Summary – 2016

Review & Confirm Details

General Information

School Information

IUPUI (Indiana University - Purdue University, Indianapolis) Edit Name

Primary Contact Information

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President/Chancellor's Office

- **Name:** Nasser Paydar
- **Title:** Chancellor, IUPUI
- **Address:**
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  - Indianapolis IN 46202
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- **Recognition Event:**

Standard 1

Committee Dates

- **Date Committee Was Established:** Nov 7, 2011
- **Meeting Dates for Application Year:**
  - Mar 2, 2016
  - Jul 27, 2016
  - Oct 24, 2016

Committee Members

- **Student:**
  - Greg Walker, Community Engagement Intern intern1@kibi.org
  - Jenna Berry, Communications Intern jennberr@umail.iu.edu
  - Tommy Criss, SSC President tcriss@iupui.edu
- **Faculty:**
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  - Daniel P. Johnson, Liberal Arts, Geography dpjohnso@iupui.edu
  - Kathy J. Licht, Science, Earth Sciences klicht@iupui.edu
  - Catherine Hudnall, Herron School of Art & Design, Furniture Design hudnallc@iupui.edu
  - Jessica Davis, Director, Sustainability davisjg@iupui.edu
- **Facility:**
  - Teodora Durbin, Green Team - Staff tdurbin@iupui.edu
  - Deb Ferguson (Committee Co-Chair), Asst. Director, Sustainability defergus@iupui.edu
  - Debbie Koliba, Staff dakoliba@iupui.edu
  - Mark Ramsey, University Landscape Architect maaramse@indiana.edu
  - Steve Stringer (Committee Co-Chair), Campus Grounds Manager slstring@iupui.edu
  - Darci Pellom, Staff dpellom@indiana.edu
  - Teresa A. McCurry, Staff tmccurry@iupui.edu
- **Community:**
  - Joe Jarzen, Keep Indianapolis Beautiful jjarzen@kibi.org
  - Holly Jones, Indiana Urban Forest Council director@iufc.org

Standard 2

Campus Tree Care Plan Establishment

- **Date the Campus Tree Care Plan Was Established:** Dec 14, 2012
- **Campus Tree Care Plan:**
  - Campus Tree Care Plan 1
- **Status of Plan Goals & Targets** 1) Increasing the tree canopy cover from 10% to at least 28% on campus [in progress] 2) Protecting the current tree canopy by educating campus and community members of the benefits that trees can provide [in progress] 3) Connecting the campus to its urban environment and local community, in the spirit of the campus' commitment to civic engagement, we will strive to collaborate with other Indianapolis partners such as Keep Indianapolis Beautiful, Reconnecting to Our Waterways, Indiana Urban Forest Council, Indianapolis Downtown, Inc., and our "peninsula neighbors" including IU Health, Eskenazi Health, the Indianapolis VA Medical Center, White River State Park, Indiana State Museum, the Indianapolis Zoo, the NCAA, and the National Institute for Fitness and Support. [partially completed/in progress] 4) Promoting the importance of pollinators through a "Bee Keeping Basics" course 5) Intern research project focused on tree tracking via Arc GIS 6) Ball Garden restoration

Standard 3

Expenditures Calculation

- **Tree Planting and Initial Care Costs:** $4,060
- **Campus Tree Management Costs:** $140,557
- **Volunteer Time from Students and Civic Organizations:** 65
- **Other Costs:** $0
- **Other Cost Description:**
- **Total Calculated Costs:** $146,148

Additional Campus Details

- **Number of Trees Planted:** 270
- **Number of Trees Removed:** 147
- **Reason for Tree Removal:** Street expansion/EAB
- **Number of Trees Pruned:** 90
- **Tree Canopy Cover Percent:** 14%
- **Campus Population:** 24,743

Standard 4

Observance Details

- **Short Summary of the Event:**
  IUPUI planted 20 trees along University Boulevard near Lockefield Village, where the IUPUI Office of Sustainability is located. This was accomplished through a collaborative effort between IUPUI students, faculty, the Indiana Urban Forest Alliance, local businesses and various other facets of community support. Prior to the Lockefield planting, an informative tree care workshop was hosted on campus by IUPUI Tree Campus intern Greg Walker, and IUFC director Holly Jones. The workshop was funded through an Arbor Day mini-award. Participants were instructed on proper tree planting techniques, and general tree maintenance. This workshop provided a pre-volunteer opportunity for a select group of individuals to act as sub-leaders for the primary Arbor Day planting on campus. Both the planting, and pre-planting workshop are depicted in the following video: https://www.youtube.com/watch?v=4sEemWM9GAM http://inside.iupui.edu/editors-picks/fyi/2016-05-03-fyi-round https://www.facebook.com/pg/IU

- **Documents:**
  - Arbor Day Observance 2
  - Arbor Day Observance 1

Standard 5

Service Learning Project Details

- **Date of Service Learning Project:** Apr 27, 2016
- **Short Summary of the Event:**
  IUPUI's Office of Sustainability worked with several project partners to provide a tree education workshop, part of a Tree Campus USA Arbor Day Mini-Award. This workshop allowed IUPUI to have a select sub-group of volunteers trained in higher-level, more defined tree planting techniques. Instruction was provided by IUPUI Office of Sustainability intern Greg Walker and Indiana Urban Forest Council Director Holly Jones. The workshop was held in preparation of IUPUI's Arbor Day observance later that week in which 20 additional trees were planted. A highlight reel of the tree care workshop and subsequent Arbor Day planting can be found here: https://www.youtube.com/watch?v=4sEemWM9GAM Full list of project partners: Arbor Day Foundation Alliance for Community Trees Tree Campus USA Indiana Urban Forest Council Keep Indianapolis Beautiful IUPUI School of Public and Environmental Affairs The Avenue Creative Living IUPUI Office of Sustainability
- **Number of Students Involved:** 20
- **Documents:**
  - Service Learning Project 1
  - Service Learning Project 2

IUPUI Tree Care Plan - 2016

The IUPUI (Indiana University-Purdue University Indianapolis) Tree Care Plan should serve as a guide to the University in its goal of carrying out the 2012 IUPUI Master Plan's proposal of creating "a green network that includes riparian corridors and tree cover forming a campus urban ecosystem; new memorable spaces; improvements to campus edges and greenways; and enhancements to the pedestrian realm." Increasing the tree canopy on campus will also help with storm water management, sequester carbon, and reduce the heat island effect of urban environments. Specifically, this plan supports the recommendation of the 2012 IUPUI Master Plan to "implement a…Tree Management Plan for the campus."

Objectives of the plan are to:

- Facilitate the achievement of at least a 28% tree canopy on campus, as recommended by the 2012 IUPUI Master Plan http://masterplan.indiana.edu/iupui/iupui.cfm
- Protect and maintain the campus urban forest by ensuring proper species selection and care, and by managing the impact of development and construction on campus trees.
- Educate campus community members to respect and value trees and their ability to make the campus a more beautiful, healthful and livable urban environment.
- Connect the IUPUI campus to its urban environment and help to establish IUPUI as a leader in urban sustainability initiatives.

Responsible Department

The responsibility of the IUPUI Tree Care Plan lies with the IUPUI Campus Facility Services – Grounds Operations and in collaboration with the IUPUI Office of Sustainability and the University Architect's Office.

Campus Tree Advisory Committee

A Campus Tree Advisory Committee was established November 2011. The committee is comprised of faculty, staff and students from across campus, as well as community representatives. The committee meets quarterly and provides important input for the care and

improvement of the campus landscape. The work of the committee is organized in an online confluence space (https://uisapp2.iu.edu/confluence-prd/display/tcusaiupui/Home).

