AGENDA
CITY OF CEDAR FALLS, IOWA
PLANNING AND ZONING COMMISSION
WEDNESDAY, OCTOBER 24, 2018
5:30 PM AT CITY HALL - COUNCIL CHAMBERS

1. Call to Order and Roll Call

2. Approval of Minutes

3. Public Comments

4. New Business

A. Central Business District Design Review – LBL Sign

Location:	321 Main Street
Applicant:	Lisa Richter, LBL Life by Lisa LLC
Previous Discussion:	None.
Staff Recommendation:	*Recommend Approval*
P&Z Action Needed:	*Review and make a Recommendation to City Council*

B. HWY-1 Site Plan Amendment – Raising Cane's Signage

Location:	201 Viking Plaza Drive
Applicant:	Reed Design Architects; CGA Engineering
Previous Discussion:	None
Staff Recommendation:	*Recommend Approval*
P&Z Action Needed:	*Review and make a Recommendation to City Council*

5. Old Business

A. Park Ridge Estates Preliminary Plat

Location:	20.8 acre property at the north end of Lakeshore Drive
Applicant:	Larry Hill, owner; Wingert Development, CGA, Inc. Engineer
Previous Discussion:	September 12, 2018
Staff Recommendation:	*Discussion Deferred to November 14 meeting*
P&Z Action Needed:	*None*

B. HWY-1 District Site Plan Review – Fleet Farm Retail and Convenience Store

Location:	SW Corner of Highway 58 and W. Ridgeway Avenue
Applicant:	Midland Atlantic Development Company, L.L.C.
Previous Discussion:	October 10, 2018
Staff Recommendation:	*Recommend Approval*
P&Z Action Needed:	*Review and make a Recommendation to City Council*

6. Commission Updates

7. Adjournment

Reminders:

- November 14th and December 12th Planning & Zoning Commission Meeting
- November 5th and November 19th City Council Meeting

Cedar Falls Planning and Zoning Commission
Regular Meeting
October 10, 2018
City Hall Council Chambers
220 Clay Street, Cedar Falls, Iowa

MINUTES

The Cedar Falls Planning and Zoning Commission met in regular session on Wednesday, October 10, 2018 at 5:30 p.m. in the City Hall Council Chambers, 220 Clay Street, Cedar Falls, Iowa. The following Commission members were present: Adkins, Arntson, Giarusso, Hartley, Holst, Leeper, Oberle and Saul. Wingert was absent. Karen Howard, Community Services Manager, and Shane Graham, Planner II were also present.

1.) Chair Oberle noted the Minutes from the September 12, 2018 regular meeting are presented. Mr. Holst made a motion to approve the Minutes as presented. Mr. Hartley seconded the motion. The motion was approved unanimously with 8 ayes (Adkins, Arntson, Giarusso, Hartley, Holst, Leeper, Oberle and Saul) and 0 nays.

2.) The first item of business was the HWY-1 District Site Plan review for the Fleet Farm Retail and Convenience Store. Chair Oberle introduced the item and Mr. Graham provided background information. He explained that the property is located at the southwest corner of Highway 58 and West Ridgeway Avenue and was brought before the Commission for rezoning recently. He also showed renderings of the proposed site that included the layout of the proposed buildings, parking, wetland and detention basins, etc. Mr. Graham provided another drawing that showed the full property buildout, as well as aerial photos of the area. He discussed the landscaping plan, open space, signage plan and stormwater management plan requirements, noting that they have all been met. The proposed building design and materials were presented, as well as the conditional zoning agreement items that have not yet been provided. He noted that staff has concerns about the design of the street-facing façade of the convenience store and suggest some additional design elements be added on this façade that will be visible from Ridgeway.

The Developer has proposed public roadway improvements along W Ridgeway Avenue that may impact the surrounding area, so a public informational meeting was held Monday, October 8 with surrounding property owners and the applicant and city staff to discuss the proposed roadway improvements. Mr. Graham indicated that the proposed roadway improvements shown by the developer on the site plan are a concept and may change as the City is still reviewing the traffic impact study. Of particular concern is the intersection of Nordic Drive and Ridgeway, since that intersection provides access to the existing businesses to the north. In addition, the sidewalk location between the easternmost drive and Highway 58 is problematic as it is right along the curb, which will be unsafe for pedestrians. A final concept of the proposed roadway improvements necessary to support the development of this property should be complete by the next P&Z Commission meeting on October 24th, including the proposed sidewalk location.

Nicole Chimento of Midland Atlantic (developer) spoke to the changes and the feedback received from the public information meeting, provided background on Fleet Farm, and gave introductions to the team working on the project.

Mr. Holst asked about the design of the side of the convenience store that faces Ridgeway and noted that it appears to be a rather blank facade. Jennifer Buck with RSB Architects stated that they would look at the design and would add some additional features to create

more visual interest and some articulation to the façade that will tie into the main store to add depth and character to that side.

Ms. Saul asked what is preventing the sidewalk from being moved further south. Mr. Graham explained that there is a ditch with a wetland that makes it difficult to shift to the south but that staff has asked the developer to look at other options for locating the sidewalk. Ms. Saul asked if there is a reason the sidewalk needs to extend so far. Mr. Graham noted that staff would like it to connect to the existing trail network. Ms. Howard also noted that the area is transitioning from agricultural use to an area with urban development, so the design of the streets should be expected to transition to more of an urban condition rather than the farm field with ditch that is common in a rural context. Mr. Arntson noted his concern with safety for pedestrians and bicyclists and the community's expectation that there will be safe connections to the trail network.

Mr. Holst reiterated his concern with the design of the site as an entranceway to the City and would like to see an enhanced design for the convenience store. Ms. Saul stated that she likes the additional landscaping that has been added. Mr. Hartley asked if the gas station will be geared toward automobiles or if it will be a truck stop. The developer responded that it will not be a truck stop.

Mr. Arntson asked about the phasing plan and what order the work will be done. Mr. Graham stated that there is still discussion as to whether the construction of the roadway can be phased or not. The retail store and convenience store are the buildings that are being proposed at this time as the first phase.

The item will be continued at the October 24 meeting.

3.) The next item for consideration by the Commission was the Park Ridge Estates Preliminary Plat. It was deferred to the next meeting.

4.) Ms. Howard asked the Commission to let staff know in advance if they will be able to attend the December 26 meeting so a decision can be made with regard to possible rescheduling.

5.) As there were no further comments, Mr. Holst made a motion to adjourn. Mr. Leeper seconded the motion. The motion was approved unanimously with 8 ayes (Adkins, Arntson, Giarusso, Hartley, Holst, Leeper, Oberle and Saul) and 0 nays.

The meeting adjourned at 6:40 p.m.

Respectfully submitted,

Karen Howard
Community Services Manager

Joanne Goodrich
Administrative Clerk

DEPARTMENT OF COMMUNITY DEVELOPMENT

City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
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Fax: 319-273-8610
www.cedarfalls.com

MEMORANDUM

Planning & Community Services Division

TO: Planning and Zoning Commission

FROM: Iris Lehmann, Planner I

DATE: October 18, 2018

SUBJECT: Design review of a property in the Central Business District Overlay

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REQUEST: Design review for a "new" sign band on the front façade of 321 Main Street

PETITIONER: Lisa Richter, LBL Life by Lisa LLC

LOCATION: 321 Main Street, LBL

PROPOSAL

The tenant of 321 Main Street, Lisa Richter (LBL), has installed a sequin wall panel on the top half of the storefront façade to act as a sign band behind the existing wall sign. See images below. This work was completed without city approval or permits. The applicant submitted the application for review in response to a letter sent by the City's Code Enforcement Officer outlining the necessary steps for approval.

Prior storefront

Current storefront

BACKGROUND

This item requires review by the Planning and Zoning Commission and the City Council since this property is located within the Central Business District (Section 29-168). The downtown

district requires a building site plan review (i.e. design review) for any “substantial improvement” to an exterior façade, including a color or material change. A substantial improvement to properties in the CBD Overlay is defined in Section 29-186(c) and reads as follows:

> “Substantial improvement " includes any new building construction within the overlay district or any renovation of an existing structure that involves any modification of the exterior appearance of the structure by virtue of adding or removing exterior windows or doors or altering the color or exterior materials of existing walls. All facade improvements, changes, alterations, modifications or replacement of existing facade materials will be considered a substantial improvement. Included in this definition are any new, modified or replacement awning structures or similar material extensions over the public sidewalk area. A substantial improvement also includes any increase or decrease in existing building height and/or alteration of the existing roof pitch or appearance.”

ANALYSIS

This property is located in a C-3, commercial zoning district, and falls within the Central Business District Overlay. As noted above, all substantial improvements to structures within the overlay district shall be reviewed by the Planning and Zoning Commission and City Council. The improvement is the first of its type in the overlay and will set a precedent for similar future projects. The following is an evaluation of the project:

1. Proportion: The proportions of the building are not being altered. This criterion does not apply.

2. Roof shape, pitch and direction: The roof of the building is not being altered. This criterion does not apply.

3. Pattern: The surfaces and openings of this structure will remain the same. This criterion does not apply.

4. Building Composition: The composition of the building will remain the same. This criterion does not apply.

5. Window and transparency: The size, proportion and type of windows on the building are not changing. This criterion does not apply.

6. Materials and texture: The applicant has installed a decorative wall panel over the former painted sign band that consists of silver sequins made out of composite material. See material sample to the right. The wall panel has been mounted over the existing painted wood paneling with screws. In this way the improvement does not interfere with the integrity of the building and can be easily removed. To add to the visual interest the sequins are mounted so they dangle from the panel. In this way the band is continuously sparkling as the sequins are moved by the wind.

The materials section of the code does not directly address this type of material. However, this section requires that materials and textures of buildings in the surrounding area be considered in the design review. There are no buildings in the

immediate surrounding, or in the downtown overlay, which use similar materials as part of their facade. Conversely, sign bands and signage in general are intended to be elements of a storefront that are unique and draw attention to the business, so it is not unusual to use creative approaches to create visual interest or use color or materials that differ from the primary and more permanent wall materials. While there may be differing opinions about the attractiveness of this material, staff does not believe using a unique material on the sign band should be grounds for denial based on this standard, unless there is evidence that the material will deteriorate quickly, will damage the façade of the building, or will be the predominate material on the façade. In this case, there is no evidence that the material is deteriorating, the installed panel can be removed without damage to the primary materials used for the façade of this building, and will not be used on areas of the façade outside the sign band. Staff finds that the proposal is not counter to the primary intent of this standard.

7. Color: The applicant installed a decorative wall panel that consists of silver sequins. The proposal does not utilize the earth or neutral tones that are common to the district. However, 15% of the façade is permitted to be an accent and fall outside of this color spectrum. The affected area is approximately 100 square feet (5 wide by 20 feet long). The front façade of 321 Main Street is approximately 40 feet tall and 20 feet wide for total façade surface area of approximately 800 square feet. The improvement covers approximately 12.5% of the façade. Including the purple area on the bottom right corner of the storefront, almost 15% of the façade would fall under the accent category. This criterion is met.

8. Architectural features: The architectural features of the building are remaining the same. This criterion does not apply.

9. Building Entries: The entry to the building will not change. This criterion does not apply.

10. Exterior mural wall drawings, painted artwork, exterior painting. This criterion does not apply for this review

11. Signage: The improvement covers the sign band located behind the sign, but is not the sign itself. This criterion does not apply.

TECHNICAL COMMENTS
No comments.

PLANNING & ZONING COMMISSION
Discussion/Vote
10/24/2018

STAFF RECOMMENDATION
The Community Development Department recommends approval of the submitted sign band for 321 Main Street.

Attachments: Letter of intent from business owner
Additional details about completed work

FITS YOUR ATTITUDE

321 Main St
Cedar Falls, IA 50613

September 19, 2018

Iris E Lehmann
City Planner I
City Hall
220 Clay Street
Cedar Falls, IA 50613

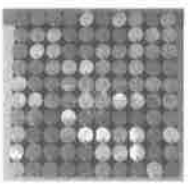
Simple upgrade to existing signage of our business. We were given permission from our landlord Tim Schilling to make the upgrade. It was a very simple upgrade no major construction or equipment used, just a drill and screws. It covers up an ugly outdated wood paneling and enhances the look of my nine-year-old business which employees one full time and three part-time people.

Sincerely,

Lisa M Richter
LBL Life by Lisa LLC
321 Main St
Cedar Falls, IA 50613
319-266-6497
www.loveLBL.com
https://www.facebook.com/lblitzonmain

Patent sequin panel 2018 decorative wall panel / size of each panel is 30cm by *30cm and there are 100 sequins on each panel. Space covered 56 1/2 inches tall 245" inches wide (143.51cm * 645.16cm)

Panel Dimension	30cm x 30cm
Number of sequins	100 PCS
Assembled panel with Nail thickness	About 1.8cm
Assembled panel weight	269g to 285g
Sequin material	Composite material (UV Protection)
Panel material	Composite material



BEFORE

AFTER

DEPARTMENT OF COMMUNITY DEVELOPMENT

City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Phone: 319-273-8600
Fax: 319-273-8610
www.cedarfalls.com

MEMORANDUM

Planning & Community Services Division

TO: Planning and Zoning Commission

FROM: David Sturch, Planner III

DATE: October 18, 2018

SUBJECT: Highway 1 District Site Plan Review – Raising Cane's Sign Amendment

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REQUEST: Site plan amendment; Raising Cane's signage plan at 201 Viking Plaza Drive

PETITIONER: Reed Design Architects; CGA Engineering

LOCATION: East Viking Plaza Lot 1. West end of Viking Plaza Drive

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PROPOSAL

It is proposed to amend the signage plan for the Raising Cane's site at 201 Viking Plaza Drive. The restaurant wishes to add a freestanding monument sign near the northeast corner of their property.

BACKGROUND

The Raising Cane's site plan was reviewed by the Planning and Zoning Commission on July 25, 2018. The Commission recommended approval of the site plan and forwarded this request to the City Council. The City Council approved the plan on August 6, 2018. The original site plan was for a new building, parking lot, landscaping and signage for the proposed Raising Cane's restaurant. The plan at that time, included signage on the building and signage on Target's multi-tenant sign on Viking Road and Highway 58. Recently, the architect requested a monument sign on the property after their signage plans changed. Raising Cane will no longer install a tenant panel sign on the aforementioned multi-tenant signs.

ANALYSIS

Since this request is a change from the approved site plan, review by the Planning and Zoning Commission and City Council is required. The Planning and Community Services Division have the following comments regarding the proposed monument sign for Raising Cane's:

1) Signage: The HWY-1 District permits wall signs to cover 20% of the surface area of any one wall space. However, no more than two wall faces can be utilized for signage in the HWY-1 District. Freestanding signs are to be reviewed on a case by case basis by the Commission and City Council. It is the intent of the HWY-1 District to limit the size, height and number of on premise free-standing signage.

Proposed Monument Sign

Example: Sign at another location

A signage plan was approved on the design of the building. Wall signage is identified on the north and west side of the building. The sign permits have been submitted and approved by city staff based on the site plan submittal to P&Z and City Council.

The architect indicated that they wish to amend their signage plan to include a monument sign for the restaurant. The proposed sign will be 6 feet in height and 22 square feet in area placed upon a 2 foot tall brick base. The monument sign will be supported by steel beams on both ends of the sign. These steel beams tie into the design of the building. The drawing below identifies steel awnings and sun shades over the windows and outdoor seating area for the proposed restaurant. **Amended signage plan satisfied.**

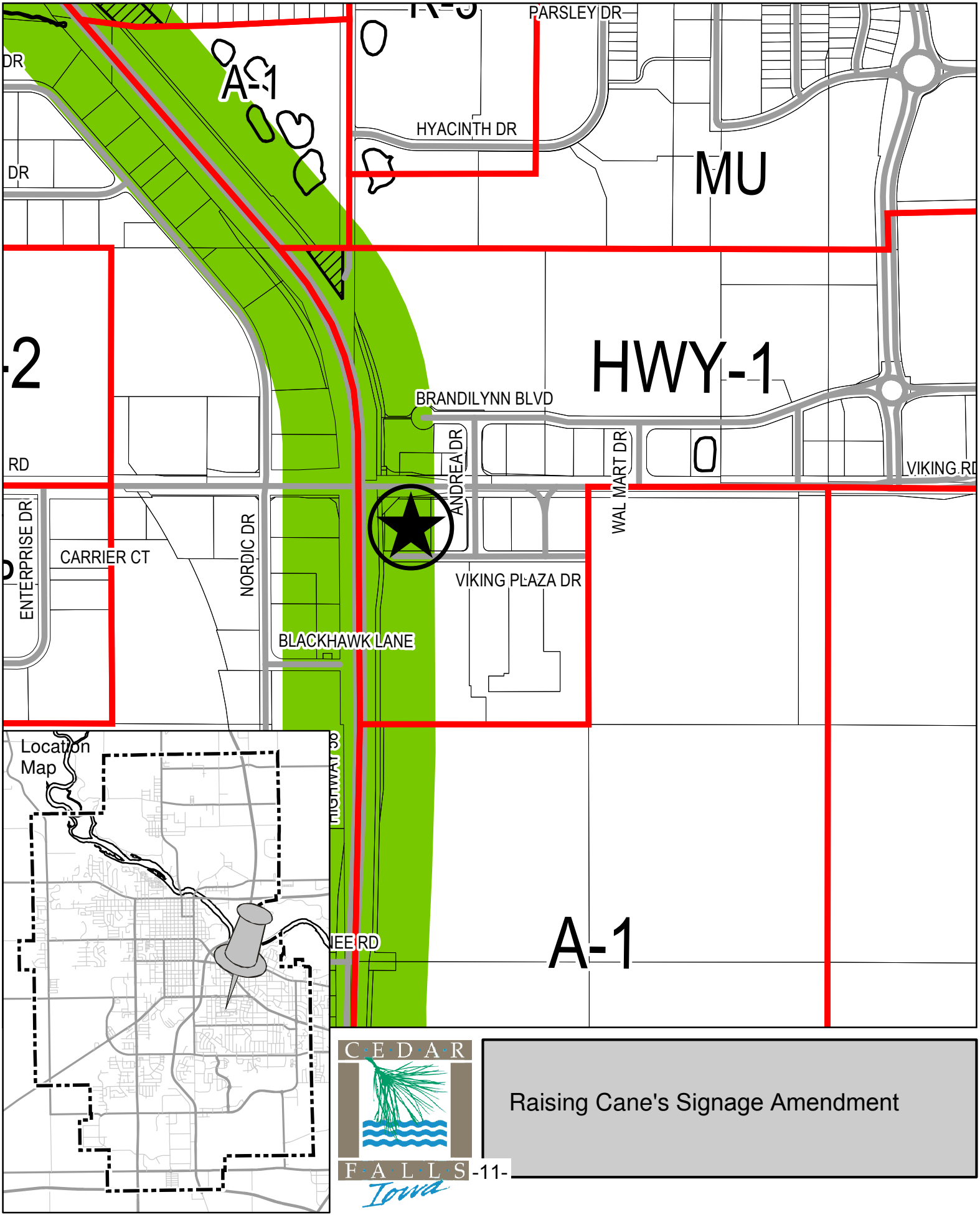
2) Setbacks: The setbacks apply to the building, parking lot and signage. The HWY-1 District requires a 20-foot setback around the perimeter of the "district" and 20 feet along the public streets. The 20-foot setback applies to the north, south and west side of the property. There are no internal setbacks along the east lot line. The site plan depicts the proposed monument off the northeast corner of the parking lot with a 20-foot setback along Viking Road. **Setbacks satisfied.**

PLANNING & ZONING COMMISSION SUMMARY

Vote
10/24/2018

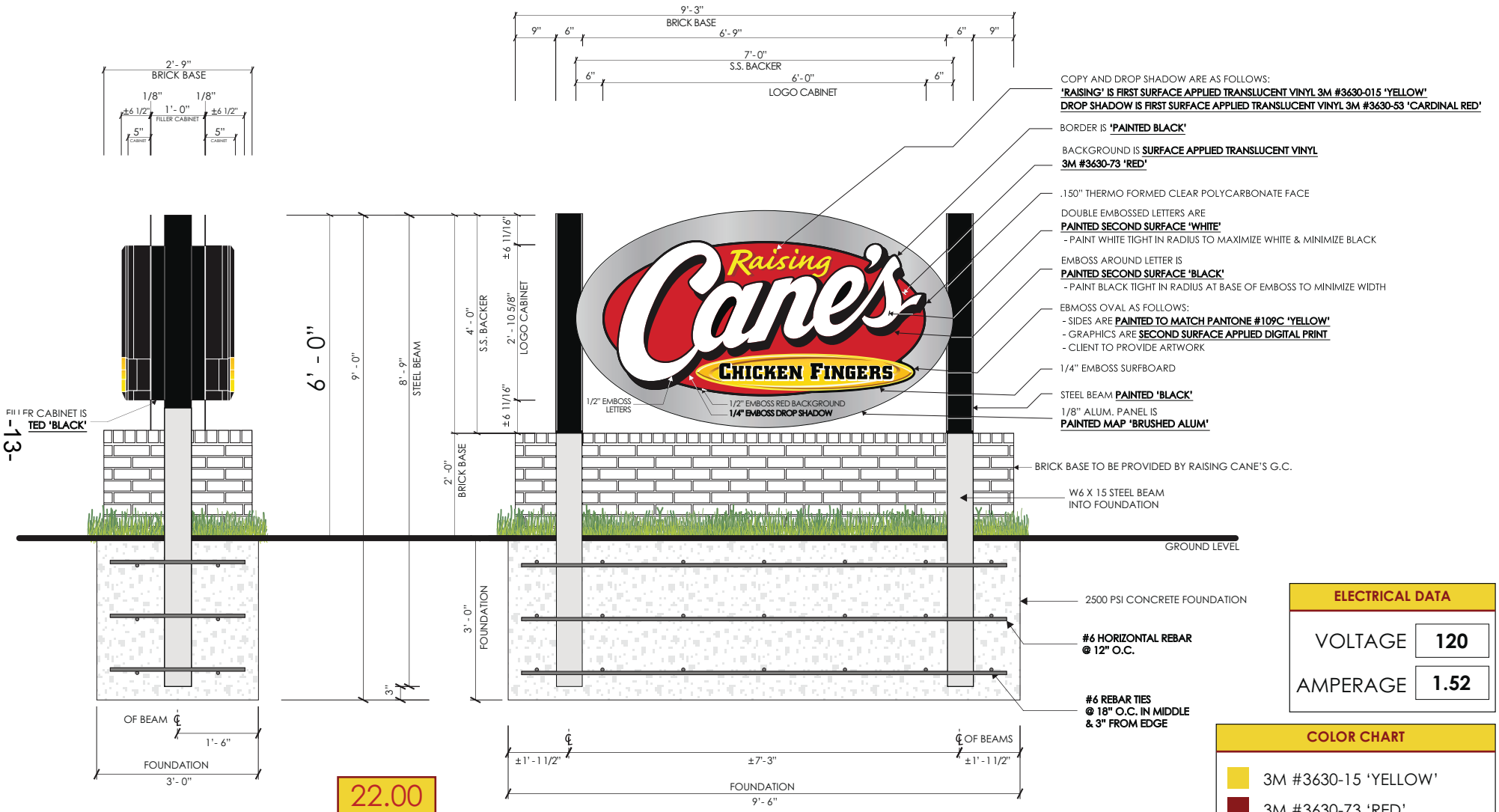
STAFF RECOMMENDATION

The Community Development Department recommends approval of the Raising Cane's amended signage plan.



Raising Cane's Signage Amendment

CUTSHEET
Monument @ 6'-0" OAH
DESIGN IS SUBJECT TO LL APPROVAL



22.00
Square Footage

ELECTRICAL DATA	
VOLTAGE	120
AMPERAGE	1.52

COLOR CHART

- 3M #3630-15 'YELLOW'
- 3M #3630-73 'RED'
- 3M #3630-53 'CARDINAL RED'

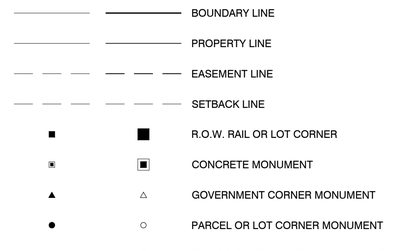
Location: Altoona, IA	AGI Rep: G.W.
Site ID: SHV13	AGI PM: Patience Casey
Date: 05/21/2018	Drawn by: M. Folden

LEGEND

EXISTING	PROPOSED	
		EVERGREEN TREE
		DECIDUOUS TREE
SIGN		SIGN (TYPE AS NOTED)
		POST
		BOLLARD
X X	X X	FENCE
		TILE OUTLET
		SILT FENCE
105	105	CONTOUR LINE
x00.00	00.00	SPOT ELEVATION
		BUILDING
W (*)	W	WATERLINE
		WATER VALVE
		FIRE HYDRANT
		WATER METER
		CURB STOP
		YARD HYDRANT
PIV	PIV	POST INDICATOR VALVE
San(*)	San	SANITARY SEWER LINE
StS (*)	StS	STORM SEWER LINE
StS (*)	DT	DRAIN TILE
StS (*)	SD	SUBDRAIN
		MANHOLE
		CLEANOUT
		INTAKE
		BEEHIVE INTAKE
G (*)	G	GAS LINE
		GAS VALVE
		GAS METER
OH E	OH E	OVERHEAD ELECTRICAL LINE
E (*)	E	BURIED ELECTRICAL LINE
		POWER POLE
		ELECTRICAL METER
		ELECTRICAL HIGHLINE TOWER
		TRAFFIC SIGNAL
		STREET LIGHT
		LUMINAIRE
		ELECTRICAL BOX/TRANSFORMER
FO(*)	FO	FIBER OPTICS LINE
FO	FO	FIBER OPTICS BOX
FO	FO	FIBER PEDESTAL
T(*)	T	TELEPHONE LINE
		TELEPHONE POLE
T	T	TELEPHONE PEDESTAL
T	T	TELEPHONE BOX
TV	TV	CABLE TELEVISION LINE
TV(*)	TV	TELEVISION PEDESTAL
TV	TV	TELEVISION BOX

EXISTING	PROPOSED	
		SECTION/R.O.W. LINE
		BOUNDARY LINE
		PROPERTY LINE
		EASEMENT LINE
		SETBACK LINE
		R.O.W. RAIL OR LOT CORNER
		CONCRETE MONUMENT
		GOVERNMENT CORNER MONUMENT
		PARCEL OR LOT CORNER MONUMENT
		TEMP. CONSTRUCTION EASEMENT CORNER
		SURVEY CONTROL POINT

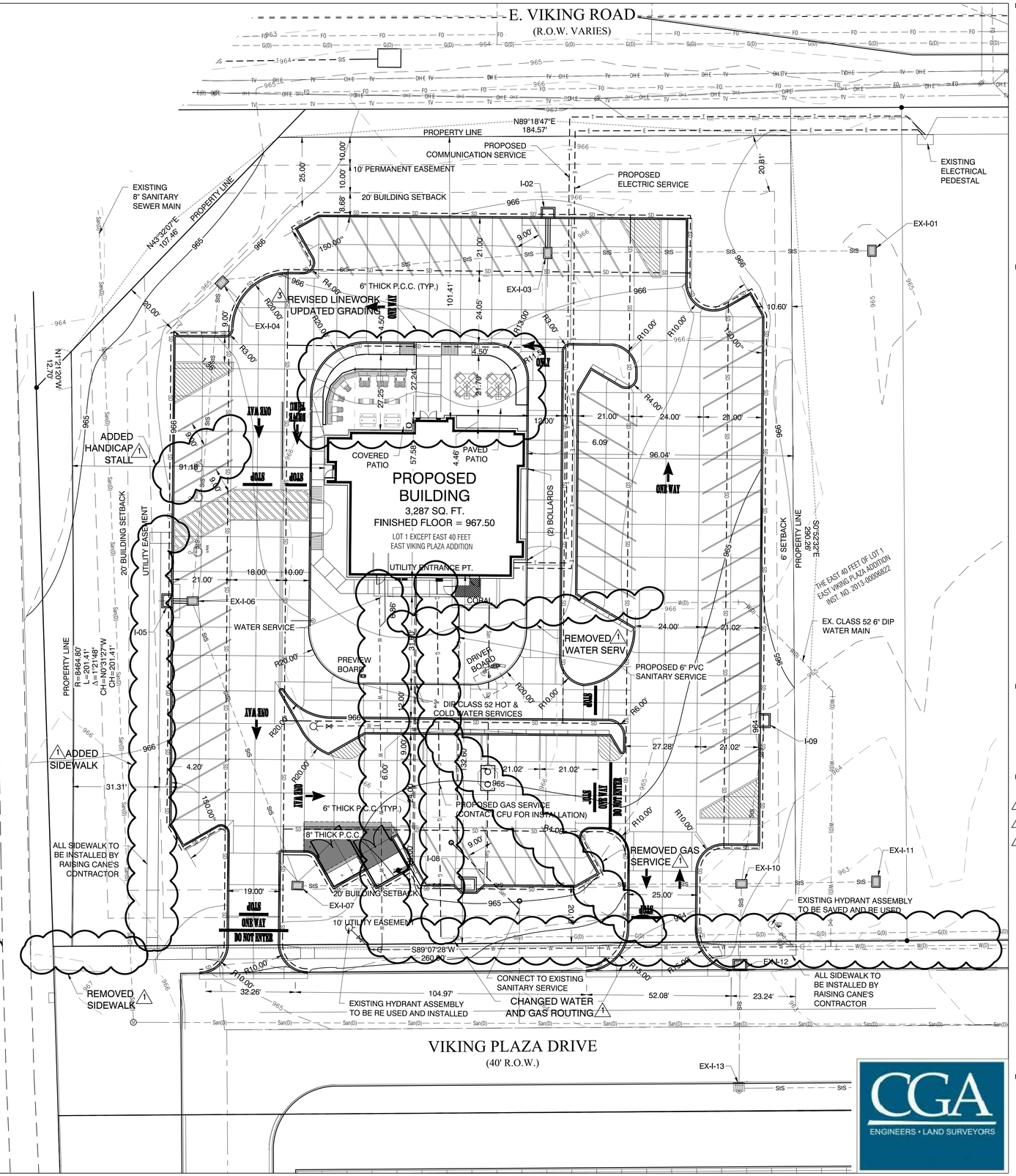
SITE NOTES:
LOT AREA = 1.67 ACRES
BUILDABLE AREA = 1.30 ACRES
PARKING COUNT = 63 STALLS
3 PARKING STALL COUNT CHANGED



DUMPSTER ENCLOSURE DETAIL
NOT TO SCALE

3 DUMPSTER AREA SHIFTED EAST WHICH ALSO ADJUSTED THICKENED PAVEMENT AREA.

EXISTING TRAIL TO BE REMOVED BY OTHERS



Raising Cane's Chicken Fingers
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

Store: **RAISING CANE'S OUTLOT 1**
Viking Plaza Dr.
Cedar Falls, IA 50613
Prototype 1 ERD
Store SHV 12

Professional of Record: DARYL ALBERTSON

DATE: 06-08-2018

Designer's Information:

Reed Design Architects
151 N 8TH STREET, SUITE 517
LINCOLN, NE 68508

Prototype Issue Date: -

Date Issued: June 8th, 2018

FOR PERMIT

Revisions:

1	7/13/2018	ADDENDUM #1
2	7/31/2018	ADDENDUM #2
3	8/22/2018	ADDENDUM #3

Sheet Title:
DESIGN COORDI
SITE PLA

Project Number:

Drawn By:

Sheet Number:
C0.0

CGA
ENGINEERS • LAND SURVEYORS

DEPARTMENT OF COMMUNITY DEVELOPMENT

City of Cedar Falls
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Cedar Falls, Iowa 50613
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MEMORANDUM

Planning & Community Services Division

TO: Planning & Zoning Commission

FROM: Shane Graham, Planner II

Updates and recommendations provided by Karen Howard, Planning & Community Services Manager

DATE: October 18, 2018

SUBJECT: Fleet Farm Retail and Convenience Store Site Plan Review

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REQUEST: Site plan approval for a new Fleet Farm retail store and convenience store.

PETITIONER: Midland Atlantic Development Company, LLC, Buyer; Bayer Becker, Engineer

LOCATION: Southwest corner of Highway 58 and West Ridgeway Avenue

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PROPOSAL

The applicant, Midland Atlantic Development Company, proposes to construct a new 257,000 square foot Fleet Farm retail store with yard area, along with a new Fleet Farm convenience store on approximately 49 acres of land located at the southwest corner of Highway 58 and W Ridgeway Avenue. Three future retail buildings totaling 55,000 square feet are also shown on the site plan just to the north of the retail building, but are not part of this site plan review request. Also, the overall development plan shows additional buildable area along the east side of the property, which is not part of this site plan review and will need to come back before the Planning & Zoning Commission in the future for approval.

Proposed Development Site

BACKGROUND
The applicant has an agreement to purchase the property, and is currently requesting to rezone it from Agricultural to Commercial in order to develop it into the intended commercial use. This report will focus on the Fleet Farm retail store and convenience store only, along with the site development elements of this project.

ANALYSIS
Please note that for purposes of this analysis, staff is assuming that the property is zoned HWY-1, Highway Commercial District. The City Council approved the first reading of a conditional rezoning of this property from A-1 Agricultural to HWY-1 Highway Commercial on October 1, 2018, and the third and final reading of the rezoning ordinance is scheduled to be presented to City Council on November 5, 2018. As you may recall, the rezoning is subject to certain conditions that are included in a conditional zoning agreement, as summarized below:

1. All street, intersection, traffic control improvements and any additional right-of-way necessary to provide for safe and efficient traffic control and circulation to serve the long term needs of the subject development at full build out of the Property without causing undue traffic circulation and congestion problems along the adjacent public street corridors must be dedicated, constructed, and accepted prior to issuance of an occupancy permit for any portion of development on the Property. Further, these improvements shall be specified and delineated in a developmental agreement between the Applicant or the then-owner of the property and the City prior to approval of the first site plan for development of the property;
2. The area shown as “Future R/W (right-of-way)” on the concept site plan shall remain as open space and shall not be developed with any structures, fences, buildings, hard surfacing, driveways or sidewalks;
3. If and when the property to the west ever redevelops with commercial uses, a 20-foot wide cross-access drive shall be constructed by the property owner at their expense within a 30-foot wide cross-access easement that will be established at the time of site plan approval. The exact location of the easement will be determined with the site plan;
4. A 5-foot wide sidewalk shall be installed along the entire frontage of the property along W. Ridgeway Avenue. The City will work with the developer to determine the best location for the easternmost sidewalk segment to avoid the wetland and provide for safe pedestrian access to the corner of Ridgeway and Hwy 58. The installation of the sidewalk shall be completed prior to issuance of an occupancy permit for the first building constructed on the development site;
5. Sidewalks shall be installed throughout the interior of the development site to provide a continuous sidewalk network between all the commercial buildings on the site. A sidewalk network plan shall be required at the time of site plan review.

The HWY-1 district is intended to promote general service commercial uses intended to serve a broader market area (i.e. city-wide or regional customer base). The property is also located within the Highway 20 Overlay Zoning District, which provides enhanced development guidelines for commercial uses located within this corridor. The ordinance requires detailed site plan review prior to approval in order to ensure that the development site satisfies a number of

basic aesthetic standards. Attention to details such as parking, open green space, landscaping, signage, building design and other similar factors help to ensure orderly development in the entire area. Following is a review of the zoning ordinance requirements:

1) Use: A big box retail store and convenience store can have a regional customer base, thus fitting within the permitted uses of the HWY-1 District. Such a use is also allowed within the Highway 20 Overlay Zoning District. **Use is allowed.**

2) Setbacks: 20-ft. setbacks are required along the edge of the district and along any internal streets/principal access ways. These areas must be landscaped. Open space and landscaping is shown on the plan within these areas. Both the retail store and convenience store meet the setback requirements. **Building setbacks are satisfied.**

3) Parking/Access:

a. ***Parking*** - For retail stores over 2,000 square feet in size, it is required to provide 4.5 parking spaces for each 1,000 square feet of gross floor area. A convenience store is required to provide 1 parking space for every 100 square feet of retail floor space. Based on the gross floor area, the big box retail store will be required to provide 750 parking spaces, and the convenience store will be required to provide 24 parking spaces, for a total of 774 spaces. 1,096 parking spaces are shown on the submitted site plan, which far exceeds the requirements for the buildings included with this site plan review. The additional parking spaces are being constructed in anticipation of providing for the additional parking needs of the future retail buildings and other buildable areas on the site, which are not being reviewed with this application.

b. ***Cross Access*** – One of the conditions in the conditional zoning agreement is that when the property to the west ever redevelops with commercial uses, a cross-access drive shall be constructed by the property owner at their expense within a 30-foot wide cross-access easement. The exact location of the easement is to be shown on the site plan. The site plan does show a 30-foot wide cross access easement located just to the north of the retail building, and this easement will need to be recorded at the time of site plan approval. This drive will not need to be constructed, unless and until the property to the west redevelops.

c. ***Reserved area for future improvements to the interchange of Highway 20 and Highway 58*** – *Another* condition in the conditional zoning agreement is that the site plan reserve an area for future right-of-way and that the area shall remain as open space and shall not be developed with any structures, fences, buildings, hard surfacing, driveways or sidewalks. This reserved open space is shown on the site plan, so this condition has been addressed. When the land is platted this area should be included as an outlot with the purpose clearly stated. If in the future the IDOT determines that this land is not needed for improvements to the highway interchange, development of the land for commercial purposes could be considered under the zoning standards in place at that time.

d. ***Street Access*** - The property currently has one farm access driveway off W Ridgeway Avenue. Although this property has frontage along both Highway 58 and US Highway 20, no access will be allowed from those frontages. The site plan shows

two new access points to the site: one across from Nordic Drive, and one across from a shared drive that serves two residential dwellings along the north side of W Ridgeway Avenue.

In order to determine the improvements to the public roadways necessary to support the development of this property, the City required the applicant to conduct a traffic study. The traffic study was originally submitted to the City on July 23, 2018, and a review of the study was completed by City staff and by City-hired peer review. It was determined that certain corrections needed to be made to the study to adequately address future traffic impacts, including assessment of a number of alternative options for access at the proposed main entrance and at Nordic Drive.

UPDATE: On October 1, 2018, the applicant submitted a revised traffic study to the City. City staff have reviewed the latest traffic study submitted by Bayer Becker, a copy of which is included in your packet. The study has also been peer reviewed by a traffic engineering consultant hired by the City. There is a memo from the City Engineer outlining the City's assessment of the traffic study and the City staff's recommended roadway improvements necessary to accommodate the traffic generated by the proposed development, while balancing the needs of adjacent property owners and businesses in the area. The developer's traffic engineer has also submitted a revised concept plan for the roadway improvements, which is included in your packet. However, the concept falls short of clearly illustrating the needed improvements and presents a confusing picture of the timing for these improvements. To clarify, staff's recommendation is outlined in the following paragraphs. A more detailed and accurate plan for the roadway improvements will be needed from the developer that is consistent with the development agreement approved by the City Council.

In general, Staff recommends that a roundabout be installed on Ridgeway Avenue at the intersection of Driveway #1 (main drive into the Midland development). Since Nordic Drive currently serves as the primary access for a considerable number of businesses, City staff finds that it is in the best interests of all parties to keep Nordic Drive full access by installing a traffic signal at the intersection of Nordic Drive and Ridgeway Avenue, which is opposite the proposed Midland Driveway #2. Additional improvements will also be necessary at the intersection of Ridgeway Avenue and Highway 58. The Iowa DOT is currently considering plans for improvements to this intersection, with a tentative timeline for construction by 2023. They are in the early planning stages, so details are not yet available. Due to physical constraints at this intersection, including the location of large culverts and wetlands in the ditches, the developer has proposed phasing the improvements. Staff finds that it is reasonable to phase the improvements as follows:

- Phase 1: Prior to issuance of an occupancy permit for the Fleet Farm store and the convenience store and gas station:
    - Construction of the roundabout at Driveway #1 (main drive)
    - Construction of a signalized intersection on Ridgeway at Nordic Drive/Driveway #2.

  - These improvements include sidewalks along Ridgeway to the intersection of Ridgeway and Nordic/Drive #2, with crosswalks at this intersection and at the roundabout.
  - Various additional turn lanes may be needed in the first phase as outlined in the City Engineer's memo. The timing of these improvements will need to be worked out in the development agreement between the City and the developer.

- Phase 2: Prior to any additional development on the Midland site, improvements necessary to support long term traffic needs generated by full build-out of this site must be constructed, including additional turn lanes in various locations and improvements to the intersection of Highway 58 and Ridgeway. Ideally these improvements would be constructed coincident with IDOT improvements at this intersection. Installation of the sidewalk segment between Drive #2 and the intersection of Ridgeway and Hwy 58 will need to be installed at this time in a safe location.

- Development Agreement: Details of the exact geometry of the roadway improvements, number and location of turn lanes, crosswalks and sidewalk locations have yet to be fully designed and agreed upon. As specified in the conditional zoning agreement, a development agreement that details the improvements, specifies timing of the improvements, responsibility for construction, and cost share between the City and the developer must be approved prior to site plan approval by the City Council.

- Concerns with future traffic circulation: As described in more detail by the City Engineer, the traffic study indicates that in the long term as the area builds out and traffic volumes increase, the traffic circulation in this area will deteriorate, particularly at peak times. Additional changes will likely be needed in the corridor in the future to address these situations. However, staff finds that the roadway improvements outlined above are the best option at this time to balance the interests of existing business and accommodate new development in the corridor.

- **The submitted plan for parking satisfies City requirements.**

- **The plan for cross access meets the requirements of the conditional zoning agreement, provided an easement is recorded.**

- **The submitted site plan does not show any development in the area required to be reserved for potential future IDOT improvements at the interchange of Hwy 20 and Hwy 58, so meets the requirement of the conditional zoning agreement.**

- **The plan for street access and associated roadway improvements has been reviewed. The staff recommendation regarding the public improvements necessary to support the proposed development is outlined above and in the City Engineer's attached memo. A development agreement will need to be drafted and approved by the City Council prior to approval of the site plan. Once**

these improvements are installed, staff finds that access can safely be provided to serve this development.

4) Open Green Space: This property is located within the Highway 20 Commercial Corridor Overlay Zoning District. This overlay district requires that open green space/landscape area be provided at the rate of 15% of the development site. Following is a summary from the landscape plan that details how this provision is met.

Development Site	36.56 Acres	
Required Open/Green Space	5.48 Acres	15%
Provided Open/Green Space	**12.11 Acres**	**33%**

Landscaping is shown throughout the site, both around the buildings as well as within the parking lot and along the street frontages. A protected wetland is located along the frontage of the property along both Ridgeway and along Highway 58. Some disturbance of the wetland area will be necessary to provide access to the site and these wetland impacts will have to be mitigated. The applicant has indicated that they plan to purchase wetland bank credits to satisfy U.S. Army Corp of Engineers mitigation requirements. The applicant has received approval of a permit based on their mitigation plan. However, if additional disturbance of the wetlands is necessary due to recommended roadway improvements, it may be necessary to seek additional federal approvals.

The open green space exceeds the minimum requirement and is well distributed.

5) Landscaping: The Highway 20 Commercial Corridor Overlay Zoning District requires landscaping at the rate of 0.02 points per sq. ft. of total development site area. Following are the requirements for the retail and convenience store sites and what is proposed.

Description	*Required*	*Proposed*
Development Lot 1,592,554 * .02	27,076 pts.	38,295 pts.
Parking lot trees *1,096/15 = 73 trees @ 80 pts.*	5,840 pts.	15,580 pts.
Street Tree Planting (.75 points per linear foot)	2,784 pts.	2,880 pts.
	35,700 pts	56,755 pts

As detailed in the table, trees are required in the vehicular use area at the rate of one tree per 15 parking spaces. With a total buildout of 1,096 parking spaces, 73 trees would be required. The landscape plan shows a total of 79 trees, which would meet the requirement.

In addition to parking lot trees, there are trees and shrubs located along the perimeter of the parking areas, as well as trees located along the street frontages. In total, there will be 319 overstory trees, 27 understory trees, 195 evergreen trees and over 500 shrubs planted on the site. **Landscaping requirements are met.**

6) Sidewalks/Recreational Accommodations:

UPDATE: Public sidewalks - Whenever a new development is proposed, City Code requires the developer to install a sidewalk along the entire street frontage of the property. On this particular property, there is no sidewalk currently located along W Ridgeway Avenue. However, there is a recreational trail located along the north side of W. Ridgeway Avenue at Nordic Drive, and along the south side of W Ridgeway Avenue east of Highway 58. Adding a sidewalk section in front of this development will connect the two trail networks, which in turn benefits the community as a whole.

There are some challenges to installing the sidewalk along the entire street frontage, as there is a drainageway and wetland in the ditch located along W Ridgeway Avenue. It is the responsibility of the developer to determine how best to provide a sidewalk in this location. As noted in the "street access" section above and in their latest concept drawings, the developer is proposing to install the sidewalk along the south side of Ridgeway with a 10-foot landscaped parkway between the sidewalk and the curb to buffer the pedestrian/bicyclists from the arterial street traffic, as recommended by City staff. If additional right-of-way is needed to accommodate the sidewalk and the 10-foot parkway, it will need to be dedicated to the City. It may be reasonable to allow the construction of the easternmost segment between Drive #2 and the intersection of Highway 58 to be installed coincident with IDOT improvements at the intersection of Highway 58 and Ridgeway tentatively planned for 2023. In case the IDOT does not move forward with these improvements in a timely manner, the development agreement between the City and the developer needs to specify a trigger deadline for installation of the sidewalk and other improvements to the Ridgeway/58 intersection necessary to support the proposed development. The developer will be responsible for the cost of construction of the sidewalk and any wetland permits needed to provide this connection. The City is open to other options for location of this sidewalk connection, provided it is designed to provide a safe route across Highway 58 to connect with the regional trail east of the intersection.

Sidewalk connections on the private development site - Since this large property includes a number of separate buildings sites with the drives providing circulation similar to a street network, one of the conditions of the rezoning is that sidewalks be installed throughout the interior of the development site to provide a continuous sidewalk network between all the commercial buildings on the site. Five-foot wide sidewalks are shown throughout the interior of the site to provide pedestrian connections to each of the buildings and future outlots on the site. This will allow customers to park once and walk safely between multiple businesses during their visit. One minor correction to the sidewalk network plan is noted: a future sidewalk segment should be illustrated along the areas labeled future outlots on the site plan. These segments will not have to be constructed until those areas are developed.

Interior sidewalk plan is acceptable, provided a future sidewalk section is illustrated along the future outlots. Staff recommends that a sidewalk be installed along the entire frontage of the development site along Ridgeway Avenue to its intersection with Highway 58. A minimum 10-foot landscaped parkway should be provided between the sidewalk and the street curb. If any additional ROW is needed to accommodate these improvements, it must be dedicated to the City. The timing of the installation of the sidewalk and other roadway improvements will be detailed in

a development agreement approved by the City Council prior to approval of the site plan.

7) Building Design: The HWY-1, Highway Commercial District, states that all structures established within the district shall be reviewed for architectural compatibility with surrounding structures. Below is a review on the elements that are to be addressed.

Proportion: The relationship between the width and height of the front elevations of adjacent buildings shall be considered in the construction or alteration of a building; the relationship of width to height of windows and doors of adjacent buildings shall be considered in the construction or alteration of a building.

The scale and proportion of the new retail building and convenience store will be similar to the existing businesses located nearby. There are several hotels nearby with heights varying between two and four stories, with several commercial and industrial buildings in the area that are one story in height. Both the retail store and convenience store will be one story in height. The size of the retail store (185,000 square feet) is larger than most buildings in this area, however because it is on a very large site, the size would not appear to be out of character for the area.

Roof shape, pitch, and direction: The similarity or compatibility of the shape, pitch, and direction of roofs in the immediate area shall be considered in the construction or alteration of a building.

The design of the both the retail store and convenience store incorporates a flat roof with a parapet wall. The Kwik Star convenience store directly to the north utilizes a similar roof design, while the nearby hotels use a gable roof design. Nearby industrial buildings located within the industrial park utilize a similar flat roof design as well, so this roof design will not be out of character with the area.

Pattern: Alternating solids and openings (wall to windows and doors) in the front facade and sides and rear of a building create a rhythm observable to viewers. This pattern of solids and openings shall be considered in the construction or alteration of a building.

The retail building was designed with textured precast concrete panels in two different tones of gray and with different patterns etched into them to provide some visual interest to the long building walls. This pattern carries through the entirety of the building. The convenience store was similarly designed with the textured concrete precast panels in the two different tones of gray, in order to give it a similar look to the large retail building. The primary façade of the big box store has alternating pattern of window and main entrance features that provide views and openings into the building. These are alternated with the precast concrete panels, separate modules of phenolic panels, some with an aged cedar wood appearance and some in Fleet Farm Orange. Decorative

metal awnings also help to visually break up the long facades. The rear and sides of the store will feature mainly the precast concrete panels, along with several overhead doors and service doors. The south side of the building will also feature an auto repair area. There are no façade variations along the rear and sides of the building, however these areas will not be highly visible to neighboring properties to the west because of a large landscaped berm that will be located along the western property line, or the public right-of-way to the south due to the location of future retail buildings and the large amount of trees that will remain along the drainage way at the north end of the property.

The primary façade of the convenience store faces west into the development site and has an alternating pattern of windows, two types of textured precast concrete panels, and Fleet Farm Orange phenolic panels. These features provide a visually pleasing main entrance into the building. The other sides of the building do not have windows due to the location of the attached car wash and the large cooler areas within the convenience store. These facades are patterned with the two types of textured precast concrete panels, in addition to the Fleet Farm Orange phenolic paneling which rises above the main roof line to give the building a more varied roofline.

UPDATE: As noted during the last Planning and Zoning Commission meeting, staff is concerned that the street-facing facades of the convenience store are largely blank facades with no window openings. This does not make for a very attractive feature at the corner of this development at a major entranceway into the community. The Commission also expressed this concern. The architect for the development has submitted new elevation drawings (attached) showing a metal trellis/canopy structure installed over the doorways along the façade that faces Ridgeway Avenue. Staff finds that this is an acceptable solution to enhance the façade. Extensive landscaping a setback area located along the Highway 58 frontage will screen and soften the view of the east-facing façade.

Materials and texture: The similarity or compatibility of existing materials and textures on the exterior walls and roofs of buildings in the immediate area shall be considered in the construction or alteration of a building. A building or alteration shall be considered compatible if the materials and texture used are appropriate in the context of other buildings in the immediate area.

Textured precast concrete panels in several different gray tones, phenolic panels in Fleet Farm Orange and aged cedar wood, perforated metal paneling and glass are the exterior materials that will be found on both the retail store and convenience store.

The front of the retail store will feature the two tones of textured concrete precast panels, as well as a white metal perforated panel with the company's name and logo located above the main entrance. Phenolic panels in an aged cedar wood color will be installed just to the south of the main entrance to give it a more modern look and feel. Also, at the northeast corner of the building will be Fleet Farm Orange phenolic paneling that that wraps around the corner of the building and will feature the company logo. The retail store will also feature a yard area at the south end of the building, which will be surrounding by a 16' tall wood fence at the south side and an 8' tall metal/slatted chain link fence on the east and west sides. Staff notes that the wood fence should be stained or painted to provide a more finished look visible from Highway 20 and to prevent deterioration. The south side of the store will feature an auto repair area, so several large overhead doors will be located on this side.

The convenience store will also feature the two tones of textured precast concrete panels, as well as the Fleet Farm Orange phenolic paneling located along portions of all four sides of the building.

Color: The similarity or compatibility of existing colors of exterior walls and roofs of buildings in the area shall be considered in the construction or alteration of a building.

Many of the existing buildings in this area utilize a neutral color exterior, which include brown, tan, and cream. Some buildings also utilize red or gray tones as well. The retail store and convenience store will include two shades of gray in the textured precast concrete panels, with areas of the signature Fleet Farm Orange highlighted on several areas of the buildings. Staff feels that the amount of the orange that is incorporated into the two buildings does not take away from the overall look of the development and provides additional visual interest to the facades.

Architectural features: Architectural features, including but not limited to, cornices, entablatures, doors, windows, shutters, and fanlights, prevailing in the immediate area, shall be considered in the construction or alteration of a building. It is not intended that the details of existing buildings be duplicated precisely, but those features should be regarded as suggestive of the extent, nature, and scale of details that would be appropriate on new buildings or alterations.

Architectural features of the retail store include two large curtain walls of windows on the front of the building, along with the raised perforated metal panel located above the main entrance. The convenience store will have typical storefront windows located on the west-facing façade and as noted above will include a metal canopy/trellis structure extending over the doorways along the north façade facing toward Ridgeway Avenue. The design

incorporates the Fleet Farm Orange phenolic panels to provide contrast from the gray textured concrete precast panels.

Overall, the design of the retail store and convenience store is architecturally compatible with other buildings in the surrounding area.

8) Trash Dumpster Site: A trash compactor will be located within the Fleet Farm building near the truck loading docks at the southwest corner of the building. Also, a trash dumpster enclosure is located at the north end of the convenience store parking lot. This enclosure will be constructed with textured precast concrete, with a color matching gate. The color of the enclosure will match the color of the convenience store building. **Dumpster enclosure plan is acceptable.**

9) Lighting Plan: The HWY-1 District regulations do not have specific lighting design guidelines. The site plan shows the location of light poles and all wall lights throughout the site. The parking lot lights will be mounted atop 38' tall light poles and will include a single head fixture. These fixtures will be housed in a die-cast aluminum housing with LED lights. Also, wall mounted lights will be located on the walls of the building in various locations, and surface mounted downlights will be located under the petroleum canopy. **Lighting plan is acceptable.**

LED Parking Lot Fixture

10) Signage: Three (3) monument signs are illustrated on the site plan in different locations on the property. The main sign (as shown to the right), located near the south end of the property along U.S. Highway 20, will be 25 feet in height and 200 square feet in area. The sign will sit on a stone veneer base that matches the color of the building. Below the sign lettering will be an LED reader board for messaging.

Two smaller 15' tall signs will be located near the corner of Highway 58 and W Ridgeway Avenue and near the eastern entrance to the property along W Ridgeway Avenue. One of the signs will be 150 square feet in area and the other will be 118.6 square feet in area. These signs will also have a stone veneer base that matches the color of the building, but will not have an LED reader board.

It should be noted that the property is located within the Highway 20 Commercial Corridor Overlay Zoning District. The signage requirements in this district state that one freestanding sign may be allowed that does not exceed 25 feet in height and 200 square feet in area. The main monument sign would meet those requirements. The ordinance goes on to state that smaller monument signs, measuring no more than 15 feet in height

and 150 square feet in area, are permitted, with a maximum of two such signs per parcel. The two additional signs on the property would meet these requirements as well.

The proposed wall signs appear to be well within the District limitations of no larger than 20% of the wall area to which the wall sign is attached. However, this will be reviewed in detail at the time a sign permit is requested. **Signage plan is acceptable, subject to detailed review with a sign permit.**

11) Storm Water Management: A total of three (3) storm water detention basins will be located on the property to collect the storm water runoff from the site. Basin #1 as shown on the plan will be located within the main parking lot area, east of the future retail buildings. This basin will collect water from a majority of the development site. The water from this basin will be released at a controlled rate via a pipe into Basin #2. Basin #2 as shown on the plan will be located just west of the convenience store and north of the main parking lot. This basin will collect water from the convenience store, and also the water from Basin #1. The water will then be released at a controlled rate into the drainage way and wetland located along the north side of the property along W Ridgeway Avenue. Basin #3 as shown on the plan will collect water from the remaining southern half of the development. The water will then be released at a controlled rate into the drainage ditch to the east along Highway 58. **The Engineering Department has reviewed the stormwater management plan and finds it acceptable. Note that stormwater facility easements will need to legally described and recorded.**

TECHNICAL COMMENTS

Since the property has not been platted, all easements shown on the site plan will need to be legally described and recorded prior to issuance of a building permit. In addition, any additional ROW along the boundaries of the development site that is necessary to accommodate the agreed upon roadway and sidewalk improvements must be dedicated to the City prior to issuance of a building permit.

Several technical comments were made by Cedar Falls Utilities staff regarding utility locations, and the Engineering Division has made technical comments regarding sanitary sewer and storm water facilities. These comments were sent to the developer to be addressed. A revised site plan showing any required corrections as noted by City and CFU staff must be submitted prior to approval by the City Council.

A more detailed drawing of the agreed upon public roadway improvements consistent with the development agreement will be required prior to approval of the site plan by the City Council.

Water, electric, gas, and communications utility services are available to the site in accordance with the service policies of Cedar Falls Utilities. The property owner/contractor is responsible to extend all utility services to the building. These utility extensions will be reviewed by CFU personnel as part of the building plan review.

STAFF RECOMMENDATION

The Community Development Department has reviewed the plan and recommends approval, subject to technical corrections to the plan as noted above and subject to approval of a development agreement that details the public improvements necessary along adjacent public roadways to safely and efficiently accommodate the traffic generated by the proposed

development at full build out and outlining the timeline and responsibility for construction of these improvements. In general these improvements include construction of a roundabout on Ridgeway Avenue at the intersection of Development Drive #1, construction of a signalized intersection at the intersection of Ridgeway Avenue and Development Drive #2/Nordic Drive, and additional turn lanes and improvements noted at the Intersection of Highway 58 and Ridgeway Avenue, a public sidewalk constructed along the entire frontage of the property along Ridgeway Avenue with a 10-foot landscaped parkway and all associated crosswalks and pedestrian signals necessary to provide for safe pedestrian and bicycle movement through and across these intersections. Dedication of necessary ROW and cost share for these improvements will also be detailed in the development agreement.

PLANNING & ZONING COMMISSION

Discussion 10/10/2018

Chair Oberle introduced the item and Mr. Graham provided background information. He explained that the property is located at the southwest corner of Highway 58 and West Ridgeway Avenue and was brought before the Commission for rezoning recently. He also showed renderings of the proposed site that included the layout of the proposed buildings, parking, wetland and detention basins, etc. Mr. Graham provided another drawing that showed the full property buildout, as well as aerial photos of the area. He discussed the landscaping plan, open space, signage plan and stormwater management plan requirements, noting that they have all been met. The proposed building design and materials were presented, as well as the conditional zoning agreement items that have not yet been provided.

The Developer has proposed public roadway improvements along W Ridgeway Avenue that may impact the surrounding area, so a public informational meeting was held Monday, October 8 with surrounding property owners and the applicant and city staff to discuss the proposed roadway improvements. Mr. Graham indicated that the proposed improvements shown by the developer on the site plan may not be the final design, as the City is still reviewing the traffic impact study. Final design of the roadway should be complete by the next P&Z Commission meeting on October 24th. Nicole Chimento of Midland Atlantic (developer) spoke to the changes and the feedback received from the public information meeting, provided background on Fleet Farm, and gave introductions to the team working on the project.

Mr. Holst asked about the design changes to the side of the convenience store that faces Ridgeway Avenue. Jennifer Buck with RSB Architects stated that they are looking at adding some articulation to the façade that will tie into the main store to add depth and character to that side.

Ms. Saul asked what is preventing the sidewalk from being moved further south. Mr. Graham explained that there is a ditch that deters it but that there is discussion of other options for the sidewalk. Ms. Saul asked if there is a reason the sidewalk needs to extend so far. Mr. Graham noted that staff recommends that there be a sidewalk connection provided in this location to tie into trail located east of the intersection of Ridgeway and Highway 58. Ms. Howard also noted that the area is transitioning from a rural area with agricultural use and ditches along the roadway to urban development where street and sidewalk improvements are needed to support the development. Mr. Arntson noted his

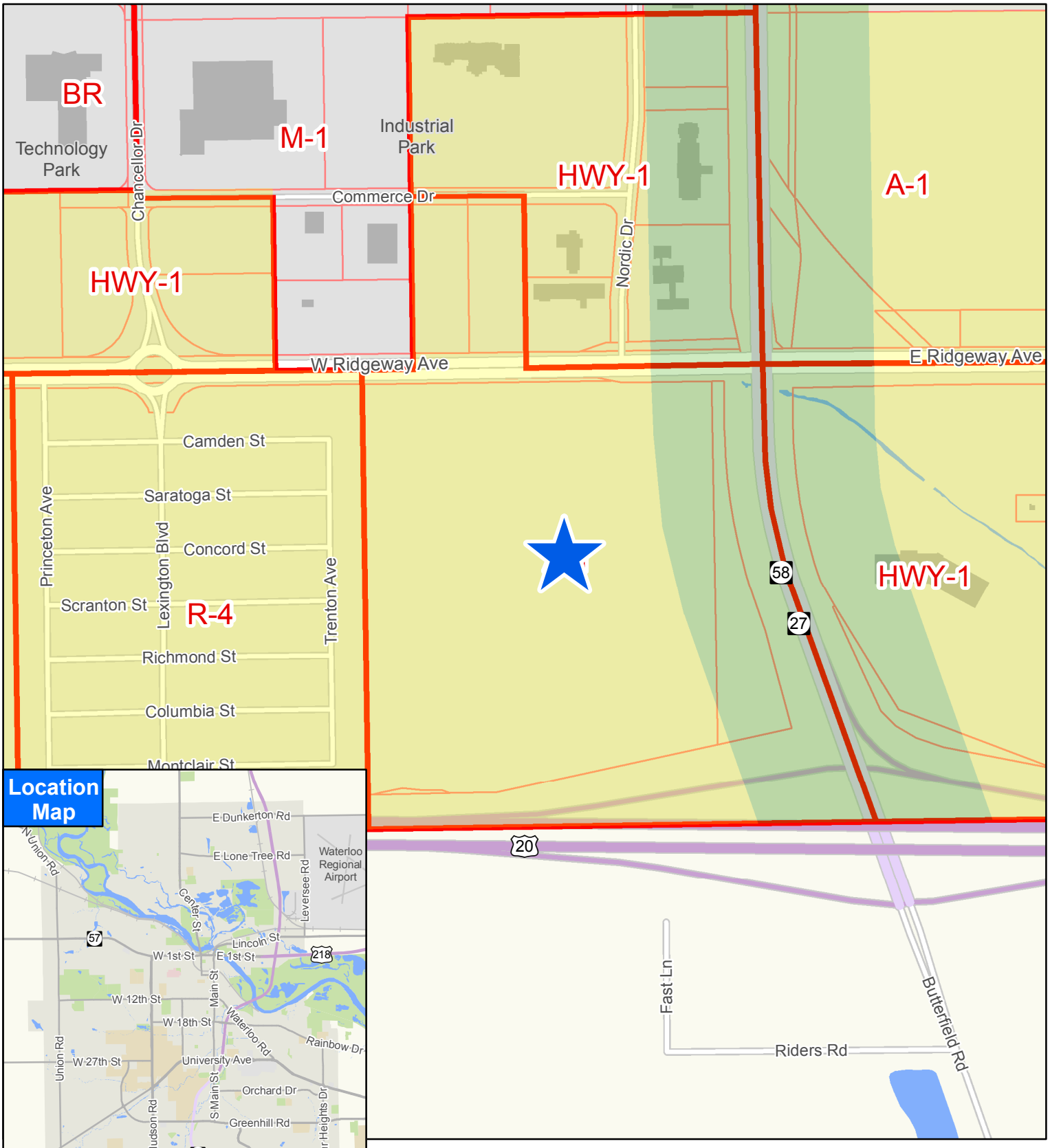
concern with pedestrian and bicycle safety and the importance of providing connections to the community's trail network.

Mr. Holst reiterated his concern with the design of the site as an entranceway to the City. Ms. Saul stated that she likes the additional landscaping that has been added. Mr. Hartley asked if the gas station will be geared toward automobiles or if it will be a truck stop. The developer responded that it will not be a truck stop.

Mr. Arntson asked about the phasing plan and what order the work will be done. Mr. Graham stated that there is still discussion as to whether the construction of the roadway can be phased or not. The retail store and convenience store are the buildings that are being proposed at this time as the first phase.

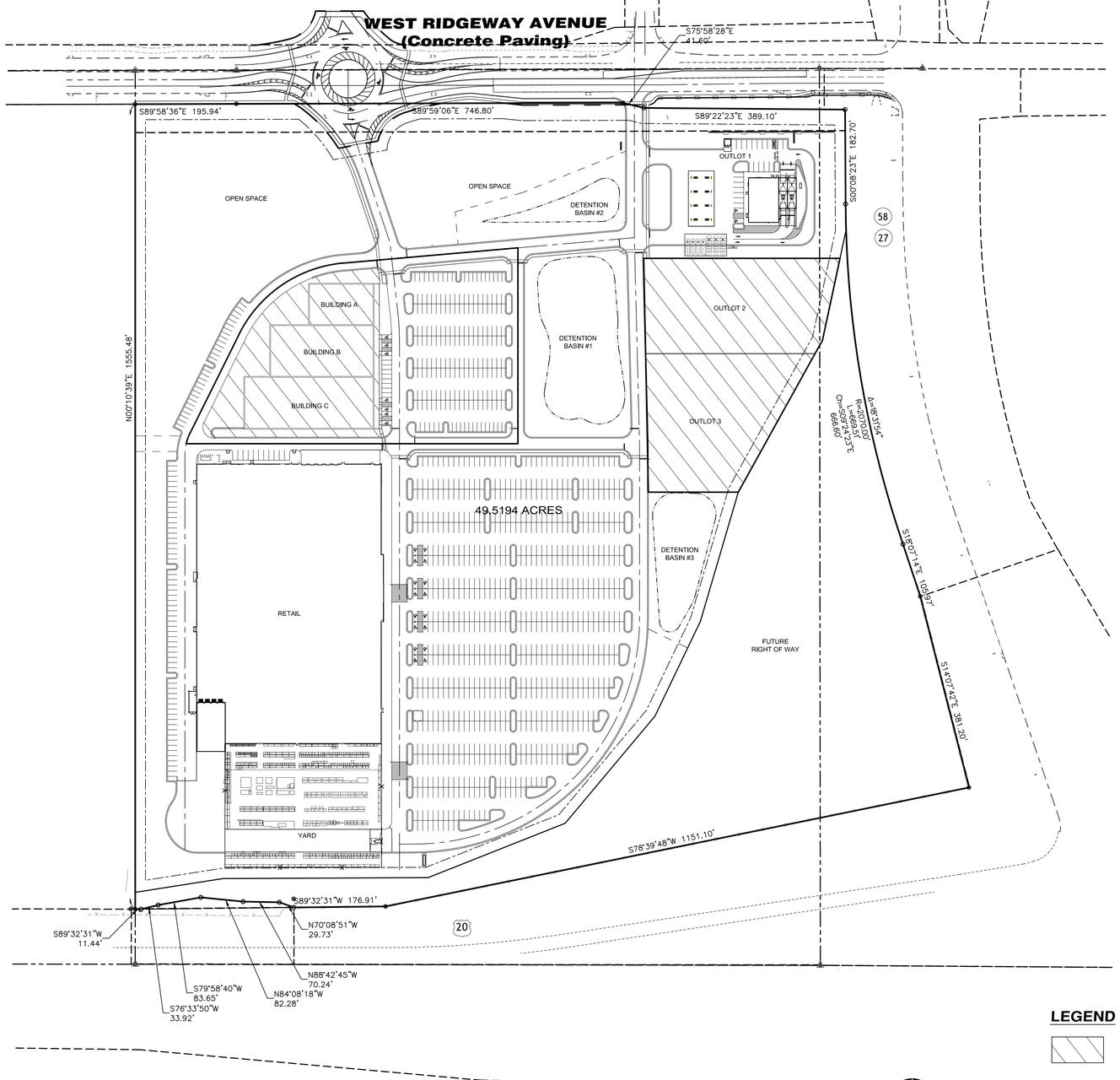
Vote
10/24/2018

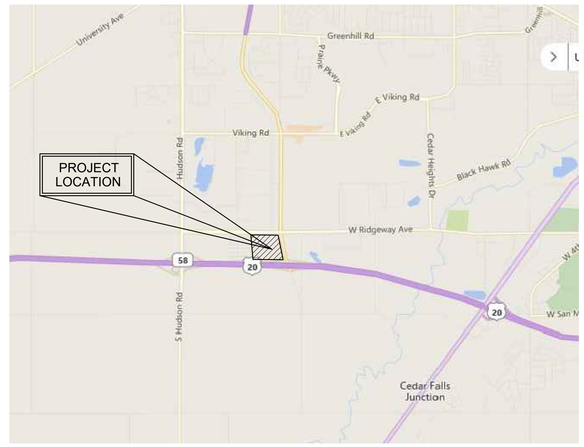
Cedar Falls Planning & Zoning Commission
October 10, 2018



Fleet Farm Retail and Convenience Store
Hwy-1 Site Plan Review

HENRY PROPERTY
BLACK HAWK COUNTY
CEDAR FALLS, IOWA 50613
REVISED SEPTEMBER 28, 2018





VICINITY MAP
NOT TO SCALE

OWNER
FLEET FARM
1300 S. LYNNDALE DRIVE
APPLETON, WI 54914
920-997-1436

DEVELOPER
MIDLAND ATLANTIC PROPERTIES
8044 MONTGOMERY RD, SUITE 370
CINCINNATI, OH 45236
513-792-5000

LAND PLANNER/ ENGINEER/ LANDSCAPE ARCHITECT
BAYER BECKER, INC.
6900 TYLERSVILLE ROAD, SUITE A
MASON, OH 45040
513-336-6600

SURVEYOR
VJ ENGINEERING
1501 TECHNOLOGY PARKWAY, SUITE 100
CEDAR FALLS, IOWA 50613

ARCHITECT
RSP
1220 MARSHALL STREET N.E.
MINNEAPOLIS, MN 55413
612-677-7100

BENCHMARK
SANITARY MANHOLE
NORTHEAST SIDE OF PROPERTY
CORNER AND SOUTH OF WEST
RIDGEWAY AVENUE
T/RIM=913.99
12"(E&W)INV=900.15
12"(S)INV=901.25

UTILITIES CONTACTS:
ELECTRIC & TELEPHONE
CEDAR FALL UTILITIES
JOHN OSTERHAUS
(319) 268-5298

WATER & GAS
CEDAR FALL UTILITIES
JERALD LUKENSMEYER
(319) 266-1761

STORM & SANITARY SEWERS
CITY OF CEDAR FALLS
JON RESLER
220 CLAY ST.
CEDAR FALLS, IA 50613
(319) 268-5176

SITE SUMMARY
ZONING: HWY-1 WITH HWY-20 OVERLAY
HWY-1 WITH HCG OVERLAY (OUTLOT 1)

LOT ACREAGE:

DEVELOPMENT	36.563 ACRES
FUTURE OUTLOTS	3.051 ACRES
FUTURE R/W	9.905 ACRES
TOTAL	49.519 ACRES

OPEN SPACE ACREAGE: 12.107 ACRES
33.1% (DEVELOPMENT AREA)
24.4% (TOTAL AREA)

GROSS LEASABLE AREA: 240,000 S.F.
RETAIL GROSS LEASABLE AREA (GLA): 185,000 S.F.
FUTURE JUNIOR ANCHORS (JA) - BUILDINGS A,B,C - GLA: 55,000 S.F.

REQUIRED PARKING SPACES:
RETAIL PARKING: 832.5 (4.5 SPACES/1000 S.F. GLA)
TYPICAL PARKING DIMENSIONS - RETAIL: 10' X 20'

JA PARKING: 247.5 SPACES (4.5 SPACES/ 1000 S.F. GLA)
TYPICAL PARKING DIMENSIONS - JA: 9' X 19' (COMPACT 8' X 19')

PROVIDED PARKING SPACES:

RETAIL	
STANDARD	833 SPACES
ACCESSIBLE	16 SPACES
TOTAL	849 SPACES

OUTLOT 1 (FUEL CENTER)	
STANDARD	23 SPACES
ACCESSIBLE	2 SPACES
TOTAL	25 SPACES

JA (FUTURE DEVELOPMENT)	
STANDARD	240 SPACES
ACCESSIBLE	7 SPACES
TOTAL	247 SPACES

OVERALL SITE (RETAIL + JA)	
TOTAL PARKING	1,096 SPACES
RATIO	4.5 SPACES / 1000 S.F.

EMPLOYEES: APPROXIMATE 150 TO 200 EMPLOYEES

ENGINEER'S CERTIFICATION

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed professional engineer under the laws of the State of Iowa.

Date: 09/28/18

Gregory J Koch, P.E. Iowa License No. 18441
My license renewal date is December 31, 2018

Pages or sheet covered by this seal: C1.0, C2.0, C2.1, C3.0, C3.1, C4.0, C4.1, C4.2, C5.0, C5.1, C6.0, C6.1, C6.2, C7.0, AND C7.1.

LEGEND
FUTURE DEVELOPMENT

Basis of Bearing:
NAD 1983 (2011) IaRCS zone 5
0 100 150
SCALE: 1" = 100'

INDEX OF SHEETS

DRAWING NO.	DRAWING TITLE	ISSUE DATE	REVISION NO.	REVISION DATE
C1.0	TITLE SHEET	07-06-18	3	09-28-18
C2.0	EXISTING SITE CONDITIONS	07-06-18	3	09-28-18
C2.1	EXISTING SITE CONDITIONS	07-06-18	2	08-10-18
C3.0	DIMENSION SITE & PAVEMENT PLAN	07-06-18	3	09-28-18
C3.1	DIMENSION SITE & PAVEMENT PLAN	07-06-18	3	09-28-18
C4.0	UTILITY PLAN	07-06-18	3	09-28-18
C4.1	UTILITY PLAN	07-06-18	3	09-28-18
C4.2	UTILITY PROFILES	07-06-18	2	09-28-18
C5.0	GRADING PLAN	07-06-18	3	09-28-18
C5.1	GRADING PLAN	07-06-18	2	09-28-18
C6.0	EROSION & SEDIMENT CONTROL SITE PLAN	09-14-18		
C6.1	EROSION & SEDIMENT CONTROL SITE PLAN	09-14-18		
C6.2	SEDIMENTATION & EROSION CONTROL DETAILS	07-06-18	2	09-28-18
C7.0	SITE AND PAVEMENT DETAILS	07-06-18	2	09-28-18
C7.1	STORM SEWER DETAILS	07-06-18	2	09-28-18
C7.2	STORM AND SANITARY SEWER DETAILS	07-06-18	1	07-26-18
L1.0	OPEN SPACE EXHIBIT & OVERALL PLANTING PLAN	07-06-18	3	09-28-18
L1.1	PLANTING PLAN - NORTH	07-06-18	3	09-28-18
L1.2	PLANTING PLAN - SOUTH	07-06-18	3	09-28-18
L1.3	SEEDING & MULCHING PLAN	07-26-18	2	09-28-18
L2.0	PLANTING NOTES & DETAILS	07-06-18	1	07-26-18

Item	Revision Description	Date	Dwn:	Chk:
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	xx
2	REVISED PER STAFF COMMENTS	8-10-18	ATC	xx
3	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	9-28-18	GJK	

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA, 50613

TITLE SHEET

bauer

Drawing:
Drawn by: GJ
Checked By: JK
Issue Date: 9-28-18
Sheet: C1.0

Item 5.B.1

Plot time: Sep 28, 2018 - 11:35am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets

Item 5.B.

Item	Revision Description	Date	Dwn.	Chk.
1	REVISIONS PER CITY COMMENTS	7-26-18	G.K.	
2	REVISED PER STAFF COMMENTS	8-10-18	A.T.C.	
3	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	9-28-18	G.K.	

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

EXISTING SITE CONDITIONS & DEMOLITION PLAN

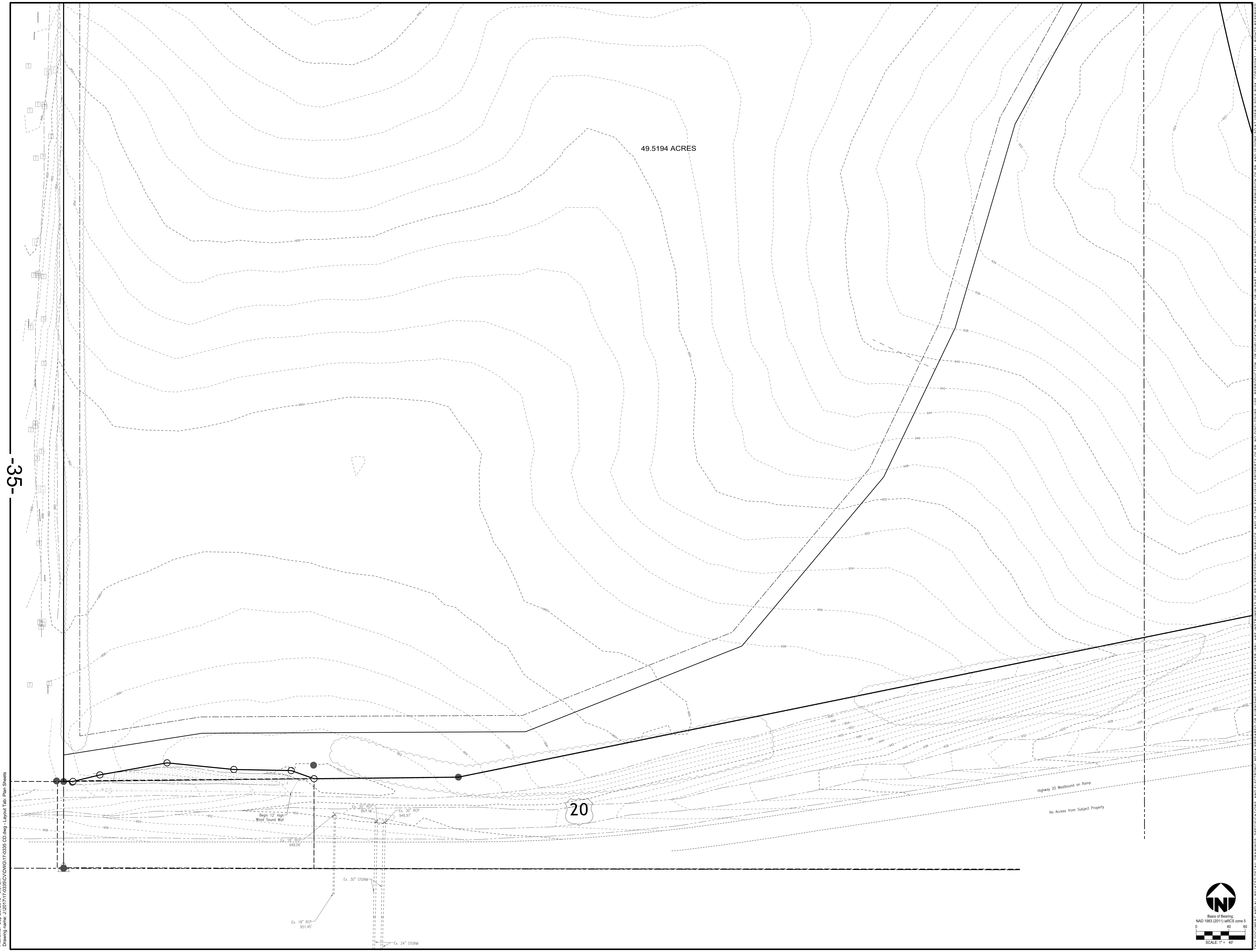
boyer becker
www.boyerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335.CD
Drawn by: GJK
Checked By:
Issue Date: 07-06-18
Sheet: **C2.0**

Basis of Bearings:
NAD 1983 (2011) IaRCS zone 5
0 40 80
SCALE: 1" = 80'

49.5194 ACRES

Plot time: Sep 28, 2018 - 11:35am
Drawing name: J:\2017\17-0335\CVD\WG\17-0335 CD.dwg - Layout Tab: Plan Sheets



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LICENSED PROFESSIONAL ENGINEER GREGORY KOCH 18441 IOWA 9/28/18

Item	Revision Description	Date	Drwn:	Chk:
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
2	REVISED PER STAFF COMMENTS	8-10-18	ATC	

HENRY PROPERTY

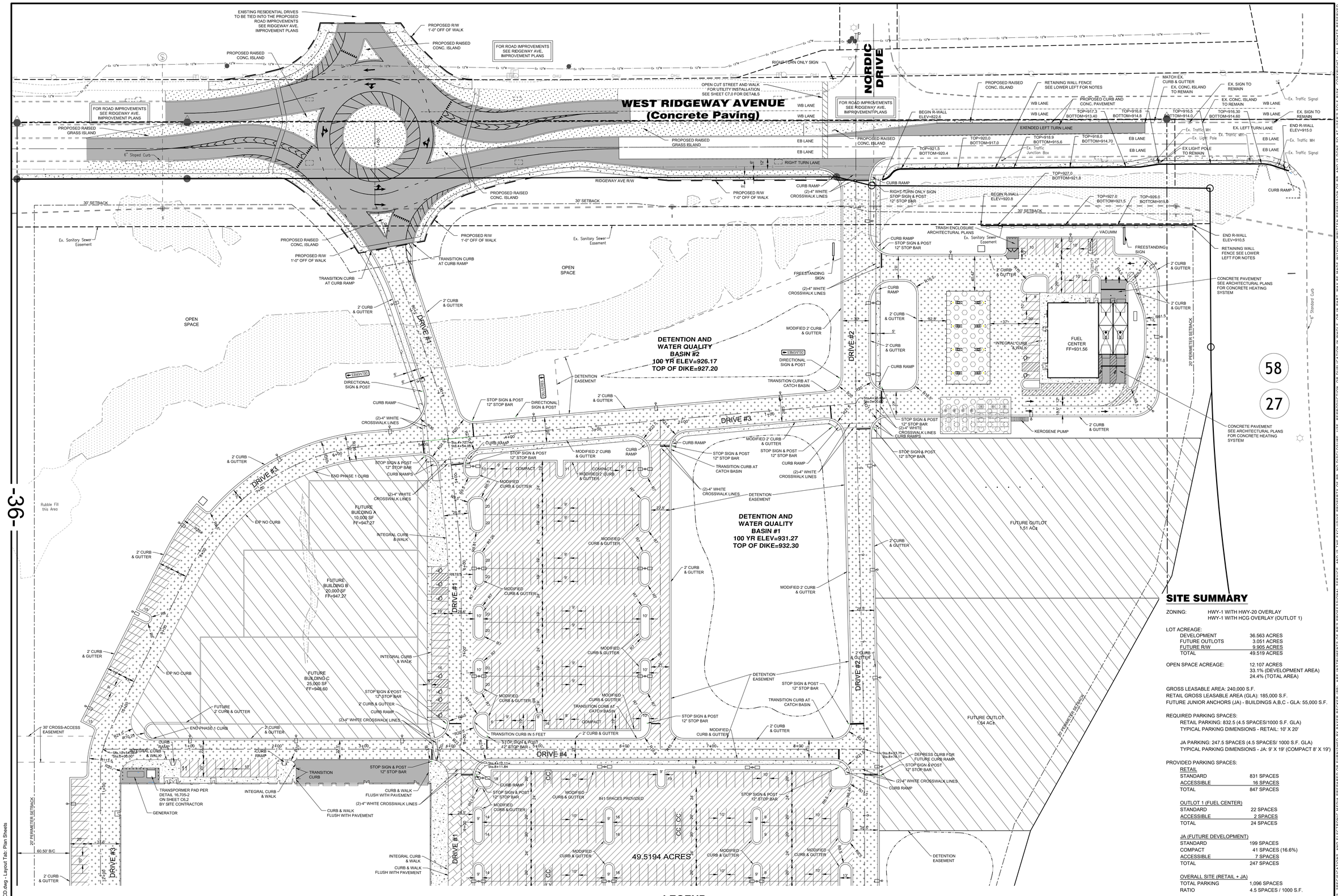
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

EXISTING SITE CONDITIONS

bauer

Item 5.B.

