

# Country Club Boulevard Reconstruction and Traffic Calming

The University of Iowa Department of Civil & Environmental  
Engineering

LEAP Engineering: Logan Weyandt, Evan Walsh, Adrian Guzman, and Parker Just



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## Letter to City of Sioux City

Dear City of Sioux City,

On behalf of all members of LEAP Engineering, it was an honor and pleasure to work with the project of the reconstruction and traffic calming of Country Club Boulevard. This opportunity greatly interests every member and allows for each member to truly show their strengths.

LEAP Engineering strives to add in components that are unfamiliar and new to both the client and the members to ensure that the work done is unique. It is important to identify the skills necessary to be successful and utilize them to provide the best product.

In the end, every member has gained many beneficial skills that will translate into the success of other projects. LEAP Engineering appreciates the opportunity to help the residential area. If any comments or concerns arise, please do not hesitate to contact LEAP Engineering. It has been a pleasure to work with the City of Sioux City these last few months.

Sincerely,

*LEAP Engineering*

## Company Information

LEAP Engineering is composed of four vital members: Logan Weyandt, Evan Walsh, Adrian Guzman, and Parker Just. Each engineer has a different specialization that allowed for the final design to be a well-rounded and efficient product. Logan Weyandt specializes in civil practice which was best suited for the project manager. Logan was able to oversee every aspect of the project and ensure that parts were not missing. Evan Walsh's strongest contribution was the transportation aspect, and worked hand in hand with Parker Just's specialization in urban and regional planning. Lastly, Adrian Guzman aided in the composition of reports, task allocator and presentation demonstrating business skills. The following contact information is provided if any comments or concerns arise:

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## Executive Summary

LEAP Engineering has taken upon the task of creating the most suitable reconstruction and traffic calming measures of Country Club Boulevard in Sioux City, Iowa. The city engineer, Glenn Ellis, remained in contact with the group and with in-depth conversations of the potential changes, three major changes were agreed upon. Major conflicts discussed with the parties were the issues of safety, political, and economical issues. The safety issues primarily are based off the fact that two schools are located within a two block, if not right off Country Club Boulevard. Clark Elementary School is functional and operates at normal times meaning that the peak of the residential traffic will be before and after school hours. This raises a large red flag since the drivers have been reported to speed and with children constantly flooding the streets, it is important that considerations for speed reduction and safe crossings for the children be of top priority. In the sense of a political consideration, the neighborhood was promised an 8 feet boulevard meaning that the expansion of the road would be highly unadvised. As all projects tend to have a budget, it is important to consider the \$4.5 million budget.

The most noticeable change is the addition of a roundabout at 40<sup>th</sup> Street and Country Club Boulevard. This change will allow for a steady flow of traffic without having to resort to stop signs. Mr. Ellis specifically mentioned how using stop signs is undesirable. With being innovative in nature, the roundabout promotes a sense of unfamiliarity causing the reduction of drivers going through.

Placement of medians has also been determined as another method to reduce the speed of the drivers traveling on the two way street. This change will provide a reduction of speed since the driver will be closer to the curve. Other benefits of the median are that it encourages a positive aesthetic feel. Landscaping is encouraged for the medians and would be a great opportunity for the city to make the road become more residential than a short cut. LEAP Engineering also discussed the addition of crosswalk knowing that children will need a safe way to cross the street. A raised median and brick cross will help prevent accidents.

Lastly, the budget limitation generated other possible solutions since LEAP Engineering was made aware of the \$2.4 million and \$2.1 million funds allocation by phase. The budget calculated amasses the total costs of concrete paving, excavation, and utilities. With all aspects considered, the budget for the total project is estimated at \$1.4 million for Phase 1 and \$1.1 million for Phase 2, at a complete total of \$2,537,300.

## **Section 1: Introduction**

The Project Design & Management (CEE:3084:0001) Instructors of the Department of Civil & Environmental Engineering sought out the help of senior University of Iowa Civil Engineering students to generate a solution towards the reconstruction and traffic calming of Country Club Boulevard. After visiting the site, meeting with the contact Glenn, and keeping constant communication with the engineers of the City of Sioux City, LEAP Engineering has created a solution to overcome the issues. Another major push for the reconstruction is the new progress of a middle school between 38<sup>th</sup> Street and Hamilton Boulevard. Located two blocks east of Country Club Boulevard is Clark Elementary School. With the location of Perry Creek being beside the school, it causes the side streets to be heavily populated with school children and their parents. For this reason, LEAP Engineering's first and foremost largest consideration was safety. In this final design, all concerns address the most suitable modifications and additions to Country Club Boulevard beginning at 38<sup>th</sup> Street north to West King Highway.

## **Section 2: Problem Statement**

The project description has allowed for LEAP Engineering to explore various options that would be beneficial to the expansion of Sioux City and also appeal to the current concerns of Country Club Boulevard. As stated, safety is an essential part of the reconstruction and traffic calming. Knowing what general routes parents and children for the streets near the schools take, it aids in the planning of phasing for the two summers for construction. Major challenges and also concerns noted with questions asked have all been addressed in the final design. The following subsections will discuss further into all aspects of the problem and will bring to light how the final solution grapples the concerns.

### **Section 2.1 Design Objectives**

The final design of Country Club Boulevard will include three major changes while creating consistency and traffic calming to ensure safety of the residents. Currently, the major issues include safety of the parents and children, political integrity, and consistency between blocks spanning from 38<sup>th</sup> Street to West King Highway. The study will include research on effective and economical solutions to provide traffic calming. Prior to doing research, a main concern that requires attention is the issue of speeding drivers. Although it is impossible to suggest publicly to drivers to obey the law, other alternatives had to be considered. On any given street, it is always suggested to follow the given speed limit and with safety being at such a high level of priority, the various methods for change must be considered.

### **Section 2.2 Approaches**

In short, the permits required for this project are listed as follows:

- City of Sioux City:
  - Fiber/Utility Installation & Maintenance
  - Right-of-Way Obstruction or Excavation

- Grading
- Oversize/Overweight Vehicle - Annual
- Iowa Department of Natural Resources:
  - General Permit No. 2

The majority of the aforementioned city permits require certain degrees of information from the applicant such as the applicant name, facility owner, contractor, project description, and project start date. The Fiber/Utility Installation & Maintenance Permit is required by the City for any utility work. This permit would be required due to the proposed extension of the storm sewer along Country Club Boulevard. The Right-of-Way Obstruction or Excavation Permit is required for any project working in the public right-of-way. This permit requires the applicant to describe the excavation area of their project as well as the obstructed street or sidewalk area. The reconstruction of Country Club Boulevard will require obstruction to the road within the public right-of-way at all times. The Grading Permit is required for grading operations, which will be performed during the construction phase of the project. The Oversize/Overweight Vehicle Permit is required in order to operate large vehicles on city roads. Requirements for what constitutes an oversize/overweight vehicle are discussed on the permit application. PDF documents of permits required by the City of Sioux City can be located at [www.sioux-city.org/engineering](http://www.sioux-city.org/engineering). Blank permit applications are located in Appendix 3: Permits.

In addition, the Iowa Department of Natural Resources General Permit No. 2 is required for storm water associated construction activities that result in the disturbance of one or more acre of ground cover. The general requirements for this permit can be located by searching “NPDES General Permits Iowa DNR” using a standard internet search engine and scrolling to the “General Permit No. 2” hyperlink. A notice of intent form is required to be sent to the DNR. This form is located in Appendix 3: Permits.

### **Section 2.3 Constraints**

Constraints for this project include, but are not limited to various components that have been identified by the City of Sioux City and as the final designs were created. The proceeding information will discuss the different constraints along with an indication if the constraint is hard or soft.

In today’s economy, cost is essential in consideration of the expansion of a project. The City of Sioux City’s budget for the work is set at \$4.4 million over two years. \$2.3 million has been allotted for 2015, with the remaining \$2.1 million budgeted for 2016. Final design will be evaluated for their compliance with the budget. Due to a limited budget, it is important to recognize that a budget of \$4.4 million over two years can be difficult. The reason for this constraint classified as hard is due to only having a specific amount to work with.

The right-of-way width along Country Club Boulevard is 80 feet. Residential lots line both sides of the roadway. The final design adheres to this right-of-way in attempt to eliminate costs of acquiring land as well as reducing nuisance to residents in the neighborhood. Space is identified as a constraint given that addition space cannot be

attained or reduced. Space will be an ongoing limitation and must be taken in precaution as planning and construction occur.

Topography has also played presented itself as a constraint for the final design. Natural features within the project boundaries must be considered when designing the roadway and relocating utilities. Specifically, topography will impact storm water runoff flow, storm sewer system design, and geometric design of the roadway, water main pressurization and sizing. Although the City of Sioux City has not identified specifications of the designs, LEAP Engineering decided to keep the current storm sewer system consistent to what it was before.

An obvious but also essential constraint is the design itself. The final design includes standards discussed in Section 2.2 to ensure the validity of the design. Careful consideration must be given to SUDAS and ISWMM standards when designing the roadway as well as storm water, sanitary sewer and water distribution utilities. In addition, aesthetics and functionality of the redesign were inspired by guidelines provided in the Sioux City Design Guidelines. Creating designs in complete compliance may be difficult but with time and precision, the design can fit all the codes and guidelines. Therefore, this of all constraints can be considered soft since this is the most controllable and easiest to modify.

Another difficult obstacle to modify is time. Work must be completed in a timely manner. All work must be completed prior to the end of the contract term on May 8<sup>th</sup>, 2015. Additional deadlines may apply for other services during the contract term as determined by the Instructor and the City of Sioux City. Consequently, scheduling and phasing during construction must be considered. Granted that the City has expressed two phases beginning the summer of 2015 and then summer of 2016, allocation of resources must follow a precise procedure outlined prior to construction.

The environment plays a large role knowing special care must be made to reduce the impacts of the project on the natural environment. Such measures could include materials selected, construction procedures (i.e. erosion control), and protection of waterways and other natural features (i.e. Perry Creek, groundwater sources). Research on the nearby area opened up considerations of where the placements and materials should be used to reconstruct Country Club Boulevard. It is important to know how the current environment is effected by the road and with that information, it is easier to find the best solution.

## **Section 2.4 Challenges**

Particular challenges encountered throughout the duration of the project included, but not limited to the following proceeding identified challenges.

One of the larger challenges was taking in consideration the impact on adjacent roadways. Traffic calming measures utilized along Country Club Road must not promote drivers to speed through adjacent roadways in order to avoid Country Club Boulevard. According to the City of Sioux City, LEAP Engineering examined additional calming measures on adjacent roadways to reduce the speed of the drivers.

Special care towards the public has been devoted to ensure that the final product addresses their desire to have traffic calmed along Country Club Boulevard while balancing what the public sees as acceptable traffic calming measure. The final design was created in a manner that the general public finds aesthetically and functionally appealing. Unreasonable nuisance and burden on the public during construction was at top priority while designing. Residents have expressed concern about the footprint of the project encroaching on their property. Adherence to the 80-foot right-of-way boundary was a priority while maximizing societal benefits upon completion of construction. Generally, consideration shall be made to maximize societal benefits upon completion.

Along with discussing the public view, neighborhood considerations are also an ongoing challenge. The final design is aesthetically pleasing to the public. In addition, the reconstructed roadway is designed to be functional and efficient. Traffic calming measures must be effective in order for the project to be considered successful. The City of Sioux City has expressed the desire to reduce the footprint of the project based on communication with the residents of the neighborhood.

Due to the long distance between LEAP and Sioux City, regular in-person meetings were not feasible. Regular email and phone correspondence with the City ensured that the contact approves of the changes and ideas for the final design.

Further research will be performed to determine the extent of sensitive areas along the corridor. Correspondence with the City will ensure that any sensitive areas are protected during and after construction.

## **Section 2.5 Societal Impacts**

LEAP Engineering understands the large impact on the society around the city of Sioux City, the State of Iowa, as well as the Nation of the United States of America. A portion of taxes will be added to the revenue stream at both the federal and state level. The work done will also bring the media into the room and allow local schools and neighborhoods around Country Club Boulevard to have the spotlight. This spotlight will allow Sioux City residents to move forward with large number positive impacts due to having the forthcoming design. On a much smaller scale, surveyors will be using their money in the area surrounding the design cite at local restaurants, shops, and markets as an example of the estimated upbringing.

Licensing fees will also need to be paid as LEAP Engineering remains in good standing with the State of Iowa. The design shows the community that the city and others are truly trying to better the masses. Although these fees do not go directly to the city, the necessity to the state's budget is crucial. LEAP Engineering will be taking up some of the Boulevard for very short periods of time during the design process; to obtain measurements for drawings, however the process will be quick and proper calculations will be collected. In the end, the solution to the problem at hand will be provided by the solution LEAP Engineering has investigated.

### Section 3: Preliminary Development of Alternative Solutions

LEAP Engineering proposed three (3) alternative conceptual designs for the reconstruction of Country Club Boulevard to the Client, and fortunately received substantial feedback. The designed featured sample aerial views of the intersection of Country Club Boulevard and 40<sup>th</sup> Street. After further discussing the needs and ideas of the two parties, it became clear the best proposed idea. Consequently, the three (3) alternative designs became one design that LEAP Engineering has determined to be the most efficient.

Each design feature contains a distinct traffic calming measure built into the roadway. The designs do not propose any changes to existing utilities along the roadway, as their locations and scope have not yet been finalized.

First and foremost, LEAP Engineering is proposing to reduce the speed limit on Country Club Boulevard from 30 to 25 miles per hour (MPH) for safety purposes. Current research indicates that there is a direct correlation between mean travel speed (which can be controlled by speed limits and other means of traffic control) and crashes resulting in injury. According to the National Cooperative Highway Research Program, an existing 30 MPH road that has its mean travel speed reduced by 5 MPH should expect to see a drop in non-fatal injury crashes by a factor of 0.57. Similarly, fatal injury crashes are expected to decrease by a factor of 0.22 under the same conditions<sup>1</sup>. Complete findings of this report can be found in Table 1.

