from a palette of native plant materials should be used. This will maintain the rhythm of 'nature' as the linking theme across campus. In areas that are located between the 'natural' areas and the formal setting at campus buildings a palette of plant materials that possess more formal characteristics will be used. This will create a smooth transition between these areas.

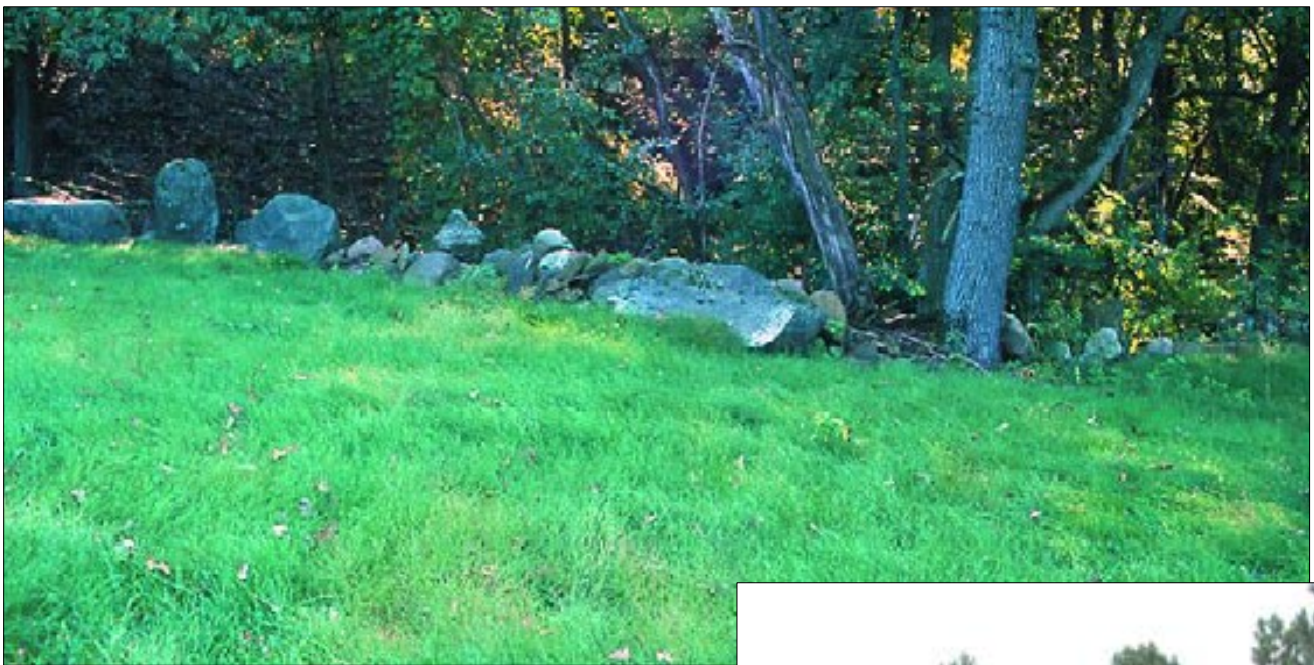
This design pattern is described in more detail at a number of specific sites across campus. The D.J. Jacobetti Center area includes instructional buildings, parking and pedestrian circulation, bike path and service facilities. Where service facilities and outdoor storage exist, they should be screened from view. This can be accomplished by expanding the existing plantings around the aviation program storage for example.



These plantings should include canopy species with an eye towards creating habitat that will support a maintenance free ground cover. Drive aisles must be maintained to allow for programmed use of these support areas. The aisles should be oriented in such a way that direct views to stored items are eliminated. The area west of the instructional building is used at various times for outdoor storage and surplus equipment auctions. These are necessary functions and the landscape in this area should allow the flexibility to accomplish these uses. The area should remain open and be planted with a 'no-mow' turf or other native prairie type grasses. These grass types are very drought tolerant, provide seasonal interest to the landscape and typically require very little maintenance.



The use of 'no mow' seeding results in a turf that will grow to a height of 6-8 inches and presents itself as a nicely textured carpet of green. Once seeded the maintenance is limited to perhaps mowing the seed heads off once they appear and once again late in the fall to mulch the fallen leaves. As the leaves compost they provide the only fertilizer that is needed. This effort will improve the appearance of this grassy area and a mowing will be all that is required to prepare it for auction events, etc.

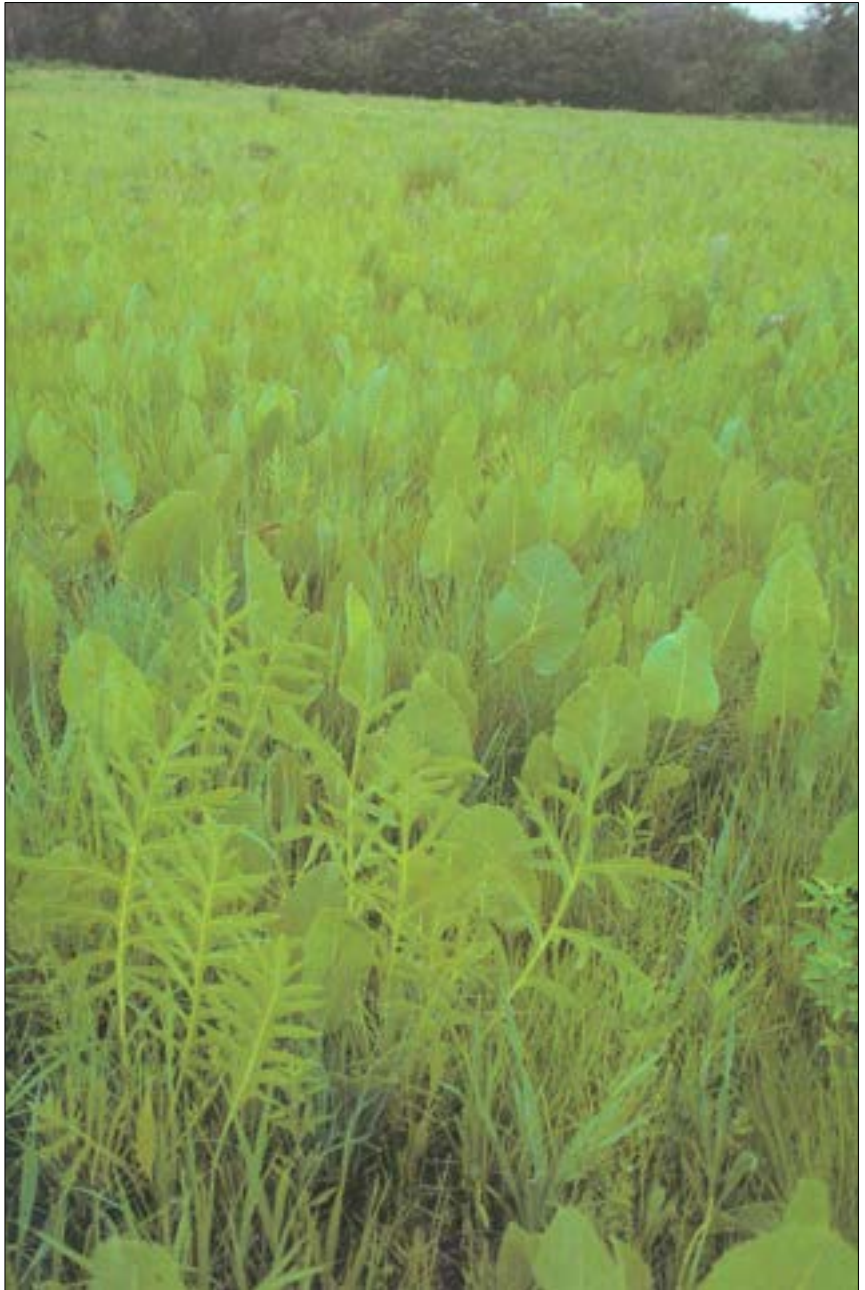


'No-Mow' Turf



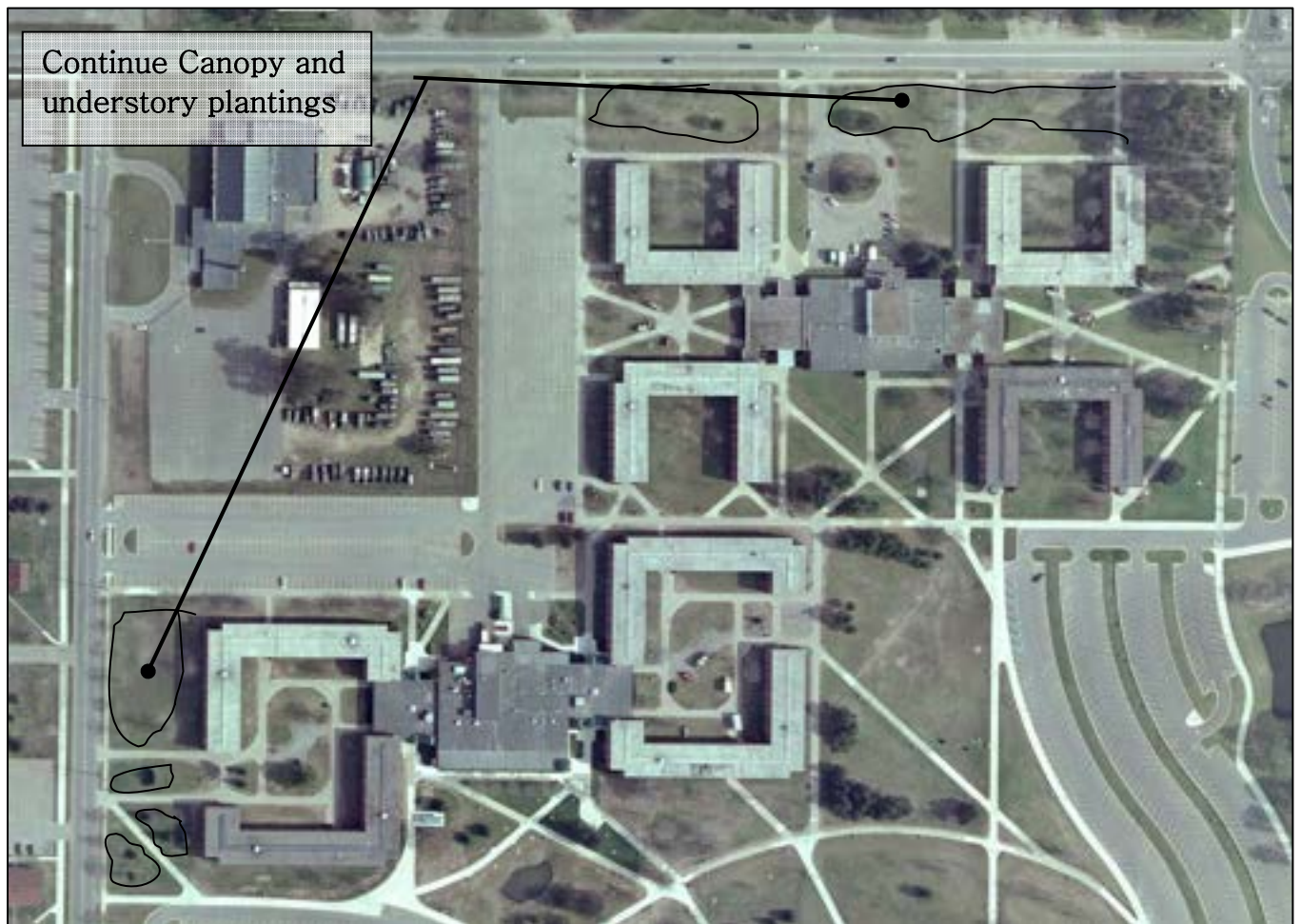
Existing Turf

Another approach to reducing the maintenance effort for large turf areas is the planting of prairie type grasses such as little bluestem. This grass in combination with prairie forbs like prairie dock can produce a very dramatic effect and requires virtually no maintenance.



