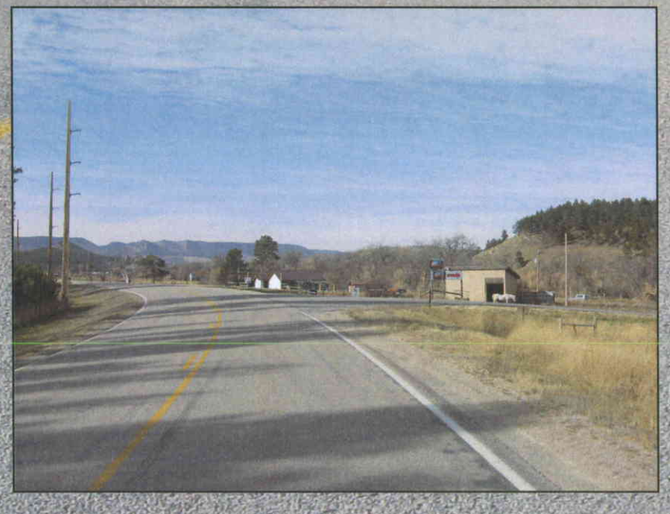
MEADE COUNTY
ELK CREEK ROAD
CORRIDOR STUDY

Review Only



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SECTION I – INTRODUCTION

A. BACKGROUND

Meade County which is located in western South Dakota is experiencing accelerating growth in the southwestern part of the county. This area is to the north of Rapid City along the I-90 corridor. The high growth rate is expected to continue and includes the area from the Pennington County line to approximately 8 – 10 miles north into Meade County. Elk Creek Road is the major arterial road servicing the northern part of this area east of I-90. This area, although not part of Rapid City, is within the Rapid City Metropolitan Planning Organization (MPO) jurisdiction.

The County, in an effort to plan and prepare for future growth and traffic demands for this area has decided to have this study prepared. Funding for the study was obtained by the MPO and funneled to Meade County to fund the study. All of Elk Creek Road west of the intersection of Erickson Ranch Road also falls within the 3-mile platting jurisdiction of the city of Summerset. Thus comments from the Cities of Rapid City and Summerset will be included in the study.

B. PURPOSE OF STUDY

The goal of Meade County is to furnish a safe and efficient transportation system for its residents and visitors. Because of the growth of residential housing along and near Elk Creek Road, Meade County has decided to see what actions are necessary to insure the safety of those using the road and living along it.

C. PHASES OF STUDY

To achieve that goal of furnishing a safe transportation system in the Elk Creek Road area the following are items are were part of this study:

1. Determine future land use along the corridor.
2. Review existing street plans for the area and County street design criteria.
3. Review available traffic count data for the area.
4. Identify existing features that may be traffic hazards or a hindrance to future traffic.
5. Observe traffic conditions and patterns to determine if there are any current issues and confirm traffic count data.
6. Factor available traffic count data to predict peak hour rates.
7. Predict future traffic patterns and peak travel hours for 25-year future design period.
8. Develop alternate route alignments.
9. Take public input on alignment options.
10. Screen alternative alignments and pick preferred alternative route.
11. Hold public meetings to gather community input on alternatives.
12. Produce Draft Access Study and present to Meade County Commission and Rapid City MPO Advisory Committee
13. Produce Final Access Study

D. DATA USED IN STUDY

The following plans, reports, studies or organizations were used for background information in completing this study:

1. Meade County Transportation Plan
2. Meade County Ordinance #10
3. Meade County Office of Equalization
4. Meade County Highway Department
5. South Dakota Department of Public Safety, Office of Accident Reports
6. South Dakota Department of Transportation
7. Pennington County Comprehensive Plan
8. City of Rapid City – Major Street Plan
9. City of Summerset – Comprehensive Street Plan
10. US Fish and Wildlife Service
11. US Department of Agriculture
12. Highway Capacity Manual – Transportation Research Board

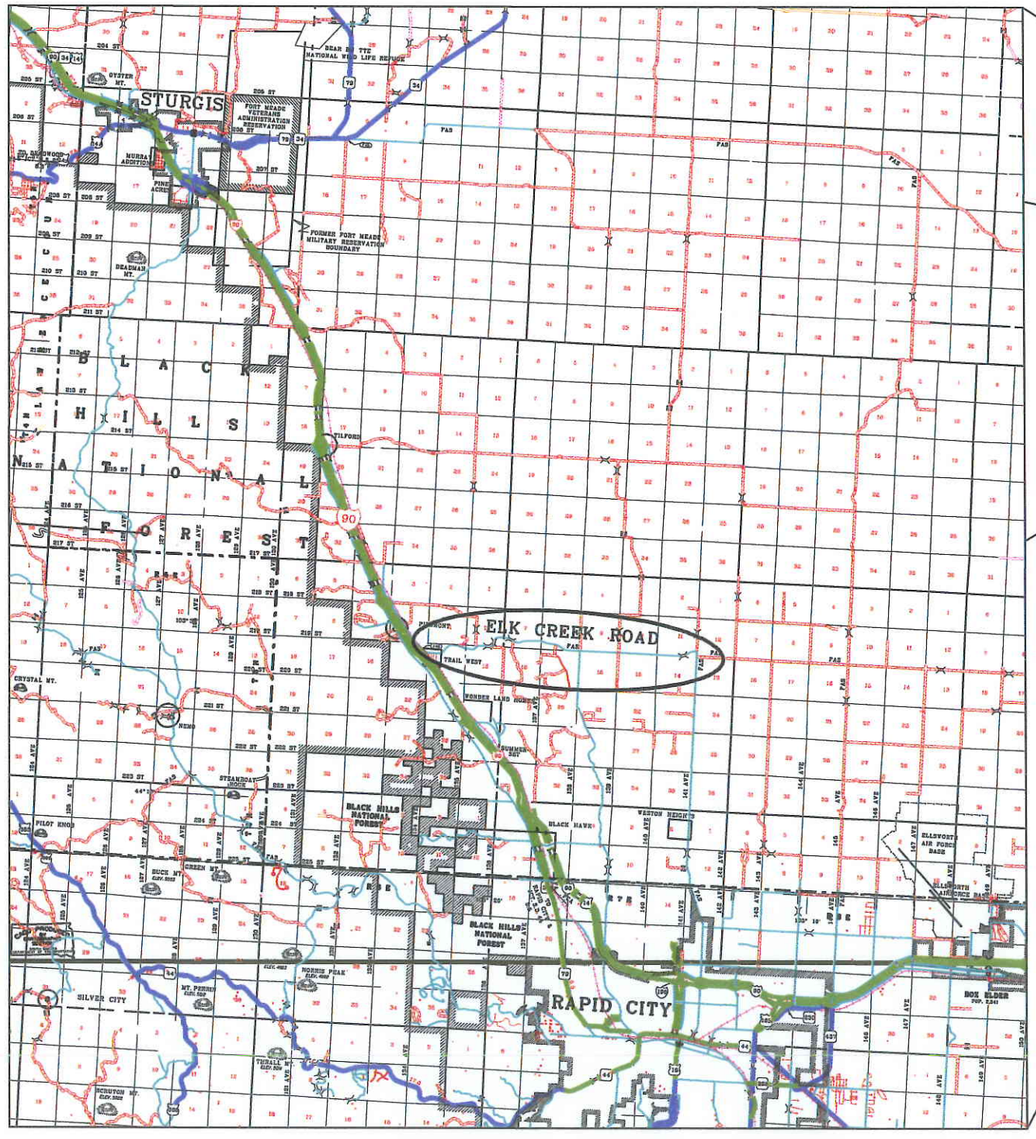
E. ITEMS ADDRESSED IN THE STUDY

Elements included in this study are;

1. Identify existing roadway conditions.
2. Identify existing traffic hazards.
3. Review accident data.
4. Review available traffic count data.
5. Investigate any possible environment issues.
6. Review population growth rate for the area.
7. Estimate future population and traffic rates.
8. Determine alternatives to correct existing hazards.
9. Estimate costs for alternatives
10. Make recommendations

Meade County

Elk Creek Road Corridor Study



Legend

- Federal Highway System
- State Highway System
- Local Asphalt
- Local Gravel

Location Map

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SECTION II – EXISTING TRAFFIC CONDITIONS

This section focuses on the existing average daily traffic counts and peak hour volumes, both AM and PM. Traffic counts were obtained from the Meade County Transportation Plan (MCTP), Meade County Director of Equalization Office and the SD DOT. Peak hours were reaffirmed by counts in the field.

A. CONNECTING ROADS

There are three paved roads that access Elk Creek Road, I-90 at the west end, Erickson Ranch Road in the middle and North Haines Avenue at the east end. Erickson Ranch Road runs south and connects to Deadwood Avenue in Rapid City. North Haines Avenue runs south into Rapid City also. Past North Haines Avenue, Elk Creek Road turns to gravel surfacing.

B. EXISTING TRAFFIC VOLUMES

The SD DOT conducted traffic counts along I-90 in 2003 as part of an I-90 corridor study. The peak hour traffic counts to the east of I-90 on Elk Creek Road were 165 in the AM and 230 in the PM. This was before the start of Sun Valley Estates and Timberwood Park Estates. Using peak hour counts and rate factors from Trip Generation, the ADT for Elk Creek Road just east of I-90 is approximately 2127 for the year 2003.

In 2007, as part of the MCTP, counts were taken at the intersection of Elk Creek Road and Erickson Ranch Road. The average daily traffic count to the west of Erickson Ranch road was 720.

The discrepancies between the DOT count at the west end of Elk Creek Road and the data from the MCTP at Erickson Ranch Road suggests that much of the traffic at the west end is generated from Trails West Subdivision and Elk Creek Steakhouse.

C. EXISTING PEAK TRAFFIC FLOW PATTERNS

It was assumed that peak daily traffic flow would be early morning and late afternoon when people are either leaving or returning from work or school. The MCTP 2007 traffic count shows the peak hours to be between 7-9 AM and 4-6 PM. A traffic count was taken to check this assumption. The count was taken on a Thursday, November 12, 2009.

This count confirmed that the highest traffic hours were 7-8 AM and 4-5 PM. Turning movement counts were collected at two of the major intersections along Elk Creek Road in the area of this study. The intersections that were studied were Glenwood Drive into Sun Valley Estates, which is part of the City of Summerset and Timberwood Road, which leads to Timberwood Park Estates to the north.

Of the traffic counted leaving Sun Valley Estates 97% turned west toward I-90 and only 3% turned east. Of the traffic turning onto Elk Creek Road off of Timberwood Road, 70% turned west and 30% turned east. Overall between these to intersections, 91% of the traffic turned west and 9% turned east. This shows that most of the people living between I-90 and Timberwood Road prefer to use I-90 to commute. Also, the closer one lives to I-90 the more the likelihood they will use I-90 for their commute.

D. *STURGIS MOTORCYCLE RALLY EFFECTS ON TRAFFIC*

The peak time of year for traffic in the area is during the annual Sturgis Motorcycle Rally held in early August each year. The traffic count taken by the County in 2008 shows ADT to be 1200 just west of the intersection of Erickson Ranch Road. A traffic count taken near the same location in 2007, not during the Rally, showed a count ADT of 720. This is an increase in traffic of 67% for the Rally week.

Of the traffic counted during the 2008 Rally, 26% were motorcycles, 61% were Class 2 & 3 vehicles (two axles) and 13% were buses or trucks including larger RV's. During normal times only 2.7% of the traffic is motorcycle and 77.8% is class 2 & 3 vehicles. It should be noted that there is one campground to the east of this site, which could account for some of the increase in Rally traffic. This campground has approximately 66 campsites consisting of RV sites, cabins and area for tents. The campground encompasses 40 acres.

Near the intersection of Elk Creek Road and Deer View Road there is a cluster of campgrounds. There are approximately 930 camping spots consisting of tent sites, RV sites and cabins between these campgrounds. Of these, 430 of the campsites exit onto Deer View Road and 500 sites onto Elk Creek Road. This area totals approximately 140 acres. With the 66 campsites located farther east there is approximately 1000 campsites along Elk Creek Road.

By using the traffic count data collected during the 2008 Rally and prorating it out for the 140 acres of campground towards the west end of Elk Creek Road the increase in traffic near the west end is estimated at:

Motorcycles		1323 per day
Car & Trailer		666 per day
2 Axle – Long		117 per day
Buses		50 per day
2 Axle – 6 Tire		21 per day
	Total	2177 per day

No other traffic types showed an appreciable change.

In talking to one of the managers of the Elk Creek Campground, number of campers was estimated between 1500 and 2000 in 2009. In previous years they have had up to 3000 campers. This decrease of campers by about 1/3 follows the traffic counts recorded by the SD DOT around Sturgis. Since peaking at 605,000 vehicles for the Rally in 2003, the count was down to 394,000 in 2009. It seems to be leveling off around 400,00.

The campgrounds are primarily busy just during the Rally. Because of the decreasing attendance at the Rally and the abundance of Rally campgrounds, a 70% occupancy rate during the Rally is assumed. By using the 70% occupancy rate the peak hour traffic rates are 140 for the AM and 259 for the PM.

Since no traffic counts during the Rally are recorded for the west end of Elk Creek Road, the traffic increase caused by the Rally was tried also to be derived by comparing similar type roads in Meade County.

The SD DOT takes traffic counts at various locations near Sturgis every year during the Rally. These counts are mostly on I-90 and State highways.

One location where counts were taken is on Highway 34 to the east of the Buffalo Chip campground. This point is past all of the Rally events but there are still a couple of campgrounds to the east. The 2008 ADT for this location was 810. During the 2008 Rally the ADT for the peak day was 7523, a 929% increase over the normal ADT.

Another asphalt road that counts were taken at is on Vanocker Canyon Road to the south of Sturgis. This is a County road. The ADT varied through Rally Week from 494 on the Sunday after the Rally to a high of 4,103 during the Rally. If the 494 figure is used as a average day the Rally traffic increases 830% during the Rally. This would be inline with the increase in traffic seen east of Sturgis on Highway 34.

The above two Rally counts are very close to the city of Sturgis, the hub of the Rally. Elk Creek Road is approximately 16 miles away from Sturgis at its west end. Therefore the traffic data collected near Sturgis should not be used in trying to project Rally traffic on Elk Creek Road. As shown by the traffic count taken in 2007 during the Rally, ADT only increased 67% on Elk Creek Road near the intersection of Erickson Ranch Road.

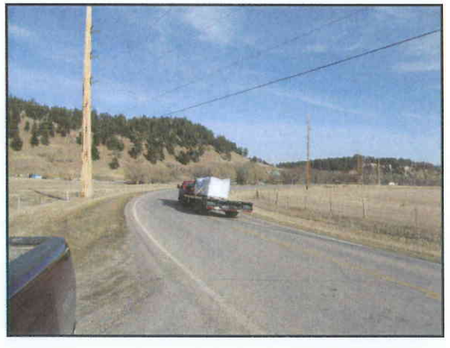
Since a high of 605,000 vehicles entering Sturgis in 2003 the attendance at the Rally has declined to 394,000 in 2009. The average attendance for the last four years is approximately 428,000. One cannot be sure what the future attendance for the Rally will be but the counts show it leveling off to be somewhere in the 400,000 to 425,000 range. Because of this, the future traffic growth for the area should not be multiplied by the existing increases in Rally Week rates to calculate future Rally Week traffic on Elk Creek Road.

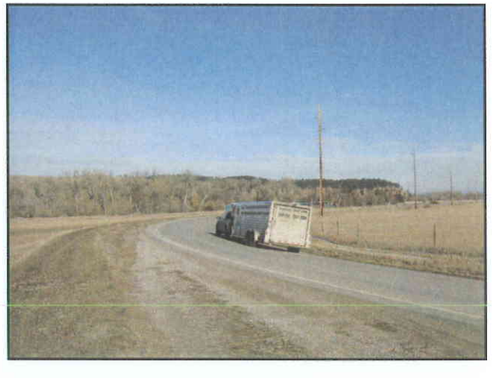
E. TRUCK TRAFFIC

Truck traffic on Elk Creek Road is limited. Most of the truck traffic consists of delivery trucks, school buses, pickups pulling stock trailers and trucks serving contractors building houses in the area.

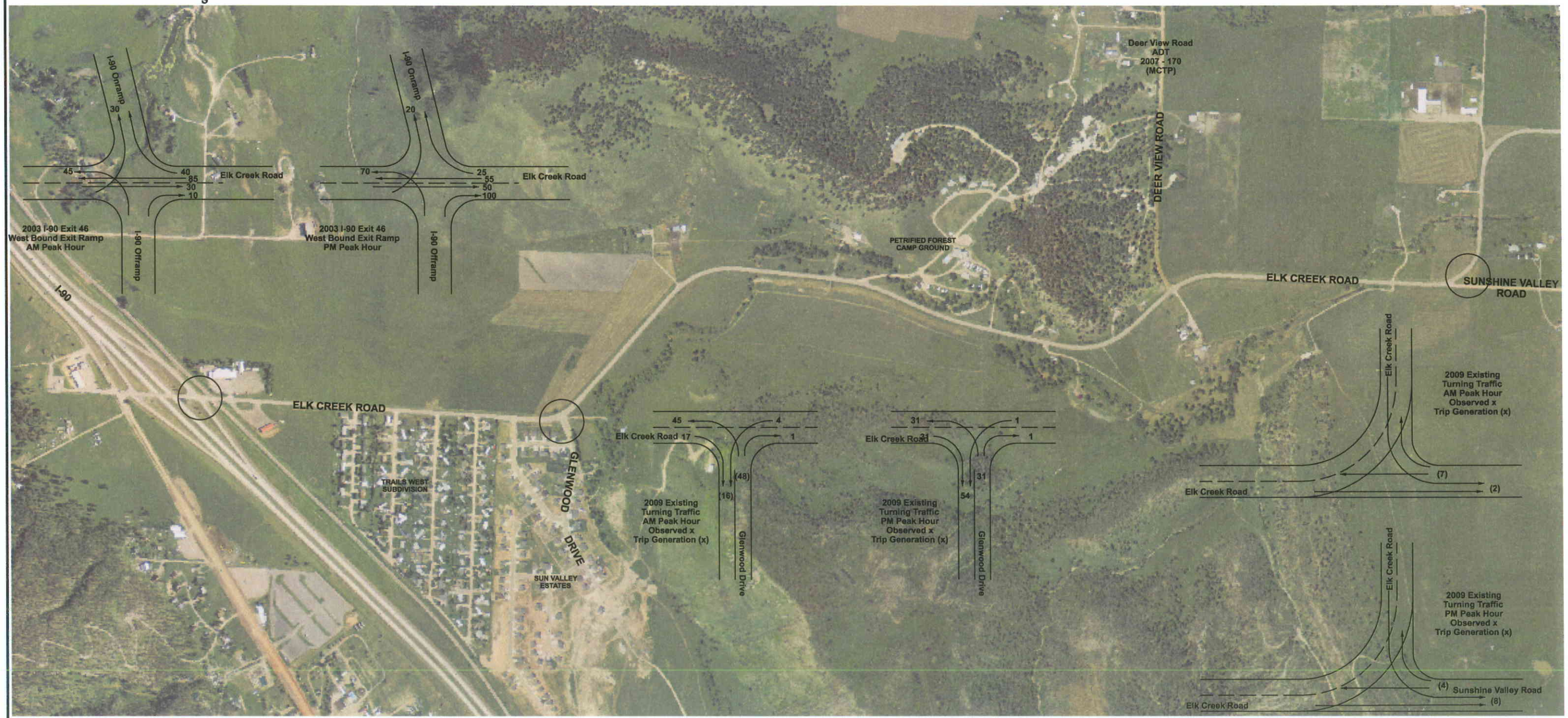
Over the road truck traffic is almost non existent on Elk Creek Road since it does not connect to a major highway on the east end. The east end connects to North Haines Avenue which will lead to I-90 Exit 58 in Rapid City. By using Elk Creek Road, over the road truck traffic would be detouring off of I-90 and taking a slower, longer, more time consuming route between I-90 Exits 46 and 58.

The 2007 traffic count on Elk Creek Road taken near the intersection of Erickson Ranch Road shows a combined bus and truck rate of 19.4%. Of this 1.6% were buses, 13.8% were straight trucks and 4.0% were tractor - trailer units. By visual inspection, very few over the road tractor-trailer units use the road. It is believed that most of the tractor-trailer units recorded are actually pickups pulling stock trailers. There may be some agriculture related trucking such as cattle trucks and hay haulers but it is very limited.





MEADE COUNTY
ELK CREEK ROAD CORRIDOR STUDY



The DOT counts near I-90 are from the Interstate 90 Black Hawk - Sturgis Corridor Preservation for the SD DOT dated December 2004.
The 2008 Rally counts are from Meade County.
The 2007 counts are from the Meade County Transportation Plan (MCTO), date Novembr 2008.