TABLE 1: CRASH FREQUENCY ACCIDENT MODIFICATION FACTORS FOR INJURY AND FATAL CRASHES BASED ON INITIAL SPEED AND SPEED CHANGE. SOURCE: NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 617

Non-fatal Injury Crashes							Fatal Injury Crashes						
$\Delta\bar{v}$ (mph)	$\bar{v}_0$ (mph)						$\Delta\bar{v}$ (mph)	$\bar{v}_0$ (mph)					
	30	40	50	60	70	80		30	40	50	60	70	80
-5	0.57	0.66	0.71	0.75	0.78	0.81	-5	0.22	0.36	0.48	0.58	0.67	0.75
-4	0.64	0.72	0.77	0.80	0.83	0.85	-4	0.36	0.48	0.58	0.66	0.73	0.80
-3	0.73	0.79	0.83	0.85	0.87	0.88	-3	0.51	0.61	0.68	0.74	0.80	0.85
-2	0.81	0.86	0.88	0.90	0.91	0.92	-2	0.66	0.73	0.79	0.83	0.86	0.90
-1	0.90	0.93	0.94	0.95	0.96	0.96	-1	0.83	0.86	0.89	0.91	0.93	0.95
0	1.00	1.00	1.00	1.00	1.00	1.00	0	1.00	1.00	1.00	1.00	1.00	1.00
1	1.10	1.07	1.06	1.05	1.04	1.04	1	1.18	1.14	1.11	1.09	1.07	1.05
2	1.20	1.15	1.12	1.10	1.09	1.08	2	1.38	1.28	1.22	1.18	1.14	1.10
3	1.31	1.22	1.18	1.15	1.13	1.12	3	1.59	1.43	1.34	1.27	1.21	1.16
4	1.43	1.30	1.24	1.20	1.18	1.16	4	1.81	1.59	1.46	1.36	1.28	1.21
5	1.54	1.38	1.30	1.26	1.22	1.20	5	2.04	1.75	1.58	1.46	1.36	1.27

$\bar{v}_0$  = initial mean travel speed  
 $\Delta\bar{v}$  = change in mean travel speed

Despite the inclusion of a roundabout at the intersection of Country Club Boulevard and 44<sup>th</sup> street in preliminary designs, LEAP Engineering opted to exclude it in the final design due concerns with the feasibility of a roundabout at this location. Principally, the concern centered on the proximity of several residential driveways to the intersections. With prioritizing residential complacency, inclusion of a roundabout

at this location would cause unnecessary hardship to residents in this area and would therefore be an inappropriate consideration for this project.

The primary goal for placing calming medians on Country Club Boulevard is to increase the safety of drivers and pedestrians that utilize the roadway. The effectiveness of medians is validated by research performed by the Federal Highway Administration. A primary metric in evaluating the effectiveness of various calming measures is the Crash Reduction Factor (CRF), which is defined as “the percentage crash reduction that might be expected after implementing a given countermeasure<sup>1</sup>”. Based on these CRFs, an urban two-lane road can expect to see a reduction in crashes resulting in injury or death by 39 percent. Furthermore, the installation of a raised median on any type of roadway can be expected to induce a reduction of all types of traffic by 20 percent.

#### **Section 4: Selection Process**

Analysis of stop sign warrants in Highway Capacity Software 2010 (HCS) was necessary in order to answer the question as to why the design doesn’t simply use stop signs as a means of traffic control. Traffic volumes courtesy of a traffic study performed for the City of Sioux City by Snyder & Associates were input into HCS, and a simulation was run in order to determine if the road would meet the nine stop sign warrants required by MUTCD’s signal warrant standards. The nine warrants are listed as follows:

1. Eight-Hour Vehicular Volume
2. Four-Hour Vehicular Volume
3. Peak Hour Conditions
4. Pedestrian Volume
5. School Crossing
6. Coordinated Signal System (Degree of Platooning)
7. Crash Experience
8. Roadway Network
9. Grade Crossings

Based on the resulting traffic volumes, Country Club Boulevard did not meet any of the nine warrants that would validate the use of stop signs. It is worth noting that the traffic study provided only presented volumes for northbound traffic on Country Club Boulevard and did not include side streets, pedestrian volumes, or crash data. Based on the overall analysis, however, it can be seen that the use of stop signs for traffic control is inappropriate for this project. In addition, MUTCD Section 2B.04: Right-of-Way at Intersections: Subsection 05 states that stop signs should not be used as a means of speed control<sup>2</sup>. A detailed report from HCS as well as the traffic study that was used can be located in Appendix 2: Stop Sign Warrant Analysis.

In determining how the intersections should contribute to traffic calming, roundabouts have been of recent talk and LEAP Engineering decided to look into the feasibility of placing a roundabout on Country Club Boulevard. As discussed, the main roundabout explored is located at the intersection of Country Club Boulevard

and 40<sup>th</sup> Street. Roundabouts have benefits that prove to be beneficial especially in a residential area. According to the U.S. Department of Transportation Federal Highway Administration, their research claims that for a 2-lane urban area with a 2-way stop, the street is expected to see a crash reduction of 18% of all types of crashes<sup>6</sup>. Since safety is a top priority, it is essential to consider adding roundabouts to provide the safest alternative to the specified issues.

## **Section 5: Final Design Details**

### **Overall Design:**

The final design for Country Club Boulevard implements several methods to control traffic along the corridor. Predominantly, the design calls for a reduction in the posted speed limit from 30 MPH to 25 MPH. Three medians and one traffic circle will be installed along the road in order to induce lateral movement and force drivers to slow down and drive more cautiously. In addition, brick crosswalks will be implemented at intersections when appropriate in order to create an effective rumble strip designed to slow down drivers even further. The design calls for widening Country Club Boulevard north of the north section of Perry Way to 31 feet curb-to-curb in order to create a uniform design throughout the project area. As such, standard curb and gutter according to SUDAS standards will be installed along this particular stretch of road up until the intersection of Country Club Boulevard and West King's Highway. All roads will be designed with at 2% cross grade in order to facilitate rainwater runoff. Further details regarding the final design will be discussed in the following sections.

### **Intersection Design:**

Intersections between Country Club Boulevard and adjacent streets were created using the Intersection Feature in Civil 3D. The tool helped maintain the crowns of both Country Club Boulevard and the intersecting streets. This is helpful to ensure that ponding will be minimized within each intersection. Curbs were designed to be 25 feet in radius in order to conform to Chapter 5C-2 Section Q of SUDAS standards for Intersection Radii of Local-Residential Collector Roads. Every intersection is designed to maintain existing right-of-way on each respective street. Brick crosswalks will be installed at all intersections where physically feasible. Certain constraints such as the location of residential driveways within some intersections made placing brick crosswalks impossible in some locations. When cases such as these arose, the decision to simply paint a crosswalk was the best option for the intersection. LEAP Engineering ultimately decided against placing additional crosswalks in Country Club Boulevard; away from the general vicinity of a cross street. Each crosswalk will be designed to conform to ADA regulations as specified in Chapter 5C-2 Section D.5 of SUDAS. Painted crosswalk markings will be designed to conform to Section 3B.18 of MUTCD. Brick crosswalks must be designed with white, retroreflective pavement marking lines on their borders in order to establish a legal crosswalk according to MUTCD<sup>3</sup>. Sample intersection plans can be found below in Figures 1A and 1B.

Specific details regarding the design and location of the intersections and crosswalks can be located in the project plan sheets.



FIGURE 1A: INTERSECTION DETAIL WITH BRICK CROSSWALK

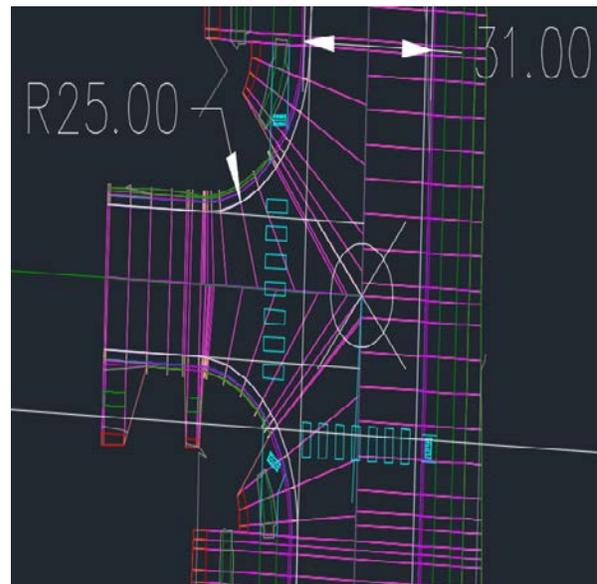


FIGURE 1B: INTERSECTION DETAIL WITH PAINTED CROSSWALK

### **Calming Median Design:**

Three elevated brick medians approximately 85 feet in length and 9 feet in maximum curb-to-curb width will be placed beginning at stations 9+57.29, 22+51.69, and 41+72.55. A detailed median plan and profile design including dimensions is depicted in Figures 2 and 3. These medians are designed with relatively sharp entrance angles in order to induce enough lateral movement to force drivers to slow down. In addition, special consideration was given to the length of the medians. This length was determined to be long enough so that drivers would not attempt to bypass the medians too quickly and to be short enough so that drivers would not feel as if they had entered a protected speedway of sorts. Adequate signage will be placed to warn drivers of the presence of these medians. Furthermore, driving lane widths along the medians will be reduced to 11 feet. This width is the minimum acceptable lane width of a single-lane local residential street according to SUDAS Table 5C-1.02. LEAP Engineering designed these medians in an effort to force drivers to operate their vehicles closer to the curbs than normally desired, which results in optimal driver discomfort and thus lower operating speeds.

Moreover, these medians were sited in order to avoid residential driveways so that drivers can maintain the option to enter both directions of flow upon leaving their home. With regards to parking, any on-street parking located within these medians would have to be removed. However, based on observations during the field visit in

February, parking is not in high demand on this street. Henceforth the minimal loss of parking incurred by the construction could be absorbed by the remainder of the street.

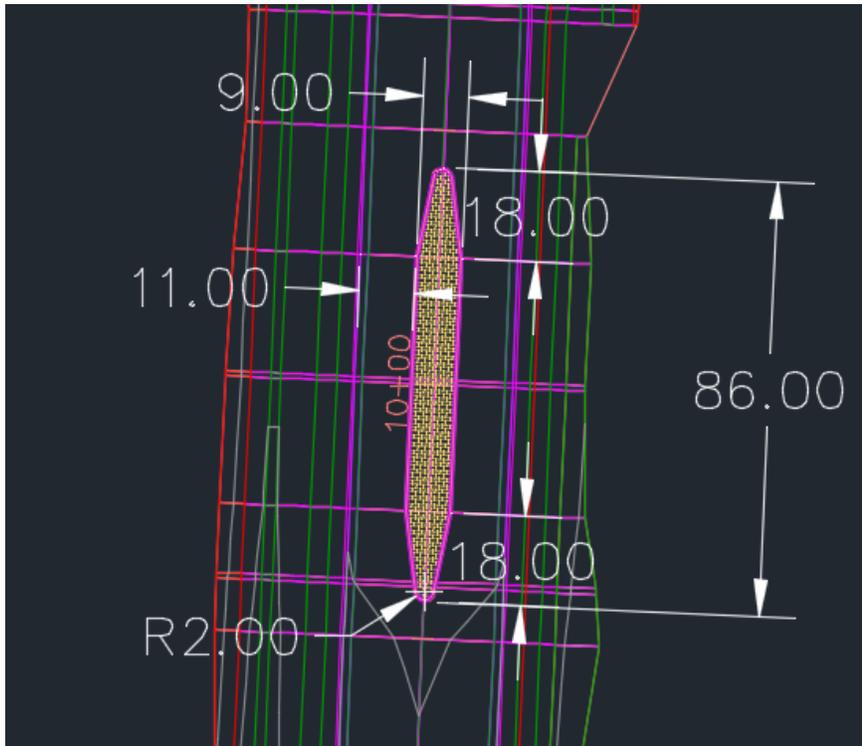


FIGURE 2: STANDARD MEDIAN PLAN DESIGN

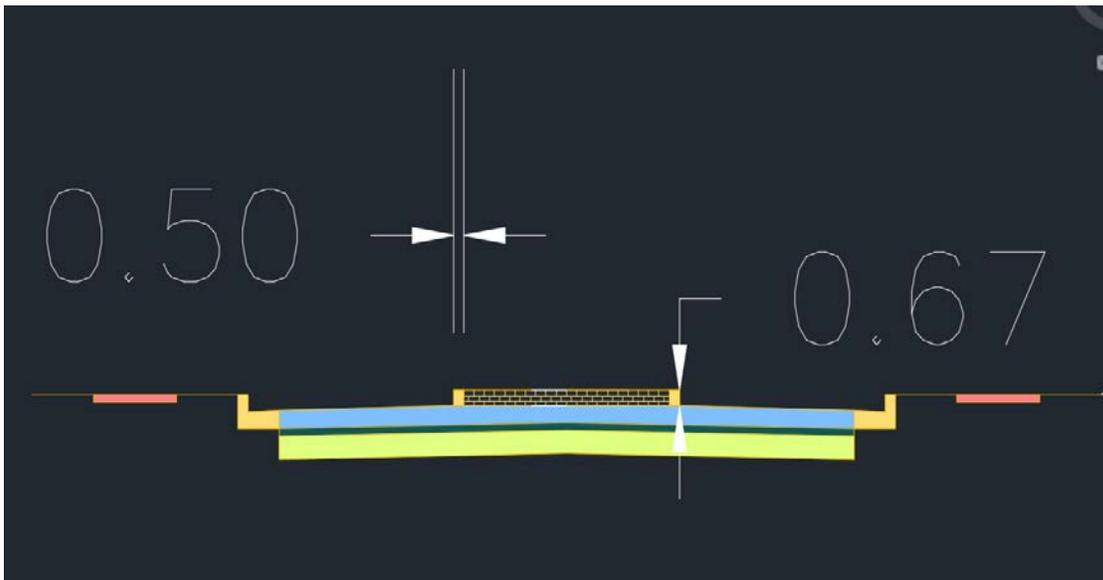


FIGURE 3: STANDARD MEDIAN PROFILE DESIGN

### **Roundabout Design:**

The design incorporates the use of a roundabout at the intersection of Country Club Boulevard and 40<sup>th</sup> Street. This roundabout is to be designed following the Federal Highway Administration's (FHWA) Roundabouts: An Informational Guide geometric design standards. It is important to note that due to civil 3D's roundabout constraints, the roundabout is depicted to be much larger than it actually will be when built. The roundabout will be constructed for a 35 foot diameter with a 12 foot wide travel lane, *not* a 70 foot diameter as depicted in the plan sets. This would classify the roundabout design as a Mini-Roundabout according to the FHWA guide<sup>2</sup>. As such, the maximum entry design speed should be 15 MPH. The roundabout will be designed to follow the five critical path radii criteria shown in Figure 4.