The area surrounding the bike path through campus provides an excellent opportunity to create a natural linear element to strengthen the rhythm of the landscape through campus. The techniques described above can continue in a linear fashion to enhance the setting from the pedestrian/bikers perspective. Where new plantings occur adjacent to walkways and bike paths, care should be taken to select plants that will preserve a clear safety zone between 3-8 feet above grade.

Changing the lawn areas between the dormitories and adjacent streets (Wright Street and Lincoln Avenue) from turf to a more shade tolerant understory planting will reduce the efforts needed to maintain a manicured lawn in these areas. It will also improve screening of the noise and lights of a busy city street.



Areas of campus that are landscaped with natural plantings will need little or no improvement. The area southeast of the Olsen Library is one such area. There is currently a turf border between this natural landscape and the sidewalk. Where these areas are retained as part of the landscape, only minimal plantings will be necessary to clean up the borders. Additional ground cover plantings may be necessary to better define the 'edge'.



Other areas may have a well developed canopy, yet are maintained as turf. These shaded growing conditions are difficult at best for traditional turf lawns. Maintenance of these areas can be reduced by building in an understory layer and replacing the turf with herbaceous ground cover.

An example of this condition is the area east of the Berry Event Center parking lot. The area that exists as a natural forest remnant again would only need additional plantings to clean-up the edge condition. The turf that grows adjacent to the forest edge provides a border between the pavement and the natural ground cover. 'No-Mow' turf in this area will further reduce maintenance and increase the texture of the lawn.



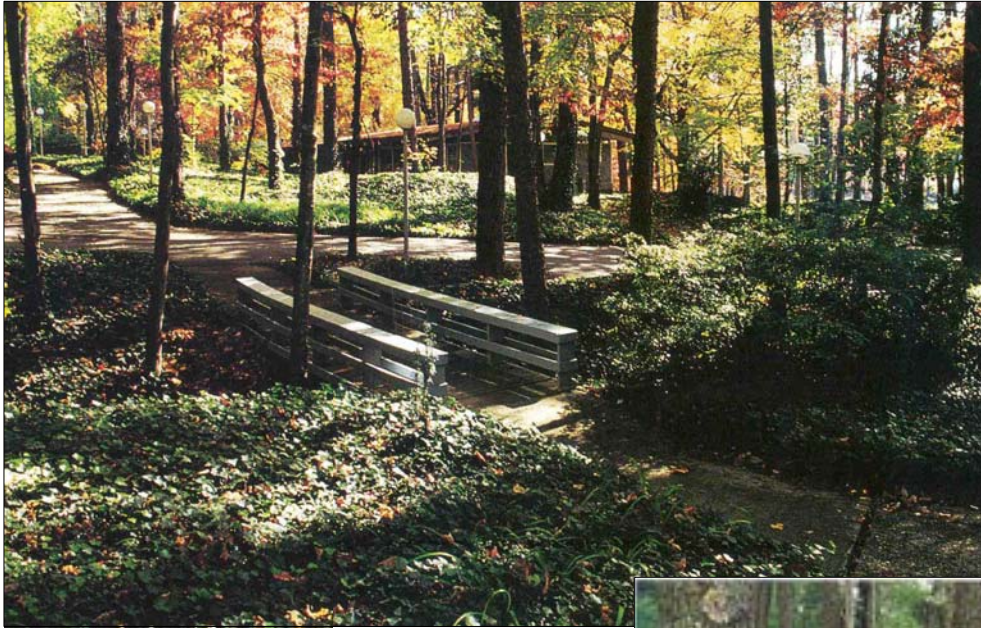
Where canopy development is sufficient to introduce a shade tolerant understory and ground cover, the new plantings should reflect the character of the canopy. Where the canopy is predominantly coniferous, the new plantings should mirror the vegetation found naturally in such settings to ensure the least amount of maintenance necessary to keep these areas in their best form. Likewise, where the canopy is predominantly deciduous the understory and groundcover should be adapted to that growing environment.

These plantings should include a layer of mulch that replicates the natural duff layer found in this habitat to optimize the growing environment. As the tree plantings on campus develop it becomes more and more difficult to maintain a manicured lawn in the shade conditions that prevail. Replacing the turf with the natural materials described continues the nature theme and reduces maintenance. Where the tree canopy has not matured to the point where it gives



shade tolerant plants a competitive advantage, and where the character of the landscape will allow, the use of 'no-mow' turf grass will provide an appropriate solution until the canopy establishes itself. In some cases a combination of these methods will provide the most attractive and maintenance free landscape. This combination of low maintenance turf and groundcover will allow the area between the Don H. Bottum University and Center Tracy Street to retain

dignified appearance while overcoming the difficulties of maintaining a traditional turf grass in such a shaded environment. The vegetation that naturally takes over the ground plane in this setting becomes essentially self maintaining.



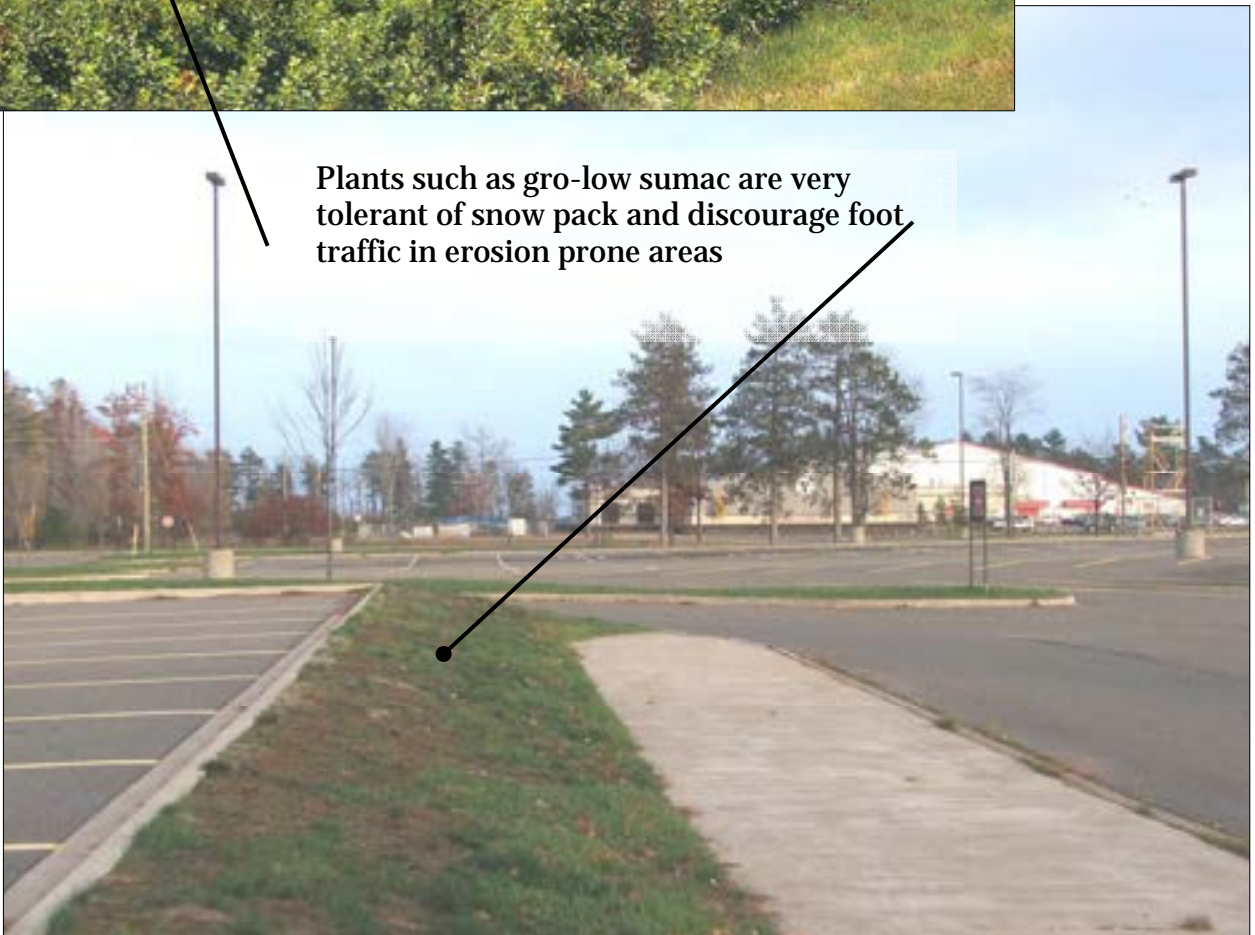
Typical ground cover under shaded forest canopy



Areas adjacent to parking lots present special maintenance and planting constraints. The landscape in this climate must be able to tolerate snow plowing activities. With an average of 150 inches of snow annually, the snow stockpiled from plowing can crush many plants. The use of hardy perennials may be a solution in some cases, especially where the parking lots are part of the public face of the campus. Perennial plantings often carry an increased level of long term maintenance which may be justified in some areas. Another solution is to plant shrubs and ground covers that are tolerant of excessive snow pack and salt conditions that often prevail adjacent to traffic areas.



Plants such as gro-low sumac are very tolerant of snow pack and discourage foot traffic in erosion prone areas



Storm water control on campus includes detention/retention ponds. These areas present opportunities to introduce plantings that are not typically found in an urban landscape setting. Mass plantings of wetland species such as sedges with decorative seed heads (i.e. *Carex lupulina*, *C. crinita* and cotton grass) or forbs



such as joe-pye weed will add considerable interest to these wetland areas and overall diversity to the university landscape. Additional ground cover and canopy plantings can also reduce turf maintenance in these areas.

The plant list attached as Appendix B includes a diverse mix of forms and textures. In most cases where the setting is transitional or formal, the individual plants should be massed to minimize weed control during establishment and to enhance the appearance. The list is by no means complete and as new cultivars are introduced, they should be included where they satisfy the requirements of this plan. Also, the use of ornamental grasses should be seriously considered. A great number of cultivated species are readily available and can add a very dramatic aspect to the landscape and also present in some cases a valuable addition to the winter landscape.

A number of special sites are represented on campus. These are sacred/memorial sites, historical sites, public art display areas, outdoor classrooms as well as a native plant research study area. This plan recommends that sacred/memorial sites remain scattered throughout the campus as they currently exist. The grouping of these sites in one area tends to fracture the rhythm that is so important to the over all feeling of the campus landscape. Also, as long range construction planning changes over time, it becomes much more difficult to resolve conflicts with these features. Sacred sites such as the Native American Drum Site constructed near the renovated Whitman Building are essentially off limits. Any landscape plantings near these sites require special consideration in the selection of materials and involvement of stakeholders in the planning process. The 'Heart of Northern' is an example of a historical landscape element. This feature is located in a formal area of campus, just off the academic mall. Changes in this area are expected to be minimal due to its existing formal setting. The native research study area defined in Appendix E provide opportunity for graduate and undergraduate students to gain 'hands on' experience in developing a native plant study site and to engage in research on native plants in the central upper peninsula.