EXISTING PEAK HOUR TURNING MOVEMENTS AND TRAFFIC COUNTS ELK CREEK ROAD BETWEEN I-90 AND SUNSHINE VALLEY ROAD

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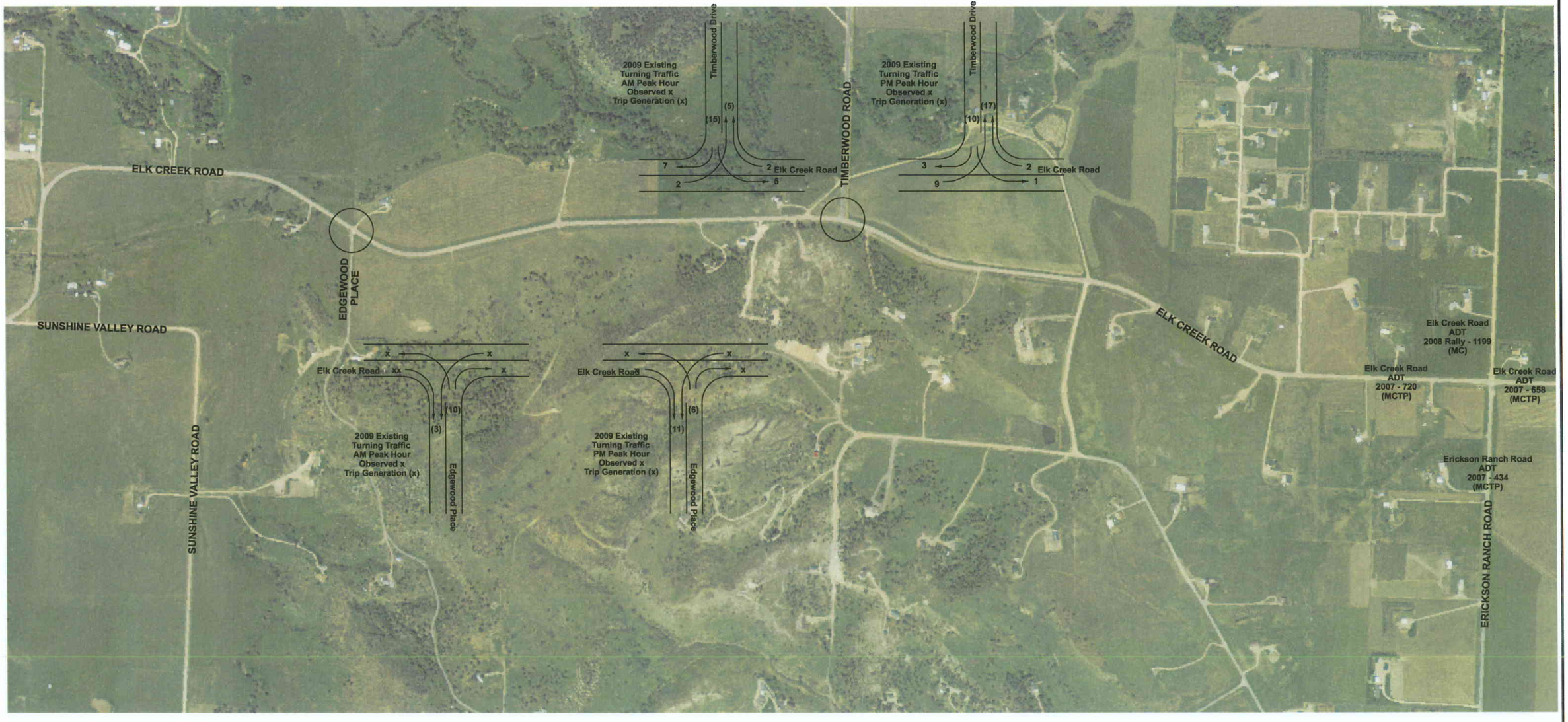
MEADE COUNTY
ELK CREEK ROAD CORRIDOR STUDY



The 2008 Rally counts are from Meade County.
The 2007 traffic counts are from the Meade County Traffic Plan (MCTP).

EXISTING PEAK HOUR TURNING MOVEMENTS AND TRAFFIC COUNTS ELK CREEK ROAD BETWEEN SUNSHINE VALLEY ROAD AND ERICKSON RANCH ROAD

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SECTION III – TRAFFIC ACCIDENTS

Data on traffic accidents for Elk Creek Road between I-90 and Erickson Ranch Road was obtained from the SD Department of Safety. The data covers January 1, 2004 thru September 30, 2009. In that time there were 25 reported accidents.

A. INJURY ACCIDENTS

During the reporting time frame, 8 accidents with injuries were reported. 4 accidents had incapacitating injuries and 4 accidents had non-incapacitating injuries. No fatal accidents were reported.

B. WEATHER CONDITIONS

Of the 25 accidents, 22 had dry surface conditions reported and the weather was clear during 21 of the accidents. Snow, ice or frost conditions were reported for 3 accidents. Fog or smoke was reported during 1 accident.

C. LIGHTING CONDITIONS

12 accidents occurred during non-lighted conditions, 11 during lighted conditions and 2 at dawn.

D. TIME OF ACCIDENTS

Of the 25 reported accidents, 5 were on Sundays, 1 on Saturday with the remainder during the week. The time frames with the most accidents were 5 AM to 7 AM and 5 PM to 7 PM. The Meade County Transportation Plan completed in November 2008 noted that most accidents during a 24 hour day occur between 6 PM and 7 PM. The 5 AM to 7 AM and 5 PM to 7 PM time frames would be when people are leaving or returning from work. They are also the time frames with the most traffic on the road s as shown in the traffic count data.

The Meade County Transportation Plan shows a dramatic increase in accidents for the month of August. It is over 3 times as high as the months of July and September. This is because of the influx of hundreds of thousands of motorcyclists for the Sturgis Rally. The State's data shows only 4 accidents for the month of August and none for the years 2007-2009.

E. ROADWAY GEOMETERY

The locations of the accidents were about evenly split between happening on straight road or on a curve. Of those reporting road alignments, 11 were on a straight roadway and 9 were on a curve.

Six of the accidents were related to intersections or driveways. This is a percent rate of 24%, which is slightly higher than the County accident average rate of 20%.

F. CONTRIBUTING CIRCUMSTANCES TO ACCIDENTS

- Running off the road was citied in 8 of the accidents.
- Speeding or driving to fast for conditions was cause for 6 of the accidents.
- Animals were cause for 7 accidents with 5 of these being wild animals. The 7 accidents represent a rate of 28%, which is considerably higher than the County average of 15%. There were also 3 swerving/avoiding circumstances, which may be related to the animals.
- Other causes were fell asleep – 1, over-correction – 2, cellular/electronic – 1, distracted – 1, following too close – 1, failure to yield – 1 and improper backing or parking – 1.
- No farm machinery or heavy equipment was listed as a contributing factor in any accidents.

G. IMPAIRED DRIVING

Only 3 of the accidents listed alcohol or drugs as contributing circumstance. This is inline with the County average rate.

H. PROPERTY DAMAGES

Damages for the result of these reported accidents, was estimated at $138,789.

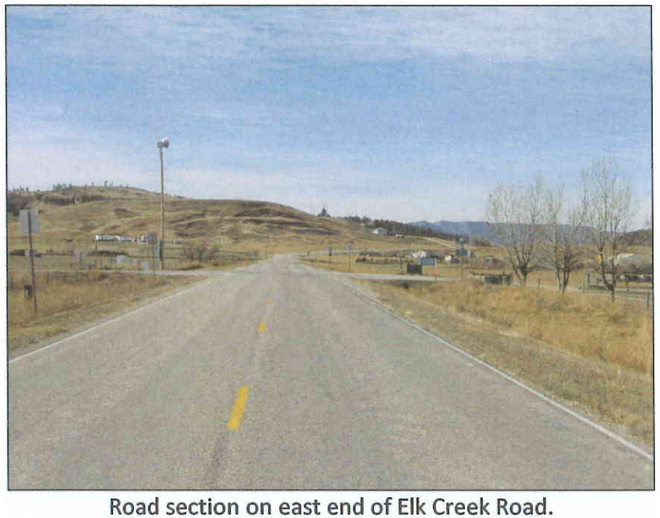
I. CONCLUSSIONS

Most of the accidents seem to be happening when people are going or returning from work in the morning and evening rush hours. The accident rate caused by animals is higher than the entire County rate. The increased traffic from the Sturgis Motorcycle Rally does not appear to be a factor relating to accident rates on this road.

SECTION IV – EXISTING ROAD CONDITIONS

A. DESCRIPTION OF EXISTING ROAD

This existing road is two-lane with an asphalt surface. Between I-90 and Edgewood Place intersection the driving surface is 26' wide with a speed limit of 45 MPH. The portion east of Edgewood Place intersection was rebuilt in the early 1990's and the asphalt surface is 26' wide with a speed limit of 55 MPH. The existing right-of-way is 66' to 100' to the east of Edgewood Place. The right-of-way varies between 66' and 90' to the west of Edgewood Place.



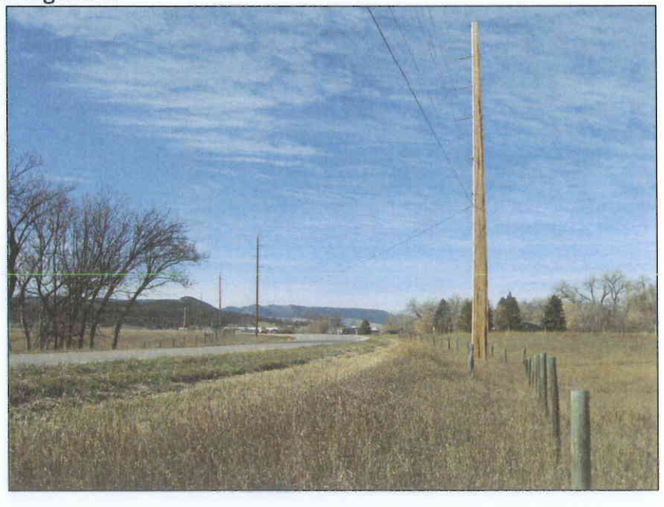
Road section on east end of Elk Creek Road.
Shoulders, 55 mph speed limit, wide right-of-way and no obstacles in right-of-way

B. EXISTING TRAFFIC HAZARDS

Box Culverts: The existing box culverts end very near the edge of the driving surface. This leaves no room for a traffic that runs off the road to make corrective actions. There also is no protection to keep a vehicle from dropping into the channel. One of the box culvert wing walls has damage where a vehicle that left the road struck it.

Typical section of road on west portion of Elk Creek Road.
No shoulder on road, edge of box culvert close to driving lane and utility poles in right-of-way

Utility Poles: There are utility poles located in the right-of-way along much of Elk Creek Road. It appears that on some curves the poles are also located inside the clear zone. These poles pose a hazard to vehicles that may leave the driving lanes.



Low Speed Curves: There are numerous slow speed curves on the west 3 miles of Elk Creek Road. The posted speed limit on this stretch of road is 45 MPH. There are warning signs for sharp curves with warning speeds of 35 MPH and one curve at 25 MPH.

Signs: There are a few places where private signs have been placed in the right-of-way. These signs pose a hazard to errant vehicles.

School Bus Stops: The road is a school bus route. There are many places where the bus stops on Elk Creek Road to load/unload children. This could become a safety issue as traffic increases on the road.

Trees: Trees have grown inside the right-of-way. These trees are a hazard to vehicles that may leave the driving lanes, and may also cut down on the sight distance a driver would have in the area.

Mailboxes: Many mailboxes are located along the road. Most of the mailboxes are located at driveway approaches providing the carrier room to pull off of the road for delivery. Most mailboxes are mounted on wood fence posts but some of the posts are larger and may not snap off if hit, creating a hazard to any vehicle that may it them.

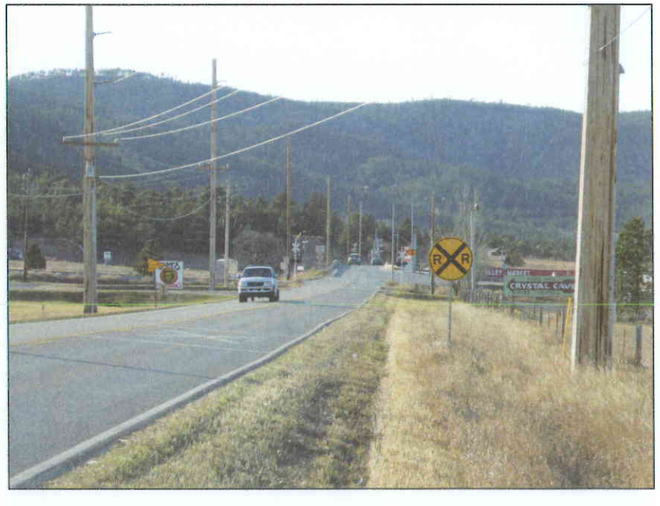
Approaches and Intersections: Some of the approaches along the road are not built to modern safety standards. The in-slopes of some approaches are to steep, causing a hazard to a vehicles that may leave the road surface. These steep approaches may act as a wall, suddenly stopping a vehicle, or act as a ramp helping a car become airborne.

There are also places where people have constructed traffic hazards in/on the approaches such as fences.

Many of the approaches and intersections do not intersect Elk Creek Road perpendicularly. This decreases the amount of visual distance a driver has to check on approaching traffic in one direction. It also encourages traffic to run stop signs at these intersections.

Vertical Walls on Approach

Railroad Crossing: At the west end of Elk Creek Road is a controlled at grade railroad crossing.



SECTION V – DRAINAGE

There are two creeks along the Elk Creek Road. Stage Barn Canyon Creek flows along the west end of the road from Sun Valley Estates to near the intersection of Elk Creek Road and Edgewood Place. Stage Barn Canyon Creek then joins Elk Creek to the north of this road intersection. Elk Creek then flows to the east approximately ¼ to ½ mile north of the road.

A. FLOODING

Flood Insurance Rate Maps (FIRM) consulted to check for possible locations where floodwater is or could be a problem for Elk Creek Road. FIRM Community Panel Number 460054 0825 A, shows two areas along Elk Creek Road where the 100-year flood now comes close to the road. One location is at the triple box culvert located just to the west of the intersection of Edgewood Place. This is where Stage Barn Canyon Creek and Elk Creek join. The 100-year flood backs up to the north end of the culvert. The other area is approximately 700 feet west of the intersection of Timberwood Road on Elk Creek. On the north side of the road is an old oxbow where the 100-year flood elevation approaches the road.

A diversion channel has been constructed along the south side of Elk Creek Road to divert the flow in Stage Barn Creek. This channel is located in Lot 2 of the NW ¼ NE ¼ Section 14, T3N, R6E. The diversion starts approximately 1000 feet west of the entrance to Elk Creek Campground and follows the road for approximately 4000 feet to the east before connecting back into the original creek channel. This diversion channel helps keep high flows in the creek from flooding the Elk Creek Campground on the north side of the road.

B. EXISTING DRAINAGE STRUCTURES

There are five drainage structures located on Elk Creek Road. All five structures are located on Stage Barn Canyon Creek. They are all reinforced concrete box culverts (RCBC). All of the RCBC's where built between 1950 and 1951. The three eastern most the box culverts are on the "On System Bridge Inspection" inventory. The structure numbers are 47-115-560, 47-117-558 and 47-122-558. The 2008 inspection reports states the three box culverts are in good condition and there is a slight chance of overtopping. One box culvert has a damaged wing wall from where a vehicle hit it, and another has an area on the inlet where the concrete is starting to spall. The two western most box culverts are also in good condition.

Diversion Channel

Box Culvert – Constructed 1951

C. DESIGN CONSIDERATIONS FOR DRAINAGE STRUCTURES

Since Elk Creek Road is designated as an Urban Arterial, drainage structures are required to handle a 50 year storm event.

In many places the creek channel is very shallow resulting in a wide flood plane. This limits the effective height of drainage structures and results in the uses of wide structures.

D. AREAS REQUIRING DRAINAGE STRUCTURE (BOX CULVERTS)

Alternative 1: This is the do nothing alternative so no new structures will be required.

Alternatives 2, 3 and 4 will each require 3 new drainage structures.

Alternative 2: This alternative follows the existing alignment more closely than alignments 3 and 4. Two of the structures, at stations 49+30 and 71+00, will be located on the north side of the diversion channel. Therefore not all the creek flow will go though the two structures. The third structure is located at station 101+00. These three structures will replace existing structures at these locations.

Alternatives 3 and 3: New structure locations will be required for alternatives 3 and 3. One is at 46+30 (Alt. 3) and at 68+40 (Alt. 4), and the other at 69+30 (Alt. 3) and 68+40 (Alt. 4). The existing triple 12 X 5 shall also be replaced in both alternatives, at stations 98+75 (Alt. 3) and at 97+50 (Alt. 4).

E. ESTIMATED STORM FLOWS AND STRUCTURES SIZES

Alternative 1: This is the do nothing alternative so no new structures will be required.

Alternatives 2, 3 and 4 will each require 3 new drainage structures.

Alternative 2: The two of the structures at 49+30 and 71+00 will be located on the north side of the diversion channel. Therefore not all the creek flow will go though the two structures. It was determined to replace these two structures with structures of the same size. This will require a Double 6 X 5 at 49+30 and a Double 6 X 6 at 71+00.

The diversion channel parallels the south side of Elk Creek Road between the structures at 49+30 and 71+00. The base of the channel is approximately 40 feet wide with a grade of approximately 2%. At a depth of approximately 2.3 feet the channel would flow the 100 year storm run flow. But by reaching this flow height some of the water would flow under Elk Creek Road into the old drainage channel.

Flow to the structure at 101+00 is estimated at 1608 cfs. This requires a triple 12 X 6 box culvert. The existing structure is a triple 12 X 5 box culvert.

Alternatives 3 and 3: Since the drainage structures at 46+30 and 69+30 in Alternative 2, and at 38+50 and 68+40 in Alternative 3 are located south of the diversion channel, the structure sizes will need to be larger than those in Alternative 2 near the same locations.

The storm flow to the structures at 46+30 (Alt. 3) or 38+50 (Alt.4) is estimated at 1595 cfs. This will require a triple 12 X 6 box culvert.

The storm flow to the structures at 69+30 (Alt. 3) or 68+40 (Alt. 4) is estimated at 1601 cfs.
Due to the deeper channel at this location a double 12 x 6 box culvert is required.

The structure at 98+75 (Alt. 3) or 97+50 (Alt. 4) is the same as the one at 101+00 in Alternative 2 and will require a triple 12 X 5 box culvert.

Note, the creek channel contours were obtained from SD Geological Survey. The size of the box culverts may need to be adjusted during engineering to fit the creek channel and prevent the height of backwater.

Meade County
Elk Creek Road Corridor Study

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Scale 1" = 1200'

Brosz Engineering, Inc.
Registered in North Dakota, South Dakota, Wyoming, Montana, and Nebraska

100 Year Flood Boundary

DRAINAGE
100 YEAR FLOOD BOUNDARY

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SECTION VI – ENVIRONMENTAL CONCERNS

A. GENERAL DESCRIPTION

Elk Creek Road between I-90 and Edgewood Place for the most part, winds its way down Stage Barn Creek Valley. For approximately the first 3000 feet of road east of I-90, the road is straight. There are two subdivisions located on the south side of this stretch of road, Trails West Subdivision and Sun Valley Estates. There are 107 lots in Trails West and Sun Valley Estates has plans for 251 lots.

Sun Valley Estates, Trails West Subdivision and Elk Creek Resort and Petrified Forest have public water systems. The well for Sun Valley Estates is located approximately 1250 feet south of Elk Creek Road. Trails West well is located approximately 1550 south of Elk Creek Road. Sun Valley Estates also has a public sanitary sewage collection system. The sewage for Trails West is handled by on-site septic systems.

Once past Sun Valley Estates the road starts to parallel the Stage Barn Creek channel and becomes a winding road. The existing road crosses the creek five times between Glenwood Drive at Sun Valley Estates and Edgewood Place at the east end of the project area.

At the very east end of the project area is the intersection of Timberwood Drive. An area to the north on Timberwood Drive is being developed as residential acreages. The long-range plans call for up to 450 lots to be developed in this area.

Farther to the east along Elk Creek Road the area has seen and continues to see development.

The growth rate for this area has been determined to be high by the County and is reinforced by the development now taking place.

At some point, the growth of traffic on Elk Creek Road will require the road to be brought up to current design standards. This will require acquiring additional land for right of way and possibly the removal or relocation of farmsteads.

Thus, the greatest environmental concerns are:

1. Effects of future traffic on the area.
2. The acquisition of ROW.
3. Construction related disturbances.
4. Construction work in the creek channel and possible creek channel modifications.

B. GENERAL ENVIRONMENTAL EFFECTS

By the present trend, it appears that residential development will continue along Elk Creek Road. This will lead to increased traffic on the road.