Campus Arboriculture Practices

The IUPUI campus follows the General Site/Landscape Standards established by the Indiana University Office for Capital Planning and Facilities.

Indianapolis has a temperate climate, and with an even distribution of rain throughout the year there are no wet or dry seasons. The summers are very warm, and polar air from the north produces very cold, low humidity winters, although, we continue to experience diverse and unpredictable patterns. These characteristics play a role in the way that IUPUI handles the selection and planting of new trees as well as the maintenance of existing trees. As a rule, IUPUI attempts to plant only native tree species on campus property.
During the summer of 2012 there was a severe drought, leading to a water ban. Due to the drought there were added pressures to the groundskeepers and they were unable to tend to all of the problems by themselves. A group of volunteers consisting of IUPUI students, faculty, and staff took it upon themselves to do some of the watering. They focused specifically on young trees, and by the end of the summer they had contributed a combined total of 108 volunteer hours. We will continue to support these severe weather occurrences with volunteer assistance as needed.

Tree selection – When possible, choose a native tree species that fits into the vertical and horizontal space, environmental conditions and exposures. Also, plan for adequate root zone space and conditions for long-term plant growth, keeping in mind any future development plans.

Planting – In most urban planting locations, soils are inadequate to provide proper nutrients, moisture, moisture retention, and drainage to promote a healthy tree. Consider the extra soil preparation and planting time, labor, and soil amendments (if applicable) that will contribute to a long life for the tree. The tree structure above ground shall be inspected for damage to the limbs and trunk, the location of the root flare, and the root system if possible for bare root or container grown plants, or the integrity of the soil ball for ball & burlaped trees. If possible, remove the top 1/3-1/2 of the wire basket. The tree

should be planted with the root flare at or just above the finished grade.

Watering - The soil conditions and weather/time-of-year will determine watering needs in the first two years, and possibly for 3-4 years of the tree's new life. Indiana rainfall cannot be relied on for the tree's water needs in the first few years of life. A scheduled regimen for inspection and watering is labor intensive, but is balanced by the initial cost of the investment and the long-term value of a mature tree. Knowing the soil type, drainage conditions, and moisture retention of the root environment will help in monitoring the water needs of the tree. To help alleviate some of the difficulty of a strict watering regimen, Grounds Operations will use "Gator bags" when possible to water new trees.

There are also continued efforts to incorporate water friendly structures in our campus' new building projects. Indiana University has instituted a policy that all new buildings and major renovations will be required to meet the minimum Leadership in Energy & Environmental Design (LEED) Silver standards. Some examples of these efforts can be found in the cisterns and rain gardens by the Glick Eye Institute (LEED Gold) and the Science and Engineering Lab Building (SELB), dedicated in November, 2013. The SELB site also contributes a number of sustainable design features, including a rain garden for storm water management and the use of native and adaptive plants in the landscaping. A recent addition is the Neuroscience Research facility (LEED Gold) that incorporates water efficient landscaping and the newly renovated Rotary Building certified LEED Silver in October, 2014. Many of these new sites incorporated additional native landscapes and trees.

Mulch - 2-3 inches of mulch is adequate to aid as a barrier to protect the roots from extreme high temperatures and to conserve soil moisture. Keep mulch from being in contact with the tree trunk.

Tree pruning – After planting, only broken or damaged limbs should be pruned. When necessary due to sidewalk or road conditions, additional pruning may take place. These additional conditions are outlined in Appendix A.

Pest management program – IUPUI Grounds Operations follows the guidelines of an Integrated Pest Management Policy, to monitor and react to insect and disease pests that affect the campus landscape. Through years of monitoring and treatment, we have developed a calendar and schedule for monitoring and treatment for the recurring pest cycles that affect the tree populations.

For complete details on the Arboricultural Practices of IUPUI, please see Appendix C.

Protection and Preservation Procedures

On the construction side, all projects must include a tree preservation plan and tree protection specification section. These require the site to be secured and inspected by the representative for the campus prior to the mobilization of the contractor. They also identify approved locations for staging, laydown, topsoil stockpile, and other associated realities of construction. Inevitably and appropriately in some instances, trees are taken during the construction process. There is a

replacement ratio of three trees for every one that is taken and the replacement location does not need to be the same as that where the tree was lost. See Appendix B for a more detailed policy.

Goals and Targets

This plan aims to help fulfill one of the overarching goals of the 2012 IUPUI Master Plan to "create a vibrant urban campus" by:

1) Increasing the tree cover from 10% to at least 28% on campus

In 2012, the IUPUI Department of Geography led a student service-learning project, developing a campus tree inventory analysis, with financial support from the Offices of Sustainability and Student Employment, with matching grant funds provided with Venture Funds through the IUPUI Solution Center. A campus tree inventory was performed, identifying species, health, DBH, and crown coverage. From this data, a GIS map was created to outline the IUPUI campus. We now have over 3,500 trees on the campus with an estimated canopy coverage of 13.0%; increasing the canopy cover to 28% would come with significant benefits in providing a natural insulator on the edge of downtown Indianapolis to reduce energy consumption, carbon dioxide release, and stormwater runoff. We plan to use and enhance the data and tools of the GIS inventory project in the campus maintenance program, with the intention of developing a dynamic, online campus map or phone app.

There are ongoing efforts to raise money for the renewal of Ball Gardens, a green space on IUPUI's campus that was designed by the creators of Central Park in New York. The new design will add a modern twist to fit with the downtown Indianapolis infrastructure. Phase I has been completed and provides a beautiful greenspace area that connects the IUPUI campus to the new Eskenazi Health Campus. Free Concert Events are hosted at the site throughout the summer months. Information regarding the history and future of Ball Gardens can be found at http://ballgardens.iupui.edu/history.html.

Recently, updated work completed was completed on the Ball Garden fountain. A news release containing further information on the project can be found here: http://news.iupui.edu/releases/2016/06/ball-nurses-sunken-garden-rededication.shtml

A large portion of funding for the 2016 calendar year was directed toward the Welcoming Campus Initiative, aimed at creating a more inviting campus for incoming students and visitors from outside IUPUI. Several trees and flowers have been planted as a result. https://chancellor.iupui.edu/initiatives-celebrations/welcoming-campus/index.html

2) Protecting the current tree canopy by educating campus and community members of the benefits that trees can provide

Continue having annual events that promote sustainability and tree care: specifically, Arbor Day, Earth Month activities, Beautify IUPUI, Campus Sustainability Day, the Green Generation Fair, partner with the IUFC to host a Tree Giveaway workshop.

Establish an "Alumni Grove," somewhere on campus such as Taylor Courtyard, Ball Gardens, or an area near the NCAA/White River Park area to act as a "Tree Walk" or promenade connector. The grove will have the same proportion of each native species as is found across the state of in Indiana. The grove would be an instructional tool, reduce energy costs for surrounding buildings during the summer, and would, as the 2012 IUPUI Master Plan states, "improve the quality of campus life by creating a vibrant outdoor space for formal and informal gatherings which enhance casual interaction and provide opportunities for outdoor events."

Increase awareness and contributions to the IUPUI Campus Beautification Fund for further support and development of tree projects.

In 2013, two of our student organizations developed an Outdoor Learning Space at one of our two Urban Garden Locations. This space incorporates urban gardening, including fruit bushes and trees and can now be utilized for outdoor classes, meetings, and other outdoor educational opportunities.

