

Matters from Staff Agenda item #___

Meeting Date: February 16, 2016

Presenter: Brian Schilling

Submitting Dept: Engineering - Pathways

Subject: South Park Loop Pathway – 50 Percent Design Review

Statement / Purpose:

Review and approve the 50% plan set and Study Phase Report for the South Park Loop Pathway Connector project. Obtain public comment and Board input for moving the design forward to 90%.

Background / Description (Pros & Cons):

In 2014, Teton County voters approved funding for the South Park Loop Connector Pathway between the south end of 3 Creek Ranch and the west end of Melody Ranch. This approximately 2.0 mile stretch is the final remaining segment to be completed in the South Park Loop pathway network. Teton County Engineering and Pathways staff have completed initial public outreach and preliminary planning work and have retained Nelson Engineering to prepare civil engineering plans. (Please see the staff report from the 12/7/15 BCC Workshop for a full summary of the public outreach and preliminary planning process).

As of February 10th, Nelson has completed the initial site visit and study phase of the design process, and has developed the civil plans to the “50%” stage. They have also prepared a 50% Design Submittal Report that accompanies the plan set and provides detailed background on many of the critical design issues (see attached Report and Plan Set).

The February 16th 50% design review meeting is the sixth of nine scheduled opportunities for public review and input. The review is intended to provide an update on the project design to date, a review of the Study Phase report and 50% alignment, and an opportunity for the board and the public to discuss any critical design decisions prior to moving the design ahead to the 90% stage.

The project is currently on schedule (see the attached Project Timeline). Pending approval of the 50% design, the project team will continue design work to prepare the 90% plans by mid-March 2016 with the intent to bid the project in April and begin construction in June 2016.

Review of Preliminary Alignment

At the December 7, 2015 BCC workshop, staff presented the preliminary recommended alignment for the pathway between 3 Creek and Melody. The recommendation was for a “Two Cross” alignment that connected to the existing 3 Creek Pathway on the west side of South Park Loop, then crossed South Park Loop to the east side of the road, continued on the east side of the road around the Shootin’ Iron bend, stayed on the north side until crossing back to the south side near the east end of Melody Ranch and connecting to the existing pathway segment on the south side of South Park Loop at Cortland Dr. Of all the options reviewed, the recommended alignment provided the best combination of safety, cost, functionality, and minimized impacts. Once the basic alignment had been defined, the primary design question to be addressed was identifying the exact location and design of the crossings. At the time, it was thought that there might be an opportunity to place the pathway on the north side of the stand of cottonwood trees on the north side of the road west of Melody Ranch and that the majority of the trees would not be impacted.

Changes from Preliminary to 50%

The subsequent study and report phase of the design process focused on exploring the crossing locations and types, as well as several other issues including tree impacts, geotechnical investigation, utility conflicts, right of way and boundary survey, driveway/side road crossings, and retaining wall needs. These items are discussed in detail in the report and will only be summarized in this staff report. In general, the pathway alignment is still a “Two Cross” alignment, but the locations of the crossings have changed slightly from what was presented as the preliminary recommendation. Of note, the eastern 2500 feet of the path was shifted from the north side to the south side of South Park Loop to avoid the extensive cottonwood tree stands on the north side of South Park Loop west of Melody

Ranch. The crossing near 3 Creek was also shifted slightly further north to optimize sight lines and reduce impacts to the adjacent hillside. Other than that, the proposed alignment remains largely the same as shown in prior concepts.

50% Design Report and Plan Set Summary

As mentioned above, the design report discusses many of the design issues in detail, but a few of the key components of the pathway design are summarized below.

- General Pathway Alignment (see Report pages 1-3)
 - Path connects to the existing 3 Creek Pathway on the west side of South Park Loop (SPL) at approx. STA 0+50
 - Path crosses to east side of SPL at STA 3+00 just south of Matheson Hill Road Rancho Alegre driveway
 - Path stays on east/north side of SPL until approx. STA 75+00
 - Path crosses to south side of SPL at approx. STA 75+00
 - Path terminates at Cortland Dr. at approx. STA 100+00
 - Path is located a minimum of 6' off the edge of SPL pavement
- SPL Crossing Locations and Design (see Report pages 4-9)
 - General design
 - At-grade crossings
 - User-activated rectangular rapid flashing beacon
 - Advance warning signage
 - Piano key crosswalk
 - Speed limit reduced from 35mph to 30mph
 - Northern crossing between Grand Teton Circle and Matheson Hill Road Rancho Alegre driveway (STA 3+00) (see Report p. 8)
 - Will require regular vegetation trimming to maintain sight lines
 - Location eliminates (or significantly reduces) need for retaining wall on hillside west of SPL, and reduces potential complications of disturbing existing Matheson Hill Road Rancho Alegre driveway embankment
 - Maintain a minimum 350' sight distance in either direction
 - Crossing at STA 75+00 (see Report p. 9)
 - Sight distance is good in all directions
 - Relatively simple mid-block crossing
 - Additional Melody Ranch Crossing (see Report p. 9)
 - Located east of Cortland Dr. along existing pathway
 - Provides mid-block crossing connection to internal Melody Ranch pathway
 - Will require some removal of willows on north side of SPL to improve sight lines
- Driveway and Side-street Crossings (see Report pages 10-12)
 - The design will try to provide crossings set back at least one car length to reduce conflict between pathway users and cars queuing to enter SPL.
 - South Park Ranch Road will be squared up to SPL slightly to reduce speed of northbound right-turning vehicles exiting SPL onto SPRR (STA 37+00)
 - Existing gravel approaches may be paved approximately 20 feet back to reduce gravel migration onto the pathway
- Trees (see the link to the Tree Report included in attachments)
 - 905 cottonwood trees on both sides of SPL west of Melody Ranch were inventoried, surveyed, and assessed for health/condition
 - A total of 832 trees were surveyed on the north side

- A total of 72 trees were surveyed on the south side, with an additional 89 trees located underneath the power lines that have been topped and were not surveyed
 - Tree report and recommendations from the project team arborist were used to advise the design team on construction impacts and pathway alignment
 - Summarized conclusion from Tree Report:
 - *Based on estimated age, tree health and structural condition, as well as limited space for tree protection, the trees existing within the public right-of-way along South Park Loop Road are not suitable for retention or preservation as part of the South Park Connector Pathway. Dense stand conditions with deteriorating tree health and structural conditions are untreatable, and amount of space available to maintain recommended “clear zones” along roadway and pathway are inadequate for public safety.*
 - Based on the recommendations in the report and from on-site assessments, the south side alignment west of Cortland Dr. is recommended as it will result in significantly fewer impacts to existing cottonwood trees (approximately 72 trees vs. 833 trees).
 - This caused the originally proposed crossing location at Cortland Dr. to shift approximately 2500 feet west (from STA 100+00 to STA 75+00) in order to avoid the trees on the north side of SPL.
 - Replanting new trees as part of the pathway construction should be explored further
 - Independent of pathway design and construction, the condition of the cottonwood trees in the public right-of-way along South Park Loop should be addressed for public safety reasons
- Retaining Walls (see Report p. 2)
 - The proposed design has entirely eliminated uphill retaining walls from the design (i.e. there are no retaining walls above the grade of South Park Loop Road or the pathway
 - There will be some short sections of retaining wall (max. 4’ high) below the pathway that will be largely hidden from view by roadway users and adjacent property owners. These retaining walls are necessary to avoid conflicts with utilities, existing vegetation, or grading encroachment onto private property.
- Utility Conflicts (see Report p. 2)
 - There are several utility poles and guy wires that will need to be relocated.
 - LVE has been consulted and has indicated that the relocations are all feasible

As shown on the attached South Park Loop Pathway Project Plan, the project is currently on schedule. The next scheduled phase will take the design from 50% to 90% in preparation for project bidding. The next scheduled milestone is the 90% Design Review at the March 15th BCC meeting.

Statement of Strategic Intent addressed by this item (Identify BCC goals accomplished/addressed):

Environmental Stewardship

- Support an integrated and efficient multi-modal transportation system
- Partner and collaborate with local, state, federal and other agencies

Economic Sustainability

- Partner to develop economic vitality consistent with community values as expressed in the Comprehensive Plan
- Deliver efficient government services to ensure the safety and welfare of residents and visitors

Attachments:

1. Project Timeline (1 page)
2. 50% Design Submittal Report (12 pages)
3. Study Phase Plan Set dated 1-18-16 (13 pages)
4. Tree Report link (45 pages) - http://www.tetonwyo.org/pathways/docs/Capital_Projects/Region3-SouthPark/3Creek_Melody/SPL_Tree_Survey_2015_Report_rdxopt.pdf

Fiscal Impact:

There is no immediate fiscal impact to approving the 50% design. Thus far, the design recommendations made by the project team have also happened to be the most cost effective options (crossing locations, reduced retaining wall sections, reduced tree removal, etc.), so overall the project is on track to be well within the available budget. Nelson Engineering is expected to have a preliminary cost estimate prepared for the February 16th meeting.

Staff Impact:

If the 50% design is approved as presented, staff and the consultant will continue the design process to 90% and there would be no increase in the amount of work that was already anticipated. If major changes to the 50% design are recommended, then there would be a potentially large increase (depending on the number and the extent of the changes) to the amount of work required by staff and the consultant.

Legal Review:

There are no items for legal review at this time. Staff is currently working with the Teton County Attorney's Office on a couple items that require future legal review.

