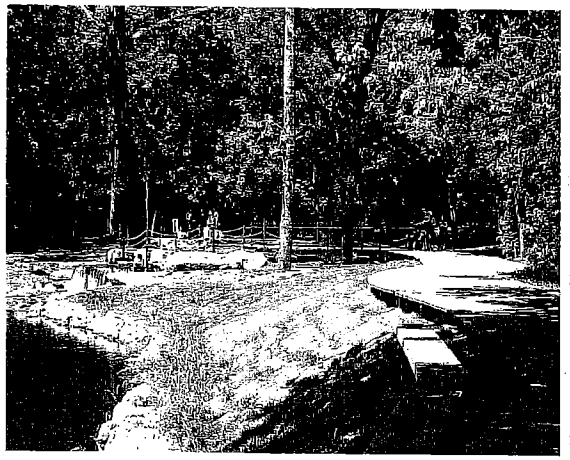
THE CITY OF GAHANNA, OHIO
CREEKSIDE TRAILWAY LOOP STUDY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CREEKSIDE TRAILWAY LOOP STUDY

0.0 EXECUTIVE SUMMARY

Over the years, the City of Gahanna has put a considerable amount of energy into re-vitalizing the Olde Gahanna historical district, an area that lies along Big Walnut Creek between Friendship Park and Carpenter Road (see Plates 1 & 2). Within this designated historical area, it is the City's goal to encourage a market-driven re-vitalization of the area along the east bank of Big Walnut Creek north of Granville Street . . . an area now known as "Creekside". Recently, a stream-side trailway and waterfall feature segment was constructed to enhance the public value and marketability of this area. However, because this new stream-side trailway is not connected to any of the other City of Gahanna designated trailway systems and because parking in the Mill Street area is very limited, the public's present ability to access Creekside is also difficult and very limited. A project has therefore been developed to address these inadequacies. The project evaluated by this study posses three major Creekside enhancement assets:

1. The project will extend the new Creekside trailway into a looped trailway along both sides of Big Walnut Creek, immediately providing users with direct access to Creekside from a wide variety of additional trailway starting points, lessening the need to park near Creekside. This Creekside Trailway Loop will also eliminate the 'one-way' nature of the trailway. Currently, once users reach the end of the new Creekside trail, they must turn around and retrace their steps back to where they started.

2. Once this **Creekside Trailway Loop** is established along both sides of Big Walnut Creek, it then also becomes very easy to directly connect Creekside to essentially all of the City's bikeway systems. This will further increase the public's direct access to Creekside, making Creekside a focal point destination from essentially every geographical area of the City.

3. To form the proposed Creekside Trailway Loop, two Big Walnut Creek crossings are needed. By connecting the City's bikeways to the Creekside Trailway Loop, the level of connection between the City's bikeways on both sides of Big Walnut Creek improves substantially, a need identified by the City's 1999 Bikeway Master Plan (Edsall & Associates).

The proposed Creekside Trailway Loop project will therefore greatly improve the public's direct access to Creekside, provide some relief to the existing Creekside parking dilemma, substantially extend the length of the Creekside trailway experience and significantly improve the quality of the City's overall bikeway systems. Most importantly, all of these improvements will enhance the value and the future marketability of the Creekside re-development area.

The two Big Walnut Creek Crossings, the Creekside Trailway Loop and the Creekside Bikeway Connectors are described in the following sections.

0.0 EXECUTIVE SUMMARY (Cont.)

BIG WALNUT CREEK CROSSINGS. As presented in **Section 3.0**, the project includes two Creekside pedestrian/bikeway crossings over Big Walnut Creek. To stay within the boundaries of the historical district study area, it has been established that the highest-priority crossing should be constructed to connect the new Creekside trailway to the municipal golf course (see Plate 2). Even though this crossing would be low to the water to permit handicap access, it must also be noted that this type of crossing is typically constructed without railings because of the potential for damage from high creek flows (see Plates 3 & 4). The second crossing has been established to cross Big Walnut Creek within the limits of Friendship Park (see Plate 1). This elevated crossing would consist of a steel, pre-manufactured structure that can be delivered to the site and erected onto concrete abutments customized to fit the site conditions (see Plates 5 & 6).

Whenever structures are built in or along a waterway, US Army Corps of Engineers and Ohio EPA permits must be obtained. Fortunately, approval to construct the Low Water Crossing was obtained in 1998 as a part of the recent Creekside trailway and waterfall feature construction project. Regarding the Friendship Park Crossing, the Huntington District of the Corps has indicated that this elevated crossing will likely be able to be approved under a program of simplified permits known as Nationwide Permits.

CREEKSIDE TRAILWAY LOOP. As presented in **Section 4.0**, a number of stream-side trailways are already in place between the two proposed crossing locations. Therefore, only a few trail sections will have to be constructed to form a completely looped Creekside trailway along both sides of Big Walnut Creek (see Plates 1 & 2). The segments needed to complete the loop could consist of a variety of trailway types including wood, concrete and asphalt, depending upon the their location and relationship to other existing adjacent trailways. Each of these new trailway segments are described in detail in Section 4.0 and are graphically depicted in detail on Plates 7 thru 16 attached to the rear of this study.

CREEKSIDE BIKEWAY CONNECTIONS. As presented in **Section 5.0**, two bikeway connector segments were evaluated. The first will connect the Low Water Crossing to the Ridenour Road bikeway (see Plates 17 & 18). The second will connect the north end of the Creekside trail with Mill Street just north of the Clark Oil Station (see Plates 19 & 20). No bikeway connections are recommended along the south end of the **Creekside Trailway Loop** due to the facts that 1) the bikeway systems in the southeast part of Gahanna cannot be directly connected to Friendship Park due to the Rocky Fork shale cliff and 2) the bikeway systems in the southwest part of Gahanna already have access to the Creekside Trailway Loop at Discovery Point Park. However, in addition to the two crossings evaluated in detail within this study, three other creek crossings are recommended in the City's 1999 Bikeway Master Plan, including a crossing in the Rocky Fork Drive area to serve the southern portion of the city. The cost estimates contained within this study may also be used to estimate the per foot costs of that crossing. However, being outside the historical district study limits, this crossing was not evaluated in detail as a part of this Creekside Trailway Loop study.

0.0 EXECUTIVE SUMMARY (Cont.)

Section 6.0 discusses the outstanding opportunities and advantages of incorporating educational trailway features into the project. An environmental treasure, many opportunities exist to educate both school children and the general public about the site's stream-side ecology and the bio-engineering stream restoration efforts by the City to restore the creek's meandering nature.

Section 7.0 discusses the relationship of the Creekside Trailway Loop to the overall Creekside development Master Plan. One of the primary considerations in the development of these proposed crossings and trailway segments was the need to plan these crossings and connector segments to enhance and be consistent with the overall Creekside Master Plan.

Section 8.0 presents information relating to grant programs that would be available to assist with funding the construction of the Creekside Trailway Loop. Four main grant opportunities exist: the ODNR NatureWorks Program, the ODNR Recreational Trails (TEA-21) Program, the ODOT TEA-21 Program and the OEPA Environmental Educational Fund Program. Assuming that the proper effort is put into preparing convincing grant application packages, the potential for receiving grant funds for this project are excellent.

Section 9.0 presents individual construction cost estimates for each of the two crossings and each of the needed trailway segments to permit cost comparisons to be made between the various segments. **Section 10** presents a discussion regarding ways in which project costs could be reduced without compromising the basic project goals. To meet the minimum project goals, the new Creekside trailway needs to be extended enough to provide additional Creekside trailway starting points. Also, the Creekside trailway should be extended enough to provide a looped trailway system, eliminating users from having to turn around and retrace their steps when they reach the end of the Creekside trailway. The Value Engineering effort determined that it would very cost-effective to design the entire project at once, no matter how the construction was phased. It also determined that some costs may be saved if the location of the Friendship Park Crossing were to be moved north to be nearer the Friendship Park gazebo. However, the savings from this move will also result in lower benefits. The priorities of the segments are presented in Section 10.

Section 11.0 of this study discusses the timetables required to design and construct the Creekside Trailway Loop. Beginning with the Preliminary Design work, approximately 28 months will be required to complete the project *if the preliminary design phase can be started within the next three months.* The completed Creekside Trailway Loop project could then be opened to the public during the spring of 2002. If the preliminary design work is started after that, the 2001 construction season would be lost, moving the completion date backwards to the spring of 2003.

1.0 STUDY SCOPE

This study evaluates a construction project that has been proposed in order to enhance the value and marketability of the City's Creekside area, an area located along the east side of Big Walnut Creek north of Granville Street. Specifically, this project extends the newly-constructed Creekside trailway throughout the City's historical (Olde Gahanna) district, thus extending the trailway experience and permitting pedestrians and cyclists to reach the Creekside area from a wide variety of new starting points along the extended route. Additionally, the project will 'loop' the Creekside trailway, eliminating users from having to turn around and retrace their steps when they reach the end of the Creekside trailway.

This study has also evaluated the direct connection of the Creekside Trailway Loop to the existing City of Gahanna bikeway systems, thus providing additional direct trailway access to Creekside from essentially every geographical area of Gahanna. Not only would this make Creekside a focal point destination for a much larger geographical area, these bikeway connections will also provide much-needed connections between those City bikeways that are located east of Big Walnut Creek and those that are located west of Big Walnut Creek.

2.0 INTRODUCTION

Over the years, the City has put a considerable amount of energy into re-vitalizing the Olde Gahanna historical district, an area that lies along Big Walnut Creek between Friendship Park and Carpenter Road (see Plates 1 & 2). Within this designated historical area, it is the City's goal to encourage a market-driven re-vitalization of the area along the east bank of Big Walnut Creek north of Granville Street . . . an area now known as "Creekside". Recently, a stream-side trailway and waterfall feature was constructed, enhancing the public value and marketability of this area. However, the value of this trailway segment is limited due to the 'one-way' nature of the trail, parking difficulties in the Mill Street area and the lack of connections to other stream-side trails. This project has been developed to address these inadequacies.

First, by extending the new Creekside trailway segment into a looped trailway system along both sides of Big Walnut Creek, users will immediately be able to have direct access to Creekside from a wide variety of trailway starting points. Secondly, once this **Creekside Trailway Loop** is established, it becomes easy to directly connect Creekside to essentially all of the City's existing bikeway systems. Thirdly, by constructing the two proposed Big Walnut Creek pedestrian / bikeway crossings to form the ends of the Loop, the level of connection between the City's existing bikeways on both sides of Big Walnut Creek improves substantially. Together, these improvements will serve to greatly enhance the public value and future marketability of the Creekside re-development area.

3.0 CROSSING CONFIGURATION OPTIONS

To establish the **Creekside Trailway Loop**, two pedestrian / bikeway crossings over Big Walnut Creek are needed. It has been established that the north creek crossing should connect the recently-constructed Creekside trailway to the municipal golf course and that the south crossing should be placed within the limits of Friendship Park. The recommended configurations of these two Big Walnut Creek crossings are described in the following sections.

3.1 LOW WATER CROSSING CONFIGURATION

The northernmost crossing is proposed to be a Low Water Crossing, consisting of a series of four-sided concrete box culverts placed side-by-side to span the creek channel. In general, the interior roof elevations of the box sections will be established to allow the passage of normal creek flowrates with one foot of freeboard above the water surface (see Plates 3 & 4). The Low Water Crossing must also be located such that the structure will not interfere with the natural pool / riffle sequences of the channel nor interfere with the ability of the creek to naturally form scour zones (deep parts) along the outside of the bends.

The surface of the Low Water Crossing should consist of mortared stone to complement the existing Creekside trailway design and blend in with the natural cobbles found throughout this section of Big Walnut Creek. However, due to the typical nature of this type of crossing, several items should be considered. First of all, even though keeping the crossing low to the water is required to permit handicap accessibility, floating debris may accumulate against the upstream side during particular times of the year. Secondly, low water crossings do not typically include hand railings due to the fact that railings, etc. would likely become damaged by floating debris during higher creek flows.

3.2 FRIENDSHIP PARK CROSSING CONFIGURATION

The Friendship Park Crossing is proposed to be constructed as an elevated structure for three primary reasons. First, a low water crossing-type structure would increase the degree of environmental impacts and would therefore likely require formal, individual US Army Corps of Engineers 404 permit approval. This 404 permit process can be a lengthy and costly process with no guarantee

3.0 CROSSING CONFIGURATION OPTIONS (Cont.)

that the process would ultimately result in an approval to build the structure. As further discussed in Section 3.3.2 below, approval to construct an elevated crossing would likely be much easier to obtain. Secondly, the creek channel in this section of Big Walnut Creek is wide, producing slower flow velocities. As such, the installation of a low water crossing would present an obstruction that would likely result in the build-up of sediments upstream of the crossing. Thirdly, an elevated crossing would be an appealing destination point for trail users and would be much more desirable to cross with wheelchairs and / or bicycles.

The most cost-effective elevated crossing would be constructed of pre-fabricated steel truss bridge sections manufactured by a number of US companies (see Plates 5 & 6). Similar to the existing crossing at Woodside Green Park, these structures can be delivered to the site and erected onto concrete abutments customized to fit the conditions of the site. In order to minimize the amount of site work and overall disturbance to the abutment areas, wooden ramps constructed on wooden piers should be used to reach the elevations of the spans from the existing surrounding grades.

3.3 REGULATORY CONSIDERATIONS

3.3.1 Low Water Crossing. Fortunately, since the northernmost proposed crossing was envisioned as an original part of the recent Creekside trailway project, approval for the construction of this crossing was already obtained as a part of the formal 404 Permit Application prepared for that project. However, even though only a simple schematic of the low water crossing was submitted, the approval for this low water crossing was based on a computerized hydraulic model that assumed a cross section larger than the cross section now proposed. Since this computer model proved that the low water crossing would not impact the passage of flood flows, discussions with the Corps indicate that the Corps will recognize this and allow the Low Water Crossing construction to proceed under the terms of the previously-approved Creekside permit.