All of the alternatives that address updating the road shall require the acquisition of private land for right of way. There is no public land that will be taken for road construction in any of the alternatives.

All of the following alternatives that address updating the road shall have construction related disturbances. These would include noise, dust, soil erosion and possible contamination by construction materials.

The SD Department of Environment and Natural Resources requires that all construction projects prepare and follow a Storm Water Pollution Prevention Plan. This ensures that the contractor has a plan in place to control erosion and hazardous material spills. The contractors employees are to be educated in the prevention of contamination and what to do if contamination or spill does occur.

All of the following alternatives that address updating the road will require work to be done in the creek channel. The disturbance to the channel can be minimized by construction procedures and scheduling.

C. COMPATIBLE LAND USE

All the alternatives except number 1 would require the accusation of private property for right-of-way use. Most land that would be required is now in agricultural use.

Alternate 2 would require the purchase of approximately 5 foot land in Lot 2R, and approximately 10 for Alternate 3 in Lots 2R and Lot B of Lot 1 in the Orwick Subdivision in the NW ¼ of the NW ¼ of Section 13, T3N, R6E. This would move the right-of way closer to the houses located on those lots.

All alternatives except 1 would cut into the campground located to the south of Elk Creek Road in the NW ¼ of the NW ¼ Section 13, T3N, R6E. Alternatives 2 through 4 would require the relocation of the office trailer and the elimination of approximately 4 to 6 RV hookup sites.

D. NOISE

It is not anticipated that traffic noise will increase or decrease due to any of the alternatives. It appears that traffic is going to increase on the road no matter what is done due to the increase in traffic.

Depending on the alternative chosen, the traffic noise may increase for some homes while it decreases for others. This is a result of moving the existing alignment closer to or farther away from homes.

E. WATER QUALITY

All of the alternatives would have little if any added impact as compared to the present roadway alignment.

Depending on the alternative chosen, the effects on Stage Barn Creek would remain the same or be lessened. By choosing an alternative where the alignment crosses the creek less than the now required five crossings, the possibility to impact the water quality decreases.

Stage Barn Creek is a normally dry creek. As such construction activities required to construct any of the alternatives could be scheduled around normally wet times of year when the creek is more apt to flow.

Also, by bringing the box culverts up to modern safety design there will be less likelihood of a vehicle leaving the road and entering the creek channel and possibly causing a hazardous spill in the creek channel.

F. HISTORIC, ARCHITECTURAL, ARCHEOLOGICAL AND CULTURAL RESOURCES

Quality Services, Inc, of Rapid City conducted a study of all cultural resources and inventories within one mile of the Elk Creek Road Corridor project area. A map and table of sites is attached in the Appendix.

There are two potential sites of concern located at the east end of the project area.

MD00000091 is a National Register listed site on the Evans ranch. This site is approximately 425 feet north of Elk Creek Road located in the Se ¼ of Section 7, T3N, R7E. This site should not be imposed on by the alternate alignments shown in this study ad the road shall retain it's present alignment in the area.

The Stevens Ranch, located in the SW ¼ Section 8, T3N, R7E, is approximately ¼ mile north of Elk Creek Road. None of the alignments in this study should affect this site, as it is at least ½ mile from any proposed new construction.

G. BIOTIC COMMUNITIES

The area along the road is being has been and continues to be developed. The area is mostly flat land consisting of subdivisions, homesteads, campgrounds, pasture and cropland.

Since this project would involve rebuilding an existing road in the above mentioned area it is anticipated there will be no greater impacts to wildlife or plants than presently exists.

H. ENDANGERED AND THREATENED SPECIES

According to the United States Department of Agriculture – Natural Resources Conservation Service there are no Endangered or Threatened plants in the area.

According to the United States Fish and Wildlife Service there are 2 animals listed as Endangered for Meade County. They are the Whooping Crane and the Least Tern. The Whooping Crane has been known to migrate through the area. The Least Tern prefers areas with permanent waters for nesting and feeding. Due to the fact that Stage Barn Creek is a dry channel most of the time the likelihood of these birds to be in the area is remote.

I. WETLANDS

The U.S. Fish and Wildlife Service web site was checked for wetlands along the proposed routes. There are no wetlands in the adjacent area.

J. FLOODPLAINS

In the four alternates chosen, only in Alternative 1, the existing alignment, would the 100 year flood plain be close to the road. The flood plain from the merging of Stage Barn Creek with Elk Creek backs up to near Elk Creek Road in two locations. One is near the existing box culvert in the NE1/4 SW1/4 SW1/4 of Section 7, T3N, R7E and in Evans Estate Subdivision Tract 1 in the SW ¼ Section 7, T3N, R7E. The road is above the 100 year flood elevation but areas along the north side of the road would be flooded.

In Alternates 2 through 4, none of the road realignments are in a 100 year flood plain.

K. SOCIAL IMPACTS

The area is presently being socially impacted. The area is zoned mostly agriculture but the trend has been toward more developments and housing along the corridor. Because of the existing conditions there would be little if any social impacts by improving Elk Creek Road. It may increase the rate of development in the area but it appears that the development is going to happen be it in 10 years or 25 years.

All alternatives except 1 would cut into the campground located to the south of Elk Creek Road in the NW ¼ of the NW ¼ Section 13, T3N, R6E.

L. ECONOMIC IMPACTS

As stated in the Social Impacts, the campground could be affected depending on what alternative route for the road is chosen.

In the short term, if the County would decide to improve Elk Creek Road, construction jobs will be created. These would be short-term jobs for the area, but the income earned by those employed would be spent for goods and services in the area.

In the long term, an improved road may lead to new businesses locating along the road, a faster rate of housing developments. The construction for theses new business and developments would and bring new jobs to the area. This would also increase the tax base for the County, allowing it to provide more or better services to its citizens.

SECTION VII – FUTURE GROWTH

A. GROWTH RATES

It is anticipated that the area east of I-90 and north of Rapid City up to I-90 Exit 44 will experience a high growth rate in the next 25 years. This is shown in The Meade County Transportation Plan. The Meade County Comprehensive Plan also states that two-thirds of the Counties housing growth is along I-90 between Piedmont and Blackhawk.

The Meade County Transportation Plan projects an annual growth rate of 4% per year for areas of Meade County that are designated as high growth areas which includes the area around Elk Creek Road.

Between 2003 and 2009 the growth rate along the service area of west Elk Creek Road was approximately 12%. This growth rate was fueled by the Sun Valley Estates and Timberwood Park Estates subdivisions. Between theses two developments approximately 131 homes have been constructed in the area.

The I-90 Corridor Preservation Study completed by Felsburg, Holt and Ullevig in 2004 for the SD DOT states that significant residential growth is expected north of I-90 interchange 46, which is the Elk Creek Road exit. This annual growth rate is estimated between 6% north of Elk Creek Road and 3% south of Elk Creek Road. The lower figure for the area south of Elk Creek Road is because of the limiting topography of the area. For their 2025 traffic forecast on Elk Creek Road, the I-90 Corridor Study used an annual growth rate of 4.75%.

It is not expected that the 12% growth rate can continue through to 2035. By that time Sun Valley Estates will have reached it's full build out condition. Meade County has accepted a growth rate of 4% for the area. After studying the growth rate and planned development for the area a growth rate of 4.4% in population is what is suggested in this study.

B. DEVELOPMENT TRENDS

Higher density housing is developed or is developing close to I-90 along Elk Creek Road. This is seen as Trail West Subdivision with 107 developed lots and Sun Valley Estates with 105 developed lots and plans for a total of approximately 251 lots. The lots in Sun Valley Estates average approximately 1/3 of an acre including streets and green space. The farther away from I-90 one travels, the housing density becomes sparser as acreages become more prevalent. The Timberwood Park Estates development has 3 acres lots and farther east the Golden Valley Subdivision lots average over 3 acres. There are also many 5 to 20 acre lots along Elk Creek Road near its intersection with Erickson Ranch Road.

It is anticipated that denser development will continue near the west end of Elk Creek Road. This is because of the availability of a central water supply and a sewer collection system.

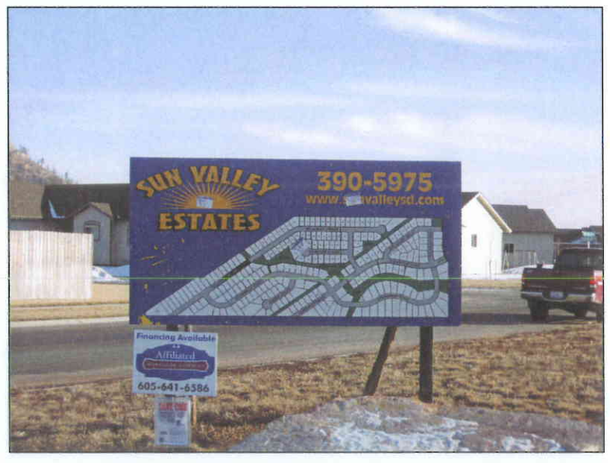
C. 2035 HOUSING FORECAST

As of 2009 there were approximately 270 homes in the area serviced by Elk Creek Road from I-90 to Timberwood Drive. Using a 4% growth rate, by 2035 there will be approximately 750 homes.

It is appears that Sun Valley Estates and Timberwood Park Estates will grow faster than 4% per year. By looking at the proposed lots to be developed for these developments and past home construction in these areas, a figure of 850 homes looks more reasonable.

Much of the Sun Valley Estates planning and construction has been done. Timberwood Park Estates is farther behind time wise in reaching it's full build out.

At present, the plans for Sun Valley Estates include 271 lots. There is the possibility of 450 lots in the Timberwood Park Estates development. By 2035 it is estimated Sun Valley Estates will be full and Timberwood Park Estates will have approximately 338 homes. Using a 4% growth rate on the remaining area homes brings the 2035 house count to approximately 800. This number does not take into account the possible expansion of Sun Valley Estates to the south at its present growth rate. Thus it appears that there will be between 800 and 850 homes along the Elk Creek Road service area by 2035.



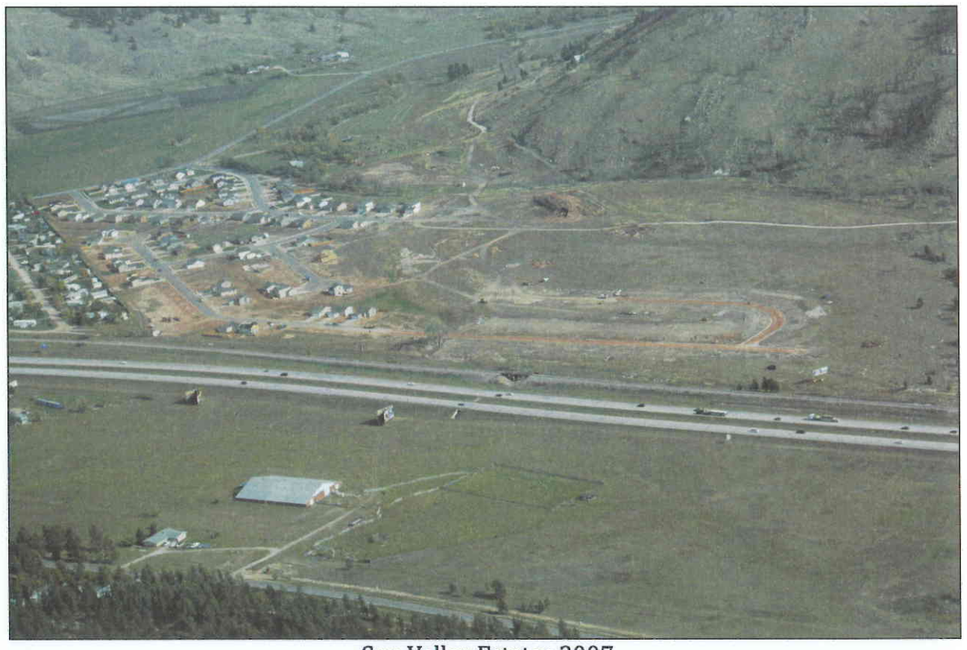
Sun Valley Estates

Timberwood Park Estates

If the County decides to update Elk Creek Road it could also spur development, thus it is more probable that the future home count in the area will be on the high side of the above estimate. Therefore, the future number of homes in the area is estimated to be 825.

D. RALLY WEEK TRENDS

Because Rally attendance has declined from its peak and is starting to level off, it is not anticipated that Rally traffic will increase significantly in the coming years. It is therefore assumed that Rally generated traffic will remain level in the coming years.



Sun Valley Estates 2007

E. GROWTH RATE COMPARISIONS

2009 270 HOMES EXISTING
2035 @ 4.0% GROWTH - 749 HOMES
2035 @ 4.5% GROWTH - 848 HOMES
2035 @ 5.0% GROWTH - 906 HOMES

SECTION VIII – FUTURE TRAFFIC

A. AVERAGE ANNUAL DAILY TRAFFIC

By using 825 homes and computing the AADT using Trip Generation, an AADT of 7895 is predicted for the year 2025. This rate is just for these homes and does not include through traffic on Elk Creek Road.

By studying the existing traffic counts, 66% of the traffic that reaches the Glenwood Drive intersection does not turn onto Glenwood Drive but passes it by.

By using the 2035 projected home count of 353 along the Glenwood Drive service area, an AADT of 3378 is forecast for Glenwood Drive in 2035. By still assuming that 66% of the traffic at the intersection of Elk Creek Road and Glenwood Drive continues on east or west, an AADT for Elk Creek Road at the intersection for the year 2035 is 9932.

For Elk Creek Road east of I-90, the I-90 Corridor Study predicts peak AM hourly traffic at 595 and peak PM hourly traffic at 830 in the year 2025. By using the peak hour factors stated below the AADT for 2025 will be approximately 8410. By continuing growth by 4% per year for the next 10 years, the AADT would be 12,450 in 2035.

By taking the 2003 data from the I-90 Corridor Study and applying a steady growth rate of 5% per year through the year 2035, the AADT would be 11,700 in 2035.

By taking the average of the above three traffic estimates the projected traffic count for 2035 is 11,360 AADT.

B. PEAK HOURS

Peak traffic hours for Elk Creek Road will be between 7 and 9 AM in the morning and between 4 and 6 PM in the afternoon. The AM peak factor is 0.078 of the AADT and the PM peak factor is 0.105 of the AADT.

By using the year 2035 AADT of 11,360 The peak AM hour traffic will be 886 and the peak PM hour traffic will be 1193.

C. TRAFFIC COMPOSITION

By using 2007 Meade County traffic count on Elk Creek Road as a basis, the following is the projected traffic make up for elk Creek road in the year 2035.

Vehicle type	Percentage of Traffic
Motorcycles	2.7%
Car & Trailer	78.0%
Buses	1.5%
2 Axle, 6 Tire	12.6%
3 Axle, Single	1.0%
4 Axle, Single	0.2 %
5 Axle, Double	3.9%
5 Axle Double or Larger	0.1%

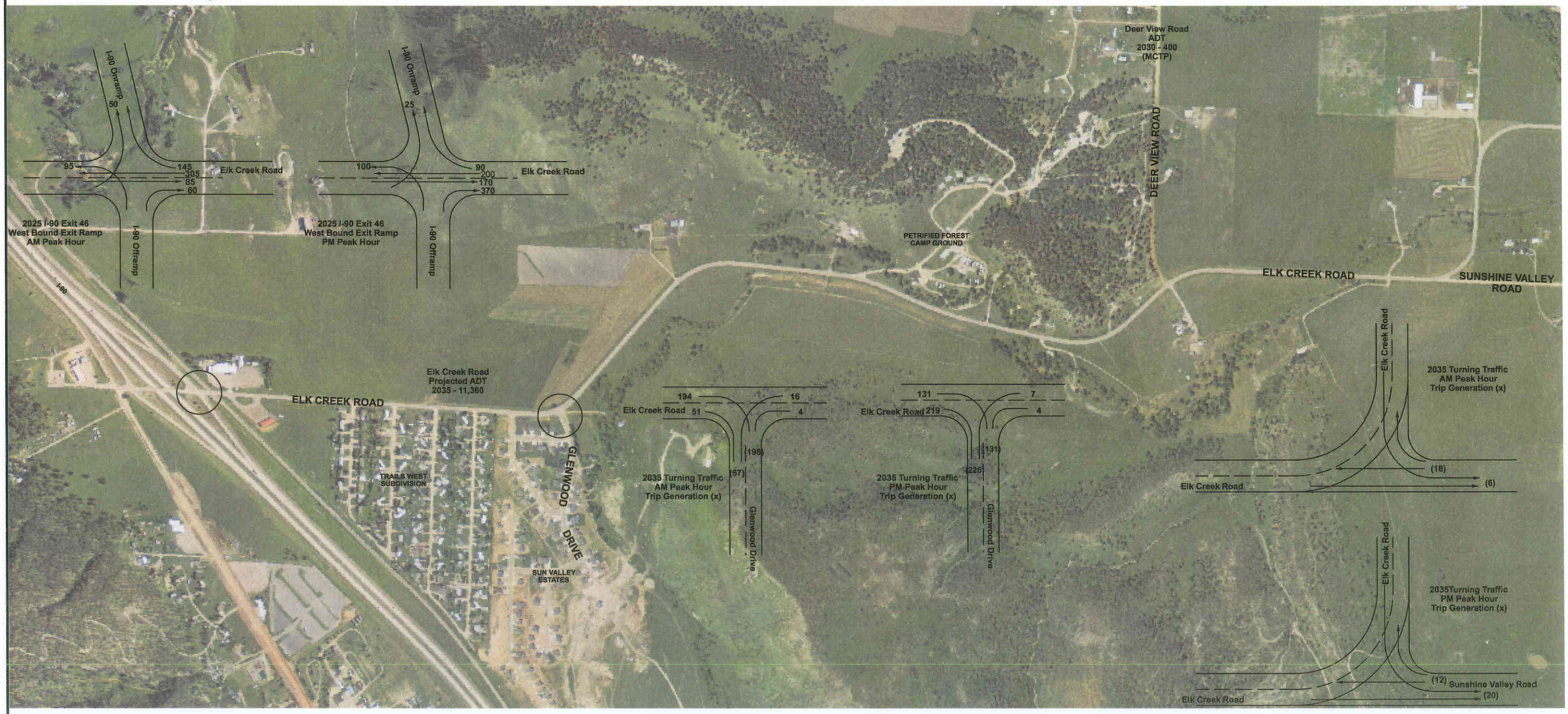
D. RALLY WEEK TRENDS

By using the 2008 traffic count done during the Rally and taking into account the Rally's stabilizing attendance rate, the following increases for traffic on Elk Creek Road can be anticipated through the year 2035;

Motorcycles		1350 per day
Car & Trailer		670 per day
2 Axle – Long		120 per day
Buses		50 per day
2 Axle – 6 Tire		25 per day
	Total	2215 per day

There will no doubt be years when the rates are higher, such as the Rally's 75th anniversary 2015 or years when it is down due to economic factors.

MEADE COUNTY
ELK CREEK ROAD CORRIDOR STUDY



The DOT counts near I-90 are from the Interstate 90 Black Hawk - Sturgis Corridor Preservation for the SD DOT dated December 2004.
The 2008 Rally counts are from Meade County.
The 2003 counts and 2030 projections are fron the Meade County Transportation Plan date Novembr 2008.