Drawing: CD
Drawn by: JK
Checked By:
Issue Date: -18
Sheet: C2.1



CONSTRUCTION DRIVE NOTE

1. CONSTRUCTION DRIVES MAY NEED TO BE ONE OF THE FOLLOWING:
   - 1.1. 12 INCHES OF CRUSHED STONE WITH GEOGRID.
   - 1.2. 24 INCHES OF CRUSHED STONE WITHOUT GEOGRID.

NOTES

1. ALL DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
2. ALL RADII ARE TO THE FACE OF CURB AND ARE 6.5' UNLESS OTHERWISE NOTED.
3. SEE ARCHITECTURAL PLANS FOR BUILDING FOUNDATION DIMENSIONS.
4. ACCESSIBLE PARKING SPACES SHALL HAVE STRIPING AND SIGNAGE MEETING ADAAG AND LOCAL REQUIREMENTS.
5. ALL SIGNS SHOWN ON THE PLAN IS APPROXIMATE. ALL SINGS SHALL BE KEPT OUT OF THE RIGHT OF WAY.

BULDING S.F.

BUILDING A	10,000 SF
BUILDING B	20,000SF
BUILDING C	25,000 SF
BUILDING D	185,000 SF
TOTAL	240,000 SF

LEGEND

- LIGHT DUTY ASPHALT PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT (30 YEAR)
- CC | CC — CART CORRAL
- CONCRETE WALK
- CONCRETE PAVEMENT
- CONCRETE PAVEMENT SEE FUEL CENTER PLAN
- FUTURE DEVELOPMENT TO BE REVIEWED AS PART OF A FUTURE SITE PLAN SUBMITTAL
- WETLAND
- FUTURE SIDEWALK BY OTHERS

SITE SUMMARY

ZONING: HWY-1 WITH HWY-20 OVERLAY
HWY-1 WITH HCG OVERLAY (OUTLOT 1)

LOT ACREAGE:

DEVELOPMENT	36.563 ACRES
FUTURE OUTLOTS	3.051 ACRES
FUTURE R/W	9.905 ACRES
TOTAL	49.519 ACRES

OPEN SPACE ACREAGE: 12.107 ACRES
33.1% (DEVELOPMENT AREA)
24.4% (TOTAL AREA)

GROSS LEASABLE AREA: 240,000 S.F.
RETAIL GROSS LEASABLE AREA (GLA): 185,000 S.F.
FUTURE JUNIOR ANCHORS (JA) - BUILDINGS A,B,C - GLA: 55,000 S.F.

REQUIRED PARKING SPACES:
RETAIL PARKING: 832.5 (4.5 SPACES/1000 S.F. GLA)
TYPICAL PARKING DIMENSIONS - RETAIL: 10' X 20'

JA PARKING: 247.5 SPACES (4.5 SPACES/ 1000 S.F. GLA)
TYPICAL PARKING DIMENSIONS - JA: 9' X 19' (COMPACT 8' X 19')

PROVIDED PARKING SPACES:

RETAIL	
STANDARD	831 SPACES
ACCESSIBLE	16 SPACES
TOTAL	847 SPACES

OUTLOT 1 (FUEL CENTER)	
STANDARD	22 SPACES
ACCESSIBLE	2 SPACES
TOTAL	24 SPACES

JA (FUTURE DEVELOPMENT)	
STANDARD	199 SPACES
COMPACT	41 SPACES (16.6%)
ACCESSIBLE	7 SPACES
TOTAL	247 SPACES

OVERALL SITE (RETAIL + JA)	
TOTAL PARKING	1,096 SPACES
RATIO	4.5 SPACES / 1000 S.F.

EMPLOYEES: APPROXIMATE 150 TO 200 EMPLOYEES

811 Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Basis of Bearing: NAD 1983 (2011) iaRCS zone 5
0 40 60
SCALE: 1" = 40'

Item	Revision Description	Date	Drwn:	Chk:
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
2	REVISED PER STAFF COMMENTS	8-10-18	ATC	
3	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	8-28-18	GJK	

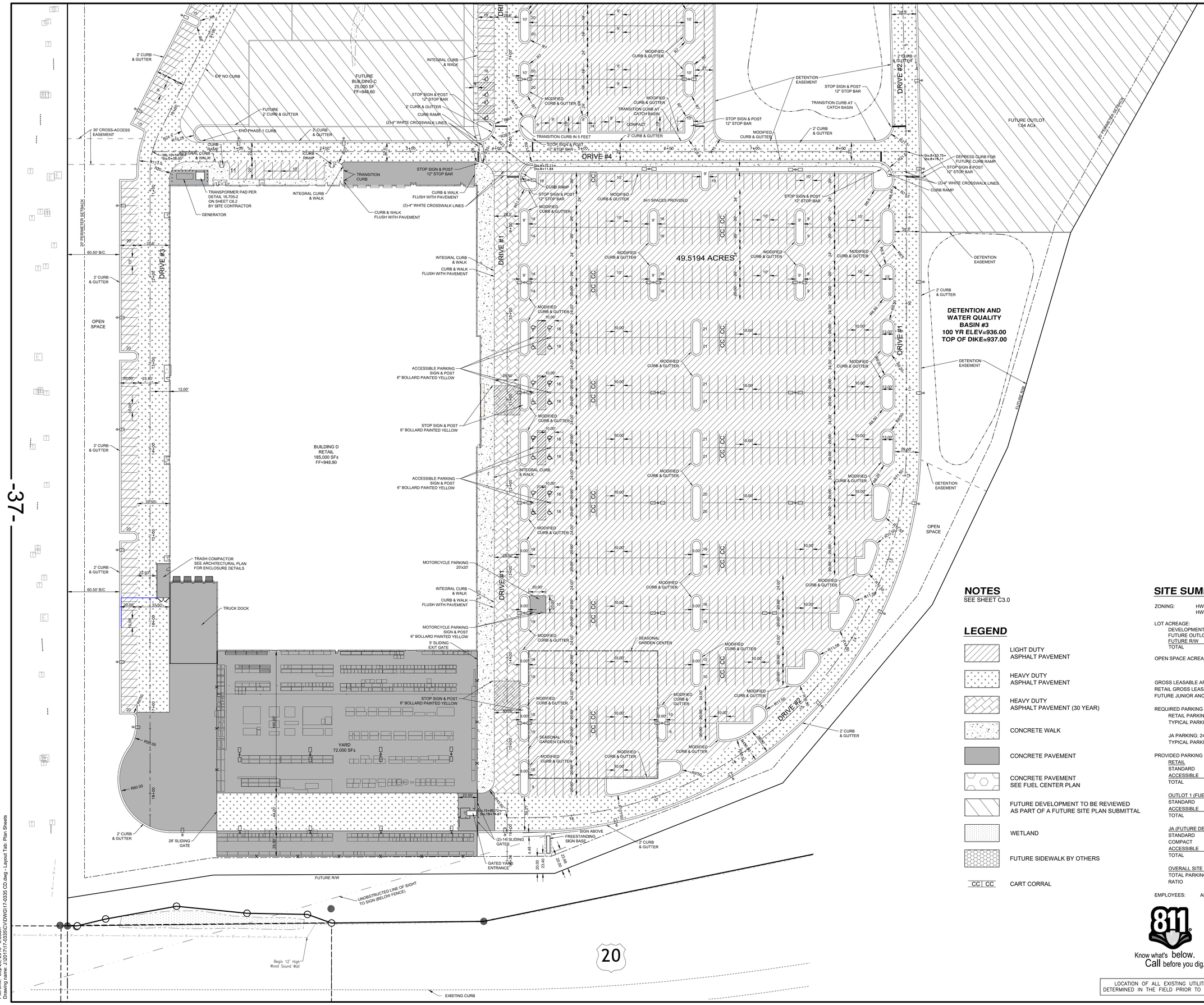
HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

DIMENSION SITE & PAVEMENT PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 CD
Drawn by: GJK
Checked By:
Issue Date: 07-06-18
Sheet: C3.0

Plot time: Sep 28, 2018 - 11:36am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets



NOTES

SEE SHEET C3.0

LEGEND

- LIGHT DUTY ASPHALT PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT (30 YEAR)
- CONCRETE WALK
- CONCRETE PAVEMENT
- CONCRETE PAVEMENT SEE FUEL CENTER PLAN
- FUTURE DEVELOPMENT TO BE REVIEWED AS PART OF A FUTURE SITE PLAN SUBMITTAL
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EMPLOYEES: APPROXIMATE 150 TO 200 EMPLOYEES

Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Basis of Bearing: NAD 1983 (2011) IaRCS zone 5

0 40 60

SCALE: 1" = 40'

LICENSED PROFESSIONAL ENGINEER
GREGORY J. KOCH
18441
IOWA
9/28/18

Item	Revision Description	Date	Drwn	Chk
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
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HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

DIMENSION SITE & PAVEMENT PLAN

bauer

Item 5.B.

Drawing:
Drawn by: CD
Checked By: JK
Issue Date: -18
Sheet: C3.1

Plot time: Sep 28, 2018 - 8:58am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets

Item	Revision Description	Date	Drwn:	Chk:
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
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3	REVISED PER CITY AND INTERNAL REVIEW COMMENTS	9-26-18	GJK	

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS, IOWA

UTILITY PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 CD
Drawn by: GJK
Checked By:
Issue Date: 07-06-18
Sheet: C4.0

UTILITY PIPE MATERIAL

1. SANITARY SEWER
   - 1.1. POLYVINYL CHLORIDE COMPOSITE PIPE (TRUSS TYPE PVC):
     - 1.1.1. COMPLY WITH ASTM D 2680. PIPE CONSTRUCTED WITH TRUSS-TYPE STRUCTURE BETWEEN INNER AND OUTER PVC WALLS WITH VOIDS FILLED WITH LIGHTWEIGHT CONCRETE.
     - 1.1.2. PIPE STIFFNESS PER ASTM D 2412, 200 PSI.
     - 1.1.3. PVC PLASTIC MEETING ASTM D 1784, CELL CLASSIFICATION 12454. DO NOT EXCEED 10 PARTS BY WEIGHT PER 100 OF PVC RESIN IN THE COMPOUND FOR ADDITIVES AND FILLERS, INCLUDING BUT NOT LIMITED TO STABILIZERS, ANTIOXIDANTS, LUBRICANTS, AND COLORANTS.
     - 1.1.4. INTEGRAL BELL AND SPIGOT JOINTS WITH ELASTOMERIC SEALS COMPLYING WITH ASTM D 3212 AND F 477.
2. WATER MAIN
   - 2.1. DUCTILE IRON, CLASS 52, AWWA C151.
3. STORM SEWER
   - 3.1. BE POLYVINYL CHLORIDE PIPE (PVC). USE PIPE COMPLYING WITH THE FOLLOWING:
     - 3.1.1. TYPES OF PVC PIPES:
       - 3.1.1.1. CORRUGATED EXTERIOR, SMOOTH INTERIOR, ASTM F 949.
         - 3.1.1.1.1. SOLID WALL, ASTM D 3034 OR ASTM F 679.
         - 3.1.1.1.2. CLOSED PROFILE, ASTM F 1803.
         - 3.1.1.1.3. COMPOSITE, ASTM D 2680.
       - 3.1.1.2. PVC PLASTIC MEETING ASTM D 1784, CELL CLASSIFICATION 12454.
       - 3.1.1.3. MINIMUM PIPE STIFFNESS OF 46 PSI.
       - 3.1.1.4. INTEGRAL BELL AND SPIGOT JOINTS WITH ELASTOMERIC SEALS ACCORDING TO ASTM D 3212 AND ASTM F 477.

UTILITY NOTES

1. CONTRACTOR SHALL FIELD-VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. STORM SEWERS MATERIAL SHALL HAVE MANNINGS 'N' VALUE EQUAL TO OR LESS THEN 0.013 AND SHALL CONFORM TO CEDAR FALLS SPECIFICATIONS UNLESS SPECIFIED ON THE PLANS.
3. ALL CATCH BASINS TYPES ARE IOWA DOT AND SUDAS (IOWA STATEWIDE URBAN DESIGN AND SPECIFICATIONS) STANDARD.
4. ALL TOP SLABS, FRAMES, AND GRATES WITHIN PAVEMENT AREAS SHALL BE TRAFFIC BEARING (H-20 LOADING).
5. CATCH BASINS TO HAVE DRAIN TILE INSTALLED 10 FEET OUT IN THE DIRECTIONS SHOWN.
6. DOWNSPOUTS ON BUILDINGS ARE TO BE CONNECTED INTO THE STORM SEWER SYSTEM. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF DOWNSPOUTS.
7. ALL SANITARY SEWER MATERIALS AND CONSTRUCTION SPECIFICATIONS SHALL BE PER THE LATEST REVISION OF CEDAR FALLS STANDARDS.
8. ALL SANITARY SEWER MANHOLES TO BE SUDAS TYPE "A" MANHOLES WITH TYPE "A" RING AND COVER.
9. ROOF DRAINS, FOUNDATION DRAINS OR OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED.
10. ALL WATER MAIN MATERIALS AND CONSTRUCTION SPECIFICATIONS SHALL BE PER THE LATEST REVISION OF CEDAR FALLS UTILITIES STANDARDS.
11. CONTRACTOR TO MAINTAIN MINIMUM 18" VERTICAL SEPARATION BETWEEN WATER MAIN, STORM SEWER AND SANITARY SEWER.
12. DOMESTIC METERS AND BACKFLOW PREVENTER ON THE BUILDING FIRE LINES ARE TO BE LOCATED INSIDE.
13. MATERIALS AND CONSTRUCTION TO BE IN ACCORDANCE WITH THE "STANDARDS OF THE CEDAR FALLS MUNICIPAL WATER UTILITY" ON FILE WITH DEPARTMENT OF NATURAL RESOURCES, THE "IOWA STANDARDS FOR WATER SUPPLY DISTRIBUTION SYSTEMS"AND THE "TEN STATE STANDARDS". THE CONTRACTOR SHOULD VERIFY THESE REQUIREMENTS PRIOR TO BIDDING ON THIS PROJECT.
14. INSTALL TRACER WIRE WITH WATER MAIN ACCORDING TO SPECIFICATIONS OF CEDAR FALLS UTILITIES.
15. INSTALL 3 LBS. ANODE AND TEST STATION AT ALL PERMANENT HYDRANT LOCATIONS.
16. INSTALL 3LBS. ANODE AT ALL ENDS OF WIRES AND PROTECT WIRE CONNECTION.
17. CONTRACTOR TO ENSURE THAT ALL VALVE BOX AND FIRE HYDRANT INSTALLATIONS ARE COMPLETED TO THE APPROPRIATE ELEVATION, COMPATIBLE WITH FINISHED GRADE.
18. SANITARY MANHOLES UP TO 15' DEEP SHALL BE 48" IN DIAMETER, GREATER THAN 15' DEEP UP TO 25' DEEP SHALL BE 60" IN DIAMETER AND GREATER THAN 25' DEEP SHALL BE 72" IN DIAMETER. IF INSIDE DROP CONNECTIONS ARE USED, 12" SHALL BE ADDED TO THE MANHOLE DIAMETER.

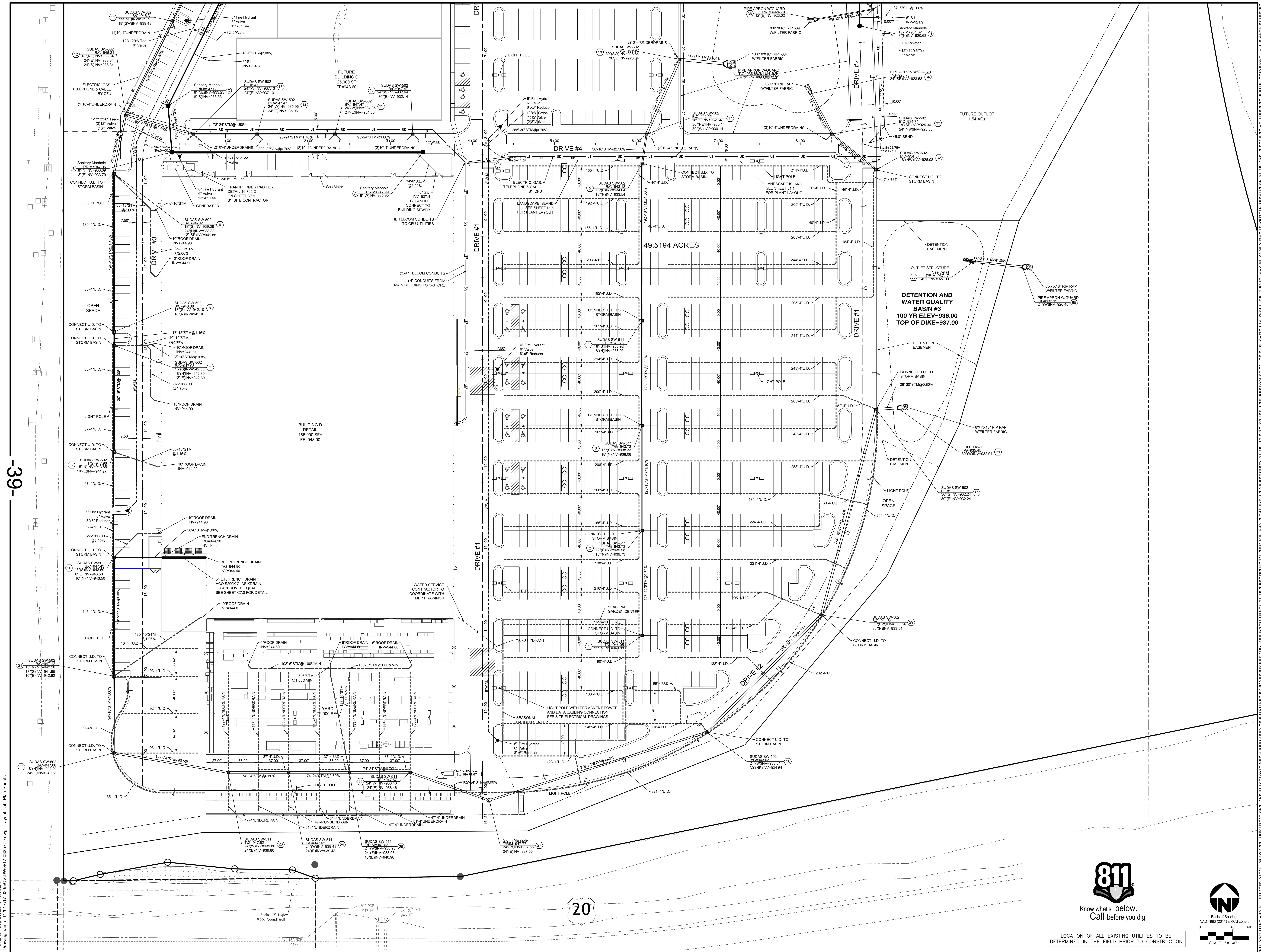
Basis of Bearing:
NAD 1983 (2011) isRCS zone 5
0 40 60
SCALE: 1" = 40'

811 Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Plot time: Sep 28, 2018 - 11:36am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets

-39-



LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

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Basis of Bearing: NAD 1983 (2011) IaRCS zone 5

SCALE: 1" = 40'

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1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
2	REVISED PER STAFF COMMENTS	8-10-18	ATC	
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HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

UTILITY PLAN

bauer

Item 5.B.

Drawing:
Drawn by:
Checked By:
Issue Date:
Sheet:

C4.1

LICENSED PROFESSIONAL ENGINEER GREGORY KOCH 18441 IOWA 9/28/18

Plot time: Sep 28, 2018 - 8:59am
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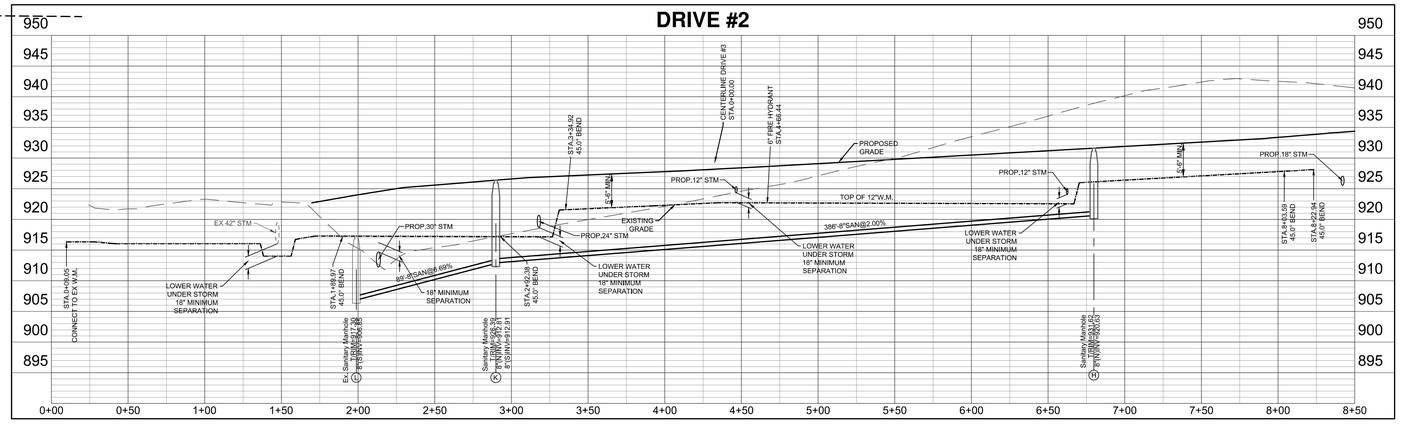

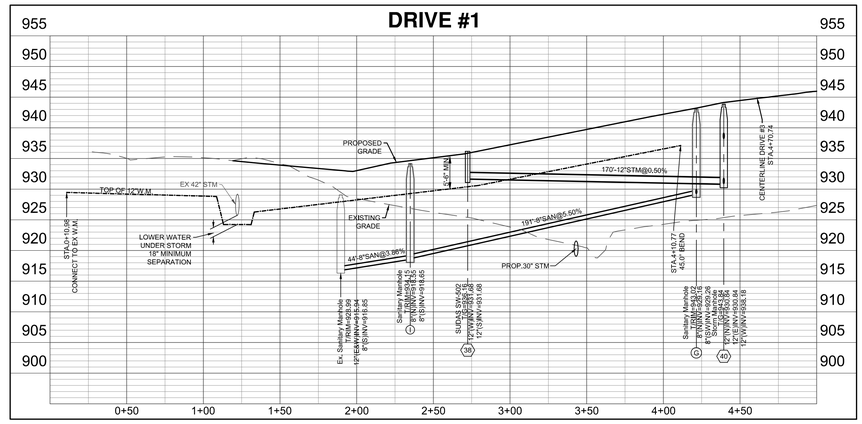

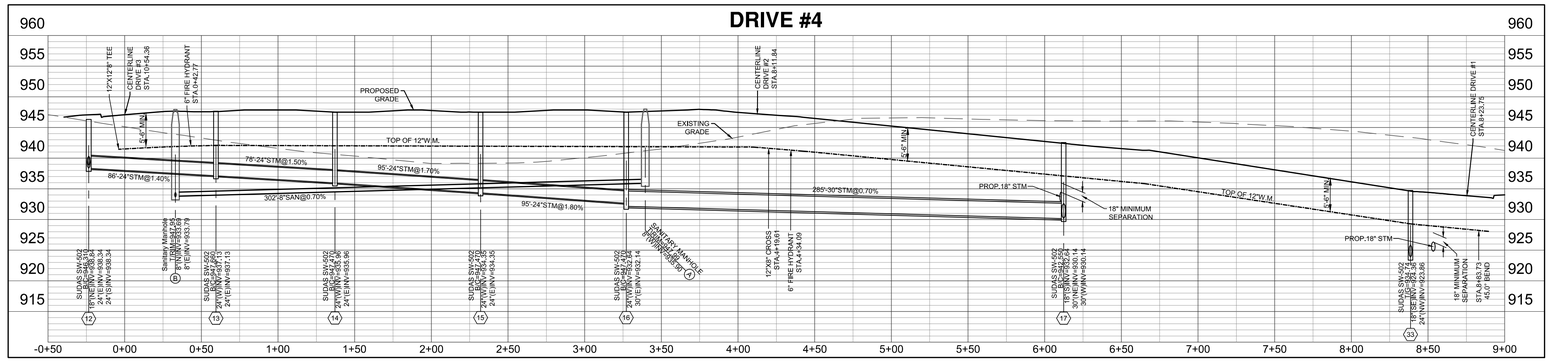

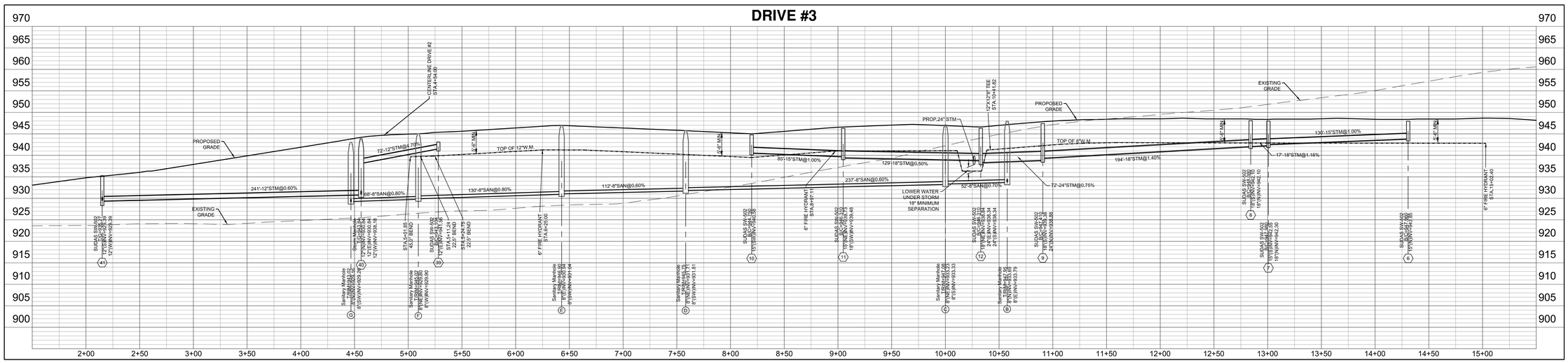

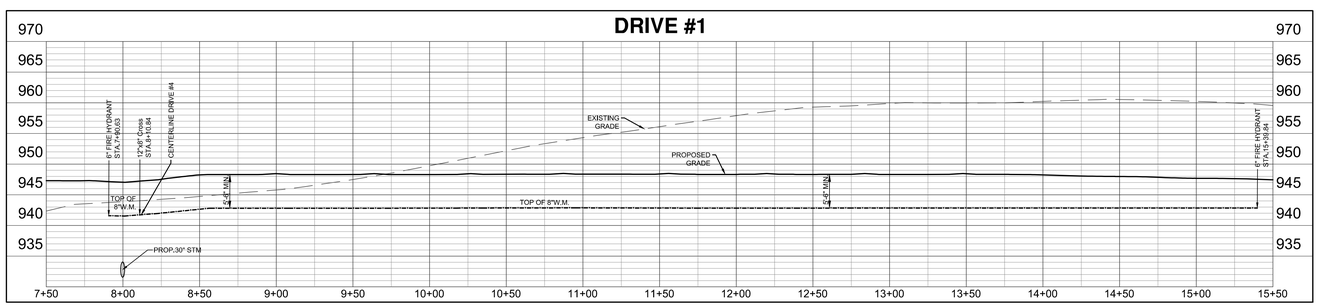

GRAPHIC SCALE
(VERTICAL)
1 inch = 10 ft.
20 10 5 0 10
0 20 40 80
(HORIZONTAL)
1 inch = 40 ft.

Plot time: Sep 28, 2018 - 8:59am
Drawing name: J:\2017\17-0335\CVD\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets

LICENSED PROFESSIONAL

Item 5.B.

Item	Revision Description	Date	Drwn:	Chk:
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
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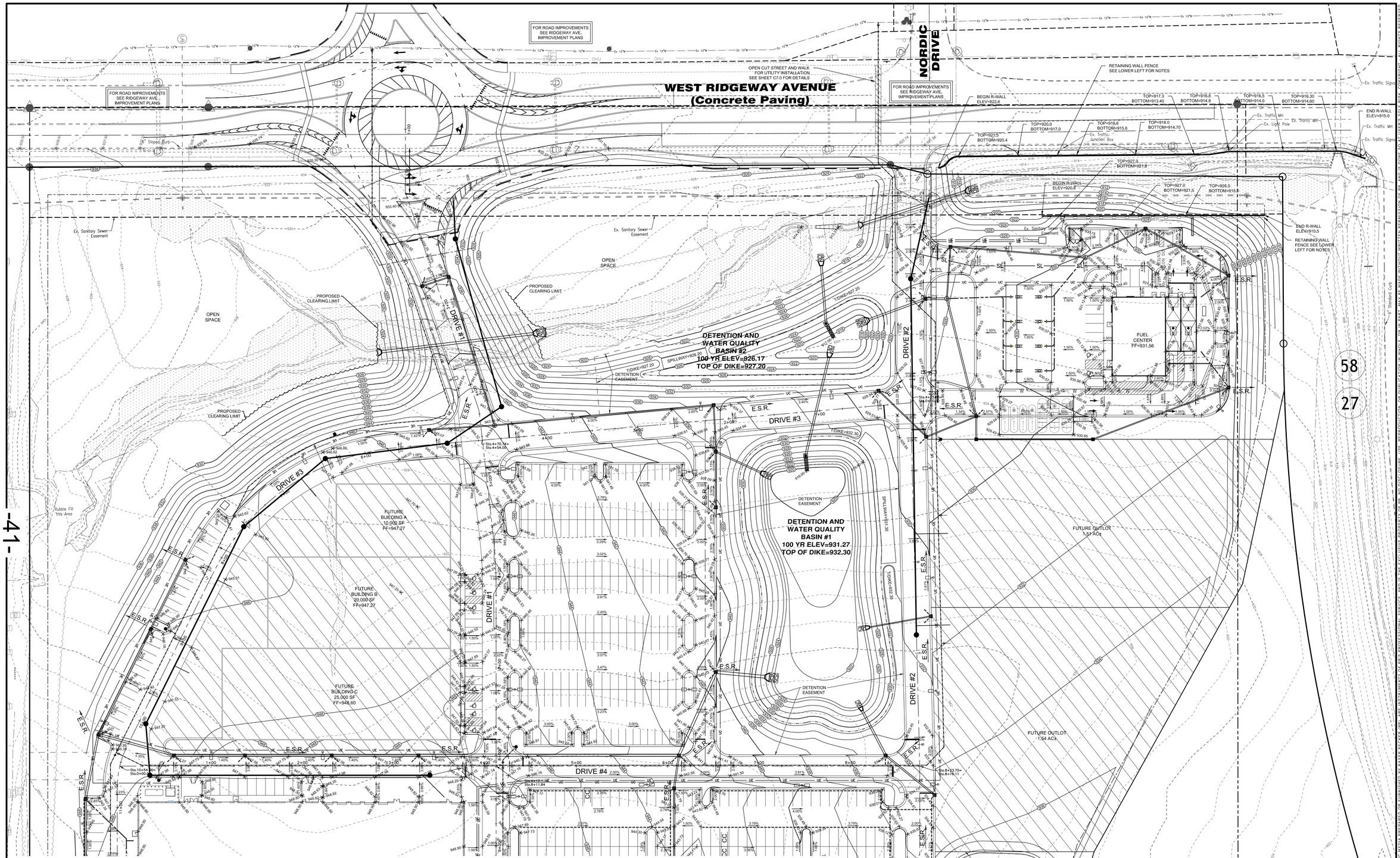
HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

UTILITY PROFILES

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 CD
Drawn by: GJK
Checked By:
Issue Date: 07-06-18
Sheet: C4.2



GRADING NOTES

1. THE GRADING PLAN IS TO BE USED FOR GRADING PURPOSES ONLY.
2. CONTRACTOR SHALL OBTAIN A COPY OF THE COMPLETE GEOTECHNICAL REPORT BY TERRACON, DATED AUGUST 31, 2018 AND ALL ADDENDUMS PRIOR TO STARTING THE PROJECT.
3. ALL DIMENSIONS AND PROPOSED ELEVATIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. ALL PROPOSED ELEVATIONS ARE TO THE FINISHED SURFACE.
4. A TEMPORARY CONSTRUCTION ENTRANCE SHALL BE BUILT AT ALL POINTS USED FOR INGRESS AND EGRESS TO THE SITE DURING CONSTRUCTION.
5. CONTRACTOR SHALL ASSUME THE TOP 1'-0" OF EXISTING GROUND IS TOPSOIL. TOPSOIL REMOVED TO DEPTHS GREATER THAN 1'-0" SHALL BE DONE ONLY AFTER CONSULTATION WITH THE PROJECT GEOTECHNICAL ENGINEER AND APPROVAL BY THE DEVELOPER.
6. ALL STRUCTURAL FILL/EARTHWORK SHALL BE CONSTRUCTED, INSPECTED AND TESTED AS DESCRIBED IN THE GEOTECHNICAL STUDY.
7. CONTRACTOR SHALL VERIFY ALL EARTHWORK QUANTITIES PRIOR TO AWARD OF CONTRACT. PAY QUANTITIES ARE FINAL EXCEPT FOR DOCUMENTED UNDERCUT APPROVED BY OWNER PRIOR TO COMPLETION OF THE EXTRA WORK. UPON REQUEST, CONTRACTORS MAY HAVE ACCESS TO THE SITE TO FIELD CHECK TOPOGRAPHY.
8. SUBGRADE OF THE BUILDING PADS SHALL BE CONSTRUCTED TO AN ELEVATION 8" BELOW FINISH FLOOR.
9. ALL CUT AREAS OUTSIDE OF ALL BUILDING PADS, PAVEMENT AREAS AND OUTLOTS, SHALL HAVE A MINIMUM OF 6" OF TOPSOIL SPREAD OVER TOP OF THE PROPOSED CONTOURS SHOWN.
10. CONTRACTOR SHALL REMOVE ALL CLEARING FROM SITE.
11. FF= APPROXIMATE FINISH FLOOR ELEVATIONS. FINISH FLOOR ELEVATIONS SHOULD NOT PRECLUDE OTHER ACCEPTABLE DESIGNS.

BUILDING PAD CERTIFICATION

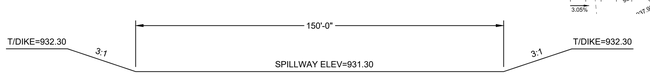
1. THE BUILDING PAD SHALL EXTEND AT LEAST 10 FEET BEYOND THE EXTERIOR BUILDING WALLS, COLUMNS AND YARD.
2. THE COMPLETE BUILDING PAD SHALL BE CERTIFIED TO FLEET FARM ON FLEET FARM BUILDING PAD RESPRENTATION AND CERTIFICATION FORM BY A LAND SURVEYOR REGISTERED IN THE STATE IN WHICH THE WORK WAS PERFORMED, THAT THE LOCATION, PREPARATION AND ELEVATION OF THE PAD IS IN COMPLIANCE WITH FEET FARM APPROVED SITE CONSTRUCTION DOCUMENTS.
   - 2.1. THE SURVEYOR SHALL PROVIDE A DRAWING WITH THIS CERTIFICATION SHOWING THE OUTLINE OF BUILDING D AND THE EXTENTS OF THE BUILDING PAD.
   - 2.2. SPOT ELEVATIONS SHALL BE TAKEN ON A GRID OF 50 FOOT CENTERS ACROSS THE BUILDING PAD, AND LOCATION AND MEASURED ELEVATION AT EACH POINT SHALL BE SHOWN ON THIS DRAWING.
   - 2.3. SPOT ELEVATIONS SHALL BE WITHIN +/- 0.1 FOOT OF THE APPROVED PAD ELEVATION.

SEGMENTAL RETAINING WALL

CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, MATERIALS AND INSTALLATION OF THE SEGMENTAL RETAINING WALL. THE DESIGN SHALL BE BASED ON ACCEPTABLE ENGINEERING PRACTICE, MEET OR EXCEED THE PARAMETERS AND CRITERIA AS DESCRIBED BY THE PROJECT GEOTECHNICAL ENGINEER IN THE SITE GEOTECHNICAL REPORT AND ALL ADDENDUMS, AND BE CERTIFIED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF IOWA. DESIGN CALCULATIONS, PLANS AND SPECIFICATIONS SHALL BE PROVIDED FOR REVIEW AND APPROVAL BY THE PROJECT GEOTECHNICAL ENGINEER (HIRED BY OWNER). THE CONTRACTOR SHALL SUBMIT THE DESIGN TO CITY OF CEDAR FALLS FOR REVIEW AND APPROVAL AND BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. THE SEGMENTAL RETAINING WALL SHOWN ON THE PLAN IS APPROXIMATE. THE CONTRACTOR SHALL SUBMIT, TO THE OWNER, THE COLOR, STYLE, AND MANUFACTURE TO BE USED PRIOR TO SUBMITTING ANY DETAILED DRAWINGS. THE CONTRACTOR SHALL TAKE INTO CONSIDERATION ALL UTILITY LOCATIONS WHEN DESIGNING THE WALL. A FENCE SHALL BE CONSTRUCTED AT THE TOP OF THE RETAINING WALL AS A BARRIER FOR PEDESTRIANS. THE WALL DESIGNER SHALL ACCOUNT FOR THE FENCE POSTS BEING BEHIND THE LAST ROW OF BLOCKS.

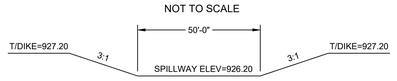
RETAINING WALL FENCE

1. THE FENCE SHALL BE 4 FEET HIGH VINYL-COATED (BLACK).
2. ALL POST AND HARDWARE TO BE VINYL-COATED (BLACK).
3. CONTRACTOR SHALL SUPPLY PRODUCT SPECIFICATIONS AND SHOP DRAWINGS FOR OWNER APPROVAL PRIOR TO PURCHASING AND/OR INSTALLING MATERIALS.



BASIN #1 EMERGENCY SPILLWAY DETAIL

NOT TO SCALE



BASIN #2 EMERGENCY SPILLWAY DETAIL

NOT TO SCALE

LEGEND

- CONTRACTOR TO SPREAD 4 INCHES OF TOPSOIL OVER TOP OF FUTURE BUILDING PADS AND OUTLOTS
- CLEARING LIMITS
- E.S.R. — EMERGENCY STORM ROUTE

811 Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Basis of Bearing: NAD 1983 (2011) IaRCS zone 5

0 40 60

SCALE: 1" = 40'

LICENSED PROFESSIONAL ENGINEER
GREGORY J. KOCH
18441
IOWA
9/28/18

Item	Revision Description	Date	Drwn	Chk
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
2	REVISED PER STAFF COMMENTS	8-10-18	ATC	
3	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	9-26-18	GJK	

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

GRADING PLAN

bauer

Item 5.B.

Drawing: C5.0
Drawn by: GD
Checked By: GJK
Issue Date: 9-28-18
Sheet:

Plot time: Sep 28, 2018 - 11:36am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets

-41-

FUTURE BUILDING C
25,000 SF
FF=948.60

DRIVE #4

DRIVE #1

DRIVE #2

DRIVE #3

49.5194 ACRES

DETENTION EASEMENT

FUTURE OUTLOT
1.54 AC±

DETENTION AND WATER QUALITY BASIN #3
100 YR ELEV=936.00
TOP OF DIKE=937.00

TOE=927.00

OPEN SPACE

BUILDING D
RETAIL
185,000 SF±
FF=948.90

PROPOSED CLEARING LIMIT

YARD
75,000 SF±

APPROXIMATE LOCATION OF TOPSOIL STOCKPILE

E.S.R.

LEGEND

CLEARING LIMITS

E.S.R. EMERGENCY STORM ROUTE

T/DIKE=937.00 — 3:1 — 65'-0" SPILLWAY ELEV=936.00 — 3:1 — T/DIKE=937.00

BASIN #3 EMERGINCY SPILLWAY DETAIL
NOT TO SCALE

Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Basis of Bearing:
NAD 1983 (2011) iaRCS zone 5

0 40 60
SCALE: 1" = 40'

LICENSED PROFESSIONAL

Item	Revision Description	Date	Drwn	Chk
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	ATC
2	REVISED PER STAFF COMMENTS	8-10-18	ATC	GJK
3	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	9-26-18	GJK	

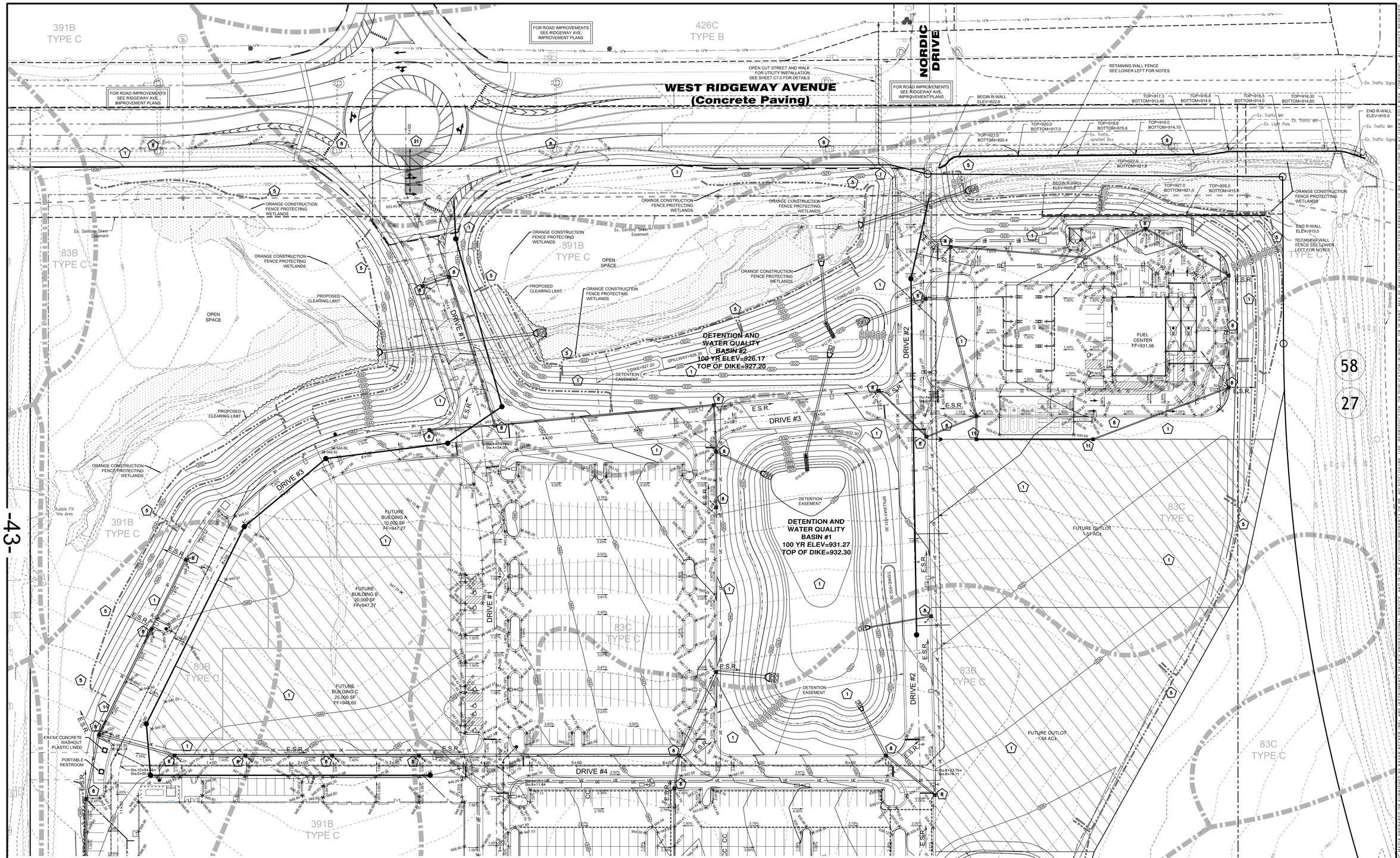
HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

GRADING PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 CD
Drawn by: GJK
Checked By:
Issue Date: 07-06-18
Sheet: **C5.1**

Plot time: Sep 28, 2018 - 9:00am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets



58
27

-43-

ESTIMATED CONSTRUCTION SEQUENCE AND EROSION CONTROL IMPLEMENTATION

1. INSTALL CONSTRUCTION ENTRANCE.
2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES AND WETLAND PROTECTION FENCING.
3. THE SWPPP CONTROLS WILL NEED TO BE INSPECTED AND APPROVED BEFORE AND CONSTRUCTION BEGINS.
4. CLEARING AND GRUBBING.
5. STRIPPING OF TOPSOIL AND MASS EARTHWORK.
6. INSTALL EROSION AND SEDIMENT CONTROL MEASURES AROUND STOCKPILES
7. INSTALL STORM WATER MANAGEMENT SYSTEMS.
8. TEMPORARY VEGETATIVE STABILIZATION OF EROSION AND SEDIMENT CONTROL MEASURES.
9. GRADING OF ACCESS DRIVES, PARKING AREAS, BUILDING PADS, ETC.
10. INSTALLATION OF ALL UTILITIES.
11. CURB AND PAVEMENT CONSTRUCTION.
12. FINAL GRADING, STABILIZATION, AND LANDSCAPING.
13. AFTER THE VEGETATION HAS BECOME WELL ESTABLISHED, REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES.

EROSION CONTROL NOTES

1. AT A MINIMUM, ALL EROSION AND SEDIMENT CONTROLS ON THE SITE SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN ONE-HALF INCH OF RAIN PER 24 HOUR PERIOD. QUALIFIED INSPECTION PERSONNEL (THOSE WITH KNOWLEDGE AND EXPERIENCE IN THE INSTALLATION AND MAINTENANCE OF SEDIMENT AND EROSION CONTROLS) SHALL CONDUCT THESE INSPECTIONS TO ENSURE THAT THE CONTROL PRACTICES ARE FUNCTIONAL AND TO EVALUATE WHETHER THE EROSION CONTROL IS ADEQUATE AND PROPERLY IMPLEMENTED OR WHETHER ADDITIONAL CONTROL MEASURES ARE REQUIRED. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. DISCHARGE LOCATIONS SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION AND SEDIMENT CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO THE RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFF-SITE VEHICLE TRACKING.
2. SITE STABILIZATION SHALL BE INITIATED ON ANY EXPOSED SOILS IF EARTH DISTURBING ACTIVITIES HAVE CEASED TEMPORARILY OR PERMANENTLY AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS.
3. ALL MUD OR DEBRIS TRACKED ON EXISTING STREETS SHALL BE CLEANED AT THE END OF EACH DAY OR AS DIRECTED BY CITY OF CEDAR FALLS OR THE OWNER. PERIODIC STREET SWEEPING MAY BE REQUIRED.
4. IN ADDITION TO ANY TEMPORARY EROSION, MUD, AND DEBRIS CONTROL DETAILS AND NOTES SHOWN ON THE PLANS, THE CONTRACTOR SHOULD PLACE TEMPORARY OR PERMANENT SEEDING, MULCHING AND/OR MULCH NETTING OR ANY OTHER GENERALLY ACCEPTED METHODS TO PREVENT EROSION, MUD, AND DEBRIS FROM BEING DEPOSITED ON OTHER PROPERTY, ON NEWLY CONSTRUCTED OR EXISTING ROADS, OR INTO EXISTING SEWERS OR NEW SEWERS WITHIN THE DEVELOPMENT. THE CONTRACTOR SHOULD CONTINUALLY MONITOR THE CONSTRUCTION PROGRESS AND MAKE ANY NECESSARY TEMPORARY ADJUSTMENTS TO MAINTAIN THIS CONTROL.
5. AFTER THE VEGETATION HAS BECOME WELL ESTABLISHED, TEMPORARY EROSION AND SEDIMENT CONTROLS CAN BE REMOVED.

SWPPP NOTES

1. THE CONSTRUCTION ACTIVITY WILL CONSIST OF CLEARING AND GRUBBING, MASS EARTHWORK, UTILITY INSTALLATION, CURB AND PAVEMENT CONSTRUCTION, BUILDING CONSTRUCTION, AND FINE GRADING.
2. ACREAGE:
   - LOT 49.5 ACRES
   - DISTURBED AREA 41.8 ACRES
3. PRIOR LAND USE: ROW CROPS, MEADOW AND WOODS
4. IMPERVIOUS CALCULATIONS:
   - IMPERVIOUS AREA
     - PRE-DEVELOPED 0.0 ACRES
     - POST-DEVELOPED 25.0 ACRES
   - IMPERVIOUS PERCENTAGE
     - PRE-DEVELOPED 0.0 %
     - POST-DEVELOPED 50.1 %
5. EXISTING SOIL DATA:

SYMBOL	SOIL NAME	HSG
83B	KENYON LOAM, 2 TO 5 PERCENT SLOPES	C
83C	KENYON LOAM, 5 TO 9 PERCENT SLOPES	C
391B	CLYDE-FLOYD COMPLEX, 1 TO 4 PERCENT SLOPES	C
426C	AREDALE LOAM, 5 TO 9 PERCENT SLOPES	B

6. POSSIBLE PREVIOUS CONTAMINATIONS: FERTILIZER AND CHEMICALS TO CONTROL WEEDS.
7. THE NORTH TWO THIRDS OF THE DEVELOPMENT DRAINS TO THE NORTHEAST TOWARD THE INTERSECTION OF RIDGEWAY AND HIGHWAY 58. THE REMAINING PORTION OF THE SITE DRAINS EAST TOWARD THE ROADSIDE DITCH ALONG HIGHWAY 58.
8. RUNOFF COEFFICIENT:
   - PRE-CONSTRUCTION 0.90
   - POST-CONSTRUCTION 0.90

LEGEND

- (1) SEEDING & MULCHING
- (5) SILT FENCE OR MULCH BERM
- (8) DANDY BAG (OR APPROVED EQUAL)
- (21) CONSTRUCTION ENTRANCE SEE SHEET C6.2 FOR DETAIL
- (11) INLET PROTECTION
- (22) CONCRETE TRUCK WASHOUT
- CLEARING LIMITS
- x ORANGE CONSTRUCTION FENCE PROTECTING WETLANDS

STAGING AREAS

1. DURING CONSTRUCTION OF THE INDIVIDUAL LOTS, THE CONTRACTOR SHALL PROVIDE ENOUGH STAGING AREAS STABILIZED WITH ROAD FOR CONSTRUCTION PARKING AND MATERIAL STORAGE.

811 Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Basis of Bearing: NAD 1983 (2011) iaRCS zone 5

0 40 60

SCALE: 1" = 40'

LICENSED PROFESSIONAL ENGINEER GREGORY J. KOCH 18441 IOWA 9/28/18

Item	Revision Description	Date	Drwn	Chk

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

EROSION & SEDIMENT CONTROL SITE PLAN

Drawing:
Drawn by: CD
Checked By: JK
Issue Date: -18
Sheet: C6.0

bauer Item 5.B.

Plot time: Sep 28, 2018 - 11:37am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets

49.5194 ACRES

FUTURE BUILDING C
25,000 SF
FF=948.60

BUILDING D
RETAIL
185,000 SF±
FF=948.90

YARD
75,000 SF±

FUTURE OUTLOT
1.54 AC±

DETENTION AND WATER QUALITY BASIN #3
100 YR ELEV=936.00
TOP OF DIKE=937.00

DRIVE #1
DRIVE #2
DRIVE #3
DRIVE #4

83B TYPE C
83C TYPE C
391B TYPE C

OPEN SPACE

4'X4'X4' CONCRETE WASHOUT PLASTIC LINED

PORTABLE RESTROOM

PROPOSED CLEARING LIMIT

APPROXIMATE LOCATION OF TOPSOIL STOCKPILE

DETENTION EASEMENT

E.S.R.

Sta.8+23.75=
Sta.8+76.11

Sta.8+122.11=
Sta.8+11.84

Sta.10+54.16=
Sta.0+00

Sta.15+85.72=
Sta.18+74.67

Begin 12" High Wood Sound Wall

20

NOTES

SEE SHEET C6.0 FOR EROSION CONTROL AND SWPPP NOTES

LEGEND

- 1 SEEDING & MULCHING
- 5 SILT FENCE OR MULCH BERM
- 8 DANDY BAG (OR APPROVED EQUAL)
- 11 INLET PROTECTION
- 22 CONCRETE TRUCK WASHOUT
- CLEARING LIMITS
- X ORANGE CONSTRUCTION FENCE PROTECTING WETLANDS

Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Basis of Bearing:
NAD 1983 (2011) iaRCS zone 5

0 40 60
SCALE: 1" = 40'

LICENSED PROFESSIONAL

Item	Revision Description	Date	Drwn	Chk

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

EROSION & SEDIMENT CONTROL SITE PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 CD
Drawn by: GJK
Checked By:
Issue Date: 09-28-18
Sheet: C6.1

Plot time: Sep 28, 2018 - 9:32am
Drawing name: J:\2017\17-0335\CV\DWG\17-0335 CD.dwg - Layout Tab: Plan Sheets

PERMANENT SEEDING (1)

Permanent seeding includes the seedbed preparation, seeding, and the establishment of perennial vegetation used to permanently stabilize soil, prevent sediment pollution, reduce runoff by promoting infiltration, and provide storm water quality benefits offered by dense vegetation.

CONDITIONS WHERE PRACTICE APPLIES

Permanent seeding should be applied to:

* Areas or portions of construction-sites which can be brought to final grade. Applications of permanent seeding should not be delayed while construction on limited portions of the site being completed.
* Areas on that will be regraded, but will be dormant for a year or more.

PLANNING CONSIDERATIONS

Healthy dense turf will have a dramatic long lasting effect on stormwater quality as well as promoting infiltration and reducing the amount of runoff. To establish quality vegetation, careful preparation of the seedbed, soil, even subsoil is highly encouraged.

Soil Compaction--Stormwater quality and the amount of runoff both vary significantly with soil compaction. Non-compacted soils improve stormwater by promoting:

* dense vegetation.
* high infiltration & lower runoff rates.
* pollutant filtration, deposition & absorption, and
* beneficial biologic activity in the soil.

Construction activity can cause highly compacted soils but also offers the opportunity to improve soil condition. The best time for improving soil condition is during the establishment of permanent vegetation. It is highly recommended that subsoilers, plows or others implements be specified as part of final seedbed preparation. Use discretion in slip-prone areas.

Minimum Soil Conditions--Vegetation cannot be expected to stabilize soil that is unstable due to its texture, structure, water movement or excessively steep slope. The following minimum soil conditions are needed for the establishment and maintenance of a long-lived vegetation cover. If these conditions cannot be met, see the Standards and Specifications for Resoiling.

* Soils must include enough fine-grained material to hold at least a moderate amount of available moisture.
* The soil must be free from material that is toxic or otherwise harmful to plant growth.

Permanent Seeding			
Seed Mix	Seeding Rate lb./ac.	Seeding Rate lb./1,000 ft.^{2}	Notes:
General Use			
Creeping Red Fescue Ryegrass Kentucky Bluegrass	20-40 10-20 10-20	1/2-1 1/4-1/2 1/4-1/2	
Tall Fescue	40	1	
Dwarf Fescue	40	1	
Steep Banks or Cut Slopes			
Tall Fescue	40	1	
Crown Vetch Tall Fescue	10 20	1/4 1/2	Do not seed later than August
Flat Pea Tall Fescue	20 20	1/2 1/2	Do not seed later than August
Road Ditches and Swales			
Tall Fescue	40	1	
Dwarf Fescue Kentucky Bluegrass	90 5	2 1/4	
Lawns			
Perennial Ryegrass Kentucky Bluegrass	60 60	1 1/2 1 1/2	
Creeping Red Fescue Kentucky Bluegrass	60 60	1 1/2 1 1/2	For shaded areas
Note: Other approved seed species may be substituted.			

aintenance for Permanent Seedings rtilization and Mowing					
Mixture	Formula	lb./ac.	lb./1,000 sq. ft.	Time	Mowing
Creeping Red Fescue Ryegrass Kentucky Bluegrass	10-10-10	500	12	Fall, yearly or as needed	Not closer than 3"
Tall Fescue	10-10-10	500	12		Not closer than 4"
Dwarf Fescue	10-10-10	500	12		Not closer than 2"
Crown Vetch Fescue	0-20-20	400	10	Spring, yearly following establishment and every 4-7 yrs. thereafter	Do not mow
Flat Pea Fescue	0-20-20	400	10		Do not mow
Note: Following soil test recommendations is preferred to fertilizer rates shown above.					

SITE PREPARATION

1. A subsoiler, plow or other implement shall be used to reduce soil compaction and allow maximum infiltration. (Maximizing infiltration will help control both runoff rate and water quality.) Subsoiling should be done when the soil moisture is low enough to allow the soil to crack or fracture. Subsoiling shall not be done on slip-prone areas where soil preparation should be limited to what is necessary for establishing vegetation.
2. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation and seeding.
3. Resoil shall be applied where needed to establish vegetation.

SEEDBED PREPARATION

1. Lime--Agricultural group limestone shall be applied to acid soil as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 100 lb./1,000 sq. ft. or 2 tons/ac.
2. Fertilizer--Fertilizer shall be applied as recommended by a soil test. In lieu of a soil test, fertilizer shall be applied at a rate of 12 lb./1,000 sq. ft. or 500 lb./ac. of 10-10-10- or 12-12-12 analysis.
3. The lime and fertilizer shall be worked into the soil with a disk harrow, spring-tooth harrow, or other suitable field implement to a depth of 3 in. On sloping land the soil shall be worked on the contour.

SEEDING DATES AND SOIL CONDITIONS

Seeding should be done March 1 to May 31 or August 1 to September 30. These seeding dates are ideal but, with the use of additional mulch and irrigation, seedings may be made any time throughout the growing season. Tillage/seedbed preparation should be done when the soil is dry enough to crumble and not form ribbons when compressed by hand. For winter seeding, see the following section on dormant seeding.

MULCHING

1. Mulch material shall be applied immediately after seeding. Seedings made during optimum seeding dates and with favorable soil conditions and on very flat areas may not need mulch to achieve adequate stabilization. Dormant seeding shall be mulched.
2. Materials

* Straw--If straw is used it shall be unrotted small-grain straw applied at the rate of 2 tons/ac. or 90 lb./1,000 sq. ft. (two to three bales). The mulch shall be spread uniformly by hand or mechanically so the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 sq. ft. sections and spread two 45-lb. bales of straw in each section.
* Hydroseeders--If wood cellulose fiber is used, it shall be used at 2,000 lb./ac. or 46 lb./1,000 sq. ft.
* Other--Other acceptable mulches include mulch mattings applied according to manufacturer's recommendations or wood chips applied at 6 tons/ac.

3. Straw Mulch Anchoring Methods

Straw mulch shall be anchored immediately to minimize loss by wind or water.

* Mechanical--A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped by, generally, be left longer than 6 in.

PERMANENT SEEDING (1)

MAINTENANCE

1. Permanent seeding shall not be considered established for at least 1 full yr. from the time of planting. Seeded areas shall be inspected for failure and vegetation conditions, it may be necessary to irrigate, fertilize, overseed, or reestablish plantings in order to provider permanent vegetation for adequate erosion control.
2. Maintenance fertilization rates shall be established by soil test recommendations or by using the rates shown in the following table.

DORMANT SEEDINGS.

1. Seeding shall not be planted from October 1 through November 20. During this period the seeds are likely to germinate but probably will not be able to survive the winter.
2. The following methods may be used for "Dormant Seeding":

* From October 1 through November 20, prepare the seedbed, add the required amounts of lime and fertilizer, then mulch and anchor. After November 20, and before March 15, broadcast the selected seed mixture. Increase the seeding rates by 50% for this type of seeding.
* From November 20 through March 15, when soil conditions permit, prepare the seedbed, lime and fertilize, apply the selected seed mixture, mulch and anchor. Increase the seeding rates by 50% for this type of seeding.
* Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydro-seeder (slurry may include seed and fertilizer) on a firm, moist seedbed.
* Where feasible, except when a cultipacker type seeder is used, the seedbed should be firmed following seeding operations with a cultipacker, roller, or light drag. On sloping land, seeding operations should be on the contour where feasible.
* Mulch Nettings--Nettings shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.
* Asphalt Emulsion--Asphalt shall be applied as recommended by the manufacturer or at the rate of 160 gal./ac.
* Synthetic Binders--Synthetic binders such as Acrylic DLR (Agri-Tac), DAC-70, Petroset, Terra Tack or equal may be used at rates recommended by the manufacturer.
* Wood Cellulose Fiber--Wood cellulose fiber binder shall be applied at a net dry weight of 750 lb./ac. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lb./100 gal. of wood cellulose fiber.

IRRIGATION

1. Permanent seeding shall include irrigation to establish vegetation during dry or hot weather or on adverse site conditions as needed for adequate moisture for seed germination and plant growth.
2. Excessive irrigation rates shall be avoided and irrigation monitored to prevent erosion and damage from runoff.

TEMPORARY SEEDING (1)

Temporary seeding provides erosion control on areas in between construction operations. Grasses which are quick growing are seeded and usually mulched to provide prompt, temporary soil stabilization. It effectively minimizes the area of a construction-site prone to erosion and should be used everywhere the sequence of construction operations allows vegetation to be established.

CONDITIONS WHERE PRACTICE APPLIES

Temporary seeding should be applied on exposed soil where additional work (grading,etc.) is not scheduled for more than 45 days. Permanent seeding should be applied if the areas will be idle for more than a year.

PLANNING CONSIDERATIONS

This practice has the potential to drastically reduce the amount of sediment eroded from a construction-site. Control efficiencies greater than 90% will be achieved with proper applications of temporary seeding. Because practices used to trap sediment are usually much less effective, temporary seeding is to be used even on areas where runoff is treated by sediment trapping practices. Because temporary seeding is highly effective and practical on construction-sites, its liberal use is highly recommended.

Temporary Seeding Species Selection			
Seeding Dates	Species	Lb./1,000 ft.^{2}	Per Acre
March 1 to August 15	Oats Tall Fescue Annual Ryegrass	3 1 1	4 bushel 40 lb. 40 lb.
	Perennial Ryegrass Tall Fescue Annual Ryegrass	1 1 1	40 lb. 40 lb. 40 lb.
August 16 to November 1	Rye Tall Fescue Annual Ryegrass	3 1 1	2 bushel 40 lb. 40 lb.
	Wheat Tall Fescue Annual Ryegrass	3 1 1	2 bushel 40 lb. 40 lb.
	Perennial Ryegrass Tall Fescue Annual Ryegrass	1 1 1	40 lb. 40 lb. 40 lb.
November 1 to Spring Seeding	Use mulch only, sodding practices or dormant seeding.		
Note: Other approved seed species may be substituted.			

1. Structural erosion- and sediment-control practices such as diversions and sediment traps shall be installed and stabilized with temporary seeding prior to grading the rest of the construction-site.
2. Temporary seed shall be applied between construction operations on soil that will not be graded or reworked for 45 days or more. These idle areas should be seeded as soon as possible after grading or shall be seeded within 7 days. Several applications of temporary seeing are necessary on typical construction projects.
3. The seedbed should be pulverized and loose to ensure the success of establishing vegetation. However, temporary seeding shall not be postponed if ideal seedbed preparation is not possible.
4. Soil Amendments--Applications of temporary vegetation shall establish adequate stands of vegetation which may require the use of soil amendments. Soil tests should be taken on the site to predict the need for lime and fertilizer.
5. Seeding Method--Seed shall be applied uniformly with a cyclone seeder, drill cultipacker seeder, or hydroseeder. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used, the seed and fertilizer will be mixed on-site and the seeding shall be done immediately and without interruption.

MULCHING TEMPORARY SEEDING

1. Applications of temporary seeding shall include mulch which shall be applied during or immediately after seeding. Seedings made during optimum seeding dates and with favorable soil conditions and on very flat areas may not need mulch to achieve adequate stabilization.
2. Materials:

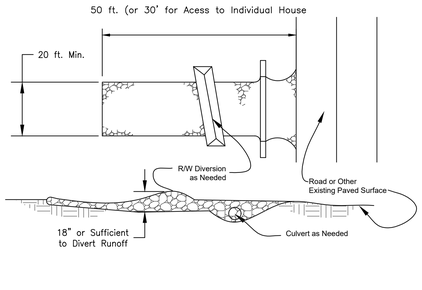
* Straw--If straw is used, it shall be unrotted small-grain straw applied at the rate of 2 tons/ac. or 90 lb./1,000 sq. ft. (two to three bales). The mulch shall be spread uniformly by hand or mechanically so the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000-sq.-ft. sections and spread two 45-lb. bales of straw in each section.
* Hydroseeders--If wood cellulose fiber is used, it shall be used at 2,000 lb/ac. or 46 lb./1,000 sq. ft.
* Other--Other acceptance mulches include mulch mattings applied according to manufacturer's recommendations or wood chips applied at 6 tons/ac.

3. Straw mulch shall be anchored immediately to minimize loss by wind or water.
Anchoring Methods:

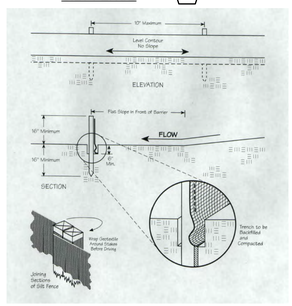
* Mechanical--A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but, generally, be left longer than 6 in.
* Mulch Nettings--Nettings shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentration runoff and on critical slopes.
* Asphalt Emulsion--Asphalt shall be applied as recommended by the manufacturer or at the rate of 160 gal./ac.
* Synthetic Binders--Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Tack or equal may be used at rates recommended by the manufacturer.
* Wood-Cellulose Fiber--Wood-cellulose fiber binder shall be applied at a net dry weight of 750 lb./ac. The wood-cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lb./100 gal.

CONSTRUCTION ENTRANCE (21)

1. Stone Size--2 to 3 inch stone shall be used, or recycled concrete equivalent.
2. Length--The construction entrance shall be as long as required to stabilize high traffic areas but not less than 50 ft. (except on single residence lot where a 30-ft. minimum length applies).
3. Thickness--The stone layer shall be at least 6 to 12 inch thick.
4. Width--The entrance shall be at least 20 ft. wide. Busy entrances will need the capacity of handling a lane of traffic each way, typically 30 feet wide flare the entrance where it meets the existing road to provide a turning radius.
5. Bedding--If soft soil condition exist, place a subgrade stabilization fabric over the entire length and width of the entrance prior to placing the rock.
6. Culvert--A pipe or culvert shall be constructed under the entrance if needed to prevent surface water flowing across the entrance from being directed out onto paved surfaces.
7. Water Bar--A water bar shall be constructed as part of the construction entrance if needed to prevent surface runoff from flowing the length of the construction entrance and out onto paved surfaces.
8. Maintenance--Top dressing of additional stone shall be applied as conditions demand. Mud spilled, dropped, washed or tracked onto public roads, or any surfaces where runoff is not checked by sediment controls, shall be removed immediately. Removal shall be accomplished by scraping or sweeping.
9. Construction entrances shall not be relied upon to remove mud fro vehicles and prevent off-site tracking. Vehicles that enter and leave the construction-site shall be restricted from muddy areas.



SILT FENCE (5)

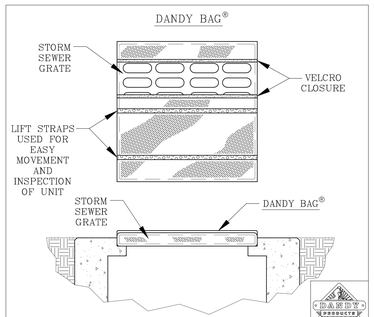


1. Silt fence shall be constructed before upslope land disturbance begins.
2. All silt fence shall be placed as close to the contour as possible so that water will not concentrate at low points in the fence and so that small swales or depressions which may carry small concentrated flows to the silt fence are dissipated along its length.
3. To prevent water ponded by the silt fence from flowing around the ends, each end shall be constructed upslope so that the ends are at a higher elevation.
4. Where possible, silt fence shall be placed on the flattest area available.
5. Where possible, vegetation shall be preserved for 5 ft. (or as much as possible) upslope from the silt fence. If vegetation is removed, it shall be reestablished within 7 days from the installation of the silt fence.
6. The height of the silt fence shall be a minimum of 16 in. above the original ground surface.
7. The silt fence shall be placed in a trench cut a minimum of 6 in. deep. The trench shall be cut with a trencher, cable laying machine, or other suitable device which will ensure an adequately uniform trench depth.
8. The silt fence shall be placed with the stakes on the downslope side of the geotextile and so that 8 in. of cloth are below the ground surface. Excess material shall lay on the bottom of the 6-in.-deep trench. The trench shall be backfilled and compacted.
9. Seams between section of silt fence shall be overlapped with the end stakes of each section wrapped together before driving into the ground.
10. Maintenance--Silt fence shall allow runoff to pass only as diffuse flow through the geotextile. If runoff overtops the silt fence, flows under or around the ends, or in any other way becomes a concentrated flow, one of the following shall be performed, as appropriate: 1) The layout of the silt fence shall be changed, 2) Accumulated sediment shall be removed, or 3) Other practices shall be installed.

Criteria for Silt Fence Materials

1. Fence Posts--The length shall be a minimum of 32 in. long. Wood posts will be 2-by-2-in. hardwood of sound quality. The maximum spacing between posts shall be 10 ft.
2. Silt Fence Fabric shall Geotextile Fabric or as described by the chart below:

DANDY BAG DETAIL (8)



DETAIL OF INLET SEDIMENT CONTROL DEVICE

PROJECT: DR. BY:
CITY/STATE: DATE: DR. NO:

DANDY BAG®
SPECIFICATIONS

NOTE: THE DANDY BAG® WILL BE **MANUFACTURED IN THE U.S.A.** FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

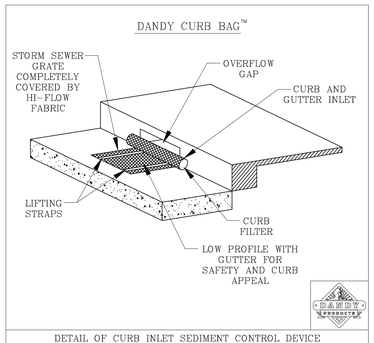
HI-FLOW DANDY BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	$l/min/m^2$ (gal/min/ft^2)	5907 (145)
Permittivity	ASTM D 4491	Sec^{-1}	2.1

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

Detail Provided By:
Site Supply Inc.
33 Glendale-Milford Road
Loveland, OH 45140
Phone: (513) 248-1498
Fax: (513) 248-4584
cbrowning@sitefabric.com
http://www.sitefabric.com

DANDY CURB BAG DETAIL (9)



DETAIL OF CURB INLET SEDIMENT CONTROL DEVICE WITH CURB FILTER

PROJECT: DR. BY:
CITY/STATE: DATE: DR. NO:

DANDY CURB BAG™
SPECIFICATIONS

NOTE: THE DANDY CURB BAG™ WILL BE **MANUFACTURED IN THE U.S.A.** FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

DANDY CURB BAG™ (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	$l/min/m^2$ (gal/min/ft^2)	5907 (145)
Permittivity	ASTM D 4491	Sec^{-1}	2.1

*Note: All Dandy Curb Bags™ can be ordered with our optional oil absorbents

Erosion Prevention and Sediment Control Site Inspection Form

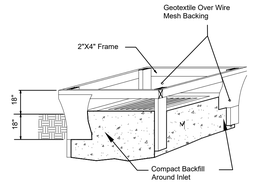
If you answered "no" to any of the above questions, note any corrective action needed above, and note on the Inspection Log when the action was completed.

Inspection Log

The site shall be inspected before and after storm events with 0.5 inches or greater predicted or actual precipitation, and documented on the Construction Site Inspection Form. Incidents of noncompliance must be reported to the Engineer. A log of all inspections, as shown below, shall be kept current.

Date:	Inspector:	Corrective Actions Performed/Date:

INLET PROTECTION IN SWALES, DITCH LINES OR YARD INLETS (11)



1. Inlet protection shall be constructed either before upslope land disturbance begins or before the storm drain becomes operational.
2. The earth around the inlet shall be excavated completely to the depth at least 18in.
3. The wooden frame shall be constructed of 2-by-4-in. construction grade lumber. The 2-by-4-in. posts shall be driven 1 ft. into the ground at four corners of the inlet and the top portion of 2-by-4-in. frame assembled using the overlap joint shown. The top of the frame shall be at least 6 in. below adjacent roads if ponded water would pose a safety hazard to traffic.
4. Wire mesh shall be of sufficient strength to support fabric with water fully impounded against it. It shall be stretched tightly around the frame and fastened securely to the frame.
5. Geotextile shall have an equivalent opening size of 20-40 sieve and be resistant to sunlight. It shall be stretched tightly around the frame and fastened securely. It shall extend from the top of the frame to 18 in. below the inlet notch elevation. The geotextile shall overlap across one side of the inlet so the ends of the cloth are not fastened to the same post.
6. Backfill shall be placed around the inlet in compacted 6-in. layers until the earth is even with notch elevation on ends and top elevation on sides.
7. A compacted earth dike or a check dam shall be constructed in the ditch line below the inlet if the inlet is not in a depression and if runoff bypassing the inlet will not flow to a setting pond. The top of earth dikes shall be at least 6 in. higher than the top of the frame.

Erosion Prevention and Sediment Control Site Inspection Form

Erosion Prevention and Sediment Control Site Inspection Form

Introduction: By using some simple Best Management Practices (BMP's) developers and contractors can do their share to protect the County's water resources from the harmful effects of sediment. The topography of the site and the extent of the construction activities will determine which of these practices are applicable to any given site, but the BMP's listed here are applicable to most construction sites. For details on the installation and maintenance of these BMP's, please refer to the approved plans and or the Iowa Construction Site Erosion Control Manual.

Temporary Stabilization is the most effective BMP. All disturbed areas that will lie dormant for 21 days or more must be stabilized within 7 days of the date the area becomes inactive. The goal of temporary stabilization is to provide cover quickly. Areas within 50 feet of a stream must be stabilized within 2 days of reaching final grade. This is accomplished by seeding with fast-growing grasses, then covering with straw mulch. See the Rainwater and Land Development Manual for seasonally adjusted seeding specifications. To minimize your costs of temporary stabilization, leave natural cover in place for as long as possible by only disturbing areas worked within the next 21 days.

Construction Entrances are installed to minimize off-site tracking of sediments. A roughstone access drive underlain with woven geotextile shall be installed at every point where vehicles enter or exit the site. Every individual lot should also have its own drive once construction on the lot begins. Maintenance is performed by top dressing with stone and/or street sweeping.

Sediment Basins/Traps are the sediment control of choice for areas, which exceed the design capacity of silt fence (see page 119 of the Rainwater manual) or to control concentrated flows or runoff. There are two types: sediment basins and sediment traps. A trap is appropriate where the contributing drainage area is 10 acres or less. The outlet is an earthen embankment with a simple stone spillway underlain with woven geotextile. A sediment basin is appropriate for drainage areas larger than 10 acres. The outlet is an engineered riser pipe. Often a permanent storm water management pond, such as a retention or detention basin, can be retrofitted to act as a sediment basin during construction. All sediment ponds, regardless of whether they are a trap or a basin, or whether they will become a permanent storm water pond, must provide a minimum storage of 67 cubic yards per acre of total contributing drainage area. Sediment ponds must be installed prior to mass clearing and grading. Maintenance must be performed once the basin loses 40% of capacity, and 30% for storm water basins retrofitted as sediment basins.

Silt Fence or Mulch Berms are typically used at the perimeter of a disturbed area. They are only for small drainage areas on relatively flat slopes or around small soil storage piles; not suitable where runoff is concentrated in a ditch, pipes or though streams. For large drainage areas where flow is concentrated, collect runoff in diversion berms or channels and pass it through a sediment pond prior to discharging it from the site.Combination barriers constructed of silt fence supported by welded wire fencing, mulch berms supported by rock check dams, or silt fence embedded within rock check dams may be effective within small channels. As with all sediment controls, silt fence or mulch berms must be capable of ponding runoff so that sediment can settle out of suspension. These must be installed within 7 days of first grubbing the area it controls. Whenever practical they should be installed before clearing or grubbing the area it controls.

Inlet Protection must be installed on all yard drains and curb drains when these inlets do not drain to a sediment trap or basin. Even if there is a sediment trap or basin, inlet protection is still recommended, as it will reduce the amount of sediment entering the basin and increase the overall sediment removal efficiency. Best used on roads with little or no traffic. If working properly, inlet protection will cause water to pond. If used on curb inlets, streets will flood temporarily during heavy storms, (overflow should be built-in.) Check with the authority that has jurisdiction over the roads before installing. They may prefer an alternate BMP. Care should be taken when placing inlet protection so that the runoff is not diverted to public roads or other areas where it could cause a hazard.

Permanent Stabilization must occur on areas at final grade within 7 days of reaching final grade. This is usually accomplished by using seed and mulch, but special measures are sometimes required. This is particularly true in drainage ditches or on steep slopes. These measures include the addition of topsoil, erosion control matting, rock riprap or retaining walls. See the Rainwater and Land Development Manual for seasonally adjusted seeding specifications. At all times of the year, the area should be temporarily stabilized until a permanent seeding can be applied.

Inspections shall be performed at least once a week and within 24 hours after a storm event greater than 1/2 inch of rainfall within a 24-hour duration using the enclosed Inspection Form. Inspections can be tracked using the enclosed Inspection Log. These shall be maintained throughout the development process and kept on file for three years per OEPA requirements. Erosion prevention and sediment control (EP&SC) measures shall be observed to ensure correct operation. Discharge locations shall be inspected to determine effectiveness of EP&SC measures in preventing significant impacts to the receiving waters. Where practices require repair or maintenance, it must be accomplished within three days of the inspection or as soon as site conditions allow. Repairs to sediment ponds shall be completed within 10 days or as soon as site conditions allow. Most of these BMP's are easy to implement with a little bit of planning and go a long way toward keeping your site clean and organized if they are properly installed and maintained. Please be sure to inform all parties on site how these BMPs affect their operations on the site, particularly those that will be working near a stream.

Erosion Prevention and Sediment Control Site Inspection Form

Inspector: _____ Date: _____

General:
Amount of rainfall since last inspection: _____inches
Overall site conditions: _____

Construction Entrances:
Is the entrance installed correctly according to the approved plan? YES NO N/A
(Check for mud in stones/street, runoff diverted from street, etc..)
Action Needed: _____

Sediment Basins/Traps:
Are all Basins installed correctly according to the approved plan? YES NO N/A
(Check for runoff directed to basin, down slope areas stabilized, riser pipe wrapped with wire fence/filter fabric, emergency overflow, accumulated sediment more than 40% of volume, etc..)
Action Needed: _____

Silt Fence/Mulch Berms:
Are all Silt Fence/Mulch Berm (SF/MB) installed correctly according to the approved plan? YES NO N/A (Check for fabric trenched in, follow contour, turned upslope at ends, silt accumulated, broken stakes, tight fabric, installed in all areas where sediment could leave the site)
Action Needed: _____

Inlet Protection:
Are all Inlet Protections installed correctly according to the approved plan? YES NO N/A
Check for runoff ponding, in good shape, silt accumulated, etc..)
Action Needed: _____

Temporary Stabilization:
Are all disturbed areas that will lie dormant for 21 days or more stabilized with seed/straw or mulch? (stockpiles, hillsides, etc..) YES NO N/A

Are all areas stabilized still in good condition and not eroding? YES NO N/A

Permanent Stabilization:
Have areas that achieved final grade within the last 7 days been stabilized? YES NO N/A

Do all storm water outflow areas have riprap or concrete to prevent scouring? YES NO N/A

Stream Crossing:
Are the Stream Crossings installed correctly according to the approved plan? YES NO N/A
(Check for stabilized edges, runoff diverted from stream, mud over stones, end of useful life, etc..)
Action Needed: _____

Item	Revision Description	Date	Drwn:	Chk:
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
2	REVISED PER CITY / DEVELOPER AND INTERNAL REVIEW COMMENTS	9-28-18	GJK	

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

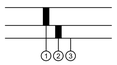
SEDIMENTATION & EROSION CONTROL DETAILS

LICENSED PROFESSIONAL ENGINEER
GREGORY J. KOCH
18441
IOWA
9/28/18

bauer
Item 5.B.
Drawing:
Drawn by: GD
Checked By: JK
Issue Date: 9-28-18
Sheet: C6.2

Plot time: Sep 28, 2018 - 9:24am
Drawing name: J:\2017\17-0335\CV\DW\17-0335 CD.dwg - Layout Tab: Details

Item 5.B.

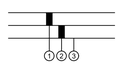


CONCRETE PAVEMENT DETAIL

NOT TO SCALE

1. 7" PORTLAND CEMENT CONCRETE PAVEMENT
2. 6" CRUSHED STONE BASE COURSE
3. SUBGRADE COMPACTION PER THE SITE GEOTECHNICAL REPORT

NOTES:
1. SAWCUT JOINTS TO 2" DEPTH.
2. JOINTS SPACING AT 12'-0" O.C. MAX.

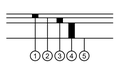


CONCRETE WALK PAVEMENT DETAIL

NOT TO SCALE

1. 5" PORTLAND CEMENT CONCRETE WALK
2. 4" CRUSHED STONE BASE COURSE
3. SUBGRADE COMPACTION PER THE SITE GEOTECHNICAL REPORT

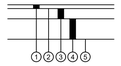
NOTES:
1. SAWCUT JOINTS TO 2" DEPTH.
2. SITE WALK JOINTS SPACING EVERY 5'-0".
3. FOR JOINTING IN WALK AT BUILDING, SEE ARCHITECTURAL PLAN.



