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July 20, 2018

Via Electronic Filing

Ms. Barcy McNeal
Administration/Docketing
Ohio Power Siting Board
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3793

Re: Seneca Wind, LLC
Case No. 18-488-EL-BGN

Dear Ms. McNeal:

On July 16, 2018, Seneca Wind, LLC filed an Application for a Certificate of Environmental Compatibility and Public Need for a wind-powered generating facility in Seneca County, Ohio. The purpose of this letter is to submit for filing Appendix E, Traffic Management Plan, which was pending at the time the application was filed.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Dylan F. Borchers

Attachment

Cc: Jim O'Dell (w/Attachment)

Appendix E.

Transportation Study

and

Management Plan

TRANSPORTATION STUDY AND MANAGEMENT PLAN

FOR THE:
PROPOSED SENECA WIND PROJECT
OPSB SUBMITTAL
SENECA COUNTY, OHIO

PREPARED FOR:
S POWER
SENECA WIND, LLC
2180 SOUTH 1300 EAST, SUITE 600
SALT LAKE CITY, UT 84106

PREPARED BY:
BENNETT, BREWER & ASSOCIATES, LLC
23 EAST MAIN STREET, SUITE 200
FROSTBURG, MARYLAND 21532

SUBMITTAL DATE: JULY 18, 2018

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1.0 INTRODUCTION AND EVALUATION CRITERIA

1.1 Project Description and Purpose

sPOWER is planning the development of a wind-powered electric generating facility in northern Ohio referred to as the Seneca Wind Project (the Project). As part of the Project development an application for a Certification of Compatibility and Public need from the Ohio Power Siting Board (OPSB) was prepared and this Transportation Study and Management Plan (TSMP) has been prepared in support of that application. This TSMP focuses on serving the public's interest, convenience and necessity as it relates to the roadway infrastructure necessary to construct the proposed Project. The purpose of this TSMP is to:

1. Identify a Preferred and Alternate delivery route to the Project Area; and
2. Evaluate the existing characteristics of the roadways and describe the anticipated impacts associated with construction vehicles and equipment delivery. Measures to improve existing roads and repair roads and bridges to at least the condition prior to construction are discussed.

The Project will include up to 85[1] wind turbines along with associated infrastructure such as an operations and maintenance building, access roads, electrical collection and transmission lines, substation(s), construction staging areas, and meteorological towers. It is located in Seneca County within the townships of Eden, Bloom, Venice, Reed and Scipio (hereafter referred to as the Project Area).

The turbines will be located at various locations across the Project Area and access to the proposed turbine sites for construction and operation will be from state, county, and township roads and where necessary new gravel access roads. Construction of the Project will cause temporary increases in truck traffic on area roadways due to the delivery of materials and equipment.

1.2 Methodology

This TSMP identifies and analyzes one (1) Preferred Route and one (1) Alternate Route for construction traffic. The evaluation identifies three Road Types:

1. Primary Roads - Interstate and 4-lane divided State highways;
2. Secondary Roads - 2-lane State highways; and
3. Tertiary Roads - 1 or 2-lane county and township roads.

The evaluation was based on State Highway 224 being used as the primary road to the Project Area. Therefore, the evaluation of the Preferred and Alternate routes originates at interchanges from this primary road (see Figure 1). The secondary roads are Ohio Department of Transportation (ODOT) roadways leading from intersections with the primary road to the Project Area. The Preferred Route is State Highway 224 and the Alternate Route is State Highway 4. The tertiary roads are township and county roadways originating from the secondary Roads to each of the proposed turbine access roads.

This TSMP includes a desktop study and on-site visual assessment of the probable primary and secondary roads and documentation of roadway limitations for load width pavement condition height grades intersection radii and sharp curve radii. The evaluation identifies locations where improvements to the road are likely needed to accommodate the size of the delivery and construction vehicles; figures are included that

[1] Only 85 turbines will be installed, however, up to 94 turbine sites have been evaluated.

graphically show these conceptual improvements. Research for state permits that are necessary for hauling the materials and equipment is also included. In addition, an on-site visual assessment of the Tertiary Roads was conducted.

Once selected, the turbine manufacturer will contract with a transportation company specializing in wind turbine component hauling and delivery. A more detailed Transportation Management Plan will be provided at a later date by the selected transportation company. The follow-up study may include surveys to identify roadway constraints such as horizontal and vertical alignments and overhead utilities. The follow-up study will identify necessary upgrades to roadways and intersections so that engineered construction plans can be prepared. In addition, the follow-up study will include a pre- and post-construction roadway survey so that the condition of the roadway infrastructure affected by the development is in the same or better condition as it was prior to construction.

1.3 Vehicle Types

The size and types of vehicles needed to deliver the turbine equipment depend on the specific Project and the model and manufacturer of the turbine being hauled. Turbine components can be classified as follows:

1.3.1 Wind Turbine Equipment

- Blade Sections - Blades are transported on trailers with one to three blades per vehicle. Blades typically control the length of the design vehicle and the radii of the curves along the travel route to the site. Specialized transport vehicles are designed with articulating (manual or self-steering) rear axles to allow maneuverability through curves.

- Tower Sections - Towers are typically transported in as many as five sections depending on the supplier. Towers generally do not control design vehicle length, but may control design vehicle height and/or width.

- Nacelle and Hub - The turbine nacelle, hub, and related elements are typically the heaviest components transported. Generally, the nacelle and hub are transported separately; the nacelle is the heaviest component.

- Escort Vehicles - Light trucks with signs and banners travel immediately in front of or behind oversized loads to provide warning to motorists of the oversized vehicle.

1.3.2 Construction Equipment and Materials

- Construction of Site Access Roads – Used by conventional trucks carrying stone, gravel and miscellaneous construction equipment.

- Crane – Used for assembly of the wind turbine towers cranes are transported in sections over numerous trips to the site.

- Concrete trucks – Used for pouring tower foundations.

- Various vehicles – Used for transporting construction staff and other incidental truck trips.

1.4 Design Vehicle Characteristics

Transportation of turbine components and associated construction material involves numerous conventional and specialized transportation vehicles. Wind turbine components (such as the tower sections, blades, and nacelles) are transported separately. The actual dimensions and specifications of the design vehicles may vary depending on the specific wind turbine supplier and components.

In anticipation of this study, sPower provided a variety of wind turbine generator (WTG) vendor information as a basis for various assumptions. Based on this information, and previous experience with these types of projects, sPower asked BBA to make assumptions for the design vehicle characteristics for this report. These assumptions are shown in Table 1.

A 204-foot (62.2-m) blade has been used for the purpose of this route evaluation. Therefore, a worst-case design vehicle was used for the evaluation, which has a 204-foot trailer component and total length of 225 feet. For purposes of this study, blade delivery trucks were assumed to have rear-steering capabilities.

Approximate vehicle dimensions for other construction components are also listed in Table 1. An experienced transportation provider will be used for the delivery of materials and turbine elements. For the purposes of this investigation, use of low-profile flatbed or open-bottom (Schnabel) truck trailers was assumed to offset overhead clearance limitations. Also, multi-axle trailers will be used to distribute oversized loads to acceptable levels as stipulated by state special hauling permits.

Table 1 - Design Vehicle Characteristics

Vehicle Characteristic	APPROXIMATE DIMENSION OF COMPONENT TO BE TRANSPORTED, INCLUSIVE OF VEHICLE			
	Blade	Nacelle	Tower Sections	Crane
Width of vehicle inclusive of load	12’	14.1’	14.1’	Unknown
Height of vehicle inclusive of load	14’	15.1’	15.1’	Unknown
Length inclusive of load and bumpers	225’	110’	188’	Unknown
Total weight of vehicle with 3 or more axels	80,000 lbs	354,000 lbs	233,000 lbs	Unknown
Weight Per axle for 2- axle	Unknown	Unknown	Unknown	Unknown

2.0 PROBABLE ROUTE EVALUATION

2.1 Probable Routes

Regarding the primary Road (Interstate 76) the interchanges appear to provide an adequate radius for a blade truck with rear-steering capability. At the toll booth locations there is typically a bypass for oversized loads. Blade delivery trucks may need to pass through the toll booths due to turning movement restrictions. The means of access from Interstate 76 will be verified after selection of a WTG model and the point of access along Interstate 76 is determined. Figure 1 shows a map of probable primary roads to be utilized for the Project.

As a part of this evaluation, a visual assessment of the probable secondary transportation roads was conducted by traveling the roadways listed below (see Figure 2 for location of roads). Tables 2A and 2B summarize the existing conditions of the secondary roadways.

Table 2A - Secondary Road Characteristics - Preferred Route

Road	From	To	2-Lane Width	Pavement Condition	Surface Type	Speed Limit
U.S. 224	I-76	1 MILE WEST OF S.R. 19	24’	GOOD	ASPHALT	VARIES
S.R.162	T.R. 81	1.4 MILES WEST	22’	GOOD	ASPHALT	55MPH
S.R. 119	U.S. 224	T.R. 8	22’	GOOD	ASPHALT	55 MPH
S.R. 67	T.R. 8	T.R. 58	22’	GOOD	ASPHALT	55 MPH

Table 2B – Secondary Road Characteristics – Alternative Route

Road	From	To	2-Lane Width	Pavement Condition	Surface Type	Speed Limit
S.R. 4	I-90	T.R. 8	22’	GOOD	ASPHALT	55 MPH

The Seneca County Engineer was contacted to discuss the viability of the Transportation Management Plan and load capacity of bridges and culverts within the Project Area. The Seneca County Engineer indicated that there are no "posted" bridge or culvert crossings on County or Township roads within the Project Area. During the course of this evaluation, no “posted” structures were observed along the secondary road routes. A bridge or culvert is 'posted' if it does not meet County or ODOT's loading/inspection requirements. At such time as the final Transportation Management Plan has been prepared, it will be submitted to both the ODOT and the Seneca County Engineer for detailed review and approval.

2.2 Constraints and Conceptual Improvements

Each of the secondary roads in Tables 2A and 2B have constraining features, particularly intersection radii.

Possible constraining points were investigated in the field and existing conditions were photo documented. The path of the worst-case design vehicle (i.e., blade truck) was evaluated along each of the potential travel routes to identify whether intersection improvements may be required. Figure 2 shows an overall map of all intersections within the Project Area. Figure 3 depicts design vehicle turning movements at each intersection throughout the Project Area.

Individual diagrams at each intersection were developed to show turning movements (Figures T1 through T84. An AutoTurn® turning simulation analysis was performed using the blade truck (worst-case design vehicle) to generate the turning movements shown in these figures. Turning movements were generated to avoid utilities where possible; however, it may be necessary to permanently and/or temporarily relocate some utilities to complete turning movements. These figures can be used as a basis for potential improvement areas for constrained intersections along the potential travel routes.

Due to turning capabilities of the assumed delivery vehicles tire paths may be shown outside the right-of- way limits. These limits will be confirmed when final information is obtained from the selected transportation provider. Impacts that would extend outside the right-of-way would require easements and/or land purchases from adjacent property owners.

The secondary roads were observed for height limitations. Permanent structures that cross over the road and restrict the clearance for oversized loads (such as bridges and overpasses) were found along the secondary roads. Along the Alternate Route (State Route 4), there were no overpasses or bridges over the road. Along the Preferred Route (State Route 224), there were multiple overpasses. No observations indicated a less-than-legal overhead clearance for these structures. The ODOT Location and Design Manual Figures 3 2-1E and 3 2-2E indicate that the minimum vertical clearance for Interstate and Other Freeway Bridges to remain is 14.5 feet. The selected transportation company will investigate the actual vertical clearances at these locations using the selected wind turbine and component delivery vehicles. For overhead cables the national standard for minimum clearance over roads is 15.5 feet; cables cross over the studied roadways in numerous locations. In the areas of likely intersection improvements (see Figures T1 through T73), cables and poles running parallel to the road may be in conflict with the travel routes. However, utility providers can (for a fee) temporarily or permanently raise the cables and/or move the poles. Therefore, existing cables should not be a limiting feature for the roads.

The secondary roads were observed for potential vertical curve/gradient limitations. Generally, the terrain throughout the Project Area is flat; the secondary road gradients were observed to be significantly less than 10%. Active railroads cross the Project Area at multiple locations. Typically, the railroad beds appear to have been constructed at or above grade with road approaches that are elevated to meet the rail line. Railroad crossing approach improvements (i.e., profile modifications) may be necessary to provide a more gentle transition over the rail intersections and prevent a delivery vehicle from "bottoming out". A more detailed investigation for necessary improvements at the rail locations will be performed during design of the infrastructure improvements when the capabilities of wind turbine component delivery vehicles are known.

2.3 Loads and Permits

Special hauling permits are required when loads exceed legal dimensions or weights. Table 3 summarizes these maximum legal dimensions for State of Ohio highways. Transportation of the blades, nacelles, tower sections, and cranes will require Special Hauling Permits for a variety of criteria. Each vehicle must receive

an individual Special Hauling Permit from the ODOT Central Office. Permits are issued by ODOT for various vehicle criteria but all permits have the name "Special Hauling Permit."