3.3.2 Friendship Park Crossing. If a project's impacts to the waterway are minimal, the Corps can approve projects under a simplified permit program known as the Nationwide Permit Program. To maximize the likelihood of being able to fall under a Nationwide Permit, the Friendship Park Crossing should be designed so that 1) the lowest elevation of the span lies above the 100-year floodplain elevation, 2) only one small center pier is used and 3) the abutments are placed outside the main floodway.

In conversations with the Corps of Engineers, Huntington District, it appears that if the above conditions are met and the bridge design can be approved by FEMA and the Gahanna Flood Plain Administrator, the Corps of Engineers will permit the construction of the crossing under Nationwide permit #11. FEMA has indicated that they will approve the structure if it can be shown that it will pass a minimum of 90% of the 100-year flood event.

4.0 CREEKSIDE TRAILWAY LOOP

4.1 OVERALL TRAILWAY OPPORTUNITIES

The proposed **Creekside Trailway Loop** will provide a number ofsignificant benefits to the citizens of Gahanna. First, this trailway loop will provide direct access to the Creekside area from a wide variety of trailway starting points. Secondly, providing this trailway loop will extend the newly-constructed Creekside trailway throughout Gahanna's historical district, enhancing both the community's appreciation of Olde Gahanna and the public's stream-side trailway experience. Thirdly, the looped trailway will eliminate the current need for Creekside trailway users to retrace their steps back to where they started when they reach the end of the trail. Lastly, if the loop is connected to the City's existing bikeways, two additional benefits are realized. First, Creekside will immediately become directly connected to essentially every geographical area of Gahanna. Secondly, the two Big Walnut Creek crossings will substantially improve the level of connection between the City's bikeway systems on both sides of Big Walnut Creek, a need emphasized in the City's recently-completed Bikeway Master Plan (Edsall & Associates, 1999).

4.2 THE CREEKSIDE TRAILWAY LOOP

Throughout the historical district of Gahanna, the stream-side pedestrian and bicycle trailways along Big Walnut Creek are currently segmented and limited. For example, once users reach the end of the new Creekside trail, they must turn around and retrace their steps back to where they started. On the west bank, the stream-side portions of the trailway provide no access to Creekside unless users cross the SR 62 highway bridge. Providing a looped Creekside trail system along both banks of Big Walnut Creek will permit direct trailway access to the heart of Creekside from many points of origin.

4.2.1 Required East Bank Connections

Segment 1ES. Traversing a distance of approximately 400 feet, this segment will begin at the south terminus of the new Creekside wooden trailway and will terminate at the Historical Society log house on South High Street (see Plates 7 & 8). Two routes are possible. Preferably, to maintain the character of and extend the newly-constructed Creekside boardwalk trail, this segment should be constructed of wood along the edge of the creek bank (Segment 1ES - Preferred). This shoreline wooden trail would however require the acquisition of easements from two property owners (Male, Gahanna Historical Society). This segment could also travel through an existing 15-foot-wide City right-of-way that runs through the middle of the parking lot (Segment 1ES - Alternate). If this route is utilized, the segment should be constructed with a brick surface to match that along Granville Street.

4.0 CREEKSIDE TRAILWAY LOOP (Cont.)

Segment 2ES. Located just south of segment 1ES, this segment will traverse a distance of approximately 800 feet between the Historical Society log house and the parking lot at Friendship Park. This segment could be constructed along several different routes depending upon the ability of the City to obtain easements and/or acquire streambank property (see Plates 9 & 10).

Segment 2ES - Preferred. The preferred route between the Historical Society log house and the Friendship Park parking lot would consist of the construction of an 800-foot-long concrete stream-side trailway along the edge of Big Walnut Creek. This route would however require easements from four property owners (Gahanna Historical Society, Peters, Miller and Roby).

Segment 2ES - Alt #1. A second alternate route for this segment would consist of dedicating a 950-foot-long trailway along the south side of Clark Street and then along the west side of Oklahoma Avenue, terminating at the Friendship Park parking lot. This would be the most preferable of the two alternate routes since sufficient right-of-way width exists and the route could remain as a bikeway even if the more desired stream-side route was constructed later.

Segment 2ES - Alt #2. Approximately 950 feet long, a last alternative route between the Historical Society log house and the Friendship Park parking lot would consist of utilizing the existing series of narrow street right-of-ways that jog towards Friendship Park. However, due to their narrow widths, these streets would likely require reconstruction to primarily become a trailway, almost necessarily requiring vehicular traffic restrictions to be placed upon them. This alternative route would likely involve re-constructing the existing asphalt pavement as either a brick or concrete trailway surface.

Segment 3ES. Located south of Segment 2ES, this segment would consist of a concrete trailway segment approximately 900 feet long constructed between the north end of the Friendship Park parking lot and the proposed Friendship Park crossing location (see Plates 11 & 12). Ideally suited for a trailway, a grassed corridor exists throughout the entire length of this segment that lies adjacent to the Big Walnut stream bank. This segment would be constructed along the western edge of this grassed corridor as close to the creek as possible without requiring tree removals. As well, several Creekside council rings could be added at points along the segment. Being within a city park, this alternative would require no easements.

Segment 4ES. It should also be noted that the location proposed for the Friendship Park crossing is less than 500 feet from the confluence of Big Walnut Creek and Rocky Fork Creek. The confluence is a popular fishing spot and is aesthetically very appealing due to the presence of large shale cliffs along the south side of Rocky Fork Creek. It is recommended that a concrete trailway be extended approximately 300 feet towards the confluence from the Friendship Park Crossing location (see Plates 13 & 14). This extension could be terminated with a council ring similar to those along the Creekside trail.

4.0 CREEKSIDE TRAILWAY LOOP (Cont.)

4.2.2 Required West Bank Connections

Along the west bank of Big Walnut Creek, approximately 1,400 feet of stream-side asphalt trailway already exists between a point approximately 200 feet north of the SR 62 bridge and a point approximately 1,200 feet south of the SR 62 bridge. At its north end, this trailway turns to the west, traveling along SR 62 until it reaches the Ridenour Road bikeway. At the south end, this stream-side trail terminates at the entrance road to the swimming pool property owned by Jefferson Local School District Recreation. At that point, approximately 500 feet of existing asphalt roadway continues south along the creek to a point approximately 600 feet north of the proposed Friendship Park crossing location. With permission and some minor improvements, this 500-foot roadway segment could be utilized as a portion of the Creekside Trailway Loop. Only two other stream-side trailway segments will have to be provided along the west bank, one north of the SR 62 bridge and one south of the SR 62 bridge.

Segment 1WS. Beginning at the location proposed for the Friendship Park crossing, a west bank stream-side trailway segment approximately 600 feet long will connect the west abutment of the Friendship Park crossing with the existing asphalt roadway along the east side of the swimming pool (see Plates 11 & 12). It is recommended that this segment be constructed just outside the western edge of the stream-side trees and be constructed of asphalt. Easements from two property owners would be required for this segment (Jefferson Local School District Recreation & Weber).

Segment 2WS. Beginning at the location proposed for the Low Water Crossing, a west bank stream-side trailway approximately 500 feet long would be connected between the existing west bank asphalt trailway (just north of the SR 62 bridge) and the Low Water Crossing (see Plates 15 & 16). Constructed of concrete, it is recommended that this connector lie as close to the Big Walnut Creek streambank as possible without requiring the removal of trees. No easements or property acquisitions would be required for this segment. As shown on the Plates, this segment would begin at a Creekside council ring placed at the west end of the Low Water Crossing.

4.3 CREEKSIDE TRAILWAY LOOP DIRECTIONAL SIGNAGE & LIGHTING CONSIDERATIONS

In order to establish the identity and the route of the **Creekside Trailway Loop**, it is recommended that all trailway segments and trailway approach routes be provided with trailway identification signage similar to that proposed by the recent Bikeway Master Plan, using the City's Creekside logo (see Plate 21). It is further recommended that all new trailway loop segments be provided with lighting. In those areas with mature trees, tree lighting should be provided. Otherwise, lighting similar to that provided for the existing bikeway along the western bank of Big Walnut Creek should be provided.

5.0 BIKEWAY CONNECTION OPPORTUNITIES

5.1 BIKEWAY MASTER PLAN CONSIDERATIONS

Currently physically separated by Big Walnut Creek, the 1999 City of Gahanna Bikeway Master Plan (Edsall & Associates, 1999) emphasizes the need to provide connections between the City's east and west bikeway systems. With the Creekside Trailway Loop completed, it will be easy to connect the Loop to the City's existing bikeways, providing two much-needed connections between the City's east & west bikeway systems. At the same time, connecting the Creekside Trailway Loop to the bikeways will immediately result in Creekside becoming a focal point destination from essentially any geographical point in Gahanna.

To connect Creekside to the existing City of Gahanna bikeway systems, two connections between the **Creekside Trailway Loop** and the existing bikeway systems have been evaluated as a part of this Creekside Trailway Loop construction project. The first will connect the Low Water Crossing to the Ridenour Road bikeway (see Plates 17 & 18). The second will connect the north end of the new Creekside trail with Mill Street just north of the Clark Oil Station (see Plates 19 & 20). No connections to the south end of the Creekside Trailway Loop are recommended as a part of this project due to the facts that 1) the bikeway systems in the southeast part of Gahanna are essentially forced to use Granville Street due to the Rocky Fork shale cliff and 2) the bikeway systems in the southwest part of Gahanna already have access to the Creekside Trailway Loop via Discovery Point Park. However, a south crossing is proposed within the Bikeway Master Plan in the Rocky Fork Drive area. The cost estimates for the Friendship Park Crossing herein may also be used to estimate the per foot cost to construct that needed bikeway crossing.

5.2 CONNECTING CREEKSIDE TO THE CITY'S NORTHWESTERN BIKEWAY SYSTEMS.

Currently, in order to access Big Walnut Creek from the popular Ridenour Road bikeway route, users must travel south on Ridenour Road to the intersection of Ridenour Road and State Route 62. At that point the bikeway turns east towards Big Walnut Creek, following the north edge of the SR 62 pavement. To directly connect Creekside to the City's northwest bikeway systems and to eliminate bikeway users from having to approach the **Creekside Trailway Loop** from the edge of a busy highway, a direct bikeway connector segment is proposed between the Ridenour Road bikeway and the Low Water Crossing (see Plates 17 & 18). Two alternative routes exist:

Segment B - NW. The preferred alternative route would consist of a concrete connector that would run north along the east edge of the golf course practice range. At the point where the route would approach the ninth green, the route would turn west and run along the existing cart path and then along the eastern edge of the golf course parking lot until it reaches the Ridenour bikeway (Segment B - NW - Preferred). This route would require the construction of approximately 350 feet of concrete trailway and would

5.0 BIKEWAY CONNECTION OPPORTUNITIES (Cont.)

require approximately 400 feet of modifications to the cart path and the parking lot edges. The main advantages of this route are the facts that 1) this route could likely be constructed entirely on City-owned property and 2) that it would be easy to observe the activities taking place on this trail segment. The second alternative route would consist of a concrete connector that would run directly west from the Low Water Crossing through the wooded area currently owned by Parker (Segment B - NW - Alternate). Ending at the south driveway entrance to the golf course parking lot, this route would require the construction of approximately 450 feet of concrete walkway, along with some tree removals and some earthwork to establish permissible handicap grades.

5.3 CONNECTING CREEKSIDE TO THE CITY'S NORTHEASTERN BIKEWAY SYSTEMS.

The 1999 Gahanna Bikeway Master Plan proposes that the existing bikeway route along the congested commercial area of Mill Street north of Granville Street be eliminated due to the extremely high levels of vehicular traffic on Mill Street. To eliminate the need for bikeway users to travel through the congested area of Mill Street south of Carpenter Road, a bikeway connector is proposed as described in the following paragraph.

Segment B - NE. This bikeway connector begins where the Creekside Trail currently ends behind the Mifflin Township Fire Station (See Plates 19 & 20). Even though this route could proceed directly to Mill Street across the fire station property rear lot, it would be much more desirable to construct this trailway segment along the east stream bank of Big Walnut Creek to a point where the trail could intersect Mill Street just north of the Clark Oil Station. Possessing a total length of approximately 750 feet, it may be likely that the most southern 250 feet of this trailway segment would have to be an elevated wood trailway to lie just west of the east bank of the mill race. At its north end, the trail would proceed as concrete trailway to its intersection with Mill Street. Even though the northern end of this segment could surely be placed on City property, a property survey should be performed to determine the exact eastern-most edge of the City's property along the route to determine whether or not easements would be desired and/or required. It would be recommended that this segment be constructed of concrete to the greatest extent possible. The possibility also exists to provide public parking along Mill Street just north of the Clark Oil Station.

5.4 BIKEWAY CONNECTOR DIRECTIONAL SIGNAGE AND LIGHTING CONSIDERATIONS.

In order to establish the identity and the route of the **Creekside Trailway Loop**, it is recommended that all bikeway connector segments be provided with trailway identification signage similar to that proposed by the City's Bikeway Master Plan, using the City's Creekside logo (see Plate 21). In those areas with mature trees, tree lighting should be provided. Otherwise, lighting similar to that provided for the existing bikeway along the western bank of Big Walnut Creek should be provided.

6.0 ENVIRONMENTAL EDUCATION OPPORTUNITIES

This Creekside Trailway Loop project will provide an outstanding environmental education opportunity to reach the public, both young & old. An excellent setting to allow school teachers to take the classroom outdoors, the learning experience could be enhanced through the installation of educational signage and educational activity stations along the trailway. Designated as an exceptional warmwater habitat by the Ohio Environmental Protection Agency, a number of environmental subjects can be presented.

