A G E N D A

REGULAR MEETING OF THE MIDLAND CITY PLANNING COMMISSION, TO TAKE PLACE ON TUESDAY, FEBRUARY 23, 2016, 7:00 P.M., COUNCIL CHAMBERS, CITY HALL, MIDLAND, MICHIGAN

1. **Call to Order**
2. **Pledge of Allegiance to the Flag**
3. **Roll Call**
4. Approval of the Minutes

   Regular Meeting – February 9, 2016

5. **Public Hearings**

   a. **Site Plan No. 343 –** initiated by LSG Engineers & Surveyors on behalf of The Kroger Co. of Michigan for site plan review and approval for a 124,942 square foot Kroger Marketplace and fuel station, located at 315 Joe Mann Boulevard.

   b. **Site Plan No. 345 –** initiated by D & M Site, Inc. for revised site plan for a 6,672 square foot Lucky's Steakhouse Restaurant, located at 830 Joe Mann Boulevard.

   Public Hearing Process

   1. Staff presentation and overview of petition
   2. Petitioner presentation
   3. Public comments in support of the petition
   4. Public comments in opposition to the petition
   5. Opportunity for petitioner rebuttal and final comments
   6. Closing of public hearing
   7. Deliberation and possible decision by Planning Commission

6. **Old Business**
7. **Public Comments (unrelated to items on the agenda)**
8. **New Business**
9. **Communications**
10. **Report of the Chairperson**
11. **Report of the Planning Director**
12. **Items for Next Agenda – March 22, 2016**
13. **Adjournment**

MINUTES OF THE MEETING OF THE MIDLAND CITY PLANNING COMMISSION WHICH TOOK PLACE ON TUESDAY, FEBRUARY9, 2016, 7:00 P.M., COUNCIL CHAMBERS, CITY HALL, MIDLAND, MICHIGAN

1. The meeting was called to order at 7:00 p.m. by Chairman McLaughlin

2. The Pledge of Allegiance was recited in unison by the members of the Commission and the other individuals present.

3. **Roll Call**

PRESENT: Bain, Hanna, Mayville, McLaughlin, Pnacek, Senesac, and Tanzini

ABSENT: Heying and Stewart

OTHERS PRESENT: Brad Kaye, Assistant City Manager for Development Services; Grant Murschel, Community Development Planner; and three (3) others.

4. **Approval of Minutes**

Moved by Pnacek and seconded by Hanna to approve the minutes of the regular meeting of January 26, 2016 as written. Motion passed unanimously.

5. **Public Hearing**

Site Plan No. 344 – initiated by Fisher Contracting Co. for site plan review and approval for a 16,400 square foot storage and shop addition, located at 3401 Contractor Drive.

Murschel gave the staff presentation on the proposal. He indicated that the site plan meets all district requirements. Landscaping has been satisfied by the previous development of the site. Excess stormwater detention volume exists in the current pond in an amount that will adequately serve the proposed building. A stormwater permit amendment will need to be approved by the City Engineering Department. The fire hydrant request noted in the staff report has been addressed by the applicant through the submission of revised plans. The required easement documents are needed at time of construction around the hydrant and water main.

Erik Forshee, of Fisher Contracting Company, presented as the applicant. He indicated that the development would likely take place in two phases. The cold storage area would likely proceed in advance of the staff area.

The public hearing was opened. No comments in support or opposition to the proposal were received. The public hearing was closed.

A motion was made by Senesac to waive the procedural requirements to delay a decision on the proposal until the next meeting. The motion was seconded by Hanna. The motion was approved unanimously.

Senesac commented that he thought the site plan was well designed and prepared to meet the requirements for approval. He indicated his support of the plan. Pnacek agreed.

It was moved by Hanna and supported by Pnacek to recommend approval of Site Plan No. 344 initiated by Fisher Contracting Co. for site plan review and approval to City Council contingent on:

1. A final stormwater management permit amendment must be approved by the City Engineering Department.
2. A final soil and sedimentation control plan must be approved by the City Building Department.

3. Required water utility easement documents shall be submitted for review and approval by the City Engineering Department and the City Attorney.

YEAS: Bain, Hanna, Mayville, McLaughlin, Pnacek, Senesac, and Tanzini
NAYS: None
ABSENT: Heying and Stewart

6. Old Business

a. North Saginaw Road – Future Land Use Plan Designation Update

Kaye presented the staff memorandum to the Commission regarding the informal public hearing that took place on the future land use plan in the North Saginaw Road area. The report was mailed to all persons that presented at the previous meeting. No response or further comments were received in response to that mailing. No action was necessary to receive the memorandum.

7. Public Comments (unrelated to items on the agenda)
None

8. New Business
None

9. Communications
None

10. Report of the Chairperson
None

11. Report of the Planning Director
None

12. Items for Next Agenda – February 23, 2016

a. Site Plan No. 343 – initiated by LSL Engineers & Surveyors on behalf of The Kroger Co. of Michigan for site plan review and approval for a 124,942 square foot Kroger Marketplace and fuel station, located at 315 Joe Mann Boulevard
b. Site Plan No. 3454 – initiated by D & M Site, Inc. for a revised site plan for a 6,672 square foot Lucky's Steakhouse restaurant, located at 830 Joe Mann Boulevard.

Kaye commented that traffic and access management concerns are continued to be worked out with the Kroger team. A revised Lucky's Streakhouse site plan will be in front of the Commission with a revised access drive proposed directly onto Joe Mann Boulevard.

13. Adjourn

Motion by Mayville and seconded by Hanna to adjourn at 7:20 p.m. Motion passed unanimously.

Respectfully submitted,

C. Bradley Kaye

C. Bradley Kaye, AICP, CFM
Assistant City Manager for Development Services

MINUTES ARE NOT FINAL UNTIL APPROVED BY THE PLANNING COMMISSION

Site Plan SP #343 Date: February 17, 2016

STAFF REPORT TO THE PLANNING COMMISSION

SUBJECT:	Kroger Marketplace & Fuel Center
APPLICANT:	LSG Engineers & Surveyors on behalf of The Kroger Co. of Michigan
LOCATION:	315 Joe Mann Boulevard
ZONING:	(RC) Regional Commercial
ADJACENT ZONE:	North, south & west: (RC) Regional Commercial East: (COM) Community & (OS) Office Service
ADJACENT DEV:	North: Auto dealership and bank East: Soccer complex South: U.S. 10 freeway West: ATM site (partially vacant) and cinema complex

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REPORT

The proposed site plan includes a 125,190 square foot Kroger Marketplace and fuel center on approximately 17.06 acres. The proposal includes 559 parking spaces between the marketplace grocery store and the fuel center. The site plan proposes shared access between the site and the existing Chemical Bank to the northeast of the new development. In addition to utilization of the existing Chemical Bank access to Jefferson Avenue, a second limited-access driveway is proposed on Jefferson Avenue to the south as well as a third full access driveway onto Joe Mann Boulevard. Stormwater detention facilities are proposed fully onsite. Substantial landscaping is proposed throughout the site including along the street frontages and west property line, and within the parking areas. One existing cell tower is proposed to remain on the site.

The subject property is zoned (RC) Regional Commercial by the City of Midland Zoning Ordinance. A grocery store is identified as a principal permitted use in the RC district. Site plan review and approval under Section 27.02(A) of the Zoning Ordinance is required for this proposed use. Section 27.06(A) of the Zoning Ordinance states that: “The following criteria shall be used as a basis upon which site plans will be reviewed and approved:”

BASIS FOR ACTION

1. **Adequacy of Information**
The site plan shall include all required information in sufficiently complete and understandable form to provide an accurate description of the proposed uses and structures.

The site plan contains most of the information required for site plan approval but is deficient in the following areas, all of which are proposed as contingencies and are usually addressed at time of construction:

- A final stormwater management plan and permit application must be approved by the City Engineering Department.
- A final soil erosion and sedimentation control permit must be approved by the City Building Department.
- Shared/cross access easement agreements must be submitted for review and approval to the City Planning Department and the City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval.
- Public water utility easement documents shall be submitted for review and approval by the City Engineering Department and City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval
- An agreement indicating the City is not responsible for maintenance or restoration of landscaping along Joe Mann Boulevard within the future right-of-way expansion area shall be approved by the City Engineering Department and City Attorney.
- Access modification to the south side of the Chemical Bank site must meet ordinance standards.

2. **Site Design Characteristics**
All elements of the site design shall be harmoniously and efficiently organized in relation to topography, the size and type of parcel, the character of adjoining property, and the type and size of buildings. The site shall be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted by this Ordinance.

The proposed development includes a 125,190 square foot Kroger Marketplace oriented with the main entrances facing towards the east. The proposed fuel station is proposed on the southeast side of the site along the street frontage of Jefferson Avenue. Shared access is proposed with the existing Chemical Bank to the northeast of the subject development area. One of the two existing cell towers is proposed to remain on the site with a new access easement proposed through the interior parking lot driveways. The site plan design utilizes the existing topography with minor modifications.

3. **Appearance**
Landscaping, earth berms, fencing, signs, walls and other similar site features shall be designed and located on the site so that the proposed development is aesthetically pleasing and harmonious with nearby existing or future developments.

The building orientation and internal layout of the parking areas are considered appropriate for the site. The proposed landscaping plan has addressed and in some areas exceeded ordinance standards.

Discussed further under Ingress/Egress, additional road right-of-way will be needed in order to accommodate lane improvements on Joe Mann Boulevard and a future traffic signal at the intersection of the proposed driveway at Joe Mann Boulevard and Alan Ott Drive. The site plan has been designed with this right-of-way expansion in mind for building and parking lot setback but a portion of the proposed street frontage landscaping is located within the future right of way. The applicant has been informed that the ideal situation would be to move the landscaping back from the potential right-of-way but it is understood that adequate space might not exist to accommodate all of the required plantings. As such, staff is recommending that if the landscaping cannot be relocated that an agreement be established that removes the City from being responsible for restoration of any landscaping as a result of street or utility construction work.

4. **Compliance with District Regulations**
The site plan shall comply with the district requirements for height of building, lot size, lot coverage, density, and all other requirements set forth in the Schedule of Regulations (Article 26.00) unless otherwise provided in this Ordinance.

The project meets all setbacks, lot area, height and other dimensional requirements for the proposed use.

5. **Preservation and Visibility of Natural Features**
Natural features shall be preserved as much as possible, by minimizing tree and soil removal alteration to the natural drainage course and the amount of cutting, filling, and grading.

Currently, this site consists of an agricultural field on the west and a collection of houses and apartments on the east, with a row of trees separating the two. All of the existing residences and the existing trees will be removed to accommodate the proposed development and the associated parking and stormwater detention facilities. The site design is minimizing the amount of grading and soil alternation needed in order to utilize the existing drainage patterns and courses that exist on the site. Preservation of the existing trees does not appear feasible.

6. **Privacy**
The site design shall provide reasonable visual and sound privacy. Fences, walls, barriers, and landscaping shall be used, as appropriate if permitted, for the protection and enhancement of property and the safety and privacy of occupants and uses.

There are no required standards for privacy screening for this type of development given its location within the business district, other than the dumpster screening which as proposed meets ordinance standards. The proposed development is considered appropriate for this vehicle-oriented commercial area of the city.

7. **Emergency Vehicle Access**
All buildings or groups of buildings shall be so arranged as to permit convenient and direct emergency vehicle access.

The Fire Department has reviewed the proposed site plan for adequate emergency vehicle access and is satisfied with the plan as proposed. Adequate access exists on all sides of the proposed building and fuel station, and within all proposed parking areas.

8. **Ingress and Egress**

Every structure or dwelling unit shall be provided with adequate means of ingress and egress via public or private streets and pedestrian walkways.

A traffic study was required as part of the site plan submission given the high traffic volumes anticipated with a development of this nature. The City's traffic consultant has been engaged during the site plan review period and has provided guidance to the applicant's team and city staff on the site plan and traffic study. City staff has worked with the applicant on addressing the concerns raised by the traffic consultant. While a final indication from the traffic consultant has not yet been received, it is anticipated that the traffic consultant will be in attendance at the February 23 Planning Commission meeting to indicate his final thoughts on the site plan and traffic study.

The site plan includes three access points, which will be discussed in further detail: a full access driveway onto Joe Mann Boulevard, directly aligned with the intersection of Alan Ott Drive; utilization of the existing Chemical Bank full access driveway onto Jefferson Avenue, with some modifications; and a second access driveway onto Jefferson Avenue, south of the shared access with Chemical Bank, with a limiting geometry.

Full Access Driveway – Joe Mann Boulevard

This full access driveway is proposed onto Joe Mann Boulevard with direct alignment with Alan Ott Drive. The traffic study indicated that a full access driveway could be accommodated here. The study recommended that a future traffic signal could be installed here if traffic volumes warranted the intersection be controlled.

In order to accommodate a future signal, additional road right-of-way is needed. An agreement addressing the installation of any needed traffic light and providing for the conveyance of this additional right-of-way to the city is therefore required. Anticipating this future right-of-way expansion, the site plan has been designed with this in mind, including building and parking lot setback distances.

Beyond the actual signalized intersection, widening and increasing the number of travel lanes on Joe Mann Boulevard is expected to be necessary to accommodate this development. Road widening along the full length of Joe Mann Boulevard adjacent to the property, as well as the Chemical Bank site, is therefore necessary to respond to the traffic impacts anticipated from this proposal. As stated above, the site has been designed to accommodate this road widening and fully comply with setback requirements of the RC zoning district. The agreement referenced above will therefore need to include conveyance of additional right-of-way, beyond that needed to accommodate the signalized driveway, along Joe Mann Boulevard.

Shared Full Access Driveway with Chemical Bank – Jefferson Avenue (Northern Driveway)

This full access driveway is proposed to utilize the existing curb cut onto Jefferson Avenue that was built when the Chemical Bank site was developed. During the site plan approval process for Chemical Bank in 2007, the shared driveway was required to be located on the common property line between Chemical Bank and the vacant property to the south in order to accommodate future development. Kroger is proposing to utilize this shared access driveway.

The traffic study submitted supported the utilization of this existing driveway. To address the concerns of the City's traffic consultant, this driveway is proposed to be modified to accommodate additional left-hand outbound stacking. Given the nature of stacking that exists within the north-bound left-turn lane on Jefferson Avenue, the City's traffic consultant has indicated that left turns leaving the site will be naturally limited out of this driveway onto Jefferson Avenue during most parts of the day. Despite this natural limitation, the City's traffic consultant does not recommend that left turns be prohibited at this intersection.

Limited Access Driveway – Jefferson Avenue (Southern Driveway)
A second access driveway is proposed onto Jefferson Avenue south of the shared access with Chemical Bank and near the proposed fuel center. The existence of this additional access point was supported by the traffic study. To address the concerns of the City's traffic consultant, this driveway has been modified from an original proposal of full access to one with limited egress. Specifically, left turns out of this driveway are restricted by the driveway design through the inclusion of a center island 'pork-chop'. This driveway will be able to accommodate both left and right hand turns into the driveway but will only allow right-hand turns out.

Shared Access Easement Agreements
A shared/cross access easement agreement, to the satisfaction of the City Planning Department and City Attorney, is required to ensure shared access is provided in perpetuity between the Chemical Bank and Kroger sites. The City should keep final discretion over whether shared access is removed on the site due to a change of circumstances in the future.

A current shared access easement agreement exists between the subject property and the ATM site to the west. Due to concerns over trucks utilizing a shared driveway, a curb and sign prohibiting cross access between the sites has been proposed on the site plan. City staff have meet with the ATM property owner to better understand his concerns. While shared access is usually beneficial to abutting businesses, in this case it appears that only minor benefits would be achieved while opening up the potential for trucks to utilize this connection. Planning Commission discussion of this connection and whether or not sufficient need for it exists is encouraged. Even if no connection is required, staff would recommend that the easement at least be maintained to allow for the potential of future shared access if warranted at a later date when the full extent of the ATM site is further developed.

9. **Pedestrian Circulation**
Each site plan shall provide a pedestrian circulation system, which is insulated as completely as is reasonably possible from the vehicular circulation system.

Adequate pedestrian walkways have been provided within the interior of the site as well as connecting to the public sidewalk along Joe Mann Boulevard and Jefferson Avenue. The main pedestrian connections into the site are provided with one to the immediate west of the proposed driveway onto Joe Mann Boulevard, a second to the south of the proposed marketplace connecting to the existing non-motorized pathway, and a third from the sidewalk along Jefferson Avenue directly to the fuel center.

10. **Vehicular and Pedestrian Circulation Layout**
The layout of vehicular and pedestrian circulation systems shall respect the pattern of existing or planned streets or pedestrian or bicycle pathways in the vicinity of the site. The width of streets and drives shall be appropriate for the volume of traffic they will carry in accordance with subsection 3.10. In order to insure public safety and promote efficient traffic flow and turning movements, the applicant may be required to limit street access points or construct a secondary access road.

All internal driveway width standards within the Kroger site have been met. Appropriate accommodations for truck deliveries, customer traffic, pedestrians and bicyclists have been made on the site. As previously discussed in the Ingress/Egress portion, the applicant has worked with city staff and the City's traffic consultant to modify the site plan to address various concerns.

As part of the proposal, a modification to the Chemical Bank ATM access drive is proposed. The site plan does not indicate the resulting width of this driveway modification or the intended vehicle maneuvering pattern. If the driveway is intended to be a two-way access, it appears to be too narrow. Staff is asking for clarification by the applicant on this matter.

11. **Parking.**
The proposed development shall provide adequate off-street parking in accordance with the requirements in Article 5.00 of this ordinance.

At this time, the parking proposed for the marketplace and fuel center is compliant with Article 5.00 of the Zoning Ordinance. A total number of 556 parking spaces are proposed, including 15 barrier-free spaces, to meet the requirement of 1 space per 180 square feet of usable floor area. Of this total, three spaces, one being barrier-free, are proposed at the fuel station. The parking area on the north side of the site, located on property intended to be purchased from Chemical Bank, is intended to be used for employee parking.

A bike rack is proposed to the north of the marketplace.

