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Manchester Riverbank Parks Engineering & Design

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Section I - Executive Summary

At the request of the Manchester Vitality Endowment (Client), a University of Iowa Civil and Environmental Engineering student team completed designs for the update of two sites in Manchester, Iowa. The first site, the N River St. Site, is in the northwest corner of the intersection between W Main Street and N River Street. The second site, the W Marion St. Site, is east of 1 W Marion Street. These two sites compose Riverbank Parks. Implementing the Engineer's designs of Riverbank Parks would improve the organization of the Farmer's Market, enhance the aesthetics and cohesion of Manchester, and foster outdoor recreation at a combined cost of $1,066,581.

The N River St. Site is approximately 2.25 acres of gravel and spotty grass that hosts the Manchester Farmer's Market along the Manchester Walkway/Bikeway that runs parallel to the Maquoketa River on the site's western boundary. The site also functions as snow storage and parking for the Bushel & A Peck grocery store. When the Farmer's Market is open, vendors park alongside the existing trail, inhibiting pedestrian and bicycle flow. Additionally, Farmer's Market visitor parking is disorganized due to a lack of defined spots, decreasing traffic flow, and visual appeal. To resolve the Farmer's Market parking issues, improve the aesthetics of the site, and increase the utilization of the space, the Engineer has designed a site plan that features a semipermeable parking lot to host the Farmer's Market, a green space, three recreation areas, prairie, and a trail system to connect these features. It is estimated that implementation of this design would cost $884,224.

The W Marion St. Site is about 0.20 acres and consists of three levels. The first level is a relatively flat, grassy area that features a large tree and a picnic table. This area slopes northeast to the Maquoketa River to another relatively flat grassy area. These two levels are connected by a set of deteriorating stairs. This lower level then slopes sharply northeast to the rocky riverbank. This slope is covered in woody, nuisance vegetation that requires significant maintenance. While the site is not frequently utilized, it can provide a fishing spot and should the woody vegetation be removed, provide a view of the city. The team developed a site plan to reduce maintenance requirements of the site, provide safe passing to the lower flat area for relaxation, provide seating, and enhance the aesthetics of the site. This plan includes the removal of unwanted vegetation, the installation of new benches, and a staircase totaling an estimated cost of $182,356.

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Section II – Organization Qualifications and Experience

Organization and Design Team Description

The design team is composed of civil and environmental engineering students at the College of Engineering at the University of Iowa in their capstone design course, CEE4850 Project Design and Management. The team is composed of Sam Greiner, Danny Scordato, Connor Owsianiak, and Lily VanderLinden. Their designs are informed and reviewed by their faculty advisor, Dr. Craig Just.

Sam Greiner, Project Manager

Environmental Engineering, water chemistry focus

In addition to facilitating communication between the Client, Dr. Just, and the design team, scheduling and leading meetings, and supervising design work, Greiner also utilized Revit to create 3D models of both existing sites and the final designs.

Danny Scordato

Environmental Engineering, geoscience focus

Scordato led the team in prairie grass species research but also generated a layout of the W Marion St. Site that would ultimately be developed into the final design. Scordato worked closely with Owsianiak to create the drawings of both sites using Autodesk AutoCAD.

Connor Owsianiak

Civil Engineering, hydraulics and water resources focus

Owsianiak utilized his AutoCAD expertise to develop site drawings. He also led the team in the SUDAS, FEMA, and EPA research to ensure compliance in the final design.

Lily VanderLinden

Environmental Engineering, ecological engineering focus

VanderLinden recorded meeting minutes and managed file organization but mainly focused on research and report preparation. She also provided the basis of design for the W Marion St. Site.

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Section III – Proposed Services

1. Project Scope

Through the city of Manchester, Iowa (population: ~5000) flows the Maquoketa River, a beautiful tributary to the Mississippi. Situated along its banks are 2 sites planned to be updated to create Riverbank Parks by the Manchester Vitality Endowment.

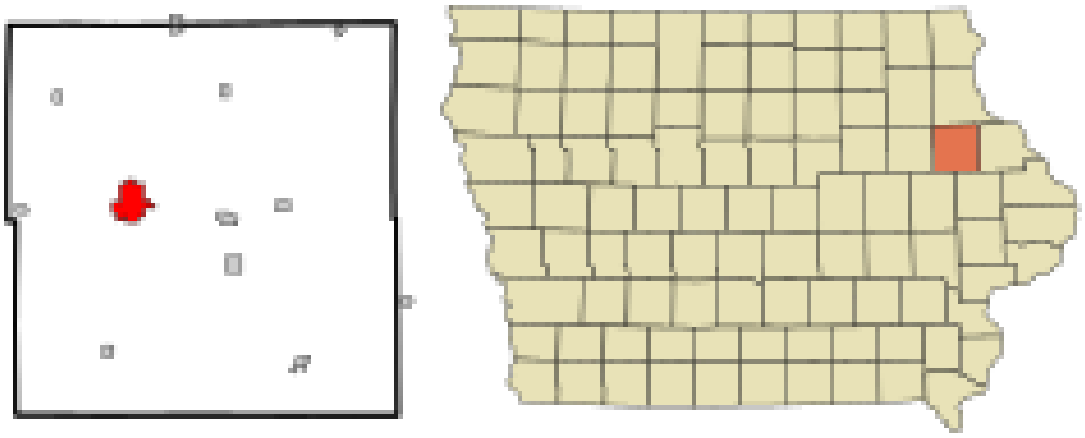

Figure 1: Manchester, Iowa

The Manchester Vitality Endowment is a committee of Manchester residents focused on funding and facilitating projects that support community and improve town aesthetics. While the Client has focused on smaller projects in the past, such as the installation of flowerboxes, funding murals, and replacing trash receptacles, the Client is now focused on the development of two sites along the Maquoketa River into Riverbank Parks. The N River St. Site is in the northwest corner of the intersection between W Main Street and N River Street, and the W Marion St. Site is the lot east of 1 W Marion Street (Figure 2).

Figure 2: Map of Manchester, Iowa with the N River St. Site and W Marion St. Site locations highlighted.

The N River St. Site is approximately 2.25 acres of gravel and spotty grass that hosts the Manchester Farmer's Market along the Manchester Walkway/Bikeway (Trail) that runs parallel to the Maquoketa River on the site's western boundary. The site also functions as snow storage, parking and holiday tree display for the Bushel & A Peck grocery store, and a staging area for an annual motocross competition. When the Farmer's Market is open, vendors park alongside the Trail, impeding pedestrian and bicycle flow. Additionally, Farmer's Market visitor parking is disorganized due to a lack of defined spots, decreasing traffic flow, and visual appeal. The N River St. Site design goals were to define an organized space for Farmer's Market vendors and visitors, create spaces for recreation, and enhance site aesthetics while maintaining sufficient snow storage space. Additionally, the design must be divisible into phases to accommodate budget and time restrictions. Figures 2 and 3 below detail the existing condition at the N River St. Site.

Figure 2: Looking South at the existing N River St. Site towards Main Street. Large portions of the site are covered in gravel and debris that create an unsightly mess.

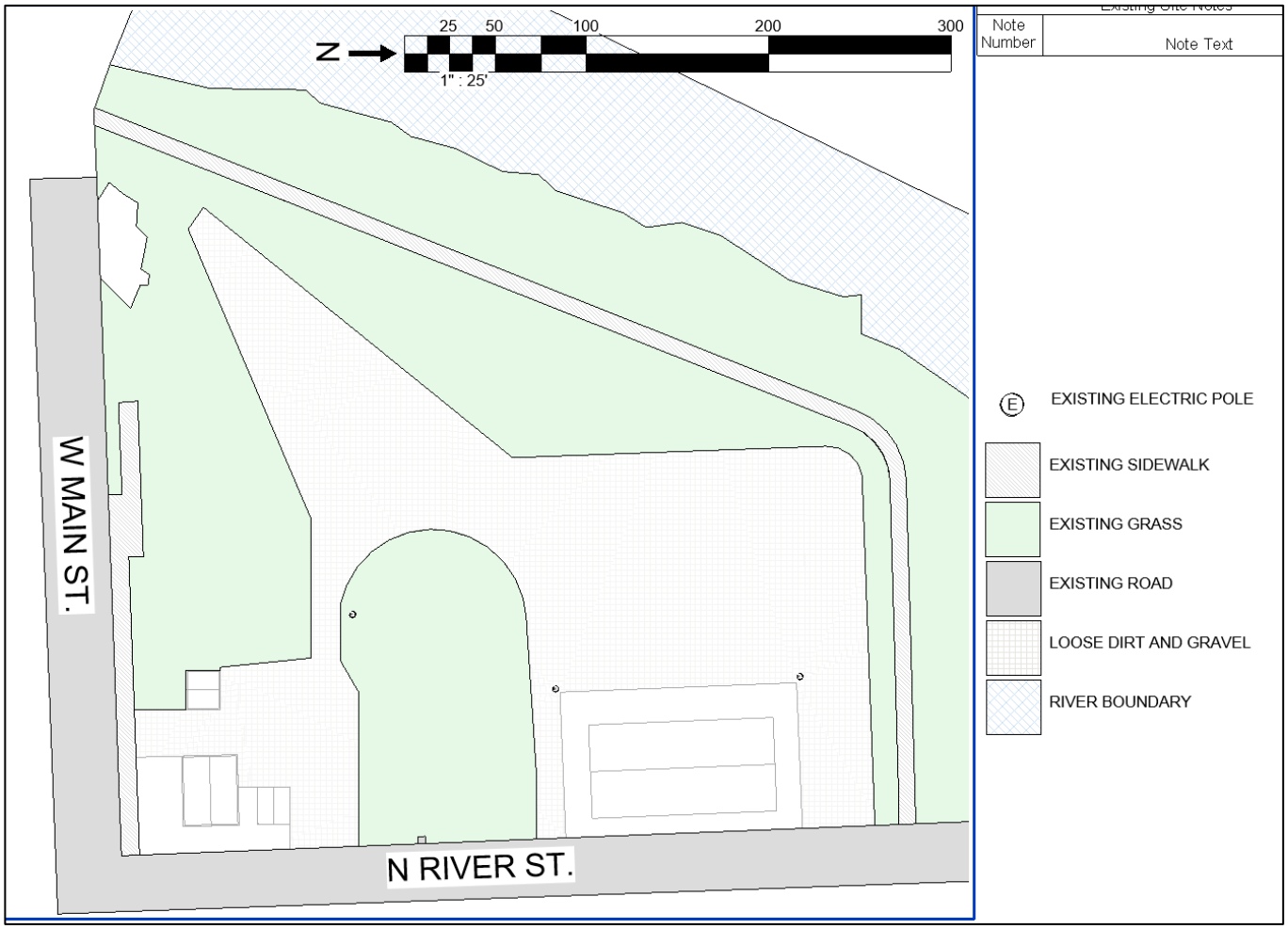

Figure 3: N River St. Site existing conditions.

The W Marion St. Site is about 0.20 acres and consists of three levels. The first level is a relatively flat, grassy area that features a large tree and a picnic table. This area slopes northeast to the Maquoketa River to another relatively flat grassy area. These two levels are connected by a set of deteriorating stairs. This lower level then slopes sharply northeast to the rocky riverbank. This slope is covered in woody, nuisance vegetation that requires significant maintenance. Design goals for this site were to install safer stairs, reduce maintenance, and to provide a view of Whitewater Park and Howard & Helen Shelly Memorial Park (Shelly Park), and the city's skyline. The existing condition for the W Marion St. Site is below in Figure 4.

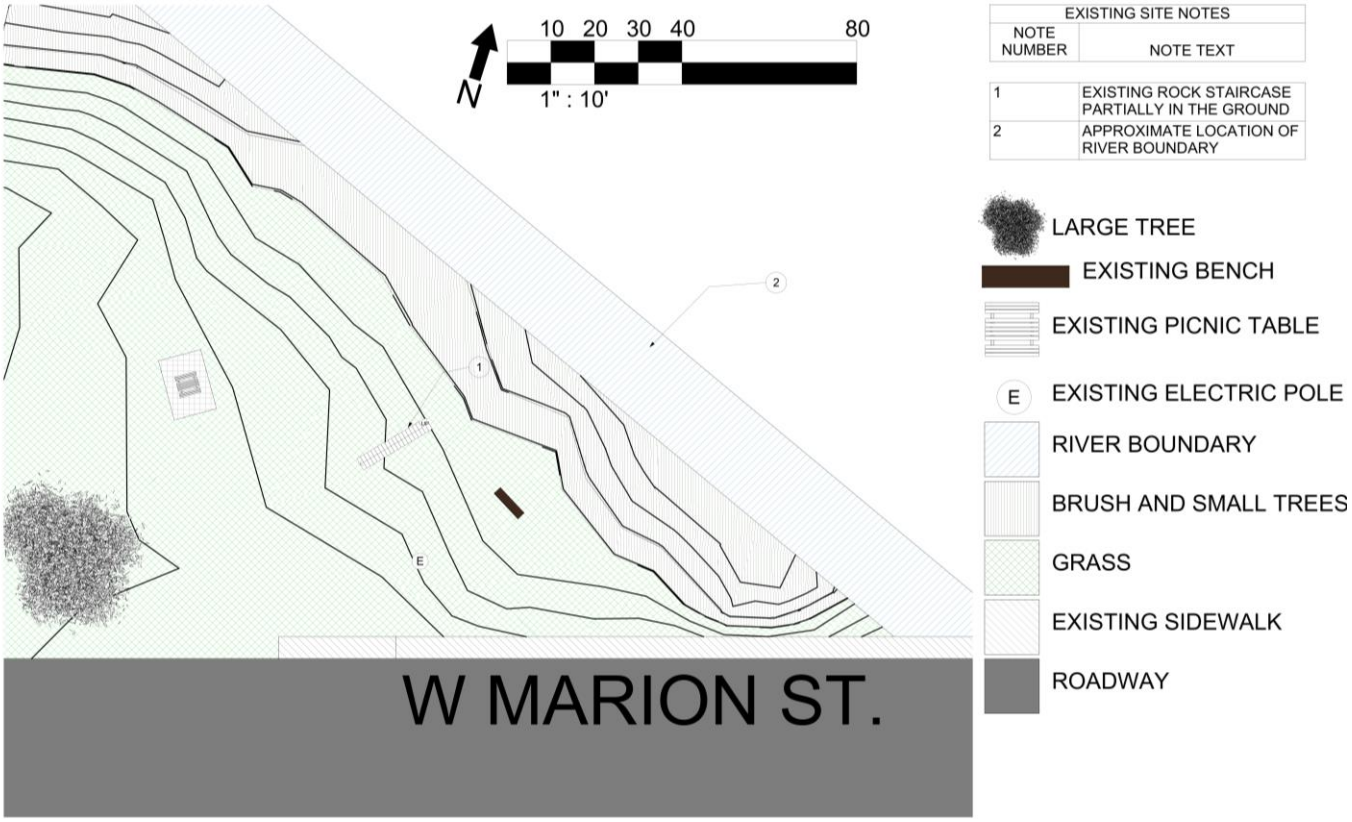

Figure 4: W Marion St. Site existing conditions, containing a bench and staircase that are in poor condition.

2. Work Plan

The process of implementing Riverbank Parks would begin with a pre-construction phase of up to three months. This phase would consist of topographic and utility surveys and soil testing. The N River St. Site was formerly a truck shipping depot and as such soil testing on this site should include BTEX contaminant testing. Contaminant testing should be strongly considered due to the potential contamination of the soil with oils and solvents used for truck maintenance and operation. These compounds, if disturbed or incorporated back into the fill, pose the potential to harm park users, especially children. Additionally, if the soil is contaminated special considerations will be needed regarding disposal of excavated earth. Testing the soil from the beginning may prevent future health hazards, as well as costly cleanup efforts should contamination be found. Topographic, utility, and soil maps would then be utilized to finalize designs. Once finalized, permit applications will need to be filed and approved. Site preparation and demolition, expected to last up to two months, would include removing gravel, existing structures, and other debris, grading, and clearing and grubbing. Rough grading and utilities would involve shaping the land for drainage, soil stabilization, and moving electrical conduits. Grading should begin as early in the year as feasible, ideally before the end of March, and prioritize the

parking lot area. Starting the grading too far into the year may leave the site barren over the winter which could lead to loss of soils and rework.

Following site preparation and demolition, Farmer's Market parking lot construction would begin at the N River St. Site. Construction is expected to take up to four months due to the inclusion of permeable pavers in addition to concrete. If the grading and parking lot construction proceeds on schedule, then grass seed could be planted in late September or October, which would give it enough time to establish prior to the cold weather months. Should parking lot construction take longer than expected, efforts should be made to seed as much of the open area on site as possible to avoid soil erosion that may negatively impact the final grade of the site and pollute the river. During the next construction season, the first phase of trail construction at the N River St. Site may commence. This phase has an expected duration of three months and includes layout and fine grading of the walkways and conversation circle. Should all trails be constructed at once to minimize mobilization costs, construction would be extended to 5 months. After the construction of the trails, the site may need additional grading to connect the landscape smoothly to the trails.

After fine grading is complete, prairie seeding at the N River St. Site would then proceed. While seeding is expected to last a month, full establishment can be expected at three years with regular maintenance. Seeding should begin in the mid to late fall which, if the other construction phases proceeded as expected, should line up with the completion of the trail connections. The final installation of park features, such as benches and play structures, is expected to take up to two months. Lastly the project closeout of final inspections, punch list corrections, cleaning up, and finally opening the parks could take up to a month. This would give an overall timeline of nine months to a year of construction, with three years for vegetation to mature.

Work on the W Marion St. Site should be completed in one construction season to minimize mobilization costs and erosion. Demolition and removal of the existing staircase, benches, and the top layer of brush is expected to occur during the first month of revitalization. During the following two weeks, a backfill of the removed staircase and grading of the north end of the site will commence. Installation of the limestone staircase and new benches is expected to last another month. It is anticipated that the placement of 8 limestone blocks to create a lookout will take another two weeks. Finally, site closeout, including reseeding of graded areas and touchups, can proceed in late summer or early fall.

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Section IV – Constraints, Challenges, and Impacts

1. Constraints

The N River St. Site is constrained by its location in a floodplain, which restricts the type of buildings that are feasible. Because the site was purchased with funds from the Federal Emergency Management Agency (FEMA), no permanent buildings containing two walls and a roof are permitted without extensive fill to increase the base elevation above the flood line. Iowa Administrative Code (IAC) adds additional restrictions on the use of fill, such that the flood storage of the site cannot be negatively impacted. Additionally, the site is limited in size and accessibility. While the site is 2.25 acres, because it must serve as snow storage, recreation, and a Farmer's Market, space must be utilized efficiently. Furthermore, street access to the site is partially blocked by the Bushel & A Peck grocery store and the storage facility, Honeycreek Storage & Warehousing.

The W Marion St. Site is limited primarily by its slope and small size. Only about half of the total area on the site is grass; the rest is comprised of nuisance shrubs and small trees located on a steep slope next to the river. These slopes are too steep to place any real amenities as they would present a safety risk to the community. The lack of space prevents adding parking that would be necessary to support more extensive design elements such as playground equipment or a gazebo. Additionally, private property abutting the site narrows the scope of potential designs even further.

2. Challenges

Although there is not a set budget, minimizing construction costs and providing phasing options will improve the likelihood of Riverbank Parks' implementation. This is especially important for this project because funding is likely to be from donations and grants. Despite this challenge, Riverbank Parks is expected to still provide amenities for the community not found elsewhere in Manchester. At the N River St. Site specifically, additional design challenges arise from the use of the space as snow storage. Because the snow storage area must be able to drain melt to a central culvert, locations of proposed trails are limited. Furthermore, to protect proposed plantings from salt, snow storage areas must be contained. Finally, entrances should be large enough and pavement must be strong enough to accommodate snow transport.

The W Marion St. Site has a steep grade between levels and a brush buildup blocking the overlook. The grade significantly limits the amount of useable space and creates a concern for the stability of the slope. The brush build up is unwanted, and a low maintenance solution is preferred. Removal of the brush along the river presents its own challenges as permanent removal would require significant chemical treatment and earthwork along the slope in a limited amount of space. Removal of the brush will also likely impact the stability of the slope and may increase bank erosion. The site does not have any parking, and the steep slope presents a safety risk so while the site needs to be made more attractive, the site should not become a major site for recreation or have dramatically increased foot traffic. Lastly, the geometry of the site makes it such that any construction or earthwork performed would be at a significant markup as the grade presents logistical complications.

3. Societal Impact within the Community and/or State of Iowa

Riverbank Parks will increase community connectivity by the addition of trails within the N River St. Site and the creation of a designated Farmer's Market. An organized space for the Farmer's Market will allow vendors to move from the existing trail and facilitate smoother traffic flow on N River Street. The new design will also provide areas for recreation, a facility for community gatherings, and access to green space. By facilitating recreation, community, and green space access, Riverbank Parks is not only anticipated to enhance the aesthetics of the N River St. Site but also promote mental health.

Implementation of the W Marion St. Site design will improve safety, reduce maintenance, and enhance aesthetics. Safety improvements will be made with the replacement of an unmaintained staircase and the discouragement of accessing the river. Maintenance requirements will be reduced because the limestone wall will act as a physical barrier for invasive species growth. While the enhancement of aesthetics will provide an easier view of the city's skyline and of the nearby Whitewater and Shelly Parks, it may also encourage visitation. Because the site has no parking, visitors may be inclined to park on the street which may reduce traffic flow or, if they park elsewhere, expose them to street danger.

Section V – Alternative Solutions

Before developing designs, the Engineer proposed multiple concepts to the Client to gain a better understanding of goals and aesthetics. This started with vision board planning before generating several alternatives. One of these alternatives was selected at both sites for further development. Final alternatives of Riverbank Parks were developed in several stages with the input of the Client, Dr. Just, and various professionals of prairie restoration, traffic, and geoscience.

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1. N River St. Site Alternative Solutions

In the conceptual stage, ideas for structural elements, materials, and entertainment were considered. This informed the styling and activity selection. Style elements that were desired include train inspired decor, organic shapes, and general cohesion with nearby Shelly Park. Activities at the N River St. Site will be facilitated by nature-inspired recreational structures and a pavilion. Following the conceptual meeting, three initial alternatives were developed for consideration. These concepts shared several design elements including the allocation of green space, a parking lot to host the Farmer's Market, and walking paths through the site. The major differentiators between the original concepts were in layout and the inclusion of optional elements.

One of the main concepts considered featured a diagonal Farmer's Market capable of hosting twelve vendors, a significant area designated for prairie, a recreational area, a gathering area with seating and a pavilion. These features would be connected by four paths, two of which would be capable of supporting vehicles. To enter the diagonal Farmer's Market, vendors would enter a one-way trail north of the Honeycreek Storage & Warehousing facility and park on a concrete pad running parallel along the east side of the facility. Vendors would then exit on another one-way trail south of the facility. While this Farmer's Market concept was more visually appealing than a standard parking lot, it was ultimately not selected due to anticipated traffic congestion, a lack of visitor parking, the unfeasibility of future expansion, and difficulty in communicating the vision. This design can be seen below in Figure 5.

