Minnetonka Planning Commission Meeting

July 12, 2007

Agenda Item 8D, Public Hearing For Opus Corporate Center Expansion Project

(For first half of meeting agenda, please see separate electronic packet for "Planning Commission Final Agenda, Item 4 through Item 8C")

Feasibility Report

June 6, 2007

Green Circle Drive Street Realignment (OPUS Headquarters Expansion)

Prepared for:

City of minnetonka
Where quality comes naturally

City Project No. 97096.06

WSB Project No. 1515-16

Prepared by:

701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416 763-541-4800

WSB & Associates, Inc.

FEASIBILITY REPORT

GREEN CIRCLE DRIVE STREET REALIGNMENT
(OPUS HEADQUARTERS EXPANSION)

CITY PROJECT NO. 97096.06

FOR THE
CITY OF MINNETONKA

June 6, 2007

Prepared By:

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WSB & Associates, Inc.

Infrastructure ■ Engineering ■ Planning ■ Construction

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June 6, 2007

Honorable Mayor and City Council
City of Minnetonka
14600 Minnetonka Boulevard
Minnetonka, MN 55345

Re: Feasibility Report
Green Circle Drive Street Realignment
City of Minnetonka Project No. 97096.06
WSB Project No. 1515-16

Dear Mayor and City Council Members:

Transmitted herein is a feasibility report that addresses the proposed street relocation for Green Circle Drive in conjunction with the proposed OPUS headquarters expansion. The proposed project includes relocation of the existing roadway, relocation and extension of a driveway, and construction of a pedestrian underpass.

The report contained herein reviews alternative layouts and presents costs for the proposed project.

We are available at your convenience to discuss this report. Please feel free to contact me at 763-287-7193 if you have any questions.

Sincerely,

WSB & Associates, Inc.

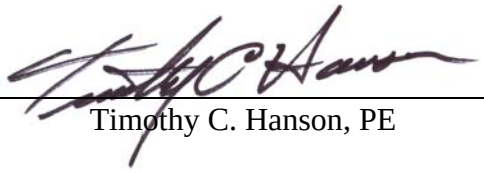
Kevin B. Kawlewski, PE
Senior Project Manager

Enclosure

cc: Lee Gustafson, City of Minnetonka
Steve Lillehaug, City of Minnetonka
Virgil Herrmann, City of Minnetonka

CERTIFICATION

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Timothy C. Hanson, PE

Date: June 6, 2007 Lic. No. 19574

Quality Control Review by:

Kevin B. Kawlewski, PE

Date: June 6, 2007 Lic. No. 25496

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

1. EXECUTIVE SUMMARY

The feasibility study for the relocation of Green Circle Drive is a project initiated by The OPUS Group to accommodate the proposed expansion of the OPUS headquarters building. The expansion also includes the redevelopment of three lots in OPUS 2 Fourth Addition. The headquarters building expansion is proposed to extend across the existing Green Circle Drive alignment necessitating the relocation of the roadway. Traffic analysis is detailed in a memorandum from WSB & Associates, Inc. dated May 31, 2007, to Ms. Julie Wischnack, City Planner and titled "OPUS Traffic Study Addendum."

The proposed relocated roadway alignment for Green Circle Drive extends from Bren Road West just west of the existing intersection with Green Circle Drive, extends to the north and northeast along the west side of the three lots identified for redevelopment, extends across a corner of a City owned outlot and connects to existing Green Circle Drive at the west side of the residential condominium complex. The Green Circle Drive realignment consists of a long horizontal curve to the north and a horizontal curve back to the northwest. The long curve meets 30 mph design criteria by utilizing a 4% crown in the cross slope of the roadway. The vertical alignment as indicated will meet or exceed 30 mph stopping site distance for vertical grades.

The proposed realignment of Green Circle Drive will result in the construction of a pedestrian underpass of Green Circle Drive and the relocation/extension of the private driveway to the south side of the residential condominium complex. The recommended pedestrian underpass location and driveway location are approximately 60 feet north of the existing trail and proposed Green Circle Drive crossing. ***Figure 2*** located in ***Appendix A*** depict this layout. This location minimizes the construction limits of Green Circle Drive, maximizes the sight distance at the driveway intersection and minimizes the impact on existing trees. Wetland impacts and bituminous trail relocations are also indicated in the report.

Right-of-way and construction easements will be required for the proposed relocation of Green Circle Drive. Right-of-way is required from the parcels to be redeveloped and Outlot A, a City owned outlot.

The estimated project cost is identified at $1,115,000.00. The cost as presented includes a construction contingency in the amount of ten percent (10%) and indirect cost in the amount of twenty percent (20%). Wetland mitigation cost, easement acquisition cost, and on-site infrastructure modifications are not included in the estimated project cost. These items are identified to be financed by the developer independent of the roadway relocation project.

The project as described herein is feasible and cost-effective from an engineering standpoint. It is the recommendation of WSB & Associates, Inc. that the City accept this report and authorize the improvements for the relocation of Green Circle Drive as proposed, if the City approves the OPUS Headquarters Expansion.

2. INTRODUCTION

2.1 Project Background

The OPUS Group has requested the City complete a study for the relocation of Green Circle Drive within OPUS 2 Park. The OPUS Group is proposing to expand their corporate headquarters building to the north/northwest across the existing Green Circle Drive alignment. The proposed Phase I office expansion consists of a 4-story office building with approximately 137,900 square feet of office space and a 475 car surface parking lot. The proposed expansion also identifies a second phase office building expansion similar in size to the Phase I expansion, including the construction of a parking ramp constructed in the location of the proposed Phase I surface parking lot. To complete the proposed office expansion, Green Circle Drive must be relocated. The project location is identified in ***Figure 1*** located in ***Appendix A***.

A traffic study was completed to determine the impact of the proposed office expansion and street relocation on the existing street network of the OPUS Business Park. The traffic study titled "OPUS Traffic Study Addendum" dated May 31, 2007 is attached to this report as ***Appendix B***. The results of the traffic study are utilized in this report.

Green Circle Drive is proposed to be relocated from its westerly intersection with Bren Road West, extending northerly adjacent to the wetland complex and intersecting existing Green Circle Drive at a location west of the residential condominium complex. The proposed Green Circle Drive location will be along the westerly property line of three existing light industrial properties that OPUS has identified for redevelopment to allow for expansion of their corporate headquarters.

2.2 Scope

The scope of this feasibility report is illustrated in ***Figure 2***. The project as proposed includes a new horizontal and vertical alignment for Green Circle Drive from just west of the existing Bren Road West and Green Circle Drive intersection. It extends northerly adjacent to the existing waterway and pedestrian trail connecting to existing Green Circle Drive north of the light industrial parcels and west of the residential condominium building. The project also includes intersection modifications to the existing Green Circle Drive and Bren Road West intersection, realignment of a private driveway to the condominium building and construction of a pedestrian underpass along the proposed Green Circle Drive realignment.

The OPUS Group is reviewing and designing infrastructure systems needed for the proposed building expansion. These systems include the storm water collection and treatment system, sanitary sewer system modifications, water main system modifications, and site improvements for the proposed Phase I and Phase II office building expansions. The OPUS Group will complete demolition of existing buildings, removal of parking lots, and abandonment of existing Green Circle Drive and other facilities adjacent to and within their property. The feasibility study includes cost for removals, clearing, and grading improvements that are located beyond the property lines of the lots proposed for redevelopment, the street costs for the entire street alignment and the soil correction cost for both the south and north end of the project. The cost

identified does not include the cost for removals or grading within the lots to be redeveloped nor does it include the cost to extend storm sewer or other public utilities.

The feasibility study addresses the feasibility of the proposed improvements and associated cost for the work proposed to be completed. The study also identifies impacts to the adjacent wetlands which will need to be mitigated by the developer.

3. EXISTING CONDITIONS

3.1 Existing Street Conditions

Green Circle Drive is a one-way, looped roadway that extends from Bren Road West in the north central portion of the OPUS 2 Business Park. Bren Road West extends from Trunk Highway 169 and is the major access roadway into the business park. Green Circle Drive extends north as a two-lane roadway providing access to light industrial development, and residential condominium development. Green Circle Drive continues in its loop back to Bren Road West and serves additional light industrial development. The existing roadway is 27 feet wide, with a two foot concrete edger that protects and delineates the edge of the roadway on each side. The existing horizontal alignment of the portion of Green Circle Drive proposed to be relocated includes a short radius curve that is considerably shorter than 30 mph design speed criteria. The vertical curve alignment of Green Circle Drive includes a modest hill with vertical curves that meet or exceed 30 mph design speed criteria for stopping sight distance.

3.2 Existing Trail Conditions

A 10-foot-wide bituminous trail (identified as a secondary road in construction as-builts) extends north/northeast along the west side of the light industrial lots proposed for redevelopment. This trail continues north along the west side of existing Green Circle Drive and the residential condominium complex. A second trail intersects the north-south trail north of the industrial parcels. This trail extends east between the industrial parcels and the residential parcel crossing under existing Green Circle Drive. The existing trail is in moderate to good structural condition.

The trail system within the OPUS 2 business/industrial park crosses the roadway network in several locations. At most of these locations the crossing is completed utilizing a pre-cast slab span bridge for the roadway. The opening provided by the pre-cast slab span bridge for the bituminous trail is typically 18 feet wide by 8.5 feet in height. The bituminous trail or "Secondary Road" is typically located directly over public utilities such as sanitary sewer, water main, or storm sewer. The "Secondary Road" and bridge opening provides for vehicle access along the alignment of the public utilities.

Only one at-grade pedestrian crossing is located within the OPUS Business Campus. This crossing is on a north-south segment of Bren Road East.

3.3 Existing Storm Sewer Conditions

The drainage system utilized for Green Circle Drive is a rural street section that allows street runoff to flow to roadside swales and culverts. Existing storm sewer culverts on the north end of the project convey runoff from east of Green Circle Drive west to a wetland complex located to the west.

A 42-inch storm sewer outfall pipe from a storm water management pond located in the center of the Green Circle Drive loop extends west under Green Circle Drive to the wetland area.