FUTURE PEAK HOUR TURNING MOVEMENTS AND PROJECTED AADT ELK CREEK ROAD BETWEEN I-90 AND SUNSHINE VALLEY ROAD

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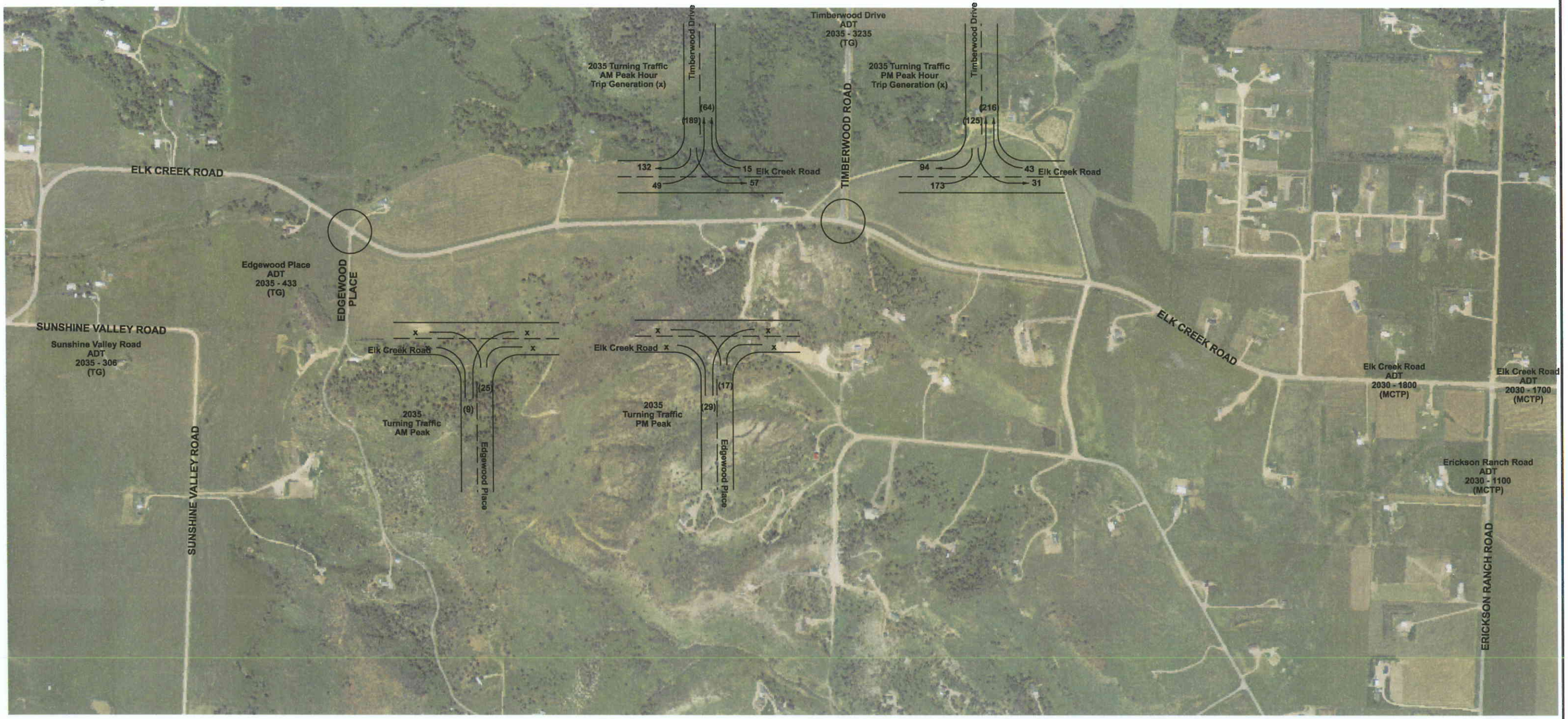
MEADE COUNTY
ELK CREEK ROAD CORRIDOR STUDY



The 2035 counts were calculated using Trip Generation.
The 2030 traffic counts are from the Meade County Traffic Plan (MCTP).

FUTURE PEAK HOUR TURNING MOVEMENTS AND PROJECTED AADT
ELK CREEK ROAD
BETWEEN SUNSHINE VALLEY ROAD AND ERICKSON RANCH ROAD

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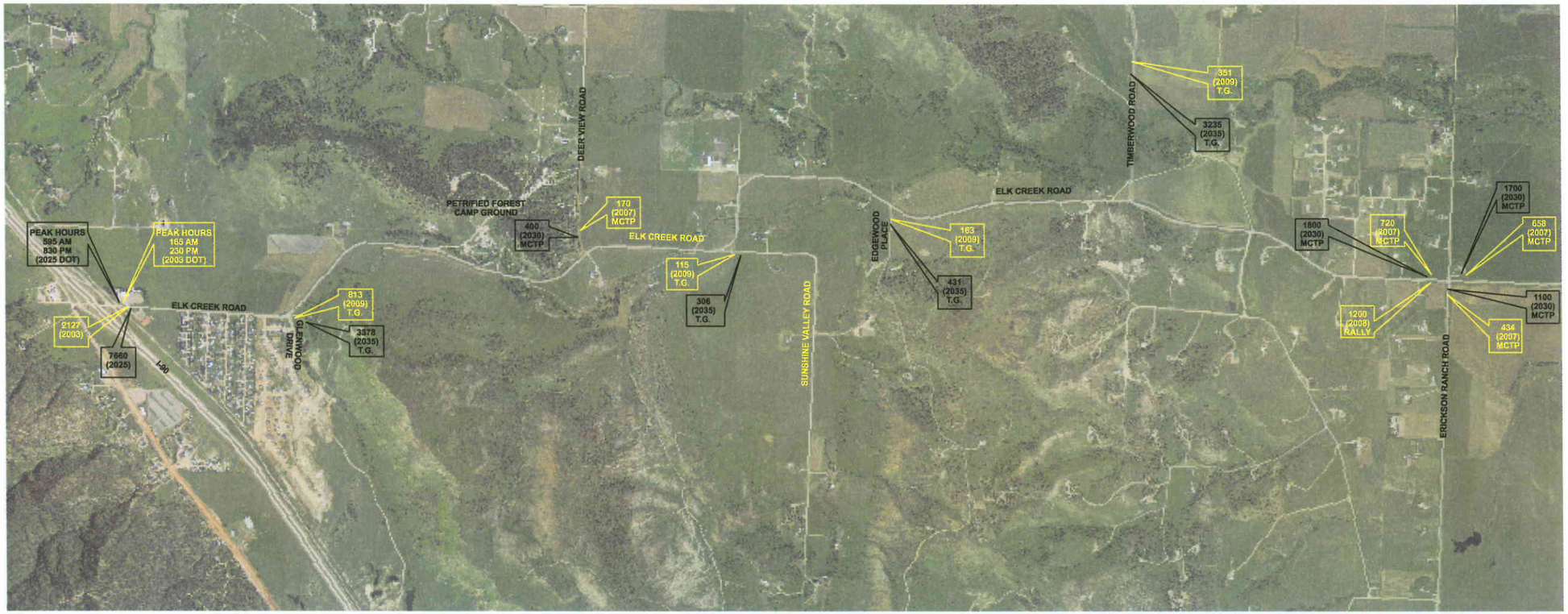
MEADE COUNTY
ELK CREEK ROAD CORRIDOR STUDY



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The Rally counts are from Meade County.
The 2007 counts and 2030 projections are fron the Meade County Transportation Plan date Novembr 2008.
The counts with T.G. were calculated using Trip Generation software.

LEGEND

AVERAGE DAILY TRAFFIC COUNT	170
(YEAR OF COUNT)	(2007)

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EXISTING AND FUTURE AADT
ELK CREEK ROAD
BETWEEN ERICKSON RANCH ROAD AND I-90

SECTION IX – ROAD RE-ALIGNMENT

A. STUDY PERIMETERS AND CONSIDERATIONS

Elk Creek Road is classified as an Urban Arterial in the Meade County Transportation Plan. This type of road is to be asphalt surfaced with two – twelve foot driving lanes with asphalt shoulders and is to have a 100-foot Right-of-Way.

Elk Creek Road is also a Federal Aid Secondary road.

A County Arterial road is to receive full maintenance and have snow removal service per County ordinance.

A Clear Zone is required along roads to provide for the recovery of errant vehicles. This zone is measured for the edge of the traveled way. The width of the clear zone is influenced by traffic volume, speed and embankment slopes. Using the South Dakota Department of Transportation Secondary Road Plan, the **minimum** clear zone requirement is ten feet. The required distance increases as the speed limit increases on the road.

Elk Creek Road between Edgewood Place and North Haines Avenue was rebuilt in the early 1990's. This portion of road was design for a speed of 55 MPH. It has twelve foot driving lanes with one-foot asphalt shoulders. Some of this portion of Elk Creek road has 100' ROW but there are still places with 66' ROW.

The remainder of Elk Creek Road west of Edgewood Place was constructed in the early 1950's. The existing asphalt surface is 26' wide. The horizontal alignment has many sharp corners with speed warning signs. The posted speed limit on this segment of road is mostly 45 MPH. The ROW along this portion of road varies, but nowhere is it 100' wide.

The Counties Urban Arterial classification was used to determine preferred alternatives and costs in this study with a 55 MPH design.

In researching the Right-of-Way along Elk Creek Road it was found that when the road was built in the 1950's, a 90-foot ROW easement was obtained along the road. Since that time some of the plats that have been recorded show only 66 foot of ROW. This discrepancy will have to be addressed when obtaining any new ROW. The quantities of new ROW needed include areas in the platted 66 foot ROW areas.

B. ALTERNATIVES

Various alternatives were studied to find a solution to existing and possible future road and traffic problems along Elk Creek Road. Nine alternatives were originally proposed and presented to Meade County Planning. From these nine alternatives they narrowed the alternatives down to four, one of which was the do nothing alternative. A description of the four alternatives is as follows.

Alternative 1: This is the do nothing alternative. This is also has the least up front expenses. This alternative also requires no Right-of-Way to be acquired. This alternative should be deemed acceptable. The existing road does not meet the requirements of Meade County for an Urban Arterial Road and none of the existing traffic hazards would be corrected

Alternative 2: This alternative would realign the road on the east end by continuing the alignment south to the section line, then west to intersect the existing alignment. The curves on the west 1 ½ miles of road would be straightened out. This alternative would eliminate two creek crossings. There new box culverts would be required with alternative.

Alternative 3: This alternative would also realign the road on the east end to the section line to the south. It would also move the alignment south of the diversion channel located across the road from the Elk Creek Campground. Three new box culverts would be required with this alternative.

Alternative 4: Compared to alternate 3 this alternative would move the road farther south away from the drainage channel to parallel the south property line of Lots 1 and 2. It would then cross the existing Elk Creek Road and extend west into the north ½ of the NW ¼ Section 14, T3N, R6E before turning to the southwest to connect with a possible realignment of Elk Creek Road required by the rebuilding of I-90 exit 46.

The horizontal and vertical alignments would be such that they meet the design standards for a 55 mph road.

All three of the new alignment options will enhance traffic flow and improve safety on the road by removing sharp curves, widening the Right-of-Way and removing obstructions and traffic hazards.

Table of Alternative Cost Comparisons
For Reconstructing Elk Creek Road

ELK CREEK ROAD
ALTERNATE COST COMPARISIONS
FROM WEST SIDE OF TRAILS WEST SUBDIVISION TO TIE IN WITH 1990'S IMPROVEMENTS

Alternate	32 'Asphalt Road	Structures	Grading	Incidentals	R.O.W.	Engineering	Total
1	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2	$1,377,196.64	$260,700.00	$180,900.00	$818,458.49	$39,420.00	$395,588.27	$3,072,263.40
3	$1,438,862.16	$337,800.00	$189.000.00	$884,547.97	$55,950.00	$427,531.52	$3,333,692.66
4	$1,557,625.39	$337,800.00	$204,600.00	$945,011.42	$70,830.00	$456,755.52	$3,572,622.34
West End	$91,356.33	$0.00	$12,000.00	$51,678.16	$900.00	$23,255.17	$179,189.67

Note: Incidentals include fencing, seeding, traffic control, culverts, removals, erosion control, incidental work

Right-of-Way cost based on a price of $3000 per acre.
West End includes the area from the west side of Trails West subdivision west to I-90.

Additional Right-of-Way Requirements

The following is an estimate of additional Right-of-Way that would be required to construct the above alternatives. These areas are from the west side of Trails West subdivision to near Edgewood Place.

Alternate 1. 0.0 Acres
Alternate 2. 13.14 Acres
Alternate 3. 18.65 Acres
Alternate 4. 23.61 Acres
Tie in between Trails West and I-90 – 0.3 Acres

C. HIGHWAY CLASSIFICATION

There are two classes of highways. The general description is as follows:

Class I: Highways on which motorist expect to travel at relatively high speeds, including major intercity routes, primary arterials, and daily commuter routes.

Class II: Highways on which motorist do not necessarily expect to travel at high speeds, including access routes, scenic and recreational routes that are not primarily arterials, and through rugged terrain.

By designating Elk Creek Road a Primary Arterial road so it would be a Class I highway.

D. DISCRIPTION OF LEVEL OF SERVICE (LOS)

There are six different categories of LOS, described as LOS A though LOS F.

LOS A describes the highest quality of traffic services, when motorists are able to travel at their desired speed. Without strict enforcement, this highest quality would result in average speeds of 55 mi/h or more on two-lane highways in Class I. The passing frequency required to maintain these speeds has not reached a demanding level, so that passing demand is well below passing capacity, and platoons of three or more vehicles are rare. Drivers are delayed no more than 35% of their travel time by slow-moving vehicles. A maximum flow rate of 490 pc/h total in both directions may be achieved with base conditions. On Class II highways, speeds may fall below 55 mi/h, but motorists will not be delayed in platoons more than 40% of their travel time.

LOS B characterizes traffic flow with speeds of 50 mi/h or slightly higher on level-terrain Class I highways. The demand for passing to maintain desired speeds becomes significant and approximates the passing capacity at the lower boundary of LOS B. Drivers are delayed in platoons up to 50% of the time. Service flow rates of 789 pc/h total in both directions can be achieved under base conditions. Above this flow rate, the number of platoons increases dramatically. On Class II highways, speeds may fall below 50 mi/h, but motorists will not be delayed in platoons for more than 55% of their travel time.

LOS C describes further increases in flow, resulting in noticeable increases in platoon formation, platoon size and frequency of passing impediments. The average speed still exceeds 45 mi/h on level-terrain Class I highways, even though unrestricted passing demand exceeds passing capacity. At higher volumes the chaining of platoons and significant reductions in passing capacity occur. Although traffic flow is stable, it

is susceptible to congestion due to turning traffic and slow-moving vehicles. Percent time-spent-following may reach 65%. A service flow rate of up to 1,190 pc/h total in both directions can be accommodated under base conditions. On Class II highways, speeds may fall below 45 mi/h, but motorists will not be delayed in platoons for more than 70% of their travel time.

LOS D describes unstable traffic flow. The two opposing traffic streams begin to operate separately at higher volume levels, as passing becomes extremely difficult. Passing demand is high, but passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common, although speeds of 40 mi/h still can be maintained under base conditions on Class I highways. The proportion of no-passing zones along the roadway section usually has little influence on passing. Turning vehicles and roadside distractions cause major shock waves in the traffic stream. Motorists are delayed in platoons for nearly 80% of their travel time. Maximum service flow rates of 1,830 pc/h total in both directions can be maintained under base conditions. On Class II highways, speeds may fall below 40 mi/h, but in no case will motorists be delayed in platoons for more than 85% of their travel time.

At **LOS E,** traffic flow conditions have a percent time-spent-following greater than 80% of Class I highways and greater than 85% on Class II. Even under base conditions, speeds may drop below 40 mi/h. Average travel speeds on highways with less than base conditions will be slower, even down to 24 mi/h on sustained upgrades. Passing is virtually impossible at LOS E and platooning becomes intense, as slower vehicles or other interruptions are encountered.

The highest volume attainable under LOS E defines the capacity of the highway, generally 3,200 pc/h total in both directions. Operating conditions at capacity are unstable and difficult to predict. Traffic operations seldom reach near capacity on rural highways, primarily because of a lack of demand.

LOS F represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable.

E. FUTURE LEVEL OF SERVICE

The year 2035 traffic projections were used to determine the LOS for each of the four alternative road alignments. It is difficult to determine the LOS for short segments of road such as this but the best estimates are as follows.

For Class I Highway

Alternative 1, the do nothing alternative, the traffic flow will exceed capacity and a LOS of F will be had in the area Between I-90 and Glenwood Drive. Once past Glenwood Drive the LOS will be E.

Alternative 2, a LOS C would be expected for a two-lane road.

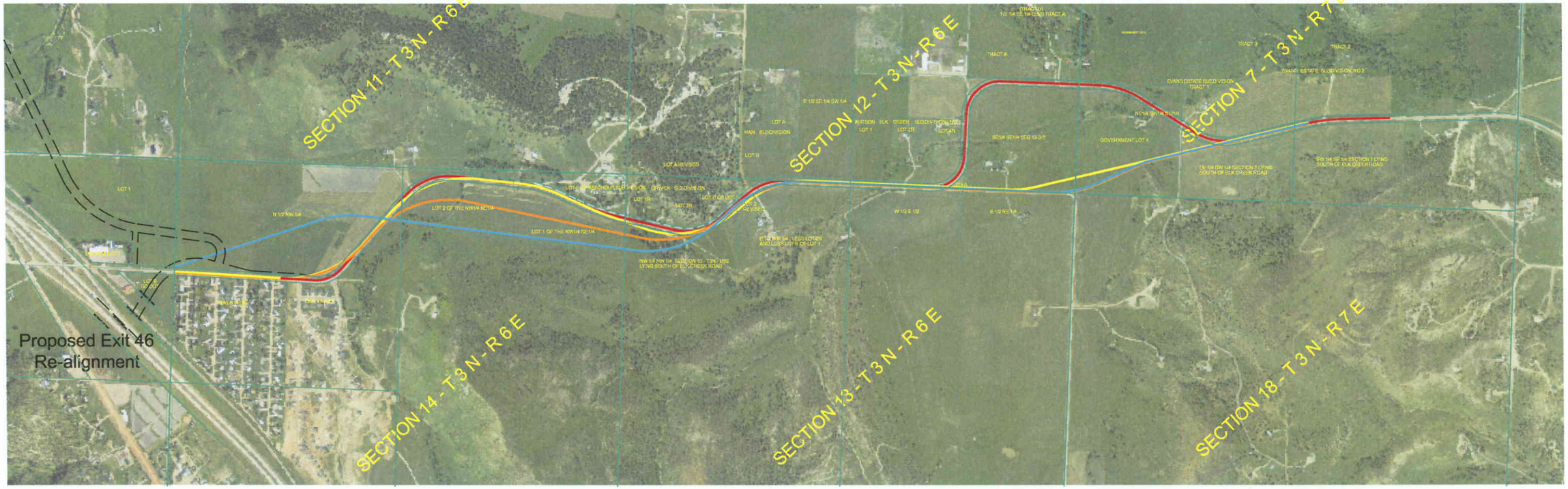
Alternative 3, a LOS C would be expected for a two-lane road.

Alternative 4, a LOS D would be expected for a two-lane road up to Glenwood Drive. East of Glenwood a LOS C would be expected.

F. FINAL ALTERNATIVE

There are numerous possible alignments that can be used to help alleviate existing and future traffic and safety issues along Elk Creek Road. The alternatives listed above are the chosen alternatives but in no way should be considered the only ones. It may be necessary to modify or combine portions of two or more of the proposed alternatives to come up with the best solution for all interested parties.