Figure 5: Initial design concept for the N River St. Site including diagonal parking stalls for Farmer's Market vendors with art murals at the end of the spots. Conceptual design included a large climbing rope structure and significant prairie area.

The most significant optional feature that was considered was the addition of a structure to house the Farmer's Market. This structure would be inspired by the awning at the nearby Shelly Park, provide overhead protection, and allow for vendor access to electricity and water. Because this element was anticipated to distract from the nature-inspired aesthetic, require significant earthwork to comply with floodplain building restrictions, and add unnecessary expense, it was discarded early in the design process.

Other large amenities in the N River St. Site that were considered included an outdoor movie theater and sporting facilities. While the outdoor movie theater may have created a nostalgic amenity, it was ultimately not included in the final design because it would have decreased the amount of prairie area. Furthermore, the geometry of the site precluded sufficient seating without detracting from the trails or Farmer's Market. Although the sporting facilities would have increased the amount of youth engagement at the site as well as provide an all-ages area for recreation, it was ultimately not included due to the proximity of similar amenities in the area. Furthermore, this element would not support the vision of beautification and would decrease space available for trails and the Farmer's Market.

Ultimately, the iterative process of concept presentation followed by collaborative critique facilitated a final design that included some elements of many concepts. These design elements include permeable pavers for stall designation in the Farmer's Market, a portable restroom privacy fence, significant area designated for prairie, and nature-inspired recreation structures. Because these elements were maintained throughout the critique process, they were accepted as the most important and developed further in the final design.

2. W Marion St. Site Alternative Solutions

Many alternatives for the W Marion St. Site that were considered were larger in scope than what was ultimately developed due to the challenges that the site's geometry presents. An early design included a circular gazebo on the top of the hill with seating for ten to serve as a small community gathering area for birthday parties or picnics. The gazebo would have been similar in style to the pavilion at Shelly Park to continue the visual identity of that part of the river. This alternative was not developed further because it would not have enhanced site aesthetics when viewed from Shelly Park, and it would have been overshadowed by the large tree and nuisance vegetation. Additionally, a lack of parking at the site and proximity to a private residence make encouraging site visitation undesirable.

Another alternative that was discussed was the transformation of the steep slope into a prairie with an additional staircase down to the riverbank. Transforming the hillside would have satisfied the criteria for improved visual appeal and improved biodiversity; however, feasibility concerns related to this design caused it to not be included. Firstly, because the site is not intended to be a major social gathering spot, it is difficult to justify a large budget for purely visual changes. Secondly, since the riverbanks are so steep and the site has quite limited machinery access, any sort of earthwork would be more difficult and more expensive than similar work at another site. Additionally, the shrubs and trees on the riverbank support the slope. If they were removed, a retaining wall or similar support structures would need to be installed in their place, further increasing price. Finally, the removal of the shrubs and trees would have to be accompanied by yearly chemical treatments to prevent regrowth that would disturb the prairie during establishment. These treatments, reseeding, and mowing would increase rather than decrease city maintenance requirements. Thus, to reduce cost and maintenance requirements, a more limited design was chosen for the W Marion St. Site that made moderate improvements to the site's visual appearance.

Compliance with the Americans with Disabilities Act posed an additional challenge for the W Marion St. Site due to the steep banking and uneven ground. After considerable research and iteration, two designs options were developed. The first option, shown in Figure 6 in light gray, would extend the existing sidewalk and turning area around the existing picnic table and concrete pad. This would make the top section of the site ADA compliant under the assumption that the

upper and lower levels of the site have the same “distinct view” of downtown Manchester. If the U.S. Access Board determines that the lower area must be ADA accessible, this design would not satisfy ADA requirements. The second option, shown in Figure 6 in dark gray, utilizes the existing sidewalk and adds a straight ramp with railings down to the lower level. The lower level would need to be graded, and a path of compacted earth would be added to ensure the terrain is stable, firm, and slip resistant. This design is less preferred as it greatly bisects the site, costs considerably more, and reduces site aesthetics. Additional consultation with ADA compliance professionals will be required to determine which, if any, of the alternative designs presented would satisfy ADA requirements for the W Marion St. Site. The design presented in Section VI for this site contains the baseline changes and design goals without specific ADA accessible design elements. Design elements could be selected from Figure 6 and added to the final design after consultation with ADA compliance professionals.

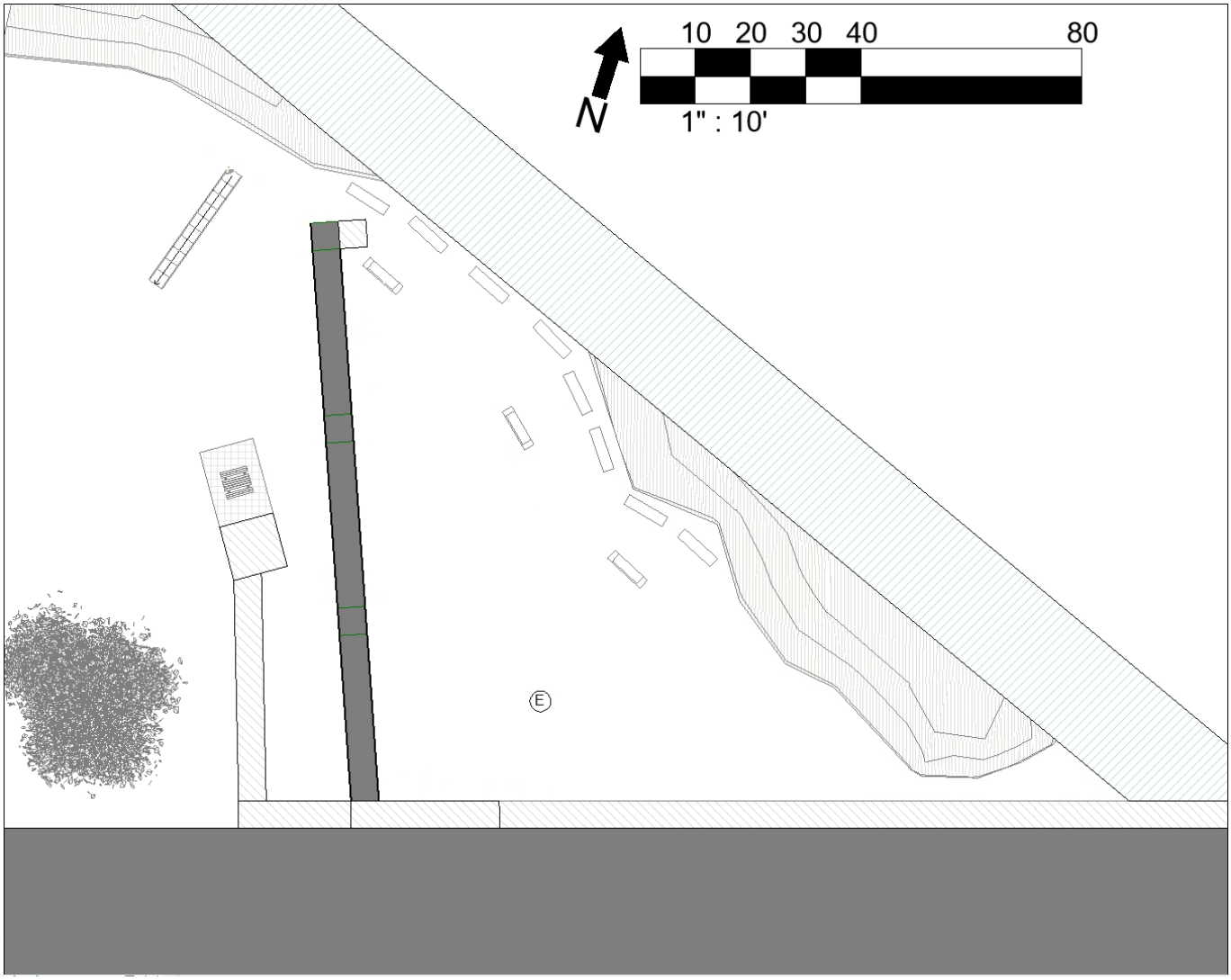

Figure 6:The W Marion St. Site with both ADA accessible design options. Option 1 in light grey is a path and viewing area at the top of the hill. Option 2 in dark grey adds a ramp all the way down to the bottom of the hill with a viewing area. Option 2 would require significant additional grading.

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Section VI – Final Design Details

North River Street Site – Phasing Plan

The Client desired the N River St. Site be transformed into beautified outdoor area that can host the Manchester Farmer's Market and community gatherings, promote recreation, and retain snow storage capacity. To accomplish this, the N River St. Site design includes a permeable parking lot with spaces designated for both vendors and visitors, several walking paths, recreation areas, and a centralized gathering area that connects all the paths and a pavilion. The design may be divided into multiple phases to make the design more financially feasible. It is the team's recommendation that the phases be constructed in order, however, after completion of Phase 0 – Site Conditioning and Grading, alternative phasing is possible. Phases 0 through Phase 3 fulfill the majority of the general site goals while Phases 4 through 6 offer standalone changes and features that accomplish more specific goals.

Figure 7: N River St. Site phase 6 site plan including all construction from previous phases. Major features include Farmer's Market parking lot structure, trail network through the prairie, pavilion, and three recreation spaces for families.

Phase 0 – Site Conditioning and Grading

Due to the existing condition of the site, significant excavation will be required to remove the gravel, debris, and trash from the N River St. Site. Soil testing will be required to determine the lateral extent of gravel soils and the depth of the gravel. Approximately the top six inches of the area shown in red in Figure 8 will have to be removed to clean up the site and remediate the soils to a condition suitable for grass and prairie growth. This would require approximately 900 cubic yards of earth to be removed and replaced with topsoil. The gravel depth in Figure 8 to the southwest is thinner, so it is likely that less gravel will need to be removed. All gravel areas will be replaced with 6 inches of topsoil regardless of the amount of gravel removed. If survey determines that less gravel removal is necessary, the total excavated volume should be checked to ensure it is still greater than the total fill. Since the N River St. Site is in a floodplain, the total excavated volume must be larger than the total fill volume such that the water storage of the site is not decreased. The estimated total fill for grading and gravel repair is 1640 cubic yards, which requires at least 1640 cubic yards of excavation.

During excavation, substantial grading should occur to flatten the Farmer's Market area and future trail construction areas. In general, the west side of the site will be lowered, and a path extending from the southern sidewalk to the northern trail will be raised to facilitate future construction. The new contours for the site can be found on sheet C104 in Appendix C. Grading the site will require both excavation and topsoil fill resulting in a net cut of about 550 cubic yards of earth removed from the site. Included in this phase is the relocation of an electric pole located roughly near the center of the site as it will interfere with future construction phases, the new location of the electric pole can be found on sheet C102 in Appendix C. After the completion of Phase 0, the site will have the unappealing gravel removed, and the site will be prepared for future construction.

Phase 1 – Farmer's Market Parking Lot Structure

A rectangular parking lot with the eastern edge curved outwards will provide organization to the Farmer's Market as well as add parking for customers and visitors to the site when the Farmer's Market is not in session. The overall design of the parking lot is below in Figure 9 and additional details on dimensions, elevations, and surface preparation can be found on sheets S102 and S501 in Appendix C. The parking lot contains 40 total spots, 3 of which are standard ADA accessible spots with a reserved parking sign and a parking aisle. A single extra wide ADA van accessible spot is also included in the parking lot structure. During the Farmer's Market the eastern curved edge would become an area that the vendors could back up into and set up their tents along the 20-foot-wide pathway the surrounds the curve. There are 14 spots along the eastern curve for Farmer's Market vendors which would leave 26 customer spots connected to the outer trail via a 5-foot-wide path. Traffic would enter the parking lot at the southwest corner

and then turn right and proceed in a one-way counterclockwise direction around the parking lot before exiting out of the same curb cut. The driving lane as well as the ADA accessible parking spaces would be made of 6-inch-thick Portland Cement Concrete (PCC) to provide an even driving and walking surface. The other 36 parking stalls would be made of permeable pavers with gaps that would allow grass to grow between the pavers. This grass, as well as larger grass areas in the parking lot, would break up the solid concrete look of the structure to ensure visual aesthetic goals are met. An optional expansion of the parking lot is detailed in Phase 6 if additional parking is required.

Phase 2 – North and South Trail Connections

Phase 2 consists of the beginning of the trail extension connecting the Farmer's Market to the existing sidewalk on the south end of the site and the existing trail network to the north. The entire trail network is ADA accessible with a 10-foot-wide path, running slopes below 5%, and cross slopes below 2%. The trail surface is 5.5-inch-thick PCC and subgrade information can be found on sheet S501 in Appendix C. Following AASHTO guidelines for bike paths there is a 2-foot grass buffer on either side of the trail which allows for better visibility and a safer place to pull off if traffic is congested. The buffer strip would also prevent the prairie from crowding the walking path. The overall design of the new trail paths is below in Figure 10. In future phases, the grass surrounding the trails will be replaced with prairie, which will create a more interesting and relaxing view for trail users. Included on the new path north of the parking lot are storage boxes for the Farmer's Market as well as a temporary portable restroom surrounded by wooden privacy walls that would reduce the negative impact a temporary restroom has on the visual harmony of the North River Street Site. Additional details on the privacy walls can be found on sheet S501 in Appendix C.

Phase 3 – Connecting Trails and Conversation Circle

The trail would be completed in Phase 3 with an elbow shaped trail connecting the trails from Phase 2 routed through a gathering area. The new trails would also connect to the western part of the existing trail at the site. The same guidelines for the trails in Phase 2 apply to the Phase 3 trails to ensure accessibility. The main feature of Phase 3 is the conversation circle, which is a large flat concrete pad hosting five benches and a medium sized picnic table. The conversation circle would be a calming area next to the prairie to read a book or have conversations with friends over a meal. There is seating for 16 in the conversation circle and the picnic table could be moved to host small events such as a solo musician. The Engineer recommends installing the prairie after the construction of Phase 3 as the later phases would require less remedial prairie work compared to Phases 2 and 3. If it is anticipated that there will be a significant gap between the previous phases, then the prairie should be installed earlier as it is the major visual improvement

to the N River St. Site. The prairie is type Moist Meadow - Rain Garden Mix by Prairie Nursery. Figure 11 below shows the completed trails as well as the extents of the new prairie grasses.

Phase 4 – Community Events Pavilion

To facilitate parties or larger community events, a 24’ x 44’ pavilion would be added at the intersection between the trails heading north and to the parking lot as seen in Figure 12. The proposed pavilion is considered a “low damage potential” structure under 567 IAC Chapter 70 because park shelters are specifically identified as structures that would sustain minimal flood damage. As such, the pavilion would not require a floodplain development permit from the Iowa Department of Natural Resources. The pavilion would be large enough to house six wooden picnic tables with seating for 36 people in total and standing room for about 50 people. The wooden pillars and roof truss should be made of dark wood to match the shade structure at Shelly Park. To construct the pavilion pad, the existing trail intersection will have to be removed such that foundations can be poured along with the expanded pad. This demolition would also require remedial prairie work as the machines required to rip up the concrete will damage the nearby prairie. For additional details on the extent of demolition required for the pavilion and future phases, see sheet C103 in Appendix C.

Phase 5 – Recreation Areas for Families

The final major design elements for the N River St. Site are three recreational spaces intended for family use that add unique play experiences for the community. The general layout of the three recreation areas can be seen in Figure 13 with the younger kids play area in the northwest, the older kids play area in the southwest, and the fitness area in the southeast. The organic shapes of the play areas were designed to make the areas feel more natural and to enhance site aesthetics. Recreation areas set aside for children's play areas include a poured rubber surface for safety that was selected over loose media due to flood concerns.

Nature based risk play features were selected for the two play areas as they are a more unique play feature not currently offered near the site. More conventional play structures like swings or slides are already present at Tirril Park to the north and the school to the east. Risk play features such as climbable rocks or balance beams offer a chance for children to gain experience making risk assessments and to grow their self-confidence. The specific play structures selected for the younger children's play area are Log Crawl tunnel, Mushroom Steppers, the Peak Rock Climber, and Log Balance Beam are all manufactured by Landscape Structures. For the older kids play area, the NatureROCKS 3 Boulder Set – Rust Sandstone by AAA State of Play was selected as it offers a more adventurous play experience. These play structures fit within the overall natural feel of the N River St. Site. Some selected play features are below in Figure 14.

The final recreation area at the N River St. Site will contain approximately eight fitness machines for parents to use while watching their kids or for the community to use to get a light workout while enjoying the trail. The fitness machines would be similar to the Olympic Spirit Fitness Course offered by WillyGoat Playground Equipment. The machines are low maintenance due to the lack of moving weights and instead, rely on body weight, reducing the number of points of failure. Additionally present in the fitness area are two sets of regulation concrete cornhole boards and a storage box to contain the bags required to use them. The cornhole boards would provide entertainment specifically for people using the pavilion for an event and would encourage community engagement.

Phase 6 – Optional Parking Lot Expansion

Phase 6 is an optional expansion of the Farmer's Market parking lot structure should the need arise for additional customer parking. The redesigned parking lot will replace some of the green space with ten additional customer parking spots constructed out of permeable pavers. The ADA spots are relocated to account for the removed green areas. This redesign does not specifically add any vendor spots should they be needed. However, the vendors could set up on one side of the center walkway if needed. As part of the redesign, a significant amount of concrete will need to be removed both to relocate the ADA spots and to aid in the installation of permeable pavers. It is also expected that at the time of the expansion, the concrete driving lanes will need some repair due to wear and tear. If, however, the expanded parking lot was installed from the beginning, then concrete removal and repair would not be needed. See Figure 15 for the expanded parking lot layout and sheet S103 in Appendix C for additional details on exact placement of new spots.

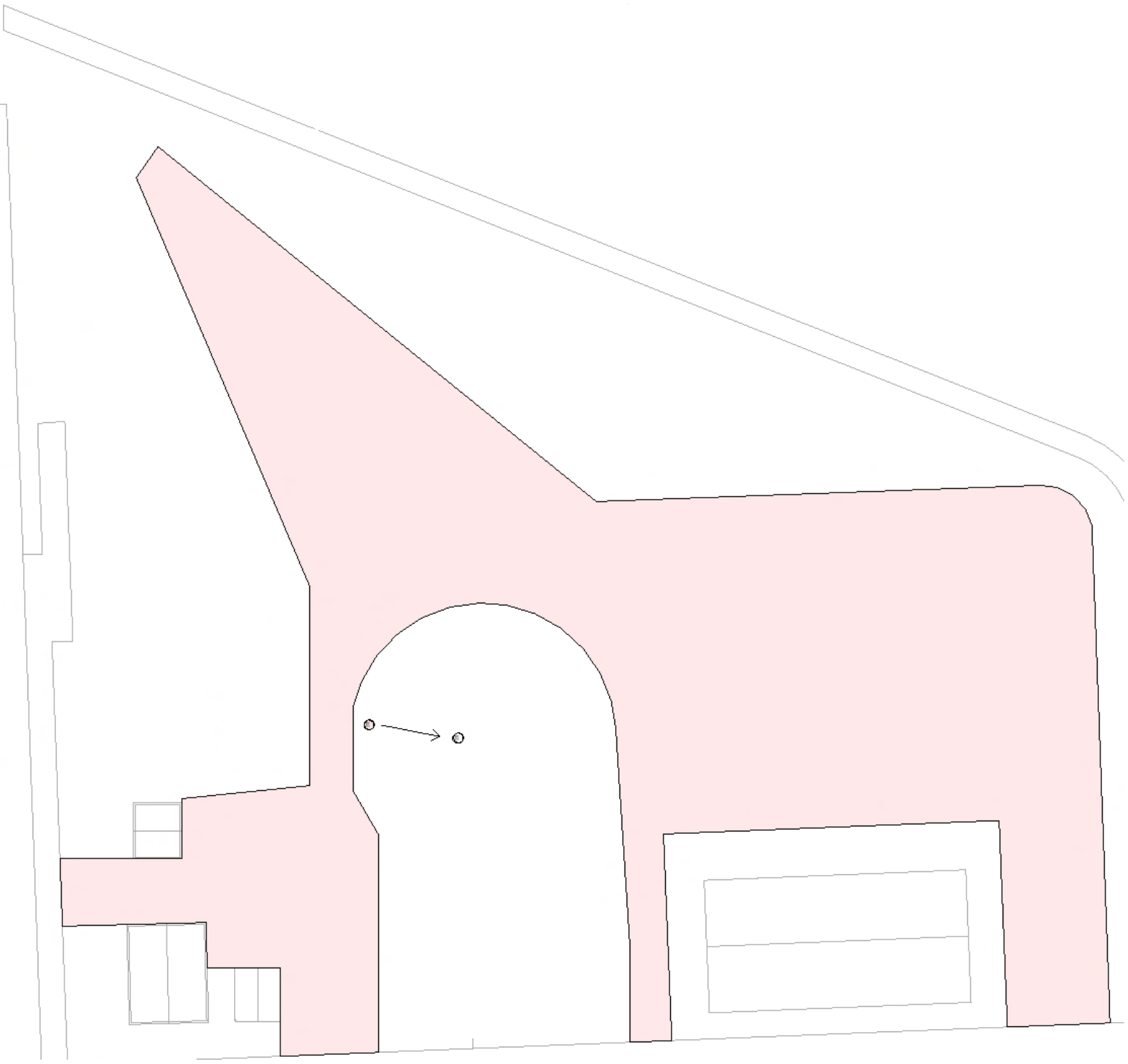

Figure 8: Site preparation including roughly 900 cf of gravel excavation shown in the red area with exact extents to be determined on site. The existing power pole should be relocated such that it does not cause conflict in the future.