Recommendation:

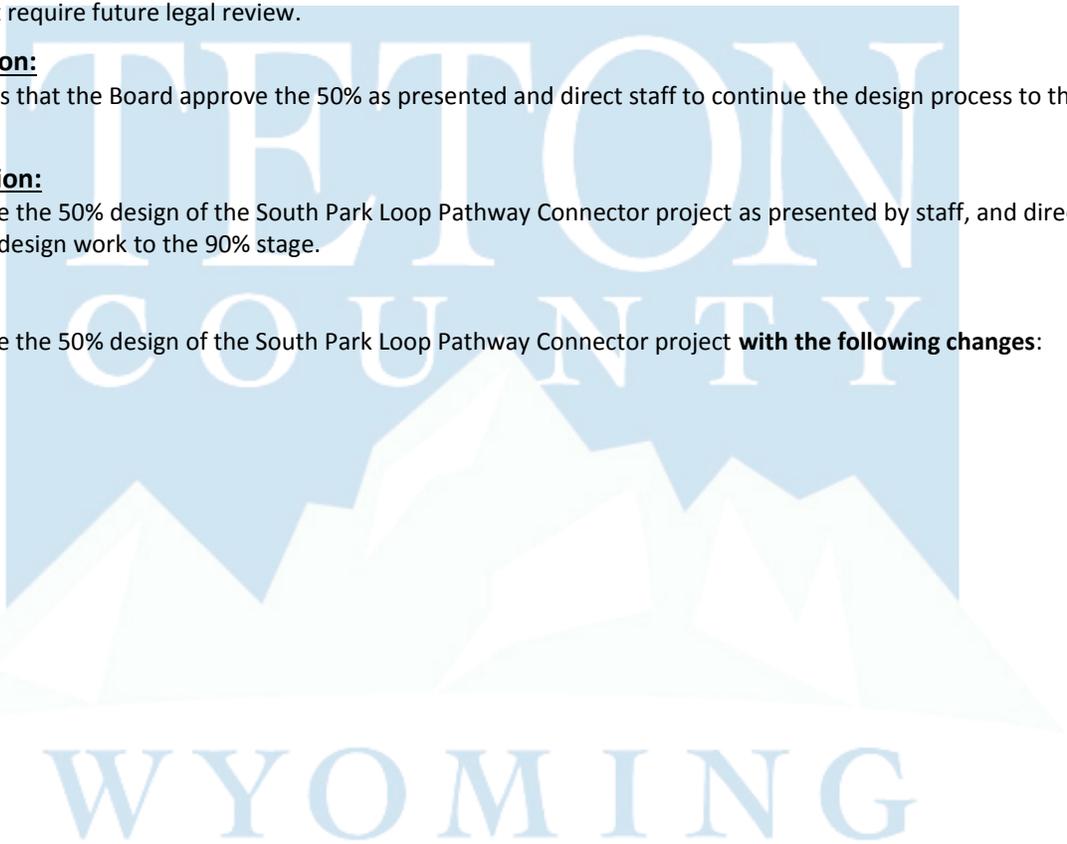
Staff recommends that the Board approve the 50% as presented and direct staff to continue the design process to the 90% stage.

Suggested Motion:

I move to approve the 50% design of the South Park Loop Pathway Connector project as presented by staff, and direct staff to continue design work to the 90% stage.

ALTERNATIVE:

I move to approve the 50% design of the South Park Loop Pathway Connector project **with the following changes:**
[LIST CHANGES]





SOUTH PARK LOOP PATHWAY PROJECT PLAN

STAGES OF PROJECT DEVELOPMENT



PRELIMINARY PLANNING

- Identify project purpose and need
- Corridor assessment and data collection
- Identify alignment alternatives

PUBLIC COMMENT

- Oct. 17 Public Open House
- Oct. 20 County Commission (BCC) Workshop
- Nov. 12 Public Open House

- Assess alternatives (benefits and impacts)
- Develop concept plan/recommended alternative
- Approve concept plan/recommended alternative

- Dec. 7 BCC/Public Workshop



CIVIL ENGINEER SELECTION

- Advertise Request for Proposals (Nov. 11, 18, 25)
- Proposals due December 2
- Select consultant by December 9
- Award Civil Engineering contract December 15

PUBLIC COMMENT

- Present at BCC December 15



DESIGN AND ENGINEERING

- Start civil design late December/early January
- Take Concept Plan to 50% design by Feb. 2016
- Continue design development to 90%
- 90% design by mid-March 2016
- Prepare final plans and bid package

PUBLIC COMMENT

- Early February 2016 BCC Meeting or Workshop
- March 15 (2016) BCC Meeting



CONTRACTING AND CONSTRUCTION

- Present final plans and bid package for approval
- Advertise for construction bids April 6, 13, 20
- Open bids April 27
- Award construction contract May 3

PUBLIC COMMENT

- March 28 BCC Meeting
- May 3 BCC Meeting



START CONSTRUCTION JUNE 2016

February 9, 2016

dd/15-256-02

South Park Loop Road Pathway Connector Project – 50% Design Submittal

This report describes the proposed project, discusses past and current planning goals and recommends an alignment for the pathway. The report also describes the rationale behind the alignment recommendations and presents issues and constraints that have to be addressed during planning and construction in order to complete the project.

Background

In 2014, Teton County voters approved funding for the South Park Loop Connector Pathway between the south end of 3 Creek Ranch and the west end of Melody Ranch. The approximately 2 mile long section is the final remaining segment to be completed in the South Park Loop pathway network. Three public workshops were held in the fall of 2015 to provide an overview of the project and to solicit public input regarding the proposed pathway section. Input received during the workshops is summarized as follows:

- Concern about potential additional traffic and the speed of vehicles on South Park Loop Road.
- Maintain the visual character of the corridor. Minimize upslope retaining walls.
- Minimize removal of trees, particularly the cottonwood trees that line the roadway.
- Pathway crossings of South Park Loop Road are acceptable if done safely and if neighborhoods are connected.
- Many attendees would like the pathway completed as soon as possible.

On January 6, 2016, a field team of Dave Dufault (Nelson Engineering), Brian Schilling (TC Pathways), Amy Ramage and Gabe Klamer (Teton County Engineering), Andy Chambers (Pathways Task Force), Jack Koehler (Friends of Pathways), and Joe Gilpin (Alta Planning and Design) walked the roadway corridor with a goal of identifying an alignment and possible road crossing locations that would best meet the goals and objectives that were identified during the public outreach process. This group unanimously felt that the alignment and crossing locations identified within this report (and accompanying drawings) best meets the needs of the project and the citizens input.

Pathway Alignment and Constraints

This section provides a discussion, analysis and rationale for the proposed alignment of the proposed pathway along South Park Loop Road between the terminus of the existing pathway at the south end of 3 Creek Ranch and the terminus at the existing pathway at Cortland Drive. Please refer to the accompanying drawings to this report to best understand the proposed location for the pathway. The proposed location of the path and the issues and constraints of the corridor are identified on the drawings as well as summarized as follows.

The field team described above determined that the pathway should cross to the east side of South Park Loop just south of the terminus of the existing pathway at the south end of 3 Creek Ranch. The crossing location is proposed between Matheson Hill Road and the north end of Grand Teton Circle at approximately station 3+00. A discussion about the

justification for this crossing location is presented below under the “Crossings Analysis” section of this report. However, please note that the crossing at this location will minimize disturbance to the steep hillside that constrains the roadway for about 3000 feet on the west side of the road as well as allow the pathway to be readily available to the neighborhoods on the east side of the road.

Once on the east side of the road, the proposed pathway is expected to generally be located with approximately 6 feet of grassed area between the 10 foot wide pathway and the east of the edge of South Park Loop Road. This alignment will provide a safety buffer that will not require guardrail between the road and path (if path is less than 5 feet from road and guardrail is required), and will aid in minimizing the disturbance to the vegetation, fencing and existing utilities along the corridor. Lower Valley Energy has buried three phase primary power as well as a gas line in this location, none of which are to be disturbed. Fiber optic cable also exists in this area and is not expected to require adjustment. The path and embankments are expected to remain completely within the easement/right-of-way of South Park Loop Road in this configuration. In a few cases, there will be the need to install a retaining wall off the shoulder of the pathway to retain the embankment to minimize disturbance to the existing ditch, fencing, power vaults, and vegetation. Wall heights are not expected to exceed 4 feet; gabion style retaining walls are anticipated, and a pedestrian rail (post and rail fence) that meets Teton County wildlife-friendly design guidelines will be installed at the top of the wall. Other retaining wall styles and alignment adjustments will be considered in order to minimize costs and conflicts with utilities.

Just north of South Park Ranch Road (station 32+00 to 36+00), a private landowner has installed a number of trees and an irrigation system in the road right of way that will have to be removed or relocated in order to construct the pathway. The design will try to be considerate of the well-done landscaping in this location; however, in order to install the pathway, some adjustments to the location of trees and irrigation system will be required. The design intent will be to blend the pathway grading into the existing landscaped berm and to move trees so that they will be far enough from the pathway edge to ensure adequate sight distances in the future and eliminate potential for the roots to damage the pathway.

At South Park Ranch Road (station 37+00) the pathway will be set back from South Park Ranch Road in order to allow space for cars to queue at the road without interfering with the pathway. (See Crossings Analysis Section of this report). An adjustment of the South Park Ranch Road approach to South Park Loop Road is proposed in order to improve safety by slowing entering traffic. This improvement may require relocating the neighborhood mailboxes and the parking area for the mailboxes. Also, the pathway alignment at this road crossing will necessitate relocating property fences closer to the property line(s). Currently fences are located within the right-of way and space may be needed to locate the pathway and embankment within the right-of-way.

South of South Park Ranch Road, the pathway is proposed to remain east of South Park Loop Road. The corridor along this reach lacks significant trees and the topography is very suitable for the installation of the pathway. The main issue with this section (from approximate station 40+00 to approximate station 66+75) is the overhead utility poles and associated guy wires. The four utility poles in this section are in direct conflict with the pathway, either directly or due to the guy wires. Guy wires are required and reconfiguring them must consider that the wires cannot become a hazard to motorists or pathway users. Nelson Engineering has contacted Lower Valley Energy and held a meeting to discuss and plan adjustments to these conflicts. Lower Valley Energy had indicated that they will be able to make adjustments to these utility poles and will, upon a final, coordinated, path design, provide the costs for the adjustments which will be borne by the Project. There is slight potential for the need for easements from landowners in order to adequately relocate these overhead facilities because the South Park Loop Road right-of-way may be too narrow to accommodate everything.

From approximate station 67+00 to 70+00 a landowner fence that encroaches into the north side of the South Park Loop Road right-of way will need to be relocated. Crossing to the south side of South Park Loop Road was considered prior to this fence location; however, the south side right-of way in this reach has a substantial stand of cottonwood trees that are preferred to remain. In addition, the field team identified that a crossing from the east/north side of South Park Loop Road to the south side of the road is best located at approximate station 75+00. (Refer to Crossings Analysis section of the report).

East of the proposed road crossing at 75+00, the pathway is proposed to remain on the south side of South Park Loop Road until it reaches the existing pathway at Cortland Drive. The south side was identified as the most appropriate location primarily due to the desire to minimize removal of cottonwood trees and overall vegetation. The cottonwood stands along the south side of the road are less dense (fewer trees overall) and groups of stands are separated further apart than the trees on the north side of the road where the stands are very dense and run nearly continuously from approximate station 77+50 to Kestrel Lane. By placing the path on the south side of the road, it is possible that many of the cottonwood trees that sit at the southern edge of the right-of-way can remain.

Also in this eastern stretch of the pathway, there are numerous culverts that will need to be extended or relocated to accommodate the pathway. (The culverts will require adjustment regardless of whether the path is on the north side of the road or the south side). A small amount of wetland area (less than 0.1 acre) will be impacted by the pathway near station 86+50 and between 95+00 and 97+50. These wetlands are jurisdictional wetlands and permitting with the Army Corps of Engineers will be required through a Nationwide permit in order to construct the pathway at this location. Teton County may view some or all of these wetlands as irrigation induced and therefore, mitigation of these wetlands in association with permitting with Teton County should be minimal if required at all.