12. **Drainage**
The project must comply with the City's Stormwater Ordinance.

The City Engineering Department has reviewed the stormwater management plan and is satisfied with the submitted designs. Stormwater throughout the site is proposed to be collected and detained in a basin at the southwestern portion of the site. This design utilizes the existing grading patterns on the site. Due to the steepness of the slope on the sides of the detention basin, a fence encompassing the basin is required.

Ultimately, a final stormwater management permit must be approved by the City's Engineering Department. Final stormwater permitting is typically addressed at the time of construction.

13. **Soil Erosion and Sedimentation**
The proposed development shall include measures to prevent soil erosion and sedimentation during and upon completion of construction, in accordance with current State, County, and City standards.

Soil erosion and sedimentation control details have been submitted for review and approval by the City Building Department. Final design detail and permitting is typically addressed at the time of construction.

14. **Exterior Lighting**
Exterior lighting shall be designed so that it is deflected away from adjoining properties and so that it does not impede vision of drivers along adjacent streets and comply with the provisions in Section 3.12.

The applicant has submitted photometric plans and lighting fixture details that demonstrate compliance with city standards.

15. **Public Services**
Adequate services and utilities, including water, sewage disposal, sanitary sewer, and storm water control services, shall be available or provided, and shall be designed with sufficient capacity and durability to properly serve the development. All streets and roads, water, sewer, and drainage systems, and similar facilities shall conform to the design and construction standards of the City.

As previously discussed, a final storm water management permit must be approved by the City Engineering Department. This is typically addressed at final permitting stage.

The City Fire and Utility Departments have indicated that they are satisfied with the proposed utility plans. Ultimately, easement documentation will need to be submitted, approved, and recorded encompassing the public water main loop through the site.

Dial-A-Ride transportation has been accommodated through the proposed inclusion of a bench outside the north entrance of the marketplace. Additionally, the site plan notes that users of DART may wait just inside the main entry. These provisions are similar to other grocery stores within the city and are satisfactory to the City Public Services Department.

16. **Screening**
Off-street parking, loading and unloading areas, outside refuse storage areas, and other storage areas shall be screened by walls or landscaping of adequate height and shall comply with Articles 6.00 and 7.00 of this Ordinance. All roof-top mechanical equipment shall be screened from view from all residential districts and public roadways.

The proposed dumpster screening, being located within the northernmost loading dock, fully meets the City's screening requirements. A staggered row of Serbian Spruce, Eastern White Pine, and maple trees is proposed along the western property line to provide screening of the rear of the marketplace, which contains the loading and unloading areas.

17. **Health and Safety Concerns**
Any use in any zoning district shall comply with all applicable public health, pollution, and safety laws and regulations.

No health and safety concerns have been identified.

18. **Sequence of Development**
All development phases shall be designed in logical sequence to insure that each phase will independently function in a safe, convenient and efficient manner without being dependent upon subsequent improvements in a later phase or on other sites.

The applicant has indicated that this will be built in one phase with the possibility that the fuel center will open before the marketplace construction has been completed.

19. **Coordination with Adjacent Sites**
All site features; including circulation, parking, building orientation, landscaping, lighting, utilities, common facilities, and open space shall be coordinated with adjacent properties.

Modification of the shared access drive will require coordination with the adjoining Chemical Bank parcel. Additionally, the applicant will need to finalize the acquisition of the Chemical Bank property that contains the access driveway onto Joe Mann Boulevard and the northern parking lot.

20. **Signs.**
All proposed signs shall be in compliance with the regulations in Article 8.00 of this Ordinance

Ground and wall signage concepts have been submitted with the site plan. Signage will be required to comply with Article 8 and will be permitted through the signage permitting process administered by the City Building Department.

TRAFFIC CONSULTANT REPORT

The staff comments included in this report have been based on the applicant submittals, including their original and supplemented traffic studies, as well as the comments and advice of the city traffic consultant received throughout our review process. Note, however, that the final review and recommendation of the traffic consultant had not been received by planning staff at the time this report was prepared. That final report is anticipated prior to the public hearing. Additionally, staff are making arrangements for the traffic consultant to be present at the public hearing and to present his final review and recommendations at that time.

In light of the above, there may be additional comments forthcoming from the traffic consultant that staff are not aware of at this time. While every effort has been made to reflect his known recommendations and concerns herein, careful attention will need to be paid to the final report and recommendation received at the time of the public hearing. Should anything in the final report differ from comments contained herein, or if additional changes to the site plan are necessitated by the final report, these differences will be specifically highlighted by planning staff and/or the traffic consultant at the time of the public hearing.

CONTINGENCY ITEMS

Based on consideration of the site plan thus far, staff is of the opinion that the proposal generally meets city requirements and is designed in a manner which is harmonious with the campus. Should the Planning Commission be ready to move forward with a recommendation on the plan following receipt of the traffic consultant's final report and completion of the public hearing, approval of the site plan could be considered subject to the following contingencies:

1. A final stormwater management plan and permit application must be approved by the City Engineering Department.
2. A final soil erosion and sedimentation control permit must be approved by the City Building Department.
3. Shared/cross access easement agreements must be submitted for review and approval by the City Planning Department and City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval.
4. Public water utility easement documents shall be submitted for review and approval by the City Engineering Department and City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval.
5. An agreement addressing City and applicant responsibilities for maintenance and restoration of landscaping along Joe Mann Boulevard within the right-of-way area shall be approved by the City Engineering Department and City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval.
6. Access modification to the south side of the Chemical Bank site shall be completed to the satisfaction of the City Planning and Engineering Departments to meet ordinance standards.
7. An agreement regarding future installation of a traffic signal and conveyance of additional right-of-way along the south side of Joe Mann Boulevard to address the traffic impacts of the proposal shall be entered into between the City and applicant.

PLANNING COMMISSION ACTION

Staff currently anticipates that the Planning Commission will hold a public hearing on this request during its regular meeting on February 23, 2016 and will formulate a recommendation to City Council thereafter. If all concerns of the Planning Commission have been met, a recommendation to City Council may be made the same evening. If so decided, we anticipate that on February 29, 2016 the City Council will consider the site plan and Planning Commission recommendation. Please note that these dates are merely preliminary and may be adjusted due to Planning Commission action and City Council agenda scheduling.

Respectfully Submitted,

C. Bradley Kaye, AICP
Assistant City Manager for Development Services

/grm

KROGER MARKETPLACE TRAFFIC IMPACT STUDY

CITY OF MIDLAND, MICHIGAN

DECEMBER 28, 2015

PREPARED FOR:

40399 GRAND RIVER AVENUE
NOVI, MI 48375

PREPARED BY:

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

27725 STANSBURY BLVD., SUITE 150
FARMINGTON HILLS, MI 48834

F&V Project 825350
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Stover, V. G., & Koepke, F. J. (2006). *Transportation and Land Development* (Vol. 2nd Edition). Washington DC: Institute of Transportation Engineers (ITE).

1 INTRODUCTION

This report presents the results of a Traffic Impact Study (TIS) for the proposed Kroger Marketplace development in the City of Midland, Michigan. The subject site is located in an area near the southwest corner of Jefferson Avenue & Joe Mann Boulevard, as shown on **Figure 1**. All study roadways are under the jurisdiction of the City of Midland and a TIS is required in accordance with the City of Midland Zoning Ordinance for approval of driveway permits and site plan.

The proposed development includes a Kroger Marketplace store and 14 pump fuel station. The proposed site access will be provided via Joe Mann Boulevard and Jefferson Avenue; with two access driveways on Joe Mann and either one or two driveways to Jefferson Avenue. The site access to Jefferson Avenue was evaluated in this study and summarized below:

1. Alternative 1: Two site driveways to Jefferson Avenue
2. Alternative 2: One site driveway to Jefferson Avenue

The scope of this study was developed based on Fleis & VandenBrink's (F&V) knowledge of the study area, understanding of the development program, accepted traffic engineering practice, and information published by the Institute of Transportation Engineers (ITE). Additionally, F&V solicited input regarding scope of work for this study from the City of Midland and their traffic consultant (OHM). The study analyses were completed using Synchro and SimTraffic, Version 9 traffic analysis software. The study intersections analyzed for this TIS include:

- Jefferson Avenue & Wackerly Street,
- Jefferson Avenue & Joe Mann Boulevard / Joseph Drive,
- Jefferson Avenue & Chemical Bank Drive / Credit Union Drive,
- Joe Mann Boulevard & Alan Ott Drive,
- Joe Mann Boulevard & Firehouse Car Wash Drive / Ford Midland Drive, and
- The proposed site access locations.

The purpose of this study is to identify the traffic related impacts, if any, of the proposed project on the adjacent road network. Specific tasks undertaken for this study include the following:

1. Review of the proposed development plans, adjacent road network, and other background information.
2. Field reconnaissance of existing roadway and intersection geometrics, traffic controls, and speed limits, and acquisition of traffic signal timing information from the City of Midland.
3. Collection of weekday PM (4:00 PM to 6:00 PM) and Saturday (11:00 AM to 1:00 PM) peak period turning movement counts at the study intersections.
4. Identify the Existing PM and Saturday peak hour traffic volumes at the study intersections based on turning movement count data collected.
5. Calculate the ***Existing*** vehicle delays, Levels of Service (LOS), and vehicle queues at the study intersections based on the methodologies of the *Highway Capacity Manual, 2010* using Synchro, Version 9 traffic analysis software.
6. Calculate the future background traffic volumes based on an appropriate traffic growth rate to the project build-out year and/or any applicable background developments in the vicinity of this project.
7. Calculate the ***Background (without the proposed development)*** vehicle delays, LOS, and vehicle queues at the study intersections and identify improvements (if any) that would be required to mitigate any unacceptable background traffic conditions.
8. Forecast the number of PM and Saturday peak hour trips that would be generated by the proposed development based on information provided by Kroger for the proposed land use and data published by the Institute of Transportation Engineers (ITE) in *Trip Generation, 9th Edition.*
9. Assign the trips that would be generated by the proposed development to the adjacent road network based on the area of influence methodology for two site access alternatives, 1) site access with all four site access driveways, 2) site access with three site access driveways, excluding the proposed south site driveway on Jefferson Ave.

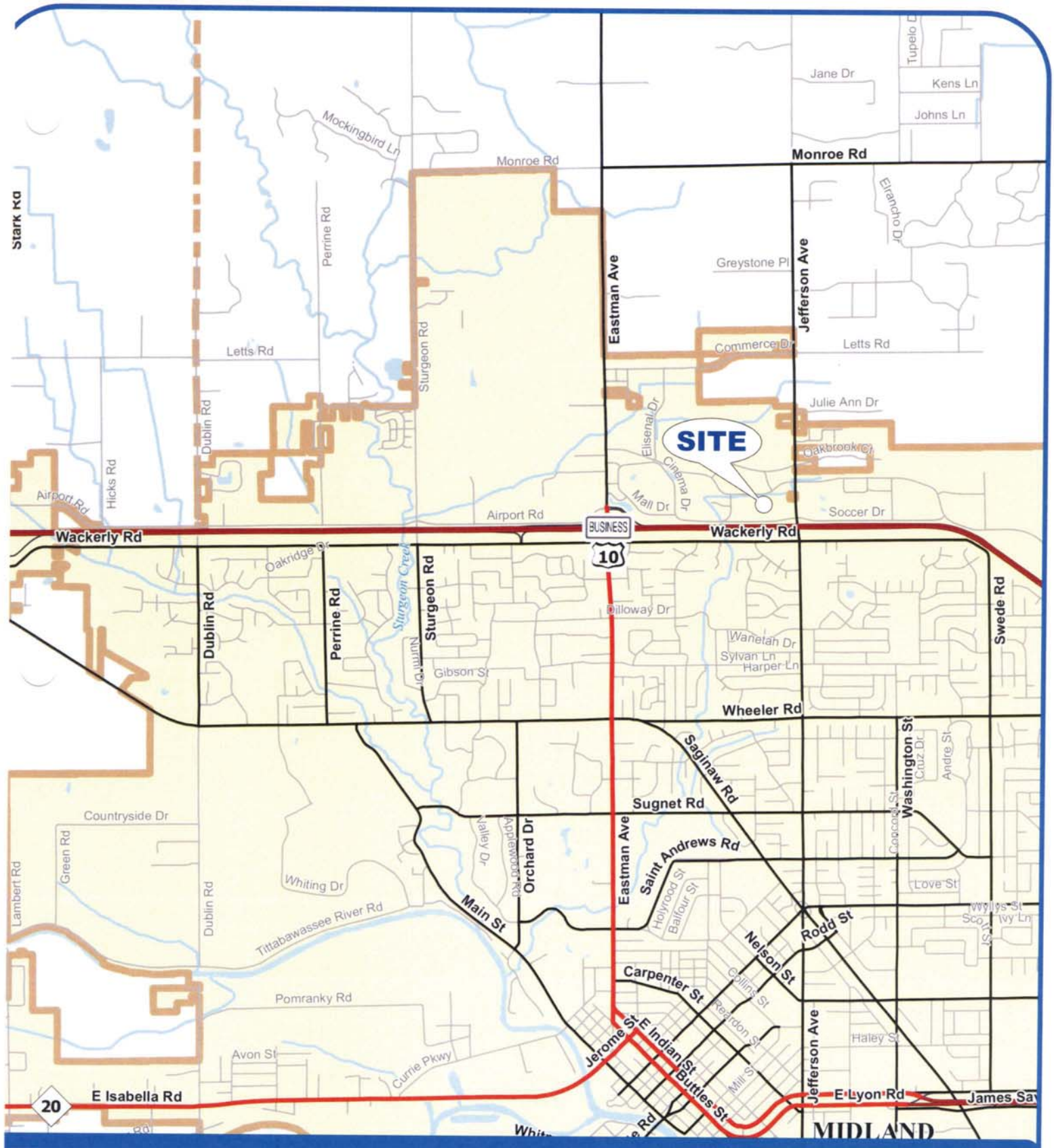


FIGURE 1
SITE LOCATION MAP

KROGER MARKETPLACE - MIDLAND, MI

2

LEGEND

SITE — SITE LOCATION

NORTH

SCALE: NOT TO SCALE

2015

10. Combine the site-generated traffic assignments with the background traffic forecasts to establish the Future PM peak hour traffic volumes for the two site access alternatives.
11. Calculate the Future (with the proposed development) vehicle delays, LOS, and vehicle queues at the study intersections for the two site access alternatives.
12. Identify improvements (if any) for the study road network that would be required to accommodate the site-generated traffic volumes for the two site access alternatives.
13. Complete a technical report consistent with accepted practice and suitable for submission to the City of Midland which outlines the methodologies, analyses, results, and recommendations of the traffic study.

Sources of data for this study include traffic counts conducted by F&V subconsultant Traffic Data Collection, Inc. (TDC), information provided by the developer, Michigan Department of Transportation (MDOT), City of Midland, and ITE. All background information is provided in **Appendix A**.

2 BACKGROUND DATA

Access to and from the proposed development is provided via Jefferson Avenue and Joe Mann Boulevard. The study intersections of Jefferson Avenue & Joe Mann Boulevard and Jefferson Avenue & Wackerly Street are signalized, while the intersection of Joe Mann Boulevard & Alan Ott Drive and the existing / proposed site driveways are currently STOP controlled on the minor street approaches. The lane use and traffic control at the study intersections for Alternatives 1 and 2 are shown on **Figures 2-1 and 2-2** respectively. The study roadways are further described below. For the purposes of this study, all minor streets and driveways are assumed to have an operating speed of 25 miles per hour (mph).

Jefferson Avenue runs in the north and south directions with a posted speed limit of 45 mph and 35 mph to the north and south of Joe Mann Boulevard, respectively. The study section of Jefferson Avenue is under the jurisdiction of the City of Midland and has a typical three-lane cross section, with one lane in each direction and a center lane for left turns. Additionally, at the intersection of Jefferson Avenue & Wackerly Street the *City of Midland Master Plan, Chapter 8* recommended to improve existing signal operations with the addition of left-turn phasing at this intersection.

Joe Mann Boulevard runs generally in the east and west directions with a posted speed limit of 35 mph and 30 mph to the east and west of Jefferson Road, respectively. The study section of Joe Mann Boulevard is under the jurisdiction of the City of Midland and has a typical three-lane cross section, with one lane in each direction and a center lane for left turns. Additionally, at the intersection of Jefferson Avenue & Joe Mann Boulevard the *City of Midland Master Plan, Chapter 6* has recommended a roundabout at this intersection, in conjunction with the installation of a boulevard along Joe Mann Boulevard between Jefferson Avenue and Eastman Avenue.

2.1 EXISTING TRAFFIC VOLUMES

Existing traffic volume data at the study intersections were collected by F&V subconsultant Traffic Data Collection, Inc. (TDC). Vehicular turning movement count data were collected in 15-minute intervals on Thursday November 19, 2015 from 4:00 PM to 6:00 PM, and Saturday November 21, 2015 from 11:00 AM to 1:00 PM. This data was used as a baseline to establish the current peak hour traffic volumes for the existing traffic conditions analysis. The PM and Saturday peak hours of existing network traffic were identified to generally occur between 4:45 PM to 5:45 PM for a typical weekday and 11:15 AM to 12:15 PM for a typical Saturday.

The peak hour volumes for each intersection were utilized for this study and the volumes were balanced upward through the study network. Peak Hour Factors (PHF) were also calculated for each study intersection approach. In addition, at the intersection of Jefferson Avenue & Joe Mann Boulevard the number of right-turn-on-red vehicles were quantified and included in the peak hour analysis. The traffic volume data are included in **Appendix A** and the existing peak hour traffic volumes are summarized on **Figure 3**.