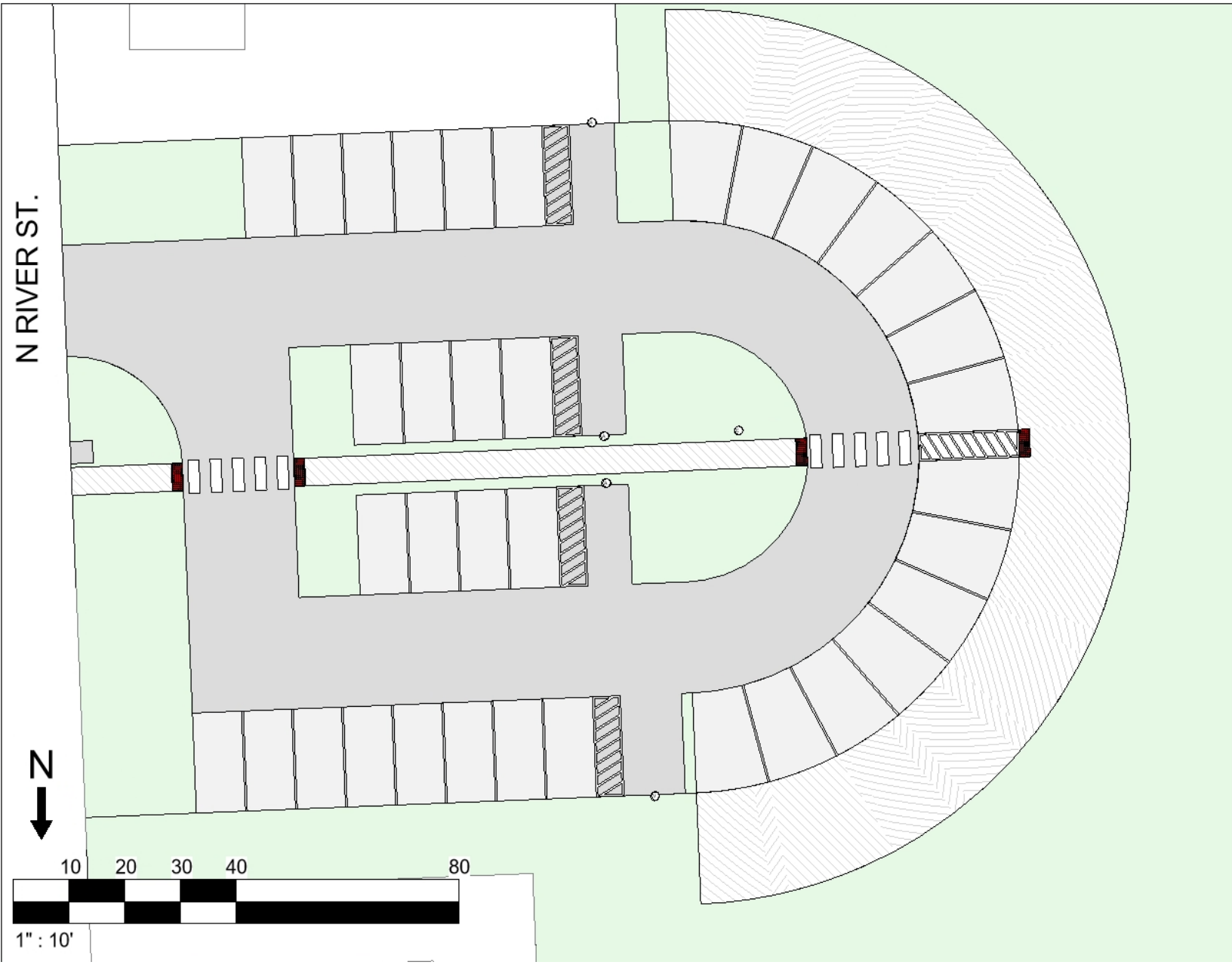

Figure 9: Farmer's Market and parking lot structure containing 14 vendor spots along the western curve and 26 customer spots in the rectangular portion of the structure. The solid gray sections are the driving lanes and ADA parking spots while the lighter gray crosshatches are the permeable paver spots for vendors and customers.

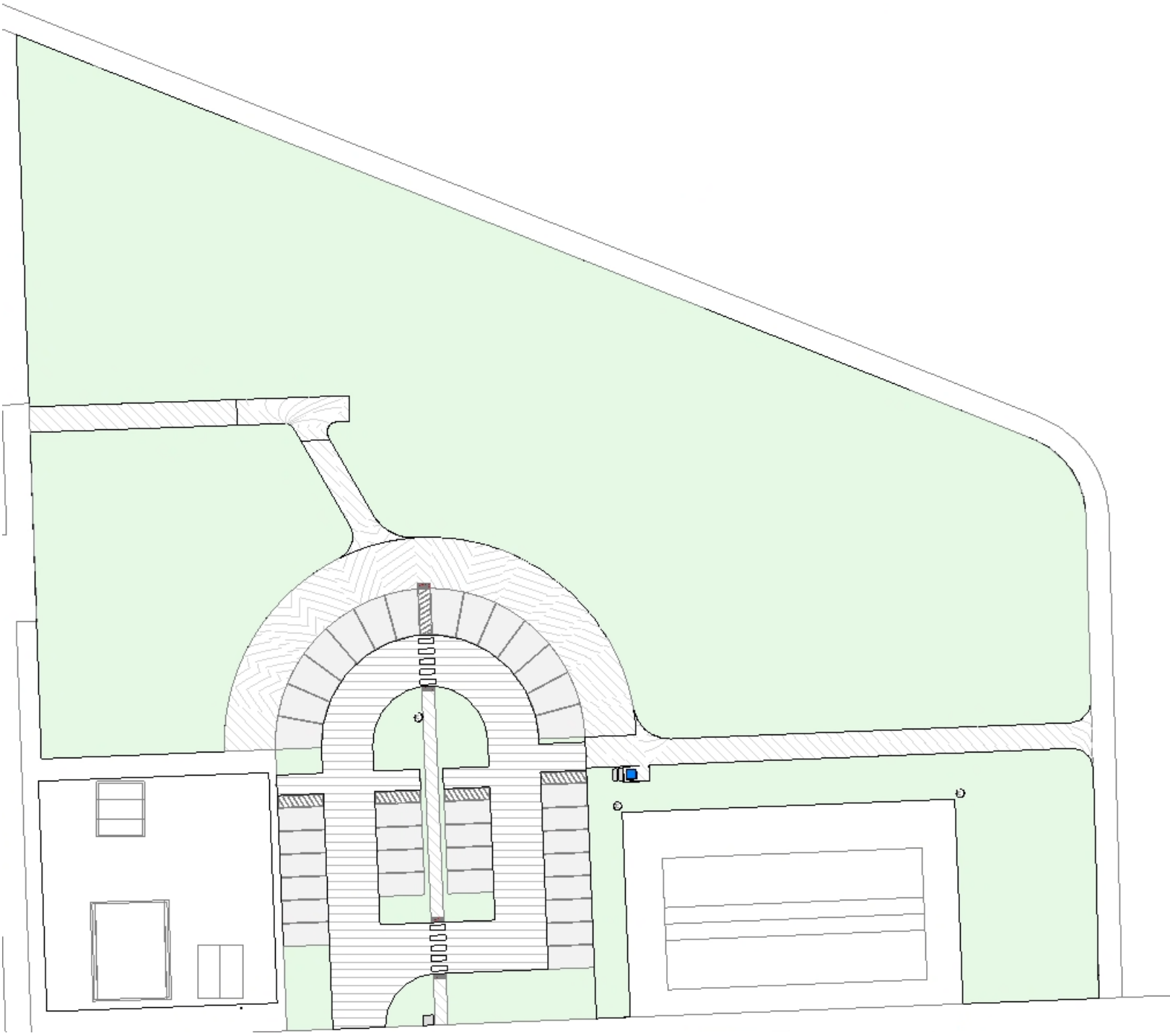

Figure 10: First phase of 10' trail construction connecting the Farmer's Market parking lot structure to the existing sidewalk on the southern side of the site and the existing trail network to the north.

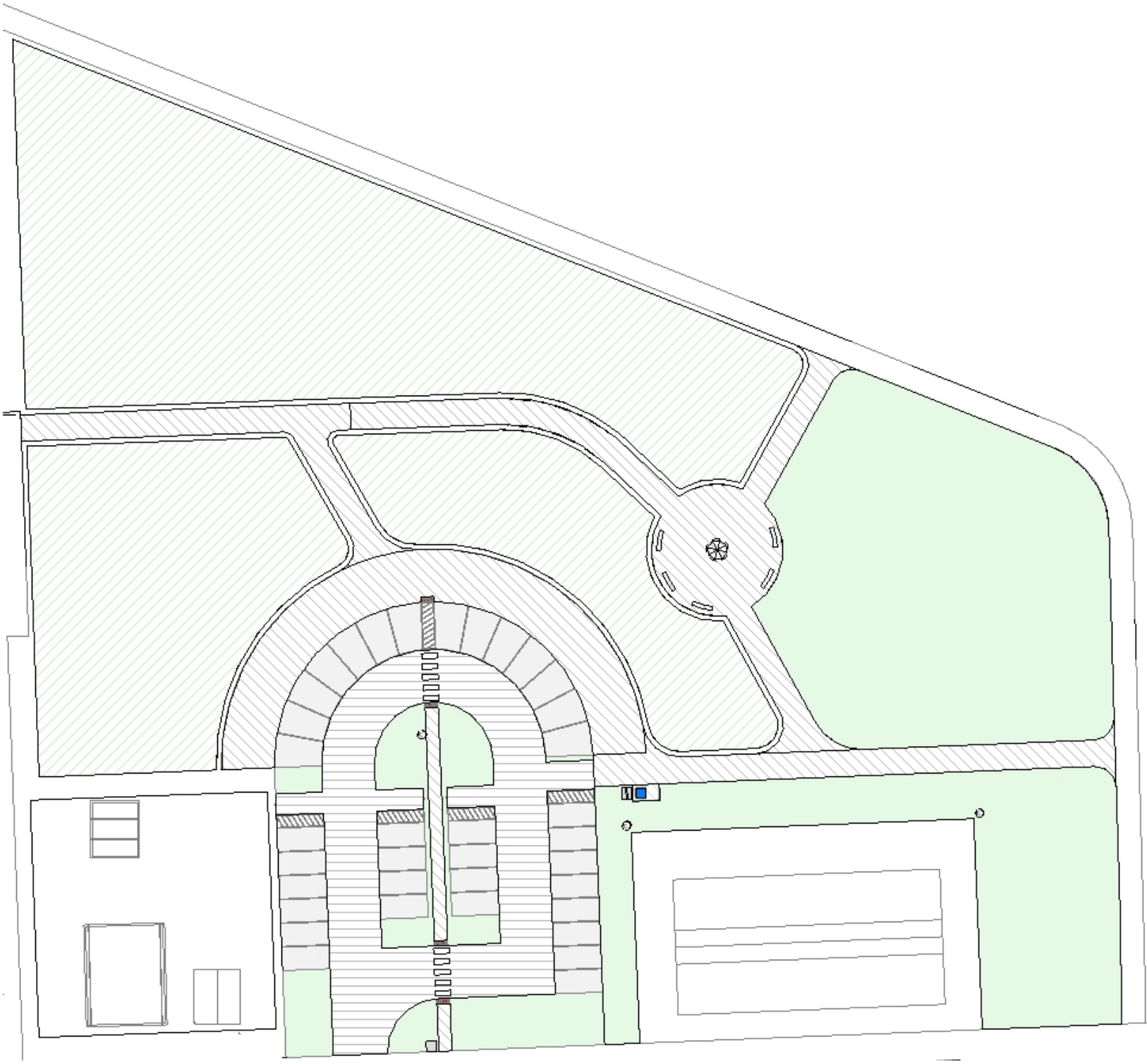

Figure 11: Completed 10’ trail network through prairie containing a conversation circle with benches and a picnic table to create a relaxing space next to the river.

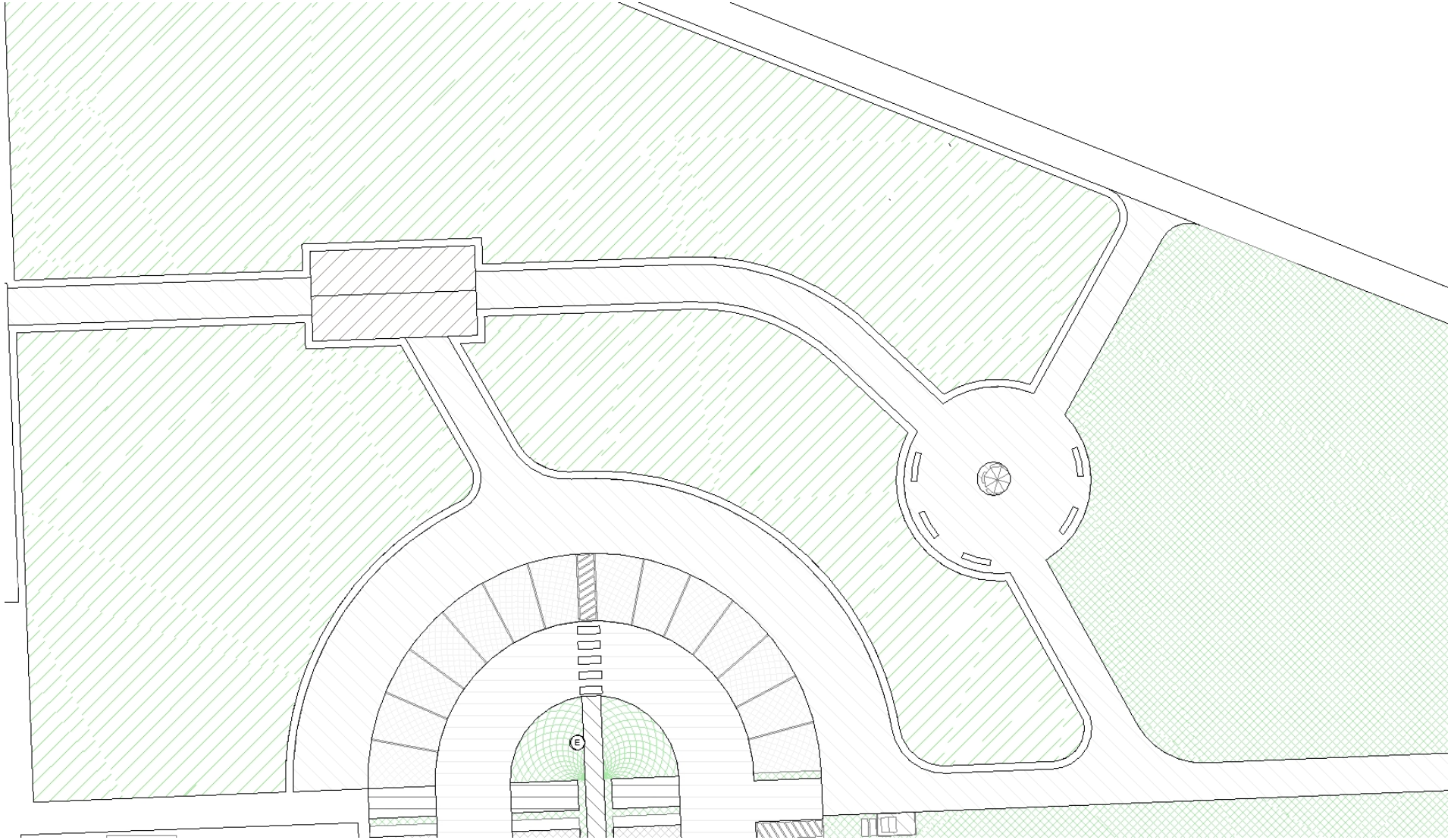

Figure 12: Plan view of the pavilion structure at the existing intersection between trail arms with seating for 36 at picnic tables and standing room for 50 to accommodate events.

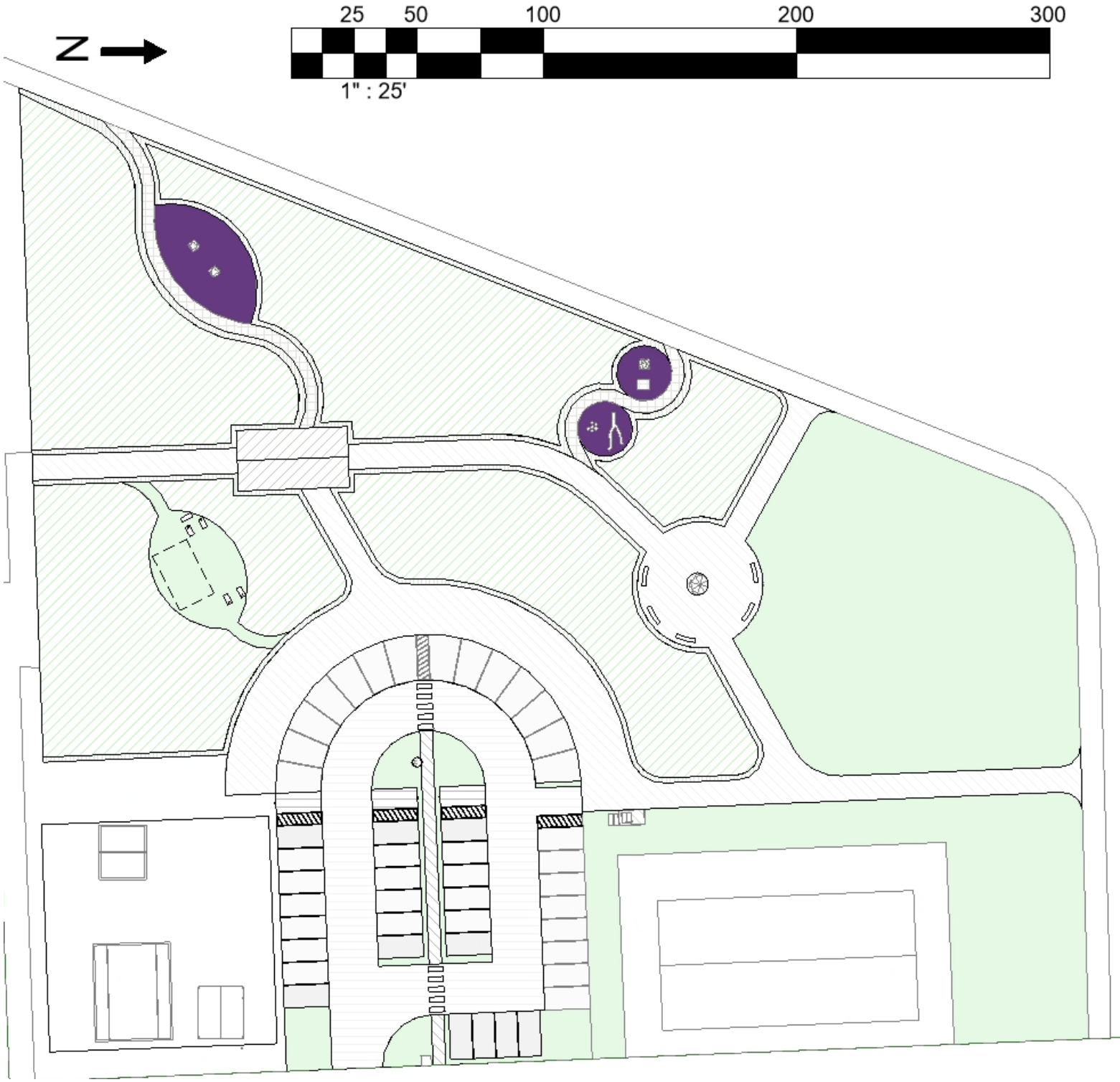

Figure 13: Layout of recreational areas for families with unique play structures. The play area for younger children is to the northwest in the shape of a figure 8, the play area for older children is to the southwest in the shape of a leaf, and the fitness area is in the southeast section of the site

Figure 14: Examples of nature-based risk play features. On the left is the Log Crawl by Landscape Structures and on the right is a 3 boulder set by AAA State of Play.

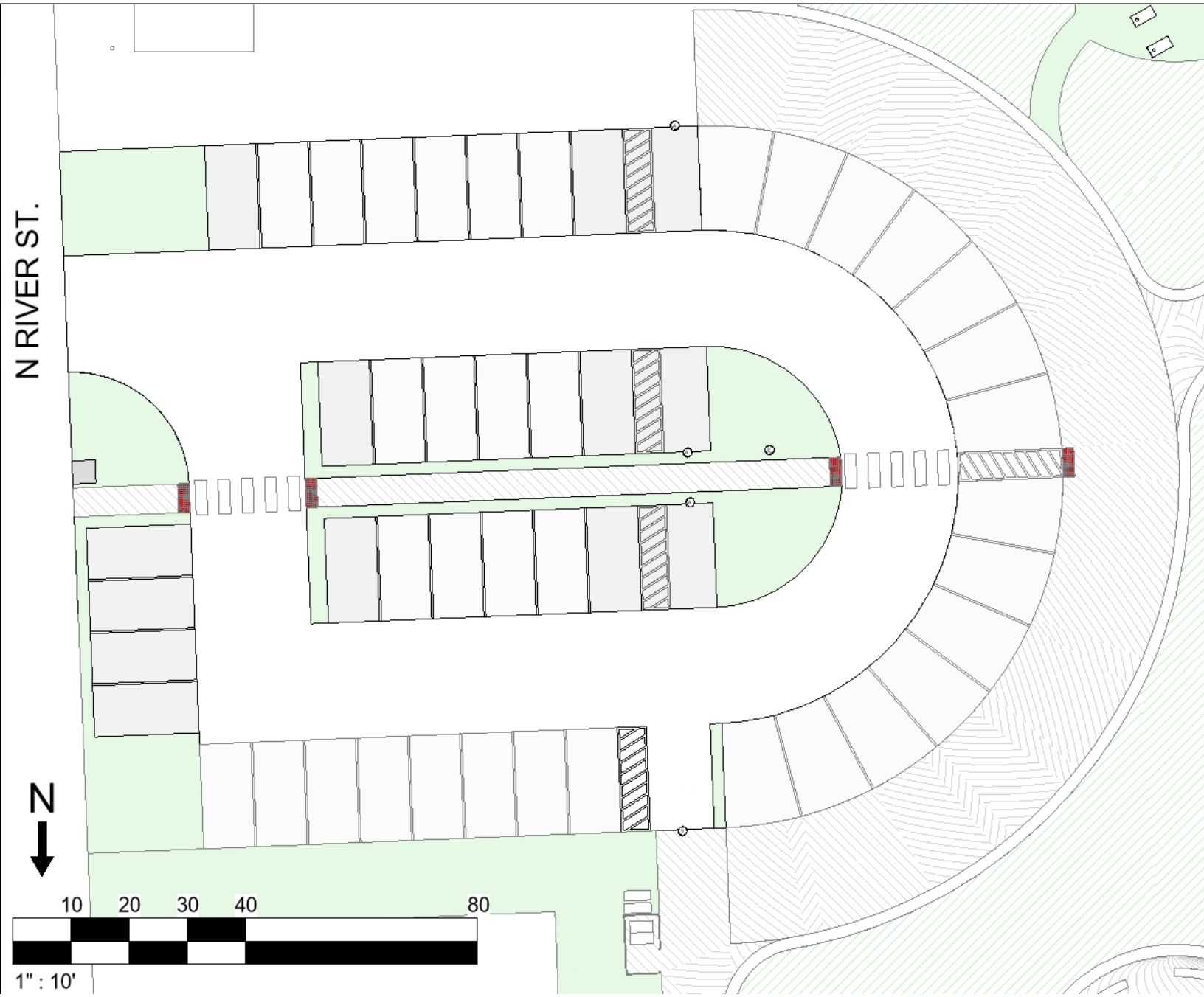

Figure 15: Optional expanded parking lot structure with 10 new parking spaces replacing grass. New parking spots are shown in dark gray crosshatching. Note that the three standard ADA accessible spaces were moved to the west to facilitate the expansion.

