

# PRELIMINARY ENGINEERING REPORT

for

## DAVIS AVENUE

K-68 Highway to Sand Creek Road



### Prepared for:

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101 South Hickory Street  
Ottawa, Franklin County, Kansas 66067

BG Project No. 11-1097L  
MAY 31, 2013

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## EXECUTIVE SUMMARY

This Report documents the findings of the preliminary engineering assessment for improving Davis Avenue in Ottawa, Kansas from Kansas Highway 68 north to Sand Creek Road. The assessment addresses existing conditions, traffic demand and capacity, improvement options, right-of-way, permitting, construction method and construction contracting, constructability impacts and a probable schedule for the recommended improvements.



The U.S. Census Bureau reported the population of Ottawa grew by 6.1% between 2000 and 2010, making it one of the fastest growing cities in Kansas. Contributing to this population growth are numerous economic development initiatives implemented in that same period which resulted in numerous well-paying jobs added in northeast Ottawa. The City of Ottawa therefore commissioned this Preliminary Engineering Report to examine the need to improve Davis Avenue to better serve the expanding economic development base being created in this area.

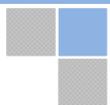
The preliminary engineering assessment found the need to improve Davis Avenue to better meet the current and expected traffic demands, enhance safety through the corridor, and provide multi-modal infrastructure to accommodate alternative modes of transportation. The context of the arterial roadway, Davis Avenue, is expected to transition significantly over the next decade from a rural farm-to-market road to modern urban street with turn lanes, storm sewers, sidewalks and shared use paths.



Roadway improvement alternatives were identified for which a preliminary design analysis was performed and conceptual plans for the alternatives were prepared. The alternatives reviewed were “do nothing but maintenance”, improve to a 4-lane urban arterial street and improve to a 2-lane urban arterial street.

The recommended improvements to Davis Avenue include the creation of a 2-lane, urban arterial street with turn lanes at major intersections and entrances. The improvements should include a sidewalk, a shared use path and storm sewers designed to accommodate possible expansion to a 4-lane facility under full build-out conditions. The design volume for the recommended improvements should be 12,000 vehicles per day with a pavement section anticipated to be a 12 inch hot mix asphalt pavement placed on a 6 inch aggregate base.

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### *INTRODUCTION*

The purpose of this preliminary engineering report (PER) is to identify current deficiencies with the Davis Avenue corridor between K-68 and Sand Creek Road and provide options for improving the corridor to accommodate not only the current day needs, but to accommodate and support future industrial growth in the northeast region of Ottawa, Kansas. The PER provides planning level traffic analysis to support the recommendations for transportation needs. The PER also provides project cost estimates for the various improvements.

### *BACKGROUND*

Davis Avenue is an Arterial Street located in northeast Ottawa, Kansas. There are a handful of existing properties abutting the Project Corridor, which starts at K-68 and continues to Sand Creek Road, that have recently developed with industrial land uses. These include the American Eagle Outfitters Retail Distribution Center, Monoflo International, Ernest-Spencer Companies and Schuff Steel Co., among others.

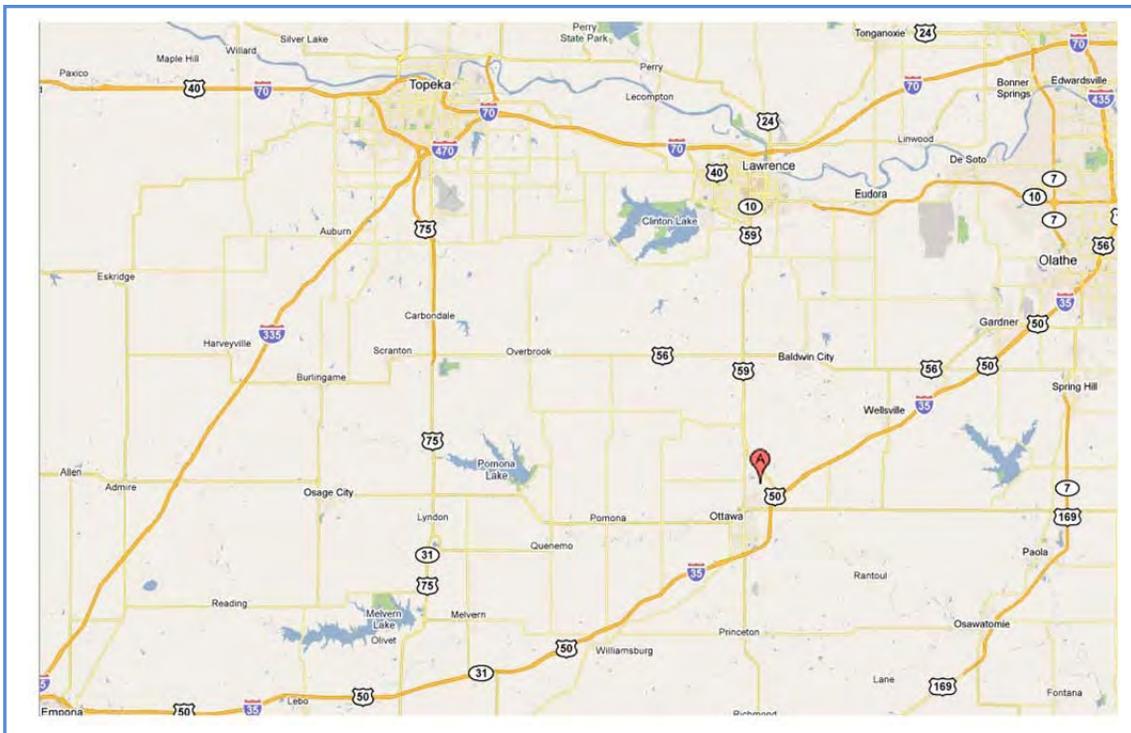


The Davis Avenue corridor has long been considered a prime location in Ottawa for industrial growth. This consideration has been reinforced by the recent construction of US-59. In addition, the City of Ottawa's Comprehensive Plan identifies future land uses to be Industrial on many of the undeveloped properties served by Davis Avenue. An estimated 700 to 800 acres of undeveloped real estate is located within one-half mile of Davis Avenue in this 2 mile long corridor, roughly 500 acres of which is slated for future industrial land use.

Transportation facilities and connectivity to major transportation routes are often the primary factor a business must consider when choosing a community to locate a new industrial facility. Industrial facilities typically require

infrastructure that can support the demands of heavy truck traffic and often times a location near a railroad for transportation of large volumes of freight.

The location of Davis Avenue meets these needs in several ways. The Project Corridor is well connected to multiple transportation modes and routes. Davis Avenue intersects K-68 on the south and US-59 to the north. K-68 serves transportation demands to the east and west. US-59 serves transportation demands to the north and south. Both K-68 and US-59 provide transportation connection to I-35 on the east side of Ottawa. I-35 serves statewide and interstate traffic, connecting this corridor to the Kansas City area to the northeast and to Emporia and Wichita to the southwest.



Properties along the Davis Avenue corridor also have railroad accessibility, which is critical to strong and sustainable industrial growth. The BNSF Railway Company has railroad facilities that cross Davis Avenue approximately midway along the Project Corridor. The rail line is aligned northeast/southwest and links Davis Avenue to the BNSF Intermodal Facility under construction in Edgerton 25 miles to the northeast.