Meade County
Elk Creek Road Corridor Study



	Additional ROW Required (Acres)
Alternate #1 - No change	0.0
Alternate #2 - Realign East End, Remove Sharp Curves on West End	13.14
Alternate #3 - Realign Road to South, Tie into Existing West End	18.65
Alternate #4 - Realign Road to South, Line up West End With Proposed New I-90 Exit	23.61

Brosz Engineering, Inc.
Registered in North Dakota, South Dakota, Wyoming, Montana, and Nebraska

Final Alignment Alternatives 1 - 4

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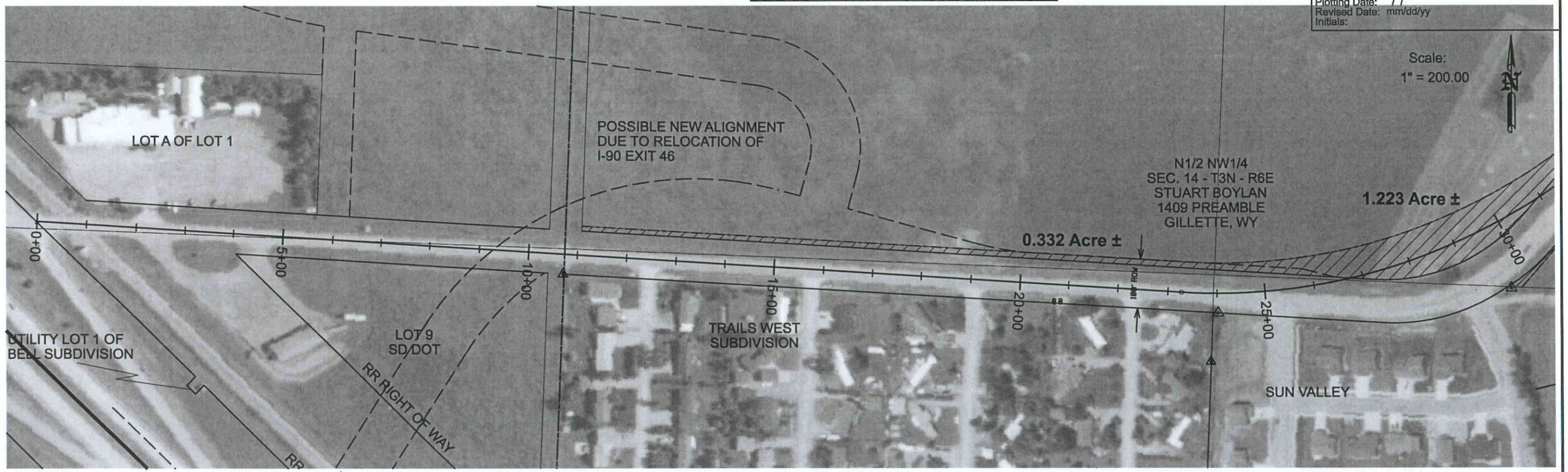
ALTERNATE #2

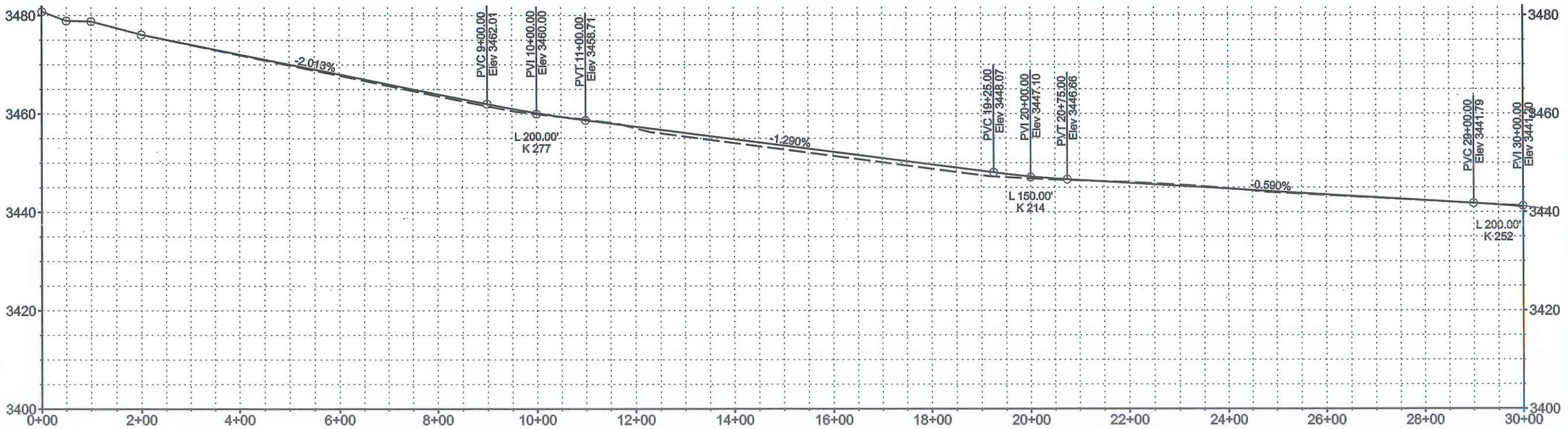
Additional ROW Required

MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	1	5

Plotting Date: / /
Revised Date: mm/dd/yy
Initials:

Scale:
1" = 200.00





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ALTERNATE #2

MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	2	5

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Revised Date: mm/dd/yy
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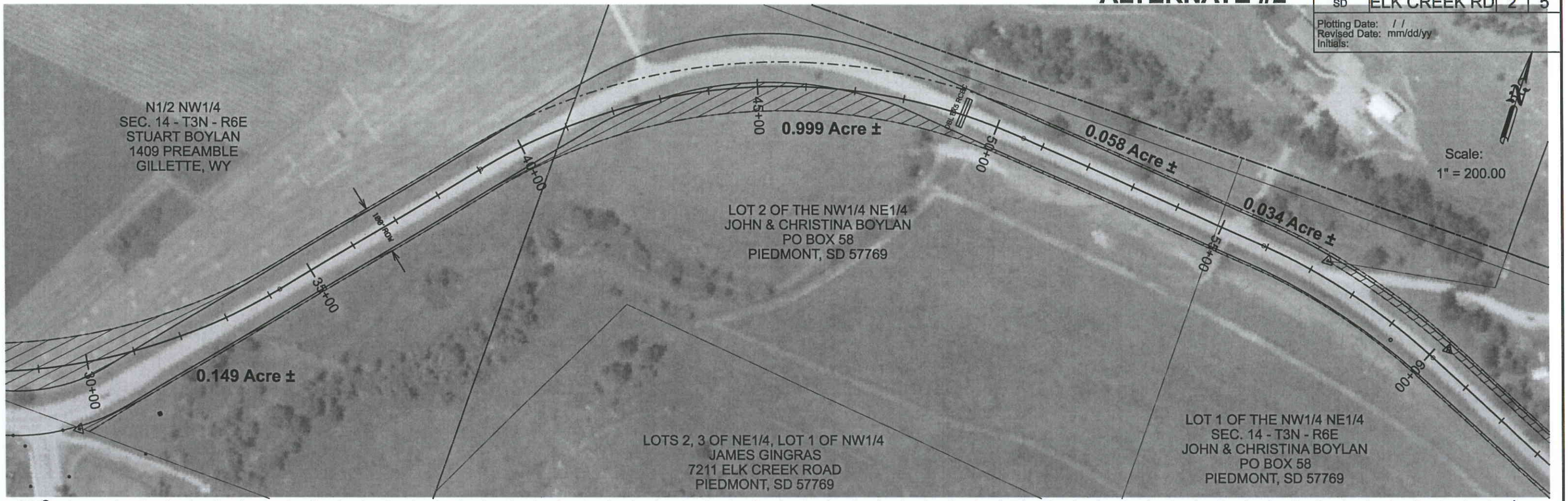

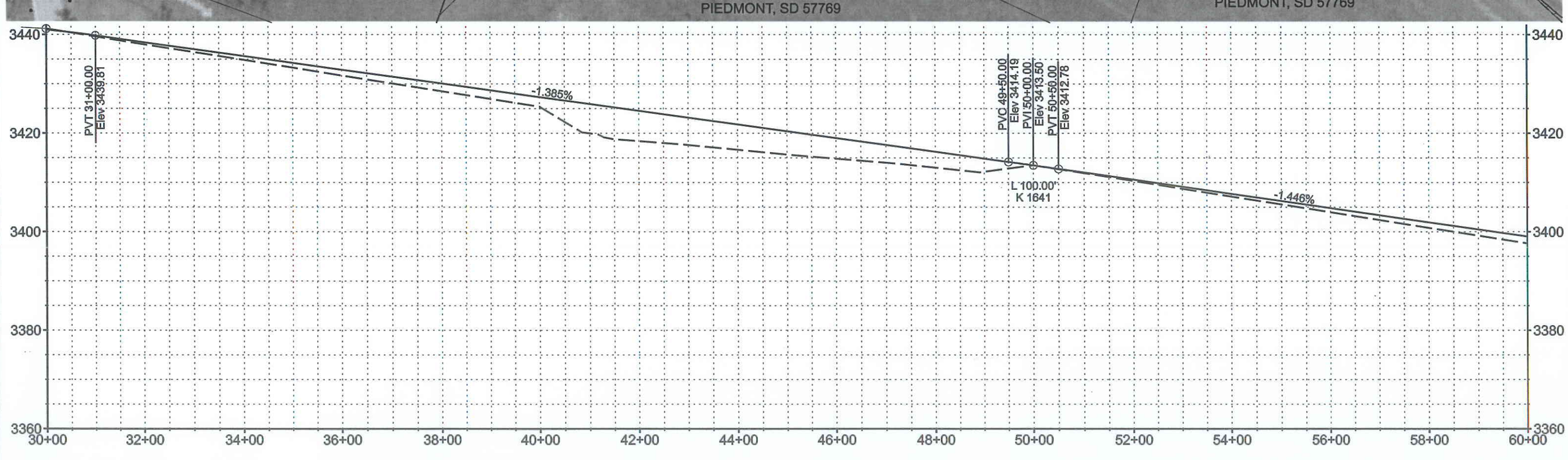

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ALTERNATE #2

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	ELK CREEK RD	3	5

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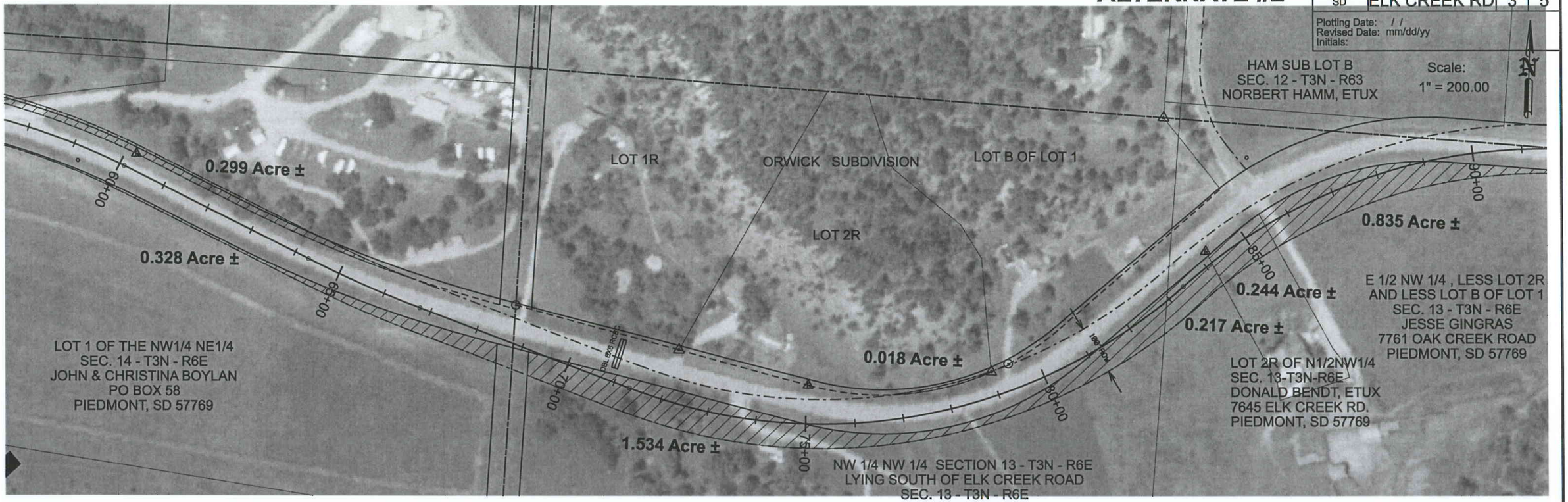
Revised Date: mm/dd/yy
Initials:



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MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	4	5

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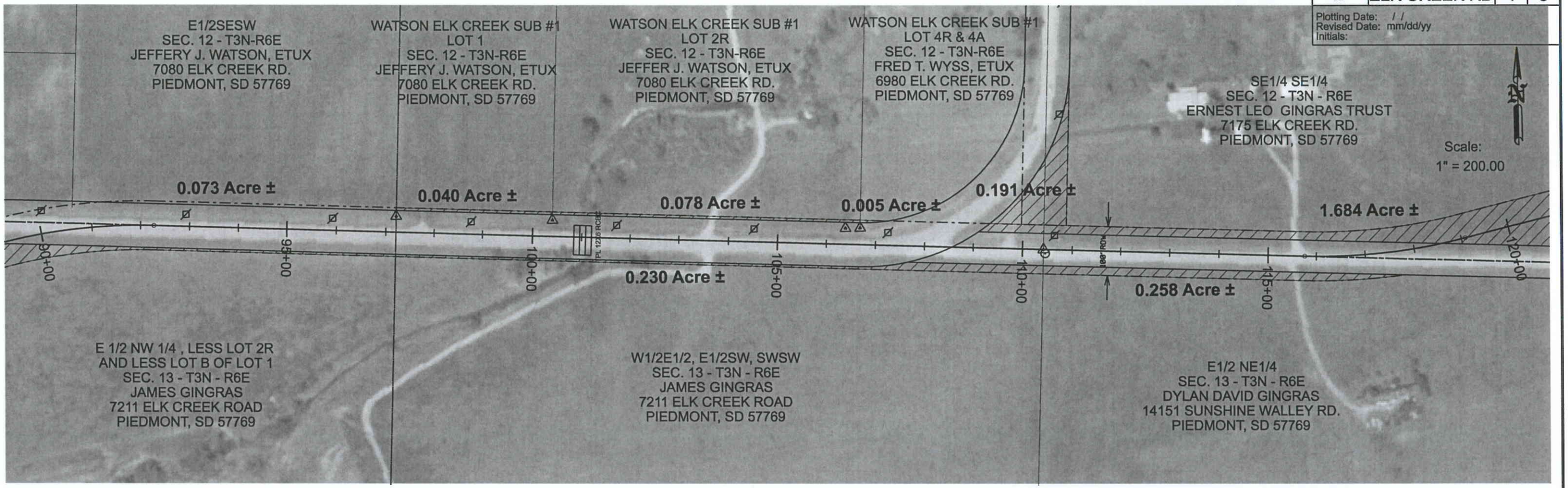

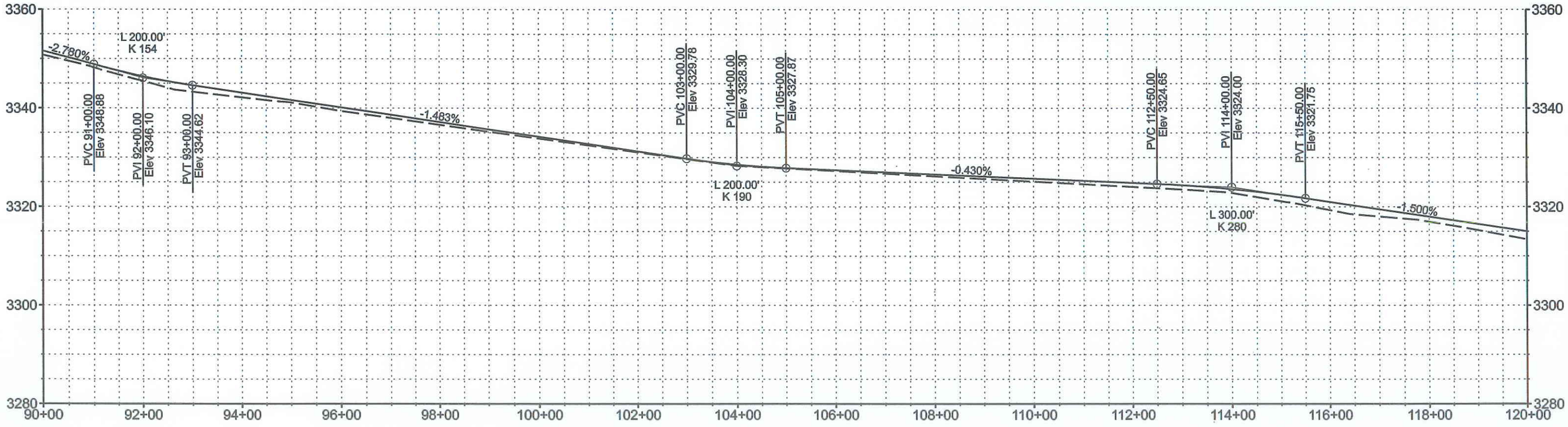

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MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	5	5

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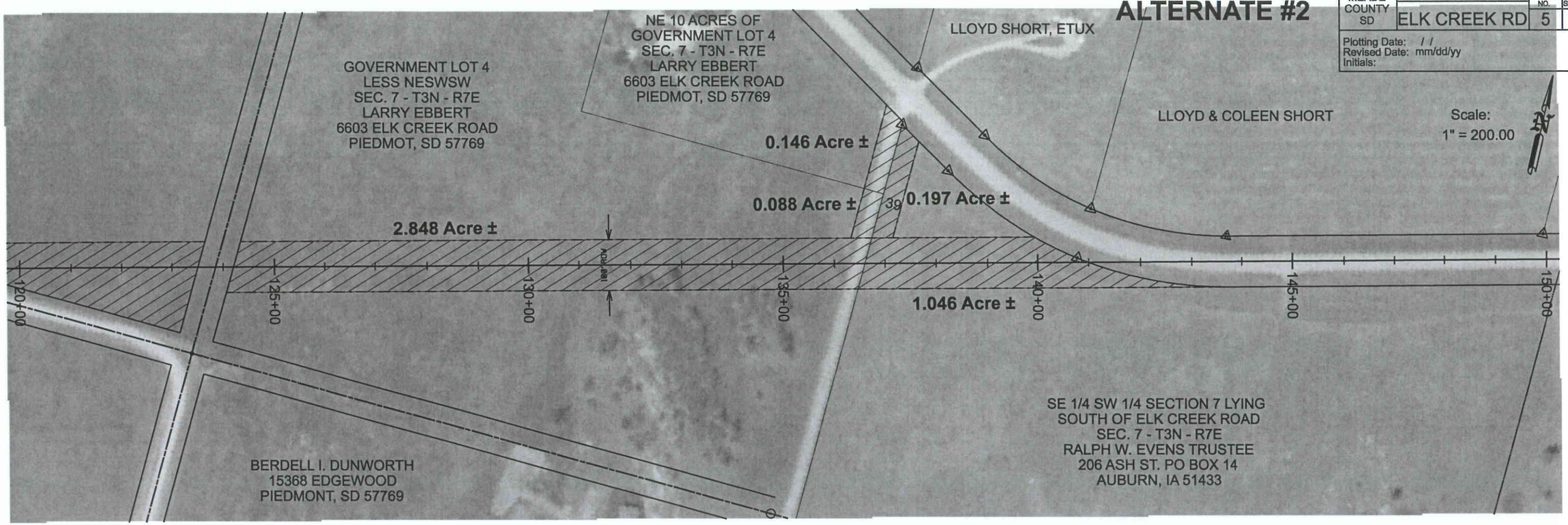

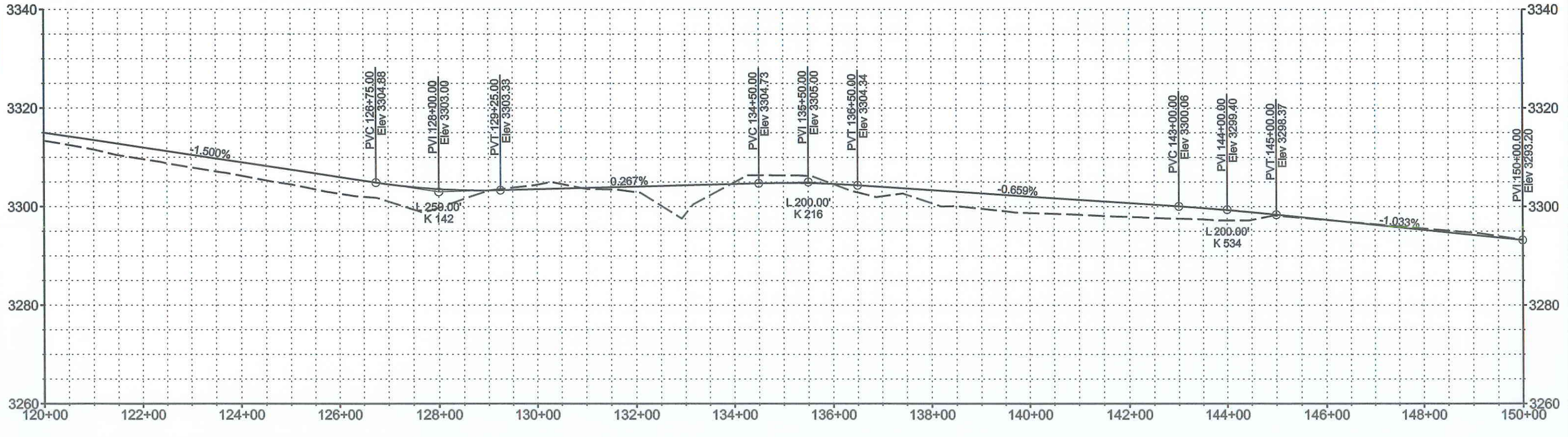

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Additional ROW Required

ALTERNATE #3

MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEL RD	1	5

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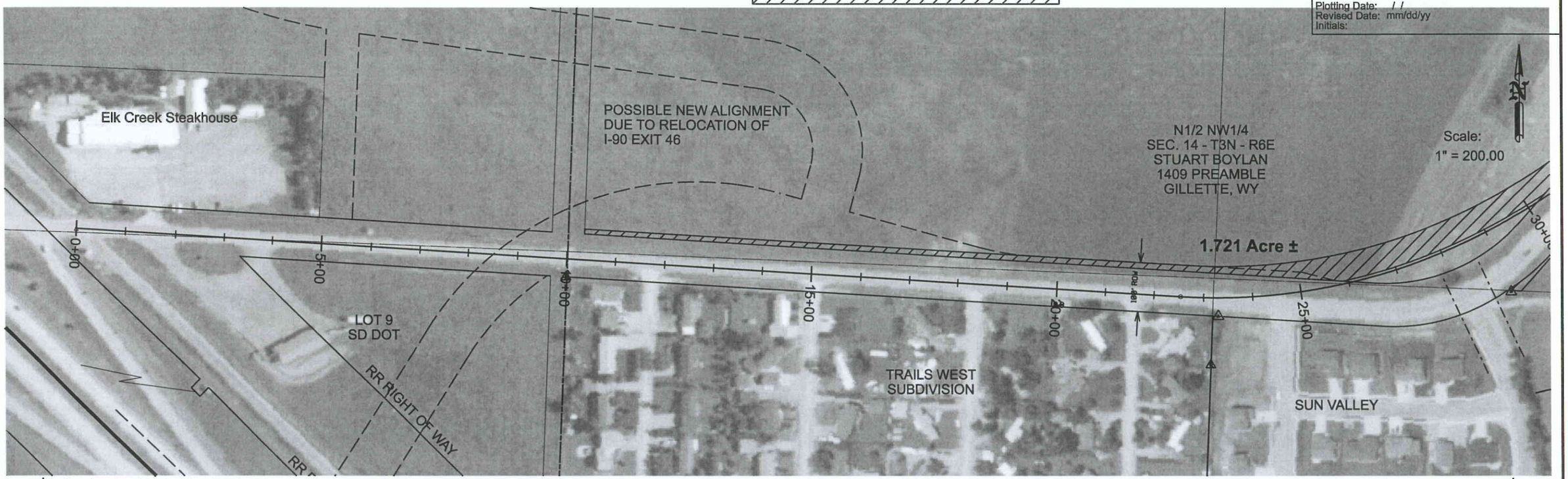