No crossing of South Park Loop Road is proposed at the eastern end of the new pathway at Kestrel Lane. Rather, the field team felt that providing a crossing from the pathway north to Melody Ranch is best accommodated about 500 feet east of Kestrel Lane where the existing gravel neighborhood pathway approaches the road. The team felt that if Melody Ranch HOA was willing, the existing gravel pathway could be paved from the crossing location to Balsam Lane to provide pathway users a connection to the paved Melody roadway network. (Refer to Crossings Analysis section of this report).

Alignment Summary

Essentially, the pathway is proposed in locations that minimize the disturbance to the environment and that the field team felt would have the least effect on the character of the roadway corridor. Although two main-line crossings of South Park Loop Road are proposed, these crossings are proposed to be located in appropriate locations and constructed with treatments that will ensure the utmost in safety to motorists and pathway users. The benefits of the crossings are clear: less disturbance to the roadway aesthetic, topography and vegetation; and ideal access to the pathway for the most populated neighborhoods. The third crossing from Melody Ranch is ideally located away from a vehicular entrance and provides convenient access for pathway users from Melody Ranch and for visitors to Melody Ranch and Munger View Park.

It is also worth noting that the alignment proposed is located entirely within the South Park Loop Road right-of-way. Where topography, utility conflicts and right-of-way allow, the design will provide greater separation of the pathway from the roadway, however, typically, the pathway will be designed approximately 6 feet from the road edge. Temporary easements from private parties will be required in order to adequately re-grade some driveways at pathway/driveway crossings. The optional pathway setback at minor road crossings and the possible need to relocate overhead utility poles and guy wires may cause the need to obtain additional easements from private parties. The driveway crossings, path setback at approaches as well as the utility pole adjustments will be evaluated during the next phase of the project to determine what easements will be necessary or beneficial.

Crossings Analysis

This section provides a discussion, analysis and rationale for the proposed alignment with regard to crossings over South Park Loop Road and parallel to it on minor street and driveway crossings. Based on the proposed alignment there will be three roadway crossings of South Park Loop Road and 12 parallel crossings including four minor street crossings and eight driveway crossings. The Crossings and type are indicated on Figure A.

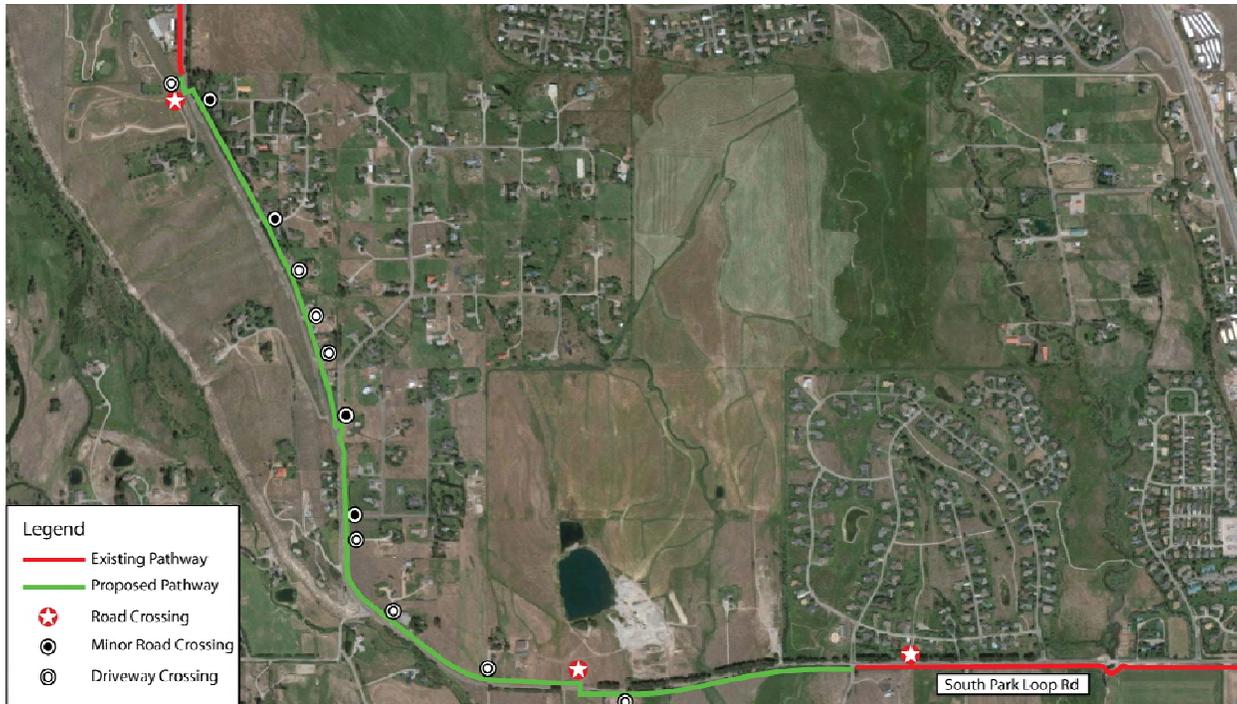


FIGURE A: CROSSING LOCATIONS AND TYPES

For roadway crossings of South Park Loop Road and minor street parallel crossings the following objectives are established:

1. Increase awareness of drivers of pathway crossings
2. Increase conspicuity of Pathway Users approaching and within pathway crossings
3. Isolate conflicts to the extent possible
4. Clearly assign priority at the crossing
5. Preserve rural character of setting to the greatest extent possible

Roadway crossings of South Park Loop Road

This section discusses the characteristics of South Park Loop Road, challenges and overall design recommendations in addition to the rationale behind the location and treatments proposed for each of the three locations.

Corridor Recommendations

South Park Loop road within the study area has a relatively low volume of between 600 and 1,400 vehicles per day with higher volumes as the roadway nears Hwy 89. The roadway is characterized by a wide range of traffic including area residential traffic, construction traffic for new homes, and gravel pit and ranch traffic. The road may, in the future, see increased traffic if the road is ever extended to Hwy 22 to the north or if additional development occurs in the area. Speed limits are currently posted at 35-mph at the south and east legs of the project and at 45-mph at the north and west legs. Mature Cottonwood trees, Willows and other vegetation have created an ‘enclosed’ feeling to the corridor which could manage speeds, however these minimal clearances also create difficulties for establishing proper sight distance at potential pathway crossings. There is a desire by both Teton County and by local residents to calm traffic and lower speed limits.

It is recommended that the speed limit through the area where pathway users will be crossing South Park Loop Road be reduced to 30-mph. This lowering is recommended for several reasons:

- This speed is a balance between the higher posted speeds that currently exist and a lower speed limit of 25-mph which would likely require extensive traffic calming of the corridor to achieve and may not be respected by motorists.
- This lower speed reduces the required stopping sight distance: 360 feet at 45-mph, 305 feet at 40-mph, 250 feet at 35-mph and 200 feet at 30-mph (AASHTO Table 3-1 Stopping Sight Distance on Level Roadways, A Policy on Geometric Design of Highways and Streets).
- 30-mph improves pedestrian/bicyclist crash survival risk significantly versus 40+mph.

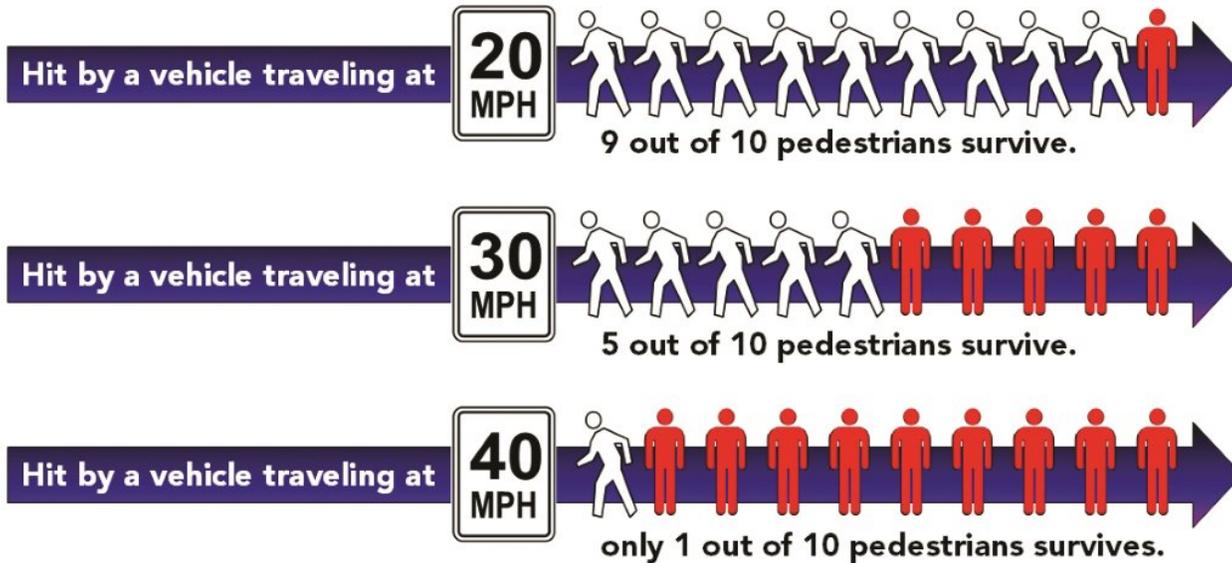


FIGURE B: PEDESTRIAN COLLISION MORTALITY BY IMPACT SPEED

Pathway crossings can employ a variety of treatments to achieve the five objectives noted previously. Over the past decade there have been substantial improvements in understanding the effectiveness of a variety of treatments and ways to combine them to achieve safe and comfortable crossings. Alta has created a summary chart showing desirable crossing treatments based on a variety of industry research summarizing street type, speed and configuration.

PEDESTRIAN CROSSING CONTEXTUAL GUIDANCE At unsignalized locations	Local Streets 15-25 mph		Collector Streets 25-30 mph			Arterial Streets 30-45 mph						
	2 lane	3 lane	2 lane with median refuge	3 lane	2 lane with median refuge	3 lane	4 lane	4 lane with median refuge	5 lane	6 lane	6 lane with median refuge	
	FACILITY TYPE											
1 Crosswalk Only (high visibility)	✓	✓	EJ	EJ	X	EJ	EJ	X	X	X	X	X
2 Crosswalk with warning signage and yield lines	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X
3 Active Warning Beacon (RRFB)	X	EJ	✓	✓	✓	✓	✓	✓	X	✓	X	X
4 Hybrid Beacon	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓
5 Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓
6 Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ	✓	✓	✓	✓

LEGEND	
Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

FIGURE C: CROSSING TREATMENTS BY SPEED

Based on Figure C and the speeds at which might be present (30-35 mph), the minimal appropriate crossing treatments would be high visibility crossings with supplemental warning signage and yield lines. Enhanced visibility and safety could be achieved by adding Rectangular Rapid Flashing Beacons (RRFB) and/or a median refuge. The possibility of installing a median refuge was discussed prior to and during the field visit. Upon closer examination installing a median refuge would require a significant approach taper involving widening South Park Loop Road. This could more greatly impact vegetation and will require a minimum six foot wide refuge area with at least one foot of shy distance on both sides. This added roadway width would result in the roadway being even closer to the pathway for certain sections which could make the pathway less comfortable and trigger a requirement to install guardrail between the pathway and road. For these reasons median refuges are not recommended at this time as a pathway specific safety treatment. Should Teton County wish to explore traffic calming on a broader scale along South Park Loop Road, median refuges could be utilized as horizontal traffic calming to help enforce lower vehicle speeds. Traffic calming would be helpful if the County wanted to lower the speed limit to 25-mph, however it may not be as needed with a 30-mph speed limit.