### *EXISTING CONDITIONS*

Davis Avenue currently serves residential and industrial land uses. The Project Corridor that is addressed in this report extends 2 miles beginning on the south at K-68 and extending north to Sand Creek Road. The roadway continues to the north of Sand Creek Road and into Franklin County as Montana Road, intersecting US-59 approximately  $\frac{3}{4}$  of a mile to the north of the City Limits with a grade separated interchange.



The existing cross section is a rural type section with the appearance of a Local Road classification. The surface is an asphalt pavement, 24 feet wide with open ditches paralleling the pavement to convey storm water runoff. Pavement markings delineate two 11 foot lanes of travel, one in each direction, with a 1 foot paved shoulder on

both sides of the road. Although the pavement thickness of the corridor is unknown, recent geotechnical exploration revealed approximately 9 inches of asphalt near K-68.

The date of the last surfacing project on the Project Corridor is unknown. The existing asphalt surface appears to have been in place for quite some time. The pavement is showing significant alligator cracking and thermal cracking with some areas of subgrade degradation, causing rutting and potholes.



Davis Avenue currently conveys 1,000 vehicles per day (vpd) at the north end of the Project Corridor to approximately 3,200 vpd at the south end. Traffic volumes tend to be higher in the northbound direction during the AM Peak Hour and higher in the southbound direction during the PM Peak Hour. This is consistent with what could be expected given the nature of development in this area. Employees working at the current industrial facilities would be coming from the southern residential areas of Ottawa to go to work in the morning and then they would be headed southbound on their way home during the late afternoon and evening.



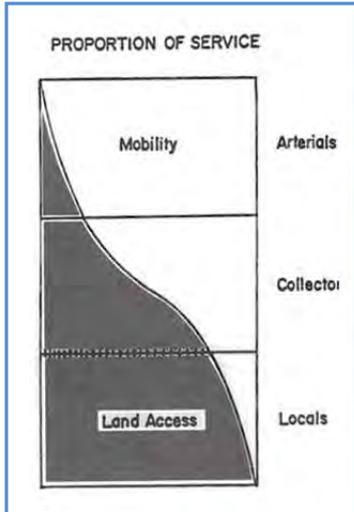
Heavy trucks and buses make up approximately 6% of the traffic stream in the southern portion of the Project Corridor. The percentage of heavy trucks and buses increases to approximately 10% at the northern end of the Project Corridor. These percentages are higher than a typical urban street, which is expected along an arterial street in an area with significant industrial land uses.

The posted speed limit along the Project Corridor is 40 mph. Speed data revealed average speeds of approximately 40-45 mph, with 85<sup>th</sup> percentile speeds of approximately 45-50 mph. Slightly higher speeds were recorded north of the project corridor where the corridor transitions from an urban appearance to the rural appearance in Franklin County.



*TRAFFIC CAPACITY ANALYSIS*

When planning a transportation facility, the capacity for traffic flow is generally discussed in terms of Average Daily Traffic (ADT) with units of vehicles per day (vpd). Identifying the current ADT and estimating growth rates or growth trends allows for the estimation of the size of facility that may be necessary to service future traffic demands.



The City of Ottawa’s *Comprehensive Plan*, Table 4.9, establishes the City’s criteria for classifying streets based on a number of characteristics, one of them being the ADT serviced by the street. ADT volumes of up to approximately 3,000 vpd are consistent with the City’s policy of classifying the street as a Local Street or a Minor Collector.

With auxiliary lanes located at key locations, a 2-lane street with turn lanes at major intersections and driveways can provide a capacity of 10,000 vpd to 12,000 vpd. Four lane transportation facilities should be considered for locations expected to service ADT’s in excess of 10,000 vpd.

The current ADT on Davis Avenue is as high as 3,200 vpd. Using trend line growth rates based on historical population growth, future population estimates and typical traffic growth rates for this area, traffic volumes were estimated for several horizons, including the years 2030, 2040 and 2050 (20 years, 30 years and 40 years, respectively). The following table summarizes this information.

Year	Estimated ADT (vpd) based on Trend Lines	
	Constant Growth *	Varied Growth #
2010	3,200	3,200
2030	5,800	7,000
2040	7,800	9,400
2050	10,500	11,500

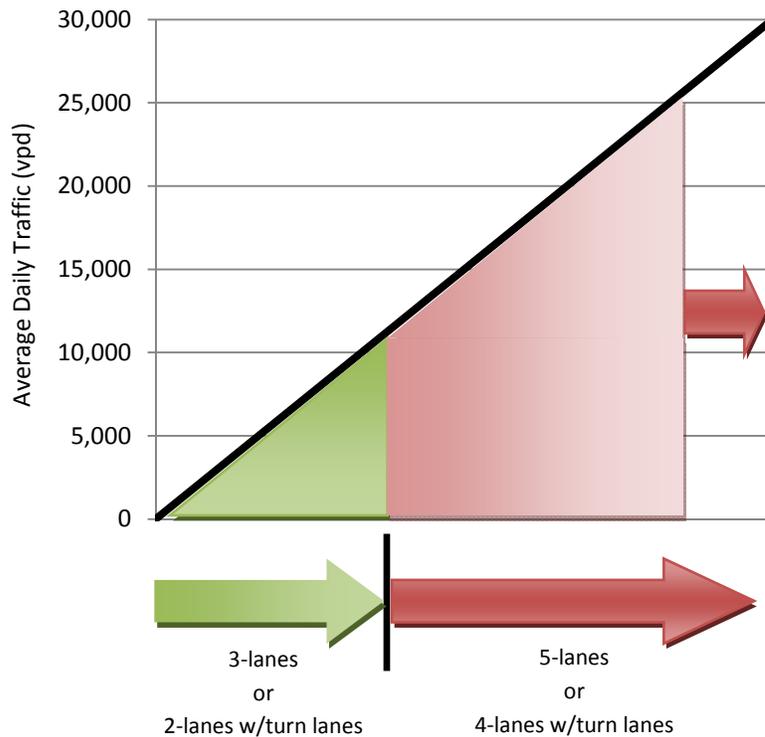
\* = 3% per year (2010-2050)

# = 4% per year (2010-2030) + 3% per year (2030-2040) + 2% per year (2040-2050)

A 2-lane transportation facility with turn lanes at all major intersections and high-traffic driveways could provide a capacity of 10,000 vpd to 12,000 vpd. The capacity of this type of facility could accommodate the transportation demands along Davis Avenue for an estimated 40 years. It is important to note that the need for certain size of transportation facility should be based on the actual traffic demand rather than a “target year” calculated on estimated growth



rates. The purpose of this analysis is to identify what could reasonably be anticipated in the near term and to quantify potential timeframes in which the traffic demand would trigger the need for a larger facility.



### *INFRASTRUCTURE IMPROVEMENT OPTIONS*

A variety of options are available for improving Davis Avenue to service the current traffic demands as well as the future growth in this area. The following options and project cost estimates are presented

#### **Option #1: Take No Action and Continue Rural Road Maintenance**

Option #1 is to take no action and leave the existing rural road “as is”. The roadway currently serves the existing land uses, but additional growth will only further deplete the limited capacity of the existing facility and cause further deterioration of the existing pavement structure. The pavement is showing signs of distress and will require maintenance funds to be expended in the very near future. The maintenance activities would not improve the capacity of the street nor would it increase the structural integrity of the pavement without spending significant funds.



The costs of taking no action include maintenance activities required simply to maintain the condition of the existing road. Assuming the existing pavement can support traffic for the next 40 years without significant failure, approximately \$75,000 per year for 40 years, totaling \$3.0 million in today’s dollars, would be necessary to maintain the road. Maintenance activities include pavement patching, crack sealing and painting pavement markings along with a planned mill and overlay of the Project Corridor once every 10 years. This option is impractical for long term sustainable growth.