The specifications of the Special Hauling Permit depend on the characteristics of the vehicle, its cargo and the duration of the delivery schedule. The total weight of nacelles combined with the transport vehicle can exceed 360,000 pounds. If any vehicle exceeds 120,000 pounds, 14 feet wide, or 14.5 feet in height, a permit via the "super load" process is required. Table 3 presents the criteria for Special Hauling Permits as well as the approximate dimensions for the Project delivery vehicles. The Special Hauling Permit fees and the Special Hauling Permit application are included in Appendix B.

Table 3 - Dimensional Criteria for Special Hauling Permits

Vehicle Characteristic	State Highway Limit	State Highway Limit with Special Hauling Permit	Approximate Dimension of Component to be Transported, Inclusive of Vehicle			
			Blade	Nacelle	Tower	Crane Sections
Width of vehicle inclusive of load	8.5 Feet	none	12’	14.1	14.1’	Unknown*
Height of vehicle inclusive of load	13.5 Feet	none	14’	15.1'	15.1'	Unknown*
Length of vehicle inclusive of load and bumpers	85 Feet	none	225’	110’	188’	Unknown*
Total weight of vehicle with 3 or more axles	80,000 Pounds	none	79,000 lbs	354,000 lbs	233,000 lbs	Unknown*
Weight Per axle for 2-axle group	34,000 Pounds	usually 46,000 lbs Pounds	Unknown	Unknown	Unknown	Unknown*

*Crane sections are typically designed to be disassembled and transported without Super Load Permits

2.4 Conclusions for Secondary Roads

The purpose of this evaluation was to identify probable secondary travel routes; identify constraints for height, width, turning radii, and weight along the routes; and determine potential improvements required for delivery of major wind turbine components during the construction of the Project.

Along the Preferred Route height constraints including bridges/overpasses and some overhead cables were identified. Improvements may be necessary at the railroad crossings on State Route 162 and State Route 224, and at select intersections. Special hauling permits will be required for many components.

Along the Alternative Route no height or width constraints other than overhead cables were identified improvements may be necessary at select intersections and special hauling permits will be required for many components.

Special hauling permits will also be required due to the weight of the components; however, specialized transport vehicles with numerous axles can be used to distribute the weight and minimize the effects to the roadway and comply with the special hauling permit requirements.

3.0 PRELIMINARY ASSESSMENT OF TERTIARY ROADS

3.1 Visual Observation Results

The following roads were investigated on a preliminary basis and a general summary of the results is presented below.

1. County Road 58 from County Route 43 west to approximately 0.3 mile west of Township Road 171:
   Average 19-foot pavement width; asphalt in good condition with berm; double yellow paint striping, no shoulder either side, probable turning constraints; possible low overhead electric lines along road at multiple locations; a box culvert with shallow cover was observed along this route.

2. County Road 43 from Township Road 58 south to County Road 58:
   18-foot pavement width; asphalt pavement in fair condition with minor fatigue cracking; double yellow paint striping; probable turning constraints; possible low overhead electric lines along road at multiple locations; a 24-foot wide bridge; and two large-diameter reinforced concrete culverts observed.

3. Township Road 44 from County Route 43 west to approximately 0.6 mile west of Township Road 171:
   Average 10-foot pavement width; asphalt in good condition with berm; no paint striping, 12-inch gravel shoulder one side, probable turning constraints; possible low overhead electric lines along road at multiple locations.

4. County Road 6 from County Route 43 west to approximately 0.65 mile west of Township Road 171:
   Average 20-foot pavement width; asphalt in good condition with berm; double yellow paint striping, no shoulder either side, probable turning constraints; possible low overhead electric lines along road at multiple locations; a26-foot wide bridge was observed along this route.

5. Township Road 197 from U.S. 224 north to Township Road 12:
   Average 19-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; no defined shoulder; probable turning constraints; possible low overhead electric lines along road at multiple locations.

6. Township Road 12 from Township Road 197 west 0.5 mile:
   Average 18-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; no defined shoulder; probable turning constraints; possible low overhead electric lines along road at multiple locations; one box culvert.

7. Township Road 81 from U.S. 224 north to State Route 162:
   Average 18-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; no defined shoulder; probable turning constraints; possible low overhead electric lines along road at multiple locations; one railroad crossing; one box culvert

8. Township Road 104 from U.S. 224 east to Township Road 81:
   Average 10-foot pavement width; asphalt pavement in good condition with minor cracks in berm;

no striping; 2-foot-wide gravel shoulders each side; probable turning constraints; possible low overhead electric lines along road at multiple locations; one arched cmp culvert.

9. Township Road 104 from Township Road 81 east 1.4 miles:
   Average 16-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; no gravel shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; one railroad crossing.

10. Township Road 8 from Township Road 81 east 1.3 miles:
    Average 10-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; 2-foot gravel shoulder north side; probable turning constraints; possible low overhead electric lines along road at multiple locations; one box culvert and one bridge in poor condition.

11. Township Road 8 from Township Road 81 west 3.67 miles:
    Average 10-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; 1-foot gravel shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; multiple culvert crossings.

12. Township Road 8 from State Route 19 to State Route 67:
    Average 18-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; no shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations.

13. County Road 16 from State Route 67 to Township Road 173:
    Average 19-foot pavement width; asphalt pavement in good condition with minor cracks in berm; double yellow paint striping; no shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; multiple culvert crossings.

14. Township Road 173 from County Road 16 south to County Road 12:
    Average 18-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; no shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; one bridge 24’ wide.

15. Township Road 173 from County Road 12 south 0.67 mile:
    Average 10-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; 1-foot gravel shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; one bridge 24’ wide bridge; one culvert with 12-foot wide travel way.

16. Township Road 58 from State Road 67 to County Road 43:
    Average 11-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; 1-foot gravel shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; one bridge crossing.

17. Township Road 58 from State Road 67 to Township Road 17:
    Average 18-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; no shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; one culvert crossing.

18. Township Road 58 from Township Road 17 0.75 mile west:
    Average 12-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; 1-foot gravel shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; one culvert crossing.

19. Township Road 79 North from Township Road 8 south to State Route 224:
    Average 10-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; 2-foot gravel shoulder both sides; probable turning constraints; possible low overhead electric lines along road at multiple locations; multiple culvert crossings; probable modifications to railroad crossing (i.e., modify profile) near County Road 36.

20. Township Road 79 South from State Route 224 approximately 0.25 mile south to new access road:
    Average 14-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; 1-foot gravel shoulder both sides; probable turning constraints; possible low overhead electric lines along road at multiple locations; no culvert crossings observed.

21. Township Road 77 from State Route 224 to approximately 0.20 mile north of Township Road 106:
    Average 12-foot pavement width; asphalt pavement in fair condition with minor cracks in berm; no striping; no shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; multiple culvert crossings.

22. Township Road 106 from State Route 19 approximately 0.25 mile west to new access road:
    Average 17-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; probable turning constraints; possible low overhead electric lines along road at multiple locations; no culvert crossings observed.

23. Township Road 106 from Township Road 181 to approximately 0.30 mile east of Township Road 77:
    Average 17-foot pavement width; asphalt pavement in good condition with minor cracks in berm; no striping; no shoulders; probable turning constraints; possible low overhead electric lines along road at multiple locations; no observed culvert crossings.

4.0 POTENTIAL IMPACTS TO ROADWAYS

The development of the Project has the potential to create transportation impacts as a result of short-term construction activities. The following sections estimate the trip generation for construction vehicles during the Project and outline steps for mitigating the impacts to roadways.

4.1 Construction Traffic

The Project Area is served by state and local roadways. To deliver the turbine components, concrete, gravel, equipment, and construction workers to each turbine site during the construction of the facility these roads will experience temporary increased truck traffic. The exact construction vehicles have not yet been determined but the following assumptions provide an order-of-magnitude estimate for the trip generation for each truck type:

- Gravel trucks with capacity of approximately 10 cubic yards (CY) per truck and an estimated gross weight of 75,000 pounds for access road construction (estimated total of 13,000 trips throughout construction).

- Concrete trucks for construction of tower foundations with capacity of approximately 8 CY per truck and an estimated gross weight of 75,000 lbs (estimated total of approximately 7,600 trips throughout construction).

- Flatbed trucks (multiple axles to distribute loads) for transporting turbine components. These trucks can have gross weights up to 360,000 lbs; lengths (inclusive of tractor) up to 225 feet; widths up to 14.1 feet; and heights up to 15.1 feet. The estimated trips for each turbine component are as follows:

    - Blades – 1 per truck; 282 trips
    - Towers – 4 tower sections per turbine; 376 trips
    - Nacelle and Hub – 3 loads per turbine; 282 trips

- Pickup trucks for equipment and tools.

- Trucks and cars for transporting construction workers.

- Oversize trucks for crane assembly/erection.

A final delivery route has not yet been confirmed but it is likely that delivery of turbine components to the Project Area will be from the east from Interstate 76 (Pennsylvania Turnpike) to State Route 224 or from the northeast by way of Interstate-8/9 (Ohio Turnpike) to State Route 4. Within the Project Area several county and township roads and new gravel access roads will likely be used to deliver components to each turbine site. Prior to construction such factors as highway limitations; planned work schedules for state and local roadways; road widening intersection improvements; utility re-locations; railroad crossing geometry modifications; potential delays; and bridge/culvert reinforcement will be assessed by the selected transportation company.

Oversized construction vehicles could cause minor delays on public roads in the vicinity of the Project but these are unlikely to be significant given the relatively low traffic volume through the area. Most of the impacts will be to transportation infrastructure due to roadway improvements for oversized

vehicles. Temporary turn-outs may be installed to allow uninterrupted flow of traffic and intersection widening may be used to accommodate the turning radius of over-length vehicles. Overhead utility line relocations will be needed in some areas to accommodate over-height vehicles and turning radii. Culvert and/or bridge reinforcement efforts may be necessary along main delivery routes for heavy vehicles.

There are locations along the identified routes where component delivery vehicles and construction traffic will cross into opposing lanes of traffic. With the assistance of Law Enforcement Officers (LEO) escorts and/or flaggers, maintenance of traffic (MOT) concerns will be adequately addressed.

4.2 Management of Potential Impacts

Prior to construction, the selected transportation provider will obtain all necessary permits from ODOT and the Seneca County Engineer. Permits will likely be required for oversized loads; new access points, improving existing roadways, and crossing highways with buried electrical interconnects. The final Transportation Management Plan will be provided to the government agencies prior to the start of the Project.

All public upgrades that may be required to accommodate construction vehicles will be identified as part of the final Transportation Management Plan based on the routes selected. The following measures may be utilized to avoid or minimize transportation-related impacts and/or to provide long-term improvement to the local road system:

Insufficient Roadway Width -

- Widening roadway width to accommodate construction vehicles
- Rerouting over-width vehicles to wider roadways

Insufficient Vertical Clearance -

- Temporarily relocating overhead utility lines and poles
- Permanently relocating overhead utility lines and poles
- Rerouting over-height vehicles to roadways with sufficient vertical clearance

Insufficient Cover over Drainage Structures -

- Adding temporary gravel
- Reinforcing structures with bracing
- Using bridge jumpers to clear structures
- Replacing structures prior to construction

- Repairing structures during or after construction if damaged by construction traffic
- Rerouting heavy-loaded vehicles to avoid structures

Poor Structure Condition -

- Repairing structure prior to construction
- Replacing structure during or after construction if damaged by construction traffic
- Using bridge jumpers to clear structures
- Rerouting heavy-loaded vehicles to avoid structures

Inadequate Bridge Capacity -

- Using bridge jumpers to clear bridges
- Reinforcing bridge with additional longitudinal or lateral support beams
- Replacing bridge components that provide insufficient capacity
- Rerouting heavy-loaded vehicles to avoid bridges

Insufficient Roadway Geometry -

- Constructing appropriate turning radii at intersections where construction traffic is anticipated. This includes clearing and grubbing of existing vegetation; grading of the terrain to accommodate the improvement; extension of existing drainage pipes and/or culverts; re-locating utility poles if necessary; re-establishment of ditch line if necessary; and construction of a suitable roadway surface to carry the construction traffic based on the existing geotechnical conditions.
- Rerouting over-sized vehicles to avoid insufficient roadway geometry
- Profile adjustments to roadways with insufficient vertical geometry