1. Examples of 'bio-engineered' stream restoration features have been installed along the Creekside trailway including the use of 'Tree Root Wads' for erosion protection and 'Rock Veins' to encourage Big Walnut Creek to naturally re-direct its high-flow energy to re-establish the stream's natural meander, degraded over the years by both the Mill Race and the construction of the SR 62 bridge. Currently, the public either ignores these bio-engineered stream restoration items or has no idea why they were installed. Trailway signage should be provided to assist educators during field trips and provide self-education opportunities to other trailway users.

2. This segment of Big Walnut Creek contains a very strong and vibrant population of mussels, one of the strongest indicators of stream health. Trailway signage should be prepared to educate the public about the types and importance of these mussels.

3. The proximity of the trailway to the shoreline of Big Walnut Creek presents the opportunity to install a number of environmental education activity stations. For example, short metal tubes (3 ft x 8 in dia) can be installed so that they are aimed at specific examples of riparian or near-shore plant and/or animal biota, beaver activity, etc.

4. Along the trailway there are many examples of how man's activities can degrade Big Walnut Creek. Educational signage could be installed to educate the public about how storm water outfalls can carry trash from the street curbs to the stream, how illegal dumping of refuse causes harm to plants, animals and fish, how the construction of the SR 62 highway bridge seriously impacted the health of Big Walnut Creek, how the damming of Big Walnut Creek to form Hoover Reservoir impacted Big Walnut Creek, etc.

5. Importantly, educational trailway signage could be used to educate the public about the ways in which the City has been and will continue to be pro-active in restoring the environmental integrity of Big Walnut Creek. As well, educational signage can be used to educate the public about the various roles other agencies play in protecting the environment, such as the Ohio Environmental Protection Agency, the Ohio Department of Natural Resources, the US Army Corps of Engineers and the US Fish & Wildlife Service.

Other examples of potential environmental education subjects exist but in general, the Creekside Trailway Loop is an outstanding opportunity to provide the public with important environmental education relating to stream ecology. Section 8.0 of this study identifies an OEPA grant program that may be able to fund the costs of the materials needed to provide this environmental education experience.

7.0 RELATIONSHIPS TO THE OVERALL CREEKSIDE MASTER PLAN

An on-going process, a Master Plan has been developing during the past several years to encourage a market-driven re-development of the Mill Street area, primarily between Granville Street and Carpenter Road. The focus of this Master Plan is to provide a framework that will encourage a re-development featuring Big Walnut Creek as the 'front door' of the area as opposed to being the 'rear' of the area as it has been in the past. To accomplish this, it is the City's intent to provide the fundamental creek-side and infrastructure improvements that will increase the desirability of the area to the point where private development will be able to take over, redeveloping the area in accordance with the Master Plan.

Currently, the Master Plan is a phased plan that first recommends the completion of the stream-side improvements along Big Walnut Creek and the Mill Race. This work has already been initiated with the recent completion of the Creekside trailway and waterfall feature, both of which have become popular destinations for both pedestrians and bicyclists alike. The Creekside Trailway Loop described in this study should be considered as a part of this first phase. This first phase also recommends a shoreline treatment of the eastern edge of the Mill Race in order to establish a western limit of the Mill Street redevelopment area that will be consistent throughout the length of the Mill Street Creekside area.

The second phase of the Creekside Master Plan recommends the installation of two east-west canals between the Mill Race and Mill Street. Along with these two canals, the second phase would include those water, sanitary & stormwater sewer infrastructure improvements that will be required for the ultimate re-development of the Creekside Master Plan area. The last phase of the Master Plan establishes the nature of the surface improvements and development schemes that will be considered approvable by the City.

In terms of the relationship of the Trailway Loop to the overall Creekside Master Plan, this trailway loop will provide an important impetus to the ultimate realization of Creekside by providing direct access to the area from essentially every geographical segment of the City, bringing in additional visitors and making it much easier to access Creekside. Because of a current lack of public parking areas in the immediate area, this trailway will allow Creekside visitors the ability to park elsewhere and be able to experience a pleasant stream-side walk leading directly to the Mill Race area. This improved direct access to Creekside will further enhance the potential value of the Creekside area for redevelopment.

In terms of how the physical layout of the Creekside Trailway Loop relates to the overall Creekside Master Plan, none of the proposed Creekside Trailway Loop segments will impact the ability to continue with the other phased improvements recommended by the overall Master Plan. As shown on Plates 1 & 2, both crossings and all segments are located in stream-side areas that are removed from the Master Plan areas and therefore will not result in future construction conflicts.

8.0 POTENTIAL OUTSIDE FUNDING SOURCES

Due to the multiple benefits to the citizens of the entire City of Gahanna, the Creekside Trailway Loop project would meet the eligibility requirements for a number of federal and state agency grant funding programs. To supplement bond or capital improvement funds, there are four grant programs that have been identified as being able to potentially assist with the funding of the Creekside Trailway Loop.

ODNR NatureWorks Program. Administered by the Ohio Department of Natural Resources, this State grant program is already an integral part of Creekside, having provided funds for the construction of the recently-completed Creekside trailway and waterfall feature (Grant Round #3 for $ 289,000). Providing up to 75% reimbursement, the Creekside Trailway Loop project would be eligible for these funds. However, to receive funding under this program, the City must hold title or at least a 15-year non-revocable lease of the property. Discussions held with ODNR representatives indicate that the project would be an excellent candidate but it would have to be evaluated against all other grant applications received. The next application deadline (Round #6) will be July 1, 2000. It should be noted that construction may not begin prior to the approval of the grant application. Following the application deadline, it takes approximately 60 days for a winning application to be approved. Once approved the grantee is allowed 30 months to complete the project.

ODNR Recreational Trails Program. Also administered by the Ohio Department of Natural Resources, the Creekside Trailway Loop project would also be eligible for up to 80% matching federal reimbursement funds. Funded by Federal Highway Administration TEA-21 funds, this grant program will be able to disburse approximately $1,300,000 during each year between 2000 and 2003. The next deadline for the submittal of applications will be February 1, 2000. It should be noted that construction may not begin prior to the approval of the grant application. Following the application deadline, it can take up to 10 months for a winning application to be approved.

Ohio Environmental Educational Fund Grant Program. Administered by the Ohio Environmental Protection Agency, this grant program provides non-cost-share grants of up to $ 50,000 for materials relating to environmental education that could include signage and environmental education activity stations along the Creekside Trailway Loop. Since 1990, more than $ 8 million has been provided to more than 300 organizations under this grant program. Currently, the program is funded with an annual budget of more than $ 1.5 million per year. The program allows applications to be submitted twice each year with the next two deadlines established as January 17, 2000 and July 17, 2000. It is likely to take 60 days for a successful grant application to be approved.

ODOT TEA-21 Grant Program. Differing from the ODNR TEA-21 Recreational Trailways program, the Ohio Department of Transportation administers grants for pedestrian and bicycle trailways that are funded through MPO's (Metropolitan Planning Organizations). In the case of the City of Gahanna, these funds would be applied through MORPC (the Mid-Ohio Regional Planning Commission). These grants are issued on a yearly basis and the next submittal deadline is July 1, 2000. It should be noted that grant applications must be approved before any construction is permitted to occur and it is likely to take 60 days for a successful grant application to be approved.

9.0 CONSTRUCTION COST ESTIMATES

On the following page, a chart is presented depicting construction cost estimates prepared to estimate the costs to design and construct each of the proposed crossings and trailway segments described in sections 5.0 & 6.0. These construction cost estimates have been prepared on the basis of the costs that have been bid by contractors for other similar work in the City of Gahanna and should only be used to establish preliminary project budgets and make judgements regarding the cost differences between different segments or alternatives. Due to the unknowns involved with obtaining easements and/or acquiring property, the chart only indicates whether or not each of the particular segments would require easements and/or property acquisitions. All trailways are assumed to be 8 feet in width.

The cost estimates contained on the following page can be summarized below by trailway section. For those trailway segments that contain alternate routes, the resulting range of costs for that segment are presented. The estimated project totals are therefore also presented as a range.

PROJECT FEATURE / TRAILWAY SEGMENT	PLATES	COST RANGE
Low Water Crossing With Approaches	Plates 3 & 4	$ 120,000
Friendship Park Crossing With Approaches	Plate 5 & 6	$ 300,000
ESTIMATED COSTS OF CROSSINGS		$ 420,000
Trailway Segment 1 E S	Plates 7 & 8	$ 90,000 - $ 149,000
Trailway Segment 2 E S	Plates 9 & 10	$ 67,000 - $ 113,000
Trailway Segment 3 E S	Plates 11 & 12	$ 146,000
Trailway Segment 4 E S	Plates 13 & 14	$ 56,000
Trailway Segment 1 W S	Plates 13 & 14	$ 81,000
Trailway Segment 2 W S	Plates 15 & 16	$ 81,000
ESTIMATED COSTS OF CREEKSIDE TRAILWAY LOOP		$ 521,000 - $ 626,000
Bikeway Connector - N W	Plates 17 & 18	$ 68,000 - $ 113,000
Bikeway Connector - N E	Plates 19 & 20	$ 175,000
ESTIMATED COSTS OF BIKEWAY CONNECTORS		$ 243,000 - $ 288,000
ESTIMATED RANGE OF TOTAL PROJECT COSTS	Plates 1 & 2	$ 1,184,000 - $ 1,334,000

CONSTRUCTION COST ESTIMATES

CREEKSIDE TRAILWAY LOOP STUDY

SEGMENT	PLATE NOS.	Length (Feet)	Surface Type	Site Work	Crossing Complete	Crossing Approach	Trailway	Railings	Stone	Plantings	Add For Lighting	Engineering & Inspection	Total Estimated Cost	Easement or Acquisition Required
BIG WALNUT CREEK CROSSINGS														
LOW WATER CROSSING	3 & 4	80	Stone	10,000	70,000	5,000			5,000	5,000	5,000	20,000	**120,000**	NO
FRIENDSHIP PARK CROSSING	5 & 6	190	Wood	10,000	120,000	70,000		20,000	20,000	5,000	15,000	40,000	**300,000**	YES
CREEKSIDE TRAILWAY LOOP SEGMENTS														
1 E S - Preferred	7 & 8	400	Wood	5,000			80,000	15,000		4,000	20,000	25,000	**149,000**	YES
1 E S - Alternate	7 & 8	480	Brick	5,000			65,000			5,000		15,000	**90,000**	NO
2 E S - Preferred	9 & 10	800	Concrete	10,000			35,000			8,000	40,000	20,000	**113,000**	YES
2 E S - Alt #1	9 & 10	950	Concrete	10,000			40,000			5,000		12,000	**67,000**	NO
2 E S - Alt #2	9 & 10	950	Concrete	10,000			40,000			5,000		12,000	**67,000**	NO
3 E S	11 & 12	900	Concrete	10,000			47,000		10,000	9,000	45,000	25,000	**146,000**	NO
4 ES	13 & 14	300	Concrete	3,000			20,000		5,000	3,000	15,000	10,000	**56,000**	NO
1 W S	11 & 12	600	Concrete	6,000			25,000			5,000	30,000	15,000	**81,000**	YES
2 W S	11 & 12	500	Concrete	5,000			26,000		5,000	5,000	25,000	15,000	**81,000**	NO (?)
BIKEWAY CONNECTION SEGMENTS														
B - NW - Preferred	17 & 18	750	Concrete	15,000			30,000			8,000	40,000	20,000	**113,000**	NO (?)
B - NW - Alternate	17 & 18	450	Concrete	6,000			20,000			5,000	25,000	12,000	**68,000**	YES
B - NE	19 & 20	750	Wood & Concrete	10,000			80,000	10,000		5,000	40,000	30,000	**175,000**	NO (?)

NOTES: Engineering Costs assume 1) the costs for permitting (1/2%), grant applications(1/2%), mapping (1/2%), surveying (1%), preliminary design (4%), final design (6%) and construction administration (7.5%), 2) the preparation of final design that will permit trailway segments to either be grouped together or stand alone, 3) the design work will be accomplished as a single effort and 4) that separate bid packages will not have to be prepared for each proposed segment.

A budgetary figure of approximately $ 100,000 should be added to the above estimated project costs to provide educational signage and educational activity stations.

10.0 CONSTRUCTION PHASING CONSIDERATIONS

Since the project consists of a number of proposed segments, consideration may be given to phasing the construction work in order to phase the costs of construction over a period of years. The major disadvantages to this consist of 1) extra costs that would be incurred if separate design bid packages were prepared for each phase, 2) escalations in construction costs due to inflation and 3) phasing the project results in delaying the overall completion of the project and its overall use by the public.

However, if phasing of the project would be required, significant savings in both cost and time could be realized if the entire project could be designed as one effort. For example, this would mean that there would only be one preliminary design stage instead of multiple preliminary design efforts. Not only does this approach save costs, the approach helps to ensure that all facets of the project are looked at simultaneously and it essentially eliminates the need to schedule design timeframes for later phases. To accomplish this, a singular design approach should produce design drawings and specifications for each of the segments that can be either grouped to form single construction projects or can be bid for construction as stand alone projects.

A Value Engineering approach was used to develop a prioitization of the various items in terms of each item's ability to provide immediate benefits to the public. In terms of ways to reduce the overall project costs, the only significant option would be to move the location of the Friendship Park Crossing further north to be nearer the Friendship Park gazebo. This would eliminate the costs associated with Segment 1WS.