#### **Option #2: Construct 4-Lane Urban Arterial Street**

The City of Ottawa’s Comprehensive Plan lists design criteria for an urban arterial street. The criteria include construction of a 4-lane facility, 48 feet wide with curbs, storm sewers, and a sidewalk on one side of the street and a shared use path on the other side of the street. Construction of this type of facility would require a number of intersections to include auxiliary lanes (left and/or right-turn lanes) removing turning traffic from the thru lanes of traffic.



The construction of this type of facility could provide a capacity of 25,000 vpd or more. Recalling the traffic growth trends shown in the Traffic Analysis section, the improvements in Option #2 would provide a capacity nearly 8 times in excess of what is currently necessary, and roughly twice as much capacity than is anticipated to be necessary for approximately 40 years.

The estimated cost to implement a project as described in Option #2 is \$10.03 million. The following table summarizes the estimated quantities of construction work required to improve Davis Avenue to a 4-lane arterial facility.

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Average unit prices bid for similar work in this region are included to provide an estimated construction cost. Additional project costs are tabulated below the construction total.

<b>Option #2: 4-Lane Arterial</b>					
<b>Davis Avenue - K-68 to Sand Creek Road</b>					
<u>Item #</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total Price</u>
1.	Removal of Existing Structures	1	L.S.	\$ 50,000.00	\$ 50,000.00
2.	Unclassified Excavation	50,000	C.Y.	\$ 3.00	\$ 150,000.00
3.	Compaction of Earthwork (Type B)	40,000	C.Y.	\$ 2.00	\$ 80,000.00
4.	6" AB-3 Subgrade	70,000	S.Y.	\$ 5.00	\$ 350,000.00
5.	12" Asphalt Surfacing (BM-2)	42,000	Tons	\$ 75.00	\$ 3,150,000.00
6.	Combined Curb & Gutter	21,500	L.F.	\$ 20.00	\$ 430,000.00
7.	Concrete Pavement (8")(NRDJ)	1,500	S.Y.	\$ 60.00	\$ 90,000.00
8.	Concrete Pavement (8")	2,350	S.Y.	\$ 60.00	\$ 141,000.00
9.	Concrete Pavement (6")	800	S.Y.	\$ 50.00	\$ 40,000.00
10.	Concrete Sidewalk (4" A.E.)	14,400	S.Y.	\$ 35.00	\$ 504,000.00
11.	HMA 10' Shared Use Path	16,000	L.F.	\$ 35.00	\$ 560,000.00
12.	Sidewalk Ramps	30	Each	\$ 1,500.00	\$ 45,000.00
13.	2-cell 9'x4' RCB Structure	100	L.F.	\$ 1,400.00	\$ 140,000.00
14.	Std. Curb Inlet (10')	40	Each	\$ 4,000.00	\$ 160,000.00
15.	Storm Sewer Pipe (18") (RCP)	3,700	L.F.	\$ 60.00	\$ 222,000.00
16.	Cross Road Pipe (24") (RCP)	2,200	L.F.	\$ 75.00	\$ 165,000.00
17.	End Sections(24") (RC)	4	Each	\$ 750.00	\$ 3,000.00
18.	Traffic Control	1	L.S.	\$ 20,000.00	\$ 20,000.00
19.	Pavement Marking	30,000	L.F.	\$ 3.00	\$ 90,000.00
20.	Pavement Marking Symbols	1	L.S.	\$ 5,000.00	\$ 5,000.00
21.	Permanent Signing	1	L.S.	\$ 10,000.00	\$ 10,000.00
22.	Seeding, Fertilizing and Mulching	1	L.S.	\$ 10,000.00	\$ 10,000.00
23.	Contractor Construction Staking	1	L.S.	\$ 20,000.00	\$ 20,000.00
24.	Mobilization	1	L.S.	\$ 250,000.00	\$ 250,000.00
Subtotal =					\$ 6,685,000.00
+ 20% Contingency =					\$ 1,340,000.00
<b>Construction Total =</b>					<b>\$ 8,025,000.00</b>
+ 25% Engineering Design, Bonding, Administration, Inspection =					\$ 2,005,000.00
<b>Project Total =</b>					<b>\$10,030,000.00</b>

### **Option #3: Construct 2-Lane Urban Arterial Street**

To avoid “over-building” infrastructure for traffic demands that may not be realized for nearly one-half of a century, Option #3 takes advantage of multiple phases of improvements to Davis Avenue beginning with a 2-lane Arterial Street with auxiliary lanes at major intersections and driveways. A future phase or phases could be implemented to widen the 2-lanes to 4-lanes when traffic demand requires the additional capacity. As noted in the Traffic Capacity Analysis section, a 2-lane street with auxiliary lanes at Wilson, Davis and



driveways serving heavy traffic flow can serve the needs of this area for an estimated 40 years.

The estimated cost to implement a project as described in Option #3 is \$6.64 million. The following table summarizes the estimated quantities of construction work required to improve Davis Avenue to a 2-lane arterial street with a sidewalk, storm sewer and auxiliary lanes at key intersections. The estimate includes construction of a 10' wide shared use path between North St. and Sand Creek Road with connecting loops to residences west of Davis Avenue.

<b>Option #3: 2-Lane Arterial</b>					
<b>Davis Avenue – 750' North of K-68 to Sand Creek Road</b>					
<b>Item #</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Total Price</b>
1.	Removal of Existing Structures	1	L.S.	\$ 35,000.00	\$ 35,000.00
2.	Unclassified Excavation	25,000	C.Y.	\$ 4.00	\$ 100,000.00
3.	Compaction of Earthwork (Type B)	25,000	C.Y.	\$ 3.00	\$ 75,000.00
4.	6" AB-3 Subgrade	37,000	S.Y.	\$ 5.00	\$ 185,000.00
5.	12" Asphalt Surfacing (BM-2)	25,000	Tons	\$ 75.00	\$ 1,875,000.00
6.	Combined Curb & Gutter	15,000	L.F.	\$ 20.00	\$ 300,000.00
7.	Gravel Shoulder	1,000	S.Y.	\$ 7.00	\$ 7,000.00
8.	Concrete Pavement (8")(NRDJ)	1,500	S.Y.	\$ 60.00	\$ 90,000.00
9.	Concrete Pavement (8")	2,350	S.Y.	\$ 60.00	\$ 141,000.00
10.	Concrete Pavement (6")	800	S.Y.	\$ 50.00	\$ 40,000.00
11.	Concrete Sidewalk (4" A.E.)	10,000	S.Y.	\$ 35.00	\$ 350,000.00
12.	HMA 10' Shared Use Path	16,000	L.F.	\$ 35.00	\$ 560,000.00
13.	Sidewalk Ramps	28	Each	\$ 1,500.00	\$ 42,000.00
14.	Std. Curb Inlet (10')	26	Each	\$ 4,000.00	\$ 104,000.00
15.	Storm Sewer Pipe (18") (RCP)	3,200	L.F.	\$ 60.00	\$ 192,000.00
16.	Cross Road Pipe (24") (RCP)	1,700	L.F.	\$ 80.00	\$ 136,000.00
17.	End Sections(24") (RC)	4	Each	\$ 750.00	\$ 3,000.00
18.	Traffic Control	1	L.S.	\$ 20,000.00	\$ 20,000.00
19.	Pavement Marking Lines	12,000	L.F.	\$ 3.00	\$ 36,000.00
20.	Pavement Marking Symbols	1	L.S.	\$ 5,000.00	\$ 5,000.00
21.	Permanent Signing	1	L.S.	\$ 10,000.00	\$ 10,000.00
22.	Seeding, Fertilizing and Mulching	1	L.S.	\$ 10,000.00	\$ 10,000.00
23.	Contractor Construction Staking	1	L.S.	\$ 10,000.00	\$ 10,000.00
24.	Mobilization	1	L.S.	\$ 100,000.00	\$ 100,000.00
Subtotal =					\$ 4,426,000.00
+ 20% Contingency =					\$ 884,000.00
<b>Construction Total =</b>					<b>\$ 5,310,000.00</b>
+ 25% Engineering Design, Bonding, Administration, Inspection =					\$ 1,330,000.00
<b>Project Total =</b>					<b>\$ 6,640,000.00</b>