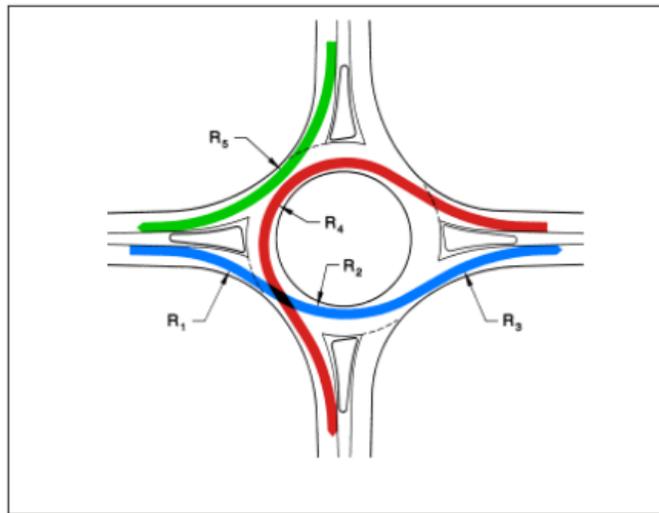


FIGURE 4: FIVE CRITICAL PATH RADII CRITERIA. SOURCE: FHWA ROUNDABOUT GUIDE EXHIBIT 6-12

In Figure 5, R1 should be less than R2, R2 should be less than R3, R4 should be dimensioned so that the speed difference between left turn vehicles and entering vehicles is less than 12 MPH, and R5 should be dimensioned so that right turn vehicles have speeds no more than 12 MPH above left turn vehicles<sup>2</sup>. Civil 3D's automated design criteria ensures that these parameters are met. The center island would be built up minimally in order to accommodate large vehicles such as busses. A gradual curb with a traversable apron will be implemented in order to accomplish this goal. In addition, the non-traversable portion of the center island would be landscaped with brick. A detailed plan view of the roundabout can be seen in Figure 5.

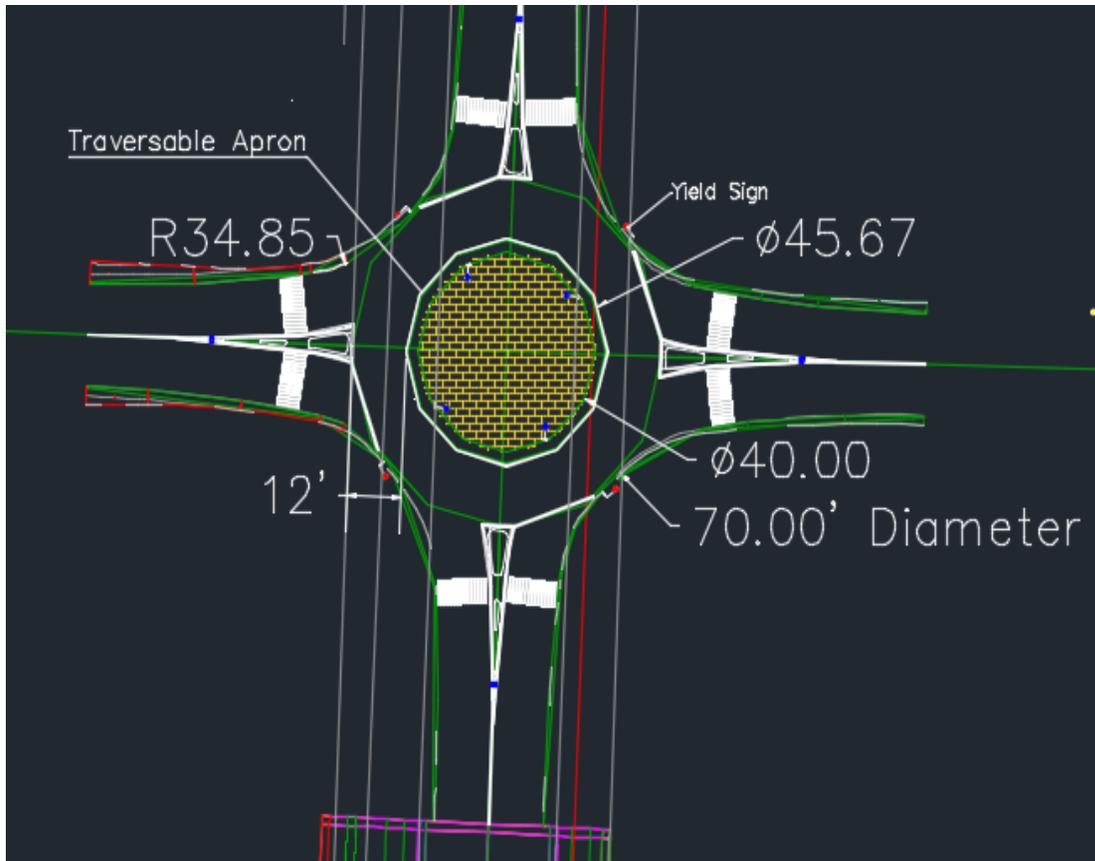


FIGURE 5: ROUNDABOUT DESIGN

**Pavement Design:**

Based on feedback provided from the City of Sioux City, the redesign of Country Club Boulevard will be paved with 4000 pounds per square inch (psi) of Portland Cement Concrete to a thickness of 8 inches. This thickness was determined in order to maintain consistency with the portion of Country Club Boulevard south of 38<sup>th</sup> Street to Hamilton Boulevard, which was recently reconstructed. LEAP Engineering assumed that 8 inches would be sufficient to meet SUDAS standards for pavement thickness design. This assumption is based on Chapter 5F of SUDAS, which outlines the procedure for calculating the optimal pavement thickness based on Equivalent 18,000 pound Single Axle Loads (ESALs), of which AADT is a component. Since AADT is roughly the same north of 38<sup>th</sup> Street as it is south of 38<sup>th</sup> Street, the assumption that the study performed by a previous engineering firm for the area south for 38<sup>th</sup> Street was valid. In addition, a 6 inch base made of Class A Roadstone and a 12 inch sub base made of natural soils will be constructed. A detailed description of the pavement thickness design is depicted in Table 2, and a standard cross-section of the road design with curb and gutter is shown in Figure 6.

TABLE 2: PAVEMENT THICKNESS DESIGN

Street Component	Thickness (inches)
Pavement (4000 psi PCC)	8"
Base (Class A Roadstone)	6"
Subbase (Natural Soil)	12"

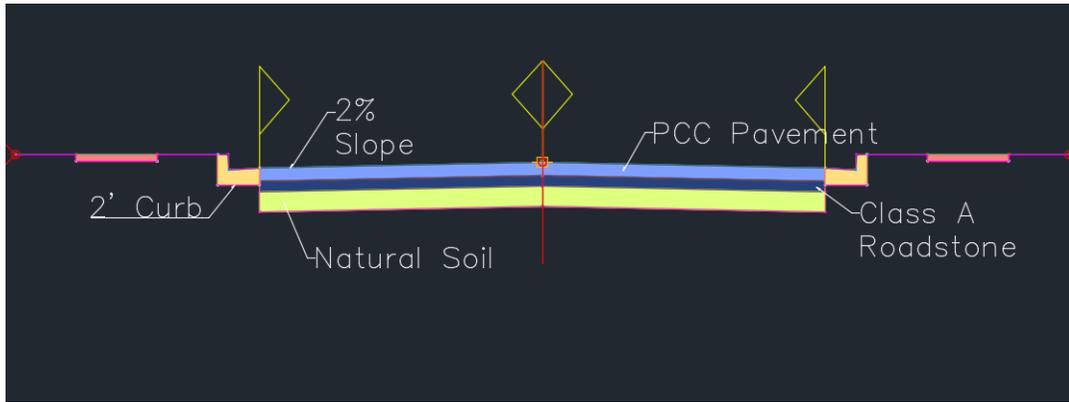


FIGURE 6: PAVEMENT DESIGN CROSS-SECTION

Joints in pavement should be designed to have a centerline saw cut with 2 or 4 panels having 2:1 length to width ratio as per Division 7 Part 3.02J of the 2015 Edition of the Sioux City Supplement to Iowa SUDAS. SUDAS Standard Specification PCC Pavement Jointing Figure 7010.901 Quarter Point Jointing should be used as guidance for jointing.

**Existing Utility Plan:**

All utilities will be removed and replaced as depicted on the plan sheets, with the exception of the fire hydrants and accompanying pipes that connect to the existing main located at Stations 51+42.89 and 55+88.38. A plan view of the fire hydrant relocation at Station 51+42.89 is depicted in Figure 7. The pipe connecting the water main to the hydrant is to be extended a distance of one foot to the east of the sidewalk in line with its current direction in each case. The fire hydrant at each location is to be removed and replaced at their new locations. Hydrants will need to remain within the city's right-of-way. Any new hydrants installed should be in accordance to City of Sioux City standards for fire hydrants. In addition, the existing sanitary sewer system is to be dug up and replaced in the same location with approximately 6100 linear feet of 8 inch PVC pipe.

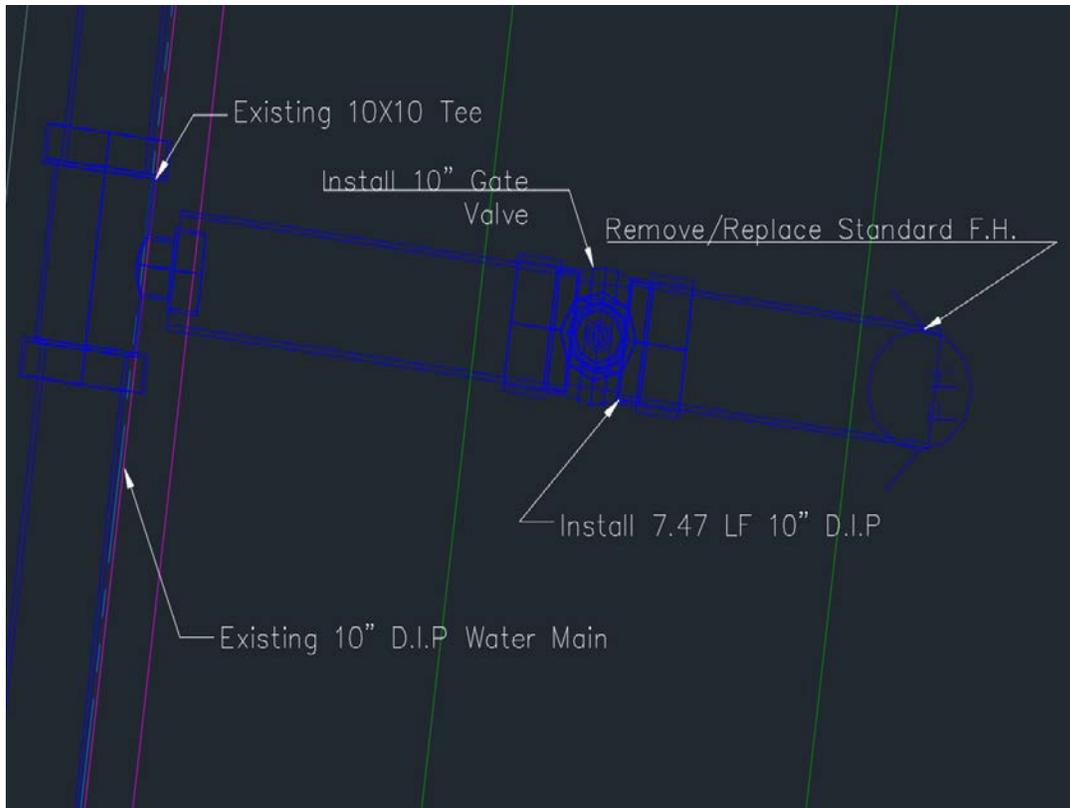


FIGURE 7: STATION 51+42.89 FIRE HYDRANT RELOCATION PLAN

**Sidewalk Plan:**

Any sidewalk disturbed to the south of the beginning of the road widening during the construction phase should be replaced in a manner matching the design of the existing sidewalk. Throughout the area in which Country Club Boulevard is to be widened, sidewalks should be constructed of Portland Cement Concrete and designed to a thickness of 4 inches. In areas where sidewalks cross driveways, the thickness of the sidewalk shall be 6 inches or the thickness of the driveway, whichever thickness is greater. The sidewalk is to be 4 feet wide and located 3 feet away from back of curb in order to maintain a consistent boulevard width. This design is in accordance with Chapter 12A-1 Section D1 of SUDAS.

**Storm Sewer Addition Design:**

The storm sewer addition to be constructed north of West 45<sup>th</sup> Street up West Kings Highway is designed to meet minimum SUDAS specifications. Additional provisions from the Sioux City SUDAS supplement will be followed. The final engineering design would be developed using relevant calculations to adequately size pipes, inlets, and other features. A sample plan view at the location of the sewer addition is shown in Figure 8.

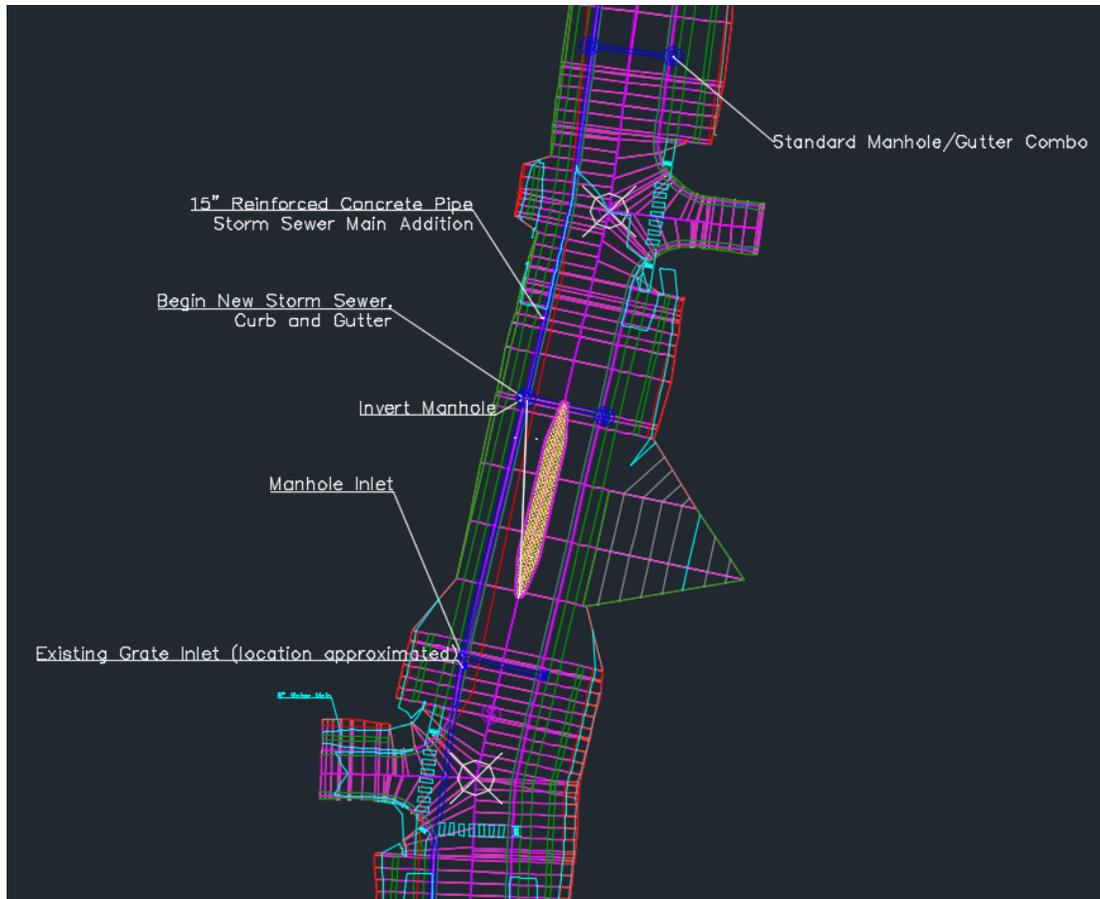


FIGURE 8: SAMPLE STORM SEWER EXTENSION PLAN

The minimum required diameter for a reinforced concrete storm sewer main according to SUDAS is 15 inches with a smooth interior and a Manning’s coefficient of 0.013. The design for the storm sewer addition will follow these parameters. Using the rational formula and assuming a 10 year, 24-hr storm with a subcatchment area (which is assumed to be the width of the road multiplied by the distance between sewer inlets) of approximately 0.24 acres, the sewer can be expected to see a peak flow of 0.038 cubic feet per second (cfs). Based on the Manning equation for a 15” circular concrete pipe at a slope of 1.2% (which matches the slope of the northernmost section of the storm sewer extension), the sewer has a flow capacity of 7.11 cfs. Therefore, the new storm sewer should have adequate capacity. Detailed calculations regarding storm sewer capacity can be found in Appendix 1: Storm Sewer Capacity Calculations.