The sculpture garden near Lee Hall could be improved by upgrading the pathway to provide a barrier free surface. The surface should remain informal and could be replaced with synthetically stabilized earth. The surface would appear to be a simple dirt path, yet would have the density of a paved surface. The coniferous canopy makes turf maintenance difficult and would be best

converted to ground cover plantings including low shrubs and ferns. Hardscaped areas such as the new parking lots north of the academic mall and the large paved area at the east end of the University Center are in need of landscape improvements from the standpoint of maintenance as well as for aesthetic reasons. The large paved parking lots result in elevated air temperatures, or heat islands, from the radiant energy absorbed by the asphalt surfaces. Planting trees in the turf island along with establishment of 'no-mow' turf will substantially improve these areas.

The pavement oceans present at the Tracy Street entrance to the University Center occupies a very visible location on campus, however this hard sterile setting discourages pedestrian activity and detracts from the campus architecture. These large paved areas can be made more attractive by creating a living canopy. Additional seating also improves these public spaces.



COSTS

The following cost estimate is for budgeting purposes and is based on the improvement areas indicated on the schematic plans included as Appendix C. The majority of work involves the establishment of low maintenance plantings. The initial step in the construction sequence is to eliminate the existing turf planting. This would be accomplished through the application of low toxicity herbicides such as glyphosphate. The seeding of low maintenance turf grass or ground cover plantings would follow. In some areas, this newly established turf would be the final planting. In other areas, particularly where the creation of a tree canopy is the ultimate goal, the no-mow lawn would be planted as a somewhat temporary measure to provide ground cover until the canopy matures to the point where ground cover can be planted. In this case the lawn would again be treated with herbicide and replaced with a mulch layer and ground cover plantings. Ideally the mulch layer in natural areas should be composed of materials that comprise the natural 'duff' layer in the surrounding forest lands. The trees should be rather thickly planted to speed the development of canopy where needed. In these areas, the trees could be thinned as they mature by transplanting. In effect, newly planted areas can become a nursery for materials for future plantings. Ground cover plantings are assumed to be from 2 ¼" plugs planted by hand. This approach requires more time and effort for establishment, but has advantages in reducing costs. The natural type mulch also provides the proper growing environment for native and other similarly adapted species. The total estimated budget to establish the goals of this plan is \$1,200,000. As the length of time to accomplish all of the recommendations is significant, inflation will increase the cost of uncompleted portions over time.

Cost Breakdown by Area: Includes primary and secondary plantings. Primary planting includes herbicide application, turf seeding, trees, shrubs, groundcover and mulch. In areas where turf is a temporary measure in preparation for groundcover, a secondary application of herbicide and groundcover planting is included. This secondary planting would follow the primary planting by five to ten years.

Jacobetti Center (Sheet L-2):	Primary planting 4.0 acres	\$26,000
	Secondary planting 4.0 acres	<u>\$86,000</u>
		\$112,000

Services Building (Sheet L-3):	Primary planting 1.9 acres	\$41,000
	Secondary planting 1.2 acres	<u>\$22,000</u>
		\$63,000
Wright Street/Lincoln: Recreation Area (Sheet L-4)	Primary planting 1.6 acres	\$11,000
	Secondary planting 1.6 acres	<u>\$34,000</u>
		\$45,000
Dorms (Sheet L-5):	Primary planting 2.1 acres	\$54,000
Wright St. Apartments : (Sheet L-6)	Primary planting 4.0 acres	\$114,000
Core Campus (Sheet L-7):	Primary planting 4.0 acres	\$113,000
	Secondary planting 0.4 acres	<u>\$9,000</u>
		\$122,000
Summit St. Apartments: (Sheet L-8)	Primary planting 0.9 acres	\$6,000
	Secondary planting 3.2 acres	<u>\$69,000</u>
		\$75,000
Thomas Fine Arts/University: Center (Sheet L-9)	Primary planting 3.4 acres	\$22,000
	Secondary planting 5.1 acres	<u>\$109,000</u>
		\$131,000
Lee Hall/Cohodas Building: (Sheet L-10)	Primary planting 0.3 acres	\$2,000
	Secondary planting 0.8 acres	<u>\$17,000</u>
		\$19,000
PEIF/Berry Events Center: (Sheet L-11)	Primary planting 3.4 acres	\$22,000
	Secondary planting 3.4 acres	<u>\$73,000</u>
		\$95,000
Dome/Practice Fields: (Sheet L-12)	Primary planting 7.2 acres	\$48,000
	Secondary planting 7.2 acres	<u>\$156,000</u>
		\$204,000
	Sub-total	\$1,034,000
	Contingency (15%)	<u>\$166,000</u>
	Total Budget	\$1,200,000

Implementation Strategy

The complete landscaping of the entire campus is dauntingly ambitious. The actual implementation is most logically accomplished over a long period of time. Additionally, as it is most cost effective to plant small specimens, a significant time period is also required for the plantings to reach anything even remotely close to maturity, especially for the tree plantings. In an effort to illustrate the appearance of the landscape described in this plan, a sample planting was constructed in the area east of Tracy Avenue as shown on Appendix D.

The process of implementing this master landscape plan would typically occur in most areas in two stages. The 'primary planting' for naturalized areas would include some form of herbicide treatment to prepare the site for no-till seeding of a low maintenance turf or temporary ground cover species that will conserve soil moisture and limit weed growth. This turf type approach is to minimize the maintenance effort required in areas where tree canopy is being constructed. In these areas, trees will be planted to begin this process. As the canopy develops, to the point where there is sufficient shade to support the growth of groundcover adapted to a woodland habitat, the turf can be replaced with herbaceous plant material. This activity would constitute the 'secondary planting'. This process involves either the removal and salvage of the turf for use elsewhere on campus or the removal of the turf by herbicide application; followed by planting of perennial plugs and over seeding with matching species. This process jump starts the ground plane plant community typical of a mature forest and essentially requires no maintenance and is quite beautiful.

It is assumed that seventy five percent of the tree plantings for naturalized areas would be in the form of bare root 'whips', 3-6 feet in height. This size lends it self to planting by relatively unskilled workers in a volunteer capacity. Using this approach could help in offsetting inflationary costs due to the long project time period. The remaining twenty five percent of the tree plantings would be nursery size stock and would require at least some mechanized equipment for planting. The recommendation for herbicides to kill existing turf is a result of the recognition of the short season available for construction and establishment; essentially limited to summer recess. Killing the sod in this manner requires significantly less time than would be needed to destroy the turf through conventional tillage. In addition, the preservation of the dead sod will help conserve moisture for the new seeding and will minimize the germination of dormant weed seeds banked in the soil. Where subsequent removal of no-mow turf is necessary to prepare for ground cover plantings, it is possible to salvage it for use elsewhere. Also, planting of small whips can be done with narrow spacing. As they begin to fill in, they can be thinned by transplanting to other areas of campus. In this way, the newly implemented planting plan serves as a

nursery of sorts to expand the pace of implementation without unduly increasing costs. Also, it is recommended that groundcover specimens be established, in part, through the use of transplanted plugs rather than seed. This will reduce the time needed for significant results. The use of mulch in the form of decomposing leaves and, in the case of coniferous plantings, pine needles will provide the proper growing environment. In the case of secondary plantings, where turf is salvaged prior to plantings, it is recommended that the turf be salvaged in the late summer. The earth should then be covered with mulch which would provide protection for the bare soil through the winter. Where weed species show themselves in the spring, they would be again treated by herbicide application. Plugs/seeding would then be placed in this prepared surface. Regular maintenance, primarily watering and weed control, will be required for one to three seasons to establish new plantings. Irrigation of a temporary nature is most appropriate to allow equipment to be easily re-used in future plantings. Once well established, irrigation can be discontinued. The selection of plant materials from local sources will be advantageous in that sharing of material with the Native Plant Project north of the academic mall will then be possible. Where local provenance (central Upper Peninsula) can be documented for commercially available plant material, excess material harvested by dividing perennials or by thinning tree plantings can likewise be useful to the Native Plant Project. Where more formal areas of campus are landscaped and in areas where formal low maintenance plantings are desired, the practices typical of the nursery trade will be employed.

The landscape adjacent to structures and other areas that have formal functions remains formal in appearance. By naturalizing larger areas across campus, these formal sites are linked together within the natural setting of the University's place in the 'Northwood's'. The regional landscape then links the campus building environment together as....."Northern Naturally".

APPENDIX 'A'
USDA SOIL SURVEY MAP

APPENDIX 'B'
RECOMMENDED PLANT PALETTE

NORTHERN MICHIGAN UNIVERSITY - CAMPUS PLANT PALETTE

FORM	NATIVE	CULTIVAR	COMMON NAME	BOTANICAL NAME	SETTING			SIZE			LAYER				SLOPE		SOIL MOISTURE			LIGHT				FOLIAGE		WINTER INTEREST	MAINTENANCE		
					FORMAL	TRANSITIONAL	NATURALIZED	SMALL, < 6"	INTERMEDIATE, 6" - 2'	TALL, > 2'	OTHER	GROUND COVER	SHRUB	UNDERSTORY	CANOPY	< 3:1	≥ 3:1	DROUGHT TOLERANT	INTERMEDIATE	MOISTURE TOLERANT	FULL SUN	LIGHT SHADE	MODERATE SHADE	DENSE SHADE	EVERGREEN	DECIDUOUS		LOW	MEDIUM
G	•		Big Bluestem or Turkeyfoot	<i>Andropogon gerardii</i>			•			•				•	•	•	•		•					•	•	•			
G	•		Blue-joint Grass	<i>Calamagrostis canadensis</i>			•				•				•		•	•						•	•	•			
G	•		Canada Wild-Rye	<i>Elymus canadensis</i>			•		•		•				•	•	•	•		•				•	•	•			
G	•		Kentucky Bluegrass	<i>Poa pratensis</i>	•			•			•				•	•		•		•				•			•		
G	•		Little Bluestem	<i>Andropogon scoparius</i>			•			•					•	•	•			•				•	•	•			
G	•		Narrow-leaved Cottongrass	<i>Eriophorum angustifolium</i>			•		•		•				•			•	•					•	•	•			
G	•		Red Fescue	<i>Festuca rubra</i>	•	•		•			•				•	•		•		•	•			•	•	•			
G	•		Scouring Rush	<i>Equisetum hyemale</i>			•		•		•				•			•	•					•	•	•			
G	•		Sheep Fescue	<i>Festuca ovina</i>	•	•		•			•				•	•		•		•	•			•		•			
G	•		Soft-stemmed Rush	<i>Juncus effusus</i>			•		•		•				•			•	•					•	•	•			
G	•		Tawny Cottongrass	<i>Eriophorum virginicum</i>			•		•		•				•			•	•					•	•	•			
G	•		Virginia Wild-Rye	<i>Elymus virginicus</i>			•		•		•				•	•		•	•	•				•	•	•			
G	•		Winged Sedge	<i>Carex alata</i>			•		•		•				•			•	•					•		•			
F	•		Bracken Fern	<i>Pteridium aquilinum</i>		•	•		•		•				•	•	•	•		•	•	•		•		•			
F	•		Cinnamon Fern	<i>Osmunda cinnamomea</i>		•	•		•		•				•			•			•	•		•		•			
F	•		Crested Shield Fern: Woodfern	<i>Dryopteris cristata</i>		•	•		•		•				•			•			•	•		•		•			
F	•		Lady Fern	<i>Athyrium filix-femina</i>	•	•	•		•		•				•			•			•	•		•		•			
F	•		Maidenhair Fern	<i>Adiantum pedatum</i>		•	•		•		•				•			•			•			•		•			
F	•		Ostrich Fern	<i>Matteuccia struthiopteris</i>	•	•	•			•					•			•			•			•		•			