3.4 Existing Sanitary Sewer and Water Main Conditions

Existing 12-inch sanitary sewer extends along the west side of the light industrial parcels adjacent to the wetland complex. This trunk sanitary sewer provides service leads to the three light industrial parcels proposed to be redeveloped by The OPUS Group.

Existing 8-inch water main extends parallel to the sanitary sewer along the west side of the site. Water service extensions and fire mains with hydrants extend from the water main into the three existing light industrial parcels identified for redevelopment.

3.5 Existing Soil Conditions

Soil testing and a geotechnical evaluation report dated May 3, 2007 by Braun Intertec Corporation was completed for David Bangasser, PE, of The OPUS Group. Soil borings were completed along the proposed Green Circle Drive realignment and within the site identified to be redeveloped. Several soil types, both native and fill material, are indicated within the project site.

The southerly 400 feet of the proposed Green Circle Drive Realignment consists of granular fill material placed over natural peat, fat clay and lean clay deposits. The granular fill extends to a depth of 4 to 14 feet below grade. The peat and soft soils extend from 4 feet below grade to 23 feet below grade. These deposits are located within the lots proposed to be redeveloped.

The northerly 200 feet of the site has peat, organic clay, and fat clay extending down from the surface. These deposits extend down to a depth of 9 feet. The peat and organic clays are located adjacent to the drainage way within the wetland. The remaining areas of the site include granular fill, natural silts and clay material.

Soil borings completed along Green Circle Drive in 1999 by STS Consultants for a street improvement project identify 5 inches of bituminous and 8-9 inches of crushed limestone aggregate base within the section of Green Circle Drive that extends adjacent to the light industrial parcels. This roadway was milled and overlaid with 2 inches of bituminous in 1999. The existing pavement is in good condition.

The northerly section of Green Circle Drive adjacent to the condominium complex had a pavement section consisting of 4½ inches of bituminous and 7½ to 9 inches of aggregate base (sand and gravel). This section of roadway was reconstructed in 1999 with 7 inches of bituminous pavement and 12 inches of aggregate base. The existing pavement is in very good condition.

3.6 Existing Right-of-Way

Existing Green Circle Drive is located within a 27-foot-wide right-of-way as it extends north of Bren Road West between the existing industrial parcels. The existing bituminous pavement portion of the roadway lies within the existing right-of-way, the concrete edger is located within a drainage and utility easement that extends adjacent to the right-of-way. The drainage and utility easement is typically 15 feet in width but has several areas where the width is 25 feet or more.

3.7 Wetlands

Three wetlands have been identified on site. The wetland areas were delineated by Svoboda Environmental for The OPUS Group. The Wetland areas consist of a Department of Natural Resources Wetland (796W) that lies west of the existing trail (secondary road), the drainage way and adjacent area that lies on the north end of the site, and a small wetland that lies between the trail (secondary road) and the parking lots of the existing light industrial lots. This wetland is a drainage swale that collects runoff from east of the trail and conveys the runoff under the trail to the west.

4. PROPOSED IMPROVEMENTS

4.1 Street Improvements

The project includes the realignment and construction of Green Circle Drive adjacent to the proposed OPUS redevelopment. Proposed Green Circle Drive extends from Bren Road West via a single slip lane west of the existing Green Circle Drive and Bren Road West intersection. The new roadway alignment widens to two lanes and curves north, then northeast adjacent to the existing trail and along the westerly property line of the parcels proposed for redevelopment. The roadway continues north connecting to existing Green Circle Drive just south of the northerly driveway entrance into the westerly parking lot for the residential condominium. The proposed Green Circle Drive realignment is shown in ***Figure 2*** located in ***Appendix A***. The total length of the street realignment is 1,600 feet. The proposed street realignment includes a pedestrian underpass and the extension and realignment of the southerly driveway to the residential condominium complex.

The proposed horizontal alignment for Green Circle Drive has a horizontal curve that is slightly less in radius than required for a 30 mph design speed, however by utilizing a 4% cross slope the horizontal curvature meets design criteria for a 30 MPH roadway. The proposed horizontal curve is significantly larger than the existing radial curve of the existing roadway. The proposed vertical alignment meets or exceeds 30 mph stopping sight distance design criteria.

The relocated Green Circle Drive and Bren Road West intersection is just east of the Umoga driveway that accesses onto the south side of Bren Road West. To egress the Umoga parking lot onto northbound Green Circle Drive would require driving against traffic on the one way street of Bren Road West and making a sharp left hand turn onto Green Circle Drive. Barrier curb and a guard rail that protect traffic from the steep slope adjacent to the pedestrian bridge will prohibit vehicles from driving north across green space onto Green Circle Drive.

The proposed driveway realignment from the condominium complex extends from the existing driveway intersection with Green Circle Drive north 150 feet along the existing Green Circle Drive alignment, then curves west to intersect with proposed Green Circle Drive. The driveway intersection location is just north of the proposed pedestrian underpass which is at the crest of a vertical curve for proposed Green Circle Drive. At this location, the sight lines and sight distances for the driveway and Green Circle Drive intersection are maximized.

4.1.1 Proposed Typical Section

The proposed roadway system for the OPUS expansion was reviewed and traffic forecasts for Green Circle Drive were determined. The forecasted ADT for the southerly portion of proposed Green Circle Drive is 1,380 vehicles per day. The forecasted ADT for the northerly portion of proposed Green Circle Drive is 1,250 vehicles per day. This traffic can be accommodated with a two-lane, one-way roadway. The proposed typical section for Green Circle Drive is a 30-foot wide roadway, face of curb to face of curb. This provides the same driving surface width as the existing roadway of Green Circle Drive.

The proposed typical section extends B618 Curb and Gutter from Bren Road West, north beyond the pedestrian underpass. This section of roadway will collect runoff from the street. Concrete edger (ribbon curb), typical to the OPUS development, is proposed on the north end to connect with the existing ribbon curb. The proposed street section is shown on ***Figure 3***.

4.1.2 Proposed Pavement Section

The proposed pavement section for Green Circle Drive shall be the City's standard commercial industrial pavement section which was previously utilized to reconstruct streets in the OPUS complex. This pavement section consists of the following:

Material	**Thickness – Inches Minimum Standard Street Section**	**Granular Equivalent G.E. – Inches**
Hot Mix Bituminous Wear Course	2	4.5
Hot Mix Bituminous Binder Course	2	4.0
Hot Mix Bituminous Base Course	3	6.0
Mn/DOT Class 5 – 100% Crushed or Mn/DOT Class 7	12	12
TOTAL G.E.		**26.5 inches**

Utilizing Mn/DOT design criteria for flexible pavement with an ADT of 1,380 and an estimated R-value for the subgrade soils, the minimum pavement thickness can be determined. The subgrade in which Green Circle Drive will be constructed is anticipated to be a combination of onsite material, and borrow material from off-site. The R-value for the subgrade material is estimated to be R=10. The Required Granular Equivalent (GE) in inches for Green Circle Drive is then 15 inches. The City's minimum street section for commercial and industrial streets is adequate for this project. The proposed pavement section is shown on ***Figure 3***.

4.1.3 Proposed Grading and Excavation

The proposed Green Circle Drive alignment extends over an area with buried peat and soft clays. This material is located at both the south end of the site and the north end of the site. The geotechnical evaluation completed by Braun Intertec and dated May 3, 2007 identifies three recommendations for road construction within the area of poor soils on the south end of the project. These recommendations are identified in the soils report and summarized below:

- Remove all poor soils including peat, organic clay, fat clay, and soft lean clay. This would require soil excavation to a depth of approximately 18 feet below existing grade. The soils would be replaced with soils suitable for road construction.

- Remove organic soils down to the fat clays and soft lean clay to a depth of approximately 12 feet below grade. Replace the excavated soils with soils suitable for road construction and surcharge the soil correction area.

- Utilize light weight fill over the area with poor soils.

Soil correction recommendation number 2 is the preferred option. Option number 2 includes the removal of all peat and organic clay within the roadway alignment to a width of 1:1 beyond the edge of the roadway pavement. Since much of the proposed Green Circle Drive realignment consists of fill, the poor soils being replaced can be utilized in non-structural areas beyond the 1:1 slope of the roadway foundation.

This soils recommendation includes placement of fill in stages and the construction of a surcharge over the area of poor soils. Recommendation number 2 must be constructed according to the Braun Soil Report and the soil engineer's recommendations.

The north end of the site within the wetland area also has organic and peat material. This material is located at this surface extending down to a depth of nine feet. This material must be removed from the Green Circle Drive roadway alignment to a width of 1:1 beyond the edge of pavement. Granular borrow material is proposed to replace the peat, organics and soft clays.

4.2 Pedestrian Underpass Location

The project includes the crossing of an existing trail (secondary road) north of the light industrial parcels proposed for redevelopment. The Green Circle Drive trail crossing location is shown on ***Figure 2*** located in ***Appendix A***. Several locations for the trail crossing were evaluated for safety and construction impacts. The locations evaluated were:

4.2.1 Crossing at Existing Trail Location

Construction of an underpass at the existing trail location as it crosses the proposed Green Circle Drive realignment results in tree clearing in this area. This is due to the trail having its highest elevation at this location, lowering the trail results in additional tree clearing east of the crossing and raising the road results in a wider construction impact area for the road alignment. Also, for safety considerations, the driveway to the residential condominium complex needs to intersect Green Circle Drive near its vertical crest which is at the trail crossing location. Locating the driveway adjacent to the existing trail alignment will result in additional tree clearing. The exact location of the trail crossing and driveway intersection will be detail designed with development of final construction plans and specifications.