It is recommended that high-visibility piano key style crosswalks be installed with advance warning signage and a RRFB. Some communities have paired advance yield lines with a crossing to indicate clearly that the driver is expected to yield and provide them with a spatial target for doing so. This addition is not clear within the guidance of the MUTCD. Some interpretations of the guidance may allow for it, while others do not. The issue is that a yield line must be paired with a regulatory sign such as a R1-2 or a R1-5 sign. These signs are not permitted within the interim approval language for RRFBs, however other communities have successfully applied them. Both concepts are illustrated below.

In the context of these crossings, the RRFB may not be actuated by many pathway users who may cross when no vehicles are present, however during busier times of the road and for less confident pathway users the RRFB will greatly enhance safety and comfort. RRFBs have been found to result in very high yielding rates, particularly so in locations where there is already a good culture of pedestrian respect by motorists like Teton County.



BUTTON ACTUATED RECTANGULAR RAPID FLASHING BEACON IN DRIGGS, ID



FIGURE D: CONCEPT OF SOUTH PARK LOOP ROAD CROSSING TREATMENTS (NO YIELD LINE)



FIGURE E: NON-COMPLIANT USE OF YIELD LINE WITH RRFB

Selection of Crossing Locations

The proposed alignment of the pathway includes crossing to the east side of South Park Loop at the north end of the corridor and back to the south side of the roadway near station 75+00. An additional crossing will be established to connect the Melody Ranch neighborhood to the pathway.

North Crossing Near Grand Teton Circle

The existing pathway terminates at a residential driveway just north of Grand Teton Circle (North). This location is at a curve in South Park Loop Road and has significant vegetation along the inside of the curve. Crossing locations were examined to the south of this location, but are considered problematic due to significant structural retaining walls and minimal setbacks which would be needed due to the existing hillside grade and proximity to the road. The large parcel to the northeast of the existing pathway terminus may be developed in the future and could hold opportunities for relocating the pathway crossing further north on to the straight portion of South Park Loop Road, but this is not an option currently. However, through multiple field visits and design work, it was determined that a location just north of Grand Teton Circle provides adequate sight distance between road and pathway users (with some vegetation management).

Based on on-site observations and measurements by team members at various locations, it was determined that there is at least 350 feet of sight distance for southbound traffic at this proposed crossing location. This distance is minimally acceptable for a 45-mph speed limit, however additional safety would be achieved if the speed limit can be reduced to 30-mph. Sight distance in the northbound direction is quite good assuming some vegetation removal to the south the pathway crossing. The more vegetation removal that can occur the better the visibility will be. At the very minimum, aggressive pruning should be undertaken and this will have to be maintained annually. Strategic removal of a small number of trees would improve visibility considerably.



North Crossing, looking north towards existing pathway terminus.



North Crossing, looking south towards Grand Teton Circle. Note vegetation obstruction

Crossing Near Station 75+00

To meet the alignment objectives of minimizing tree removal and avoiding property impacts, a crossing of South Park Loop at approximately station 75+00 of the pathway centerline (see drawings). This location provides the best balance of sight distance from both directions and also separates the crossing by at least 50 feet from the southern ranch driveway. This simplifies the crossing and does not mix it with any potential turning vehicles.



75+00 Crossing, looking east toward gentle curve in the road.



75+00 Crossing, looking west with good visibility from approaching traffic.

Melody Ranch Crossing

As the existing pathway will be extended on the south side of the roadway, it makes sense for there to be an additional connection to the Melody Ranch subdivision so that its residents can safely access the pathway and that pathway users are provided with a designated crossing to access Munger View Park on the SW corner of the subdivision. Three locations for this crossing were considered: a crossing at Kestrel Lane (S Cortland Drive) at the west end, a middle crossing aligned with an interior subdivision trail, or one approximately aligned with Fishing Club Drive which is a lower-trafficked access to the Melody Ranch subdivision. After field evaluating all three, the middle crossing that connects to the interior trail provides the best combination of safety and access. The first 200 feet of the interior pathway are recommended to be paved to reach Balsam Lane where pathway users can access the subdivision. There is a sizable thicket of willows which has grown right to the edge of the pavement of South Park Loop at this crossing location. This vegetation obscures needed sight lines and should be removed. Replacement plantings/mitigation can be explored elsewhere in the project or in the subdivision pathway easement.



Melody Crossing, looking east with obstructions from willows.



Melody Crossing, looking west with obstructions from willows.

Parallel crossings Along South Park Loop Road

The proposed pathway alignment has four minor street crossings and nine driveway crossings. Each of these contexts has different concerns. Due to differences in volume minor street and driveway crossings will be treated differently.

Minor Street Parallel Crossings

Four minor streets serve as subdivision access roads, including Grand Teton Circle (two crossings), South Park Ranch Road, and Wilson Road. These minor streets serve local residential traffic and a small assortment of service and construction traffic. Due to the concentration of turning traffic at these locations the following design strategies are typically employed.

Parallel crossing design objectives:

1. Improve sight lines
2. Slow turning vehicles
3. Increase awareness & conspicuity
4. Set crossing back at least one car length (if possible).

For most of the side street approaches turning vehicle speed is not a significant issue with the exception of northbound right turns onto South Park Ranch Road.

The recommended treatments for this parallel minor street are consistent with other pathway crossings in Teton County. These elements include a solid yellow centerline for pathway users at least 50 feet in advance of the minor street, high-visibility piano key type crossing markings. Additional signage such as W11-15 crossing signage and R10-15 turning vehicles yield signage will be examined on a sight specific basis depending on sight lines and available set back distance.



Existing parallel minor street crossing at South Park Loop Road and Whitehouse Dr. Drivers must merge onto or off of the major roadway and cross the pathway in one movement.



Existing parallel minor street crossing along Moose Wilson Road with a setback pathway crossing. This configuration separates the movements of merging on and off of the Moose Wilson Rd from crossing the pathway into two separate decision making processes.

Figure F and G provide concept treatments for the minor street parallel crossings.

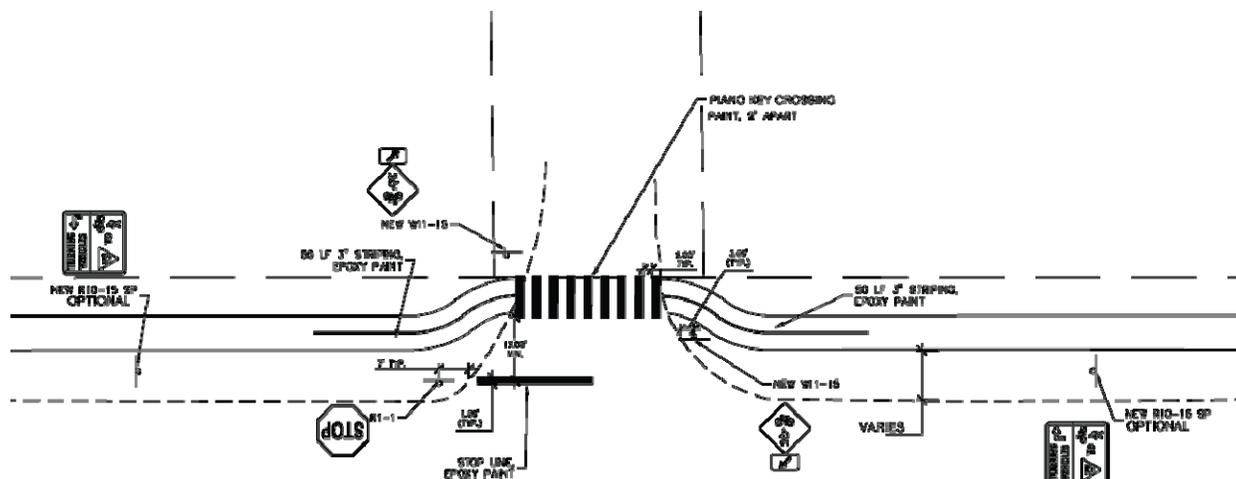


Figure F: Typical Minor Street With Setback Crossing

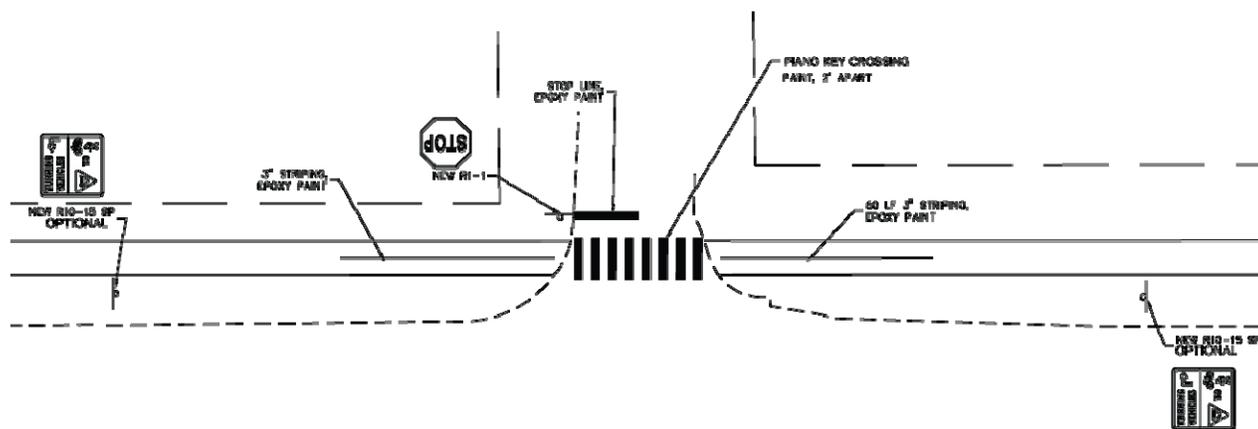


Figure G: Typical Minor Street Without Setback Crossing

Driveway Crossings

Driveway crossings differ from minor street parallel crossings in that each access serves a much smaller number of users. Along the proposed pathway alignment there are nine driveways with most serving a single residence, however several serve up to three households. Due to the low numbers of vehicle accessing these driveways, no pavement markings or signage are proposed. It is recommended that the driveways be paved 20 feet past the pathway so that gravel has a place to settle before it reaches the pathway crossing.