### *Recommendation*

The improvements described in Option #3 should be implemented to upgrade Davis Avenue to service the existing traffic demands and the estimated traffic growth from continued industrial expansion. This option, with continued maintenance such as sealing cracks, will serve Ottawa for an estimated 40 years based on trend line growth rates. Furthermore, these improvements can be incorporated into a second phase of improvements to expand from 2-lanes to 4-lanes when traffic demands require the additional capacity.

Option #3 includes construction of several key infrastructure components of Davis Avenue to meet Arterial Street requirements, but limiting other components to service the traffic volumes expected in the Project Corridor for an estimated 40 years.

- Two “thru” lanes (one northbound, one southbound).
- Auxiliary lanes (left-turn lanes) at Wilson Street and North Street.
- 6’ wide concrete sidewalk on one side of the street.
- 10’ asphalt shared use path on the other side of the street.
- Storm Drainage Improvements:
  - Curb and gutter with curb inlets and storm sewers south of the BNSF Railway Co.
  - Open ditches north of the BNSF Railway Co.

### *Recommended Design Criteria, dimensions and capacities*

The following list of key design criteria should be considered during the engineering design phase based upon the type of existing land uses, traffic composition and future land uses along the Project Corridor.

- Street Classification = Arterial Street
- Design Speed = 45 mph
- Lane Width = 12 feet
- Design Volume = 10,000 to 12,000 vpd
- Percent Heavy Trucks = 10% min.
- Plan for 12” Asphalt pavement on 6” Aggregate Base
- Storm Sewer Design Criteria = APWA KC Metro Standards
- Concrete sidewalk on one side of the street
- Asphalt shared use path on one side of the street

*RIGHTS-OF-WAY and EASEMENTS*

The existing right-of-way width along Davis Avenue is approximately 70 feet. Additional right-of-way will most likely be necessary to accommodate the grading and construction of the previously identified street improvements. Because Davis Avenue is an Arterial Street and could ultimately be a 4-lane or 5-lane facility, consideration should be given to acquiring sufficient right-of-way widths during the recommended Option #3 project to accommodate future needs.

The City of Ottawa should plan for acquisition of property to obtain at least a 100 foot wide right-of-way centered on the section line (50 feet on both sides of the section line).

An alternative to acquiring the ultimate right-of-way needs during the initial improvement project is to plan for acquiring right-of-way sufficient for building the recommended improvements in Option #3. If this avenue is pursued, the City should also adopt a policy that would require land owners with undeveloped or unplatted property abutting Davis Avenue to dedicate the additional rights-of-way needed for a total width of 100 feet when the property is developed and/or platted.



## PERMITS

Capital improvement projects can impact more than just the right-of-way on which the infrastructure is built. The construction project will probably impact more than just the users of the facility as well. The engineering design phase of a project should include a permit exploration phase to ensure the project complies with rules and regulations put in place by regulatory agencies. Following a permitting process such as described below will also help avoid costly delays and changes during construction.

Permitting requirements vary depending on the scope and size of a project as well as the type of funding source(s) used to fund a project. The following is a description of the various permits that must be considered for a capital improvement project such as the Davis Avenue Improvements.



- Franklin County Right-of-Way Use Permit:** A Franklin County Right-of-Way Use Permit is required when construction activities will encroach on rights-of-way in Franklin County’s jurisdiction. Encroachment includes activities to build infrastructure in the County’s rights-of-way and/or installation of temporary traffic control devices in the County’s rights-of-way.
- Flood Plain Development Permit:** When a construction project includes work within a flood plain that is defined by FEMA, a flood plain development permit is required by a City of Ottawa ordinance which the City was required to enact as part of their participation in the National Flood Insurance Program. The law creating this requirement is now the National Flood Insurance Program Re-extension Act of 2010; Senate Bill 3814 of the 111<sup>th</sup> Federal Congress.
- Stream Obstructions and The Levee Law:** Kansas statute (KSA 82a-301 et seq.) requires an Obstructions in Streams Permit to be obtained for an improvement located in Franklin County which has a watershed of 640 acres or more draining to or through the project limits. This permit falls under the jurisdiction of the Kansas Department of Agriculture, Division of Water Resources (DWR).



If the infrastructure improvement acts like a levee, then The Levee Law (KSA 24-126) would apply. A levee is defined by the State of Kansas as “any floodplain fill with an average height of more than one foot above the surrounding terrain constructed generally parallel to a water course

and whose purpose is to repel floodwaters.” This permit also falls under the jurisdiction of the DWR.

If an Obstructions in Streams Permit and/or a Levee Permit is required for a project, the Kansas Water Environmental Coordination Act (KSA 82a-325) must be followed. Under the KSA 82a-325, the applicant for a permit must solicit a project review and comment from the following agencies:

- Kansas Department of Wildlife and Parks
- Kansas Forestry Service
- Kansas Biological Survey
- Kansas Department of Health and Environment
- Kansas Historical Society
- Kansas Conservation Commission
- Kansas Corporation Commission



- **KDOT Use of Highway Right-of-Way Permit:** A Kansas Department of Transportation (KDOT) Use of Highway Right-of-Way Permit is required when construction activities will encroach on rights-of-way in KDOT’s jurisdiction. Encroachment includes activities to build infrastructure in the KDOT rights-of-way and/or installation of temporary traffic control devices in KDOT rights-of-way.



- **Burlington, Northern, Santa Fe Railway Right-of-Way Use Permit:** A Burlington, Northern, Santa Fe (BNSF) Railway Right-of-Way Use Permit is required when construction activities will encroach on BNSF property. Encroachment includes any activity occurring on BNSF property which has not previously been permitted, which includes nearly all infrastructure construction projects.



- **National Environmental Policy Act:** If a construction project is federally funded, the National Environmental Policy Act (42 U.S.C. §4321 et seq.) requires either an Environmental Impact Statement or an Environmental Assessment. A Categorical Exclusion from providing either of the afore mentioned documents is also an option. A project to implement improvements to Davis Avenue as identified in this report would more than likely be a prime candidate for a Categorical Exclusion.