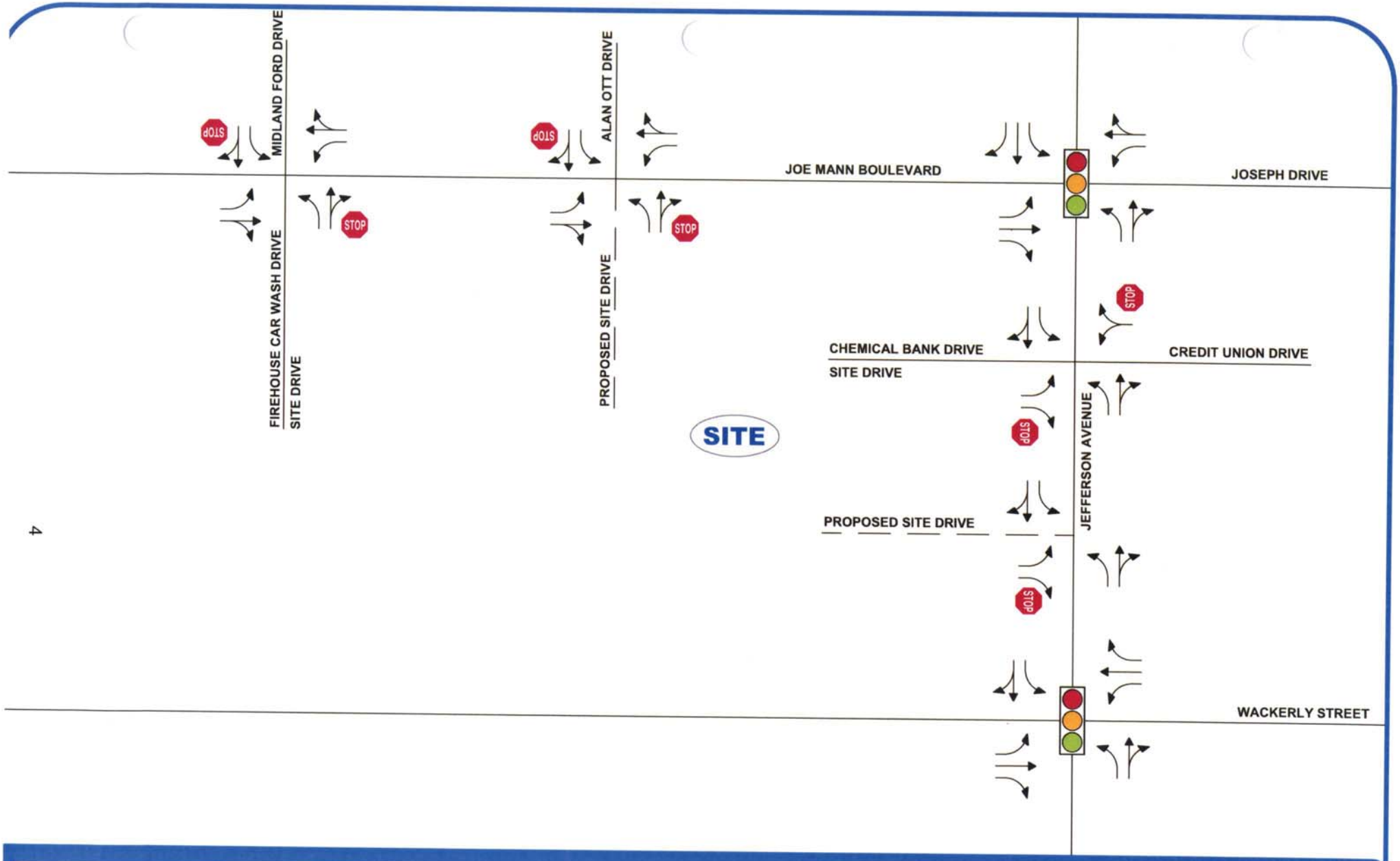


FIGURE 2-1
LANE USE AND TRAFFIC CONTROL

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- ROADS
- LANE USE

2015

NORTH
SCALE: NOT TO SCALE

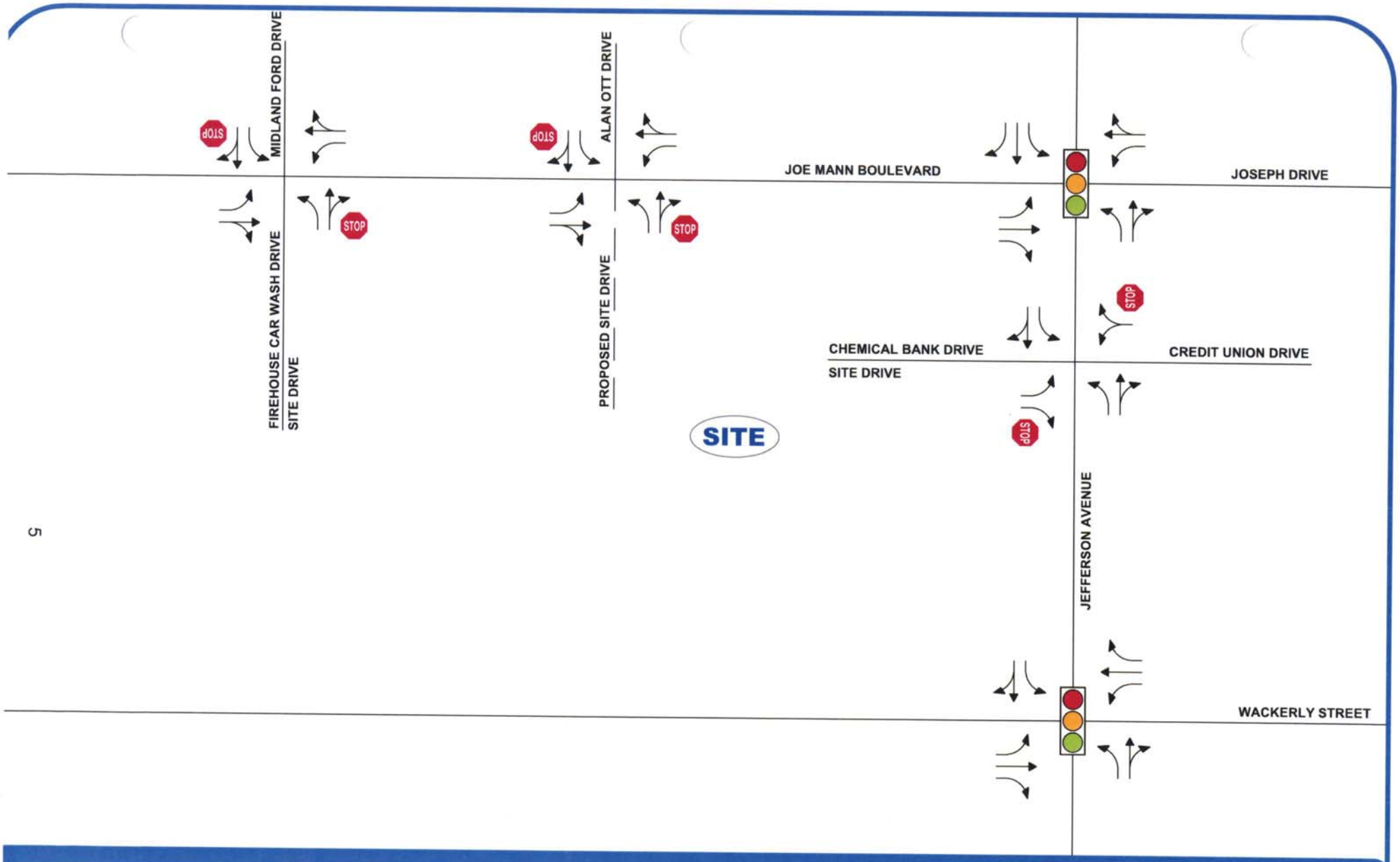


FIGURE 2-2
LANE USE AND TRAFFIC CONTROL

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

ROADS

LANE USE

2015

NORTH

SCALE: NOT TO SCALE

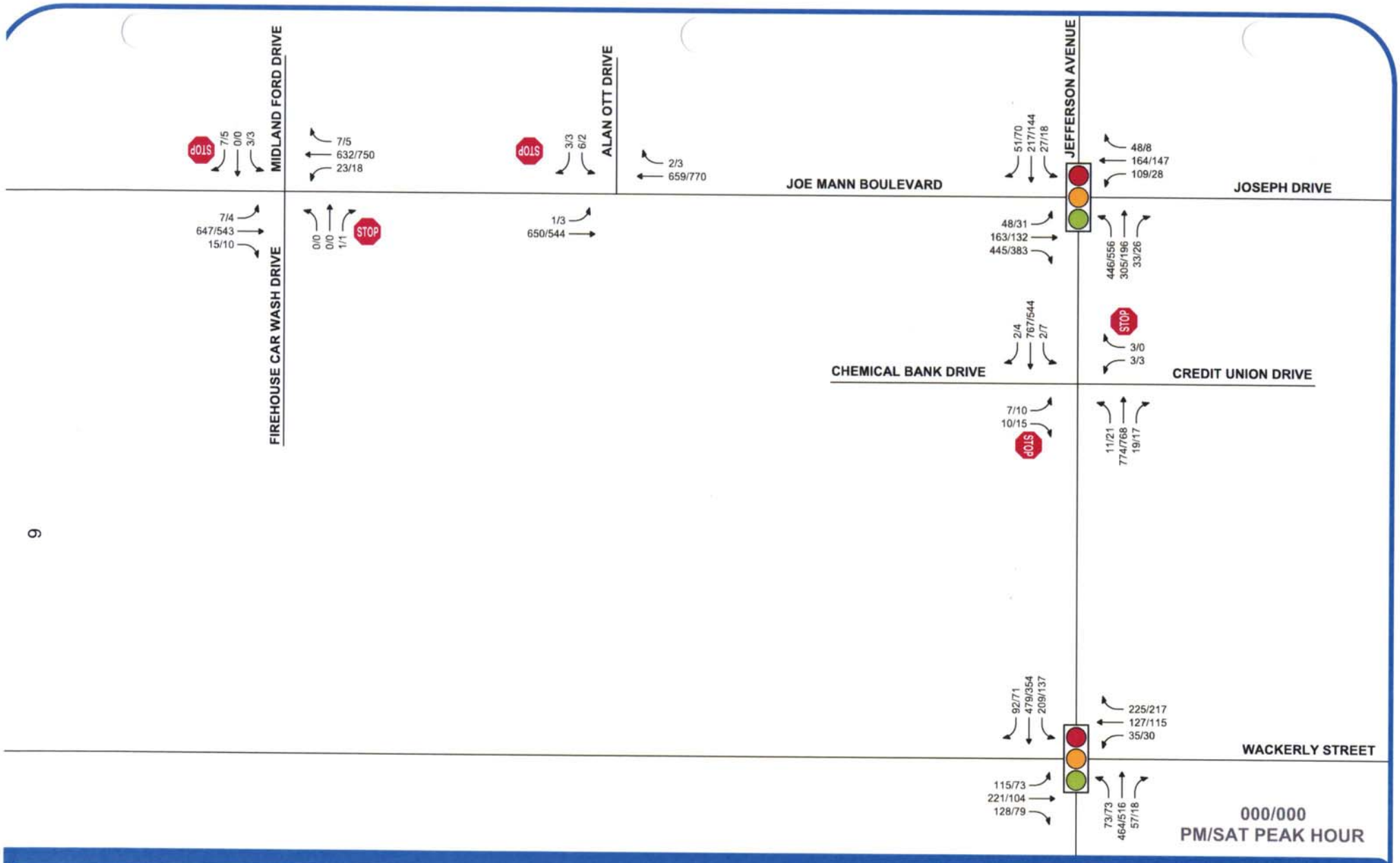


FIGURE 3
EXISTING TRAFFIC VOLUMES

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

TRAFFIC VOLUMES (AM/PM)

ROADS

2015

NORTH

SCALE: NOT TO SCALE

3 ANALYSIS

3.1 EXISTING CONDITIONS

Existing PM and Saturday peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersections using Synchro traffic analysis software. The results of the analysis of existing conditions were based on the existing lane use and traffic control shown on Figures 2-1 & 2-2, the existing traffic volumes shown on Figure 3, and the methodologies presented in the Highway Capacity Manual (HCM), 2010. Additionally, SimTraffic traffic simulations were utilized to evaluate network operations and vehicle queues.

Descriptions of LOS "A" through "F" as defined in the HCM are provided in Appendix B for signalized and unsignalized intersections. Typically, LOS D is considered acceptable, with LOS A representing minimal delay, and LOS F indicating failing conditions. The results of the analysis of existing conditions are presented in **Appendix B** and are summarized in **Table 1**.

Table 1: Existing Intersection Operations

Intersection	Control	Approach	PM Peak Delay (s/veh)	PM Peak LOS	SAT Peak Delay (s/veh)	SAT Peak LOS
1. Jefferson Avenue & Joe Mann Boulevard	Signalized	EB	35.5	D	29.3	C
		WB	29.1	C	28.7	C
		NB	19.7	B	38.7	D
		SB	27.7	C	17.1	B
		Overall	**26.5**	**C**	**32.2**	**C**
2. Jefferson Avenue & Wackerly Street	Signalized	EB	32.3	C	26.5	C
		WB	34.6	C	28.3	C
		NB	23.0	C	24.3	C
		SB	32.3	C	30.0	C
		Overall	**30.2**	**C**	**27.2**	**C**
3. Joe Mann Boulevard & Alan Ott Drive	STOP (Minor)	EB LT	9.0	A	9.5	A
		WB	Free		Free	
		SB	16.1	C	16.1	C
4. Joe Man Boulevard & Firehouse Car Wash Drive / Midland Ford Drive	STOP (Minor)	EB LT	8.9	A	9.3	A
		WB LT	9.1	A	8.7	A
		NB	13.1	B	12.1	B
		SB	20.8	C	23.5	C
5. Jefferson Avenue & Chemical Bank Drive / Credit Union Drive	STOP (Minor)	EB	36.6	E	26.0	D
		WB	39.6	E	44.6	E
		NB LT	9.5	A	8.8	A
		SB LT	9.7	A	9.5	A

The results of the existing conditions analysis indicates that all approaches and movements at the signalized study intersections operate acceptably at a LOS D or better during both peak hours. Furthermore, all unsignalized study intersection STOP controlled approaches will operate acceptably at a LOS D or better during both peak hours; except for the eastbound approach at the Jefferson Avenue & Chemical Bank intersection operating at a LOS E during the PM peak hour and the westbound approach operating at a LOS E during both peak periods.

Review of the SimTraffic network simulations indicates acceptable traffic operations during the PM peak hour. During the Saturday peak hour a long vehicle queue is observed for the northbound left turn movement at the

intersection of Jefferson Avenue & Joe Mann Boulevard which lasts for approximately 30 minutes of the peak period.

3.2 BACKGROUND CONDITIONS

In order to determine the applicable traffic growth rate for the existing traffic volumes to project build-out, historical traffic data in the vicinity of the project was referenced. Historical traffic volumes data was available from the Michigan Department of Transportation (MDOT) Traffic Monitoring Information System (TMIS) for US-10, located just south of the proposed site. The average annual growth rate from 2010 to 2014 was approximately 0.6%; therefore, this growth rate was applied to the existing 2015 traffic volumes to determine the background traffic volumes at the project build-out year of 2017 shown on **Figure 4**.

Future peak hour vehicle delays and LOS ***without the proposed development*** were calculated based on the existing lane use and traffic control, the background traffic volumes shown on Figure 4, and the methodologies presented in the HCM. The results of the analysis of background conditions are presented in **Appendix C** and are summarized in **Table 2**.

Table 2: Background Intersection Operations

			PM Peak		SAT Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Jefferson Avenue & Joe Mann Boulevard	Signalized	EB	35.9	D	29.4	C
		WB	29.2	C	28.8	C
		NB	21.0	C	41.4	D
		SB	27.9	C	17.1	B
		Overall	**27.1**	**C**	**33.6**	**C**
2. Jefferson Avenue & Wackerly Street	Signalized	EB	32.5	C	26.6	C
		WB	35.0	C	28.4	C
		NB	23.4	C	24.6	C
		SB	32.8	C	30.2	C
		Overall	**30.6**	**C**	**27.5**	**C**
3. Joe Mann Boulevard & Alan Ott Drive	STOP (Minor)	EB LT	9.0	A	9.6	A
		WB	Free		Free	
		SB	16.3	C	16.3	C
4. Joe Man Boulevard & Firehouse Car Wash Drive / Midland Ford Drive	STOP (Minor)	EB LT	9.0	A	9.4	A
		WB LT	9.1	A	8.7	A
		NB	13.2	B	12.1	B
		SB	21.2	C	24.0	C
5. Jefferson Avenue & Chemical Bank Drive / Credit Union Drive	STOP (Minor)	EB	37.6	E	26.4	D
		WB	41.0	E	45.9	E
		NB LT	9.5	A	8.8	A
		SB LT	9.7	A	9.5	A

The background conditions results indicate that all signalized study intersections will continue to operate at an overall LOS D or better during the peak periods. At the STOP controlled driveways all approaches and movements will continue to operate in a manner similar to existing conditions. Review of the network simulations indicates acceptable traffic operations and significant vehicle queues are not observed.