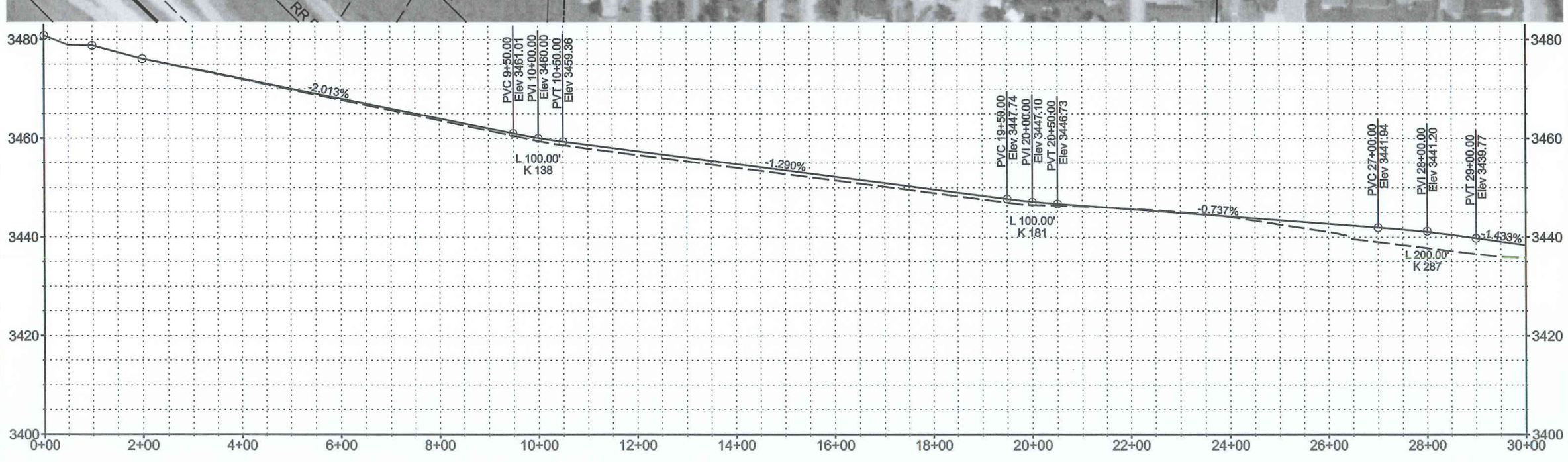

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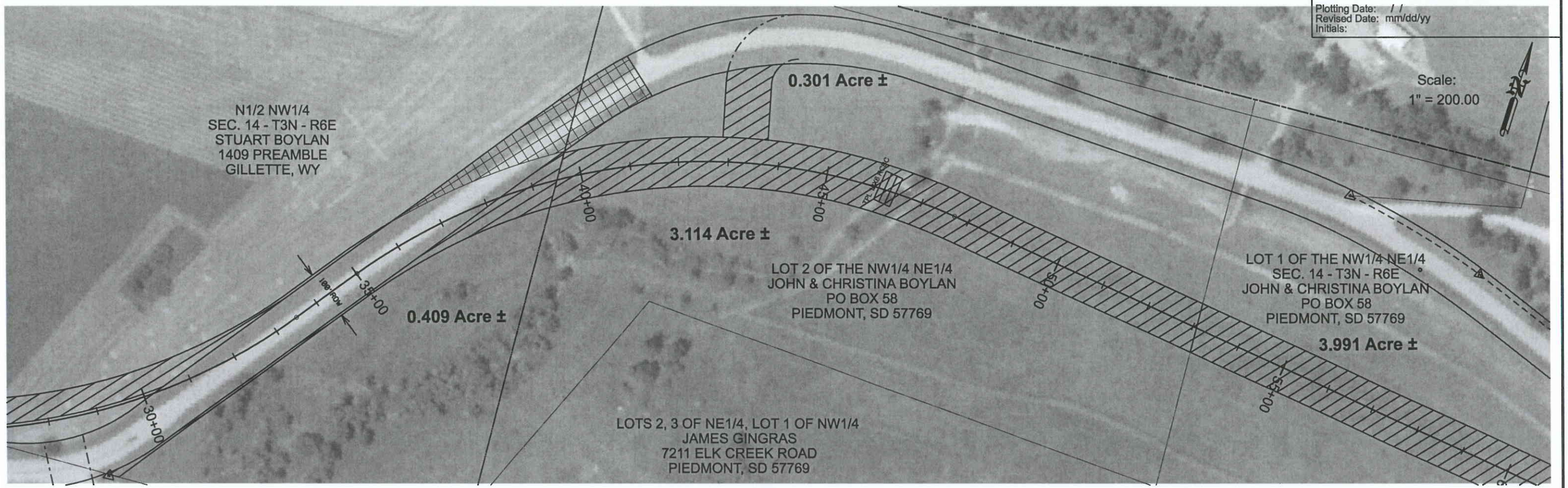

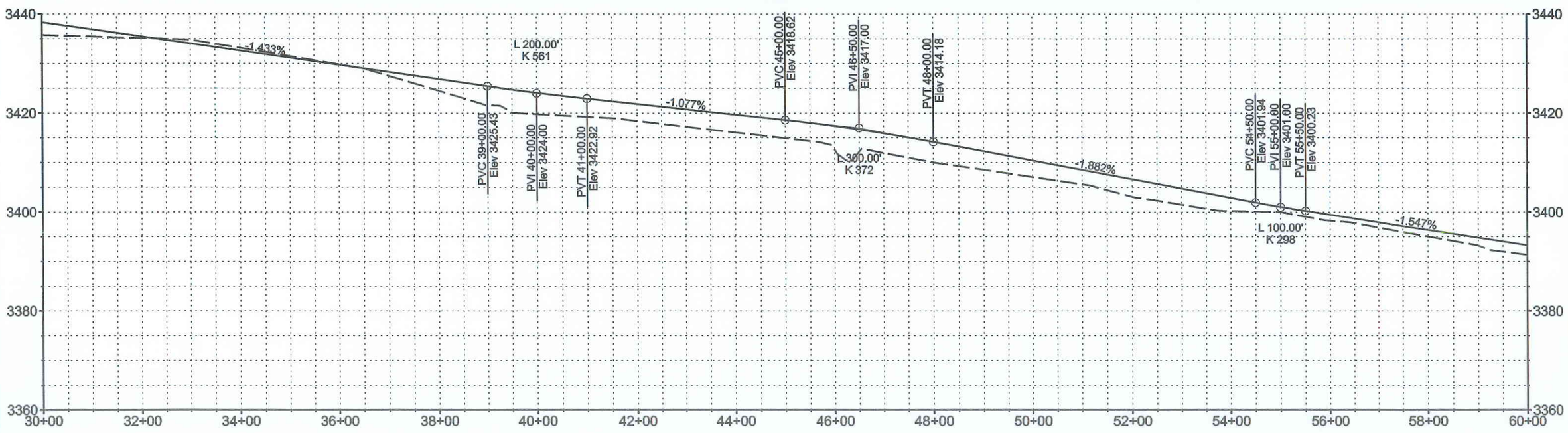

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MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
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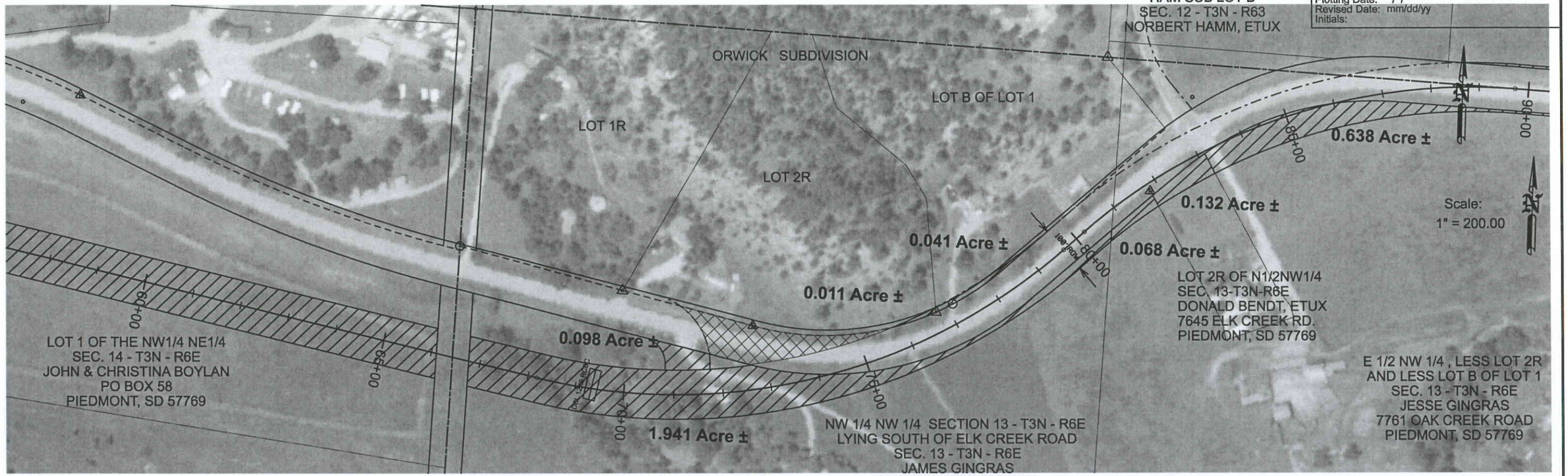

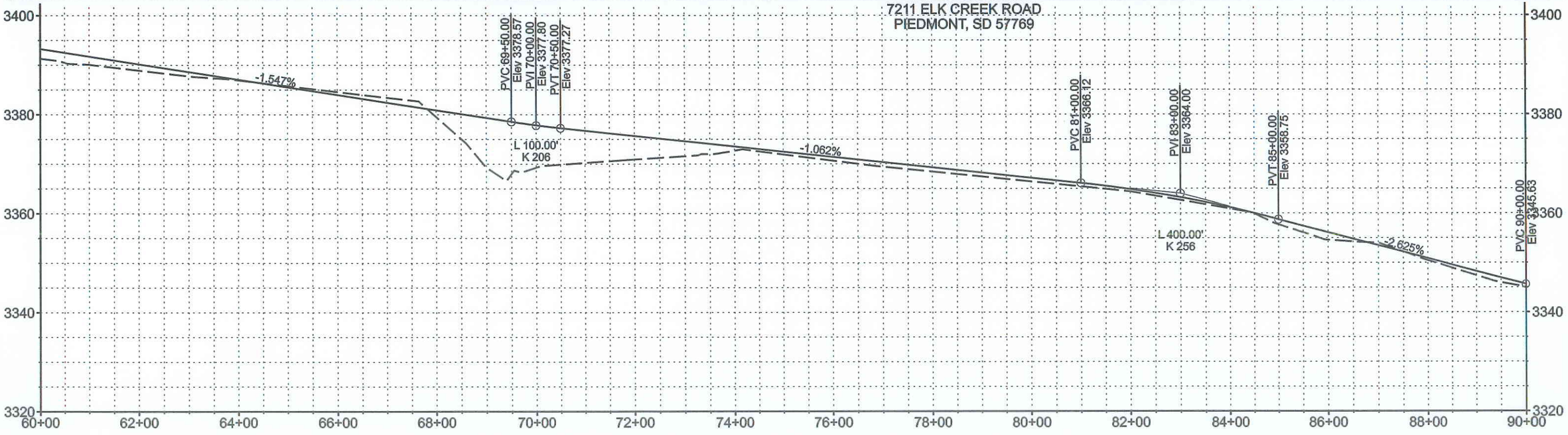

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ALTERNATE #3

MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	4	5

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Revised Date: mm/dd/yy
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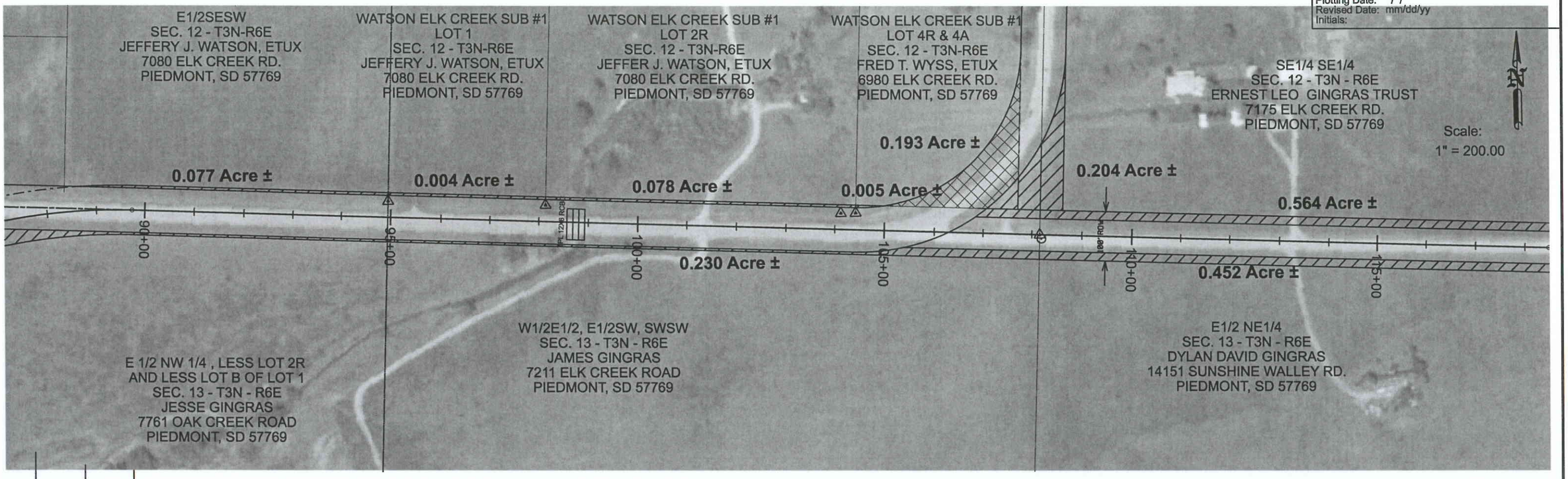

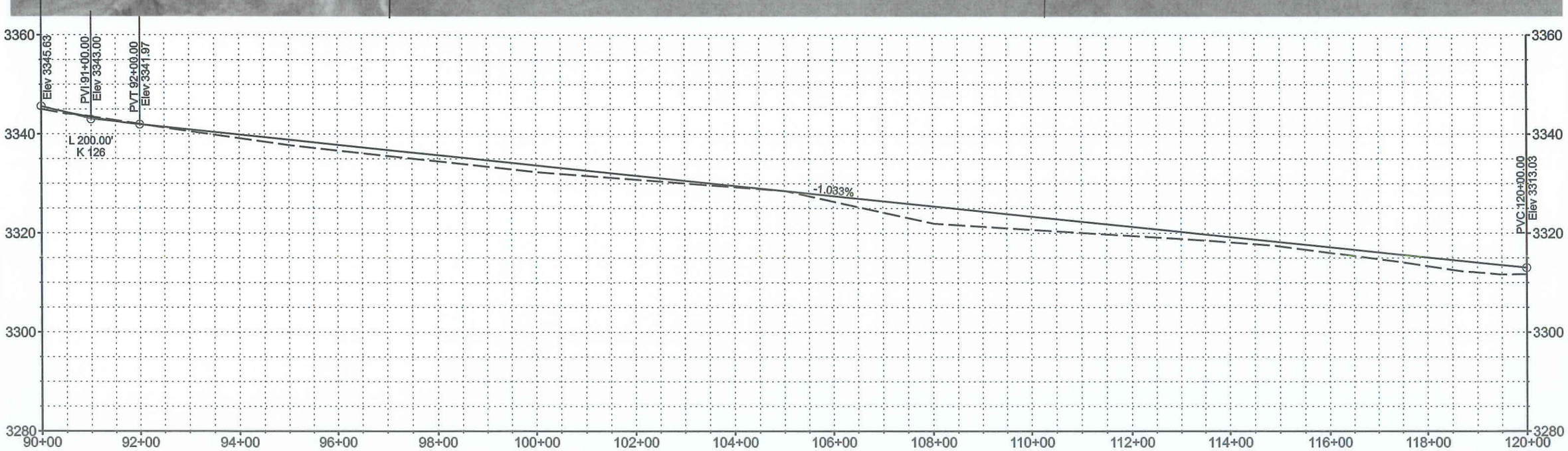

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MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
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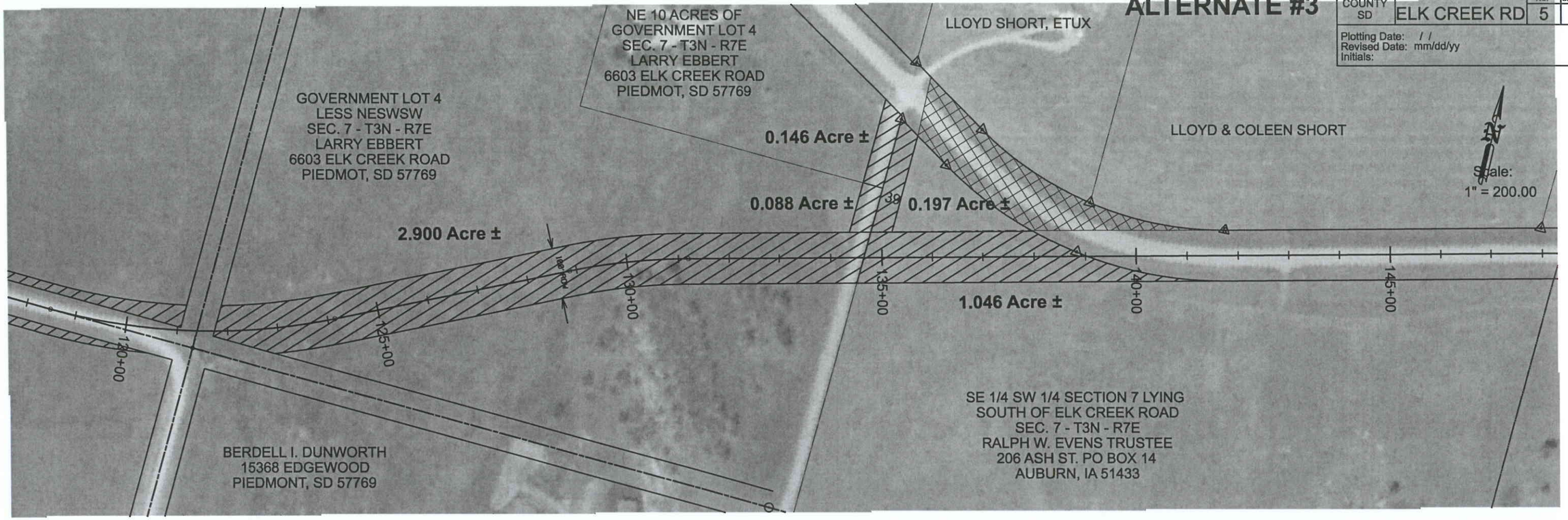