LIGHT DUTY PAVEMENT DETAIL

NOT TO SCALE

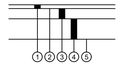
1. 2" ASPHALT CONCRETE SURFACE COURSE
2. TACK COAT
3. 2" BINDER COURSE
4. 7" CRUSHED STONE BASE COURSE
5. SUBGRADE COMPACTION PER THE SITE GEOTECHNICAL REPORT



HEAVY DUTY PAVEMENT DETAIL

NOT TO SCALE

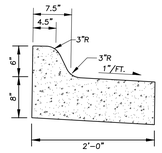
1. 2" ASPHALT CONCRETE SURFACE COURSE
2. TACK COAT
3. 3" BINDER COURSE
4. 8" CRUSHED STONE BASE COURSE
5. SUBGRADE COMPACTION PER THE SITE GEOTECHNICAL REPORT



HEAVY DUTY (30 YEAR) PAVEMENT DETAIL

NOT TO SCALE

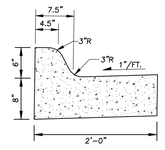
1. 2" ASPHALT CONCRETE SURFACE COURSE
2. TACK COAT
3. 3.5" BINDER COURSE
4. 8" CRUSHED STONE BASE COURSE
5. SUBGRADE COMPACTION PER THE SITE GEOTECHNICAL REPORT



2' MODIFIED CURB & GUTTER*

NOT TO SCALE

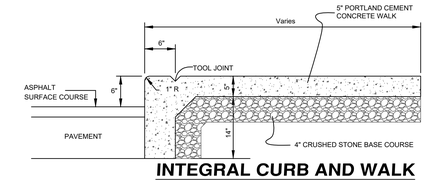
*NOTE:
PROVIDE TRANSVERSE 'C' JOINTS THROUGH CURB & GUTTER AT A 15' SPACING



2' CURB & GUTTER*

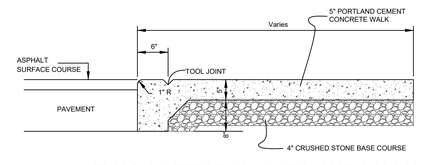
NOT TO SCALE

*NOTE:
PROVIDE TRANSVERSE 'C' JOINTS THROUGH CURB & GUTTER AT A 15' SPACING



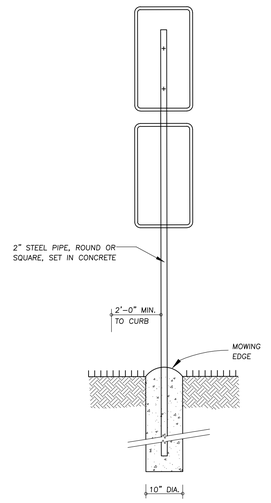
INTEGRAL CURB AND WALK

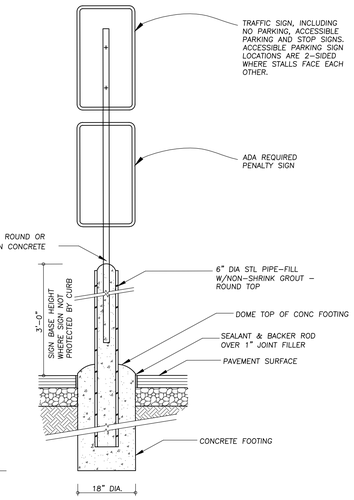
NOT TO SCALE

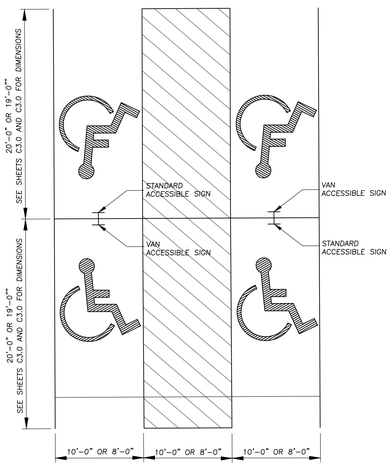


FLUSH INTEGRAL CURB AND WALK

NOT TO SCALE







'N IN LANDSCAPE AREA OR SIDEWALK

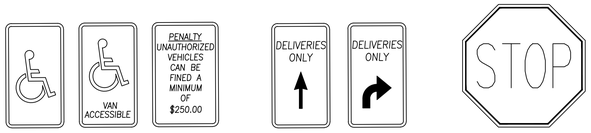
NOT TO SCALE

SIGN IN PARKING LOT OR DRIVE

NOT TO SCALE

HANDICAP PARKING SPACE DETAIL

NOT TO SCALE



12" X 18" FLAT SCREEN STEEL SIGN W/ WHITE LETTERS ON BLUE BACKGROUND TO COMPLY W/ ADA GUIDELINES.

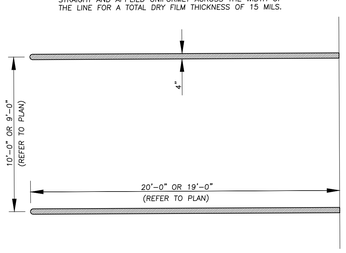
12" X 18" FLAT SCREEN STEEL

30" X 30" FLAT SCREEN STEEL

SIGN DETAILS

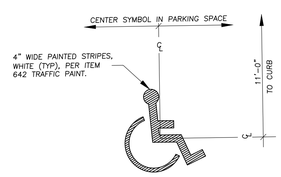
NOT TO SCALE

NOTE:
1. PARKING BAYS, END ISLANDS, ACCESSIBLE SPACES AND PEDESTRIAN STRIPING SHALL BE SINGLE 4-INCH WIDE WHITE STRIPE. APPLY TWO COATS OF VOC COMPLIANT, LOCAL DOT APPROVED, UNDILUTED, SOLVENT BASED OR LATEX TRAFFIC PAINT. USE MANUFACTURE'S RECOMMENDED APPLICATION RATE, WITHOUT ADDITION OF A THINNER, WITH A MAXIMUM OF 1200 SQUARE FEET PER GALLON OR AS REQUIRED PROVIDING MINIMUM OF 30 DAYS BETWEEN APPLICATIONS. SECOND COAT OF PAINT SHALL NOT BE APPLIED EARLIER THAN 7 DAYS PRIOR TO OPENING OF THE TARGET STORE. PAINT SHALL BE CRISP, STRAIGHT AND APPLIED UNIFORMLY ACROSS THE WIDTH OF THE LINE FOR A TOTAL DRY FILM THICKNESS OF 15 MILS.



STRIPING DETAIL

NOT TO SCALE



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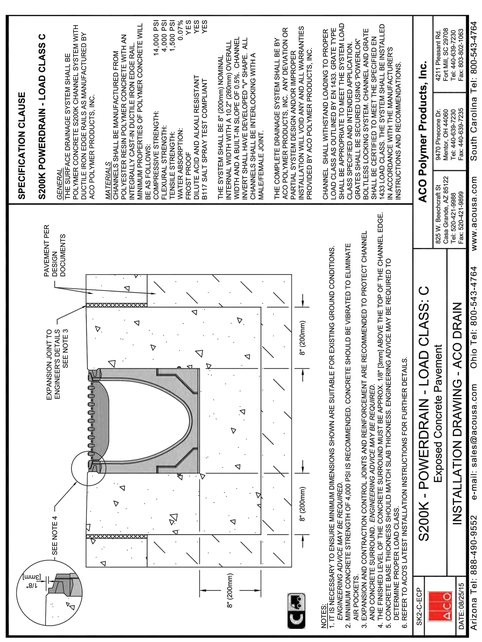
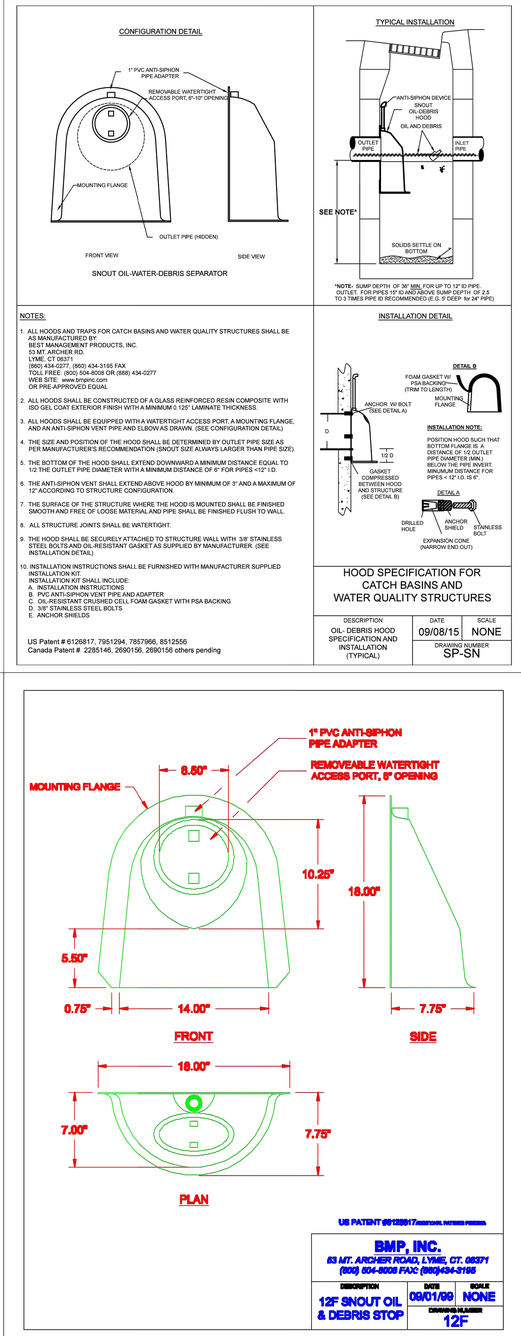
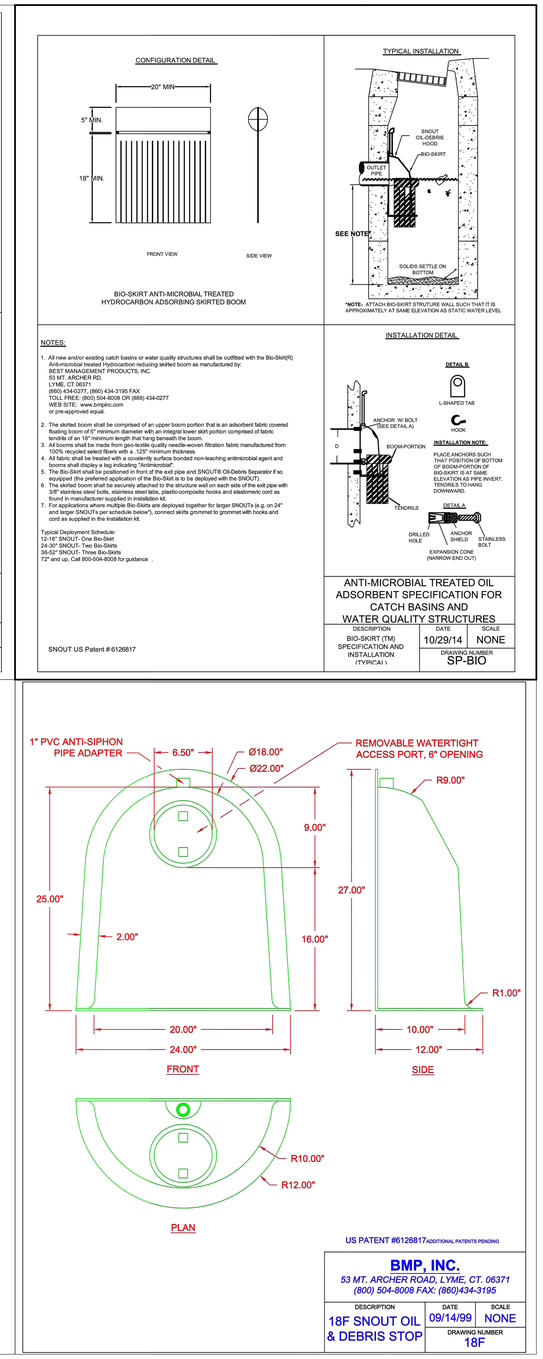
NOT TO SCALE







Item	Revision Description	Date	Drwn:	Chk:
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
2	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	9-28-18	GJK	

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS, IOWA

SITE & PAVEMENT DETAILS

bayer becker
Engineering | Surveying | Planning
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 CD
Drawn by: GJK
Checked By:
Issue Date: 07-06-18
Sheet: C7.0

Plot time: Sep 28, 2018 - 9:35am
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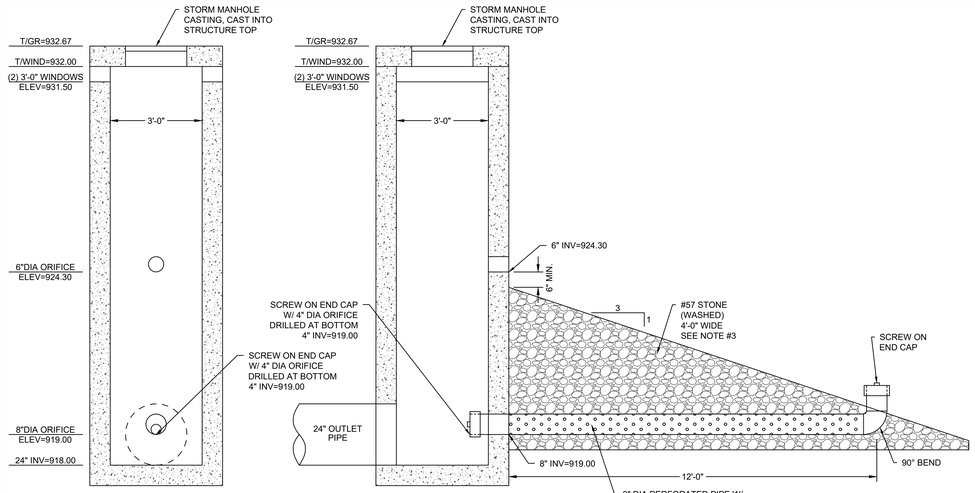
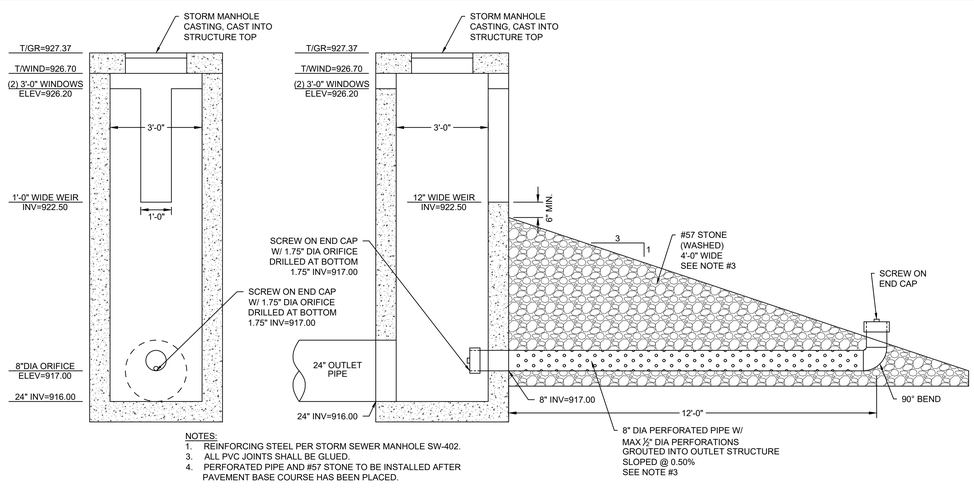


NOTES:
1. REINFORCING STEEL PER STORM SEWER MANHOLE SW-402.
3. ALL PVC JOINTS SHALL BE GLUED.
4. PERFORATED PIPE AND #57 STONE TO BE INSTALLED AFTER PAVEMENT BASE COURSE HAS BEEN PLACED.

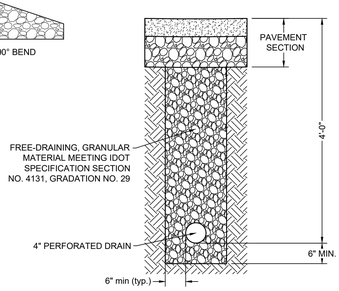
BASIN #1 OUTLET STRUCTURE DETAILS



NOTES:
1. REINFORCING STEEL PER STORM SEWER MANHOLE SW-402.
3. ALL PVC JOINTS SHALL BE GLUED.
4. PERFORATED PIPE AND #57 STONE TO BE INSTALLED AFTER PAVEMENT BASE COURSE HAS BEEN PLACED.

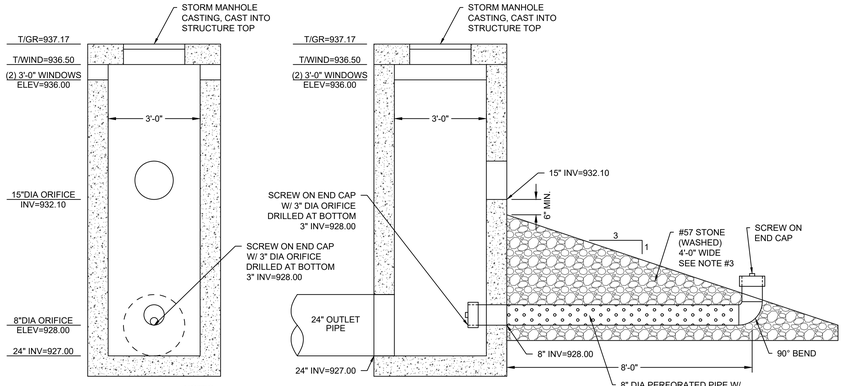
BASIN #2 OUTLET STRUCTURE DETAILS

NOT TO SCALE



PAVEMENT UNDERDRAIN DETAIL

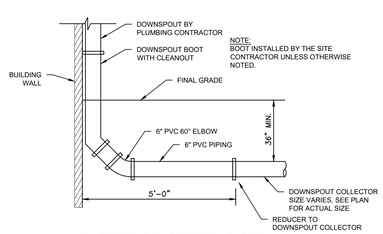
NOT TO SCALE



NOTES:
1. REINFORCING STEEL PER STORM SEWER MANHOLE SW-402.
2. ALL PVC JOINTS SHALL BE GLUED.
3. PERFORATED PIPE AND #57 STONE TO BE INSTALLED AFTER PAVEMENT BASE COURSE HAS BEEN PLACED.

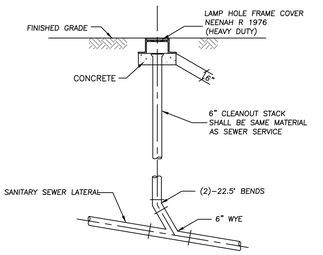
BASIN #3 OUTLET STRUCTURE DETAILS

NOT TO SCALE



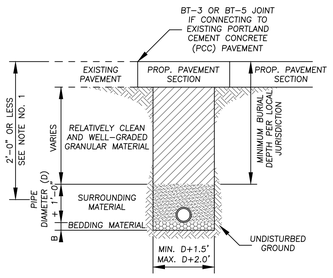
DOWNSPOUT BOOT

NOT TO SCALE



TYPICAL INLINE CLEAN OUT DETAIL

NOT TO SCALE



TYPICAL TRENCH DETAIL

NOT TO SCALE

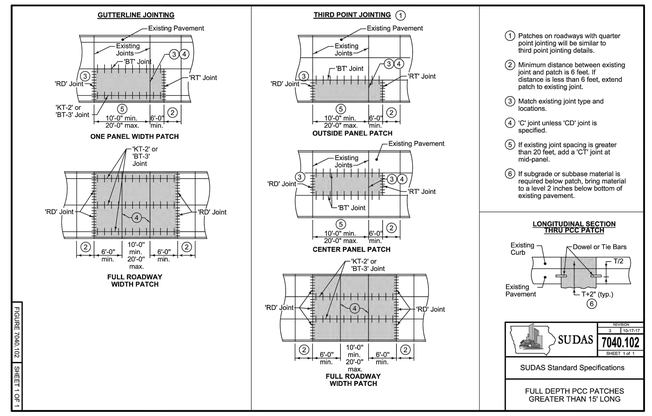
NOTES:
1. THE SURROUNDING MATERIAL MUST BE INSTALLED TO THE PAVEMENT BASE ELEVATION IF THERE IS LESS THAN 2'-0" OF FILL OVER THE PIPE.
2. COMPACT ALL BEDDING, SURROUNDING, AND BACKFILL MATERIALS PER GEOTECH REPORT.
3. WHERE A PIPE HAS A SLOPE GREATER THAN OR EQUAL TO 4% OR WHERE GROUNDWATER IS PRESENT, CLAY DAMS SHALL BE INSTALLED AROUND THE PIPE EVERY 100' TO PREVENT WASHOUT AROUND THE PIPE.
4. FILL LIFT THICKNESS:
   4.1. 8-INCHES OR LESS IN LOOSE THICKNESS, WHEN HEAVY, SELF PROPELLED COMPACTION EQUIPMENT IS USED.
   4.2. 6-INCHES OR LESS IF HAND COMPACTION EQUIPMENT USED (I.E., JUMPING JACK, PLATE COMPACTOR OR WALK BEHIND COMPACTOR.

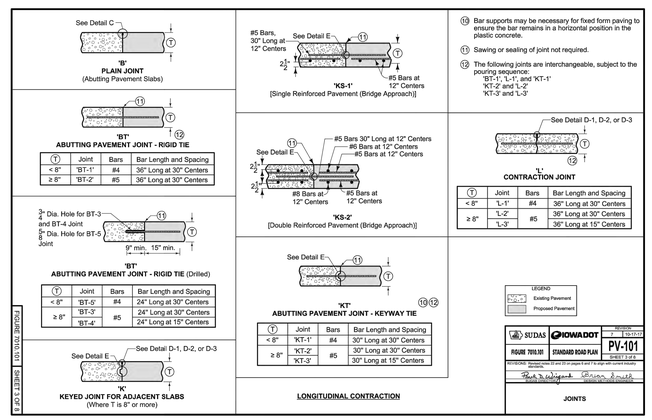
RECOMMENDED FILL MATERIALS

TYPE OF PIPE	SURROUNDING MATERIAL TYPE	B-DIMENSION	BEDDING MATERIAL TYPE
DUCTILE IRON PIPE	"A", "B", OR "C"	3"	SAND OR "C"
RCP PIPE	"B" OR "C"	3"	SAND OR "C"
ALL PIPE OVER BEDROCK	"B" OR "C"	6"	SAND OR "C"
PLASTIC-ALL	"C"	6"	SAND OR "C"

"RECOMMENDED FILL MATERIALS" ARE MINIMUM REQUIREMENTS. CONTRACTOR SHALL ENSURE COMPLIANCE WITH LOCAL JURISDICTION AND/OR THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.

MATERIAL TYPES:
"A": GRAVEL MATERIAL WHICH HAS NO STONES GREATER THAN 1.5" DIAMETER.
"B": STONE WITH 100% PASSING 1.5" SQUARE SIEVE, A MAXIMUM OF 25% PASSING A ¾" SQUARE SIEVE AND A MAXIMUM 5% PASSING A ¾" SQUARE SIEVE, PEA GRAVEL, BANK RUN, OR RUN OF BANK.
"C" CRUSHED STONE WITH 100% PASSING A 1" SQUARE SIEVE AND 0-5% PASSING A ¾" SQUARE SIEVE, PEA GRAVEL, OR OTHER NATURAL FREE DRAINING STONE MATERIAL WITH LESS THAN 10% P200 (PASSING NO. 200 SIEVE).





Item	Revision Description	Date	Drwn	Chk
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	
2	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	9-28-18	GJK	

LICENSED PROFESSIONAL ENGINEER
GREGORY J. KOCH
18441
IOWA
9/28/18

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

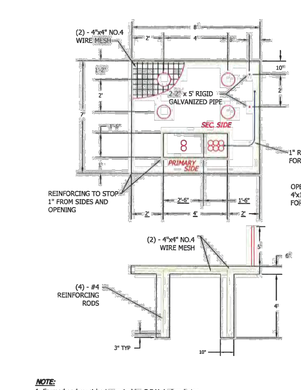
STORM SEWER DETAILS

bauer
Item 5.B.

Drawing:
Drawn by: CD
Checked By: JK
Issue Date: 9-28-18
Sheet:

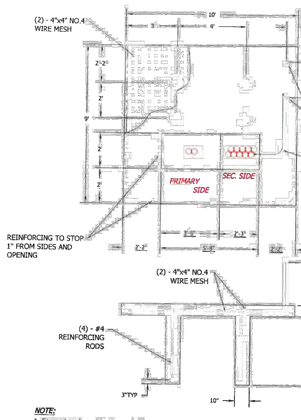
-47-

Plot time: Sep 28, 2018 - 9:36am
Drawing name: J:\2017\17-0335\CVDWG\17-0335 CD.dwg - Layout Tab: Details



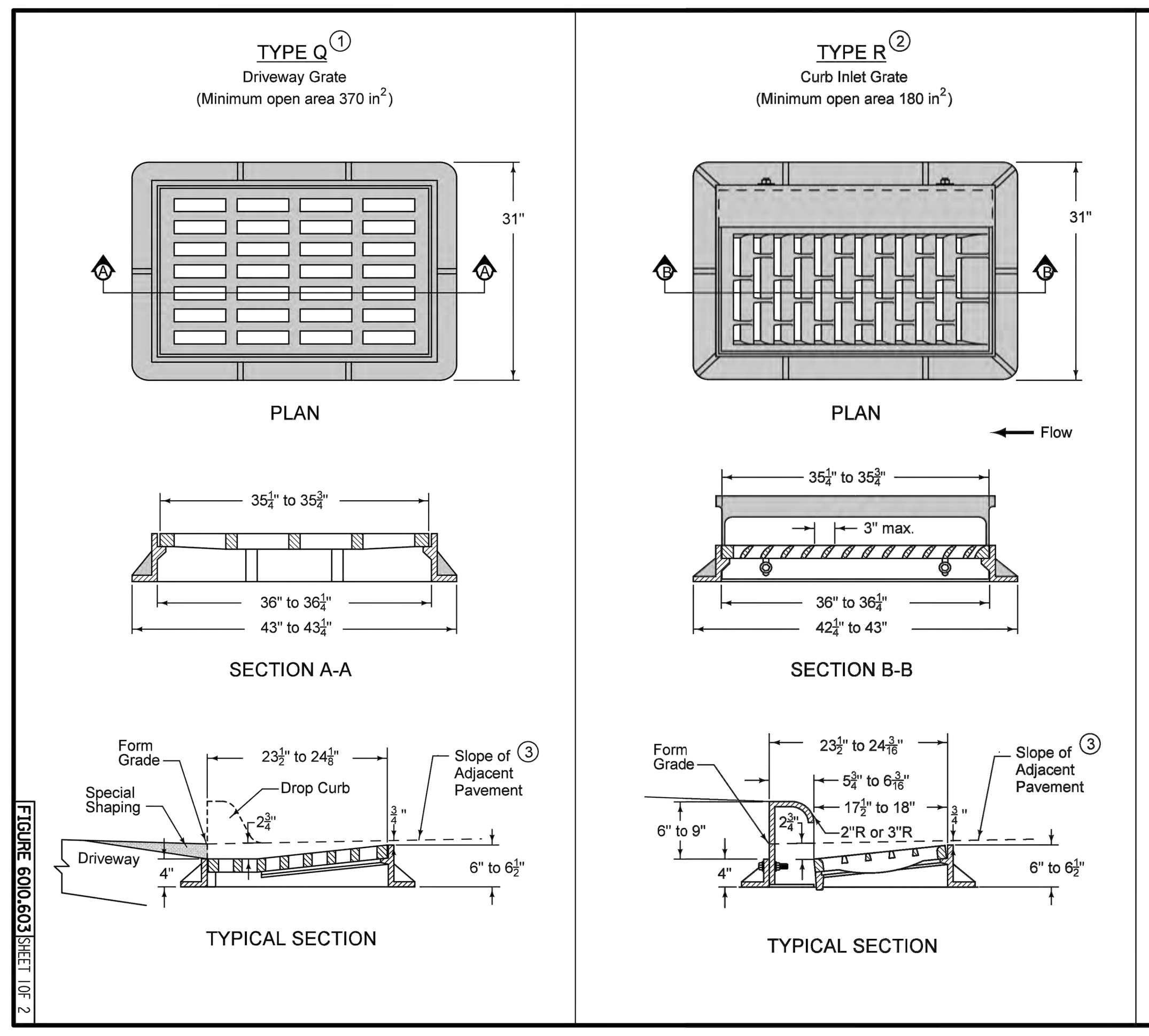
NOTE:
1. Formed pad must be inspected by C.F.U. before being poured or it will not be accepted.
   - Call the planner at 268-5297.
2. Contractor to stub conduits out for C.F.U..
   - Conduits provided by C.F.U..
3. All conduits cut flush with top of pad.
4. Place primary conduits as shown.
5. Bollards to be installed by the contractor, where the transformer is subject to vehicle damage.

CONSTRUCTION STANDARDS
3 PHASE KVA TRANSFORMER PAD
500KVA OR LESS
LAST UPDATE 11/06/03
16.705-1



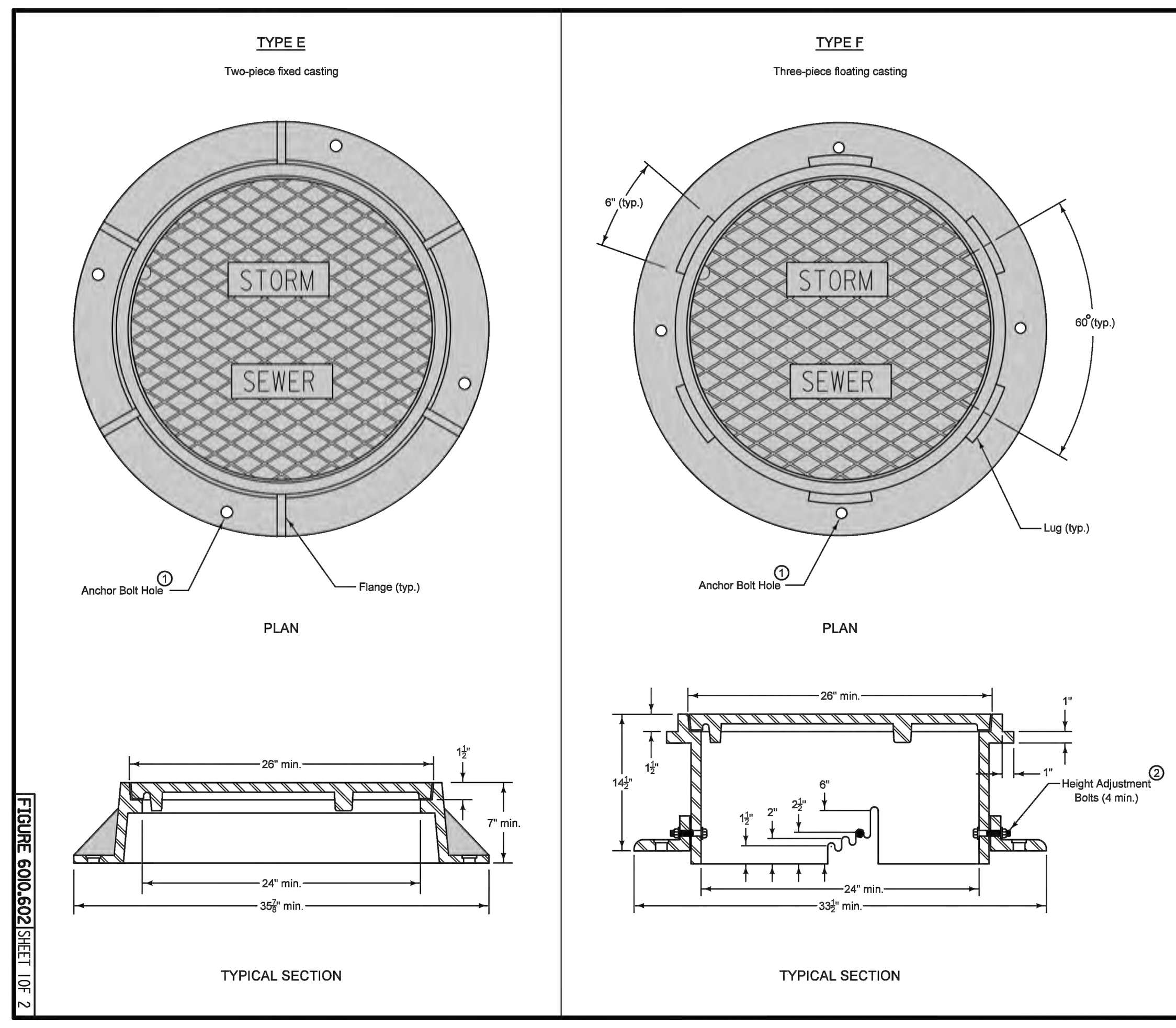
NOTE:
1. Formed pad must be inspected by C.F.U. before being poured or it will not be accepted.
   - Call the planner at 268-5297.
2. Contractor to stub conduits out for C.F.U..
   - Conduits provided by C.F.U..
3. All conduits cut flush with top of pad.
4. Place primary conduits as shown.
5. Bollards to be installed by the contractor, where the transformer is subject to vehicle damage.

CONSTRUCTION STANDARDS
TRANSFORMER PAD FOR
1500KVA - WITH METER IN PAD
LAST UPDATE 03/02/18
16.705-2



1. For use at curb drops for driveways. Use only when specified in the contract documents.
2. Provide bicycle-safe vane-style grate. At low points, grates with vanes facing both directions of flow are allowed.
3. For details of boxout pavement, refer to SW-514.

SW-603 — CASTINGS FOR GRATE INTAKES

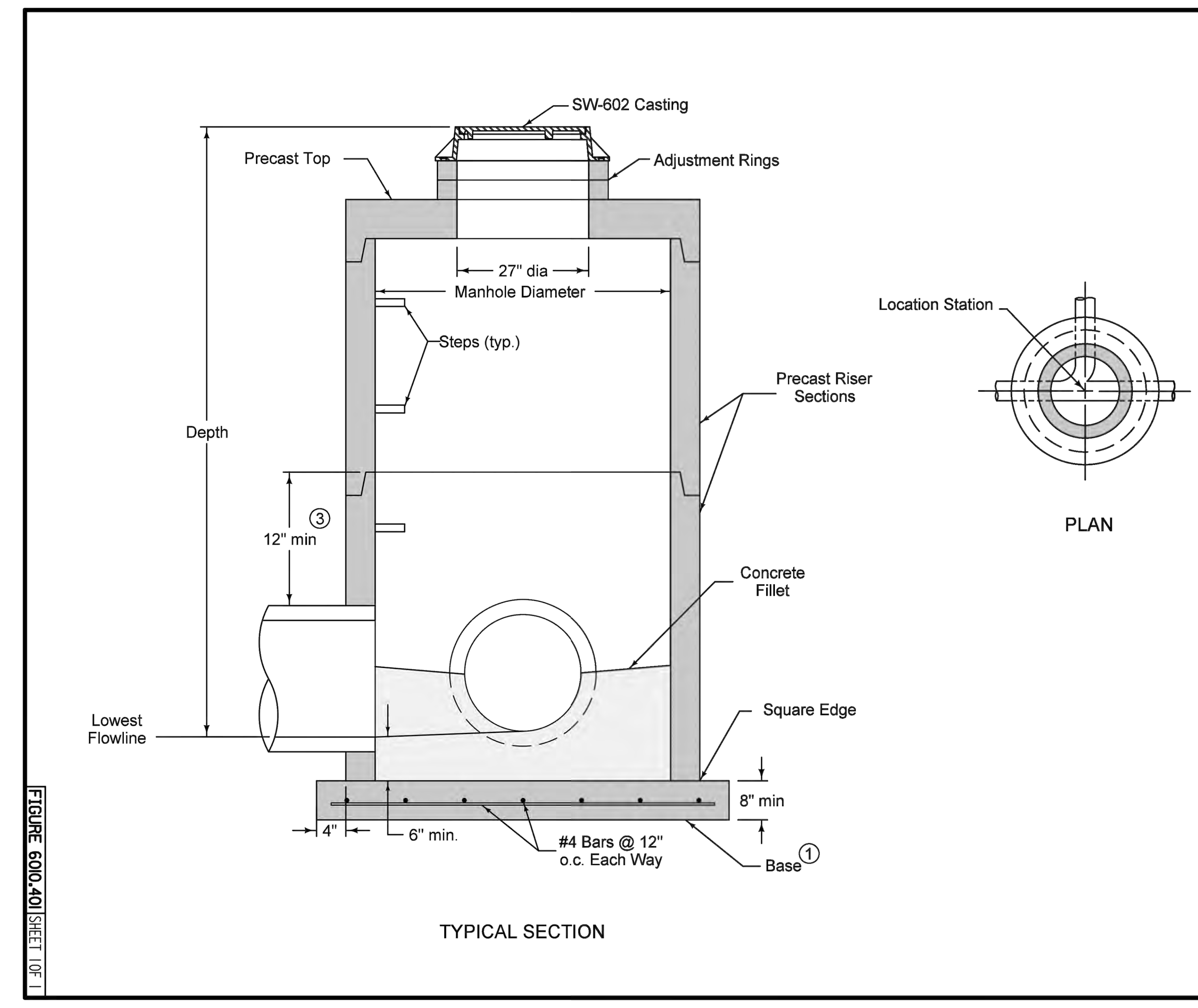


Frame Notes:
Size and spacing of lugs and flanges may vary.

Cover Notes:
Roughness pattern and text styles may vary.
Minimum one concealed pickhole.

1. When the contract documents require the frame to be attached to the structure, drill four 3/4" diameter holes or slots, equally spaced around frame.
2. Set casting at proper grade using one of the adjustment slots. Remove bolts upon completion of paving.

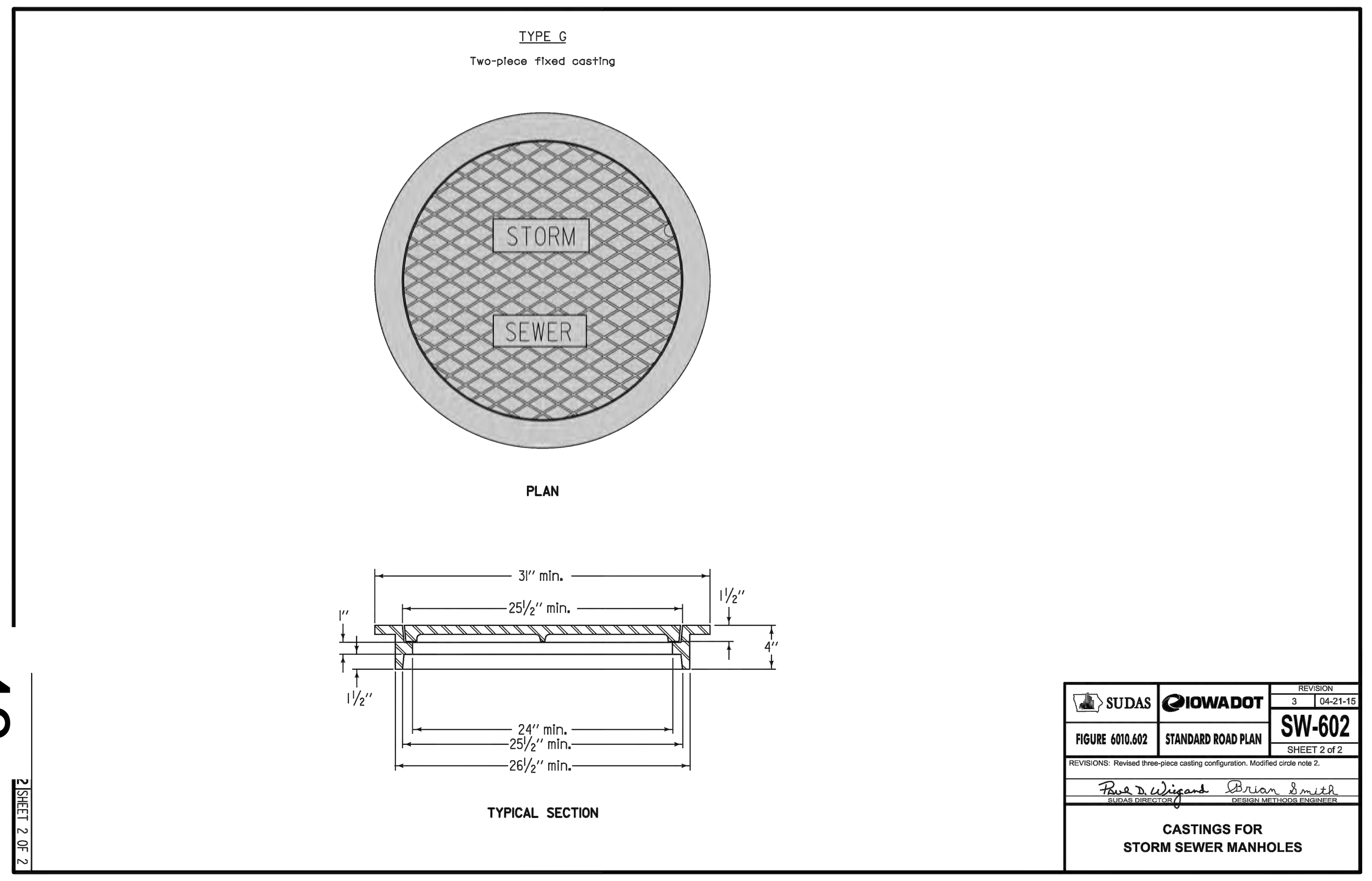
SW-602 — CASTINGS FOR STORM SEWER MANHOLES



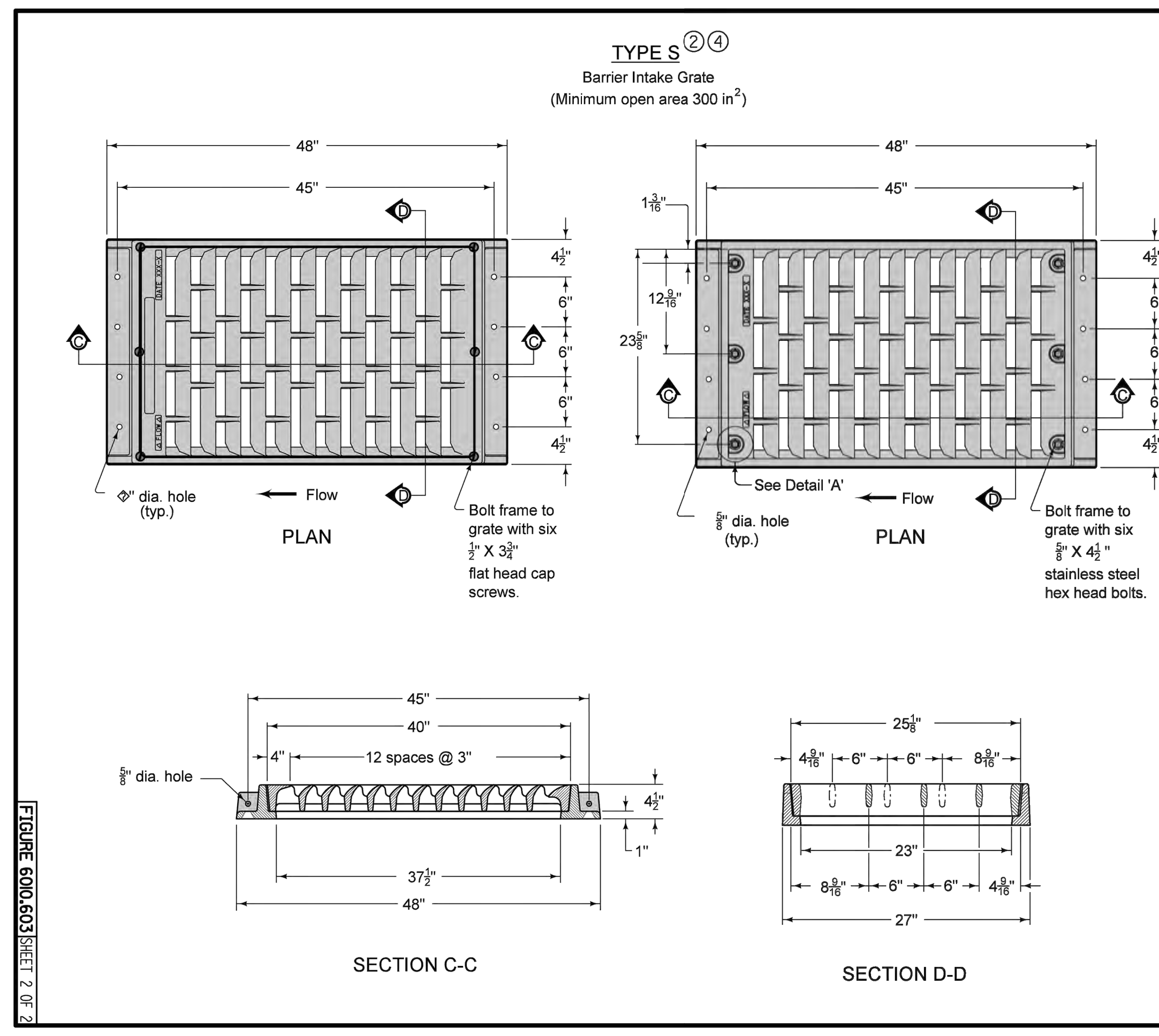
1. Cast-in-place base shown. If base is precast integral with bottom riser, the footprint of the base is not required to extend beyond the outer edge of the riser.
2. For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
3. 12 inch minimum riser height above all pipe openings.

Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes (2)	
	At 180° Separation	At 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

SW-401 — CIRCULAR STORM SEWER MANHOLE



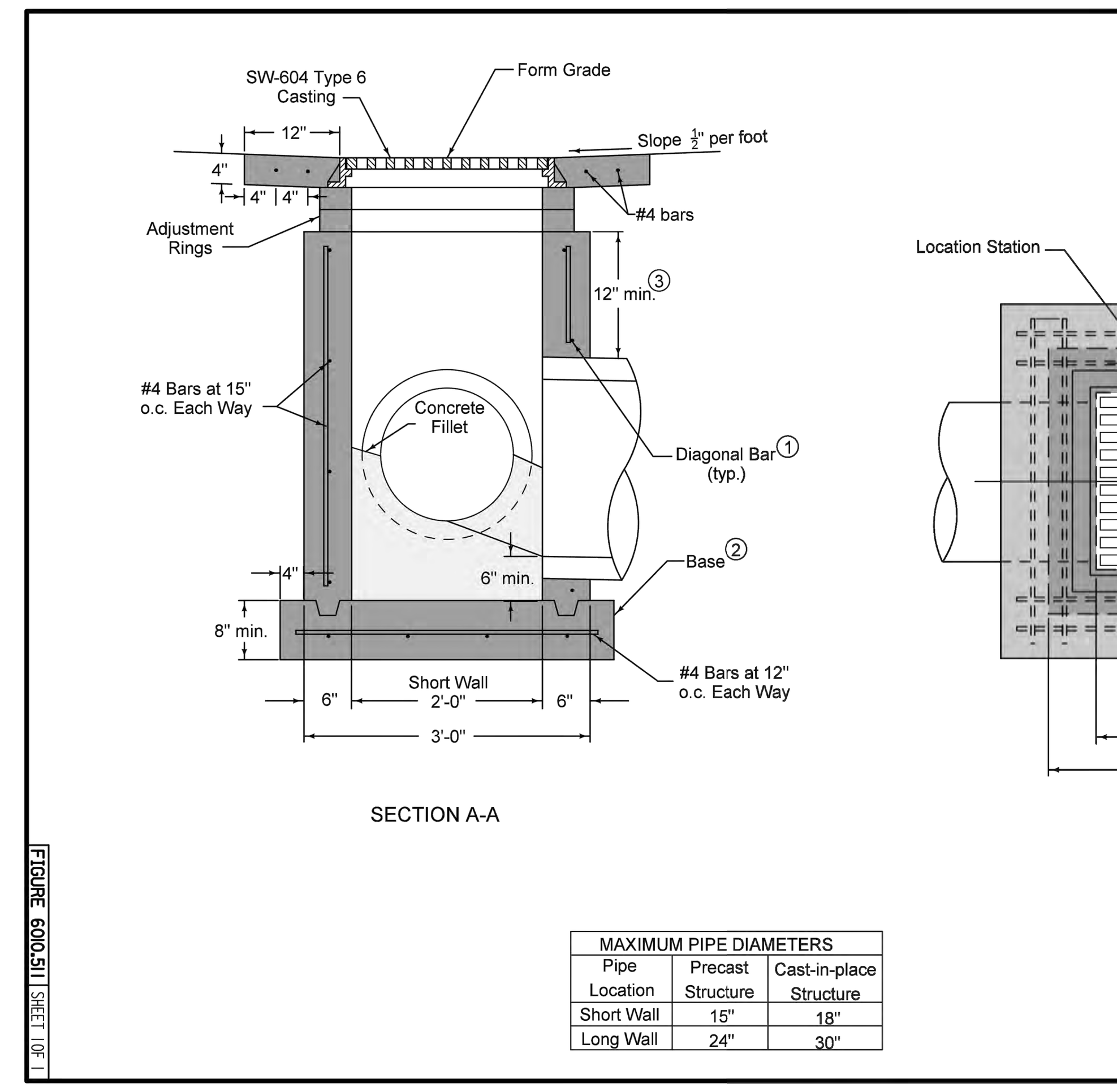
SW-602 — CASTINGS FOR STORM SEWER MANHOLES



2. Provide bicycle-safe vane-style grate. At low points, grates with vanes facing both directions of flow are allowed. The Contractor has the choice of which Type S Grate to use.
4. Use ductile iron frame castings meeting the requirements of ASTM A 536.

Frame minimum weight = 220 lbs.
Grate minimum weight = 340 lbs.

SW-603 — CASTINGS FOR GRATE INTAKES

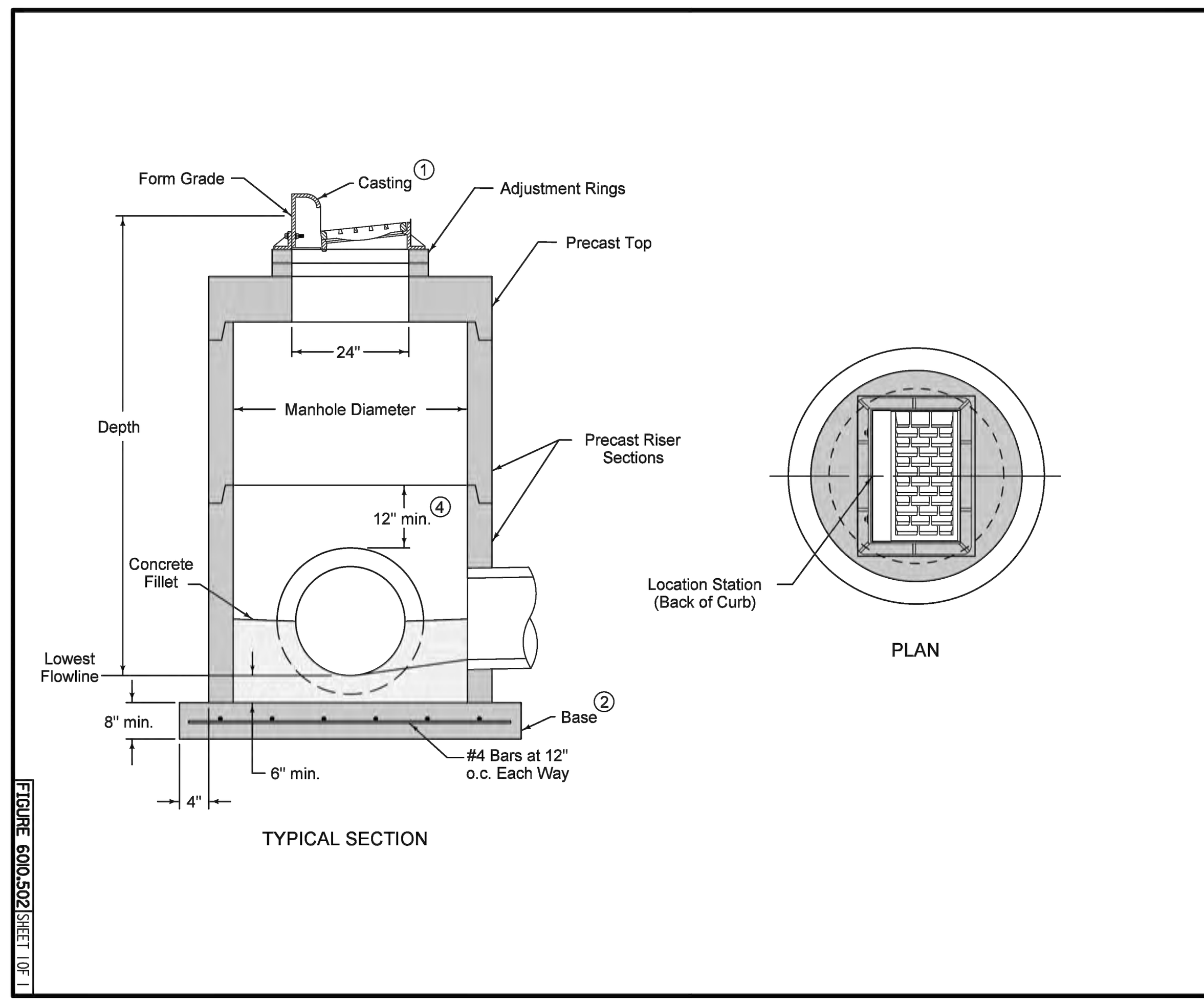


1. Install four #4 diagonal bars at all pipe openings.
2. Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
3. 12 inch minimum wall height above all pipes.

MAXIMUM PIPE DIAMETERS

Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	15"	18"
Long Wall	24"	30"

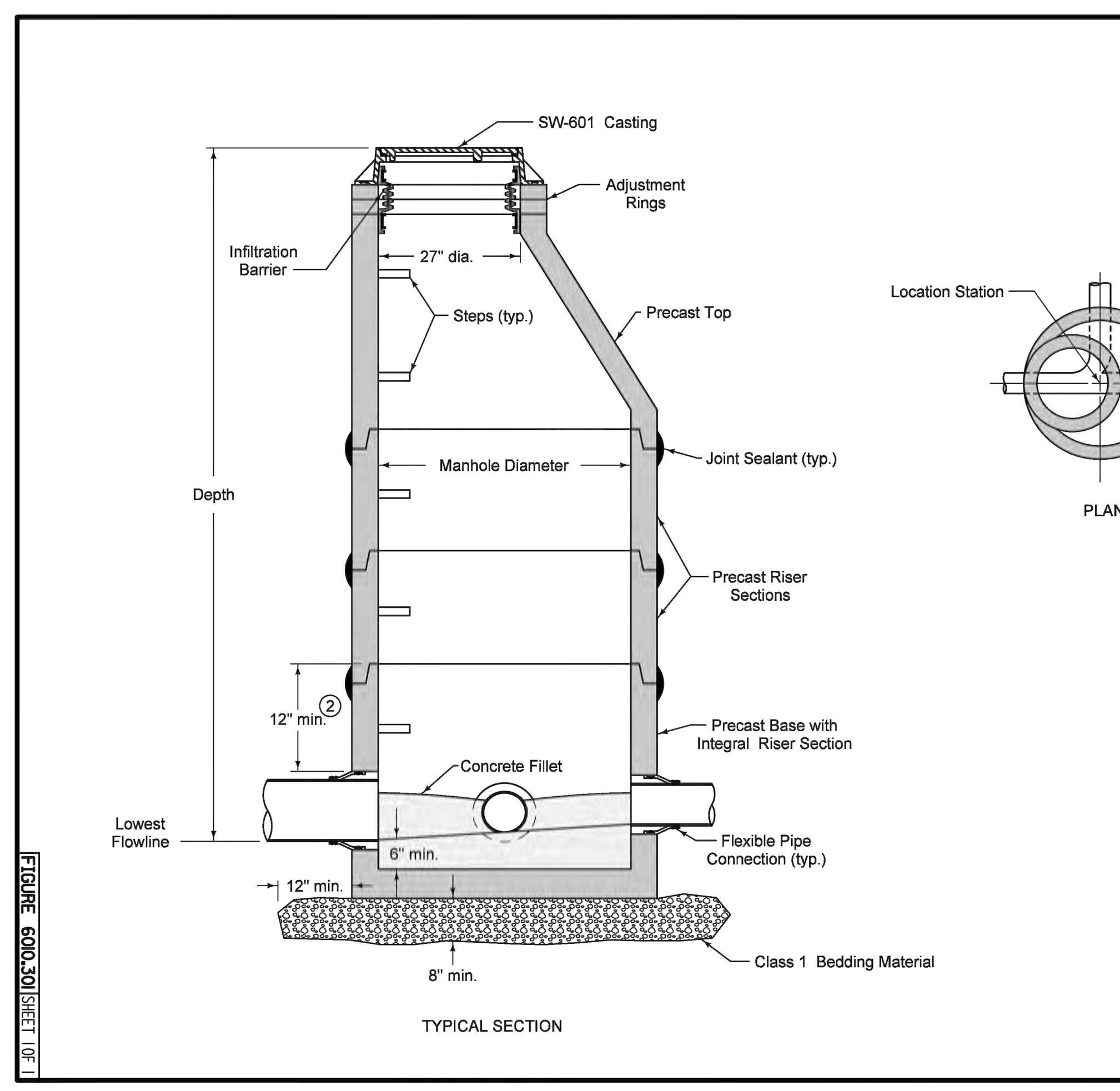
SW-511 — RECTANGULAR AREA INTAKE



Refer to SW-514 for boxout details.
1. SW-603 Type R unless Type Q is specified in the contract documents.
2. Cast-in-place base shown. Base may be square. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
3. For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
4. 12 inch minimum riser height above all pipes.

Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes (3)	
	at 180° Separation	at 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

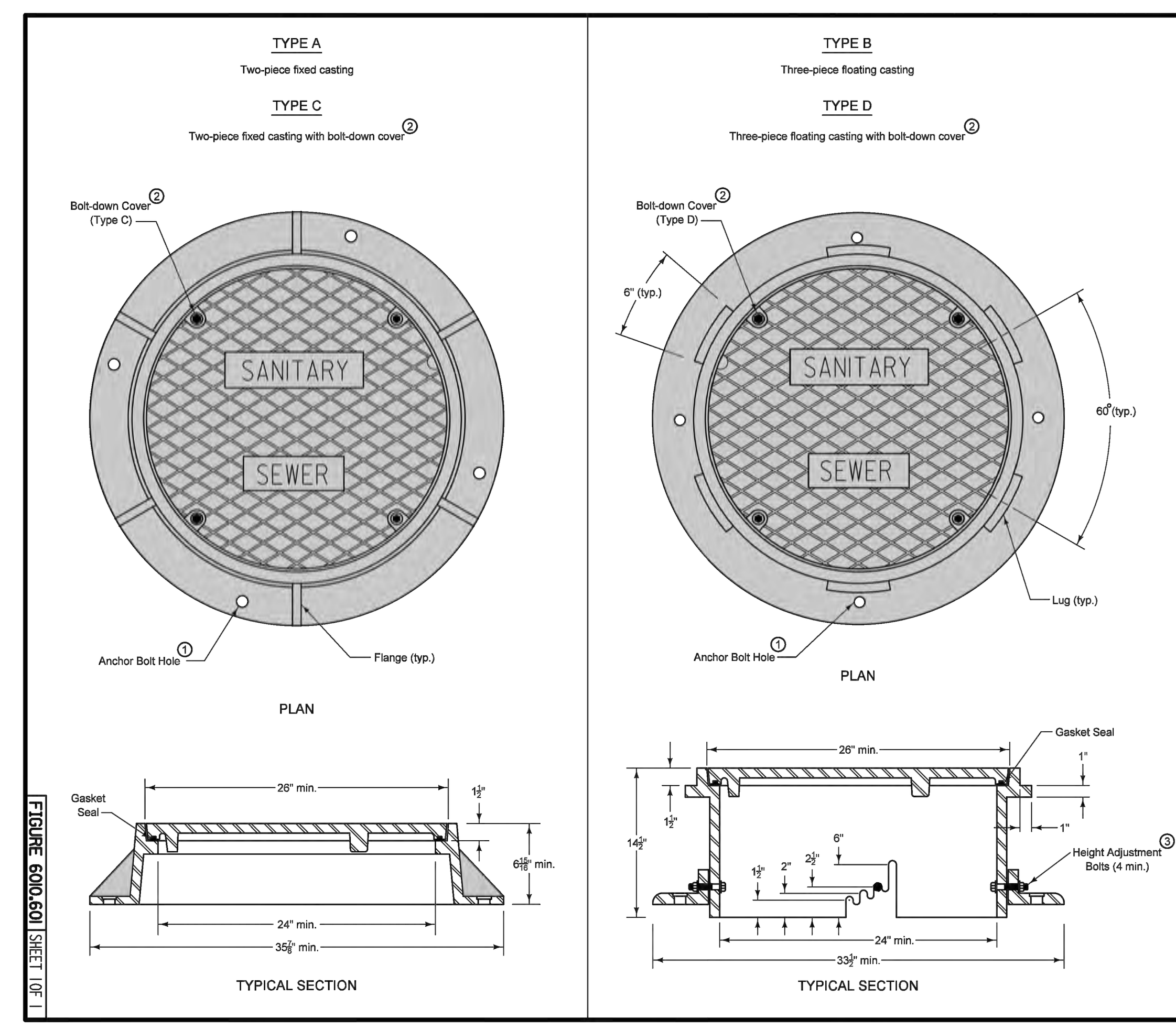
SW-502 — CIRCULAR SINGLE GRATE INTAKE



1. For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
2. 12 inch minimum riser height above all pipe openings.

Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes (1)	
	At 180° Separation	At 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

SW-301 — CIRCULAR SANITARY SEWER MANHOLE



Frame Notes:
Size and spacing of lugs and flanges may vary.

Cover Notes:
Roughness pattern and text style may vary.
Minimum one concealed pickhole.

1. When the contract documents require the frame to be attached to the structure, drill four 3/4" diameter holes or slots, equally spaced around frame.
2. If specified, furnish bolt down frame and cover with four 3/4" x 2 1/2" stainless steel, hex head, recessed cap screws. Secure cover with screws, washers, and rubber gasket seals.
3. Set casting at proper grade using one of the adjustment slots. Remove bolts upon completion of paving.

SW-601 — CASTINGS FOR SANITARY SEWER MANHOLES

Item	Revision Description	Date	Drawn	Chk.
1	REVISIONS PER CITY COMMENTS	7-26-18	GJK	

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

STORM SEWER & SANITARY SEWER DETAILS

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 CD
Drawn by: GJK
Checked By:
Issue Date: 07-06-18
Sheet: C7.2

Plot time: Sep 18, 2018 - 2:38pm
Drawing name: J:\2017\17-0335\CVD\DWG\17-0335 CD.dwg - Layout Tab: Details

RSP bayer becker

Item 5.B.

10.17.18

RSP bayer becker

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RSP

bayer becker

10.17.18

RSP FF bayer becker

10.17.18

RSP FF bayer becker

RSP bayer becker

10.17.18

RSP

bayer becker

Item 5.B.

10.17.18

RSP bayer becker

10.17.18

RSP bayer becker

RSP FF bayer becker

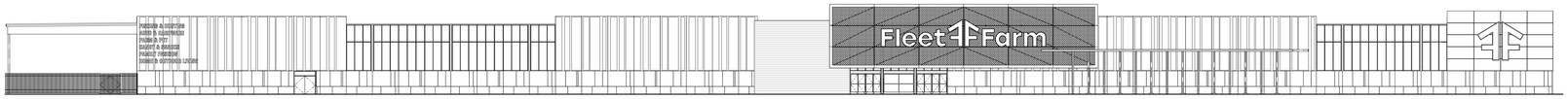
10.17.18

CEDAR FALLS, IA

FLEET FARM -RETAIL STORE

Henry Property

PROJECT NUMBER: 295210700



DOCUMENT PACKAGE

ISSUED: .09.2018

PACKAGE: PLANNING & ZONING SUBMITTAL

LOCATION MAP

SITE PLAN

PROJECT TEAM

OWNER

Fleet Farm C/O Midland Atlantic Development Co. LLC
8044 Montgomery Road, Suite 370
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Phone: 513/792-5000

Nicole Chimento Dracon, Director of Leasing
Phone: 513/587-6167
Email: nchimento@midlandatlantic.com

CONTRACTOR

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Nicole Nebelung, Project Representative
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Bob Steckel
Phone: 262/377-7602
Email: bob.steckel@ambeng.com

MECHANICAL ENGINEER

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Kansas City, MO 64108
Phone: 913/207-1484

Robert Harris
Phone: 816/997-9614
Email: robert.harris@dialecticeng.com

ELECTRICAL ENGINEER

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Kansas City, MO 64108
Phone: 913/207-1484

Robert Harris
Phone: 816/997-9614
Email: robert.harris@dialecticeng.com

CODE SUMMARY

PROJECT NAME

PROJECT DESCRIPTION:

New retail store with lumber yard and gas station.

APPLICABLE CODES:

2015 International Building Code
2013 ICC/ANSI A117.1 Accessibility Code
2015 International Mechanical Code
2015 International Fire Code
2015 Uniform Plumbing Code
2017 National Electrical Code
2012 International Energy Conservation Code

OCCUPANCY:
IBC Section 302 and 508, and Table 302.3.3
Proposed:
M-Mercantile
S1-Storage
Non-separated use

TYPE OF CONSTRUCTION:
IBC Chapter 6, Tables 601, 602, 704.8 and Sections 602, 704.5 and 704.8.

Proposed:
Type VB
HEIGHT AND NUMBER OF STORIES:
IBC Table 503 and Section 504

Allowable Height: 60 feet per 504.2
Allowable Stories: 2 stories per 504.2

Actual Height: 32'-0"
Actual Stories: 1

ALLOWABLE FLOOR AREA:
IBC Table 503 and Section 505, 506 and 507

Allowable Floor Area: Unlimited, Sprinklered w/ 60' clear yards

Area determination: **203,905 SF Main Store**

FIRE RESISTIVE REQUIREMENTS:

Table 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (hours)

BUILDING ELEMENT	TYPE V B
Structural frame	0
Bearing walls	
Exterior	0
Interior	0
Nonbearing walls and partitions	
Exterior	0 (per Table 602)
Interior	0
Floor construction	0
Roof construction	0

Corridor Construction: **No rating required**
IBC Section 1004.3.2.

Interior Finishes:
IBC Chapter 8 and Table 803.4.

EXITING REQUIREMENTS:
IBC Table 1003.2.2

Occupant Load Factors (OLF): 60 Mercantile
100 Offices
300 S1 Stock
300 Mechanical

EGRESS WIDTH:
Table 1003.2.3
Refer to sheet A021 for Occupant Loads from each space.

EXIT ACCESS: – STORE

Minimum Number of Exits:

	REQUIRED	PROVIDED
First Floor	4	16

Exit Access Travel Distance: **250 feet**
IBC Section 1004.2.4.

Common Path of Egress Travel: **75feet**
IBC Section 1004.2.5.

Corridor Fire-Resistance Rating: **0 hours**
IBC Section 1004.3.2.1.

Dead Ends: **25 feet**
IBC Section 1004.3.2.3.

PLUMBING CALCULATION:

Minimum Number of Fixtures:
IBC Chapter 29 and Table 2902.1

Water Closets:	Calculation	Required	Provided
First Floor:			
Men	1552	4	4 Public, 3 Staff
Women	1552	4	4 Public, 3 Staff

Note: Urinals may be substituted for up to 67% of required water closets.

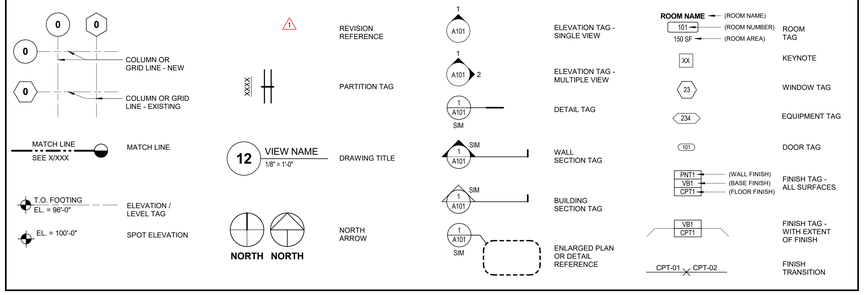
Lavatories:			
First Floor:			
Men	1552	3	3 Public, 1 Staff
Women	1552	3	3 Public, 1 Staff
Drinking Fountains:			
First Floor:	3101 / 1000	4	4

Service Sinks: 1 per floor

SHEET INDEX

SHEET NO.	NAME	ISSUES: PLANNING SUBMITTAL
	ISSUE KEY: 1 ISSUED (WITH SIGNATURE); 2 REVISED AND RE-ISSUED (WITH SIGNATURE); 3 NOT FOR CONSTRUCTION - REFERENCE ONLY; 4 RE-ISSUED FROM A PRIOR BID PACK - NO REVISIONS	
00 GENERAL		
G001	COVER SHEET	3
04 ARCHITECTURAL		
A021	CODE REVIEW/ EXIT DIAGRAM	3
A200	EXTERIOR ELEVATIONS	3

DRAWING SYMBOLS



RSP Architects
1220 Marshall Street NE
Minneapolis
Minnesota 55413-1036
612.677.7100
612.677.7499 fax
www.rsparch.com

Consultants

NOT FOR CONSTRUCTION 9 JULY, 2018

Certification

Name Robert Lucius
License Number 3570
Date Signed

Project For

CEDAR FALLS, IA

FLEET FARM -RETAIL STORE

Project No. 295210700
Drawn By BGW
Checked By NHN
Date 07/09/18

Sheet Issues / Revisions

No.	Date	Description

Item 5.B.

COVER S G001

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Occupant Load Calculations

Name	Area	Occupancy Group	Occupant Load Factor From IBC Table 1004.1.1	Occupant Load Input
AUTO	3583 SF	S1	300	12
BREAK/CONFERENCE	2799 SF	A	15	189
CASH	189 SF	B	100	2
ELEC.	144 SF	Mechanical	300	1
ELEC. DATA	185 SF	Mechanical	300	1
ELECTRICAL	647 SF	Mechanical	300	1
FIRE PUMP	280 SF	Mechanical	300	1
JAN.	64 SF	Mechanical	300	1
LOADING DOCK	2700 SF	S1	300	10
LOSS PREV	185 SF	B	60	2
MECHANICAL	215 SF	Mechanical	300	1
MECHANICAL	518 SF	Mechanical	300	2
OFFICES	1959 SF	B	100	18
OUTDOOR SALES	15206 SF	M	60	254
REC. OFFICE	192 SF	B	100	2
RETAIL	150787 SF	M	60	2524
RETURNED GOODS	277 SF	B	100	3
STOCK ROOM	20964 SF	S1	300	70
TIRE STORAGE	2153 SF	S1	300	7
TOTAL	203048 SF			3101

EXIT KEY

EXIT NUMBER	WIDTH	IN/OCC	CAP OF EXIT
SALES			
EXIT 1	140.50"	0.20"	703
EXIT 2	140.50"	0.20"	703
EXIT 3	66.87"	0.20"	334
EXIT 4	90.87"	0.20"	454
EXIT 5	90.87"	0.20"	454
EXIT 6	72.00"	0.20"	360
EXIT 7	32.87"	0.20"	164
EXIT 8	72.00"	0.20"	360
EXIT 9	90.87"	0.20"	454
NON-SALES			
EXIT 10	32.87"	0.20"	164
EXIT 11	32.87"	0.20"	164
EXIT 12	32.87"	0.20"	164
EXIT 13	32.87"	0.20"	164
EXIT 14	32.87"	0.20"	164
EXIT 15	32.87"	0.20"	164
EXIT 16	32.87"	0.20"	164
TOTAL PROVIDED: 16	1027.45"		5134

TOTAL REQUIRED: 567.2"
IN/ OCC REQ: 0.20
CAP OF OCC REQ: 2833

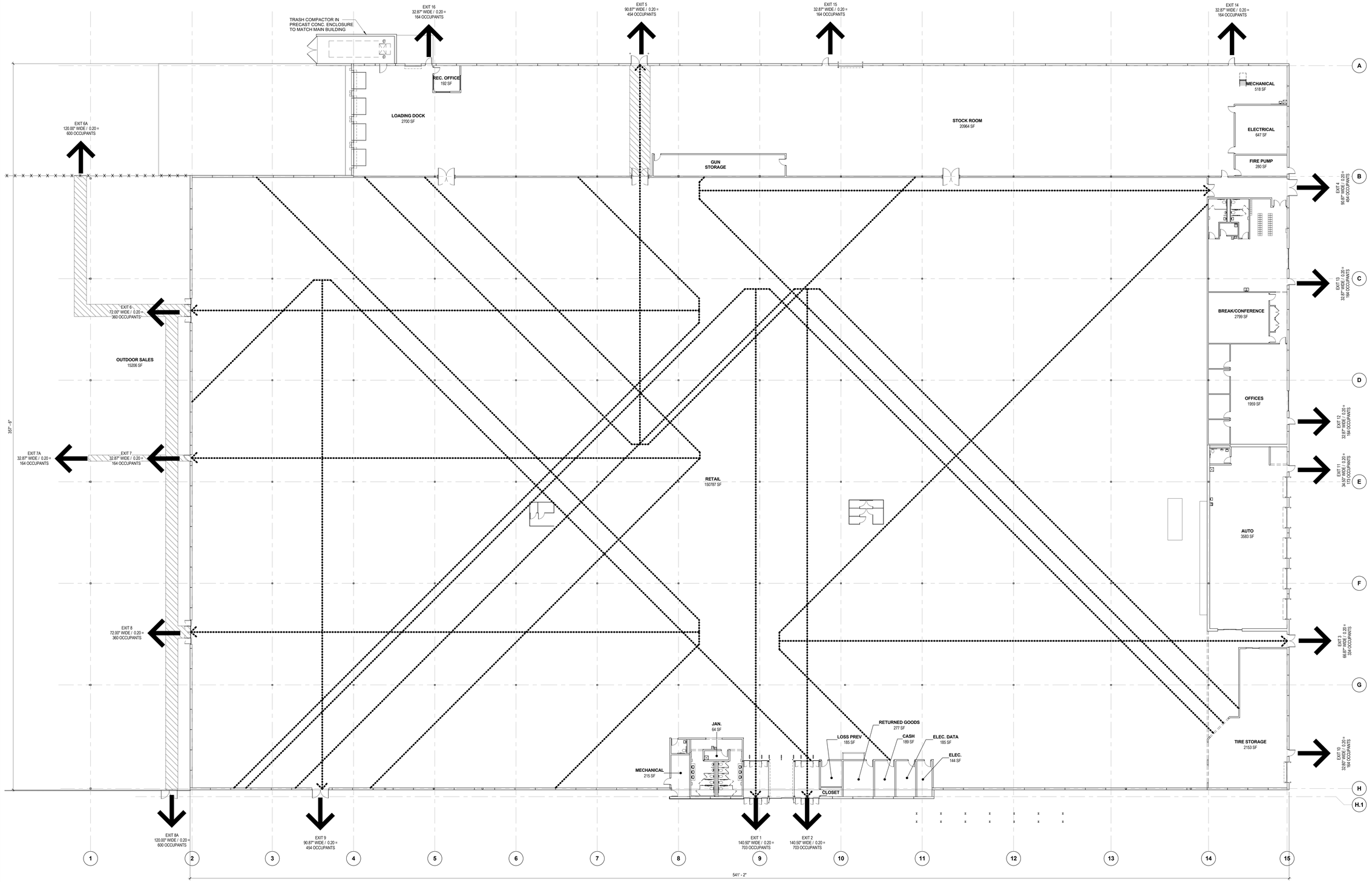
Outdoor Occupant Load Calculations

Name	Area	Occupancy Group	Occupant Load Factor Input	Occupant Load Input	Exits Required	Exits Provided
OUTDOOR SALES	15206 SF	M	60	254	2	3
EGRESS FROM INTERIOR		M	60	884		
TOTAL				1138		

OUTDOOR SALES EXIT KEY

	WIDTH	IN/OCC	CAP OF EXIT
EXIT 6A	120	0.2	720
EXIT 7A	32.87	0.2	164
EXIT 8A	120	0.2	720
TOTAL PROVIDED: 3	272.87		1604

TOTAL REQUIRED: 227.6"
IN/ OCC REQ: 0.20"
CAP OF OCC REQ: 1138



1 LIFE SAFETY PLAN
1/16" = 1'-0"

TRUE NORTH

-62-

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Item 5.B.

RSP Architects
1220 Marshall Str
Minneapolis
Minnesota 55413-

9
9 fax
ch.com

Consultants

NOT CONSTRUC
9 JULY, 2018

Certification

Name: Robert Lucius
License Number: 3570
Date Signed:

Project For

CEDAR FALLS, IA

FLEET FARM -RETAIL STORE

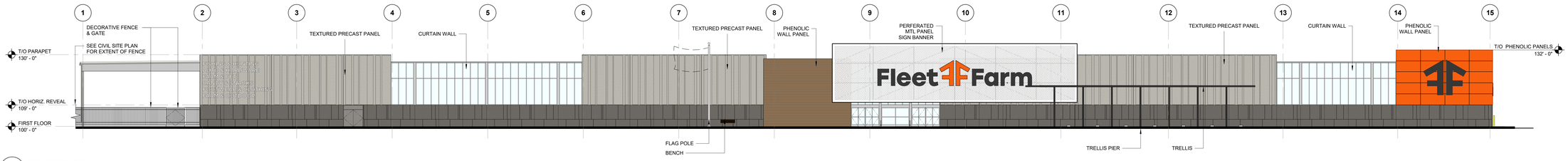
Project No.	295210700
Drawn By	BGW
Checked By	NHN
Date	07/09/18

Sheet Issues / Revisions

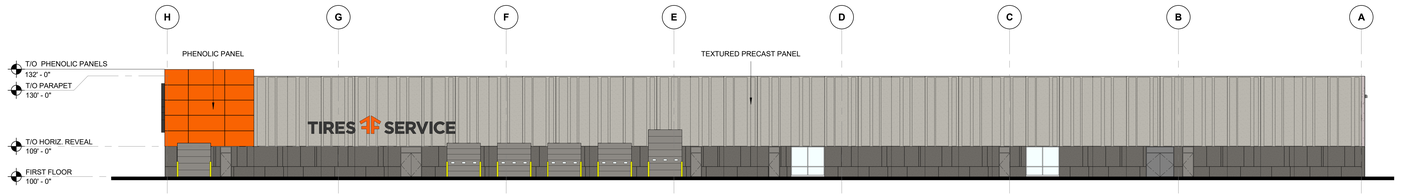
No.	Date	Description

CODE REVIEW/ EXIT DIAGRAM

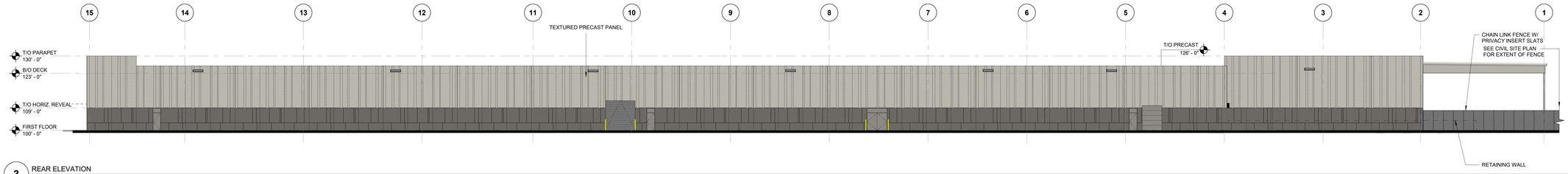
A021



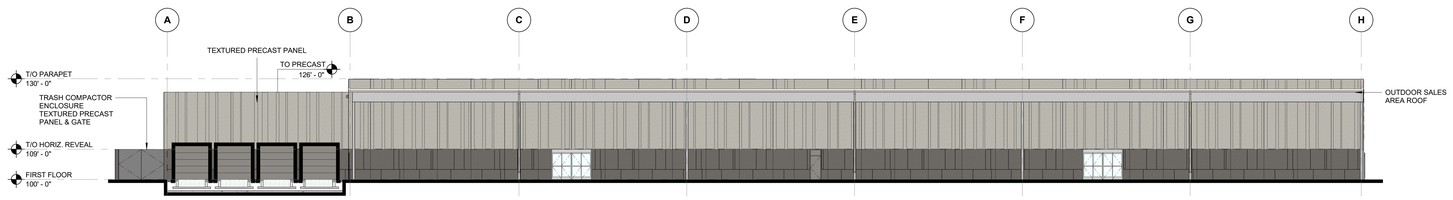
1 FRONT ELEVATION
1/16" = 1'-0"



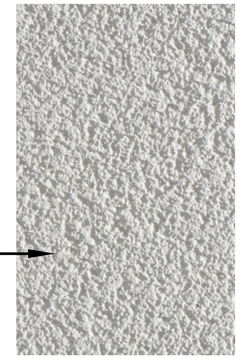
2 RIGHT ELEVATION
1/16" = 1'-0"



3 REAR ELEVATION
1/16" = 1'-0"



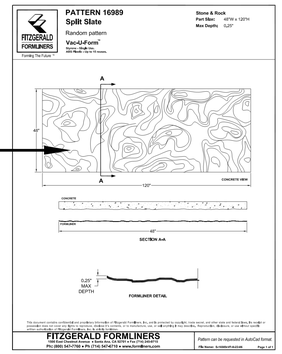
4 LEFT ELEVATION
1/16" = 1'-0"



EFS-2
Pantone Cool Gray 5C

B **Precast Concrete**
Upper body of building above 9'-0".
Flat precast concrete panel with vertical pattern.
Paint with medium texture EFS paint system in field.

EFS-1
Pantone Cool Gray 9C



A **Precast Concrete Formliner Type A**
Base texture around entire building, unless noted otherwise
Fitzgerald Formliners
Pattern 16989 Split Slate

RSP Architects
1220 Marshall Street NE
Minneapolis
Minnesota 55413-1036
612.677.7100
612.677.7499 fax
www.rsparch.com

Consultants

NOT FOR CONSTRUCTION 9 JULY, 2018

Certification

Name: Robert Lucius
License Number: 3570
Date Signed:

Project For

CEDAR FALLS, IA

FLEET FARM -RETAIL STORE

Project No.	295210700
Drawn By	BGW
Checked By	NHN
Date	07/09/18

Sheet Issues / Revisions

No.	Date	Description

Item 5.B.

EXTERIOR ELEVATIONS

A203

63-

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OVERALL PLANTING PLAN (1" = 60')

Plot time: Sep 28, 2018 - 11:12am
Drawing name: J:\2017\17-0335\LA\DWG\17-0335 LA.dwg - Layout Tab: L1.0-Overall

GENERAL NOTES

A. EXISTING TOPO NOT SHOWN FOR CLARITY
B. THIS OVERALL PLAN IS FOR REFERENCE ONLY. SEE SHEETS L1.1 AND L1.2 FOR PLANT CALL OUTS.