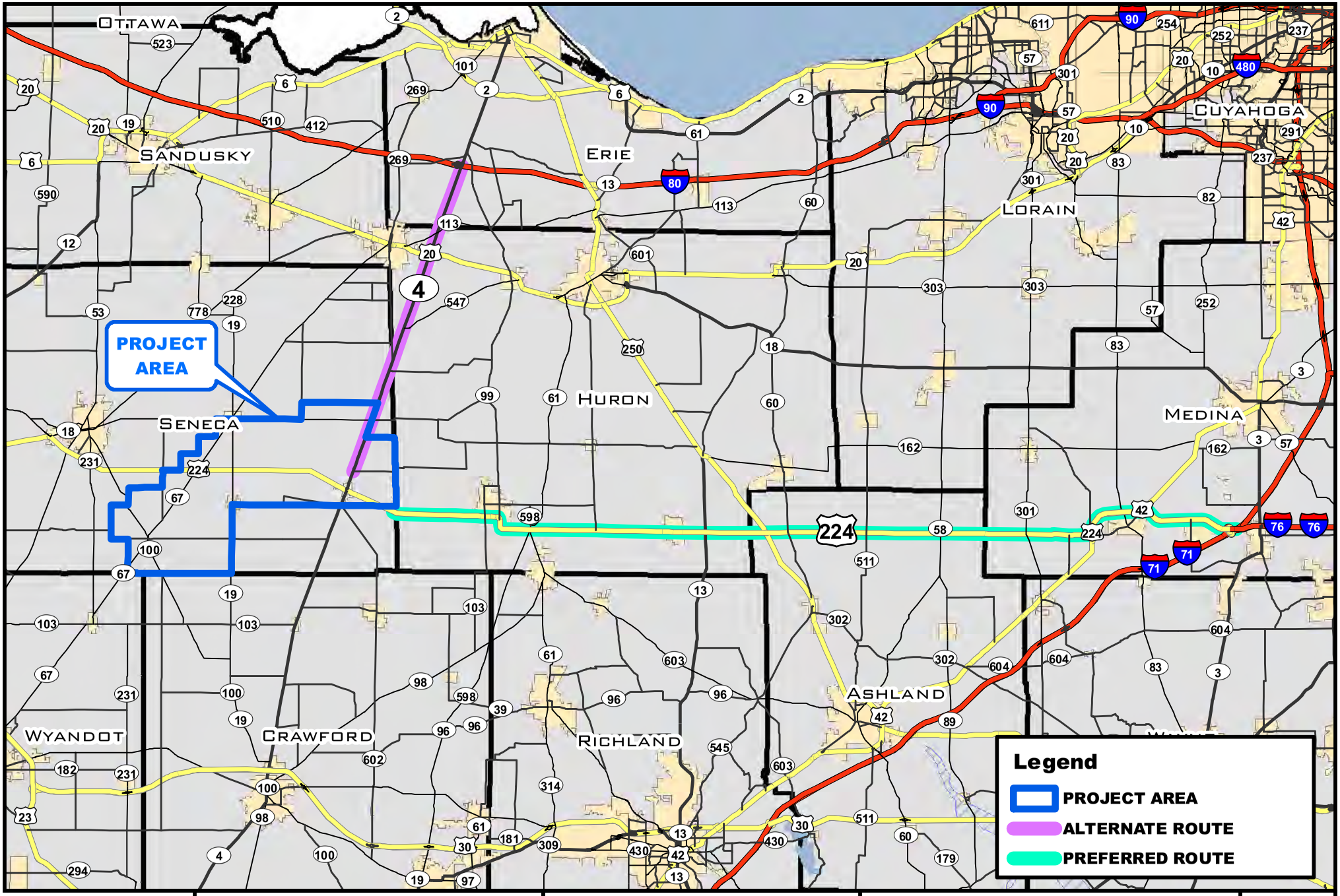
The selected roadways will also be video-documented to establish existing conditions prior to and after construction. Upon completion of the Project, sPower will at a minimum return all roadways to their pre- construction conditions. The process of documenting roadway condition and restoring impacted roads after construction will be performed in conjunction with state and local permitting and defined in the Road Use Maintenance Agreement (RUMA).

5.0 CONCLUSIONS

Based on information collected during the field investigation, delivery vehicle assumptions, and information sufficient infrastructure exists via primary and secondary roads to transport the turbine components to the Project Area. A number of intersection radii improvements will be required. Specialized transport vehicles are available to offset vertical clearance limitations at overpasses and bridges along the probable routes such as Interstate 76, Interstate-8 /9, State Route 224, and State Route 4. These vehicles are also capable of distributing the weights of loads to acceptable levels along the probable routes.

A transportation provider experienced with oversized loads will be engaged to provide a final Transportation Management Plan including all primary secondary and tertiary roads. The Plan will be developed in conjunction with the special hauling permit process for the Ohio Department of Transportation (and other state DOTs for out-of-state deliveries) and coordinated with the Seneca County Engineer. Construction plans will be prepared for any roadway or intersection improvements. These improvements could be temporary or permanent. All temporary improvements will be restored to their pre-construction condition following completion of construction. All work will be coordinated and approved by the appropriate regulatory agency prior to construction.

FIGURES



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Surveyors | Engineers | Planners
Bennett Brewer & Associates, LLC

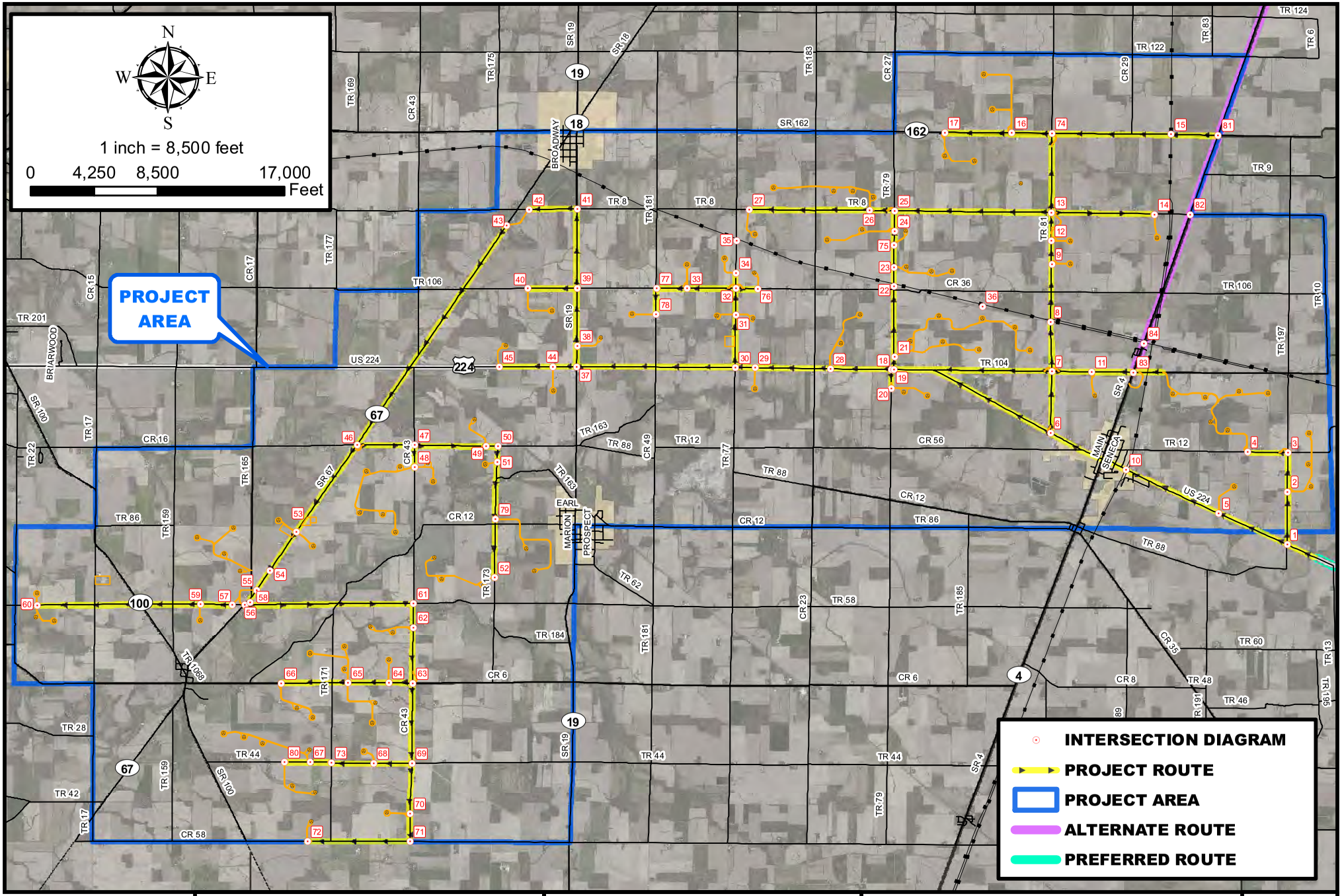
S·POWER
SUSTAINABLE POWER GROUP

SENECA WIND PROJECT
SENECA COUNTY
OHIO

DRAFT TRANSPORTATION STUDY AND MANAGEMENT PLAN
POTENTIAL ROUTES OVERVIEW
7/16/2018

FIGURE
1

Path: P:\2016\16034 - Exelon - Seneca Wind Exelon - Seneca County - Ohio\ARC\MXD\EXHIBIT\DELIVERY ROUTING\FIGURE 1-DELIVERY TO SITE.mxd



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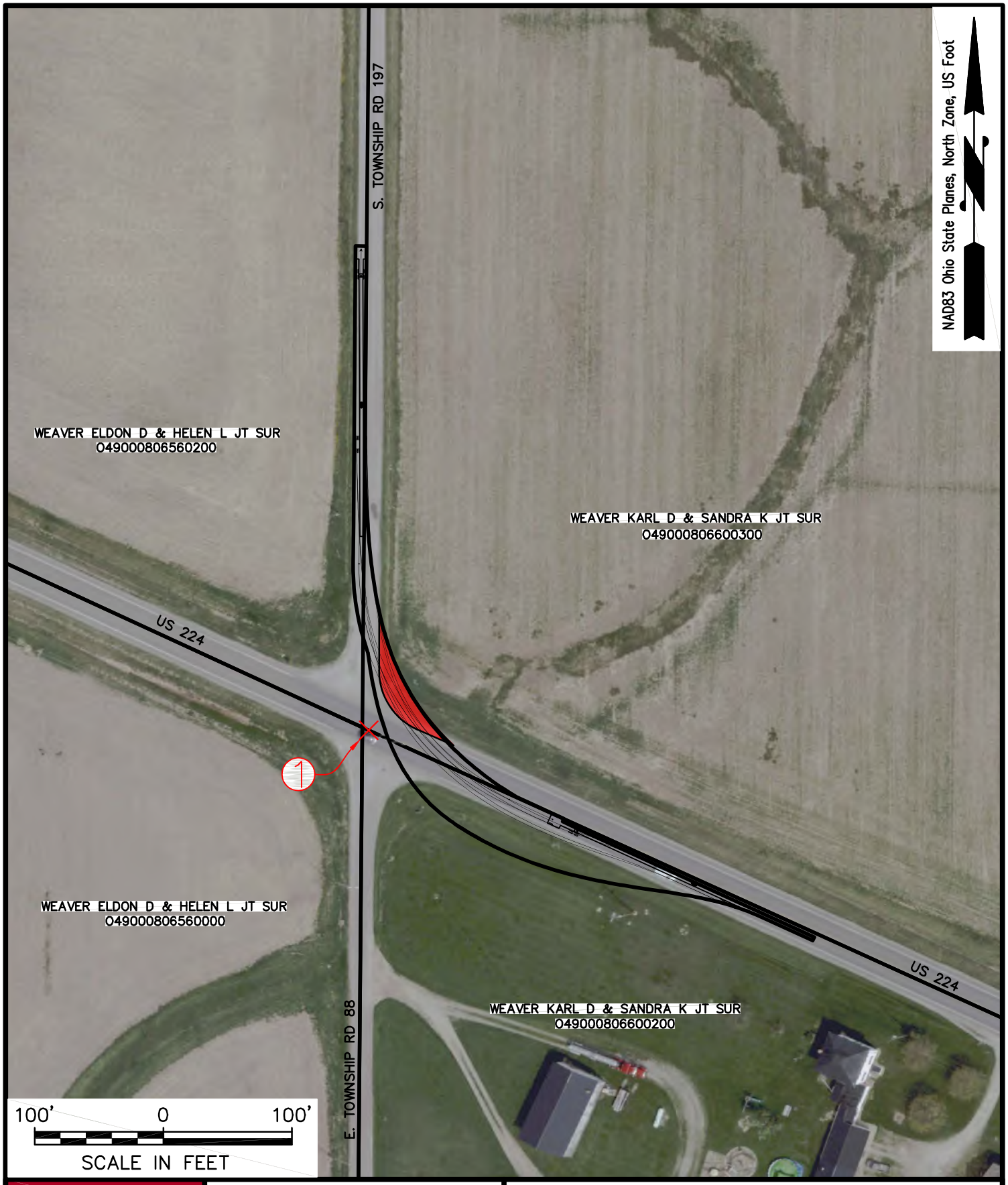
S·POWER
SUSTAINABLE POWER GROUP

SENECA WIND PROJECT
SENECA COUNTY
OHIO

DRAFT TRANSPORTATION STUDY AND MANAGEMENT PLAN (PROJECT AREA)
7/16/2018

FIGURE
2

Path: P:\2016\16034 - Exelon - Seneca Wind Exelon - Seneca County - Ohio\ARC\MXD\EXHIBIT\DELIVERY ROUTING\FIGURE 2-PROJECT AREA ROUTES.mxd