End of Report

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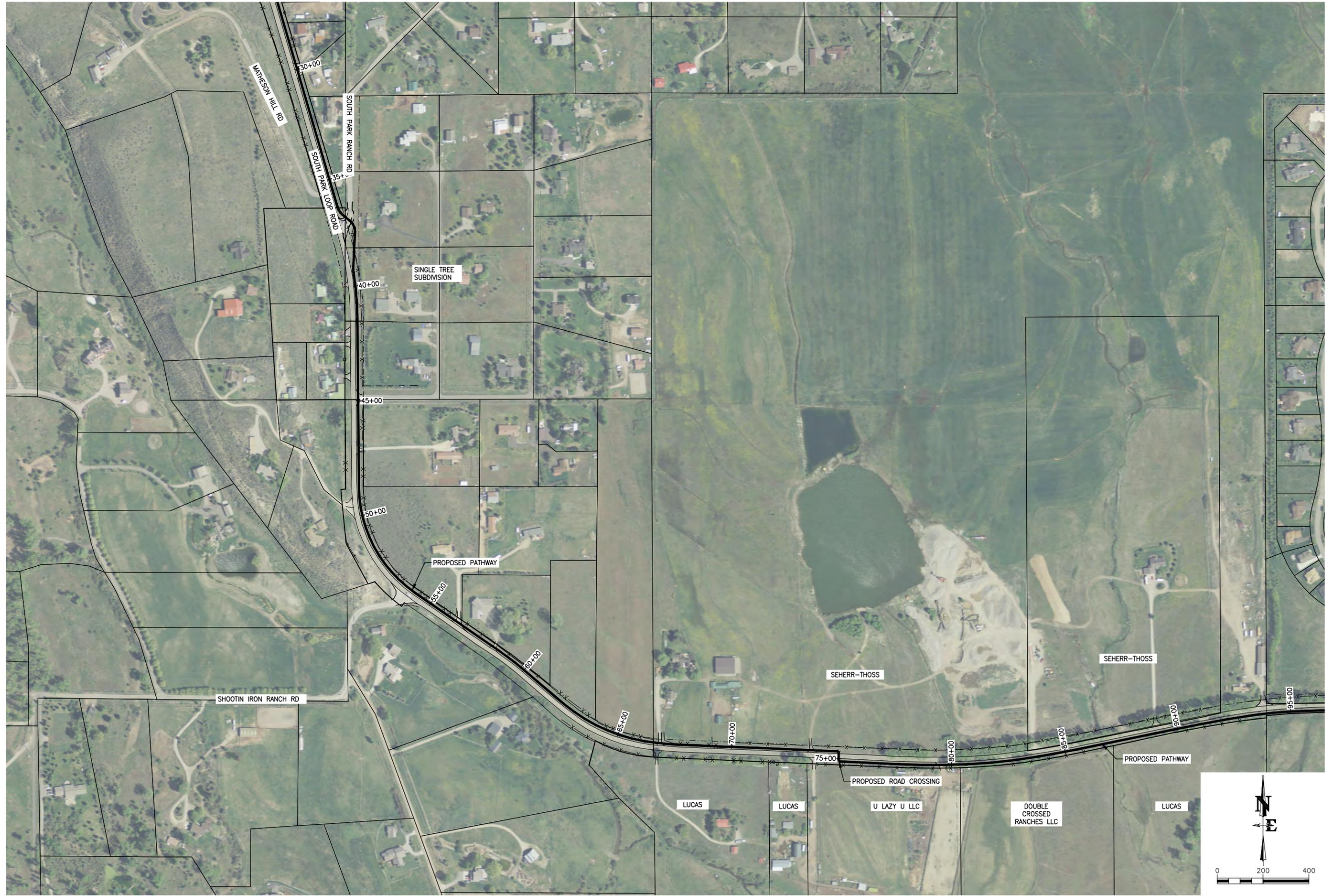
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SOUTH PARK LOOP
CONNECTOR PATHWAY PROJECT
TETON COUNTY, WY

DRAWING TITLE
AERIAL PLANNING EXHIBIT
STUDY & REPORT PHASE

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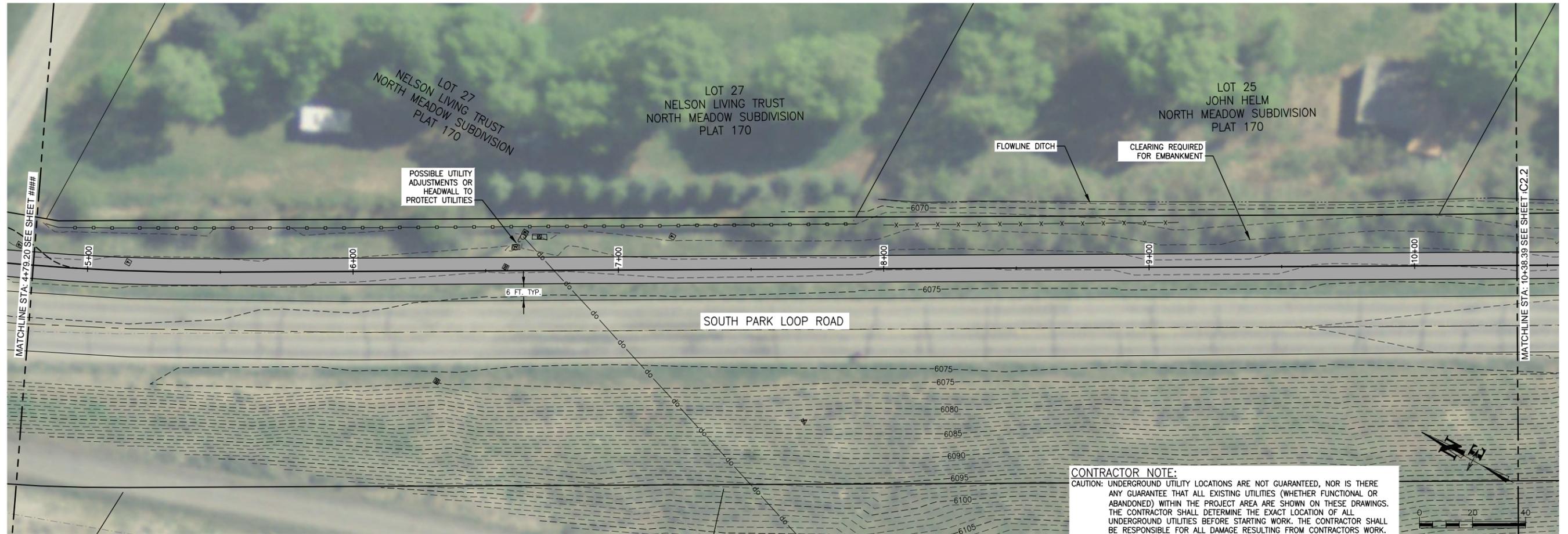
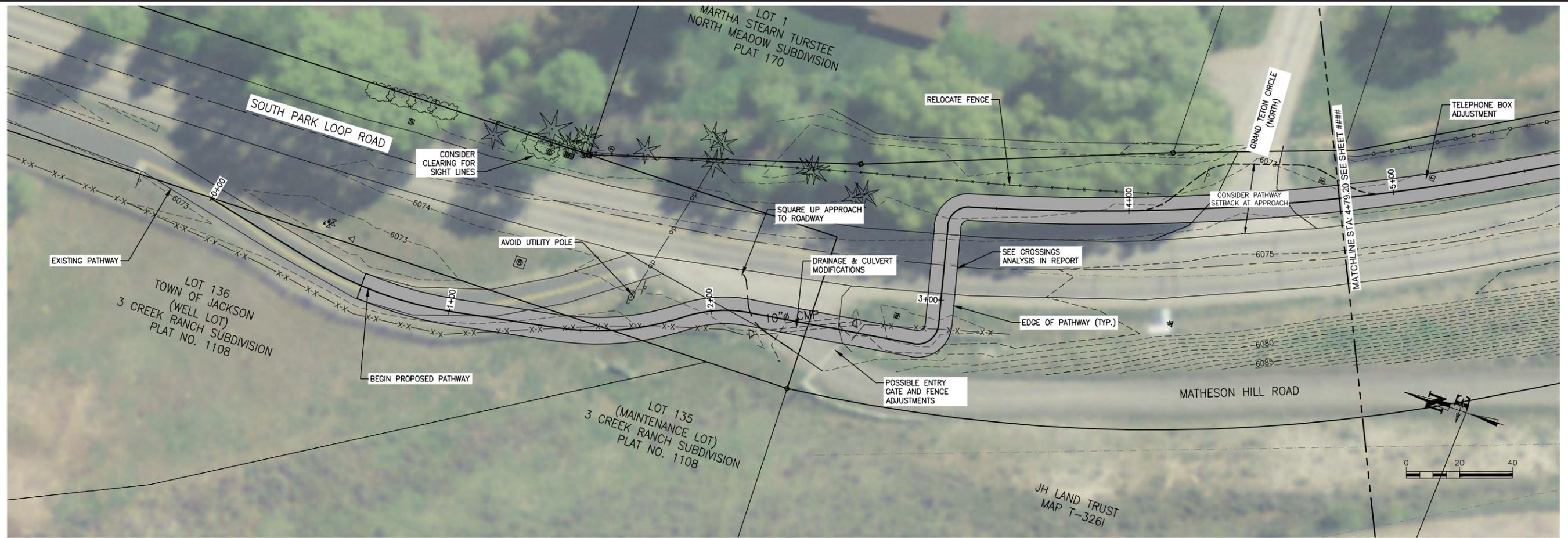
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TETON COUNTY, WY