Any sub drains included in the final design will be designed to be 6 inches in diameter, and storm sewer stubs will be 4 inches in diameter. In addition, the storm sewer will be capable of handling storm water flow between 3 feet per second (fps) and 15 fps. Additional analysis may be required in order to determine if the final design meets the velocity standard. The sewer should be buried at a cover from ground to top of pipe of approximately 4 feet, which adheres to the minimum recommended cover of 1 foot according to SUDAS.

Each new intake in the storm sewer is a standard curb-opening intake with access manholes incorporated at each intake. According to SUDAS standards, intakes and manholes should not be located more than 400 feet apart to meet maintenance needs. The intakes in the new storm sewer will be spaced approximately 300 feet apart in order to ensure that inlets are not spaced too close together near West King's Highway. In addition, inlets will be placed at all intersections located in this area. Manholes will be designed to be 48 inches in diameter according to minimum standards, and manhole block outs will be designed to 24 inches in order to accommodate a 15 inch pipe diameter. Finally, the invert drop at the pipe size change located at Station 48+55.73 will be designed to maintain a consistent energy gradient between the two pipe sizes. Specific details regarding the design of the storm sewer can be found in the project plan sets.

An additional four inlets and accompanying 24 inch pipe will be constructed on the outside of the new roundabout at 40<sup>th</sup> Street in order to prevent ponding of storm water runoff in the roundabout. This plan is depicted in Figure 9. This is in accordance to relevant standards. The locations of these inlets were based on projected flow patterns modeled in Civil 3D based on the region's contours.

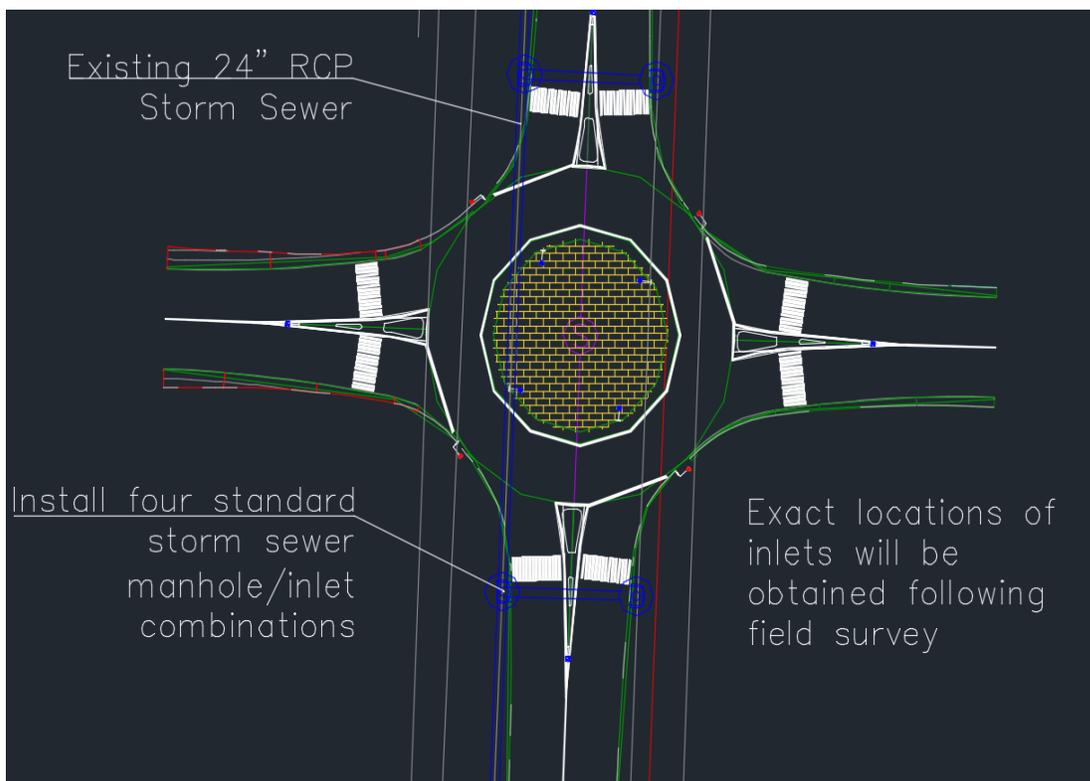


FIGURE 9: ROUNDABOUT STORM SEWER INLET CONSTRUCTION PLAN

## **General Signage Plan:**

Since the existing parking regulations along Country Club Boulevard will be maintained following construction, all signs regulating parking that are located within the project will be removed and restored as they were prior to construction, with the exception of any existing parking signs that are located within the installed traffic medians. “No parking” signs will be placed at the beginning of each median. To accommodate a reduction in the allowable speed limit, all 30 MPH speed limit signs along the road will be replaced with 25 MPH speed limit signs. Appropriate median signs, including diversion signs typically placed at the beginning of all medians, will be placed in order to alert drivers of the presence of the newly installed medians. Roundabout alert signs will be placed prior to the entrances to the roundabout, yield signs will be placed at each entrance, and directional arrows, will be placed in the circle. Finally, all signs depicting the locations of crosswalks along Country Club Boulevard will be removed and replaced. Additionally, crosswalk signs will be placed at new crosswalk locations along the road. All signs should be compliant with MUTCD signage standards.

## **Section 6: Cost and Construction Estimates**

### **Cost Estimation**

For this project the engineers at LEAP Engineering have put together a cost estimation of the reconstruction and traffic calming of Country Club Boulevard. The cost per unit values were all taken from RS Means online catalog using values from the first quarter of 2015. These values were determined to be the most accurate method of cost estimation because of their recent updates and reputable source. The unit costs amass the material, labor, and equipment costs. Additional features added to the road such as the roundabout and traffic choking medians were set in Table 3 as separate costs to show how much of an impact these primary traffic calming items had on the total cost.

The design of the 8 inch thick Portland Cement Concrete was determined to cost \$38.02 per square yard. The total quantity of square yardage covering the new road surface was estimated to be 22,000 square yards. This square yard value was used in determining the costs for the concrete, rock base layer, and final grading. The pavement cost came out to \$840,000 and the 6 inch base layer with a unit cost of \$6.71 per square yard was \$150,000. The cast-in-place 4 inch sidewalk on both sides of the roadway was determined to be \$25,000 with a unit cost of \$4.32. Brick paving was a very instrumental part of LEAP Engineering’s design. Multiple crosswalks were designed with brick paving to act as rumble strips and the medians are detailed to have their centers brick paved. Brick paving was determined to have a unit cost of \$11.44 per square foot. With all the brick paving combined with the concrete paving the total cost for all pavement is \$1,108,300.00.

The utility replacement for this project involved addition and replacement of the entire storm sewer along with the water piping and the sanitary sewer. The total cost for replacing the storm sewer was \$596,000 while the cost of replacing the sanitary

was \$522,500. The water piping cost was \$303,000. A large cost with all three utilities being replaced was the excavation and backfill of the trenches. This is due to the depth at which the utilities must be placed to remain safe and compliant with SUDAS standards. Country Club Boulevard is an existing road being widened, therefore the cut and fill quantities obtained are very low for a project of this scale. The total costs for cut and fill on Country Club Boulevard will be \$7,500.

A comprehensive cost estimate for this project is shown below in Table 3. The total budget allocated by Sioux City for this project was \$4.5 million over the course of two years. Each year will be considered its own phase with Phase 1 being given \$2.4 million and Phase 2 given \$2.1 million. The total project cost was estimated to be \$2.5 million for the entirety of the project. Based on a project phasing it is estimated that \$1.4 million (55% of the total cost) will be incurred during Phase 1 and \$1.1 million (45%) on Phase 2. This was determined with Phase 1 ending just south of the intersection of Country Club Boulevard and Manor Circle. Phase 2 will finish from the Manor Circle intersection to the Kings Highway intersection.

Table 3: Material Cost Estimate for Country Club Boulevard Reconstruction.

<u>Material Cost Estimate</u>	Cost per Unit	Quantity	Unit	Total Cost
<b>CONCRETE PAVING</b>				
8" Concrete	\$ 38.02	22000	SY	\$ 840,000.00
Grading area to be paved	\$ 0.89	22000	SY	\$ 20,000.00
6" Base Layer	\$ 6.71	22000	SY	\$ 150,000.00
Sidewalk cast-in-place, 3000 psi, 4" thick	\$ 4.32	5500	SY	\$ 25,000.00
Brick Crosswalks	\$ 11.44	2000	SF	\$ 25,000.00
<b>Roundabout</b>				
Additional Concrete	\$ 41.30	200	SY	\$ 10,000.00
Brick Paving	\$ 11.44	1400	SF	\$ 17,000.00
<b>Medians (x3)</b>				
Additional Concrete (Curbs)	\$ 41.30	30	CY	\$ 1,300.00
Brick Paving	\$ 11.44	1700	SF	\$ 20,000.00
<i>Paving Total</i>				<b>\$ 1,108,300.00</b>
<b>EXCAVATION</b>				
Cut	\$ 3.69	1300	CY	\$ 5,000.00
Fill	\$ 3.31	800	CY	\$ 2,500.00
<i>Excavation Total</i>				<b>\$ 7,500.00</b>
<b>UTILITIES</b>				
<b>Storm Sewer</b>				
4' I.D. 6' Deep Drainage Structures	\$ 1,723.60	29	EA.	\$ 50,000.00
24" Reinforced Concrete Pipe	\$ 51.44	5000	LF	\$ 260,000.00
15" Reinforced Concrete Pipe	\$ 28.62	1200	LF	\$ 35,000.00
Trench Excavation	\$ 8.49	9300	CY	\$ 80,000.00
Backfill	\$ 18.30	9300	CY	\$ 171,000.00
<i>Storm Sewer Total</i>				<b>\$ 596,000.00</b>
<b>Sanitary Sewer</b>				
8" PVC Pipe	\$ 11.94	6000	LF	\$ 72,000.00
Trench Excavation	\$ 8.49	16500	CY	\$ 141,000.00
Backfill	\$ 18.30	16500	CY	\$ 302,000.00
4' Diameter Man Hole	\$ 499.11	15	EA.	\$ 7,500.00
<i>Sanitary Sewer Total</i>				<b>\$ 522,500.00</b>
<b>Water Pipe</b>				
12" Ductile Iron Piping	\$ 38.18	6100	LF	\$ 233,000.00
Trench Excavation	\$ 8.49	7300	CY	\$ 62,000.00
Backfill	\$ 18.30	7300	CY	\$ 8,000.00
<i>Water Pipe Total</i>				<b>\$ 303,000.00</b>

<b>TOTAL PROJECT COST</b>	<b>\$ 2,537,300.00</b>
---------------------------	------------------------

### **Detour Plan:**

Detailed maps of the proposed detour plan can be seen in Figures 10A, 10B, and 10C. Detour routes are represented by colored arrows on the map. In addition, average annual daily traffic (AADT) counts are shown adjacent to each road.

### **Option 1, Phase 1:**

The first detour plan option involves working in conjunction with the project phasing plan. The primary goal of this plan is to ensure that construction of the new roadway progresses as smoothly as possible. Under this plan, the entirety of Country Club Boulevard would be closed from 38<sup>th</sup> Street to just south of Manor Circle during Phase 1, and closed from Manor Circle to King's Highway during Phase 2. The detour for Phase 1 would involve diverting traffic from Country Club Boulevard via Hamilton Boulevard, then routing traffic west on West King's Highway, south on Perry, and back to Country Club Boulevard. This route is the most efficient way to divert traffic due to the fact that Hamilton Boulevard is a four-lane arterial that sees over 10,000 vehicles per day. Therefore, Hamilton should be able to withstand additional traffic due to the detour. The westward route on West King's Highway may be controversial due to the narrow road width of the section just west of Hamilton. However, this road sees roughly 1,000 vehicles per day and should be able to withstand additional traffic. Additional measures such as signage or increased police presence may be needed to ensure that drivers are not speeding through this stretch of the detour.

The southern stretch of Perry Way would be used as an access point for residents to their homes. In addition, residents of the southern part of the Phase 1 region can access their homes via W 39<sup>th</sup> Street. Because of this detour, residents will be required to use adjacent streets for parking.

### **Option 1, Phase 2:**

Phase 2 of Option 1 involves closing Country Club Boulevard to the north of Manor Circle. To accommodate construction, northbound traffic will be routed east onto 41<sup>st</sup> Street. This street was chosen based on AADT, which shows that 41<sup>st</sup> street has the ability to absorb greater traffic loads than 40<sup>th</sup> or 43<sup>rd</sup> street. Local traffic would then be routed north on Perry Way. During this phase, the two intersections with Perry Way in addition to the intersection with 45<sup>th</sup> street will remain open as long as possible in order to allow residents in the northern section of the project to access their homes. However, when these intersections are inevitably closed, residents of homes to the north of 45<sup>th</sup> street may need to access their homes via the detour route proposed in Phase 1. Additional measures may need to be taken on the Perry Way section of the detour route to ensure the safety of students that may frequent this area during their walks to and from the nearby school.