In terms of phasing the construction to provide the most immediately benefits to the public, the order of priority would be

INDIVIDUAL SEGMENT PRIORITY		SEGMENT COST RANGE	CUMULATIVE RANGE
1.	Low Water Crossing	$ 120,000	$ 120,000
2.	Segment 2WS	$ 81,000	$ 201,000
3.	Bikeway Connector B- NW	$ 68,000 - $ 113,000	$ 269,000 - $ 314,000
4.	Segment 1ES	$ 90,000 - 149,000	$ 359,000 - $ 463,000
5.	Friendship Park Crossing	$ 300,000	$ 659,000 - $ 763,000
6.	Segment 2ES	$ 67,000 - $ 113,000	$ 726,000 - $ 876,000
7.	Segment 3ES	$ 146,000	$872,000 - $ 1,022,000
8.	Segment 1WS	$ 81,000	$ 953,000 - $ 1,103,000
9.	Segment 4ES	$ 56,000	$ 1,009,000 - $ 1,159,000
10.	Bikeway Connector B - NE	$ 175,000	$ 1,184,000 - $ 1,334,000

11.0 CAPITAL IMPROVEMENT PROGRAM TIMELINES

Execution of Aerial & Ground Survey Work. Due to the extensive tree cover throughout the site, aerial photogrammetry work should be performed during the 1999-2000 winter months. Along with this, sufficient ground survey work should be performed to tie the aerial photogrammetry to existing surface features, provide construction baseline information and determine the locations of exceptional trees, property corners, buildings, baselines, etc. These two surveys should then be combined to provide an acceptable survey for the design of the project. Once authorized, this work can be performed in conjunction with the Preliminary Design Phase.

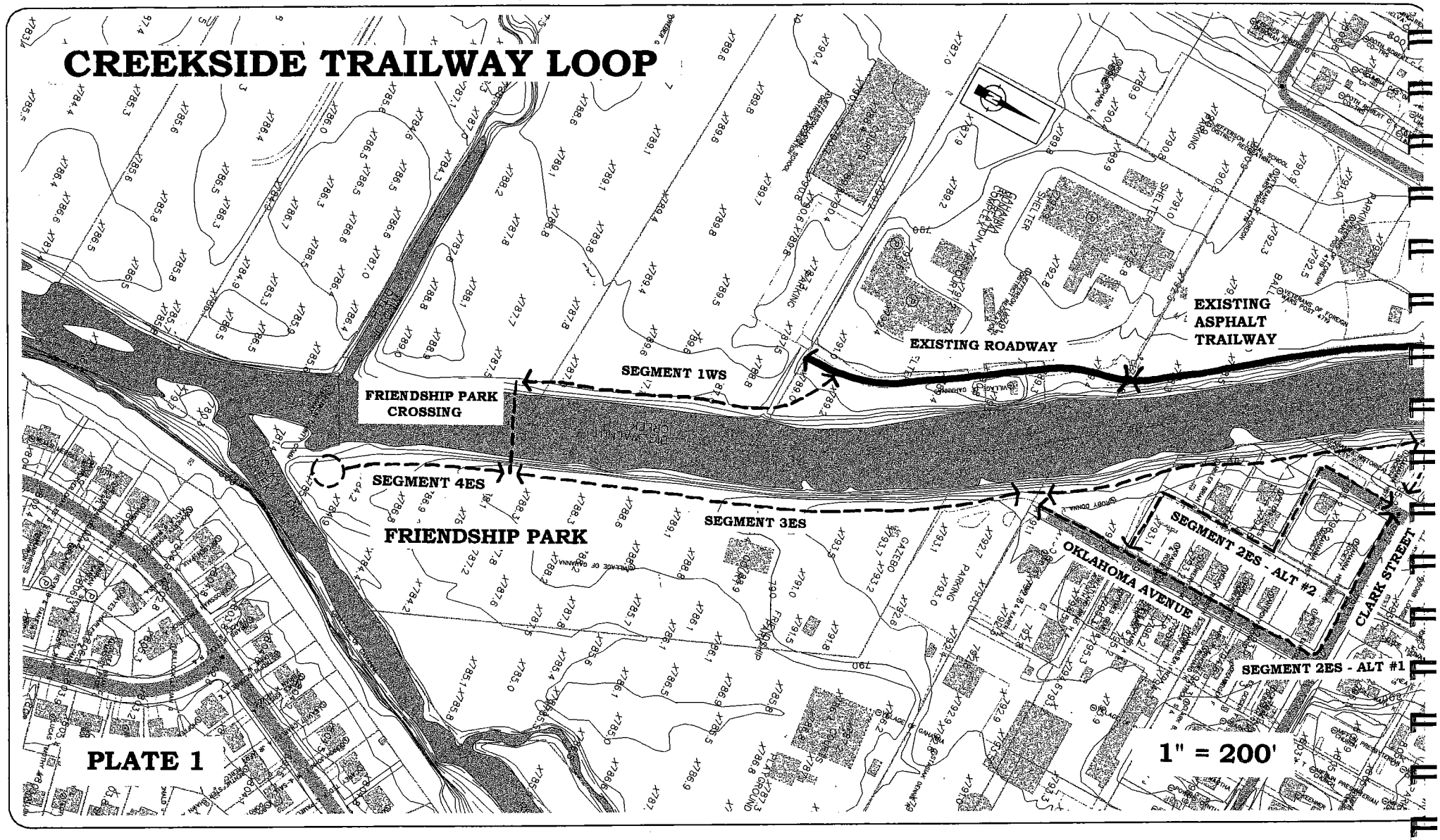
Filing of Grant Applications. For all of the grant programs discussed in Section 8.0, plans should be made to prepare all applications prior to July, 2000. The Preliminary Design Drawings should also be completed prior to this date to provide the detailed information needed for the grant application packages.

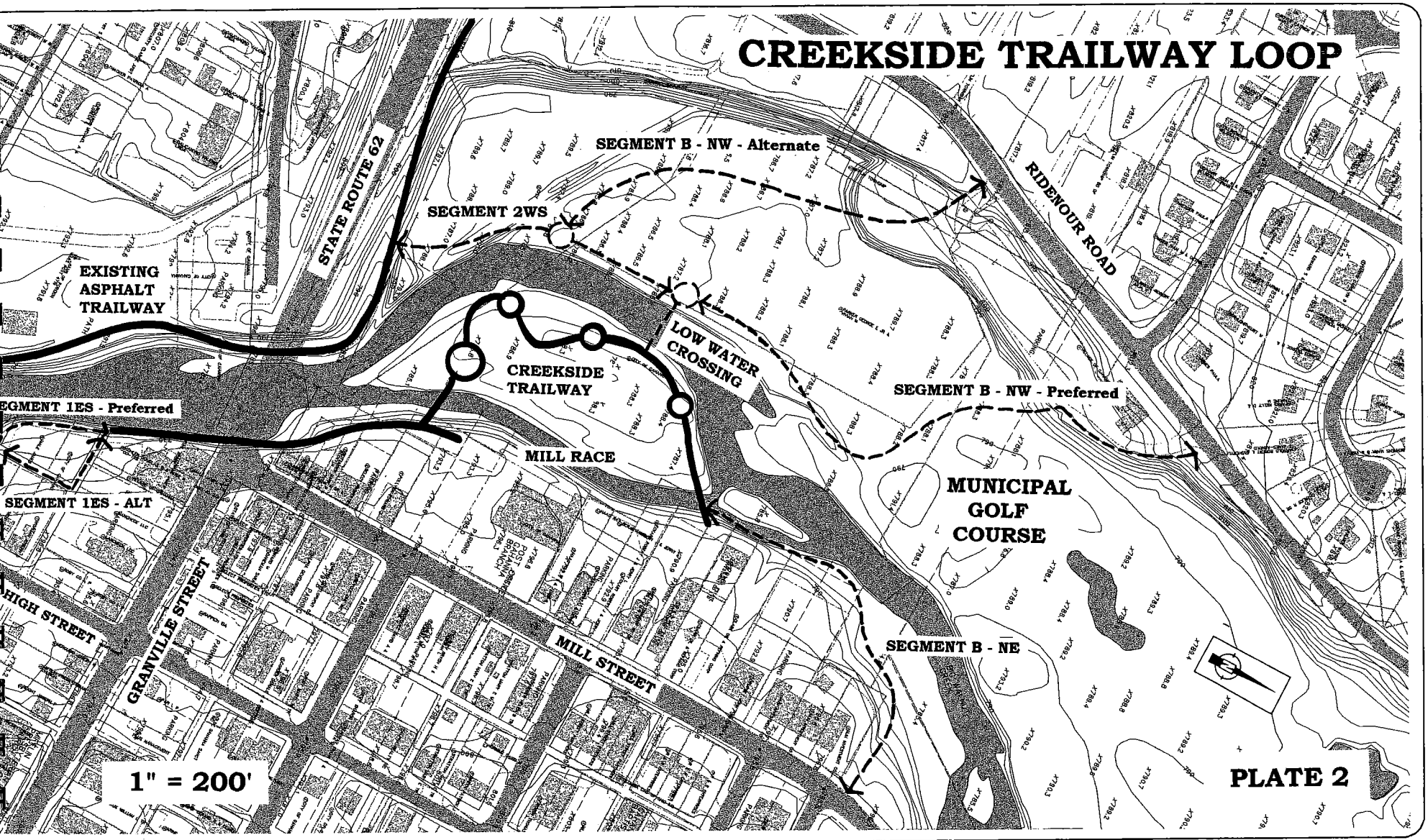
Preparation of Preliminary Design Drawings. During the execution of the aerial and ground survey work, preliminary design drawings should be prepared and submitted for the review of City officials in order to confirm the exact locations for both proposed crossings and each of the Creekside Trailway Loop segments. As mentioned above, these preliminary design drawings should be completed in time to allow the drawings to accompany the grant applications that will be submitted prior to July, 2000. To minimize costs and insure that all aspects of the entire Creekside Trailway Loop are considered, it is recommended that the scope of the Preliminary Design include all proposed crossings and trailway segments. These drawings will consist of the basic design information needed to make decisions regarding the exact form, type, and locations of each of the project features. During this period, all US Army Corps of Engineer permit requirements for the construction of the Friendship Park Crossing should be addressed and submitted for the review and approval of the US Army Corps of Engineers.

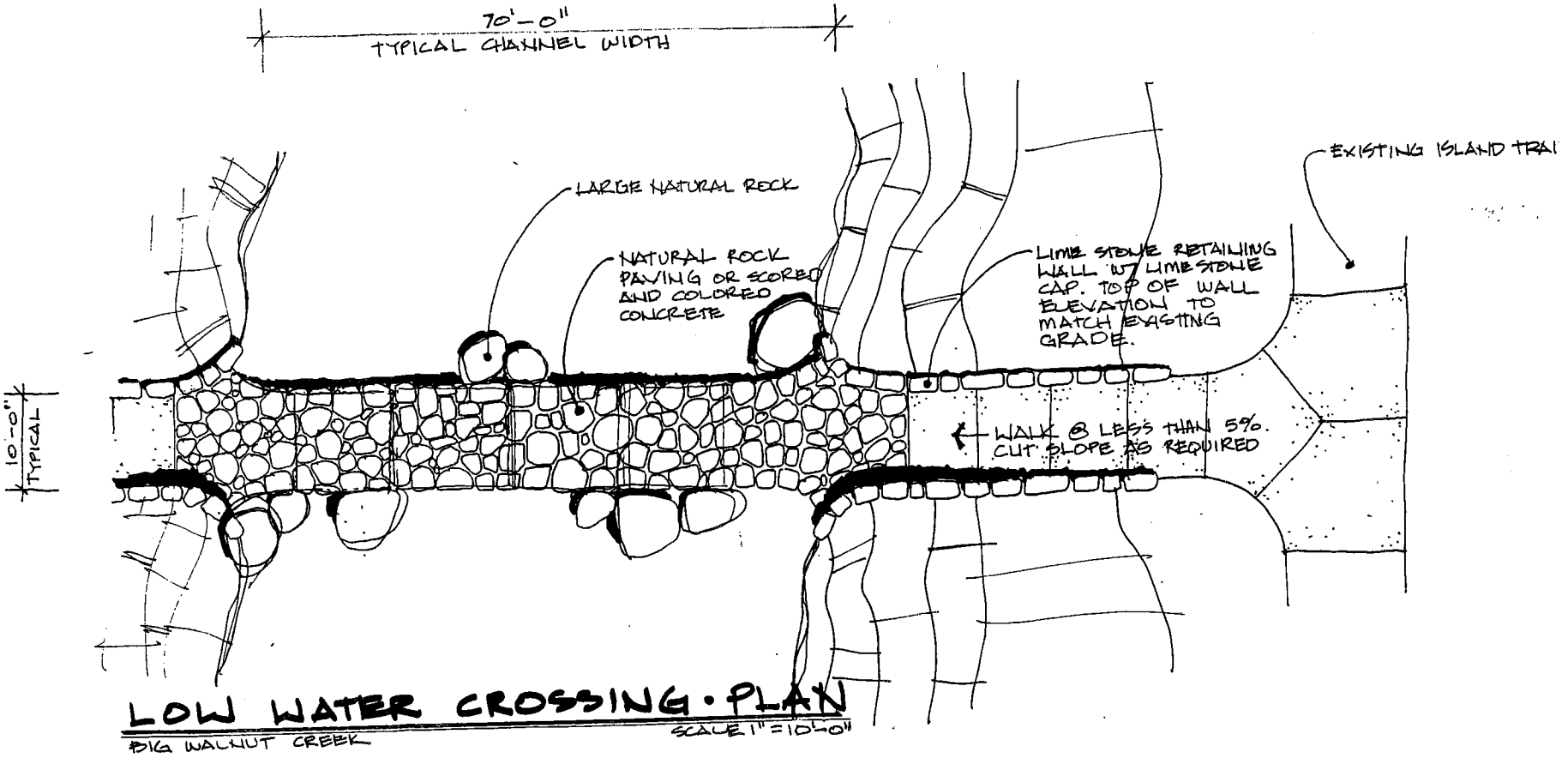
Preparation of Final Design Drawings. Following the completion of the Preliminary Design Phase, the preparation of the Final Design Construction Drawings and Construction Contract Specification packages will likely require a timeframe of approximately 8 months. As recommended above, if the preparation of these final drawings can be started by the early fall of 2000, construction bid packages can be made ready in time to permit construction to begin during the spring of 2001. Later starts will likely result in the loss of the 2001 construction season. In terms of the scope of this final design work, it is recommended that the plans for each segment be prepared in such a manner that will permit the segments to be grouped as desired (i.e., if a particular segment cannot be bid due to unfinished easement or property acquisitions, that segment can be pulled from the group and easily be bid at a later date).