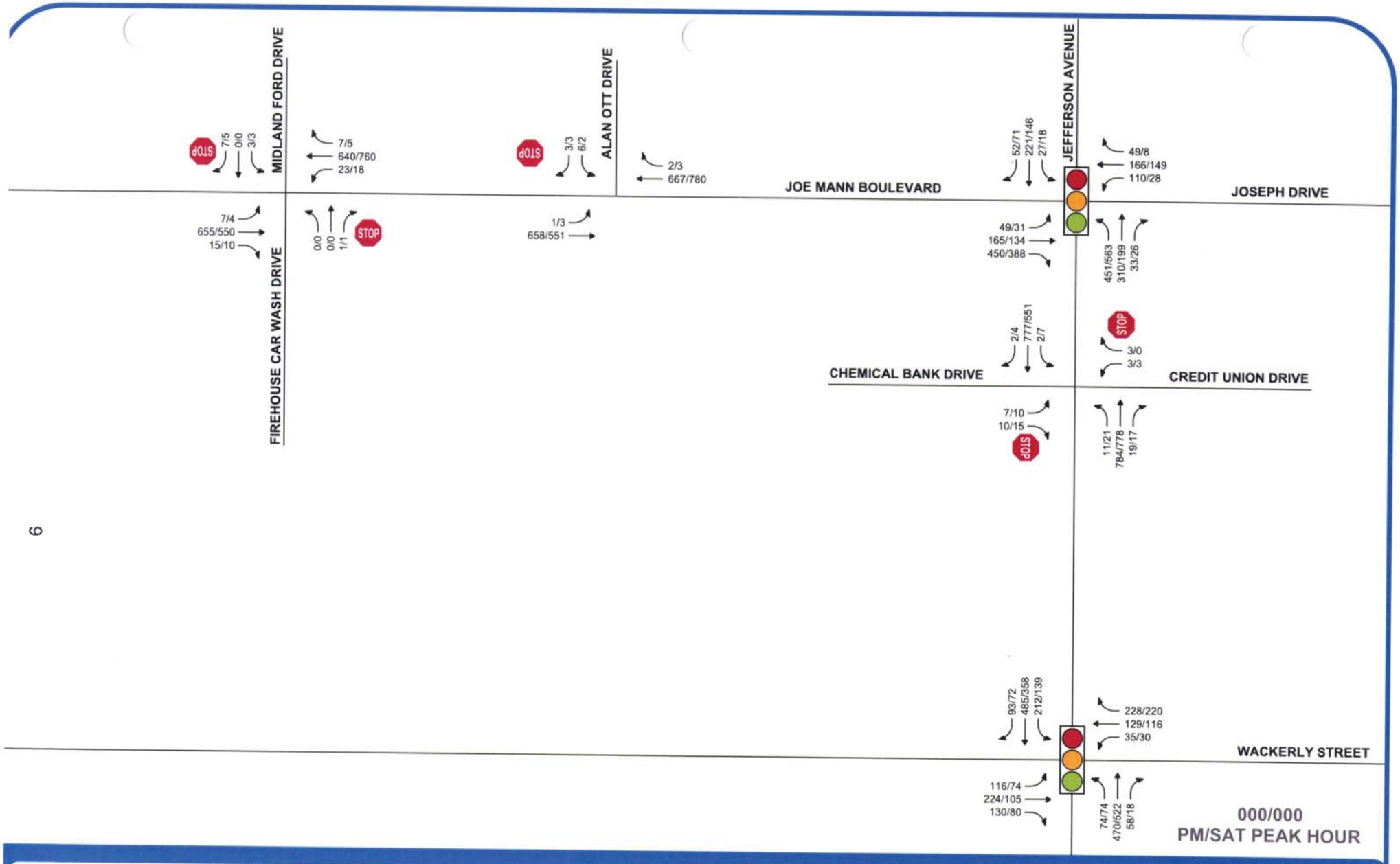


FIGURE 4
BACKGROUND TRAFFIC VOLUMES

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

TRAFFIC VOLUMES (AM/PM)

ROADS

2015

NORTH

SCALE: NOT TO SCALE

3.3 SITE TRIP GENERATION

The number of PM and Saturday peak hour vehicle trips that would be generated by the proposed development was forecast based on data published by ITE in Trip Generation, 9th Edition as well as data provided by Kroger. The ITE land use "Supermarket" best describes the proposed Kroger Marketplace store. However, the majority of data available for this land use is for supermarkets with less than 100,000 SF of Gross Floor Area (GFA). Therefore, the ITE data were compared to customer count data provided by Kroger for three Kroger Marketplace stores to determine an appropriate rate.

3.3.1 Weekday Trip Generation

Daily customer counts were provided for Tuesday, Wednesday, and Thursday of three different stores for two separate weeks. The average number of daily customers was calculated from the data provided and was used to forecast the average daily traffic for a Marketplace Store. This forecast indicates that the Kroger Marketplace store generates approximately 8,800 vehicle trips per day. As shown in **Table 3**, application of the ITE rate significantly over-estimates the number of daily trips that would be generated by the proposed Kroger.

Table 3: Site Trip Generation Comparison

Land Use	ITE Code	Amount	Units	Average Daily Traffic
Site Forecast Trips	850	123,000	SF	12,576
Site Actual Trips		123,000	SF	8,775
% DIFFERENCE				-30%

In order to determine the number of PM peak hour trips that would be generated by the proposed Kroger Marketplace, ITE data for land uses 850 (Supermarket) and 813 (Free-Standing Discount Superstore) were evaluated as they most closely match the proposed use of the Kroger Marketplace store. This data indicates that approximately 9.3% and 8.6% of daily trips occur during the PM peak hour for a Supermarket and Free-Standing Discount Superstore, respectively. Further, the average directional distribution during the PM peak hour for the two uses indicates that approximately 50% of trips are inbound and 50% are outbound. Therefore, trip generation for the proposed Kroger Marketplace during the PM peak hour was calculated to be 9.3% of the 8,800 daily trips with 50% entering and 50% exiting. The pass-by rate at the Kroger Marketplace store was calculated based on the average of the pass-by rates for the Supermarket and Free-Standing Discount Superstore land uses.

3.3.2 Saturday Trip Generation

Saturday customer counts were provided by Kroger for 52 weeks (Dec. 2014-Dec. 2015) for a similar Kroger Marketplace between the hours of 11:00 AM to 1:00 PM. During the Saturday mid-day peak hour the store has an average of 437 transactions. It was assumed that each transaction is two trips, one entering and one exiting. Further, the directional distribution from ITE data for land use Supermarket indicates 51% of trips are inbound and 49% are outbound. Therefore, trip generation for the proposed Kroger Marketplace during the Saturday peak hour was calculated to be 874 peak hour trips with 51% entering and 49% exiting.

The number of PM and Saturday peak hour vehicle trips that would be generated by the fuel station was forecast based on data published by ITE in *Trip Generation, 9th Edition* and the *Trip Generation Handbook, 3rd Edition*. The total site trip generation forecast for the proposed development is shown in **Table 4**.

Table 4: Site Trip Generation

Land Use	ITE Code	Amount	Units	Average Daily Traffic	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	Saturday Peak Hour Total
Supermarket	850	123,000	SF	8,800	409	409	818	446	428	874
Pass-By	*32% PM, 25% SAT*			3,168	131	131	262	112	107	219
				5,632	278	278	556	334	321	655
Gas Station	944	14	Pumps	2,360	97	97	194	109	110	219
Pass-By		*42%*		*802*	*41*	*40*	*81*	*46*	*46*	*92*
New Trips				1,558	56	57	113	63	64	127
TOTAL				**11,160**	**506**	**506**	**1,012**	**555**	**538**	**1,093**
Pass-By				***3,970***	***172***	***171***	***343***	***158***	***153***	***311***
New Trips				**7,190**	**334**	**335**	**669**	**397**	**385**	**782**

As is typical of retail uses, a portion of the site-generated trips are already present on the adjacent road network and are interrupted to visit the site. These trips are known as "pass-by" trips and account for a percentage of the total site-generated traffic. Pass-by trips result in turning movements at the site driveways, but do not increase traffic volumes on the adjacent road network. The pass-by rate for each use was determined based on data published in the *Trip Generation Handbook, 3rd Edition*. The pass-by trip rate for Saturday was calculated based on the Supermarket the PM pass-by rate, which when compared to the Saturday pass-by rates of a Free-Standing Discount Superstore resulted in a 30% reduction in pass-by trips between PM and Saturday. Therefore, the PM Supermarket pass-by rate was averaged with the Saturday Free-Standing Discount Superstore (30% reduction), resulting in an average 25% pass-by trip rate for Saturday.

3.4 SITE TRAFFIC ASSIGNMENT

The vehicle trips that would be generated by the proposed development were assigned to the study road network based on the area of influence methodology using the City of Midland 2010 Census population data. The pass-by trips were distributed to the site driveways based on existing traffic patterns on the Jefferson Avenue and Joe Mann Boulevard. The site-generated and pass-by traffic distributions are shown in **Table 5**. The site generated traffic in Table 4 was assigned to the study intersections based on the site distribution shown in Table 5 and is shown on **Figures 5-1, and 5-2** for Alternatives 1 and 2 respectively.

Table 4: Site Trip Distribution

New Trips PM	New Trips Saturday	To / From	via	*Pass-By PM*	*Pass-By Saturday*
10%	10%	North	Jefferson Avenue	25%	30%
5%	5%	East	Joe Mann Boulevard	25%	20%
20%	20%	East	Wackerly Street	0%	0%
40%	40%	South	Jefferson Avenue	25%	20%
5%	5%	West	Joe Mann Boulevard	25%	30%
20%	20%	West	Wackerly Street	0%	0%
100%	100%			100%	100%

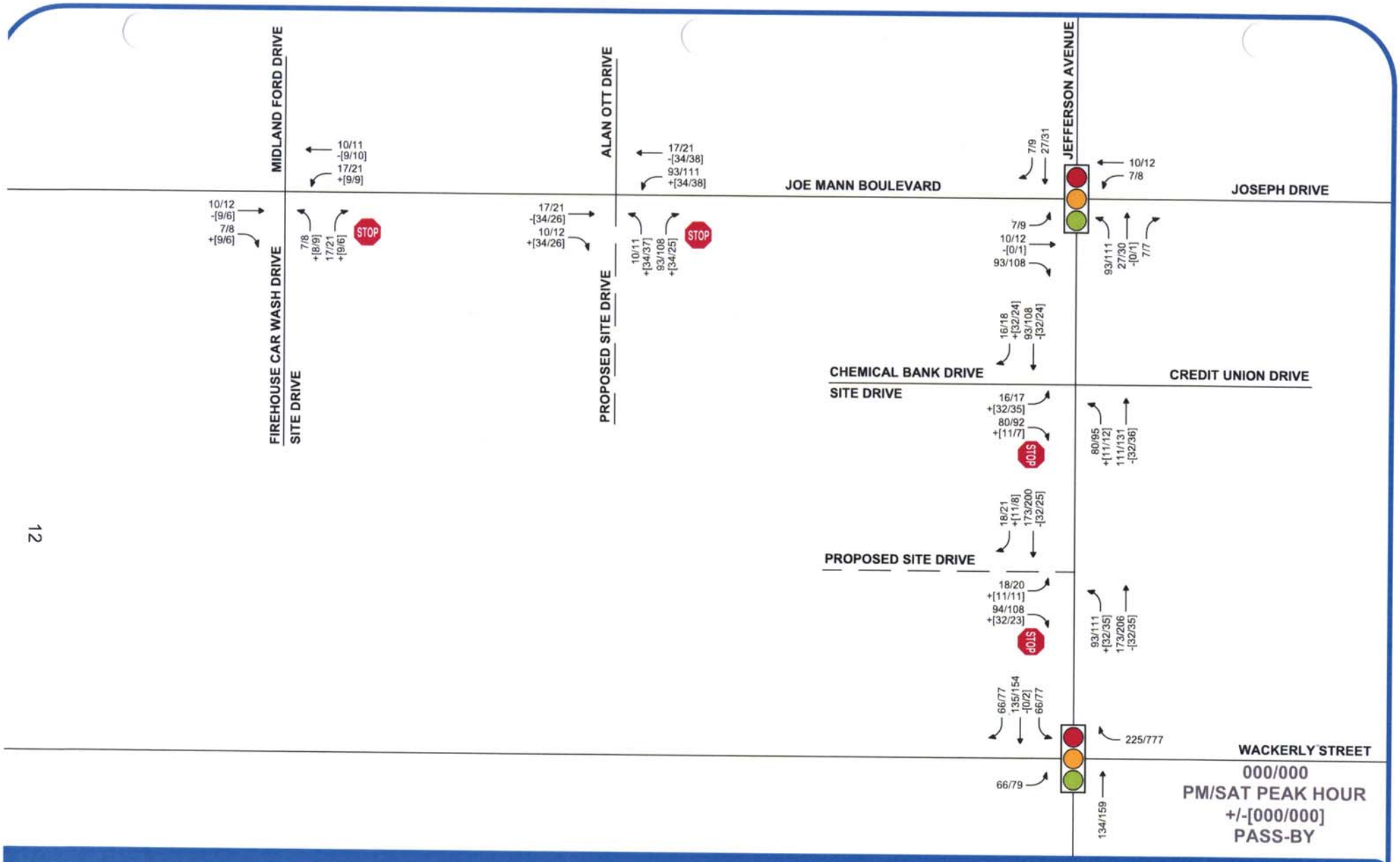


FIGURE 5-1
SITE-GENERATED TRAFFIC VOLUMES

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- TRAFFIC VOLUMES (AM/PM)
- ROADS

2015

NORTH
SCALE: NOT TO SCALE

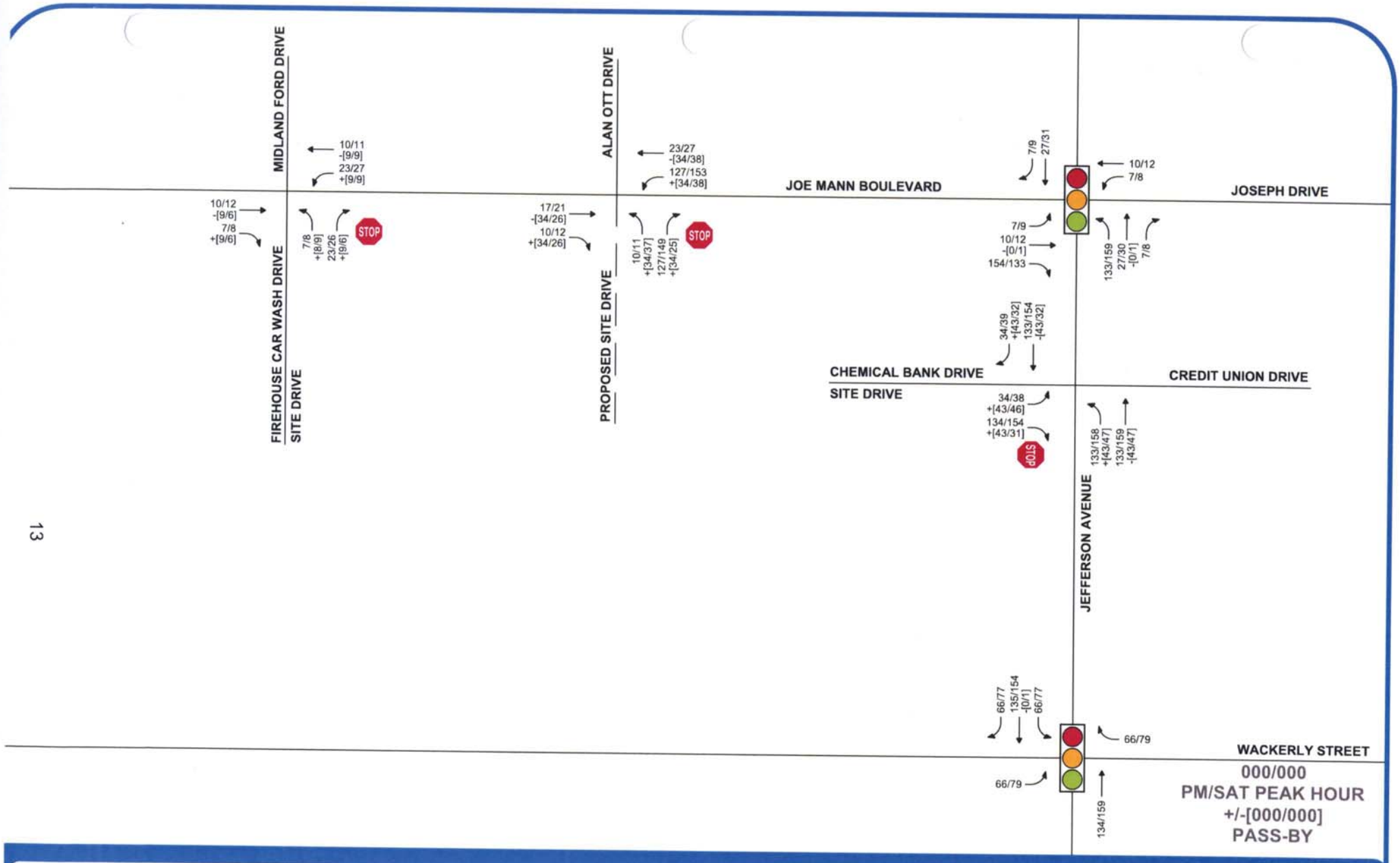


FIGURE 5-2
SITE-GENERATED TRAFFIC VOLUMES

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- TRAFFIC VOLUMES (AM/PM)
- ROADS

2015

NORTH
SCALE: NOT TO SCALE

3.5 FUTURE CONDITIONS

3.5.1 Alternative 1: Two Site Driveways to Jefferson Avenue

The site generated traffic volumes on Figure 5-1 were added to the background traffic volumes shown in Figure 4 to calculate the Future traffic volumes shown on **Figure 6-1**.

Future peak hour vehicle delays and LOS ***with the proposed development*** were calculated based on the existing lane use and traffic control shown on Figure 2-1, the proposed site access plan, the future traffic volumes shown on Figure 6-1, and the methodologies presented in the HCM. Additionally, SimTraffic simulations were utilized to evaluate network operations and vehicle queues. The results of the future conditions analysis are presented in Appendix D and are summarized in **Table 6**.