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PROJECT:
SENECA WIND

PROJECT NO.: 2018031

DATE: 07/18/18

FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T1

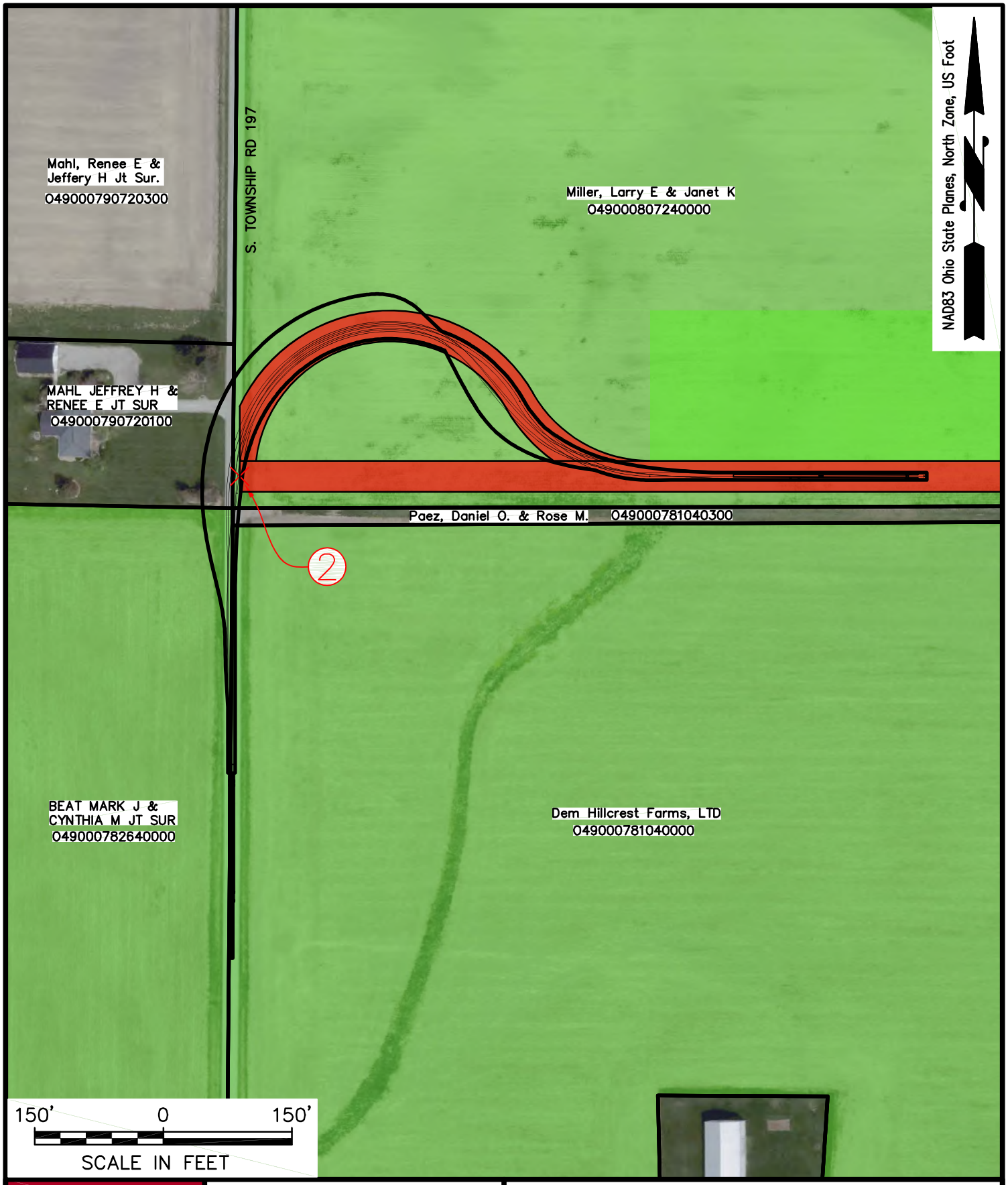

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T2

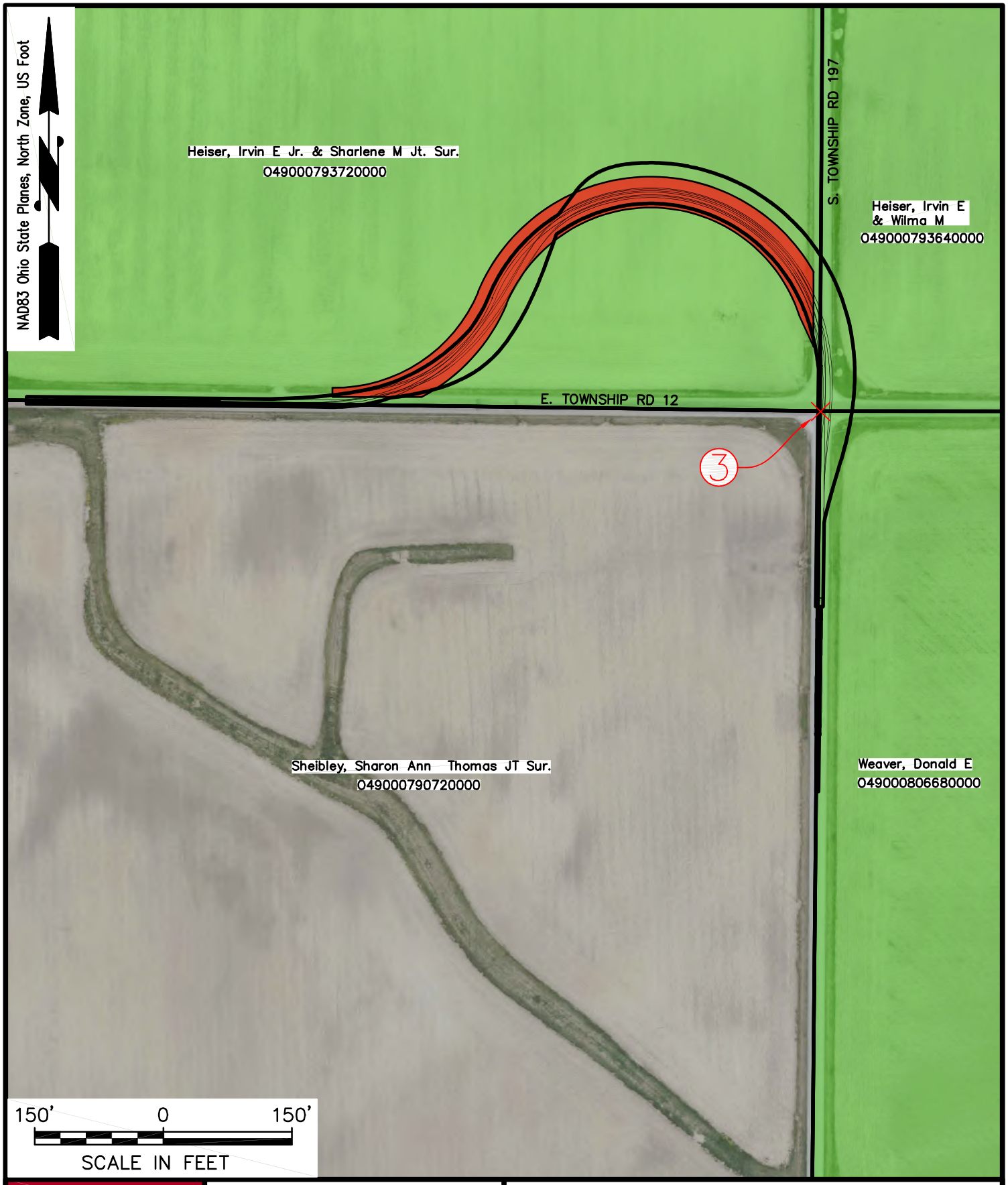

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T3

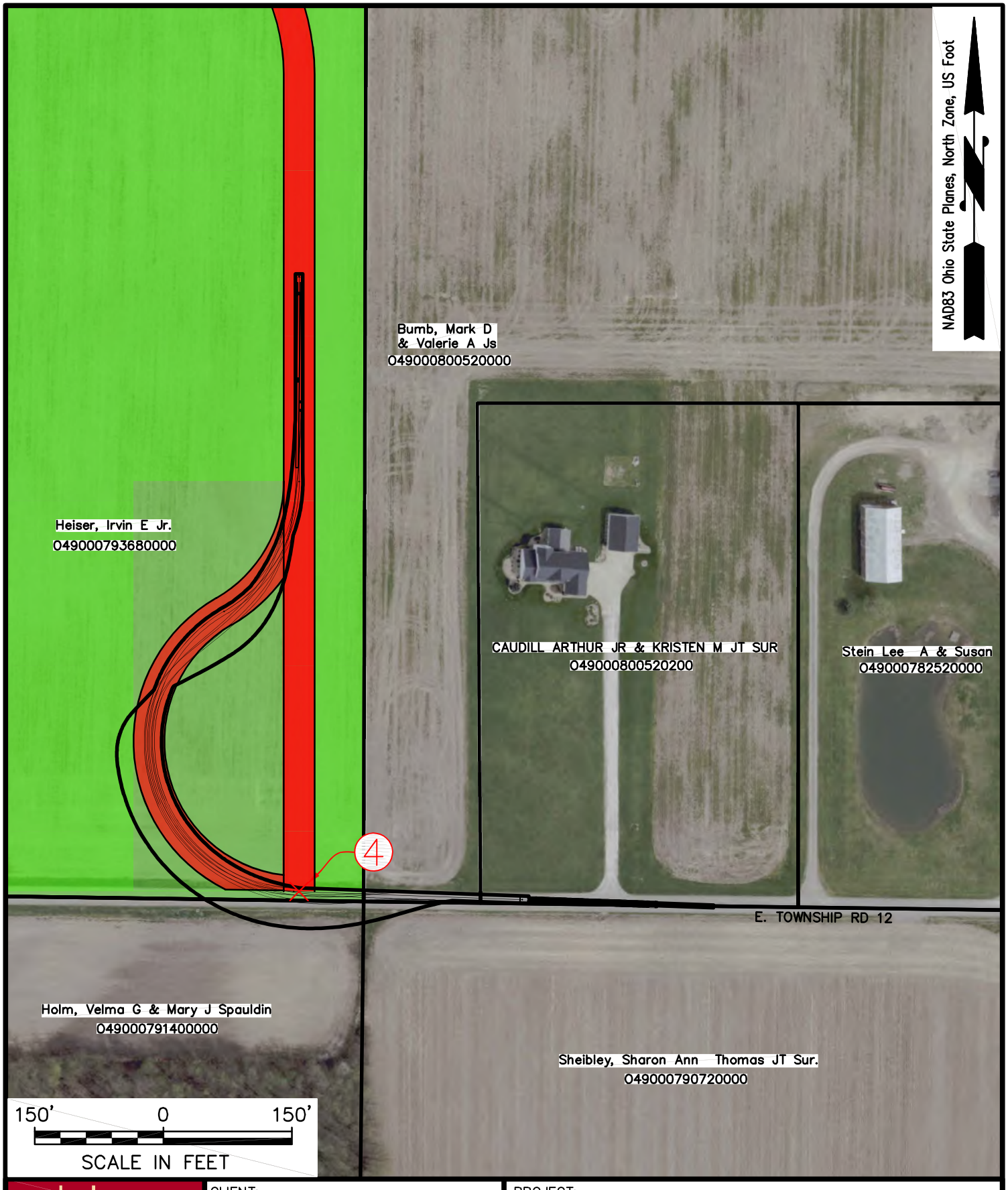