### **Option 2:**

The primary goal of this option is to minimize the burden of construction on the residents of the neighborhood. While this plan will observe the proposed project phasing, one lane of Country Club Boulevard will remain open at all times in order

for residents to maintain access to their homes to the greatest extent possible. Furthermore, this option will not require mandatory detours, which may prove to be lengthy due to the lack of several access points to Country Club Boulevard from adjacent roads. Drivers will be encouraged but not required to use the detour route proposed in Option 1, Phase 1, especially those who live in the northern region of the neighborhood.

# Detour Plan: Option 1, Phase 1

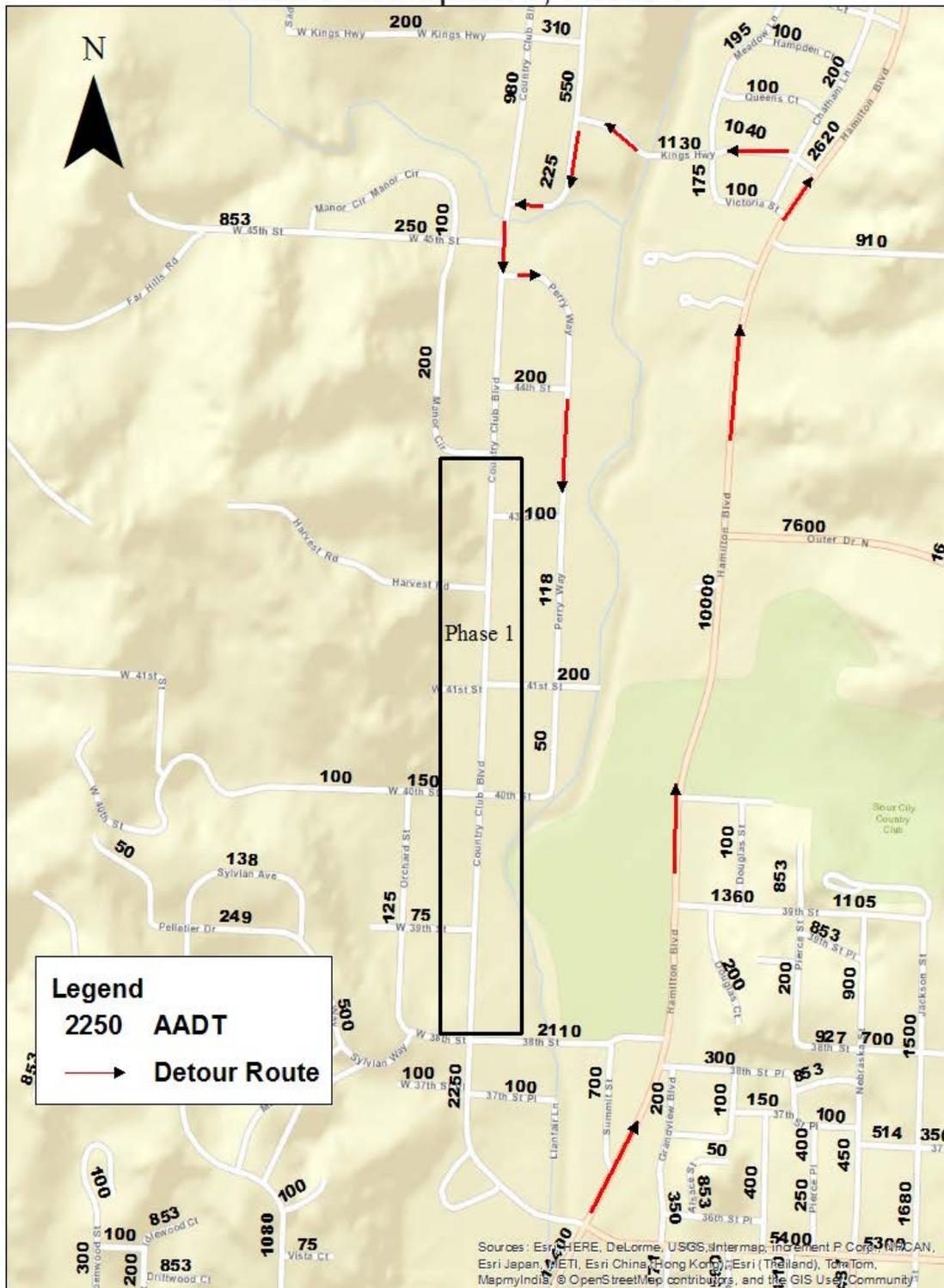


FIGURE 10A: PHASE ONE OF DETOUR PLAN, OPTION 1

# Detour Plan: Option 1, Phase 2

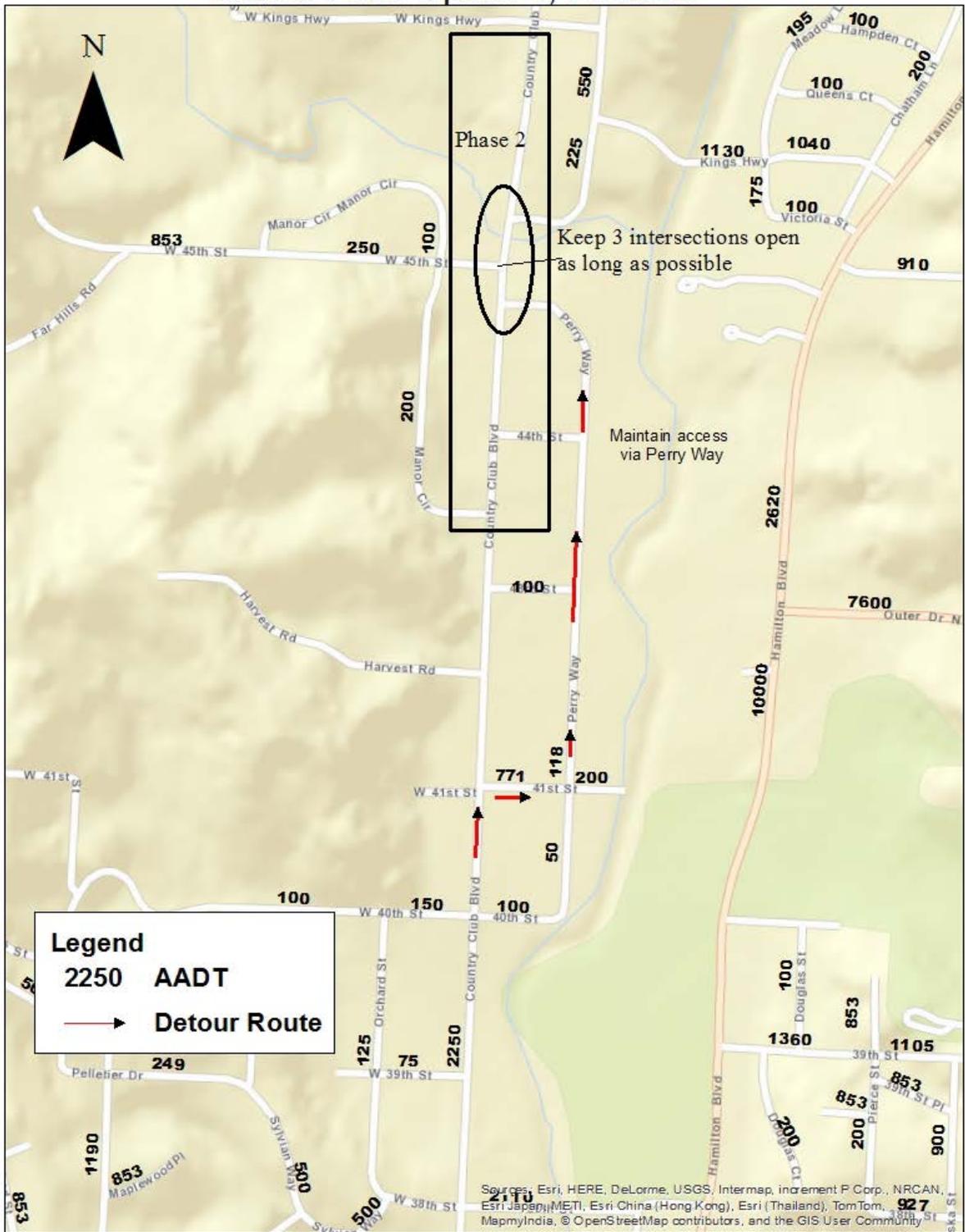


FIGURE 10B: PHASE TWO OF DETOUR PLAN, OPTION 1

## Detour Plan: Option 2

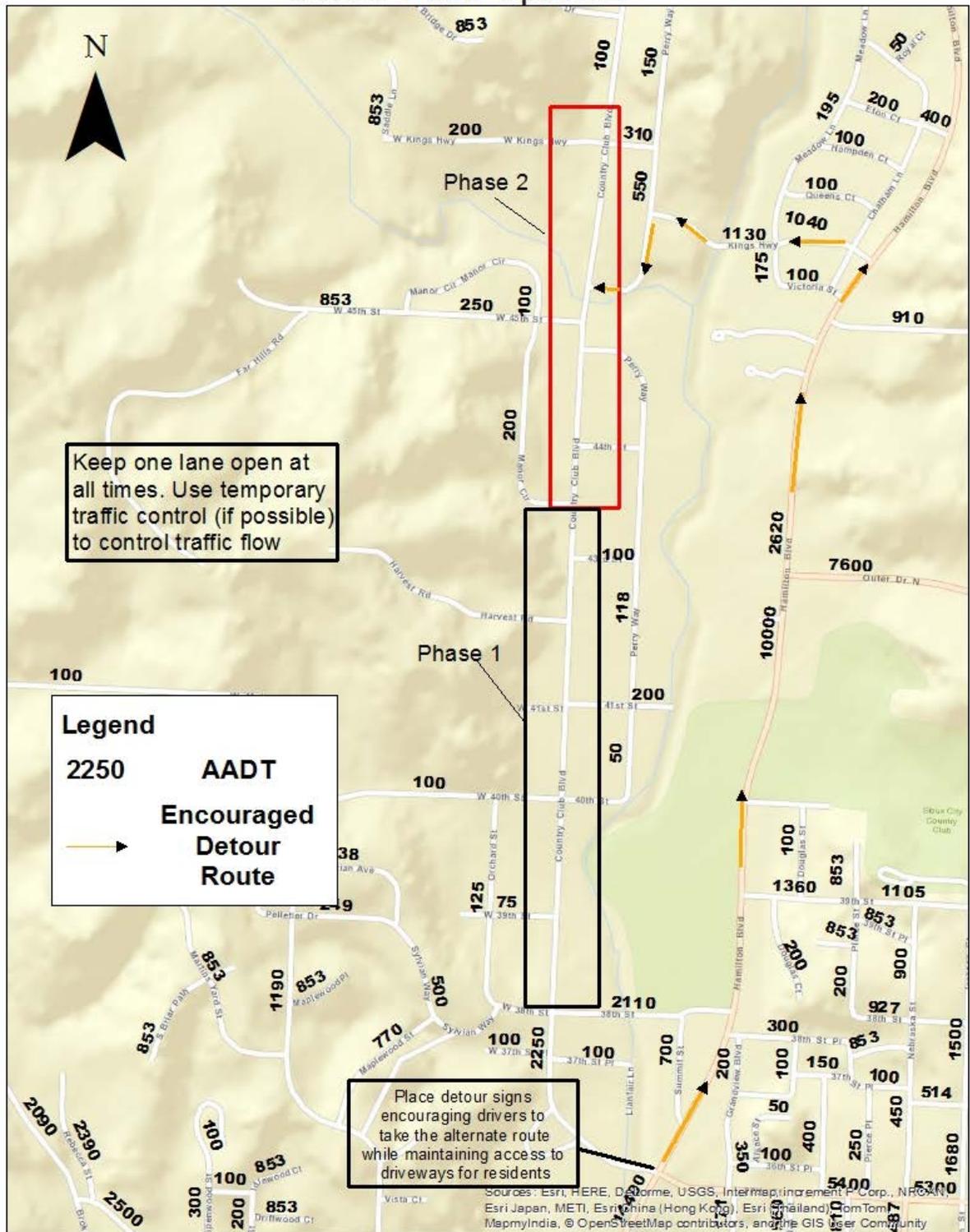


FIGURE 10C: DETOUR PLAN, OPTION 2

## Section 7: Conclusions

LEAP Engineering worked with the City of Sioux City to create the best possible option for the traffic calming and reconstruction of Country Club Boulevard from 38<sup>th</sup> Street to West King's Highway. Many variations of road changes were discussed between the two parties and came to a consensus of the most desired designs for the upcoming construction. With the understanding that the project was to be split into two phases, Phase 1 the summer of 2016 and then summer of 2017, a budget and phase plan was assembled. The largest concern that was expressed had been the safety of the street. With one school located south of 38<sup>th</sup> Street and Clark Elementary School located between 43<sup>rd</sup> and 44<sup>th</sup> Street, it was essential to consider safe crossing and clear reduction of speed without the distinct use of stop signs. Along with safety being of top priority, societal and economic factors proved to also influence the end product.

In terms of safety and ensuring the nearby community acceptance of the changes, the addition of a roundabout at 40<sup>th</sup> Street and Country Club Boulevard was chosen. Alongside adding in the roundabout, a median is also considered in the final design assuming that more signage would help indicate changes in the road. The research found from numerous sources indicated that roundabouts help reduce speed and also encourage a steady flow of traffic. The median placement will aid in naturally reducing speed and provide the opportunity to situate a paved crosswalk for pedestrians.

Lastly, the speed of the road was heavily emphasized. Currently the road is legalized at 30 MPH and LEAP Engineering suggests the reduction to 25 MPH. Parking had also been discussed but due to the field visit, parking was not essential. The research and designs created by LEAP Engineering and collaboration with the city engineer, Glenn, have helped with the final product of how Country Club Boulevard should be constructed in the next couple of years.