In 2014, we partnered with the Keep Indianapolis Beautiful Adopt-A-Block program, to display our commitment to environmental and community stewardship. We also partnered with the Indiana Urban Forestry Council (IUFC) to support and host their 2014 Big Tree Giveaway and Workshop that was sponsored by ACTrees and CSX Transportation. The workshop provided education on proper tree planting and maintenance, ecological services, and information on Tree Campus standards. In November, we also hosted a service workday for our student Campus Ambassadors, that included a session on sustainability at IUPUI, a sustainability scavenger hunt, and a workday assisting with mulching one of our urban gardens on campus.

3) Connecting the campus to its urban environment and local community, in the spirit of the campus' commitment to civic engagement, we will strive to collaborate with other Indianapolis partners such as Keep Indianapolis Beautiful, Reconnecting to Our Waterways, Indiana Urban Forest Council, Indianapolis Downtown, Inc., and our "peninsula neighbors" including IU Health, Eskenazi Health, the Indianapolis VA Medical Center, White River State Park, Indiana State Museum, the Indianapolis Zoo, the NCAA, and the National Institute for Fitness and Support. We also participate in an Indianapolis Higher Education Sustainability Roundtable that includes; IUPUI, Butler University, Marian University, Ivy Tech, Franklin College, UIndy, and Martin University – we are coordinating with the Indiana Sports Corporation, the NCAA and KIB, for each campus to participate in a tree planting opportunity on our respective campuses during the 2015 NCAA Men's Basketball Championships to be held in Indianapolis.

4) IUPUI has been promoting the importance of pollinators within Indianapolis. A beekeeping course was held on campus to teach participants about bees and their role in the ecosystem. A write-up of the event can be found below:

Date: Friday, November 18, 2016
The Latest Buzz: Beekeeping Basics Course
Dr. Steven Blanchard and Kathleen Prough came out to the New York Street Garden and taught over 20 participants about urban beekeeping and the importance of honeybees in our ecosystem. Dr. Blanchard is a professor at Indiana University School of Dentistry and the beekeeper at the New York Street Garden beehive on campus, and Kathleen is the apiary inspector for the Indiana Department of Natural Resources.

Students were able to suit up and get an up close look at IUPUI's urban beehive. Dr. Blanchard was even able to find the queen bee inside of the hive! To close out the session, IUPUI student Madison Mohr gave her speech over the importance of honeybees, urging students taking action and work together to provide a pollinator-friendly campus. Madison made it to the final round of IUPUI's Speech Night competition which was held on December 5th at the Old National Centre.
5) Ongoing intern research focused upon tree tracking via Arc GIS.

Tree Damage Assessment, Enforcement and Penalties

CFS Grounds Operations will monitor and inspect trees for damage from construction projects. Prior to the start of a construction project, University Architects and Grounds Operations will inspect the site and desirable trees will be noted in construction documents and drawings. The contractor shall follow proper tree protection methods. All damaged trees shall be assessed to determine if corrective measures are possible, including pruning or fertilization to stimulate the growth and vigor of the tree. Severe root or structural damage to a tree may warrant complete tree removal. A report of damages shall be sent to University Architects and the Construction Manager, and University Architects and Grounds Operations will determine compensation requirements.

Prohibited Practices

Prior to tree removal due to construction, detrimental tree health, or tree hazards that affect the tree's impact on a space, prior approval shall be received from the University Architect's Office. Beginning in 2013, we will now incorporate the consideration of harvested trees for potential repurposing and use by our furniture and design department within our IUPUI Herron School of Art & Design.

Definitions

Caliper – *The diameter or thickness of a main stem of a young tree or sapling as measured at six inches (6") above ground level. This measurement is used for nursery-grown trees having a diameter of four inches (4") or less.*
Canopy Tree – *A tree that will grow to a mature height of at least 40 feet with a spread of at least 30 feet*
Critical Root Zone – *The minimum area surrounding a tree that is considered essential to support the viability of the tree and is equal to a radius of one foot per inch of trunk diameter (DBH)*
Diameter, breast height (DBH) – *The diameter width of the main stem of a tree as measured 4.5 feet above the natural grade at its base. Whenever a branch, limb, defect or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below 4.5 feet at which a normal diameter occurs.*

GIS Base Map – *A geographically referenced electronic map of the campus site features and utility infrastructure that includes point data for some of the trees on campus*

Green space – *Any area retained as permeable, unpaved ground and dedicated on the site plan to supporting vegetation.*

Impervious surface – *A solid base underlying a container that is non-porous, unable to absorb hazardous material, free of cracks or gaps and is sufficient to contain leaks, spills and accumulated precipitation until collected material is detected and removed.*

Landscape plan – *A map and supporting documentation which describes for a particular site where vegetation is to be retained or provided in compliance with the requirements of this policy.*

Laydown area – *A space designated on a protection plan and on a construction site to allow contractor's to offload, store and manipulate products coming to and leaving the site.*

Native tree – *Any species that occurs naturally and is indigenous within the region*

Pre-bid meeting – *A mandatory meeting of all prospective bidders for any university construction project during which clarifications are made and addenda, if necessary, are identified*

Pre-construction meeting – *A mandatory meeting of the successful bidder and Owner representative prior to the start of work on any university construction project*

Tree protection plan – *A map and supporting documentation that describes for a particular site, where existing trees are to be retained in compliance with the requirements of the regulations, those tree types and their relationship to the overall reforestation plan.*

Tree inventory – *A service-learning intern's project that included a detailed tree survey of the IUPUI campus with species, DBH, and crown percentage dendrometrics.*

Preferred Trees - *a list of trees provided to outside design consultants to guide their plant palette so that their design is in keeping with the overall character of the campus canopy. Native trees will be given preference when all other aspects are equal. Other species will be considered but approval must be obtained from the University Architect's Office. The list includes:*

American Basswood – *Tilia americana*
American Beech – *Fagus grandifolia*
European Beech – *Fagus sylvatica*
Black Birch – *Betula nigra*
Cornelian Cherry – *Cornus mas*
Horse Chestnut - *Aesculus hippocastanum*
Crabapple – *Malus spp.*
Bald Cypress – *Taxodium distichum*
Flowering Dogwood – *Cornus florida*
Kousa Dogwood – *Cornus kousa*
Elm Tree - *Ulmus (hybrid)*
Douglas Fir – *Pseudotsuga menziesii*
White Fir – *Abies concolor*
Common Hackberry – *Celtis occidentalis*
Washington Hawthorn - *Crataegus phaenopyrum*
Eastern Hemlock – *Tsuga Canadensis*
Paperback Maple – *Acer griseum*
Red Maple – *Acer rubra*
Trident Maple – *Acer buergerianum*
Sugar Maple – *Acer saccharum*

Bur Oak – *Quercus macrocarpa*
Chinkapin Oak – *Quercus muehlenbergii* Northern Red Oak – *Quercus rubra* Scarlet Oak – *Quercus coccinea* Shumard Oak – *Quercus shumardii* White Oak – *Quercus alba*
London Planetree - *Platanus x acerifolia* Eastern Redbud – *Cercis Canadensis*
Eastern RedCedar - *Juniperus virginiana*
Canadian Serviceberry – *Amelanchier Canadensis*
Common Serviceberry – *Amelanchier arborea*
Black Hills Spruce – *Picea glauca var. densata*
Norway Spruce – *Picea abies*
Serbian Spruce – *Picea omorika*
Sweetgum – *Liquidamber styraciflua* Maidenhair Tree – *Ginkgo biloba* Tulip Tree – *Liriodendron tulipifera*

Dedicated Annual Expenditures

For fiscal year 2015

Contracted Tree Care

Tree fertilization	$ 13,200
Pest protection	$ 32,257
Tree trimming and tree removal	$ 19,980
Storm damage removal	$ 10,120

IUPUI Ground Operations

Leaf removal	$ 20,000
Limb cleanup	$ 0
Misc. materials	$ 0
Mulching labor	$ 30,000
Mulch materials	$ 15,000
Pest control	$ 0
Watering	$ 0
Planting labor	$ 0
Plant materials	$ 4,060
*Donated trees	$ 0
Tree trimming	$ 0
Volunteer Labor	$ 1,531
TOTAL	**$ 146,148**

*There is an IUPUI Campus Beautification Fund where donated funds are used strictly for the purchase of bulbs, plants, trees and shrubs and other products necessary to landscape the IUPUI campus including mulch, various forms of ground cover, flower bedding soil, decorative stone, edging, etc.