LANDSCAPE REQUIREMENTS (GENERAL)

LANDSCAPE REQUIREMENTS PER CHAPTER 29 OF THE CEDAR FALLS, IOWA ZONING CODE FOR:
Project: The Henry Property Buildings A, B & C, retail and yard and fuel center (excludes future outlots)
Date: Revised 07/27/2018

GENERAL PLANT INFORMATION INFO FOR HGC, HWY-1 & HWY-20 ZONING DISTRICTS
PLANT MATERIAL TYPE
- Overstory tree (30' height & spread at maturity)
  - Install sizes: 4" caliper = 100 points, 3" caliper = 90 points, 2" caliper = 80 points
- Understory tree (Less than 30' height & spread at maturity)
  - Install sizes: 2" caliper = 40 points, 1.5" caliper = 30 points, 1.0" caliper = 20 points
- Screening trees (6' O.C. if single row of arborvitae or juniper) (10' O.C. if double row of arborvitae or juniper (15' O.C. if single row of spruce, pine or fir) (20' O.C. if double row of spruce, pine or fir)
  - Install 10'ht=100 pts, 8'ht=90pts, 6'ht=80 points, 5'ht=40 pts, 4'ht=30 pts, 3'ht = 20pt
- Shrubs Install sizes: 5 gallon = 10 points, 3 gallon = 5 points

SUMMARY OF MINIMUM REQUIRED PLANT QUANTITIES/SIZES (excludes outlots)
- **177 overstory trees 2.0" cal.** (HWY-20 = 135 site trees + 29 street, HCG = 7 street + 6 VUA)
- **142 overstory trees 1.5" cal.** (HWY-20 = 73 pkg interior + 56 peripheral, HGC = 13 peripheral)
- **170 evergreen trees 6' height** (HWY-20 = 170 site trees)
- **25 evergreen trees 3' height** (HGC = 25 property line screening)
- **27 understory trees 1.5" cal.** (HWY-20 = 27 site trees)
- **189 shrubs 5 gallon container** (HWY-20 = 189 site shrubs)
- **+/-395 shrubs 36" ht., B&B or cont.** (HWY-20 = 280 periph + 26 screen, **(**HCG = 40 vua + 49 peripheral + 5 dumpster screening)

LANDSCAPE REQUIREMENTS (HWY-20 OVERLAY)

HWY-20 OVERLAY CALCULATIONS (EXCLUDES FUEL CENTER & OUTLOTS)
Site Trees 36.563 AC = 1,592,684.28 sf x 0.02 rate = 31,853.6856 x 0.15 = minus 4,778.05284 (ex. tree credits) **= 27,076 landscape points required***
Required points may be reached through several different plant type combinations and sizes. Calculations shown below will utilize the following mix of plants and install sizes, however, mix and install size can be adjusted during design, as long as minimum points are met and existing trees are counted.

*Existing Tree Credit Calculation (29-167/h/4)
Existing landscaping may be counted, up to a max. of 15% of the on-site landscaping requirement. The points reduction listed above is equivalent to (59) 80-point new trees. We estimate 85 or more ex. trees will remain based on a review of aerial imagery and photographs.

40% overstory trees /2" cal. option	27,076 x 0.40 = 10,830.4 points / 80 pts = **135 trees**
3% understory trees/1.5" cal.option	27,076 x 0.03 = 812.28 points / 30 pts = **27 trees**
50% evergreen trees/6' ht. option	27,076 x 0.50 = 13,538 points / 80 pts = **170 trees**
7% shrubs / 5 gallon option	27,076 x 0.07 = 1,895.32 points / 10 pts = **189 shrubs**

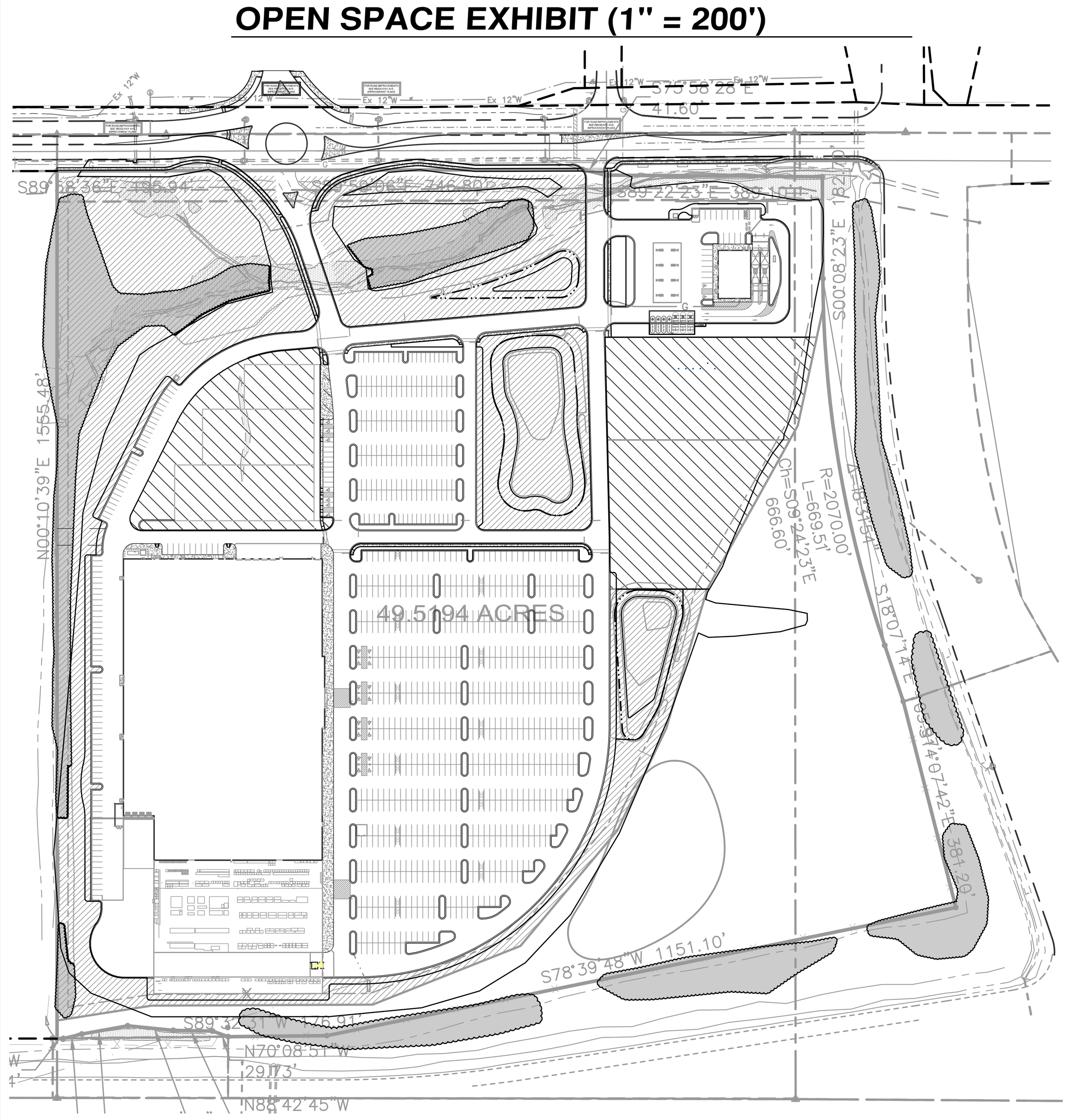
Street Trees	
Ridgeway Avenue	1,394 LF frontage x 0.75 rate = 1045.5 pts / 80 pts (2" cal. overstory option) = **13 trees**
Highway 20	1,639 LF frontage x 0.75 rate = 1229.25 pts / 80 pts (2" cal. overstory option) = **16 trees**
Parking Lot	
Interior	1,096 parking spaces / 15 spaces = **73 trees** (min 1.5" caliper overstory trees)
Peripheral trees	2,774 LF parking perimeter / 50 LF = **56 trees** (assume min. 1.5" caliper overstory)
Peripheral shrubs	+/-280 shrubs **280 shrubs**
Outdoor Storage	556 LF 16' high solid fence and **26 screening shrubs** provided

LANDSCAPE REQUIREMENTS (HCG OVERLAY)

HCG OVERLAY CALCULATIONS FOR FUEL CENTER (EXCLUDES FUTURE OUTLOTS)

Street Trees in HCG	
Ridgeway Avenue	390 LF frontage x 0.75 rate = 292.5 pts / 80 pts (2" cal. overstory option) = **4 trees**
Highway 58	289 LF frontage x 0.75 rate = 216.75 pts / 80 pts (2" cal. overstory option) = **3 trees**
Vehicular Use Area	46,558 SF VUA x .05 = 2,328 SF landscaping
VUA interior trees	**6 trees** (min 2.0" caliper overstory trees) and
VUA interior shrubs	**+/- 40 shrubs** (36" ht (or 18" ht were needing low shrubs for vision)
Screening shrubs	**+/- 5 shrubs** at dumpster
Peripheral trees	**13 trees** (assume min. 1.5" caliper overstory) (from off street parking requirements)
Peripheral shrubs	**+/-49 shrubs** (36" ht BB or cont) (from off street parking requirements)
Prop Line Screening	290 LF frontage – 43 LF wetland = 247 LF / 20' O.C. option = 12.35 x2 = **25 trees** (3' ht. evergreen (spruce pine or fir) in double row)

OPEN SPACE EXHIBIT (1" = 200')



OPEN SPACE EXHIBIT LEGEND

- OPEN SPACE REQUIRED = 15%
  OPEN SPACE PROPOSED = APPROX. 24%
  (SEE SHEET C1.0 FOR CALCULATIONS)
- WETLAND AREA
  (0.48 ACRES PF WETLAND DISTURBANCE. SEE GENERAL NOTE ABOVE)
- FUTURE DEVELOPMENT

Basis of Bearing: State Plane NAD27 North
0 60 90
SCALE: 1" = 60'

Item	Revision Description	Date	Drwn:	Chk:
1	REVISED PER CIVIL CHANGES & OUTLOT ACREAGE REMOVED	07-27-18	HMW	ADH
2	REVISED PER STAFF COMMENTS DATED 8/3/2018	08-10-18	HMW	RLG
3	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	09-28-18	HMW	RLG

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

OPEN SPACE EXHIBIT & OVERALL PLANTING

bauer

Item 5.B.

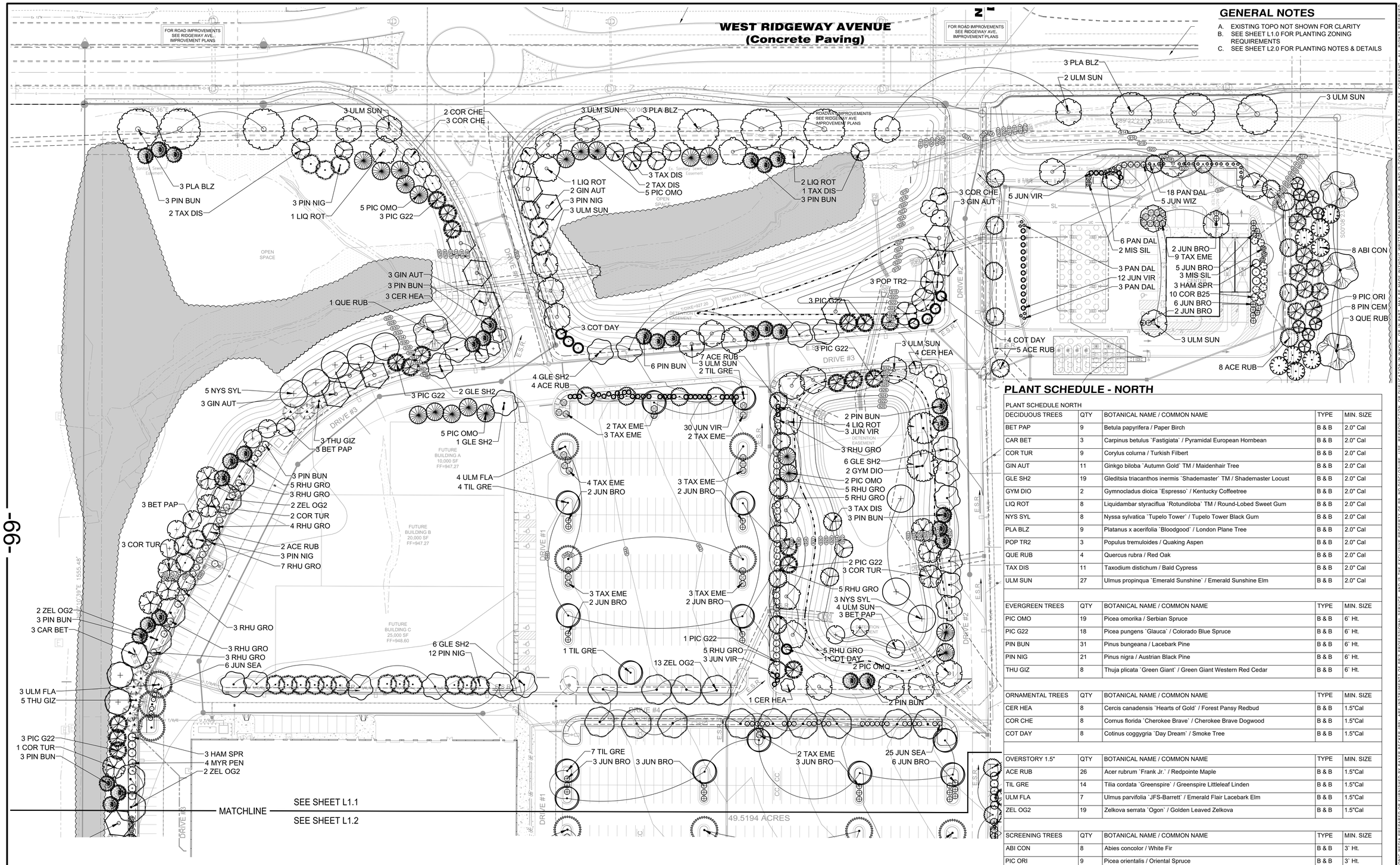
Drawing: LA
Drawn by: MW
Checked By:
Issue Date: 018
Sheet: L1.0

WEST RIDGEWAY AVENUE
(Concrete Paving)

FOR ROAD IMPROVEMENTS SEE RIDGEWAY AVE. IMPROVEMENT PLANS

GENERAL NOTES

A. EXISTING TOPO NOT SHOWN FOR CLARITY
B. SEE SHEET L1.0 FOR PLANTING ZONING REQUIREMENTS
C. SEE SHEET L2.0 FOR PLANTING NOTES & DETAILS



PLANT SCHEDULE - NORTH

PLANT SCHEDULE NORTH				
DECIDUOUS TREES	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
BET PAP	9	Betula papyrifera / Paper Birch	B & B	2.0" Cal
CAR BET	3	Carpinus betulus `Fastigiata` / Pyramidal European Hornbean	B & B	2.0" Cal
COR TUR	9	Corylus colurna / Turkish Filbert	B & B	2.0" Cal
GIN AUT	11	Ginkgo biloba `Autumn Gold` TM / Maidenhair Tree	B & B	2.0" Cal
GLE SH2	19	Gleditsia triacanthos inermis `Shademaster` TM / Shademaster Locust	B & B	2.0" Cal
GYM DIO	2	Gymnocladus dioica `Espresso` / Kentucky Coffeetree	B & B	2.0" Cal
LIQ ROT	8	Liquidambar styraciflua `Rotundiloba` TM / Round-Lobed Sweet Gum	B & B	2.0" Cal
NYS SYL	8	Nyssa sylvatica `Tupelo Tower` / Tupelo Tower Black Gum	B & B	2.0" Cal
PLA BLZ	9	Platanus x acerifolia `Bloodgood` / London Plane Tree	B & B	2.0" Cal
POP TR2	3	Populus tremuloides / Quaking Aspen	B & B	2.0" Cal
QUE RUB	4	Quercus rubra / Red Oak	B & B	2.0" Cal
TAX DIS	11	Taxodium distichum / Bald Cypress	B & B	2.0" Cal
ULM SUN	27	Ulmus propinqua `Emerald Sunshine` / Emerald Sunshine Elm	B & B	2.0" Cal
EVERGREEN TREES	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
PIC OMO	19	Picea omorika / Serbian Spruce	B & B	6` Ht.
PIC G22	18	Picea pungens `Glauca` / Colorado Blue Spruce	B & B	6` Ht.
PIN BUN	31	Pinus bungeana / Lacebark Pine	B & B	6` Ht.
PIN NIG	21	Pinus nigra / Austrian Black Pine	B & B	6` Ht.
THU GIZ	8	Thuja plicata `Green Giant` / Green Giant Western Red Cedar	B & B	6` Ht.
ORNAMENTAL TREES	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
CER HEA	8	Cercis canadensis `Hearts of Gold` / Forest Pansy Redbud	B & B	1.5"Cal
COR CHE	8	Cornus florida `Cherokee Brave` / Cherokee Brave Dogwood	B & B	1.5"Cal
COT DAY	8	Cotinus coggygria `Day Dream` / Smoke Tree	B & B	1.5"Cal
OVERSTORY 1.5"	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
ACE RUB	26	Acer rubrum `Frank Jr.` / Redpointe Maple	B & B	1.5"Cal
TIL GRE	14	Tilia cordata `Greenspire` / Greenspire Littleleaf Linden	B & B	1.5"Cal
ULM FLA	7	Ulmus parvifolia `JFS-Barrett` / Emerald Flair Lacebark Elm	B & B	1.5"Cal
ZEL OG2	19	Zelkova serrata `Ogon` / Golden Leaved Zelkova	B & B	1.5"Cal
SCREENING TREES	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
ABI CON	8	Abies concolor / White Fir	B & B	3` Ht.
PIC ORI	9	Picea orientalis / Oriental Spruce	B & B	3` Ht.
PIN CEM	8	Pinus cembra / Swiss Stone Pine	B & B	3` Ht.
SHRUBS	QTY	BOTANICAL NAME / COMMON NAME	SIZE	HEIGHT
COR B25	10	Cornus sericea `Baileyi` / Red Twig Dogwood	B&B	36" Ht.
HAM SPR	6	Hamamelis vernalis / Spring Blooming Witchhazel	B & B	36" Ht.
JUN SEA	31	Juniperus chinensis `Sea Green` / Sea Green Juniper	B&B	36" Ht.
JUN BRO	38	Juniperus sabina `Broadmoor` / Broadmoor Juniper	5 gal	12" Ht.
JUN WIZ	5	Juniperus scopulorum `Wichita Blue` / Wichita Blue Juniper	B & B	36" Ht.
JUN VIR	53	Juniperus virginiana `Grey Owl` / Grey Owl Juniper	B&B	36" Ht.
MIS SIL	3	Miscanthus sinensis `Silberfeder` / Silver Feather Grass	5 gal	36" Ht.
MYR PEN	4	Myrica pensylvanica / Northern Bayberry	B&B	36" Ht.
PAN DAL	32	Panicum virgatum `Dallas Blues` TM / Dallas Blues Switch Grass	5 gal	
RHU GRO	56	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	5 gal	18" Ht.
TAX EME	31	Taxus cuspidata `Emerald Spreader` TM / Emerald Spreader Japanese Yew	3 gal	12" Ht.

Item	Date	Revision Description	Drwn:	Chk:
1	07-21-18	REVISED PER CIVIL CHANGES & OUTLOT ACREAGE REMOVED	HMW	ADH
2	08-10-18	REVISED PER STAFF COMMENTS DATED 8/3/2018	HMW	RLG
3	09-28-18	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	HMW	RLG

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

PLANTING PLAN - NORTH

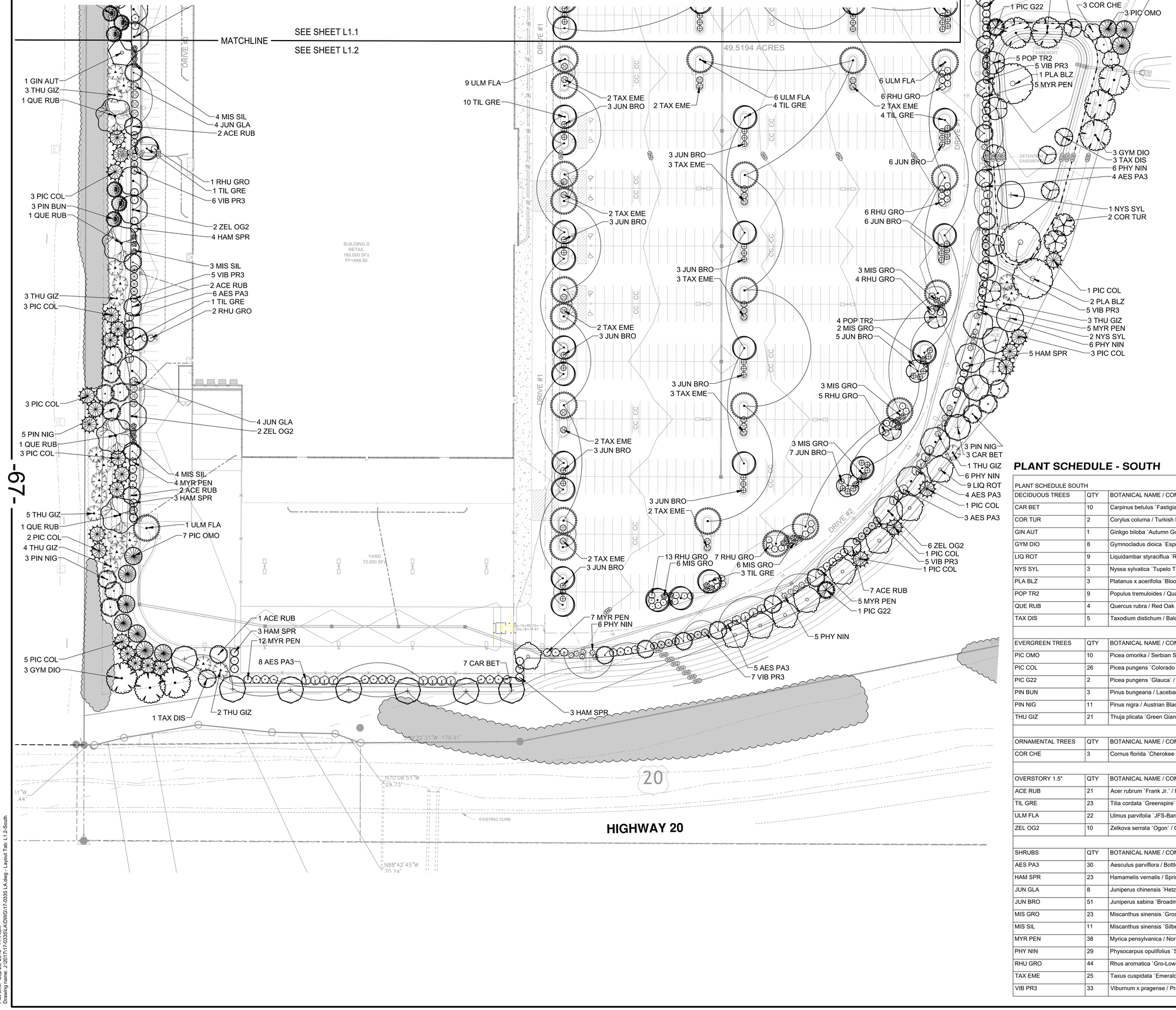
bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335 LA
Drawn by: HMW
Checked By: ADH
Issue Date: 07/09/2018
Sheet: L1.1

Plot time: Sep 28, 2018 - 11:13am
Drawing name: J:\2017\17-0335\LA\DWG\17-0335 LA.dwg - Layout Tab: L1.1-North

GENERAL NOTES

A. EXISTING TOPO NOT SHOWN FOR CLARITY
B. SEE SHEET L1.0 FOR PLANTING ZONING REQUIREMENTS
C. SEE SHEET L2.0 FOR PLANTING NOTES & DETAILS



PLANT SCHEDULE - SOUTH

PLANT SCHEDULE SOUTH				
DECIDUOUS TREES	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
CAR BET	10	Carpinus betulus `Fastigiata` / Pyramidal European Hornbean	B & B	2.0" Cal
COR TUR	2	Corylus colurna / Turkish Filbert	B & B	2.0" Cal
GIN AUT	1	Ginkgo biloba `Autumn Gold` TM / Maidenhair Tree	B & B	2.0" Cal
GYM DIO	8	Gymnocladus dioica `Espresso` / Kentucky Coffeetree	B & B	2.0" Cal
LIQ ROT	9	Liquidambar styraciflua `Rotundiloba` TM / Round-Lobed Sweet Gum	B & B	2.0" Cal
NYS SYL	3	Nyssa sylvatica `Tupelo Tower` / Tupelo Tower Black Gum	B & B	2.0" Cal
PLA BLZ	3	Platanus x acerifolia `Bloodgood` / London Plane Tree	B & B	2.0" Cal
POP TR2	9	Populus tremuloides / Quaking Aspen	B & B	2.0" Cal
QUE RUB	4	Quercus rubra / Red Oak	B & B	2.0" Cal
TAX DIS	5	Taxodium distichum / Bald Cypress	B & B	2.0" Cal
EVERGREEN TREES	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
PIC OMO	10	Picea omorika / Serbian Spruce	B & B	6` Ht.
PIC COL	26	Picea pungens `Colorado Green` / Colorado Spruce	B & B	6` Ht.
PIC G22	2	Picea pungens `Glauca` / Colorado Blue Spruce	B & B	6` Ht.
PIN BUN	3	Pinus bungeana / Lacebark Pine	B & B	6` Ht.
PIN NIG	11	Pinus nigra / Austrian Black Pine	B & B	6` Ht.
THU GIZ	21	Thuja plicata `Green Giant` / Green Giant Western Red Cedar	B & B	6` Ht.
ORNAMENTAL TREES	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
COR CHE	3	Cornus florida `Cherokee Brave` / Cherokee Brave Dogwood	B & B	1.5"Cal
OVERSTORY 1.5"	QTY	BOTANICAL NAME / COMMON NAME	TYPE	MIN. SIZE
ACE RUB	21	Acer rubrum `Frank Jr.` / Redpointe Maple	B & B	1.5"Cal
TIL GRE	23	Tilia cordata `Greenspire` / Greenspire Littleleaf Linden	B & B	1.5"Cal
ULM FLA	22	Ulmus parvifolia `JFS-Barrett` / Emerald Flair Lacebark Elm	B & B	1.5"Cal
ZEL OG2	10	Zelkova serrata `Ogon` / Golden Leaved Zelkova	B & B	1.5"Cal
SHRUBS	QTY	BOTANICAL NAME / COMMON NAME	SIZE	HEIGHT
AES PA3	30	Aesculus parviflora / Bottlebrush Buckeye	B & B	36" Ht.
HAM SPR	23	Hamamelis vernalis / Spring Blooming Witchhazel	B & B	36" Ht.
JUN GLA	8	Juniperus chinensis `Hetzii Glauca` / Hetzi Blue Juniper	B & B	36" Ht.
JUN BRO	51	Juniperus sabina `Broadmoor` / Broadmoor Juniper	5 gal	12" Ht.
MIS GRO	23	Miscanthus sinensis `Grosse Fontaene` / Eulalia	3 gal	36" Ht.
MIS SIL	11	Miscanthus sinensis `Silberfeder` / Silver Feather Grass	5 gal	36" Ht.
MYR PEN	38	Myrica pensylvanica / Northern Bayberry	B&B	36" Ht.
PHY NIN	29	Physocarpus opulifolius `Summer Wine` / Summer Wine Ninebark	B & B	36" Ht.
RHU GRO	44	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	5 gal	18" Ht.
TAX EME	25	Taxus cuspidata `Emerald Spreader` TM / Emerald Spreader Japanese Yew	3 gal	12" Ht.
VIB PR3	33	Viburnum x pragense / Prague Viburnum	B & B	36" Ht.

Basis of Bearing:
State Plane NAD27 North
0 40 60
SCALE: 1" = 40'

Item	Revision Description	Date	Drwn	Chk
1	REVISED PER CIVIL CHANGES & OUTLOT ACREAGE REMOVED	07-27-18	HMV	AJH
2	REVISED PER STAFF COMMENTS DATED 8/3/2018	08-10-18	HMV	RLG
3	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	09-28-18	HMV	RLG

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

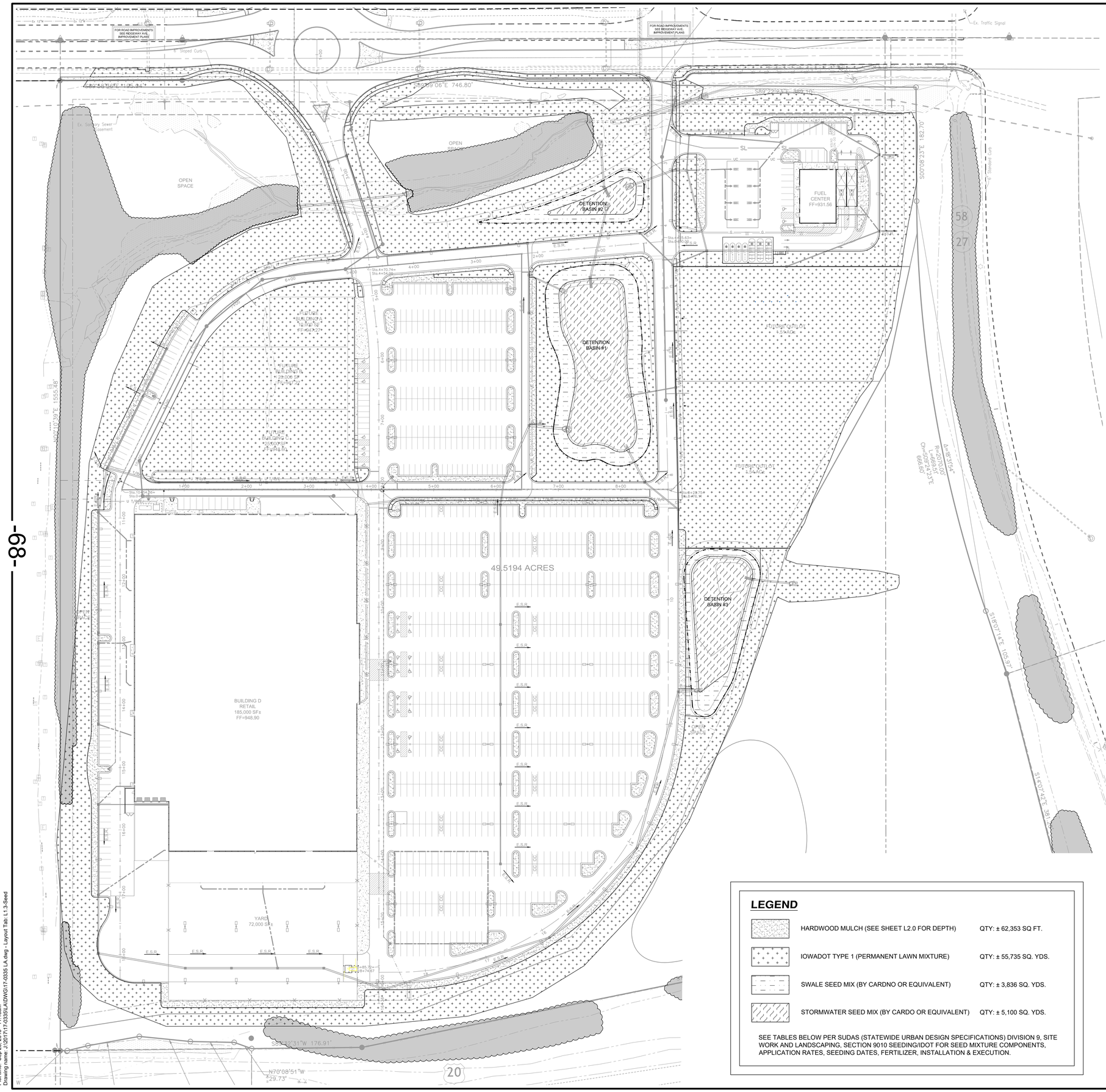
PLANTING PLAN - SOUTH

bauer

Item 5.B.

Drawing: LA
Drawn by: MW
Checked By: AL
Issue Date: 18
Sheet: L1.2

Plot time: Sep 28, 2018 - 11:14am
Drawing name: J:\2017\17-0335\LA\DWG\17-0335 LA.dwg - Layout Tab: L1.2-South



GENERAL NOTES

1. SEE SEEDING AND MULCH LEGEND BELOW

PERMANENT SEED MIXTURE

SUDAS Standard Specifications — Division 9 - Site Work and Landscaping, Section 9010 - Seeding

2.02 SEED MIXTURES AND SEEDING DATES

See the contract documents for the specified seed mixture. If a mixture is not specified, use the following. The Contractor may submit a modification of the mixture for the Engineer's consideration.

A. Type 1 (Permanent Lawn Mixture): Used for residential and commercial turf site, fertilized, and typically mowed. Use between March 1 and May 31 and between August 10 and September 30.

Table 9010.06: Type 1 Seed Mixture[1]

Common Name	Application Rate lb/acre
Creeping red fescue	25
Turf-type perennial ryegrass[2]	20
Turf-type perennial ryegrass[2]	20
Kentucky bluegrass cultivar[3]	65
Kentucky bluegrass cultivar[3]	65
Kentucky bluegrass cultivar[3]	65

[1] A commercial mixture may be used if it contains a high percentage of similar bluegrasses; it may or may not contain creeping red fescue.
[2] Choose two different cultivars of turf-type perennial ryegrass, at 20 lbs/acre each.
[3] Choose three different cultivars of Kentucky bluegrass, at 65 lbs/acre each.

SWALE SEED MIX (UPPER PORTION OF BASINS)

WWW.CARDNONATIVEPLANTNURSERY.COM, PH: 574-586-2412, EMAIL: JASON.FRITZ@CARDNO.COM

Swale Seed Mix

Best suited for drainage swales or depressions, areas that temporarily retain water after a rain event or dry bottomed detention basins. The native plants used in this mix help filter pollutants from lawns and pavement runoff and includes at least 10 of 12 native permanent grass and sedge species and 12 of 17 native forb species to provide diversity for establishment. Apply at 32.30 PLS pounds per acre.

Botanical Name	Common Name	PLS Ounces/Acre	Seeds/Oz	Seeds/SQ FT
Permanent Grasses/Sedges:				
Andropogon gerardii	Big Bluestem	4.00	8188	0.75
Carex comosa	Bristly Sedge	2.50	41183	2.36
Carex cristatella	Crested Oval Sedge	2.00	59000	2.71
Carex lurida	Bottlebrush Sedge	2.50	12000	0.69
Carex spp.	Prairie Sedge Mix	8.00	33422	6.14
Carex vulpinoidea	Brown Fox Sedge	4.00	125000	11.48
Elymus virginicus	Virginia Wild Rye	8.00	4375	0.80
Glyceria striata	Fowl Manna Grass	1.00	125000	2.87
Panicum virgatum	Switch Grass	2.00	28356	1.30
Scirpus atrovirens	Dark Green Rush	2.00	187500	8.61
Scirpus cyperinus	Wool Grass	1.00	562500	12.91
Spartina pectinata	Prairie Cord Grass	3.00	15750	1.08
	Total	**40.00**		**51.71**
Temporary Cover:				
Avena sativa	Common Oat	360.00	8125	67.15
Lolium multiflorum	Annual Rye	100.00	14188	32.57
	Total	**460.00**		**99.72**
Forbs:				
Alisma spp.	Water Plantain (Various M	1.00	70175	1.61
Asclepias incarnata	Swamp Milkweed	2.00	4540	0.21
Coreopsis tripteris	Tall Coreopsis	1.00	11500	0.26
Eutrochium maculatum	Spotted Joe-Pye Weed	0.25	78125	0.45
Iris virginica	Blue Flag	4.00	1400	0.13
Liatris spicata	Marsh Blazing Star	1.00	12000	0.28
Lobelia cardinalis	Cardinal Flower	0.25	437000	2.51
Lobelia siphilitica	Great Blue Lobelia	0.50	520000	5.97
Lycopus americanus	Common Water Horehoun	0.25	235000	1.35
Pycnanthemum virginianum	Common Mountian Mint	0.50	331250	3.80
Rudbeckia triloba	Brown-Eyed Susan	0.50	33000	0.38
Sagittaria latifolia	Common Arrowhead	0.25	56700	0.33
Senna hebecarpa	Wild Senna	1.00	1400	0.03
Silphium terebinthinaceum	Prairie Dock	1.00	1100	0.03
Symphyotrichum novae-angliae	New England Aster	1.00	76000	1.74
Verbena hastata	Blue Vervain	1.50	125000	4.30
Zizia aurea	Golden Alexanders	0.75	12000	0.21
	Total	**16.75**		**23.37**

Mix Statistics				
Native Component	PLS lbs./Acre	PLS Seeds/Acre	PLS Seeds/Sq. Ft.	% of Native Mix
Forbs	1.05	1,018,186	23.37	31.13%
Grasses	2.50	2,252,548	51.71	68.87%
Total Natives	3.55	3,270,734	75.09	100.00%
Cover	28.75	4,343,800	99.72	
Totals	32.30	7,614,534	174.81	

STORMWATER SEED MIX (LOWER PORTION OF BASINS)

WWW.CARDNONATIVEPLANTNURSERY.COM, PH: 574-586-2412, EMAIL: JASON.FRITZ@CARDNO.COM

Stormwater Seed Mix

A wetland seed mix for saturated soils in a detention pond of for seeding a saturated basin. This mix will tolerate highly fluctuating water levels and poor water quality associated with urban stormwater wetlands and ponds. For detention basins that experience long, dry periods, use the Economy Prairie seed mix in the upper third to half of the basin in combination with this mix. This seed mix includes at least 10 to 12 native permanent grasses and sedge species and 12 of 16 native form species. Apply at 32.81 PLS pounds per acre.

Botanical Name	Common Name	PLS Ounces/Acre	Seeds/Oz	Seeds/SQ FT
Permanent Grasses/Sedges/Rushes:				
Bolboschoenus fluviatilis	River Bulrush	0.25	27500	0.16
Carex cristatella	Crested Oval Sedge	2.00	59000	2.71
Carex lurida	Bottlebrush Sedge	3.00	12000	0.83
Carex vulpinoidea	Brown Fox Sedge	6.00	125000	17.22
Elymus virginicus	Virginia Wild Rye	13.50	4375	1.36
Glyceria striata	Fowl Manna Grass	1.25	125000	3.59
Juncus effusus	Common Rush	2.00	281000	12.90
Leersia oryzoides	Rice Cut Grass	1.00	94500	2.17
Panicum virgatum	Switch Grass	2.00	28356	1.30
Schoenoplectus tabernaemontani	Softstem Bulrush	3.00	37813	2.6
Scirpus atrovirens	Dark Green Rush	2.00	187500	8.61
Scirpus cyperinus	Wool Grass	1.00	562500	12.91
	Total	**37.00**		**66.19**
Temporary Cover:				
Avena sativa	Common Oat	360.00	8125	67.15
Lolium multiflorum	Annual Rye	100.00	14188	32.57
	Total	**460.00**		**99.72**
Forbs & Shrubs:				
Alisma spp.	Water Plantain (Varic	4.25	70175	6.85
Asclepias incarnata	Swamp Milkweed	1.50	4540	0.16
Bidens spp.	Bidens (Various Mix)	2.00	14175	0.65
Helenium autumnale	Sneezeweed	2.00	141750	6.51
Iris virginica	Blue Flag	4.00	1400	0.13
Lycopus americanus	Common Water Hore	0.25	235000	1.35
Mimulus ringens	Monkey Flower	1.00	283500	6.51
Oligoneuron riddellii	Riddell's Goldenrod	0.50	94500	1.08
Penthorum sedoides	Ditch Stonecrop	0.50	36063	0.41
Polygonum spp.	Pinkweed (Various M	4.00	4063	0.37
Rudbeckia subtomentosa	Sweet Black-Eyed Su	1.00	46000	1.06
Rudbeckia triloba	Brown-Eyed Susan	1.50	33000	1.14
Sagittaria latifolia	Common Arrowhead	1.00	56700	1.30
Senna hebecarpa	Wild Senna	1.00	1400	0.03
Symphyotrichum novae-angliae	New England Aster	1.50	76000	2.62
Thalictrum dasycarpum	Purple Meadow Rue	2.00	13500	0.62
	Total	**28.00**		**30.78**

Mix Statistics				
Native Component	PLS lbs./Acre	PLS Seeds/Acre	PLS Seeds/Sq. Ft.	% of Native Mix
Forbs	1.75	1,340,887	30.76	31.74%
Grasses	2.31	2,883,281	66.19	68.26%
Total Natives	4.06	4,224,168	96.97	100.00%
Cover	28.75	4,343,800	99.72	
Totals	32.81	8,567,968	196.69	

LEGEND

	HARDWOOD MULCH (SEE SHEET L2.0 FOR DEPTH)	QTY: ± 62,353 SQ FT.
	IOWADOT TYPE 1 (PERMANENT LAWN MIXTURE)	QTY: ± 55,735 SQ. YDS.
	SWALE SEED MIX (BY CARDNO OR EQUIVALENT)	QTY: ± 3,836 SQ. YDS.
	STORMWATER SEED MIX (BY CARDO OR EQUIVALENT)	QTY: ± 5,100 SQ. YDS.

SEE TABLES BELOW PER SUDAS (STATEWIDE URBAN DESIGN SPECIFICATIONS) DIVISION 9, SITE WORK AND LANDSCAPING, SECTION 9010 SEEDING/IDOT FOR SEED MIXTURE COMPONENTS, APPLICATION RATES, SEEDING DATES, FERTILIZER, INSTALLATION & EXECUTION.

Item	Revision Description	Date	Drwn:	Chk:
1	REVISED PER STAFF COMMENTS DATED 8/3/2018	08-10-18	HMW	RLG
2	REVISED PER CITY, DEVELOPER AND INTERNAL REVIEW COMMENTS	09-28-18	HMW	RLG

HENRY PROPERTY
BLACK HAWK COUNTY
OUTLOT C CEDAR FALLS
CEDAR FALLS, IOWA

SEEDING AND MULCHING PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 17-0335.LA
Drawn by: LMH
Checked By: HMW
Issue Date: 07-27-18
Sheet: L1.3

Item 5.B.

Plot time: Sep 28, 2018 - 11:16am
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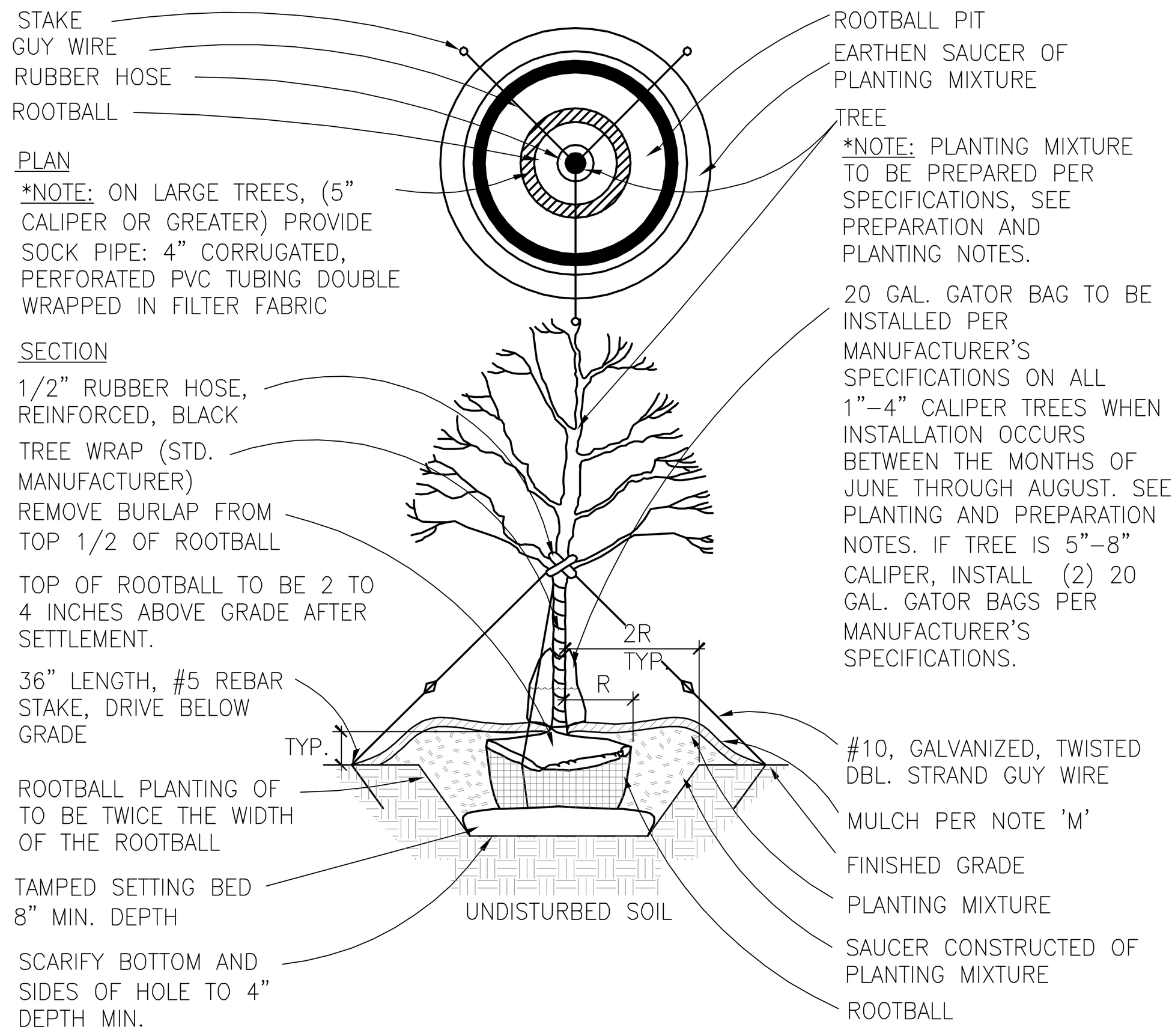
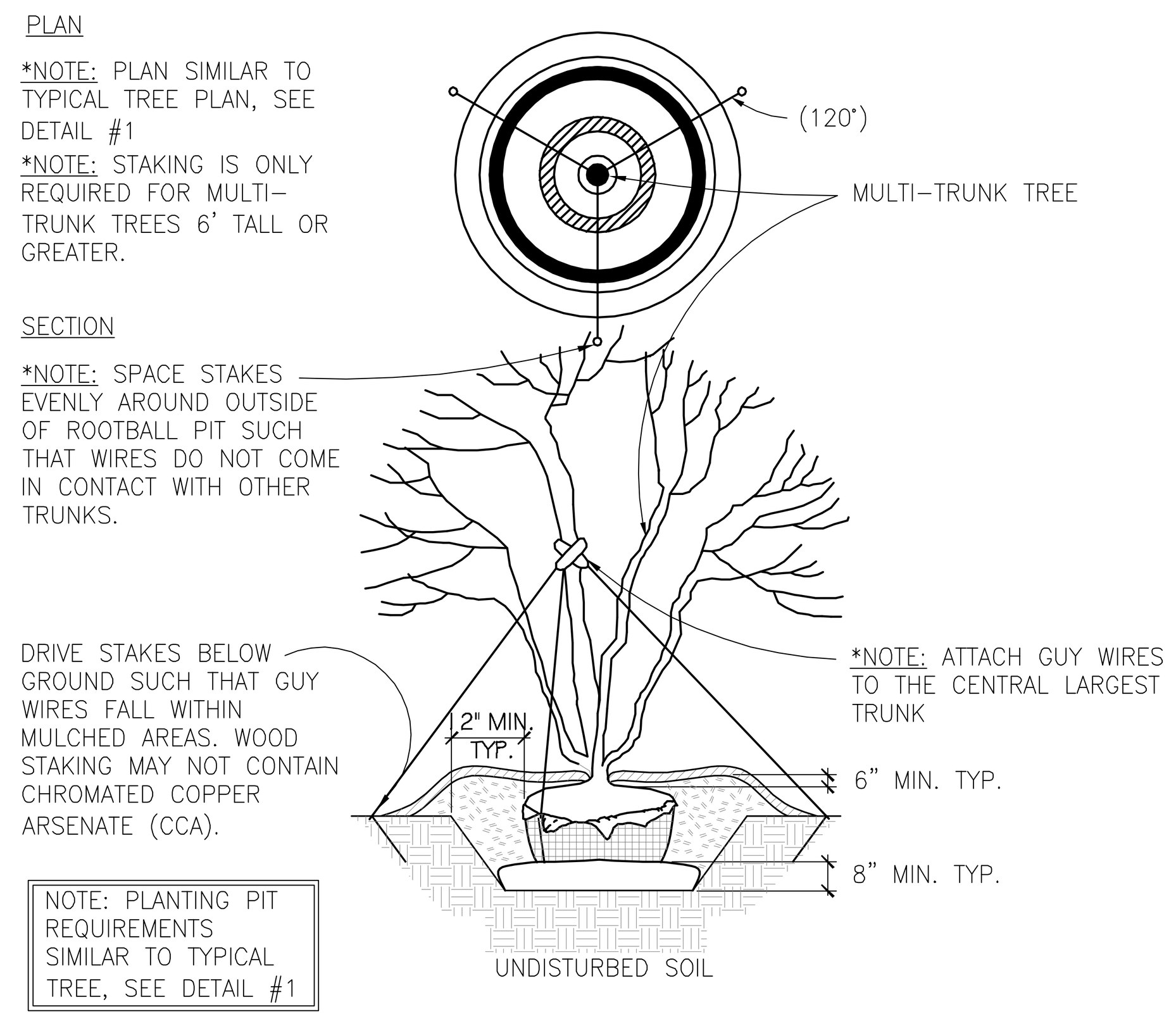


1 **TYP. TREE PLANTING DETAIL**
SCALE: NOT TO SCALE



2 **CLUMP TREE PLANTING DETAIL**
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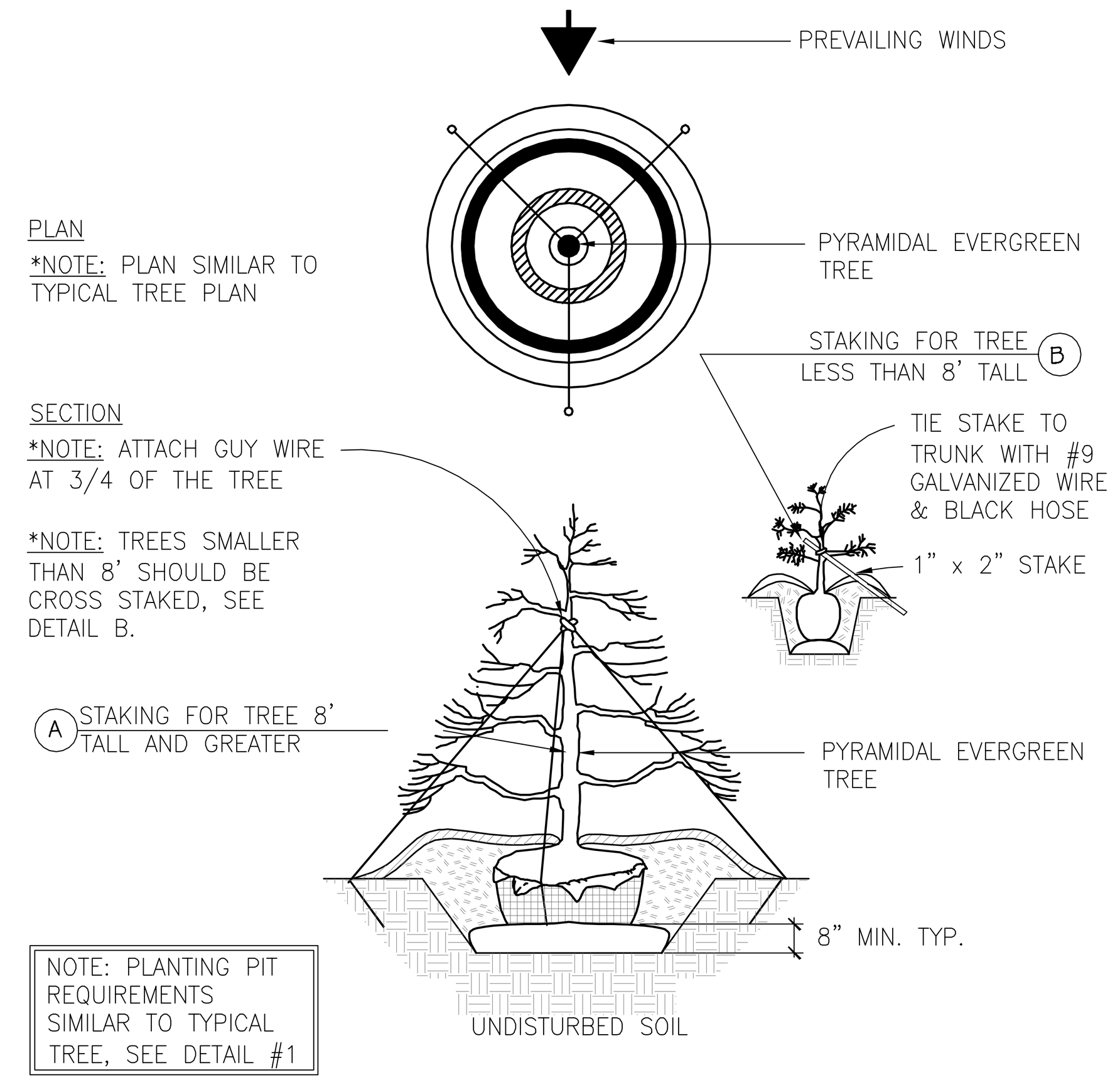

3 **EVERGREEN TREE DETAIL**
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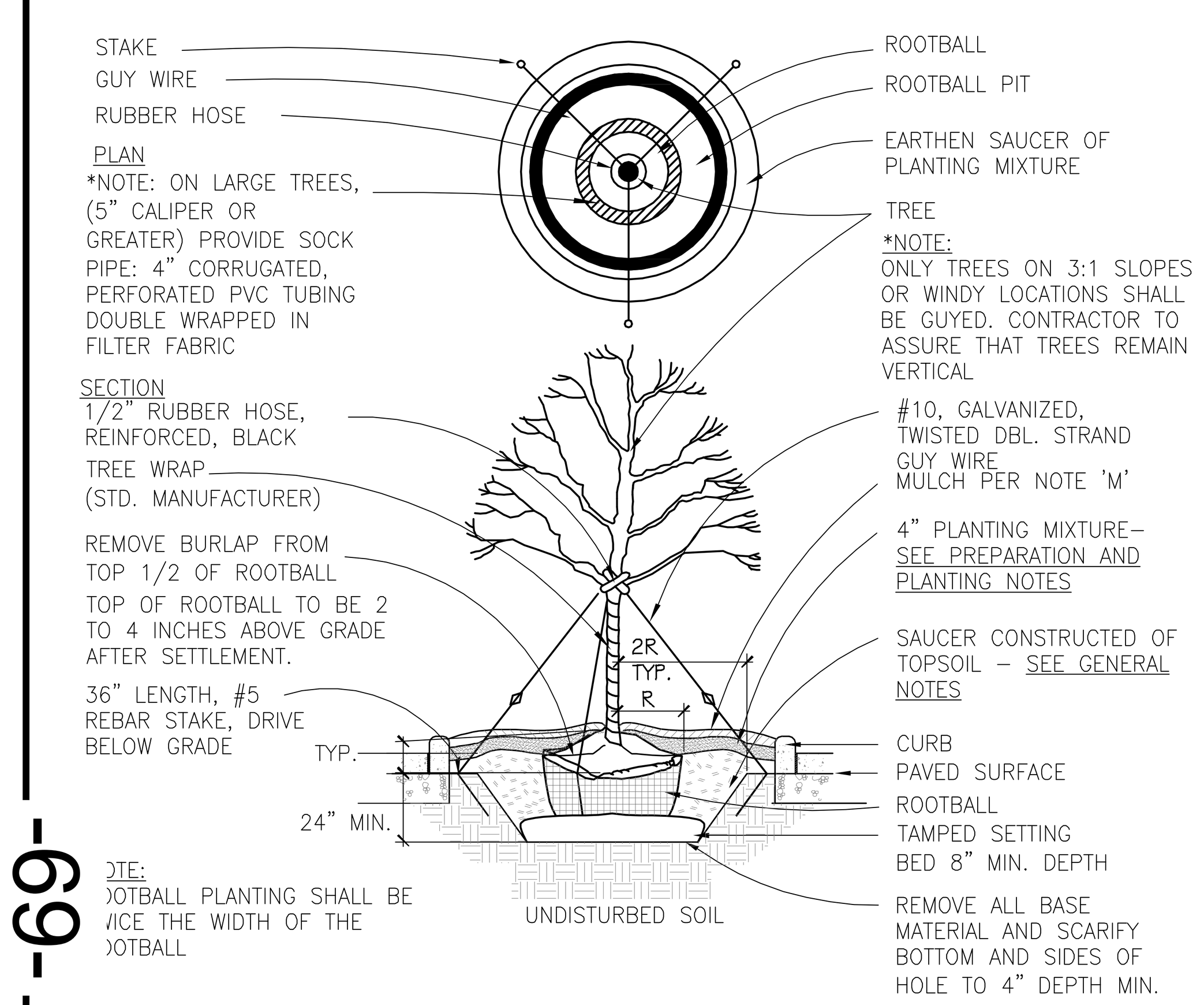
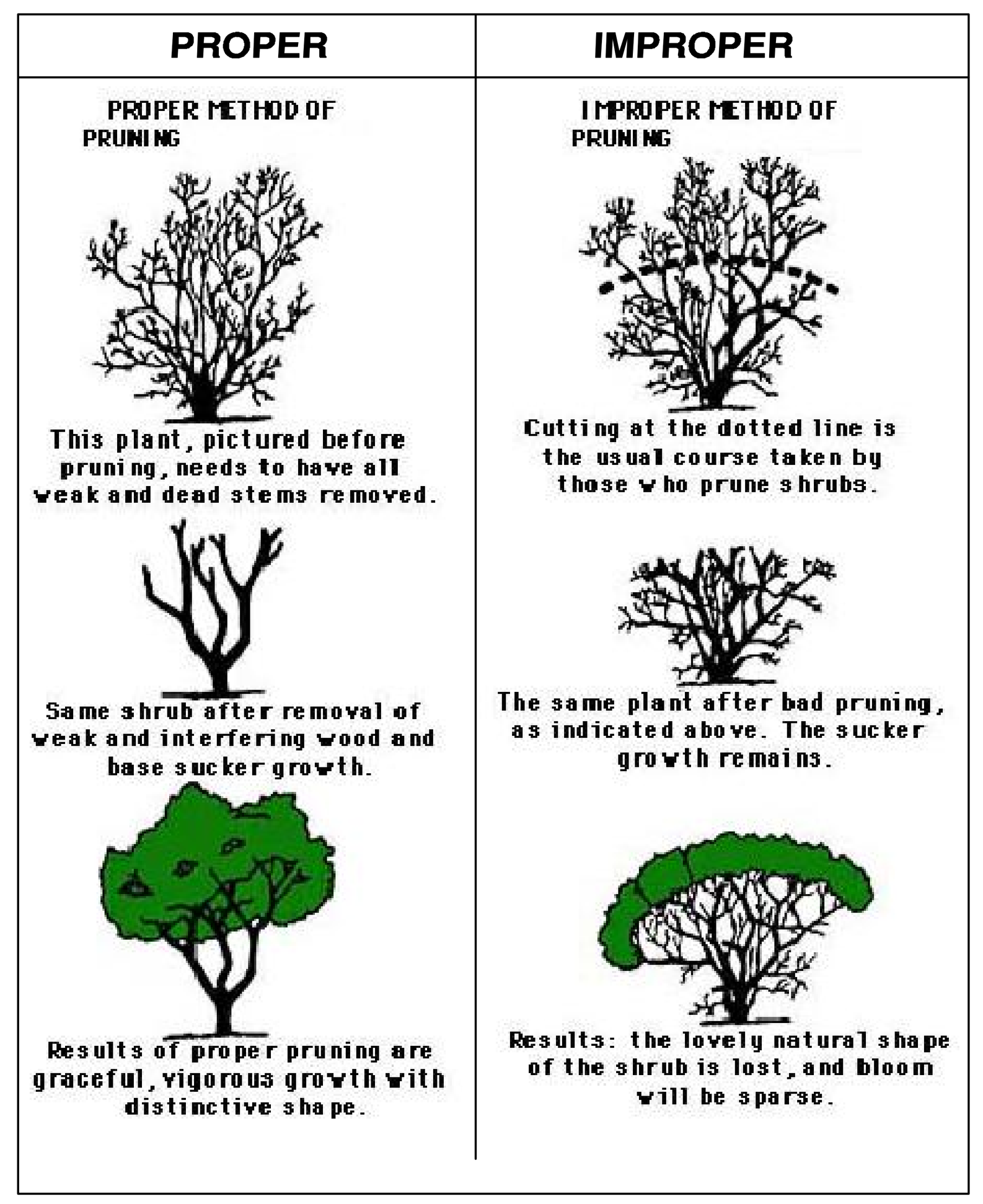


-69-

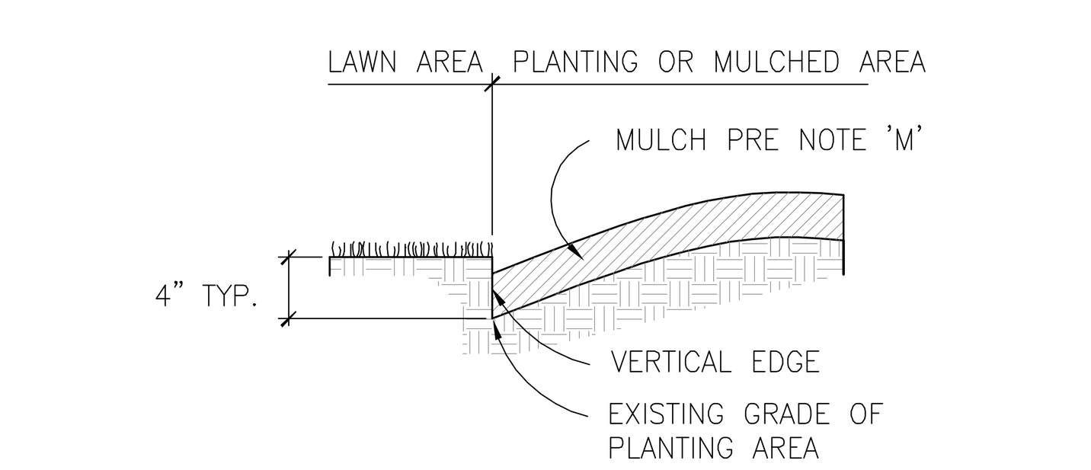
NOTE: ROOTBALL PLANTING SHALL BE TWICE THE WIDTH OF THE ROOTBALL

4 **TYP. TREE ISLAND PLANTING DETAIL**
SCALE: NOT TO SCALE

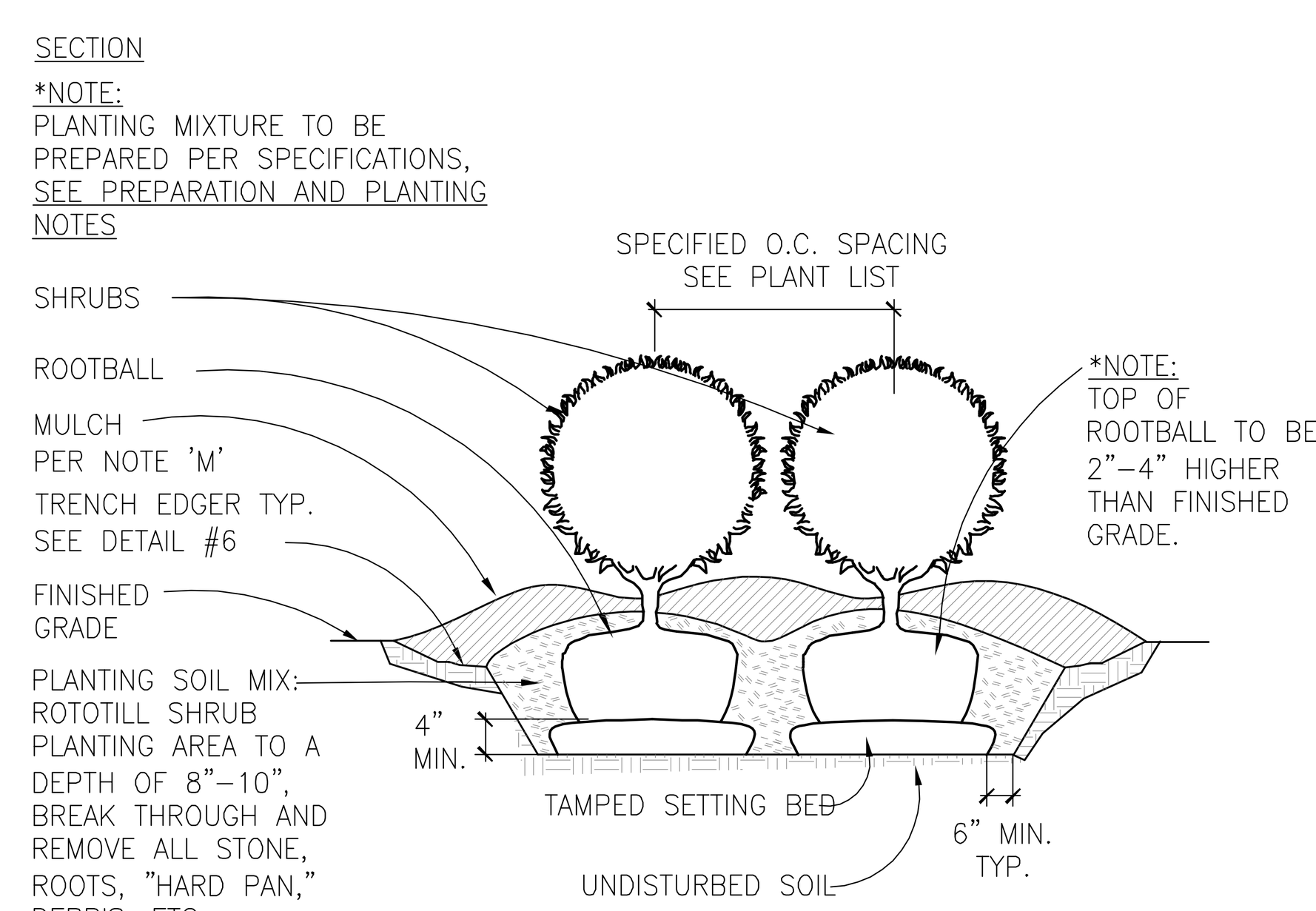


5 **FUTURE SHRUB MAINTENANCE**
PROPER PRUNING, DO NOT ALTER NATURAL SHAPE OF PLANT

*NOTES:
1. EDGE SHALL CREATE A CLEAN SEPARATION BETWEEN AREAS AND SHALL CREATE SMOOTH AND EVEN LINES AS INDICATED ON PLANS.
2. EDGE DETAIL SHALL BE USED AT ALL LAWN EDGES AND AT EDGES OF MULCHED AREAS FOR CONTAINMENT.



6 **SHRUB BED EDGE DETAIL**
SCALE: NOT TO SCALE



7 **SHRUB PLANTING DETAIL**
SCALE: NOT TO SCALE

PREPARATION AND PLANTING

A. NOTIFY LANDSCAPE ARCHITECT OF WORK COMMENCEMENT AND SCHEDULE.
B. LANDSCAPE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES PRIOR TO STARTING WORK. LOCAL UTILITY PROTECTION SERVICES AS NOTED ON THE DRAWINGS. IF A PLANT IS SHOWN ON THE PLAN WITHIN THREE FEET OF AN UNDERGROUND UTILITY, NOTIFY LANDSCAPE ARCHITECT FOR ADJUSTMENT INSTRUCTIONS.
C. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, OTHER FACILITIES, LAWNS, AND EXISTING EXTERIOR PLANTS FROM DAMAGE CAUSED BY PLANTING OPERATIONS.
D. PROVIDE EROSION–CONTROL MEASURES TO PREVENT SOIL EROSION OR DISPLACEMENT AND DISCHARGE OF SOIL–BEARING RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS.
E. LANDSCAPE CONTRACTOR SHALL LAY OUT INDIVIDUAL TREE AND SHRUB LOCATIONS AND BED EDGES FOR ALL EXTERIOR PLANTINGS. STAKE LOCATIONS, OUTLINE AREAS, ADJUST LOCATIONS WHEN REQUESTED, AND OBTAIN LANDSCAPE ARCHITECT'S, OWNER AND/OR THE OWNER'S REPRESENTATIVE WRITTEN ACCEPTANCE OF LAYOUT BEFORE PLANTING. MAKE MINOR ADJUSTMENTS AS REQUIRED PER SITE CONDITIONS.
F. TREES SHALL BE SITED IN FIELD BY LANDSCAPE ARCHITECT WHERE NOTED ON PLANS.
G. ALL PLANTING BEDS ARE TO BE PREPARED AS FOLLOWS :
– LOOSEN SUBGRADE TO A DEPTH OF 6 – 7". REMOVE STONES LARGER THAN 1" IN ANY DIMENSION AND STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATTER, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.
– SPREAD COMPOST AT A DEPTH OF 4" AND PEAT MOSS AT A DEPTH OF 1".
– TILL WITH LOOSENED SUBGRADE MIXING THOROUGHLY.
– GRADE PLANTING BEDS TO A SMOOTH, UNIFORM SURFACE PLANE FOR A UNIFORM FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
– EDGE BEDS 3" TO 4" DEEP (SEE DETAILS ON THIS SHEET).
H. LANDSCAPE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT IF SUBSOIL CONDITIONS SHOW EVIDENCE OF UNEXPECTED WATER SEEPAGE OR RETENTION IN TREE OR SHRUB PITS.
I. REFER TO TYPICAL PLANTING DETAILS ON THIS SHEET FOR PLANT INSTALLATION.
J. IT IS THE CONTRACTOR'S OPTION WHETHER OR NOT TO STAKE A TREE, BUT IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ASSURE PLANTS REMAIN IN AN UPRIGHT POSITION UNTIL THE END OF THE WARRANTY PERIOD. CONTRACTOR TO REMOVE STAKES & WIRE.
K. PRIOR TO MULCHING, APPLY PRE–EMERGENT HERBICIDE (PREEN OR EQUIVALENT) PER MANUFACTURER'S RECOMMENDATIONS.
L. IT IS THE CONTRACTOR'S RESPONSIBILITY TO:
– KEEP ADJACENT PAVING AND CONSTRUCTION CLEAN, AND MAINTAIN WORK AREA IN AN ORDERLY CONDITION, FOR DURATION OF PROJECT.
– PROTECT EXTERIOR PLANTS FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND OTHERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED EXTERIOR PLANTING.
– REMOVE SURPLUS SOIL AND WASTE MATERIAL, INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.
M. ALL SHRUB PLANTING BEDS AND INDIVIDUAL TREES AND SHRUBS ARE TO BE MULCHED AT A DEPTH OF 4". ALL ANNUAL, PERENNIAL, AND/OR GROUNDCOVER PLANTING BEDS ARE TO BE MULCHED AT A DEPTH OF 2".
N. ALL NEW TREE RINGS SHALL BE FIVE FEET IN DIAMETER AND MULCHED PER NOTE 'M'. DO NOT PILE MULCH UP AROUND THE TREE BARK.
O. ALL DECIDUOUS TREES SHALL BE WRAPPED WITH STANDARD MANUFACTURER'S TREE WRAP TO PREVENT WINTER DAMAGE WHICH SHALL BE REMOVED AFTER THE FIRST WINTER BY THE LANDSCAPE CONTRACTOR.
P. ALL PLANT MATERIAL SHALL BE PRUNED AND/OR SHAPED IN ACCORDANCE WITH STANDARD HORTICULTURE PRACTICES TO RETAIN THE NATURAL CHARACTER OF THE PLANT. ALL INJURED, DAMAGED, OR CROSSED BRANCHES SHALL BE REMOVED. DO NOT REMOVE THE TREE LEADER.
Q. LANDSCAPE CONTRACTOR SHALL INSTALL GATOR BAGS, PER MANUFACTURER'S SPECIFICATIONS WITH ALL NON–IRRIGATED TREES.
R. LANDSCAPE CONTRACTOR SHALL INSTRUCT OWNER OR OWNER'S REPRESENTATIVE ON WATERING NEEDS OF INSTALLED PLANTINGS.

WARRANTY

A. CONTRACTOR SHALL PROVIDE OWNER WITH A MINIMUM ONE YEAR WRITTEN WARRANTY FOR LABOR AND MATERIALS.
B. CONTRACTOR SHALL WARRANT EXTERIOR PLANTS AGAINST DEFECTS, INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT OR ABUSE BY OWNER, OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL.
C. WARRANTY SHALL INCLUDE SPECIFIC WARRANTY PERIODS FROM DATE OF ACCEPTANCE FOR TREES AND SHRUBS, GROUND COVERS, AND OTHER EXTERIOR PLANTS.
D. WARRANTY SHALL BE LIMITED TO ONE REPLACEMENT OF EACH EXTERIOR PLANT, EXCEPT FOR LOSSES OR REPLACEMENTS DUE TO FAILURE OF CONTRACTOR TO COMPLY WITH REQUIREMENTS.
E. WARRANTY FOR IRRIGATION SERVICE, PLUMBING, & DRAINAGE SHALL BE GUARANTEED FOR A PERIOD OF 1 YEAR AND WILL INCLUDE START–UP, WINTERIZATION, AND SECOND SEASON START–UP. WARRANTY SHALL INCLUDE ALL LABOR, MATERIAL, TOOLS, AND EQUIPMENT AS NECESSARY TO PROVIDE A FUNCTIONING SYSTEM, FREE FROM DEFECTS AND ADJUSTED PROPERLY FOR APPROPRIATE WATER DELIVERY TO ALL PLANT MATERIAL.

TRAFFIC & SAFETY

A. REFER TO BID DOCUMENTS AND COMPLY WITH ALL STATE & LOCAL REQUIREMENTS REGARDING APPROVED WORK TIMES, SCHEDULING OF INSTALLATION, AND ALL OTHER REQUIREMENTS.

SODDING

TURFGRASS SOD
A. TURFGRASS SOD SHALL BE OF GOOD QUALITY, FREE OF WEEDS, DISEASE AND INSECTS AND OF GOOD COLOR AND DENSITY
B. INDIVIDUAL PIECES OF TURFGRASS SOD SHALL BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH. MAXIMUM ALLOWABLE DEVIATION FROM STANDARD WIDTHS AND LENGTHS SHALL BE 5 PERCENT.
C. STANDARD SIZE SECTIONS OF TURFGRASS SOD SHALL BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY FROM A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
D. LANDSCAPE CONTRACTOR SHALL SOD ALL SPECIFIED AREAS. THE FINAL GRADE AND TOPSOIL WITHIN +/– .10 FEET WILL BE IN PLACE FOR SOD CONTRACTOR.
E. TILL AREA TO BE SODDED TO A DEPTH OF 4". RAKE TILLED AREA TO REMOVE DEBRIS 1" OR LARGER IN SIZE THAT HAS BEEN BROUGHT TO THE SURFACE DURING TILLING.
F. AFTER ALL GRADING HAS BEEN COMPLETED, THE SOIL SHALL BE IRRIGATED WITHIN 12–24 HOURS PRIOR TO LAYING THE TURFGRASS SOD. TURFGRASS SOD SHOULD NOT BE LAID ON SOIL THAT IS DRY AND POWDERY.
G. THE FIRST ROW OF TURFGRASS SOD SHALL BE LAID IN A STRAIGHT LINE, WITH SUBSEQUENT ROWS PLACED PARALLEL TO, AND TIGHTLY AGAINST, EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHALL BE EXERCISED TO INSURE THAT THE TURF IS NOT STRETCHED OR OVERLAPPED, AND ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS, WHICH WOULD CAUSE AIR–DRYING OF THE ROOTS.
H. ON SLOPES ARE WHERE EROSION MAY BE A PROBLEM, TURFGRASS SOD SHALL BE LAID WITH STAGGERED JOINTS AND SECURED BY PEGGING.
I. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING TURFGRASS SOD IMMEDIATELY DURING AND AFTER INSTALLATION TO PREVENT DRYING. IT SHALL THEN BE THOROUGHLY IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE NEW TURFGRASS SOD PAD AND SOIL IMMEDIATELY BELOW THE TURFGRASS SOD ARE THOROUGHLY WET (USUALLY 1 INCH OF WATER IS NEEDED). THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING ADEQUATE WATER AVAILABLE AT THE SITE PRIOR TO AND DURING INSTALLATION OF THE TURFGRASS SOD.
J. LANDSCAPE CONTRACTOR IS TO SET GRADE TO PROMOTE POSITIVE DRAINAGE AWAY FROM THE BUILDING AND TO DETENTION BASINS.
K. UNLESS OTHERWISE SPECIFIED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE ACCEPTED SODDED TURFGRASS AREAS UNTIL THE EFFECTIVE DATE FOR TURF MAINTENANCE OPERATIONS BEGINS. THE EFFECTIVE DATE SHALL BE SPECIFIED IN WRITTEN NOTICE FROM THE GENERAL CONTRACTOR.

IRRIGATIONS SYSTEMS

A. GENERAL CONTRACTOR SHALL PROVIDED AN IRRIGATION SYSTEM (IF CLIENT WISHES TO IRRIGATE, VERIFY WITH CLIENT). PLAN SHALL PROVIDED FULL SITE COVERAGE ON THE PROPERTY.
B. COMPLETE DESIGN DRAWINGS & EQUIPMENT TO BE SUBMITTED TO OWNER FOR REVIEW.

*IRRIGATION SYSTEM DESIGN / BUILD NOTES:
1. IRRIGATION SYSTEM SHALL HAVE A REMOVABLE EXTERIOR BACK–FLOW PREVENTER WITH FAKE ROCK COVER IN GRASS AREA OUTSIDE OF METER PIT AT POINT OF CONNECTION.
2. IRRIGATION HEADS(DRIPLINE IN PLANTING BEDS; COMPLETE ROTOR SPRINKLER IN LAWN).
3. RAIN BIRD ESP OR HUNTER I–CORE CONTROLLER LOCATED IN MECH ROOM WITH RAIN SENSOR.
4. SLEEVES ARE REQUIRED UNDER ALL PAVEMENT / SIDEWALK FOR SYSTEM, COORDINATE WITH GENERAL CONTRACTOR.
5. IRRIGATION CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR LAYOUT APPROVAL.

GENERAL LANDSCAPE NOTES

A. THE CONTRACTOR SHALL VISIT THE SITE AND COMPLETELY REVIEW THESE DOCUMENTS AND FULLY UNDERSTAND THE NATURE AND SCOPE OF WORK NEEDED TO ACHIEVE THE FINISHED PRODUCT INTENDED BY THE OWNER. IN ADDITION, THE CONTRACTOR SHALL AT ONCE REPORT TO THE LANDSCAPE ARCHITECT, INACCURACIES OR INCONSISTENCIES DISCOVERED. FAILURE TO REASONABLY RECOGNIZE OR NOTIFY THE LANDSCAPE ARCHITECT OF SUCH ITEMS SHALL RELEASE THE LANDSCAPE ARCHITECT AND OWNER OF ALL LIABILITY. ANY DEVIATIONS FROM THESE DOCUMENTS WITHOUT WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT SHALL BE CORRECTED AT THE CONTRACTORS EXPENSE.
B. PROTECT ALL EXISTING VEGETATION TO REMAIN AS PER PLANS AND SPECIFICATIONS.
C. PRIOR TO CONSTRUCTION, THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS NECESSARY TO COMPLETE THE WORK, LOCATING ALL UNDERGROUND UTILITIES, AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING INSTALLATION. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC., WHICH MAY OCCUR AS A RESULT OF LANDSCAPE CONSTRUCTION.
D. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS NECESSARY TO COMPLETE THE WORK.
E. LANDSCAPE CONTRACTOR MUST CERTIFY THAT ITS SAFETY PROGRAM MEETS REGULATORY REQUIREMENTS AT A MINIMUM. CONTRACTOR TO PROVIDE DOCUMENTATION OF THE OSHA RECORD KEEPING SUMMARY.
F. LANDSCAPE ARCHITECT MAY OBSERVE TREES AND SHRUBS EITHER AT PLACE OF GROWTH OR AT SITE BEFORE PLANTING FOR COMPLIANCE WITH REQUIREMENTS FOR GENUS, SPECIES, VARIETY, SIZE, AND QUALITY. LANDSCAPE ARCHITECT RETAINS RIGHT TO OBSERVE TREES AND SHRUBS FURTHER FOR SIZE AND CONDITION OF BALLS, ROOT SYSTEMS, INSECTS, INJURIES, AND LATENT DEFECTS AND TO REJECT UNSATISFACTORY OR DEFECTIVE MATERIAL AT ANY TIME DURING PROGRESS OF WORK. LANDSCAPE CONTRACTOR SHALL REMOVE REJECTED TREES OR SHRUBS IMMEDIATELY FROM PROJECT SITE.
G. IF EXISTING ECOLOGY CAUSES ADJUSTMENTS OF LANDSCAPE PLANS TO FIT THE SITE CONDITIONS, A STAKE OUT BY LANDSCAPE CONTRACTOR AND ADJUSTMENTS BY LANDSCAPE ARCHITECT SHALL BE REQUIRED PRIOR TO INSTALLATION.
H. THE OWNER AND/OR THE OWNER'S REPRESENTATIVE WILL APPROVE STAKED LOCATIONS OF ALL MATERIAL PRIOR TO INSTALLATION, OR AS DEEMED NECESSARY BY OWNER/OWNER'S REP.
I. ALL PLANTING AREAS SHOWN ON PLANS SHALL BE TO WITHIN 2" OF FINAL GRADE BEFORE LANDSCAPE CONTRACTOR COMMENCES INSTALLATION.
J. FOR LOCATION AND DESCRIPTION OF PROPOSED SITE UTILITIES, STORM STRUCTURES, EASEMENTS, ETC., REFER TO THE SITE PLAN AND CIVIL ENGINEERING DRAWINGS.
K. ALL PLANT MATERIAL MUST BE INSTALLED ACCORDING TO THE APPROVED LANDSCAPING PLAN BY NO LATER THAN THE NEXT PLANTING SEASON OR WITHIN 6 MONTHS FROM THE COMPLETION OF ALL SITE CONSTRUCTION.
L. PLANT QUANTITIES ARE ESTIMATES ONLY. CONTRACTOR TO VERIFY ALL PLANT QUANTITIES. ANY DISCREPANCY BETWEEN THE PLANTING LIST AND THE PLAN SHALL BE VERIFIED BY THE LANDSCAPE ARCHITECT. ALL SUBSTITUTIONS AND/OR CHANGES SHALL BE REQUESTED IN WRITING TO THE OWNER OR OWNER'S REPRESENTATIVE AND BE APPROVED BY THE LANDSCAPE ARCHITECT AND THE LOCAL MUNICIPALITY PRIOR TO INSTALLATION.
M. THE CONTRACTOR SHALL PROVIDE QUALITY, SIZE, GENUS, SPECIES, AND VARIETY OF EXTERIOR PLANTS INDICATED, COMPLYING WITH APPLICABLE REQUIREMENTS IN ANSI Z60.1, "AMERICAN STANDARD FOR NURSERY STOCK."
N. THE CONTRACTOR SHALL FURNISH NURSERY–GROWN TREES AND SHRUBS COMPLYING WITH ANSI Z60.1, WITH HEALTHY ROOT SYSTEMS DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL–SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK, FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.
O. TREES AND SHRUBS OF A LARGER SIZE MAY BE USED, IF ACCEPTABLE TO LANDSCAPE ARCHITECT, WITH A PROPORTIONATE INCREASE IN SIZE OF ROOTS OR BALLS.
P. IF FORMAL ARRANGEMENTS OR CONSECUTIVE ORDER OF TREES OR SHRUBS IS SHOWN, SELECT STOCK FOR UNIFORM HEIGHT AND SPREAD, AND NUMBER LABEL TO ASSURE SYMMETRY IN PLANTING.
Q. THE CONTRACTOR SHALL LABEL ONE TREE AND ONE SHRUB OF EACH VARIETY AND CALIPER WITH A SECURELY ATTACHED, WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTH THE BOTANICAL AND COMMON NAME.
R. TOPSOIL SHALL BE ASTM D 5268, pH RANGE OF 5.5 TO 7, A MINIMUM OF 4 PERCENT ORGANIC MATERIAL CONTENT; FREE OF STONES 1 INCH OR LARGER IN ANY DIMENSION AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH. STANDARD TOPSOIL PLANTING MATERIAL SHALL CONSIST OF 60% NATIVE SOIL, 10% PEAT HUMUS, AND 30% COMPOST.
S. COMPOST SHALL BE WELL–COMPOSTED, STABILE, AND WEED–FREE ORGANIC MATTER, pH RANGE OF 5.5 TO 8; MOISTURE CONTENT 35 TO 55 PERCENT BY WEIGHT; 100 PERCENT PASSING THROUGH ONE INCH SIEVE; SOLUBLE SALT CONTENT OF 5 TO 10 DECISIEMENS/M; NOT EXCEEDING 0.5 PERCENT INERT CONTAMINANTS AND FREE OF SUBSTANCES TOXIC TO PLANTINGS.
T. FERTILIZER SHALL BE SLOW–RELEASE, GRANULAR OR PELLETS CONSISTING OF 50 PERCENT WATER–INSOLUBLE NITROGEN, PHOSPHORUS, AND POTASSIUM IN AMOUNTS RECOMMENDED FOR TYPE OF PLANT BEING GROWN.
U. MULCH TO BE FREE FROM DELETERIOUS MATERIALS AND DISEASE AND SUITABLE AS A TOP DRESSING OF TREES AND SHRUBS. MULCH SHALL BE CLEAN, NON–DYED, TOXIC FREE, DOUBLE–SHREDDED HARDWOOD, DARK BROWN IN COLOR, UNLESS NOTED OTHERWISE. CRUSHED ROCK AND PEA GRAVEL OR SIMILAR MATERIALS ARE NOT ACCEPTABLE MULCH/GROUNDCOVER. ALL LANDSCAPE ISLANDS SHALL BE MULCHED BY THE LANDSCAPE CONTRACTOR UNLESS OTHERWISE STATED IN THE LANDSCAPE PLANS.
V. PLANT TAGS SHALL REMAIN ON INSTALLED PLANT MATERIAL UNTIL THE WORK HAS BEEN APPROVED BY LOCAL INSPECTOR AND/OR THE OWNER OR OWNERS REPRESENTATIVE.
W. LANDSCAPE CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE FROM ALL PLANT BEDS WITHOUT ADVERSELY AFFECTING SITE DRAINAGE. GRADES BEHIND CURBS FOR AREAS RECEIVING MULCH SHALL BE 3 INCHES BELOW TOP OF CURB & 2 INCHES BELOW TOP OF CURB FOR SOD.
X. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING, INCLUDING, BUT NOT LIMITED TO, WATERING, SPRAYING, MULCHING, FERTILIZING, ETC., ALL PLANTING AREAS AND LAWN UNTIL THE WORK IS ACCEPTED BY THE OWNER OR THE OWNER'S REPRESENTATIVE.
Y. ISLAND AND PLANTER GRADES (IF APPLICABLE) SHALL BE MOUNDED IN THE CENTER SLOPING DOWNWARD FROM THE MIDDLE OUTWARD AT A MINIMUM 2% AND A MAXIMUM 4%.
Z. ALL PLANT MATERIAL INSTALLATION TO BE COORDINATED WITH IRRIGATION CONTRACTOR. ACTIVATE IRRIGATION SYSTEM UPON COMPLETION OF ALL LAWN AREAS. ALL IRRIGATION COMPONENTS SHALL BE OF THE SAME MANUFACTURER & INSTALLED PER MANUFACTURER SPECIFICATIONS
AA.NO TREES SHALL BE PLANTED WITHIN 10'–0" OF FIREHYDRANTS.