W Marion St. Site:

The primary goal of the W Marion St. Site redevelopment is to create an area for residents to relax and enjoy the view of Shelly Park, the whitewater course, and the downtown skyline. A secondary goal is to improve the view from Shelly Park looking towards the W Marion St. Site. The existing condition of the site is unsafe and unsightly, containing brush overgrowth up the riverbank and onto the lower level which blocks the view out from the site. An existing bench is in poor condition, and the existing stairs present a safety hazard as they are uneven and have slippery plants growing through them. Figure 16 presents the existing condition of the site and outlines areas of concern.

Due to the steep slopes located at the W Marion St. Site the redesign is narrower in scope compared to the N River St. Site however small changes should be able to create a significant increase in the usefulness and beauty of the W Marion St. Site. The first design element is the demolition of the existing stairs, bench, and top layer of brush located at the lower level of the site, shown on sheet C102 in Appendix D, spanning an estimated area of 1895 square feet. Removing the top layer of brush will increase the visibility to and from the W Marion St. Site without causing significant damage to the hillslope which may increase erosion or cause bank instability. The new design features for this site will be in visual cohesion with Shelly Park by using the same limestone block motif in all of the new features. The first feature is a new limestone block staircase that has a more natural look than a concrete staircase but will be significantly safer than the existing staircase both due to the wider stair step and the inclusion of a railing on each side of the staircase. At the lower level where the brush was removed three new limestone benches with wooden seats and seatbacks will be added so that people going to the site can sit and enjoy the view of Shelly Park and downtown. The new benches will be in improved condition and fit the aesthetics of the river corridor better compared to the existing bench on the site. Finally, a set of eight limestone blocks roughly 8 feet long will line the edge of the lower lookout area with exact locations to be determined on site. The limestone blocks will create a natural place to stand and overlook the city as well as prevent the majority of the brush from regrowing limiting future maintenance requirements at this site. The W Marion St. Site Plan is below in Figure 17 and additional detail on the design elements can be found on sheet S501 in Appendix D.

Figure 16: W Marion St. Site existing conditions with dense overgrown brush along the riverbank on the left and existing staircase in disrepair on the right.

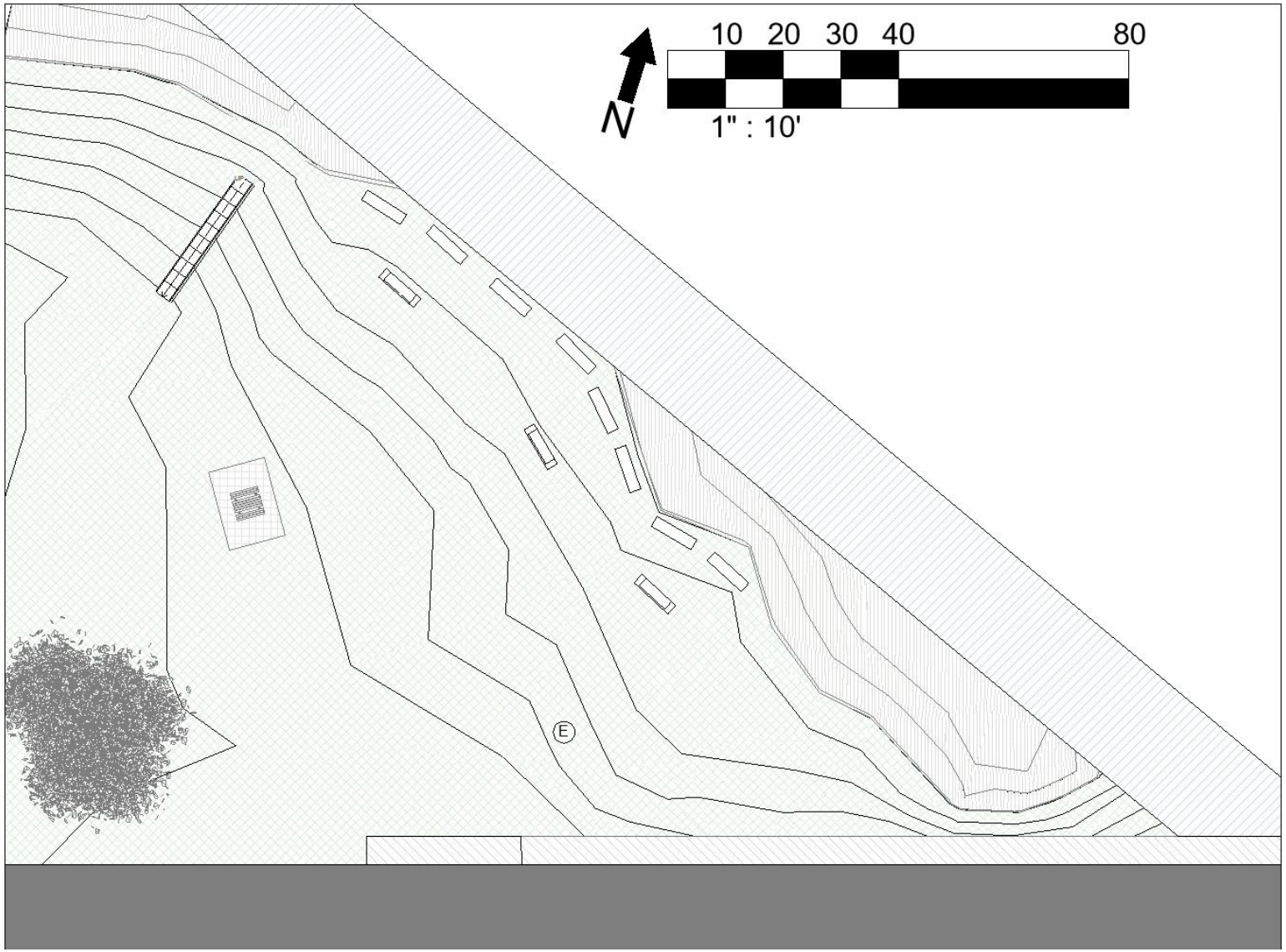

Figure 17: Site plan for the W Marion St. Site with 3 new benches and 8 limestone blocks to create a lookout point overseeing Shelly Park and the skyline as well as a new limestone staircase with a handrail for safety.

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Section VII – Engineer's Cost Estimate

All unit costs were sourced from April 2025 to March 2026 DOT winning contracts. The cost tables below are divided by phases discussed in Section VI. If the project is constructed in a different phasing plan, mobilization and reseeding costs would have to be adjusted in accordance with the new work plan. A 10% mobilization cost was assumed for all phases representing the cost to get people and equipment to the site for each phase. Unit costs include labor, overhead, and profit except for the recreation additions included in Phase 5. Those play structures are sourced straight from the manufacturer and as such an approximately 25% installation fee was assumed to account for labor, overhead, and profit costs on top of the mobilization cost. A 10% contingency factor was added which is at the lower end as there are limited utilities buried or other hazards that may impact construction. A 10% construction administration fee was assumed to oversee the construction progress for each phase.

For the N River St. Site, the largest portion of the cost comes from the site preparation for and installation of the Farmer's Market parking lot structure. Significant grading is required to meet ADA slope requirements, and the concrete and required subbase are the largest individual cost for Phases 0 and 1. After the Farmer's Market parking lot structure, the recreational play areas are the other largest line items. The play structures described in Section VI are just one possible configuration of the play structures and represent an average cost play setup, but the actual cost of the recreation areas could vary significantly depending on which play structures are installed. The cost for the optional expansion of the parking lot will depend on when the expansion is completed. If the expanded parking lot is selected from the beginning, then the actual cost will be lower as the concrete removal, some of the excavation, and the concrete repair costs can be removed from the cost table. If the expanded parking lot is completed many years after the initial parking lot construction, then the concrete repair costs will have to be increased as the parking lot will have aged and require more significant upkeep costs. The overall cost per phase for the N River St. Site is below in Table 1, additional details on per phase pricing can be found in Tables 2-8 in Appendix A.

Table 1: Cost per phase for the construction of the N River St. Site. Cost per phase includes contingency, mobilization, and construction administration as well as installation costs where applicable.

Phase	Description	Cost
0	Site Conditioning and Grading	$78,118
1	Farmer's Market and Parking Lot	$303,194
2	North and South Trail Connections	$64,975
3	Connecting Trails and Conversation Circle	$93,489
4	Community Events Pavilion	$74,261
5	Recreation Areas for Families	$213,353
6	Optional Parking Lot Expansion	$56,836
Total Cost		$884,224

The costs for the W Marion St. Site are dominated primarily by the clearing and grubbing costs required to remove the top layer of brush. That cost is based on an estimated removal area of 1895 square feet. However, the actual removal area and thus cost will have to be determined on site. Due to the unknown exact area of removal, a higher contingency of 20% was used for the W Marion St. Site to account for the possibility of higher clearing costs as well as the potential for additional challenges related to working on the sloped riverbank. The cost breakdown for the W Marion St. Site is below in Table 9.

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Table 9: Cost table for the W Marion St. Site including mobilization, contingency, and construction administration. Note that the W Marion St. Site includes a larger contingency than the N River St. Site due to unknown dimensions of brush extent.

ESTIMATE FOR W MARION ST. SITE

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
CLEARING AND GRUBBING	1895	SF	$45.00	$85,275.00
EXCAVATION, CLASS 10	113	CY	$8.50	$960.50
LIMESTONE BLOCKS	11	EACH	$675.00	$7,425.00
LIMESTONE BLOCKS FOR STAIRS	10	EACH	$165.00	$1,650.00
REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	120	LF	$0.09	$10.80
SILT FENCE	120	LF	$1.56	$187.20
STAIRCASE RAILING	1	LS	$3,800.00	$3,800.00
TOPSOIL, FURNISH AND SPREAD	627	CY	$24.00	$15,048.00
WOODEN BENCH SEATS	4	EACH	$2,750.00	$11,000.00
MOBILIZATION	1	LS	$13,000.00	$13,000.00
CONTINGENCY	1	LS	$31,000.00	$31,000.00
CONSTRUCTION ADMINISTRATION	1	LS	$13,000.00	$13,000.00
TOTAL COST				$182,356.50

Section VIII – Appendices

Appendix A: Cost Tabulation Tables

Table 2: Cost breakdown for site conditioning and grading including removal of approximately 6" of gravel with the exact cost to be determined after site survey confirming gravel depth.

ESTIMATE FOR N RIVER ST. SITE WORK

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
GRADING EXCAVATION	1295	CY	$8.50	$11,007.50
GRADING FILL	740	CY	$24.00	$17,760.00
GRAVEL EXCAVATION	902	CY	$8.50	$7,667.00
GRAVEL FILL	902	CY	$24.00	$21,648.00
GRASS SEEDING	1.85	ACRE	$1,100.00	$2,035.00
MOBILIZATION	1	LS	$6,000.00	$6,000.00
CONTINGENCY	1	LS	$6,000.00	$6,000.00
CONSTRUCTION ADMINISTRATION	1	LS	$6,000.00	$6,000.00
TOTAL COST				$78,117.50

Table 3: Cost breakdown for the Farmer's Market parking lot structure.

ESTIMATE FOR N RIVER ST. PHASE 1

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
PARKING SURFACE 6" CONCRETE	890	SY	$64.00	$56,960.00
GRANULAR MATERIAL	890	SY	$33.00	$29,370.00
SUBBASE	890	SY	$7.75	$6,897.50
SIDEWALK AND PAD 5.5" CONCRETE	555	SY	$65.00	$36,075.00
GRANULAR MATERIAL	555	SY	$33.00	$18,315.00
SUBBASE	555	SY	$7.75	$4,301.25
PAVERS	710	SY	$60.00	$42,600.00
GRANULAR MATERIAL	710	SY	$33.00	$23,430.00
SUBBASE	710	SY	$10.75	$7,632.50
ROAD PAINT	40	Per Stall	$6.00	$240.00
ADA SIGNAGE	4	Each	$150.00	$600.00
GRASS SEEDING	0.1	ACRE	$1,025.00	$102.50
STORAGE BOXES	2	Each	$250.00	$500.00
EXCAVATION	740	CY	$8.50	$6,290.00
TACTILE WARNING PADS	4	Each	$220.00	$880.00
MOBILIZATION	1	LS	$23,000.00	$23,000.00
CONTINGENCY	1	LS	$23,000.00	$23,000.00
CONSTRUCTION ADMINISTRATION	1	LS	$23,000.00	$23,000.00
TOTAL COST				$303,193.75

Table 4: Cost breakdown for north and south trails connecting the Farmer's Market to existing sidewalk and trail. Cost includes privacy walls for a temporary portable restroom.

ESTIMATE FOR N RIVER ST. PHASE 2

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
SIDEWALK AND PAD 5.5" CONCRETE	450	SY	$64.00	$28,800.00
GRANULAR MATERIAL	450	SY	$33.00	$14,850.00
SUBBASE	450	SY	$7.75	$3,487.50
PORTA-POTTY WALLS	170	SF	$9.00	$1,530.00
PORTA-POTTY POSTS 2"X2"	4	EACH	$8.00	$32.00
EXCAVATION	150	CY	$8.50	$1,275.00
MOBILIZATION	1	LS	$5,000.00	$5,000.00
CONTINGENCY	1	LS	$5,000.00	$5,000.00
CONSTRUCTION ADMINISTRATION	1	LS	$5,000.00	$5,000.00
TOTAL COST				$64,974.50

Table 5: Cost breakdown for connecting elbow trails, conversation circle, and prairie seeding.

Estimate for N RIVER ST. PHASE 3

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
PRAIRIE SEEDING	1	ACRE	$975.00	$975.00
BENCHES	5	EACH	$1,700.00	$8,500.00
PICNIC TABLE	1	EACH	$5,000.00	$5,000.00
SIDEWALK AND PAD 5.5" CONCRETE	525	SY	$65.00	$34,125.00
GRANULAR MATERIAL	525	SY	$35.00	$18,375.00
SUBBASE	525	SY	$7.75	$4,068.75
EXCAVATION	170	CY	$8.50	$1,445.00
MOBILIZATION	1	LS	$7,000.00	$7,000.00
CONTINGENCY	1	LS	$7,000.00	$7,000.00
CONSTRUCTION ADMINISTRATION	1	LS	$7,000.00	$7,000.00
TOTAL COST				$93,488.75

Table 6: Cost breakdown for 24' x 44' pavilion including concrete removal of existing trail connections and remedial prairie work. Cost also includes foundations for pavilion columns and picnic tables with seating for 36 in total.

ESTIMATE FOR N RIVER ST. PHASE 4

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
REMEDIAL PRAIRIE WORK	0.03	ACRE	$960.00	$28.80
CONCRETE REMOVAL	65	SY	$16.00	$1,040.00
FOUNDATIONS	9.5	TON	$40.00	$380.00
EXCAVATION	45	CY	$8.50	$382.50
SIDEWALK AND PAD 5.5" CONCRETE	120	SY	$65.00	$7,800.00
GRANULAR MATERIAL	120	SY	$35.00	$4,200.00
SUBBASE	120	SY	$7.75	$930.00
PICNIC TABLES	6	EACH	$1,500.00	$9,000.00
PAVILLION	1	LS	$44,000.00	$44,000.00
MOBILIZATION	1	LS	$6,500.00	$6,500.00
CONTINGENCY	1	LS	$6,500.00	$6,500.00
CONSTRUCTION ADMINISTRATION	1	LS	$6,500.00	$6,500.00
TOTAL COST				$74,261.30

Table 7: Cost breakdown for all three recreation areas. Mobilization cost is for the entire phase; each play area includes a 25% installation fee to account for labor, profit, and overhead for play areas only.

ESTIMATE FOR N RIVER ST. PHASE 5

YOUNG KID PLAY AREA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
RUBBER SURFACE	760.5	SF	$13.00	$9,886.50
GRAVEL PATH	11.75	TON	$30.00	$352.50
LOG	1	EACH	$5,000.00	$5,000.00
BALANCE BEAM	1	EACH	$5,000.00	$5,000.00
TOADSTOOL STEPS	6	EACH	$750.00	$4,500.00
PLAY ROCK	1	EACH	$5,000.00	$5,000.00
BENCHES	2	EACH	$1,700.00	$3,400.00
INSTALLATION	1	LS	$8,300.00	$8,300.00

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OLDER KID PLAY AREA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
RUBBER SURFACE	1308	SF	$13.00	$17,004.00
GRAVEL PATH	22	TON	$30.00	$660.00
LARGE CLIMBING ROCK	1	EACH	$47,500.00	$47,500.00
BENCHES	1	EACH	$1,700.00	$1,700.00
INSTALLATION	1	LS	$17,000	$17,000.00

ALL AGES PLAY & WORKOUT AREA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
CORNHOLE	2	EACH	$1,500.00	$3,000.00
ADDITIONAL STORAGE	1	EACH	$250.00	$250.00
INSTALLATION	1	LS	$800.00	$800.00
MACHINES	1	LS	$28,000.00	$28,000.00
INSTALLATION	1	LS	$8,000	$8,000.00
MOBILIZATION	1	LS	$16,000.00	$16,000.00
CONTINGENCY	1	LS	$16,000.00	$16,000.00
CONSTRUCTION ADMINISTRATION	1	LS	$16,000.00	$16,000.00
TOTAL COST				$213,353.00

Table 8: Cost breakdown for parking lot expansion after an intermediate time after original parking lot installation. Includes cost for 10 additional spots as well as concrete repair and removal. If parking lot is installed with the expanded configuration, concrete removal and repair costs are not necessary.

ESTIMATE FOR N RIVER ST. PHASE 6

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
6" CONCRETE	78	SY	$65.00	$5,070.00
GRANULAR MATERIAL	78	SY	$33.00	$2,574.00
SUBBASE	78	SY	$7.75	$604.50
CONCRETE REMOVAL	250	SY	$15.00	$3,750.00
EXCAVATION	86	CY	$8.50	$731.00
CONCRETE REPAIR	180	SY	$65.00	$11,700.00
PAVERS	180	SY	$60.00	$10,800.00
GRANNULAR MATERIAL	180	SY	$33.00	$5,940.00
SUBBASE	180	SY	$10.50	$1,890.00
ROAD PAINT	46	Per Stall	$6.00	$276.00
MOBILIZATION	1	LS	$4,500.00	$4,500.00
CONTINGENCY	1	LS	$4,500.00	$4,500.00
CONSTRUCTION ADMINISTRATION	1	LS	$4,500.00	$4,500.00
TOTAL COST				$56,835.50

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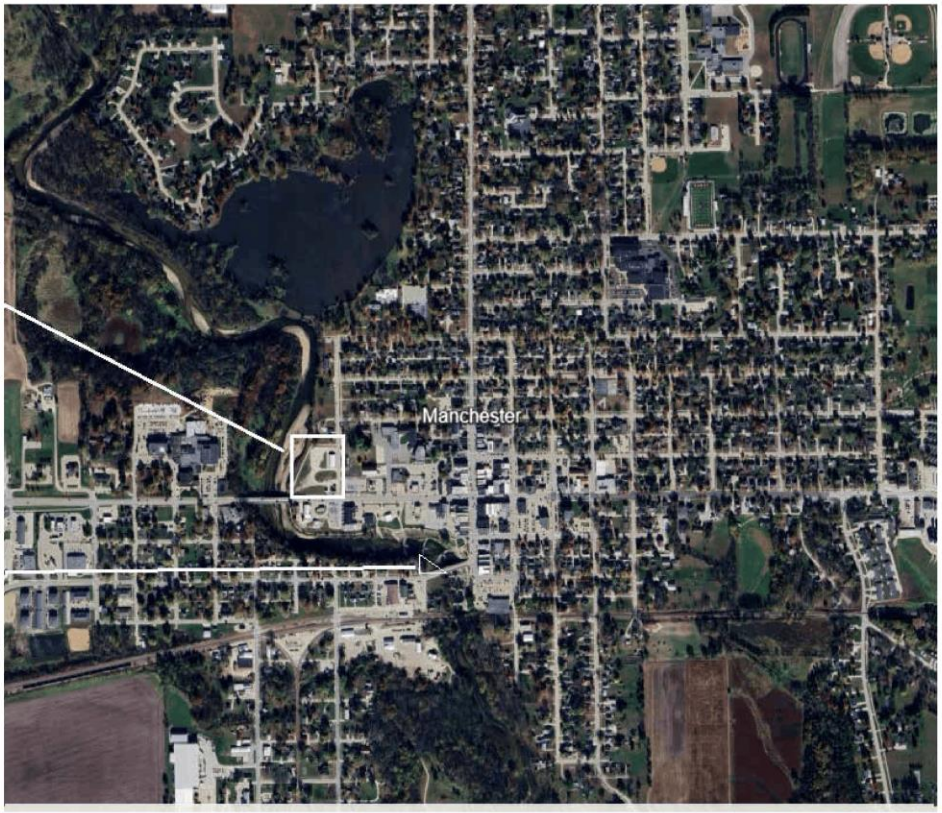
Appendix C: N River St. Site Engineering Drawings

MANCHESTER VITALITY ENDOWEMENT

RIVERBANK PARKS N RIVER ST. SITE CONSTRUCTION BID PLANS
PROJECT NO. 1
108 N RIVER ST.
MANCHESTER, IOWA 52057

N RIVER ST. SITE
42°29'04.07"N 91° 27'44.80"W

W MARION ST. SITE
42°28'57.43"N 91° 27'40.64"W



SHEET LIST	
SHEET NUMBER	SHEET NAME
G101	TITLE SHEET
C101	EXISTING SITE
C102	DEMOLITION PLAN
C103	PHASES 4-6 DEMOLITION PLAN
C104	CONTOUR MAP
C105	PHASE 1-3 SITE PLAN
C106	PHASE 4-6 SITE PLAN
S101	PHASES 1-3 SIDEWALK AND TRAIL PLAN
S102	PHASE 1 PARKING LOT DETAIL
S103	PHASE 6 PARKING LOT DETAIL
S401	PHASE 5 SOUTHWEST RECREATION ALCOVE
S402	PHASE 5 NORTHWEST RECREATION ALCOVE
S403	PHASE 5 SOUTHEAST RECREATION ALCOVE
S501	STRUCTURAL DETAILS
S502	PHASE 4 PAVILLION DETAILS
S503	MISC. STRUCTURAL DETAILS

THE UNIVERSITY OF IOWA
CIVIL AND ENVIRONMENTAL ENGINEERING
4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES
103 S CAPITOL ST
IOWA CITY, IOWA 52242
PHONE: 319.335.5647
FAX: 319.335.5660
EMAIL: civil-iowa@uiowa.edu

PROJECT: CEE 4850
DATE: 5/8/2026
DRAWN BY: Sam Greiner
REVISION:

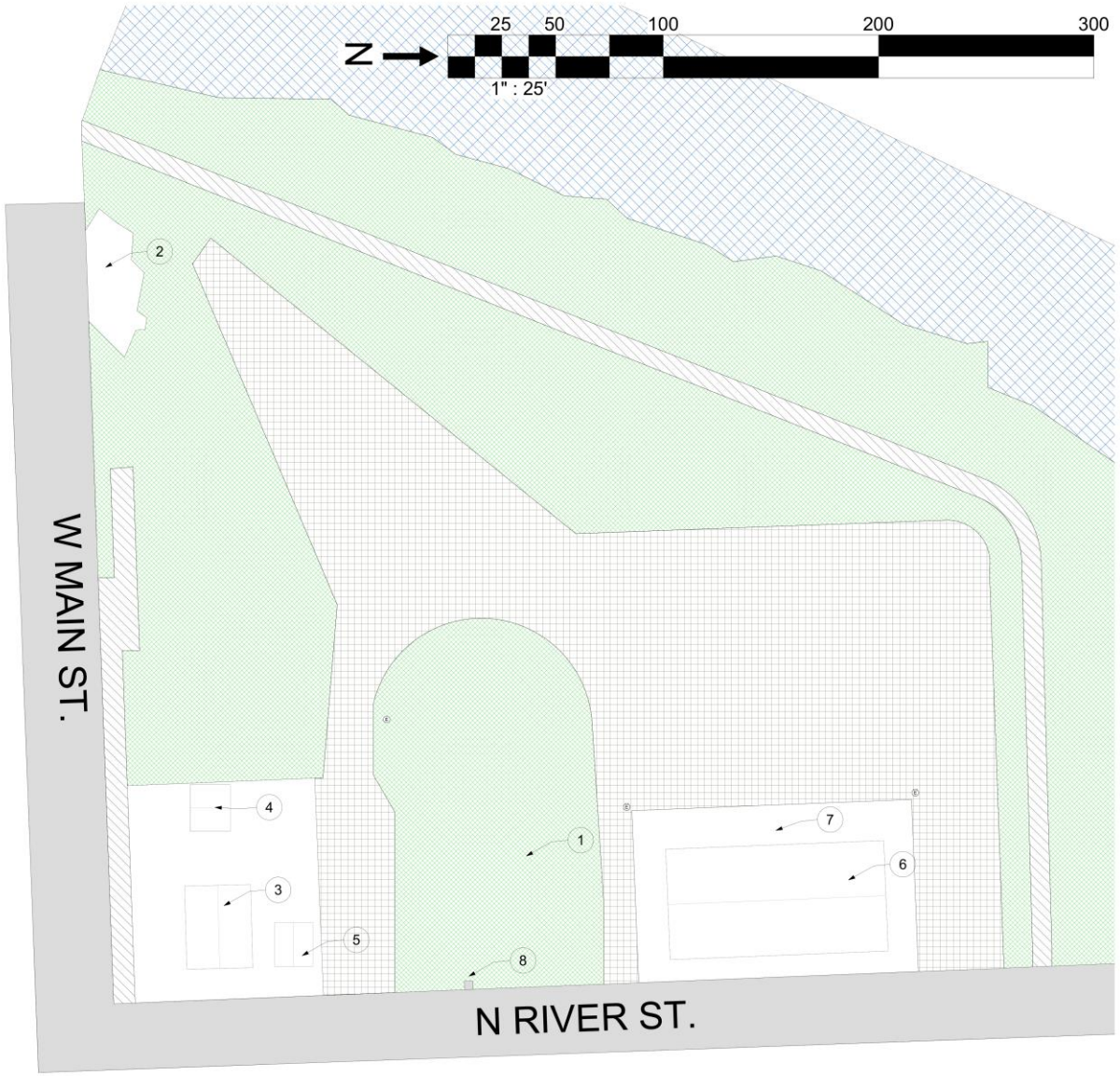
EDUCATIONAL - NOT FOR CONSTRUCTION

RIVERBANK PARKS
N RIVER ST. SITE
108 N RIVER ST.
MANCHESTER IOWA, 52057

SHEET NAME
TITLE SHEET

SHEET NO.
G101

IOWA



EXISTING SITE NOTES	
NOTE NUMBER	NOTE TEXT
1	GRASS ON EXISTING SITE EAST OF THE SIDEWALK NEXT TO THE RIVER IS IN POOR SHAPE OR NONEXISTANT IN SPOTS
2	COLLECTION OF ROCKS AND CONCRETE DEBRIS EXACT LOCATION AND SIZE TO BE DETERMINED ON SITE
3	BUSHEL & A PECK GROCERY STORE
4	BUSHEL & A PECK STORAGE GARAGE
5	BUSHEL & A PECK GARBAGE COVERING ROOF AND FENCE
6	HONEY CREEK STORAGE LOCKERS
7	HONEY CREEK STORAGE LOCKER CONCRETE PAD
8	EXISTING STORMWATER INLET

(E) EXISTING ELECTRIC POLE

EXISTING SIDEWALK

EXISTING GRASS

EXISTING ROAD

LOOSE DIRT AND GRAVEL

RIVER BOUNDARY

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4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES
103 S CAPITOL ST
IOWA CITY, IOWA 52242
PHONE: 319.335.5647
FAX: 319.335.5660
EMAIL: civil-hawks@uiowa.edu

PROJECT: CEE 4850
DATE : 5/8/2026
DRAWN BY: Sam Greiner
REVISION:

EDUCATIONAL - NOT FOR CONSTRUCTION

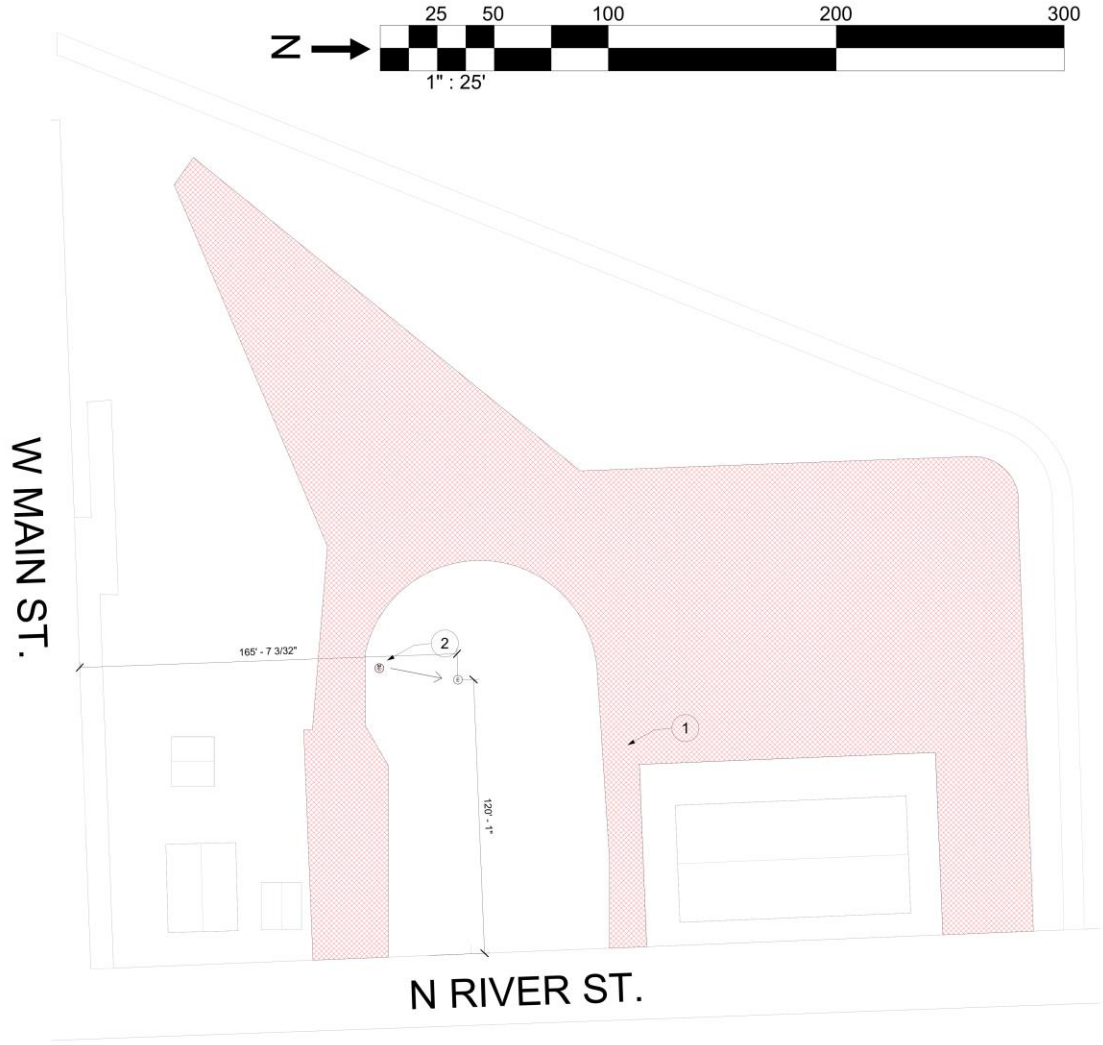
RIVERBANK PARKS
N RIVER ST. SITE

108 N RIVER ST.
MANCHESTER IOWA, 52057

SHEET NAME
EXISTING SITE

SHEET NO.
C101

IOWA



DEMOLITION NOTES	
NOTE NUMBER	NOTE TEXT
1	REMOVE ALL EXISTING GRAVEL, LOOSE DIRT, AND GENERAL DEBRIS AND REPLACE WITH 6" TOP SOIL. EXACT DIMENSIONS AND DEPTH TO BE DETERMINED ON SITE.THE AREA SHOWN IS ESTIMATED TO BE 6" DEEP REQUIRING AN ESTIMATED EXCAVATION VOLUME OF 895 CY. IF LESS THAN THE EXPECTED EXCAVATION IS REQUIRED, CONFIRM THAT TOTAL EXCAVATION EXCEEDS TOTAL FILL FOR THE PROJECT AS TO NOT DECREASE FLOOD STORAGE.
2	RELOCATE EXISITING ELECTRIC POLE TO SHOWN LOCATION.

(E) ELECTRIC POLE

DEMOLITION AREA

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103 S CAPITOL ST
IOWA CITY, IOWA 52242
PHONE: 319.335.5647
FAX: 319.335.5660
EMAIL: chris-hawn@uiowa.edu

PROJECT: CEE:4850
DATE: 5/8/2026
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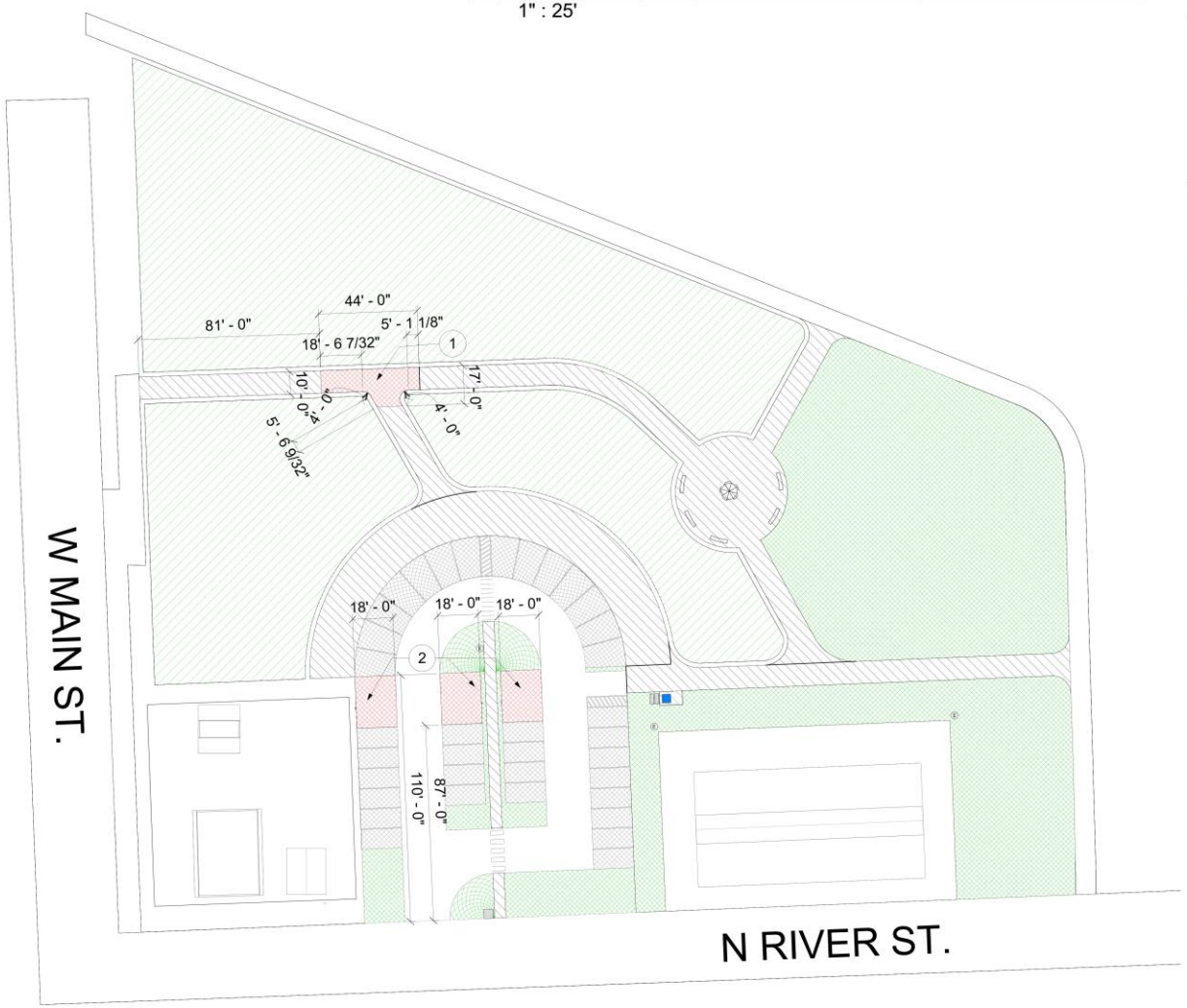
RIVERBANK PARKS
N RIVER ST. SITE
108 N RIVER ST.
MANCHESTER IOWA, 52057

SHEET NAME
DEMOLITION PLAN

SHEET NO.
C102

IOWA



DEMOLITION NOTES PHASES 4-6	
NOTE NUMBER	NOTE TEXT
1	REMOVE EXISTING TRAIL TO MAKE SPACE FOR PAVILION PAD
2	REMOVE ADA SPOTS AND WESTERN GRASS TO MAKE SPACE FOR ADDITIONAL PARKING SPACES, ADA SIGNS SHOULD BE RELOCATED TO THE POSITIONS SHOWN ON SHEET S103

(E) ELECTRIC POLE

DEMOLITION AREA

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IOWA CITY, IOWA 52242
PHONE: 319.335.5647
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EMAIL: civil-hawks@uiowa.edu

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108 N RIVER ST.
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SHEET NAME
PHASES 4-6
DEMOLITION PLAN

SHEET NO.
C103

IOWA

CONTOUR NOTES	
NOTE NUMBER	NOTE TEXT
1	CONTOURS ON HILL SHOULD BE UNCHANGED FROM EXISTING SITE
2	CONTOURS PAST SIDEWALK NEAR RIVER SHOULD BE UNCHANGED FROM EXISTING SITE

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N RIVER ST. SITE

108 N RIVER ST.
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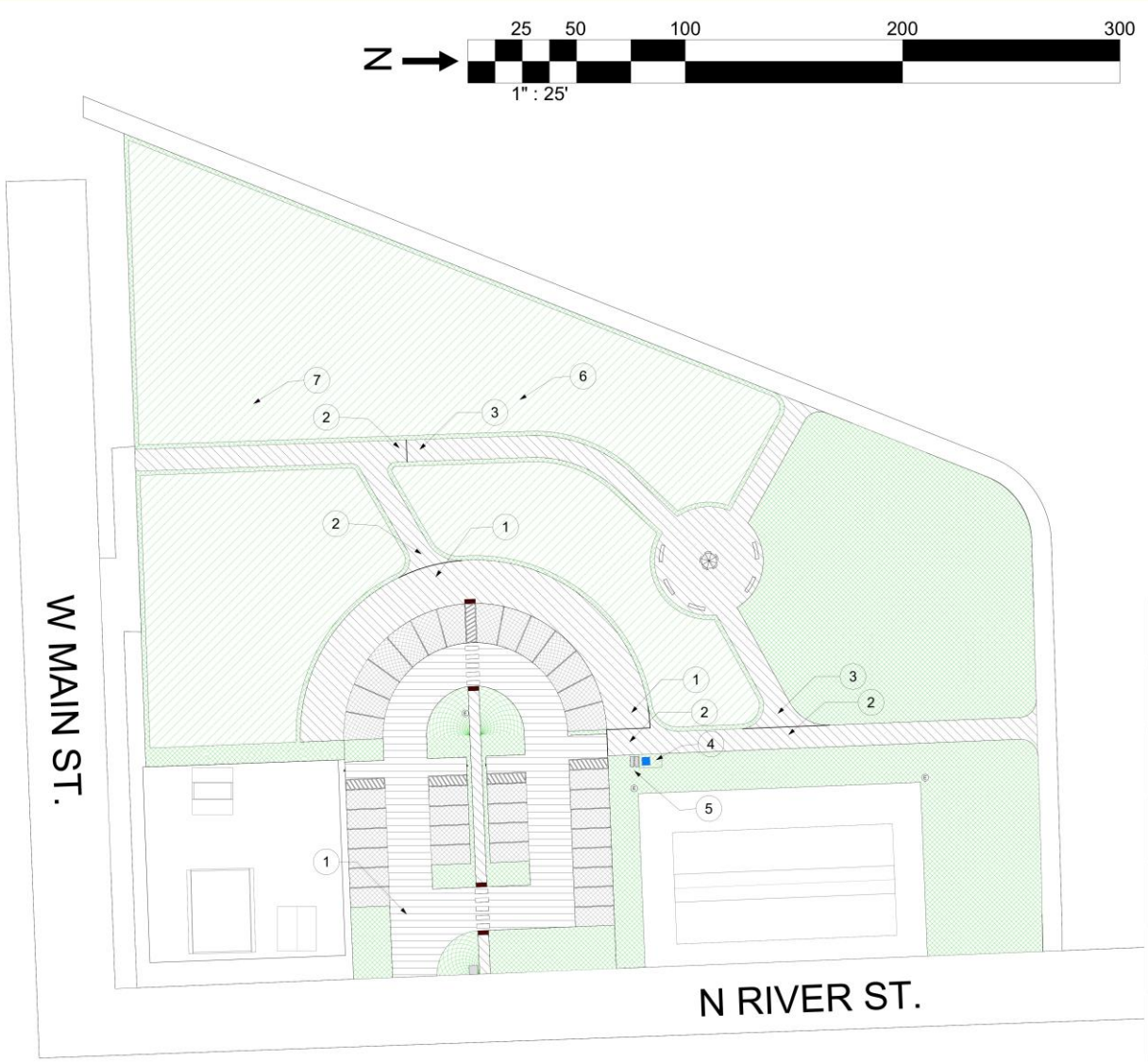
SHEET NAME
CONTOUR MAP

SHEET NO.
C104

IOWA



PHASES 1-3 SITE PLAN NOTES	
NOTE NUMBER	NOTE TEXT
1	PHASE 1 CONSTRUCTION INCLUDING PARKING LOT AND SEMI CIRCULAR VENDOR TRAIL CONCRETE PAD
2	PHASE 2 CONSTRUCTION INCLUDING NORTH SOUTH STRAIGHT TRAIL SECTIONS CONNECTING TO PARKING LOT
3	PHASE 3 CONSTRUCTION INCLUDING ELBOW TRAIL PATH AND CIRCULAR RELAXATION AREA
4	PORTA POTTY LOCATED ON SIDEWALK PAD
5	TWO 18.3 CF OUTDOOR STORAGE CONTAINERS FOR PARK USE
6	PRAIRIE GRASS IS MOIST MEADOW - RAIN GARDEN SEED MIX BY PRAIRIE NURSERY
7	PRAIRIE TO BE INSTALLED AFTER TRAIL PATHS ARE COMPLETE IN PHASE 3 OR AFTER PHASE 2 IF SIGNIFICANT TIME IS EXPECTED TO PASS BETWEEN PHASES 2 AND 3

- PRAIRIE
- 2' PRAIRIE BUFFER
- GRASS
- TRAIL 5.5" CLASS C PCC
- PARKING LOT 6" CLASS C PCC
- 3 7/8" x 7 7/8" CONCRETE PAVERS
- PORTA-POTTY
- (E) ELECTRIC POLE