Communication Strategy

The Tree Care Plan, particularly the parts of it dealing with tree selection, care, protection, and replacement, will be distributed to Campus Facilities staff and all contractors whose work may have an effect on the trees on IUPUI's campus. Students, faculty, staff, and alumni will be made aware of the plan upon its adoption by announcements in/on the following:

- JAG News (electronic newsletter for students, emailed to entire campus community)
- Inside IUPUI (electronic newsletter for faculty and staff)
- IUPUI Facebook page http://www.facebook.com/IUPUI
- Facebook pages of various IUPUI schools and departments
- Student Sustainability Council's Facebook http://www.facebook.com/SustainIUPUI
- Office of Sustainability website, Facebook, Twitter
  http://sustainability.iupui.edu/
  http://www.facebook.com/IUPUISustainability
  https://twitter.com/#!/IUPUISustain
- NUVO, Indy Star, Indiana Living Green, Reconnecting to Our Waterways

The Campus Tree Advisory Committee will also strive to place a series of news stories in campus publications and in various other city publications regarding the adoption of the plan and achievement of Tree Campus USA status, special tree planting and watering initiatives, coordination with Keep Indianapolis Beautiful and other community partners, completion of the IUPUI GIS tree database, and other projects. Each of these instances will be used as an opportunity to refer to the new Campus Tree Care Plan, the work of the committee, and Tree Campus USA certification.

Appendix A

Additional Maintenance Procedures -

1. Tree limbs shall be removed to a height of 7 ft. over sidewalks and 14 ft. over roads and parking areas. Limbs will be removed from around area lights to prevent diminished light from the fixture. This should be typically done in June after full leaf out.
2. Young trees will receive annual pruning for up to five years after planting. The purpose of the pruning will be to direct the tree into the appropriate form for the species and the site.
3. The "walk around" should help determine what maintenance the tree requires. Trees in close proximity to buildings, roads, parking lots, sidewalks, and high use areas should be evaluated for several conditions. Priority should be made for hazardous limbs or trees. The trees should also be checked for disease, insect infestations, dead branches, and anything that might contribute to the trees declining health. Once an evaluation is done a corrective action (if needed) will be decided and executed.
4. The timing of the pruning should be to avoid bud break and leaf drop on live wood.
5. Corrective pruning will be performed to maintain the natural shape and characteristic of the species. Pruning should be targeted at dead branches, crossing branches, suckers, water sprouts, infested branches, etc. All pruning will be done using accepted arboriculture techniques and methods.
6. Unless approved by the campus manager, tree wrap will not be used.
7. Irrigation of newly planted trees will take place at least twice monthly, unless there is adequate rainfall, during the first three growing seasons.
8. Pest control should be done as needed.
9. Mulch will be maintained at a minimum depth of 1 inch and a maximum depth of 3 inches.
10. Trees will not be removed without prior approval of the campus manager. In some cases approval will be required by the university landscape architect. Removal of dead or badly damaged trees will take place in a manner that observes all standard safety practices.
11. Stumps of removed trees will be reduced to a level beneath the soil grade that allows replanting in that location.
12. Remove stump shavings and back fill hole immediately after stump grinding

Appendix B

From the Office of Indiana University Architects:

SECTION 02231

TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes tree protection for existing trees indicated to remain. List below only construction that the reader might expect to find in this Section but is specified elsewhere.

B. Related Sections include the following:
   1. Division 2 Section "Site Clearing" for removal limits of trees, shrubs, and other plantings affected by new construction.
   2. Division 2 Section "Earthwork" for building excavation, backfilling, compacting and grading requirements, and soil materials.
   3. Division 2 Section "Landscape Material" for tree and shrub planting, tree support systems, and soil materials.

1.2 DEFINITIONS

A. Tree Protection Zone: Area surrounding individual trees or groups of trees to remain during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For tree service firm and arborist.

C. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

D. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.4 QUALITY ASSURANCE

A. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of tree protection and trimming.

B. Arborist Qualifications: An arborist certified by ISA or licensed in the jurisdiction where Project is located.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.

B. Topsoil: As specified in Division 2 Sections “Lawns and Grasses” and “Exterior Plants.”

C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Chain-Link Fence: Metallic-coated steel chain-link fence fabric of 0.120-inch- diameter wire; a minimum of 48 inches high; with 1.9-inch- diameter line posts; 2-3/8-inch- diameter terminal and corner posts; 1-5/8-inch- diameter top rail; and 0.177-inch- diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.

E. Organic Mulch: As specified in Division 2 Section “Landscape Material.”

PART 3 - EXECUTION

3.1 PREPARATION

A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Maintain temporary fence and remove when construction is complete.
   1. Install chain-link fence according to ASTM F 567 and manufacturer's written instructions.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.
   1. Apply 2-inch average thickness of organic mulch. Do not place mulch within 4 inches of tree trunks.

D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

E. Maintain tree protection zones free of weeds and trash.

F. Do not allow fires within tree protection zones.

3.2 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.
   1. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction.
   2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.3 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist, unless otherwise indicated.
   1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.

B. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.4 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction.

B. Cut branches with sharp pruning instruments; do not break or chop.

3.5 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

B. Remove and replace trees indicated to remain that die or are damaged during construction operations that arborist determines are incapable of restoring to normal growth pattern.
   1. Provide new trees of same size and species as those being replaced; plant and maintain as specified in Division 2 Section "Exterior Plants."

3.6 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner's property.

Appendix C

Indiana University Landscape Standards10/2006

SECTION 02110 SITE CLEARING

PART 1- GENERAL

1.01 RELATED WORK

A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division - 1 Specifications Sections, apply to work of this Section.

B. Section 02200 - Earthwork

1.02 DESCRIPTION OF WORK

A. Provide site clearing work as shown and indicated.

B. Site clearing work includes, but is not limited to:

1. Protect existing or newly planted trees and plants as shown on drawings or as directed by Architect/Engineer.
2. Removal of trees and other vegetation.
3. Topsoil stripping.
4. Clearing and grubbing.
5. Removing above-grade improvements.
6. Removing below-grade improvements.
7. Installation of erosion control fabric.

1.03 JOB CONDITIONS

C. Erect protection prior to any disturbance associated with new construction on site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fence: Plastic mesh safety fence no less than 4' in height.

B. Stakes: Steel Channel Posts

C. Wire: Galvanized iron wire, 12 gauge.

PART 3 - EXECUTION

3.01 SITE CLEARING:

A. General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items elsewhere on the site or premises as specifically indicated. Removal includes digging out stumps and roots.

1. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.