4.2.2 Pedestrian Crossing 60 Feet North of Existing Location

Construction of a pedestrian underpass approximately 60 feet north of the existing trail crossing location minimizes impact on trees. This is primarily due to the natural grade at this location being 4 feet lower than to the south. This results in a smaller roadway construction limit, resulting in less impact. Trail relocation along this alignment extends over an existing sanitary sewer alignment. The area is vegetated with sumac. The condominium driveway extension to Green Circle Drive also has the least impact at this location. The recommended trail, driveway location and street layout is indicated on ***Figure 2.***

4.2.3 Crossing at Existing Location with Driveway Located Further North

A third alternative for the pedestrian crossing and condominium driveway was evaluated. This alternative consisted of placing the pedestrian underpass at the existing trail location and the driveway as far north as possible. This resulting distance between the crest of the vertical curve and the driveway egress point is not long enough for adequate sight distance. This alternative was considered unacceptable due to safety.

4.2.4 Relocate the Trail to the South

A fourth alternative was evaluated that consists of relocating the trail further south for the pedestrian underpass. This also results in significantly larger construction impacts for Green Circle Drive, which impacts the existing trail extending along the wetland, which in turn impacts the wetland to the west. This alternative was deemed unacceptable due to aesthetics, constructability, tree loss and additional impact to the wetlands west of the proposed realignment.

4.3 Pedestrian Underpass

A pedestrian underpass structure is shown on ***Figure 4.*** This structure is a slab span structure providing the same clearance and opening as existing pedestrian underpasses within the business park. The opening allows maintenance vehicles to follow the alignment of the public utilities and provides an open, safe environment for pedestrians utilizing the trail system. The slab span identified is constructed utilizing decorative concrete facing to replicate a stone wall. The intent of the design is to have the same finish and colors as the bridges proposed for construction on Shady Oak Road (CSAH 61). Other architectural faces can be utilized to give the wing walls and bridge rails a different landscape appearance.

Construction of a new pedestrian underpass will establish design criteria and architectural standards for recommendation of other pedestrian underpasses within OPUS Business Park. As such, a review of potential structures has been requested by City staff. This review is currently in progress.

4.4 Street Lighting

The proposed realignment of Green Circle Drive will require installation of public street lights and the lighting of the pedestrian underpass typical to the OPUS Business Park development. Lighting improvements will be designed by The OPUS Group. Street lighting is not part of this study's construction cost estimate.

4.5 Storm Sewer Improvements

Storm sewer improvements are required for the proposed Green Circle Drive realignment and also for the extension of two existing storm sewer systems across the proposed Green Circle Drive alignment in the northern section of the project.

All storm sewer systems, storm water management facilities, and water quality improvements will be designed by The OPUS Group.

4.6 Sanitary Sewer Improvements

The required improvements to the sanitary sewer system consist of the adjustment of manhole structures where they are impacted by the roadway vertical alignment and the proper relocation or abandonment of existing sanitary sewer services to the parcels proposed for redevelopment. Sanitary sewer improvements will be designed by The OPUS Group.

4.7 Water Main Improvements

The required water main improvements consist of hydrant relocations and adjustment, water service relocation or abandonment and fire main relocation or abandonment to match the proposed roadway vertical alignment. Water main improvements will be designed by The OPUS Group.

4.8 Right-of-Way and Easements

The proposed alignment for Green Circle Drive will require the dedication of right-of-way across the parcels proposed for redevelopment. Temporary construction easements may also be required along the southwest side of the condominium parcel for the construction of Green Circle Drive and the abandonment of the existing roadway. Pedestrian trail relocation will require a trail easement over its alignment.

Expansion of the OPUS headquarters building will require the vacation of the existing right-of-way of Green Circle Drive. Required right-of-way dedication and right of way vacation, trail easement dedication, and temporary construction easements will be coordinated by The OPUS Group.

4.9 Wetland Impacts

The proposed Green Circle Drive alignment extends across an existing wetland and drainage way located at the north end of project. The wetland impact is 10,230 square feet. The proposed street realignment also may require a section of the existing bituminous trail west of the roadway be reconstructed 18 feet west of its current location. If relocated, the bituminous trail relocation may impact an existing Department of Natural Resources wetland (796W). The potential wetland impact at this location is 950 S.F. A third wetland on site will also be impacted by the proposed realignment. This wetland will be filled by the roadway improvements. Impact to this wetland is estimated to be 1,420 S.F.

Total estimated wetland impacts are 12,600 S.F. Wetland mitigation must be provided by The OPUS Group. Wetland mitigation will be 2 to 1 of area impacted. The estimated area of wetland impacts is shown on ***Figure 5.***

4.10 Permits

Permits required as part of the proposed improvements are anticipated as follows:

Minnesota Pollution Control Agency (MPCA)
- NPDES Phase II Construction Activity Permit

Nine Mile Creek Watershed
- Grading and Storm Sewer

Army Corps of Engineers
- Wetland Impacts

Minnesota Department of Natural Resources
- Wetland Impacts

5. FINANCING

5.1 Opinion of Cost

A detailed Engineer's Opinion of Probable Cost for the proposed improvements can be found in ***Appendix C*** of this report. The opinion of probable cost incorporates 2007 construction cost and includes a 10% construction contingency and indirect cost in the amount of 20% of the estimated construction cost. The indirect cost includes legal, administrative and engineering cost.

The identified project cost includes the roadway construction cost for the entire length of the Green Circle Drive realignment. The construction cost also includes removals, clearing and grading improvements located beyond the property line of the lots proposed for redevelopment by The OPUS Group as well as the soil correction cost to remove poor soils at the north and south end of the project.

The identified project cost does not include grading and all preparatory work for the realignment within the lots proposed for redevelopment as this will be completed by The OPUS Group. This estimate also does not include utility relocation cost or storm sewer for the proposed improvements. Wetland mitigation and easement acquisition cost is not included in the project cost as these costs are also the developers responsibility to complete.

A summary of the project cost is shown below.

Street Improvements	$	608,000.00
Pedestrian Underpass	$	250,000.00
Construction Contingency – 10%	$	85,800.00
Indirect Cost – 20%	$	171,600.00
TOTAL ESTIMATED PROJECT COST	**$**	**1,115,400.00**

5.2 Funding

The proposed funding for the project will be 100% developer funds. The OPUS Group will construct and finance the improvements as a private development. A letter of credit will be required for 125% of the estimated project cost.

6. PROJECT SCHEDULE

The estimated project schedule indicated below requires permitting and right-of-way acquisition be completed in a timely manner. Right-of-way and easement acquisition is estimated to be completed by August 1, 2007.

Permitting for wetland impacts is estimated to be completed by August 1, 2007.

Developer Reviews Draft Report..... May 3, 2007

Planning Commissions considers project ..... June 14, 2007

Begin Construction ..... August, 2007

Street Construction Substantially Complete ..... June, 2008

Construction Complete .....November, 2008

7. CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding discussions we have reached the following conclusions:

1. The relocation of Green Circle Drive to the west side of the light industrial parcels as requested by The OPUS Group can be accomplished but will require dedication of right-of-way from the parcels proposed for redevelopment and across Outlot A, a City owned parcel. Temporary construction easements from the residential condominium parcel north of the industrial parcels may also be required.

2. A two-lane roadway with 12-foot-wide traffic lanes and a 3-foot buffer to face of curb is adequate to serve the area.

3. The relocation of Green Circle Drive requires the construction of a pedestrian underpass. The recommended location of the underpass is north of the existing trail location to reduce grading, tree clearing and allow for drainage.

4. Relocation of Green Circle Drive requires the extension and relocation of the southerly driveway to the condominium complex. The new driveway intersection with Green Circle Drive must be as close to the crest of the road as possible to allow for maximum sight distance to the south.

5. The proposed Green Circle Drive alignment minimizes tree clearing, but requires the relocation of bituminous trail on the east and west side of the roadway alignment. The trail relocation on the west side may impact wetlands.

6. The proposed Green Circle Drive alignment will impact a drainage way and wetland area adjacent to the drainage way. Wetland mitigation must be provided by the developer for all wetland impacts.

7. Sanitary sewer modifications and extensions to serve the redeveloped area must be determined by The OPUS Group and have not been included as part of this report.

8. Water service modifications and extensions to serve the redeveloped area must be determined by The OPUS Group and have not been included as part of this report.

9. The proposed street section shall be the City's Standard Commercial Industrial street section which was previously utilized for the construction of City streets in OPUS 2 Industrial Park.

10. Unsuitable soils are located at the south end and north end of the project. The peat and organic soils must be removed from the street alignment as recommended in the soils report completed by Braun Intertec and dated May 3, 2007.

11. Storm sewer extensions and modifications to serve Green Circle Drive realignment must be determined by The OPUS Group and have not been included as part of this report.