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T4

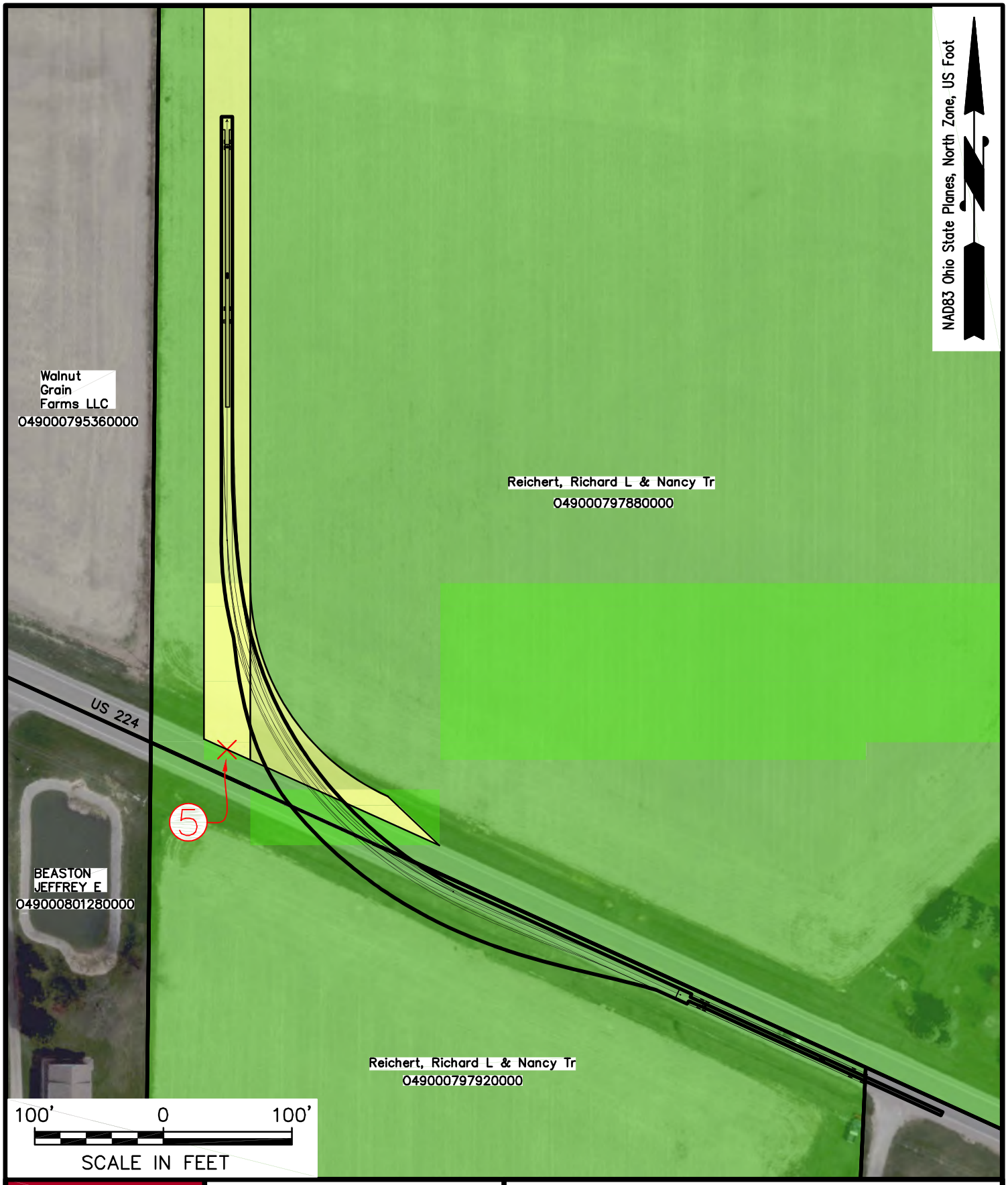

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T5

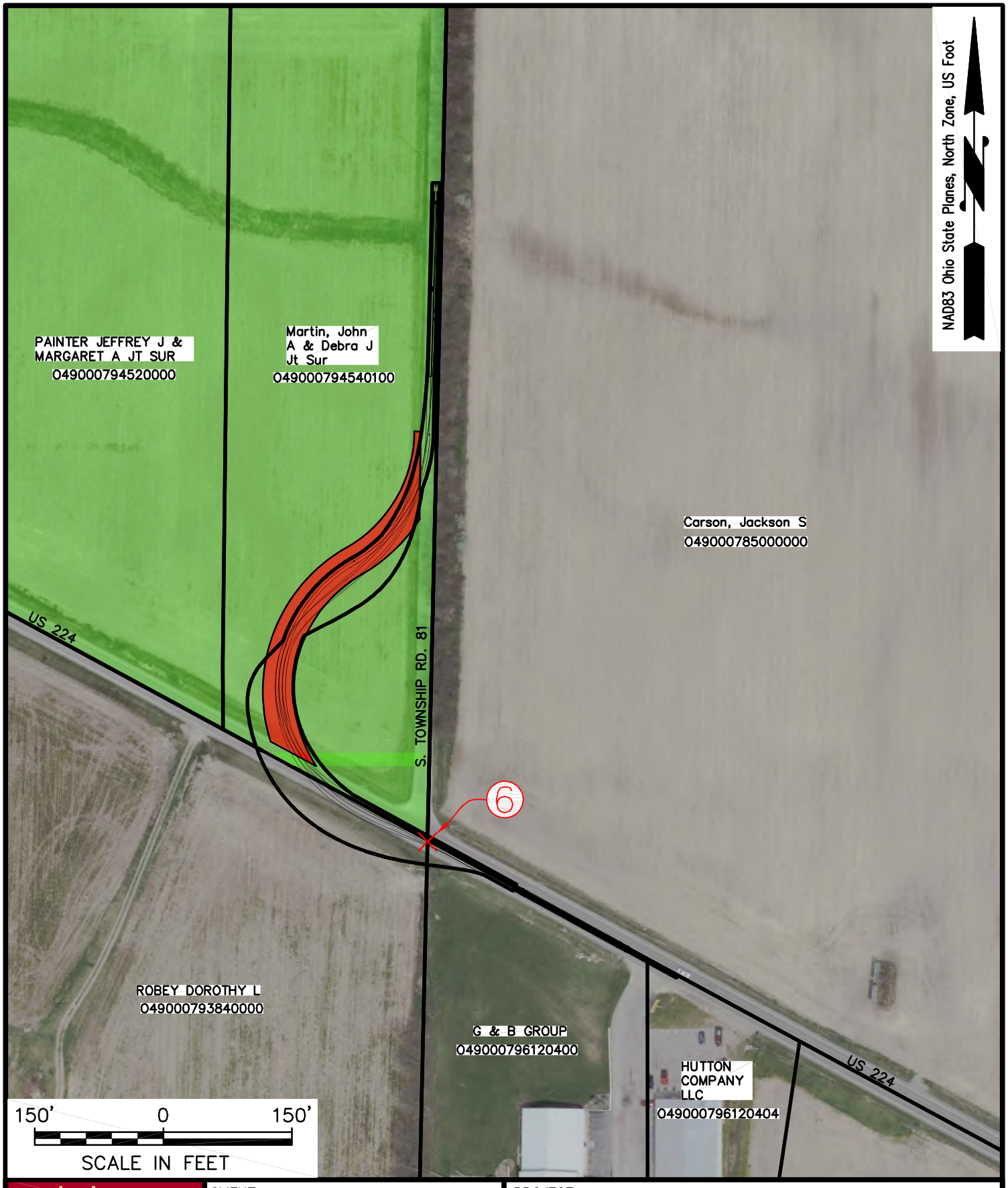

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T6

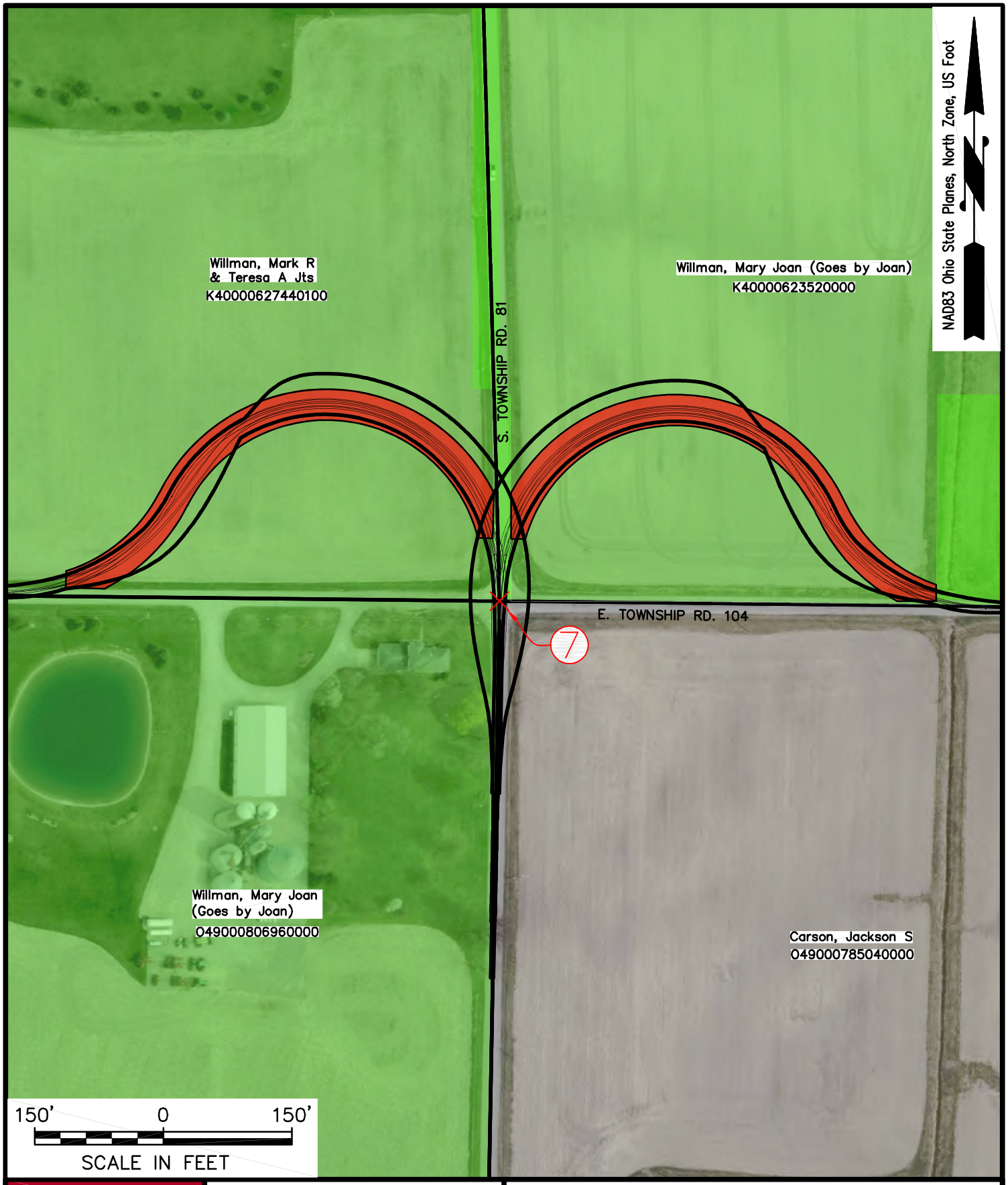

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T7

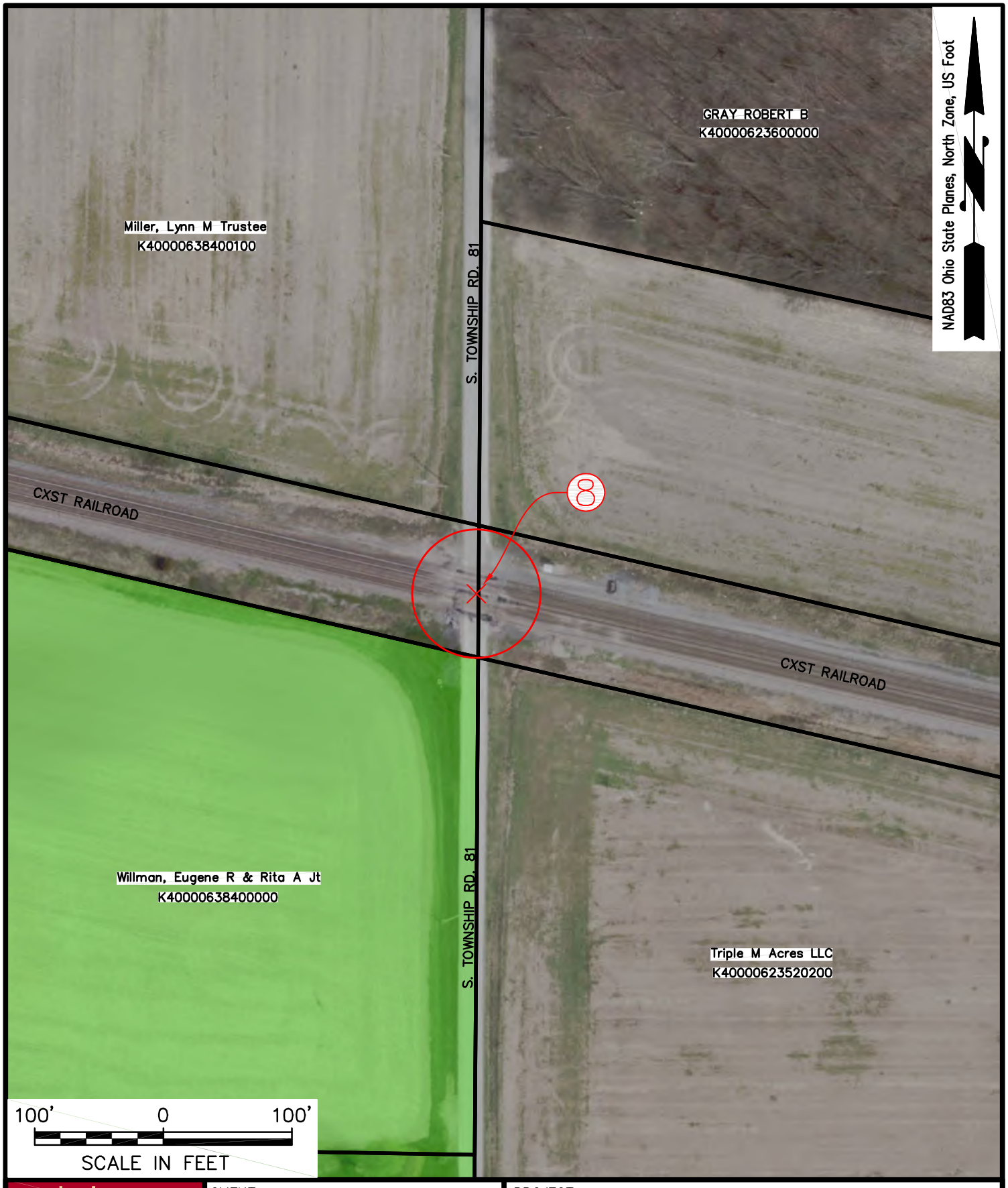

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T8