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- Section 404 Permit:** If a capital improvement project includes placement of fill below the “ordinary high water mark” of a stream, Section 404 of the federal Clean Water Act (33 U.S.C. §1251 et seq.) requires the project be permitted by the US Army Corps of Engineers.
- Waters of the United States:** Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. §403) gives the US Army Corps of Engineers regulatory authority over anything built in or near the “Waters of the United States”. In addition to navigable waters, wetlands are nearly always considered “Waters of the United States”. To be a wetland, the area must have water, hydric soils and hydrophilic vegetation (plants that grow in oxygen free soil).
- Notice of Intent:** The federal Clean Water Act (33 U.S.C. §1251 et seq.) requires a Notice of Intent (NOI) permit application be sent to the Kansas Department of Health and Environment (KDHE). The NOI requests coverage of the project under the requirements and conditions of the Kansas National Pollutant Discharge Elimination System for Stormwater Runoff from Construction Activities General Permit.



Permit	Permit Needed?			Remarks
	Yes	No	TBD *	
Franklin County Right-of-Way Use Permit	✓			Permit should be applied for during Engineering Design when bidding documents are ±75% complete.
Flood Plain Development Permit		✓		Project limits are not anticipated to impact a FEMA defined flood plain.
Obstructions in Streams Permit		✓		The largest watershed impacting Davis Avenue is 160 acres, which is below the 240 acre threshold.
Levee Permit		✓		Not anticipated, the proposed improvements would not perform like a levee.
KDOT Use of Highway Right-of-Way Permit	✓			Permit should be applied for during Engineering Design when bidding documents are ±75% complete.
BNSF Right-of-Way Use Permit			✓	If construction limits encroach BNSF right-of-way, permit should be applied for during engineering design phase.
NEPA Permitting	✓			The NEPA review should be initiated at the beginning of the engineering design phase.
Section 404 Permit			✓	US Army Corps of Engineers should be notified at the start of engineering design phase to determine permit need.
Waters of the U.S.			✓	US Army Corps of Engineers should be notified at the start of engineering design phase to determine permit need.
Stormwater NOI	✓			Permit should be applied for during Engineering Design when bidding documents are ±90% complete.

\* TBD = To Be Determined. The need for the permit should be determined in a review with the regulatory agency during engineering design. If required, permit should be applied for and obtained prior to construction.

*CONSTRUCTION METHOD and CONTRACTING*

Several methods of construction are available for implementation of capital improvement projects. These methods include competitive bid with one or more contracts, design/build, construction management at-risk, or construction in-house utilizing City Staff.

It is recommended that a construction project of this type be implemented using the competitive bid method with a single construction contract. This project is a prime candidate for competitive bid because the work does not



require a unique or proprietary method of construction. Furthermore, the improvements can be identified during the engineering design phase with relative ease. The bidding documents should be prepared to include itemized units of work which contractors bid on, thus providing an “apples-to-apples” comparison. Using this method of contracting, the construction contract is typically awarded to the lowest, responsible bidder qualified to perform the work.

A competitive bid project will allow the City to realize continued low construction prices. The construction industry is continuing its attempt to recover from the 2008/2009 economic recession. Recent bid lettings for competitive bid projects in this region continue to show current day average bid prices below the pre-2008/2009 economic recession bid prices.

A single contract project is recommended for a number of reasons. First, City Staff time and expense will be reduced as a result of administering only one contract. Secondly, the single contract project greatly reduces the City’s liability for costs arising from scheduling conflicts or lack of quality workmanship. This is accomplished by placing the responsibility of constructing the entire project in accordance with plans and specifications on the general contractor. The general contractor is responsible for scheduling and quality workmanship. If a component of the project is not constructed properly, the general contractor is responsible for making the repair, not the City.



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### *CONSTRUCTABILITY*

Construction of the recommended improvements in Option #3 should be considered on the existing alignment of Davis Avenue. An alternative alignment would require significantly more right-of-way, permitting of a new railroad crossing, potential impacts to the flood plain located west of the corridor, and reconfiguration of several properties currently serviced by the existing Davis Avenue alignment. Furthermore, an alternative alignment for Davis Avenue would need to converge back to the existing alignment at both the north and south ends to maintain critical connectivity to US-59 and K-68.



Reconstruction of a road on an existing alignment presents some challenges to mitigate or minimize impacts to existing residences, businesses and users of the facility. The initial scan of possible construction sequencing reveals there are solutions to these challenges. The solutions to the challenges lie primarily on the numerous connections Davis Avenue has to other streets and highways, which is also a reason this corridor has the potential for significant economic growth.

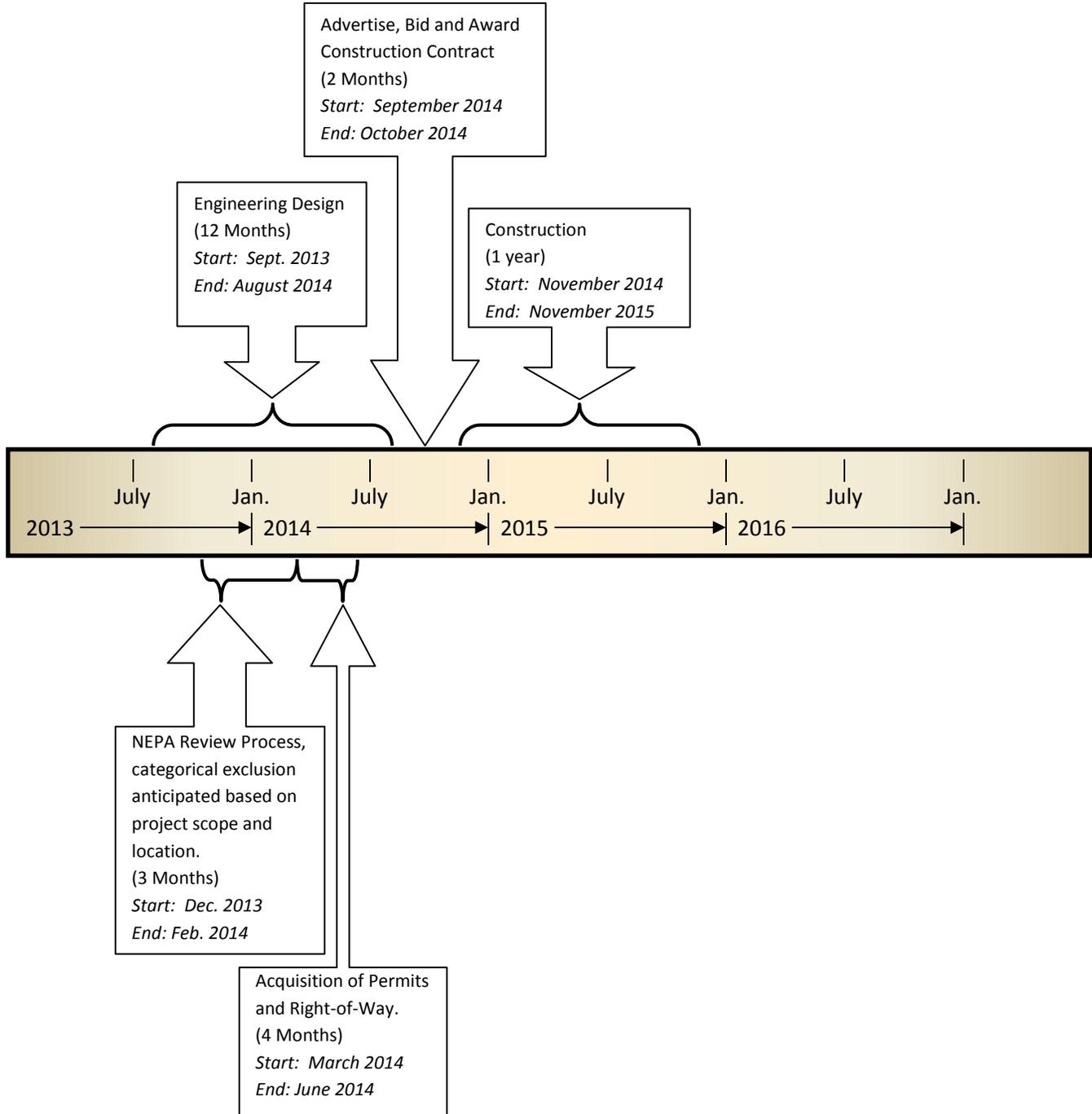
**Phase 1** could include reconstruction of Davis Avenue starting at the north end of KDOT's K-68 and Davis construction project and continuing north to Garfield Avenue while maintaining local access to the residences within that section. Employees and trucks accessing the industrialized properties north of North Street can be served from the west via North Street or the north via US-59.