12. The project as proposed is feasible from an engineering standpoint.

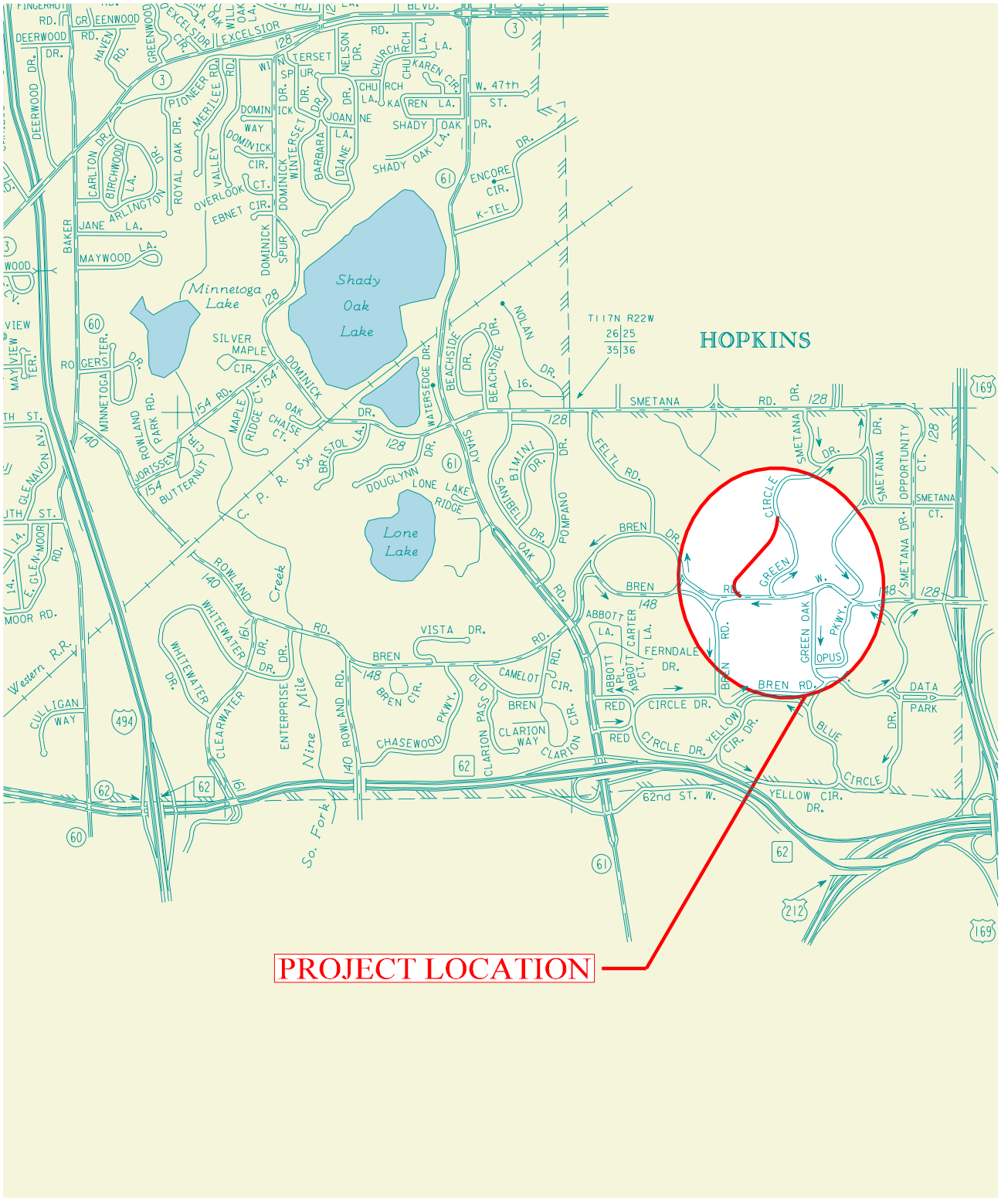
Based on the preceding discussions, we would recommend the following:

1. The City Council accepts the report on feasibility and authorizes construction of the proposed improvements as indicated in this report.

2. Discussion should be initiated with private property owners to begin easement acquisition.

APPENDIX A

Figures



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INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

Project Location Map

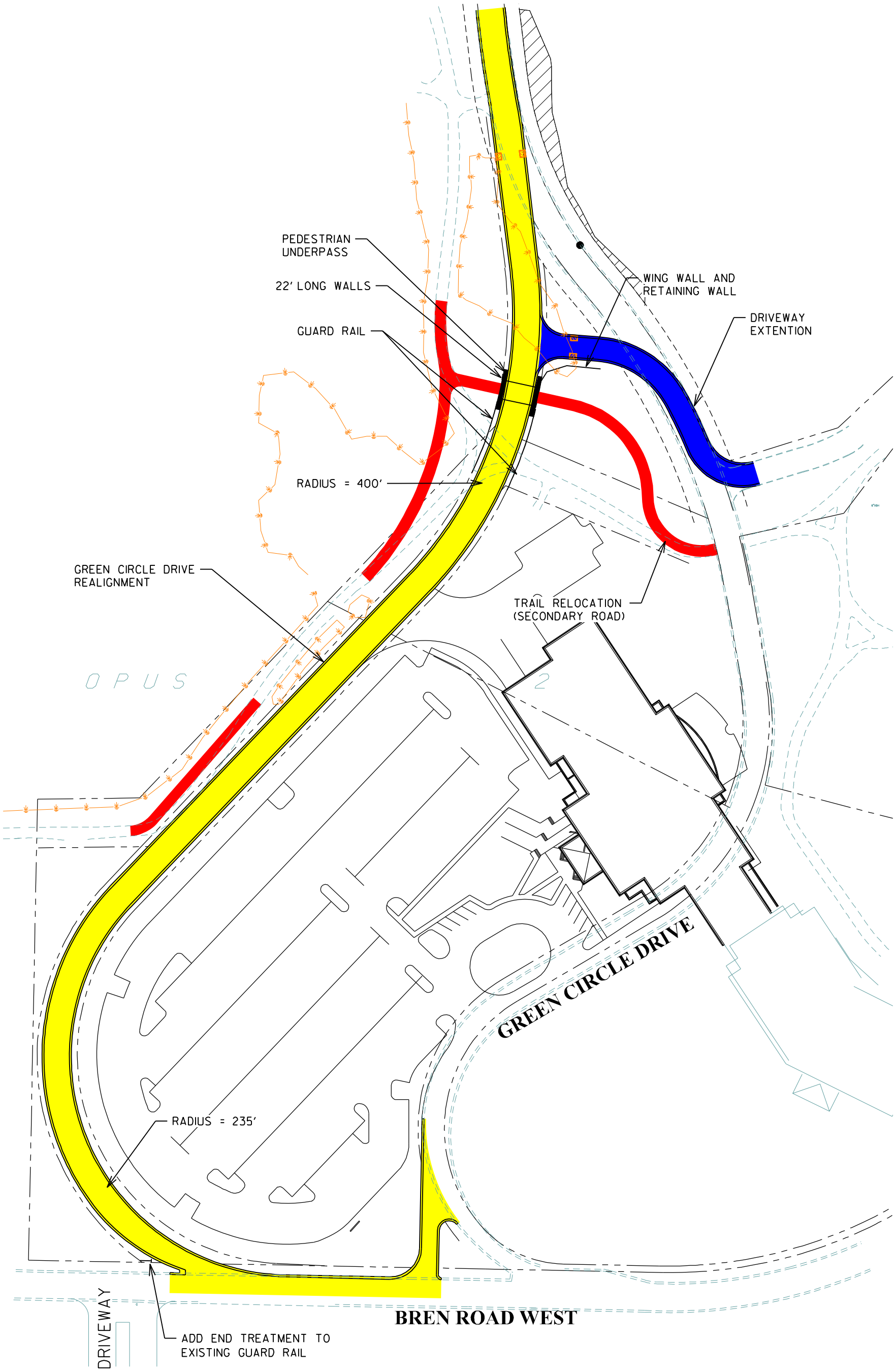
Green Circle Drive
Street Realignment
Minnetonka, Minnesota

WSB Project No. 01515-16

Date: April 2007

Figure Number

Opus Corporate Center Expansion
#97096.07a
A75



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INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

Proposed Layout

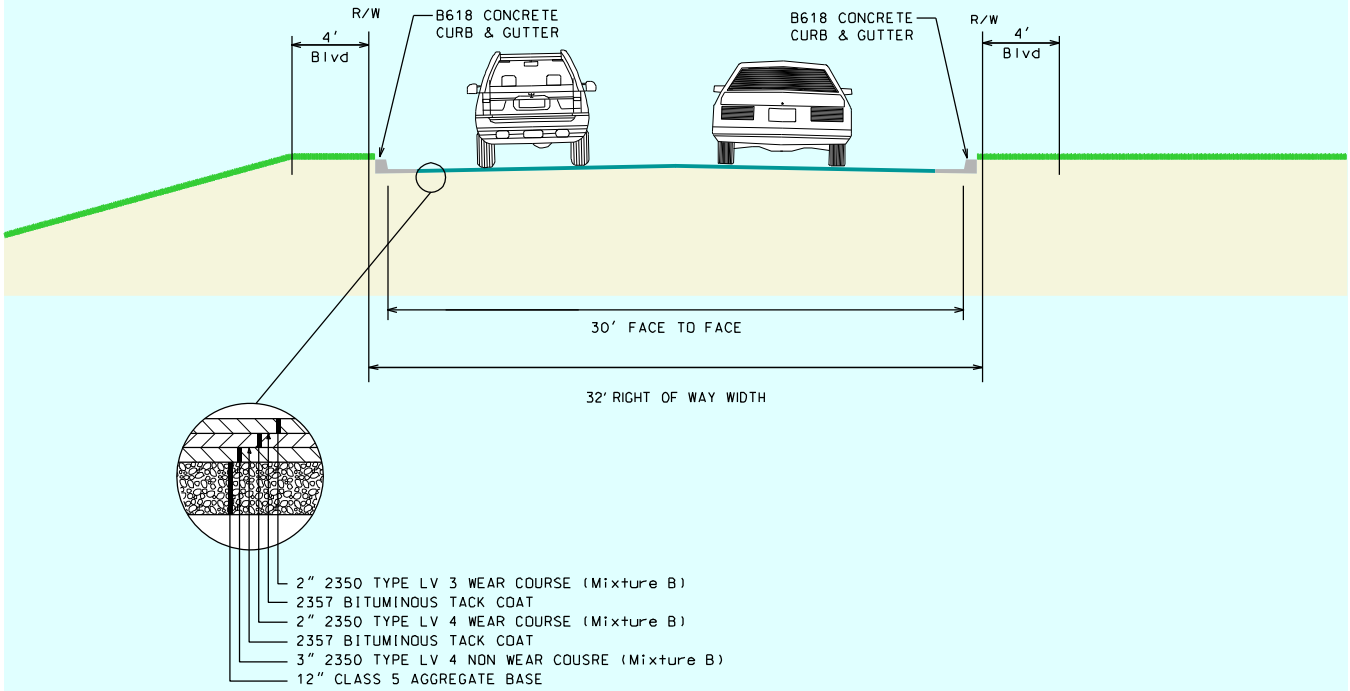
Green Circle Drive
Street Realignment

Minnetonka, Minnesota

WSB Project No. 01515-16 Date: April 2007

Figure Number 2

Opus Corporate Center Expansion
#97096.07a



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INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