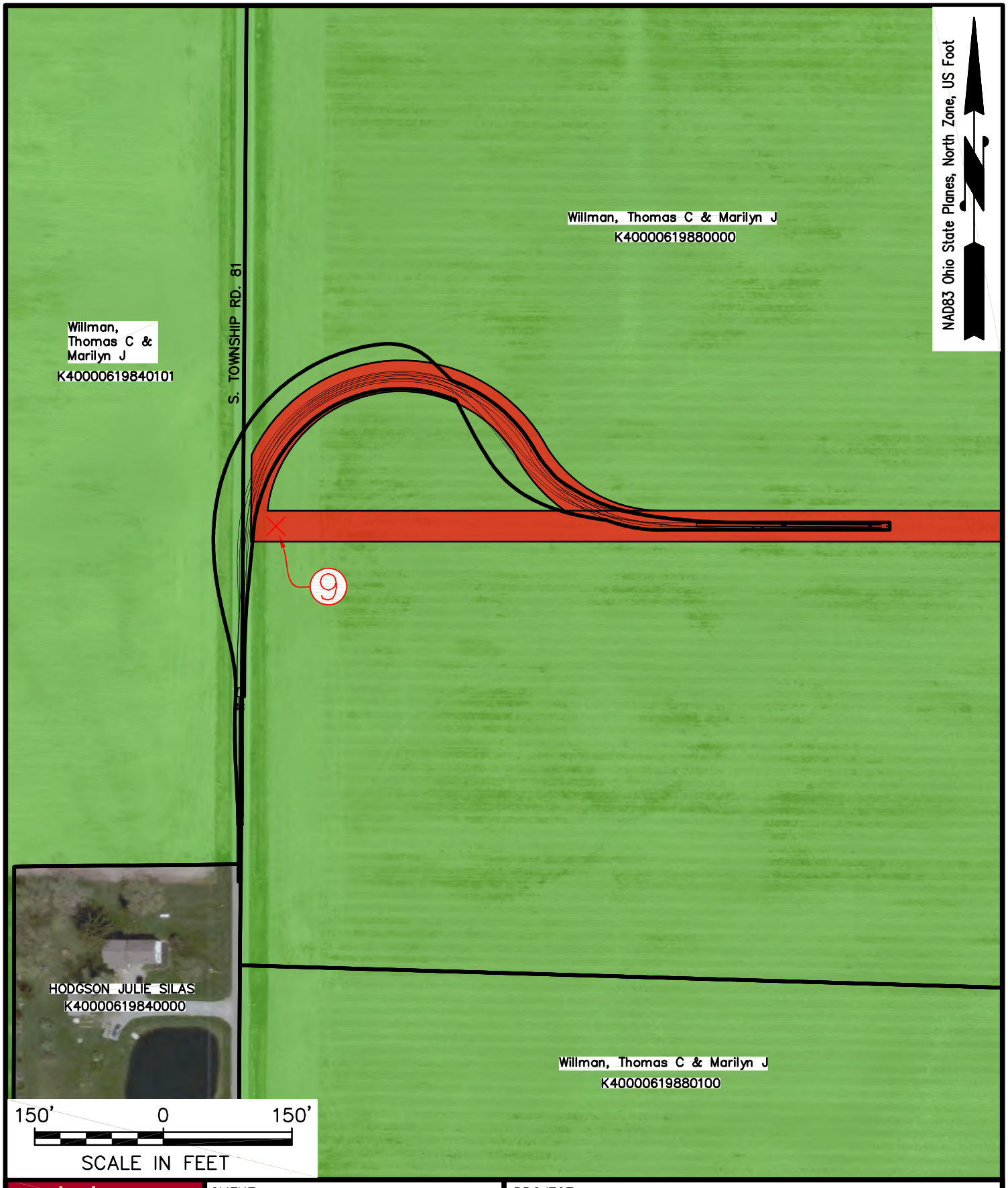

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T9

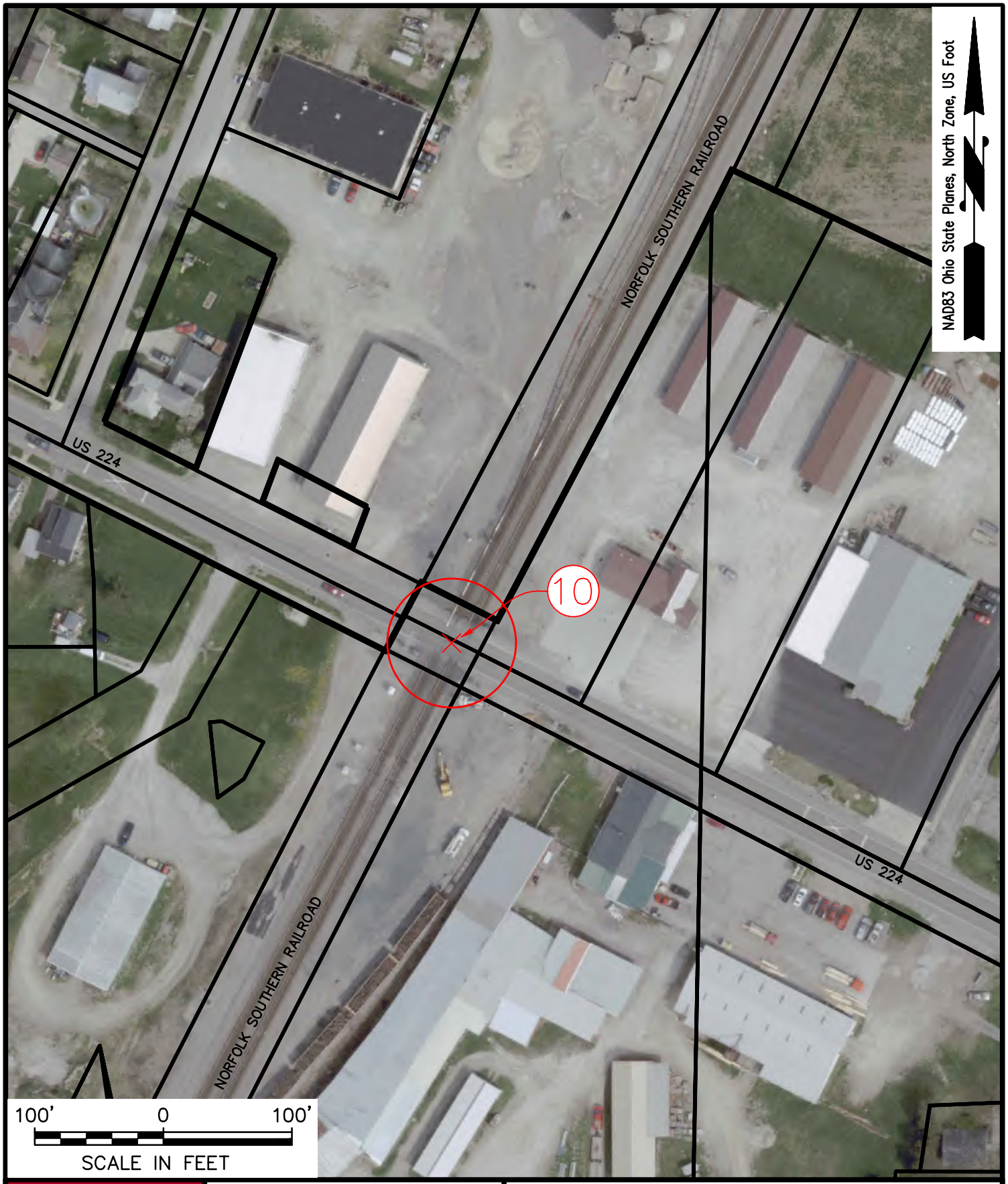

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T10

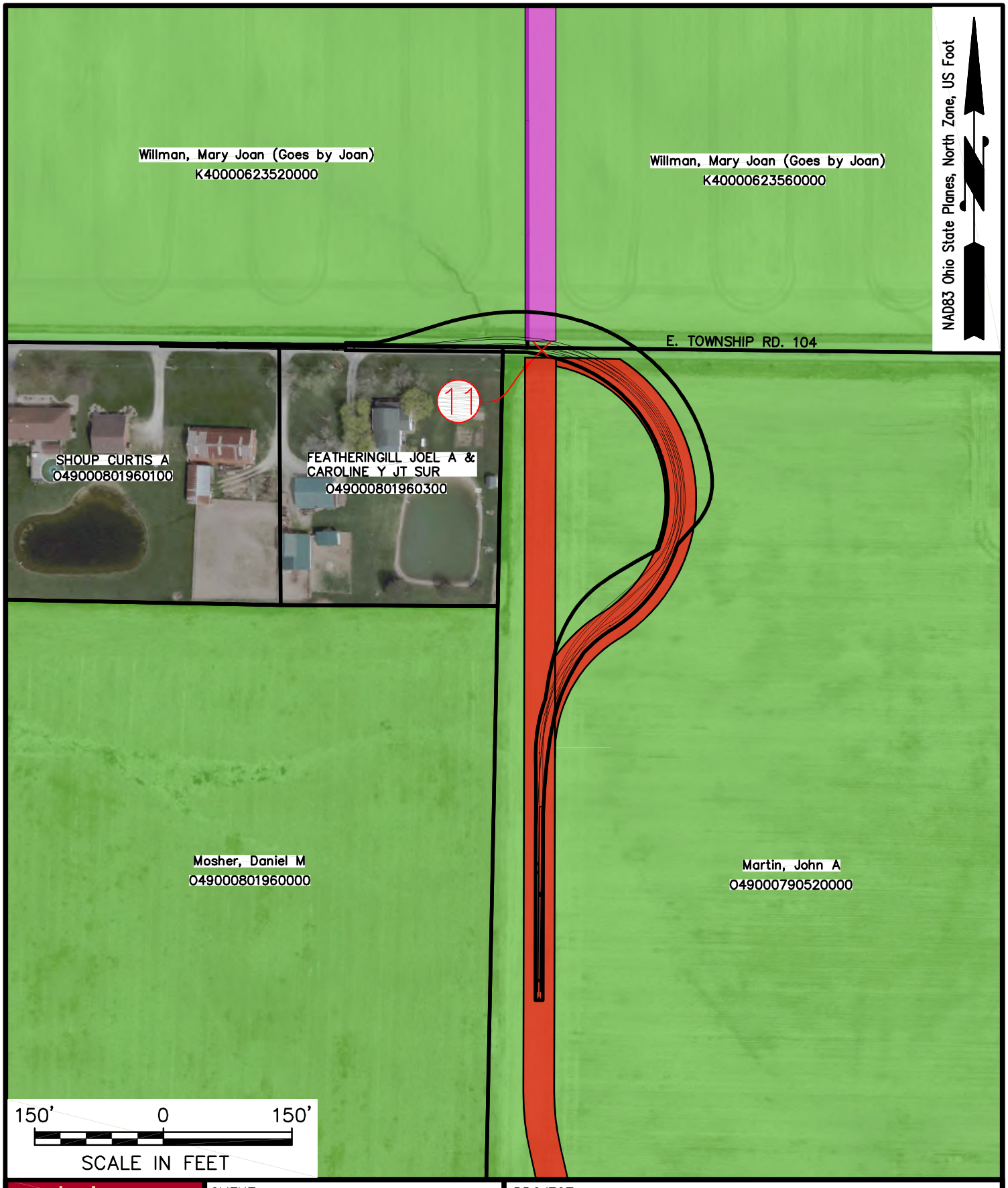

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T11

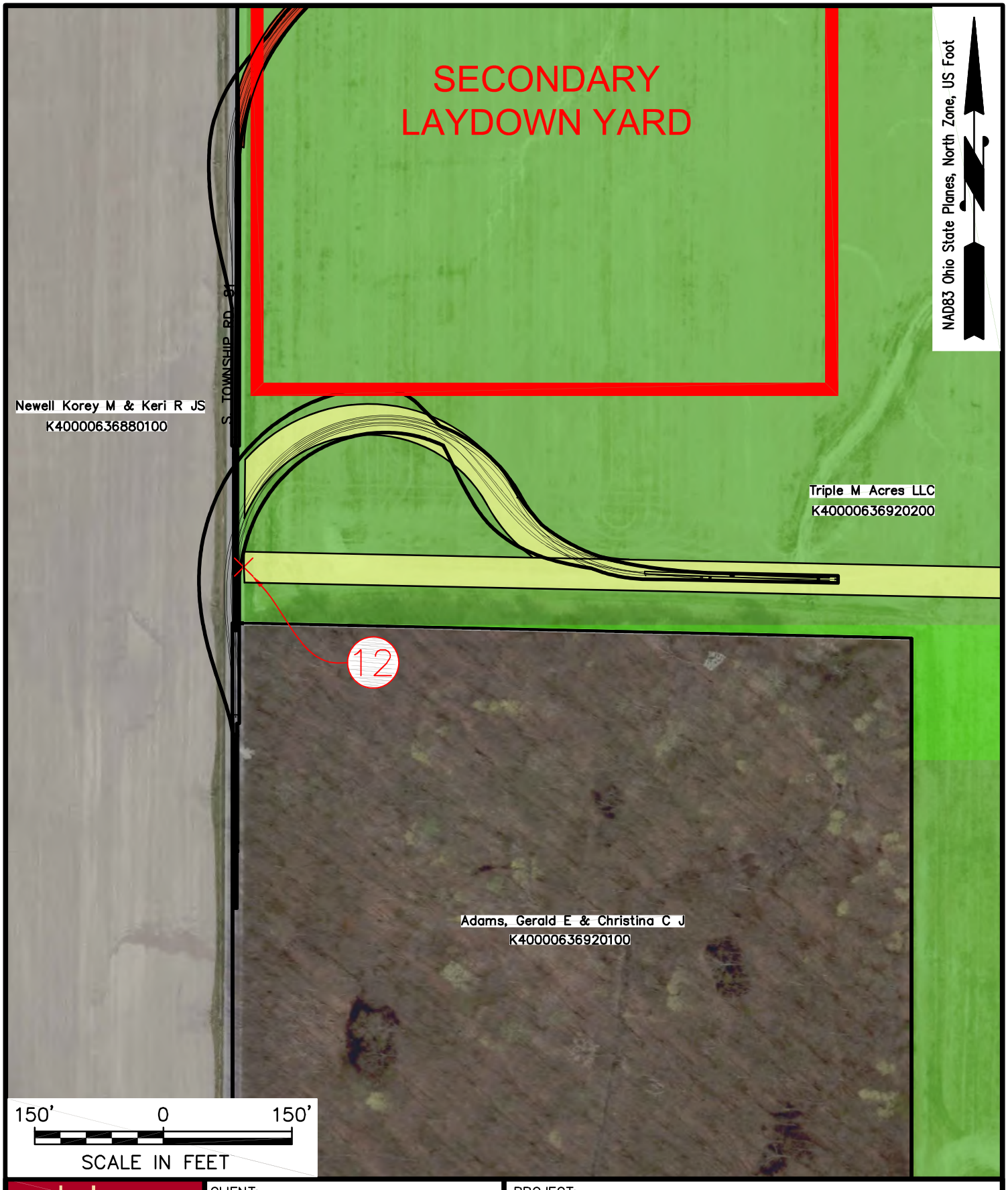

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T12

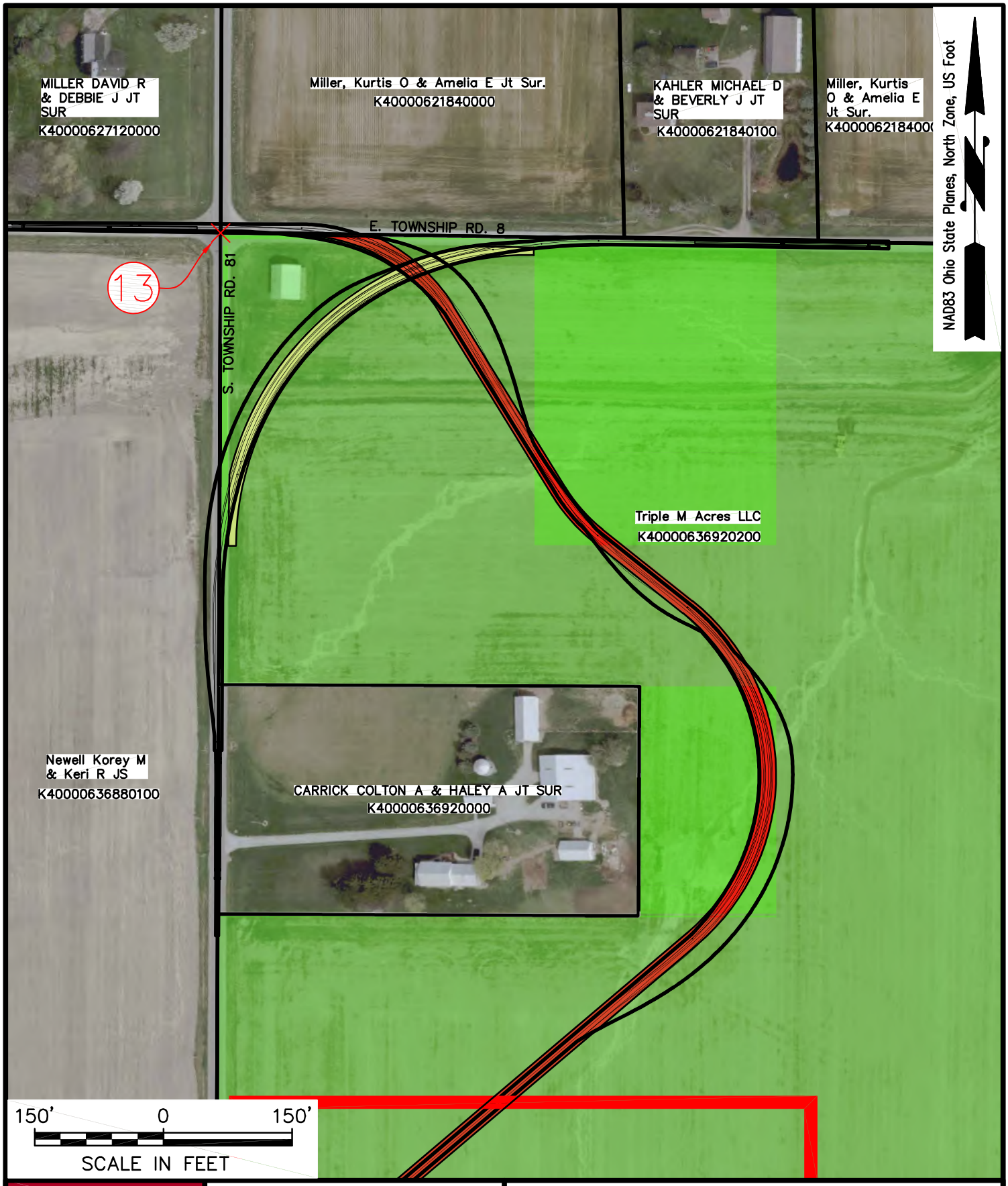