**Phase 2** could include reconstruction of the Davis Avenue between Garfield Avenue and Industrial Avenue. This phase would require Davis Avenue to be closed to all traffic at North Street for the reconstruction of drainage structures and the pavement.

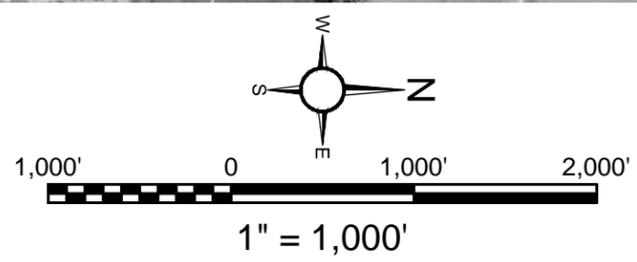
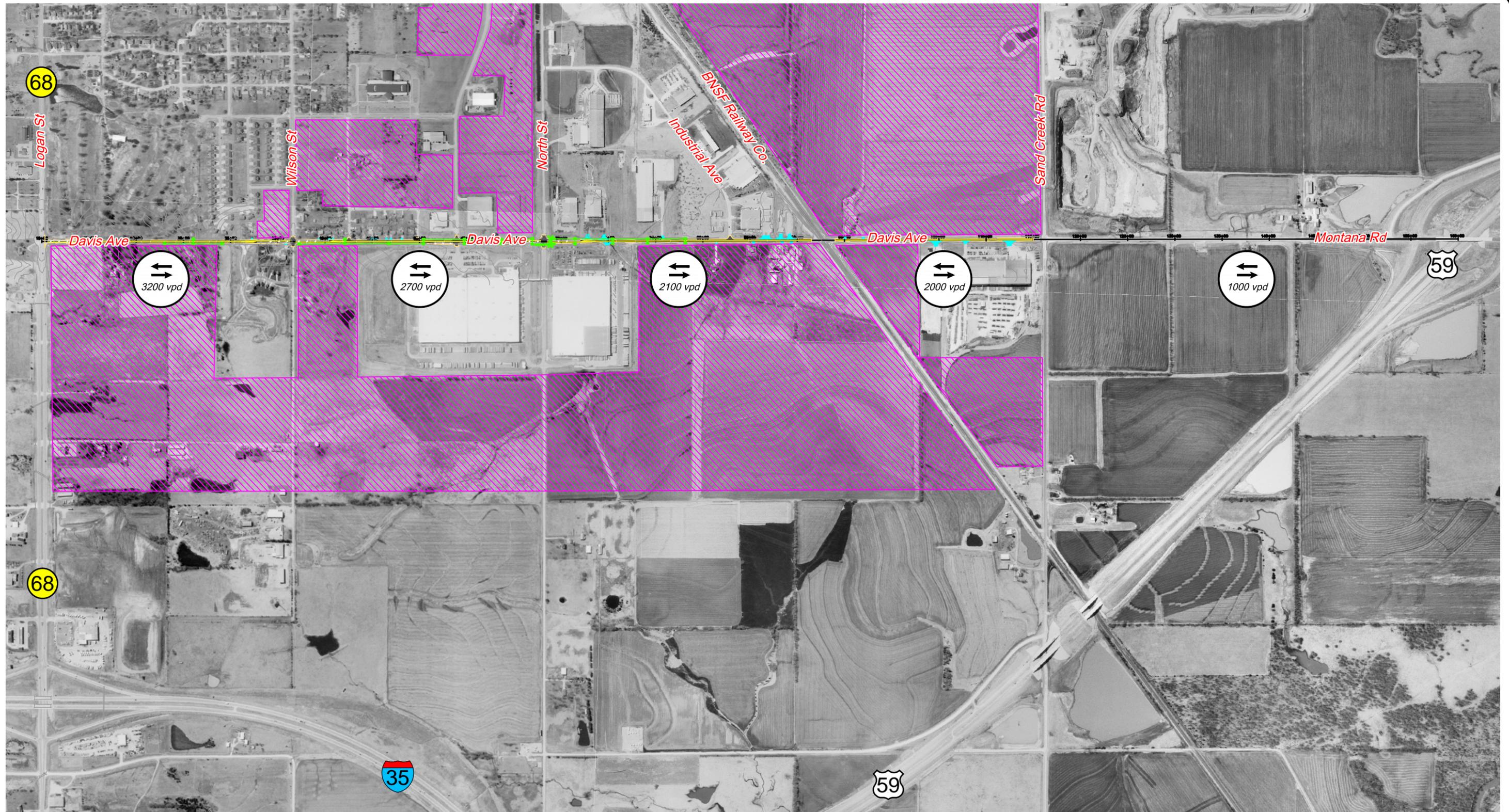
**Phase 3** could include reconstruction of Davis Avenue from Industrial Avenue north to Sand Creek Road. Local access to the residences can be maintained through construction, while employees and truck deliveries to the industrialized properties can be maintained from the south to North Street or from the west on either North Street or Industrial Avenue. An additional temporary access to Sand Creek Road may be necessary to accommodate the Schuff Steel Co. facility at the north end of the Project Corridor.



SCHEDULE

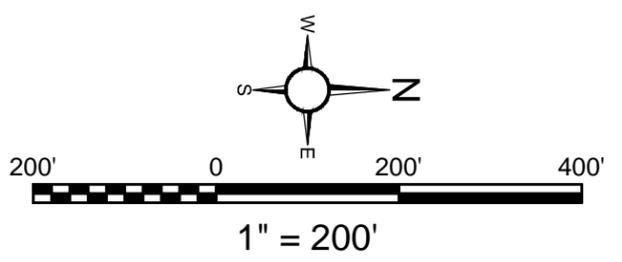
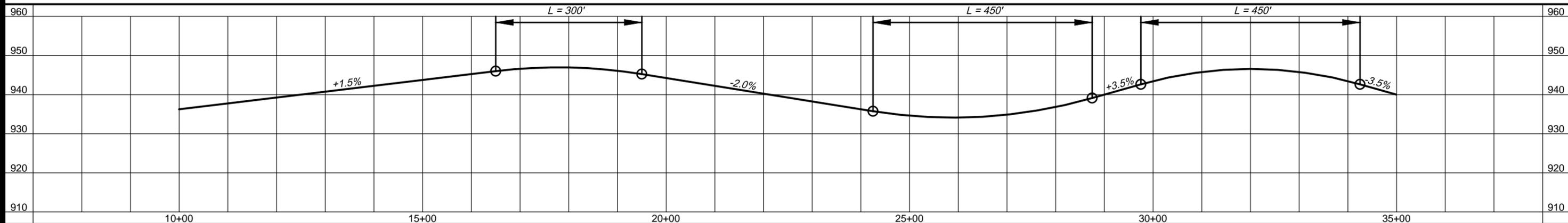