Typical Section

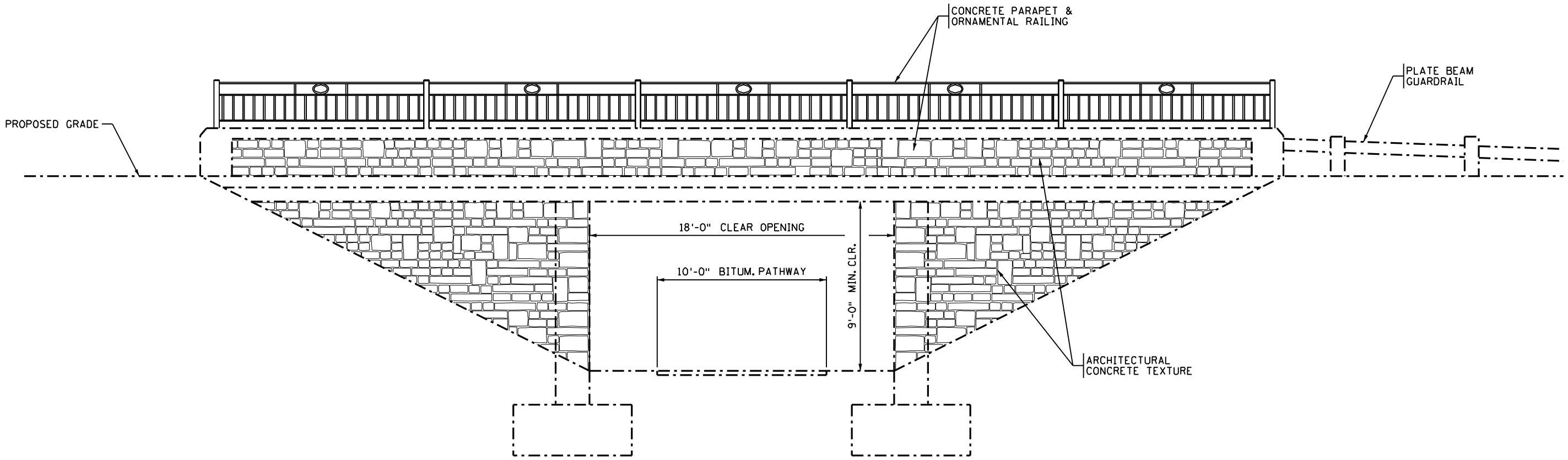
Green Circle Drive
Street Realignment
Minnetonka, Minnesota

WSB Project No. 01515-16

Date: April 2007

Figure Number
A77

Opus Corporate Center Expansion
#97096.07a



GENERAL ELEVATION

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Pedestrian Underpass

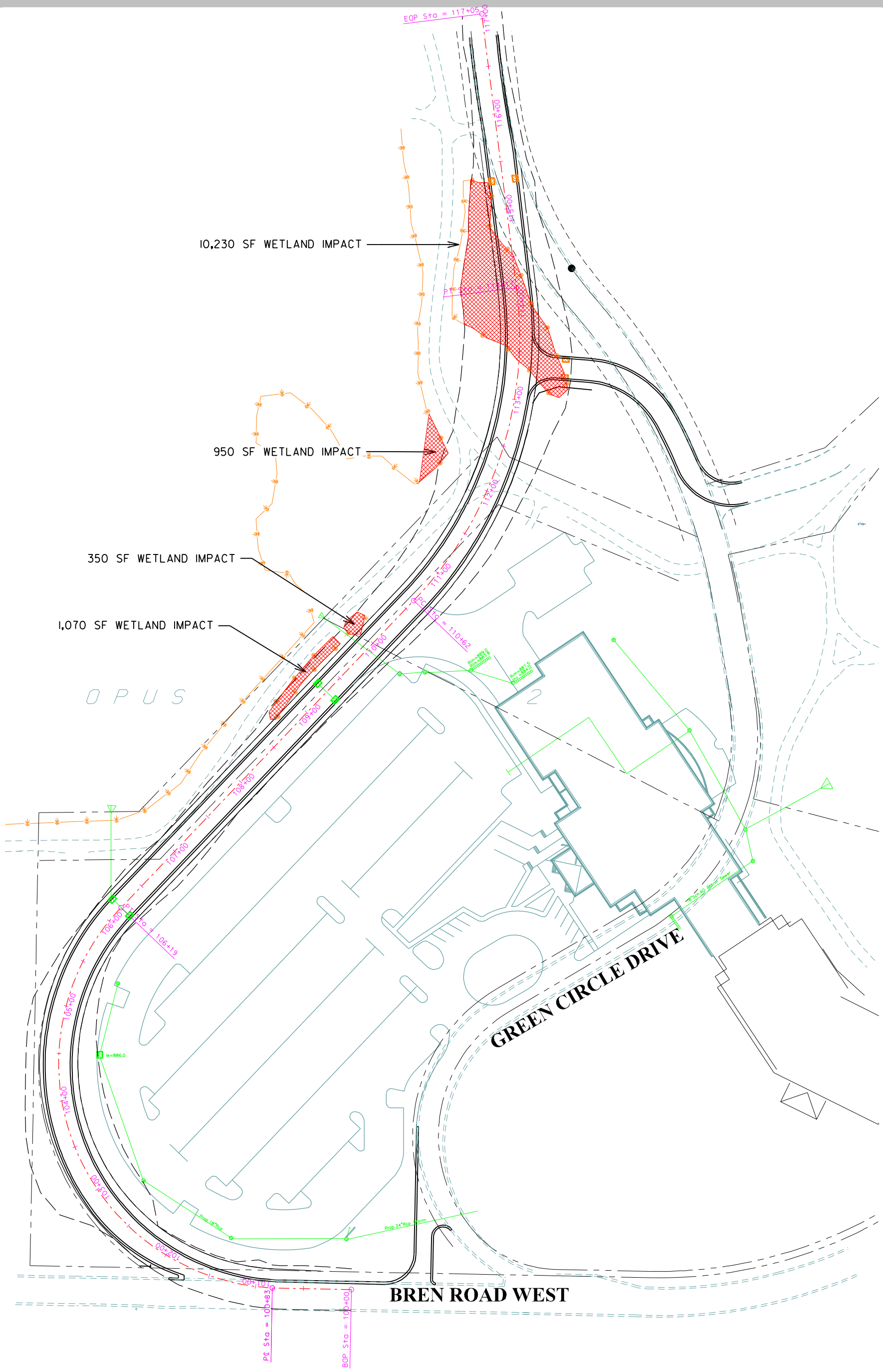
Green Circle Drive
Street Realignment

Minnetonka, Minnesota

WSB Project No. 01515-16 Date: April 2007

Figure Number

4



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Wetland Impacts

Green Circle Drive
Street Realignment

Minnetonka, Minnesota

WSB Project No. 01515-16 Date: April 2007

Figure Number
5

Opus Corporate Center Expansion
#97096.07a

APPENDIX B

OPUS Traffic Study Addendum

WSB & Associates, Inc.
Infrastructure ■ Engineering ■ Planning ■ Construction
701 Xenia Avenue South
Suite #300
Minneapolis, MN 55416
Tel: 763 541-4800
Fax: 763 541-1700

Memorandum

DATE: May 31, 2007

TO: Ms. Julie Wischnak, Director of Planning
City of Minnetonka

FROM: Lynn Miller, PE, PTOE
Anthony Heppelmann, PE

RE: Opus Traffic Study Addendum
City of Minnetonka, MN
WSB Project No. 1515-16

Purpose of Study

This is an update to a traffic study completed on May 01, 2006 for a two phase office development proposed by Opus Corporation on Green Circle Drive north of Bren Road West. In the previously approved plan, Opus had proposed 238,000 square feet of office space to the west of Green Circle Drive. Opus has recently modified their plans for this area to realign Green Circle Drive to the west side of their proposed development in order to create more of campus setting for their headquarters. With the new plan, the proposed development has been increased to 243,800 square feet of new office space. (See **Figures 1** and **2** for the Phase I and Phase II site plans.) The new plan includes redevelopment of one additional parcel, and would remove an existing 16,000 square foot office building in addition to two other office buildings that were proposed for removal in the previous site plan.

Project History

There have been several traffic studies completed over the last year for proposed development projects within the Opus Industrial Park. This section summarizes the previous development proposals and the previous traffic analysis completed for those development proposals in the Opus Industrial Park.

Opus

In May 2006, Opus Corporation had proposed redevelopment of this site next to their corporate headquarters just west of Green Circle Drive and north of Bren Road West. The original redevelopment plan included the removal of two single-story buildings located on the northwest corner of Bren Road West and Green Circle Drive. The buildings consisted of 79,400 square feet of office and warehouse space. In its place 238,000 square feet of office space was proposed in two phases. Phase I included a four-story building with about 128,000 sq ft of office. Phase II included the addition of a four-story building with 110,000 sq ft office. Structured parking was proposed with the second phase and a skyway was proposed to cross Green Circle Drive, connecting the existing headquarters building to the new development.

At the completion of Phase II, the proposed development was expected to generate a total of 2,321 vehicle trips per day. Up to 369 vehicle trips were forecast in the a.m. peak hour with 325 inbound and 44 outbound and 355 vehicle trips were forecast in the p.m. peak hour with 295 outbound and 60 inbound.

The traffic study for this project evaluated the access points to the site off of Bren Road West and Green Circle Drive. All intersections providing access to the site remained at Level of Service (LOS) A with the proposed project.

The original Opus study included trips generated from the approved American Medical Systems development. A separate traffic study for American Medical Systems had previously evaluated the intersections of Bren Road/Smetana Drive and the Bren Road and TH 169 ramp intersections. The Bren Road/Smetana Drive intersection and the TH 169 southbound ramp intersection with Bren Road operated at LOS B in the p.m. peak hour and the TH 169 northbound ramp intersection with Bren Road operated at LOS C during the p.m. peak hour and therefore the proposed Opus project was not expected to cause any traffic operations problems at these intersections with either Phase I or Phase II.