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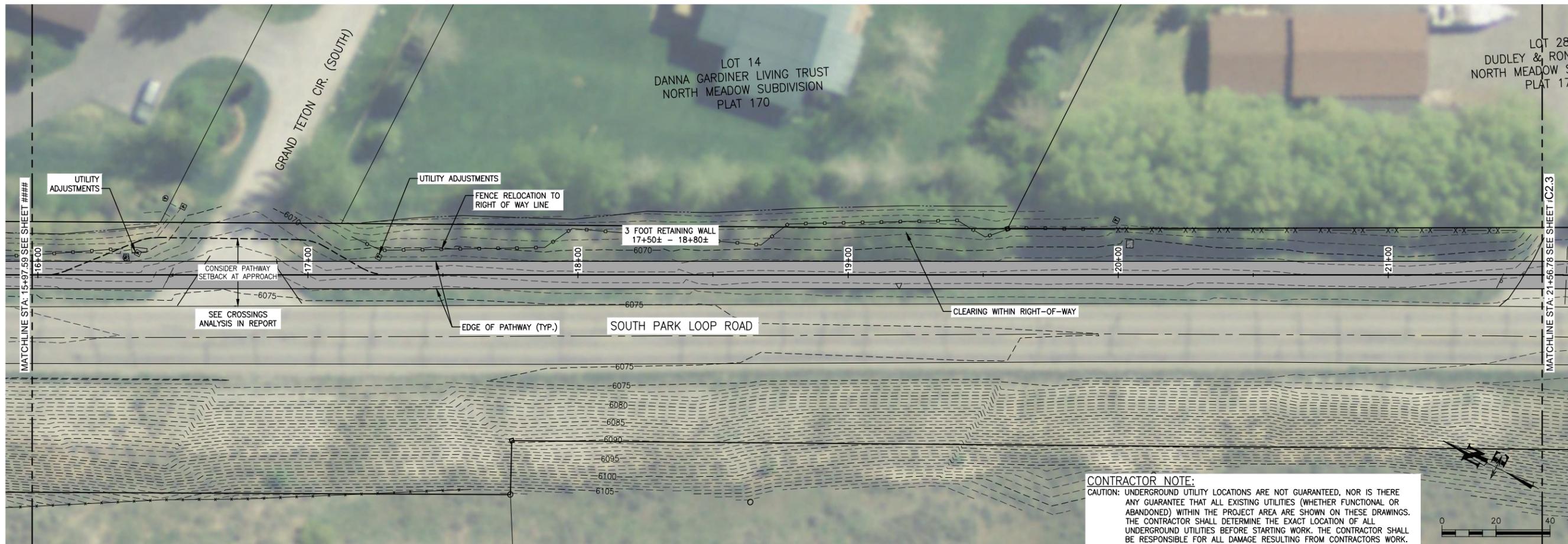
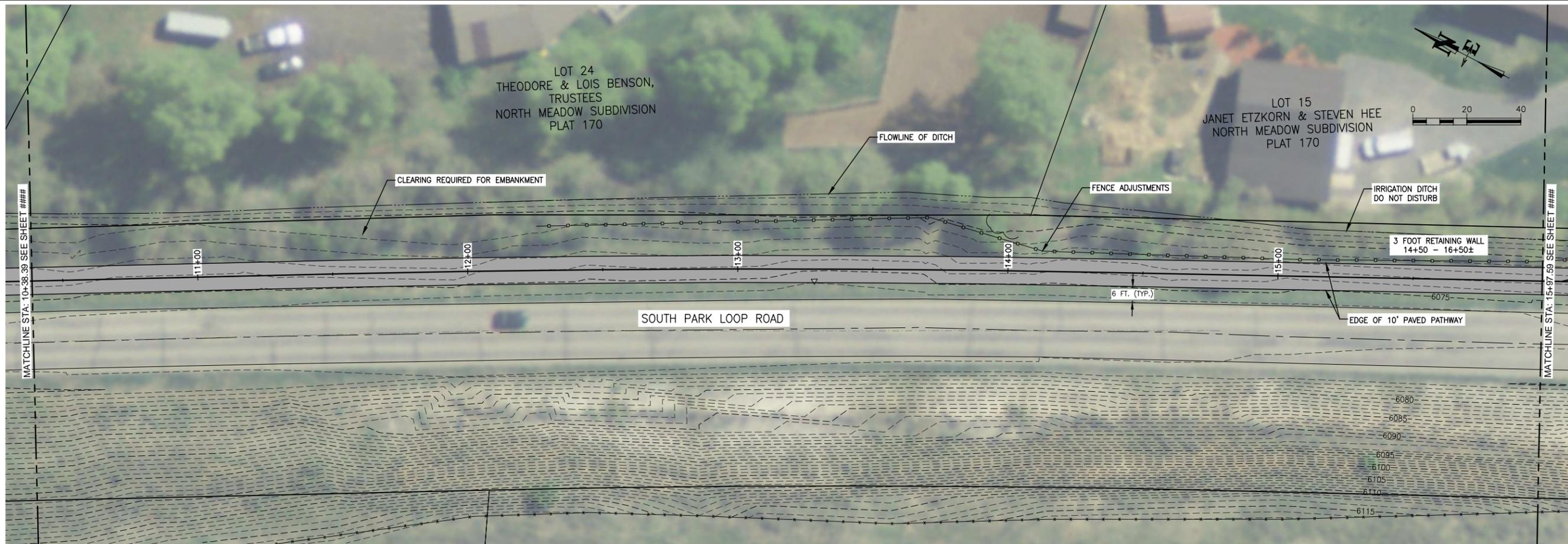
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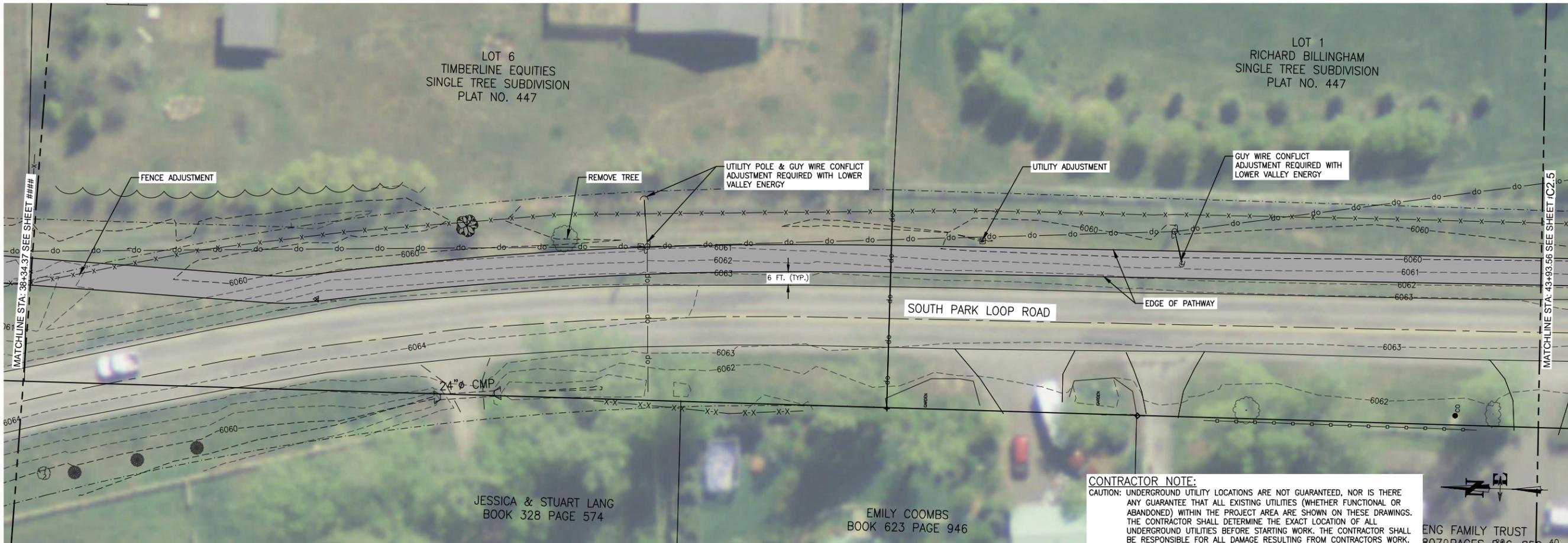
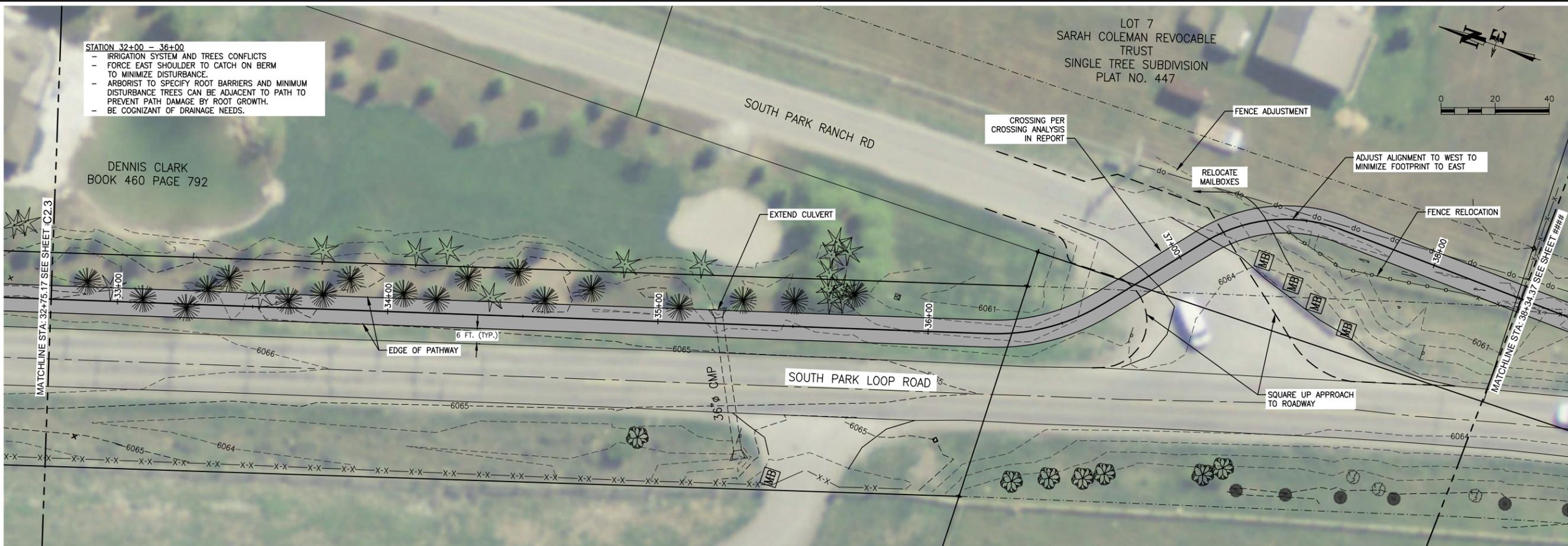


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STATION 32+00 - 36+00
 - IRRIGATION SYSTEM AND TREES CONFLICTS
 - FORCE EAST SHOULDER TO CATCH ON BERM TO MINIMIZE DISTURBANCE.
 - ARBORIST TO SPECIFY ROOT BARRIERS AND MINIMUM DISTURBANCE TREES CAN BE ADJACENT TO PATH TO PREVENT PATH DAMAGE BY ROOT GROWTH.
 - BE COGNIZANT OF DRAINAGE NEEDS.