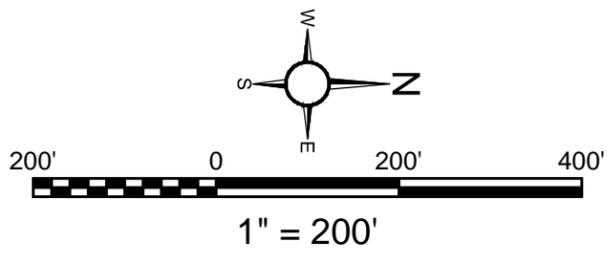
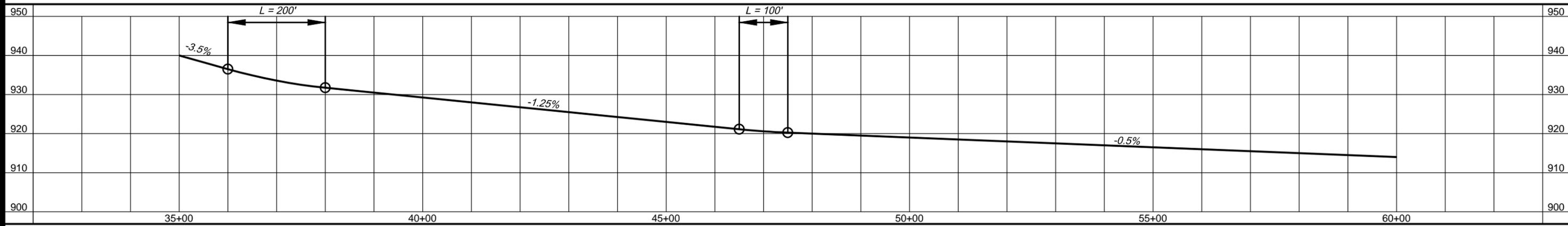
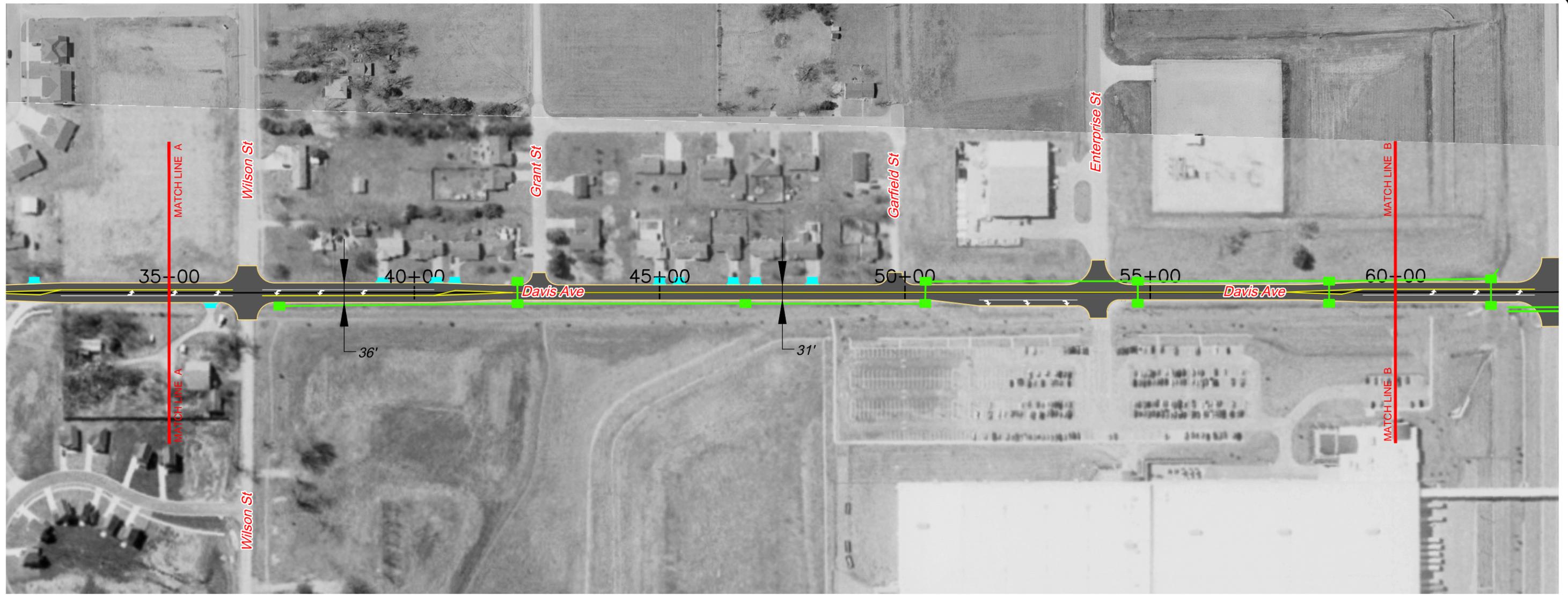
**BG**  
 BG Project: 11-1097L  
 Date Prepared: May 15, 2013

**2011 Traffic Volume**  
**PRELIMINARY ENGINEERING REPORT**  
 DAVIS AVENUE - K-68 to Sand Creek Road  
 City of Ottawa, Kansas



**BG**  
 BG Project: 11-1097L  
 Date Prepared: May 15, 2013

*Plan and Profile 1 of 5*  
**PRELIMINARY ENGINEERING REPORT**  
 DAVIS AVENUE - K-68 to Sand Creek Road  
 City of Ottawa, Kansas

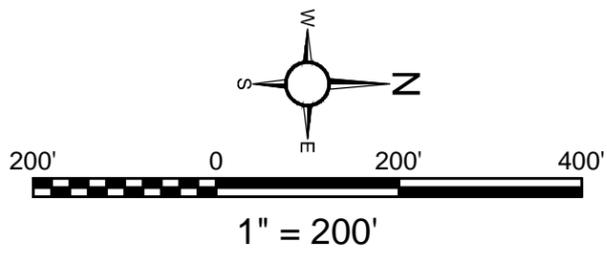
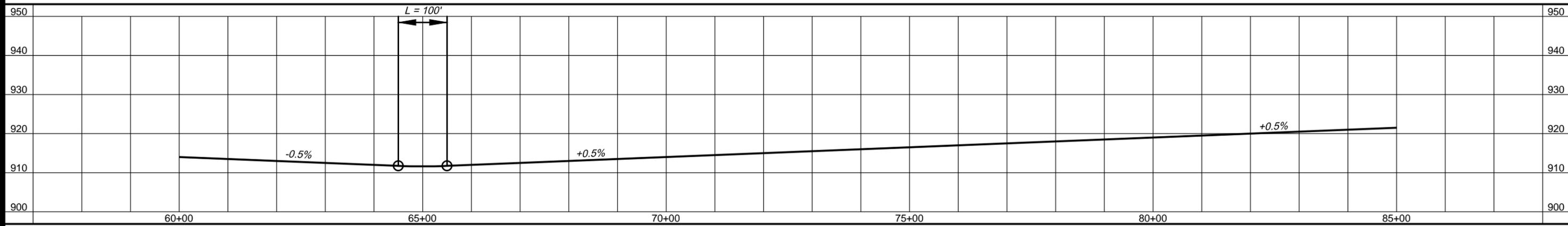