FORM

G = Grass/Grasslike
F = Fern
P = Perennials/Forb

S = Shurb/Shurblike
OT = Ornamental/Understory Tree
CT = Canopy/Shade/Specimen Tree



NORTHERN MICHIGAN UNIVERSITY - CAMPUS PLANT PALETTE

FORM	NATIVE	CULTIVAR	COMMON NAME	BOTANICAL NAME	SETTING			SIZE				LAYER				SLOPE		SOIL MOISTURE			LIGHT				FOLIAGE		WINTER INTEREST	MAINTENANCE		
					FORMAL	TRANSITIONAL	NATURALIZED	SMALL, < 6"	INTERMEDIATE, 6" - 2'	TALL, > 2'	OTHER	GROUND COVER	SHRUB	UNDERSTORY	CANOPY	< 3:1	≥ 3:1	DROUGHT TOLERANT	INTERMEDIATE	MOISTURE TOLERANT	FULL SUN	LIGHT SHADE	MODERATE SHADE	DENSE SHADE	EVERGREEN	DECIDUOUS		LOW	MEDIUM	HIGH
F	•		Royal Fern	<i>Osmunda regalis</i>			•		•			•				•				•			•		•			•		
P		•	Alum Root	<i>Heuchera americana</i> - cultivar	•					•		•				•		•	•		•	•	•			•		•		
P		•	Artemesia	<i>Artemesia</i> sp.	•	•			•	•		•	•			•		•	•		•	•				•	•		•	
P		•	Astilbe	<i>Astilbe</i> sp.	•	•			•	•		•	•			•			•		•	•	•			•		•	•	
P	•		Beach Pea	<i>Lathyrus japonicus</i>			•		•			•				•	•	•			•					•		•		
P	•		Bearberry	<i>Arctostaphylos uva-ursi</i>	•	•	•	•				•				•	•	•	•		•	•				•		•		
P		•	Bee Balm	<i>Monarda didyma</i> 'cultivar'	•	•			•			•				•			•		•					•			•	
P	•	•	Black-eyed Susan	<i>Rudbeckia hirta</i>	•	•			•			•				•			•		•					•		•		
P	•		Blue Vervain	<i>Verbena hastata</i>	•	•			•			•				•			•		•					•		•		
P	•		Bluebead-Lily: Corn-Lily	<i>Clintonia borealis</i>			•		•			•				•			•			•	•			•		•		
P	•		Broad-leaved Cat-tail	<i>Typha latifolia</i>			•			•		•				•				•	•					•			•	
P	•		Bunchberry: Drawf Cornel	<i>Cornus canadensis</i>		•	•		•			•				•			•				•	•		•		•		
P	•		Canada Mayflower	<i>Maianthemum canadense</i>	•	•	•	•				•				•			•			•	•			•		•		
P		•	Catmint	<i>Nepeta</i> sp.	•	•			•	•		•	•			•			•		•				•			•		
P		•	Common Hop	<i>Humulus lupulus</i>			•		•			•	•			•			•		•					•	•		•	
P	•		Compass Plant	<i>Silphium laciniatum</i>		•	•			•		•	•			•	•	•	•		•					•		•		
P		•	Foamflower	<i>Tiarella</i> sp.	•	•			•			•				•			•			•	•	•		•		•		
P		•	Garden Lily	<i>Lilium</i> sp.	•					•		•	•			•			•		•					•		•		
P		•	Gayfeather	<i>Liatris</i> sp.	•	•			•			•				•			•		•					•		•		

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G = Grass/Grasslike
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NORTHERN MICHIGAN UNIVERSITY - CAMPUS PLANT PALETTE

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P		•	Globe Thistle	<i>Echinops ritro</i>	•	•			•			•		•		•	•		•					•	•		•			
P		•	Gooseneck Loosestrife	<i>Lysimachia clethroides</i>	•	•			•					•			•		•					•		•				
P	•		Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>		•	•	•				•			•	•		•		•				•		•				
P	•	•	Iris	<i>Iris sp.</i>	•	•	•		•	•		•			•			•	•	•				•		•				
P	•		Joe-pye Weed	<i>Eupatorium maculatum</i>			•		•			•			•				•	•				•		•				
P		•	Larkspur	<i>Delphinium sp.</i>	•				•					•			•			•				•		•				
P		•	Lily Turf	<i>Liriope spicata</i>	•	•		•				•			•	•	•	•		•	•				•		•			
P	•		Lily-of-the-Valley	<i>Convallaria Majalis</i>	•	•		•				•			•	•		•		•	•	•			•		•			
P	•		Marsh-Marigold: Cowslip	<i>Caltha palustris</i>			•	•				•			•				•		•	•			•		•			
P		•	Nettle	<i>Lamium sp.</i>	•			•				•			•	•		•			•	•			•		•			
P	•		New England Aster	<i>Virgulus novae-angliae (Aster n.)</i>		•	•		•			•			•			•		•				•		•				
P	•		Orange Day-Lily	<i>Hemerocallis species</i>	•												•	•	•	•	•	•			•		•			
P		•	Ornamental Onion	<i>Allium sp.</i>	•	•			•	•		•			•			•		•				•			•			
P		•	Periwinkle	<i>Vinca minor</i>	•	•		•				•			•	•		•		•	•	•	•			•				
P	•		Prairie Dock	<i>Silphium terebinthinaceum</i>			•		•			•			•		•	•		•				•		•				
P	•		Purple Coneflower	<i>Echinacea purpurea</i>	•	•	•		•			•	•		•		•	•		•					•		•			
P	•		Running Ground-Pine	<i>Lycopodium clavatum</i>			•	•				•			•			•			•	•		•		•				
P		•	Sage	<i>Salvia sp.</i>	•	•			•			•			•			•		•					•		•			
P	•		Sand Coreopsis	<i>Coreopsis lanceolata</i>		•	•		•			•			•			•	•	•	•				•		•			

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NORTHERN MICHIGAN UNIVERSITY - CAMPUS PLANT PALETTE

FORM	NATIVE	CULTIVAR	COMMON NAME	BOTANICAL NAME	SETTING			SIZE				LAYER				SLOPE		SOIL MOISTURE			LIGHT				FOLIAGE		WINTER INTEREST	MAINTENANCE		
					FORMAL	TRANSITIONAL	NATURALIZED	SMALL, < 6"	INTERMEDIATE, 6" - 2'	TALL, > 2'	OTHER	GROUND COVER	SHRUB	UNDERSTORY	CANOPY	< 3:1	≥ 3:1	DROUGHT TOLERANT	INTERMEDIATE	MOISTURE TOLERANT	FULL SUN	LIGHT SHADE	MODERATE SHADE	DENSE SHADE	EVERGREEN	DECIDUOUS		LOW	MEDIUM	HIGH
P	•		Side-flowering Aster	<i>Aster lateriflorus</i>			•		•			•				•			•	•	•	•				•		•		
P	•		Smooth Aster	<i>Aster laevis</i>	•	•	•		•			•				•			•		•					•		•		
P	•		Solomon-Seal	<i>Polygonatum biflorum</i>		•	•		•			•				•		•				•	•	•		•		•		
P		•	Speedwell	<i>Veronica sp.</i>	•	•			•	•		•				•			•		•					•		•		
P		•	Stonecrop	<i>Sedum sp.</i>	•	•		•	•			•				•	•	•	•		•				•			•		
P	•		Swamp Milkweed	<i>Asclepias incarnata</i>			•		•			•				•			•	•	•					•		•	•	
P		•	Sweet Woodruff	<i>Galium odoratum</i>	•	•	•		•			•				•			•	•			•	•				•		
P	•		Sweet-Flag: Calamus	<i>Acorus sp.</i>			•		•			•	•			•			•			•	•			•				
P		•	Thyme	<i>Thymus sp.</i>	•			•	•			•				•	•		•		•					•		•		
P	•		Turtlehead	<i>Chelone glabra</i>			•	•	•			•				•			•			•				•		•		
P		•	Virginia Creeper	<i>Parthenocissus quinquefolia</i>	•	•	•			•		•	•			•			•	•	•	•				•		•		
P	•		Virgin's Bower	<i>Clematis virginiana</i>		•	•	•		•		•	•			•			•	•	•	•				•	•			
P	•		Wild Ginger	<i>Asarum canadense</i>	•	•	•	•				•				•	•			•		•	•	•			•		•	
P	•		Wild Sarsaparilla	<i>Aralia nudicaulis</i>			•		•			•				•			•				•	•			•		•	
P	•		Wintercreeper	<i>Euonymus fortunei</i>	•	•		•				•	•			•	•	•	•		•	•	•	•	•		•		•	
P		•	Yarrow	<i>Achillea sp.</i>	•	•			•	•		•				•		•	•		•					•		•		
S	•		American Fly Honeysuckle	<i>Lonicera canadensis</i>			•		•			•				•		•			•	•								
S	•		Beaked Hazelnut	<i>Corylus cornuta</i>		•	•			•			•	•		•			•		•	•				•		•		
S	•		Black Haw	<i>Viburnum prunifolium</i>	•	•	•			•			•			•		•	•		•	•	•			•		•		

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FORM	NATIVE	CULTIVAR	COMMON NAME	BOTANICAL NAME	SETTING			SIZE				LAYER				SLOPE		SOIL MOISTURE			LIGHT				FOLIAGE		WINTER INTEREST	MAINTENANCE		
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S	•		Blueberry	<i>Vaccinium angustifolium</i>		•	•		•			•				•	•	•	•		•	•				•		•		
S	•		Bush Honeysuckle	<i>Diervilla lonicera</i>		•	•			•			•	•		•		•	•		•	•	•			•		•		
S	•		Canadian Yew: Gound Hemlock	<i>Taxus canadensis</i>		•	•		•			•	•			•	•		•				•		•		•			
S	•	•	Common Lilac	<i>Syringa vulgaris</i>	•					•			•			•			•		•	•				•			•	
S	•	•	Fragrant Sumac	<i>Rhus aromatica 'Gro-low'</i>	•	•			•				•					•	•		•					•		•		
S	•		Labrador-Tea	<i>Ledum groenlandicum</i>			•			•			•			•				•		•	•		•			•		
S	•		Nannyberry: Sheepberry	<i>Viburnum lentago</i>	•	•	•			•			•			•			•		•	•				•		•		
S	•		Pussy Willow	<i>Salix discolor</i>		•	•			•			•						•	•						•		•		
S	•	•	Red Honeysuckle	<i>Lonicera dioica</i>			•			•			•			•			•		•	•				•		•		
S	•		Red-Osier Dogwood	<i>Cornus stolonifera</i>		•	•			•			•			•				•	•	•				•	•			
S	•		Shrubby Cinquefoil	<i>Potentilla fruticosa 'cultivar'</i>	•					•			•			•		•			•					•		•		
S	•		Silky Willow	<i>Salix sericea</i>			•			•			•			•				•	•					•		•		
S	•		Smooth Arrow-Wood	<i>Viburnum dentatum</i>		•	•			•		•				•			•		•	•				•		•		
S	•		Sweet-fern	<i>Comptonia peregrina</i>		•	•			•		•	•			•		•	•		•					•		•		
S	•		Thimbleberry	<i>Rubus parviflorus</i>		•	•			•		•	•			•	•		•		•	•				•		•		
S	•		Wild Red Raspberry	<i>Rubus strigosus (R. idaeus)</i>			•			•			•			•			•		•	•				•		•		
S	•		Winterberry: Michigan Holly	<i>Ilex verticillata</i>	•	•	•			•			•			•			•	•	•					•	•	•		
S	•		Witch-hazel	<i>Hamamelis virginiana</i>		•	•			•			•	•		•			•		•	•				•		•		
S	•		Withe-Rod: northern Haw	<i>Viburnum cassinoides</i>			•			•			•			•				•		•	•			•		•		