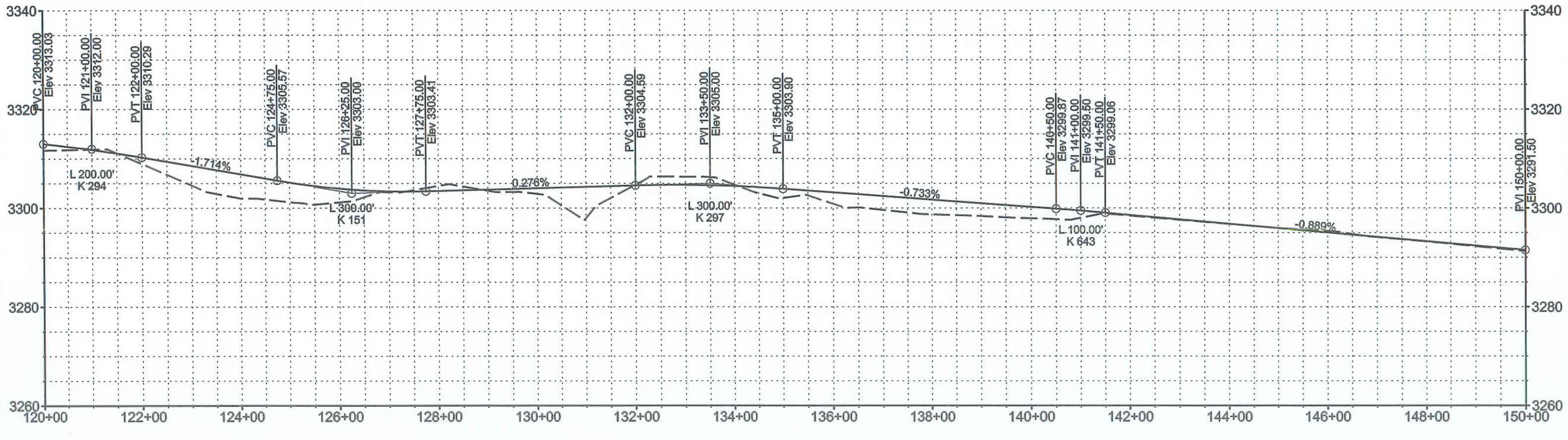

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	ELK CREEK RD	1	5

Plotting Date: / /
Revised Date: mm/dd/yy
Initials:

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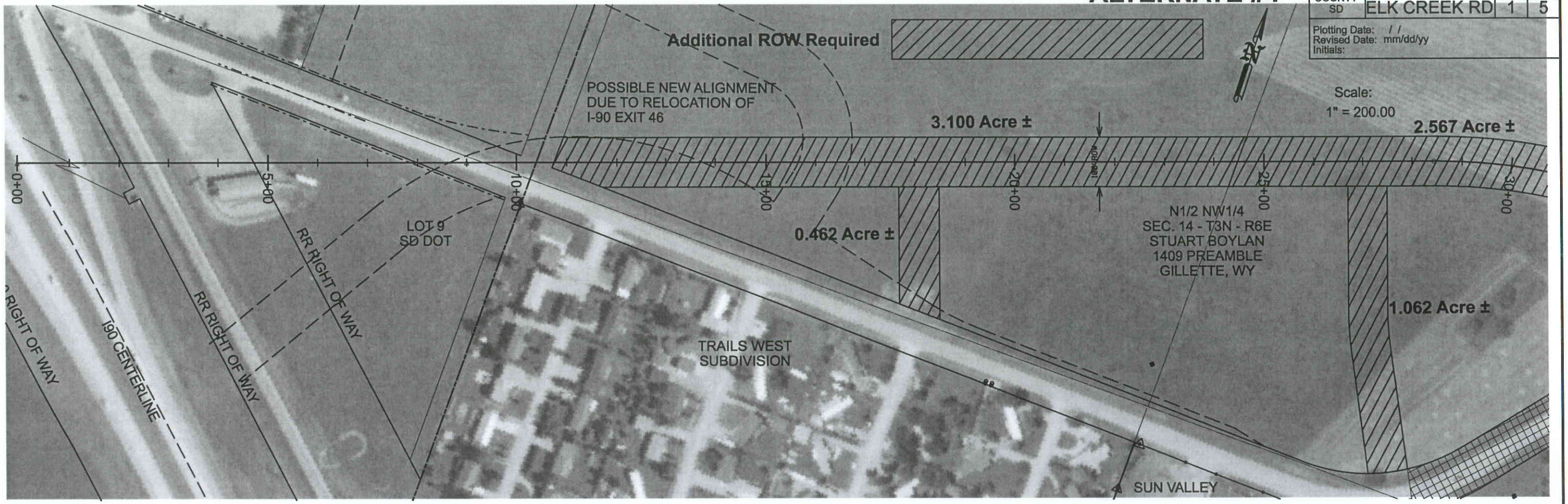

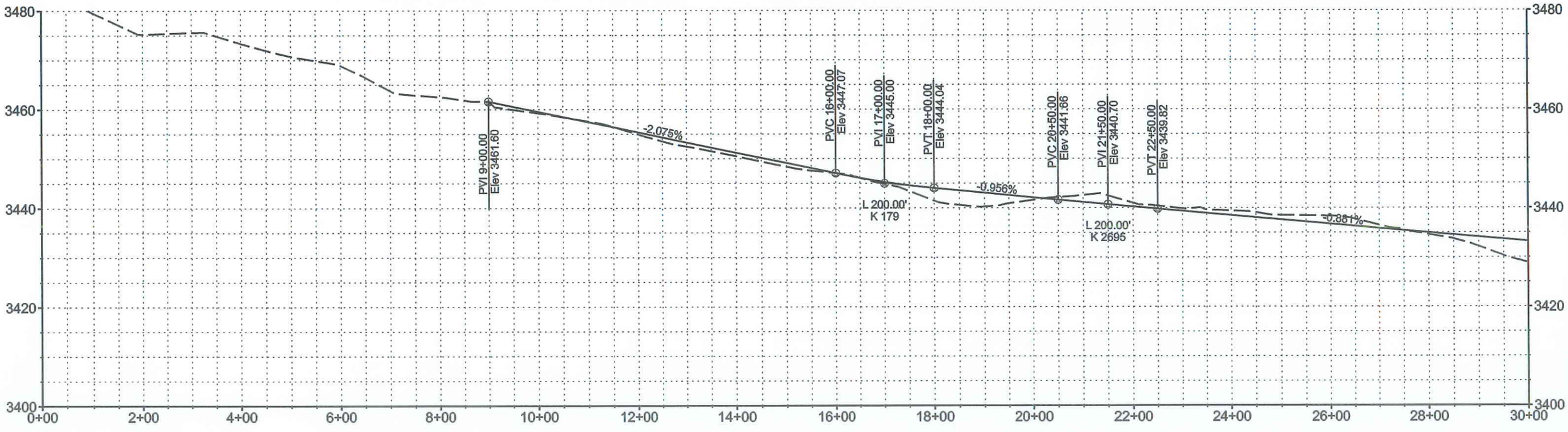

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ALTERNATE #4

MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	2	5

Plotting Date: / /
Revised Date: mm/dd/yy
Initials:

Scale:
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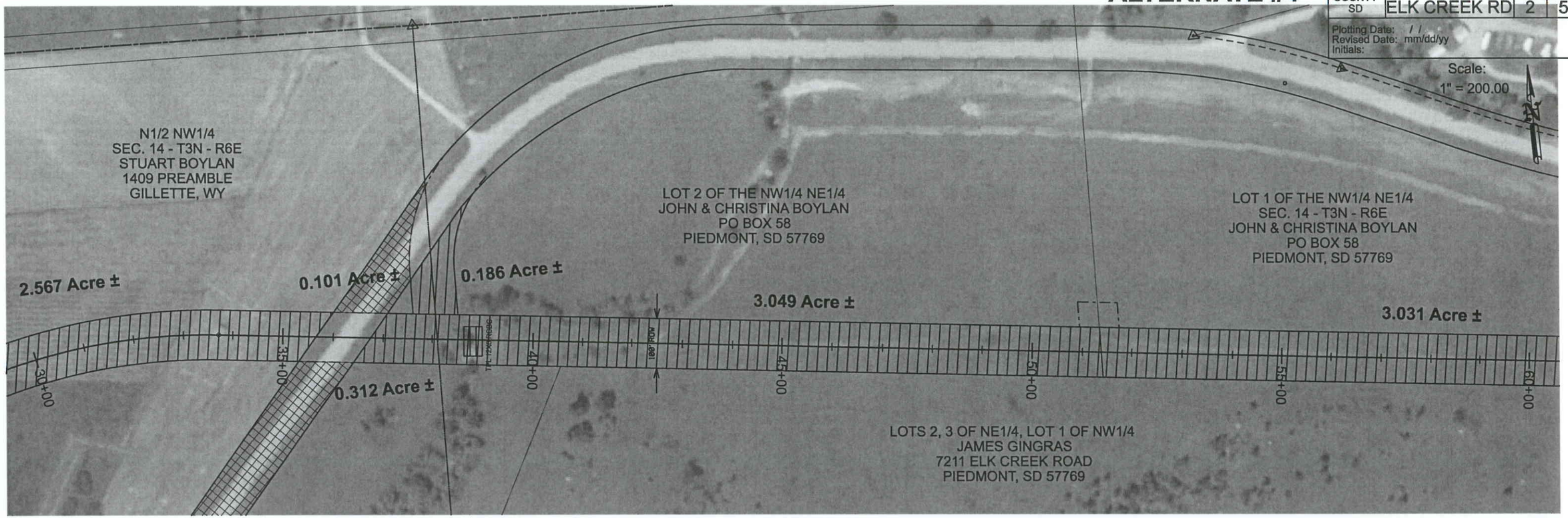

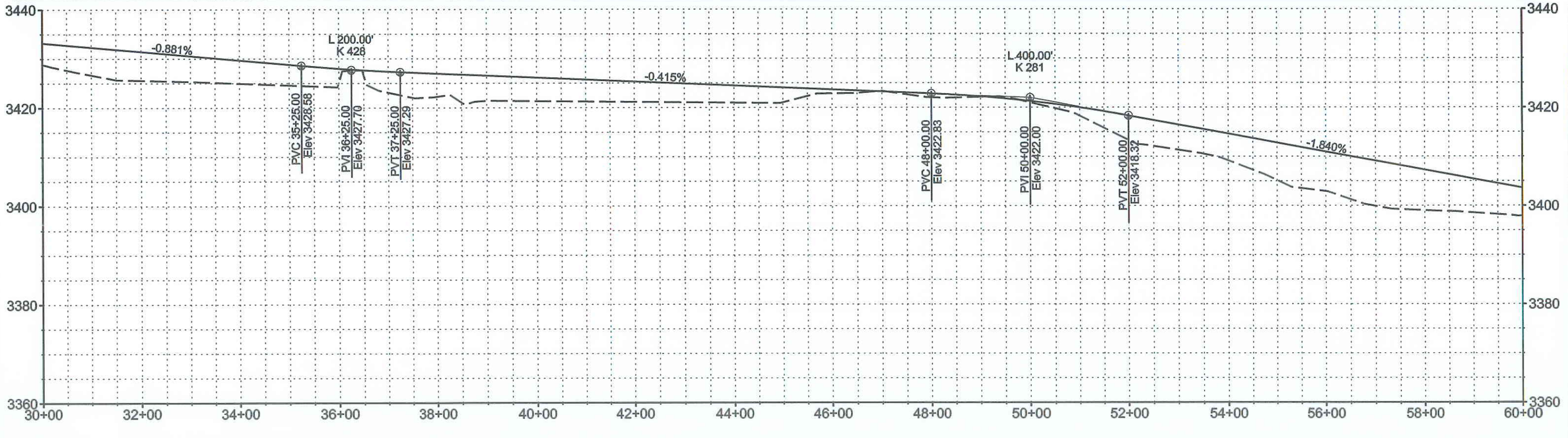

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ALTERNATE #4

MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	3	5

Plotting Date: / /
Revised Date: mm/dd/yy
Initials:

Scale:
1" = 200.00

LOT 1 OF THE NW1/4 NE1/4
SEC. 14 - T3N - R6E
JOHN & CHRISTINA BOYLAN
PO BOX 58
PIEDMONT, SD 57769

ORWICK SUBDIVISION
LOT 1R
LOT 2R
LOT B OF LOT 1

HAM SUB LOT B
SEC. 12 - T3N - R63
NORBERT HAMM, ETUX

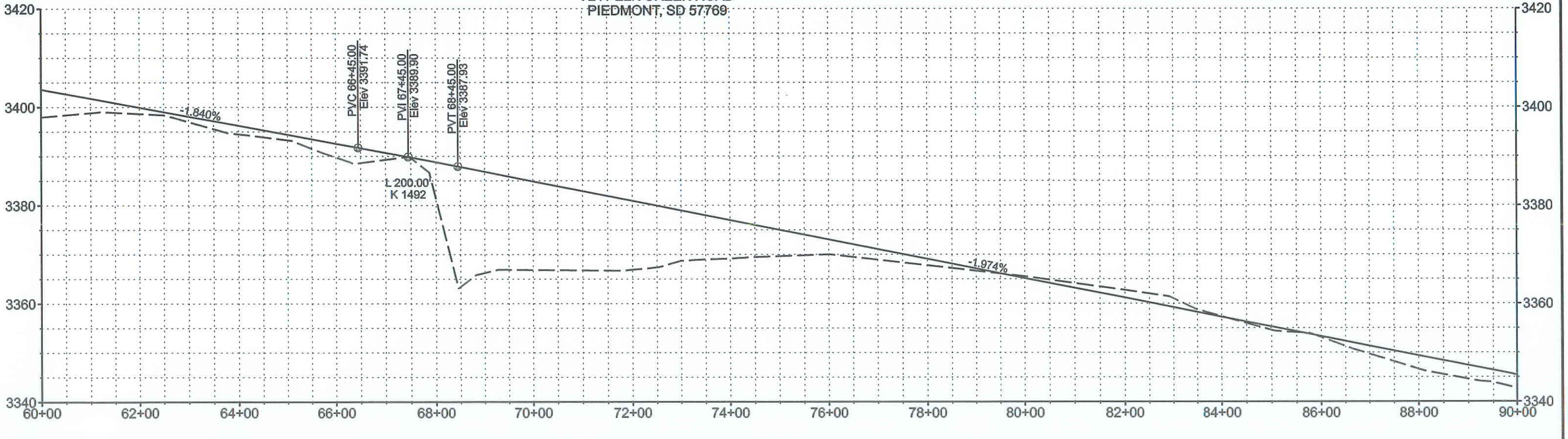
E1/2SESW
SEC. 12 - T3N-R6E
JEFFERY J. WATSON, ETUX
7080 ELK CREEK RD.
PIEDMONT, SD 57769

0.361 Acre ±
0.052 Acre ±
0.106 Acre ±
0.585 Acre ±
0.077 Acre ±
2.546 Acre ±

LOT 2R OF N1/2NW1/4
SEC. 13-T3N-R6E
DONALD BENDT, ETUX
7645 ELK CREEK RD.
PIEDMONT, SD 57769

E 1/2 NW 1/4 , LESS LOT 2R
AND LESS LOT B OF LOT 1
SEC. 13 - T3N - R6E
JESSE GINGRAS
7761 OAK CREEK ROAD
PIEDMONT, SD 57769

NW 1/4 NW 1/4 SECTION 13 - T3N - R6E
LYING SOUTH OF ELK CREEK ROAD
SEC. 13 - T3N - R6E
JAMES GINGRAS
7211 ELK CREEK ROAD
PIEDMONT, SD 57769



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ALTERNATE #4

MEADE COUNTY SD	PROJECT	SHEET NO.	TOTAL SHEETS
	ELK CREEK RD	4	5

Plotting Date: / /
Revised Date: mm/dd/yy
Initials:

E1/2SESW
SEC. 12 - T3N-R6E
JEFFERY J. WATSON, ETUX
7080 ELK CREEK RD.
PIEDMONT, SD 57769

WATSON ELK CREEK SUB #1
LOT 1
SEC. 12 - T3N-R6E
JEFFERY J. WATSON, ETUX
7080 ELK CREEK RD.
PIEDMONT, SD 57769

WATSON ELK CREEK SUB #1
LOT 2R
SEC. 12 - T3N-R6E
JEFFER J. WATSON, ETUX
7080 ELK CREEK RD.
PIEDMONT, SD 57769

WATSON ELK CREEK SUB #1
LOT 4R & 4A
SEC. 12 - T3N-R6E
FRED T. WYSS, ETUX
6980 ELK CREEK RD.
PIEDMONT, SD 57769

SE1/4 SE1/4
SEC. 12 - T3N - R6E
ERNEST LEO GINGRAS TRUST
7175 ELK CREEK RD.
PIEDMONT, SD 57769

Scale:
1" = 200.00

0.077 Acre ±
0.004 Acre ±
0.078 Acre ±
0.005 Acre ±
0.145 Acre ±
0.204 Acre ±
0.564 Acre ±
0.230 Acre ±
0.452 Acre ±

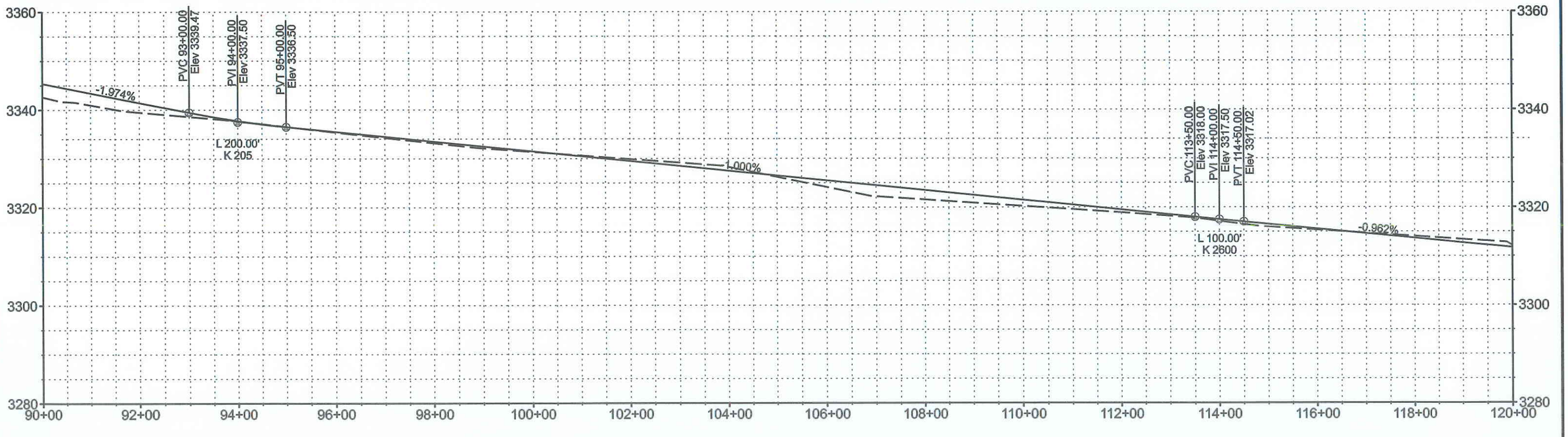
LOT 4A

90+00 95+00 100+00 105+00 110+00 115+00 120+00

E 1/2 NW 1/4 , LESS LOT 2R
AND LESS LOT B OF LOT 1
SEC. 13 - T3N - R6E
JAMES GINGRAS
7211 ELK CREEK ROAD
PIEDMONT, SD 57769

W1/2E1/2, E1/2SW, SWSW
SEC. 13 - T3N - R6E
JAMES GINGRAS
7211 ELK CREEK ROAD
PIEDMONT, SD 57769

E1/2 NE1/4
SEC. 13 - T3N - R6E
DYLAN DAVID GINGRAS
14151 SUNSHINE WALLEY RD.
PIEDMONT, SD 57769



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ALTERNATE #4

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	ELK CREEK RD	5	5

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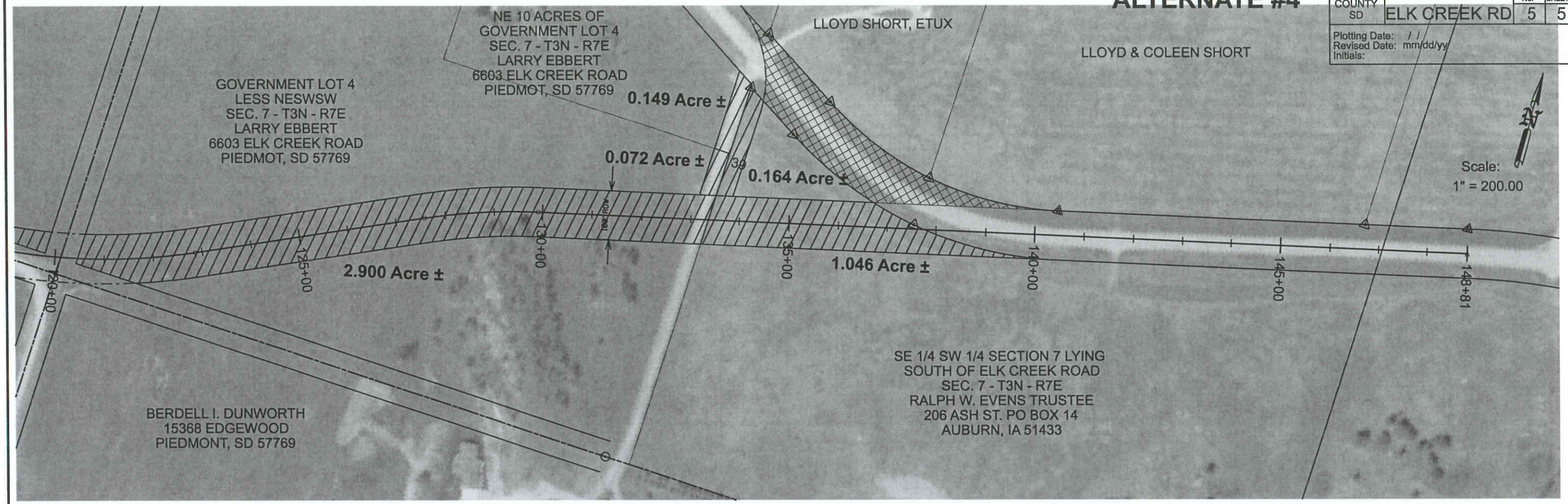