Other Developments

Since the previous approval of the Opus development, additional developments within the study area have been approved by the City of Minnetonka. The most substantial of these is United Health Group (UHG). Two new office buildings were proposed by UHG on the southeast quadrant of Bren Road East and Data Park Drive to be constructed in two phases. The first phase included construction of 350,000 sq ft office building, replacing 150,000 sq ft of light industrial. Phase II includes an additional 300,000 sq ft of office space.

The traffic study completed for the proposed UHG development included forecast traffic from existing vacant buildings within the Opus Industrial Park as well as forecast traffic from previously approved development plans including the original proposed 238,000 square foot Opus office development, American Medical Systems, and a mixed use development on Red Circle Drive. American Medical Systems is located west of the Opus site and included 50,000 sq ft of office. The mixed use development on Red Circle Drive included a 6,450 sq ft restaurant, 7,720 sq ft retail, and 15,550 sq ft general office. The location of all approved developments is illustrated on **Figure 3**.

Phase I of UHG has been approved for construction by the city of Minnetonka. The following improvements are currently being constructed to accommodate the traffic forecast with the completion of the Phase I UHG development (including traffic from other approved plans and filling of vacant space).

- Green Oak Drive/Bren Road East Intersection– Green Oak Drive at the approach to Bren Road East is being realigned and widened to provide a two lane approach on Green Oak Drive and a traffic signal is being installed at the intersection of Green Oak Drive and Bren Road East.

- A third lane is being added to Bren Road East from Data Park Road through the intersection with Smetana Drive. Bren Road East is also being widened at the approach to Data Park Road to provide a two lane exit into Data Park Road and Blue Circle Drive.

The traffic study indicated that additional road improvements will be needed to accommodate Phase II of the proposed UHG development as well as other future development or redevelopment in the Opus Industrial Park. The improvements will include improvements to the

Bren Road and TH 169 interchange and the addition of a third lane to Bren Road West from the TH 169 southbound off-ramp to Green Oak Drive.

Traffic Operations with the Currently Proposed Opus Corporation Project

Trip Generation

The current proposed Opus Corporation project will not generate any more traffic than forecast with the previously approved project. The estimated trip generation from the total proposed development is shown in **Table 1** below. The net additional square feet of development is slightly less with the current proposal compared to the previously approved plan. Although, the current plan has 243,800 square feet compared to the previous plan of 238,000 square feet, the current plan would remove one additional existing building of approximately 16,000 square feet. Therefore the net square footage being added is only 227,800 square feet in comparison to the previous proposal of 238,000. The estimated a.m. and p.m. peak hour traffic of 353 trips per hour and 339 trips per hour respectively is slightly less than the previous forecast of 369 and 355 trips per hour. Because the UHG study included the trips from the approved Opus plan, the current proposal would not increase the traffic volumes from those analyzed in the UHG study.

Table 1. Estimated Site Trip Generation from both Phases of Opus Project

Time of Day	*ITE Land Use Code*	*Size*	*Trip Rate*	*Total*	*In*		*Out*	
					%	*Trips*	*%*	*Trips*
Daily	*710*	*227,800 sq ft*	*11.01*	*2,508*	*50*	*1,254*	*50*	*1,254*
AM Peak Hour			*1.55*	*353*	*88*	*311*	*12*	*42*
PM Peak Hour			*1.49*	*339*	*17*	*58*	*83*	*281*

Source: Institute of Transportation Engineers Trip Generation Manual, 7th Edition

The proposed land use would generate approximately 35 trucks per day. Of these, most (25 to 30) would be light duty delivery trucks (eg. UPS, FedEx, etc.) and would use the main entrance rather than the loading docks. It is estimated that 5 to 10 heavier trucks per day would use the loading dock area. These would still be primarily single unit vehicles rather than semis.

Trip Distribution

The trip distribution will be similar to the trip distribution for the previous study. The trip distribution is shown on **Figure 4**. It is expected that some of the trips generated by the project that are destined to the TH 169 and Bren Road interchange will utilize Green Circle Drive rather than Bren Road as in the previous proposal because with the realigned Green Circle Drive it is possible to exit the site onto Bren Road and then take Green Circle Drive to the north which provides access back to the TH 169/Bren Road Interchange via Smetana Drive. WSB has estimated that it would take approximately the same amount of time to use Green Circle to Smetana Drive to TH 169 as it takes to use Bren Road West to Bren Road East to TH 169.

Trip Assignment

Figure 5 shows the forecasted turning movements for the current proposed Opus Phase I and Phase II development at the access points to the development and at intersections along Bren Road West and Bren Road East. As noted previously, these forecasts also include vehicle trips

for existing vacant properties and other improved developments. As shown on the figure, with the proposed site plan the majority of employees will exit the site onto Bren Road. However, it is possible to get from Bren Road onto Green Circle Drive and therefore some of the site generated trips are expected to use Green Circle Drive. The assumption in the analysis is that approximately half of the site generated trips destined to the TH 169/Bren Road interchange will use Green Circle Drive. Based on the trip distribution in **Figure 4** and the above assumption it is estimated that the proposed Phase I and II development will increase the daily traffic volumes on Bren Road West between Green Oak Drive and Green Circle Drive from 5,100 vpd to 6,500 vpd and increase traffic on Green Circle Drive from 830 vpd to 1,250 vpd. The truck docks are located on Green Circle Drive along with about 12 parking spaces. This traffic would have to use Green Circle Drive and is included in the estimated daily forecasts for Green Circle Drive. This increase in traffic is not expected to impact the traffic operations on these roadways. Historical counts on Green Circle Drive indicate that the daily traffic volume on Green Circle Drive has varied from under 600 vehicles per day to as high as 1,400 vehicles per day.

Forecast Traffic Operations

The forecast intersection levels of service from the UHG traffic study are shown in **Table 2.** These forecast levels of service include only Phase I of the UHG project, but include both Phase I and Phase II of the Opus project since the Opus development had been approved at the time the UHG study was done. The intersections that have the lowest level of service are the intersections of Bren Road / Smetana Drive and the Bren Road /TH 169 ramp intersections. Future improvements will be required at these intersections to accommodate all of the traffic that is forecast in the Opus Industrial Park. The UHG study indicated that a second westbound lane is needed on Bren Road West from the west TH 169 ramp intersection to Green Oak Drive and either dual rights or a free right is needed on Bren Road East at the SB TH 169 on-ramp to maintain acceptable traffic operations at these intersections if all currently vacant and approved space is occupied along with full occupation of both Phase I and II of the Opus Corporate site and Phase I of the UHG site. Additional improvements will be needed at the TH 169 / Bren Road Interchange to accommodate Phase II of the UHG project and other potential redevelopment within the Opus Industrial Park. A traffic study of the entire industrial park taking into account all potential redevelopment is proposed to determine the extent of these improvements. Because the current proposal generates only slightly fewer trips than the previously approved plan this project will not change the forecast conditions at the critical intersections.

Site Access and Circulation

The proposed location of site access onto Bren Road West was analyzed to determine whether there would be any operational problems given the location near the relocated Green Circle Drive exit from Bren Road West. The analysis shows that this intersection should not be a problem if it is designed as a standard stop condition exit from the site. It is recommended that a right-turn lane be developed for the exit from Bren Road West into the site, but that the exit from the site onto Bren Road West should be a standard stop condition with no lane added to Bren Road West.

The Green Circle Drive exit has been located to prevent traffic exiting the Umoga parking lot from using Green Circle Drive. The Bren Road West access to Umoga is located west of the Green Circle Drive. Proposed barrier curb would prevent vehicles from cutting across the grass or open area.

The Phase II plans show an access to the proposed Phase II parking ramp on Green Circle Drive. The access is proposed as a second access point to the ramp. The parking ramp should be designed to discourage traffic from using this access point as an exit to Green Circle Drive.

Table 2. UHG Phase I Intersection Level of Service

Intersection	Traffic Control	AM Peak Hour					PM Peak Hour				
		Intersection		Worst Movement			Intersection		Worst Movement		
		LOS	Delay	Movement	LOS	Delay	LOS	Delay	Movement	LOS	Delay
Bren Road/Smetana Drive	Traffic Signal	B	13.6	NBL	D	46.2	D	38.5	NBL	E	78.0
Bren Road/TH 169 Southbound Ramps	Traffic Signal	C	24.5	SBL	C	33.6	C	20.2	WBL	D	46.1
Bren Road/TH 169 Northbound Ramps	Traffic Signal	C	25.7	EBL	D	48.6	C	32.1	NBL	D	54.6
Bren Road/Londonderry Road	All-Stop	A	8.0	EBR	A	9.4	A	7.7	SBT	A	8.7
Shady Oak Road/TH 62 Eastbound Ramps	Traffic Signal	B	18.6	EBT	E	66.3	A	6.8	WBL	D	39.3
Shady Oak Road/TH 62 Westbound Ramps	Traffic Signal	B	10.0	NBL	D	46.9	B	11.6	WBL	C	34.5
Shady Oak Road/Red Circle Drive Entrance	Thru-Stop	A	3.1	SBL	A	9.5	A	2.0	SBL	B	14.4
Shady Oak Road/Red Circle Drive Exit	Traffic Signal	A	9.7	WBL	C	34.5	C	27.1	WBL	E	60.0
Shady Oak Road/Bren Road	Traffic Signal	A	9.8	WBL	D	35.4	C	34.8	WBL	D	40.0
Shady Oak Road/Smetana Drive	Traffic Signal	A	8.8	WBL	D	46.4	B	10.3	EBL	D	38.1
Smetana Drive/Feltl Road	Thru-Stop	A	3.5	NBR	A	7.4	A	4.9	NBR	A	8.9
Smetana Drive/11th Avenue South	All-Stop	A	7.8	SBT	B	13.4	A	9.8	WBL	B	12.4
Bren Road West/Green Oak Drive	Thru-Yield	B	11.1	WBL	C	19.7	A	7.1	WBL	A	7.1
Bren Road East/Green Oak Drive	Thru-Stop	B	13.9	SBL	C	16.2	A	7.2	SBL	C	16.1
Bren Road East/Data Park Road	Thru-Yield	A	9.7	NBR	B	12.0	A	4.6	NBR	A	7.8

Source: WSB & Associates, Inc.
Notes: Includes the following improvements:

- Green Oak Drive/Bren Road East Intersection– Realign and widen Green Oak Drive at the approach to Bren Road East to provide a two lane approach on Green Oak Drive and provide traffic signal at the intersection of Green Oak Drive and Bren Road East.
- Add a third lane to Bren Road East from Data Park Road through intersection with Smetana Drive.
- Add a third lane to Bren Road West from the TH 169 southbound off-ramp to Green Oak Drive.
- Modify the eastbound Bren Road approach to the TH 169 southbound on-ramp to provide a channelized right-turn lane from Bren Road East onto the southbound on-ramp.