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OT	•		American Mountain Ash	<i>Sorbus americana</i>	•	•	•			•				•		•			•		•	•				•	•	•		
OT		•	Amur Maple	<i>Acer Ginnala</i>	•	•				•				•	•	•			•		•	•				•			•	
OT	•		Arbor Vitae	<i>Thuja occidentalis</i>	•	•	•			•				•		•	•		•	•	•	•	•		•			•		
OT	•		Balsam Fir	<i>Abies balsamea</i>		•	•			•				•		•			•	•	•	•	•	•				•		
OT	•		Choke Cherry	<i>Prunus virginiana</i>		•	•			•				•		•			•		•	•				•	•	•		
OT		•	Cockspur Hawthorn	<i>Crataegus crus-galli, inermis</i>	•	•				•				•		•			•		•	•				•	•	•	•	
OT		•	Dwarf Hackberry	<i>Celtis tenuifolia</i>			•			•			•	•		•			•		•	•				•	•	•	•	
OT	•		Fire or Pin Cherry	<i>Prunus pensylvanica</i>		•	•			•				•		•			•		•	•				•	•	•	•	
OT	•		Alternate-leaved Dogwood	<i>Cornus alternifolia</i>	•	•	•			•				•		•			•		•	•	•			•	•	•	•	
OT	•		Ironwood: Hop Hornbeam	<i>Ostrya virginiana</i>	•	•	•			•				•	•	•			•		•	•				•	•	•	•	
OT	•		Jack Pine	<i>Pinus banksiana</i>		•	•			•				•		•		•			•				•		•	•		
OT	•		Juneberry	<i>Amelanchier arborea</i>	•	•	•			•				•		•		•	•		•	•				•	•	•	•	
OT	•		Paper Birch	<i>Betula papyrifera</i>	•	•	•			•				•	•	•			•		•	•				•	•	•	•	
OT		•	Smooth Shadbush	<i>Amelanchier laevis</i>	•	•	•			•				•		•		•	•		•	•				•	•	•	•	
OT	•		Staghorn Sumac	<i>Rhus typhina</i>		•	•			•				•		•		•	•		•					•	•	•	•	
OT	•		Striped Maple: Moosewood	<i>Acer pensylvanicum</i>		•	•			•				•		•			•			•	•	•		•	•	•	•	
OT	•		Tamarack: Larch	<i>Larix laricina</i>	•	•	•			•				•	•	•		•	•		•					•		•	•	
CT		•	Bur Oak	<i>Quercus macrocarpa</i>	•	•				•					•	•			•		•	•	•			•	•	•	•	
CT	•		Hackberry	<i>Celtis occidentalis</i>	•	•	•			•					•	•			•		•	•				•	•	•	•	

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CT	•		Hemlock	<i>Tsuga canadensis</i>		•	•			•				•	•			•	•		•	•	•	•		•	•			
CT	•		Linden: Basswood	<i>Tilia americana</i>	•	•	•			•					•			•		•	•	•			•		•			
CT	•		Pin Oak	<i>Quercus palustris</i>	•	•				•					•			•		•	•	•			•		•			
CT	•		Red Maple	<i>Acer rubrum</i>	•	•	•			•				•	•			•		•	•	•	•		•		•			
CT	•		Red Oak	<i>Quercus rubra</i>	•	•	•			•					•			•		•	•	•			•		•			
CT	•		Red Pine	<i>Pinus resinosa</i>	•	•	•			•					•			•		•				•		•		•		
CT	•		Sugar Maple: Hard Maple	<i>Acer saccharum</i>	•	•	•			•					•			•		•	•	•	•		•		•			
CT		•	Swamp White Oak	<i>Quercus bicolor</i>	•	•				•					•			•	•	•	•				•		•			
CT	•		White Oak	<i>Quercus alba</i>	•	•				•					•			•		•	•	•			•		•			
CT		•	American Elm	<i>Ulmus americana (valley forge)</i>						•					•			•	•	•	•				•		•			
CT	•		White Pine	<i>Pinus strobus</i>	•	•	•			•					•			•	•					•		•		•		
CT	•		Yellow Birch	<i>Betula alleghaniensis</i>	•	•	•			•					•			•	•	•	•				•		•			

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APPENDIX 'C'
SCHEMATIC PLANS



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UNIVERSITY



LEGEND

- SNOW STORAGE
- SAFETY ZONE (30')
- EXISTING NATURALIZED AREA'S
- FORMAL LANDSCAPE/TURF
- TURF
- LOW MAINTENANCE LANDSCAPE

FORMAL LANDSCAPE
- TREES
- SHRUBS
- TURF (SNOW DAMAGE)
- ALTERNATIVES

LOW MAINTENANCE
LANDSCAPE
- MAINTAIN SNOW
STORAGE AT EDGE

OPENING FOR BIKE
PATH CONNECTION

SNOW STORAGE
- SALT TOLERANT
- CRUSH TOLERANT

EXISTING NATURALIZED AREA

LOW MAINTENANCE
LANDSCAPE



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MICHIGAN
UNIVERSITY



LEGEND

- SNOW STORAGE
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- EXISTING NATURALIZED AREA'S
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- TURF
- LOW MAINTENANCE LANDSCAPE



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L3





CAMPUS LANDSCAPE MASTER PLAN

**NORTHERN
MICHIGAN
UNIVERSITY**



LEGEND



SAFETY ZONE (30')

EXISTING NATURALIZED AREA'S

 FORMAL LANDSCAPE/TURF
TURF

**WRIGHT /
LINCOLN
RECREATION
AREA**

GRAPHIC SCALE
30 60
(IN FEET)

BEFORE YOU DID IT
ALL:

04-06
-25479 L4

L4



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CAMPUS LANDSCAPE MASTER PLAN

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MICHIGAN
UNIVERSITY



LEGEND

- SNOW STORAGE
- SAFETY ZONE (30')
- EXISTING NATURALIZED AREA'S
- FORMAL LANDSCAPE/TURF
- TURF
- LOW MAINTENANCE LANDSCAPE



DORMS

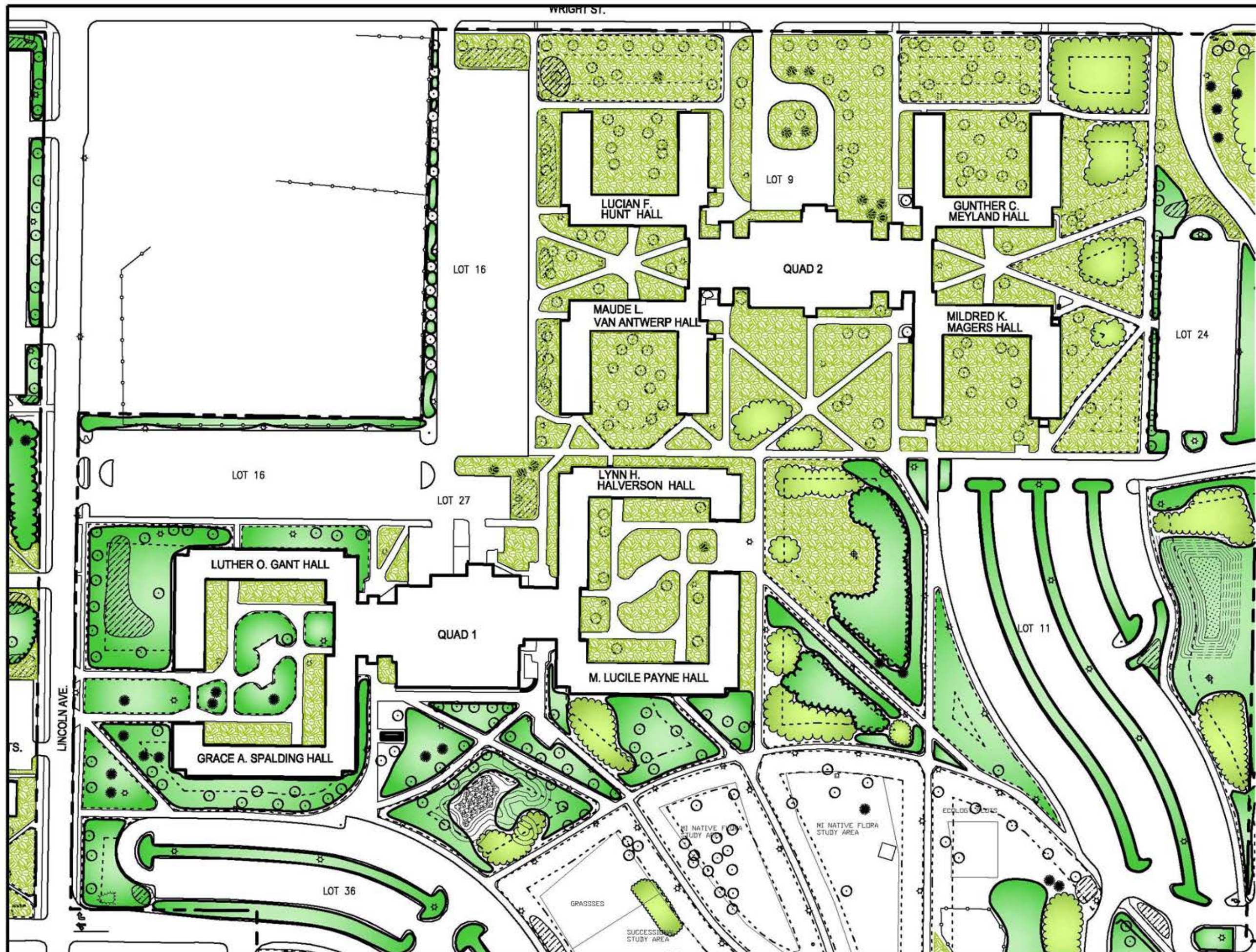
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(IN FEET)

BEFORE YOU DIG II
CALL:

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
(TOLL FREE)
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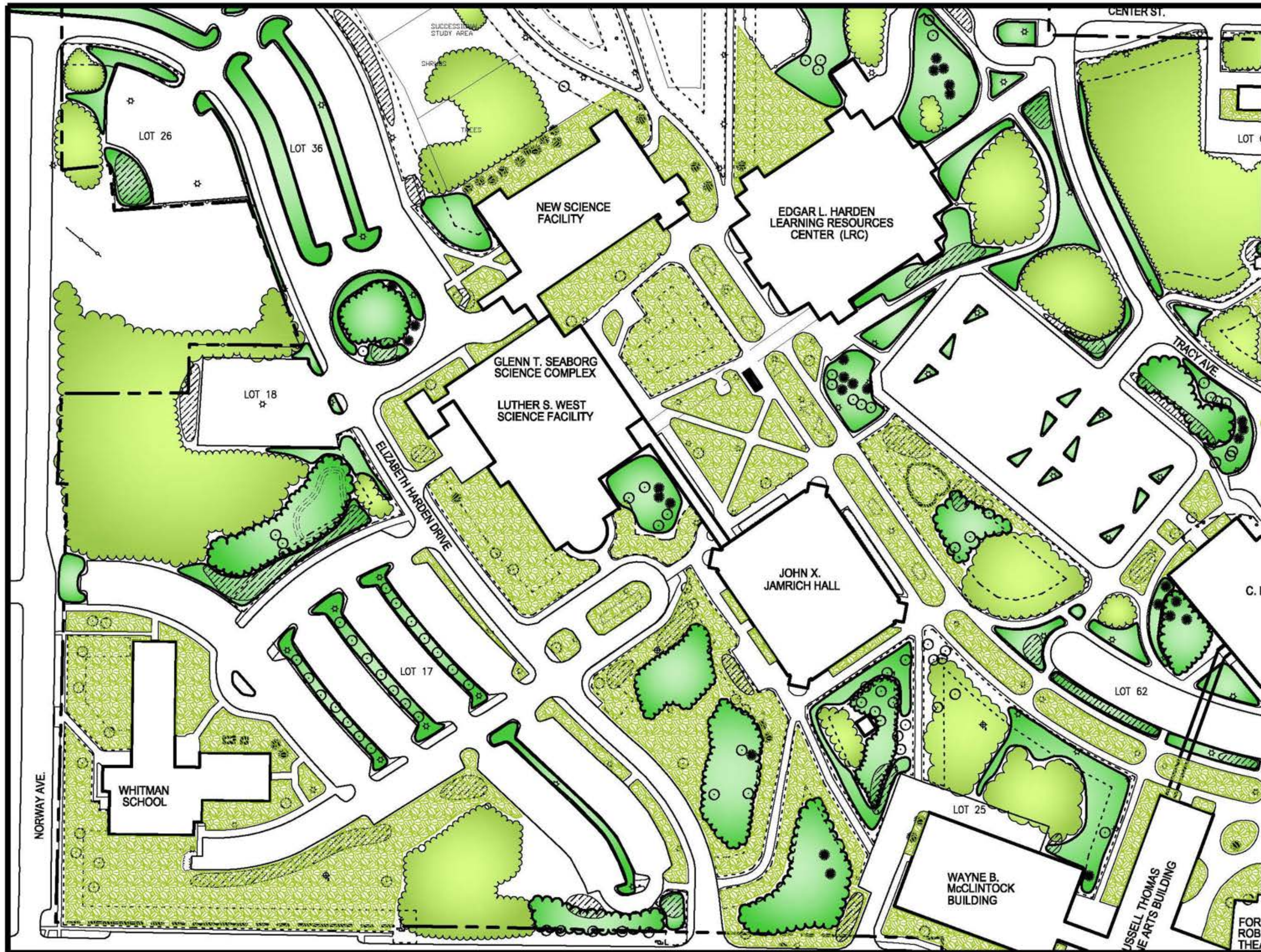
WRIGHT ST. APARTMENTS

GRAPHIC SCALE
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(IN FEET)

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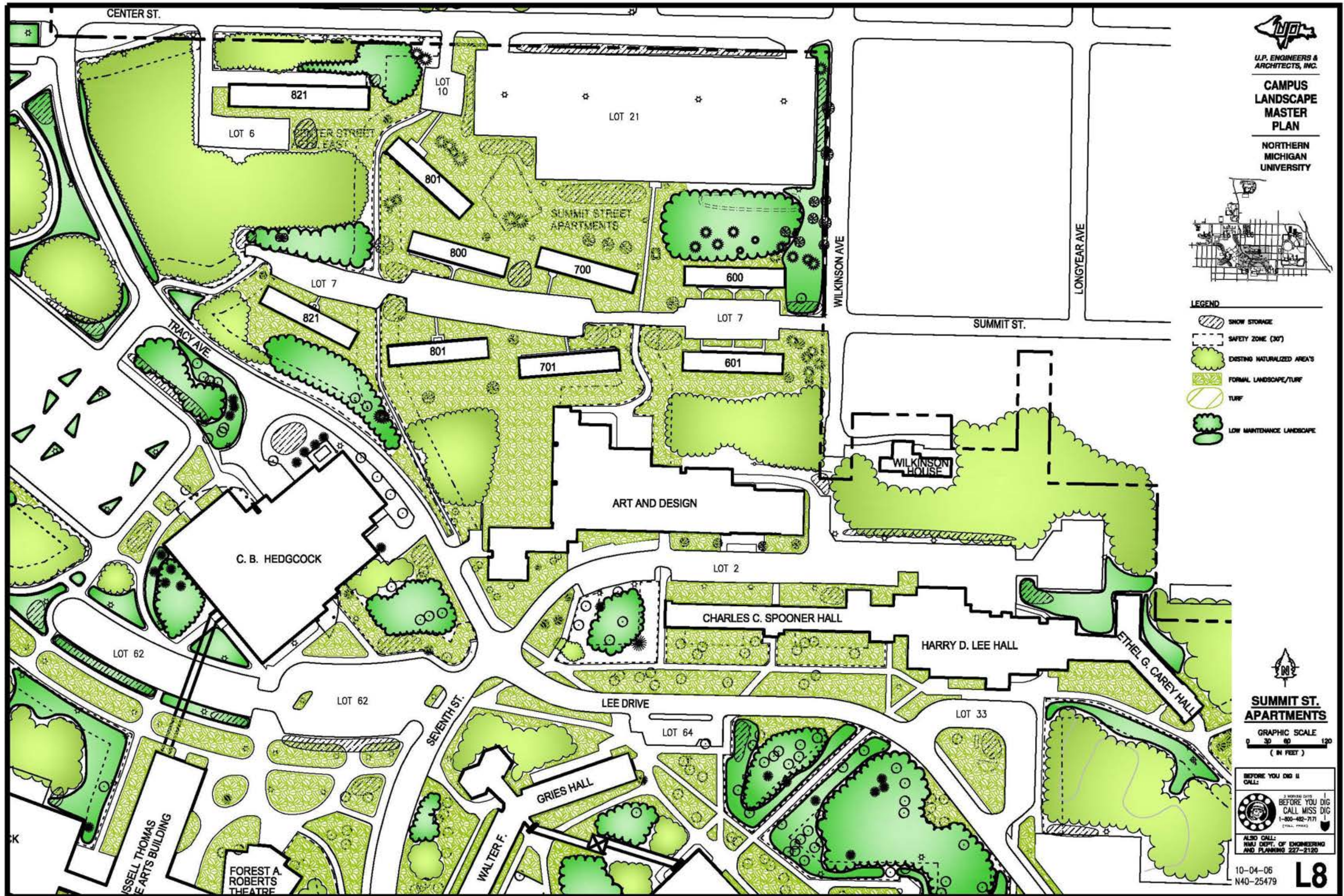
CORE CAMPUS

GRAPHIC SCALE
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(IN FEET)

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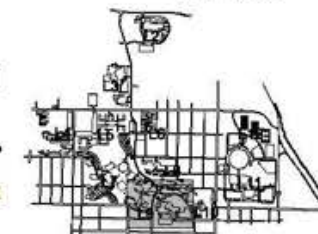




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LEGEND

- SNOW STORAGE
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THOMAS FINE ARTS BUILDING / UNIVERSITY CENTER

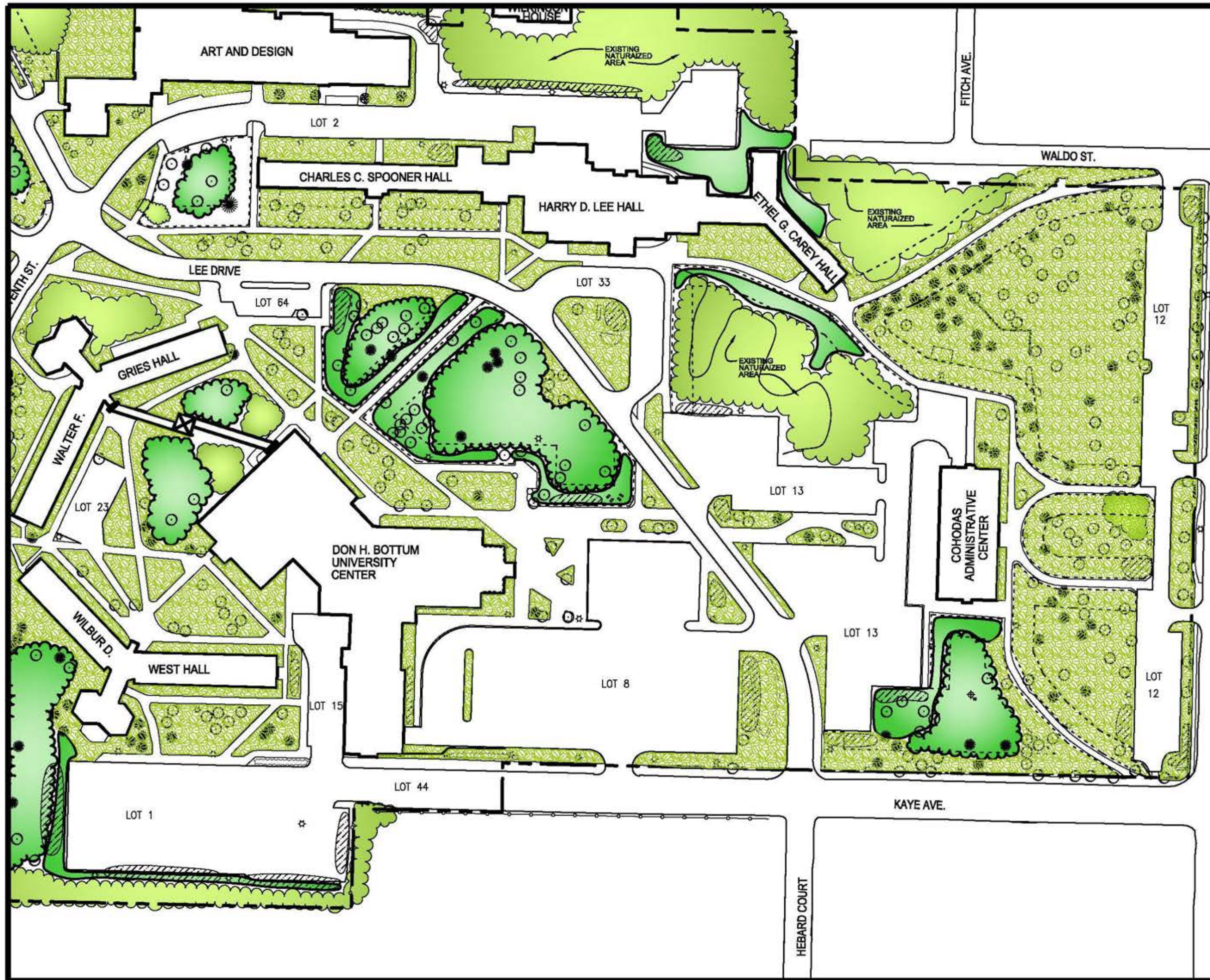
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LEGEND

- SNOW STORAGE
- SAFETY ZONE (30')
- EXISTING NATURALIZED AREA'S
- FORMAL LANDSCAPE/TURF
- TURF
- LOW MAINTENANCE LANDSCAPE



LEE HALL/ COHODAS BUILDING

GRAPHIC SCALE
0 30 60 120
(IN FEET)

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LEGEND

- SNOW STORAGE
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- TURF
- LOW MAINTENANCE LANDSCAPE



PEIF/
BERRY
EVENTS
CENTER

GRAPHIC SCALE
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(IN FEET)