2. Clear all material collected at base of tree to original grade. Remove collected material and clear area from trunk to dripline.

Where trees are indicated to be left standing, stop topsoil stripping a sufficient distance to prevent damage to main root system.

D. Installation of Protection Fence: Drive stakes 6' o.c. along the line designated by the greatest reach of a branch from the trunk. Drive stakes 18" deep. Place fence outside the stakes and secure with wire. Overlap fence by 4' on the ends and secure with wire. Allow no gate for access into dripline area through snow fence.

E. Use only hand methods for grubbing inside drip line of trees indicated to be left standing.

END OF
SECTION

B. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.

2. Protect structures, utilities, sidewalks pavements, and other facilities from damages caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

a. Perform excavation within drip line of large trees to remain by hand, and protect the root system from damage or dry out to the greatest extent possible. Maintain moist condition for root system and cover exposed roots with burlap. Paint root cuts of 1" diameter and larger with emulsified asphalt tree paint.

PART 3 - EXECUTION

3.02 PLACING TOPSOIL

A. Use topsoil in relatively dry state.weather. place during dry

B. Fine grade topsoil eliminating rough or low areas to ensure positive drainage. Maintain levels, profiles and contours of sub-grades.

C. Remove stone, roots, grass, weeds, debris and other foreign material while spreading.

D. Manually spread topsoil around trees to prevent damage which may be caused by grading equipment.

PLANT MATERIALS AND INSTALLATION

Landscape contractor will be pre-qualified with five years minimum experience in landscape installation of similar size projects.

- All plant material will conform to the current issue of the American Standard for Nursery stock published by the American Association of Nurserymen.

- Plant material must be selected from nurseries which are located in hardiness zones similar to the project's location. Nurseries must also be inspected and approved by state and federal agencies.

- Plant materials must be approved by the landscape architect prior to digging and delivery.
  Plant material inspections and approvals can be done at the nursery or by photographs. A minimum of two photographs per plant type with a front and side view is required. Photographs must indicate size, shape, color, and nursery growing conditions.

- Plant materials will have the following minimum sizes:

Deciduous shade type trees	2.5" caliper
Deciduous ornamental trees	1.5 "caliper
Deciduous shrubs, dwarf & semi-dwarf	15"-18"
Deciduous shrubs, medium Deciduous shrubs, large Evergreen Trees	18"- 24"
Evergreen shrubs, dwarf & semi-dwarf	24"- 30"
Evergreen shrubs, medium Evergreen shrubs, large Perennials, 2 year plants	7'-8' ht.
Roses, No. 1 grade	15" -18"
· Ground Covers, 2 year plants	18"-24"
Bulb	24"-30"
Annual flowers	2 gal.
	2 gal. No.1
	Top size
	18 pack flats

SECTION 02490 PLANT MATERIALS

PART 1 -GENERAL

1.01 WORK INCLUDED

A. Trees, shrubs, perennials, bulbs and flowers.

B. Topsoil bedding and mulching.

C. Maintenance

1.03 QUALITY ASSURANCE

A. Perform work with personnel experienced in the technical and construction tasks required of this section under the direction of a skilled foreman.

B. Plant materials will be approved by Landscape Architect prior to digging and shipping. Contractor will submit photos from at least two sides of material indicating size, shape and condition to the Landscape Architect for approval if material is located more than 50 miles from project site.

C. Ship landscape materials with certificates of inspection required by governing authorities. Comply with regulations applicable to landscape materials. Indiana Nurserymen's Association, American Association of Nurserymen's American Standard for nursery stock and Federal specifications Q-F-
241D and A-P-166E.

D. Do not make substitutions. If specified landscape material is unavailable, submit proof of non- availability and proposal for use of equivalent material to Landscape Architect.

E. Analysis and Standards: Packaged standard products with manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

1.04 DELIVERY, STORAGE AND HANDLING

A. Immediately before digging, all plant material shall be marked to indicate north side at time of digging. Provide freshly dug trees and shrubs. Do not prune prior to delivery. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or destroy natural shape. Provide protective covering during delivery.

B. Root ball size: The minimum root ball diameter for trees and shrubs shall be as follows:

1. Trees

Caliper inches	Minimum Root Ball Diameter
1"-1-1/4"	18 times larger than caliper
1-1/2"- 2-1/4"	15 times larger than caliper
2-1/2"- up	13.5 times larger than caliper

2. The minimum root ball diameter for trees shall be 1/3 the tree height when tree size is specified by height, i.e.; 8ft. high tree will have a minimum root ball diameter of 32".
3. The minimum root ball diameter for shrubs (36" high and larger) shall be 1/3 their height. Shrubs less than 36" high shall have a minimum root ball size equal to their spread.
4. Root ball depths:
   a. Root balls with diameters less than 48" shall have a depth of not less than 75% of their diameter.
   b. Root balls with diameters 48" to 60" shall have a depth of not less than 66-2/3% of their diameter.
   c. Root balls with diameters over 60" will have the depth scaled down proportionately

C. Deliver trees and shrubs after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, then store plant material in shade. Protect from weather and mechanical damage and keep roots moist. Provide cover if necessary.

D. Reject plants when ball of earth surrounding roots has been cracked or broken during delivery or planting process.

E. Reject plants when burlap, staves, and ropes required in connection with transporting have been displaced prior to acceptance.

1.05 WARRANTY

A. Provide one year warranty from plant material acceptance.

B. Replace dead, unhealthy, and misshapen plant materials.

C. Replacements: Plant materials of same size and species, with a new warranty commencing on date of replacement.

PART 2-PRODUCTS

2.01 MATERIALS

A. Trees and shrubs: Species and size as identified on landscape plan, grown in climatic conditions similar to those in locality of the project site.

H. Fertilizer: For trees and shrubs, provide slow release granular fertilizer with not less than 10% available phosphoric acid and 3-5% total nitrogen and from 3-5% soluble potash.

I. Mulch: Shredded native hardwood bark. 3" minimum layer, pieces shall not exceed Yz" x 1" x 4" and contain a minimum of 25% organic material.

PART 3-EXECUTION

3.01 PREPARATION

A. Verify topsoil and plant bed soil is ready for planting operations. Prepare planting areas and beds for plant installation.

3.02 INSTALLATION

A. Place plant materials or location stake for review and final orientation by Landscape Architect prior to installation.

B. Excavate for plant materials.

1. Plant pits shall be circular in outline and shall have vertical sides and flat bottoms. They must be excavated at least 6" deeper than the root balls. Their diameter shall be:
   a. At least 3' larger than plant root balls 5 feet larger in diameter.
   b. At least 2' larger than tree plant root balls 2 to 5 feet in diameter.
   c. A minimum of 18" larger than plant root balls less than 2 feet in diameter.

C. Set plant materials relative to grade as originally grown, after settlement, and orient north side of plant.

D. Set plants in pits partly filled with prepared topsoil mixture, at a minimum depth of at least 6" as indicated under each plant. Pull away burlap, ropes wires, etc. from top of root ball. All covering and ropes other than burlap and hemp shall be completely removed.

E. Backfill soil mixture in 6" layers. Maintain plant materials in vertical/plumb position. Dish top of backfill to allow for mulching.

F. Thoroughly water soil when the hole is half full, even if it is raining, and again when full. Water plant materials as indicated.

G. Mulch pits and plant beds. Provide 3" thickness of mulch and work into top of backfill and finish level with adjacent grades. Mulched tree pits shall be a diameter of 6 feet. Unless pit area is restricted by site elements.