Comments received on the proposed plan to realign Green Circle Drive suggested terminating Green Circle Drive in a cul-de-sac north of the Opus Corporate Center. This proposal would not work with the one-way circulation system in the Opus Industrial Park since it would eliminate or severely restrict access to a number of properties and also adversely affect emergency access in the park.

Conclusions

Based on the analysis, WSB has concluded the following:

- Opus has changed their site plan from 238,000 square feet to 243,800 square feet of office space. A 16,000 square foot building will be removed during construction so the new plan will have a net square footage of 227,800 compared to the previous approved plan.

- The new plan will generate slightly fewer trips than the previous approved plan. The trip generation estimate for the current combined Phase I and II plan is 2,508 daily trips with 353 in the am peak hour and 339 in the pm peak hour versus the approved plan trip generation of 2,621 daily trips with 369 trips in the a.m. peak hour and 355 trips in the p.m. peak hour. The combined Phase I and Phase II plan will generate approximately 35 trucks per day with 5 to 10 larger trucks per day that would use the loading dock area.

- The proposed Phase I and II development will increase the daily traffic volumes on Bren Road West between Green Oak Drive and Green Circle Drive from 5,100 vpd to 6,500 vpd and increase traffic on Green Circle Drive from 830 vpd to 1,250 vpd. This increase in traffic is not expected to impact the traffic operations on either of these roadways. However to reduce traffic on Green Circle Drive, the parking ramp should be designed to discourage traffic from using this access point as an exit to Green Circle Drive.

- Accesses to the Opus development are forecast to operate at LOS A during the a.m. and p.m. peak hours with the proposed plan. It is recommended that a right-turn lane be developed for the exit from Bren Road West into the site, but that the exit from the site onto Bren Road West should be a standard stop condition with no lane added to Bren Road West.

- The current proposal will not change the forecast conditions at the critical intersections of Bren Road and Smetana Drive and the Bren Road and TH 169 ramp intersections from what was forecast for Phase I of the UHG project. Future improvements will be needed at these intersections to accommodate Phase II of the UHG project and other potential redevelopment in the Opus Industrial Park. A study of the needed improvements at the TH 169 Interchange should be completed considering all the potential redevelopment in the area.

NORTH

OPUS TRAFFIC STUDY

Prepared by:

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City of minnetonka
Where quality comes naturally

Phase I Site Plan

Figure 1

Opus Corporate Center Expansion
#97096.07a

A87

NORTH

OPUS TRAFFIC STUDY

Phase II Site Plan

Prepared by:

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Figure 2

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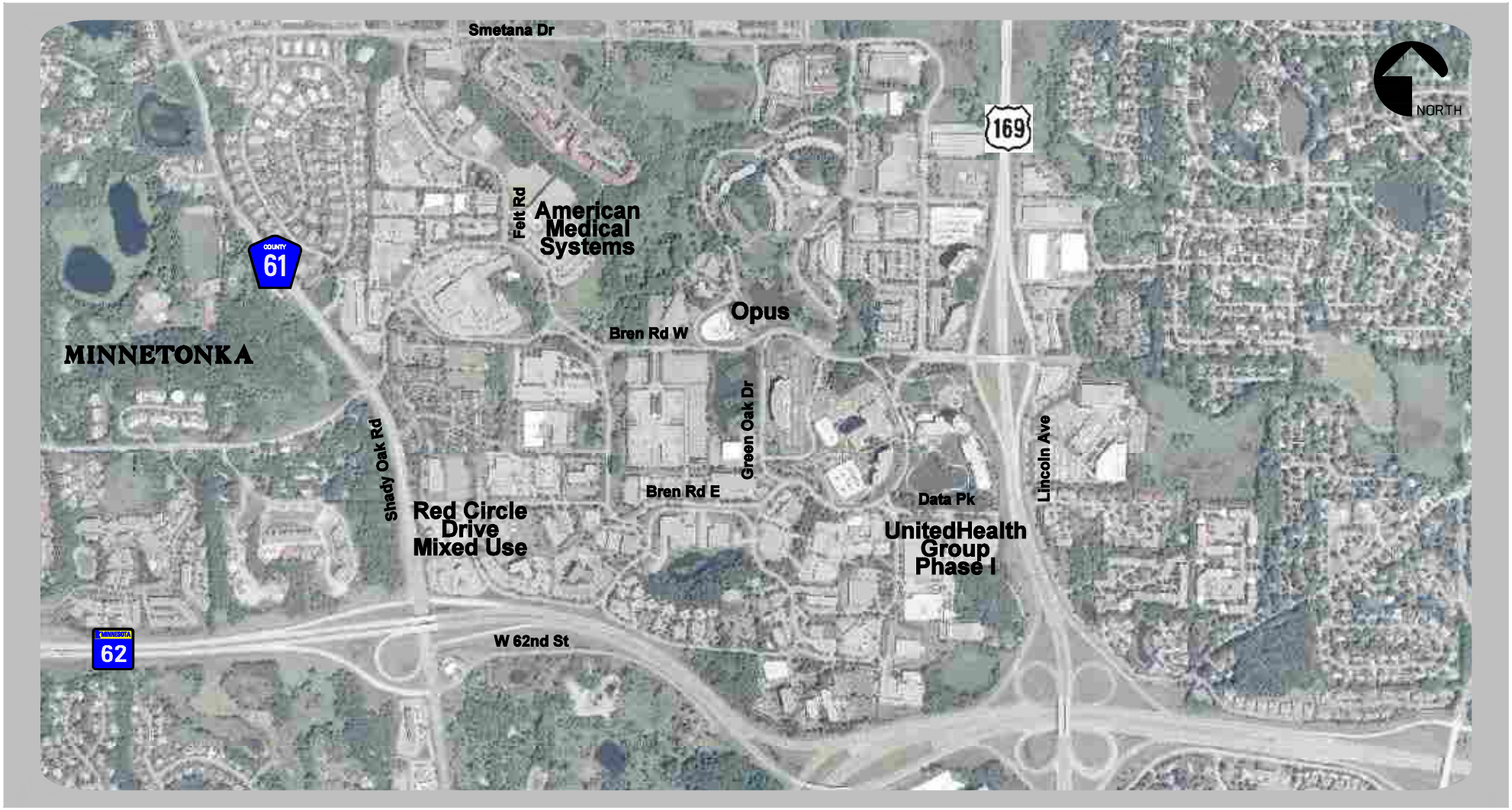

OPUS TRAFFIC STUDY

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Approved Developments

Figure 3

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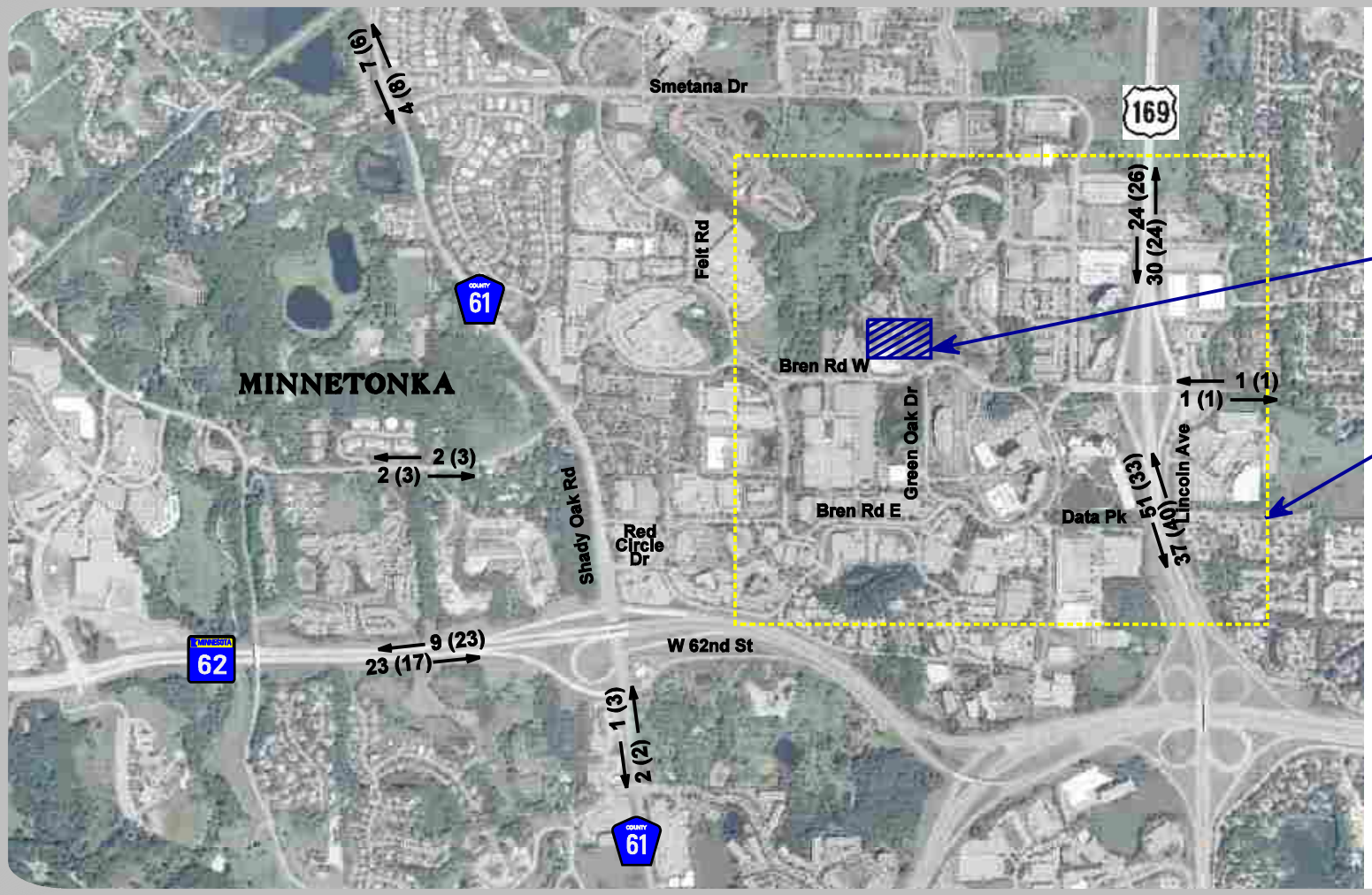