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103 S CAPITOL ST
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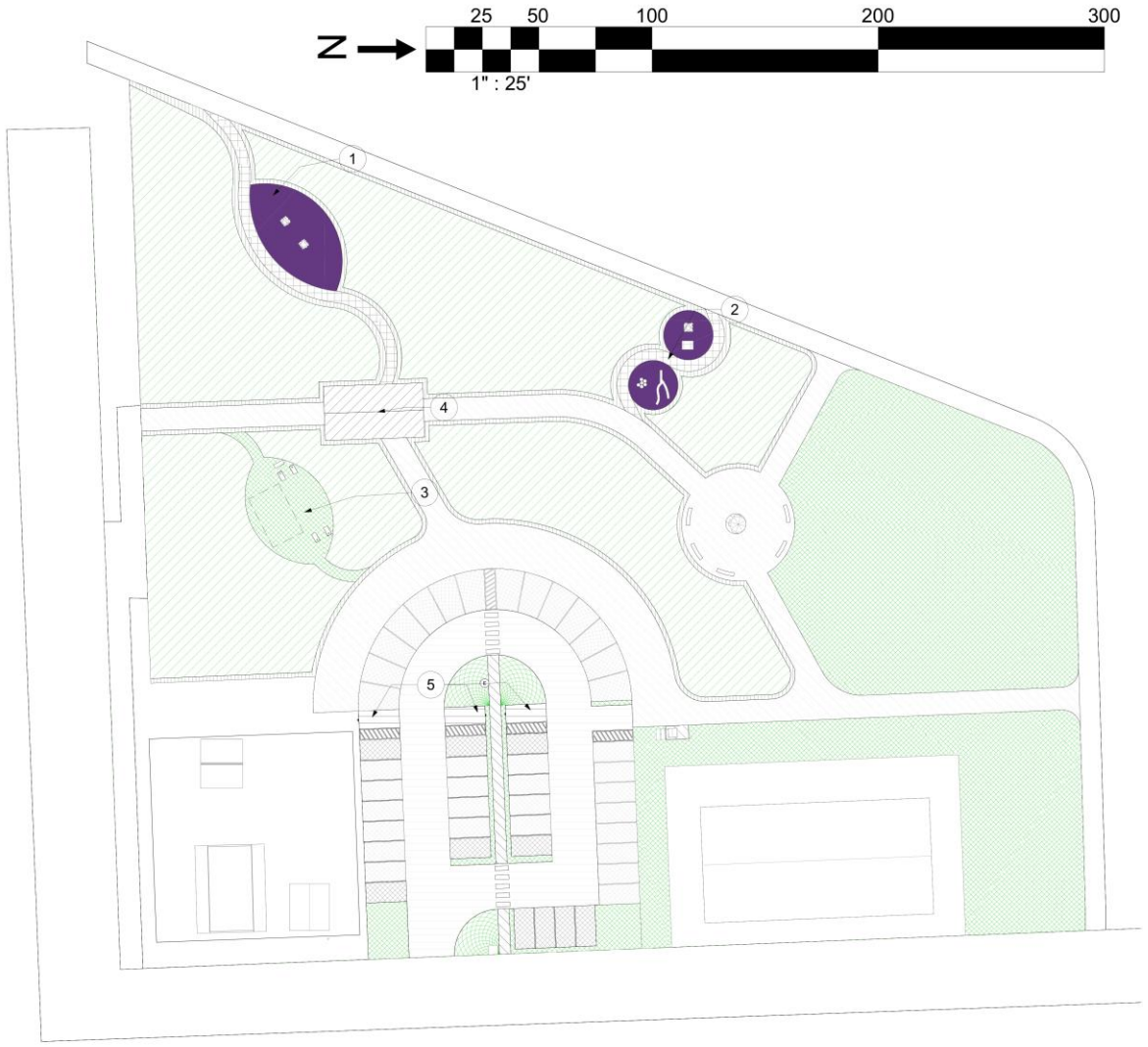
MANCHESTER IOWA, 52057

SHEET NAME
PHASE 1-3 SITE PLAN

SHEET NO.
C105

IOWA



PHASES 4-6 SITE PLAN NOTES	
NOTE NUMBER	NOTE TEXT
1	OLDER KIDS PLAY AREA TO BE INSTALLED IN PHASE 5, SEE SHEET S401 FOR MORE DETAIL
2	YOUNGER KIDS PLAY AREA TO BE INSTALLED IN PHASE 5, SEE SHEET S402 FOR MORE DETAIL
3	FITNESS AREA TO BE INSTALLED IN PHASE 5, SEE SHEET S403 FOR MORE DETAIL
4	NEW PAVILION TO BE INSTALLED IN PHASE 4, SEE SHEET S502 FOR MORE DETAIL
5	NEW PAVING FOR RELOCATED ADA PARKING SPOTS, TO BE INSTALLED IN PHASE 6

- GRAVEL PATH
- PRAIRIE
- 2' PRAIRIE BUFFER
- GRASS
- RECYCLED RUBBER PLAY AREA
- EXISTING TRAIL 5.5" CLASS C PCC
- EXISTING PARKING LOT 6" CLASS C PCC
- NEW PARKING LOT SPACES 6" CLASS C PCC
- EXISTING 3 7/8" x 7 7/8" CONCRETE PAVERS
- NEW 3 7/8" x 7 7/8" CONCRETE PAVERS
- NEW PAVILION ROOF
- (E) ELECTRIC POLE

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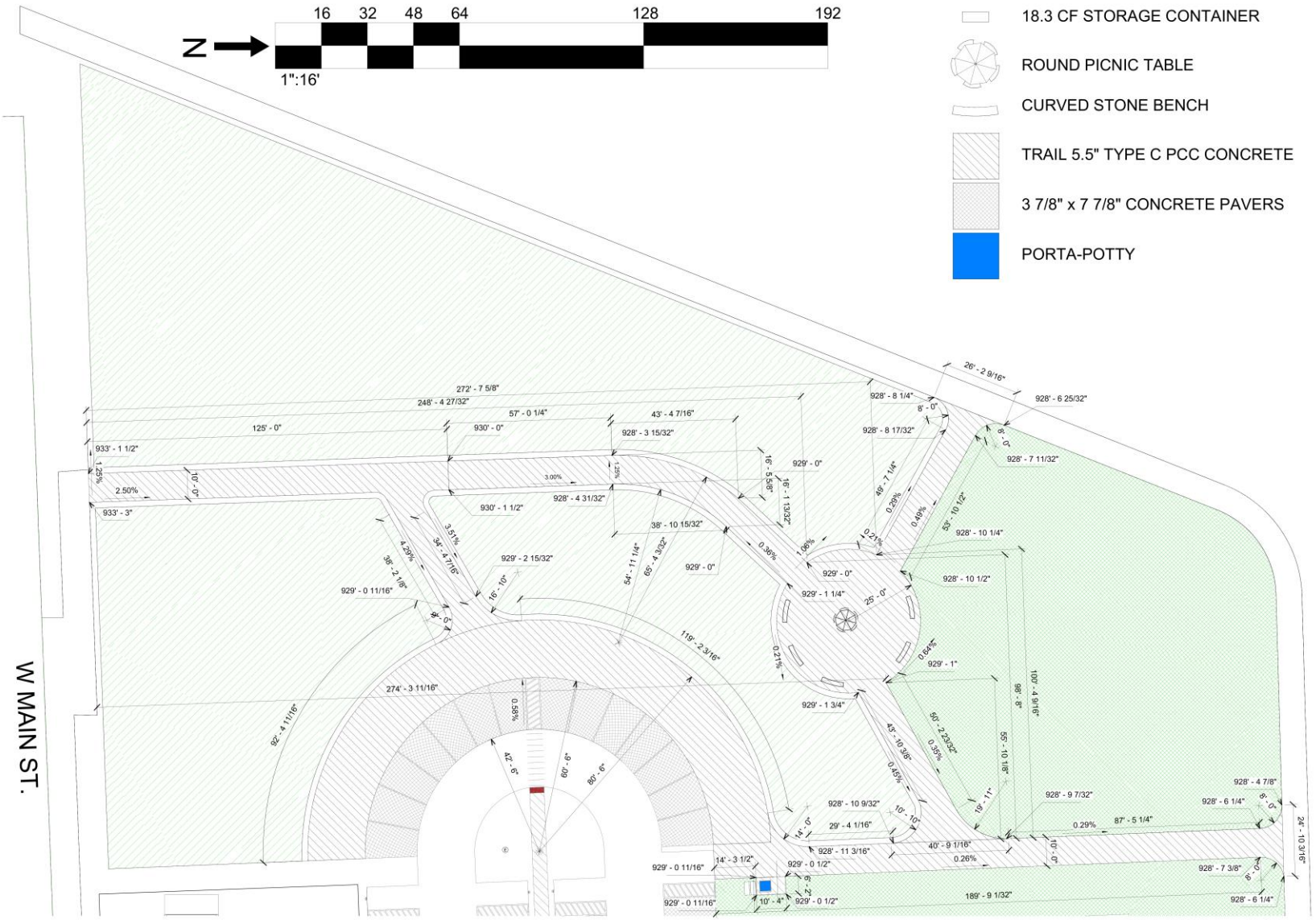
SHEET NAME
PHASE 4-6 SITE PLAN

SHEET NO.
C106

IOWA



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103 S CAPITOL ST
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PHONE: 319.335.5647
FAX: 319.335.5660
EMAIL: civil-hawks@uiowa.edu

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RIVERBANK PARKS
N RIVER ST. SITE

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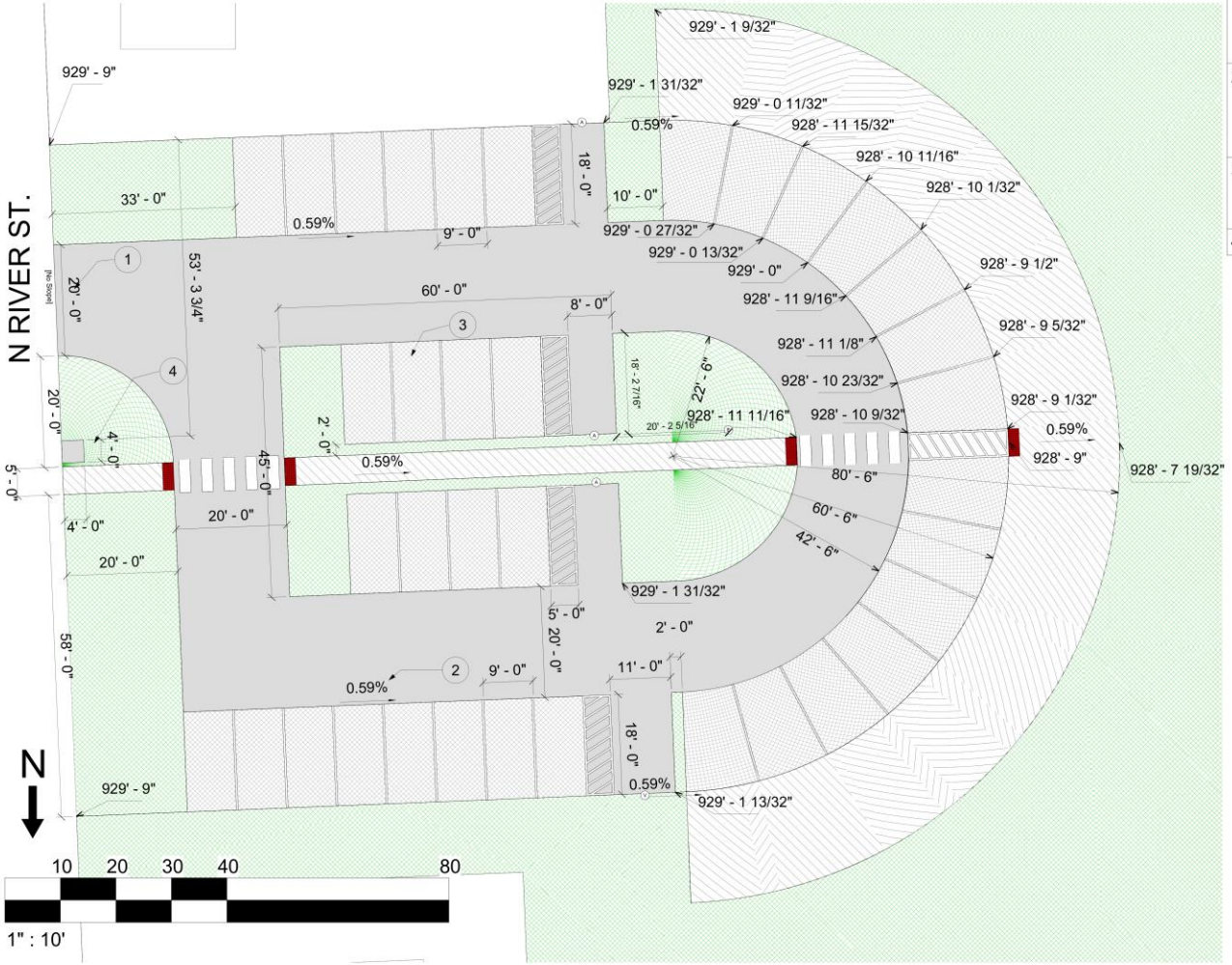
SHEET NAME
PHASES 1-3
SIDEWALK AND
TRAIL PLAN

SHEET NO.
S101

IOWA



PARKING LOT DETAIL NOTES	
NOTE NUMBER	NOTE TEXT
1	0% SLOPE IN NORTH-SOUTH DIRECTION PARALLEL TO ROAD, ALL ELEVATIONS CAN BE MIRRORED ACROSS CENTER OF SIDEWALK TO OBTAIN THE ELVATION ON THE OPPOSITE SIDE
2	CONSTANT 0.59% SLOPE FOR ENTIRE PARKING LOT AND CURVED SIDEWALK IN EAST-WEST DIRECTION PERPENDICULAR TO N RIVER ST.
3	PAINTED LINES DESIGNATING PARKING STALLS AND PARKING AISLES SHOULD BE 4" WIDE
4	EXISTING STORMWATER INLET

- VISION IMPAIRED DETECTABLE WARNING 5' x 2'
- E — ELECTRIC POLE
- V — ADA VAN ACCESSIBILITY PARKING SPOT SIGN
- A — ADA ACCESSIBILITY PARKING SPOT SIGN
- CROSSWALK 2' x 6'
- PARKING AISLE 5' x 18'
- PARKING SPOT LINE
- SIDEWALK 5.5" TYPE C PCC CONCRETE
- DRIVING LANES 6" PCC CONCRETE
- GRASS
- 3 7/8" x 7 7/8" CONCRETE PAVERS

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CIVIL AND ENVIRONMENTAL ENGINEERING
4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES
103 S CAPITOL ST
IOWA CITY, IOWA 52242
PHONE: 319.335.5647
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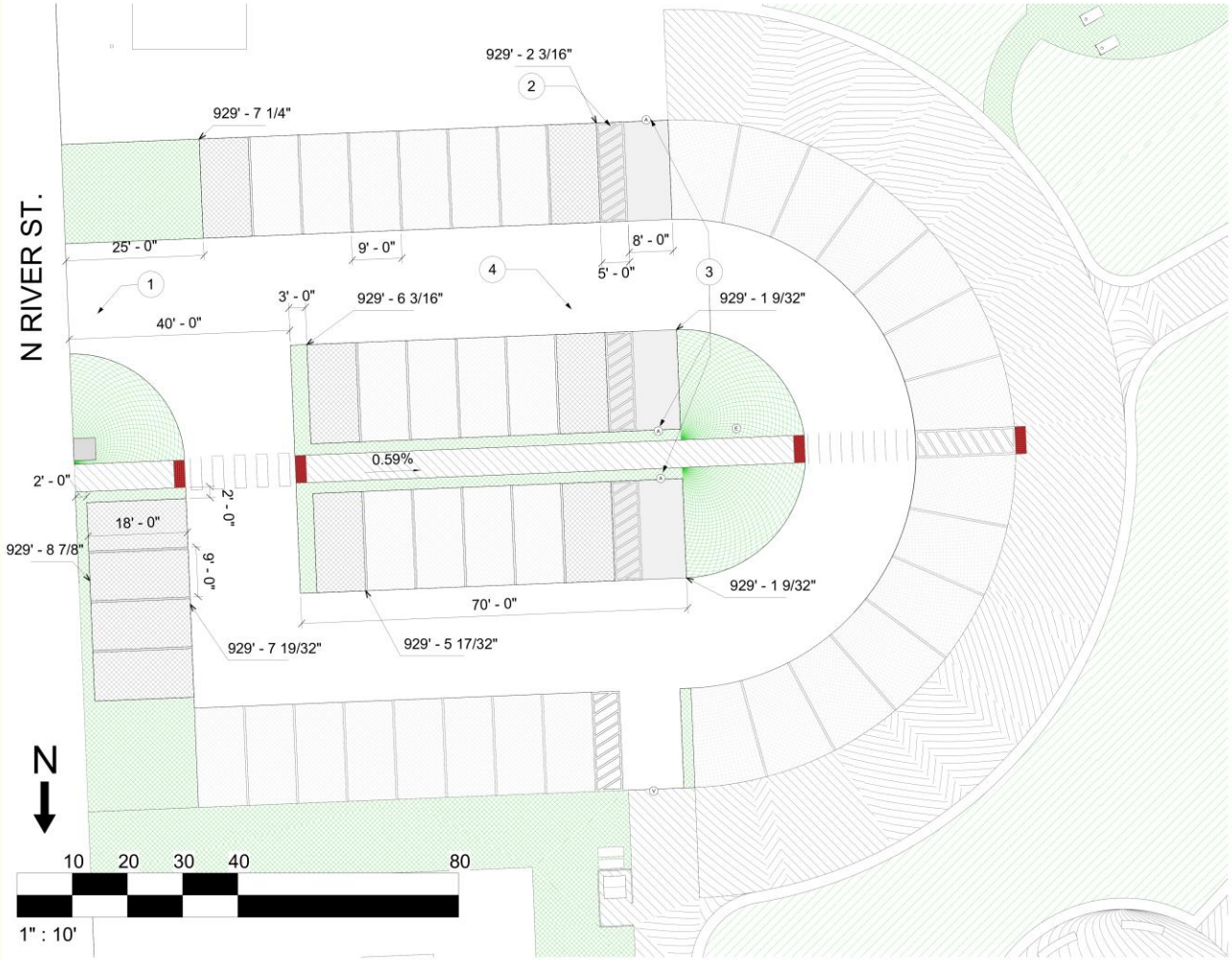
SHEET NAME
PHASE 1 PARKING LOT DETAIL

SHEET NO.
S102

IOWA



PARKING LOT PHASE 6 DETAIL NOTES	
NOTE NUMBER	NOTE TEXT
1	SLOPE AND ELEVATIONS OF PARKING SURFACE ARE IDENTICAL TO THOSE IN SHEET S102, ELEVATIONS ON THIS SHEET ARE FOR CLARITY ONLY
2	ALL PARKING LINES AND CROSS WALKS WILL BE REPAINTED IN PHASE 6
3	ADA ACCESSIBLE PARKING SPOT SIGNS RELOCATED TO MATCH NEW POSITION OF ADA ACCESSIBLE PARKING SPOTS
4	AN ESTIMATED 1600 SF OF CONCRETE WILL BE NEED TO BE REPAIRED NEAR THE LOCATION OF THE PHASE 1 ADA ACCESSIBLE PARKING SPOTS THAT WERE RELOCATED

- E — ELECTRIC POLE
- V — ADA VAN ACCESSIBILITY PARKING SPOT SIGN
- A — ADA ACCESSIBILITY PARKING SPOT SIGN
- CROSSWALK 2' x 6'
- PARKING AISLE 5' x 18'
- PARKING SPOT LINE
- EXISTING SIDEWALK 5.5" TYPE C PCC CONCRETE
- EXISTING 6" PCC CONCRETE
- NEW 6" PCC CONCRETE FOR PARKING SPOTS
- EXISTING GRASS
- EXISTING 3 7/8" x 7 7/8" CONCRETE PAVERS
- NEW 3 7/8" x 7 7/8" CONCRETE PAVERS

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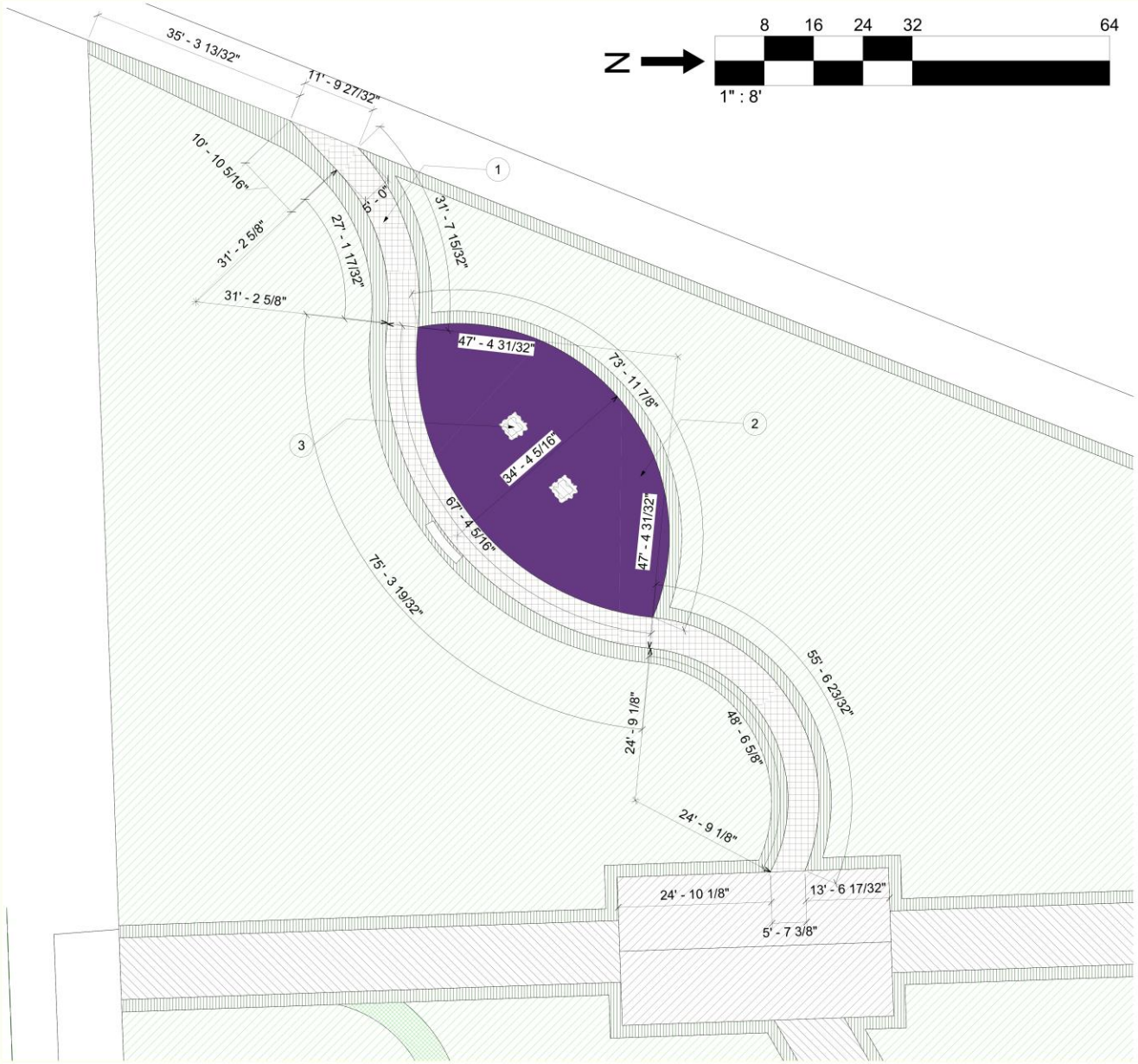
SHEET NAME
PHASE 6 PARKING LOT DETAIL

SHEET NO.
S103

IOWA



N

8 16 24 32 64

1" : 8'

SOUTHWEST RECREATION ALCOVE NOTES	
NOTE NUMBER	NOTE TEXT
1	NEW GRAVEL PATH SHOULD BE 5' WIDE EXCEPT AT THE BEGINNING AND END WHERE IT IS WIDER TO MEET THE TRAIL NETWORK
2	GRADING OF NEW PLAY PAD SHOULD MATCH GRADING AFTER SITE CONDITIONING IN SHEET C104
3	PLAY FEATURE SHOULD BE TYPE NATUREROCKS 3 BOULDER SET - RUST SANDSTONE BY AAA STATE OF PLAY OR SIMILIAR