SEEDING

HYDROSEED
A. LANDSCAPE CONTRACTOR SHALL SEED ALL DISTURBED AREAS. THE FINAL GRADE AND TOPSOIL WITHIN +/– .10 FEET WILL BE IN PLACE FOR SEEDING CONTRACTOR.
B. CONTRACTOR SHALL APPLY CELLULOSE FIBER MULCH AT A MINIMUM RATE OF 1500 LBS./ACRE AND FERTILIZERS: BEST 6–20–20 OR BEST 15–15–15 OR APPROVED EQUAL APPLIED AT RATE APPROPRIATE FOR PRODUCT. ORGANIC TACKIFIER SHALL BE APPLIED AT RATE OF 70 LBS./ACRE. HYDROSEED SEED MIX SHALL BE APPLIED AT THE 2,000 LBS./ACRE.
C. CONTRACTOR SHALL WATER ALL PLANT AREAS THOROUGHLY TO SATURATE UPPER LAYERS OF SOIL PRIOR TO THE HYDROSEEDING OPERATION. ALLOW THE PLANTING AREA SOIL SURFACE TO DRY OUT FOR ONE DAY ONLY PRIOR TO THE HYDROSEEDING APPLICATION.
D. CONTRACTOR SHALL APPLY THE HYDROSEEDING IN THE FORM OF A SLURRY CONSISTING OF ORGANIC SOIL AMENDMENTS, COMMERCIAL FERTILIZER, AND ANY OTHER CHEMICALS THAT ARE CALLED OUT. WHEN HYDRAULICALLY SPRAYED ONTO THE SOIL, THE MULCH SHALL FORM A BLOTTER–LIKE MATERIAL. SPRAY THE AREA WITH A UNIFORM VISIBLE COAT, USING THE DARK COLOR OF THE CELLULOSE FIBER AS A VISUAL GUIDE. THE SLURRY SHALL BE APPLIED IN A DOWNWARD DRILLING MOTION VIA A FAN STREAM NOZZLE. CONTRACTOR SHALL INSURE THAT ALL OF THE SLURRY COMPONENTS ENTER AND MIX WITH THE SOIL.
E. IF SLURRY COMPONENTS ARE LEFT FOR MORE THAN TWO HOURS IN THE MACHINE, ADD 50% MORE OF THE ORIGINALLY SPECIFIED SEED MIX TO ANY SLURRY MIXTURE WHICH HAS NOT BEEN APPLIED WITHIN THE TWO HOURS AFTER MIXING. ADD 75% MORE OF THE ORIGINAL SEED MIX TO ANY SLURRY MIXTURE WHICH HAS NOT BEEN APPLIED EIGHT (8) HOURS AFTER MIXING. ALL MIXTURES MORE THAN EIGHT (8) HOURS OLD, SHALL BE DISPOSED, OFFSITE, AT THE CONTRACTOR'S EXPENSE.
F. CONTRACTOR SHALL REMOVE ALL SLURRY SPRAYED ONTO HARDSCAPE AREAS INCLUDING CONCRETE WALKS, FENCES, WALLS, BUILDINGS, ETC. AT THE CONTRACTOR'S EXPENSE.
G. CONTRACTOR SHALL SAVE ALL SEED AND FERTILIZER TAGS AND FIBER MULCH BAGS FOR THE LANDSCAPE ARCHITECT TO VERIFY COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS.

NATIVE SEED NOTES
A. ALL WEEDS AND EXISTING VEGETATION MUST BE ELIMINATED PRIOR TO HYDROSEEDING OR DRILL SEEDING ANY NATIVE SEED MIX.
B. INSTALLATION SHALL BE PERFORMED IN LATE FALL – EARLY WINTER OR SPRING. IF SITE IS PREPARED AT ANY OTHER TIME OF THE YEAR, STABILIZE WITH THE FOLLOWING SEED MIX PER ACRE: 64 LBS SEED OATS(AVENA SATIVA)/25 LBS ANNUAL RYE GRASS (LOLIUM MULTIFLORUM)
C. IF VEGETATION EXISTS ON SITE, APPLY A GLYPHOSATE HERBICIDE AT LEAST THREE DAYS PRIOR TO INSTALLATION ON ALL ACTIVELY GROWING VEGETATION. NEVER APPLY FERTILIZER TO THE SITE.
D. IF DRILL SEEDING, INSTALL SEED WHEN SOIL IS SUFFICIENTLY DRY SO THAT SOIL DOES NOT STICK TO THE PACKER WHEELS ON THE DRILL.
E. ENSURE THE DRILL OR HYDROSEEDER IS PROPERLY CALIBRATED TO SOW THE SPECIFIED AMOUNT OF SEED OVER THE SPECIFIED AREA. ENSURE COMPLETE COVERAGE OF THE SPECIFIED AREA.
F. MOW AT A HEIGHT OF 4 – 6 INCHES WHEN THE OATS SET SEED HEADS. MOW AT A HEIGHT OF 4 – 6 INCHES ONCE A MONTH OR WHENEVER WEED GROWTH REACHES 10 INCHES FOR THE REMAINDER OF THE FIRST SEASON.
G. IF COOL SEASON WEED GROWTH IS HEAVY IN THE SPRING OF THE SECOND SEASON, MOW ONCE IN LATE MAY OF THE SECOND SEASON.

Item	Revision Description	Date	Drwn	Chk
1	REVISED PER CIVIL CHANGES & OUTLOT ACREAGE REMOVED	07-27-18	HMW	ADH

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

PLANTING NOTES & DETAILS

bauer

Item 5.B.

Drawing: LA
Drawn by: MW
Checked By: AL
Issue Date: 018
Sheet: L2.0

Plot time: Jul 27, 2018 - 4:24pm
Drawing name: J:\2017\17-0335\LA\DWG\17-0335 LA.dwg - Layout Tab: L2.0-Details

Fleet Farm

EXTERIOR SIGN ELEVATIONS

07.26.2018

CEDAR FALLS, IA

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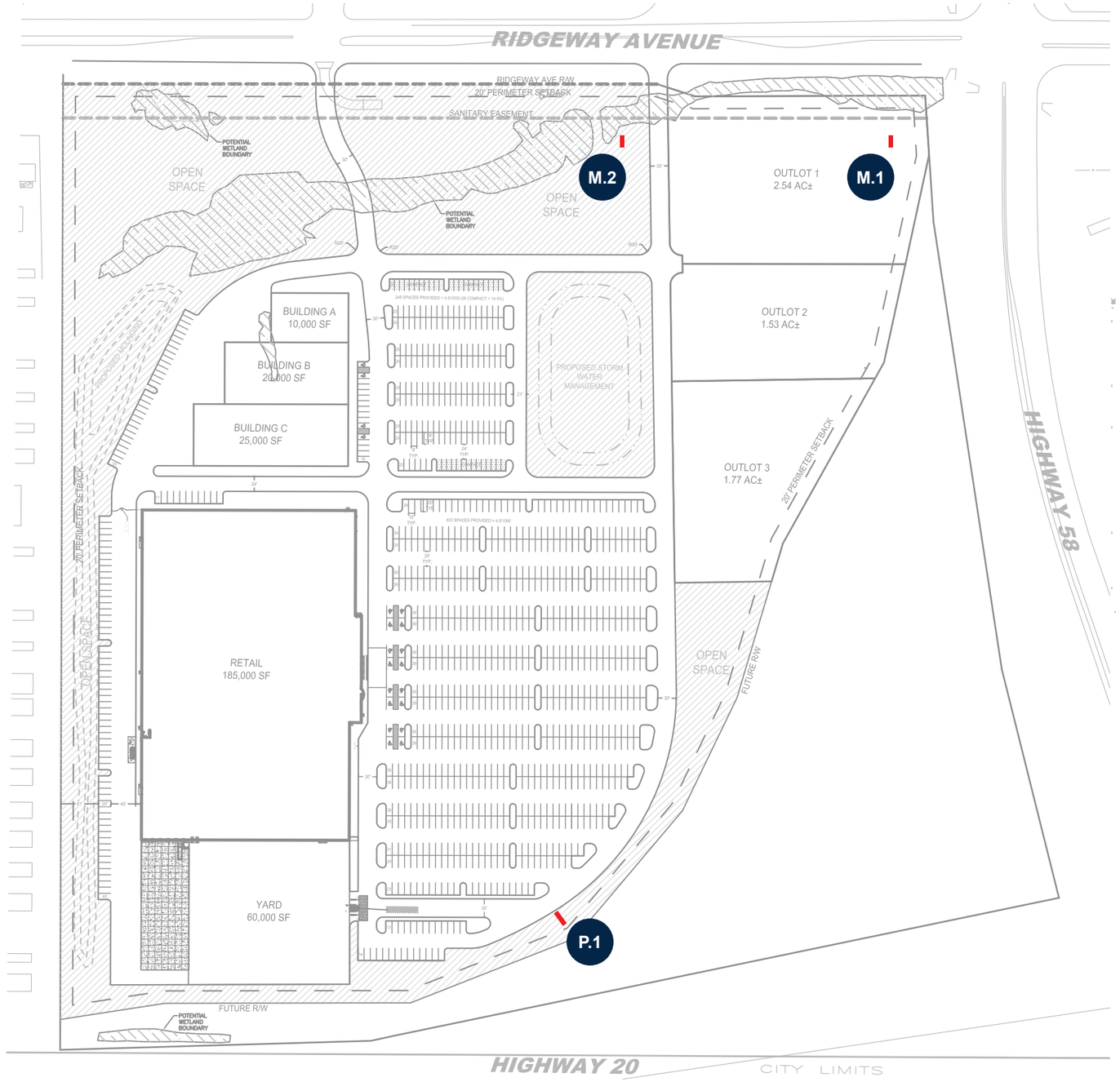

Basis of Bearing:
State Plane NAD27 North
0 60 90

SCALE: 1"=200'-0"

FREESTANDING SIGNS

- **P.1** D/F INTERNALLY ILLUMINATED PYLON SIGN
- **M.1** D/F INTERNALLY ILLUMINATED MONUMENT SIGN
- **M.2** D/F INTERNALLY ILLUMINATED TENANT MONUMENT SIGN

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EST #: **4743-R1**
DATE: 06.25.2018
DESIGNER: A. McKinney
SALES REP: N. Lison
PROJ MGR: D. LaCrosse

REV.	DATE	BY	DESCRIPTION
1	07.26.18	WAM	REVISE P.1, M.1 SIGN HEIGHTS, SQ. FT.; DELETE SOUTH & WEST ELE C-STORE SIGNS, ADD M.2
2	00.00.00	XX	XXXX
3	00.00.00	XX	XXXX
4	00.00.00	XX	XXXX
5	00.00.00	XX	XXXX
6	00.00.00	XX	XXXX
7	00.00.00	XX	XXXX
8	00.00.00	XX	XXXX
9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE

LANDLORD APPROVAL DATE

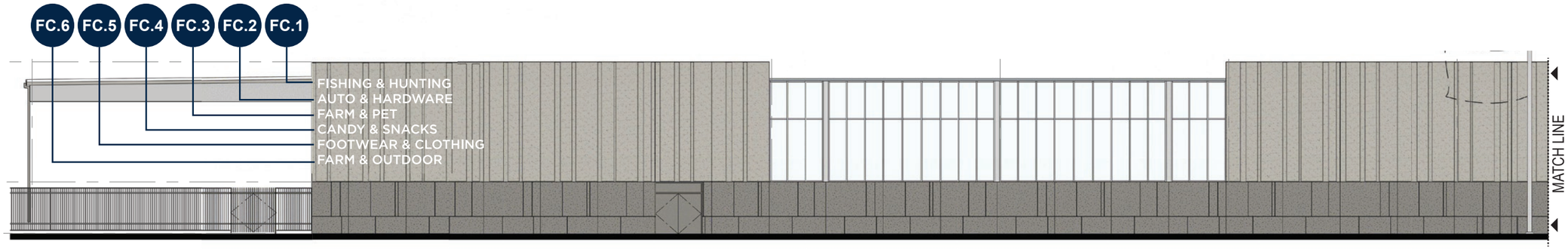
QC

Fleet Farm

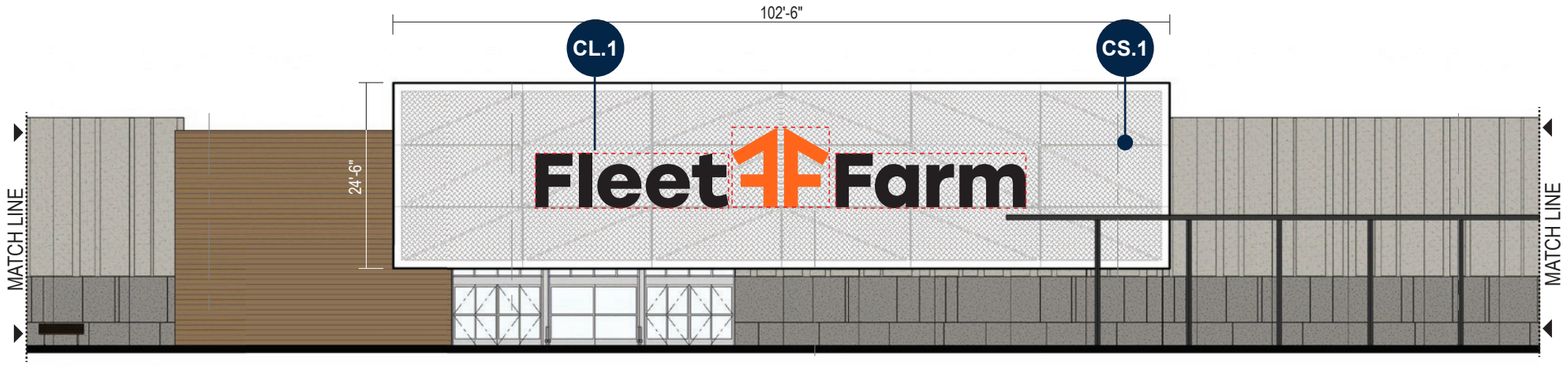
Fleet Farm
Black Hawk County
Cedar Falls, IA

DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
0.0



FRONT ELEVATION
SCALE: 1" = 20'-0"



FRONT ELEVATION
SCALE: 1" = 20'-0"

FC.1 — 23'-2 1/8" × 1'-7"
IFISHING & HUNTING
NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 36.7

FC.2 — 23'-6 3/4" × 1'-7"
IAUTO & HARDWARE
NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 37.3

FC.3 — 13'-9 3/4" × 1'-7"
IFARM & PET
NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 21.9

FC.4 — 20'-9 3/4"
ICANDY & SNACKS
NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 33.0

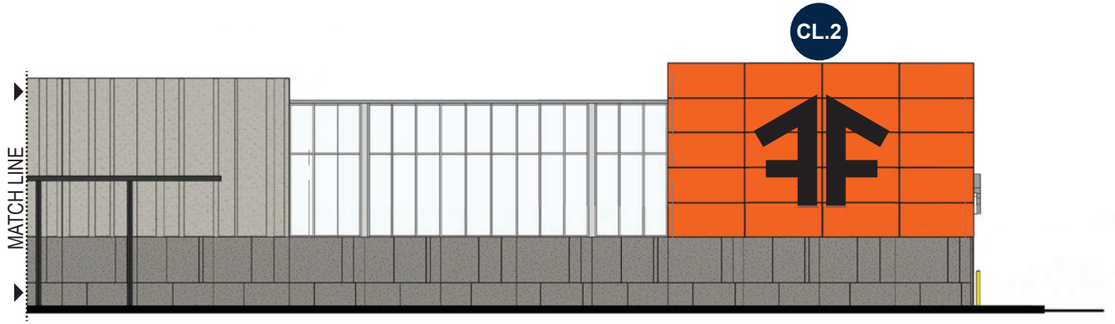
FC.5 — 29'-0" × 1'-7"
IFOOTWEAR & CLOTHING
NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 45.9

FC.6 — 21'-8 1/8" × 1'-7"
IFARM & OUTDOOR
NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 34.3

CL.1 — 64'-8 5/8" × 10'-8 1/4"
Fleet Farm
HALO-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 500.3

CS.1
CUSTOM METAL SCREEN:
PERFORATED METAL SCREEN BACKGROUND FOR CHANNEL LETTERS
INTEGRATED INTO STOREFRONT DESIGN;

CL.2 — 17'-10 5/8" × 14'-8 3/8"
FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 262.8



FRONT ELEVATION
SCALE: 1" = 20'-0"

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EST #: **4743-R1**
DATE: 06.25.2018
DESIGNER: A. McKinney
SALES REP: N. Lison
PROJ MGR: D. LaCrosse

REV.	DATE	BY	DESCRIPTION
1	**07.26.18**	**WAM**	REVISE P.1, M.1 SIGN HEIGHTS, SQ. FT.; DELETE SOUTH & WEST ELE C-STORE SIGNS, ADD M.2
2	00.00.00	XX	XXXX
3	00.00.00	XX	XXXX
4	00.00.00	XX	XXXX
5	00.00.00	XX	XXXX
6	00.00.00	XX	XXXX
7	00.00.00	XX	XXXX
8	00.00.00	XX	XXXX
9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE

LANDLORD APPROVAL DATE

QC

Fleet Farm

Fleet Farm
Black Hawk County
Cedar Falls, IA

DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
1.0

FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 163.4

RIGHT ELEVATION
SCALE: 1" = 20'-0"

RIGHT ELEVATION
SCALE: 1" = 20'-0"

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EST #: **4743-R1**
DATE: 06.25.2018
DESIGNER: A. McKinney
SALES REP: N. Lison
PROJ MGR: D. LaCrosse

REV.	DATE	BY	DESCRIPTION
1	07.26.18	WAM	REVISE P.1, M.1 SIGN HEIGHTS, SQ. FT.; DELETE SOUTH & WEST ELE C-STORE SIGNS, ADD M.2
2	00.00.00	XX	XXXX
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4	00.00.00	XX	XXXX
5	00.00.00	XX	XXXX
6	00.00.00	XX	XXXX
7	00.00.00	XX	XXXX
8	00.00.00	XX	XXXX
9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE

LANDLORD APPROVAL DATE

QC

Fleet Farm

Fleet Farm
Black Hawk County
Cedar Falls, IA

DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
2.0

CL.4 — 5'-4 1/2" × 1'-5 3/4" — FUEL

FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 7.95

VI.1

NON-ILLUM. VINYL GRAPHICS

CL.5 — 8'-4 1/8" × 6'-10 1/4"

FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 57.2

CL.6 — 5'-4 1/2" × 1'-5 3/4" — FUEL

FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 7.95

VI.2

NON-ILLUM. VINYL GRAPHICS

CL.7 — 33'-10 1/8" × 3'-3 3/8" — CAR WASH

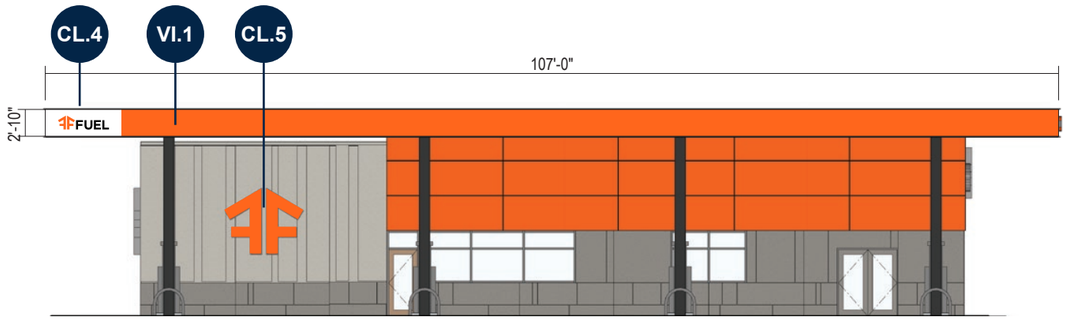
FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 125.7

FC.7 — 4'-9 3/4" × 1'-0" — ENTER

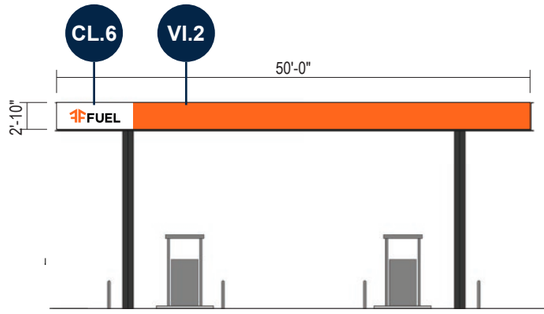
NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 4.8

FC.8 — 4'-9 3/4" × 1'-0" — ENTER

NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 4.8



C-STORE FRONT (EAST) ELEVATION
SCALE: 1/16" = 1'-0"



CANOPY RIGHT (NORTH) ELEVATION
SCALE: 1/16" = 1'-0"

C-STORE RIGHT (NORTH) ELEVATION
SCALE: 1/16" = 1'-0"

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EST #: 4743-R1
DATE: 06.25.2018
DESIGNER: A. McKinney
SALES REP: N. Lison
PROJ MGR: D. LaCrosse

REV.	DATE	BY	DESCRIPTION
1	07.26.18	WAM	REVISE P.1, M.1 SIGN HEIGHTS, SQ. FT.; DELETE SOUTH & WEST ELE C-STORE SIGNS, ADD M.2
2	00.00.00	XX	XXXX
3	00.00.00	XX	XXXX
4	00.00.00	XX	XXXX
5	00.00.00	XX	XXXX
6	00.00.00	XX	XXXX
7	00.00.00	XX	XXXX
8	00.00.00	XX	XXXX
9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE

LANDLORD APPROVAL DATE

QC

Fleet Farm

Fleet Farm
Black Hawk County
Cedar Falls, IA

DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
3.0

FC.9 3'-2 1/4" × 1'-0" — EXIT

NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 3.2

FC.10 3'-2 1/4" × 1'-0" — EXIT

NON-ILLUM. WHITE ACRYLIC LETTERS, 1/2" THICK
SQUARE FOOTAGE: 3.2

CL.9 5'-4 1/2" × 1'-5 3/4" — FUEL

FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 7.95

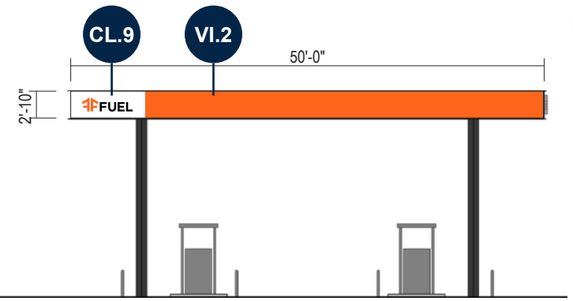
VI.2 NON-ILLUM. VINYL GRAPHICS

CL.10 5'-4 1/2" × 1'-5 3/4" — FUEL

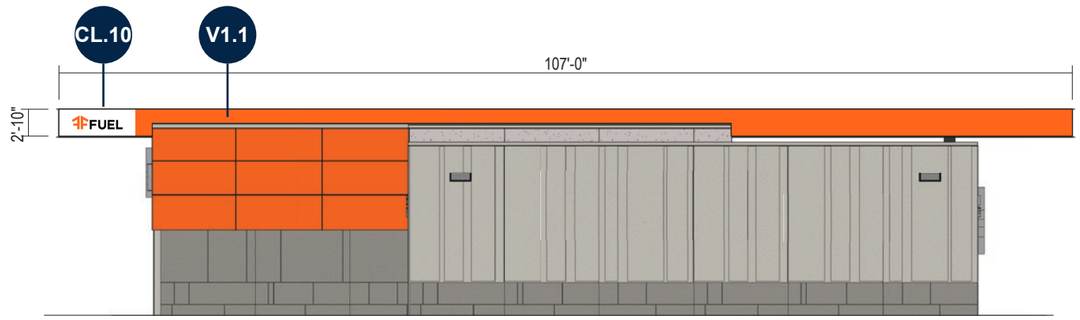
FACE-LIT CHANNEL LETTERS
SQUARE FOOTAGE: 7.95

VI.1 NON-ILLUM. VINYL GRAPHICS

C-STORE LEFT (SOUTH) ELEVATION
SCALE: 1/16" = 1'-0"



CANOPY LEFT (SOUTH) ELEVATION
SCALE: 1/16" = 1'-0"



C-STORE REAR (WEST) ELEVATION
SCALE: 1/16" = 1'-0"

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EST #: **4743-R1**
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DESIGNER: A. McKinney
SALES REP: N. Lison
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REV.	DATE	BY	DESCRIPTION
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2	00.00.00	XX	XXXX
3	00.00.00	XX	XXXX
4	00.00.00	XX	XXXX
5	00.00.00	XX	XXXX
6	00.00.00	XX	XXXX
7	00.00.00	XX	XXXX
8	00.00.00	XX	XXXX
9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE

LANDLORD APPROVAL DATE

QC

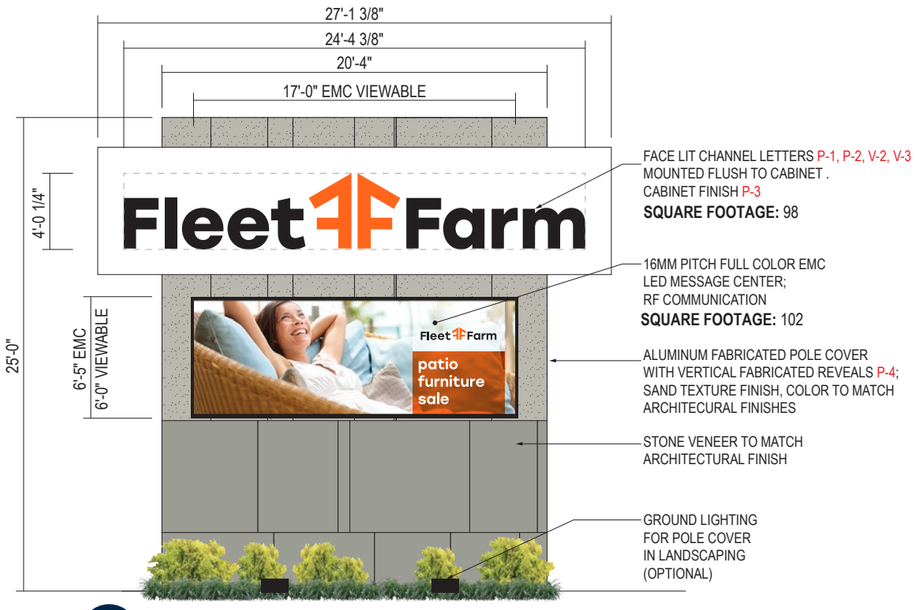
Fleet Farm

Fleet Farm
Black Hawk County
Cedar Falls, IA

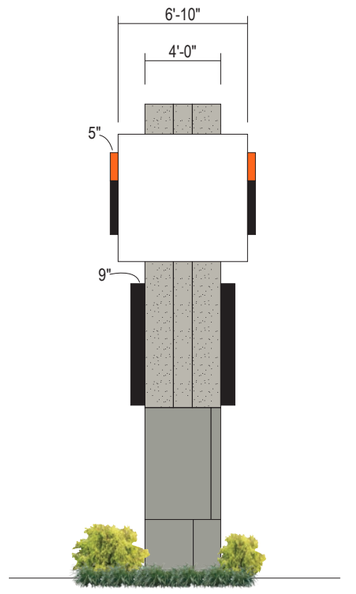
DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
4.0

P.1 **D/F INTERNALLY ILLUMINATED PYLON SIGN**
SQUARE FOOTAGE: 200



P.1 **MAIN STORE PYLON FRONT / BACK ELEVATION**
1/8"=1'-0"



MAIN STORE PYLON RIGHT / LEFT ELEVATION
1/8"=1'-0"

-77-

COLORS/FINISHES

	P-1	MP BLACK, SATIN FINISH
	P-2	MP TO MATCH PMS 165C, SATIN FINISH
	V-2	3M 3630-84 TANGERINE TRANSLUCENT
	V-3	3M 3635-222 DUAL COLOR FILM
	P-3	MP TO MATCH BENJAMIN MOORE OC-65 CHANTILLY LACE
	P-4	MP TO MATCH PRE-CAST WALL PANEL (T.B.D.)

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EST #: 4743-R1
DATE: 06.25.2018
DESIGNER: A. McKinney
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REV.	DATE	BY	DESCRIPTION
1	07.26.18	WAM	REVISE P.1, M.1 SIGN HEIGHTS, SQ. FT.; DELETE SOUTH & WEST ELE C-STORE SIGNS, ADD M.2
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7	00.00.00	XX	XXXX
8	00.00.00	XX	XXXX
9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE
LANDLORD APPROVAL DATE
QC

Fleet Farm
Fleet Farm
Black Hawk County
Cedar Falls, IA
DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
5.(

Item 5.B.

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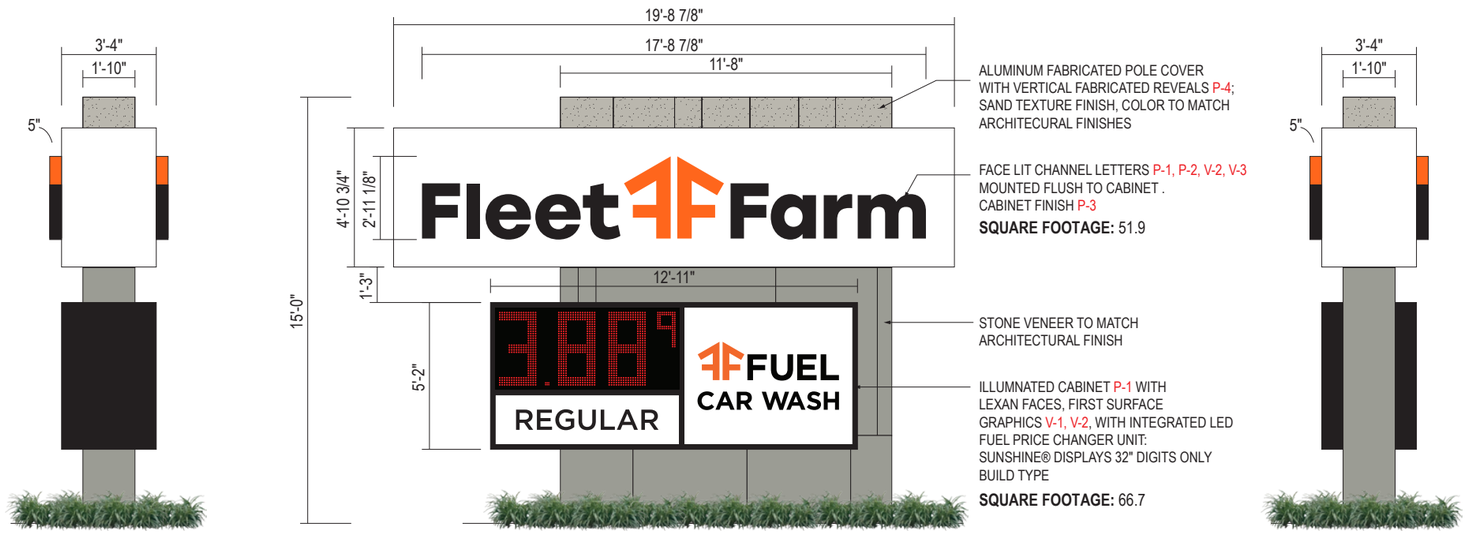

SIDE VIEW
SCALE: 3/16"=1'-0"

M.1 **D/F ILLUMINATED MONUMENT SIGN**
SCALE: 3/16"=1'-0"

SIDE VIEW
SCALE: 3/16"=1'-0"

COLORS/FINISHES

- P-1 MP BLACK, SATIN FINISH
- P-2 MP TO MATCH PMS 165C, SATIN FINISH
- P-3 MP TO MATCH BENJAMIN MOORE OC-65 CHANTILLY LACE
- P-4 MP TO MATCH PRE-CAST WALL PANEL (T.B.D.)
- V-1 3M 3630-22 BLACK VINYL
- V-2 3M 3630-84 TANGERINE
- V-3 3M 3635-222 DUAL COLOR FILM

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EST #: **4743-R1**
DATE: 06.25.2018
DESIGNER: A. McKinney
SALES REP: N. Lison
PROJ MGR: D. LaCrosse

REV.	DATE	BY	DESCRIPTION
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9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE

LANDLORD APPROVAL DATE

QC

Fleet Farm

Fleet Farm
Black Hawk County
Cedar Falls, IA

DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
6.0

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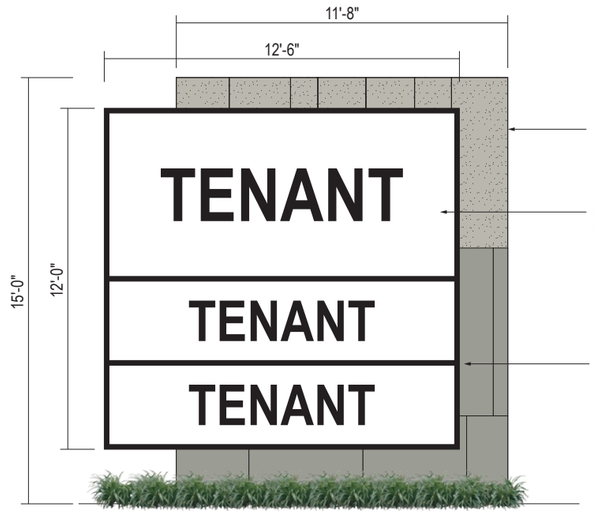

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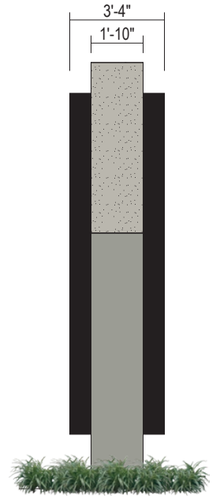

SIDE VIEW
SCALE: 3/16"=1'-0"

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8	00.00.00	XX	XXXX
9	00.00.00	XX	XXXX
10	00.00.00	XX	XXXX

CLIENT APPROVAL DATE
LANDLORD APPROVAL DATE
QC

Fleet Farm

Fleet Farm
Black Hawk County
Cedar Falls, IA

DESIGN PHASE: CONCEPTUAL

SHEET NUMBER
7.0

Item 5.B.

1 SITE LIGHTING PHOTOMETRICS
1"=40'-0"

Schedule							
Label	Manufacturer	Catalog Number	Description	Lamp	Light Loss Factor	Wattage	Notes
SA	LITHONIA LIGHTING	DSX2 LED P8 40K T4M MVOLT	POLE MOUNTED LED AREA LIGHT, FORWARD THROW	LED	0.9	431	ON 38' POLE
SA2	LITHONIA LIGHTING	DSX2 LED P8 40K T4M MVOLT	SAME AS FIXTURE SA BUT TWO HEADS AT 180 DEGREES	LED	0.9	862	ON 38' POLE
SC	LITHONIA LIGHTING	DSXW2 LED 30C 1000 40K T2M MVOLT	WALL MOUNTED WIDE THROW AREA LIGHT	LED	0.9	109	
SD	LSI INDUSTRIES	CRUS-SC-LED-HO-50	LED SURFACE MOUNT PETROLEUM CANOPY FIXTURE	LED	0.9	132.4	
SE	LITHONIA LIGHTING	IBGN 4ft 30000LM SEF GND ACL 40K 80CRI	LED HIGHBAY	LED	0.9	205	

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
BACK DRIVES	+	5.0 fc	21.7 fc	2.3 fc	9.4:1	2.2:1
BACK PARKING	◇	3.3 fc	4.8 fc	2.3 fc	2.1:1	1.4:1
C STORE DRIVE	+	10.4 fc	37.3 fc	1.1 fc	33.9:1	9.5:1
C STORE PARKING	◇	3.4 fc	4.8 fc	2.2 fc	2.2:1	1.5:1
FUTURE BLDG PARKING	◇	3.5 fc	3.9 fc	2.8 fc	1.4:1	1.3:1
MAIN DRIVE	+	4.9 fc	9.2 fc	1.7 fc	5.4:1	2.9:1
MAIN PARKING DRIVE	+	4.3 fc	7.8 fc	2.7 fc	2.9:1	1.6:1
MAIN PARKING LOT	◇	4.4 fc	9.6 fc	3.1 fc	3.1:1	1.4:1
PROPERTY LINE	+	0.3 fc	2.8 fc	0.0 fc	N/A	N/A
SECONDARY PARKING	◇	4.3 fc	9.4 fc	2.6 fc	3.6:1	1.7:1
SIDE PARKING	◇	5.9 fc	7.5 fc	4.1 fc	1.8:1	1.4:1
SIDE YARD	+	12.7 fc	32.1 fc	2.2 fc	14.6:1	5.8:1

ADRIAN T. FRANKS 20868 LICENSED PROFESSIONAL ENGINEER IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Adrian Franks — 07/06/2018
NAME: DATE:

MY LICENSE RENEWAL DATE IS 12/31/2019.

PAGES OR SHEETS COVERED BY THIS SEAL:
E1.0
E1.1

Dialectic
Dialectic Inc.
310 W 20th Street, Suite 200
Kansas City, MO 64108
T 816-997-9601
F 816-997-9602
DialecticEng.com

Basis of Bearing: State Plane NAD27 North
0 40 60
SCALE: 1" = 40'

Item	Revision Description	Date	Drwn:	Chk:

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

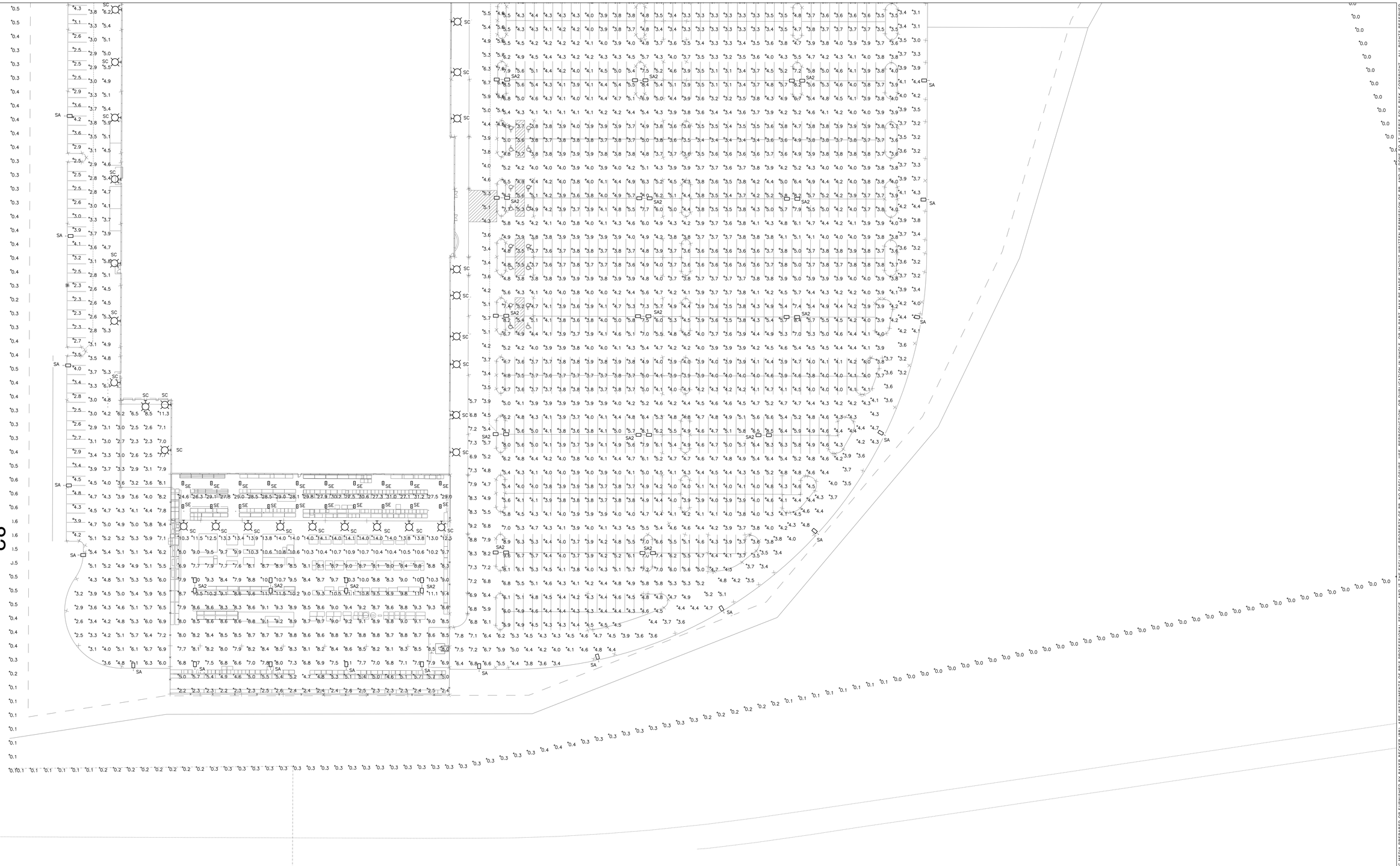
SITE PLAN

bauer

Item 5.B.2

Drawing: 1.X
Drawn by: KZ
Checked By:
Issue Date: 18
Sheet: E1.0

Plot time: Jul 06, 2018 - 8:27am
Drawing name: Y:_Projects\Active\2018\01201818.04\01201818.04_Drawings\Site Lighting Calcs\01201818.04_E1.X.dwg - Layout Tab: E1.0



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SIDE YARD	+	12.7 fc	32.1 fc	2.2 fc	14.6:1	5.8:1

Item	Revision Description	Date	Drwn:	Chk:

Item 5.B.

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

SITE PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing:	01201818.04_E1.X
Drawn by:	EKZ
Checked By:	
Issue Date:	07-06-18
Sheet:	E1.1

ADRIAN T. FRANKS
20868
IOWA
PROFESSIONAL ENGINEER
LICENSED

Dialectic
Dialectic Inc.
310 W 20th Street, Suite 200
Kansas City, MO 64108
T 816-997-9601
F 816-997-9602
DialecticEng.com

Basis of Bearing:
State Plane NAD27 North

0 40 60
SCALE: 1" = 40'

Plot time: Jul 06, 2018 - 8:27am
Drawing name: Y:_Projects\Active\2016\01201818.04\01201818.04_Drawings\Site Lighting Calcs\01201818.04_E1.X.dwg - Layout Tab: E1.1

DEPARTMENT OF COMMUNITY DEVELOPMENT

City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Phone: 319-268-5161
Fax: 319-268-5197
www.cedarfalls.com

INTEROFFICE MEMORANDUM
Engineering Division

TO: Stephanie Sheets, Director of Community Development
Karen Howard, Planning and Community Services Manager

FROM: Jon Resler, P.E., City Engineer

DATE: October 18, 2018

SUBJECT: Henry Farm Development Traffic Impact Study

The Engineering Division has reviewed the Henry Farm Development Traffic Impact Study and the review of the study performed by Foth Infrastructure and Environment. The challenge at this location is the proximity of Nordic Drive to Highway 58. The centerline distance between the two roads along Ridgeway Avenue is about 540'. Access management standards recommend this distance be at least doubled. More distance allows for adequate vehicle storage, weaving maneuvers, and additional time for driver reactions. Unfortunately, Nordic Drive is in place and has been for a long time. Moving the roadway is not currently an option. There are other options that will work today and into the future. How long into the future is dependent on the rate of development along the corridor and corresponding traffic growth.

The Bayer Becker Traffic Impact Study recommended a roundabout at their main entrance (Drive #1) and right-in/right-out access at their secondary entrance (Drive #2), which would be directly south of Nordic Drive. They also recommended that Nordic Drive be a right-in/right-out and a median be installed through the intersection on Ridgeway Avenue. Foth's review showed that this scenario works with the proposed development but at some point in the future, approaching 2040 if the traffic growth assumptions are correct, the heavy U-turn movement at the Drive #1 roundabout resulting from the right-in/right-out at Nordic Drive causes the operation of the roundabout to break down.

Bayer Becker's report also indicated two additional scenarios work for the corridor. One scenario is a traffic signal at Drive #1 and a traffic signal at Drive #2/Nordic Drive. The other is a roundabout at Drive #1 and a traffic signal at Drive #2/Nordic Drive. Both the Foth review and the Engineering Division review show that either scenario will work with the proposed development but also experience problems in the future as the corridor develops and traffic continues to grow.

All three scenarios show problems dealing with future traffic growth. The scenario that would have the most impact on reducing future traffic problems is relocating Nordic Drive an additional 500' to 750' to the west of Highway 58. That is currently not a realistic option because the immediate roadway network can function adequately with the proposed development traffic added to the existing traffic. Having reviewed the Bayer Becker and Foth analyses, Engineering recommends a roundabout at Drive #1 and a traffic signal at Drive #2/Nordic Drive with some additional lanes also recommended by the Foth review. These additions to the Bayer Becker study include:

- Dual eastbound left turn lanes at Highway 58
- An eastbound right turn lane at Highway 58
- Dual westbound left turn lanes at Drive #2/Nordic Drive
- A westbound right turn lane at Drive #2/Nordic Drive

Engineering also asked Bayer Becker to verify a single southbound and northbound lane in the roundabout at Drive #1 was adequate for the future westbound left turn volume which they did verify.

This recommendation recognizes that future traffic growth beyond the proposed development will cause traffic problems. Modeling shows the entire section of roadway between Nordic Drive and Highway 58 full of cars in the eastbound direction in 2040 with the predicted traffic growth rate. When this happens and Drive #2/Nordic Drive traffic is allowed to proceed, there is nowhere for the traffic to go until eastbound traffic at Highway 58 releases. Longer backups are also seen on Nordic Drive that will block the southernmost access to Kwik Star. When this congestion occurs, additional alternatives need to be considered. The alternatives could be adaptive signal control, a roundabout at Drive #2/Nordic Drive, limited access at Drive #2/Nordic Drive, or no access at Drive #2/Nordic Drive. Additionally, the Iowa DOT has a concept for a new interchange at Highway 20 and 58. However, it is just a concept and currently unfunded. This concept shows a grade separated interchange at Highway 58 and Ridgeway Avenue as well. A grade separated interchange would have a significant impact on traffic patterns on Ridgeway Avenue. The interchange would influence traffic pressure on Ridgeway Avenue. It seems likely that it would reduce pressure. Reducing pressure on Ridgeway would impact the traffic predictions of the Bayer Becker study.

TRAFFIC IMPACT STUDY
FOR
HENRY FARM DEVELOPMENT

CITY OF CEDAR FALLS
BLACK HAWK COUNTY, IOWA

OCTOBER 2018

PREPARED FOR:

MIDLAND ATLANTIC PROPERTIES
8044 MONTGOMERY ROAD, SUITE 370
CINCINNATI, OHIO 45236

PREPARED BY:

BAYER BECKER
6900 TYLERSVILLE ROAD
MASON, OHIO 45040
PHONE: (513) 336-6600
FAX: (513) 336-9365

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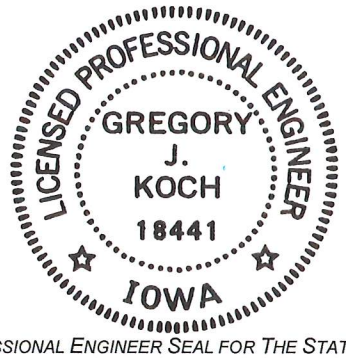
PROFESSIONAL CREDENTIALS



PROFESSIONAL ENGINEER SEAL FOR THE STATE OF IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT AUTHORITY AND I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Gregory J Koch 10/01/18

GREGORY J. KOCH, P.E. DATE

LICENSE NO. 18441

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2018.

PAGES OR SHEETS COVERED BY THIS SEAL:
ALL PAGES IN THIS REPORT

EXECUTIVE SUMMARY

The proposed Henry Farm Development is located on the south side of W. Ridgeway Avenue, west of Iowa Highway 58 (IA-58), in the City of Cedar Falls, Iowa. The proposed Henry Farm Development is approximately 50.31 acres of mixed commercial/retail land uses in the southwest corner of the Iowa Highway 58 (IA-58) and W. Ridgeway Avenue intersection. The proposed Henry Farm Development will consist of the following land uses and densities:

Henry Farm Development

Land Use	Density
Home Improvement Store	245,000 Square Feet
Commercial Retail	55,000 Square Feet
Fast-Food Restaurant (2)	6,000 Square Feet
Convenience Mart with Gasoline	16 Fueling Positions
Total Development	**306,000 Square Feet/16 Fueling Positions**

The roadways that will provide regional access to the proposed site development are State Highway 20 (US-20), Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. Direct access to the proposed Henry Farm Development will utilize the following locations:

- W. Ridgeway Avenue and Proposed Site Drive #1, approximately 1,095 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2, approximately 515 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).

Bayer Becker corresponded with representatives of the Cedar Falls Engineering Department to establish the parameters of the Study. As such, the following key intersections define the study area of this report:

- W. Ridgeway Avenue and Iowa Highway 58 (IA-58).
- W. Ridgeway Avenue and Private Residential Drive/Proposed Site Drive #1.
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2.
- Commerce Drive and Nordic Drive.
- Commerce Drive and Chancellor Drive.
- W. Ridgeway Avenue and Chancellor Drive.

The traffic control that currently operates at the key existing intersections are as follows:

- W. Ridgeway Avenue and Iowa Highway 58 (IA-58) - Signalized.
- W. Ridgeway Avenue and Nordic Drive - Unsignalized.
- W. Ridgeway Avenue and Private Residential Drive – Unsignalized.
- Commerce Drive and Nordic Drive - Unsignalized.
- Commerce Drive and Chancellor Drive - Unsignalized.
- W. Ridgeway Avenue and Chancellor Drive - Roundabout.

The site is surrounded by residential, commercial, industrial, and agricultural land uses. There are no other known planned developments within the study area.

The Iowa Department of Transportation (Iowa DOT) is currently constructing a Single-Point Urban Interchange (SPUI) improvement at the IA-58 Highway and Viking Road intersection. According to the *IA 58 Corridor Improvement Study*, additional improvements including a SPUI at the IA 58 and Greenhill Road intersection and a grade separated interchange at the IA 58 and W. Ridgeway Avenue intersection are planned but no schedule is set for the construction projects.

Operational Alternatives Evaluated

At the direction of the Cedar Falls City Engineer, six (6) operational alternatives were considered as part of the traffic operations at the W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 and W. Ridgeway Avenue and Nordic Drive/Site Drive #2 intersections. The six (6) operational alternatives are identified as follows:

- Operational Alternative #1 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound).
- Operational Alternative #2 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound).
- Operational Alternative #3 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (northbound).
- Operational Alternative #4 – Site Drive #1- Roundabout Design w/Nordic Drive Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (northbound).
- Operational Alternative #5 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Full Operational and Signalized**.**
- Operational Alternative #6 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Full Operational and Signalized.

Upon completion of the Capacity Analysis contained in this study, Alternatives #1, #3, and #4 were eliminated from further evaluation due to unacceptable overall intersection levels of service.

Improvements to Accommodate Base Traffic

Based on the analysis contained in this report, no roadway improvements are recommended to accommodate the ***Existing*** and ***Redistributed Existing 2018, No-Build 2020*** and ***No-Build 2040 Conditions*** (excluding site traffic).

Improvements to Accommodate Site Traffic

Based on the analysis contained in this report, the recommended roadway improvements to accommodate the ***2020 Build*** and ***2040 Build Conditions*** (including site traffic) are as follows:

W. Ridgeway Avenue and Iowa Highway 58 (IA-58)

- Construct an additional northbound left turn lane on Iowa Highway 58 (IA-58) to provide a total left turn storage length of 272 feet plus appropriate taper. It should be noted that the dual left-turn lanes is not required until ***2040 Build***.

W. Ridgeway Avenue and Private Drive/Proposed Site Drive #1 Intersection

- Construct a 2-lane roundabout. Right-of way on the north side of W. Ridgeway Avenue shall be secured to facilitate the roundabout design.

W. Ridgeway Avenue and Private Drive/Proposed Site Drive #2 Intersection

- Close the median opening on W. Ridgeway Avenue at Nordic Drive/Site Drive #2 to prohibit left-turn movements.
- Construct one (1) eastbound right-turn lane, approximately 200 feet plus appropriate taper.
- Construct one (1) northbound right-turn lane for egressing traffic.
- Provide one (1) southbound lane for ingressing traffic.
- Install stop sign traffic control device on the northbound approach of the intersection.

Based upon safety considerations, engineering judgment, and the analysis and findings contained herein, the proposed Henry Farm development, upon the construction of Alternative #2 – Roundabout at Site Access #1 and right-in/right-out at Nordic Drive and Site Access #2 and the associated recommended improvements will not significantly impact the operations on the adjacent roadway network and will operate safely.

INTRODUCTION

The purpose of this study is to determine the traffic impacts of the proposed Henry Farm Development, consisting of approximately 50.31 acres, in the City of Cedar Falls, Iowa, and to satisfy the Cedar Falls Engineering Department requirements for traffic impact studies.

This study describes the existing roadway network, identifies peak traffic conditions, forecasts and distributes future traffic volumes, and determines the impact of the proposed development on the adjacent road network. Conclusions related to the impact of the increased traffic on the roadway system are identified and recommendations for mitigating any possible traffic impacts are provided.

The proposed Henry Farm Development is located at the intersection of W. Ridgeway Avenue and Iowa Highway 58 (IA-58). A vicinity map is provided in Figure 1 below.

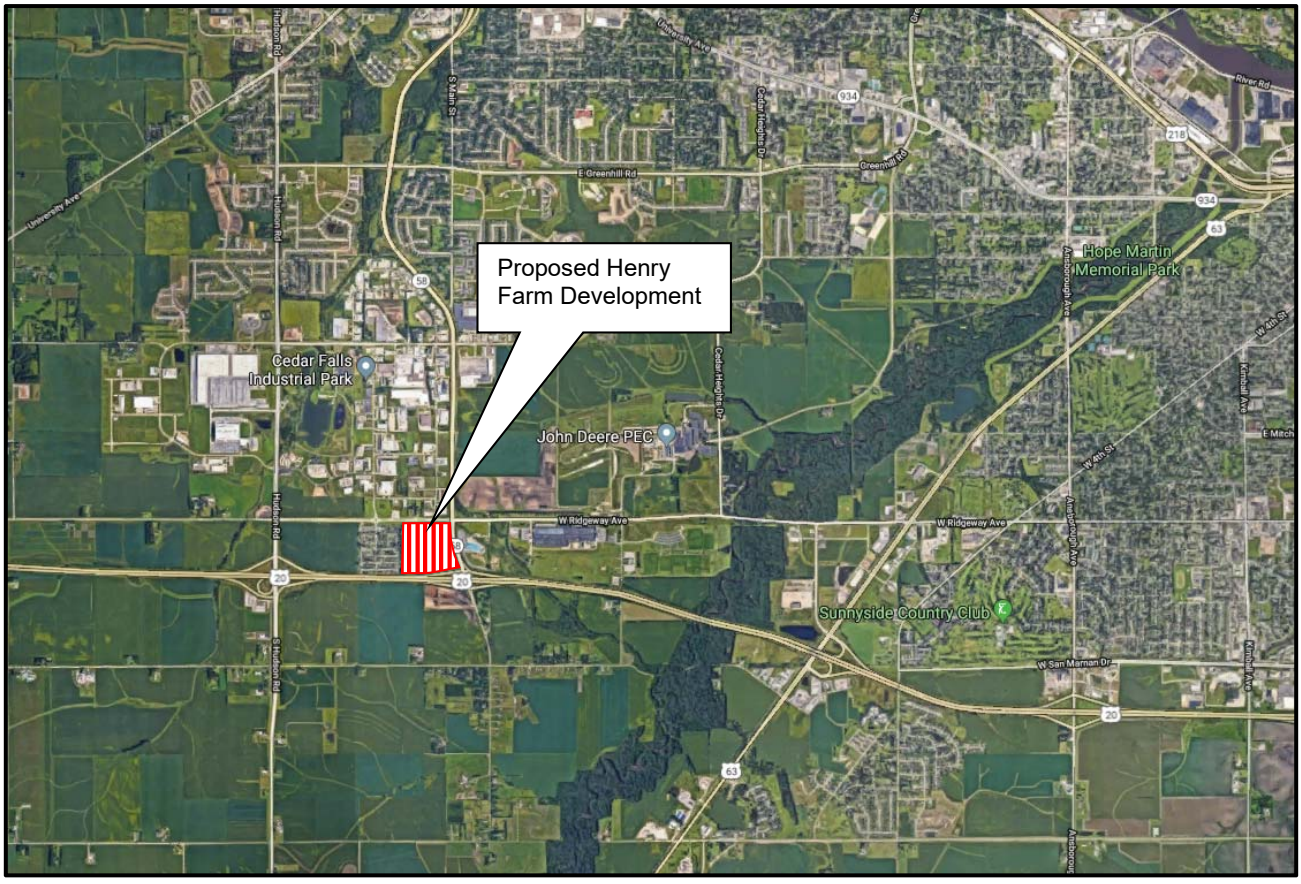


Figure 1
Vicinity Map

Bayer Becker corresponded with the Cedar Falls Engineering Department to establish the scope of the study. As such, the following key intersections define the study area of this report:

- W. Ridgeway Avenue and Iowa Highway 58 (IA-58).
- W. Ridgeway Avenue and Private Residential Drive/Proposed Site Drive #1.
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- Commerce Drive and Nordic Drive.
- Commerce Drive and Chancellor Drive.
- W. Ridgeway Avenue and Chancellor Drive.

Full build out of the proposed Henry Farm Development is anticipated by the year 2020. Therefore, the initial analysis year for the study is ***Build 2020***. The design year for the Henry Farm Development, as established with the City of Cedar Falls Engineer, is ***Build 2040***.

At full build out, the proposed Henry Farm Development will consist of the following land uses and densities:

Henry Farm Development

Land Use	Density
Home Improvement Store	245,000 Square Feet
Commercial Retail	55,000 Square Feet
Fast-Food Restaurant (2)	6,000 Square Feet
Convenience Mart with Gasoline	16 Fueling Positions
Total Development	**306,000 Square Feet/16 Fueling Positions**

The technical material and data contained in this document was prepared by Bayer Becker under the supervision and direction of a Professional Engineer licensed to practice in the State of Iowa, using the following resources in the development of the analysis:

1. Site reconnaissance by Bayer Becker.
2. Meetings and communications with representatives of the Cedar Falls Administration, Planning and Engineering Departments.
3. Communications with representatives Iowa Department of Transportation (Iowa DOT).
4. Meetings and communications with representatives of Midland Atlantic Properties.
5. Concept Site Plan for the proposed Henry Farm Development prepared by Bayer Becker.
6. Peak hour turning movement traffic counts, performed by Iowa Counts, on Tuesday, May 22, 2018, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM at the following intersections:

- W. Ridgeway Avenue and Iowa Highway 58 (IA-58).
- W. Ridgeway Avenue and Private Residential Drive/Proposed Site Drive #1.
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2.
- Commerce Drive and Nordic Drive.
- Commerce Drive and Chancellor Drive.
- W. Ridgeway Avenue and Chancellor Drive.

7. Institute of Transportation Engineer's (ITE) *Trip Generation Manual 10th, Edition.*
8. *Trip Generation Handbook, 3rd Edition.*
9. Reference to the National Cooperative Highway Research Program (NCHRP) Transportation Research Board – Report 457, *Evaluating Intersection Improvements: An Engineering Study Guide*.
10. Reference to the National Cooperative Highway Research Program (NCHRP) Transportation Research Board – Report 684, *Enhancing Internal Trip Capture Estimation for Mixed-Use Development*.
11. *Highway Capacity Manual, 2010*.
12. Synchro Plus SimTraffic 10 version 10.1 Signal Timing and Analysis Software.
13. SIDRA INTERSECTION 8.0 PLUS software program.
14. Reference to the *IA 58 Corridor Improvement Study*, prepared by AECOM and dated December 15, 2014.
15. Reference to the *Zoning & Overlay Map, City of Cedar Falls*, *Iowa*, dated May 23, 2018.
16. Reference to the Iowa Department of Transportation (IowaDOT) *Safety, Analysis, Visualization, and Evaluation Resource (SAVER)* database for traffic crash experience.
17. Reference to the Iowa Department of Transportation (Iowa DOT) *Chapter 1C-1 of the Design Manual*, originally issued: 31, 1997 and revised: May 26, 2017.
18. Reference to the Wisconsin Department of Transportation (WisDOT) *FDM 11-26-20 Roundabouts*, page 27 of the following link, https://wisconsindot.gov/rdwy/fdm/fd-11-26.pdf#fd11-26-20.

The primary objective of this traffic impact study is to determine the traffic impacts of the proposed development, to determine what off-site improvements are required to mitigate the developments' impact, and to satisfy the Cedar Falls Engineering Department requirements for traffic impact studies. The ***Existing*** and ***Redistributed Existing 2018, No-Build 2020, Build 2020, No-Build 2040,*** and ***Build 2040*** years were evaluated as part of the study.

PROPOSED SITE DEVELOPMENT

The proposed Henry Farm Development, consisting of approximately 50.31 acres, in the City of Cedar Falls, Iowa and will be located at the intersection of Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. According to the City of Cedar Falls, Iowa *Zoning & Overlay Map*, the proposed rezoning for the Henry Farm Development is Highway Commercial (HWY-1); which is consistent with the proposed land uses and similar to existing zoning in the immediate vicinity.

At full build out, the proposed Henry Farm Development will consist of the following land uses and densities:

Henry Farm Development

Land Use	Density
Home Improvement Store	245,000 Square Feet
Commercial Retail	55,000 Square Feet
Fast-Food Restaurant (2)	6,000 Square Feet
Convenience Mart with Gasoline	16 Fueling Positions
Total Development	**306,000 Square Feet/16 Fueling Positions**

The roadways that will provide regional access to the proposed site development are State Highway 20 (US-20), Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. Direct access to the proposed Henry Farm Development will utilize the following locations:

- W. Ridgeway Avenue and Proposed Site Drive #1, approximately 1,095 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2, approximately 515 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).

The Concept Plan for the proposed Henry Farm Development is provided in Figure 2.

Figure 2

PROJECT SUMMARY

Existing Zoning: A-1
Proposed Zoning: HWY-1

Gross Site Acreage: 50.31 ac.
Area Reserved for Future R/W: ±10.96 ac.
Net Developable Area: ±39.35 ac.

Total Open Space: 11.94 ac (30.34%)

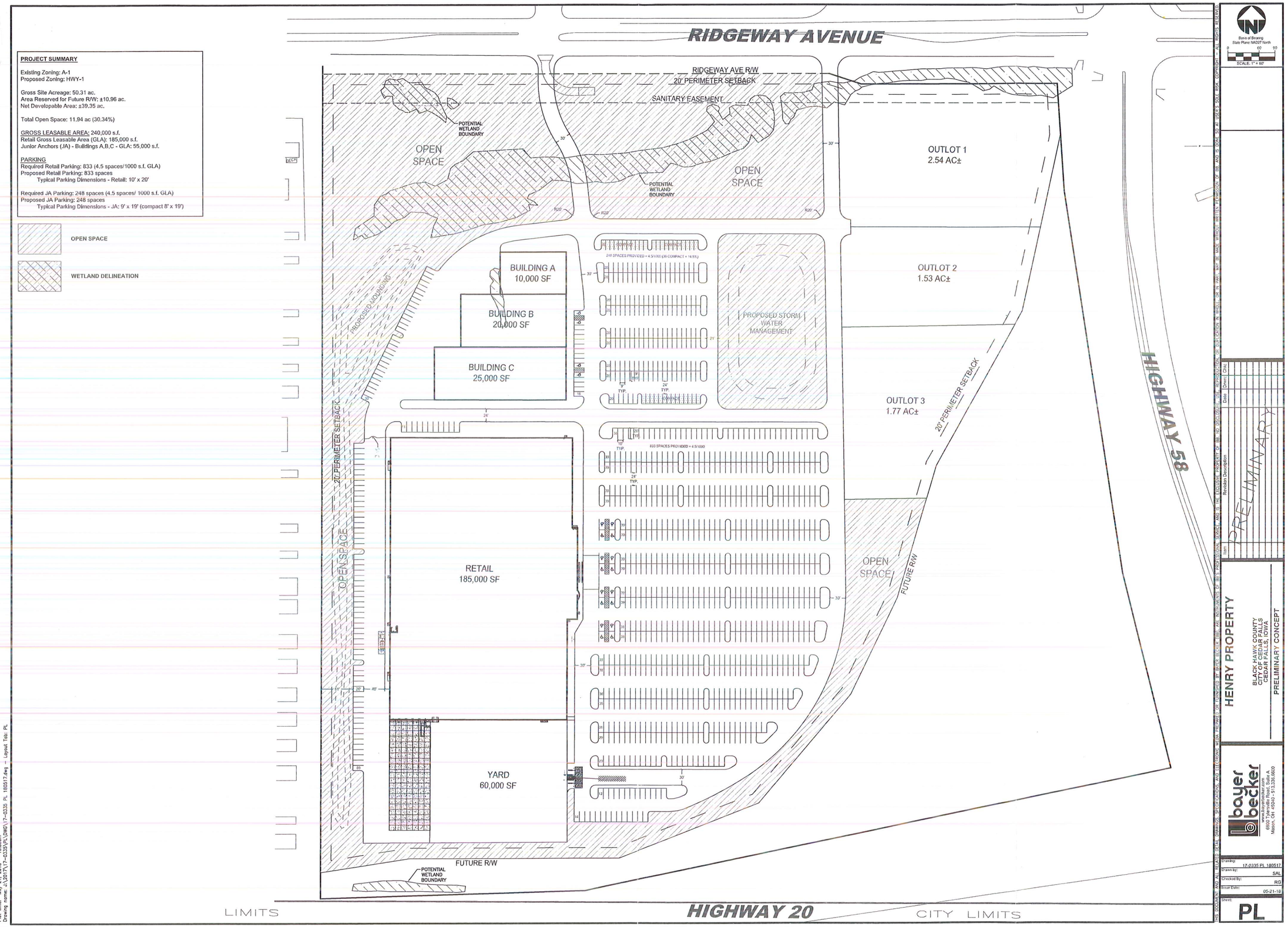
GROSS LEASABLE AREA: 240,000 s.f.
Retail Gross Leasable Area (GLA): 185,000 s.f.
Junior Anchors (JA) - Buildings A,B,C - GLA: 55,000 s.f.

PARKING
Required Retail Parking: 833 (4.5 spaces/1000 s.f. GLA)
Proposed Retail Parking: 833 spaces
Typical Parking Dimensions - Retail: 10' x 20'

Required JA Parking: 248 spaces (4.5 spaces/ 1000 s.f. GLA)
Proposed JA Parking: 248 spaces
Typical Parking Dimensions - JA: 9' x 19' (compact 8' x 19')

OPEN SPACE

WETLAND DELINEATION



Basis of Bearing
State Plane NAD27 North
0 60 90
SCALE: 1" = 60'

HENRY PROPERTY
BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

PRELIMINARY CONCEPT

PRELIMINARY

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Drawing: 17-0335 PL 180517
Drawn by: SAL
Checked By: RG
Issue Date: 05-21-18
Sheet: PL

Item | Revision Description | Date | Drwn | Chkd

Plot time: May 21, 2018 - 10:56am
Drawing name: J:\2017\17-0335\PL\DWG\17-0335 PL 180517.dwg - Layout Tab: PL

AREA CONDITIONS

Study Area

The proposed development is to be located in the southwest corner of the W. Ridgeway Avenue and Iowa Highway 58 (IA-58) intersection. The following intersections define the study area of this report:

- W. Ridgeway Avenue and Iowa Highway 58 (IA-58).
- W. Ridgeway Avenue and Private Residential Drive/Proposed Site Drive #1.
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2.
- Commerce Drive and Nordic Drive.
- Commerce Drive and Chancellor Drive.
- W. Ridgeway Avenue and Chancellor Drive.

Within the study area, **W. Ridgeway Avenue** is an east-west, five (5) lane wide Municipal City Street; operating on the north border of the Henry Farm Development, with a posted speed limit of 45 Miles Per Hour (MPH) in the vicinity of the site. Two (2) lanes of travel are provided in each the eastbound and westbound directions, with a center median providing a left-turn storage lane at critical intersections.

Iowa Highway 58 (IA-58) is a north-south, four (4) lane wide Municipal Primary Iowa State arterial; operating on the east border of the Henry Farm Development, with a posted speed limit of 55 MPH in the vicinity of the site. Two (2) lanes of travel are provided in each the northbound and southbound directions with an exclusive left-turn and/or right-turn lane provided at critical intersections.

Nordic Drive is a north-south, two (2) lane wide local roadway; operating north of the Henry Farm Development, with a posted speed limit of 25 MPH. One (1) lane of travel is provided in each the northbound and southbound directions.

Commerce Drive is an east-west, two (2) lane wide local roadway; operating north of the Henry Farm Development, with a posted speed limit of 25 MPH. One (1) lane of travel is provided in each the eastbound and westbound directions.

Chancellor Drive is a north-south, two (2) lane wide local roadway; operating north of the Henry Farm Development, with a posted speed limit of 25 MPH. One (1) lane of travel is provided in each the northbound and southbound directions.

Study Area Land Use

W. Ridgeway Avenue is located to the north and Iowa Highway 58 (IA-58) is located to the east of the Henry Farm Development. The site is surrounded by residential, commercial, industrial, and agricultural land uses. There are no other known planned developments within the study area.

The Iowa Department of Transportation (Iowa DOT) is currently constructing a major Single-Point Interchange interstate improvement at the IA-58 Highway and Viking Road intersection. Additional IA-58 improvements including a Single-Point Interchange at Greenhill Road and a grade separated interchange at W. Ridgeway Avenue are planned but no schedule is set for the construction project(s).

Site Accessibility

The roadways that will provide regional access to the proposed site development are State Highway 20 (US-20), Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. Direct access to the proposed Henry Farm Development will utilize the following locations:

- W. Ridgeway Avenue and Proposed Site Drive #1, approximately 1,095 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2, approximately 515 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).

To determine the weekday AM and PM peak hour traffic volumes for the key intersections, Iowa Counts performed the following turning movement traffic counts:

- W. Ridgeway Avenue and Iowa Highway 58 (IA-58) on Tuesday, May 1, 2018, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.
- W. Ridgeway Avenue and Nordic Drive on Tuesday, May 1, 2018, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.
- W. Ridgeway Avenue and Private Drive on Tuesday, May 1, 2018, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.
- Commerce Drive and Nordic Drive on Tuesday, May 1, 2018, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.
- Commerce Drive and Chancellor Drive on Tuesday, May 1, 2018, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.
- W. Ridgeway Avenue and Chancellor Drive on Tuesday, May 1, 2018, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.

The peak periods on the adjacent roadways occurred beginning at 7:30 AM and 4:30 PM. The Existing AM and PM peak-hour traffic volumes are presented in Figure 3. The complete existing traffic count information is provided in Appendix A.

Operational Alternatives

At the direction of the Cedar Falls City Engineer, two (2) operational alternatives were considered as part of the traffic operations at W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 and W. Ridgeway Avenue and Nordic Drive/Site Drive #2 intersections. The two (2) operational alternatives are identified as follows:

- Operational Alternative #1 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound).
- Operational Alternative #2 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound).

Upon receiving comments from the City of Cedar Falls and Iowa DOT, the scope was expanded to include the following additional alternatives. The four (4) additional operational alternatives are identified as follows:

- Operational Alternative #3 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (northbound).
- Operational Alternative #4 – Site Drive #1 - Roundabout Design w/Nordic Drive Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (northbound).
- Operational Alternative #5 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Full Operational and Signalized.
- Operational Alternative #6 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Full Operational and Signalized.

Redistributed Existing 2018 Traffic Volumes

Safety concerns regarding full access movements at the W. Ridgeway Avenue and Nordic Drive/Site Drive #2 intersection were raised due to the close proximity of Nordic Drive to IA-58. Based on Operational Alternatives established by the City of Cedar Falls, the intersection of W. Ridgeway Avenue and Nordic Drive was analyzed to operate under three (3) different scenarios; with Nordic Drive and Site Drive #2 as full operational and signalized, Nordic Drive - Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (northbound) and Nordic Drive - Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (both northbound and southbound).

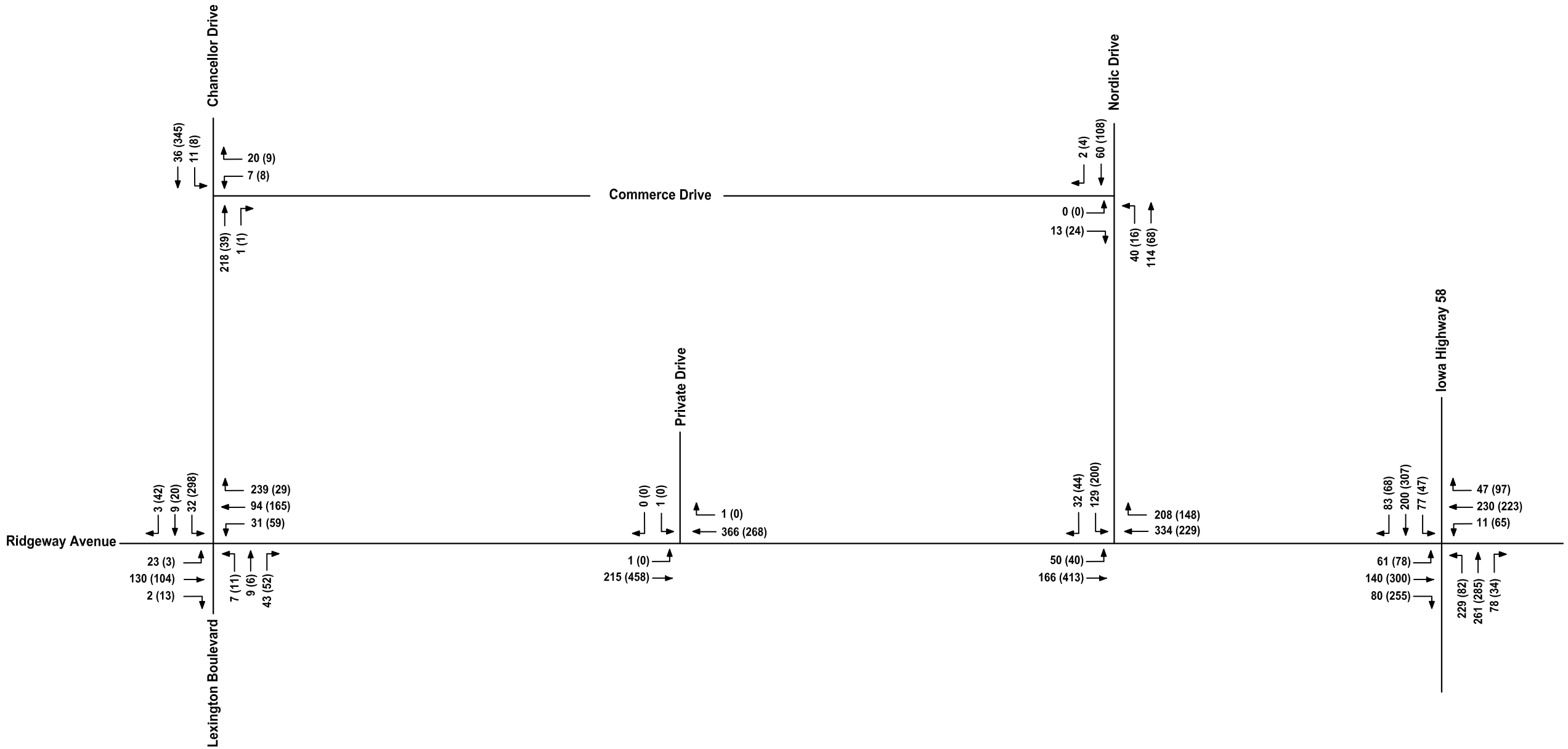

Figure 3

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Existing 2018 Weekday Traffic Volumes
- Existing Geometry (Alt# 3 & Alt# 5) & Roundabout (Alt# 4 & Alt# 6)
- Network Not Balanced

xx - AM Peak Hour
(xx) - PM Peak Hour

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As a result of the potential right-turn in/right-turn out operations at the W. Ridgeway Avenue and Nordic Drive intersection, two (2) redistributions of the existing 2018 traffic volumes were considered. The first consideration (Alternative #1) assumed the southbound and eastbound left-turn traffic at the W. Ridgeway Avenue/Nordic Drive intersection would be reassigned to Chancellor Drive and Commerce Drive as follows:

- W. Ridgeway Avenue – Eastbound through reassigned to eastbound left-turn – 75 percent (AM Peak) and 67 percent (PM Peak).
- Lexington Boulevard – Northbound right-turn reassigned to northbound through – 25 percent (AM Peak) and 33 percent (PM Peak).
- Nordic Drive – Southbound through reassigned to southbound right-turn – 73 percent (AM Peak) and 69 percent (PM Peak).

The second redistribution considered (Alternative #2) the installation of a roundabout at approximately 580 west of Nordic Drive (centerline to centerline) and assumed the southbound and eastbound left-turn traffic at the W. Ridgeway Avenue/Nordic Drive intersection would be reassigned to Nordic Drive, Chancellor Drive and Commerce Drive as follows:

- W. Ridgeway Avenue – Eastbound through reassigned to eastbound left-turn – 75 percent (AM Peak) and 67 percent (PM Peak).
- Lexington Boulevard – Northbound right-turn reassigned to northbound through – 25 percent (AM Peak) and 33 percent (PM Peak).
- Nordic Drive – Southbound left-turn combines with reassigned southbound right-turn then becomes a 360 degree “U” turn at the roundabout.

The ***Redistributed Existing 2018*** AM and PM peak-hour traffic volumes are presented in Figure 4 (Alternative #1) and Figure 5 (Alternative #2).

Redistribution Assumptions:
Eastbound left turn traffic at W. RidgewayAvenue /Nordic Drive Intersection redistributed to Chancellor Drive as follows:
- W. Ridgeway Avenue - EB Thru to EB Left - 75% (AM Peak) and 67% (PM Peak)*
- Lexington Boulevard - NB Right to NB Thru - 25% (AM Peak) and 33% (PM Peak)**

Southbound left turn traffic at W. RidgewayAvenue /Nordic Drive Intersection redistributed to Commerce Drive as follows:
- Nordic Drive - SB Thru to SB Right - 73% (AM Peak) and 69% (PM Peak)***
  (Based on percentage of SB Thru at Commerce and SB total at W. Ridgeway.)