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Trip Distribution

Figure 4

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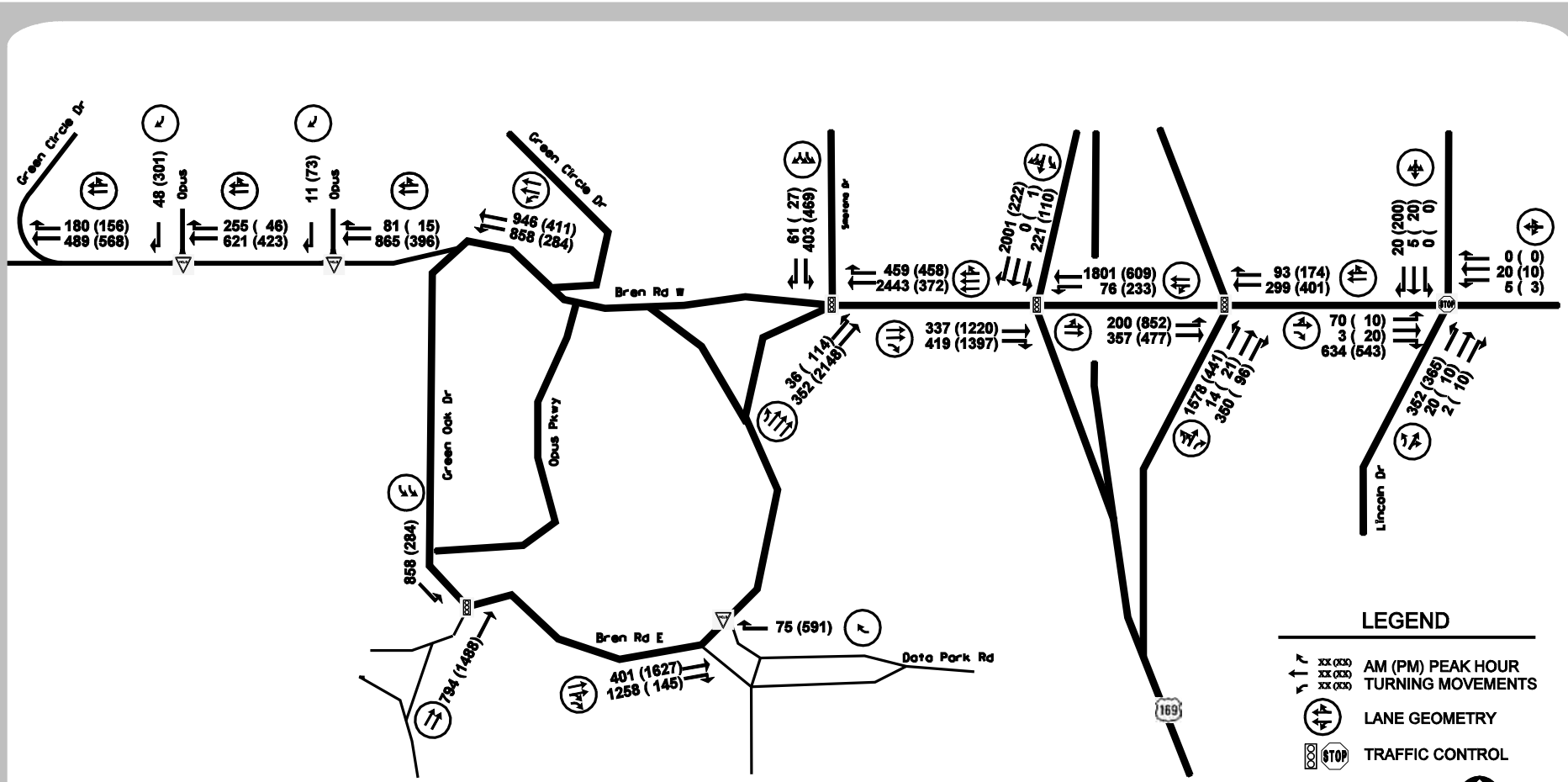

OPUS TRAFFIC STUDY

Projected Turning Movements

Prepared by:

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Figure 5

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APPENDIX C

Opinion of Probable Cost

Opinion of Probable Cost

Street Realignment

WSB Project: Green Circle Drive Improvements
Project Location: City of Minnetonka
City Project No.:
WSB Project No: 01515-16

Design By: TCH
Checked By:
Date: 6/6/2007

GREEN CIRCLE DRIVE IMPROVEMENTS

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Unit Price	Estimated Total Cost
SCHEDULE A. SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LUMP SUM	1	$15,530.00	$15,530
2	2101.501	CLEARING	ACRE	2.00	$1,500.00	$3,000
3	2101.506	GRUBBING	ACRE	2.00	$1,500.00	$3,000
4	2104.503	REMOVE BITUMINOUS PAVEMENT	SQ FT	5,000.00	$0.40	$2,000
5	2104.509	REMOVE SEWER PIPE - CONCRETE	LIN FT	45	$8.00	$360
6	2104.509	REMOVE CONCRETE CURB AND GUTTER	LIN FT	1,860	$3.00	$5,580
7	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	100	$3.00	$300
8	2104.509	REMOVE PIPE APRON	EACH	3	$200.00	$600
9	2104.509	REMOVE AND RELOCATE LIGHT POLE	EACH	2	$2,500.00	$5,000
10	2104.523	REMOVE SIGN	EACH	8	$50.00	$400
11	2104.523	REMOVE RETAINING WALL	EACH	1	$500.00	$500
12	2105.501	COMMON EXCAVATION	CU YD	11,100	$4.00	$44,400
13	2105.505	PEAT EXCAVATION	CU YD	12,600	$6.00	$75,600
14	2105.521	GRANULAR BORROW (CV)	CU YD	12,000	$12.00	$144,000
15	2105.601	DEWATERING	LIUMP SUM	1	$30,000.00	$30,000
16	2112.501	SUBGRADE PREPARATION	ROAD STA	16.0	$200.00	$3,200
17	2211.501	AGGREGATE BASE CLASS 5, 100% CRUSHED	CU YD	1,600	$20.00	$32,000
18	2211.601	SALVAGE AGGREGATE IN STOCK PILE	CU YD	660	$3.00	$1,980
19	2231.503	STREET SWEEPING	HOUR	40	$110.00	$4,400
20	2231.618	BITUMINOUS PATCH SPECIAL	SQ FT	300	$3.10	$930
21	2232.501	MILL BITUMINOUS SURFACE (2.0")	SQ YD	200	$5.00	$1,000
22	2331.604	RECLAIMED AGGREGATE BASE, CLASS 7	SQ YD	2,720	$2.75	$7,480
23	2350.501	TYPE MV 4 WEARING BITUMINOUS MIXTURE (C)	TON	670	$52.00	$34,840
24	2350.502	TYPE MV 3 NON WEARING BITUMINOUS MIXTURE (C)	TON	1,670	$48.00	$80,160
25	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	450	$3.00	$1,350
26	2411.618	CONCRETE RETAINING WALL	SQ FT	350	$35.00	$12,250
27	2502.521	4" PVC PIPE DRAIN	LIN FT	400	$8.00	$3,200
28	2502.602	4" PVC PIPE DRAIN CLEANOUT	EACH	4	$150.00	$600
29	2521.511	4" BITUMINOUS WALK	SQ FT	6,400	$3.00	$19,200
30	2531.501	CONCRETE CURB AND GUTTER DESIGN SPECIAL	LIN FT	300	$12.00	$3,600
31	2531.501	CONCRETE CURB AND GUTTER DESIGN B618	LIN FT	3,520	$11.00	$38,720
32	2531.602	CONCRETE MEDIAN NOSE DESIGN 7113	EACH	1	$500.00	$500
33	2554.603	INSTALL GUARDRAIL	LIN FT	480	$40.00	$19,200
34	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$2,000.00	$2,000
35	2571.602	TREE PROTECTION	EACH	10	$75.00	$750
36	2573.502	SILT FENCE, TYPE MACHINE SLICED	LIN FT	600	$3.50	$2,100
37	2573.602	INLET PROTECTION	EACH	4	$400.00	$1,600
38	2575.505	SODDING TYPE LAWN	SQ YD	1,250	$3.00	$3,750
39	2575.604	SEEDING, FERTILIZER AND MULCH	SQ YD	2,000.00	$0.50	$1,000
40	2575.502	SEED MIXTURE 250	LBS	140.00	$3.00	$420
41	2582.502	4" SOLID LINE WHITE-EPOXY	LIN FT	400	$1.00	$400
42	2582.502	4' BROKEN LINE WHITE-EPOXY	LIN FT	400	$2.00	$800
43	2575.523	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	200	$1.50	$300
					SUBTOTAL SCHEDULE A - SURFACE IMPROVEMENTS	$608,000
					+ 10% Contingencies	$60,800
					Subtotal	$668,800
					+ 20% Indirect Cost	$133,760
					GRAND TOTAL - CHARLTON ROAD IMPROVMENTS	**$802,560**