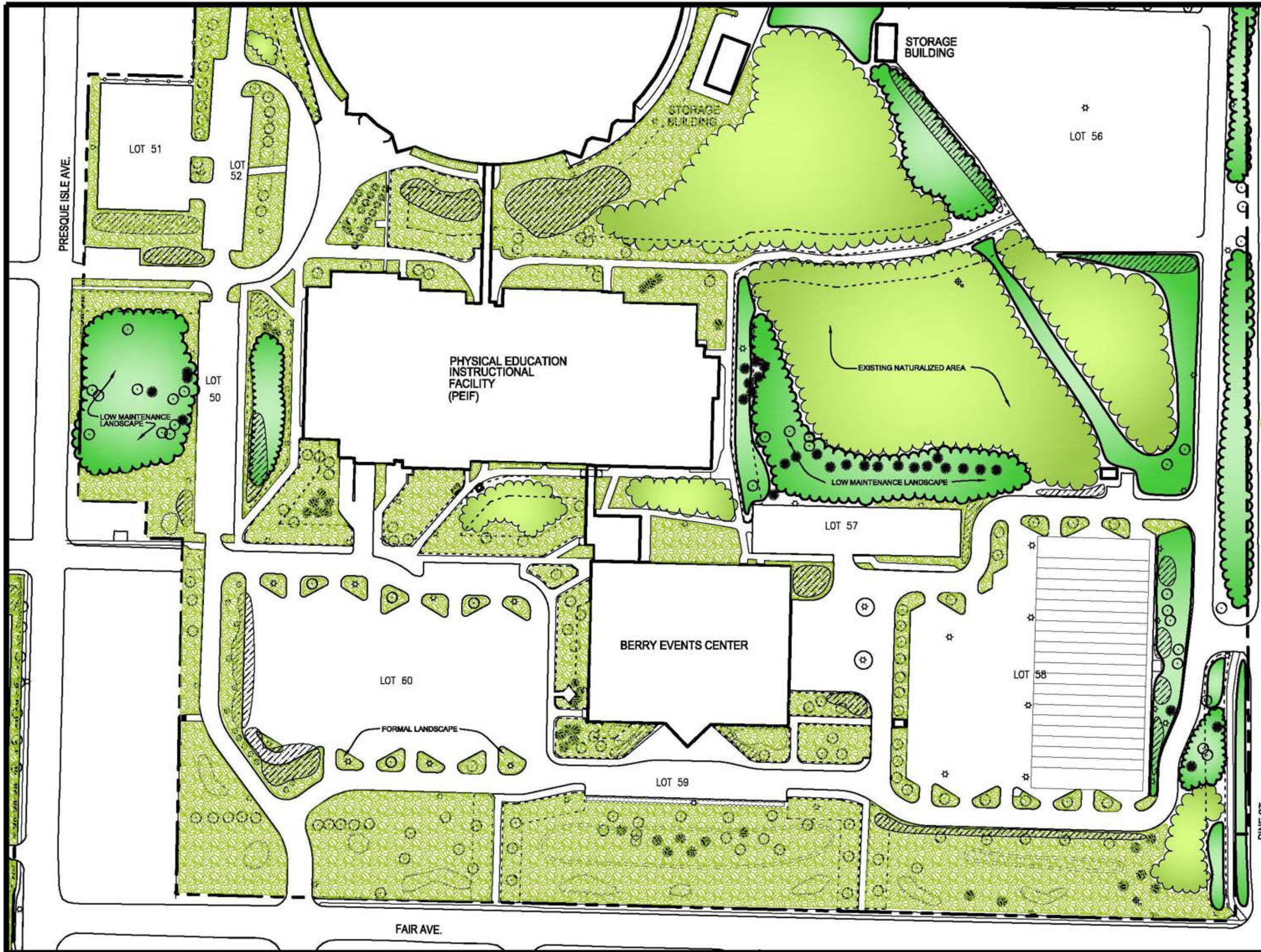
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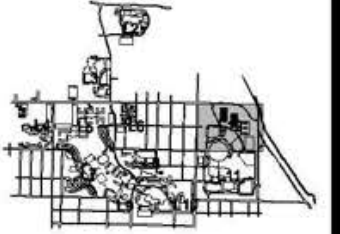




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CAMPUS LANDSCAPE MASTER PLAN

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LEGEND

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DOMES/ PRACTICE FIELDS

GRAPHIC SCALE
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(IN FEET)

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APPENDIX 'D'
NATURAL LANDSCAPE TEST PLOT



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CAMPUS LANDSCAPE MASTER PLAN

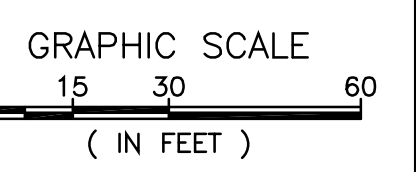
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LEGEND

- B&B CONIFER TREE
- B&B DECIDUOUS TREE
- CONIFER WHIP (SPECIES)
BARE ROOT 3' TALL
- DECIDUOUS WHIP (SPECIES)
BARE ROOT 5'-6' TALL
- EXISTING CONIFER TREE
- EXISTING DECIDUOUS TREE



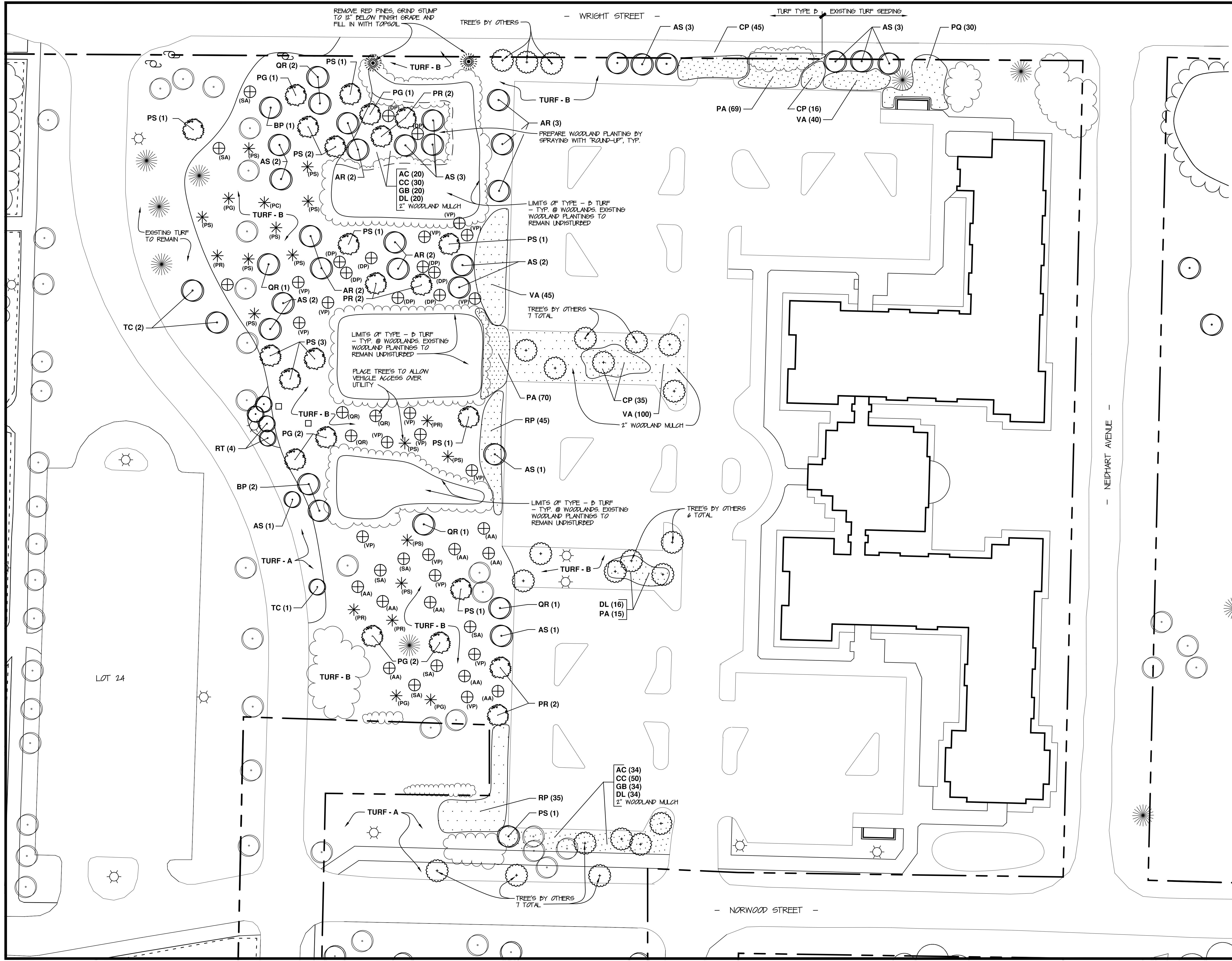
LANDSCAPE PLAN



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PLANT SCHEDULE

MARK	QUANTITY	DESCRIPTION	SIZE	TYPE	REMARKS/COMMON NAME
AA	9	Amelanchier arborea	3' TALL	WHIP	SERVICEBERRY
AC	54	Asarum canadense	4-1/2"	CONTAINER	WILD GINGER
AR	11	Acer rubrum	2"	CAL.	RED MAPLE
AS	20	Acer saccharum	2"	CAL.	SUGAR MAPLE
BP	3	Betula papyrifera	1-1/2"	B&B	CANOE BIRCH (SINGLE STEM)
CC	80	Cornus canadensis	.	.	BUNCHBERRY
CP	96	Comptonia peregrina	1 GAL.	CONTAINER	SWEETFERN
DL	70	Diervilla lonicera	1 GAL.	CONTAINER	LOW BUSH HONEYSUCKLE
DP	9	Dierca palustris	5 GAL.	CONTAINER	LEATHERWOOD
GB	54	Galium boreale	.	.	NORTHERN BEDSTRAW
PA	154	Pteridium aquilinum	4-1/2"	CONTAINER	BRACKEN FERN
PG	9	Picea glauca	4' TALL	B&B	WHITE SPRUCE
PQ	30	Parthenocissus quinquefolia	1 GAL.	CONTAINER	VIRGINIA CREEPER
PR	10	Pinus resinosa	5' TALL	B&B	RED PINE
PS	24	Pinus strobus	6' TALL	B&B	WHITE PINE
QR	8	Quercus rubra	1-1/2"	CAL.	RED OAK
RP	80	Rubus parviflorus	1 GAL.	CONTAINER	THIMBLEBERRY
RT	4	Rhus typhina	5 GAL.	CONTAINER	STAGHORN SUMAC
SA	7	Sorbus americana	3' TALL	WHIP	AMERICAN MOUNTAIN ASH
TC	3	Tilia cordata	3"	CAL.	LITTLE LEAF LINDEN
VA	185	Vaccinium angustifolium	1 GAL.	CONTAINER	LOWBUSH BLUEBERRY
VP	17	Viburnum prunifolium	3' TALL	WHIP	BLACKHAW VIBURNUM

NOTES:

- MULCHED AREA AROUND TREES AND SHRUBS TO BE AGED, WELL ROTTED WOOD CHIPS OR COMPOST MINIMUM 3" THICK WITH STAKED FILTER FABRIC BENEATH (TYPICAL IN TURF AREA 'A' ONLY). MULCH IN TURF AREA 'A' TO BE NORTHERN WHITE CEDAR BARK STRIPPED FROM TREES AND SHREDDED; SUPPLIED BY DON MACHALK AND SONS FENCE CORPORATION (906-753-4002) OR EQUAL. SUBMIT SAMPLE FOR APPROVAL.
- MULCH IN WOODLAND PLANTING AREA'S AND PLANTING BEDS TO BE 50/50 MIX OF COMPOSTED LEAF LITTER AND PINE NEEDLES IN 2" THICK LOOSELY COMPACTED LAYER, UNLESS NOTED OTHERWISE.
- PREPARE WOODLAND PLANTING AREA'S BY SPRAYING GROUND WITH "ROUND-UP" AT THE RATE OF 3 QUARTS PER ACRE IN 35 GALLONS OF WATER. EXTEND SPRAY AREA 5'-0" INTO EDGE OF ADJACENT WOODLAND, AVOIDING NATIVE PLANTS AS POSSIBLE. MULCH MOW DEAD VEGETATION AFTER CONTROL IS ACHIEVED. APPLY WOODLAND MULCH AND COMPACT BY WATERING OR ALLOW RAIN TO COMPACT. PLANT THROUGH COMPACTED MULCH. PROVIDE WEED CONTROL BY HAND METHODS UNTIL AFTER FIRST FROST. WHERE GRASS CONTROL IS NECESSARY, APPLY "ROUND-UP" AT TURF ESTABLISHMENT. RATE BY WHIPE APPLICATOR ONLY.