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T13

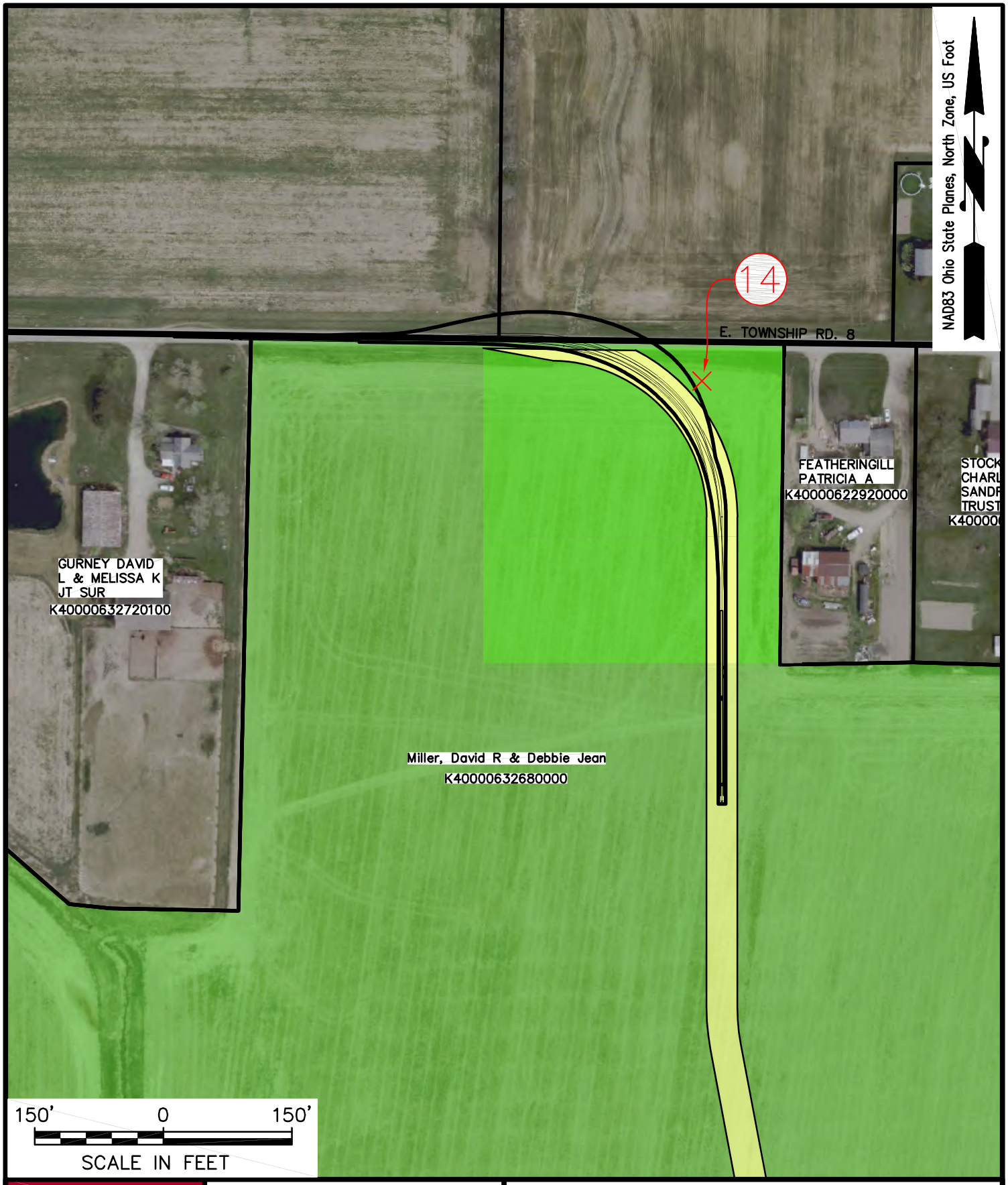

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T14

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T15

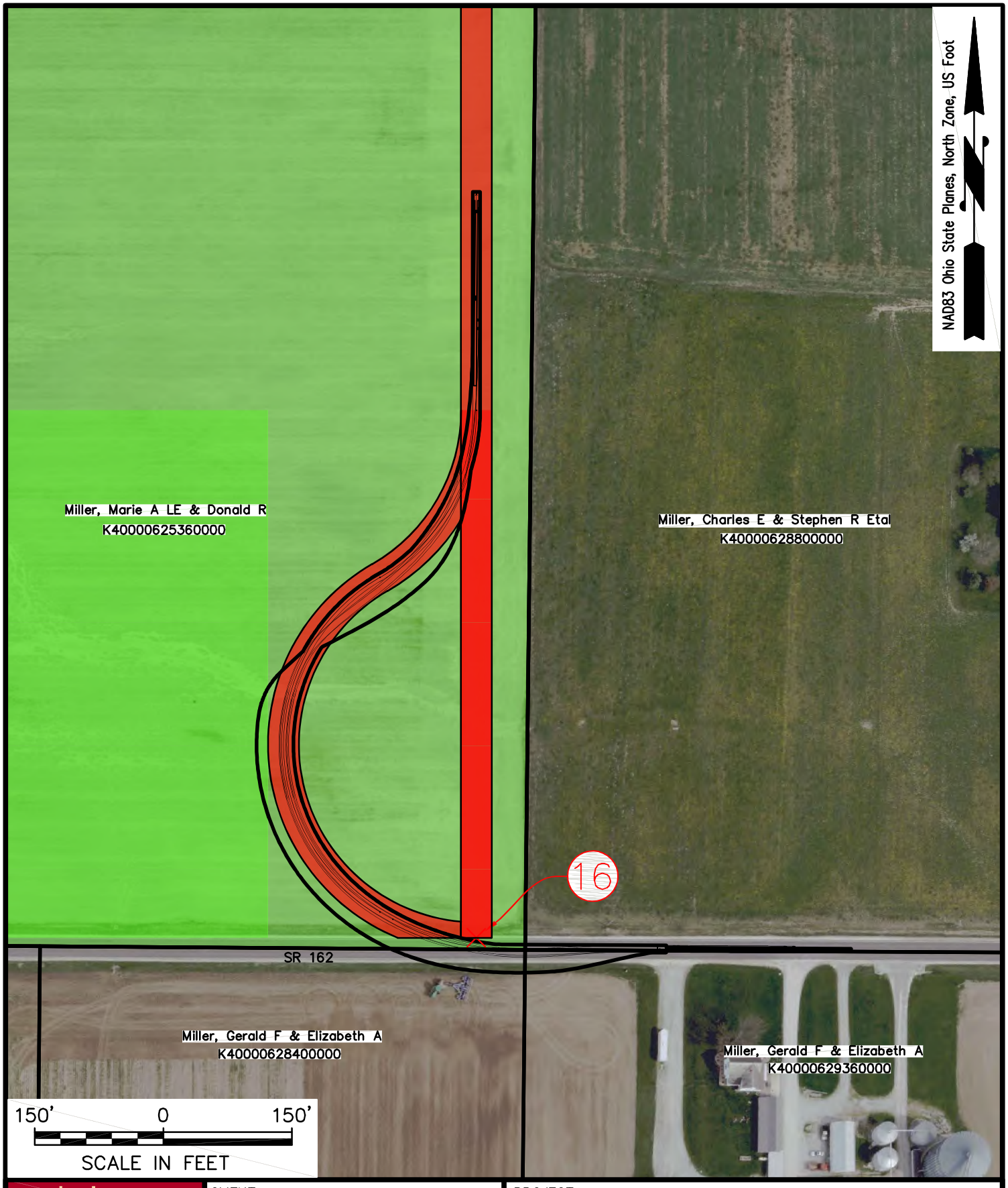

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T16

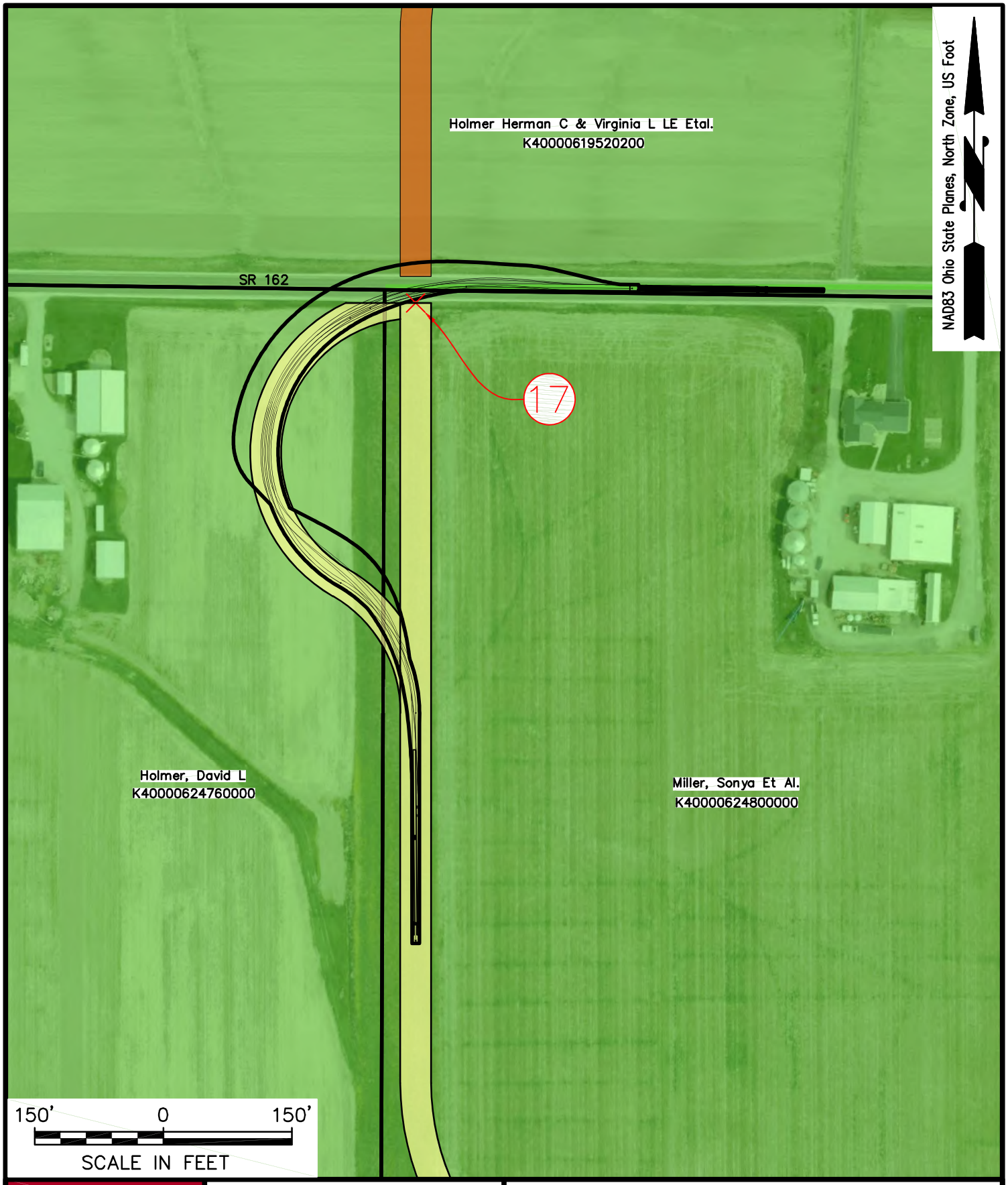

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T17