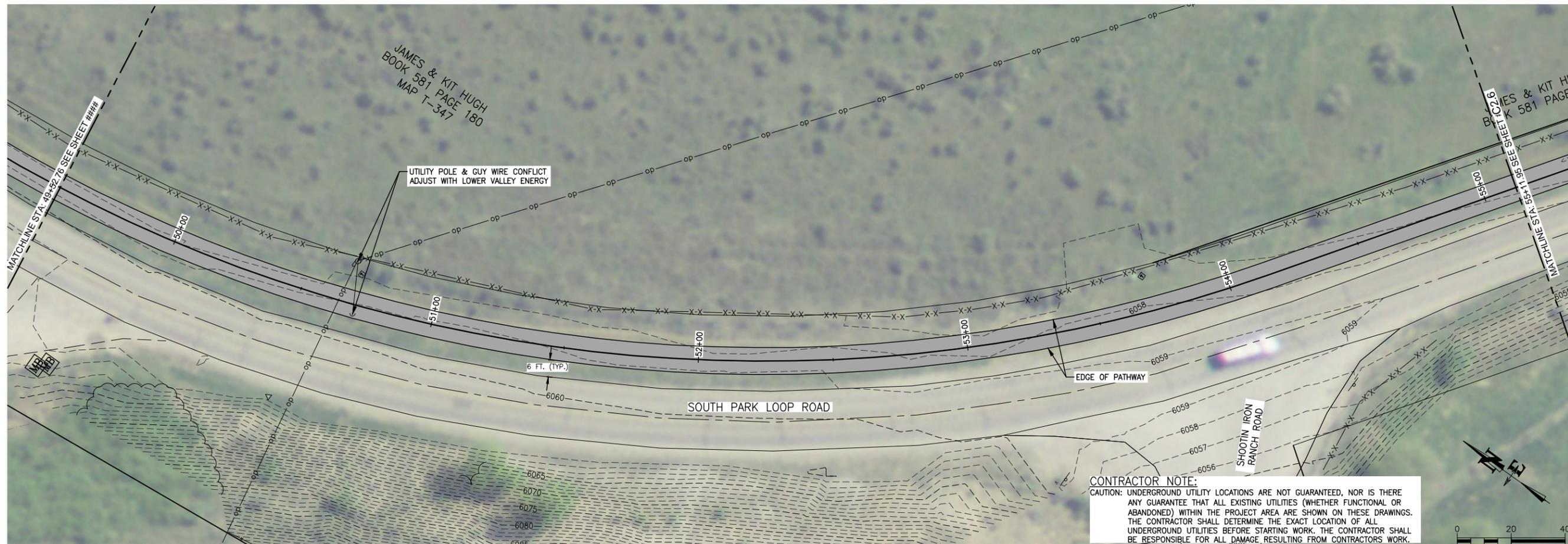
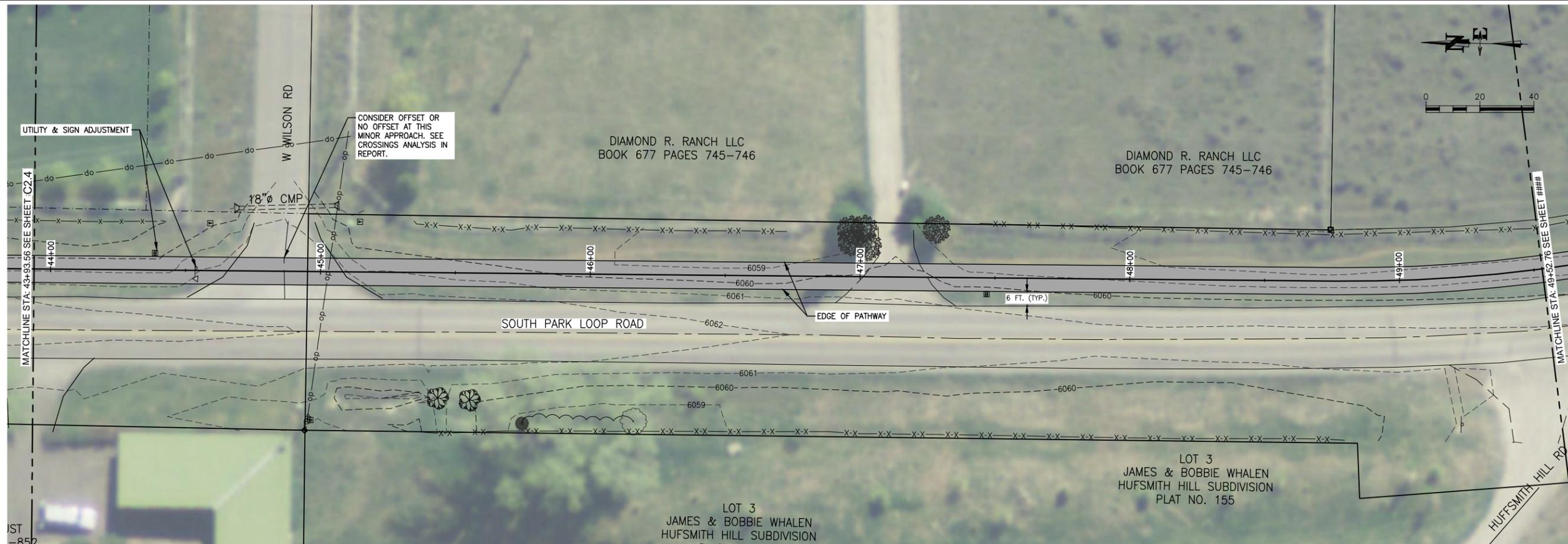
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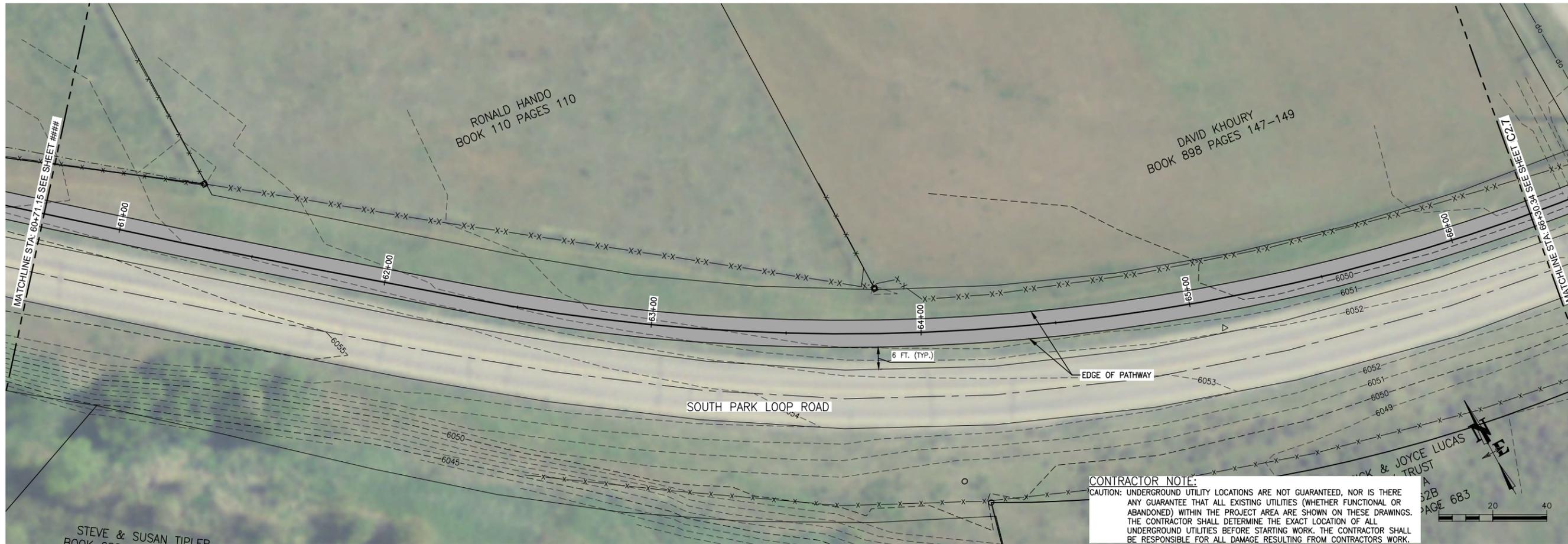
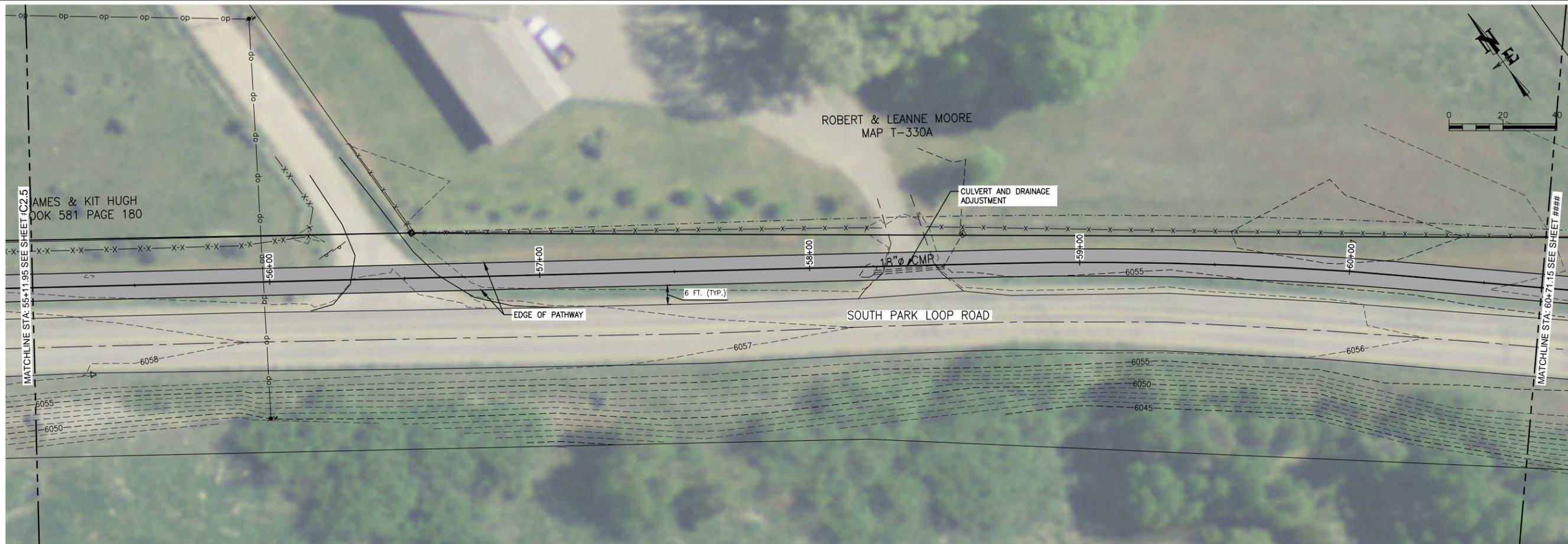
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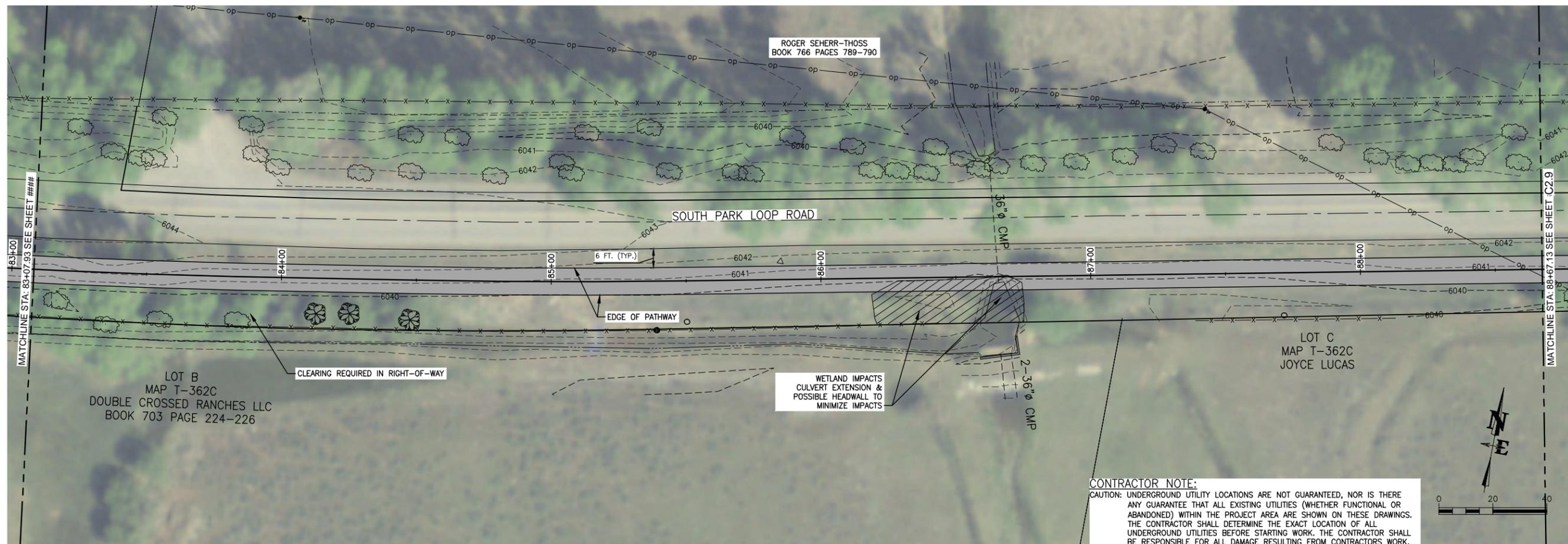
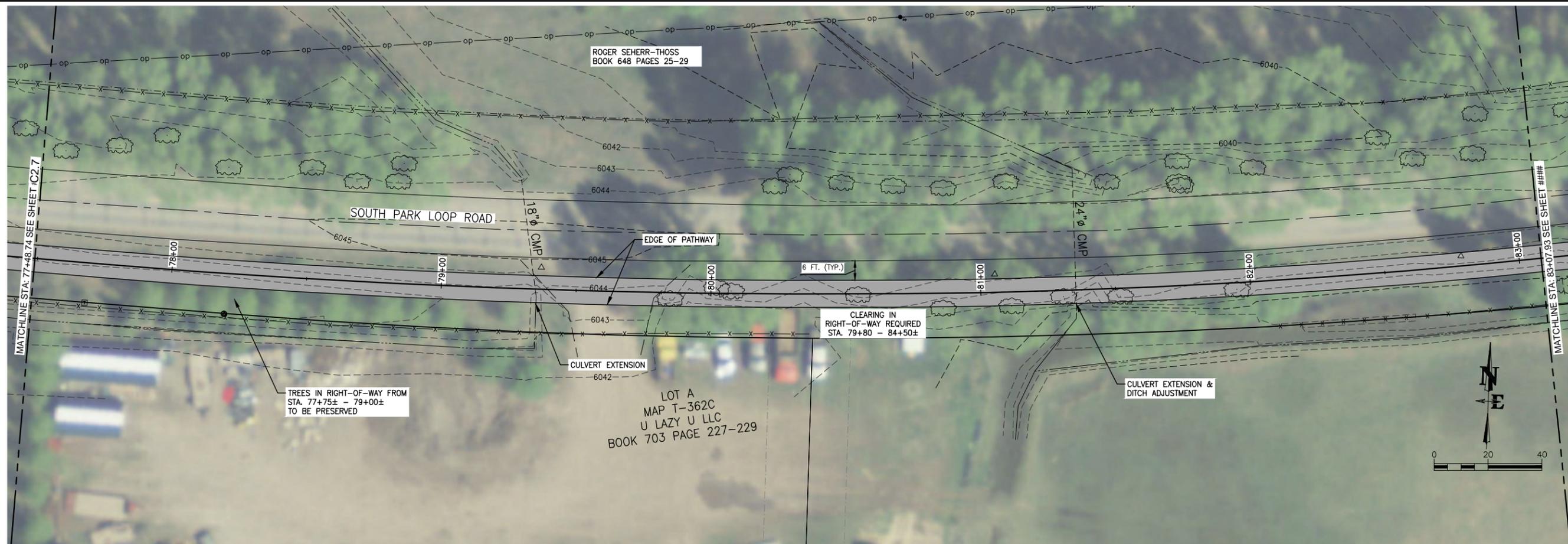