Project Construction Period. Assuming a spring, 2001 construction start, the trailway could likely be opened to the public during the spring of 2002. If the start of construction is delayed however until the late summer or fall, it will likely mean that the project will not be able to be opened for public use until the spring of 2003.

PLATES


CREEKSIDE TRAILWAY LOOP
EXISTING ASPHALT TRAILWAY
EXISTING ROADWAY
SEGMENT 1WS
FRIENDSHIP PARK CROSSING
SEGMENT 4ES
SEGMENT 3ES
FRIENDSHIP PARK
SEGMENT 2ES - ALT #2
SEGMENT 2ES - ALT #1
OKLAHOMA AVENUE
CLARK STREET
PLATE 1
1" = 200'


CREEKSIDE TRAILWAY LOOP
SEGMENT B - NW - Alternate
SEGMENT 2WS
STATE ROUTE 62
RIDENOUR ROAD
EXISTING ASPHALT TRAILWAY
LOW WATER CROSSING
CREEKSIDE TRAILWAY
SEGMENT B - NW - Preferred
EGMENT 1ES - Preferred
MILL RACE
MUNICIPAL GOLF COURSE
SEGMENT 1ES - ALT
HIGH STREET
GRANVILLE STREET
MILL STREET
SEGMENT B - NE
1" = 200'
PLATE 2

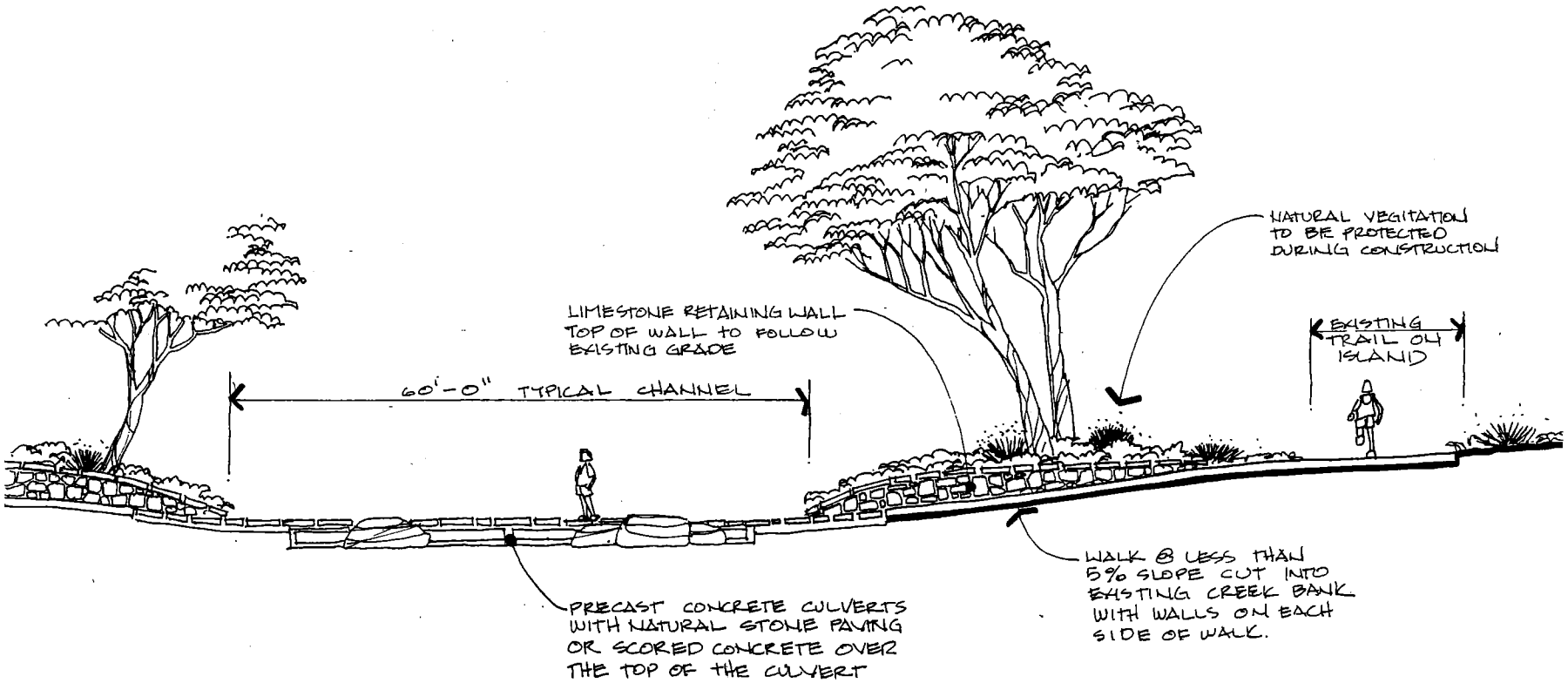


LOW WATER CROSSING · PLAN

BIG WALNUT CREEK

SCALE 1" = 10'-0"

PLATE 3



LOW WATER CROSSING • ELEVATION

SCALE 1" = 10'-0"

PLATE 4

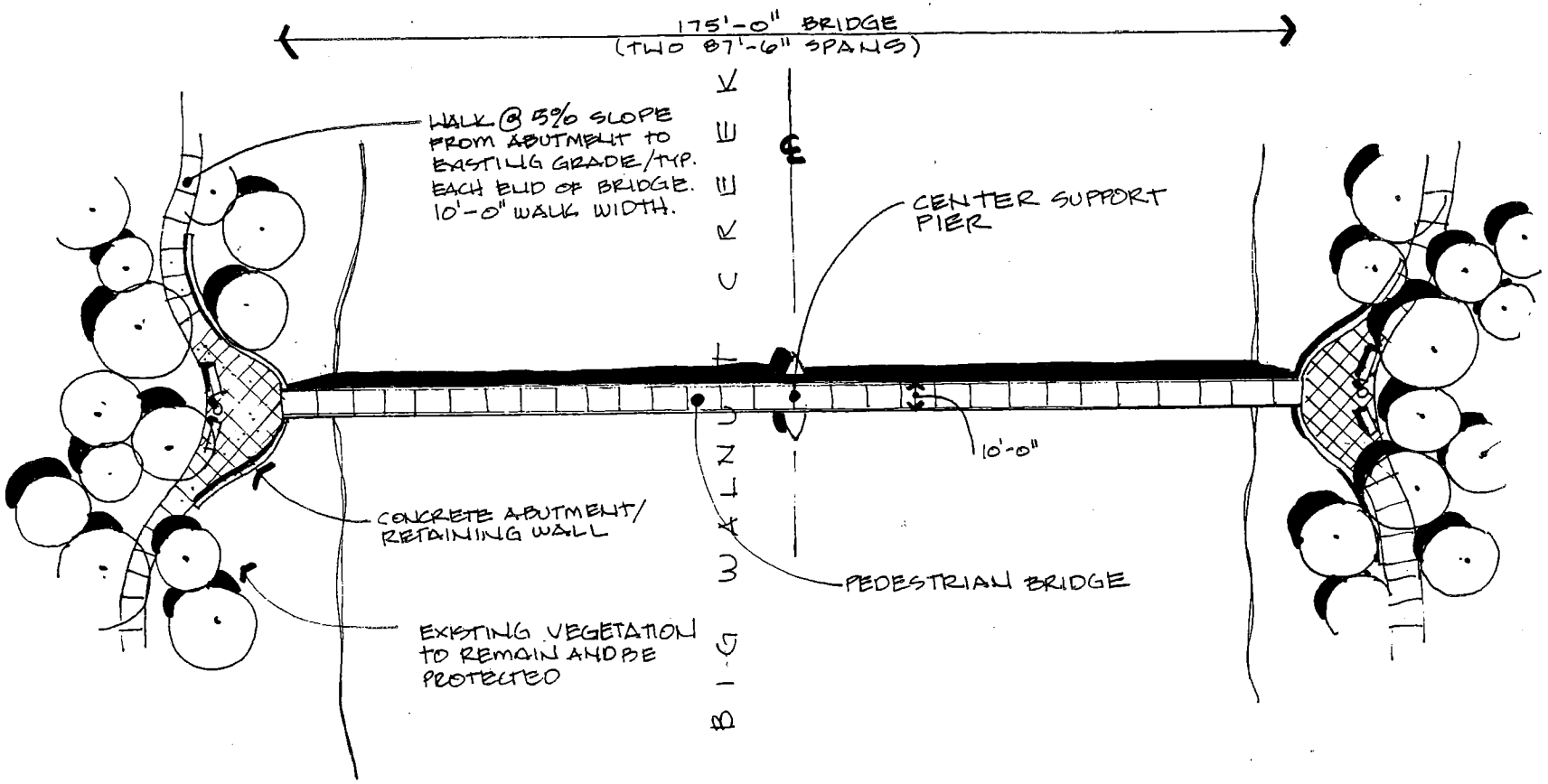
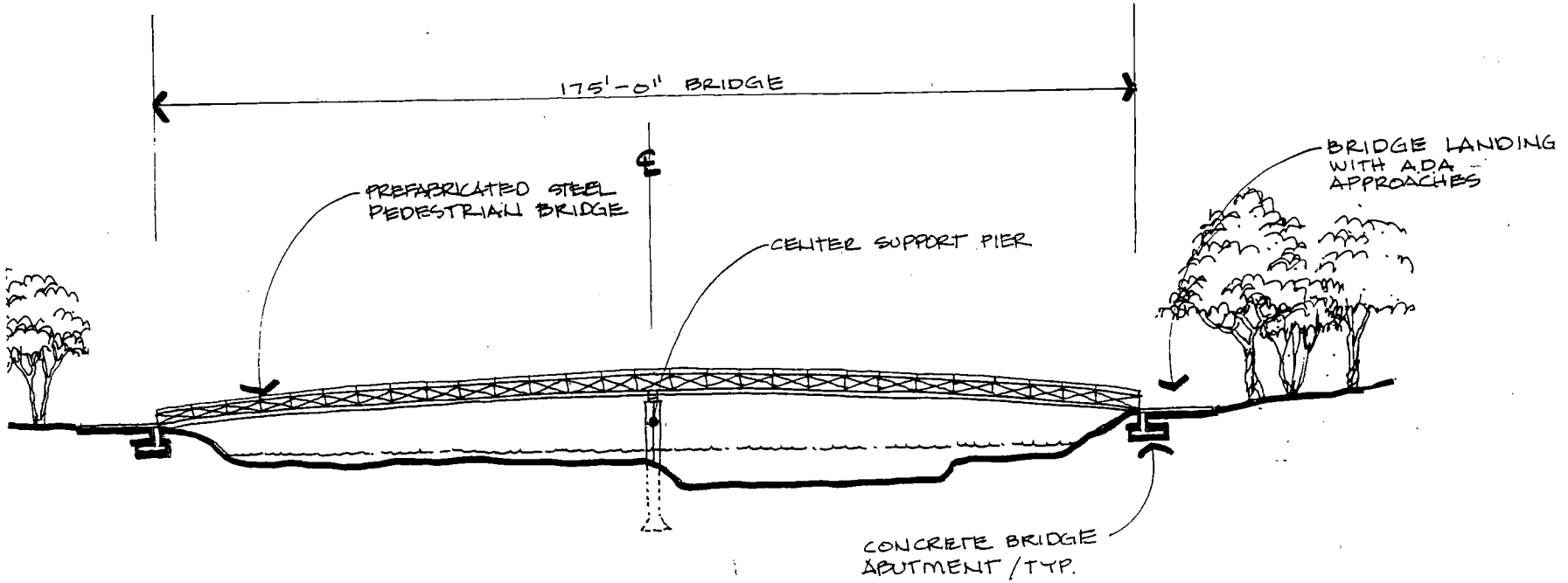


PLATE 5

PEDESTRIAN BRIDGE • PLAN

SCALE 1" = 20'-0"