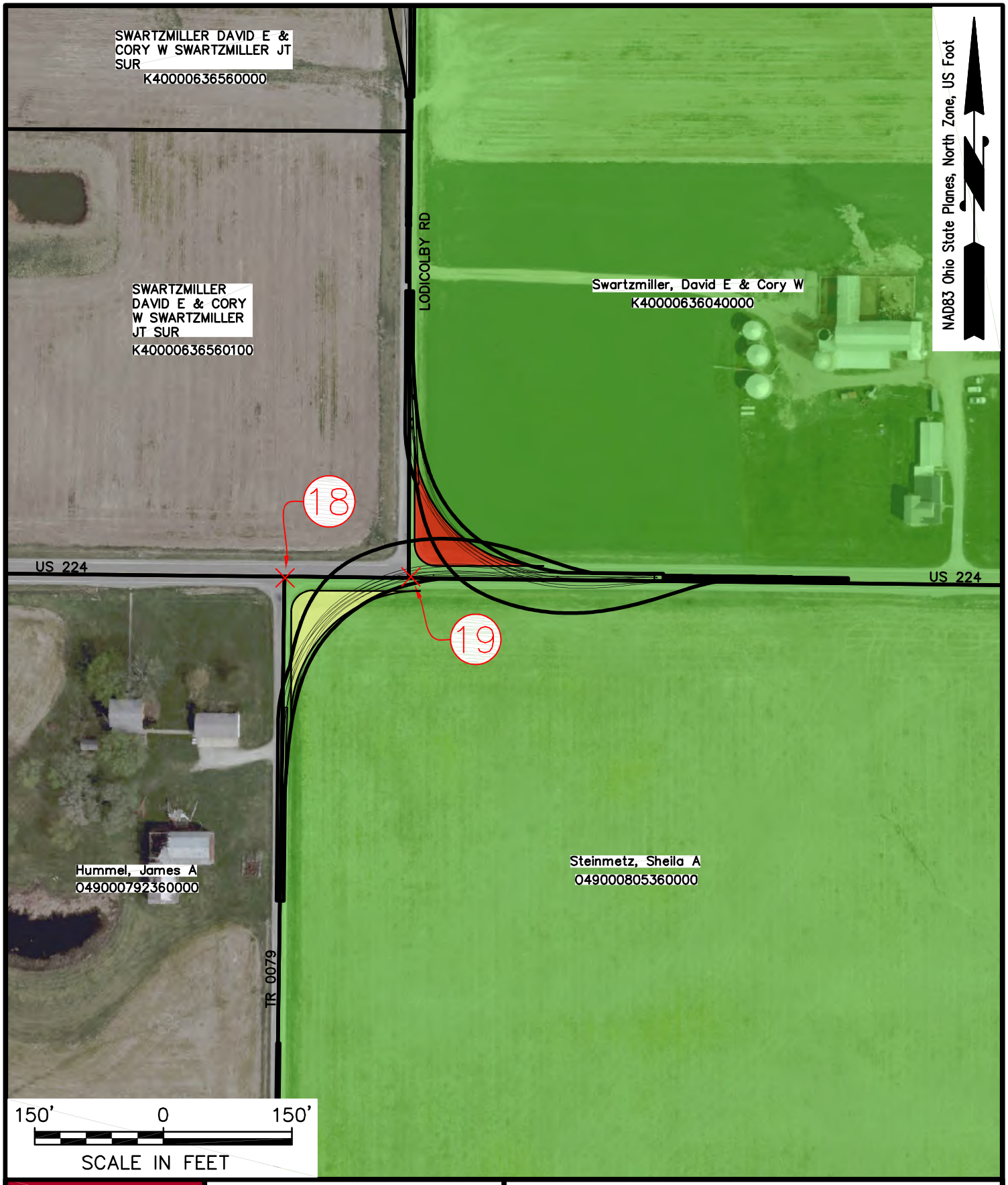

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T18

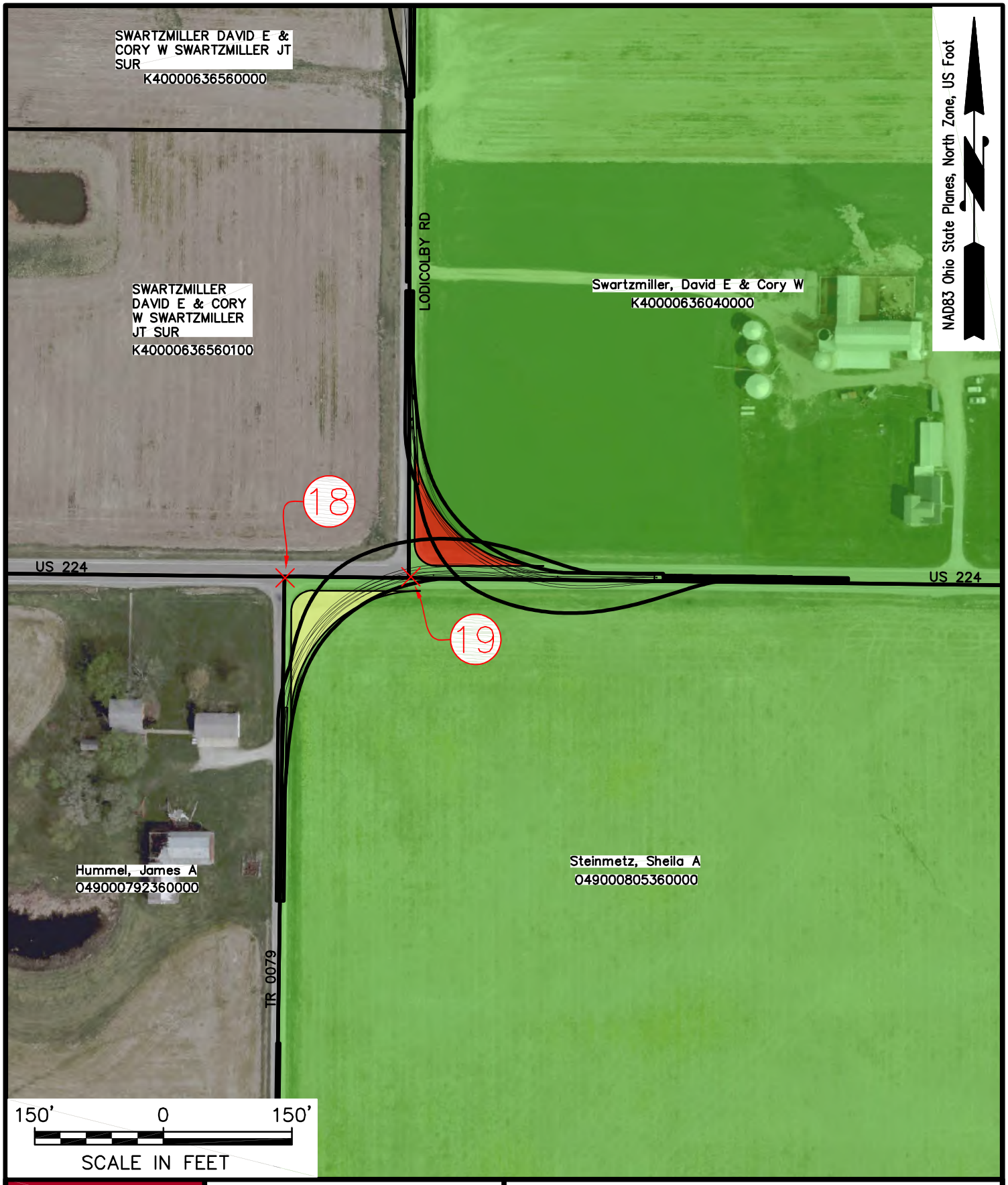

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T19

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FIGURE 3
TURNING MOVEMENTS EXHIBIT

SHEET:
T20

Summary: Correspondence Submitting Appendix E - Part 1 of 3 electronically filed by Teresa Orahood on behalf of Dylan F. Borchers