Table 5: Future Intersection Operations – Alternative 1

			PM Peak		SAT Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Jefferson Avenue & Joe Mann Boulevard	Signalized	EB	54.8	D	34.5	C
		WB	30.1	C	29.0	C
		NB	52.4	D	110.2	F
		SB	29.3	C	17.8	B
		Overall	**45.2**	**D**	**69.7**	**E**
2. Jefferson Avenue & Wackerly Street	Signalized	EB	41.1	D	33.6	C
		WB	48.9	D	33.7	C
		NB	35.3	D	42.0	D
		SB	68.9	E	61.8	E
		Overall	**50.9**	**D**	**46.4**	**D**
3. Joe Mann Boulevard & Alan Ott Drive / Site Drive	STOP (Minor)	EB LT	8.9	A	9.4	A
		WB LT	10.0	A	9.6	A
		NB	53.7	F	69.4	F
		SB	86.2	F	53.3	F
4. Joe Man Boulevard & Firehouse Car Wash Drive / Midland Ford Drive / Site Drive	STOP (Minor)	EB LT	9.0	A	9.4	A
		WB LT	9.3	A	8.9	A
		NB	29.9	D	31.3	D
		SB	24.7	C	28.7	D
5. Jefferson Avenue & Chemical Bank Drive / Credit Union Drive / Site Drive	STOP (Minor)	EB	423.9	F	214.4	F
		WB	184.2	F	166.5	F
		NB LT	10.9	B	10.2	B
		SB LT	10.1	B	9.9	A
6. Jefferson Avenue & Site Drive	STOP (Minor)	EB	31.3	D	24.5	C
		NB LT	11.8	B	10.7	B
		SB	Free		Free	

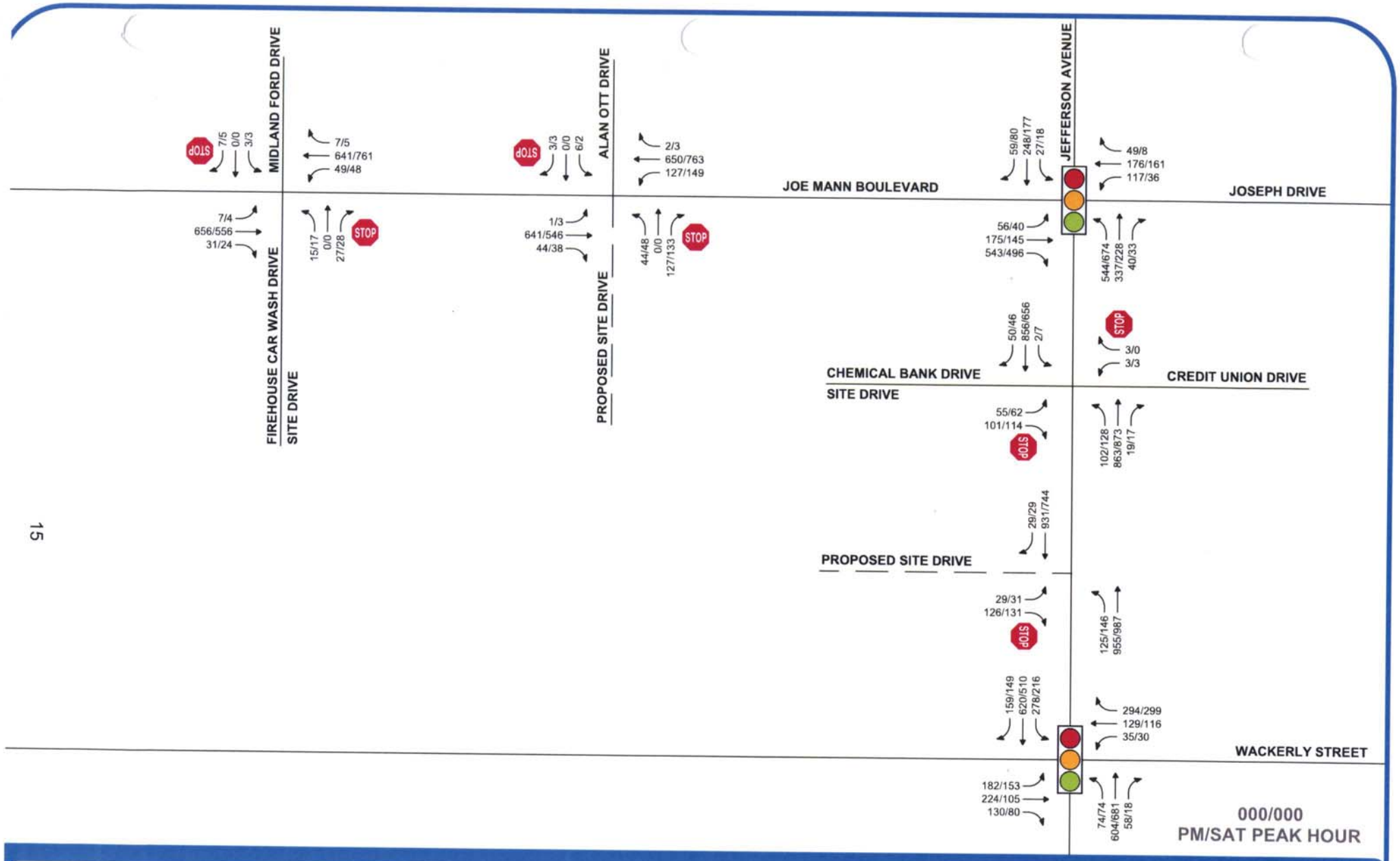


FIGURE 6-1
FUTURE TRAFFIC VOLUMES

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

TRAFFIC VOLUMES (AM/PM)

ROADS

2015

NORTH

SCALE: NOT TO SCALE

The future traffic operations were evaluated with the addition of the site generated traffic volumes. The results of the future conditions analysis indicates that all approaches at the signalized study intersections will continue to operate acceptably at a LOS D or better during both peak hours except, the southbound approach at Jefferson Avenue & Wackerly Street operating at a LOS E during both peak periods and the northbound approach at Jefferson Avenue & Joe Mann Boulevard operating at a LOS F during the Saturday peak period.

Furthermore, all approaches and movements at the intersection of Jefferson Avenue & Site Drive and Joe Mann Boulevard & Firehouse Car Wash / Site Drive will operate acceptably at a LOS D or better during the peak periods. The egress movements at Jefferson Avenue & Chemical Bank / Site Drive and Joe Mann Boulevard & Alan Ott Drive / Site Drive will operate at a LOS F during the peak periods, while the ingress movements will continue to operate acceptably at LOS C or better.

The SimTraffic simulations were reviewed for the PM and Saturday peak hours. During the PM peak hour, the results indicate long vehicle queues for the eastbound left turn, southbound and northbound movements at the intersection of Jefferson Avenue & Wackerly Street. Additionally, long vehicle queues are observed for the egress left turn movement at Jefferson Avenue & Chemical Bank Drive / Site Drive throughout the peak period.

During the Saturday peak hour, long vehicle queues are observed on eastbound and southbound approaches at the intersection of Jefferson Avenue & Wackerly Street. The northbound left turn queue at the intersection of Jefferson Avenue & Joe Mann Boulevard extends through the intersection of Jefferson Avenue & Chemical Bank Drive / Site Drive, blocking the egress left turn movement from this driveway.

In order to provide acceptable network traffic conditions, including site ingress and egress operations, improvements were investigated as detailed below. The results of the future conditions analysis with the recommended improvements are presented in Appendix D and are summarized in **Table 7**.

- A signal warrant analysis was completed at the intersection of Joe Mann Boulevard & Alan Ott Drive / Site Drive. The results of this analysis indicate ***Warrant 3 is met*** during both peak periods.
- The signal timing at the intersection of Jefferson Avenue & Wackerly Street was optimized, including the addition of permissive / protected left turns and right turn overlap phasing were added for the eastbound and westbound approaches.
- The signal timing was optimized at the intersection of Jefferson Avenue & Joe Mann Boulevard and an eastbound right turn overlap phase was added.

Table 6: Future Intersection Operations – Alternative 1 with Improvements

			PM Peak		SAT Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Jefferson Avenue & Joe Mann Boulevard	Signalized	EB	41.9	D	27.4	C
		WB	40.1	D	39.4	D
		NB	33.7	C	35.3	D
		SB	30.7	C	27.1	C
		Overall	**36.8**	**D**	**32.6**	**C**
2. Jefferson Avenue & Wackerly Street	Signalized	EB	51.1	D	44.4	D
		WB	56.4	E	45.1	D
		NB	54.8	D	42.8	D
		SB	29.9	C	18.2	B
		Overall	**45.5**	**D**	**34.5**	**C**
3. Joe Mann Boulevard & Alan Ott Drive / Site Drive	Signalized	EB	5.7	A	5.2	A
		WB	5.5	A	6.0	A
		NB	51.0	D	48.9	D
		SB	45.6	D	42.5	D
		Overall	**10.7**	**B**	**10.5**	**B**

The results of the future conditions analysis with the recommended improvements indicates all approaches at the signalized intersections will operate at a LOS D or better except the westbound approach at the intersection of Jefferson Avenue & Wackerly Street which will operate at a LOS E during the PM peak period. Additionally,

site traffic will utilize the signalized intersection of Joe Mann Boulevard & Alan Ott Drive, improving egress delays at Jefferson Avenue & Chemical Bank Drive / Site Drive.

Review of network simulations with these improvements indicates a northbound queue on Jefferson Avenue at Wackerly Street will be present for the peak 30 minutes of both peak periods while vehicle queues on the westbound approach are processed acceptably during each signal cycle. Additionally, due to the high traffic volumes along Jefferson Avenue the egress left turn queue on the Chemical Bank Drive / Site Drive will still be present. There is additional capacity at the intersection of Joe Mann Boulevard & Alan Ott Drive / Site drive, so vehicles traveling north on Jefferson Avenue or east on Joseph Drive will take advantage of the signalized site driveway during peak periods. The northbound left turn queue will block the intersection of Jefferson Avenue & Chemical Bank Drive / Site Drive for approximately 2 minutes during the PM peak period and 8 minutes during the Saturday peak period, which is not significant.

3.5.2 Alternative 2: One Site Driveway to Jefferson Avenue

The site generated traffic volumes on Figure 5-2 were added to the background traffic volumes shown in Figure 4 to calculate the Future traffic volumes shown on **Figure 6-2**.

Future peak hour vehicle delays and LOS ***with the proposed development*** for Alternative 2 were calculated based on the existing lane use and traffic control shown on Figure 2-2, the proposed site access plan, the future traffic volumes shown on Figure 6-2, and the methodologies presented in the HCM. Additionally, SimTraffic simulations were utilized to evaluate network operations and vehicle queues. The results of the future conditions analysis are presented in Appendix D and are summarized in **Table 8.**

Table 8: Future Intersection Operations – Alternative 2

			PM Peak		SAT Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Jefferson Avenue & Joe Mann Boulevard	Signalized	EB	77.3	E	40.5	D
		WB	30.1	C	29.0	C
		NB	70.9	E	139.2	F
		SB	29.3	C	17.8	B
		Overall	**58.8**	**E**	**86.0**	**F**
2. Jefferson Avenue & Wackerly Street	Signalized	EB	41.1	D	33.6	C
		WB	48.9	D	33.7	C
		NB	35.3	D	42.0	D
		SB	68.9	E	62.0	E
		Overall	**50.9**	**D**	**46.5**	**D**
3. Joe Mann Boulevard & Alan Ott Drive / Site Drive	STOP (Minor)	EB LT	9.0	A	9.4	A
		WB LT	10.3	B	9.9	A
		NB	62.3	F	81.4	F
		SB	139.2	F	76.7	F
4. Joe Man Boulevard & Firehouse Car Wash Drive / Midland Ford Drive / Site Drive	STOP (Minor)	EB LT	9.0	A	9.4	A
		WB LT	9.4	A	9.0	A
		NB	28.9	D	28.2	D
		SB	25.6	D	29.4	D
5. Jefferson Avenue & Chemical Bank Drive / Credit Union Drive / Site Drive	STOP (Minor)	EB	1072.9	F	644.2	F
		WB	17.2	C	558.5	F
		NB LT	12.3	B	11.4	A
		SB LT	10.1	A	10.0	A

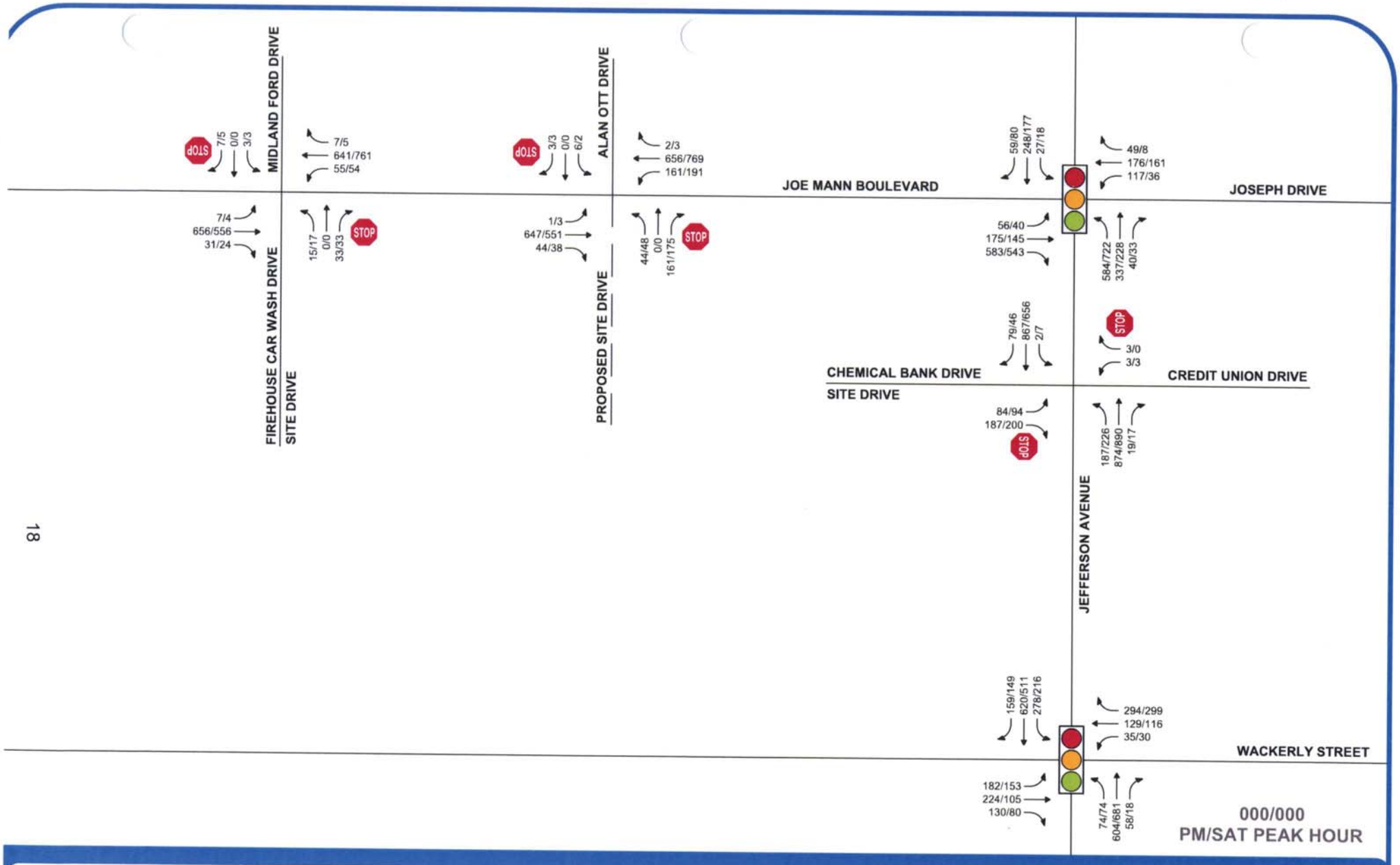


FIGURE 6-2
FUTURE TRAFFIC VOLUMES

KROGER MARKETPLACE - MIDLAND, MI

LEGEND

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

TRAFFIC VOLUMES (AM/PM)

ROADS

2015

NORTH

SCALE: NOT TO SCALE

The future traffic operations were evaluated with the addition of the site generated traffic volumes. The results of the future conditions analysis indicates that all approaches at the intersection of Jefferson Avenue & Wackerly Street will continue to operate acceptably at a LOS D or better during both peak hours except for the southbound approach operating at a LOS E during both peak periods. The intersection of Jefferson Avenue & Joe Mann Boulevard will operate at an overall LOS E and F during the PM and Saturday peak periods, respectively. The northbound approach at this intersection will operate at a LOS E and F during the PM and Saturday peak periods respectively and the eastbound approach will operate at a LOS E during the PM peak period.

Furthermore, all approaches at the intersection of Joe Mann Boulevard & Firehouse Car Wash / Site Drive will operate acceptably at a LOS D or better during the peak periods. The egress movements at Jefferson Avenue & Chemical Bank / Site Drive and Joe Mann Boulevard & Alan Ott Drive / Site Drive will operate at a LOS F during the peak periods, while the ingress movements will continue to operate acceptably at LOS C or better.

The SimTraffic simulations were reviewed for the PM and Saturday peak hours. During the PM peak period, the results indicate long vehicle queues for the eastbound left turn movement at the intersection of Jefferson Avenue & Wackerly Street. Additionally, long vehicle queues are observed for the egress left turn movement at Jefferson Avenue & Chemical Bank Drive / Site Drive throughout the peak period.

During the Saturday peak hour, long vehicle queues are observed on the eastbound approach throughout the peak period and periodic queues northbound at the intersection of Jefferson Avenue & Wackerly Street. A long northbound left turn queue at the intersection of Jefferson Avenue & Joe Mann Boulevard extends through the intersection of Jefferson Avenue & Chemical Bank Drive / Site Drive, blocking the egress left turn movement from the site during both peak periods.

In order to provide acceptable network traffic conditions, including site ingress and egress operations, improvements were investigated as detailed below. The results of the future conditions analysis with the recommended improvements are presented in Appendix D and are summarized in **Table 7**.

- A signal warrant analysis was completed at the intersection of Joe Mann Boulevard & Alan Ott Drive / Site Drive. The results of this analysis indicate ***Warrant 3 is met*** during both peak periods.
- The signal timing at the intersection of Jefferson Avenue & Wackerly Street was optimized, including the addition of permissive / protected left turns and right turn overlap phasing were added for the eastbound and westbound approaches.
- The signal timing was optimized at the intersection of Jefferson Avenue & Joe Mann Boulevard and an eastbound right turn overlap phase was added.