H. If deciduous trees or shrubs are moved in full leaf, water root zone thoroughly and spray with anti- desiccant at nursery before moving and again two weeks after planting.

I. Pruning: Thin out and shape trees and shrubs in accordance with standard horticultural practice. Prune trees to required height and spread. Do not cut tree leaders, and remove only injured or dead branches. Prune shrubs to retain natural character. Do not shear.

3.04 TRANSPLANTING EXISTING PLANTS

A. Indicate north side of plants before digging. Before digging deciduous plants which are in full leaf, water root zone thoroughly and spray with anti-desiccant as per manufacturer's instruction and again two weeks after transplanting.

B. All transplanted plants shall be balled and burlapped. Minimum size and depth of root ball shall be as specified in paragraph 1.04B.

C. Temporary storage: Existing plants which have been removed and cannot be replanted immediately shall be "healed-in" with topsoil, mulch, or sawdust. "healed-in" plants shall be kept shaded and their root balls kept moist until they can be replanted. Replant according to specifications outlined in Part 3- Execution.

D. Warranty: Transplanted material in full leaf shall not be warranted. All other warranties apply.

3.05 INSPECTION OR INITIAL ACCEPTANCE

A. Maintenance and warranty shall begin after landscape inspection and acceptance. This inspection can be on all or partially completed work under this contract.

B. At the time of final inspection, the Landscape Architect and owner reserve the right to postpone final acceptance until that time in the future when positive acceptance or rejection can be determined.

3.06 MAINTENANCE AFTER INITIAL ACCEPTANCE OR INSPECTION

A. Begin maintenance of plant materials immediately after planting and continue until 30 days after initial acceptance.

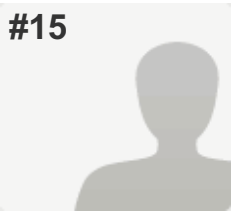
B. Maintenance shall include measures necessary to establish and maintain plants in a vigorous and healthy growing condition. Include the following:

1. Cultivation and weeding tree pits. When herbicides are used for weed control, apply in accordance with manufacturer's instructions. Remedy damage resulting from use of herbicides.
2. Water sufficient to saturate root system.
3. Pruning, including removal of dead and broken branches, and treatment of prune wounds.
4. Disease and insect control.
5. Replumb trees and stake if required. Repair or replace accessories when required.

C. Job site will be kept neat and attractive during 30 day maintenance period.

END OF SECTION


INDIANA URBAN FOREST COUNCIL
TREE CAMPUS USA
U DAY



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PAGE 1: Tree Campus USA Arbor Day Mini-Award Final Report

Q1: College Campus Information

Campus:	Indiana University-Purdue University Indianapolis (IUPUI)
First Name:	Greg
Last Name:	Walker
Title:	Office of Sustainability/Keep Indianapolis Beautiful Intern
Address:	980 Indiana Avenue, LV4408
City:	Indianapolis
State:	Indiana
Zip:	46202
Email:	intern1@kibi.org
Phone:	(317) 274-2550

Q2: ACT Member Contact Information

First Name:	Holly
Last Name:	Jones
Title:	Executive Director
Organization:	Indiana Urban Forest Council (IUFC)
Address:	P.O. Box 30663
City:	Indianapolis
State:	Indiana
Zip:	46202
Phone:	(317) 517-9180
Email:	director@iufc.org

Q3: Provide a brief overview of your Arbor Day event:

Site name and location:	Indiana University-Purdue University Indianapolis (IUPUI) campus
Project description:	We provided a tree education workshop that train designated Student Tree Captains. These Student Tree Captains were team leaders and guided student groups on the actual IUPUI campus Arbor Day tree planting. This workshop included a hands-on demonstration with trees that educated Tree Captains on proper planting techniques; pre and post tree care and maintenance; information on IUPUI's Tree Campus USA program; an overview of IUPUI's tree care plan; a highlight of IUPUI's green spaces and activities; and information on how they can apply these techniques at home. This workshop was opened to the general campus population. Participants were given multiple resources to take with them, including the following: Indiana native tree species list, tree benefit calculator, pest management, pruning, local tree and forest organizations, tree planting instructions and tips, and other general tree resources. This workshop was led by IUFC and a current Keep Indianapolis Beautiful (KIB)/SPEA/Office of Sustainability Community Engagement Student Intern who is trained in best practices in tree planting. Attendance was limited to 50 registrants (20 students, 30 other campus/community members). In addition to instructional guides, attendees also received a tree sapling and t-shirt to take home. Student Tree Captains who attended the Arbor Day Tree Planting Workshop acted as group leaders on the day of IUPUI's annual Arbor Day tree planting. Approximately 20 large trees were purchased by the University for planting across campus. IUPUI Campus Grounds identified best locations for plantings across campus and delivered them to the correct locations. Each tree had a group of 3 students assigned to planting it (1 Student Tree Captain and 2 student volunteers), bringing the total student participation to 60. Student volunteers also received a t-shirt.
Number of trees planted (if applicable):	20
Number of college student volunteers engaged:	60
Event date(s):	04/27/2016 & 04/29/2016

Q4: How was the $1000 funding used for this celebration?

Funding will allow us to create an event that will be interactive with hands-on experiential learning. A hashtag will be created for the event, and participants will be encouraged to share their photos of the Arbor Day workshop and planting on various social media platforms (Facebook, Twitter, Instagram). Video footage of the day will also be captured and edited by either GlassWeb Projects, a local marketing company that specializes in sustainability, or a student communication intern. The IUPUI Office of Sustainability will work with IU Communications to ensure a story is published for the internal university audience, and we will advocate for expansion into the Indianapolis news community.

Q5: Describe how the campus and ACT member collaborated on the execution of this award?

KIB/IUPUI intern Greg Walker joined with Holly Jones director of the Indiana Urban Forest Council (IUFC) on the presentation and the live tree planting demonstration. IUFC and the Office of Sustainability were in close contact through the planning process of the lecture portion of the workshop. Both Greg and Holly were able to distribute informational handouts detailing facts on urban forestry within Indiana. The day of the Arbor Day planting, Greg and Holly were attentive to general tree health and proper planting techniques from volunteers.

Q6: Provide 2-3 quotes from college student participants who attended the event. Quotes should be focused on how this Arbor Day celebration, the ACT member organization, and/or Tree Campus USA has impacted them in a positive way.

Quote 1	“I really liked how it made me feel that I was impacting IUPUI. I felt as if I was doing something to help out IUPUI directly. I was proud to have helped IUPUI with their sustainability." –Nicole McGaughey
Quote 2	“The School of Public and Environmental Affairs (SPEA) at IUPUI was privileged to partner alongside IUPUI's Office of Sustainability in the 2016 Arbor Day IUPUI Tree Planting. I believed it was important to involve SPEA organizations -e.g., Alpha Phi Sigma - Sigma Alpha Chapter, SPEA Ambassadors, and SPEA Student Council - in this event because our students "major in making a difference." Criminal justice and public safety majors tend to dominate the limelight within SPEA, but my school also offers majors that focus on bringing campus and community awareness to environmental conservation and providing SPEA students the knowledge base and tools to effectively address sustainability issues. The Arbor Day IUPUI Tree Planting was a unique opportunity to involve the IUPUI community in promoting and actively participating in positive ecological change in an urban ecosystem. This event taught IUPUI students, faculty, and staff the impact their ecological footprint has on our environment and engendered a desire to begin considering the implications their present decisions have on Earth's future. Arbor Day IUPUI Tree Planting participants did more than just plant twenty trees native to Indiana. We made a declaration that SPEA and the IUPUI community will not accept the status quo, and our resolve in healing and preserving the environment will endure.” –Spencer Lawson
Quote 3	“I find these types of events very satisfying, because at the end of the day, you look back and see a lot of positivity resulting from it. It brings people together, you get plenty of exercise outdoors, and most importantly, you are helping celebrate the existence of trees by planting trees! It was a big help attending the tree care workshop too, which taught me a lot of new things I had not known already about tree planting and tree care maintenance.” – Tyler Jackson

Q7: I have submitted photos and/or videos from our project to Mary Sweeney at msweeney@arborday.org.	Yes

IUPUI Arbor Day Tree Care Workshop

Greg Walker, Office of Sustainability/Keep Indianapolis Beautiful/SPEA
(In partnership with The Indiana Urban Forest Council)

SUSTAIN+ABILITY IUPUI

INDIANA URBAN FOREST COUNCIL

IUPUI SPEA MAJOR IN MAKING A DIFFERENCE

keep Indianapolis beautiful INC.