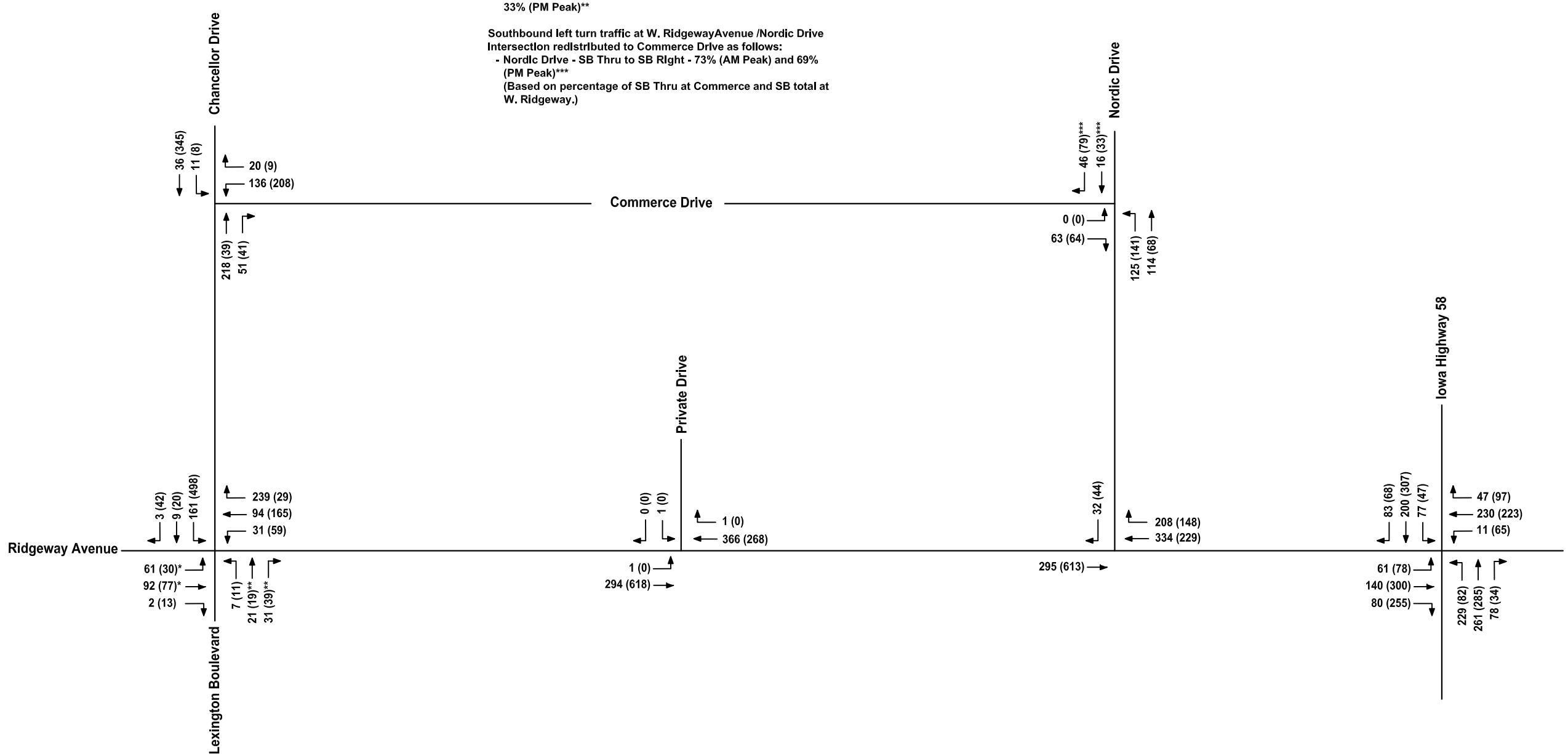

Figure 4

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Redistributed 2018 Weekday Traffic Volumes - Alternative #1
- Nordic Drive Right-Turn In/Out
(Network Not Balanced)

xx - AM Peak Hour
(xx) - PM Peak Hour

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Redistribution Assumptions:
Eastbound left turn traffic at W. RidgewayAvenue /Nordic Drive Intersection redistributed to Chancellor Drive as follows:

- W. Ridgeway Avenue - EB Thru to EB Left - 75% (AM Peak) and 67% (PM Peak)*
- Lexington Boulevard - NB Right to NB Thru - 25% (AM Peak) and 33% (PM Peak)**

- Southbound left turn traffic at W. RidgewayAvenue /Nordic Drive Intersection becomes a shared right-turn then "U" turn volume at the Private Drive Roundabout***

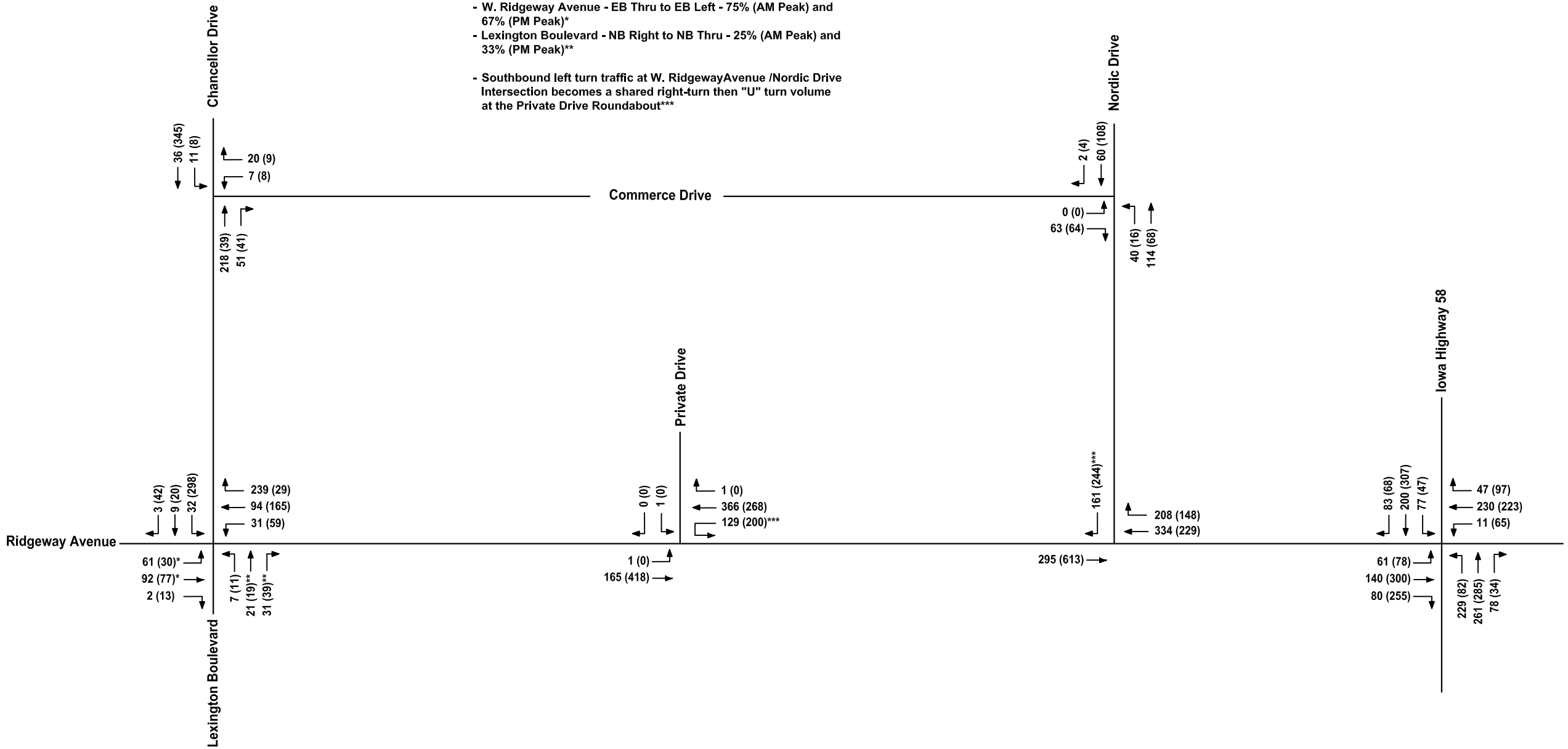

Figure 5

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Redistributed 2018 Weekday Traffic Volumes - Alternative #2
- Nordic Drive Right-Turn In/Out & Site Drive Roundabout
(Network Not Balanced)

xx - AM Peak Hour
(xx) - PM Peak Hour

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No-Build Traffic Projections

Traffic data excerpted from the *Iowa 58 Design Traffic Volumes Technical Memorandum*, dated February 2014, was the base source used to determine the future growth rate for the No-Build 2020 and No-Build 2040 design years. The aggregate of all reported traffic projections yielded a growth rate of 2.12% per year compounded or a growth rate factor of 1.04 and 1.59 for the No-Build 2020 and 2040, respectively.

The traffic data excerpt is provided in Appendix B and the **2020 No-Build Alternatives #1, #2, #3, Alt #4, Alt #5** and **Alt #6** and **2040 No-Build Alternatives #1, #2, #3, Alt #4, Alt #5** and **Alt #6** traffic projections are presented as Figures 6, 7, 8, 9, 10 and 11, respectively.

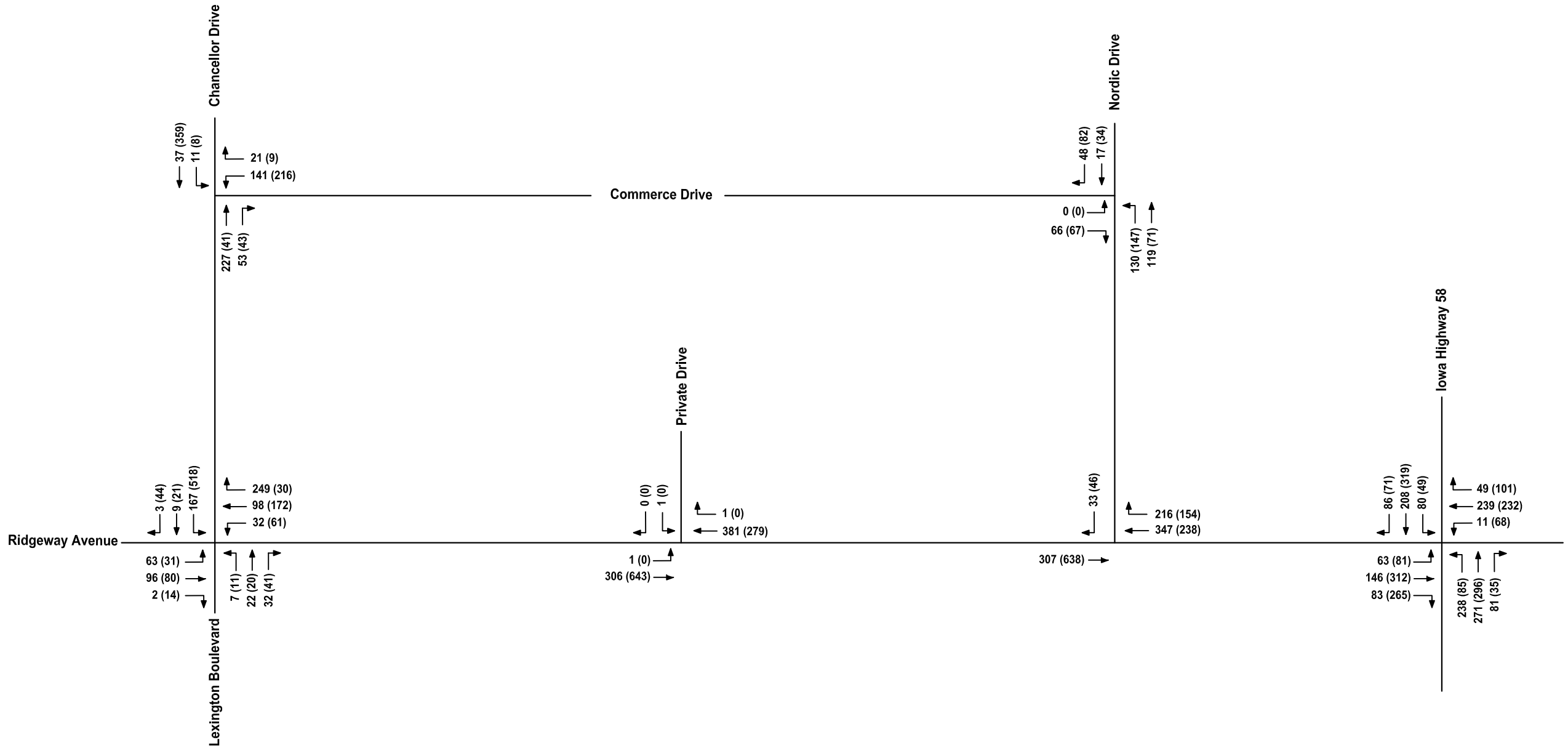

Figure 6

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2020 Weekday Traffic Projections - Alternative #1 - without North Property
- Nordic Drive RI/RO @ Ridgeway Avenue
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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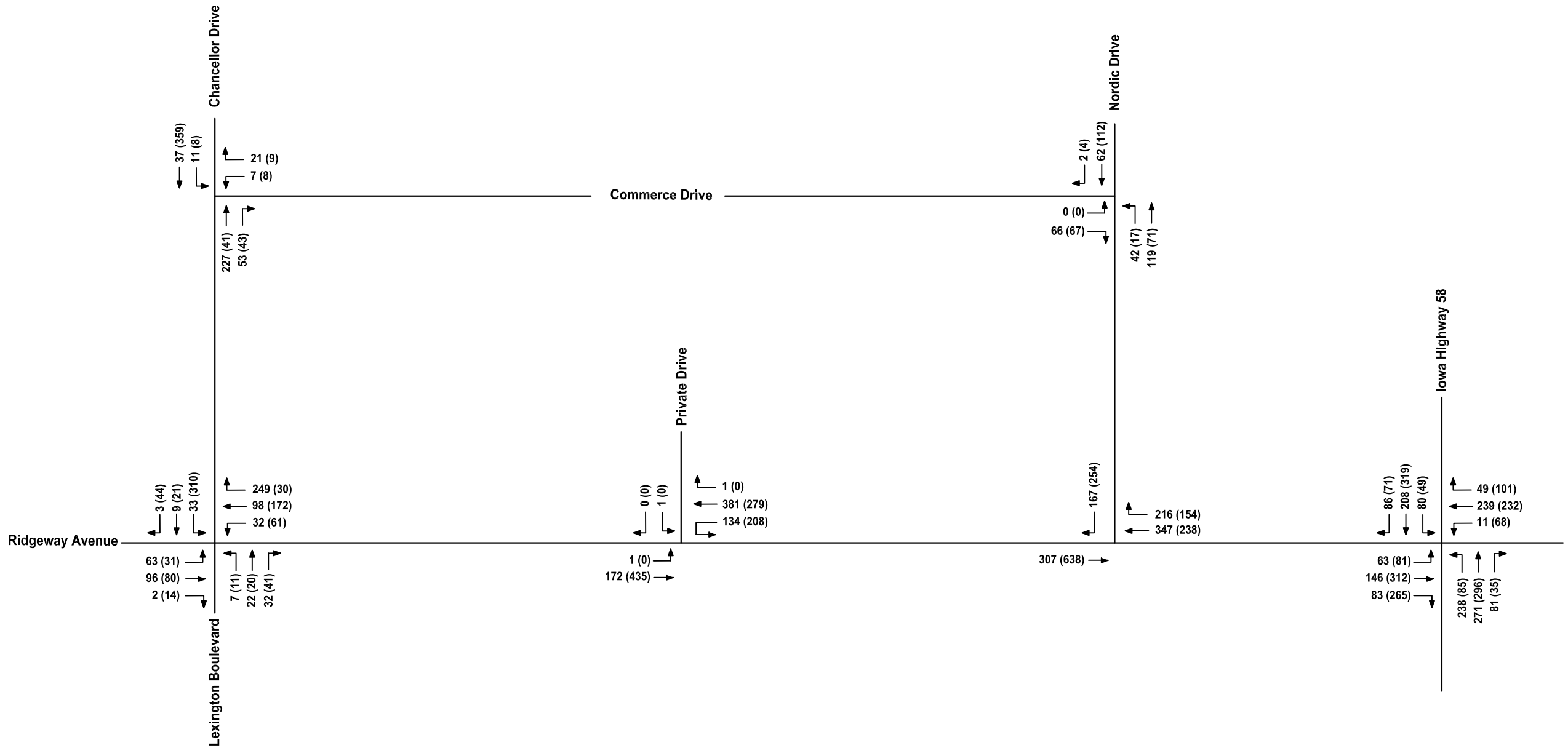

Figure 7

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2020 Weekday Traffic Projections - Alternative #2 - without North Property
- Nordic Drive Right-Turn In/Out & Site Drive Roundabout
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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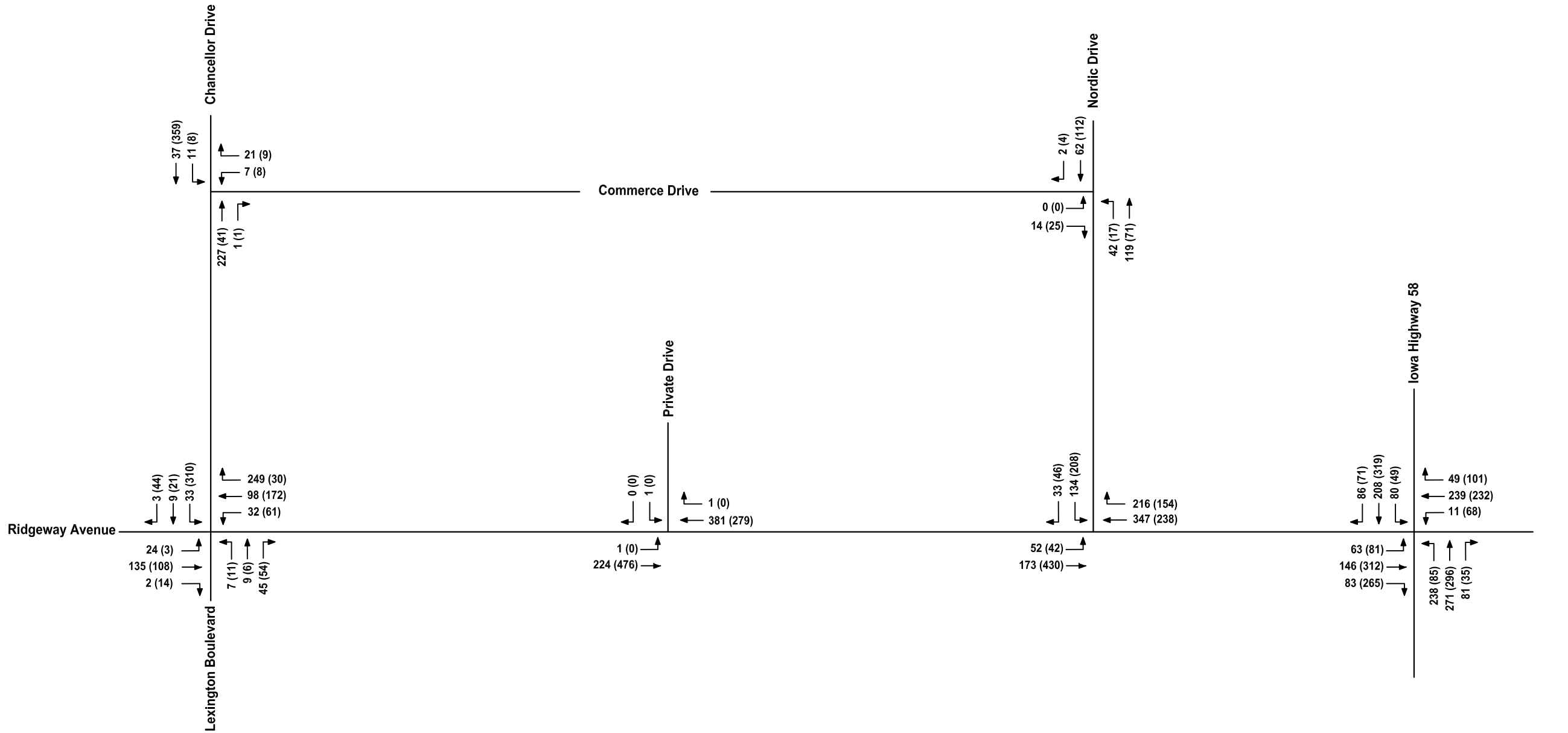

Figure 8

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2020 Weekday Traffic Projections - without North Property
- Existing Geometry (Alt# 3 & Alt# 5) & Roundabout (Alt# 4 & Alt# 6)
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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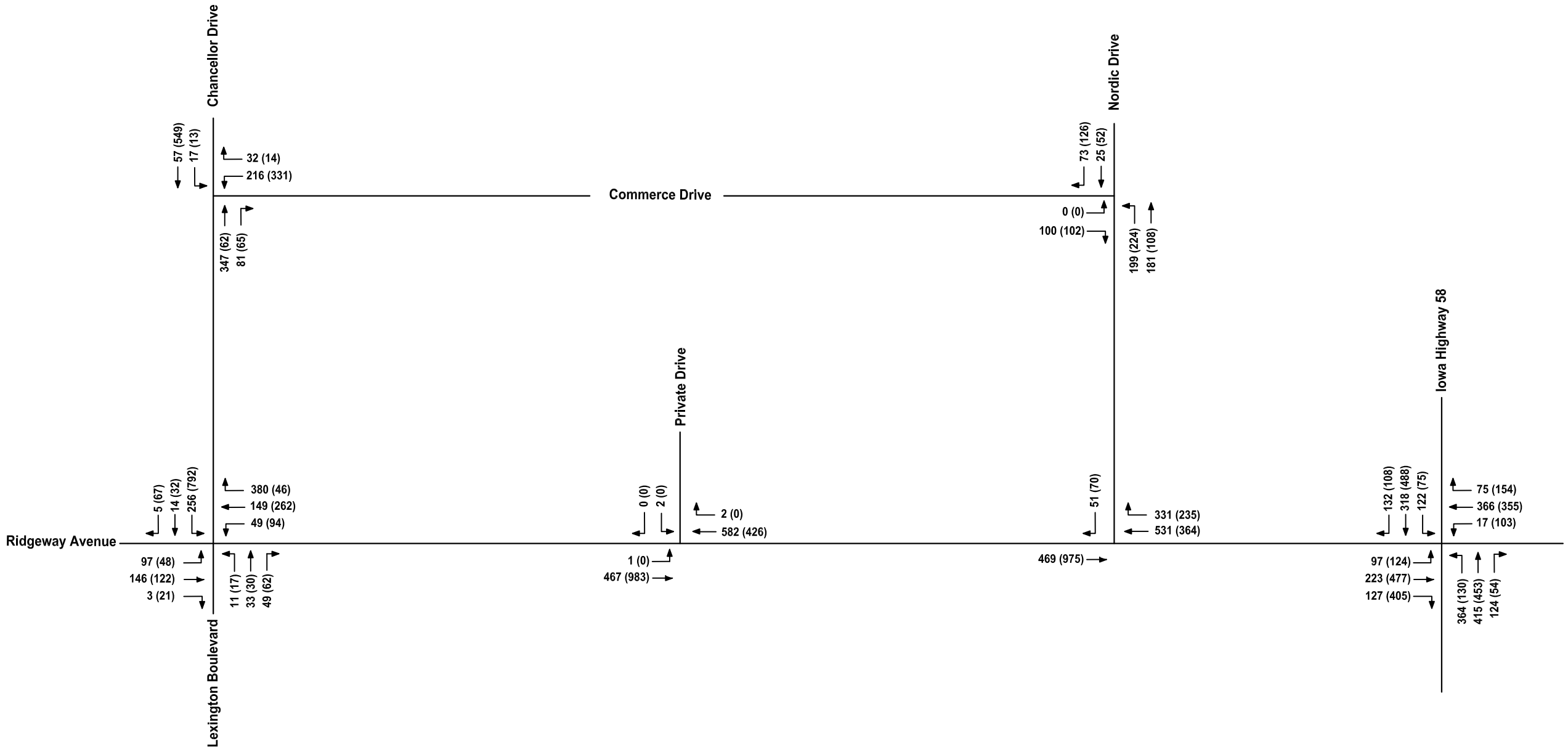

Figure 9

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2040 Weekday Traffic Projections - Alternative #1 - without North Property
- Nordic Drive RI/RO @ Ridgeway Avenue
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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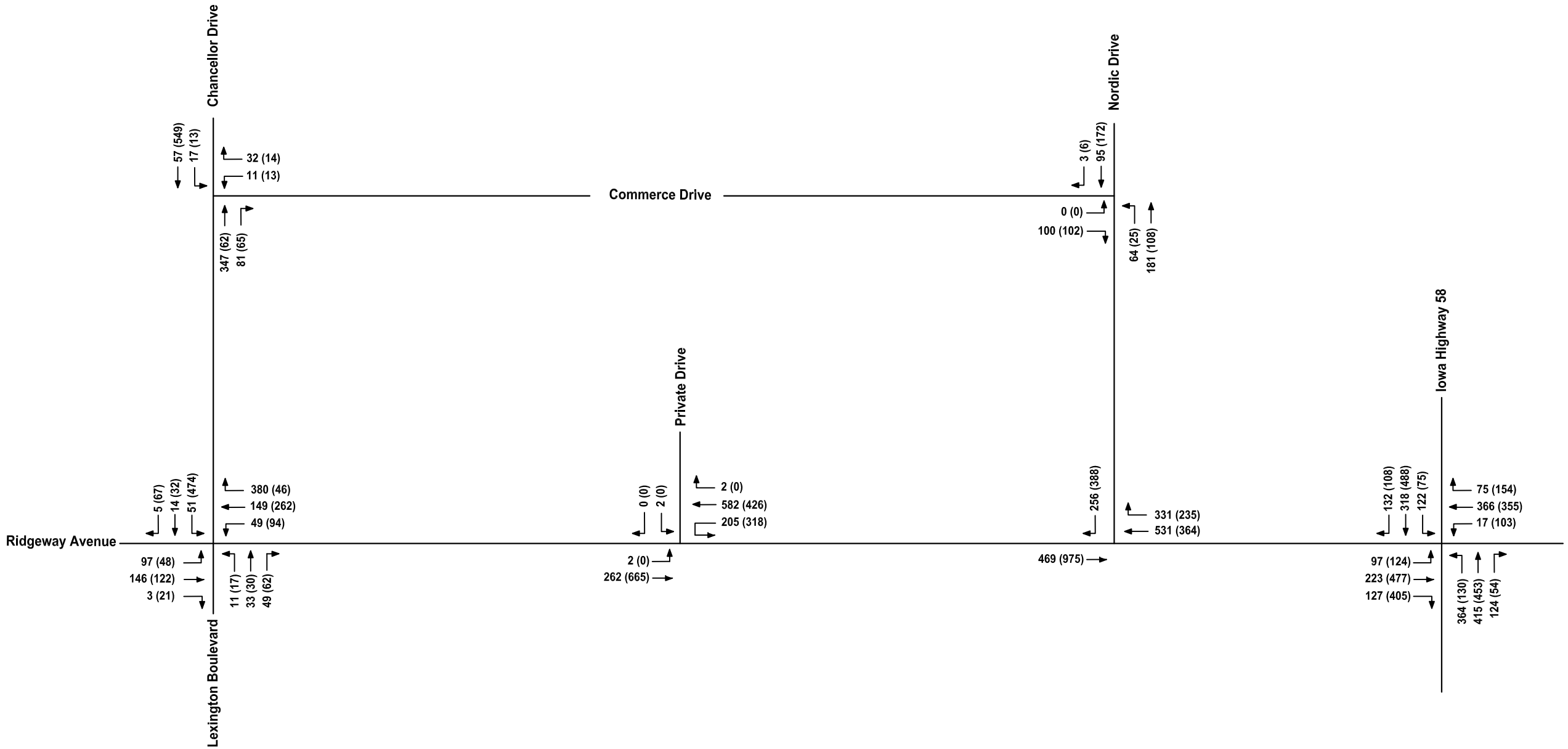

Figure 10

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2040 Weekday Traffic Projections - Alternative #2 - without North Property
- Nordic Drive Right-Turn In/Out & Site Drive Roundabout
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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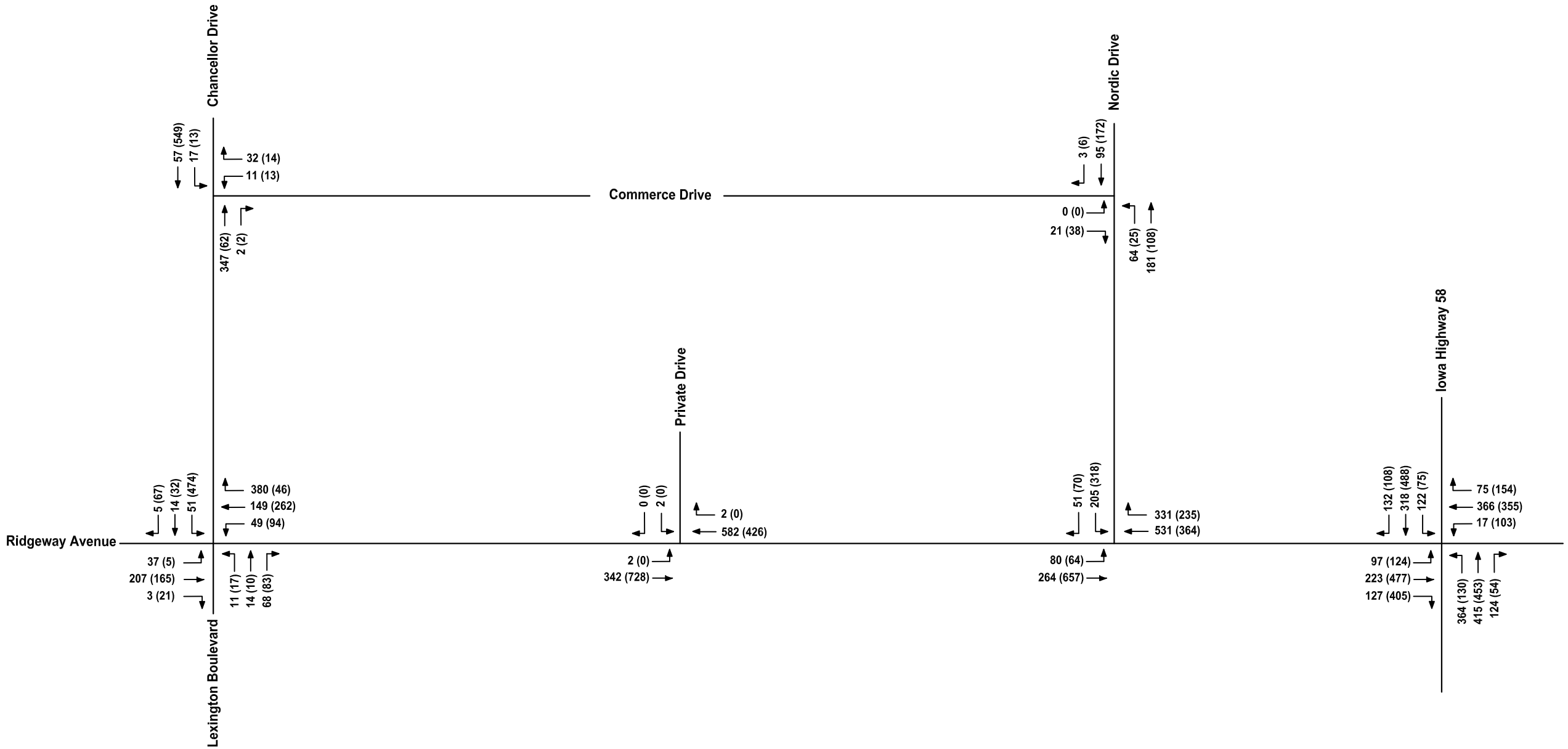

Figure 11

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2040 Weekday Traffic Projections - without North Property
- Existing Geometry (Alt #3 & Alt #5) & Roundabout (Alt #4 & Alt #6)
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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PROJECTED TRAFFIC

Site Traffic

The trips generated by a proposed development are calculated using the Institute of Transportation Engineer's (ITE) *Trip Generation Manual*, 10th Edition, based on the peak hour of adjacent street traffic. The proposed Henry Farm Development, with its mix of retail land uses, has the potential for interaction amongst these uses within the site. As defined in the ITE *Trip Generation Handbook*, *3rd Edition,* "a multi-use development is typically a single real estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system." Therefore, the procedure for estimating multi-use trip generation, presented in the *Trip Generation Handbook*, was used to estimate the internal capture rate, or "percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internal to the site."

Another important element of trip generation is the consideration of pass-by trips and diverted trips. The procedures outlined in the ITE *Trip Generation Handbook, 3rd Edition,* establishes the rates to estimate pass-by for a specific land use. The ITE rates are based on actual traffic count volumes at driveways to the various land uses. Pass-by trips, as defined by the ITE *Trip Generation Manual,* are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on an adjacent street that contains direct access to the generator. Diverted trips are attracted from another roadway traffic stream.

Therefore, a development can potentially have a combination of trip types as follows:

- Generated Trips

  A generated trip destined to a commercial facility is one in which the purpose of the trip is, for example work. The two-way travel pattern of a generated trip is generally home-to-work and work-to-home. Generated trips are destination oriented.

- Pass-by Trips/Diverted Trips

  The pass-by trip comes directly from the traffic stream already passing the facility on the adjacent street system and does not require a diversion from another roadway. Diverted trips are derived from another roadway traffic stream to a specific land use attraction. These trips are generally convenience trips.

- Internal Capture

  The internal capture is "shared" trips in a mixed land use development. The total trip estimates of the mixed-use development are reduced because all trips are not primary. The National Cooperative Highway Research Program (NCHRP) Transportation Research Board has established a spreadsheet to assist with estimating internal captured trips.

- External Trips

  The external trips are the generated trips minus internal captured trips, where applicable.

- New Trips

  The generated and/or external trips minus pass-by/diverted trips, where applicable.

The trips generated by each land use of the Henry Farm Development during the weekday AM and PM peak hour (of adjacent street traffic) are presented in Table 1.

Table 1
Henry Farm Development
Trip Generation

Land Use	ITE Code*	Size	Unit	AM Peak Hour			PM Peak Hour		
				Enter	Exit	Total	Enter	Exit	Total
Home Improvement Store	862	245	TSF	219	166	385	280	291	571
Internal Capture**=				-16	-42	-58	-38	-29	-67
External Trips (After Internal Capture)				203	124	327	242	262	504
Pass-By Trips @ 42% PM				-	-	-	*-102*	*-110*	*-212*
Shopping Center	820	55	TSF	111	68	179	168	181	349
Internal Capture=	Included as part of the Shopping Center Category								
External Trips (After Internal Capture)				111	68	179	168	181	349
Pass-By Trips @ 34% PM				-	-	-	*-57*	*-62*	*-119*
Convenience Mart w/Pumps	853	16	Pumps	167	166	333	184	183	367
Internal Capture=				-1	-1	-2	-1	-1	-2
External Trips (After Internal Capture)				166	165	331	183	182	365
Pass-By Trips @ 63% AM/66% PM				*-105*	*-104*	*-209*	*-121*	*-120*	*-241*
Fast-Food Restaurant w/Drive-Thru	934	6	TSF	123	118	241	102	94	196
Internal Capture=				-43	-17	-60	-30	-39	-69
External Trips (After Internal Capture)				80	101	181	72	55	127
Pass-By Trips @ 49% AM/50% PM				*-39*	*-49*	*-88*	*-36*	*-28*	*-64*
Total Generated Trips=				620	518	1,138	734	749	1,483
Total Internal Capture=				-60	-60	-120	-69	-69	-138
Total Primary Trips=				560	458	1,018	665	680	1,345
Total Pass-By Trip Reductions=				*-144*	*-153*	*-297*	*-316*	*-320*	*-636*
New Trips				**416**	**305**	**721**	**349**	**360**	**709**

* Institute of Transportation Engineers (ITE) -*Trip Generation Manual*, 10th Edition. See Appendix C.
** NCHRP Internal Trip Capture Estimation. See Appendix C.

Based on discussions with representatives from the City of Cedar Falls Planning and Development Departments, the City identified the need to include the anticipated build out of the 5.45-acre property

directly opposite the Henry Farm Development to the north, henceforth known as the North Property. The North Property was identified by the City as a commercial/retail development consisting of a 100 room hotel and 15,000 square feet of shopping center retail. The proposed trips generated by the North Property are shown in Table 2 as follows:

Table 2
North Property
Trip Generation

Land Use	ITE Code*	Size	Unit	AM Peak Hour			PM Peak Hour		
				Enter	Exit	Total	Enter	Exit	Total
Hotel	310	100	Rooms	27	18	45	25	24	49
Shopping Center	820	15	TSF	99	60	159	64	69	133
Pass-By Trips @ 34% PM				-	-	-	*-22*	*-23*	*-45*
Total Generated Trips=				126	78	204	89	93	182
Total Pass-By Trip Reductions=				-	-	-	*-22*	*-23*	*-45*
New Trips				**126**	**78**	**204**	**67**	**70**	**137**

* Institute of Transportation Engineers (ITE) -*Trip Generation Manual*, 10th Edition. See Appendix B.

The new trips to be generated by the proposed North Property and Henry Farm Developments were distributed to the adjacent roadway network, by directional distribution, based on existing traffic patterns and experience related to land use patterns in the area. Based on these factors, the percentage of trips that enter and exit the proposed North Property and Henry Farm Developments during the AM and PM peak hours on the adjacent road network are as follows in Table 3:

Table 3
Percentage Distribution

Orientation To/From	AM Peak		PM Peak	
	Inbound	Outbound	Inbound	Outbound
East on West Ridgeway Avenue	20%	23%	23%	22%
West on West Ridgeway Avenue	11%	8%	7%	13%
North on Iowa Highway 58 (IA-58)	26%	29%	25%	26%
South on Iowa Highway 58 (IA-58)	40%	22%	24%	36%
North on West Chancellor Drive	3%	18%	21%	3%
Total	**100%**	**100%**	**100%**	**100%**

Trip distribution percentages for the proposed Henry Farm Development are presented in Figure 12.

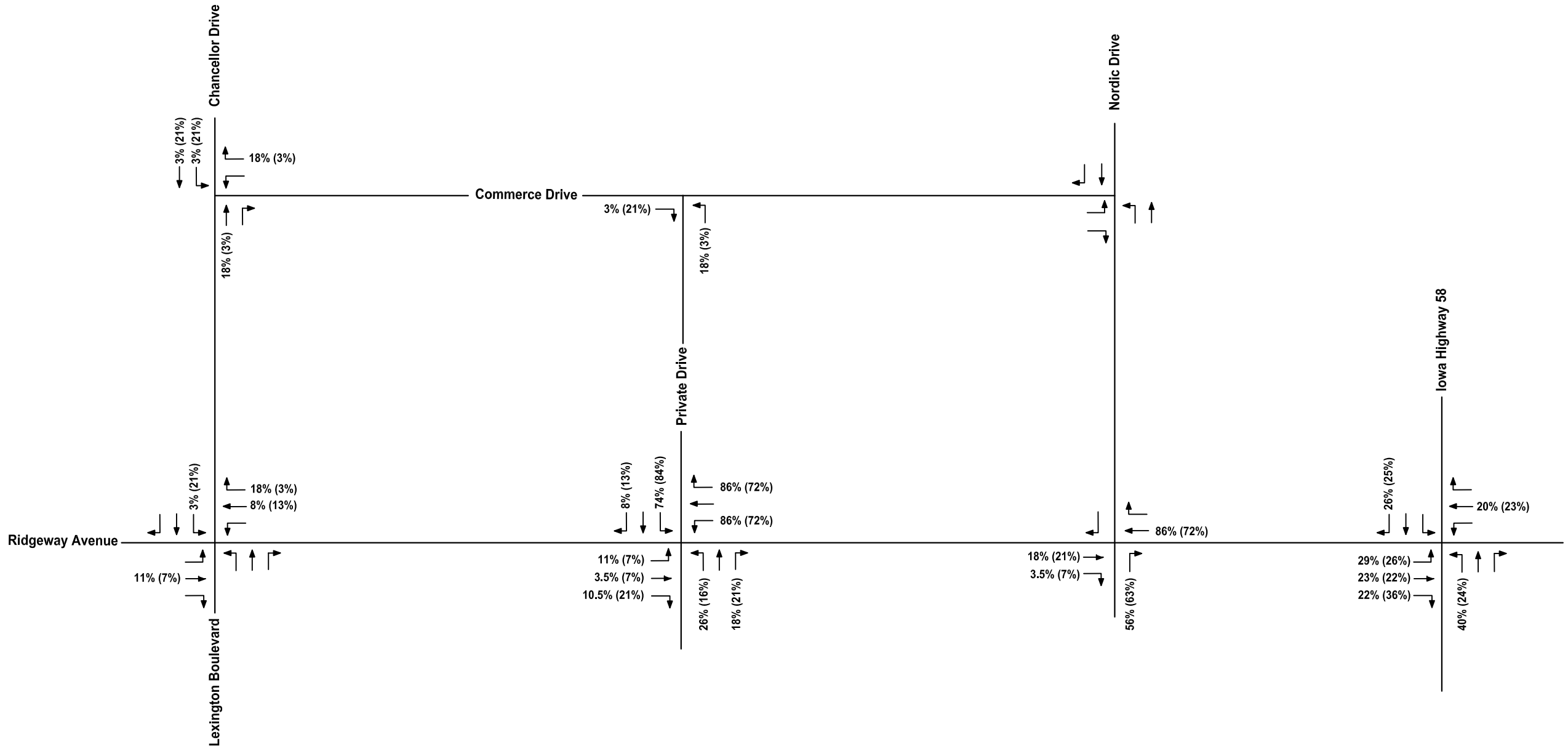

Figure 12

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Percentage Distribution - Henry Farm and North Property Developments

xx% - AM Peak Percentage
(xx%) - PM Peak Percentage

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Pass-By Trip Distribution

The pass-by trips attracted from the existing stream of traffic that enters and exits the proposed Henry Farm and North Property Developments were assigned to the adjacent roadway network, by direction, based on existing traffic patterns along the W. Ridgeway Avenue site frontage. Based on these factors, the distribution of pass-by trips that enter and exit the proposed Henry Farm and North Property Development sites during the AM and PM peak hour periods on the adjacent road network are as follows:

Table 4
Pass-By Percentage Distribution

Pass-By Trip Distribution	AM Peak Hour	PM Peak Hour
Eastbound (In/Out) on W. Ridgeway Avenue	37%	63%
Westbound (In/Out) on W. Ridgeway Avenue	63%	37%
Total	**100%**	**100%**

Generated Trip Assignment

The generated trips of the proposed Henry Farm and North Property Developments were assigned to the adjacent road network based on the trip distributions contained in Figure 12. The individual generated trips for the Henry Farm and North Property Developments are presented in Figures 13, 14 and 15, respectively.

Pass-By Trip Assignment

The pass-by trips attracted from the existing adjacent road traffic volume, to the proposed Henry Farm and North Farm Developments, were developed through the application of the percent distributions contained in Table 4. The individual pass-by trip reductions for the proposed Henry Farm and North Property Developments are presented in Figure 16, 17 and 18, respectively.

It should be noted that no reductions or assignment of diverted trips were made as part of this traffic report analysis; however, the pass-by trips were assigned to various individual volumes at the W. Ridgeway Avenue and IA-58 intersection.

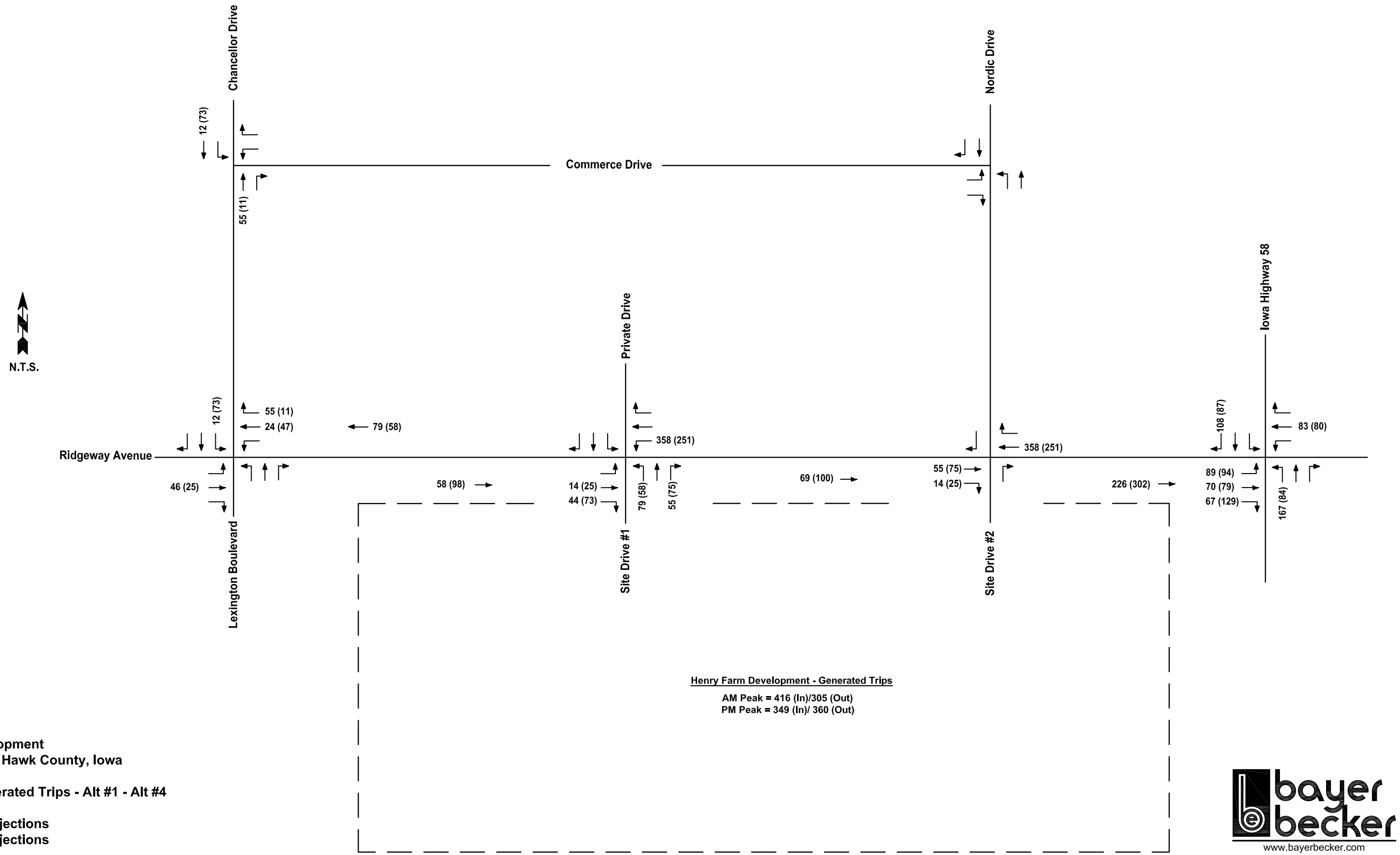

Figure 13

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Henry Farm - Generated Trips - Alt #1 - Alt #4

xx - AM Peak Projections
(xx) - PM Peak Projections

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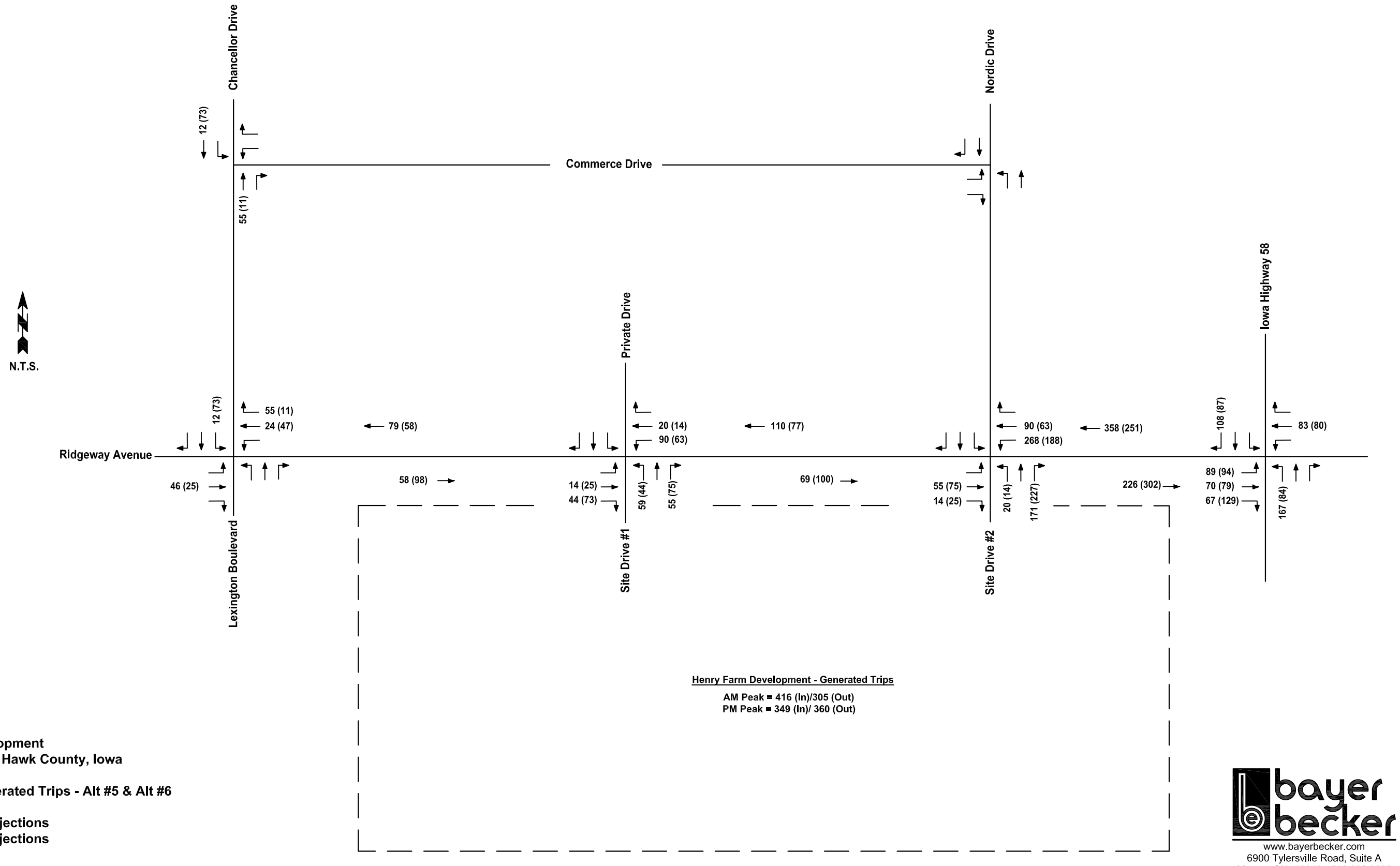

Figure 14

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Henry Farm - Generated Trips - Alt #5 & Alt #6

xx - AM Peak Projections
(xx) - PM Peak Projections

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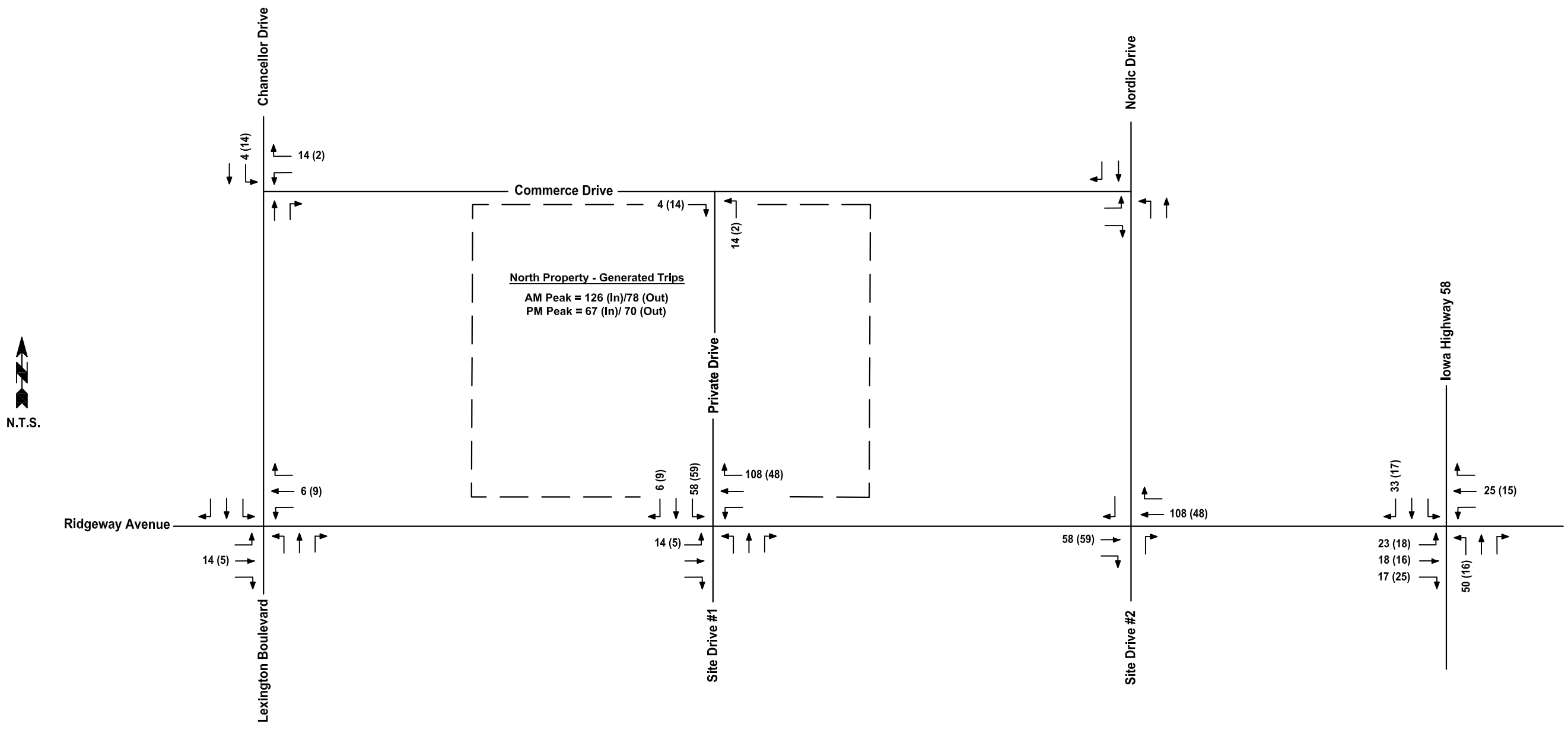

Figure 15

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

North Property - Generated Trips

xx - AM Peak Projections
(xx) - PM Peak Projections

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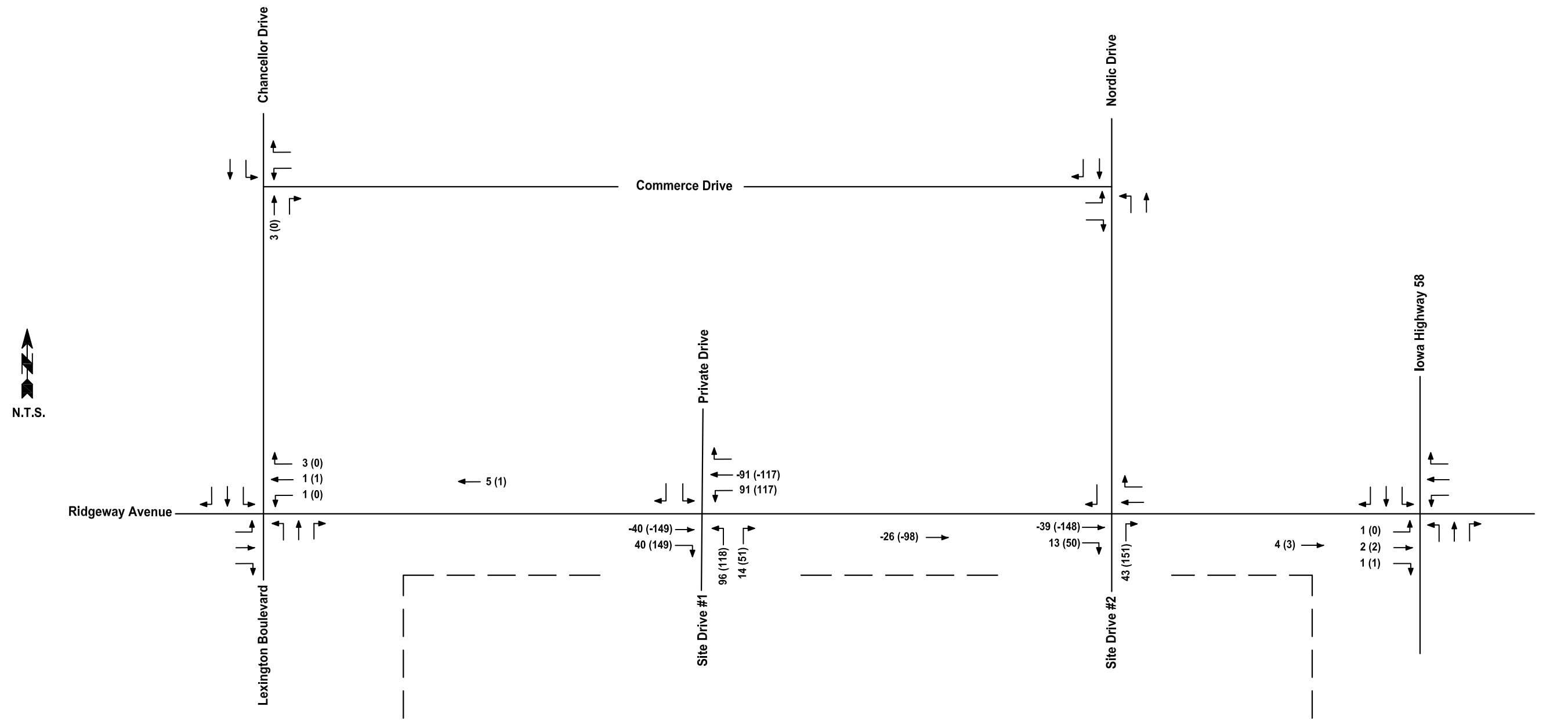

Figure 16

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Henry Farm - Pass-By Trips - Alt #1 - Alt #4

xx - AM Peak Projections
(xx) - PM Peak Projections

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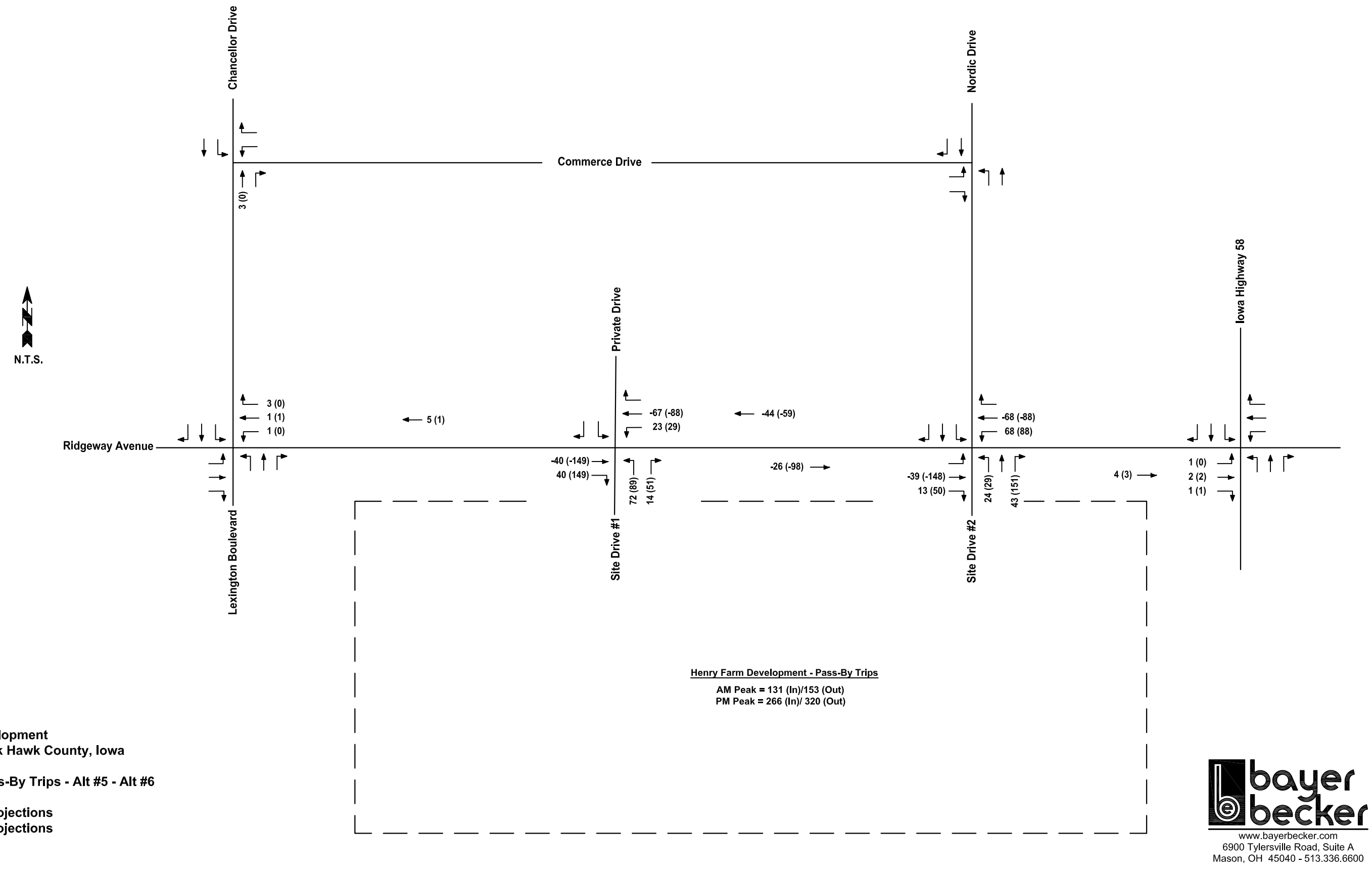

Figure 17

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Henry Farm - Pass-By Trips - Alt #5 - Alt #6

xx - AM Peak Projections
(xx) - PM Peak Projections

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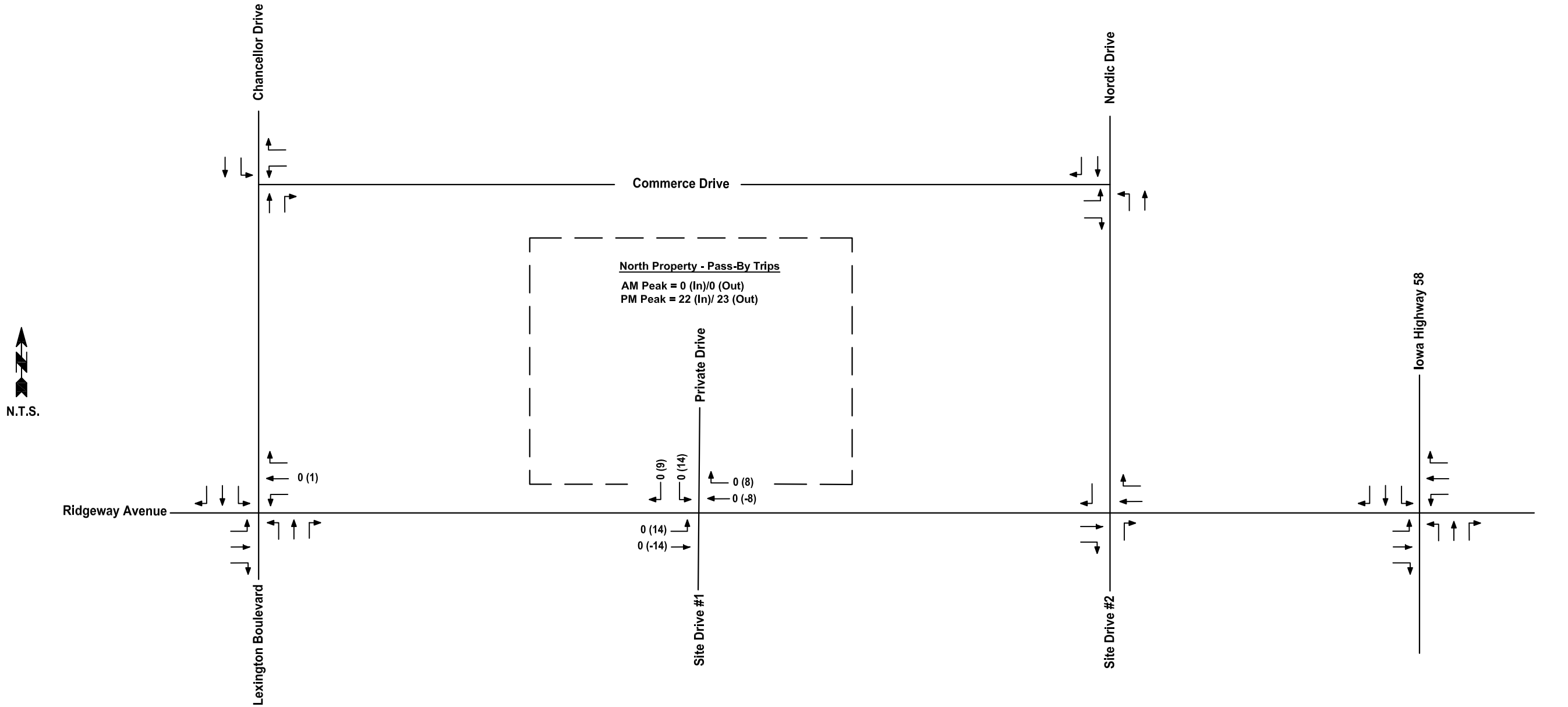

Figure 18

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

North Property - Passby

xx - AM Peak Projections
(xx) - PM Peak Projections

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New Trips

New trips are obtained by subtracting the Pass-By Trips (see Figures 16, 17 and 18) from the proposed Henry Farm and North Property Development Generated Trips (see Figure 13, 14 and 15). The proposed Henry Farm and North Property Development New Trips are individually presented in Figure 19, 20 and 21, respectively.

No-Build Traffic Projections with North Property Development

The new trips produced by the anticipated North Property Development were combined with the 2020 and 2040 No-Build traffic projections to create the complete 2020 and 2040 No-Build Traffic Projections with North Property Development for continued analysis in this report. The **2020 and 2040 No-Build Traffic Projections with North Property - Alt #1, Alt #2, Alt #3, Alt #4, Alt #5** and **Alt #6** are presented as Figures 22, 23, 24, 25, 26 and 27, respectively.

Build Traffic Projections

The 2020 and 2040 Build Traffic projections were obtained by adding the No-Build 2020 and No-Build 2040 Traffic Projections with North Property (see Figures 22, 23, 24, 25, 26 and 27) together with the New Trips (see Figures 19, 20 and 21). The **2020** and **2040 Build Alt #1, Alt #2, Alt #3, Alt #4, Alt #5** and **Alt #6** traffic projections are presented in Figures 28, 29, 30, 31, 32, 33, 34 and 35, respectively.

Average Daily Traffic

The existing and projected Average Daily Traffic (ADT) volumes on the roadway segments within the Study Area were developed based on an assumed peak hour factor of 9%. The existing and projected ADT volumes are shown in Table 5.

Table 5
Average Daily Traffic*

Location	Existing 2018	2020 No-Build W/O North Property	2020 No-Build With North Property	2020 Build	2040 No-Build W/O North Property	2040 No-Build With North Property	2040 Build
Iowa Highway 58 (IA-58) north of Ridgeway	9,800	10,190	10,580	12,590	15,580	15,970	17,980
Iowa Highway 58 (IA-58) south of Ridgeway	11,420	11,870	12,320	14,700	18,140	18,600	21,030
Ridgeway Avenue west of IA-58	11,180	11,620	12,810	18,990	17,770	18,960	25,190
Nordic Drive North of Ridgeway Avenue	4,800	5,000	5,000	5,000	7,630	7,630	7,630
Commerce Drive west of Nordic Drive	490	510	510	510	770	770	770
Chancellor Drive north of Ridgeway Avenue	4,420	4,600	4,600	5,530	7,040	7,040	7,980

* Traffic volumes based on existing geometry at W. Ridgeway Avenue and Nordic Drive intersection. Volumes rounded to nearest 10.

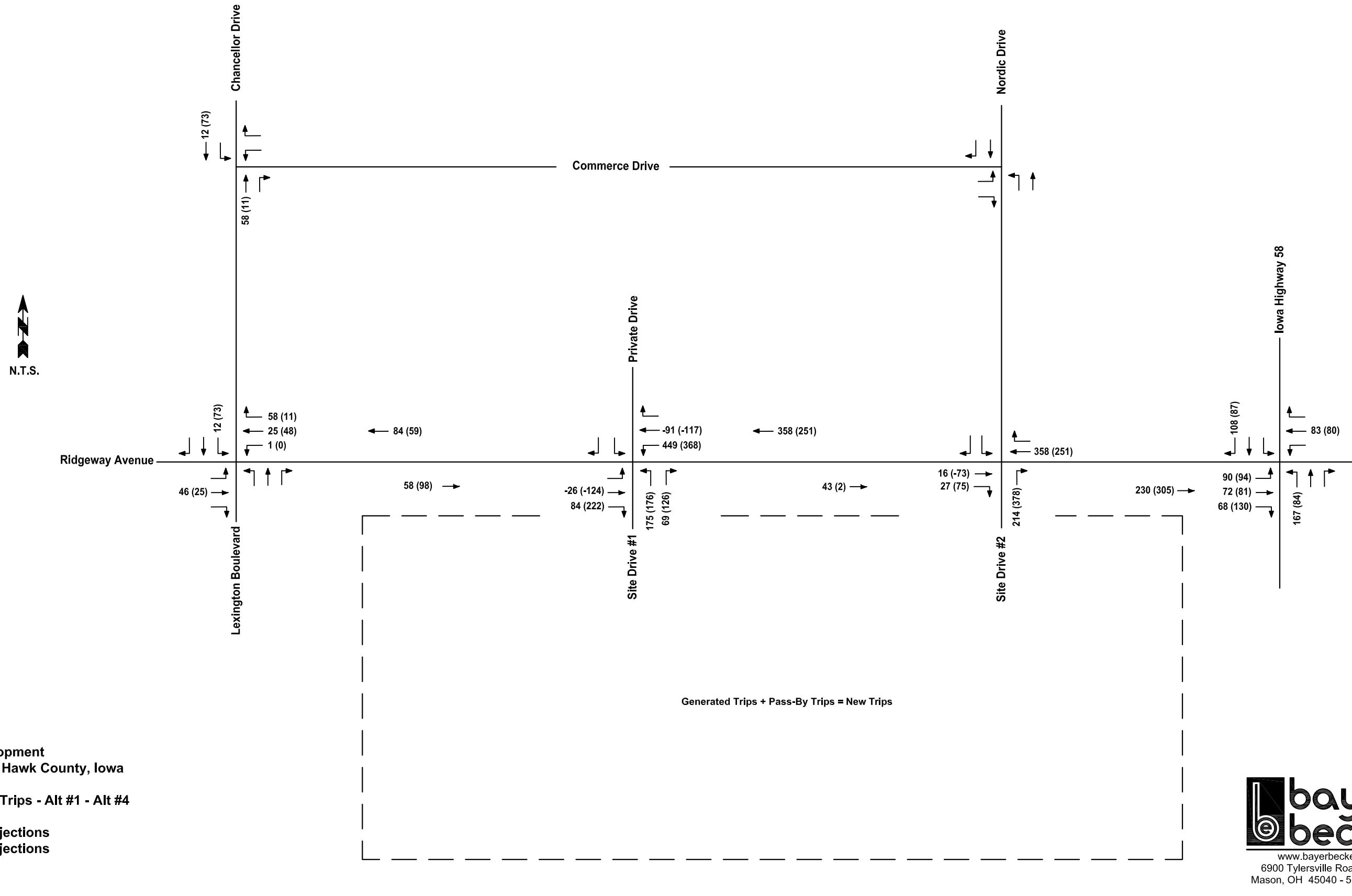

Figure 19

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Henry Farm - New Trips - Alt #1 - Alt #4

xx - AM Peak Projections
(xx) - PM Peak Projections

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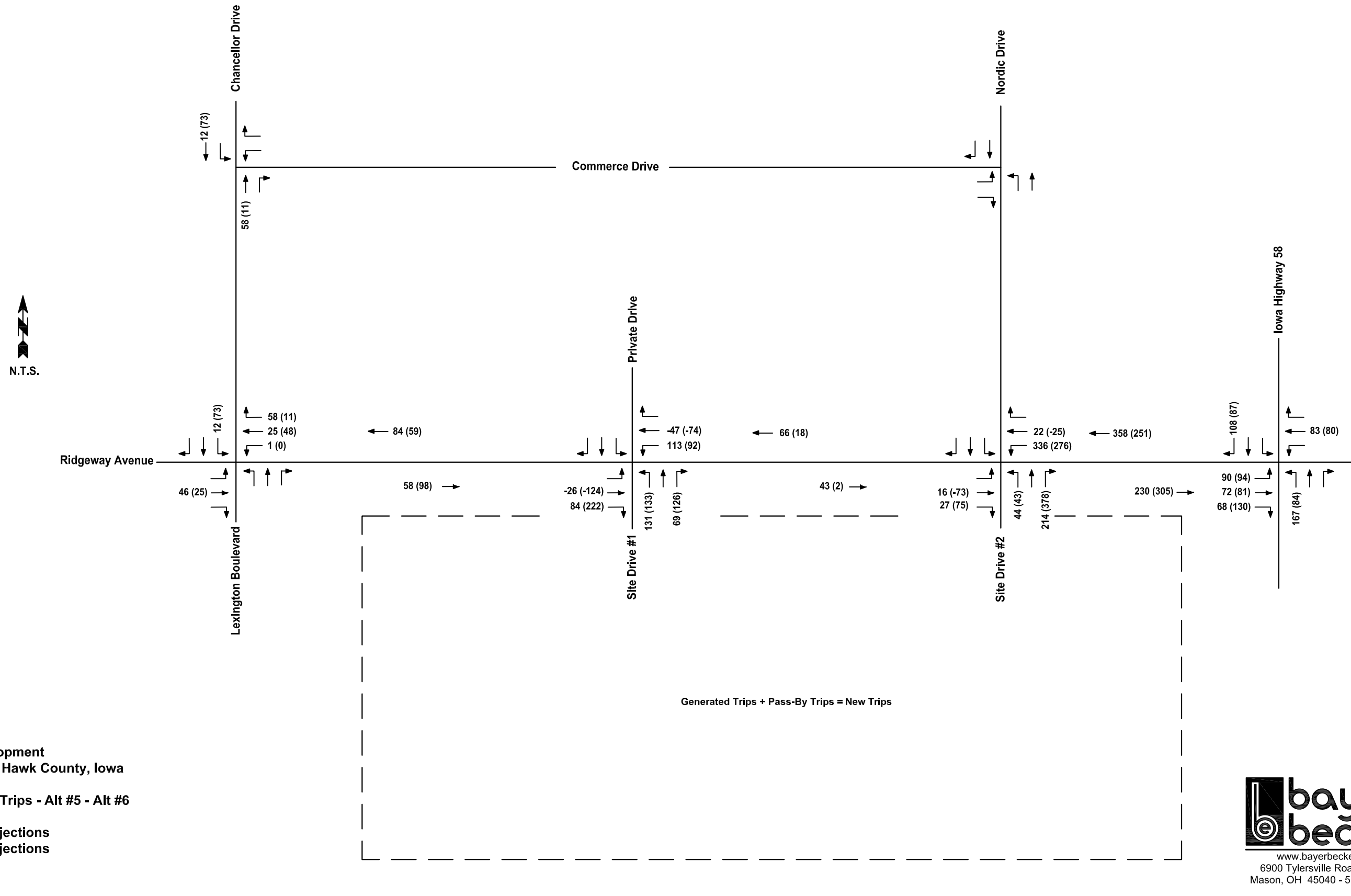

Figure 20

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

Henry Farm - New Trips - Alt #5 - Alt #6

xx - AM Peak Projections
(xx) - PM Peak Projections

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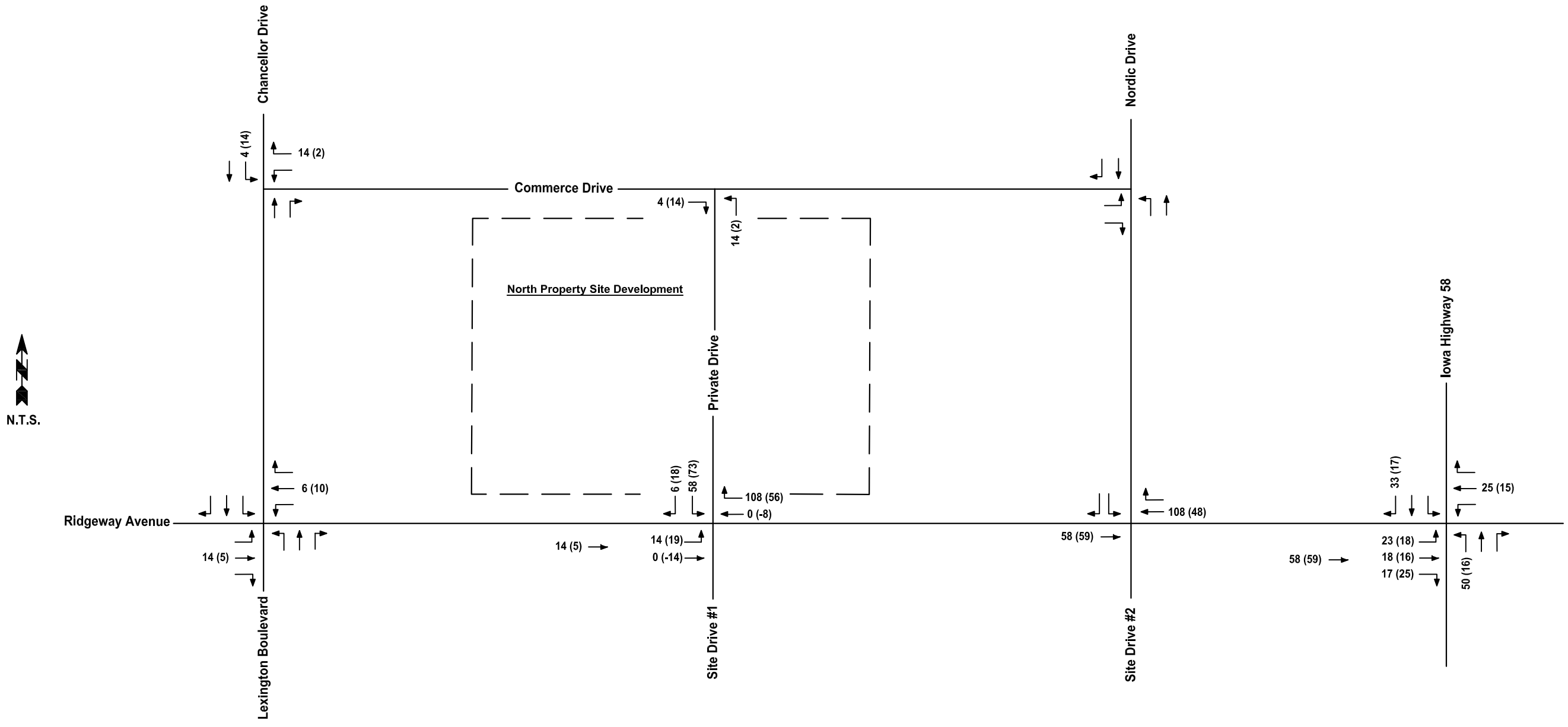

Generated Trips + Pass-By Trips = New Trips

Figure 21

Henry Farm Development
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North Property - New Trips

xx - AM Peak Projections
(xx) - PM Peak Projections

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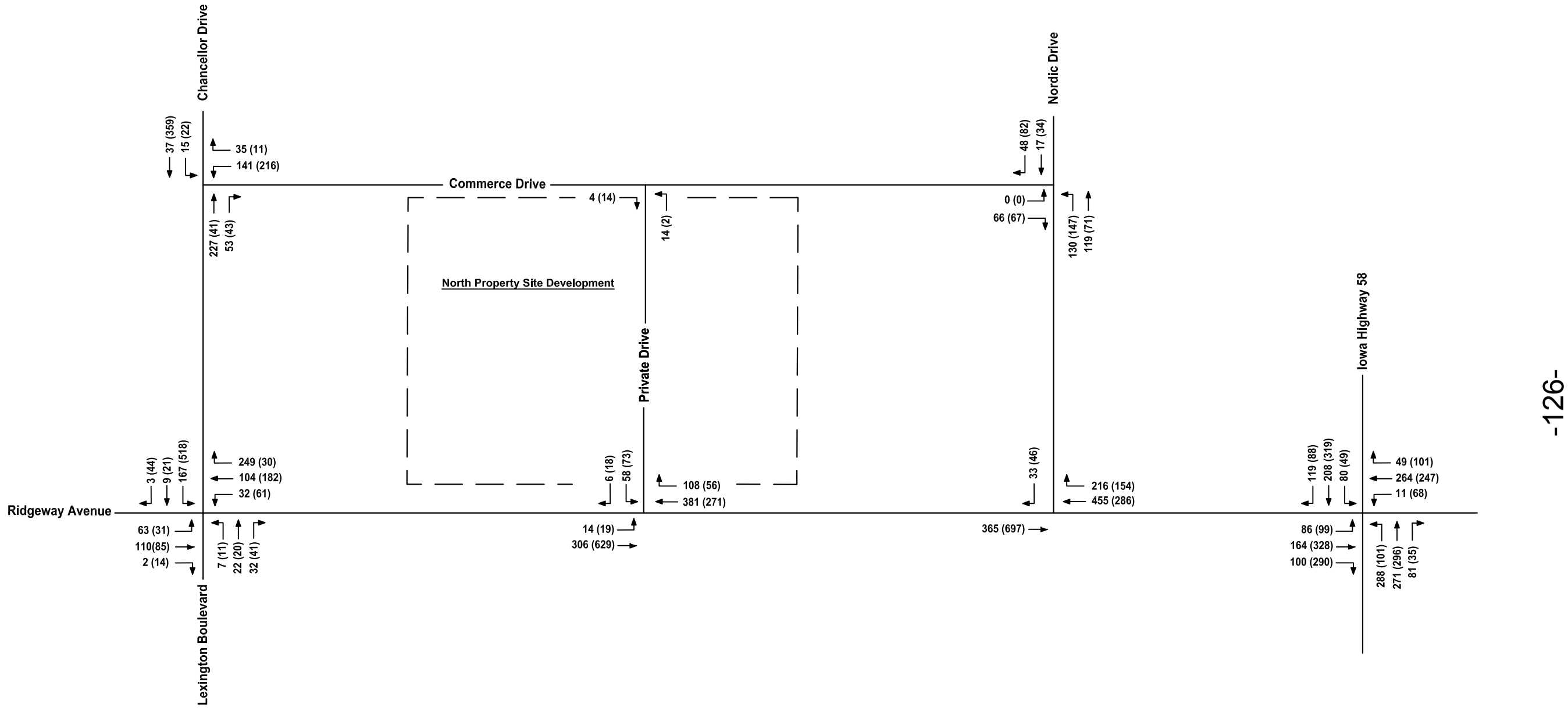