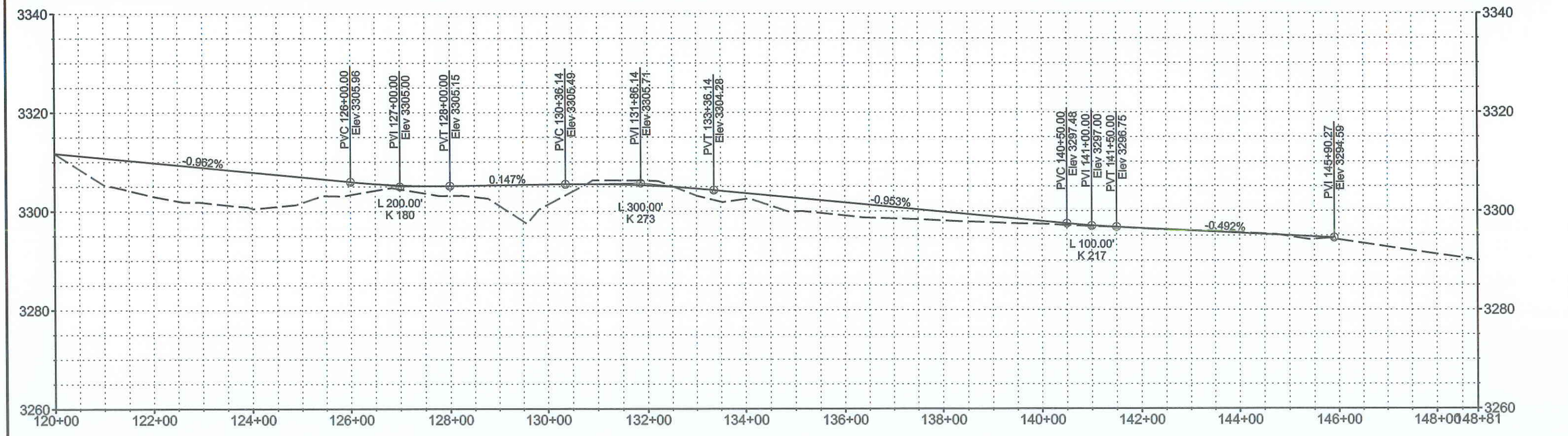

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SECTION X – RECOMMENDATIONS

A. BACKGROUND

Meade County has designated Elk Creek Road as an Urban Arterial Road. According to Meade County Ordinance #10 and the Meade County Transportation Plan, Urban Arterial Roads are to have 100' Right-of-Ways and have a minimum of two – 12' paved lanes and 4 foot paved shoulders.

B. RIGHT-OF-WAY

Since the existing right-of-way along much of Elk Creek Road is less than 100 foot, we recommend that the County acquire the required land to obtain the 100' right-of-way. The way development is rapidly progressing along the road, it is advised that the County acquire this land as soon as possible.

C. ACCESS

It is recommended that the County control access onto Elk Creek Road. The number of access points should be kept to a minimum. This will help to keep a smoother flow of traffic on the road and cut down on the number of places that contribute to congestion or an accident is likely to occur.

D. TURN LANES

It is recommended that a right hand turn lane be used to direct traffic into Trails West and Sun Valley subdivisions. This is already being done at Sun Valley.

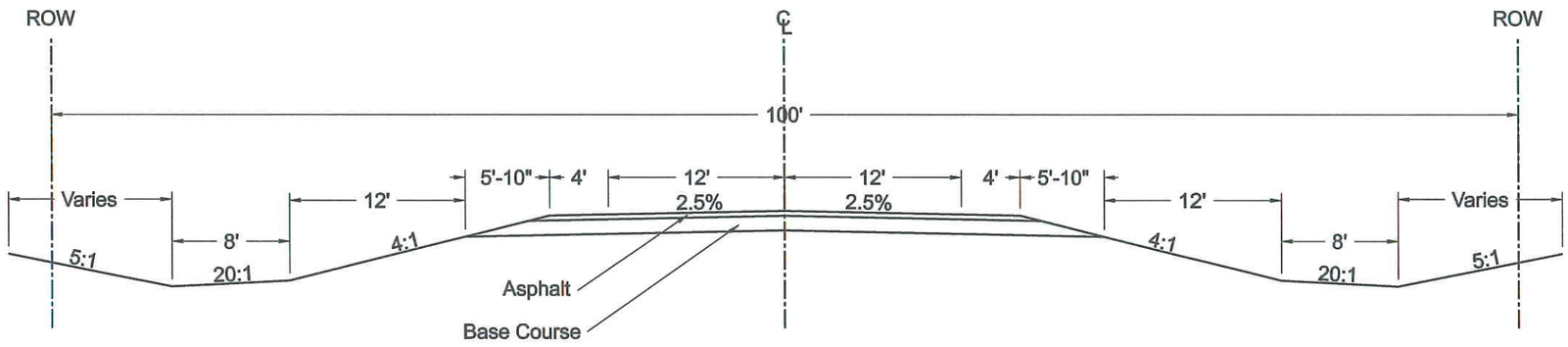
E. ROAD IMPROVEMENTS

The area that encompasses Elk Creek Road is experiencing a high growth rate. This growth rate will place more traffic on Elk Creek Road. As shown in Section IV, there are many traffic hazards along the western 3 miles of the road. We recommend that the County rebuild this portion of the road to bring in compliance with Ordinance #10 and to meet modern safety standards.

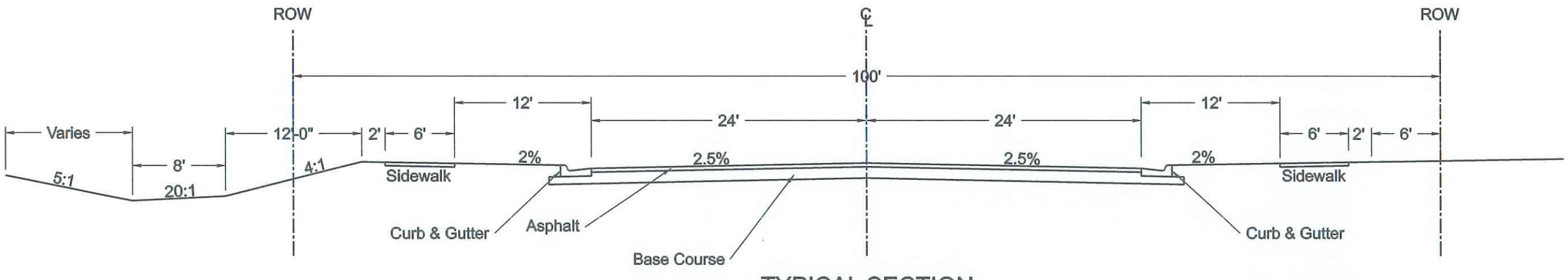
APPENDIX

Meade County
Elk Creek Road Corridor Study

Scale: 1" = 10'



TYPICAL SECTION
URBAN ARTERIAL
RURAL SECTION

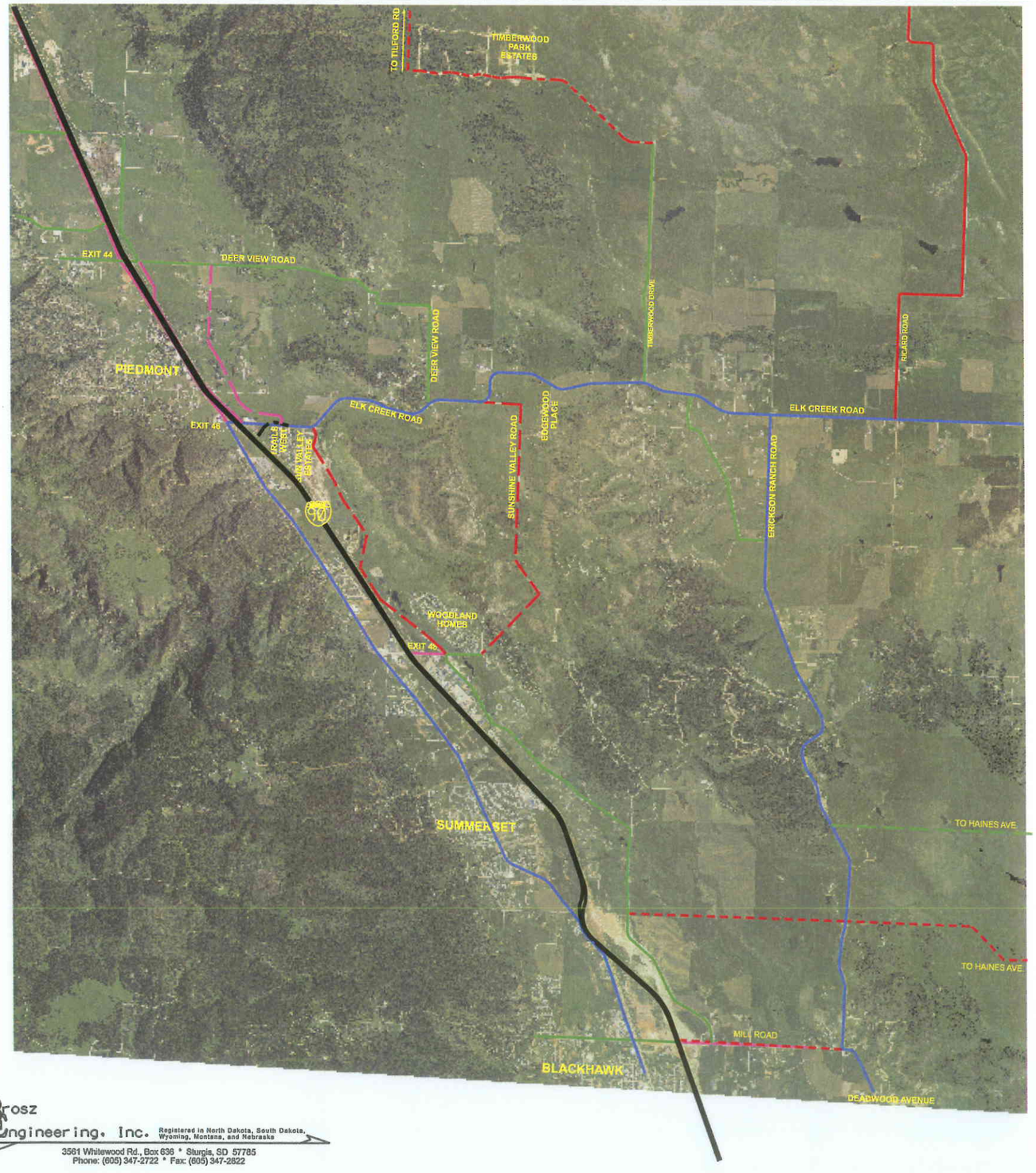


TYPICAL SECTION
URBAN ARTERIAL
CURB & GUTTER SECTION

Brosz Engineering, Inc.
Registered in North Dakota, South Dakota, Wyoming, Montana, and Nebraska

Typical Sections

MEADE COUNTY
ELK CREEK ROAD CORRIDOR STUDY



N
W E
S

I-90
Urban Arterial Road
Rural Arterial Road
Collector Road
I-90 Service Road
Proposed Exit 46 Re-Alignment
Proposed Ruar Arterial Road
Proposed I-90 Service Road
Proposed Collector Road

Brosz Engineering, Inc. Registered in North Dakota, South Dakota, Wyoming, Montana, and Nebraska
3561 Whitewood Rd., Box 636 * Sturgis, SD 57785
Phone: (605) 347-2722 * Fax: (605) 347-2822

PROPOSED FUTURE ROADS

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	I-90 NORTH SERVICE ROAD	8	8

MATCH LINE STA. 63+00

NEW SPRING VALLEY ROAD

80+30.83 L
ACCESS RD

92+92.62 SPRING VALLEY RD =
30+89.07 ELK CREEK RD

ELK CREEK RD

HILLS VIEW DR

HILLS VIEW DR

VALLEY VIEW DR

VALLEY VIEW DR

TRAIL WEST SUBDIVISION

0 100 200
SCALE: 1"=200'

PVI 77+76
Elev 3458.00

PVC 76+25.55
Elev 3456.50

PVT 79+25.55
Elev 3456.89

80+30.83
Elev 3456.11

L 300ft
G1 1.00%
G2 -0.74%
K 172

-0.74%

PVC 87+75.55
Elev 3450.59

L 400ft
G1 -0.74%
G2 1.95%
K 149

PVI 89+76
Elev 3449.10

PVT 91+75.55
Elev 3452.99

1.95%

PVI 92+92
Elev 3455.26

92+92.62 SPRING VALLEY RD =
30+89.07 ELK CREEK RD
ELEV 3455.26

3480
3470
3460
3450
3440
3430
3420
3410
3400
3390

70+00 75+00 80+00 85+00 90+00 95+00

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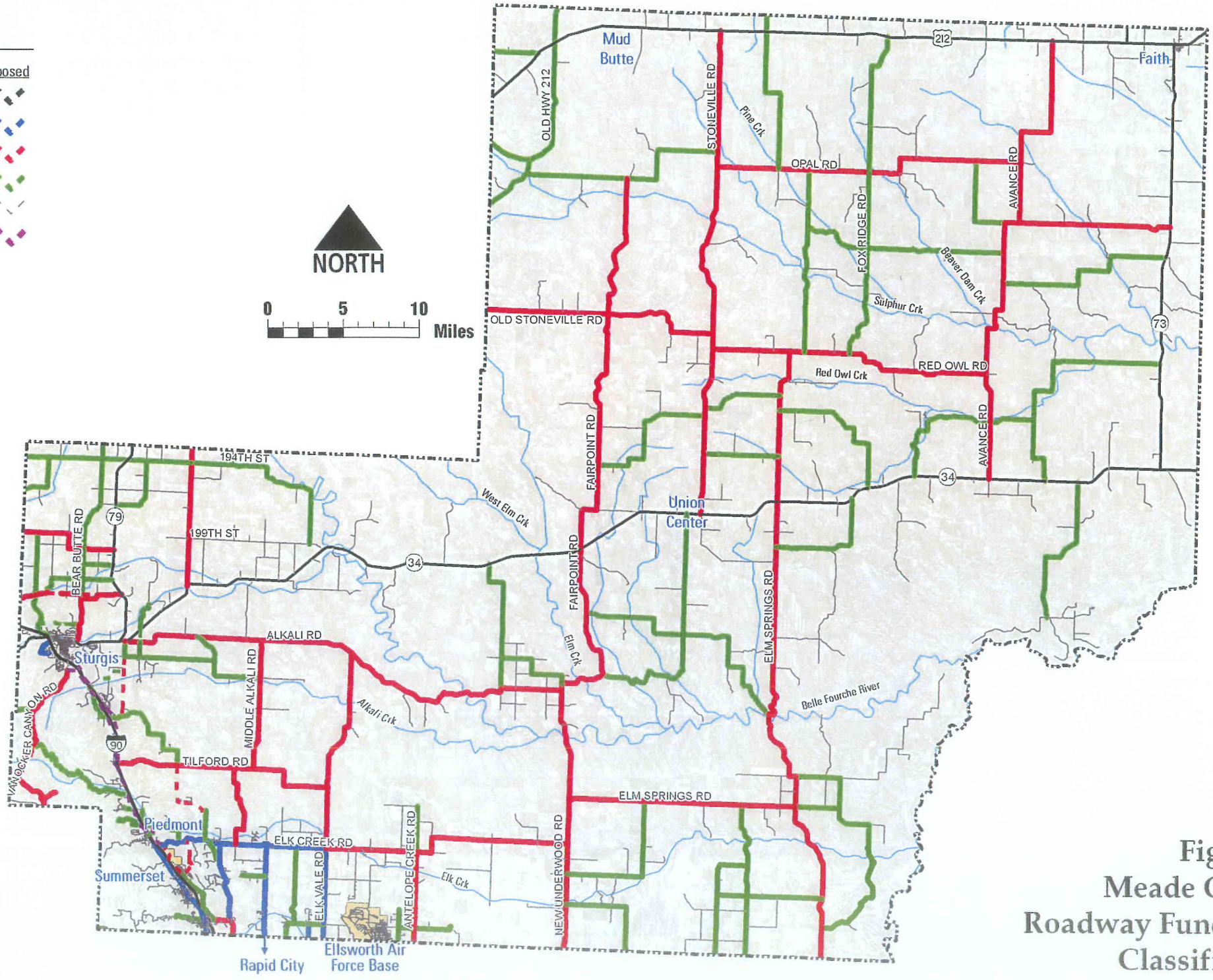
5/30/2007 2:52:21 PM
SDDOT_Sheet1.pdf BW:pMRHJ.tbl

Legend

Existing	Functional Classification	Proposed
	- Federal and State Highways -	
	- Urban Arterial Roads -	
	- Rural Arterial Roads -	
	- Collector Roads -	
	- Local Roads -	
	- I-90 Service Roads -	

NORTH

0 5 10 Miles



FELSBURG HOLT & ULLEVIG

Figure 7a
Meade County
Roadway Functional Classification

Major Street Plan

City Of Rapid City

Road Classification

- Interstate Highway
- Principal Arterial
- Proposed Principal Arterial
- Minor Arterial
- Proposed Minor Arterial
- Collector
- Proposed Collector

I do hereby certify that this Major Street Plan was adopted by the Rapid City Council on December 1, 2008. I further certify that original minutes of the Rapid City Council meeting on December 1, 2008 are on file in the Finance Office.

Dated this 1st day of December, 2008.

Alan Hanks, Mayor

James F. Preston, Finance Officer

(SEAL)

N W E S

0 5,000 10,000 20,000 30,000 40,000 Feet

0 1 2 4 6 8 Miles

Planning Commission Approved: November 18, 2008

City Council Approved: December 1, 2008

Summary of Adoption Published: 12/25/08

Effective Date: 1/14/09

08CA041

Cultural Resources Survey

Table - Previously Conducted Surveys

Author	Year	Archive #	Title
Braun, Kurt	1994	AMD-0072	Intensive Cultural Resources Survey of a Proposed Road Improvements & Realignment East of Piedmont on Elk Creek Road Meade County, South Dakota. PCEMS 349H. CIS No. 871
Bryne, Daniel	2004	AMD-0151	An Intensive Cultural Resources Survey of SDDOT Small Roads Project No. IM90-1( )46, PCEMS 6556, in Meade County, South Dakota. CIS No. 1802
Bruce, Terri	2006	AMD-0228	Cultural Resources Survey of the I-90 Corridor from Exit 40, Tilford to Exit 46, Piedmont, SDDOT Project No. 238, Meade County, South Dakota. CIS No. 2054
Buechler, Jeffrey	2008	AMD-0302	Letter Format Report of a Cultural Resources Inventory Survey of Two Service lines and a Line Repair Project for West River Electric Association Inc. in Meade County, South Dakota. Project No. 08-56

Table - Cultural Resources Within Project Area Sections

Site #	Eligibility	Site Type	Cultural Affiliation	Relation to APE
39MD2005	*Eligible*	Railroad	Euro-American	1000 feet south
39MD2176	*Not Eligible*	Road	Euro-American	Out of APE
MD00000002	*Unevaluated*	Structure	Euro-American	Out of APE
MD00000091	*Listed*	Structure in Evan Ranch Historic District	Euro-American	425 feet north
MD00000289	*Not Eligible*	Bridge	Euro-American	In APE No Effect
MD01500001	*Not Eligible*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500002	*Listed*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500003	*Listed*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500004	*Listed*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500005	*Listed*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500006	*Listed*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500007	*Not Eligible*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500008	*Listed*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
MD01500009	*Listed*	Structure in Covered Wagon Resort Historic District	Euro-American	Out of APE
District 120	NA	Stevens Ranch Historic District	Euro-American	1/4 mile northeast