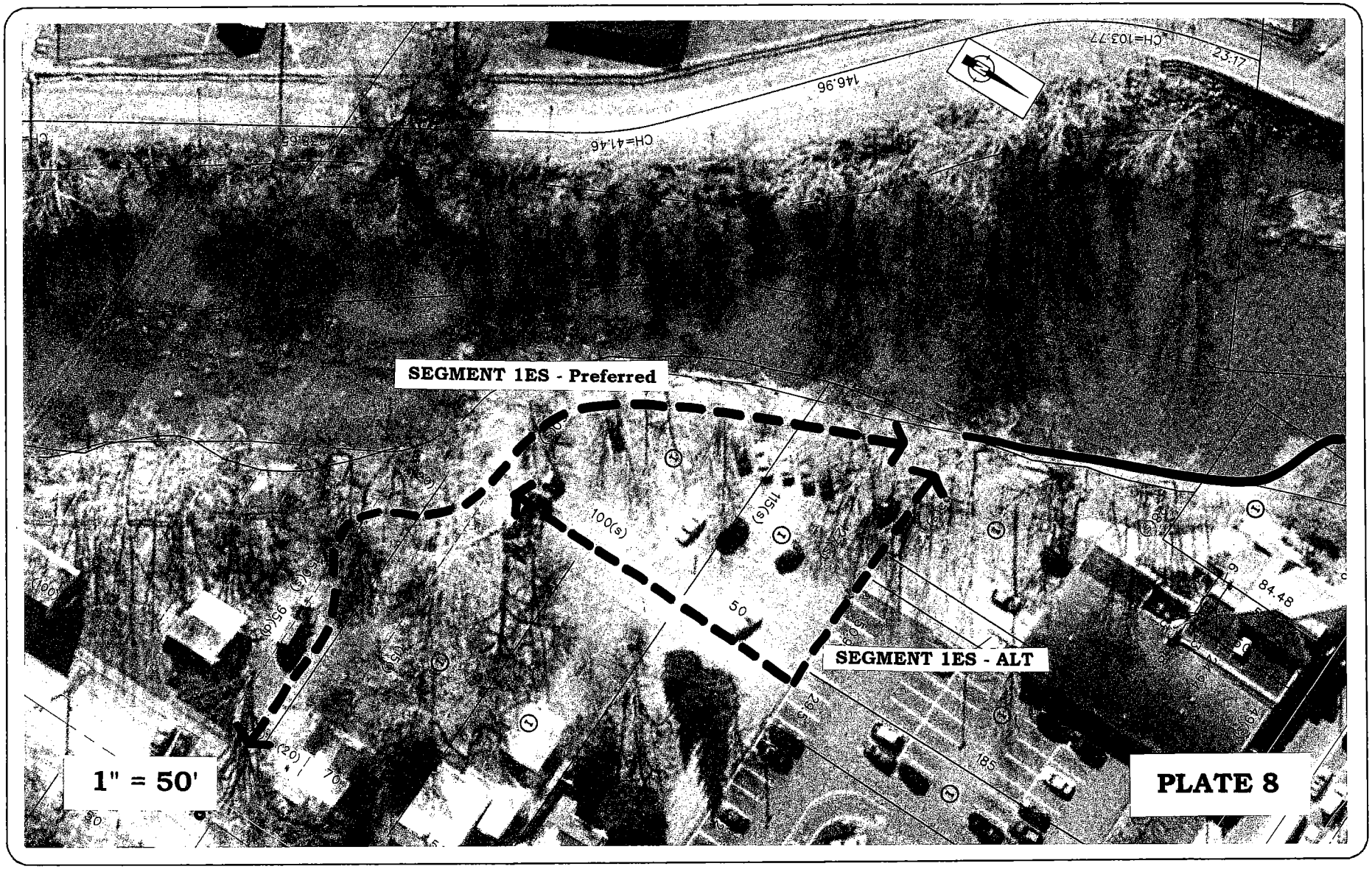


PEDESTRIAN BRIDGE • ELEVATION

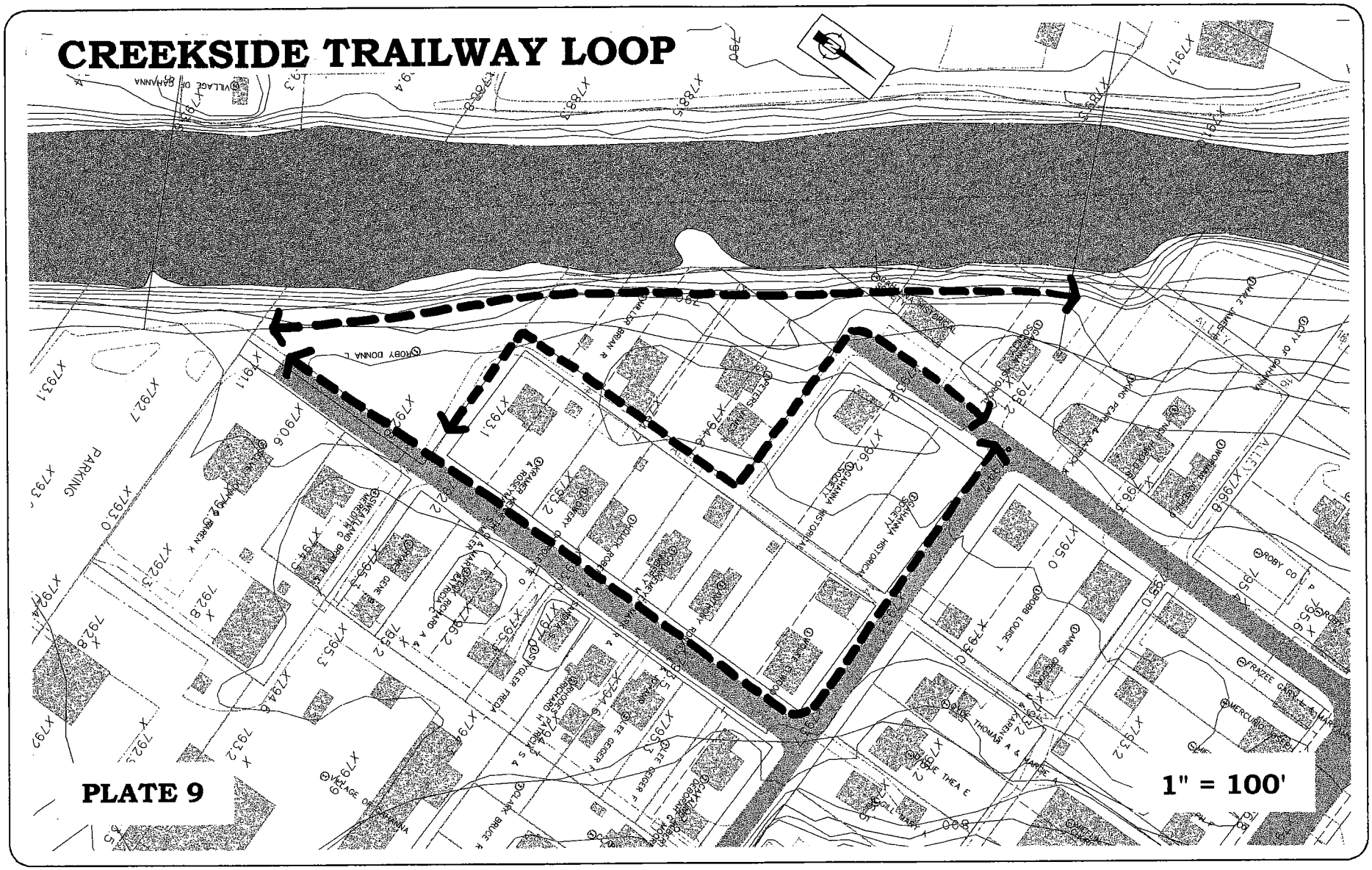
SCALE 1"=20'-0"

PLATE 6

CREEKSIDE TRAILWAY LOOP


SEGMENT 1ES - Preferred
SEGMENT 1ES - ALT
1" = 50'
PLATE 8

CREEKSIDE TRAILWAY LOOP



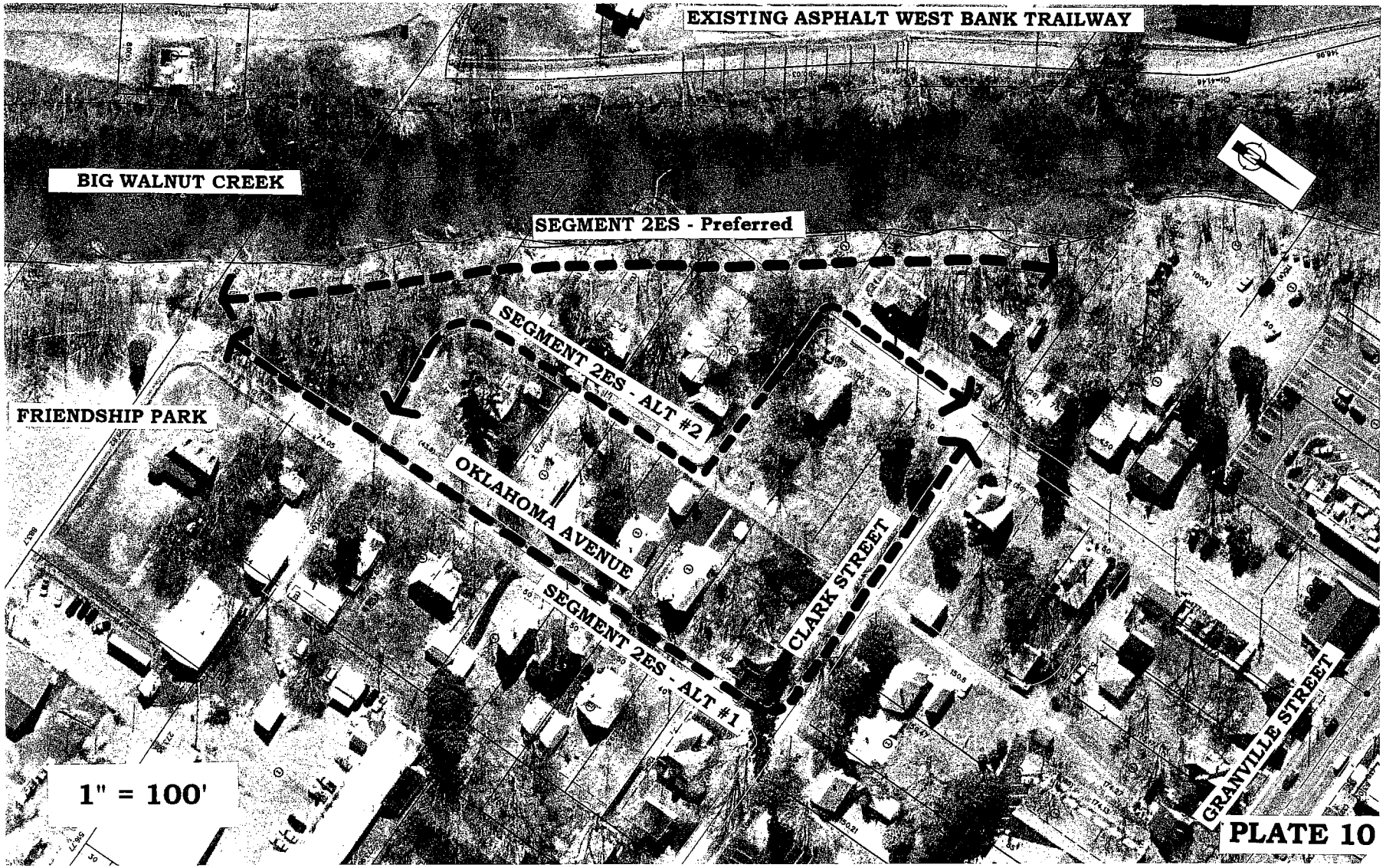
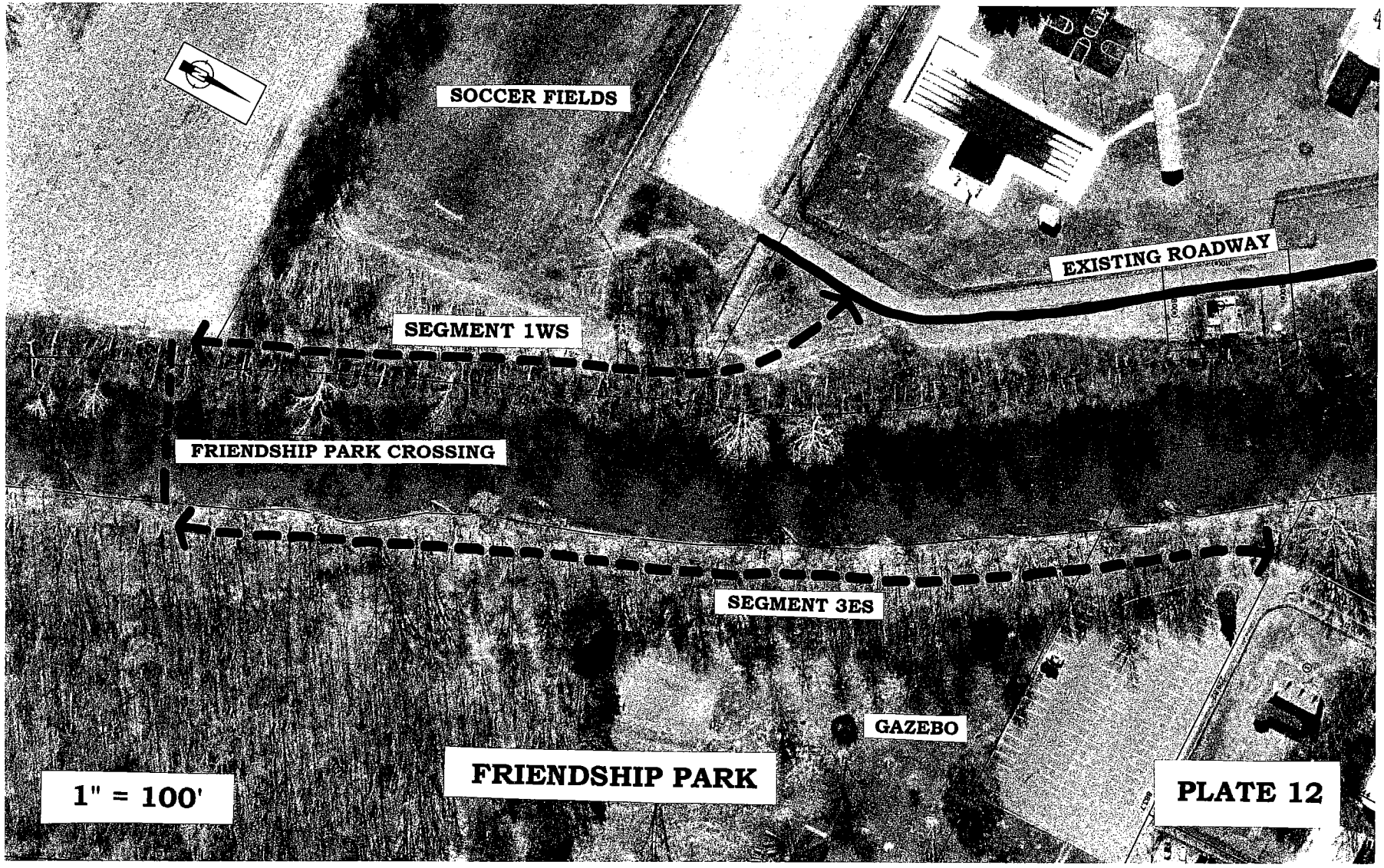