#JagsGoGreen

Overview

- Why? What do trees do?
- What is Tree Campus USA? How does it relate to IUPUI?
- What types of trees will we be planting?
- Where will they be planted?
- How will they be planted?
- What is your role within the main arbor day planting?
- Live tree planting demonstration

10 Benefits of Urban Trees

#10: Oxygen Production

If oxygen is so important, why are we placing this benefit at the bottom of the list? Trees do produce oxygen, but the amount produced by urban trees isn't much compared to the amount produced by the oceans and forests of the world, and that oxygen does a pretty good job of working its way through the atmosphere to areas far from oceans and large forests.

#9: Noise Reduction/Screening

- Trees can buffer the noise from a busy road or highway or help create a quiet spot in a city. Not only can the trees physically reduce some of the sound, but they also mask unpleasant sounds with their own soothing noises of rustling leaves and birdsong.

#8: Wildlife Habitat

- Without trees, you can't establish much wildlife. Wildlife provides opportunities for informal education and nurturing curiosity, and it is essential to our urban ecosystem. Native trees are especially valuable, as a single species can host literally hundreds of species of native insects that in turn feed birds and other animals.

#7: UV Radiation Protection

- A tree's shade can reduce UV exposure and delay sunburn. The benefit will vary depending on the density and spread of the canopy, but dense shade can offer up to a 95% reduction in UV radiation.

#6: Water Quality Improvement

- Whenever we get a heavy rain in Indianapolis, we are at risk for a combined sewer overflow. What this means is that so much rain is running off of our paved surfaces and into our sewer system that raw sewage overflows and gets into our natural waterways. Trees can reduce the number and severity of combined sewer overflows by collecting rain on leaves, bark, and in the soil. Indianapolis is doing great work in using green infrastructure to manage stormwater, and was even featured in a 2013 report from the Natural Resource Defense Council, but there is still a long way to go.

#5: Greenhouse Gas Reduction

- Trees use the carbon dioxide in the air to make the sugars they need to live, and this helps offset the carbon dioxide we produce both biologically and through burning fossil fuels. In one year, an acre of mature trees can consume enough carbon dioxide to match what is emitted by an average car driving 26,000 miles. Our urban forests aren't large enough to totally compensate for the amount of carbon dioxide we produce, but they certainly reduce it.

#4: Air Quality Improvement

- Producing oxygen and capturing carbon dioxide are types of air quality improvement, but urban trees don’t stop there. They can also reduce air pollution as the trees catch particulate matter in the air that might otherwise turn into unhealthy smog or contribute to asthma.

#3: Health Benefits

- Beyond reducing UV radiation, trees offer some surprising and substantial health benefits. Trees reduce asthma and respiratory disease by reducing air pollution. Being around trees and other plants can have psychological effects similar to antidepressants and ADD medication, and they have been shown to reduce stress. Hospital patients with a view of greenery recover faster, require less pain medication, and have fewer complications than patients without such a view.

#2: Aesthetic and Socio-Economic Benefits

- We intuitively understand the aesthetic benefits of trees. They're beautiful, and they make the spaces around them more beautiful. The socio-economic benefits of trees are less obvious, but studies show that trees reduce crime rates, increase business sales, and reduce traffic speeds, and we also know that they increase property values and strengthen communities.

#1: Cooling and Energy Savings

- Not all of these benefits can be measured in dollars and cents, but this one can. Trees reduce heating costs through shade and evapotranspiration (as they pull water from the soil, more evaporates from the leaves and has a cooling effect), or they can provide a windbreak to reduce winter heating if properly placed. Adding greenery to cities can reduce or even eliminate the urban heat island effect. The urban heat island effect explains that urban areas tend to be substantially warmer than suburban or rural areas due to the lack of green space and the abundance of heat reflecting surfaces like glass and asphalt.

Tree Campus USA

Standard 1 - Campus Tree Advisory Committee

Standard 2 - Campus Tree Care Plan

Standard 3 - Campus Tree Program with Dedicated Annual Expenditures

Standard 4 - Arbor Day Observance

Standard 5 - Service Learning Project

TREE CAMPUS USA

Tree Campus Advisory Committee

12 person committee est. Nov, 7th 2011

Meets each quarter

Comprised of students, faculty, facility, and community

Plans and coordinates all additional aspects of the Tree Campus USA application

IUPUI Tree Care Plan - 2015

The IUPUI (Indiana University-Purdue University Indianapolis) Tree Care Plan should serve as a guide to the University in its goal of carrying out the 2012 IUPUI Master Plan's proposal of creating "a green network that includes riparian corridors and tree cover forming a campus urban ecosystem; new memorable spaces; improvements to campus edges and greenways; and enhancements to the pedestrian realm." Specifically, this plan supports the recommendation of The 2012 IUPUI Master Plan to "implement a... Tree Management Plan for the campus." Objectives of the plan are to:

- Facilitate the achievement of at least a 28% tree canopy on campus, as recommended by the 2012 IUPUI Master Plan http://www.masterplan.iupui.edu/
- Protect and maintain the campus urban forest by ensuring proper species selection and care, and by managing the impact of development and construction on campus trees.
- Educate campus community members to respect and value trees and their ability to make the campus a more beautiful, healthful and livable urban environment.
- Connect the IUPUI campus to its urban environment and help to establish IUPUI as a leader in urban sustainability initiatives.