TURF TYPE 'A'

"U.P. SPECIAL MIX" FROM MELS LAWN AND GARDEN IN ESCANABA, MICHIGAN (906) 786-8157 OR EQUAL. MAXIMUM INERT MATTER 5.00%, OTHER CROP SEED 0.30% MAXIMUM, WEED SEED 0.05% MAXIMUM.

GRASS KIND	GERMINATION	PROPORTIONS BY WEIGHT
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ANNUAL RYE GRASS	90%	9.70
PERENNIAL RYE GRASS	90%	9.80
"PARK" KENTUCKY BLUEGRASS	85%	34.30
"85/80" KENTUCKY BLUEGRASS	80%	21.25
CREEPING RED FESCUE	85%	14.70
"CHEWINGS" FESCUE	86%	4.9

TURF TYPE 'B' (NATURALIZED AREA)

PLANT AT RATE OF 220 LBS./ACRE INTO FIRM WEED-FREE SEED BED. 23.52% FESTUCA RUBRA SPP. COMMUTATE, 23.52% FESTUCA OVINA, 11.76% FESCUE FESCUTA TRACHYPHYLLA, 11.76% FESCUE FESCUTA TRACHYPHYLLA VAR. SPRAY, 11.76% FESTUCA RUBRA, 1.76% FESTUCA RUBRA VAR. DAWSON, 3.88% LOLIUM MULTIFLORUM. SEED PURITY TO BE 97.97% MINIMUM. SEED MIX "PRAIRIE NURSERY" - "NO-MOW MIX" OR EQUAL.

TURF TYPE 'B' PLANTING SEQUENCE:

- SCHEDULE WORK TO ALLOW SEEDING BETWEEN AUGUST 6TH AND OCTOBER 20TH.
- KILL EXISTING TURF WITH 2 QUARTS OF "ROUND-UP" PER ACRE IN 35 GALLONS OF WATER. WHERE NECESSARY, MULCH MOW AFTER TURF DIE-BACK OR MOW AND REMOVE DEAD MATERIAL WHERE LITTER IS EXCESSIVE. USE HERBICIDE IN STRICT ACCORDANCE WITH MANUFACTURERS PRINTED INSTRUCTIONS AND ACCORDING TO REGULATIONS IN FORCE. PROVIDE, "HERBICIDE APPLICATION IN PROGRESS", WARNING SIGNAGE FOR THE TERM OF THE TREATMENT.
- PLACE SEED AT THE PRESCRIBED RATE WITH "NO-TILL SEED DRILL" WITH PRESS WHEELS. PLACE SEED NO DEEPER THAN 1/8".
- WATER SEEDING EVERY OTHER MORNING FOR 15 TO 30 MINUTES FOR 4 TO 6 WEEKS. FOLLOWING PLANTING, PROVIDE OCCASIONAL DEEP WATERING FOR REMAINDER OF GROWING SEASON.
- APPLY NO FERTILIZER. LAWN HERBICIDE MAY BE APPLIED FOR BROAD LEAF WEED CONTROL AS NEEDED.
- MOW LATE SEASON (NO LOWER THAN 3-1/2") WITH MULCHING MOWER ONLY AFTER ESTABLISHED (LATE FALL).

NOTE:

DO NOT PRUNE EVERGREENS

TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY.

GUY TREES OVER 5' HEIGHT.

2 PLY REINFORCED RUBBER HOSE, POSITIONED DIRECTLY ABOVE TREE BRANCH

12" GA. GALV. DOUBLE STRAND TWISTED GUYING WIRE, 3 GUYS PER TREE, 120' APART.

3" MULCH AS SPECIFIED (4" DIAMETER)

3" SALKER

2" X 2" X 30" GUYING STAKE

PLANTING MIXTURE, AS SPECIFIED

REMOVE BURLAP FROM TOP 1/3 OF BALL. REMOVE ALL PLASTIC WRAP AND FABRIC. REMOVE ALL ROT PROOF WRAP.

SCARIFY SETTING BED TO 3" DEPTH

SET BALL ON 6" COMPACTED TOPSOIL

PLANTING DETAIL - CONIFEROUS TREE

SCALE: N.T.S.

DO NOT CUT LEADER

TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY.

2 PLY REINFORCED RUBBER HOSE POSITIONED DIRECTLY ABOVE FIRST BRANCH

12 GA. GALV. DOUBLE STRAND TWISTED GUYING WIRE, 3 GUYS PER TREE, 120' APART

TREE WRAP

3" MULCH, AS SPECIFIED (4" DIAMETER)

3" SALKER

2" X 2" X 30" GUYING STAKE

REMOVE BURLAP FROM TOP 1/3 OF BALL. REMOVE ALL PLASTIC WRAP AND FABRIC.

REMOVE ALL ROT PROOF WRAP.

PLANTING MIXTURE, AS SPECIFIED

SCARIFY SETTING BED TO 3" DEPTH

SET BALL ON 6" COMPACTED TOPSOIL

PLANTING DETAIL - DECIDUOUS TREE

SCALE: N.T.S.

DO NOT TRIM EVERGREENS

SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY.

PLANT SHRUBS TO WITHIN 42" OF TREE TRUNKS IN SHRUB BEDS.

REMOVE BURLAP FROM TOP 1/3 OF BALL. REMOVE ALL PLASTIC WRAP AND FABRIC. REMOVE ALL ROT PROOF WRAP.

PLANTING MIXTURE, AS SPECIFIED

SCARIFY SETTING TO 3" DEPTH

SET BALL ON 6" COMPACTED TOPSOIL

PLANTING DETAIL - SHRUB

SCALE: N.T.S.

SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY.

PLANT SHRUBS TO WITHIN 42" OF TREE TRUNKS IN SHRUB BEDS.

REMOVE ALL PLASTIC WRAP AND FABRIC. REMOVE ALL ROT PROOF WRAP.

PLANTING MIXTURE, AS SPECIFIED

SCARIFY SETTING TO 3" DEPTH

SET BALL ON 6" COMPACTED TOPSOIL

PLANTING DETAIL - PERENNIAL

SCALE: N.T.S.



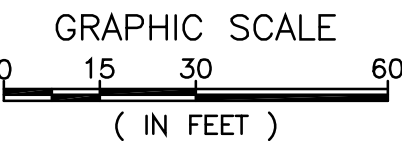
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CAMPUS LANDSCAPE MASTER PLAN

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LANDSCAPE DETAILS



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APPENDIX
'D-2'



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LANDSCAPE
DETAILS

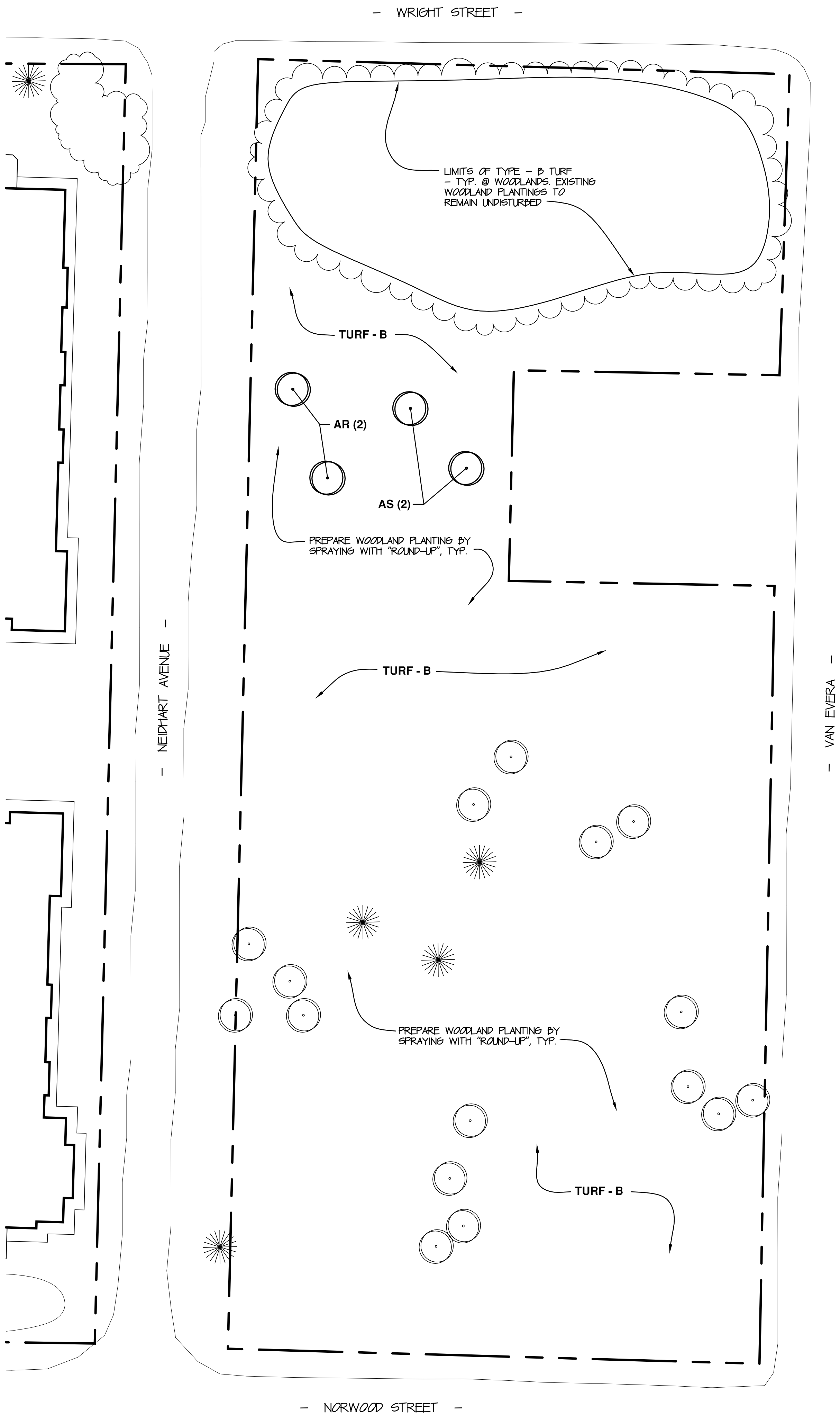
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APPENDIX
'D-3'



APPENDIX 'E'
MICHIGAN NATIVE FLORA STUDY AREA PLAN