## Section 8: Bibliography

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6. United States. Department of Transportation Federal Highway Administration. By Geni Bahar, Maruice Masliah, Rhys Wolff, and Peter Park. U.S. Department of Transportation Federal Highway Administration, Sept. 2007. Web. 20 Apr. 2015.
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## Appendix 1: Storm Sewer Capacity Calculations

1. Calculate peak flow for the watershed
  - Rational Formula:  $Q=CiA$ 
    - $Q$ =peak flow (cfs)
    - $C$ =runoff coefficient – assumed to be 0.875, which is in the middle of the 0.80 – 0.95 range for concrete.
    - $i$ =assumed rainfall intensity - assumed to be 0.18 in/hr for a 10 year, 24-hour storm for Region 4 of the State of Iowa.
    - $A$ =subcatchment area – assumed to be the width of the road from curb to curb (31 feet) times 350 feet (which is the estimated distance between each inlet of the new sewer plus 50 feet to make a conservative estimate.
      - $31*350=10,500$  square feet = 0.241 acres
  - Calculation:  $Q=CiA=(0.875)*(0.18 \text{ in/hr})*(0.241 \text{ ac.}) = 0.038 \text{ ac-in/hr} = \mathbf{0.038 \text{ cfs.}}$
2. Calculate Storm Sewer Capacity for 15” concrete storm sewer
  - Manning’s equation for open channel flow:  $Q=(1.49/n)AR^{2/3}S^{1/2}$ 
    - $Q$ =flow capacity (cfs)
    - $n$ =manning’s coefficient – assumed to be 0.013 for concrete pipe
    - $A=(3.14*D^2)/4 = (3.14/4)*(15 \text{ in}/12 \text{ in/ft})^2 = 1.23 \text{ ft}^2$
    - $R=D/4=(15 \text{ in}/12 \text{ in/ft})/4 = 0.313 \text{ ft}^2$
    - $S=0.012$  (1.2% slope/100)
  - Calculation= $(1.49/0.013)*(1.23)*(0.313)^{2/3}*(0.012)^{1/2} = \mathbf{7.11 \text{ cfs.}}$

**Since 7.11>0.038, the storm sewer has adequate capacity to handle this particular rainfall intensity.**

## Appendix 2: Stop Sign Warrant Analysis

### HCS Results Summary:

Warrants Summary													
<b>Information</b>													
Analyst	Parker Just		Intersection	N/A									
Agency/Co	The University of Iowa		Jurisdiction										
Date Performed	4/24/2015		Units	U.S. Customary									
Project ID			Time Period Analyzed	7 am - 7 pm									
East/West Street	N/A		North/South Street	Country Club Boulevard									
File Name	Warrants1		Major Street	North-South									
Project Description													
<b>General</b>			<b>Roadway Network</b>										
Major Street Speed (mph)	30	<input type="checkbox"/>	Population < 10,000							Two Major Routes			<input type="checkbox"/>
Nearest Signal (ft)	0	<input type="checkbox"/>	Coordinated Signal System							Weekend Count			<input type="checkbox"/>
Crashes (per year)	0	<input type="checkbox"/>	Adequate Trials of Alternatives							5-yr Growth Factor			0
<b>Geometry and Traffic</b>	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of lanes, N	0	0	0	0	0	0	0	1	0	0	0	0	
Lane usage								T					
Vehicle Volume Averages (vph)	0	0	0	0	0	0	0	119	0	0	0	0	
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	
<b>Warrant 1: Eight-Hour Vehicular Volume</b>													
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--												<input type="checkbox"/>	
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--												<input type="checkbox"/>	
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>	
<b>Warrant 2: Four-Hour Vehicular Volume</b>													
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>	
<b>Warrant 3: Peak Hour</b>													
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume ) --or--												<input type="checkbox"/>	
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>	
<b>Warrant 4: Pedestrian Volume</b>													
4 A. Four Hour Volumes --or--												<input type="checkbox"/>	
4 B. One-Hour Volumes												<input type="checkbox"/>	
<b>Warrant 5: School Crossing</b>													
5. Student Volumes --and--												<input type="checkbox"/>	
5. Gaps Same Period												<input type="checkbox"/>	
<b>Warrant 6: Coordinated Signal System</b>													
6. Degree of Platooning (Predominant direction or both directions)												<input type="checkbox"/>	
<b>Warrant 7: Crash Experience</b>													
7 A. Adequate trials of alternatives, observance and enforcement failed --and--												<input type="checkbox"/>	
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--												<input type="checkbox"/>	
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied												<input type="checkbox"/>	
<b>Warrant 8: Roadway Network</b>													
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--												<input type="checkbox"/>	
8 B. Weekend Volume (Five hours total)												<input type="checkbox"/>	
<b>Warrant 9: Grade Crossing</b>													
9 A. Grade Crossing within 140 ft --and--												<input type="checkbox"/>	
9 B. Peak-Hour Vehicular Volumes												<input type="checkbox"/>	

Traffic study utilized in HCS Warrant Analysis:

Snyder & Associates  
Ankeny, Iowa  
(515)964-2020

Country Club Boulev :  
North of 38th St :  
Sioux City, IA :

Site: CCB

Weekly Volume,

Interval Start	Mon 12/8/2014	Tue 12/9/2014	Wed 12/10/2014	Thu 12/11/2014	Fri 12/12/2014	Sat 12/13/2014	Sun 12/14/2014	Mon - Fri Average	Weekly Average
12:00 AM	-	4	7	11	8	-	-	7.5	7.5
1:00 AM	-	2	3	5	4	-	-	3.5	3.5
2:00 AM	-	2	5	1	4	-	-	3.0	3.0
3:00 AM	-	3	4	3	3	-	-	3.3	3.3
4:00 AM	-	6	3	4	2	-	-	3.8	3.8
5:00 AM	-	11	11	11	12	-	-	11.3	11.3
6:00 AM	-	58	48	46	57	-	-	52.3	52.3
7:00 AM	-	153	168	170	155	-	-	161.5	161.5
8:00 AM	-	120	109	123	-	-	-	117.3	117.3
9:00 AM	-	75	77	61	-	-	-	71.0	71.0
10:00 AM	-	110	53	72	-	-	-	78.3	78.3
11:00 AM	-	85	79	84	-	-	-	82.7	82.7
12:00 PM	108	103	93	125	-	-	-	107.3	107.3
1:00 PM	105	86	112	95	-	-	-	99.5	99.5
2:00 PM	141	95	77	87	-	-	-	100.0	100.0
3:00 PM	132	155	161	134	-	-	-	145.5	145.5
4:00 PM	148	135	163	152	-	-	-	149.5	149.5
5:00 PM	190	198	193	198	-	-	-	194.8	194.8
6:00 PM	117	124	117	139	-	-	-	124.3	124.3
7:00 PM	77	84	100	92	-	-	-	88.3	88.3
8:00 PM	70	80	86	77	-	-	-	78.3	78.3
9:00 PM	39	62	58	52	-	-	-	52.8	52.8
10:00 PM	20	21	29	20	-	-	-	22.5	22.5
11:00 PM	6	6	13	18	-	-	-	10.8	10.8
Totals	1153	1778	1769	1780	245	0	0	1768.6	1768.6

**Peak Hours**

12:00 AM - 12:00 PM	-	7:15 AM	7:00 AM	7:15 AM	7:00 AM	-	-	7:15 AM	7:15 AM
Volume	-	161	168	184	155	-	-	170.3	170.3
Factor	-	0.82	0.72	0.94	0.76	-	-	0.85	0.85
12:00 PM - 12:00 AM	5:00 PM	5:00 PM	4:45 PM	5:00 PM	-	-	-	5:00 PM	5:00 PM
Volume	190	198	210	198	-	-	-	194.8	194.8
Factor	0.91	0.77	0.91	0.97	-	-	-	0.87	0.87

## Appendix 3: Permits

### "HOW TO FILE A COMPLETE NOTICE OF INTENT"

For

NPDES General Permit No.1  
for "Storm Water Discharge  
Associated With Industrial Activity"

or

NPDES General Permit No.2  
for "Storm Water Discharge  
Associated with Industrial Activity  
for Construction Activities"

or

NPDES General Permit No.3  
for "Storm Water Discharge Associated with  
Industrial Activity for Asphalt Plants, Concrete  
Batch Plants, Rock Crushing Plants  
and Construction Sand and Gravel Facilities"

In accordance with the Clean Water Act, all industrial facilities that discharge storm water meeting the definition of storm water associated with industrial activity must apply for coverage under a National Pollutant Discharge Elimination System (NPDES) permit.

These instructions are provided to assist activities that need to notify the Iowa Department of Natural Resources (IDNR) of their storm water discharge to be covered under Iowa's NPDES General Permit No. 1, General Permit No. 2 or General Permit No. 3.

The instructions are the same for all general permits. When a discharger provides a complete Notice of Intent to the IDNR, its storm water discharges will be subject to the terms and conditions of the appropriate general permit unless notified by the IDNR.

A pollution prevention plan is required for all storm water permits. The plan must be completed before submittal of the Notice of Intent. The plan should be kept on-site at the facility or construction site that generates the storm water discharge. Do not send the pollution prevention plan with the Notice of Intent.

**To file a complete Notice of Intent you must provide the following items:**

1. The completed Form 542-1415 entitled "Notice of Intent for NPDES Coverage Under General Permit",
2. Proof of Public notification from the newspaper in the area with the highest circulation and,
3. Permit fee.

Each of these items is discussed in detail below and on the back side of this page.

Mail the completed application form 542-1415 with the proof of public notice and permit fee to the following address. **DO NOT** send the Pollution Prevention Plan with your Notice of Intent. **DO NOT** send the application form, fee payment or proof of public notice separately. Send them all together.

**Storm Water Coordinator  
Department of Natural Resources  
502 E. 9th Street  
Des Moines, Iowa 50319-0034**

#### 1. Proof of Public Notification

Iowa law requires dischargers to make public notice for seeking coverage under a general permit. The public notice must be published at least one day at your own expense in the newspaper with the largest circulation in the area where the discharge is located.

The wording to use in the public notice is specified as a rule of the IDNR and is included as a separate page for your convenience. This wording contains the minimum information that must be provided in the public notice. You must complete the blank portions with the specified information. You may add more information to the notice if you wish.

To determine which newspaper has the largest circulation, ask your local newspaper or call the Iowa Newspaper Association (INA) at (515) 244-2145 for circulation information. The INA is located at 319 E. Fifth Street, Des Moines, Iowa 50309.

When your Notice of Intent is sent to the IDNR, you **MUST** enclose a clipping of the public notice with the name of the newspaper and date published, or an affidavit from the newspaper with the clippings attached to demonstrate your public notification requirement. If the proof of public notice is not included with your application, the storm water permit authorization will **NOT** be issued.

#### 2. Form 542-1415

In filling out the form, type or print legibly and complete both sides of the form.

##### *Permit Information and Fee Options*

Give permit information on the general permit for which you are applying and select a fee option.

##### *Facility or Project Information*

Enter the official or legal name of the facility or site. Enter the complete street address. If no street address exists, provide a geographic description (e.g., Intersection of 5<sup>th</sup> Street and 2<sup>nd</sup> Avenue or, at a minimum, the name of the street or road nearest the site), city, county, state and zip code. Do not use a PO

Box number. This is the address of the facility or construction site not the address of the owner or contact.

For General Permits No. 1 and No. 3, provide a four-digit SIC code that best represents the principal products or activities provided by the facility.

*Contact Information*

Provide the legal name of a contact person, firm, public organization or any other entity that owns or operates the facility or site. The name of the operator or contact may or may not be the same as the name of the facility. The operator is the legal entity that controls the facility's operation. Provide a mailing address (P.O. box numbers may be used). Include the city, state, zip code and telephone number for a contact person. All correspondence relating to the storm water permit, including the storm water permit authorization, will be sent to this address.

*Facility Location or Location of Construction Site*

Give the location by ¼ section (e.g., NW), section number, township number (e.g., T78N) and range number (e.g., R4W). The location information can be obtained from United States Geological Survey topographic maps, by calling 1-(888) ASK-USGS.

*Owner Information*

Enter the name, mailing address and telephone number of the owner of the facility.

*Outfall Information*

Provide an estimated start date the discharge did or is to commence, the name(s) of the receiving water(s), and check compliance conditions. All applicable compliance conditions listed must be met for the Notice of Intent to be considered complete.

The discharge start date is the date storm water discharge from industrial activity or construction activity (from a construction site that disturbs one acre or more or is part of a larger common plan of development that disturbs one acre or more) began or will begin to leave the property. If the discharge start date is before 10/1/92, the correct date to place in the blank is 10/1/92. This is the date the State of Iowa implemented the storm water permit requirements.

If an industrial facility was not initially required to obtain a storm water permit but changed operations so that later a storm water permit was or will be required, the discharge start date is the date that the change was made that necessitated the need for a storm water permit.

Provide the name(s) of the receiving water(s) to the first uniquely named river. Explain to where the storm water runoff will drain (e.g., unnamed waterway to road ditch to unnamed tributary to Mud Creek to Skunk River).

*Compliance conditions*

Check the compliance conditions that apply. A pollution prevention plan is required for all storm water permits. For General Permit No. 3 (if no soil disturbing activities will take place) and General Permit No. 1, the question regarding state or local sediment and erosion control plans does not apply. If you check no to any of the applicable compliance conditions, your application will not be approved.

*General Permits No. 2 and No 3*

For construction sites that need a storm water discharge permit, in addition to the information required above, include a brief description of the project, estimated timetable for major activities and an estimate of the number of acres of the site on which soil will be disturbed.

For General Permit No. 3, identify if the facility is a portable plant.

*Certification*

The completed form must be signed by a qualified official. A qualified official is any of the following: owner, principal executive officer of at least the level of vice-president, general partner, general contractor (for construction sites), principal executive officer or ranking elected official (for publicly owned facilities).

**The Notice of Intent will be returned and no permit issued if information on the form is incomplete.**

**3. Fees**

There is a permit fee for each general permit. The fee schedule is the same for General Permit No. 1, No. 2 and No. 3.

The applicant has the option of paying an annual permit fee or a multi-year permit fee.

Annual permit fee	\$175
3-year permit fee	\$350
4-year permit fee	\$525
5-year permit fee	\$700

**IMPORTANT - The storm water permit authorization will not be issued unless the proof of public notice and permit fee accompany the completed Notice of Intent.**

**If you need assistance contact the DNR at (515) 725-8415 or (515) 725-8417.**



IOWA DEPARTMENT OF NATURAL RESOURCES  
 ENVIRONMENTAL PROTECTION DIVISION  
**NOTICE OF INTENT FOR NPDES COVERAGE UNDER  
 GENERAL PERMIT**

<b>CASHIER'S USE ONLY</b> 0253-542-SWD8-0581
Name

No. 1 FOR "STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY"

No. 2 FOR "STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY FOR CONSTRUCTION ACTIVITIES"

No. 3 FOR "STORM WATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY FOR ASPHALT PLANTS, CONCRETE BATCH PLANTS, ROCK CRUSHING PLANTS, AND CONSTRUCTION SAND AND GRAVEL FACILITIES."

**PERMIT INFORMATION**

Has this storm water discharge been previously permitted? <input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, please list authorization number _____
Under what General Permit are you applying for coverage?
General Permit No. 1 <input type="checkbox"/> General Permit No. 2 <input type="checkbox"/> General Permit No. 3 <input type="checkbox"/>

**PERMIT FEE OPTIONS**

For coverage under the NPDES General Permit the following fees apply:
<input type="checkbox"/> Annual Permit Fee \$175 (per year) Maximum coverage is one year.
<input type="checkbox"/> 3-year Permit Fee \$350 Maximum coverage is three years.
<input type="checkbox"/> 4-year Permit Fee \$525 Maximum coverage is four years.
<input type="checkbox"/> 5-year Permit Fee \$700 Maximum coverage is five years.
Checks should be made payable to: Iowa Department of Natural Resources.