Responsible Department

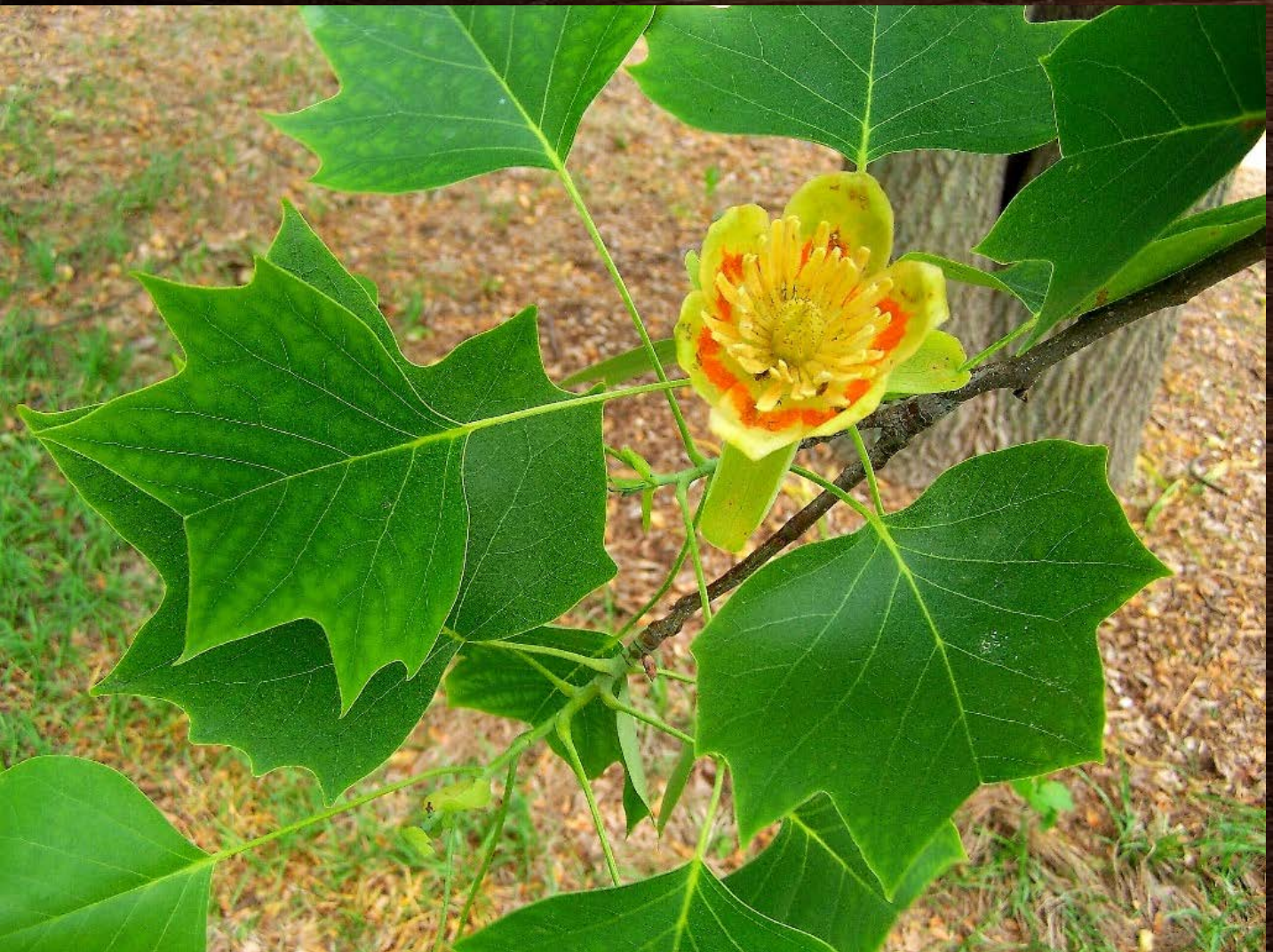
The responsibility of the IUPUI Tree Care Plan lies with the IUPUI Campus Facility Services – Grounds Operations and in collaboration with the IUPUI Office of Sustainability and the University Architect's Office.

Arbor Day Observance/Service Learning Project

For 2016's application, today's workshop and Friday's planting will be included

What types of trees will be planted?

Liriodendron tulipifera
(tulip tree)



Quercus rubra
(Northern Red Oak)

Take home Redbud Sapling

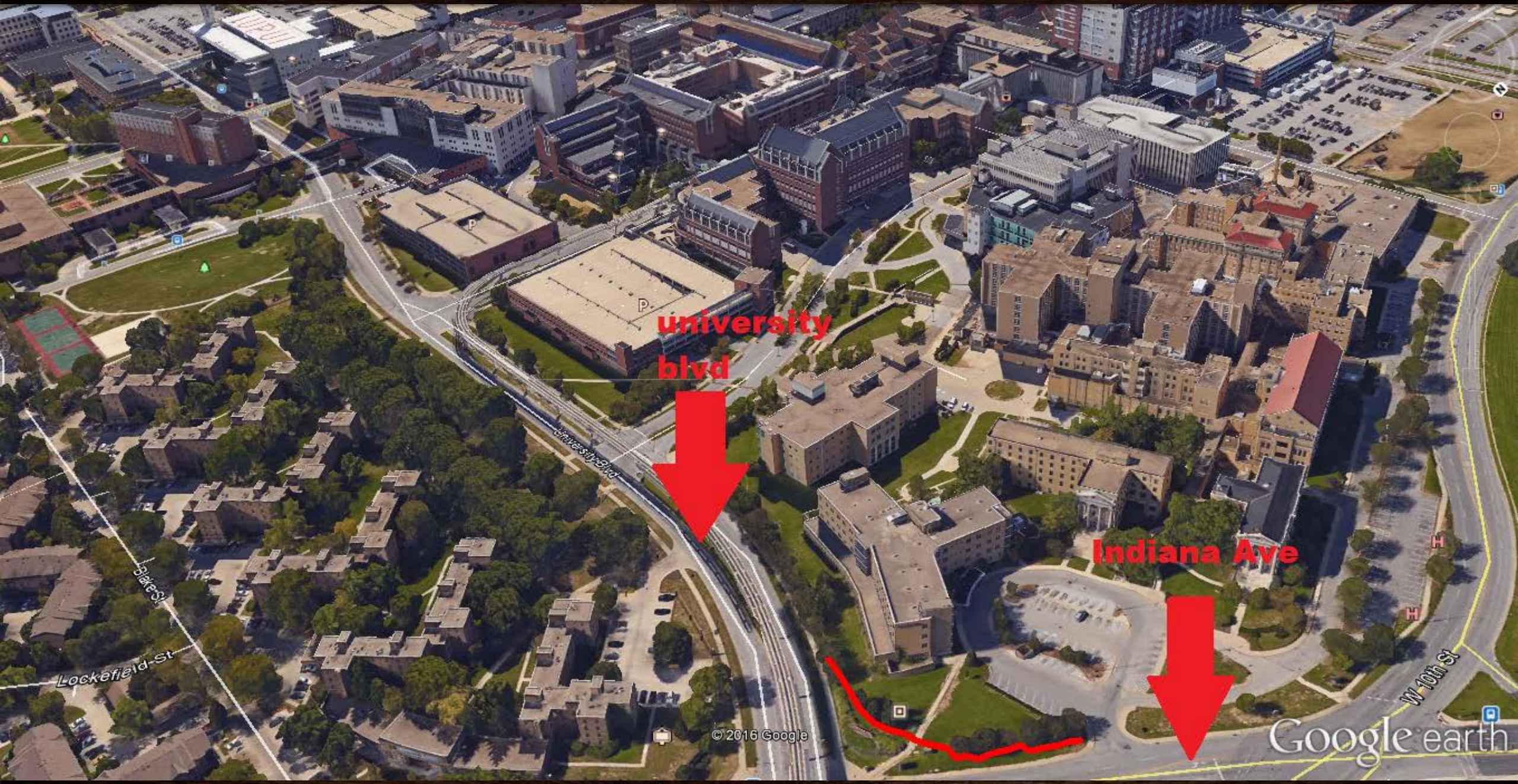
Cercis canadensis (eastern redbud)

Small understory tree (usually <30 feet tall, <1 foot diam.)

Bright pink flowers in spring. Leaves are heart shaped w/ smooth edges

Fruit is a flattened, 3 seeded pod resembling a pea pod

Balled and burlapped


university
blvd
Indiana Ave
State St
Lockefield St
W 10th St
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Tree Captain Role

How do you plant a tree?

https://www.youtube.com/watch?v=RypqSrLZVlw

Special thanks!