EXISTING ASPHALT WEST BANK TRAILWAY
BIG WALNUT CREEK
SEGMENT 2ES - Preferred
SEGMENT 2ES - ALT #2
FRIENDSHIP PARK
OKLAHOMA AVENUE
CLARK STREET
SEGMENT 2ES - ALT #1
GRANVILLE STREET
1" = 100'

PLATE 10

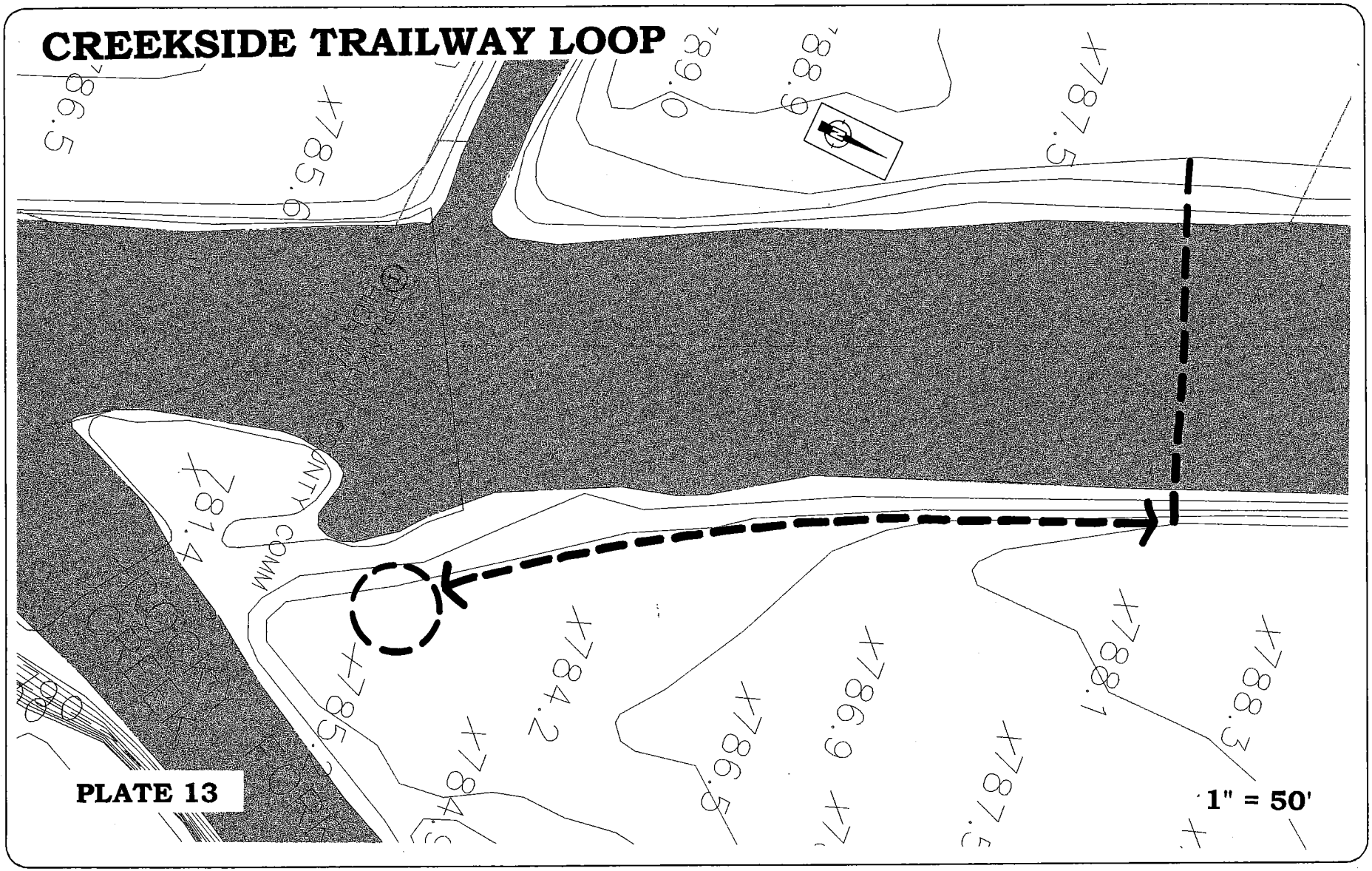
CREEKSIDE TRAILWAY LOOP

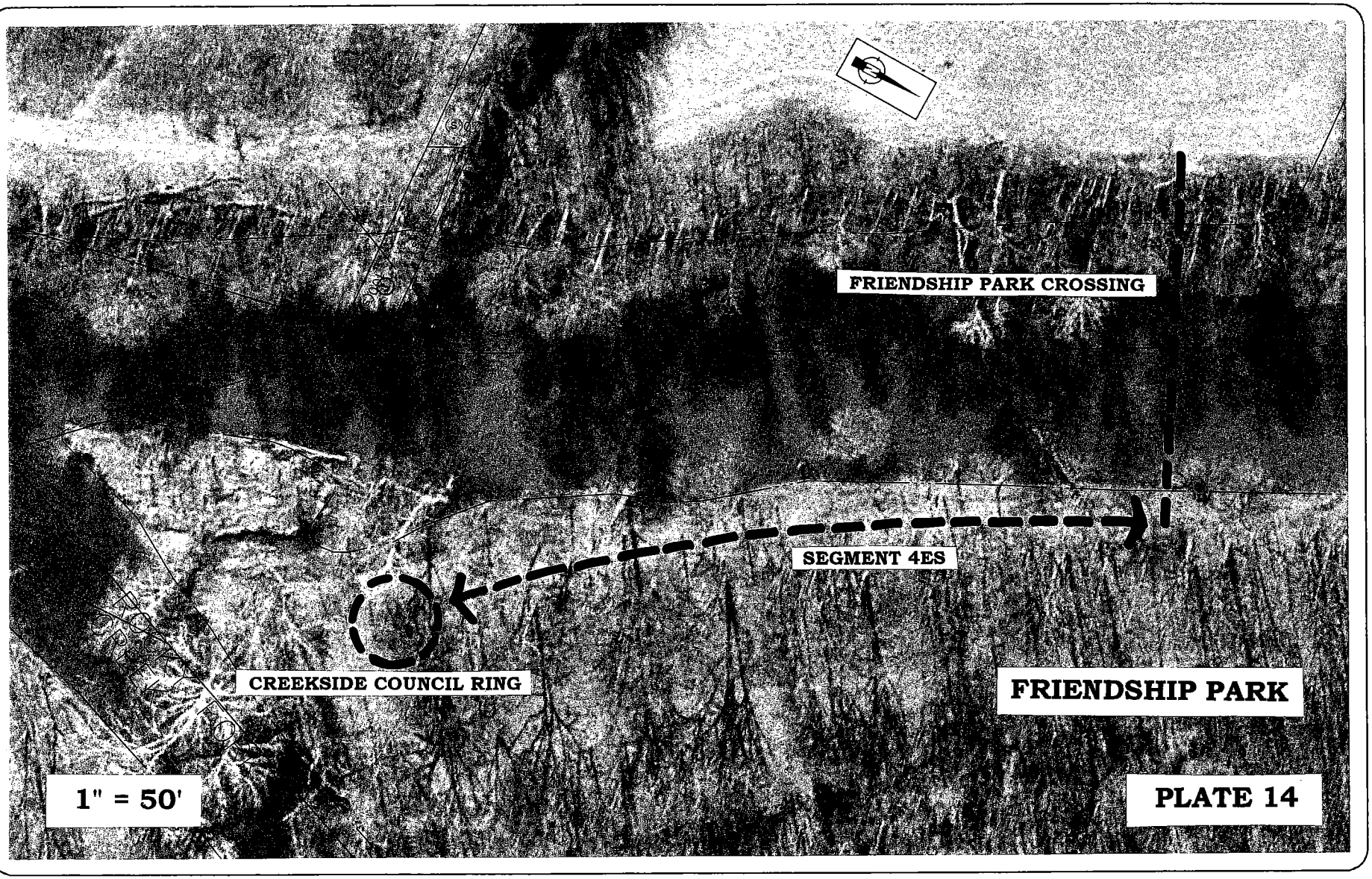
PLATE 11

1" = 100'


SOCCER FIELDS
EXISTING ROADWAY
SEGMENT 1WS
FRIENDSHIP PARK CROSSING
SEGMENT 3ES
GAZEBO
FRIENDSHIP PARK
1" = 100'
PLATE 12

CREEKSIDE TRAILWAY LOOP




FRIENDSHIP PARK CROSSING
SEGMENT 4ES
CREEKSIDE COUNCIL RING
FRIENDSHIP PARK
1" = 50'
PLATE 14

CREEKSIDE TRAILWAY LOOP

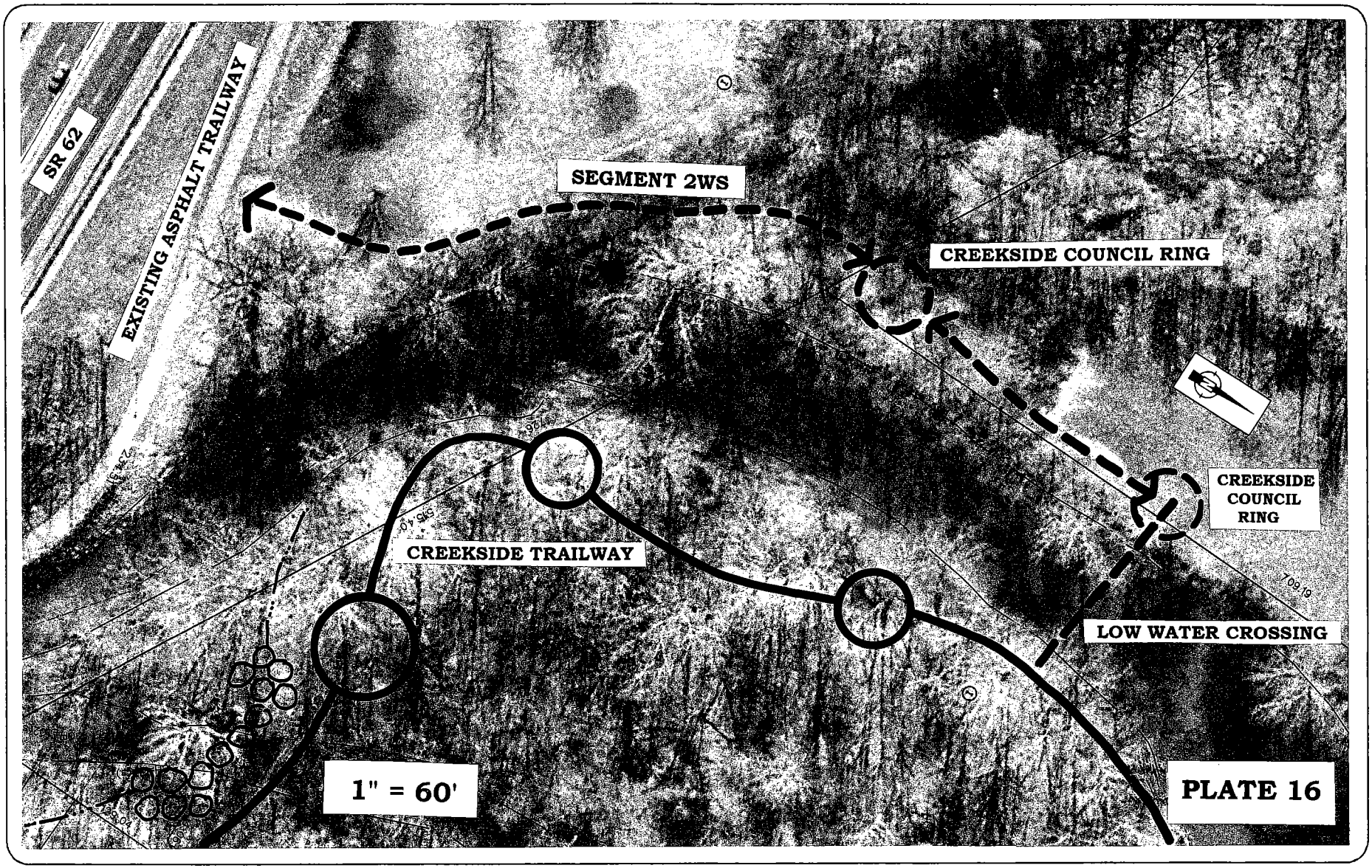
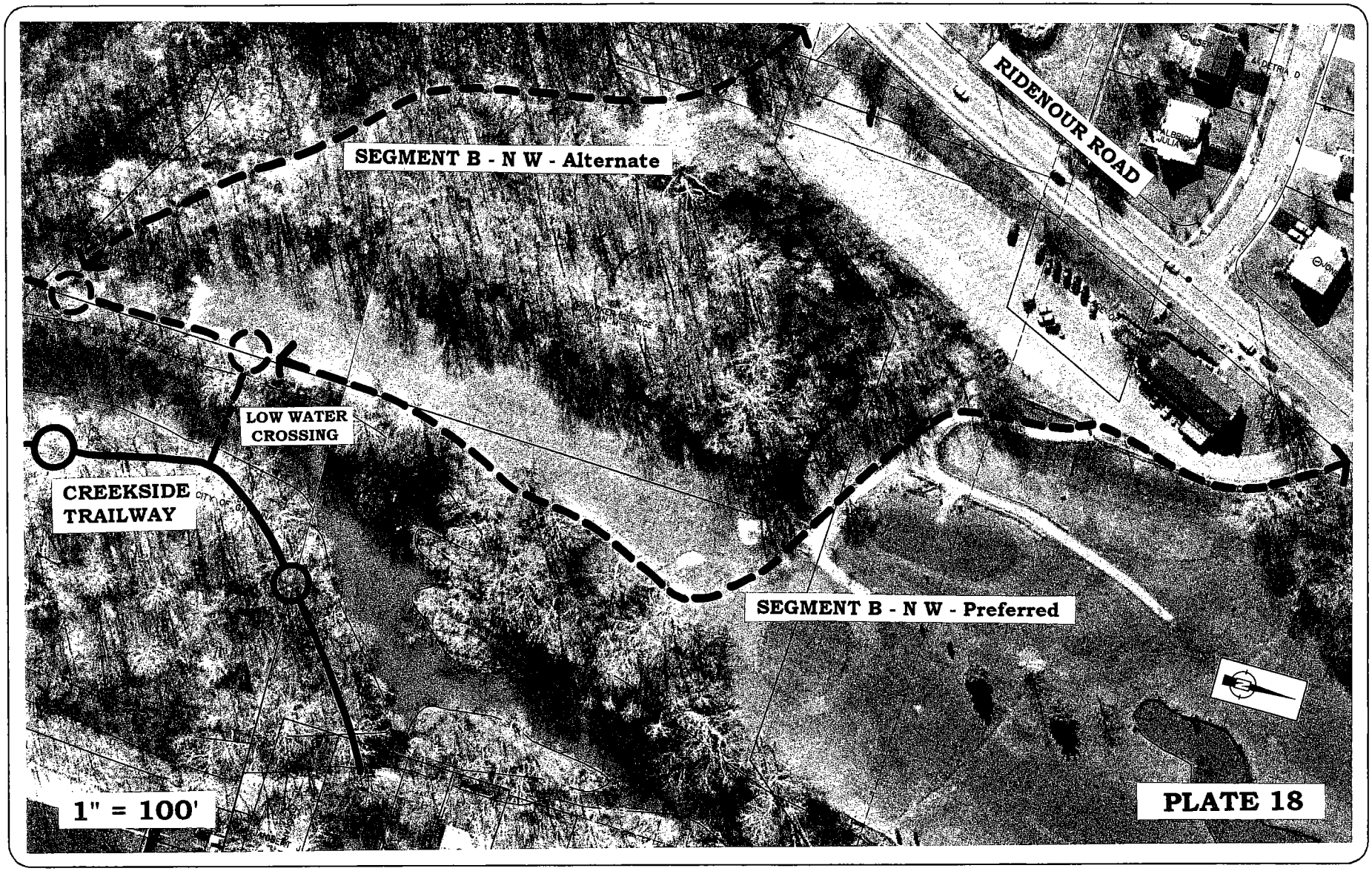