Figure 22

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2020 Weekday Traffic Projections - Alternative #1 - with North Property
- Nordic Drive RI/RO @ Ridgeway Avenue
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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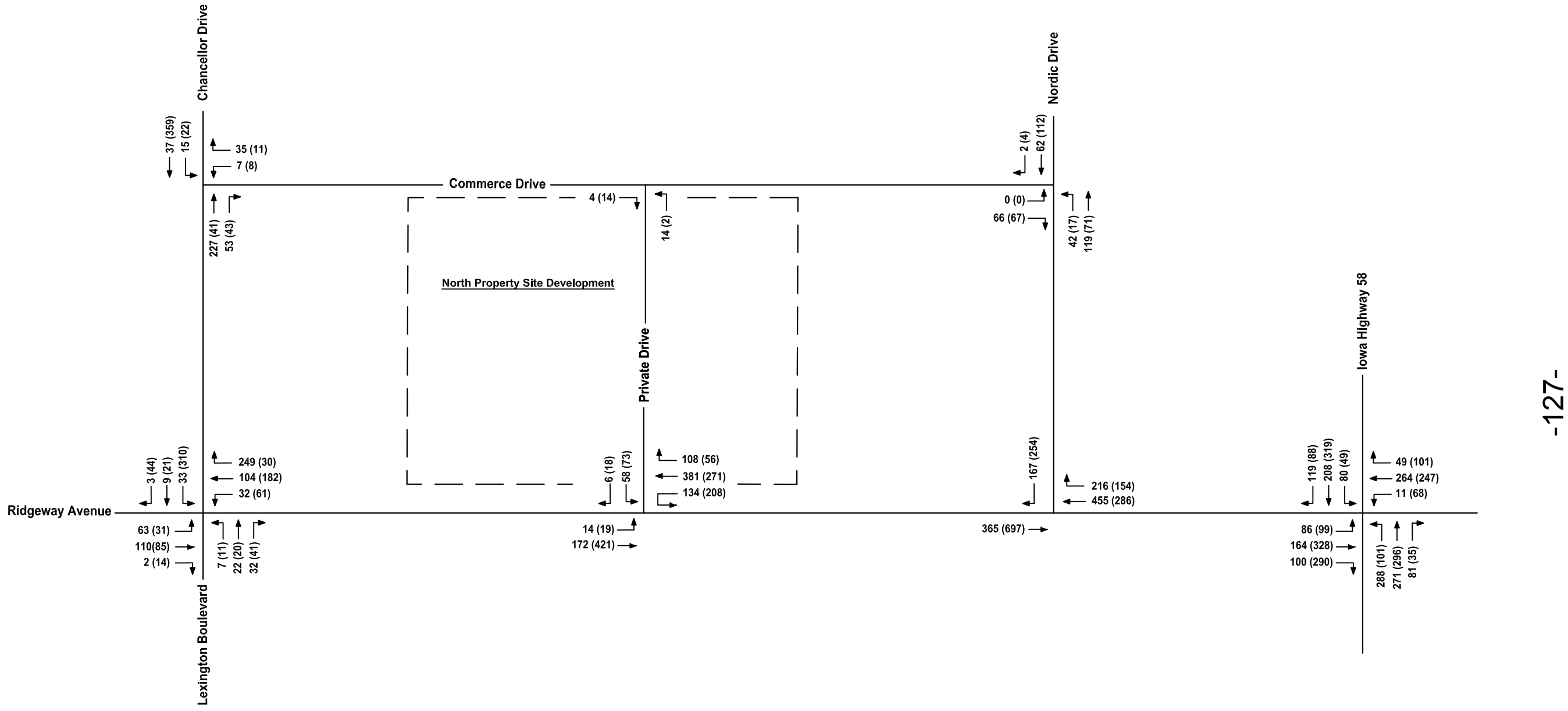

Figure 23

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2020 Weekday Traffic Projections - Alternative #2 - with North Property
- Nordic Drive Right-Turn In/Out & Site Drive Roundabout
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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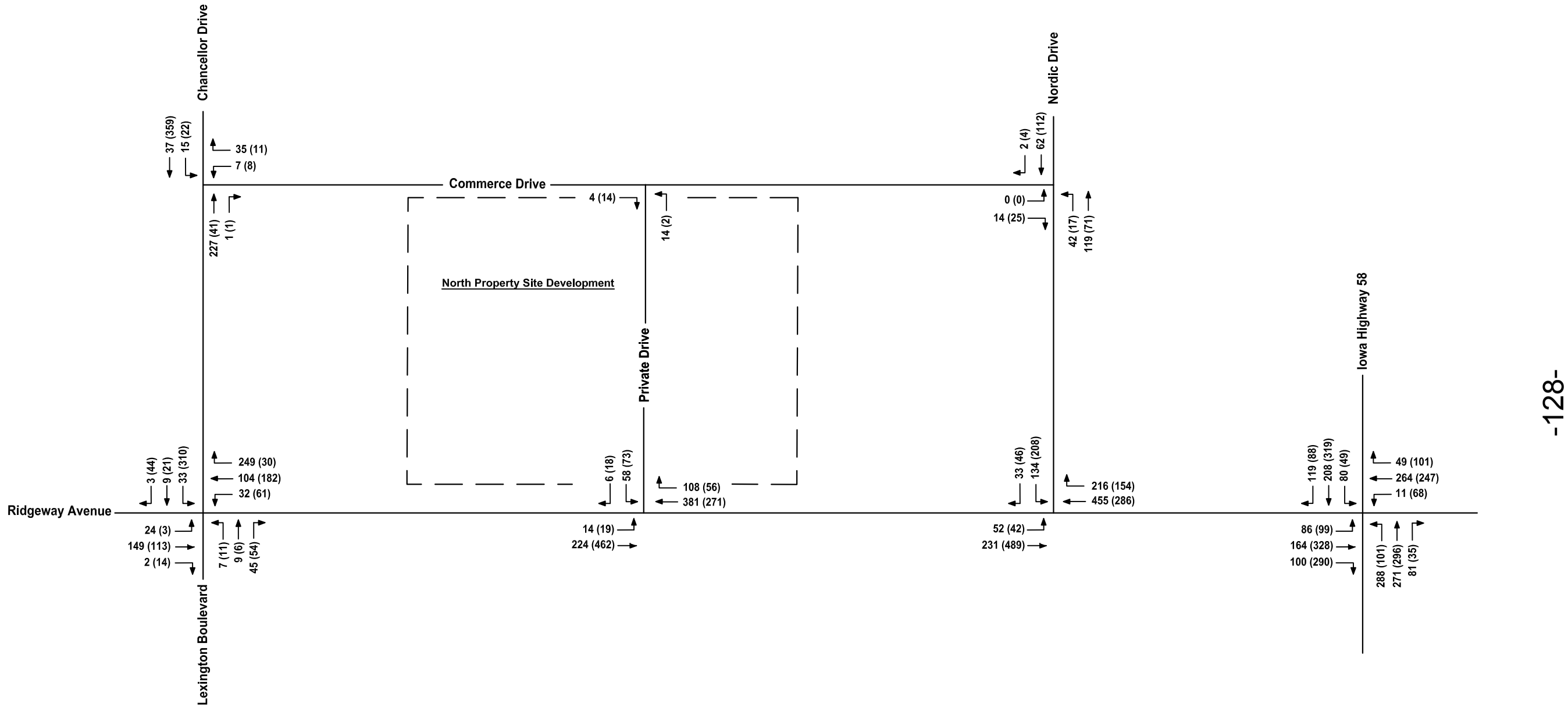

Figure 24

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2020 Weekday Traffic Projections - with North Property
- Existing Roadway Geometry (Alt #3 & Alt #5) & Roundabout (Alt #4 & Alt #6)
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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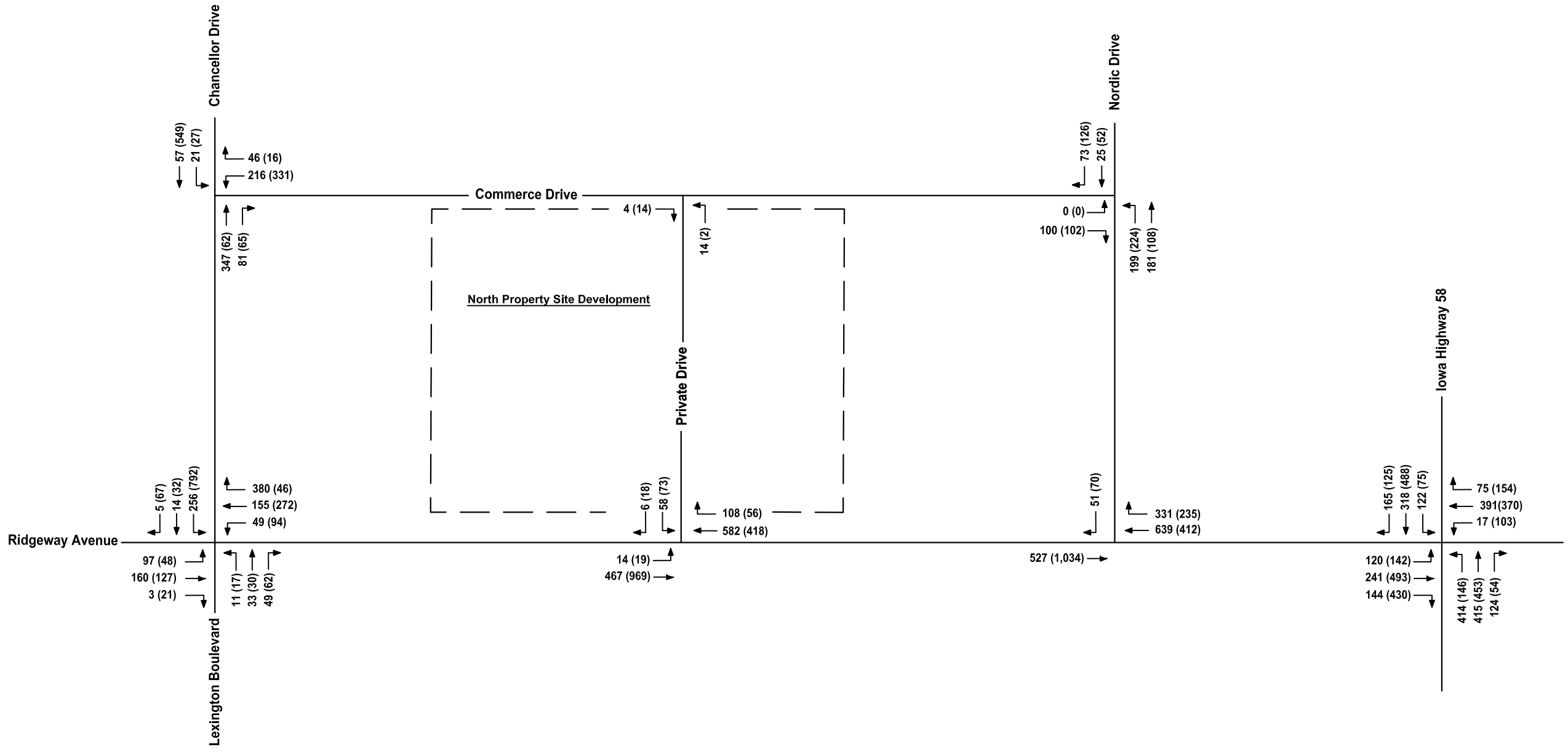

Figure 25

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2040 Weekday Traffic Projections - Alternative #1 - with North Property
- Nordic Drive RI/RO @ Ridgeway Avenue
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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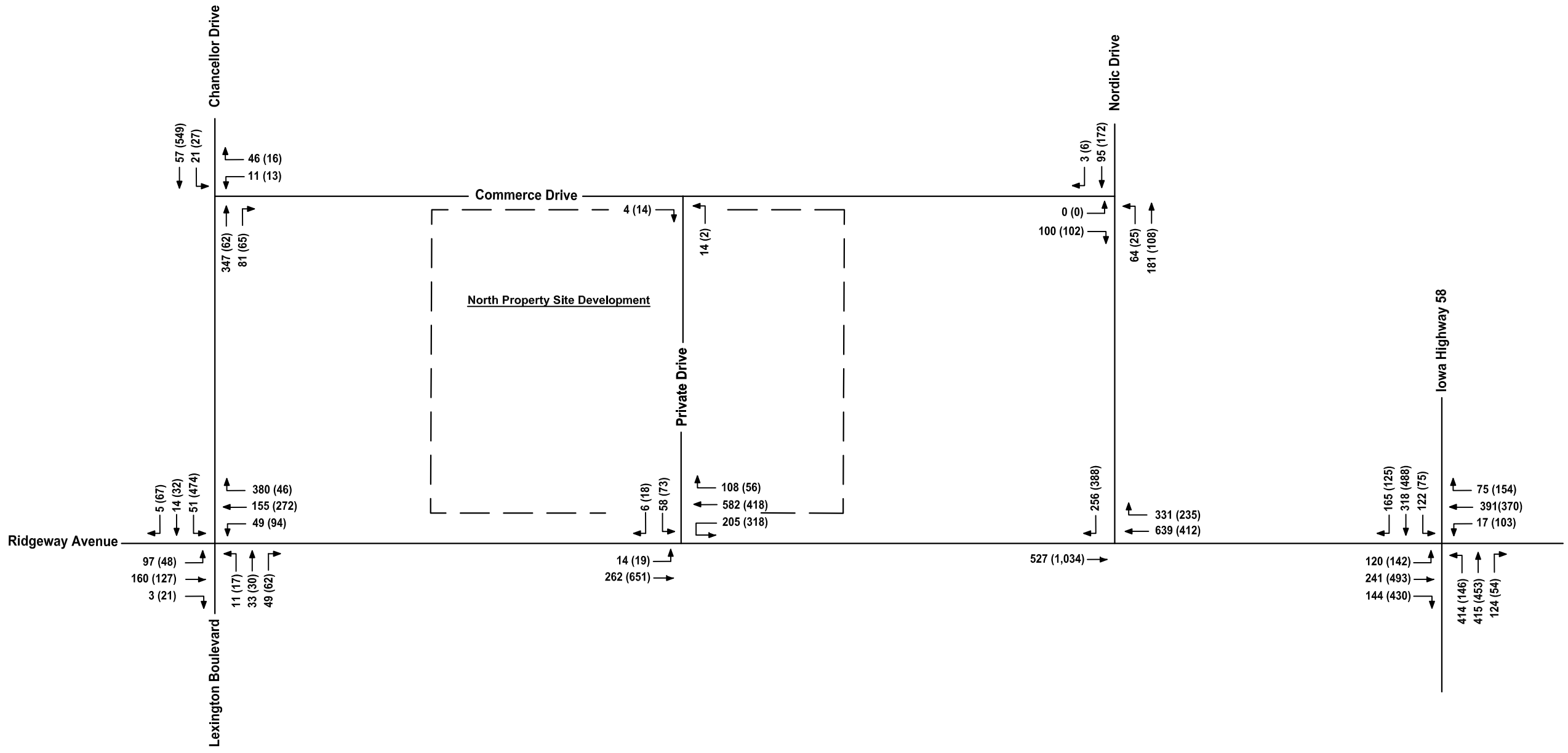

Figure 26

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2040 Weekday Traffic Projections - Alternative #2 - with North Property
- Nordic Drive Right-Turn In/Out & Site Drive Roundabout
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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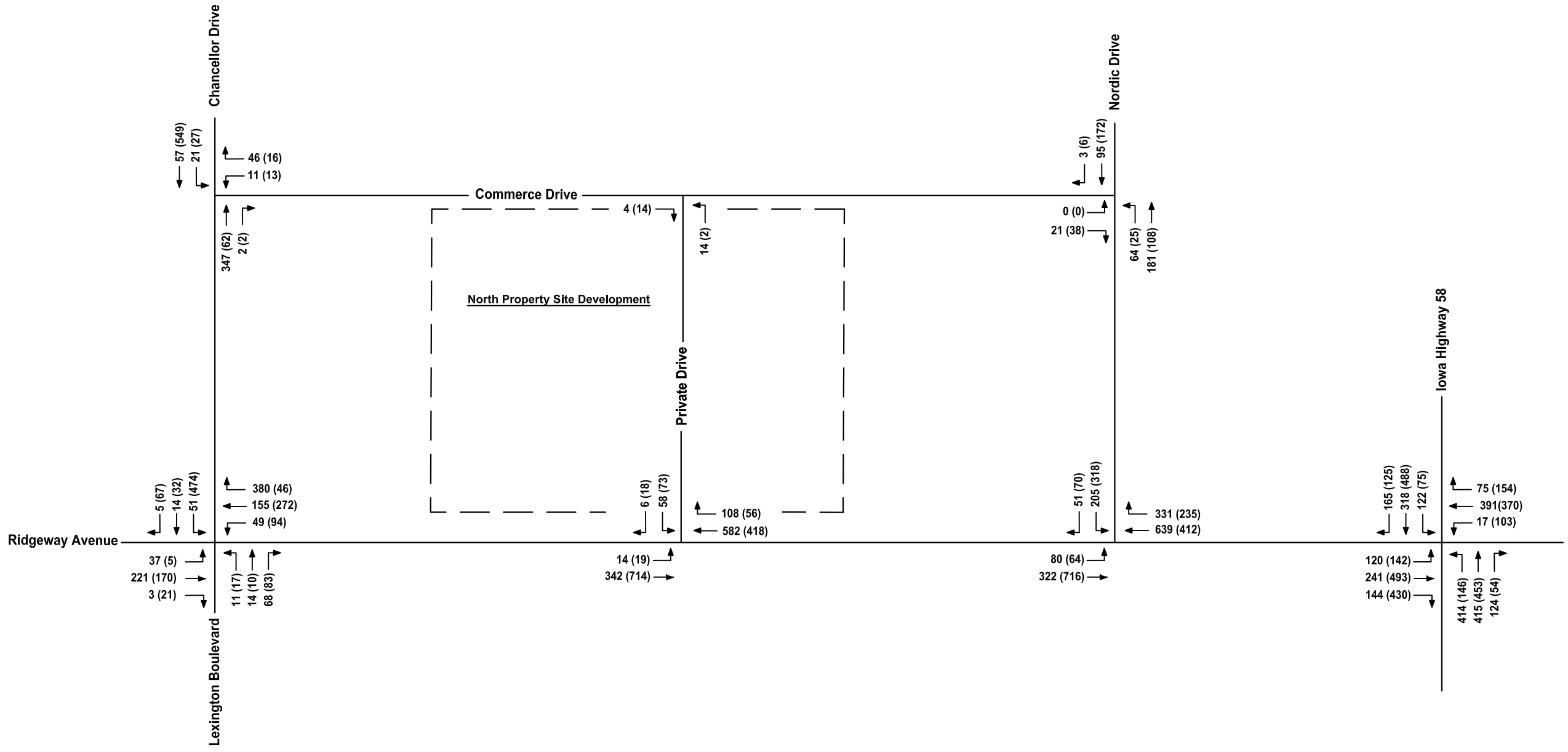

Figure 27

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

No-Build 2040 Weekday Traffic Projections - with North Property
- Existing Roadway Geometry (Alt #3 & Alt #5) & Roundabout (Alt #4 & Alt #6)
(Network Not Balanced)

xx - AM Peak Projections
(xx) - PM Peak Projections

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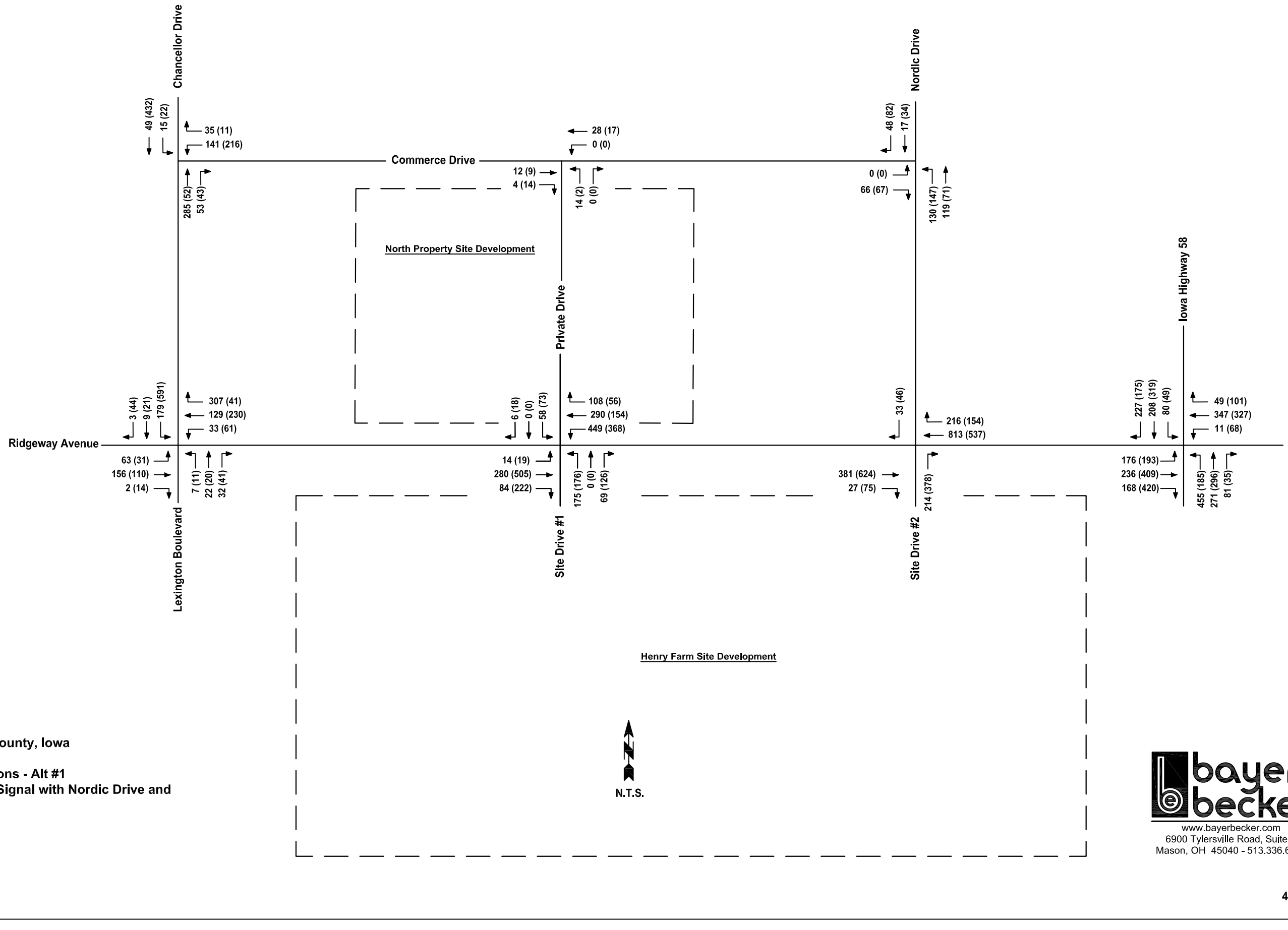

Figure 28

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

2020 Build Traffic Projections - Alt #1
- Site Drive #1 Traditional Signal with Nordic Drive and Site Drive #2 RI/RO

xx - AM Peak Hour
(xx) - PM Peak Hour

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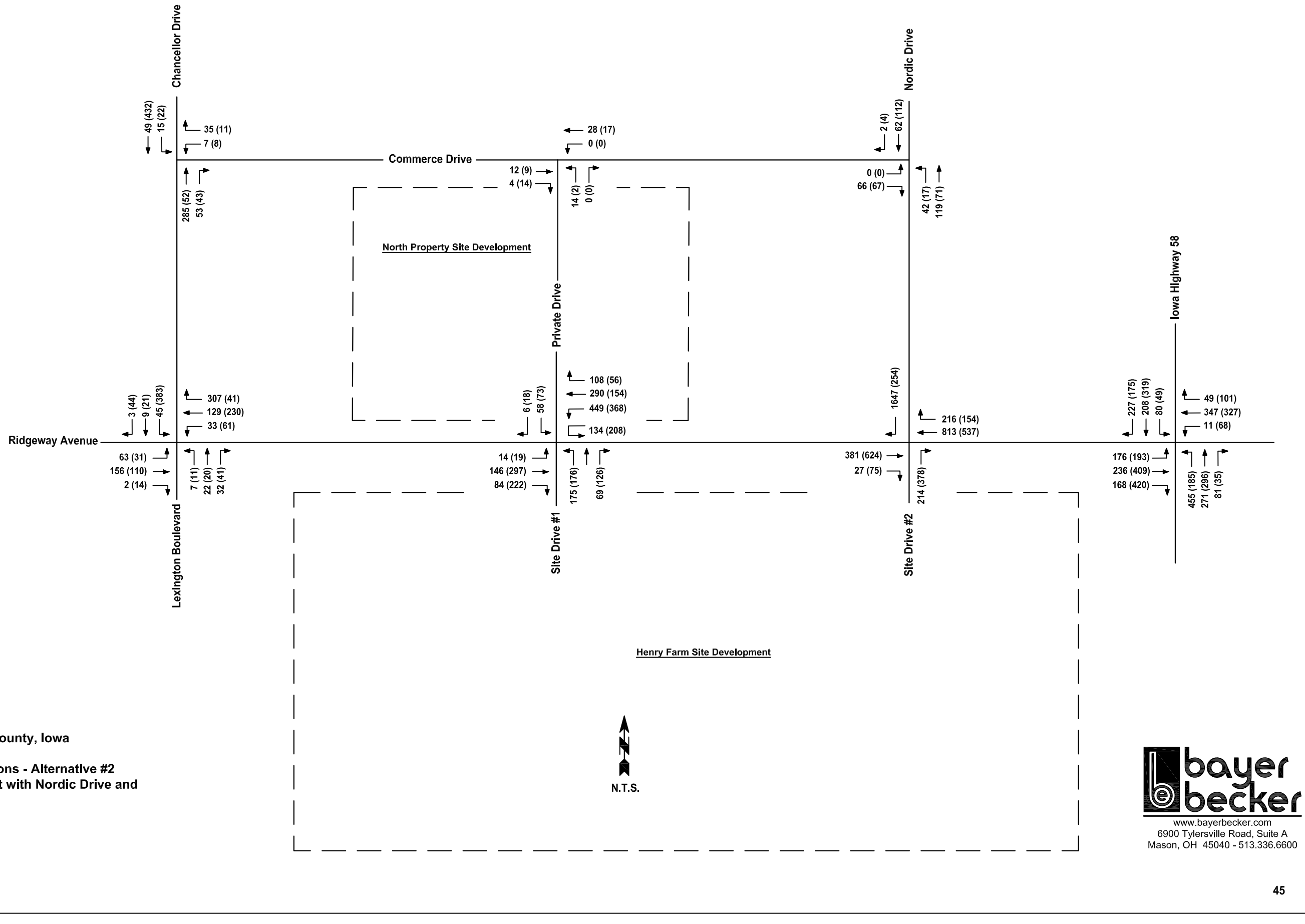

Figure 29

Henry Farm Development
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2020 Build Traffic Projections - Alternative #2
- Site Drive #1 Roundabout with Nordic Drive and Site Drive #2 RI/RO

xx - AM Peak Hour
(xx) - PM Peak Hour

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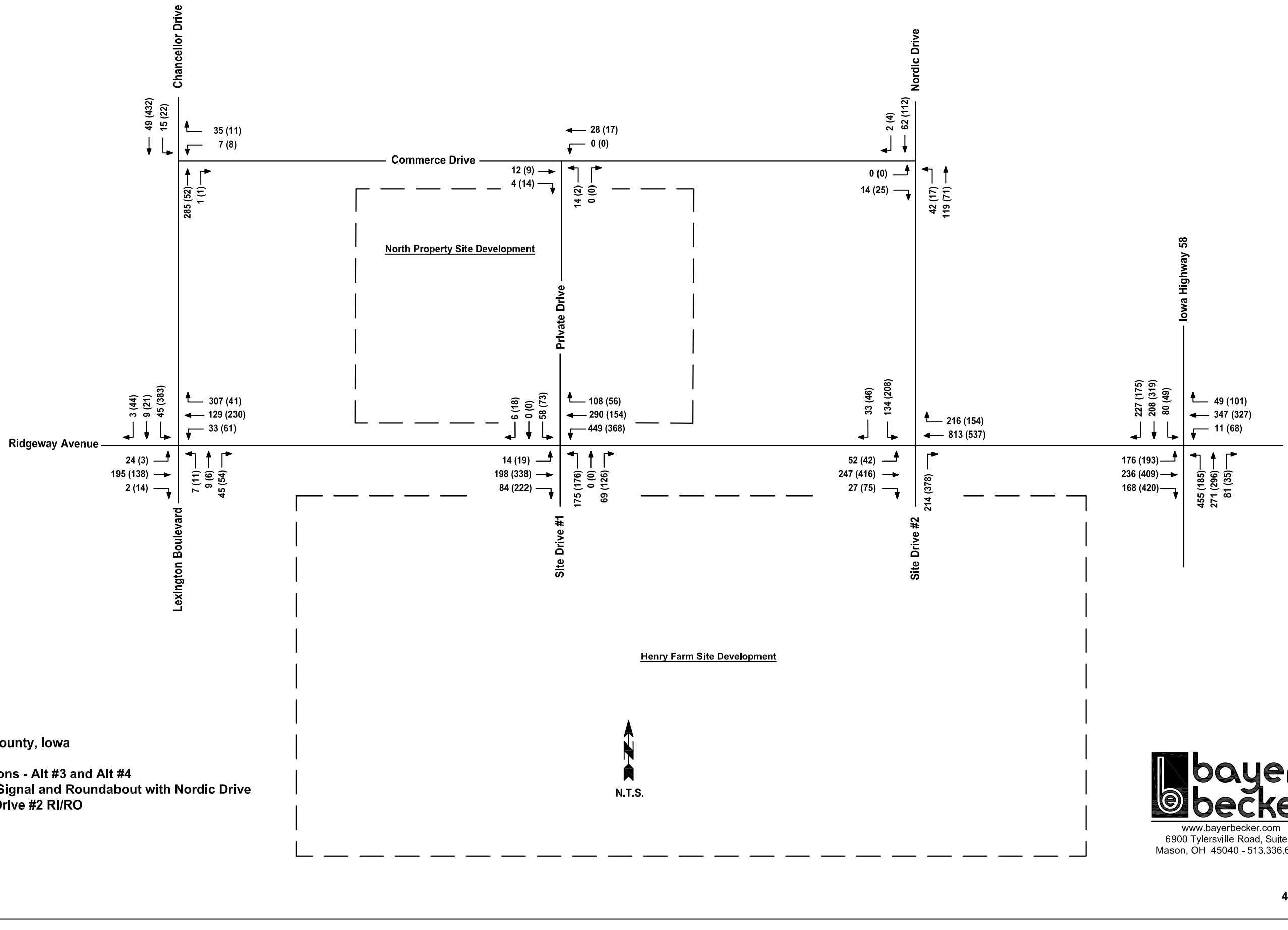

Figure 30

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

2020 Build Traffic Projections - Alt #3 and Alt #4
- Site Drive #1 Traditional Signal and Roundabout with Nordic Drive
Full Operational and Site Drive #2 RI/RO

xx - AM Peak Hour
(xx) - PM Peak Hour

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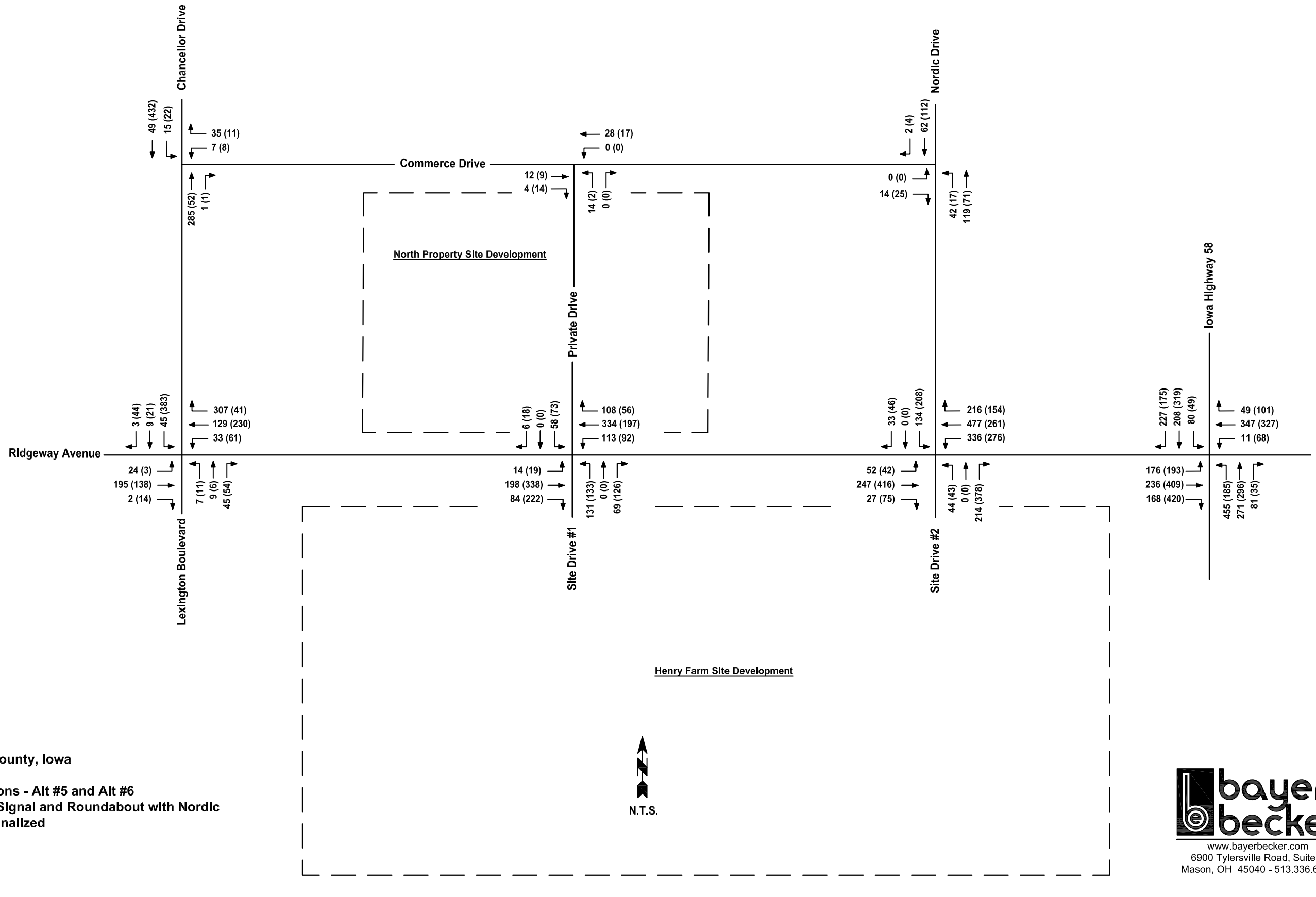

Figure 31

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

2020 Build Traffic Projections - Alt #5 and Alt #6
- Site Drive #1 Traditional Signal and Roundabout with Nordic Drive and Site Drive #2 Signalized

xx - AM Peak Hour
(xx) - PM Peak Hour

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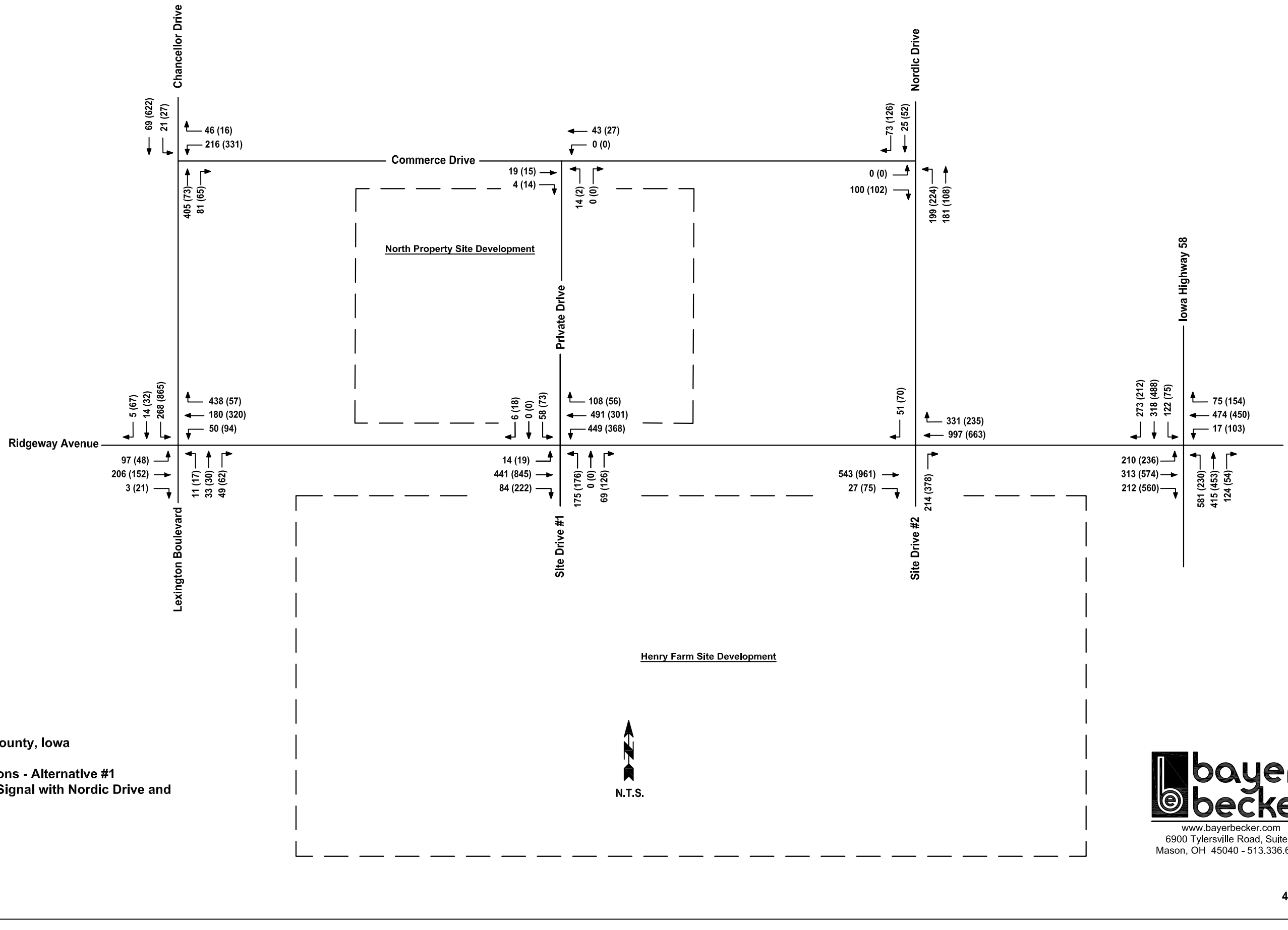

Figure 32

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

2040 Build Traffic Projections - Alternative #1
- Site Drive #1 Traditional Signal with Nordic Drive and Site Drive #2 RI/RO

xx - AM Peak Hour
(xx) - PM Peak Hour

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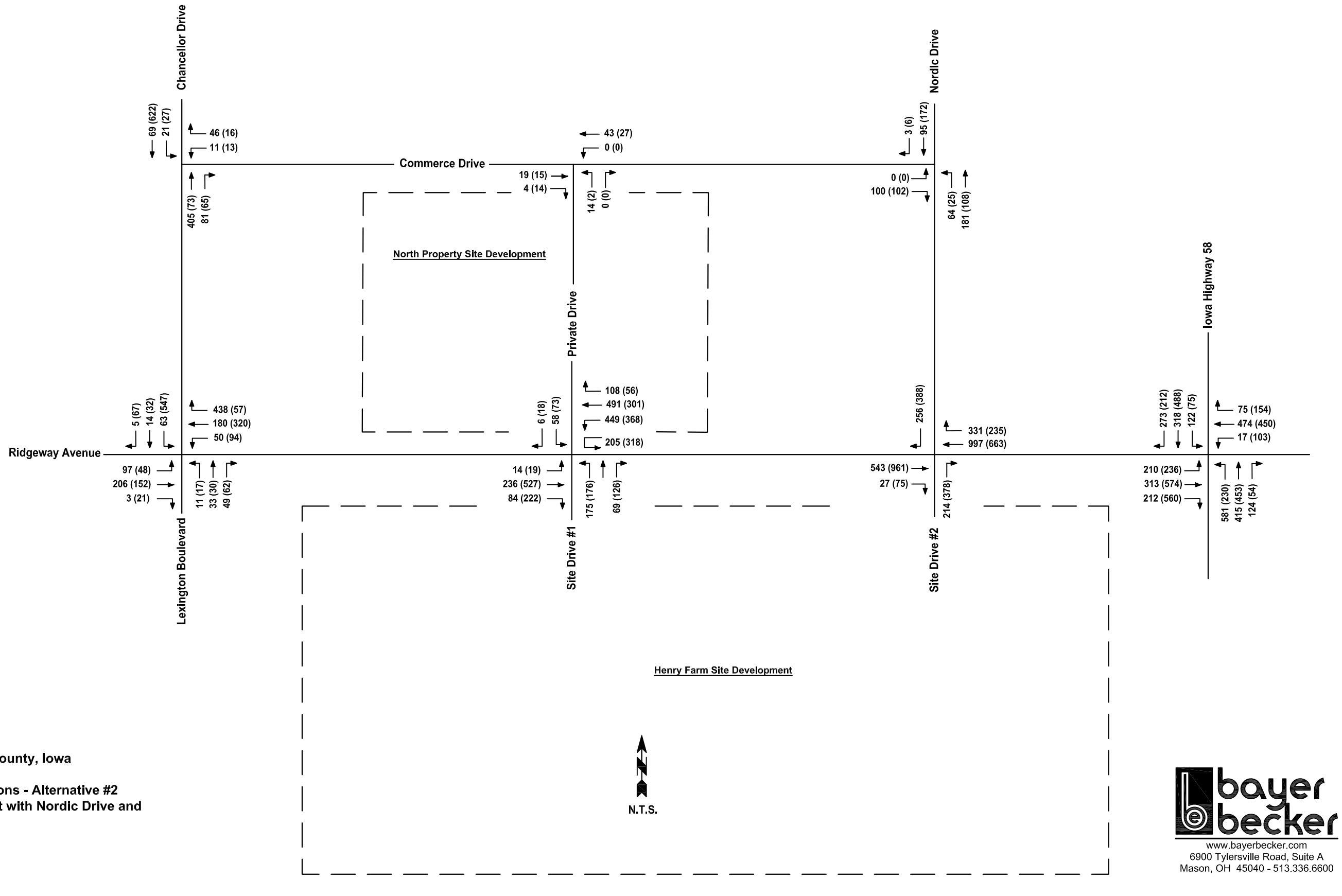

Figure 33

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

2040 Build Traffic Projections - Alternative #2
- Site Drive #1 Roundabout with Nordic Drive and Site Drive #2 RI/RO

xx - AM Peak Hour
(xx) - PM Peak Hour

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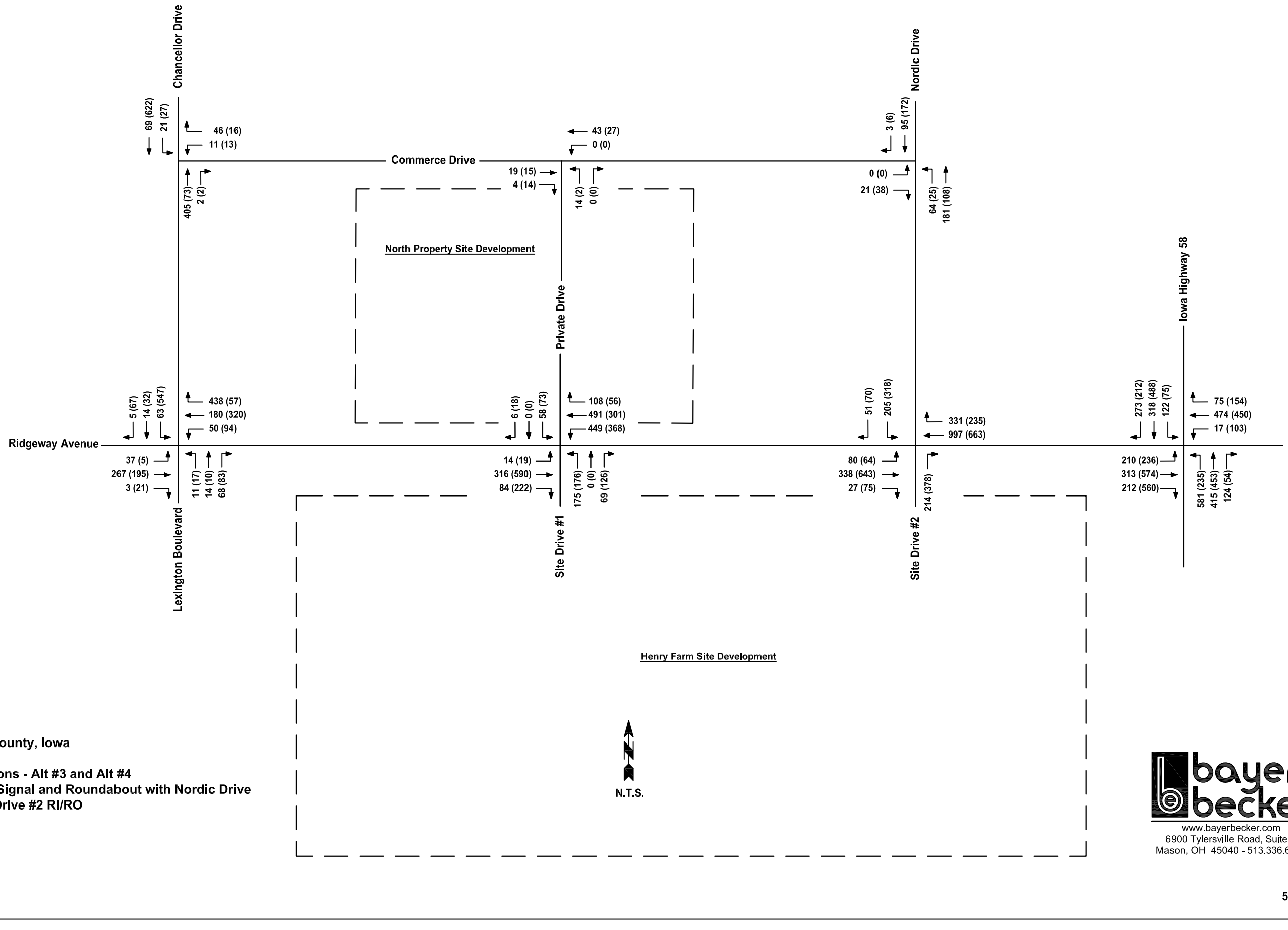

Figure 34

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

2040 Build Traffic Projections - Alt #3 and Alt #4
- Site Drive #1 Traditional Signal and Roundabout with Nordic Drive Full Operational and Site Drive #2 RI/RO

xx - AM Peak Hour
(xx) - PM Peak Hour

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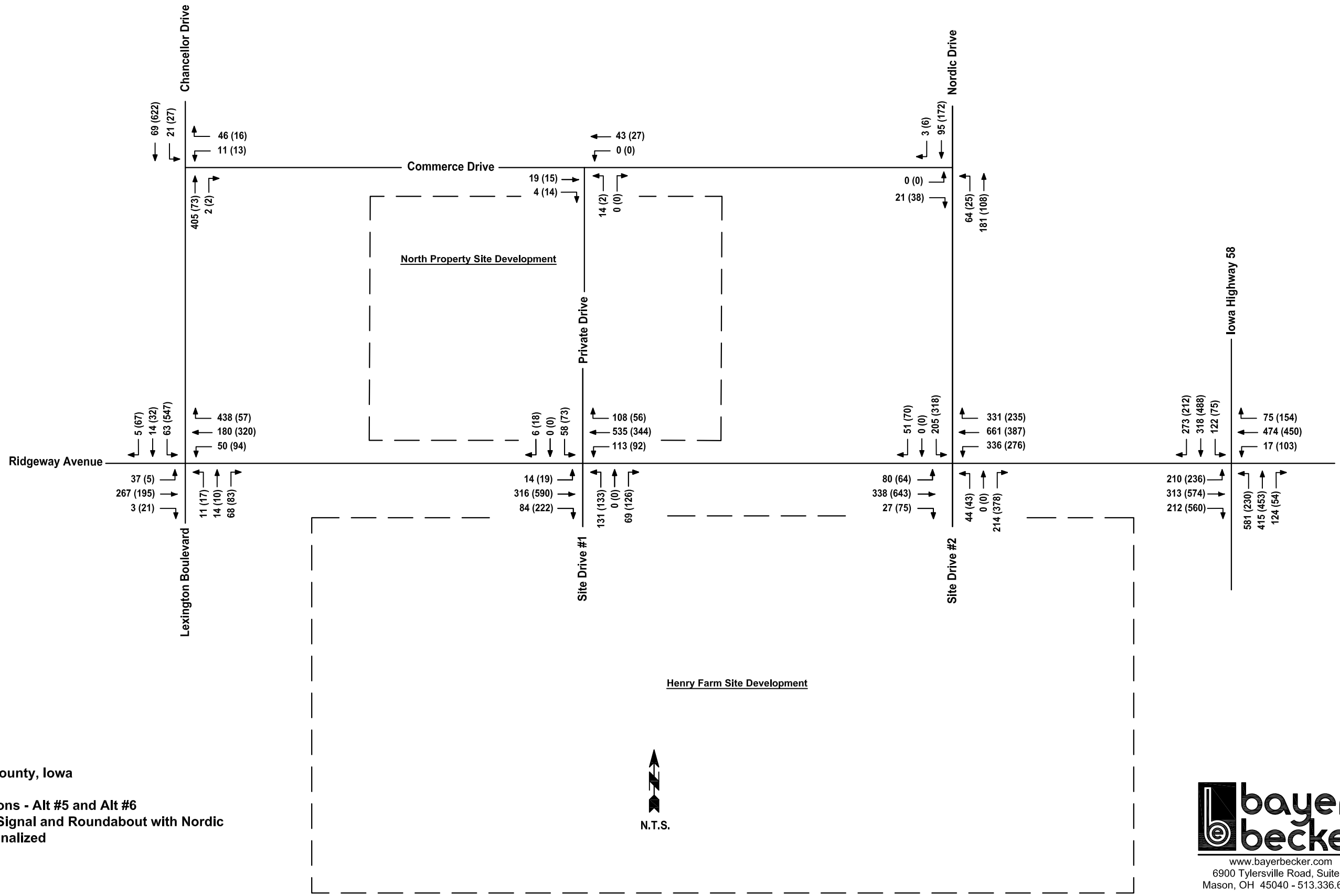

Figure 35

Henry Farm Development
Cedar Falls, Black Hawk County, Iowa

2040 Build Traffic Projections - Alt #5 and Alt #6
- Site Drive #1 Traditional Signal and Roundabout with Nordic Drive and Site Drive #2 Signalized

xx - AM Peak Hour
(xx) - PM Peak Hour

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TRAFFIC ANALYSIS

Site Access

The roadways that will provide regional access to the proposed site development are State Highway 20 (US-20), Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. Direct access to the proposed Henry Farm Development will utilize the following locations:

- W. Ridgeway Avenue and Proposed Site Drive #1, approximately 1,095 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2, approximately 515 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).

Traffic Signal Warrant Analysis

Based on the previously identified alternatives, new traffic signals at the intersections of W. Ridgeway Avenue and Private Drive/Proposed Site Drive #1 (Alternatives# 1, 3 and 5) and W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2 (Alternatives# 5 and 6) were investigated for warrant satisfaction in the study. The determination of the need for a traffic signal at this location is based upon whether the traffic signal is warranted. Since traffic signals are one of the most restrictive of the traditional traffic control devices, they should be used only where less restrictive signage or markings do not provide the required level of control or safety. It is the responsibility of local authorities in their respective jurisdictions to determine whether a location is best served by the installation of traffic signal.

Section 1A.07, Responsibility for Traffic Control Devices of the Manual of Uniform Traffic Control Devices (MUTCD) provides: “The responsibility for the design, placement, operation, maintenance, and uniformity of traffic control devices shall rest with the public agency or the official having jurisdiction, or, in the case of private roads open to public traffic, with the private owner or private official having jurisdiction. 23 Code of Federal Regulations (CFR) 655.603 adopts the MUTCD as the national standard for all traffic control devices installed on any street, highway, or bikeway open to public travel. When a State or other Federal agency manual or supplement is required, that manual or supplement shall be in substantial conformance with the national MUTCD.

23 CFR 655.603 also states that traffic control devices on all streets and highways open to public travel in each State shall be in substantial conformance with standards issued or endorsed by the Federal Highway Administrator”.

Under this section, the City of Cedar Falls Engineering Department is the responsible agency for the determination of traffic signals where warranted.

An investigation, such as contained in this Report, considers the need for traffic signal control where applicable and, at least performs an analysis of the factors contained in one (1) of the following nine warrants, as described in the MUTCD.

- Warrant 1, Eight-Hour Vehicular Volume.
- Warrant 2, Four-Hour Vehicular Volume.
- Warrant 3, Peak Hour.
- Warrant 4, Pedestrian Volume.
- Warrant 5, School Crossing.
- Warrant 6, Coordinated Signal System.
- Warrant 7, Crash Experience.
- Warrant 8, Roadway Network.
- Warrant 9, Intersection Near a Grade Crossing.

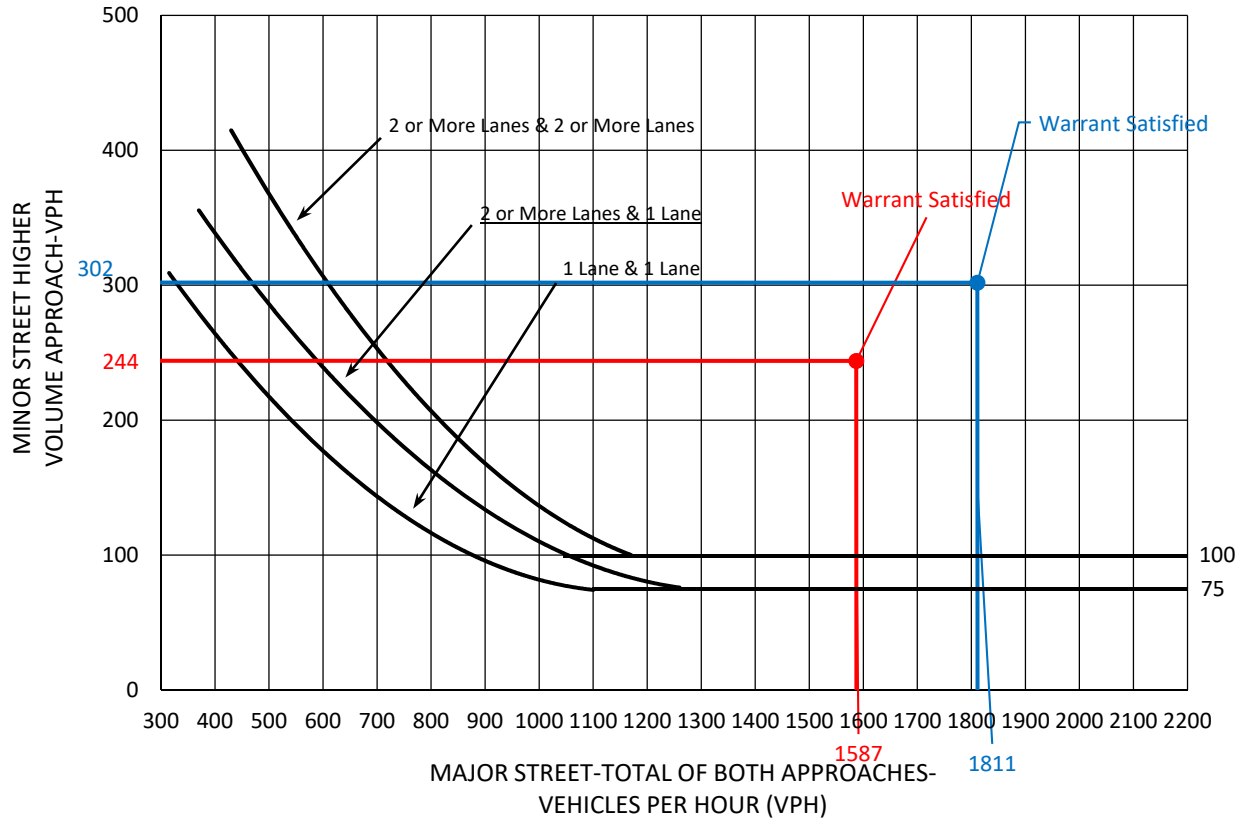
Warrant 3, Peak Hour is satisfied when an engineering study finds that the criteria in either of the following two categories are met:

A. If all three of the following conditions exist for the same one (1) hour (any four consecutive 15-minute periods) of an average day:
   1. The total stopped time delay experienced by traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: Four (4) vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and
   2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes;
   3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for one (1) hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figures 36 - 38 for the existing combination of approach lanes.

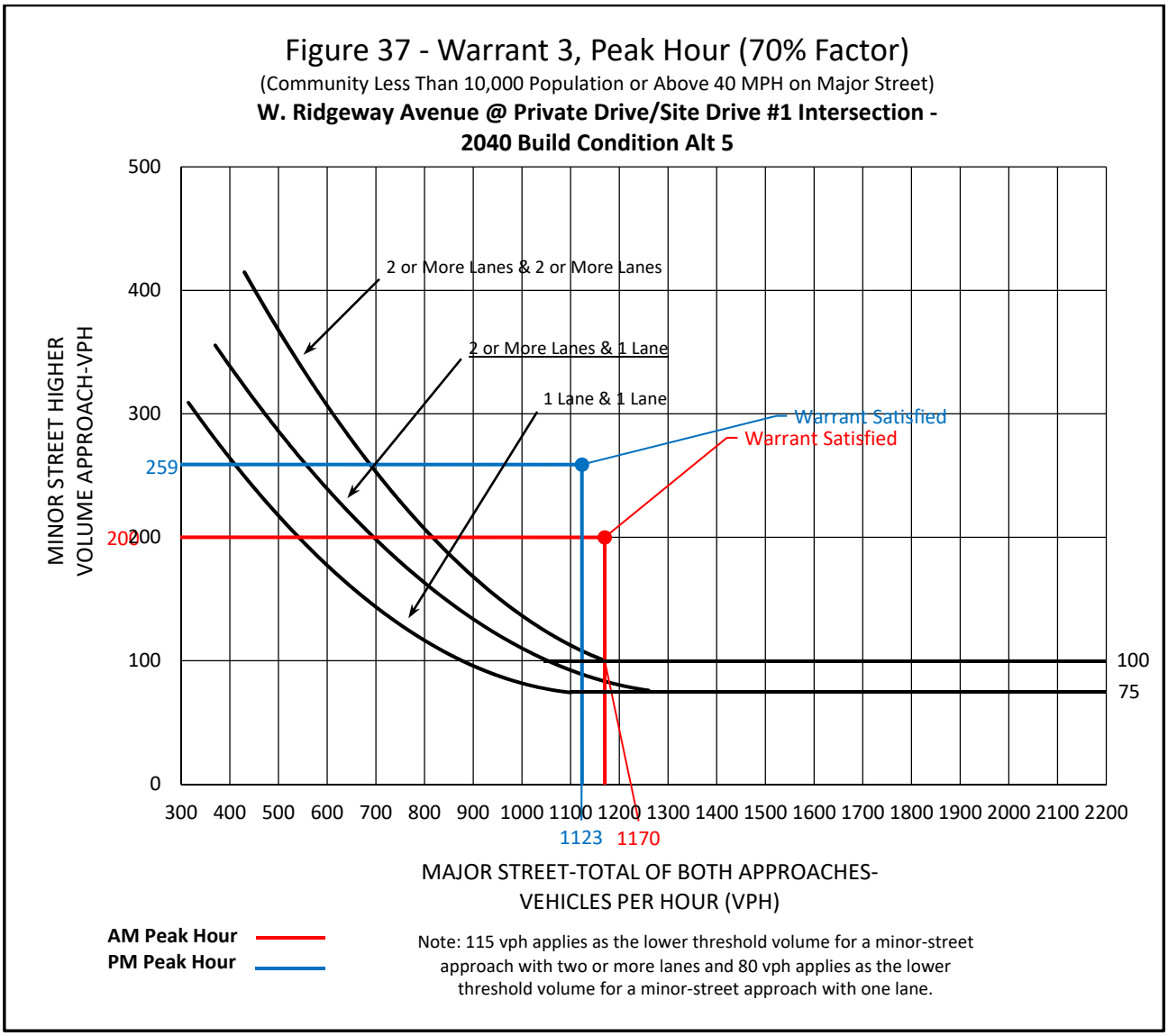
When the 85-percentile speed of major-street traffic exceeds 40 miles per hour (MPH) or when the intersection lies within a built-up area of an isolated community having a population less than 10,000, the eight-hour and four-hour volume requirements are satisfied when the volumes in the 70 percent columns are met. W. Ridgeway Avenue has a posted speed of 45 MPH along the site frontage; therefore, the 70% condition applies. The complete Warrant #3 – Peak Hour signal warrant results are provided in Figures 36, 37 and 38.

Figure 36 - Warrant 3, Peak Hour (70% Factor)
(Community Less Than 10,000 Population or Above 40 MPH on Major Street)
W. Ridgeway Avenue @ Private Drive/Site Drive #1 Intersection
2040 Build Alt 1 and Alt 3



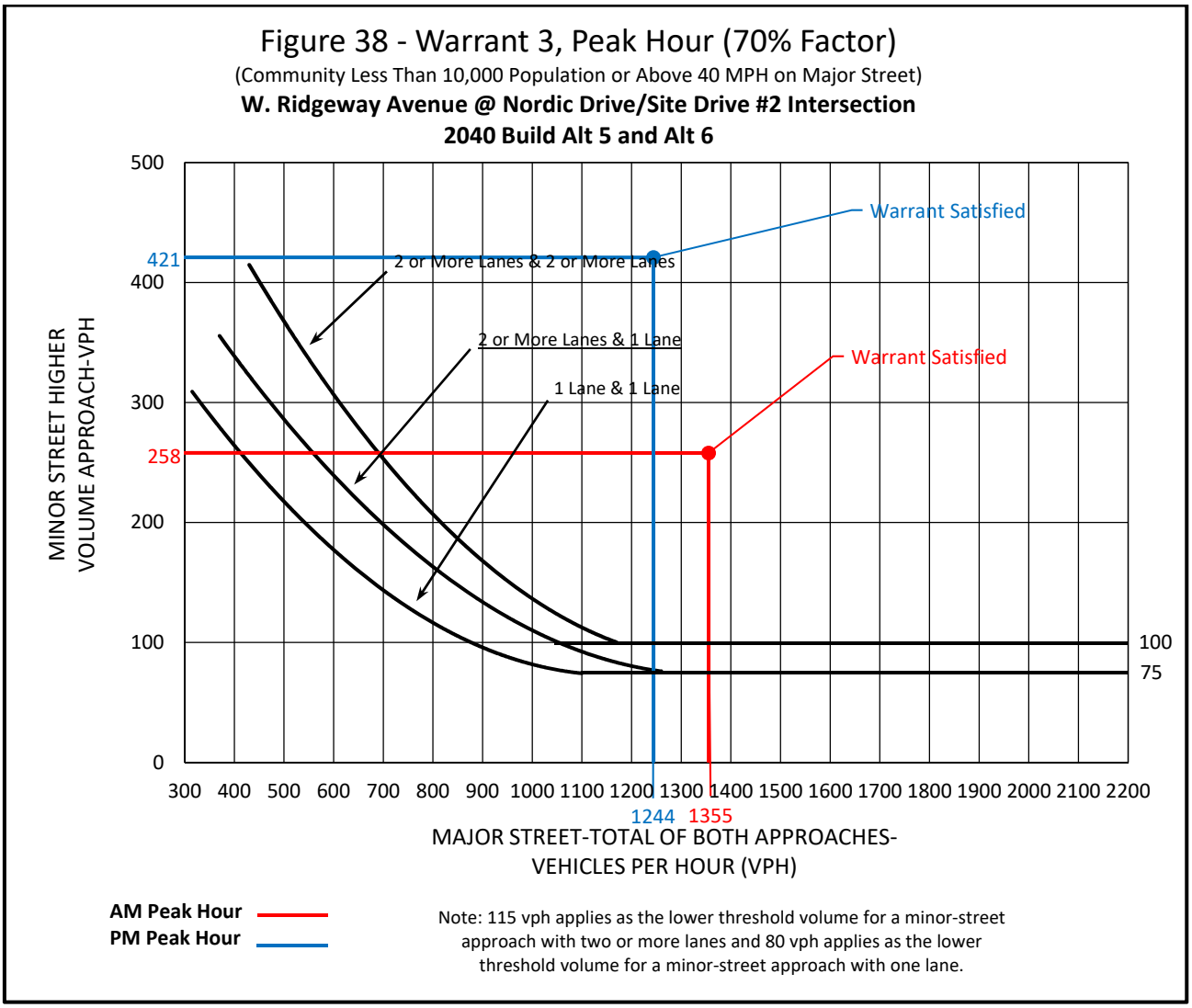
W. Ridgeway Avenue - 2-way traffic volume – 1,587 AM Peak / 1,811 PM Peak

Site Drive #1 – High volume minor street – 244 AM Peak / 302 PM Peak



W. Ridgeway Avenue - 2-way traffic volume – 1,170 AM Peak / 1,123 PM Peak

Site Drive #1 – High volume minor street – 200 AM Peak / 259 PM Peak



W. Ridgeway Avenue - 2-way traffic volume – 1,355 AM Peak / 1,244 PM Peak

Site Drive #2 – High volume minor street – 258 AM Peak / 421 PM Peak

Based on the criteria established, Warrant 3, Peak Hour is satisfied for the 70% Factor during both the AM and PM Peak hour periods at both W. Ridgeway Avenue and Private Drive/Proposed Site Drive #1 and W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2 for all alternatives evaluated.

Capacity and Level of Service

Level of service (LOS), as defined in the *Highway Capacity Manual 2010* (HCM), is "a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience." LOS is a function of the control delay per vehicle, and it is the standard used to

evaluate traffic flow at an intersection. The goal for the operation of roadways is to maintain the best level of service possible with an overall intersection LOS of D as an acceptable minimum.

The Synchro Plus SimTraffic 10 version 10.1 and SIDRA INTERSECTION 8.0 PLUS software programs were the computer applications used to analyze the capacity operations at all critical intersections. Synchro was used for signalized and unsignalized intersections analysis and SIDRA was used for roundabout intersection analysis. The capacity delay is expressed in seconds of delay as consistent with HCM. The criteria used by *HCM* is provided in Table 6.

Table 6
Level of Service Criteria for Signalized and Unsignalized Intersections

Signalized Intersection

Level of Service	Delay Range (sec/veh)	Expected Delay
A	<10	Extremely Favorable Progression
B	>10 and < 20	Good Progression
C	>20 and < 35	Fair Progression
D	>35 and < 55	Unfavorable Progression
E	>55 and < 80	Poor Progression
F	>80	Excessive Traffic Delay

Unsignalized Intersection

Level of Service	Delay Range (sec/veh)	Expected Delay
A	<10	Little or No Delay
B	>10 and < 15	Short Traffic Delay
C	>15 and < 25	Average Traffic Delay
D	>25 and < 35	Long Traffic Delay
E	>35 and < 50	Very long Traffic Delay
F	>50	Excessive Traffic Delay

Capacity analysis of the study area intersections was performed for the ***Existing*** and ***Redistributed Existing 2018, No-Build 2020, Build 2020, No-Build 2040,*** and ***Build 2040*** design years. The capacity results are provided in:

- Table 7, for Operational Alternative #1 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound).

- Table 8, for Operational Alternative #2 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound).
- Table 9, for Operational Alternative #3 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (northbound).
- Table 10, for Operational Alternative #4 – Site Drive #1 - Roundabout Design w/Nordic Drive Full Operational (southbound) and Site Drive #2 - Right-turn In/Out (northbound).
- Table 11, for Operational Alternative #5 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Full Operational - Signalized.
- Table 12, for Operational Alternative #6 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Full Operational - Signalized.

Table 7

Levels of Service Results –Operational Alternative #1 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both NB and SB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Ridgeway Avenue and Iowa Highway 58 (IA-58) - Signalized											
EB	L	C (28.9)	C (28.0)	C (26.1)	C (20.3)	C (23.6)	C (25.2)	C (28.9)	C (21.7)	D (46.0)	C (25.6)
	TR	C (20.5)	D (51.1)	B (16.7)	C (22.9)	A (8.2)	C (33.1)	B (17.8)	C (27.4)	A (7.6)	C (27.2)
	Approach	**C (22.3)**	**D (48.2)**	**B (19.0)**	**C (22.5)**	**B (12.9)**	**C (31.6)**	**C (20.5)**	**C (26.7)**	**B (18.6)**	**C (26.9)**
WB	L	C (25.5)	C (27.8)	C (21.1)	C (20.7)	C (28.7)	C (22.2)	B (17.9)	C (25.2)	C (22.4)	D (38.6)
	TR	D (46.1)	D (35.5)	C (34.5)	C (23.8)	D (38.4)	D (38.9)	C (34.2)	C (24.9)	D (50.7)	C (33.4)
	Approach	**D (45.3)**	**C (34.2)**	**C (34.1)**	**C (23.3)**	**D (38.2)**	**D (36.6)**	**C (33.6)**	**C (25.0)**	**D (49.9)**	**C (34.2)**
NB	L	B (10.4)	A (9.2)	B (13.0)	B (14.4)	D (39.8)	C (20.2)	C (33.5)	C (23.7)	D (51.0)	D (48.8)
	T	B (13.6)	B (14.3)	B (16.4)	C (20.3)	C (20.1)	C (25.2)	C (20.3)	C (26.3)	C (22.6)	C (27.7)
	R	A (0.2)	A (0.1)	A (0.3)	A (0.1)	A (0.3)	A (0.2)	A (1.2)	A (0.3)	A (1.8)	A (0.3)
	Approach	**B (10.5)**	**B (12.0)**	**B (12.8)**	**B (17.3)**	**C (29.2)**	**C (21.7)**	**C (23.5)**	**C (23.5)**	**D (35.0)**	**C (32.3)**
SB	L	A (7.9)	A (8.6)	B (11.6)	B (13.7)	B (18.3)	B (16.2)	B (15.1)	B (16.5)	B (16.6)	B (17.1)
	TR	B (10.1)	B (14.5)	B (16.1)	C (22.0)	C (22.5)	C (27.8)	C (25.3)	C (33.9)	C (28.9)	D (53.0)
	Approach	**A (9.6)**	**B (13.8)**	**B (15.2)**	**C (21.1)**	**C (21.9)**	**C (26.7)**	**C (23.3)**	**C (32.0)**	**C (26.8)**	**D (49.5)**
Overall Intersection		**B (19.2)**	**C (29.5)**	**B (18.6)**	**C (21.2)**	**C (25.0)**	**C (29.5)**	**C (24.8)**	**C (26.8)**	**C (32.0)**	**C (34.3)**
Ridgeway Avenue and Nordic Drive/Site Drive #2 - Unsignalized											
NB	R	-	-	-	-	B (11.5)	C (21.6)	-	-	B (13.6)	D (34.3)
SB	R	B (10.4)	A (9.8)	B (11.0)	B (10.1)	B (11.8)	B (10.5)	B (13.2)	B (11.3)	B (13.2)	B (12.0)
Overall Intersection		**A (0.4)**	**A (0.4)**	**A (0.3)**	**A (0.4)**	**A (1.7)**	**A (4.8)**	**A (0.4)**	**A (0.5)**	**A (2.3)**	**A (7.1)**
Chancellor Drive and Commerce Drive - Unsignalized											
WB	LR	B (12.2)	C (15.8)	B (12.6)	C (17.7)	B (13.8)	C (21.0)	C (20.1)	F (81.8)	C (23.8)	F (129.6)
	Approach	**B (12.2)**	**C (15.8)**	**B (12.6)**	**C (17.7)**	**B (13.8)**	**C (21.0)**	**C (20.1)**	**F (81.8)**	**C (23.8)**	**F (129.6)**
NB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
SB	L	A (7.9)	A (7.4)	A (7.9)	A (7.4)	A (8.1)	A (7.5)	A (8.4)	A (7.5)	A (8.5)	A (7.6)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.8)**	**A (0.2)**	**A (2.3)**	**A (0.4)**	**A (1.9)**	**A (0.4)**	**A (2.2)**	**A (0.4)**	**A (2.0)**	**A (0.3)**
Overall Intersection		**A (4.2)**	**A (5.4)**	**A (4.6)**	**A (6.0)**	**A (4.4)**	**A (6.4)**	**A (7.1)**	**D (27.3)**	**A (7.7)**	**E (39.8)**

Table 7 (Continued)

Levels of Service Results – Operational Alternative #1 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both NB and SB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
W. Ridgeway Avenue and Chancellor Drive/Lexington Boulevard – Roundabout											
EB	L	A (4.0)	A (5.4)	A (4.1)	A (5.6)	A (4.4)	A (6.2)	A (5.0)	A (8.3)	A (5.3)	A (8.3)
	T	A (4.0)	A (5.4)	A (4.1)	A (5.6)	A (4.4)	A (6.2)	A (5.0)	A (8.3)	A (5.3)	A (8.3)
	R	A (4.0)	A (5.4)	A (4.1)	A (5.6)	A (4.4)	A (6.2)	A (5.0)	A (8.3)	A (5.3)	A (8.3)
	Approach	**A (4.0)**	**A (5.4)**	**A (4.1)**	**A (5.6)**	**A (4.4)**	**A (6.2)**	**A (5.0)**	**A (8.3)**	**A (5.3)**	**A (8.3)**
WB	L	A (4.0)	A (3.9)	A (4.1)	A (4.0)	A (4.3)	A (4.2)	A (4.9)	A (4.7)	A (5.1)	A (4.9)
	T	A (4.0)	A (3.9)	A (4.1)	A (4.0)	A (4.3)	A (4.2	A (4.9)	A (4.7)	A (5.1)	A (4.9)
	R	A (4.9)	A (3.9)	A (5.1)	A (4.0)	A (5.6)	A (4.2)	A (6.7)	A (4.7)	A (7.5)	A (4.9)
	Approach	**A (4.6)**	**A (3.9)**	**A (4.7)**	**A (4.0)**	**A (5.2)**	**A (4.2)**	**A (6.1)**	**A (4.7)**	**A (6.7)**	**A (4.9)**
NB	L	A (4.1)	A (5.4)	A (4.3)	A (5.6)	A (4.5)	A (6.1)	A (5.3)	A (8.4)	A (5.6)	A (8.4)
	T	A (4.1)	A (5.4)	A (4.3)	A (5.6)	A (4.5)	A (6.1)	A (5.3)	A (8.4)	A (5.6)	A (8.4)
	R	A (4.1)	A (5.4)	A (4.3)	A (5.6)	A (4.5)	A (6.1)	A (5.3)	A (8.4)	A (5.6)	A (8.4)
	Approach	**A (4.1)**	**A (5.4)**	**A (4.3)**	**A (5.6)**	**A (4.5)**	**A (6.1)**	**A (5.3)**	**A (8.4)**	**A (5.6)**	**A (8.4)**
SB	L	A (4.5)	B (10.6)	A (4.6)	B (11.4)	A (4.8)	B (15.0)	A (5.9)	F (54.4)	A (6.2)	F (96.3)
	T	A (4.5)	B (10.6)	A (4.6)	B (11.4)	A (4.8)	B (15.0)	A (5.9)	F (54.4)	A (6.2)	F (96.3)
	R	A (4.5)	B (10.6)	A (4.6)	B (11.4)	A (4.8)	B (15.0)	A (5.9)	F (54.4)	A (6.2)	F (96.3)
	Approach	**A (4.5)**	**B (10.6)**	**A (4.6)**	**B (11.4)**	**A (4.8)**	**B (15.0)**	**A (5.9)**	**F (54.4)**	**A (6.2)**	**F (96.3)**
Overall Intersection		**A (4.4)**	**A (7.9)**	**A (4.5)**	**A (8.4)**	**A (4.9)**	**B (10.4)**	**A (5.8)**	**D (32.9)**	**A (6.2)**	**F (55.5)**
W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 – Unsignalized/Signalized											
EB	L	A (8.1)	A (0.0)	A (8.5)	A (8.1)	B (14.4)	C (21.1)	A (9.3)	A (8.5)	B (13.7)	B (10.9)
	T	-	-	-	-	D (39.9)	C (25.8)	-	-	D (40.9)	D (44.2)
	R	-	-	-	-	A (1.4)	A (7.5)	-	-	A (1.0)	A (6.8)
	Approach	**A (0.0)**	**A (0.0)**	**A (0.4)**	**A (0.2)**	**C (30.4)**	**C (20.2)**	**A (0.3)**	**A (0.2)**	**C (34.0)**	**D (36.0)**
WB	L	-	-	-	-	C (24.2)	C (31.0)	-	-	C (21.1)	D (52.4)
	TR	-	-	-	-	B (13.4)	A (9.2)	-	-	B (11.8)	B (14.9)
	Approach	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**B (19.1)**	**C (23.1)**	**A (0.0)**	**A (0.0)**	**B (15.8)**	**C (33.9)**
NB	L	-	-	-	-	C (25.3)	C (27.8)	-	-	C (23.1)	C (22.2)
	TR	-	-	-	-	A (6.7)	A (6.5)	-	-	A (8.0)	A (6.3)
	Approach	**-**	**-**	**-**	**-**	**C (20.2)**	**B (18.9)**	**-**	**-**	**B (18.8)**	**B (15.5)**
SB	LR	B (12.9)	B (13.7)	-	-	-	-	-	-	-	-
	L	-	-	C (16.2)	C (17.8)	C (22.7)	C (24.8)	C (24.8)	D (30.9)	C (20.7)	B (19.1)
	R	-	-	B (10.0)	A (9.4)	-	-	B (10.8)	B (10.0)		
	TR	-	-	-	-	B (14.0)	B (12.1)	-	-	B (17.0)	B (11.3)
	Approach	**B (12.9)**	**B (13.7)**	**C (15.6)**	**C (16.1)**	**C (21.7)**	**C (22.1)**	**C (23.5)**	**D (26.8)**	**C (20.3)**	**B (17.5)**
Overall Intersection		**A (0.0)**	**A (0.0)**	**A (1.3)**	**A (1.5)**	**C (22.2)**	**C (21.1)**	**A (1.3)**	**A (1.7)**	**C (21.5)**	**C (31.7)**
Nordic Drive and Commerce Drive - Unsignalized											
EB	LR	A (8.7)	A (9.0)	A (8.8)	A (9.0)	A (8.8)	A (9.0)	A (9.1)	A (9.4)	A (9.1)	A (9.4)
	Approach	**A (8.7)**	**A (9.0)**	**A (8.8)**	**A (9.0)**	**A (8.8)**	**A (9.0)**	**A (9.1)**	**A (9.4)**	**A (9.1)**	**A (9.4)**
NB	L	A (7.6)	A (7.7)	A (7.6)	A (7.8)	A (7.6)	A (7.8)	A (7.8)	A (8.2)	A (7.8)	A (8.2)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (4.0)**	**A (5.2)**	**A (4.0)**	**A (5.2)**	**A (4.0)**	**A (5.2)**	**A (4.1)**	**A (5.5)**	**A (4.1)**	**A (5.5)**
SB	LT	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		**A (4.1)**	**A (4.3)**	**A (4.1)**	**A (4.3)**	**A (4.1)**	**A (4.3)**	**A (4.3)**	**A (4.6)**	**A (4.3)**	**A (4.6)**