**FACILITY OR PROJECT INFORMATION**

Enter the name and full address/location (not mailing address) of the facility or project for which permit coverage is requested.

NAME:		STREET ADDRESS OF SITE:	
CITY:	COUNTY:	STATE:	ZIP CODE:

**CONTACT INFORMATION**

Give name, mailing address and telephone number of a contact person (Attach additional information on separate pages as needed). This will be the address to which all correspondence will be sent and to which all questions regarding your application and compliance with the permit will be directed.

NAME:		ADDRESS:	
CITY:	STATE:	ZIP CODE:	TELEPHONE (    )
Check the appropriate box to indicate the legal status of the operator of the facility.			
<input type="checkbox"/> Federal <input type="checkbox"/> State <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Other (specify) _____			

SIC CODE (General Permit No. 1 & 3 Applicants Only)

SIC code refers to Standard Industrial Classification code number used to classify establishments by type of economic activity.

**FACILITY LOCATION OR LOCATION OF CONSTRUCTION SITE**

Give the location by 1/4 section, section, township, range. (e.g., NW, 7, T78N, R3W).

1/4 SECTION	SECTION	TOWNSHIP	RANGE

**MAIL TO:**

STORM WATER COORDINATOR  
IOWA DEPARTMENT OF NATURAL  
RESOURCES  
502 E 9<sup>TH</sup> ST  
DES MOINES IA 50319-0034

**OWNER INFORMATION**

Enter the name and full address of the owner of the facility.

NAME:		ADDRESS:	
CITY:	STATE:	ZIP CODE:	TELEPHONE: (    )

**OUTFALL INFORMATION**

Discharge start date, i.e., when did/will the site begin operation or 10/1/92, whichever is later: \_\_\_\_\_

Is any storm water monitoring information available describing the concentration of pollutants in storm water discharges?

 Yes  No**NOTE:** Do not attach any storm water monitoring information with the application.

Receiving water(s) to the first uniquely named waterway in Iowa (e.g., road ditch to unnamed tributary to Mud Creek to South Skunk River):

**Compliance With The Following Conditions:**

Has the Storm Water Pollution Prevention Plan been developed prior to the submittal of this Notice of Intent and does the plan meet the requirements of the applicable General Permit? (do not submit the SWPPP with the application)

Yes No

Will the Storm Water Pollution Prevention Plan comply with approved State (Section 161A.64, Code of Iowa) or local sediment and erosion plans? (for General Permit 2 only)

Has a public notice been published for at least one day, in the newspaper with the largest circulation in the area where the discharge is located, and is the proof of notice attached? (new applications only)

 **GENERAL PERMIT NO. 2 AND GENERAL PERMIT NO. 3 APPLICANTS COMPLETE THIS SECTION.**

Description of Project (describe in one sentence what is being constructed):

For General Permit No. 3 - Is this facility to be moved this year?  Yes  NoNumber of Acres of Disturbed Soil: \_\_\_\_\_  
(Construction Activities Only)

Estimated Timetable For Activities / Projects, i.e., approximately when did/will the project begin and end:

**CERTIFICATION – ALL APPLICATIONS MUST BE SIGNED**

Only the following individuals may sign the certification: owner of site, principal executive officer of at least the level of vice-president of the company owning the site, a general partner of the company owning the site, principal executive officer or ranking elected official of the public entity owning the site, any of the above of the general contracting company for construction sites.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified people properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, this information is to the best of my knowledge and belief, true, accurate, and complete. I further certify that the terms and conditions of the general permit will be met. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME: (print or type)

TITLE AND COMPANY NAME OF SIGNATORY:

SIGNATURE:

DATE:

Instructions - To complete the public notice, fill in the blanks with the required information or select the appropriate response and send to the newspaper.

The public notice must be published at least one day at your own expense.

PUBLIC NOTICE OF STORM WATER DISCHARGE

\_\_\_\_\_ plans to submit a Notice of Intent to the  
*(applicant name)*

Iowa Department of Natural Resources to be covered under the NPDES General Permit

*(select the appropriate general permit - No. 1 "Storm Water Discharge Associated with Industrial Activity", General Permit No. 2 "Storm Water Discharge Associated with Industrial Activity for Construction Activities, or General Permit No. 3 "Storm Water Discharge Associated With Industrial Activity From Asphalt Plants, Concrete Batch Plants, Rock Crushing Plants, And Construction Sand And Gravel Facilities")*

The storm water discharge will be from \_\_\_\_\_  
*(description of industrial activity)*

located in \_\_\_\_\_  
*(1/4 section, section, township, range, county)*

Storm water will be discharged from \_\_\_\_\_ point source(s) and will be discharged to  
*(number)*

the following streams: \_\_\_\_\_  
*(stream name(s))*

Comments may be submitted to the Storm Water Discharge Coordinator, Iowa Department of Natural Resources, Environmental Protection Division, 502 E. 9th Street, Des Moines, IA 50319-0034. The public may review the Notice of Intent from 8:00am to 4:30pm, Monday through Friday, at the above address after it has been received by the department.



# Fiber / Utility Installation & Maintenance Permit

Applicant: \_\_\_\_\_ Name \_\_\_\_\_ Address \_\_\_\_\_ Phone \_\_\_\_\_ Email \_\_\_\_\_

Facility Owner: \_\_\_\_\_

Contractor: \_\_\_\_\_

Bond on File:  Yes  No  Not Applicable Bond Expiration Date: \_\_\_\_\_

Insurance Certificate on File:  Yes  No  Not Applicable

Work in: (Street) \_\_\_\_\_ Paved  Unpaved  Parkway

From: (Street) \_\_\_\_\_ To: (Street) \_\_\_\_\_

Address Served: (If Applicable) \_\_\_\_\_

Start Date: \_\_\_\_\_ Completion Date: \_\_\_\_\_

Project Description: \_\_\_\_\_

Type of Work: \_\_\_\_\_

- A map showing the work area and proposed traffic control must be attached to the application.

By signing the permit below, the Permittee acknowledges the rules, regulations & City Code pertaining to this permit. The Permittee also agrees to defend, indemnify, and hold harmless the City, its employees, and agents from all suits, actions, damages, or claims to which the City may be subject to, of any kind or nature whatsoever, resulting from, caused by, or arising out of the Permittee's use or occupancy of the public right-of-way authorized by this permit.

Applicant Signature \_\_\_\_\_ Date \_\_\_\_\_ Jade Dundas \_\_\_\_\_ Date \_\_\_\_\_  
 Assistant City Manager of Public Works

### FOR OFFICE USE ONLY

Date Submitted: \_\_\_\_\_ Permit/Resolution No. \_\_\_\_\_

Engineer Review: \_\_\_\_\_ Date: \_\_\_\_\_

Utility Review: \_\_\_\_\_ Date: \_\_\_\_\_

Communication Review: \_\_\_\_\_ Date: \_\_\_\_\_

Permit Fee:  New Installation \$250.00  Emergency/Maintenance Requiring Excavation \$85.00  
 Check  Cash  Credit Card

**PUBLIC WORKS DEPARTMENT** 425 S. Green • P.O. Box 447 • Sioux City, IA 51102 **WEB** www.siouxcity.org

<b>ADMINISTRATION</b> PH 715-279-4222 FAX 715-279-4422	<b>WATER TREATMENT</b> PH 715-279-4159 FAX 715-279-4179	<b>WASTE WATER TREATMENT</b> PH 715-279-4616 FAX 715-279-4141	<b>ENVIRONMENTAL SERVICES</b> PH 715-279-4328 FAX 715-279-4422	<b>ENGINEERING</b> PH 715-279-4226 FAX 715-279-4229	<b>FIELD SERVICES</b> PH 715-279-4666 FAX 715-279-4412	<b>RECREATION SERVICES</b> PH 715-279-4126 FAX 715-279-4144
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## Fiber / Utility Installation & Maintenance Permit

### STANDARD PERMIT CONDITIONS

The applicant agrees that if granted a permit for obstruction/excavation in the public right-of-way as described in the permit application, the following stipulations shall govern in addition to those included in Chapter 12.05 of the Sioux City Municipal Code.

- No public right-of-way shall be closed without notice and consent of the Public Works Department. Notice shall be at least ten (10) days in advance of any closing. Applicant is responsible for notifying the properties adjacent to the closure via door hangers. Street Closures shall be at no expense to the City.
- The contractor must schedule a preconstruction meeting with City Engineering staff prior to construction to provide information concerning the construction methods, traffic control plan, construction schedule, and impacts to the City's right-of-way. The contractor must also provide City Engineering with a construction plan showing handholes, conduit locations, and other appurtenances that will be installed in the City's right-of-way.
- Applicant/contractor shall comply with all city ordinances regulating construction in the public right-of-ways during any maintenance activities on the buried utility system. Applicant agrees to comply with all other ordinances and any amendments thereto of the City regulating the use and occupancy of public right-of-way including, but not limited to, Chapter 12.05 of the Sioux City Municipal Code. Construction work shall conform to the current edition of SUDAS and the City of Sioux City Supplement to SUDAS. See Section 7040 regarding pavement patching requirements. All street patching shall use Iowa DOT Class M concrete mix.
- The applicant shall notify Iowa One Call (IOC) at 1-800-292-8989 or [www.iowaonecall.com](http://www.iowaonecall.com) for utility locates prior to excavation. IOC requires 48 hour notification.
- No excavation in the traveled portion of the public right-of-way shall be left opened and with no work in progress for more than five (5) days. No excavation in the parkway shall be left opened and with no progress for more than ten (10) days.
- When an emergency excavation is necessary, a permit application shall be submitted at the earliest opportunity after the work has started, no later than the next business day.
- Contractor shall furnish, erect and maintain the necessary traffic controls such as signs, barricades, flaggers, etc. as required by the City. Traffic controls provided shall be in conformance with the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) as adopted by the Iowa Department of Transportation.
- A complete set of "as built" construction plans in paper and electronic format shall be filed with the City's Engineering Division within fourteen (14) days after completion of the project.
- Applicant shall maintain with the City's Engineering Division a telephone number or numbers to call to locate buried cable and to receive emergency messages at any time.
- Applicant shall relocate any buried utilities, cable, etc. at its expense, to accommodate a public improvement in the public right-of-way.
- All surfacing shall be replaced to its original condition satisfactory to the Public Works Department. Grass surfaces may be seeded and mulched, sodded or treated with erosion mat as determined by the City Engineer or his/her designee. Paved areas will require passing density tests to be provided to City Engineering staff prior to being paved. The applicant shall assume the responsibility of maintenance costs for restoring any grassed areas, streets, driveways, and sidewalks due to settlement of the trenches or improperly restored improvements over such trenches for a period of (2) years, or until the area is reconstructed by the City, whichever is sooner.
- Applicant shall submit a surety bond in the amount of \$10,000 for all right-of-way obstructions/excavations that will likely cause damage to the right-of-way. The bond shall be signed by a good and sufficient surety company authorized to execute such bonds under the laws of the state and upon which service of process may be made in the State of Iowa. Action may be taken on the bond to recover costs associated with repairs to any damages caused to the right-of-way or City utilities, or if the applicant fails to make timely repairs and reopen the right-of-way.
- Applicant agrees to require all general contractors who may perform any work for Applicant under this permit to post a payment bond with a surety by a company licensed to do business in the State of Iowa guaranteeing payment of all subcontractors and suppliers of the general contractor. In the event Applicant does not comply with this paragraph, it shall become a personal guarantor of the general contractor's obligations. This requirement is specifically provided for the benefit of third parties.

PUBLIC WORKS DEPARTMENT 425 4<sup>th</sup> Street - P.O. Box 447 - Sioux City, IA 51102 [www.sioux-city.org](http://www.sioux-city.org)

ADMINISTRATION  
PH 712-279-4222  
FAX 712-279-4422

WATER TREATMENT  
PH 712-279-4159  
FAX 712-279-4179

WASTE WATER TREATMENT  
PH 712-279-4916  
FAX 712-279-4191

ENVIRONMENTAL SERVICES  
PH 712-279-4909  
FAX 712-279-4422

ENGINEERING  
PH 712-279-4626  
FAX 712-279-4209

FIELD SERVICES  
PH 712-279-4666  
FAX 712-279-4612

RECREATION SERVICES  
PH 712-279-4139  
FAX 712-279-4184



## Fiber / Utility Installation & Maintenance Permit

- Applicant shall submit a Certificate of Liability Insurance with the application. The amount of the insurance shall be a minimum of \$1,000,000 with a maximum deductible of \$5,000. The certificate shall name the City as an additional insured and shall include a copy of the endorsement naming the City as such.
- In the event that the Applicant fails to comply with the provision of the application, after having been given reasonable notice, the City may do such works as may be needed to properly repair such pavements, sidewalks, curbs and gutters or other portions of streets and public places and the cost thereof shall be repaid to the City by the Applicant. In cases where a cut or disturbance is made in a section of street paving or sidewalks, but causes greater disturbance than to just the area cut, rather than replace only the area cut, the Applicant shall replace that area as may be ordered by the Public Works Director. All work shall comply with the City's requirements for patch back and repair.
- Applicant shall defend at its own expense, in the name and on behalf of the City, and shall indemnify and save harmless the City from any and all claims, suits, losses, damages, costs or expenses, whether caused or contributed to by the negligence of Applicant or the City, on account of injury or damage to any person or property, caused or occasioned or allegedly caused or occasioned, in whole or in part, by reason of or arising out of the construction, excavation, operation or maintenance of the buried cable permitted by this resolution. However, Applicant shall not be obligated to defend, indemnify and save harmless the City for any costs or damages arising from the sole negligence of the City. The duty of Applicant to defend and save harmless and indemnify the City shall extend to the officers, employees, elected officials, and agents of the City to the extent the City is obligated to defend, save harmless and indemnify by law.
- The applicant agrees to abide by the Supplemental Conditions (If Applicable) written below:  
Supplemental Permit Conditions (attach additional sheets as required): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**This completed, signed and approved permit must be present at the project site while work is underway. Failure to produce this permit when requested can and will result in compulsory work stoppages.**

\_\_\_\_\_  
Applicant's Initials

PUBLIC WORKS DEPARTMENT 425 E. 2nd - P.O. Box 447 - Sioux City, IA 51102 [WEB www.sioux-city.org](http://www.sioux-city.org)

ADMINISTRATION  
PH 715-279-4222  
FAX 715-279-4422

WATER TREATMENT  
PH 715-279-4122  
FAX 715-279-4179

WASTE WATER TREATMENT  
PH 715-279-4418  
FAX 715-279-4184

ENVIRONMENTAL SERVICES  
PH 715-279-4228  
FAX 715-279-4422

ENGINEERING  
PH 715-279-4226  
FAX 715-279-4229

FIELD SERVICES  
PH 715-279-4246  
FAX 715-279-4412

RECREATION SERVICES  
PH 715-279-4128  
FAX 715-279-4184



## Oversize / Overweight Permit Application

The City of Sioux City Engineering Division requires that any motorized vehicle that exceeds the maximum legal dimensions/weight allowed on Iowa roadways obtain an oversize / overweight permit to operate on streets within city limits.