Table 9: Future Intersection Operations – Alternative 2 with Improvements

			PM Peak		SAT Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Jefferson Avenue & Joe Mann Boulevard	Signalized	EB	29.6	C	26.5	C
		WB	39.9	D	39.4	D
		NB	40.5	D	44.4	D
		SB	33.6	C	28.8	C
		Overall	**36.4**	**D**	**37.2**	**D**
2. Jefferson Avenue & Wackerly Street	Signalized	EB	51.1	D	44.4	D
		WB	56.4	E	45.1	D
		NB	54.8	D	42.8	D
		SB	29.9	C	18.2	B
		Overall	**45.5**	**D**	**34.5**	**C**
3. Joe Mann Boulevard & Alan Ott Drive / Site Drive	Signalized	EB	6.9	A	6.5	A
		WB	7.1	A	7.7	A
		NB	52.7	D	51.1	D
		SB	44.8	D	40.9	D
		Overall	**12.8**	**B**	**12.9**	**B**

The results of the future conditions analysis with the recommended improvements indicates all approaches at the signalized intersections will operate at a LOS D or better except the westbound approach at the intersection of Jefferson Avenue & Wackerly Street which will operate at a LOS E during the PM peak period. Additionally, site traffic will utilize the signalized intersection of Joe Mann Boulevard & Alan Ott Drive, improving egress delays at Jefferson Avenue & Chemical Bank Drive / Site Drive.

Review of network simulations with these improvements indicates a northbound queue on Jefferson Avenue at Wackerly Street will be present for the peak 30 minutes of both peak periods, while vehicle queues on the westbound approach are processed acceptably during each signal cycle. Additionally, due to the high traffic volumes along Jefferson Avenue the egress left turn queue on the Chemical Bank Drive / Site Drive will still be present. Northbound approach vehicle queues on Jefferson Avenue at Joe Man Boulevard will block the intersection of Jefferson Avenue & Chemical Bank Drive / Site Drive for approximately 6 minutes during the PM peak period and 14 minutes during Saturday peak period.

3.6 PLANNED IMPROVEMENTS

The recommended intersection improvements at Jefferson Avenue & Wackerly Street and Jefferson Avenue & Joe Mann Boulevard included herein were also previously identified by the City in the Master Plan. In addition, the City also identified that improvements were need on Jefferson Avenue, stating "If/when the overpass is reconstructed, correct alignment of Jefferson north of intersection." Additionally, the City also identified existing traffic delays at the intersection of Jefferson Avenue & Joe Mann Boulevard and there noted the need for improvements under existing conditions. The City's additional mitigation measures include a roundabout at the intersection of Jefferson Avenue & Joe Mann Boulevard, in conjunction with the installation of a boulevard along Joe Mann Boulevard between Jefferson Avenue and Eastman Avenue.

4 CONCLUSIONS

The conclusions of this Traffic Impact Study (TIS) are as follows:

1. All signalized study intersection approaches and movements currently operate acceptably at an overall LOS D or better during both peak periods.
2. At the unsignalized study intersections the eastbound approach of Chemical Bank Drive operates at a LOS E during the PM peak and the westbound approach operates at a LOS E during both peaks.
3. An average annual background growth rate of 0.6% was applied to the existing 2015 traffic volumes to calculate the 2017 background traffic volumes.
4. All signalized study intersections will continue to operate at an overall LOS D or better during the peak periods with background traffic volumes. At the STOP controlled minor streets, all approaches and movements will continue to operate in a manner similar to existing conditions
5. The recommended intersection improvements at Jefferson Avenue & Wackerly Street and Jefferson Avenue & Joe Mann Boulevard included herein were also previously identified by the City in the Master Plan. The City's additional mitigation measures include a roundabout at the intersection of Jefferson Avenue & Joe Mann Boulevard, in conjunction with the construction of a boulevard along Joe Mann Boulevard between Jefferson Avenue and Eastman Avenue.

Alternative 1: Two Site Driveways on Jefferson

6. Future traffic operations indicate the southbound approach at Jefferson Avenue & Wackerly Street will operate at a LOS E during both peak periods and the northbound approach at Jefferson Avenue & Joe Mann Boulevard will operate at a LOS F during the Saturday peak period.
7. With the recommended improvements, all study network intersections and site driveways will operate acceptably during the PM and Saturday peak hours except the intersections of Jefferson Avenue & Wackerly Street, Jefferson Avenue & Chemical Bank / Site Drive, and Alan Ott Drive / Site Drive which will have several approaches and movements operate at a LOS F.

Alternative 2: One Site Driveway on Jefferson

8. Future traffic operations with the proposed development indicate the southbound approach at Jefferson Avenue & Wackerly Street will operate at a LOS E during the both peak periods. The intersection of

Jefferson Avenue & Joe Mann Boulevard will operate at an overall LOS E and F during the PM and Saturday peak periods, respectively, with several movements operating at LOS E or F.

9. The egress movements at Chemical Bank / Site Drive and Alan Ott Drive / Site Drive will operate at a LOS F during the peak periods.
10. With the recommended improvements, all study network intersections and site driveways of Alternative 2 will operate acceptably during the PM and Saturday peak hours, except at the intersection of Jefferson Avenue & Chemical Bank / Site Drive which will continue to have several approaches and movements operate at a LOS F.

5 RECOMMENDATIONS

The following are recommended based on the results of this TIS:

1. Based on the results of this analysis the proposed site plan evaluated with Alternative 1: *Two Site Driveways on Jefferson* is recommended. This development plan provides the necessary site access for the proposed development. Limiting the site access to one driveway on Jefferson Avenue creates extensive on-site queuing
2. The recommended intersection improvements with the proposed site development are summarized below:
    - Signalize the intersection of Joe Mann Boulevard & Alan Ott Drive / Site Drive with an actuated traffic signal.
    - Provide permissive/protected left turns for the eastbound and westbound approaches on Wackerly Street at Jefferson Avenue intersection.
    - Provide right turn overlap phasing for the eastbound and westbound approaches on Wackerly Street at Jefferson Avenue intersection.
    - Provide right turn overlap phasing for the eastbound approach on Joe Mann Boulevard at the Jefferson Avenue intersection.
3. Optimize signal timings at the study intersections with the addition of the proposed site development traffic.

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Memo

VIA EMAIL

To:	**Mr. Daniel Carper** **Kroger Company of Michigan**
From:	**Michael J. Labadie, PE** **Julie M. Kroll, PE, PTOE** **Fleis & VandenBrink**
Date:	**February 9, 2016**
Re:	**Proposed Kroger Development** **City of Midland, Michigan** **Traffic Impact Study Addendum**

Introduction

This memorandum is intended as an addendum to the original Traffic Impact Study (TIS) dated December 28, 2015 completed by Fleis & VandenBrink (F&V) for the proposed Kroger Marketplace development in the City of Midland. The City of Midland's traffic consultant (OHM) provided a review letter dated January 18, 2016 with questions and comments regarding F&V's traffic impact study. F&V subsequently met with OHM, the City of Midland, Kroger and LSG Engineers & Surveyors (LSG) on January 29, 2016 in the City of Midland.

A follow-up meeting was held on February 3, 2016 at F&V's Farmington Hills office with OHM, Kroger and LSG in attendance. The focus of this meeting included the following topics:

- Trip generation methodology and calculations.
- South site driveway to Jefferson Avenue operations.
- North site driveway to Jefferson Avenue egress queue length.

The purpose of this memorandum is to provide further information relative to the trip generation methodology utilized for the proposed Kroger Marketplace store and a summary of the items discussed regarding the site driveways on Jefferson Avenue.

Site Trip Generation

The Institute of Transportation Engineers (ITE) *Trip Generation, 9th Edition (current)* is the standard reference manual used to estimate traffic generated by new developments. However, ITE data does not sufficiently represent a 123,000 SF Kroger Marketplace store. Land use #850 (Supermarket) is illustrative of traditional grocery stores with an average size of approximately 60,000 square feet (SF) and which sells ancillary household items in addition to groceries. Land use #813 (Free-Standing Discount Superstore) includes a full service grocery department and a discount store under the same roof with an average size of approximately 200,000 square feet (SF). The Kroger Marketplace store is a hybrid of these two land uses; with a traditional grocery store which sells ancillary household items. As such, customer count data was provided by Kroger from existing Marketplace stores and was utilized to estimate the trip generation for the store. Detailed information regarding the trip generation calculations is summarized below:

27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334
P: 248.536.0080
F: 248.536.0079
www.fveng.com

Weekday PM Peak Hour Trip Generation

The number of weekday PM Peak hour trips generated by the proposed Kroger Marketplace store was calculated as follows:

1. Daily customer count information was provided by Kroger for two separate weeks from the following three Kroger Marketplace located in suburban Little Rock, Arkansas.

   a. 855 Salem Road, Conway, AR 72034 14 fueling positions

   b. 16105B Chenal Parkway, Little Rock, AR 72223 14 fueling positions

   c. 14000 Cantrell Little Rock, AR 72212 10 fueling positions

2. The weekday Tuesday, Wednesday, and Thursday counts from each store were averaged together to calculate approximately 4,400 customers per day.

3. Assuming two vehicle trips (one ingress, one egress) per customer resulted in 8,800 daily trips for an average weekday.

4. To determine the PM peak hour trips, the ratio of PM peak hour to daily trips were than calculated from the average trip generation rates for both ITE land use #850 (Supermarket) and #813 (Free-Standing Discount Superstore) as they were determined to most closely match the operations of the Kroger Marketplace store.

$$\frac{PM\ trip\ gen\ rate}{Daily\ trip\ gen\ rate} \quad ITE\ Land\ Use\ 813\ \frac{4.35\ vph}{50.75\ vpd} = 8.6\% \quad ITE\ Land\ Use\ 850\ \frac{9.48\ vph}{102.24\ vpd} = 9.3\%$$

5. The results of this comparison indicate that 8.6% and 9.3% of daily trips occur during the PM peak hour for land use #813 and #850, respectively.

6. As a conservative approach the 9.3% ratio was utilized and applied to the 8,800 daily trips to calculate a total weekday PM peak hour trip generation of 818 trips. $\{8{,}800vpd \times 9.3\% = 818\ vph\}$

7. The directional distribution of inbound vs. outbound trips was calculated as the average between land uses #813 and #850 resulting in a directional distribution of 50% inbound and 50% outbound.

8. The pass-by percentage was also calculated as an average between land use #813 and #850 and results in a pass-by rate of 32%.

Saturday Mid-day Peak Hour Trip Generation

The number of Saturday mid-day peak hour trips generated by the proposed Kroger Marketplace store was calculated as follows:

1. Saturday hourly customer count information for two hours between 11:00 AM to 1:00 PM for 52 weeks was provided by Kroger for the following existing Kroger Marketplace location:

   a. 14945 23 Mile Road
   Shelby Township, MI 48315
   14 fueling positions

2. The higher hourly count from each of the 52 weeks were averaged together to determine an average Saturday mid-day peak of 437 customers per hour.

3. Assuming two vehicle trips (one ingress, one egress) per customer resulted in 874 peak hour trips.

4. The directional distribution of inbound vs. outbound trips was calculated as the average between land uses #813 and #850 resulting in a directional distribution of 51% inbound and 49% outbound.

5. Saturday pass-by data is not available for land use #850; therefore, in order to develop a Saturday pass-by rate, weekday PM peak hour pass-by rates were compared to Saturday mid-day pass-by rates for land uses #813 and #820 (Shopping Center). The results of this comparison indicate that there are approximately 30% more pass-by trips during the weekday PM peak hour as compared to the Saturday mid-day peak hour.

6. The 30% increase in pass-by trips was then applied to the weekday pass-by rate (36%) for land use #850 resulting in a Saturday mid-day pass-by rate of 28%. $\left[\frac{PM}{\%\ Increase}\right]\frac{36\%}{1.3} = 28\%$

7. The projected Saturday mid-day pass-by rate for land use #850 was then average with the Saturday mid-day pass-by rate for land use #813 resulting in a pass-by rate of 25%. $\left[\frac{\#813\ SAT+\#850\ SAT}{2}\right]\frac{21\%+28\%}{2} = 25\%$

Conclusions

The following is a summary of items discussed during our February 3, 2016 meeting with OHM.

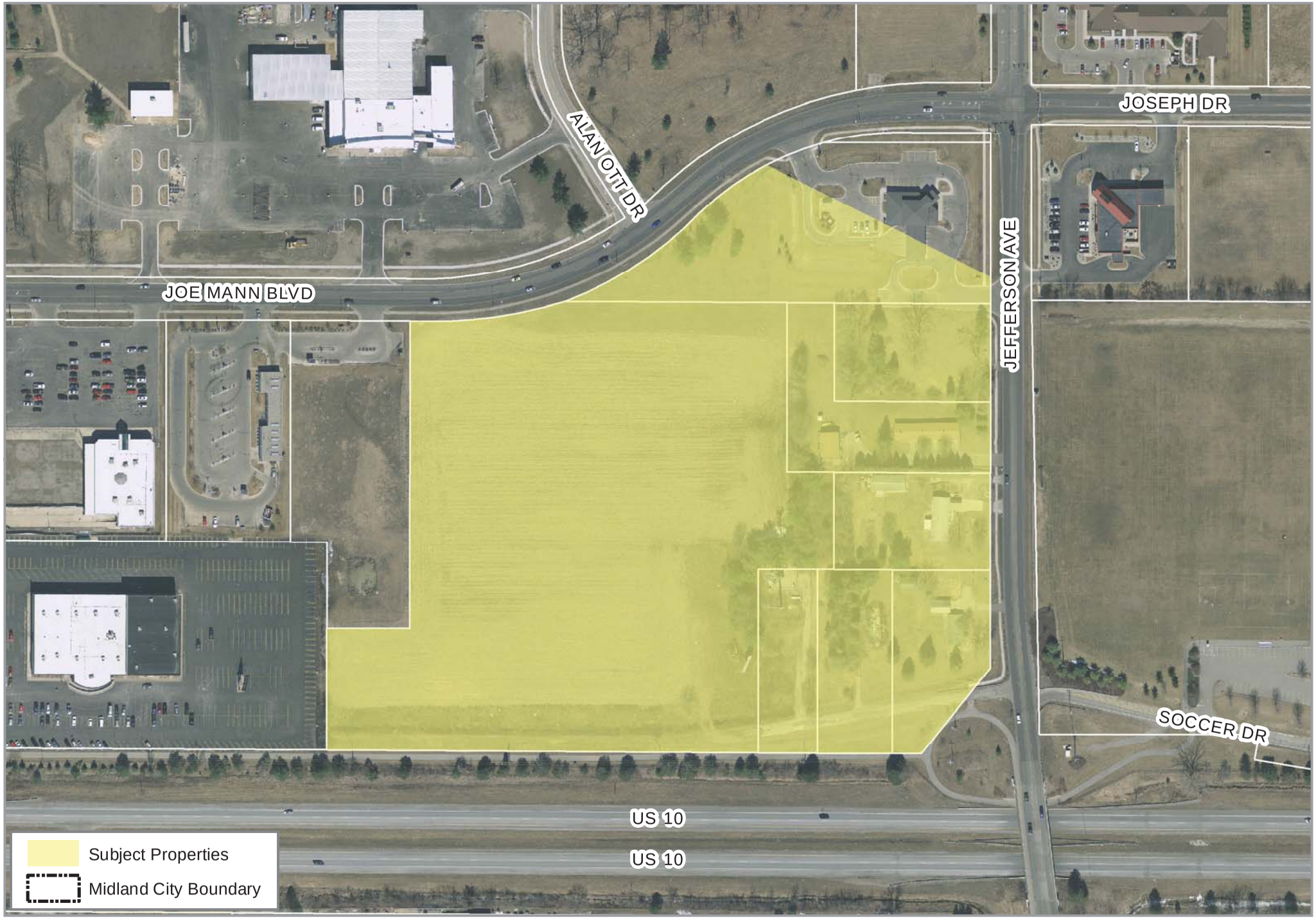
1. F&V presented the trip generation methodology and OHM approved of the trip generation data included in the TIS and as summarized above.
2. OHM requested restriction of egress left turns from the south site driveway to Jefferson Avenue. F&V and Kroger agreed to the prohibition of egress left turns, provided the "pork chop" channelizing island can be designed to adequately accommodate a WB-67. OHM did not require update of the TIS to reflect the restriction of egress left turns.
3. OHM requested increased storage space for the eastbound (egress) right turn lane on the north site driveway to Jefferson Avenue to decrease the likelihood of vehicles in the left turn lane blocking access for right-turns at this driveway. F&V agreed and LSG will redesign the right turn storage to accommodate 5-6 vehicles, with approximately 125-150 feet of queue length.

We hope that this information provides adequate clarification to address the concerns of OHM and the City of Midland. Any questions related to this memorandum, study, analyses, or results should be addressed to Fleis & VandenBrink.