Table 8

Levels of Service Results –Operational Alternative #2 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both NB and SB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Ridgeway Avenue and Iowa Highway 58 (IA-58) - Signalized											
EB	L	C (28.9)	C (28.0)	C (25.0)	C (20.3)	C (34.3)	C (27.3)	C (28.9)	B (19.9)	D (53.3)	D (40.6)
	TR	C (20.5)	D (51.1)	B (16.5)	C (22.9)	B (15.5)	C (23.4)	B (17.8)	C (27.2)	C (20.0)	D (46.3)
	Approach	**C (22.3)**	**D (48.2)**	**B (18.6)**	**C (22.5)**	**C (21.2)**	**C (24.1)**	**C (20.5)**	**C (26.2)**	**C (29.5)**	**D (45.3)**
WB	L	C (25.5)	C (27.8)	C (20.9)	C (20.7)	B (19.8)	C (20.2)	B (17.9)	C (25.8)	C (31.1)	C (28.0)
	TR	D (46.1)	D (35.5)	D (35.0)	C (23.8)	D (40.5)	C (27.3)	C (34.2)	C (27.5)	D (50.6)	D (36.5)
	Approach	**D (45.3)**	**C (34.2)**	**C (34.5)**	**C (23.3)**	**D (39.9)**	**C (26.3)**	**C (33.6)**	**C (27.2)**	**D (50.0)**	**D (35.2)**
NB	L	B (10.4)	A (9.2)	B (13.5)	B (14.4)	C (33.3)	C (20.5)	C (33.5)	C (24.0)	D (50.5)	D (44.9)
	T	B (13.6)	B (14.3)	B (16.9)	C (20.3)	B (18.5)	C (21.3)	C (20.3)	C (26.3)	C (25.1)	C (26.9)
	R	A (0.2)	A (0.1)	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (1.2)	A (0.3)	A (0.6)	A (0.3)
	Approach	**B (10.5)**	**B (12.0)**	**B (13.3)**	**B (17.3)**	**C (25.0)**	**B (19.6)**	**C (23.5)**	**C (23.6)**	**D (35.6)**	**C (30.6)**
SB	L	A (7.9)	A (8.6)	B (12.0)	B (13.7)	B (15.1)	B (14.4)	B (15.1)	B (16.5)	B (17.5)	B (17.1)
	TR	B (10.1)	B (14.5)	B (16.5)	C (22.0)	B (16.9)	C (22.7)	C (25.3)	C (33.6)	C (29.3)	D (49.2)
	Approach	**A (9.6)**	**B (13.8)**	**B (15.6)**	**C (21.1)**	**B (16.6)**	**C (21.9)**	**C (23.3)**	**C (31.7)**	**C (27.3)**	**D (46.0)**
Overall Intersection		**B (19.2)**	**C (29.5)**	**B (18.9)**	**C (21.2)**	**C (24.8)**	**C (23.2)**	**C (24.8)**	**C (27.1)**	**C (34.9)**	**D (40.5)**
Ridgeway Avenue and Nordic Drive/Site Drive #2 - Unsignalized											
NB	R	-	-	-	-	B (11.5)	C (21.6)	-	-	B (12.9)	E (46.5)
SB	R	B (11.8)	B (11.7)	B (13.0)	B (12.4)	B (14.4)	B (13.4)	C (21.2)	C (20.6)	C (21.9)	C (21.1)
Overall Intersection		**A (1.9)**	**A (2.3)**	**A (1.8)**	**A (2.3)**	**A (2.7)**	**A (5.7)**	**A (3.1)**	**A (3.9)**	**A (3.5)**	**A (9.5)**
W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 – Roundabout											
EB	L	A (3.8)	A (5.2)	A (4.1)	A (5.8)	A (6.7)	A (9.9)	A (4.8)	A (8.4)	A (8.2)	C (16.6)
	T	A (3.8)	A (5.2)	A (4.1)	A (5.8)	A (6.7)	A (9.9)	A (4.8)	A (8.4)	A (8.2)	C (16.6)
	R	-	-	-	-	A (6.7)	A (9.9)	-	-	A (8.2)	C (16.6)
	Approach	**A (3.8)**	**A (5.2)**	**A (4.1)**	**A (5.8)**	**A (6.7)**	**A (9.9)**	**A (4.8)**	**A (8.4)**	**A (8.2)**	**C (16.6)**
WB	U-Turn	A (4.6)	A (4.5)	A (5.2)	A (4.8)	B (10.6)	B (10.5)	A (6.5)	A (6.0)	B (12.4)	B (13.6)
	L	-	-	-	-	B (10.6)	B (10.5)	-	-	B (12.4)	B (13.6)
	T	A (4.6)	A (4.5)	A (5.2)	A (4.8)	A (7.4)	A (5.2)	A (6.5)	A (6.0)	B (11.0)	A (6.9)
	R	A (4.6)	A (4.5)	A (5.2)	A (4.8)	A (7.4)	A (5.2)	A (6.5)	A (6.0)	B (11.0)	A (6.9)
	Approach	**A (4.6)**	**A (4.5)**	**A (5.2)**	**A (4.8)**	**A (9.3)**	**A (9.1)**	**A (6.5)**	**A (6.0)**	**B (11.7)**	**B (11.3)**
NB	L	-	-	-	-	A (7.5)	B (11.5)	-	-	A (8.9)	C (18.6)
	T	-	-	-	-	A (7.5)	B (11.5)	-	-	A (8.9)	C (18.6)
	R	-	-	-	-	A (7.5)	B (11.5)	-	-	A (8.9)	C (18.6)
	Approach	**-**	**-**	**-**	**-**	**A (7.5)**	**B (11.5)**	**-**	**-**	**A (8.9)**	**C (18.6)**
SB	L	A (4.2)	A (4.1)	A (5.0)	A (5.2)	A (7.9)	A (7.6)	A (6.3)	A (6.5)	B (10.1)	A (9.6)
	T	-	-	-	-	A (7.9)	A (7.6)	-	-	B (10.1)	A (9.6)
	R	A (4.2)	A (4.1)	A (5.0)	A (5.2)	A (7.9)	A (7.6)	A (6.3)	A (6.5)	B (10.1)	A (9.6)
	Approach	**A (4.2)**	**A (4.1)**	**A (5.0)**	**A (5.2)**	**A (7.9)**	**A (7.6)**	**A (6.3)**	**A (6.5)**	**B (10.1)**	**A (9.6)**
Overall Intersection		**A (4.4)**	**A (4.8)**	**A (4.9)**	**A (5.3)**	**A (8.6)**	**A (9.7)**	**A (6.1)**	**A (7.1)**	**B (10.7)**	**B (14.1)**

Table 8 (Continued)

Levels of Service Results – Operational Alternative #2 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both NB and SB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
W. Ridgeway Avenue and Chancellor Drive/Lexington Boulevard – Roundabout											
EB	L	A (3.5)	A (4.5)	A (3.6)	A (4.6)	A (3.9)	A (5.1)	A (4.1)	A (6.1)	A (4.4)	A (6.7)
	T	A (3.5)	A (4.5)	A (3.6)	A (4.6)	A (3.9)	A (5.1)	A (4.1)	A (6.1)	A (4.4)	A (6.7)
	R	A (3.5)	A (4.5)	A (3.6)	A (4.6)	A (3.9)	A (5.1)	A (4.1)	A (6.1)	A (4.4)	A (6.7)
	Approach	**A (3.5)**	**A (4.5)**	**A (3.6)**	**A (4.6)**	**A (3.9)**	**A (5.1)**	**A (4.1)**	**A (6.1)**	**A (4.4)**	**A (6.7)**
WB	L	A (4.0)	A (3.9)	A (4.1)	A (4.0)	A (4.3)	A (4.2)	A (4.9)	A (4.7)	A (5.1)	A (4.9)
	T	A (4.0)	A (3.9)	A (4.1)	A (4.0)	A (4.3)	A (4.2)	A (4.9)	A (4.7)	A (5.1)	A (4.9)
	R	A (4.9)	A (3.9)	A (5.1)	A (4.0)	A (5.6)	A (4.2)	A (6.7)	A (4.7)	A (7.5)	A (4.9)
	Approach	**A (4.6)**	**A (3.9)**	**A (4.7)**	**A (4.0)**	**A (5.2)**	**A (4.2)**	**A (6.1)**	**A (4.7)**	**A (6.7)**	**A (4.9)**
NB	L	A (3.7)	A (4.6)	A (3.8)	A (4.7)	A (4.0)	A (5.1)	A (4.5)	A (6.3)	A (4.7)	A (6.9)
	T	A (3.7)	A (4.6)	A (3.8)	A (4.7)	A (4.0)	A (5.1)	A (4.5)	A (6.3)	A (4.7)	A (6.9)
	R	A (3.7)	A (4.6)	A (3.8)	A (4.7)	A (4.0)	A (5.1)	A (4.5)	A (6.3)	A (4.7)	A (6.9)
	Approach	**A (3.7)**	**A (4.6)**	**A (3.8)**	**A (4.7)**	**A (4.0)**	**A (5.1)**	**A (4.5)**	**A (6.3)**	**A (4.7)**	**A (6.9)**
SB	L	A (3.4)	A (7.1)	A (3.5)	A (7.5)	A (3.7)	A (9.2)	A (3.9)	B (13.9)	A (4.1)	C (19.3)
	T	A (3.4)	A (7.1)	A (3.5)	A (7.5)	A (3.7)	A (9.2)	A (3.9)	B (13.9)	A (4.1)	C (19.3)
	R	A (3.4)	A (7.1)	A (3.5)	A (7.5)	A (3.7)	A (9.2)	A (3.9)	B (13.9)	A (4.1)	C (19.3)
	Approach	**A (3.4)**	**A (7.1)**	**A (3.5)**	**A (7.5)**	**A (3.7)**	**A (9.2)**	**A (3.9)**	**B (13.9)**	**A (4.1)**	**C (19.3)**
Overall Intersection		**A (4.2)**	**A (5.5)**	**A (4.3)**	**A (5.7)**	**A (4.6)**	**A (6.6)**	**A (5.3)**	**A (9.1)**	**A (5.7)**	**B (11.8)**
Chancellor Drive and Commerce Drive - Unsignalized											
WB	LR	B (10.1)	B (10.1)	B (10.2)	B (10.2)	B (10.7)	B (10.6)	B (11.7)	B (11.9)	B (12.3)	B (12.6)
	Approach	**B (10.1)**	**B (10.1)**	**B (10.2)**	**B (10.2)**	**B (10.7)**	**B (10.6)**	**B (11.7)**	**B (11.9)**	**B (12.3)**	**B (12.6)**
NB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
SB	L	A (7.9)	A (7.4)	A (7.9)	A (7.4)	A (8.1)	A (7.5)	A (8.4)	A (7.5)	A (8.5)	A (7.6)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.8)**	**A (0.2)**	**A (2.3)**	**A (0.4)**	**A (1.9)**	**A (0.4)**	**A (2.2)**	**A (0.4)**	**A (2.0)**	**A (0.3)**
Overall Intersection		**A (1.0)**	**A (0.5)**	**A (1.5)**	**A (0.7)**	**A (1.3)**	**A (0.7)**	**A (1.5)**	**A (0.8)**	**A (1.4)**	**A (0.7)**
Nordic Drive and Commerce Drive - Unsignalized											
EB	LR	A (8.9)	A (9.2)	A (8.9)	A (9.2)	A (8.9)	A (9.2)	A (9.3)	A (9.9)	A (9.3)	A (9.9)
	Approach	**A (8.9)**	**A (9.2)**	**A (8.9)**	**A (9.2)**	**A (8.9)**	**A (9.2)**	**A (9.3)**	**A (9.9)**	**A (9.3)**	**A (9.9)**
NB	L	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.7)	A (7.5)	A (7.7)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (2.0)**	**A (1.4)**	**A (2.0)**	**A (1.4)**
SB	LT	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		**A (3.1)**	**A (2.7)**	**A (3.1)**	**A (2.7)**	**A (3.1)**	**A (2.7)**	**A (3.2)**	**A (2.9)**	**A (3.2)**	**A (2.9)**

Table 9

Levels of Service Results – Operational Alternative #3 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive Full Operational (SB) and Site Drive #2 - Right-turn In/Out (NB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Ridgeway Avenue and Iowa Highway 58 (IA-58) - Signalized											
EB	L	C (24.0)	C (28.0)	C (26.2)	C (25.8)	C (34.5)	C (23.3)	C (28.9)	C (34.3)	D (53.7)	C (30.6)
	TR	B (17.2)	D (51.1)	B (16.8)	C (28.6)	B (10.5)	B (19.4)	B (17.8)	D (54.2)	B (13.4)	C (33.2)
	Approach	**B (18.7)**	**D (48.2)**	**B (19.1)**	**C (28.2)**	**B (17.8)**	**C (20.1)**	**C (20.5)**	**D (51.6)**	**C (24.9)**	**C (32.7)**
WB	L	C (21.4)	C (27.8)	C (21.1)	C (25.8)	C (20.3)	C (20.6)	B (17.9)	C (28.6)	C (22.3)	D (35.9)
	TR	C (33.7)	D (35.5)	C (34.6)	C (27.4)	D (40.1)	C (28.0)	C (34.2)	C (30.9)	D (48.4)	C (34.1)
	Approach	**C (33.3)**	**C (34.2)**	**C (34.2)**	**C (27.1)**	**D (39.6)**	**C (27.0)**	**C (33.6)**	**C (30.5)**	**D (47.6)**	**C (34.4)**
NB	L	B (11.2)	A (9.2)	B (13.0)	B (12.0)	C (34.6)	C (20.6)	C (33.5)	B (15.9)	D (51.0)	D (52.7)
	T	B (16.5)	B (14.3)	B (17.0)	B (18.0)	B (18.4)	C (21.1)	C (20.3)	C (22.6)	C (22.6)	C (27.9)
	R	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (1.2)	A (0.3)	A (1.8)	A (0.3)
	Approach	**B (12.1)**	**B (12.0)**	**B (13.1)**	**B (15.1)**	**C (25.7)**	**B (19.5)**	**C (23.5)**	**B (19.2)**	**D (35.0)**	**C (33.7)**
SB	L	B (10.4)	A (8.6)	B (11.1)	B (11.5)	B (14.8)	B (14.3)	B (15.1)	B (13.6)	B (16.6)	C (29.8)
	TR	B (16.6)	B (14.5)	B (15.4)	B (20.0)	B (16.9)	C (22.2)	C (25.3)	C (31.1)	C (28.9)	D (52.0)
	Approach	**B (15.3)**	**B (13.8)**	**B (14.5)**	**B (19.1)**	**B (16.6)**	**C (21.5)**	**C (23.3)**	**C (29.2)**	**C (26.8)**	**D (49.8)**
Overall Intersection		**B (18.2)**	**C (29.5)**	**B (18.6)**	**C (23.1)**	**C (24.1)**	**C (21.6)**	**C (24.8)**	**D (35.2)**	**C (33.1)**	**D (36.9)**
Ridgeway Avenue and Nordic Drive/Site Drive #2 - Unsignalized											
EB	L	A (8.9)	A (8.3)	A (9.4)	A (8.5)	B (11.4)	A (9.5)	B (11.3)	A (9.4)	B (14.5)	B (10.7)
	Approach	**A (2.1)**	**A (0.7)**	**A (1.7)**	**A (0.7)**	**A (1.8)**	**A (0.7)**	**A (2.3)**	**A (0.8)**	**A (2.6)**	**A (0.9)**
WB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
NB	R	-	-	-	-	B (10.5)	B (14.7)	-	-	B (11.0)	C (19.8)
	Approach	**-**	**-**	**-**	**-**	**B (10.5)**	**B (14.7)**	**-**	**-**	**B (11.0)**	**C (19.8)**
SB	LR	C (20.5)	D (25.7)	D (31.2)	E (38.7)	F (427.0)	F (789.7)	F (350.8)	F (478.0)	F (2163.8)	F (4039.3)
	Approach	**C (20.5)**	**D (25.7)**	**D (31.2)**	**E (38.7)**	**F (427.0)**	**F (789.7)**	**F (350.8)**	**F (478.0)**	**F (2163.8)**	**F (4039.3**
Overall Intersection		**A (4.1)**	**A (6.1)**	**A (5.1)**	**A (8.3)**	**E (42.7)**	**F (111.3)**	**F (55.7)**	**F (102.5)**	**F (248.5)**	**F (644.1)**
W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 – Signalized											
EB	L	A (8.1)	A (0.0)	A (8.5)	A (8.1)	B (18.1)	B (13.1)	A (9.3)	A (8.5)	B (14.9)	B (11.9)
	T	-	-	-	-	D (41.0)	C (34.0)	-	-	D (40.4)	D (39.0)
	R	-	-	-	-	A (1.8)	A (8.0)	-	-	A (1.3)	A (6.7)
	Approach	**A (0.0)**	**A (0.0)**	**A (0.5)**	**A (0.3)**	**C (28.8)**	**C (23.3)**	**A (0.4)**	**A (0.2)**	**C (31.6)**	**C (29.7)**
WB	L	-	-	-	-	C (32.5)	C (21.0)	-	-	C (20.5)	C (30.0)
	TR	A (0.0)	A (0.0)	A (0.0)	A (0.0)	B (11.8)	A (7.2)	A (0.0)	A (0.0)	B (13.1)	B (14.4)
	Approach	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**C (22.8)**	**B (16.0)**	**A (0.0)**	**A (0.0)**	**B (16.3)**	**C (22.3)**
NB	L	-	-	-	-	B (14.9)	B (18.2)	-	-	C (20.5)	C (21.4)
	TR	-	-	-	-	A (0.1)	A (0.4)	-	-	A (7.6)	A (6.1)
	Approach	**-**	**-**	**-**	**-**	**B (10.7)**	**B (10.7)**	**-**	**-**	**B (16.8)**	**B (15.0)**
SB	L	B (12.4)	A (0.0)	C (15.3)	C (15.8)	B (14.0)	B (16.1)	C (22.3)	C (24.1)	B (18.7)	B (17.9)
	TR	-	-	B (10.0)	A (9.4)	A (0.0)	A (0.1)	B (10.8)	B (10.0)	B (17.3)	A (0.1)
	Approach	**B (12.4)**	**A (0.0)**	**B (14.8)**	**B (14.5)**	**B (12.6)**	**B (12.9)**	**C (21.2)**	**C (21.3)**	**B (18.6)**	**B (14.3)**
Overall Intersection		**A (0.0)**	**A (0.0)**	**A (1.3)**	**A (1.6)**	**C (21.5)**	**B (17.5)**	**A (1.4)**	**A (1.6)**	**C (20.0)**	**C (24.0)**

Table 9 (Continued)

Levels of Service Results – Operational Alternative #3 – Site Drive #1 -Traditional Signalized Intersection w/Nordic Drive Full Operational (SB) and Site Drive #2 -Right-turn In/Out (NB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
W. Ridgeway Avenue and Chancellor Drive/Lexington Boulevard – Roundabout											
EB	L	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	T	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	R	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	Approach	**A (3.5)**	**A (4.5)**	**A (3.5)**	**A (4.6)**	**A (3.9)**	**A (5.1)**	**A (4.6)**	**A (6.1)**	**A (4.4)**	**A (6.7)**
WB	L	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	T	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	R	A (4.7)	A (3.7)	A (4.7)	A (3.8)	A (5.3)	A (4.0)	A (3.8)	A (4.4)	A (6.8)	A (4.6)
	Approach	**A (4.4)**	**A (3.7)**	**A (4.4)**	**A (3.8)**	**A (4.9)**	**A (4.0)**	**A (3.8)**	**A (4.4)**	**A (6.1)**	**A (4.6)**
NB	L	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	T	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	R	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	Approach	**A (3.7)**	**A (4.6)**	**A (3.7)**	**A (4.7)**	**A (4.0)**	**A (5.1)**	**A (4.7)**	**A (6.3)**	**A (4.7)**	**A (6.9)**
SB	L	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	T	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	R	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	Approach	**A (3.4)**	**A (7.1)**	**A (3.4)**	**A (7.5)**	**A (3.7)**	**A (9.2)**	**A (7.5)**	**B (13.9)**	**A (4.1)**	**C (19.3)**
Overall Intersection		**A (4.0)**	**A (5.4)**	**A (4.0)**	**A (5.6)**	**A (4.4)**	**A (6.6)**	**A (5.6)**	**A (9.0)**	**A (5.4)**	**B (11.7)**
Chancellor Drive and Commerce Drive - Unsignalized											
WB	LR	A (9.9)	A (9.9)	B (10.0)	B (10.0)	B (10.5)	B (10.5)	B (11.3)	B (11.6)	B (11.9)	B (12.3)
	Approach	**A (9.9)**	**A (9.9)**	**B (10.0)**	**B (10.0)**	**B (10.5)**	**B (10.5)**	**B (11.3)**	**B (11.6)**	**B (11.9)**	**B (12.3)**
NB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
SB	L	A (7.7)	A (7.3)	A (7.8)	A (7.3)	A (7.9)	A (7.4)	A (8.1)	A (7.4)	A (8.3)	A (7.4)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.8)**	**A (0.2)**	**A (2.2)**	**A (0.4)**	**A (1.9)**	**A (0.4)**	**A (2.2)**	**A (0.3)**	**A (1.9)**	**A (0.3)**
Overall Intersection		**A (1.2)**	**A (0.6)**	**A (1.7)**	**A (0.8)**	**A (1.4)**	**A (0.7)**	**A (1.7)**	**A (0.8)**	**A (1.5)**	**A (0.7)**
Nordic Drive and Commerce Drive - Unsignalized											
EB	LR	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.9)	A (9.4)	A (8.9)	A (9.4)
	Approach	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.9)**	**A (9.4)**	**A (8.9)**	**A (9.4)**
NB	L	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.7)	A (7.5)	A (7.7)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (2.0)**	**A (1.4)**	**A (2.0)**	**A (1.4)**
SB	LT	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		**A (1.8)**	**A (1.5)**	**A (1.8)**	**A (1.5)**	**A (1.8)**	**A (1.5)**	**A (1.9)**	**A (1.6)**	**A (1.9)**	**A (1.6)**

Table 10

Levels of Service Results – Operational Alternative #4 - Site Drive #1 - Roundabout Design w/Nordic Drive Full Operational (SB) and Site Drive #2 - Right-turn In/Out (NB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Ridgeway Avenue and Iowa Highway 58 (IA-58) - Signalized											
EB	L	C (24.0)	C (28.0)	C (26.2)	C (25.8)	D (35.3)	C (27.3)	C (28.9)	C (34.3)	D (51.3)	D (49.9)
	TR	B (17.2)	D (51.1)	B (16.8)	C (28.6)	B (14.0)	C (23.4)	B (17.8)	D (54.2)	B (19.6)	D (47.8)
	Approach	**B (18.7)**	**D (48.2)**	**B (19.1)**	**C (28.2)**	**C (20.4)**	**C (24.1)**	**C (20.5)**	**D (51.6)**	**C (28.7)**	**D (48.2)**
WB	L	C (21.4)	C (27.8)	C (21.1)	C (25.8)	B (17.4)	C (20.2)	B (17.9)	C (28.6)	C (30.9)	C (26.3)
	TR	C (33.7)	D (35.5)	C (34.6)	C (27.4)	C (33.2)	C (27.3)	C (34.2)	C (30.9)	D (48.6)	C (31.3)
	Approach	**C (33.3)**	**C (34.2)**	**C (34.2)**	**C (27.1)**	**C (32.8)**	**C (26.3)**	**C (33.6)**	**C (30.5)**	**D (48.1)**	**C (30.6)**
NB	L	B (11.2)	A (9.2)	B (13.0)	B (12.0)	D (49.6)	C (20.5)	C (33.5)	B (15.9)	D (52.2)	D (49.5)
	T	B (16.5)	B (14.3)	B (17.0)	B (18.0)	B (18.7)	C (21.3)	C (20.3)	C (22.6)	C (24.8)	C (27.2)
	R	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (1.2)	A (0.3)	A (0.6)	A (0.3)
	Approach	**B (12.1)**	**B (12.0)**	**B (13.1)**	**B (15.1)**	**C (34.3)**	**B (19.6)**	**C (23.5)**	**B (19.2)**	**D (36.3)**	**C (32.3)**
SB	L	B (10.4)	A (8.6)	B (11.1)	B (11.5)	B (13.4)	B (14.4)	B (15.1)	B (13.6)	B (18.6)	B (16.9)
	TR	B (16.6)	B (14.5)	B (15.4)	B (20.0)	B (14.3)	C (22.7)	C (25.3)	C (31.1)	C (30.3)	D (45.8)
	Approach	**B (15.3)**	**B (13.8)**	**B (14.5)**	**B (19.1)**	**B (14.1)**	**C (21.9)**	**C (23.3)**	**C (29.2)**	**C (28.3)**	**D (43.0)**
Overall Intersection		**B (18.2)**	**C (29.5)**	**B (18.6)**	**C (23.1)**	**C (26.0)**	**C (23.2)**	**C (24.8)**	**D (35.2)**	**C (34.8)**	**D (40.3)**
Ridgeway Avenue and Nordic Drive/Site Drive #2 - Unsignalized											
EB	L	A (8.9)	A (8.3)	A (9.4)	A (8.5)	B (11.4)	A (9.5)	B (11.3)	A (9.4)	B (14.5)	B (10.7)
	Approach	**A (2.1)**	**A (0.7)**	**A (1.7)**	**A (0.7)**	**A (1.8)**	**A (0.7)**	**A (2.3)**	**A (0.8)**	**A (2.6)**	**A (0.9)**
WB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
NB	R	-	-	-	-	B (10.5)	B (14.7)	-	-	B (11.0)	C (19.8)
	Approach	**-**	**-**	**-**	**-**	**B (10.5)**	**B (14.7)**	**-**	**-**	**B (11.0)**	**C (19.8)**
SB	LR	C (20.5)	D (25.7)	D (31.2)	E (38.7)	F (427.0)	F (789.7)	F (350.8)	F (478.0)	F (2163.8)	F (4039.3)
	Approach	**C (20.5)**	**D (25.7)**	**D (31.2)**	**E (38.7)**	**F (427.0)**	**F (789.7)**	**F (350.8)**	**F (478.0)**	**F (2163.8)**	**F (4039.3)**
Overall Intersection		**A (4.1)**	**A (6.1)**	**A (5.1)**	**A (8.3)**	**E (42.7)**	**F (111.3)**	**F (55.7)**	**F (102.5)**	**F (248.5)**	**F (644.1)**
W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 – Roundabout											
EB	L	A (3.5)	A (4.4)	A (3.8)	A (4.9)	A (6.3)	A (8.1)	A (4.3)	A (6.1)	A (7.2)	B (10.8)
	T	A (3.5)	A (4.4)	A (3.8)	A (4.9)	A (6.3)	A (8.1)	A 4.3)	A (6.1)	A (7.2)	B (10.8)
	R	-	-	-	-	A (6.3)	A (8.1)	-	-	A (7.2)	B (10.8)
	Approach	**A (3.5)**	**A (4.4)**	**A (3.8)**	**A (4.9)**	**A (6.3)**	**A (8.1)**	**A (4.3)**	**A (6.1)**	**A (7.2)**	**B (10.8)**
WB	L	-	-	-	-	A (8.1)	A (7.0)	-	-	A (9.4)	A (7.0)
	T	A (4.1)	A (3.7)	A (4.6)	A (4.0)	A (7.4)	A (5.2)	A (5.5)	A (4.6)	A (9.4)	A (6.9)
	R	A (4.1)	A (3.7)	A (4.6)	A (4.0)	A (7.4)	A (5.2)	A (5.5)	A (4.6)	A (9.4)	A (6.9)
	Approach	**A (4.1)**	**A (3.7)**	**A (4.6)**	**A (4.0)**	**A (7.8)**	**A (6.4)**	**A (5.5)**	**A (4.6)**	**A (9.4)**	**A (7.0)**
NB	L	-	-	-	-	A (6.9)	A (9.4)	-	-	A (7.8)	B (12.8)
	T					A (6.9)	A (9.4)			A (7.8)	B (12.8)
	R	-	-	-	-	A (6.9)	A (9.4)	-	-	A (7.8)	B (12.8)
	Approach	**-**	**-**	**-**	**-**	**A (6.9)**	**A (9.4)**	**-**	**-**	**A (7.8)**	**B (12.8)**
SB	L	A (3.8)	A (3.5)	A (4.4)	A (4.3)	A (7.0)	A (6.3)	A (5.3)	A (4.9)	A (8.4)	A (7.2)
	T	-	-	-	-	A (7.0)	A (6.3)	-	-	A (8.4)	A (7.2)
	R	A (3.8)	A (3.5)	A (4.4)	A (4.3)	A (7.0)	A (6.3)	A (5.3)	A (4.9)	A (8.4)	A (7.2)
	Approach	**A (3.8)**	**A (3.5)**	**A (4.4)**	**A (4.3)**	**A (7.0)**	**A (6.3)**	**A (5.3)**	**A (4.9)**	**A (8.4)**	**A (7.2)**
Overall Intersection		**A (3.9)**	**A (4.2)**	**A (4.4)**	**A (4.5)**	**A (7.3)**	**A (7.6)**	**A (5.1)**	**A (5.5)**	**A (8.6)**	**A (9.5)**

Table 10 (Continued)

Levels of Service Results – Operational Alternative #4 - Site Drive #1 - Roundabout Design w/Nordic Drive Full Operational (SB) and Site Drive #2 - Right-turn In/Out (NB)

		Redistributed 2018 Existing Traffic		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
W. Ridgeway Avenue and Chancellor Drive/Lexington Boulevard – Roundabout											
EB	L	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	T	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	R	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	Approach	**A (3.5)**	**A (4.5)**	**A (3.5)**	**A (4.6)**	**A (3.9)**	**A (5.1)**	**A (4.6)**	**A (6.1)**	**A (4.4)**	**A (6.7)**
WB	L	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	T	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	R	A (4.7)	A (3.7)	A (4.7)	A (3.8)	A (5.3)	A (4.0)	A (3.8)	A (4.4)	A (6.8)	A (4.6)
	Approach	**A (4.4)**	**A (3.7)**	**A (4.4)**	**A (3.8)**	**A (4.9)**	**A (4.0)**	**A (3.8)**	**A (4.4)**	**A (6.1)**	**A (4.6)**
NB	L	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	T	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	R	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	Approach	**A (3.7)**	**A (4.6)**	**A (3.7)**	**A (4.7)**	**A (4.0)**	**A (5.1)**	**A (4.7)**	**A (6.3)**	**A (4.7)**	**A (6.9)**
SB	L	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	T	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	R	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	Approach	**A (3.4)**	**A (7.1)**	**A (3.4)**	**A (7.5)**	**A (3.7)**	**A (9.2)**	**A (7.5)**	**B (13.9)**	**A (4.1)**	**C (19.3)**
Overall Intersection		**A (4.0)**	**A (5.4)**	**A (4.0)**	**A (5.6)**	**A (4.4)**	**A (6.6)**	**A (5.6)**	**A (9.0)**	**A (5.4)**	**B (11.7)**
Chancellor Drive and Commerce Drive - Unsignalized											
WB	LR	A (9.9)	A (9.9)	B (10.0)	B (10.0)	B (10.5)	B (10.5)	B (11.3)	B (11.6)	B (11.9)	B (12.3)
	Approach	**A (9.9)**	**A (9.9)**	**B (10.0)**	**B (10.0)**	**B (10.5)**	**B (10.5)**	**B (11.3)**	**B (11.6)**	**B (11.9)**	**B (12.3)**
NB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
SB	L	A (7.7)	A (7.3)	A (7.8)	A (7.3)	A (7.9)	A (7.4)	A (8.1)	A (7.4)	A (8.3)	A (7.4)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.8)**	**A (0.2)**	**A (2.2)**	**A (0.4)**	**A (1.9)**	**A (0.4)**	**A (2.2)**	**A (0.3)**	**A (1.9)**	**A (0.3)**
Overall Intersection		**A (1.2)**	**A (0.6)**	**A (1.7)**	**A (0.8)**	**A (1.4)**	**A (0.7)**	**A (1.7)**	**A (0.8)**	**A (1.5)**	**A (0.7)**
Nordic Drive and Commerce Drive - Unsignalized											
EB	LR	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.9)	A (9.4)	A (8.9)	A (9.4)
	Approach	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.9)**	**A (9.4)**	**A (8.9)**	**A (9.4)**
NB	L	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.7)	A (7.5)	A (7.7)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (2.0)**	**A (1.4)**	**A (2.0)**	**A (1.4)**
SB	LT	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		**A (1.8)**	**A (1.5)**	**A (1.8)**	**A (1.5)**	**A (1.8)**	**A (1.5)**	**A (1.9)**	**A (1.6)**	**A (1.9)**	**A (1.6)**

Table 11

Levels of Service Results – Operational Alternative #5 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Full Operational and Signalized

		2018 Existing Traffic Volumes		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Ridgeway Avenue and Iowa Highway 58 (IA-58) - Signalized											
EB	L	C (24.0)	C (28.0)	C (26.2)	C (25.8)	D (38.2)	C (20.9)	C (28.9)	C (34.3)	D (44.0)	D (46.2)
	TR	B (17.2)	D (51.1)	B (16.8)	C (28.6)	A (6.5)	B (16.7)	B (17.8)	D (54.2)	B (14.7)	D (44.3)
	Approach	**B (18.7)**	**D (48.2)**	**B (19.1)**	**C (28.2)**	**B (16.1)**	**B (17.5)**	**C (20.5)**	**D (51.6)**	**C (23.0)**	**D (44.6)**
WB	L	C (21.4)	C (27.8)	C (21.1)	C (25.8)	C (21.4)	C (20.6)	B (17.9)	C (28.6)	C (31.0)	D (41.4)
	TR	C (33.7)	D (35.5)	C (34.6)	C (27.4)	D (40.1)	C (28.0)	C (34.2)	C (30.9)	D (50.7)	D (35.5)
	Approach	**C (33.3)**	**C (34.2)**	**C (34.2)**	**C (27.1)**	**D (39.6)**	**C (27.0)**	**C (33.6)**	**C (30.5)**	**D (50.1)**	**D (36.4)**
NB	L	B (11.2)	A (9.2)	B (13.0)	B (12.0)	C (30.0)	C (20.6)	C (33.5)	B (15.9)	D (46.8)	D (53.1)
	T	B (16.5)	B (14.3)	B (17.0)	B (18.0)	B (17.3)	C (21.1)	C (20.3)	C (22.6)	C (23.7)	C (29.4)
	R	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (1.2)	A (0.3)	A (0.6)	A (0.3)
	Approach	**B (12.1)**	**B (12.0)**	**B (13.1)**	**B (15.1)**	**C (22.8)**	**B (19.5)**	**C (23.5)**	**B (19.2)**	**C (33.1)**	**C (34.7)**
SB	L	B (10.4)	A (8.6)	B (11.1)	B (11.5)	B (13.7)	B (14.3)	B (15.1)	B (13.6)	B (16.6)	C (21.4)
	TR	B (16.6)	B (14.5)	B (15.4)	B (20.0)	B (15.8)	C (22.2)	C (25.3)	C (31.1)	C (27.3)	D (49.4)
	Approach	**B (15.3)**	**B (13.8)**	**B (14.5)**	**B (19.1)**	**B (15.5)**	**C (21.5)**	**C (23.3)**	**C (29.2)**	**C (25.4)**	**D (46.7)**
Overall Intersection		**B (18.2)**	**C (29.5)**	**B (18.6)**	**C (23.1)**	**C (22.4)**	**C (20.6)**	**C (24.8)**	**D (35.2)**	**C (32.1)**	**D (41.4)**
Ridgeway Avenue and Nordic Drive/Site Drive #2 – Unsignalized/Signalized											
EB	L	A (8.9)	A (8.3)	A (9.4)	A (8.5)	C (22.3)	A (9.4)	B (11.3)	A (9.4)	C (25.5)	B (15.8)
	T	-	-	-	-	C (23.2)	C (20.4)	-	-	C (21.7)	C (29.9)
	R	-	-	-	-	A (0.6)	A (0.7)	-	-	A (0.3)	A (0.8)
	Approach	**A (2.1)**	**A (0.7)**	**A (1.7)**	**A (0.7)**	**C (21.2)**	**B (16.7)**	**A (2.3)**	**A (0.8)**	**C (21.1)**	**C (25.9)**
WB	L	-	-	-	-	C (32.2)	C (33.2)	-	-	C (23.4)	D (35.4)
	TR	-	-	-	-	C (22.6)	B (19.8)	-	-	B (13.9)	B (14.7)
	Approach	**-**	**-**	**-**	**-**	**C (25.8)**	**C (25.1)**	**-**	**-**	**B (16.3)**	**C (21.1)**
NB	L	-	-	-	-	B (14.9)	B (13.2)	-	-	B (17.8)	B (15.0)
	R/TR	-	-	-	-	A (5.4)	A (8.2)	-	-	A (6.4)	A (6.4)
	Approach	**-**	**-**	**-**	**-**	**A (7.0)**	**A (8.7)**	**-**	**-**	**A (8.3)**	**A (7.2)**
SB	LR	C (20.5)	D (25.7)	D (31.2)	E (38.7)	-	-	F (350.8)	F (478.0)	-	-
	L	-	-	-	-	B (15.9)	C (21.5)	-	-	C (21.5)	D (53.7)
	TR	-	-	-	-	A (8.3)	A (6.4)	-	-	A (7.5)	A (5.4)
	Approach	**C (20.5)**	**D (25.7)**	**D (31.2)**	**E (38.7)**	**B (14.4)**	**B (18.7)**	**F (350.8)**	**F (478.0)**	**B (18.7)**	**D (44.9)**
Overall Intersection		**A (4.1)**	**A (6.1)**	**A (5.1)**	**A (8.3)**	**C (21.1)**	**B (18.3)**	**F (55.7)**	**F (102.5)**	**B (16.6)**	**C (24.0)**
W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 – Signalized											
EB	L	A (8.1)	A (0.0)	A (8.5)	A (8.1)	C (21.1)	B (16.8)	A (9.3)	A (8.5)	B (17.8)	B (11.9)
	T	-	-	-	-	D (39.0)	C (33.6)	-	-	D (37.3)	D (39.0)
	R	-	-	-	-	A (1.7)	A (7.9)	-	-	A (1.2)	A (6.7)
	Approach	**A (0.0)**	**A (0.0)**	**A (0.5)**	**A (0.3)**	**C (27.6)**	**C (23.1)**	**A (0.4)**	**A (0.2)**	**C (29.3)**	**C (29.7)**
WB	L	-	-	-	-	A (9.7)	B (17.9)	-	-	A (8.3)	C (30.0)
	TR	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (8.6)	B (14.5)	A (0.0)	A (0.0)	B (11.0)	B (14.4)
	Approach	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (8.8)**	**B (15.4)**	**A (0.0)**	**A (0.0)**	**B (10.6)**	**C (22.3)**
NB	L	-	-	-	-	A (9.2)	B (10.3)	-	-	B (12.1)	C (21.4)
	TR	-	-	-	-	A (4.8)	A (4.5)	-	-	A (5.5)	A (6.1)
	Approach	**-**	**-**	**-**	**-**	**A (7.7)**	**A (7.5)**	**-**	**-**	**A (9.8)**	**B (15.0)**
SB	L	B (12.4)	A (0.0)	C (15.3)	C (15.8)	A (9.3)	B (10.4)	C (22.3)	C (24.1)	B (12.0)	B (17.9)
	TR	-	-	B (10.0)	A (9.4)	B (11.4)	A (9.3)	B (10.8)	B (10.0)	B (12.6)	B (11.2)
	Approach	**B (12.4)**	**A (0.0)**	**B (14.8)**	**B (14.5)**	**A (9.5)**	**B (10.1)**	**C (21.2)**	**C (21.3)**	**B (12.1)**	**B (16.5)**
Overall Intersection		**A (0.0)**	**A (0.0)**	**A (1.3)**	**A (1.6)**	**B (13.6)**	**B (16.9)**	**A (1.4)**	**A (1.6)**	**B (15.9)**	**C (24.1)**

Table 11 (Continued)

Levels of Service Results– Operational Alternative #5 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Full Operational and Signalized

		2018 Existing Traffic Volumes		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
W. Ridgeway Avenue and Chancellor Drive/Lexington Boulevard – Roundabout											
EB	L	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	T	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	R	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	Approach	**A (3.5)**	**A (4.5)**	**A (3.5)**	**A (4.6)**	**A (3.9)**	**A (5.1)**	**A (4.6)**	**A (6.1)**	**A (4.4)**	**A (6.7)**
WB	L	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	T	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	R	A (4.7)	A (3.7)	A (4.7)	A (3.8)	A (5.3)	A (4.0)	A (3.8)	A (4.4)	A (6.8)	A (4.6)
	Approach	**A (4.4)**	**A (3.7)**	**A (4.4)**	**A (3.8)**	**A (4.9)**	**A (4.0)**	**A (3.8)**	**A (4.4)**	**A (6.1)**	**A (4.6)**
NB	L	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	T	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	R	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	Approach	**A (3.7)**	**A (4.6)**	**A (3.7)**	**A (4.7)**	**A (4.0)**	**A (5.1)**	**A (4.7)**	**A (6.3)**	**A (4.7)**	**A (6.9)**
SB	L	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	T	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	R	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	Approach	**A (3.4)**	**A (7.1)**	**A (3.4)**	**A (7.5)**	**A (3.7)**	**A (9.2)**	**A (7.5)**	**B (13.9)**	**A (4.1)**	**C (19.3)**
Overall Intersection		**A (4.0)**	**A (5.4)**	**A (4.0)**	**A (5.6)**	**A (4.4)**	**A (6.6)**	**A (5.6)**	**A (9.0)**	**A (5.4)**	**B (11.7)**
Chancellor Drive and Commerce Drive - Unsignalized											
WB	LR	A (9.9)	A (9.9)	B (10.0)	B (10.0)	B (10.5)	B (10.5)	B (11.3)	B (11.6)	B (11.9)	B (12.3)
	Approach	**A (9.9)**	**A (9.9)**	**B (10.0)**	**B (10.0)**	**B (10.5)**	**B (10.5)**	**B (11.3)**	**B (11.6)**	**B (11.9)**	**B (12.3)**
NB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
SB	L	A (7.7)	A (7.3)	A (7.8)	A (7.3)	A (7.9)	A (7.4)	A (8.1)	A (7.4)	A (8.3)	A (7.4)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.8)**	**A (0.2)**	**A (2.2)**	**A (0.4)**	**A (1.9)**	**A (0.4)**	**A (2.2)**	**A (0.3)**	**A (1.9)**	**A (0.3)**
Overall Intersection		**A (1.2)**	**A (0.6)**	**A (1.7)**	**A (0.8)**	**A (1.4)**	**A (0.7)**	**A (1.7)**	**A (0.8)**	**A (1.5)**	**A (0.7)**
Nordic Drive and Commerce Drive - Unsignalized											
EB	LR	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.9)	A (9.4)	A (8.9)	A (9.4)
	Approach	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.9)**	**A (9.4)**	**A (8.9)**	**A (9.4)**
NB	L	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.7)	A (7.5)	A (7.7)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (2.0)**	**A (1.4)**	**A (2.0)**	**A (1.4)**
SB	LT	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		**A (1.8)**	**A (1.5)**	**A (1.8)**	**A (1.5)**	**A (1.8)**	**A (1.5)**	**A (1.9)**	**A (1.6)**	**A (1.9)**	**A (1.6)**

Table 12

Levels of Service Results – Operational Alternative #6 - Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Full Operational and Signalized

		2018 Existing Traffic Volumes		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Ridgeway Avenue and Iowa Highway 58 (IA-58) - Signalized											
EB	L	C (24.0)	C (28.0)	C (26.2)	C (25.8)	C (28.7)	D (45.6)	C (28.9)	C (34.3)	D (49.2)	D (35.2)
	TR	B (17.2)	D (51.1)	B (16.8)	C (28.6)	A (7.8)	B (13.6)	B (17.8)	D (54.2)	B (15.8)	C (30.3)
	Approach	**B (18.7)**	**D (48.2)**	**B (19.1)**	**C (28.2)**	**B (14.1)**	**B (19.7)**	**C (20.5)**	**D (51.6)**	**C (25.3)**	**C (31.1)**
WB	L	C (21.4)	C (27.8)	C (21.1)	C (25.8)	B (17.4)	C (33.2)	B (17.9)	C (28.6)	C (30.6)	C (31.1)
	TR	C (33.7)	D (35.5)	C (34.6)	C (27.4)	C (34.1)	C (27.9)	C (34.2)	C (30.9)	D (50.6)	C (32.4)
	Approach	**C (33.3)**	**C (34.2)**	**C (34.2)**	**C (27.1)**	**C (33.6)**	**C (28.6)**	**C (33.6)**	**C (30.5)**	**D (50.0)**	**C (32.2)**
NB	L	B (11.2)	A (9.2)	B (13.0)	B (12.0)	D (55.0)	C (20.7)	C (33.5)	B (15.9)	D (46.5)	D (46.7)
	T	B (16.5)	B (14.3)	B (17.0)	B (18.0)	B (19.2)	C (21.1)	C (20.3)	C (22.6)	C (23.8)	C (27.5)
	R	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (0.3)	A (0.1)	A (1.2)	A (0.3)	A (0.6)	A (0.3)
	Approach	**B (12.1)**	**B (12.0)**	**B (13.1)**	**B (15.1)**	**D (37.5)**	**B (19.5)**	**C (23.5)**	**B (19.2)**	**C (33.0)**	**C (31.5)**
SB	L	B (10.4)	A (8.6)	B (11.1)	B (11.5)	B (13.0)	B (14.3)	B (15.1)	B (13.6)	B (18.8)	B (19.6)
	TR	B (16.6)	B (14.5)	B (15.4)	B (20.0)	B (14.1)	C (22.2)	C (25.3)	C (31.1)	C (27.5)	D (49.2)
	Approach	**B (15.3)**	**B (13.8)**	**B (14.5)**	**B (19.1)**	**B (14.0)**	**C (21.5)**	**C (23.3)**	**C (29.2)**	**C (26.0)**	**D (46.3)**
Overall Intersection		**B (18.2)**	**C (29.5)**	**B (18.6)**	**C (23.1)**	**C (25.7)**	**C (21.8)**	**C (24.8)**	**D (35.2)**	**C (32.7)**	**C (34.7)**
Ridgeway Avenue and Nordic Drive/Site Drive #2 – Unsignalized/Signalized											
EB	L	A (8.9)	A (8.3)	A (9.4)	A (8.5)	B (17.7)	C (28.9)	B (11.3)	A (9.4)	C (23.8)	C (20.4)
	T	-	-	-	-	C (34.9)	D (35.0)	-	-	C (34.0)	D (43.5)
	R	-	-	-	-	A (0.3)	A (0.8)	-	-	A (0.2)	A (0.5)
	Approach	**A (2.1)**	**A (0.7)**	**A (1.7)**	**A (0.7)**	**C (29.3)**	**C (29.7)**	**A (2.3)**	**A (0.8)**	**C (30.1)**	**D (37.5)**
WB	L	-	-	-	-	B (16.7)	D (40.6)	-	-	B (13.8)	D (46.5)
	TR	-	-	-	-	B (15.1)	B (16.1)	-	-	B (13.4)	B (10.1)
	Approach	**-**	**-**	**-**	**-**	**B (15.6)**	**C (25.9)**	**-**	**-**	**B (13.5)**	**C (21.3)**
NB	L	-	-	-	-	B (14.0)	B (12.8)	-	-	B (17.8)	B (13.6)
	R/TR	-	-	-	-	A (4.8)	A (5.3)	-	-	A (6.4)	B (16.0)
	Approach	**-**	**-**	**-**	**-**	**A (6.4)**	**A (6.1)**	**-**	**-**	**A (8.3)**	**B (15.7)**
SB	LR	C (20.5)	D (25.7)	D (31.2)	E (38.7)	-	-	F (350.8)	F (478.0)	-	-
	L	-	-	-	-	B (16.8)	B (18.8)	-	-	C (21.5)	D (53.4)
	TR	-	-	-	-	A (7.9)	A (6.4)	-	-	A (7.5)	A (5.5)
	Approach	**C (20.5)**	**D (25.7)**	**D (31.2)**	**E (38.7)**	**B (15.0)**	B (16.5)	**F (350.8)**	**F (478.0)**	**B (18.7)**	**D (44.7)**
Overall Intersection		**A (4.1)**	**A (6.1)**	**A (5.1)**	**A (8.3)**	**B (16.7)**	**C (21.3)**	**F (55.7)**	**F (102.5)**	**B (16.7)**	**C (29.1)**
W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 – Roundabout											
EB	L	A (3.5)	A (4.4)	A (3.8)	A (4.9)	A (4.5)	A (5.9)	A (4.3)	A (6.1)	A (5.1)	A (7.4)
	T	A (3.5)	A (4.4)	A (3.8)	A (4.9)	A (4.5)	A (5.9)	A 4.3)	A (6.1)	A (5.1)	A (7.4)
	R	-	-	-	-	A (4.5)	A (5.9)	-	-	A (5.1)	A (7.4)
	Approach	**A (3.5)**	**A (4.4)**	**A (3.8)**	**A (4.9)**	**A (4.5)**	**A (5.9)**	**A (4.3)**	**A (6.1)**	**A (5.1)**	**A (7.4)**
WB	L	-	-	-	-	A (5.6)	A (4.6)	-	-	A (6.8)	A (5.4)
	T	A (4.1)	A (3.7)	A (4.6)	A (4.0)	A (5.6)	A (4.6)	A (5.5)	A (4.6)	A (6.8)	A (5.4)
	R	A (4.1)	A (3.7)	A (4.6)	A (4.0)	A (5.6)	A (4.6)	A (5.5)	A (4.6)	A (6.8)	A (5.4)
	Approach	**A (4.1)**	**A (3.7)**	**A (4.6)**	**A (4.0)**	**A (5.6)**	**A (4.6)**	**A (5.5)**	**A (4.6)**	**A (6.8)**	**A (5.4)**
NB	L	-	-	-	-	A (6.3)	A (8.5)	-	-	A (7.1)	B (11.3)
	T					A (6.3)	A (8.5)			A (7.1)	B (11.3)
	R	-	-	-	-	A (6.3)	A (8.5)	-	-	A (7.1)	B (11.3)
	Approach	**-**	**-**	**-**	**-**	**A (6.3)**	**A (8.5)**	**-**	**-**	**A (7.1)**	**B (11.3)**
SB	L	A (3.8)	A (3.5)	A (4.4)	A (4.3)	A (5.3)	A (4.9)	A (5.3)	A (4.9)	A (6.2)	A (5.6)
	T	-	-	-	-	A (5.3)	A (4.9)	-	-	A (6.2)	A (5.6)
	R	A (3.8)	A (3.5)	A (4.4)	A (4.3)	A (5.3)	A (4.9)	A (5.3)	A (4.9)	A (6.2)	A (5.6)
	Approach	**A (3.8)**	**A (3.5)**	**A (4.4)**	**A (4.3)**	**A (5.3)**	**A (4.9)**	**A (5.3)**	**A (4.9)**	**A (6.2)**	**A (5.6)**
Overall Intersection		**A (3.9)**	**A (4.2)**	**A (4.4)**	**A (4.5)**	**A (5.4)**	**A (6.0)**	**A (5.1)**	**A (5.5)**	**A (6.3)**	**A (7.3)**

Table 12 (Continued)

Levels of Service Results – Operational Alternative #6 - Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Full Operational and Signalized

		2018 Existing Traffic Volumes		2020 No-Build Traffic Projections		2020 Build Traffic Projections		2040 No-Build Traffic Projections		2040 Build Traffic Projections	
		LOS (Delay, Sec.)									
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
W. Ridgeway Avenue and Chancellor Drive/Lexington Boulevard – Roundabout											
EB	L	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	T	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	R	A (3.5)	A (4.5)	A (3.5)	A (4.6)	A (3.9)	A (5.1)	A (4.6)	A (6.1)	A (4.4)	A (6.7)
	Approach	**A (3.5)**	**A (4.5)**	**A (3.5)**	**A (4.6)**	**A (3.9)**	**A (5.1)**	**A (4.6)**	**A (6.1)**	**A (4.4)**	**A (6.7)**
WB	L	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	T	A (3.8)	A (3.7)	A (3.8)	A (3.8)	A (4.1)	A (4.0)	A (3.8)	A (4.4)	A (4.7)	A (4.6)
	R	A (4.7)	A (3.7)	A (4.7)	A (3.8)	A (5.3)	A (4.0)	A (3.8)	A (4.4)	A (6.8)	A (4.6)
	Approach	**A (4.4)**	**A (3.7)**	**A (4.4)**	**A (3.8)**	**A (4.9)**	**A (4.0)**	**A (3.8)**	**A (4.4)**	**A (6.1)**	**A (4.6)**
NB	L	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	T	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	R	A (3.7)	A (4.6)	A (3.7)	A (4.7)	A (4.0)	A (5.1)	A (4.7)	A (6.3)	A (4.7)	A (6.9)
	Approach	**A (3.7)**	**A (4.6)**	**A (3.7)**	**A (4.7)**	**A (4.0)**	**A (5.1)**	**A (4.7)**	**A (6.3)**	**A (4.7)**	**A (6.9)**
SB	L	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	T	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	R	A (3.4)	A (7.1)	A (3.4)	A (7.5)	A (3.7)	A (9.2)	A (7.5)	B (13.9)	A (4.1)	C (19.3)
	Approach	**A (3.4)**	**A (7.1)**	**A (3.4)**	**A (7.5)**	**A (3.7)**	**A (9.2)**	**A (7.5)**	**B (13.9)**	**A (4.1)**	**C (19.3)**
Overall Intersection		**A (4.0)**	**A (5.4)**	**A (4.0)**	**A (5.6)**	**A (4.4)**	**A (6.6)**	**A (5.6)**	**A (9.0)**	**A (5.4)**	**B (11.7)**
Chancellor Drive and Commerce Drive - Unsignalized											
WB	LR	A (9.9)	A (9.9)	B (10.0)	B (10.0)	B (10.5)	B (10.5)	B (11.3)	B (11.6)	B (11.9)	B (12.3)
	Approach	**A (9.9)**	**A (9.9)**	**B (10.0)**	**B (10.0)**	**B (10.5)**	**B (10.5)**	**B (11.3)**	**B (11.6)**	**B (11.9)**	**B (12.3)**
NB	**Approach**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
SB	L	A (7.7)	A (7.3)	A (7.8)	A (7.3)	A (7.9)	A (7.4)	A (8.1)	A (7.4)	A (8.3)	A (7.4)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.8)**	**A (0.2)**	**A (2.2)**	**A (0.4)**	**A (1.9)**	**A (0.4)**	**A (2.2)**	**A (0.3)**	**A (1.9)**	**A (0.3)**
Overall Intersection		**A (1.2)**	**A (0.6)**	**A (1.7)**	**A (0.8)**	**A (1.4)**	**A (0.7)**	**A (1.7)**	**A (0.8)**	**A (1.5)**	**A (0.7)**
Nordic Drive and Commerce Drive - Unsignalized											
EB	LR	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.7)	A (9.0)	A (8.9)	A (9.4)	A (8.9)	A (9.4)
	Approach	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.7)**	**A (9.0)**	**A (8.9)**	**A (9.4)**	**A (8.9)**	**A (9.4)**
NB	L	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.7)	A (7.5)	A (7.7)
	T	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Approach	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (1.9)**	**A (1.4)**	**A (2.0)**	**A (1.4)**	**A (2.0)**	**A (1.4)**
SB	LT	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		**A (1.8)**	**A (1.5)**	**A (1.7)**	**A (1.5)**	**A (1.8)**	**A (1.5)**	**A (1.9)**	**A (1.6)**	**A (1.9)**	**A (1.6)**

For the complete SYNCHRO and SIDRA capacity analysis results, see Appendix D.

A comparison of the 2040 Build LOS capacity results for the six (6) alternatives is provided in Table 13, on following page. Based on the analysis contained in Table 7 – Table 12 and the comparison shown in Table 13, Alternatives# 1, 3, 4 were removed from further consideration based on yielding an unacceptable overall intersection capacity level of service of "F" at various intersections. Therefore, Alternatives# 2, 5, and 6 will continue further evaluation.

Table 13
2040 Build Alternative Overall Intersection
Level of Service Capacity Comparison Results

Intersection	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
W Ridgeway Avenue and IA-58	C (32.0)	C (34.3)	C (34.9)	D (40.5)	C (33.1)	D (36.9)	C (34.8)	D (40.3)	C (32.1)	D (41.4)	C (32.7)	C (34.7)
W Ridgeway Avenue and Nordic Drive/Site Drive 2	A (2.3)	A (7.1)	A (3.5)	A (9.5)	F (248.5)	F (644.1)	F (248.5)	F (644.1)	B (16.6)	C (24.0)	B (16.7)	C (29.1)
Chancellor Drive and Commerce Drive	A (7.7)	E (39.8)	A (1.4)	A (0.7)	A (1.5)	A (0.7)	A (1.5)	A (0.7)	A (1.5)	A (0.7)	A (1.5)	A (0.7)
W Ridgeway Avenue and Chancellor Drive	A (6.2)	F (55.5)	A (5.7)	B (11.8)	A (5.4)	B (11.7)	A (5.4)	B (11.7)	A (5.4)	B (11.7)	A (5.4)	B (11.7)
W Ridgeway Avenue and Private Drive/Site Drive 1	C (21.5)	C (31.7)	B (10.7)	B (14.1)	C (20.0)	C (24.0)	A (8.6)	A (9.5)	B (15.9)	C (24.1)	A (6.3)	A (7.3)
Nordic Drive and Commerce Drive	A (4.3)	A (4.6)	A (3.2)	A (2.9)	A (1.9)	A (1.6)	A (1.9)	A (1.6)	A (1.9)	A (1.6)	A (1.9)	A (1.6)

Turn Lane Warrant Analysis

The need for left-turn and right-turn lanes at the unsignalized intersection W. Ridgeway Avenue/Nordic Drive and Site Drive #2 was determined based on the criteria outlined in the National Cooperative Highway Research Program (NCHRP) Report 457 - *Evaluating Intersection Improvements: An Engineering Study Guide*. The basic guideline reads as follows: A right-turn lane should be considered if the combination of major-road approach and right-turn volume intersects above or to the right of the trend line corresponding to the major-road operating speed, then a turn bay is a viable alternative.

A left-turn lane should be considered if the advancing and opposing volume combination intersects above or to the right of the trend line corresponding to the major-road operating speed, for the

appropriate trend line on the basis of percentage of left-turns on the major-road approach, then a turn bay is a viable alternative. The advancing volume should include the left-turn, right-turn, and through movements on the subject approach. The opposing volumes should include only the right-turn and through movements on the approach across from (and heading in the opposite direction of) the subject major-road approach. The operating speed can be estimated as the 85th percentile speed. If the operating speed does not coincide with 40, 50, or 60 MPH, then interpolation can be used, as a more conservative approach, the operating speed can be rounded up to the nearest speed for which a figure (40, 50, or 60 MPH) is provided.

Based on the left-turn and right-turn lane warrant criteria, the following roadway improvements are required to accommodate the ***2040 Build Traffic Projections*** (including site traffic):

- Westbound left-turn storage lane at the W. Ridgeway Avenue/Site Drive #1 intersection (signalized operations only) – Alternative #5.
- Eastbound right-turn storage lane at the W. Ridgeway Avenue/Site Drive #1 intersection (signalized operations only) - Alternative #5.
- Eastbound left-turn storage lane at the W. Ridgeway Avenue/Site Drive #2 intersection (signalized operations only) - Alternatives #5 and #6.
- Eastbound right-turn storage lane at the W. Ridgeway Avenue/Site Drive #2 intersection – Alternatives #2, #5, and #6.

The turn lane warrants are provided in Appendix E.

Turn Lane Storage Lengths

The required turn lane lengths were calculated at the W. Ridgeway Avenue corridor signalized intersections based on the HCS 95th percentile Back of Queue storage requirements, using the design year ***2040 Build Traffic Projections***. At the unsignalized intersections, turn lane lengths were based on NCHRP 457. Table 14 provides a summary of the design speed, number of existing turn lanes, existing storage, required back of queue storage and proposed storage lengths. For instances where the 95th percentile back of queue was less than 50 feet, a minimum of 50 feet is to be provided.

Table 14
Turn Lane Length Summary

2040 Build Turn Lane	Design Speed (MPH)	No. of Existing Turn Lanes	Existing Storage (ft.)	95th Percentile Back of Queue Storage (ft.)		
				Alt 2	Alt 5	Alt 6
W. Ridgeway Avenue and IA-58 Highway						
NB Left-Turn Lane/s	55	1	300’	272’ (D)	260’ (D)	260’ (D)
NB Right-Turn Lane	55	1	200’	50’	50’	50’
SB Left-Turn Lane	55	1	315’	72’	69’	69’
EB Left-Turn Lane/s	45	1	145’	231’	118’ (D)	122’ (D)
WB Left-Turn Lane	45	1	395’	67’	91’	62’
W. Ridgeway Avenue and North Property Drive/Site Drive #1						
NB Left Turn Lane	25	1	-	N/A	92’	N/A
SB Left-Turn Lane	25	1	-	N/A	55’	N/A
EB Left-Turn Lane	45	1	130’	N/A	50’	N/A
EB Right-Turn Lane	45	1	-	N/A	50’	N/A
WB Left-Turn Lane	45	1	-	N/A	50’	N/A
W. Ridgeway Avenue and Nordic Drive/Site Drive #2						
NB Left-Turn Lane	25	1	-	N/A	50’	50’
SB Left-Turn Lane	25	1	-	N/A	254’	289’
EB Left-Turn Lane	45	1	150’	N/A	50’	50’
EB Right-Turn Lane	45	1	-	200’	50’	50’
WB Left-Turn Lane	45	1	-	N/A	237’	196’

•(D) – Dual Turn Lanes.

As shown in Table 14, the 95th percentile back of queue storage requirements are satisfied for all or will be provided for all movements based on the existing design and the City of Cedar Falls requirement of a 300-foot maximum distance for a single lane. The complete back of queue outcome is included with the LOS capacity summary. See the Back of Queue results shown in Appendix F.

Traffic Safety

The purpose of the traffic safety analysis in this study is to define and discuss the history/conditions of the existing vs. proposed development and document how the level of safety may change along the corridor within the project area. Depending on the severity or the crash rate per million vehicle miles (MVM), countermeasures may be required to reduce the pattern or occurrence of accidents.

Historical statewide accident and crash record information for five (5) complete years and current year were provided by the Iowa DOT on the roadway segments of IA-58, W. Ridgeway Avenue, Nordic Drive and Chancellor Drive within the study area. The *Safety Analysis, Visualization, and Evaluation Resource (SAVER)* is the web-based program for accessing the states historic crash record reports. The average crash rate, which is expressed as accidents per million vehicle miles traveled (ACC/MVM), was determined for the W. Ridgeway Avenue corridor, between the IA-58 and Chancellor Drive/Lexington Boulevard intersections and on IA-58 within approximately 500 feet north and south of W. Ridgeway Avenue. The equation for calculating the crash rate for a roadway segment is:

$$\textbf{Crash Rate for Segments} = \frac{\text{Number of Accidents} \times 100{,}000{,}000\text{VM}}{\text{Number of Years} \times \text{ADT} \times \text{Length} \times 365}$$

Table 15 shows the crash record summary for the calendar years of 2013 - 2018.

Table 15
2013 – 2018 Crash Record Summary

Location	24-Hour Volume	Road Segment Length	Fatal Accidents	Major Injury	Minor Injury	Possible/ Unknown	Property Damage	All Crashes
W. Ridgeway Avenue								
IA-58 to Chancellor Drive	4,699*	2,269 Ft	0**	3**	10**	7**	63**	83**
Nordic Drive Intersection	2,711*	500 Ft	0**	1**	3**	1**	12**	17**

*ADT traffic volume was generated based on the existing PM peak mainline volume on W. Ridgeway Avenue (1,006 vehicles - 2-way), at the IA-58 intersection, and a 21.41% peak hour factor for this segment as determined from data available in the IA-58 Design Traffic Volumes Technical Memorandum (See Appendix B).
**Includes all accidents in the study area as a conservative measure of accident experience on W. Ridgeway Avenue.

IA-58 to Chancellor Drive

Fatal Accidents - $\frac{0 \times 100{,}000{,}000}{5 \times 4{,}699 \times 2{,}269 \times 365} = 0.0$

Major Injury - $\frac{3 \times 100{,}000{,}000}{5 \times 4{,}699 \times 2{,}269 \times 365} = 0.0154$

Nordic Dive Intersection

Fatal Accidents - $\frac{0 \times 100{,}000{,}000}{5 \times 2{,}711 \times 500 \times 365} = 0.0$

Major Injury - $\frac{1 \times 100{,}000{,}000}{5 \times 2{,}711 \times 500 \times 365} = 0.0404$

IA-58 to Chancellor Drive (Continued)

Minor Injury - $\frac{10 \times 100{,}000{,}000}{5 \times 4{,}699 \times 2{,}269 \times 365} = 0.0514$

Possible/Unk - $\frac{7 \times 100{,}000{,}000}{5 \times 4{,}699 \times 2{,}269 \times 365} = 0.0360$

Property Damage - $\frac{63 \times 100{,}000{,}000}{5 \times 4{,}699 \times 2{,}269 \times 365} = 0.3238$

All Crashes - $\frac{83 \times 100{,}000{,}000}{5 \times 4{,}699 \times 2{,}269 \times 365} = 0.4266$

Nordic Dive Intersection (Continued)

Minor Injury - $\frac{3 \times 100{,}000{,}000}{5 \times 2{,}711 \times 500 \times 365} = 0.1213$

Possible/Unk - $\frac{1 \times 100{,}000{,}000}{5 \times 4{,}699 \times 2{,}269 \times 365} = 0.0404$

Property Damage - $\frac{12 \times 100{,}000{,}000}{5 \times 2{,}711 \times 500 \times 365} = 0.4851$

All Crashes - $\frac{17 \times 100{,}000{,}000}{5 \times 2{,}711 \times 500 \times 365} = 0.6872$

Based on customary engineering practices, the acceptable crash rate per million vehicle miles traveled is 1.0. Considering the crash records shown in Table 15, the accident experience per million vehicle miles traveled for this segment of W. Ridgeway Avenue is below the "acceptable" threshold value.

W. Ridgeway Avenue is classified as a Municipal City Street in the statewide road system. A comparison of the crash rates to the statewide average for a Municipal City Street was explored. The Iowa DOT *Crash Rates and Densities in Iowa by Road System* Report, prepared by the Office of Traffic and Safety and dated September 22, 2017, was the referenced source used for comparison. The results of the statewide 5-year average, 2012 – 2016, for Municipal City Streets as compared to this segment of W. Ridgeway Avenue are shown as follows in Table 16.

Table 16
5-Year Average Crash Rate Comparison

Location	Fatal Accidents	Major Injury	Minor Injury	Possible/ Unknown	Property Damage	All Crashes
Statewide Municipal City Street	0.89	6.11	31	67	278	382
W. Ridgeway Avenue - IA-58 to Chancellor Drive	0.0	0.0154	0.0514	0.0360	0.3238	0.4266
Nordic Drive - W. Ridgeway Avenue to Commerce Drive	0.0	0.0404	.1213	0.0404	0.4851	.6872

As conveyed in Table 16, this segment of W. Ridgeway Avenue and Nordic Avenue is experiencing a considerably lower crash rate, in all categories, when compared with the statewide average for a Municipal City Street.

The actual crash record report and the crash rates are summarized in Appendix G.

Considering that the crash experience is below the acceptable threshold, a closer look at the type of accidents revealed that the majority of the accidents occurring at the intersection of IA-58 and W. Ridgeway Avenue are rear end collisions and that the major cause was following too close. Only six (6) left-turn angled accidents occurred between the north to west (3 accidents) and south to east (3 accidents) directions and based on the volumes of traffic, the experience is not considered to be a pattern requiring corrective measures.

The second highest manner of accidents contained in the crash reports are broadside and based on the major cause reported as failure to yield right-of-way (24), ran stop sign/traffic signal (7), driving too fast/improper lane change/improper turn (12), it is clear that driver error was the major cause.

The collision diagram shows seven (7) left-turn angled accidents (south to east direction) equating to almost half of the accidents reported at the W. Ridgeway Avenue and Nordic Drive intersection. No fatalities were reported but one major injury occurred. Three (3) accidents occurred in 2016, six (6) accidents occurred in 2017, and three (3) accidents in 2018, thus far. Based on this closer review of the data, it appears that southbound left-turn conflicts are occurring with more frequency. If this trend is deemed a problem, then corrective measures to address the left-turn accident experience including peak hour signage restrictions, traffic signal installation or redesign to permanently restrict the left-turn movements should be considered.

School zones and pedestrian plans are typically reviewed as part of traffic safety studies; however, they were not developed or evaluated as part of this study.

Site Access and Parking Needs

The roadways that will provide regional access to the proposed site development are State Highway 20 (US-20), Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. Direct access to the proposed Henry Farm Development will utilize the following locations:

- W. Ridgeway Avenue and Proposed Site Drive #1, approximately 1,095 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2, approximately 515 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).

The site circulation provided in the proposed development is adequate for the assumed land uses.

IMPROVEMENT ANALYSIS

Status of Improvements Previously Recommended

There are no other known developments or improvements planned within the study area.

Improvements to Accommodate Base Traffic

Based on the analysis contained in this report, no roadway improvements are recommended to accommodate the ***Redistributed Existing 2018, No-Build 2020*** and ***No-Build 2040 Conditions*** (excluding site traffic).

Improvements to Accommodate Site Traffic

Based on the analysis contained in this report, the roadway improvements recommended to accommodate the ***2020 Build and 2040 Build Conditions*** (including site traffic) are as follows:

Alternative #2 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound).

W. Ridgeway Avenue and IA-58 Intersection

- Southbound and westbound left-turn lanes are sufficient as constructed.
- Lengthen the eastbound left-turn lane approximately, 86 feet for a total length of 231 feet each plus appropriate taper.
- Construct one (1) additional northbound left-turn lane (2 total) approximately, 275 feet each plus appropriate taper.
- Redesign the existing traffic signal.

W. Ridgeway Avenue and Private Drive/Proposed Site Drive #1 Intersection

- Construct a 2-lane roundabout. Right-of way on the north side of W. Ridgeway Avenue shall be secured to facilitate the roundabout design.

W. Ridgeway Avenue and Private Drive/Proposed Site Drive #2 Intersection

- Close the median opening on W. Ridgeway Avenue at Nordic Drive/Site Drive #2 to prohibit left-turn movements.
- Construct one (1) eastbound right-turn lane approximately, 200 feet plus appropriate taper.
- Construct one (1) northbound right-turn lane for egressing traffic.
- Provided one (1) southbound lane for ingressing traffic.
- Install stop sign traffic control device on the northbound approach of the intersection.

Alternative #5 – Site Drive #1 Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 Right-turn In/Out Full Operational and Signalized.

W. Ridgeway Avenue and IA-58 Intersection

- Southbound and westbound left-turns lane are sufficient as constructed.
- Construct one (1) additional eastbound left-turn lane (2 total), approximately 145 feet each plus appropriate taper.
- Construct one (1) additional northbound left-turn lane (2 total), approximately 260 feet each plus appropriate taper.
- Redesign the existing traffic signal.

W. Ridgeway Avenue and Private Drive/Proposed Site Drive #1 Intersection

- Construct one (1) westbound left-turn lane, approximately 100 feet plus appropriate taper.
- Construct one (1) eastbound left-turn lane, approximately 100 feet plus appropriate taper.
- Construct one (1) eastbound right-turn lane, approximately 100 feet plus appropriate taper.
- Construct one (1) northbound left-turn lane, approximately 100 feet plus appropriate taper.
- Provide one (1) northbound shared through/right-turn lane.
- Provide one (1) southbound lane for ingressing traffic.
- Construct a southbound left turn lane, approximately 100 feet plus appropriate taper.
- Provide one (1) southbound shared through/right-turn lane.
- Install a new traffic signal.

W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2 Intersection

- Construct one (1) westbound left-turn lane, approximately 237 feet plus appropriate taper.
- Construct one (1) eastbound right-turn lane, approximately 100 feet plus appropriate taper.
- Construct one (1) northbound left-turn lane, approximately 100 feet plus appropriate taper.
- Provide one (1) northbound shared through/right-turn lane.
- Provide one (1) southbound lane for ingressing traffic.
- Construct a southbound left turn lane, approximately 254 feet plus appropriate taper*.
- Provide one (1) southbound shared through/right-turn lane.
- Install a new traffic signal.

Alternative #6 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out Full Operational and Signalized.

W. Ridgeway Avenue and IA-58 Intersection

- Southbound and westbound left-turn lanes are sufficient as constructed.
- Construct one (1) additional eastbound left-turn lane (2 total), approximately 145 feet each plus appropriate taper.
- Construct one (1) additional northbound left-turn lane (2 total), approximately 260 feet each plus appropriate taper.
- Redesign the existing traffic signal.

W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2 Intersection

- Construct one (1) westbound left-turn lane, approximately 196 feet plus appropriate taper.
- Construct one (1) eastbound left-turn lane, approximately 100 feet plus appropriate taper.
- Construct one (1) eastbound right-turn lane, approximately 100 feet plus appropriate taper.
- Construct one (1) northbound left-turn lane, approximately 100 feet plus appropriate taper.
- Provide one (1) northbound shared through/right-turn lane.
- Provide one (1) southbound lane for ingressing traffic.
- Construct a southbound left turn lane, approximately 289 feet plus appropriate taper.
- Provide one (1) southbound shared through/right-turn lane.
- Install a new traffic signal.

FINDINGS

Site Accessibility

The roadways that will provide regional access to the proposed site development are State Highway 20 (US-20), Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. Direct access to the proposed Henry Farm Development will utilize the following locations:

- W. Ridgeway Avenue and Proposed Site Drive #1, approximately 1,095 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2, approximately 515 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).

Traffic Impacts

At full build out, the proposed Henry Farm Development will consist of the following land uses and densities:

Henry Farm Development

Land Use	Density
Home Improvement Store	245,000 Square Feet
Commercial Retail	55,000 Square Feet
Fast-Food Restaurant (2)	6,000 Square Feet
Convenience Mart with Gasoline	16 Fueling Positions
Total Development	**306,000 Square Feet/16 Fueling Positions**

Bayer Becker corresponded with representatives of the Cedar Falls Engineering Department to establish the parameters the study. As such, the following key intersections define the study area of this report:

- W. Ridgeway Avenue and Iowa Highway 58 (IA-58).
- W. Ridgeway Avenue and Private Residential Drive/Proposed Site Drive #1.
- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #2.
- Commerce Drive and Nordic Drive.
- Commerce Drive and Chancellor Drive.
- W. Ridgeway Avenue and Chancellor Drive.

Operational Alternatives Evaluated

Six (6) operational alternatives were considered as part of the traffic operations at W. Ridgeway Avenue and Private Residential Drive/Site Drive #1 and W. Ridgeway Avenue and Nordic Drive/Site Drive #2 intersections. Upon completion of the Capacity Analysis, Alternatives #1, #3, and #4 were eliminated from further evaluation due to unacceptable overall intersection levels of service.

Comparison of Remaining Alternatives

Alternative #2 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Right-turn In/Out (both northbound and southbound)

- Roundabout at Site Access #1 provides fewer conflict points than a full movement signalized intersection.
- Right-in/right-out restriction at the intersection of Nordic Drive and Ridgeway will eliminate angle collisions at the intersection.
- Median in W. Ridgeway Avenue to be constructed to restrict left turn movements at Nordic and Site Drive #2.

Alternative #5 – Site Drive #1 - Traditional Signalized Intersection w/Nordic Drive and Site Drive #2 - Full Operational and Signalized

- Widening of W. Ridgeway Avenue to accommodate an additional eastbound left turn lane at Iowa 58 will impact regulated wetlands adjacent to the roadway.
- Full movement access point on W. Ridgeway Avenue, opposite Nordic Drive, will require a traffic signal located approximately 515 feet from the existing signalized intersection of IA 58 and W. Ridgeway Avenue.
- Signalization will reduce but not eliminate the possibility of angle collisions at the intersections of W. Ridgeway Avenue with Site Drive #1 and Nordic Drive/Site Drive #2.

Alternative #6 – Site Drive #1 - Roundabout Design w/Nordic Drive and Site Drive #2 - Full Operational and Signalized

- Widening of W. Ridgeway Avenue to accommodate an additional eastbound left turn lane at Iowa 58 will impact regulated wetlands adjacent to the roadway.
- Full movement access point on W. Ridgeway Avenue, opposite Nordic Drive, will require a traffic signal to be located approximately 515 feet from the existing signalized intersection of IA 58 and W. Ridgeway Avenue.
- Signalization will reduce but not eliminate the possibility of angle collisions at the intersection of W. Ridgeway Avenue with Nordic Drive/Site Drive #2.

RECOMMENDATIONS

Site Access

The roadways that will provide regional access to the proposed site development are State Highway 20 (US-20), Iowa Highway 58 (IA-58) and W. Ridgeway Avenue. Direct access to the proposed Henry Farm Development will utilize the following locations:

- W. Ridgeway Avenue and Nordic Drive/Proposed Site Drive #1, approximately 515 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).
- W. Ridgeway Avenue and Proposed Site Drive #2, approximately 1,095 feet west of Iowa Highway 58 (IA-58) (centerline to centerline).

Improvements to Accommodate Base Traffic

Based on the analysis contained in this report, no roadway improvements are recommended to accommodate the ***Redistributed Existing 2018, No-Build 2020*** and ***No-Build 2040 Conditions*** (excluding site traffic).

Improvements to Accommodate Site Traffic

Based on the analysis contained in this report, the roadway improvements recommended to accommodate the ***2020 Build and 2040 Build Conditions*** (including site traffic) are as follows:

W. Ridgeway Avenue and Iowa Highway 58 (IA-58)

- Construct an additional northbound left turn lane on Iowa Highway 58 (IA-58) to provide a total left turn storage length of 272 feet plus appropriate taper. It should be noted that the dual left-turn lanes is not required until ***2040 Build***.

W. Ridgeway Avenue and Private Drive/Proposed Site Drive #1 Intersection

- Construct a 2-lane roundabout. Right-of way on the north side of W. Ridgeway Avenue shall be secured to facilitate the roundabout design.

W. Ridgeway Avenue and Private Drive/Proposed Site Drive #2 Intersection

- Close the median opening on W. Ridgeway Avenue at Nordic Drive/Site Drive #2 to prohibit left-turn movements.
- Construct one (1) eastbound right-turn lane, approximately 200 feet plus appropriate taper.
- Construct one (1) northbound right-turn lane for egressing traffic.

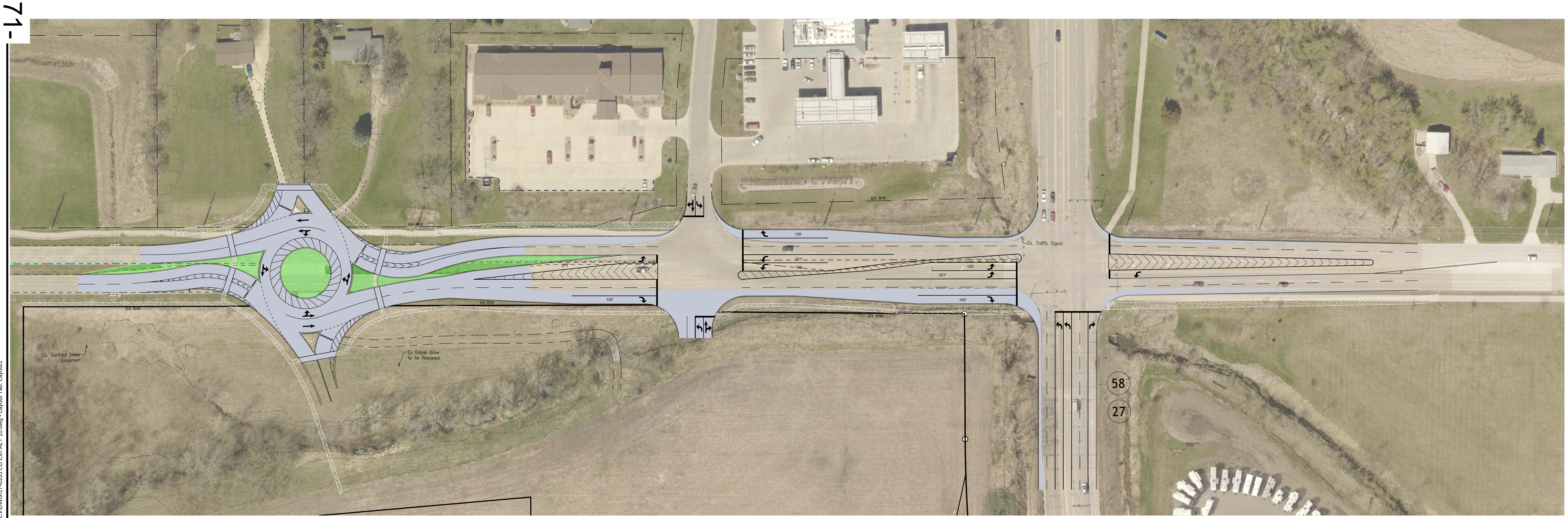
- Provide one (1) southbound lane for ingressing traffic.
- Install stop sign traffic control device on the northbound approach of the intersection.

Based upon safety considerations, engineering judgment, and the analysis and findings contained herein, the proposed Henry Farm development, upon the construction of Alternative #2 – Roundabout at Site Access #1 and right-in/right-out at Nordic Drive and Site Access #2 and the associated recommended improvements will not significantly impact the operations on the adjacent roadway network and will operate safely.

-171-

PROPOSED - INTERIM IMPROVEMENTS

SCALE: 1" = 60'



PROPOSED - 2040 Full Build

SCALE: 1" = 60'

HENRY PROPERTY

BLACK HAWK COUNTY
CITY OF CEDAR FALLS
CEDAR FALLS, IOWA

ROADWAY IMPROVEMENTS CONCEPTS

Item	Revision Description	Date	Drwn:	Chk:

bauer

Item 5.B. -

Drawing: 17-03... 10
Drawn by: PT
Checked By: MR
Issue Date: ...18
Sheet:

Plot time: Oct 16, 2018 - 5:03pm
Drawing name: J:\2017\17-0335\CVD\DWG\17-0335 CD Exh ALT 10.dwg - Layout Tab: Layout1

Karen Howard

From: Andrew Strohm <agstrohm@cfu.net>
Sent: Wednesday, October 17, 2018 4:06 PM
To: Karen Howard
Subject: Re: Development on SW corner of Ridgeway and Hwy 58

Karen-

Please do.
Thank you.

Andrew Strohm

> On Oct 17, 2018, at 8:15 AM, Karen Howard <Karen.Howard@cedarfalls.com> wrote:
>
> Andrew,
>
> Thank you for your sending your comments regarding this proposed development. Would you like me to forward your comments to the Planning & Zoning Commission and the City Council?
>
> Regards,
>
> Karen Howard, AICP
> Planning & Community Services Manager
> City of Cedar Falls
> 220 Clay Street
> Cedar Falls, Iowa 50613
> (319) 268-5169
> karen.howard@cedarfalls.com
>
>
>
> -----Original Message-----
> From: Andrew Strohm [mailto:agstrohm@cfu.net]
> Sent: Tuesday, October 16, 2018 10:32 PM
> To: Karen Howard
> Subject: Development on SW corner of Ridgeway and Hwy 58
>
> Karen-
> I got your e-mail address through the CF Planning and Zoning Commission website, it is the only form of contact I see identified. I caught word through some discussion at work of a proposal for a FleetFarm big box store proposed at the Southwest corner of Ridgeway and Hwy 58. Checking into it some more, I was able to confirm the discussion. This raises several concerns.
>
> First some history, Blain's Farm & Fleet and Mill's Fleet Farm were both started in 1955 by two families who were friends and agreed to use common naming and not share markets. This worked well for both companies for over 60 years. In 2016 the Mills family sold the company to an investment firm out of New York City. Since that time they have dropped the Mill's name, it is no longer a family owned regional company and they have been aggressively expanding their footprint. If a Fleet Farm is opened at that location, I anticipate it is only a matter of time until there is an empty

building where Blain's Farm & Fleet presently sits near the intersection of 58 and Viking. Farm and Fleet has seemingly held there own with Walmart, Target, and Menards opening nearby. The Fleet Farm business is much more similar to Blain's and will be a direct competitor not an overlapping one. With the large amount of money of the investment firm, the Fleet Farm can operate on much smaller (or even no) margins until Blain's is out of business. Any proposal of bringing more traffic to Cedar Falls is not valid, that traffic is already coming up to the intersection of Viking and 58 to visit Blain's, Walmart, Target, School's, and Menards among other smaller stores.
>
> Speaking of traffic, that is my other primary concern. The city is already pursuing major projects to address traffic issues at Viking and Highway 58. Building a facility of this type at this location will increase the amount of turning traffic (particularly left turns) at this intersection. This intersection is already on the list of dangerous intersection in the state. Adding a large store with peripheral businesses (gas station, car wash, etc.) will do nothing to improve the safety of this intersection.
>
> Personally I also don't like farmland/greenspace being taken out rather than using existing developed locations. CFU took some out for the "solar farm" but it would have made much more sense to put solar panels on building roofs (commercial, industrial...) that are already developed. Numerous new multistory buildings are going up downtown where there previously was open space along the river, some on known floodplain areas. As these various new businesses are going up many that are leaving aren't being replaced, leaving empty unused buildings.
>
> Thank you for taking the time to read this note.
>
> Andrew Strohm
> 2311 W 8th St
> Cedar Falls
>
>
>
> [NOTICE: This message originated outside of the City Of Cedar Falls mail system -- DO NOT CLICK on links or open attachments unless you are sure the content is safe.]

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