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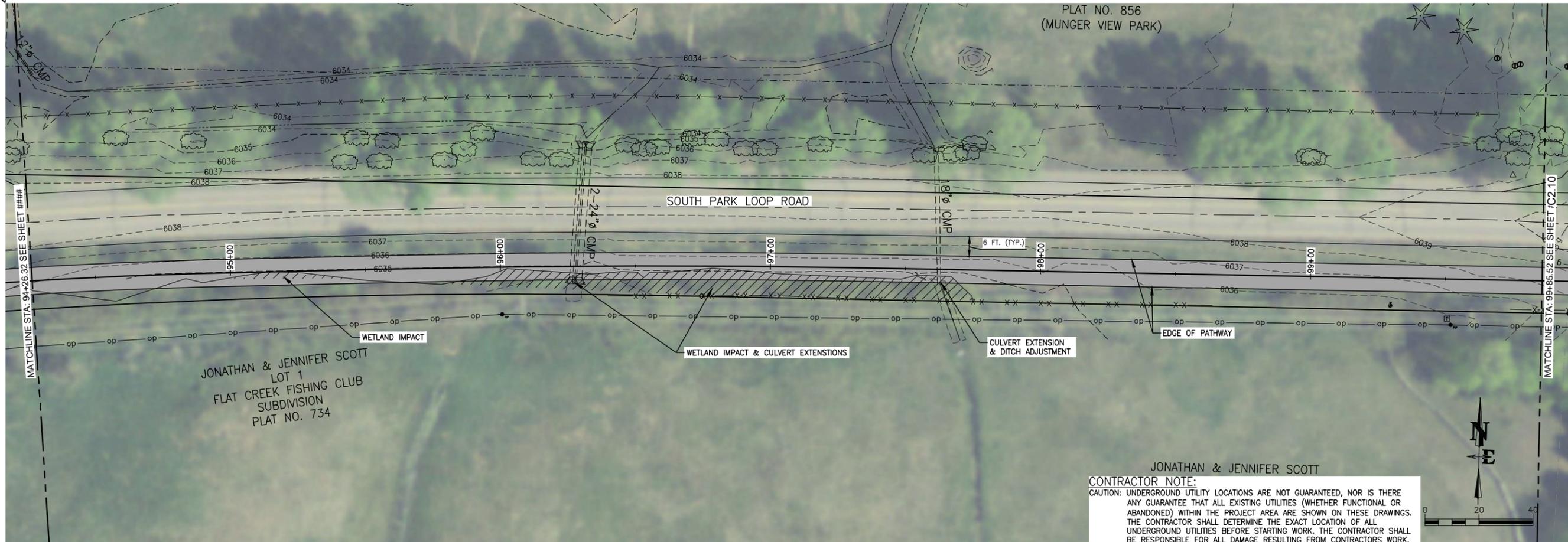


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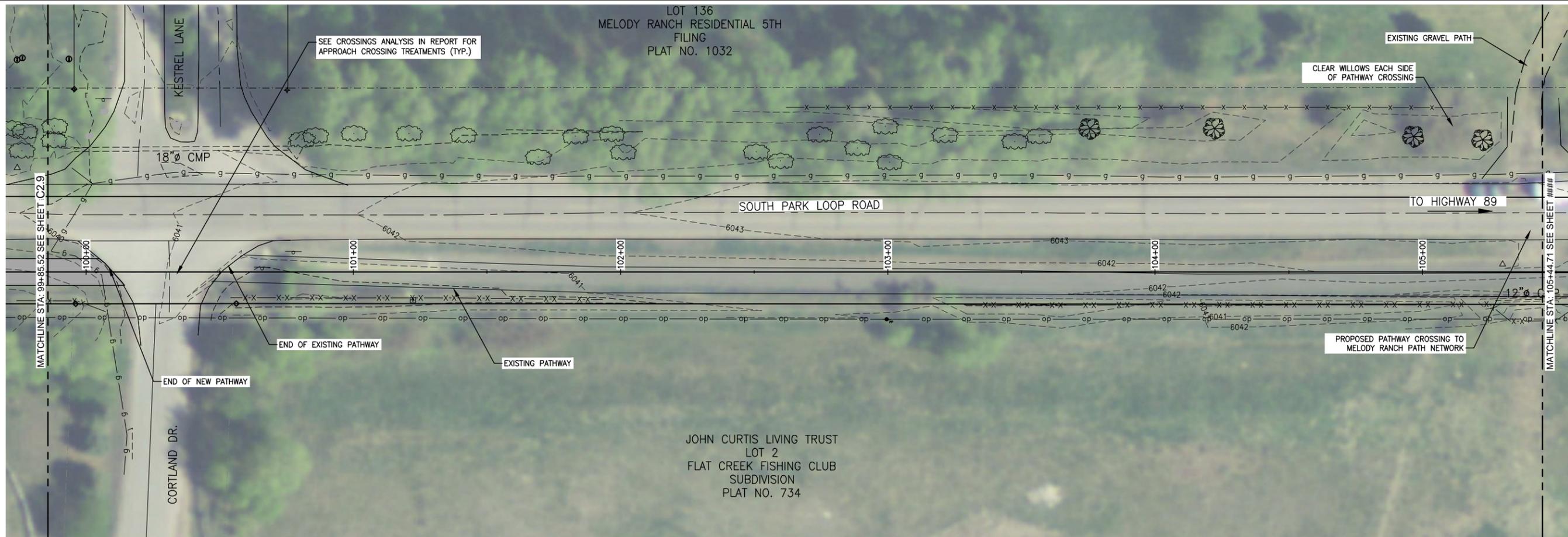


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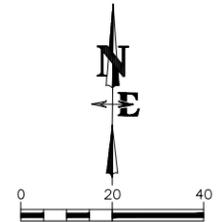
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