SJR:jmk

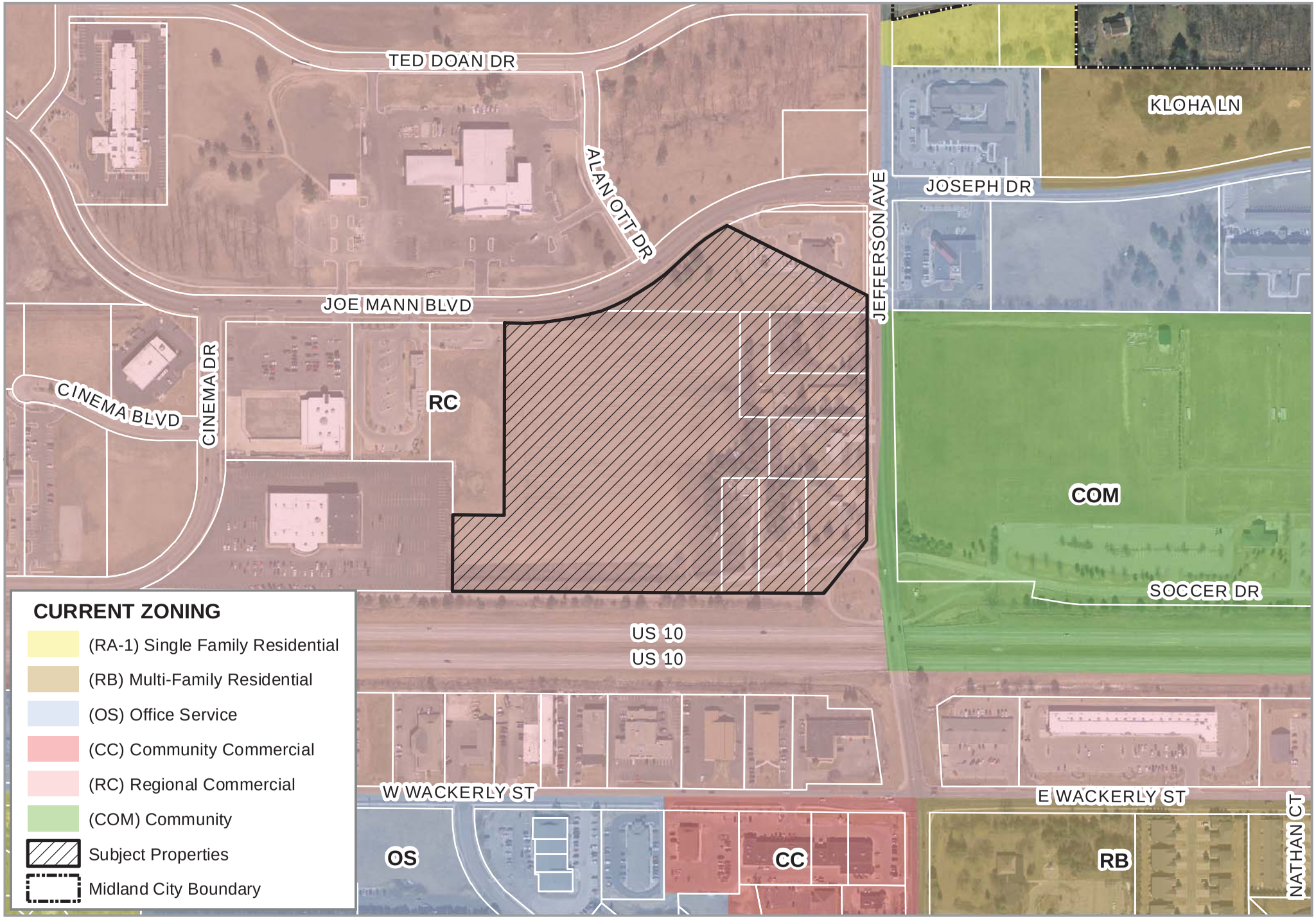
SP #343 - LSG Engineers & Surveyors

> 315 Joe Mann Blvd - Proposed Kroger Marketplace & Fuel Center



SP #343 - LSG Engineers & Surveyors

> 315 Joe Mann Blvd - Proposed Kroger Marketplace & Fuel Center



PLANS FOR CONSTRUCTION OF
KROGER MARKETPLACE #D-777

315 JOE MANN BOULEVARD
MIDLAND, MI 48642

DATE	DESCRIPTION	BY
2/11/16	PER CITY COMMENTS	MLS
12/30/15	SITE PLAN SUBMITTAL	MLS

REVISIONS/SUBMITTALS

NOTES

GENERAL

1. CONTROL BENCHMARK:
   City of Midland Engineering Department Combined Plan for N. Jefferson Avenue. (Sheet 2 of 2) P.K. Nail in power pole on the West side of Jefferson Avenue at house #1589.
   Elevation: 651.40 (Datum not specified)

   BENCHMARK #1:
   Northeast flange bolt under "S" in "WORKS" on fire hydrant 7± East of East curb line of Jefferson Avenue, 115'± South of the centerline of Chemical Bank driveway.
   Elevation: 650.08

   BENCHMARK #2:
   Chiseled "□" on top of East side of Northerly concrete light pole base located 55'± South of Northeast corner of parking lot for #6540 Cinema Drive. Also being opposite West side of detention pond West of subject property.
   Elevation: 643.71

   BENCHMARK #3:
   Chiseled "□" on Southwest corner of concrete slab under a bench on the South right of way line of Joe Mann Boulevard, 60' West of centerline Alan Ott Drive to the North.
   Elevation: 644.99
2. The contractor shall call "MISS DIG" at 811 or 1-800-482-7171 at least 3 working days (excluding weekends and holidays) prior to construction.
3. All work shall be done in accordance with the applicable codes, ordinances, design standards and standard specifications of the following agencies which have the responsibility of reviewing plans and specifications for construction of all items included in these plans:
   a. City of Midland
   b. Midland County
   c. State of Michigan
4. The contractor shall apply for and obtain all necessary permits as required for construction of this project prior to the beginning of work from the previously mentioned agencies.
5. The contractor shall notify the City of Midland a minimum of 24 hours prior to any construction in the road right-of-way of Joe Mann Boulevard or Jefferson Avenue.
6. The contractor agrees that in accordance with generally accepted construction practices, the contractor will be required to assume sole responsibility for job site conditions during the course of construction of the project, including the safety of all persons and property. This requirement shall be made to apply continuously and not be limited to normal working hours.
7. The locations and dimensions shown on the plans for existing facilities are in accordance with all available information. The engineer does not guarantee the accuracy of this information or that all existing underground facilities are shown.
8. When any existing utility requires adjustment or relocation, the contractor shall notify the proper utility company and coordinate the work accordingly. There shall be no claim made by the contractor for any costs caused by delays in construction due to the adjustment or relocation of utilities.
9. The contractor is to verify that the plans and specifications that he/she is building from are the very latest plans and specifications that have been approved by all applicable permit-issuing agencies and the owner. All items constructed by the contractor prior to receiving the final approval and permits having to be adjusted or re-done, shall be done at the contractor's expense.
10. Should the contractor encounter conflict between these plans and specifications, either among themselves or with the requirements of any and all reviewing and permit-issuing agencies, he/she shall seek clarification in writing from this engineer before commencement of construction. Failure to do so shall be at the sole expense to the contractor.
11. Unless otherwise noted the contractor shall furnish as-built drawings indicating all changes and deviations from approved drawings.
12. All signs and traffic control measures during construction and maintenance activities shall be constructed and installed per the latest edition of the Michigan Manual of Uniform Traffic Control Devices (M.M.U.T.C.D.).
13. LSG Engineers & Surveyors will not be responsible for field design changes made by the contractor or the contractor's surveyor where LSG Engineers & Surveyors has not approved these design changes.

GRADING AND SITE WORK

1. All sedimentation and soil erosion control measures shall be constructed prior to the commencement of site grading and must conform to Part 91 of Act 451 of the Public Acts of 1994 as amended. All applicable permits shall be obtained before implementing these measures. The contractor shall be responsible for maintaining the sedimentation and soil erosion control measures throughout construction.
2. Prior to grading, cutting and filling the contractor shall remove all topsoil, debris, vegetation, etc. from the site. Acceptable material excavated from the cut areas shall be used for fill. Fill shall be placed in layers not exceeding depths of 8 inches if heavy self-propelled compaction equipment is used and 6 inches if hand compaction equipment is used. Fill shall be compacted to 98% of the material's Standard Proctor maximum dry density for structural areas and to 95% of Standard Proctor maximum dry density for landscape areas where long term plans do not include structures. Refer to the Geotechnical Engineering Report prepared by TerraCon Consultants for additional compaction information.
3. The contractor shall proof-roll the existing subgrade to determine its suitability. If, in the opinion of the engineer, the subgrade is unsuitable that portion of the subgrade shall be excavated and replaced with a minimum of 12" M.D.O.T. Class II granular material.
4. All site grading must be performed to insure positive drainage across the entire site, throughout the period of construction and after project completion.

STORM DRAINAGE SYSTEM

1. Unless otherwise noted all storm drain pipe shall be ASTM C-76 Class III or better, with premium joints. All storm drain with less than 3 feet of cover below paved areas shall be ASTM C-76 Class IV, with premium joints.
2. All storm drain service leads shall be 4" minimum Schedule 40 or SDR-35 unless otherwise noted on these plans.
3. All storm drain manholes and catch basins shall conform to the City of Midland Standard Details included in these plans.
4. All storm drain within the influence of roads, drives, walks, structures and foundations shall be backfilled with 100% granular material (or approved other) and compacted to 98% of its maximum unit weight (see typical trench details included in these plans).
5. All frames and covers on drainage structures shall be non-rocking, made of heavy duty cast iron and shall conform to the casting schedule on sheet C1.3.1.
6. All rim elevations in outlawn areas are approximate only and shall be adjusted by the contractor after final grades are established.
7. See Storm Drain Details on sheets C1.3.1 & C5.3.1.

SANITARY SEWER SYSTEM

1. All construction of the sanitary sewer system shall conform to the sanitary sewer construction plans and specifications approved by the City of Midland.
2. All sanitary sewer pipe shall be PVC SDR-26 unless otherwise noted on these plans.
3. All rim elevations in outlawn areas are approximate only and shall be adjusted by the contractor after final grades are established.
4. All sanitary sewer within the influence of roads, drives, walks, structures and foundations shall be backfilled with 100% granular material (or approved other) and compacted to 98% of its maximum dry density (see typical trench details included in these plans).
5. All sanitary sewer manholes shall conform to the City of Midland standards.
6. See Sanitary Sewer Details on sheets C1.3.1 & C5.3.1.

WATER MAIN SYSTEM

1. All water main shall be Class 50 ductile iron unless otherwise noted on these plans.
2. All construction of the water main service system shall conform to the water main construction plans and specifications approved by the City of Midland.
3. All water main shall be installed with a minimum of 5.5 feet of cover from finished grades.
4. A full length of water main pipe shall be centered from the point of crossings of all sewers with a minimum vertical clearance of 1.5 feet. In the event a clearance of less than 1.5 feet is constructed, the intersection shall be encased in concrete.
5. All elevations in outlawn areas are approximate only and shall be adjusted by the contractor after finish grades are established.
6. All water main within a 45° zone of influence of roads, drives, walks, structures and foundations shall be backfilled with 100% granular material (or approved other) and compacted to 95% of its maximum unit weight (see typical trench details included in these plans).
7. All water main shall have a minimum 10' horizontal separation from any storm or sanitary sewer.
8. Water services shall be 1" type K copper pipe with corporation stop and 1" curb stop and box at rear of 10' utility easement.
9. See Water Main Details on sheets C1.3.1 & C5.3.1.
10. Hydrants shall be painted with a red upper barrel and the port cap shall be painted white per City of Midland specifications.

GEOTECHNICAL NOTE
Refer to the Geotechnical Engineering Report prepared by TerraCon Consultants, Project No. N4155202, dated November 12, 2015, for additional geotechnical and paving information.

LOCATION MAP

LEGEND

(E) SPOT ELEVATION
(E) 1' CONTOURS
(E) 5' CONTOURS
(E) GAS LINE
(E) TELEPHONE LINE
(E) ELECTRIC LINE
(E) STORM DRAIN
(E) SANITARY SEWER
(E) WATER MAIN
(E) CHAIN LINK FENCE
(E) WOOD FENCE
(E) WATER WELL
(E) FIRE HYDRANT
(E) WATER VALVE
(E) SANITARY MANHOLE
(E) STORM MANHOLE
(E) CATCHBASIN
(E) CULVERT
(E) LIGHT POLE
(E) UTILITY POLE
(E) SIGN
(E) MAILBOX
(E) CONIFEROUS TREE
(E) DECIDUOUS TREE
(P) SIDE SLOPE
(P) DRAINAGE SWALE
(P) DRAINAGE FLOW ARROW
(P) RIP RAP
LOW POINT
HIGH POINT
FINISH FLOOR
BENCHMARK
WATER SURFACE
GRADE BREAK
(P) HEAVY DUTY ASPHALT AREA
(P) LIGHT DUTY ASPHALT AREA
(P) CONCRETE SURFACE
(P) AGGREGATE SURFACE
(P) DRAINAGE BASIN BOUNDARY
(P) BASIN DESIGNATION
(P) BASIN AREA IN ACRES

(P) SPOT ELEVATION
(P) 1' CONTOUR
(P) 5' CONTOUR
(P) GAS LINE
(P) TELEPHONE LINE
(P) ELECTRIC LINE
(P) STORM DRAIN
(P) SANITARY SEWER
(P) WATER MAIN
(P) CHAIN LINK FENCE
(P) WOOD FENCE
(P) GUARD RAIL
(P) FIRE HYDRANT ASSEMBLY
(P) WATER MAIN VALVE
(P) WATER MAIN BEND
(P) WATER MAIN REDUCER
(P) CURB INLET
(P) CATCH BASIN
(P) TRENCH DRAIN
(P) FLARED END SECTION
(P) MANHOLE
(P) LIGHT POLE
(P) SANITARY SEWER CLEANOUT
(P) UTILITY CROSSING
(P) BUILDING WALLPACK
(P) SIGN
(P) PARKING COUNT
(P) BARRIER-FREE PARKING
(P) BARRIER-FREE VAN ACCESSIBLE
(P) TRAFFIC FLOW
(P) MODIFIED CURB & GUTTER
(P) REGULAR CURB & GUTTER
(P) SCREEN WALL OR RETAINING WALL

NOTE:
(E) - INDICATES EXISTING
(P) - INDICATES PROPOSED

INDEX

☒	C0	COVER
☒	CD1.1	TOPOGRAPHIC & ALTA/ASCM LAND TITLE SURVEY
☒	CD1.2	TOPOGRAPHIC & ALTA/ASCM LAND TITLE SURVEY
☒	CD1.3	TOPOGRAPHIC SURVEY - CHEMICAL BANK
☐	CD1.4	DEMOLITION PLAN
☒	C1.1	SITE PLAN
☒	C1.1.1	CELL TOWER DETAIL PLAN
☒	C1.1.2	INTERSECTION TRUCK PLAN
☒	C1.2	GRADING AND SESC PLAN
☒	C1.2.1	DRAINAGE AREA CALCULATIONS AND DETAILS
☒	C1.2.2	DRAINAGE AREA PLAN
☒	C1.3	UTILITY PLAN
☒	C1.3.1	UTILITY DETAILS
☒	C1.3.2	SANITARY SEWER PLAN AND PROFILE
☒	C1.3.3	SANITARY SEWER PLAN AND PROFILE
☒	C1.3.4	WATER MAIN PLAN AND PROFILE
☒	C1.3.5	WATER MAIN PLAN AND PROFILE
☒	C1.3.6	WATER MAIN PLAN AND PROFILE
☒	C1.4	SESC NOTES AND DETAILS
☒	C5.1	MISCELLANEOUS DETAILS
☒	C5.2.1	CIVIL STANDARD DETAILS
☒	C5.3.1	CITY OF MIDLAND STANDARD DETAILS
☒	E1.7	SITE LIGHTING PLAN
☒	L1.1	LANDSCAPE PLAN
☒	-	TPC FUEL PLANS

CONTACT LIST

OWNER/DEVELOPER CONTACTS
THE KROGER CO. OF MICHIGAN
DANIEL CARPER
40399 GRAND RIVER AVENUE
NOVI, MI 48375
PH: 248-957-2275

LSG ENGINEERS & SURVEYORS
ALAN BOYER, P.E.
3135 PINE TREE ROAD, SUITE D
LANSING, MI 48911
PH: 517-393-2902
boyer@lsg-es.com

CR ARCHITECTURE + DESIGN
ANTHONY FREY, RA, LEED AP
600 VINE STREET, SUITE 2210
CINCINNATI, OH 45202
PH: 513-721-8080
a.frey@cr-architects.com

OUTDOOR LIVING
TIM BANFIELD, ASLA
2720 ALPHA ACCESS
LANSING, MI 48910
PH: 517-484-0230
banfieldb@aol.com

GOVERNMENT CONTACTS
CITY OF MIDLAND PLANNING DEPARTMENT
GRANT MURSCHEL, COMMUNITY DEVELOPMENT PLANNER
333 W. ELLSWORTH STREET
MIDLAND, MI 48640
PH: 989-837-3381
gmurschel@midland-mi.org

CITY OF MIDLAND BUILDING DEPARTMENT
JOHN WENGER, CHIEF INSPECTOR
333 W. ELLSWORTH STREET
MIDLAND, MI 48640
PH: 989-837-3390
jwenger@midland-mi.org

CITY OF MIDLAND ENGINEERING DEPARTMENT
BRIAN MCMANUS, P.E., CITY ENGINEER
333 W. ELLSWORTH STREET
MIDLAND, MI 48640
PH: 989-837-3353
bmcmanus@midland-mi.org

MIDLAND COUNTY DRAIN COMMISSIONER
DOUGLAS ENOS, DRAIN COMMISSIONER
2220 W ELLSWORTH STREET
MIDLAND, MI 48640
PH: 989-832-6770

UTILITY CONTACTS
CONSUMERS ENERGY (GAS & ELECTRIC)
THOMAS SCOTT
1100 WASHINGTON
MIDLAND, MI 48640
PH: 989-839-8626
PH: 800-477-5050 (TO SET UP THE PROJECT IN THEIR SYSTEM AND HAVE IT ASSIGNED TO A LOCAL CONTACT.)