BG Project: 11-1097L  
Date Prepared: May 15, 2013

## Plan and Profile 2 of 5

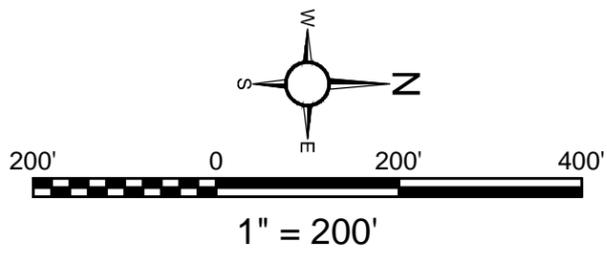
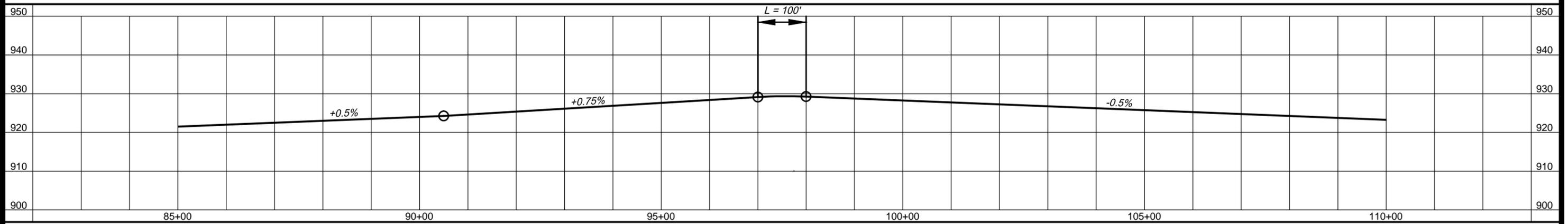
### PRELIMINARY ENGINEERING REPORT

DAVIS AVENUE - K-68 to Sand Creek Road  
City of Ottawa, Kansas



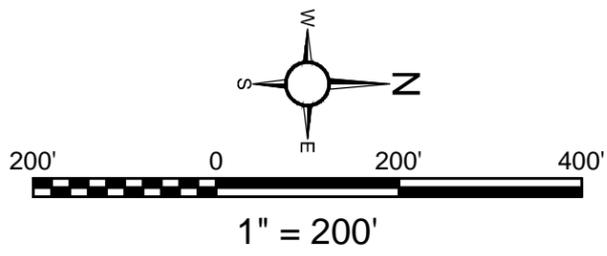
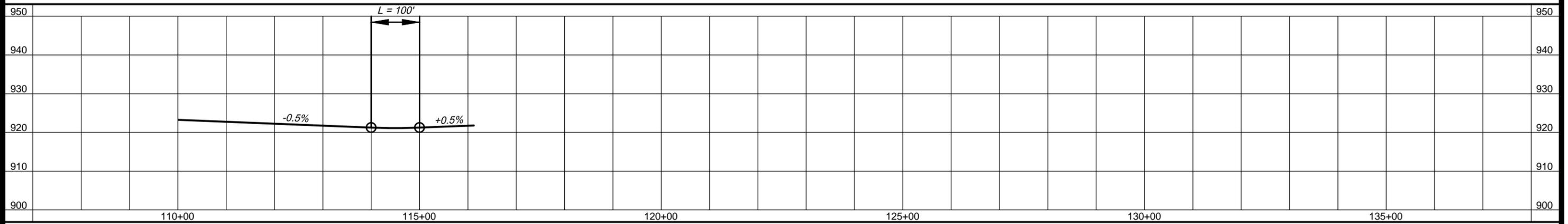
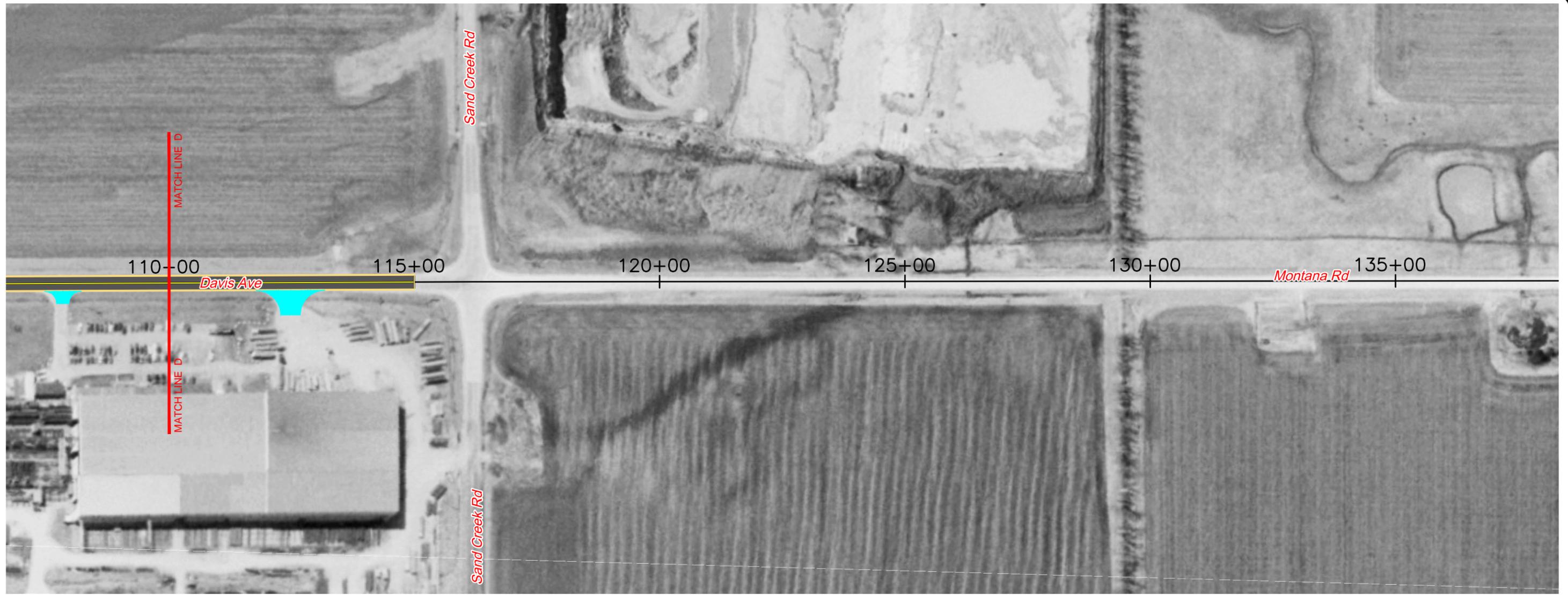
**BG**  
 BG Project: 11-1097L  
 Date Prepared: May 15, 2013

*Plan and Profile 3 of 5*  
**PRELIMINARY ENGINEERING REPORT**  
 DAVIS AVENUE - K-68 to Sand Creek Road  
 City of Ottawa, Kansas



**BG**  
 BG Project: 11-1097L  
 Date Prepared: May 15, 2013

*Plan and Profile 4 of 5*  
**PRELIMINARY ENGINEERING REPORT**  
 DAVIS AVENUE - K-68 to Sand Creek Road  
 City of Ottawa, Kansas



**BG**  
 BG Project: 11-1097L  
 Date Prepared: May 15, 2013

*Plan and Profile 5 of 5*  
**PRELIMINARY ENGINEERING REPORT**

DAVIS AVENUE - K-68 to Sand Creek Road  
 City of Ottawa, Kansas