SR 62
EXISTING ASPHALT TRAILWAY
SEGMENT 2WS
CREEKSIDE COUNCIL RING
CREEKSIDE COUNCIL RING
CREEKSIDE TRAILWAY
LOW WATER CROSSING
1" = 60'
PLATE 16

PLATE 17
CREEKSIDE BIKEWAY CONNECTOR
1" = 100'
PARKER GEORGE E JR & VIVIAN M
VILLAGE OF GAHANNA
CITY OF GAHANNA
PARKING


SEGMENT B - N W - Alternate
RIDENOUR ROAD
LOW WATER CROSSING
CREEKSIDE TRAILWAY
SEGMENT B - N W - Preferred
1" = 100'
PLATE 18

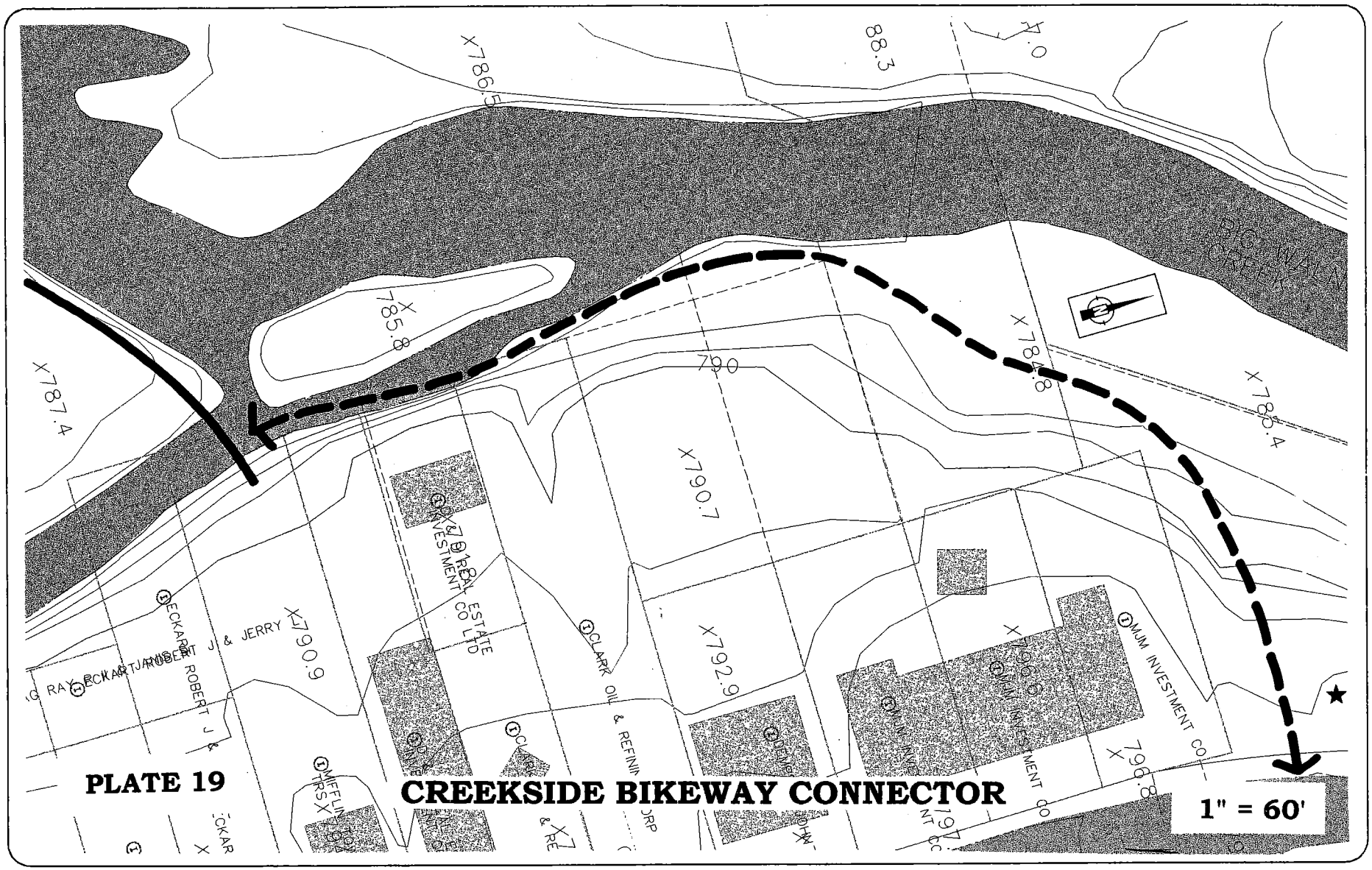
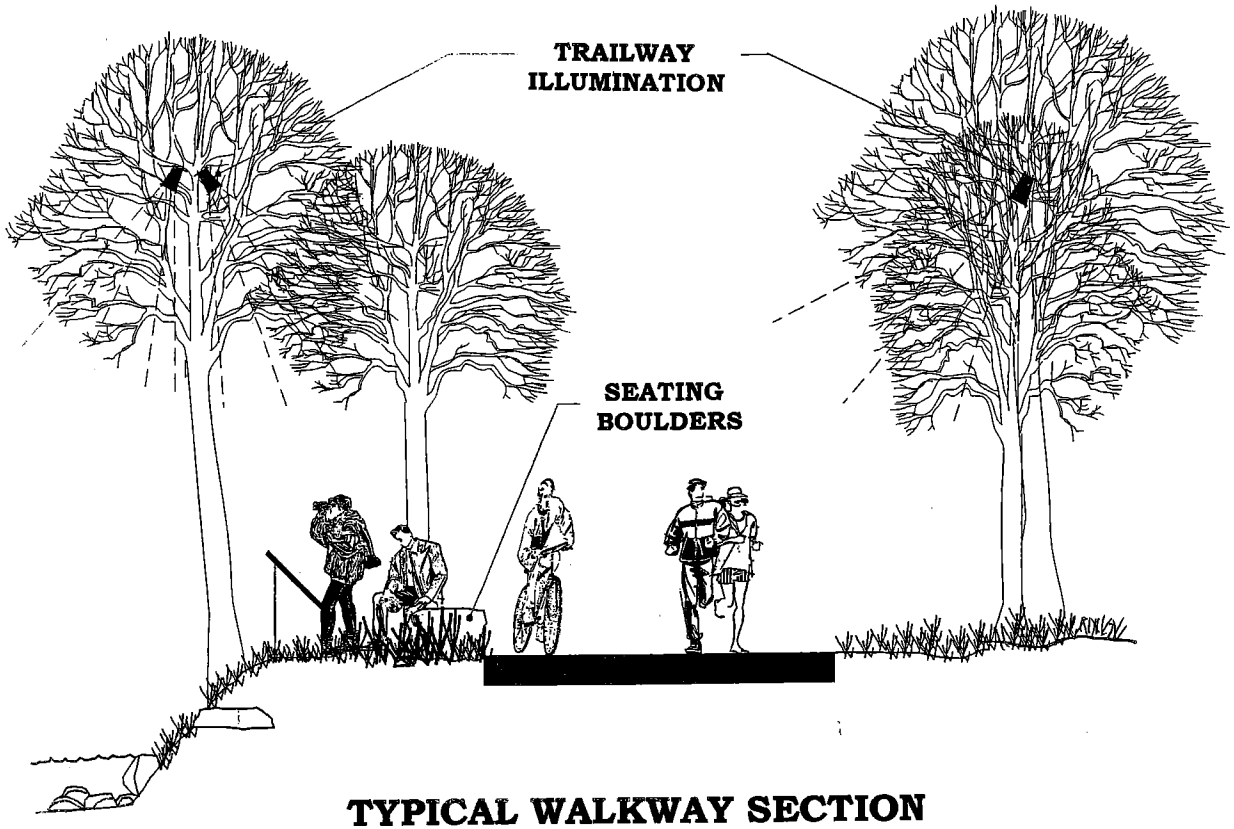
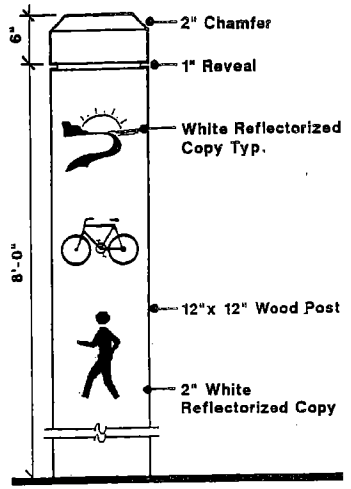


PLATE 19
CREEKSIDE BIKEWAY CONNECTOR
1" = 60'
X786.5
88.3
X785.8
X787.4
790
X790.7
X792.9
X790.9
X784.8
X785.4
ECKART ROBERT J & JERRY
CLARR OIL & REFINING
MUM INVESTMENT CO
MIFFLIN TOWNSHIP

SEGMENT B - NE
MILL RACE
MIFFLIN FIRE STATION
CLARK OIL STATION
MILL STREET
1" = 60'
PLATE 20



TYPICAL WALKWAY SECTION



TRAILWAY IDENTIFICATION SIGNAGE

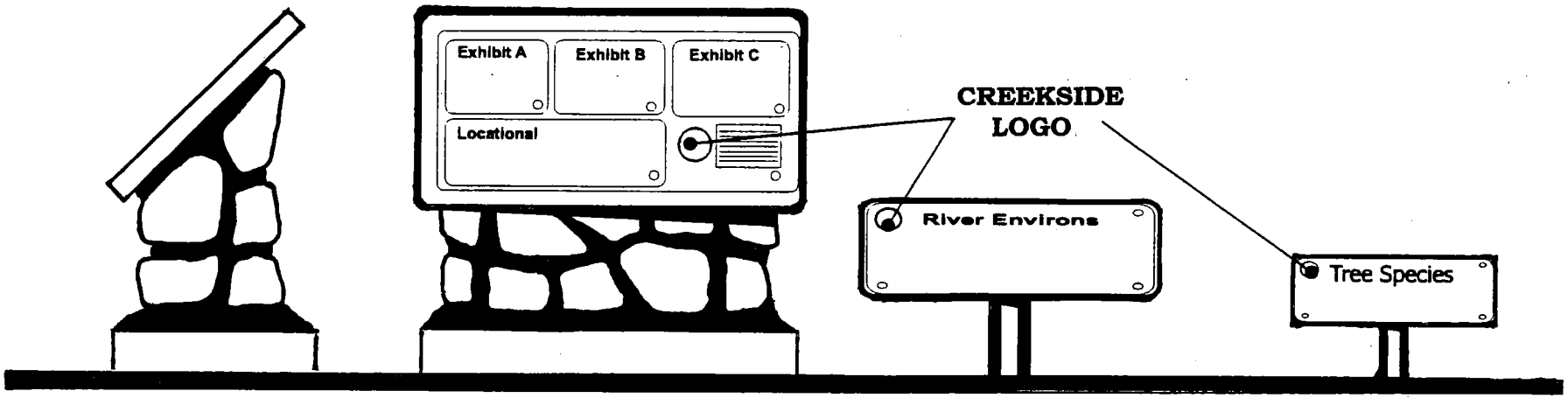
PLATE 21

VARIOUS EXAMPLES OF TYPICAL EDUCATIONAL SIGNAGE

SIDE VIEW

FRONT VIEW

SINGLE LESSON & IDENTIFICATION SIGNAGE CAN BE PLACED THROUGHOUT TRAILWAY AREAS



MULTIPLE LESSON SIGNAGE

PLACED AT COUNCIL RING LOCATIONS

SINGLE LESSON SIGNAGE

ENVIRONMENTAL IDENTIFICATION SIGNAGE

EDUCATIONAL SIGNAGE CONFIGURATIONS

PLATE 22