- GRAVEL PATH
- PRAIRIE
- 2' PRAIRIE BUFFER
- GRASS
- RECYCLED RUBBER PLAY AREA
- EXISTING TRAIL 5.5" CLASS C PCC
- NEW PAVILION ROOF
- STONE BENCH

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FAX: 319.335.5660
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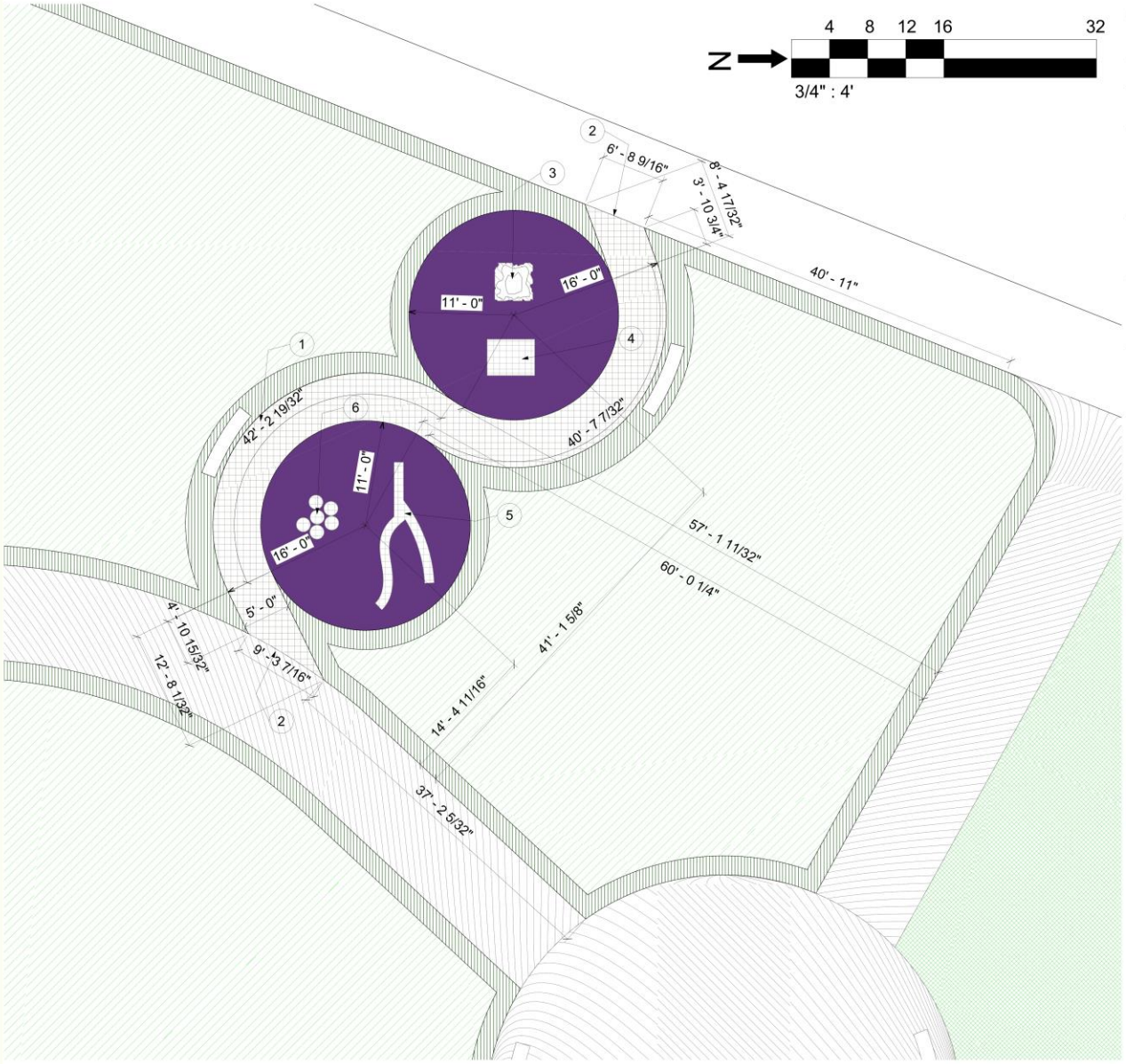
SHEET NAME
PHASE 5 SOUTHWEST RECREATION ALCOVE

SHEET NO.
S401

IOWA



NORTHWEST RECREATION ALCOVE NOTES	
NOTE NUMBER	NOTE TEXT
1	ARC LENGTHS MEASURE OUTER CIRCLE OF GRAVEL PATHS
2	GRAVEL PATHS SHOULD CONNECT TO EXISTING TRAILS AS A TANGENT TO THE CIRCULAR PATHS AROUND PLAY AREAS
3	PLAY FEATURE IS TYPE THE PEAK ROCK CLIMBER MANUFACTURED BY LANDSCAPE STRUCTURES OR SIMILAR
4	PLAY FEATURE IS TYPE LOG CRAWL TUNNEL MANUFACTURED BY LANDSCAPE STRUCTURES OR SIMILAR
5	PLAY FEATURE IS TYPE LOG BALANCE BEAM MANUFACTURED BY LANDSCAPE STRUCTURES OR SIMILAR
6	PLAY FEATURE IS TYPE MUSHROOM STEPPER AT HEIGHTS 8", 10", 16", 20", 24", 30", MANUFACTURED BY LANDSCAPE STRUCTURES OR SIMILAR

GRAVEL PATH

PRAIRIE

2' PRAIRIE BUFFER

GRASS

RECYCLED RUBBER PLAY AREA

EXISTING TRAIL 5.5" CLASS C PCC

NEW PAVILION ROOF

STONE BENCH

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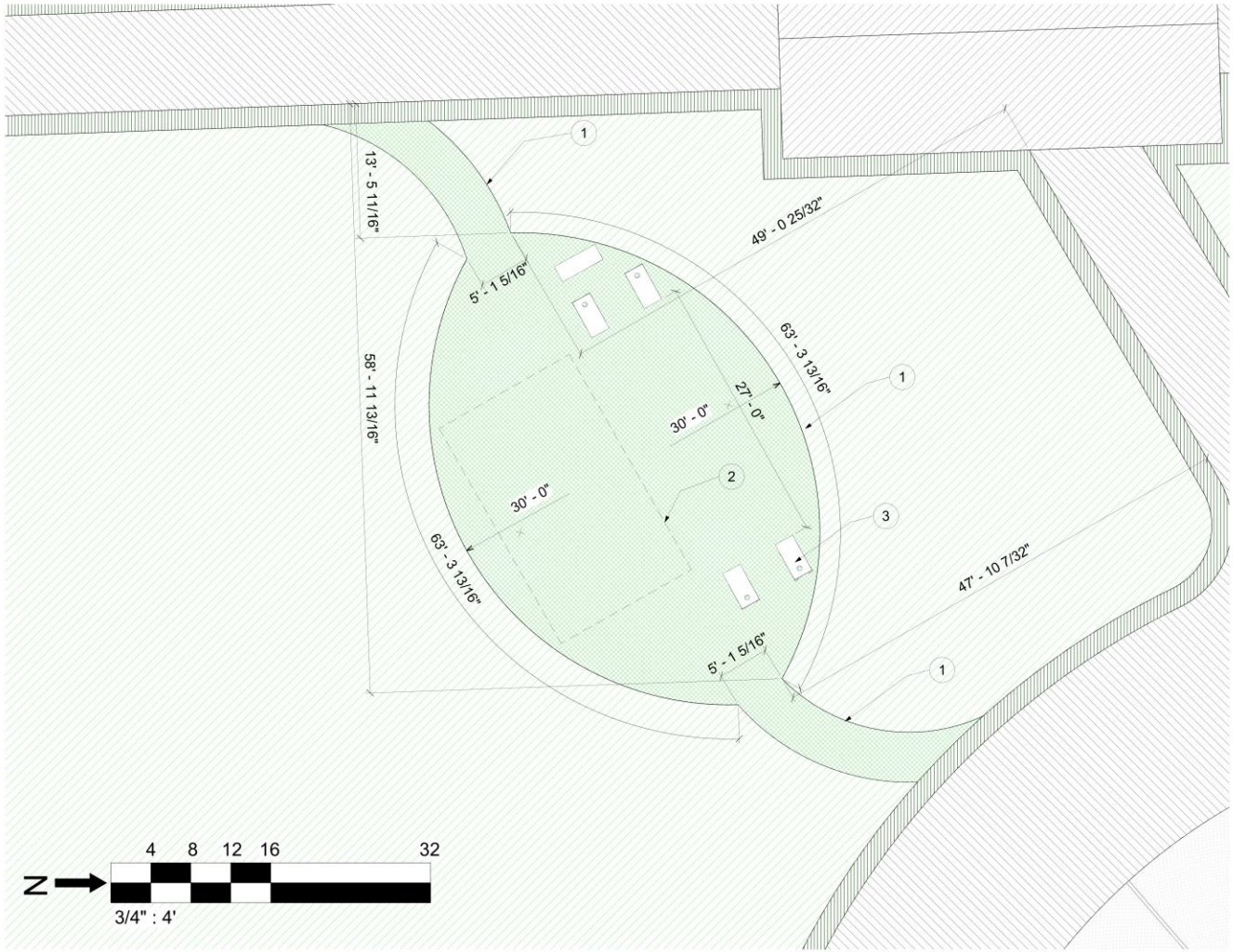
SHEET NAME
PHASE 5
NORTHWEST
RECREATION
ALCOVE

SHEET NO.
S402

IOWA



SOUTHEAST RECREATION ALCOVE NOTES	
NOTE NUMBER	NOTE TEXT
1	MOWED AREA SURROUNDING FITNESS AREA AND CORNHOLES. OUTLINE IS NOT PRECISE BUT PRAIRIE WILL NEED TO BE CLEARED TO MAKE SPACE FOR THE AMENITIES
2	ESTIMATED AREA REQUIRED TO INSTALL THE EIGHT MACHINES INCLUDED IN THE OLYMPIC SPIRIT FITNESS COURSE AS MANUFACTURED BY WILLYGOAT TOYS AND PLAYGROUND OR SIMILAR
3	REGULATION CORNHOLE BOARDS 2' x 4' PLACED 27' APART FROM ONE ANOTHER

- 18.3 CF STORAGE CONTAINER
- 2' x 4' CORNHOLE BOARD
- PRAIRIE
- 2' PRAIRIE BUFFER
- GRASS
- FITNESS MACHINES BOUNDARY
- EXISTING TRAIL 5.5" CLASS C PCC
- NEW PAVILION ROOF

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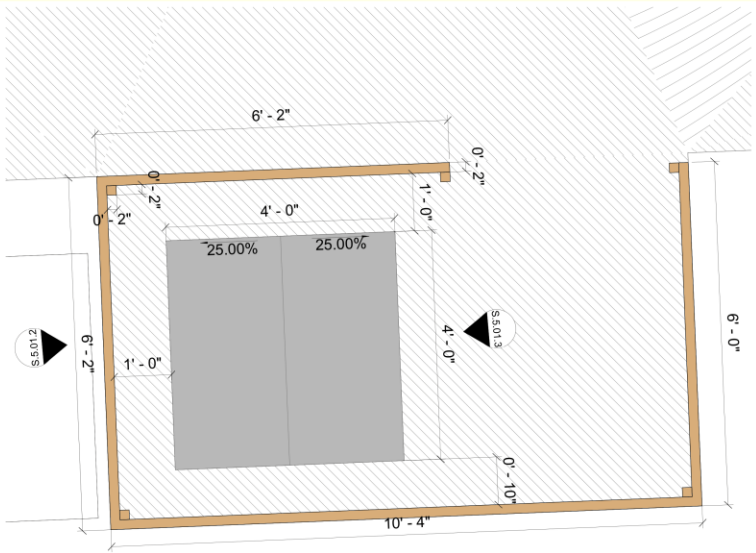
SHEET NAME
PHASE 5
SOUTHEAST
RECREATION
ALCOVE

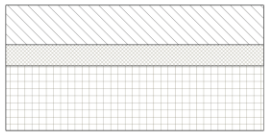
SHEET NO.
S403

IOWA



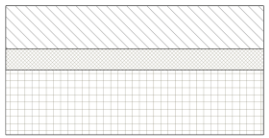
S5.01.1 PORTA-POTTY PAD AND PRIVACY WALLS PLAN VIEW

S5.01.4 SIDEWALK/TRAIL CROSS SECTION



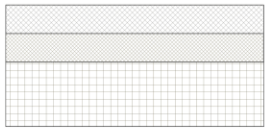
- 5.5" CLASS C PCC
- 3" COMPACTED FILL SUBBASE
- 9" 3/4" GRAVEL

S5.01.5 PARKING LOT ROADWAY CROSS SECTION

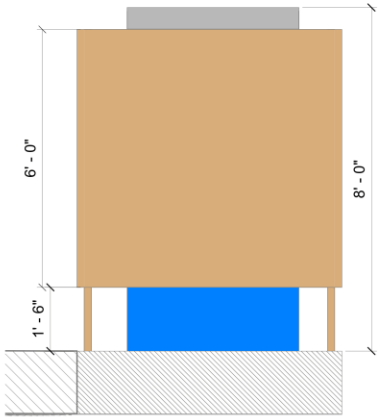


- 6" CLASS C PCC
- 3" COMPACTED FILL SUBBASE
- 9" 3/4" GRAVEL

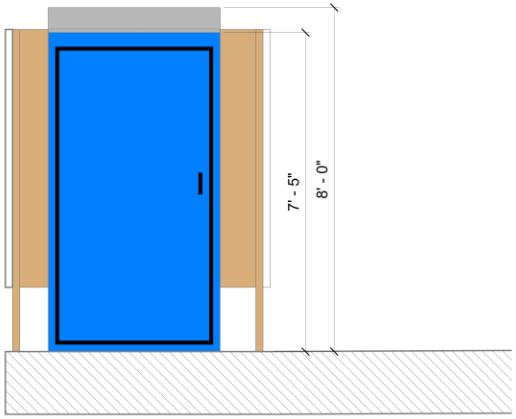
S5.01.6 PAVERS CROSS SECTION



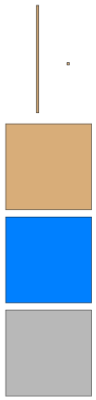
- 3 1/8" CONCRETE PAVERS
- 5" COMPACTED FILL SUBBASE
- 9" 3/4" GRAVEL



S5.01.2 NORTH FACING PORTA-POTTY PRIVACY WALLS SECTION VIEW



S5.01.3 SOUTH FACING PORTA-POTTY PRIVACY WALLS SECTION VIEW



- 2" x 2" PRIVACY WALL POSTS LIGHT COLORED WOOD
- 2" THICK PRIVACY WALLS LIGHT COLORED WOOD
- PORTA-POTTY WALLS
- PORTA-POTTY ROOF

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RIVERBANK PARKS
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108 N RIVER ST.
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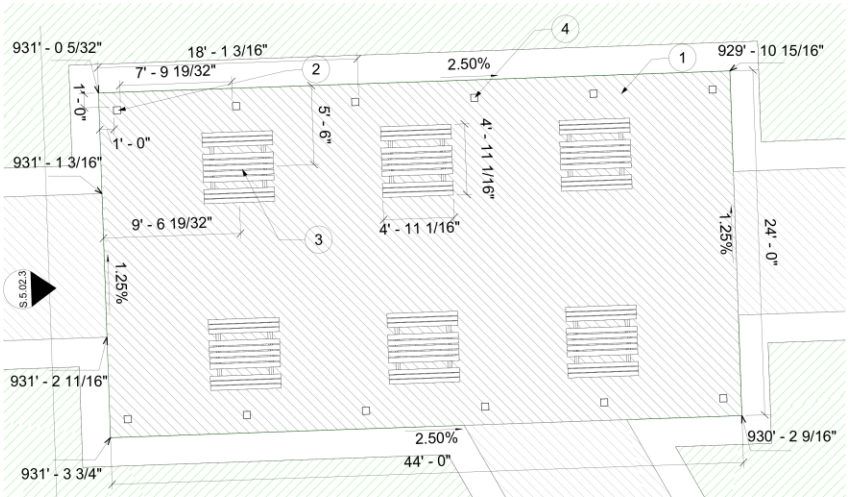
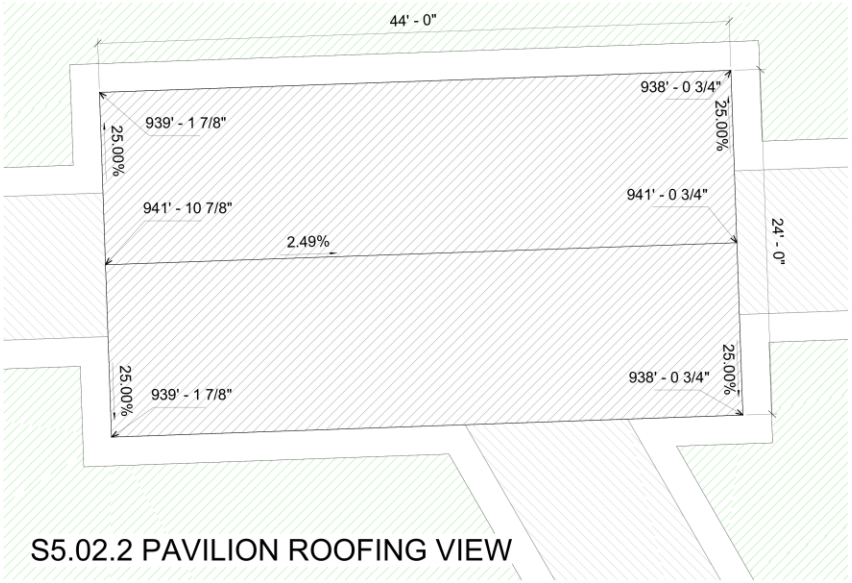
SHEET NAME
STRUCTURAL DETAILS

SHEET NO.
S501

IOWA



S5.02.1 PAVILION PLAN VIEW AND FURNITURE PLAN



S5.02.2 PAVILION ROOFING VIEW

PAVILION DETAIL NOTES	
NOTE NUMBER	NOTE TEXT
1	PAVILION SHOULD BE CONSTRUCTED PER THE SPECIFICATIONS AND DRAWINGS AVAILABLE FROM THE MANUFACTURER FIGTHROOM. EXACT MODEL IS 24' x 44' WOOD GABEL RECTANGULAR PAVILION
2	PLACEMENT OF SUPPORT COLUMNS IS SYMETRICAL ALONG CENTER VERTICAL AND HORIZONTAL LINES
3	PLACEMENT OF WOODEN PICNIC TABLES IS SYMMETRICAL ABOUT CENTER HORIZONTAL AND VERTICAL LINES
4	8" x 8" WOODEN SUPPORT COLUMN

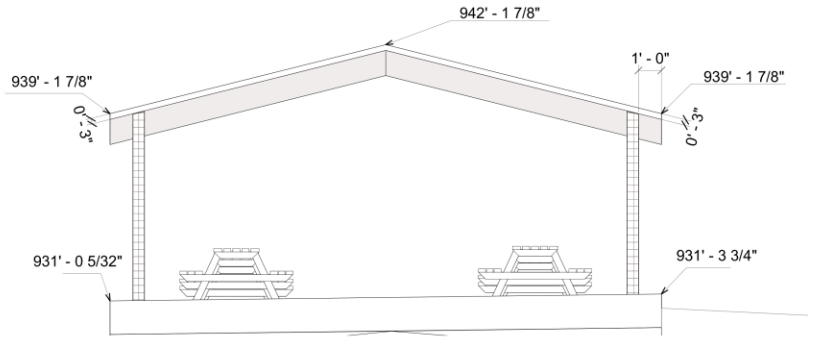
PAVILION SUPPORT COLUMN
8" x 8" - DARK WOOD

WOODEN PICNIC TABLE

EXISTING TRAIL 5.5" TYPE C PCC CONCRETE

NEW PAVILION PAD 5.5" TYPE C PCC CONCRETE

NEW PAVILION ROOF - DARK WOOD



S5.02.3 PAVILION SECTION VIEW NORTH FACING

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IOWA CITY, IOWA 52242
PHONE: 319.335.5647
FAX: 319.335.5660
EMAIL: civil-hawks@uiowa.edu

PROJECT: CEE-4850
DATE : 5/8/2026
DRAWN BY: Sam Greiner
REVISION:

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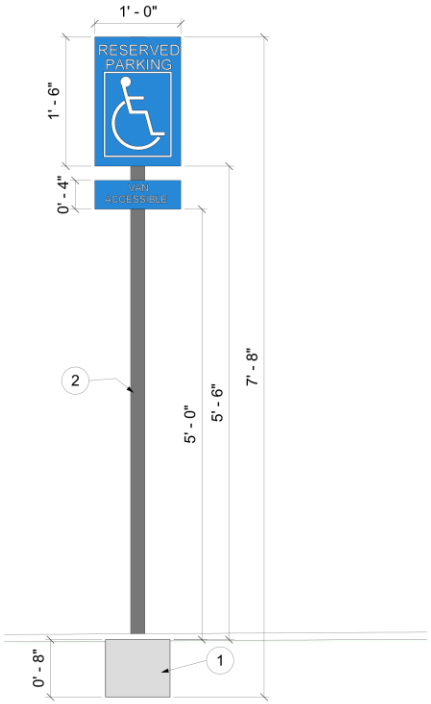
RIVERBANK PARKS
N RIVER ST. SITE
108 N RIVER ST,
MANCHESTER IOWA, 52057

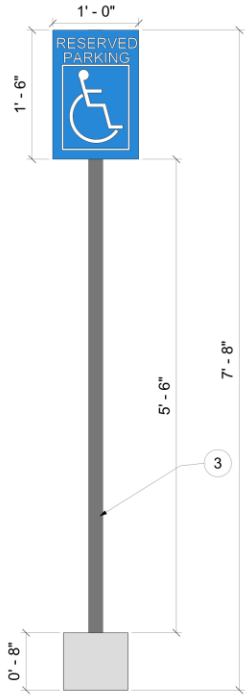
SHEET NAME
PHASE 4
PAVILLION
DETAILS

SHEET NO.
S502

IOWA

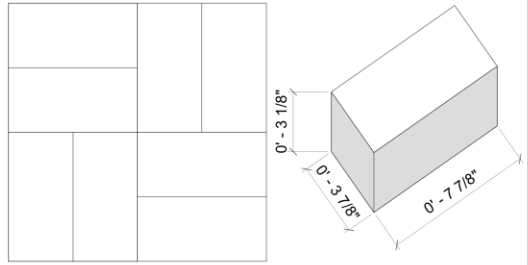


S5.03.1 ADA VAN ACCESSIBLE PARKING SIGN



S5.03.2 ADA ACCESSIBLE PARKING SIGN

S5.03.3 ADA ACCESSIBLE PARKING SIGN PLAN VIEW



S5.03.4 PAVER PATTERN DETAIL

SIGNAGE NOTES	
NOTE NUMBER	NOTE TEXT
1	CONCRETE CYLINDER FOR SIGN STABILITY. 9" DIAMETER 8" DEPTH
2	2" DIAMETER ALUMINUM POST THAT EXTENDS FROM THE TOP OF THE SIGN TO THE BOTTOM OF THE CONCRETE CYLINDER
3	DIAMETERS OF POST AND CONCRETE CYLINDER IDENTICAL TO S5.03.1