### Legal Dimensions

A permit is typically required if vehicle dimensions exceed:

<b>Length</b>	41 ft. - single vehicle 53 ft. - semitrailer, loaded or empty 57 ft. - lowboy trailers used exclusively for transportation of construction equipment
<b>Width</b>	8 ft. 6 in.
<b>Height</b>	13 ft. 6 in.
<b>Weight</b>	80,000 pounds - gross weight

**Exceptions** More information & exceptions to the dimensions listed above can be found in following sections of the Iowa Code:

- [321.453 - Exceptions](#)
- [321.454 - Width of Vehicles](#)
- [321.455 - Height of Vehicles](#)
- [321.457 - Maximum Length](#)
- [321.463 - Maximum Gross Weight](#)

### Types of Oversize / Overweight Permits Available

Permit Type	Single Trip	Annual Oversize	Annual Oversize & Overweight
<b>Length</b>	No Limit	120 ft.	120 ft.
<b>Width</b>	No Limit	16 ft.	13 ft. 5 in.
<b>Height</b>	No Limit	15 ft. 5 in.	15 ft. 5 in.
<b>Gross Weight</b>	No Limit	80,000 pounds	158,000 pounds
<b>Valid</b>	One trip in five days	12 months from issuance	12 months from issuance
<b>Cost</b>	\$10	\$25	\$300

### Escort Requirements

A rear escort is required when:

- Vehicle length exceeds 120 feet
- Width of the vehicle & load is over 16 feet 6 inches & travel is on 4 lane roadway
- Width exceeds one-half the roadway up to & including 16 feet 6 inches & travel is on 4 lane roadway (an amber light or strobe light on the power unit & on the rear extremity of the vehicle or load allowed in place of escort)

A front escort is required when:

- Width is up to & including 14 feet 6 inches & exceeds one-half the roadway & travel is on 2 lane roadways with lane width less than 12 feet or Width is up to & including 14 feet 6 inches & exceeds one-half the roadway & travel is on 2 lane roadway with lane width 12 feet or more without sufficient shoulders or Width is over 14 feet 6 inches & travel is on 2 lane roadways.
- Width is up to & including 14 feet 6 inches & exceeds one-half the roadway & travel is on 2 lane roadways with lane width 12 feet or more with sufficient shoulders (amber light or strobe light on the power unit & on the rear extremity of the vehicle or load allowed in place of escort)
- When height exceeds 14 feet 6 inches up to & including 20 feet the front escort must have mounted height pole. An escort but no height pole is required after 20 feet.

### Permit Application Process

Completed permit applications should be emailed to [muhi@sioux-city.org](mailto:muhi@sioux-city.org). The associated application fee can be paid via credit card by calling 712.279.6132 or via check payable to "City of Sioux City" sent to City of Sioux City Engineering Division, 405 6<sup>th</sup> Street, P.O. Box 447, Sioux City, IA 51102. After the City Engineer reviews & approves the permit a copy will be emailed to the address listed on the application. Please allow a minimum of 2 business days for review & approval.

PUBLIC WORKS DEPARTMENT 405 6<sup>th</sup> Street • P.O. Box 447 • Sioux City, IA 51102 WEB [www.sioux-city.org](http://www.sioux-city.org)

ADMINISTRATION  
PH 712-279-4222  
FAX 712-279-4492

WATER TREATMENT  
PH 712-279-4199  
FAX 712-279-4179

WASTE WATER TREATMENT  
PH 712-279-4916  
FAX 712-279-4181

ENVIRONMENTAL SERVICES  
PH 712-279-4389  
FAX 712-279-4492

ENGINEERING  
PH 712-279-4225  
FAX 712-279-4289

FIELD SERVICES  
PH 712-279-4666  
FAX 712-279-4612

RECREATION SERVICES  
PH 712-279-4199  
FAX 712-279-4184



Annual Oversize / Overweight  
Permit Application

Permit Number 2015 - \_\_\_\_\_

**Section A - Applicant Information**

Permit Fee: Oversize \$25 / Oversize & Overweight \$300 <input type="checkbox"/> Check/Cash <input type="checkbox"/> Credit Card		Requested Start Date	Expiration Date (Permit good for 12 months)
Legal Name - Vehicle Owner or Lessee		Company Name	Phone Number
Address		Apt. / Suite	Fax Number
City	State	Zip Code	Email Address

**Section B - Power Unit Information**

Power Unit					
Plate	State	Vehicle Identification Number (VIN)	Registered Weight	Year	Make

**Section C - Dimensions / Weight**

Length <small>(max = 120')</small>	Width <small>(max = 10' / 12' 6")</small>	Height <small>(max = 15' 6")</small>	Total Weight <small>(max = 50,000 lbs / 150,000 lbs)</small>	Front Projection <small>(max = 15')</small>	Rear Projection <small>(max = 15')</small>
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\* Maximum dimensions/weight = (oversize permit only / oversize & overweight permit)

**Section D - Iowa Department of Transportation Permit Information**

This permit is only valid for the activity associated with the Iowa Department of Transportation Permit provided below. A copy of the IDOT permit must be attached to this application.

IDOT Permit No.	Date Issued
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City Code 10.30.330 requires that this permit is only valid in conjunction with an annual permit issued by the Iowa DOT in accordance with Chapter 321 of the Code of Iowa, if required by State Law. Failure to contact the Woodbury County Communications Center (712.279.8900), in accordance with City Code, two hours prior to actual travel on any street or highway within the City Limits will invalidate this permit and result in possible revocation of this permit. (This authorization is valid providing State laws and provisions governing the movement of overweight/over length equipment is observed and complied with.)

It is the responsibility of the OPERATOR to verify that the route is free of restrictions. The route shall be free of any streets which have structures with reduced weight restrictions. This permit is for the hauling of a single overweight / over length piece of equipment, and shall not be used for the transportation of materials to and from a construction site.

**Acceptance of Conditions:** I certify that the statements contained in the application are true and correct and I will comply with all rules, regulations, and City and State Code.

<b>X</b>			
(Customer or Authorized Agent)	Date	Glenn Ellis City Engineer	Date

**CITY OF SIOUX CITY**  
**PUBLIC WORKS DEPARTMENT**  
**GRADING PERMIT APPLICATION**

Date Received: \_\_\_\_\_

**PROPERTY INFORMATION**

Property Owner's Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Property Owner's Address: \_\_\_\_\_  
Street Address of Site or Common Property Description: \_\_\_\_\_

Legal Description of Site (attach additional sheet if necessary): \_\_\_\_\_

**APPLICANT/CONTRACTOR**

Applicant's Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Applicant's Address: \_\_\_\_\_  
Contractor: \_\_\_\_\_  
Contractor's Address: \_\_\_\_\_  
Contractor's email: \_\_\_\_\_

**GRADING INFORMATION**

Type of Operation:      Excavation \_\_\_\_\_      Fill \_\_\_\_\_  
General Description of Extent of Grading Operation (Include proposed improvements & square footage): \_\_\_\_\_

Does this site include a Storm Water Basin: Yes  No

Estimated Schedule of Operations:      Starting Date \_\_\_\_\_      Completion Date \_\_\_\_\_

Proposed Methods to Minimize Fugitive Dust (both during and following operations): \_\_\_\_\_

**ATTACHMENTS**

Scaled Drawing (minimum scale 1" = 200')  Drainage and Soil Erosion Plan  Permit Fee (\$285.00)

Storm Water Pollution Prevention Plan (SWPPP) Approved by City Staff:

The SWPPP must include the NPDES Storm Water Permit, issued by the Iowa DNR. This permit must be approved before the SWPPP will be approved. If the total disturbed area within the project is less than an acre, erosion control measures are still required, but, SWPPP and NPDES Storm Water permits will not be required.

I, the undersigned, do hereby affirm the above statements are true and correct and agree to comply with the provisions of the ordinances of the City of Sioux City and the approved plans and specifications accompanying the application. The proposed work is authorized by the owner and authorization to enter the property for inspection purposes is hereby given to authorized representatives of the City of Sioux City.

Signature: \_\_\_\_\_      Owner: \_\_\_\_\_      Contractor: \_\_\_\_\_      Owner's Representative: \_\_\_\_\_

**FOR OFFICE USE ONLY**

Permit Fee (\$285.00) Paid:      Cash \_\_\_\_\_      Check \_\_\_\_\_      Money Order \_\_\_\_\_      Credit Card \_\_\_\_\_

Date Issued: \_\_\_\_\_

Engineer Approval: \_\_\_\_\_      Environmental Services Approval: \_\_\_\_\_

Conditions/Limitations: \_\_\_\_\_

**CITY OF SIOUX CITY GRADING PERMIT & STORMWATER POLLUTION PREVENTION PLAN  
(SWPPP)**

This Grading Permit and Stormwater Pollution Prevention Plan approval is permission to proceed with the work authorized and shall not be construed as authority to violate, cancel, or set aside any of the provisions of the Grading Ordinance, Construction Site and Erosion Control Ordinance, Zoning Ordinance, or any other law or ordinance of the City of Sioux City, except as specifically stipulated by modification or legally granted variation as described in the Permit Application and COSESCO Ordinance.

- 1 SCOPE OF PERMIT & STORMWATER POLLUTION PREVENTION PLAN – No grading shall be commenced without the property owner or his/her authorized representative obtaining a Grading Permit from the Engineering Division of the Public Works Department and an approved SWPPP from the Environmental Services Division of the Public Works Department. A separate permit and SWPPP are required for each non-contiguous site.
- 2 PERMIT & SWPPP LIFE – Grading Permits expire twelve (12) months from the date of issue and may be renewed up review by the City Engineer. SWPPP's will remain active during the life of the General Permit #2 authorized by the Iowa Department of Natural Resources (IDNR).
- 3 CHANGE TO APPROVED PLANS – Any proposed modification or amendment to a plan for which a Grading Permit has been duly issued shall require submission of a new Application for Permit in accordance with the requirements of the Grading Ordinance. SWPPP's must be updated throughout the life of the permit to show modifications to the existing, pre-approved plans.
- 4 REQUIRED INSPECTIONS – The recipient of the Grading Permit is responsible to request inspection during each stage of the grading operation as initially established by the City Engineer at the time of Permit approval. Stormwater Pollution Prevention inspection will be done on a quarterly basis by City staff as required by the City's National Pollutant Discharge Elimination System (NPDES) permit.
- 5 REVOCATION OF GRADING PERMIT AND ORDER TO TERMINATE FURTHER ACTIVITIES – The Director of the Public Works Department may revoke any Grading Permit after written notice and hearing whenever he/she finds that work covered by the Permit is not in conformance with the terms and provisions of the Grading Ordinance; or the Permit has been extended or altered without permission previously having been granted to do so; or whenever he/she finds that any retaining walls, cribbing, drainage structures, or other protective devices as shown on the approved plans and specifications submitted with the Application of Permit have not been constructed as proposed and approved, nor maintained in good order and repair. Violation of any

provision under the COSESCO Ordinance may be enforced by legal (civil) action including an action for injunctive relief or alternatively an order to terminate further activities.

During this time, SWPPP BMP's must be maintained. In the event that Grading Permit and/or General Permit #2 are revoked, the property owner or agent is required to properly restore site to pre-construction conditions. Prior to commencing further activity at the site, the applicant shall establish correction of the deficiency by providing to the office of the enforcement officer a written statement, signed under oath, that the deficiency has been corrected with a description, including photographs when appropriate, of the action taken to correct the deficiency.

- 6 APPEALS – Any decision of the Public Works Director not appealed within ten (10) days is final. All appeals of the Public Works Director's decision must be submitted in writing and delivered to the City Manager's Office. The City Manager will render a decision on the appeal within two (2) working days thereafter. Decisions of the City Manager are final.
- 7 PENALTY FOR VIOLATION – Any person, firm or corporation violating any of the provisions of the Grading Ordinance or COSESCO Ordinance shall be deemed guilty of a municipal infraction and upon conviction shall be subject to a fine as set forth in Section 1.04.100 of the Municipal Code. Violations may be declared a public nuisance and abated in the manner provided by Chapter 8.72 of the Municipal Code.



## Right-of-Way Obstruction or Excavation Application | 2015

	Name	Address	Phone	Email
Applicant:	_____	_____	_____	_____
Facility Owner:	_____	_____	_____	_____
Contractor	_____	_____	_____	_____
Work on: (Street)	_____		<input type="checkbox"/> Paved <input type="checkbox"/> Unpaved <input type="checkbox"/> Parkway	
From: (Street)	_____	To: (Street)	_____	
Address Served: (If Applicable)	_____			
Start Date:	_____	Completion Date:	_____	

Project Description: \_\_\_\_\_

Type of Work: \_\_\_\_\_



Excavation Area

Obstruction Street/Sidewalk Area

Street (sf): \_\_\_\_\_

Number of Lanes: \_\_\_\_\_

Sidewalk (sf): \_\_\_\_\_

Street Length (lf): \_\_\_\_\_

Parkway (sf): \_\_\_\_\_

Sidewalk Length (lf): \_\_\_\_\_

By signing the permit below, the ~~Permittee~~ agrees to defend, indemnify, and hold harmless the City, its employees, and agents from all suits, actions, damages, or claims to which the City may be subject to, of any kind or nature whatsoever, resulting from, caused by, or arising out of the ~~Permittee's~~ use or occupancy of the public right-of-way authorized by this permit.

Applicant Signature \_\_\_\_\_ Date \_\_\_\_\_

Jade Dundas \_\_\_\_\_ Date \_\_\_\_\_

Permit holders acknowledgement of rules, regulations & City Code

Assistant City Manager of Public Works  
City of Sioux City, Iowa

PUBLIC WORKS DEPARTMENT 405 W. Street - P.O. Box 447 - Sioux City, IA 51102 WEB www.sioux-city.org

ADMINISTRATION PH 715-279-4422 FAX 715-279-4422	WATER TREATMENT PH 715-279-4150 FAX 715-279-4179	WASTE WATER TREATMENT PH 715-279-4016 FAX 715-279-4181	ENVIRONMENTAL SERVICES PH 715-279-4318 FAX 715-279-4402	ENGINEERING PH 715-279-4326 FAX 715-279-4229	FIELD SERVICES PH 715-279-4460 FAX 715-279-4412	RECREATION SERVICES PH 715-279-4150 FAX 715-279-4194
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