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SHEET NAME
MISC. STRUCTURAL DETAILS

SHEET NO.
S503

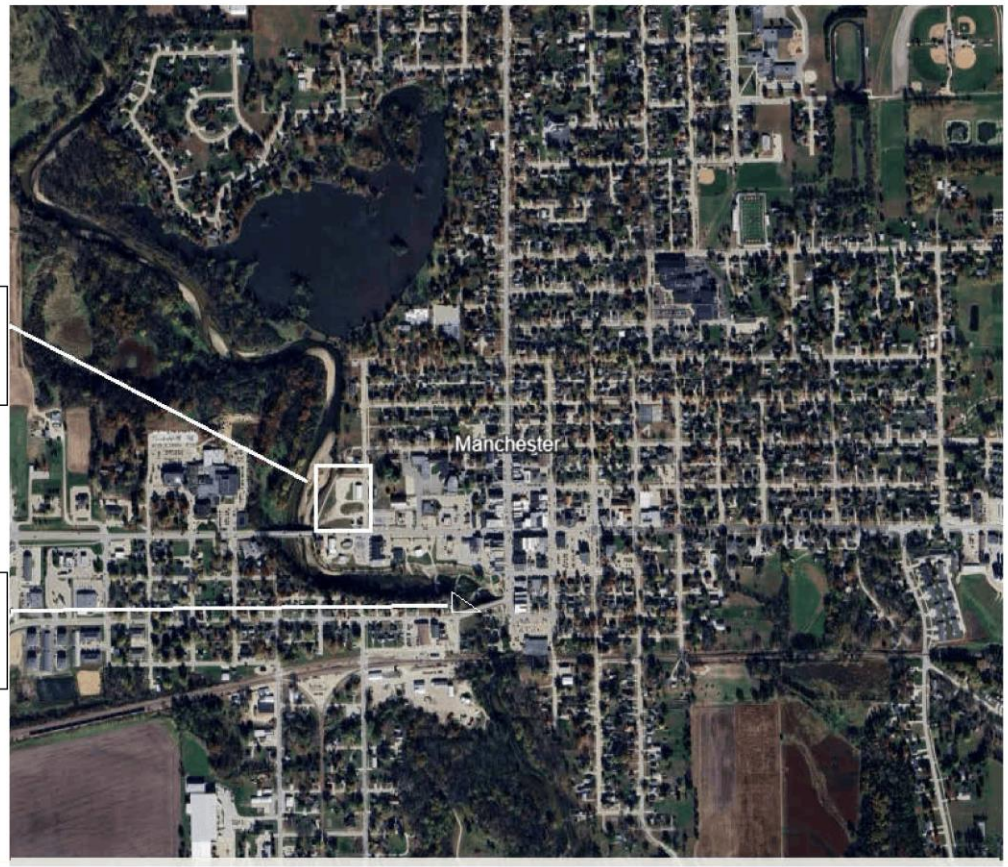
Appendix D: W Marion St. Site Engineering Drawings

MANCHESTER VITALITY ENDOWEMENT

RIVERBANK PARKS W MARION ST. SITE CONSTRUCTION BID PLANS
PROJECT NO. 2
199 W MARION ST.
MANCHESTER, IOWA 52057

N RIVER ST. SITE
42°29'04.07"N 91°
27'44.80"W

W MARION ST. SITE
42°28'57.43"N 91°
27'40.64"W



SHEET LIST	
SHEET NUMBER	SHEET NAME
G101	TITLE SHEET
C101	EXISTING SITE PLAN
C102	DEMOLITION PLAN
C103	GRADING PLAN
S101	SITE PLAN
S501	STRUCTURAL DETAILS

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103 S CAPITOL ST
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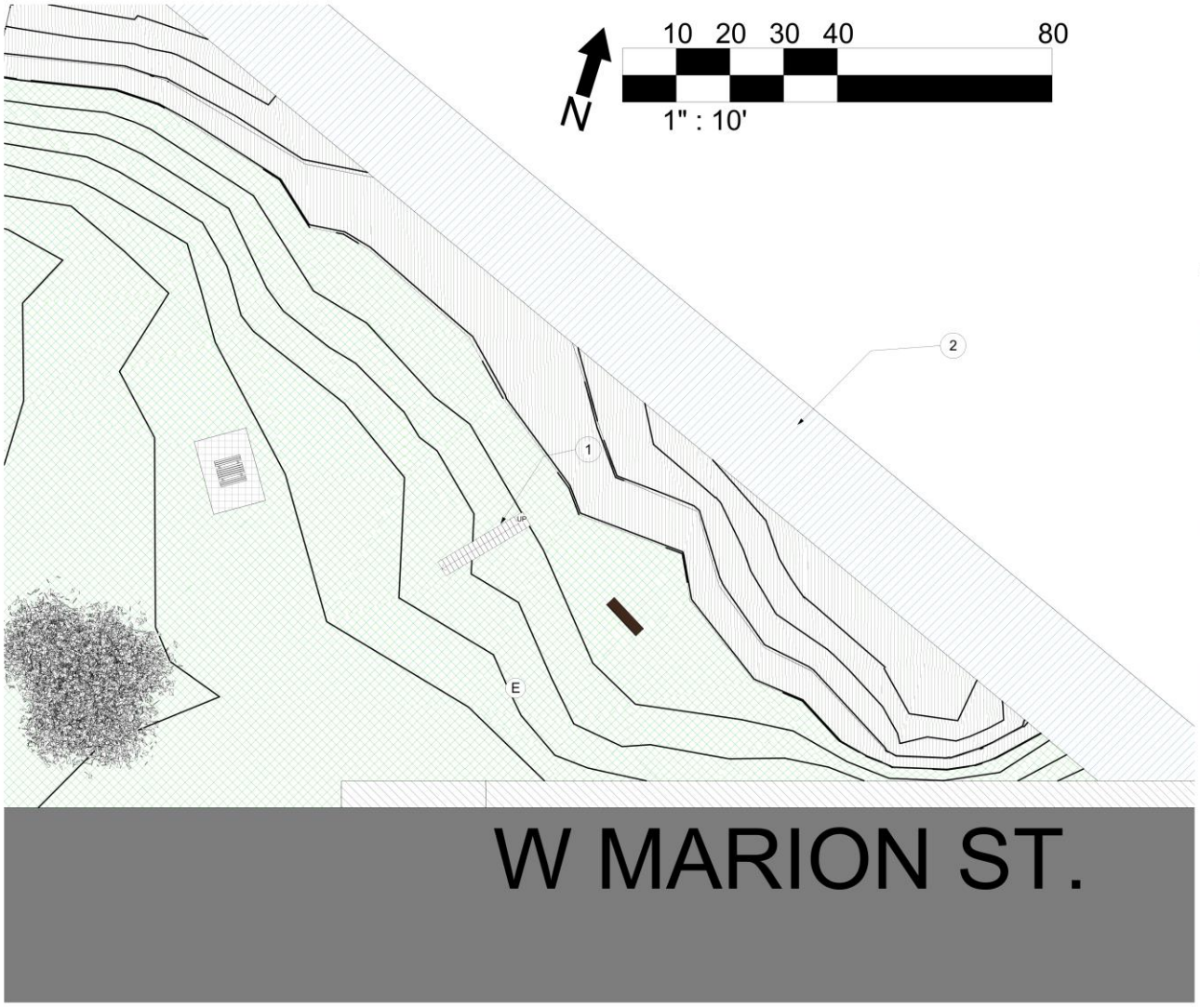
SHEET NAME
TITLE SHEET

SHEET NO.
G101

IOWA



EXISTING SITE NOTES	
NOTE NUMBER	NOTE TEXT
1	EXISTING ROCK STAIRCASE PARTIALLY IN THE GROUND
2	APPROXIMATE LOCATION OF RIVER BOUNDARY

LARGE TREE

EXISTING BENCH

EXISTING PICNIC TABLE

E EXISTING ELECTRIC POLE

RIVER BOUNDARY

BRUSH AND SMALL TREES

GRASS

EXISTING SIDEWALK

ROADWAY

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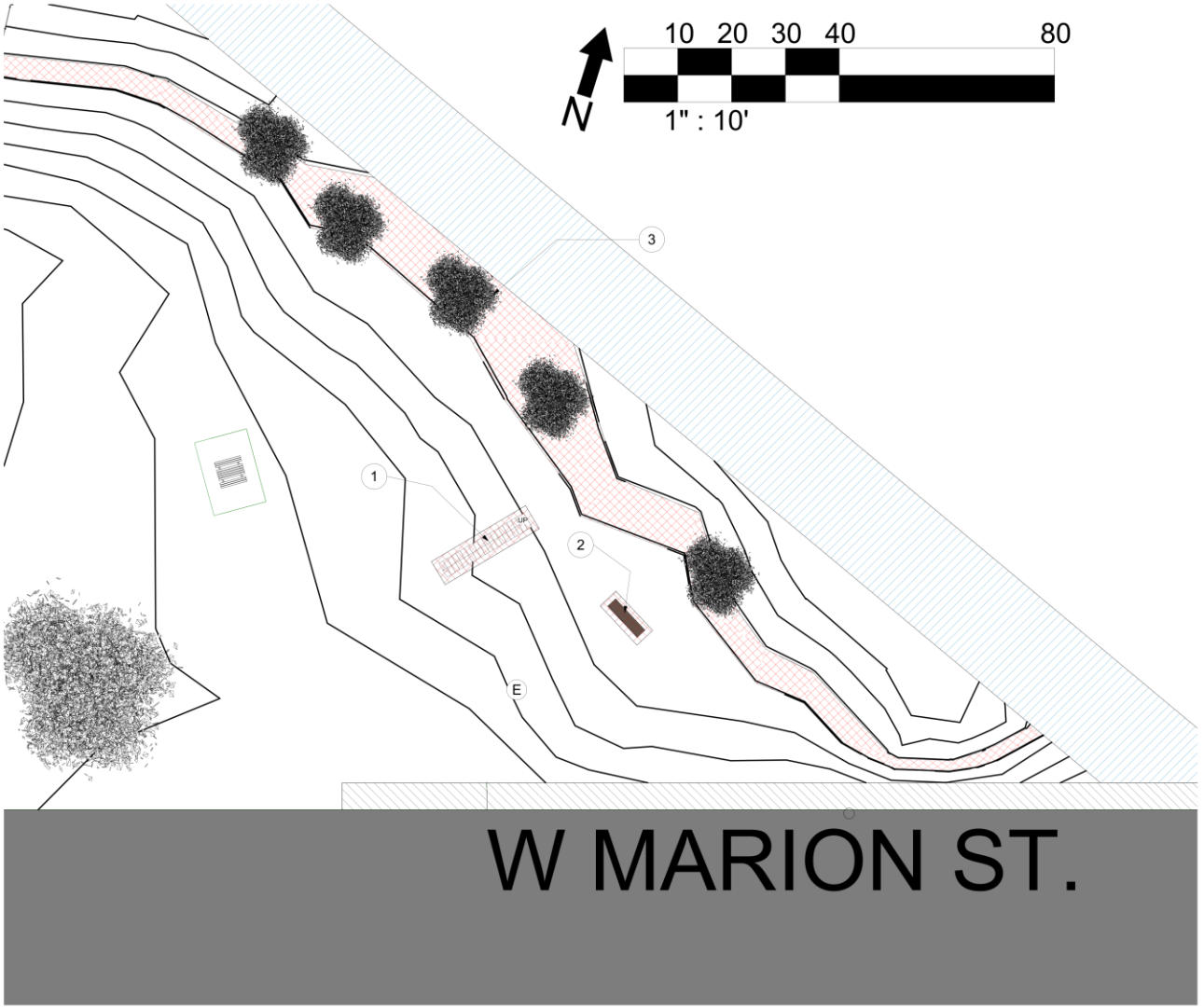
SHEET NAME
EXISTING SITE PLAN

SHEET NO.
C101

IOWA



DEMOLITION SITE NOTES	
NOTE NUMBER	NOTE TEXT
1	REMOVE EXISISTING STAIRS AND GRADE SURFACE CONSISTENT TO THE REST OF THE HILL
2	REMOVE EXISTING BENCH
3	REMOVE TOP LAYER OF BRUSH AND SMALL TREES UP UNTIL THE SLOPE DOWN TO THE RIVER BEGINS. EXACT EXTENT TO BE DETERMINED ON SITE, APPROXIMATE AREA 1895 SF

SMALL TREES IN BRUSH AREA

DEMOLITION AREA

RIVER BOUNDARY

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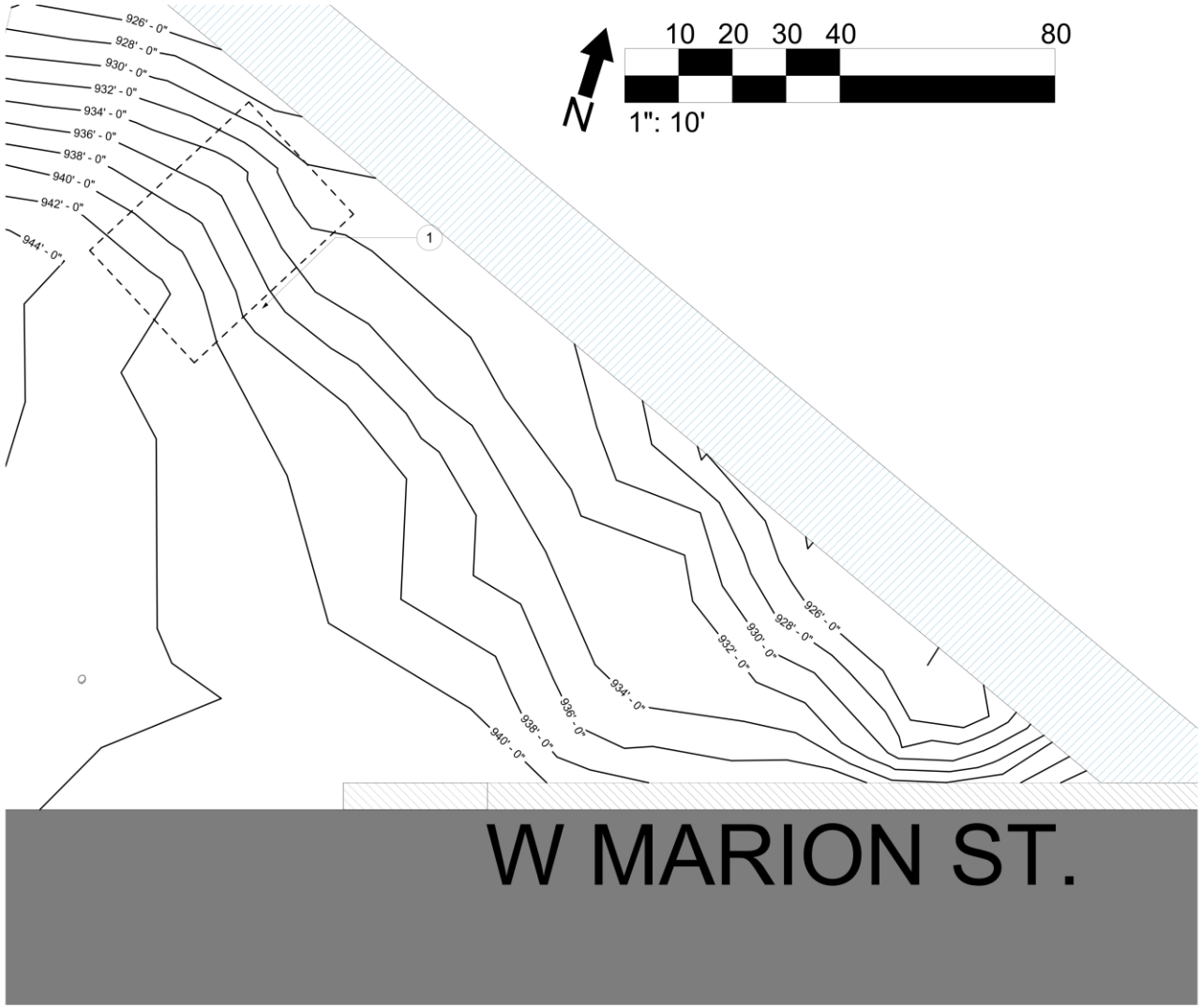
SHEET NAME
DEMOLITION PLAN

SHEET NO.
C102

IOWA



GRADING NOTES	
NOTE NUMBER	NOTE TEXT
1	GRADING IS UNCHANGED ON SITE EXCEPT NEAR WHERE THE STAIRS ARE INSTALLED. AREA OF CHANGE MARKED BY DASHED LINES

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4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES
103 S CAPITOL ST
IOWA CITY, IOWA 52242
PHONE: 319.335.5647
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SHEET NAME
GRADING PLAN

SHEET NO.
C103

IOWA

SITE PLAN NOTES	
NOTE NUMBER	NOTE TEXT
1	EXACT LOCATION OF LIMESTONE BLOCKS CAN BE DETERMINED ON SITE TO CREATE AN AESTHETIC LOOKOUT POINT OVER THE RIVER. BLOCKS SHOULD BE NATURAL IN APPEARANCE AND APPROXIMATELY 8' x 2' x 1.5'
2	BEGINNING OF SIDEWALK FLUSH WITH THE SITE SERVES AS THE REFERENCE POINT FOR MEASUREMENTS TO BENCHES AND STAIR. DISTANCES REPRESENT A PERPENDICULAR LINE FROM THE ROAD STARTING AT THE FIRST SEGMENT OF SIDEWALK FLUSH WITH THE SITE

- LIMESTONE HALF WALL BLOCKS
- LARGE TREE
- EXISTING PICNIC TABLE
- E — EXISTING ELECTRIC POLE
- LIMESTONE BENCH
- RIVER BOUNDARY
- BRUSH AND SMALL TREES
- GRASS
- EXISTING SIDEWALK
- ROADWAY

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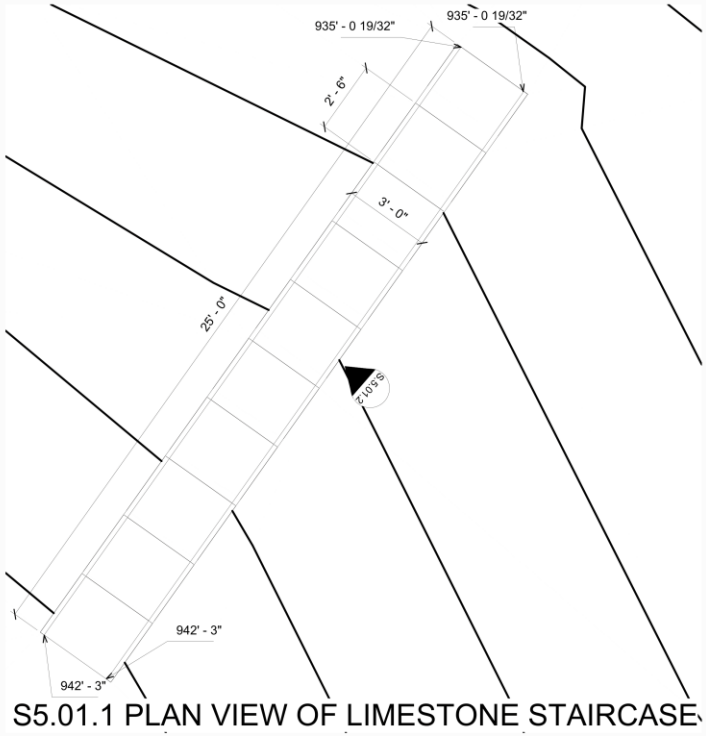
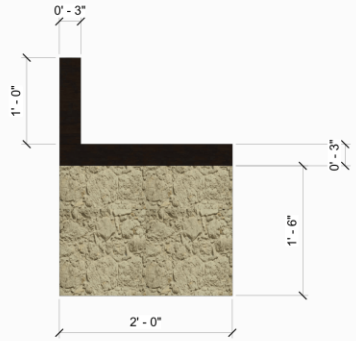
SHEET NAME
SITE PLAN

SHEET NO.
S101

IOWA

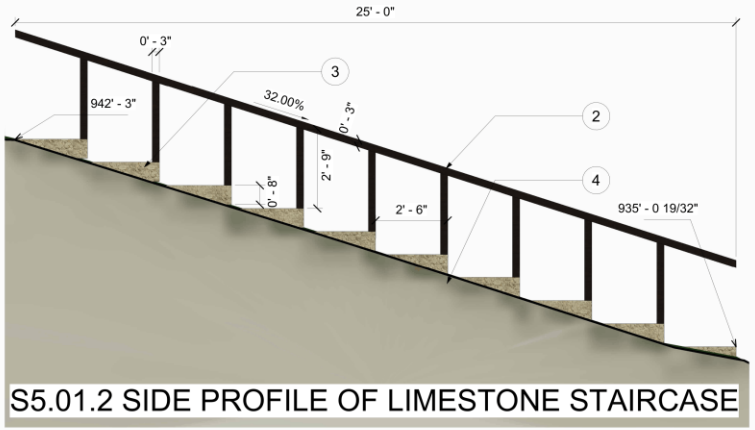


S5.01.1 PLAN VIEW OF LIMESTONE STAIRCASE



S5.01.3 SIDE PROFILE OF LIMESTONE BLOCK BENCH

STRUCTURAL DETAIL NOTES	
NOTE NUMBER	NOTE TEXT
1	BASE OF BENCH SHOULD BE A NATURAL APPEARING LIMESTONE BLOCK WITH THE APPROXIMATE DIMENSIONS SHOWN IN S5.01.3 AND S5.01.4
2	RAILING AND BALLUSTERS ARE MADE OF WALNUT WOOD
3	STAIRS SHOULD BE MADE OF NATURAL APPEARING LIMESTONE BLOCKS WITH THE APPROXIMATE DIMENSIONS SHOWN IN 5.01.1 AND 5.01.2
4	LIMESTONE BLOCKS SHOULD BE PLACED PARTIALLY IN THE GROUND SUCH THAT THE BACK OF THE STAIR STEP IS IN LINE WITH THE TERRAIN
5	SEAT AND BACK OF BENCH SHOULD BE CONSTRUCTED FROM WALNUT WOOD



S5.01.2 SIDE PROFILE OF LIMESTONE STAIRCASE

S5.01.4 FRONT FACING VIEW OF LIMESTONE BLOCK BENCH

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SHEET NAME
STRUCTURAL DETAILS

SHEET NO.
S501