AT&T (TELEPHONE)
JOE
PH: 800-288-2020
jb784p@att.com

PREPARED FOR:
THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER RD.
NOVI, MI 48375
PHONE: (248) 536-1500

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

DATE: DECEMBER 30, 2015
PROJECT NO. 1636
SHEET NO. C0

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\B PLANS\COLONE - PLOT DATE: 2/11/2016 2:57 PM BY: Michele Burnsider SCALE: 1:1

STRUCTURE INVENTORY:

STORM SEWER

STM MH 1
RIM ELEVATION: 640.17
E 54" CONC. – 632.53
W – (UNABLE TO VERIFY)

STM MH 2
RIM ELEVATION: 642.42
E 54" CONC. – 634.1±
W 54" CONC. – 634.1±
NE 18" CONC. – 635.52

STM MH 3
RIM ELEVATION: 643.66
E 54" CONC. – 635.5±
W 54" CONC. – 634.6±

STM MH 4
RIM ELEVATION: 642.91
E 54" CONC. – 636.01
W 54" CONC. – 636.01
S 6" PLASTIC – 637.91
N 6" PLASTIC – 637.91

STM MH 5
RIM ELEVATION: 645.35
S 12" CONC. – 638.05
E 54" CONC. – 637.4±
W 54" CONC. – 637.3±
N 12" CONC. – 638.1±
SW 6" PLASTIC – 639.75

CB 6
RIM ELEVATION: 645.50
N 12" CONC. – 638.45

CB 7
RIM ELEVATION: 646.08
S 12" CONC. – 638.11
E 12" SLCPP – 638.38

CB 8
RIM ELEVATION: 646.62
W 12" SLCPP – 638.65
NE 12" SLCPP – 638.67

CB 9
RIM ELEVATION: 642.53
SW 12" SLCPP – 638.67
E 12" SLCPP – 638.67
N 12" SLCPP – 638.67

CB 10
RIM ELEVATION: 643.56
W 12" SLCPP – 639.45
SE 12" SLCPP – 639.62

CB 11
RIM ELEVATION: 645.01
NW 12" SLCPP – 640.80
SE 12" SLCPP – 640.91
S 10" PVC – 640.99

CB 12
RIM ELEVATION: 647.29
N 10" PVC – 642.66
S 10" PVC – 642.66

CB 13
RIM ELEVATION: 647.33
N 10" PVC – 644.63

STM MH 14
RIM ELEVATION: 648.69
W 54" CONC. – 639.1±
E – (UNABLE TO VERIFY)
N – (UNABLE TO VERIFY)

STM MH 15
RIM ELEVATION: 648.25
W 18" CONC. – 642.58

SANITARY SEWER

SAN MH A
RIM ELEVATION: 640.62
W 15" CONC. – 628.20
E 15" CONC. – 628.20
N 6" PVC – 630.22
S 6" PVC – 630.17
SW 6" PVC – 630.87

SAN MH B
RIM ELEVATION: 642.84
W 15" CONC. – 629.98
E 15" CONC. – 629.98
N 6" PVC – 631.56
S 6" PVC – 631.60

SAN MH C
RIM ELEVATION: 644.28
NE 15" CONC. – 631.58
SW 15" CONC. – 631.58
NW 6" PVC – 633.43
SE 6" PVC – 633.48

CURVE TABLE

NUMBER	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD DIRECTION	CHORD LENGTH
C1	206.52' (M)	633.00' (R/M)	18°41'37" (R/M)	S81°02'52"W (R/M)	205.61' (R/M)

LINE TABLE

NUMBER	DIRECTION	DISTANCE
L1	N00°01'06"W (R/M)	234.31' (R/M)
L2	S89°28'06"E (R/M)	175.00' (R/M)
L3	N00°01'06"W (R/M)	165.00' (R/M)
L4	N89°28'06"W (R/M)	180.00' (R/M)
L5	N89°28'04"W (R)	339.00' (R/M)
	N89°28'06"W (M)	
L6	N89°28'04"W (R)	100.00' (R/M)
	N89°28'06"W (M)	
L7	S00°01'04"E (R)	234.30' (R)
	S00°01'06"E (M)	
L8	N80°33'35"E (R)	101.32' (R)
	N80°33'40"E (M)	101.38' (M)
L9	N00°01'04"W (R)	216.72' (R)
	N00°01'06"W (M)	216.61' (M)
L10	WEST (R)	212.00' (R/M)
	N89°28'06"W (M)	
L11	WEST (R)	127.00' (R/M)
	N89°28'06"W (M)	
L12	SOUTH (R)	216' (R)
	S00°01'06"E (M)	216.61' (M)
L13	NORTHEAST (R)	128.83' (R)
	N80°33'40"E (M)	128.74' (M)
L14	NORTH (R)	194.5' (R)
	N00°01'06"W (M)	194.32' (M)
L15	WEST (R)	212.00' (R/M)
	N89°28'06"W (M)	
L16	SOUTH (R)	194.5' (M)
	S00°01'06"E (M)	194.32' (M)
L17	NORTHEASTERLY (R)	
	N80°33'40"E (M)	214.90' (M)
L18	WEST (R)	264.00' (R/M)
	N89°28'06"W (M)	
L19	NORTH (R)	165.00' (R/M)
	N00°01'06"W (M)	
L20	EAST (R)	264.00' (R/M)
	S89°28'06"E (M)	
L21	SOUTH (R)	165.00' (R/M)
	S00°01'06"E (M)	
L22	WEST (R)	344.00' (R/M)
	N89°28'06"W (M)	
L23	EAST (R)	80.00' (R/M)
	S89°16'42"E (M)	
L24	SOUTH (R)	10 RODS (R/M)
	S00°01'06"E (M)	165.00' (R/M)
L25	SOUTH (R)	120' (R)
	S00°01'06"E (M)	118.55' (M)
L26	WEST (R)	16 RODS (R/M)
	N89°36'42"W (M)	264.00' (R/M)
L27	SOUTH (R)	10 RODS (R/M)
	S00°01'06"E (M)	165.00' (R/M)
L28	NORTH (R)	10 RODS (R/M)
	N00°01'06"W (M)	165.00' (R/M)

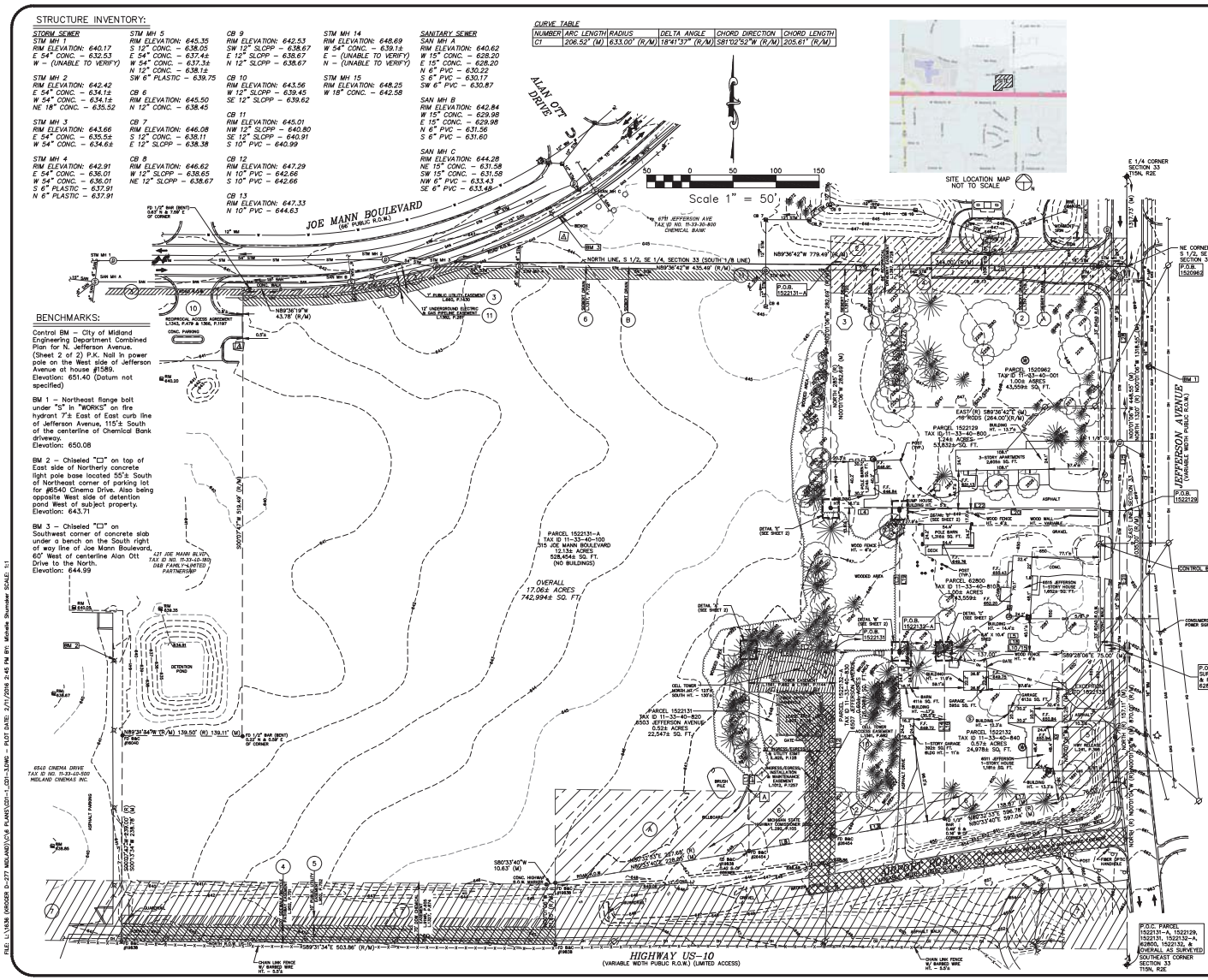
BENCHMARKS:

Control BM – City of Midland Engineering Department Combined Plan for N. Jefferson Avenue. (Sheet 2 of 2) P.K. Nail in power pole on the West side of Jefferson Avenue at house #1589. Elevation: 651.40 (Datum not specified)

BM 1 – Northeast flange bolt under "S" in "WORKS" on fire hydrant 7'± East of East curb line of Jefferson Avenue, 115'± South of the centerline of Chemical Bank driveway. Elevation: 650.08

BM 2 – Chiseled "□" on top of East side of Northerly concrete light pole base located 55'± South of Northeast corner of parking lot for #6540 Cinema Drive. Also being opposite West side of detention pond West of subject property. Elevation: 643.71

BM 3 – Chiseled "□" on Southwest corner of concrete slab under a bench on the South right of way line of Joe Mann Boulevard, 60' West of centerline Alan Ott Drive to the North. Elevation: 644.99



NOTE: THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN USE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN ANY STRUCTURE INVENTORY SHOWN HEREON.

LEGEND:

- STORM MANHOLE
- CATCHBASIN
- STORM LINE
- SANITARY MANHOLE
- SANITARY CLEANOUT
- SANITARY LINE
- ELECTRIC MANHOLE
- UTILITY POLE
- GUY WIRE
- OVERHEAD UTILITY LINE
- UNDERGROUND UTILITY LINE
- TRANSFORMER
- AC-UNIT
- TELEPHONE MANHOLE
- ROOF DRAIN
- TELEPHONE PEDESTAL
- ELECTRIC PEDESTAL
- ELECTRIC METER
- LIGHT POLE
- SIGN
- MONUMENT SIGN
- WATER MANHOLE
- WATER LINE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- GAS METER
- GAS VALVE
- GAS LINE
- FENCE LINE
- DECIDUOUS TREE
- CONIFEROUS TREE
- CURB AND GUTTER
- TREE LINE
- SET IRON & CAP #47989
- FOUND IRON AS NOTED
- SECTION CORNER
- DISTANCE NOT TO SCALE
- VAREGATED
- MAIL BOX
- ASPHALT
- CONCRETE
- (R) RECORDED
- (M) MEASURED

MISS DIG
3 WORKING DAYS
BEFORE YOU DIG OR DRILL CALL
1-800-482-7171
(TOLL FREE)

REVISIONS	
2/11/16	PER CITY COMMENTS
11/25/15	SITE PLAN SUBMITTAL
DATE	REVISION

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:
THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER AVENUE,
SUITE 110
NOVI, MICHIGAN 48375

TOPOGRAPHIC & ALTA/ACSM LAND TITLE SURVEY

FOR

KROGER D-777 PROPOSED STORE

315 JOE MANN BOULEVARD
MIDLAND, MICHIGAN

FILE	CD1-1_CD1-3.DWG
FIELD WORK	JZ / DT
DRAWN BY	JML
CHECKED BY	DKR
DATE OF SURVEY	4/28/2015
SCALE	
HOR.	1" = 50'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	CD1.1

FILE: L:\1636 (KROGER D-277 MIDLAND)\CVS PLANS\CD1-1_CD1-3.DWG – PLOT DATE: 2/11/2016 2:45 PM BY: Michelle Shumaker SCALE: 1:1

LEGAL DESCRIPTION: 315 JOE MANN BLVD TAX ID #11-33-40-100

Situated in the City of Midland, Midland County, Michigan:

Part of the Southeast 1/4 of the Southeast 1/4 of Section 33, T15N, R2E, described as: Commencing at the Southeast corner of said Section 33; thence North 00°01'06" West 1318.55 feet along the East Section line; thence North 89°36'42" West 344.00 feet along the South 1/8 line to the Point of Beginning; thence North 89°36'42" West 435.49 feet along the South 1/8 line; thence along a 633.00 foot radius curve to the right, having a central angle of 18°41'37" and a long chord bearing and distance of South 81°02'52" West 205.61 feet along the South right of way line of Joe Mann Boulevard; thence North 89°36'19" West 43.78 feet along said South right of way line; thence South 00°07'47" West 519.49 feet; thence North 89°31'34" West 139.50 feet; thence South 00°07'47" West 239.00 feet; thence South 89°31'34" East 503.86 feet along the North right of way line of US-10 Highway; thence North 00°01'06" West 71.65 feet along the said North right of way line; thence North 80°32'33" East 227.68 feet along said North right of way line; thence North 00°01'06" West 234.31 feet; thence South 89°28'06" East 175.00 feet; thence North 00°01'06" West 165.00 feet; thence North 89°28'06" West 80.00 feet; thence North 00°01'06" West 282.69 feet to the Point of Beginning.

Assurance Note: The above legal description describes the same property as in Schedule A of Title Commitment No. 1522131-A of Superior Title and Settlement Agency bearing an effective date of April 15, 2015 at 8:00 A.M.

NOTES CORRESPONDING TO SCHEDULE B:
315 JOE MANN BLVD, TAX ID #11-33-40-100

(3) Public Utility Easement in favor of the City of Midland recorded in Liber 660 at Page 1430. (Affects subject property and is plotted hereon.)

(4) Easement Grant in favor of the City of Midland recorded in Liber 952 at Page 751. (Affects subject property and is plotted hereon.)

(5) Utility Easement Agreement in favor of the City of Midland recorded in Liber 952 at Page 752. (Affects subject property and is plotted hereon.)

(6) Terms and Conditions contained in Easement Agreement recorded in October 31, 2005 in Liber 1317 at Page 722. (Affects subject property and the enclosed drain is shown hereon. Easement width is undefined.)

(7) Easement in favor of Dow Chemical Company and the Covenants, Conditions and the Restrictions contained in instrument recorded in the Liber 91 of Misc Records, Page 605. Partial Release of Right of Way recorded in Liber 1327 at Page 874. (Affects subject property and is plotted hereon.)

(8) Terms and Conditions conditions contained in Land Division Affidavit recorded in Liber 1331 at Page 1184. (Affects subject property in its entirety and gives "permission for a representative of the City of Midland, Midland County, and/or the State of Michigan to enter the property where this parcel division was proposed for purposes of inspection to verify the information on the application is correct.")

(9) Restrictive Covenant recorded in Liber 1335 at Page 901. (Affects the subject property in its entirety and prohibits the use of the site as an automated car wash. See document for additional details.)

(10) Terms and Conditions contained in Reciprocal Access Agreements recorded in Liber 1343 at 479 and in Liber 1366 at Page 1197. (Benefits subject property and includes agreement to use of a curb cut and access drive. Does not include plottable easement description and its approximate location is plotted hereon.)

(11) Terms and Conditions contained in Easement in favor of Consumers Energy Company recorded in Liber 1382 at Page 281. (Affects subject property and is plotted hereon.)

DOCUMENTS NOT INCLUDED IN SCHEDULE B EXCEPTIONS:

(A) Terms and Conditions contained Warranty Deed as disclosed by instrument recorded in Liber 292 at page 105. (Affects subject property, is plotted hereon and includes restrictive covenants and rights to maintain public utility facilities.)

(B) Siebert Drain right of way per Minutes of Survey dated May 22, 1913 and Minutes of Survey dated May 15, 1913. (Affects and benefits subject property. Width undefined – 3 rods each side of the centerline recommended by Drain Commissioner.)

LEGAL DESCRIPTION: 6503 JEFFERSON AVE. TAX ID #11-33-40-820

Situated in the City of Midland, Midland County, Michigan:
Commencing at the Southeast corner of Section 33, Town 15 North, Range 2 East, thence North 00 degrees 01 minutes 04 seconds West, 870 feet; thence North 89 degrees 28 minutes 04 seconds West, 339 feet for the place of beginning; running thence North 89 degrees 28 minutes 04 seconds West, 100 feet; thence South 00 degrees 01 minutes 04 seconds East, 234.30 east; thence North 80 degrees 32 minutes 35 seconds East, 101.32 feet; thence North 00 degrees 01 minutes 04 seconds West, 216.72 feet to the place of beginning being a part of the Southeast 1/4 of the Southeast 1/4 of said Section 33.

6503 Jefferson Ave., Midland, MI. 48642

11-33-40-820

Assurance Note: The above legal description describes the same property as in Schedule A of Title Commitment No. 1522131 of Superior Title and Settlement Agency bearing an effective date of April 15, 2015 at 8:00 A.M.

NOTES CORRESPONDING TO SCHEDULE B:
6503 JEFFERSON AVE., TAX ID #11-33-40-820

(1) Interest of Cricket Michigan Property company, a Delaware Corporation, Lessee and Terms, Conditions and Provisions of Lease, as evidenced by Memorandum of Site Agreement dated August 28, 2001, recorded September 24, 2001 in Liber 1012 at Page 1257. (Document includes Ingress/Egress, Installation and Maintenance Easements that affect the subject property and are plotted hereon.)

(2) Interest of Century Cellunet of Saginaw MSA Limited Partnership, Lessee, and Terms, Conditions and provisions of Lease, as evidenced by Memorandum of Lease, dated July 27, 1999, recorded August 25, 1999 in Liber 925 at Page 128. (Includes Lease Area & Ingress/Egress & Utility Easement for Cell Tower which affects the subject property and is plotted hereon.)

(4) Interest of STC Five, LLC, a Delaware limited liability company, Lessee, and Terms, Conditions and Provisions of Lease, as evidenced by Memorandum of PCS Site Agreement recorded February 22, 2001 in Liber 975 at Page 589, Site Designation Supplement to Master Lease and Sublease Agreement recorded July 5, 2005 in Liber 1298 at Page 976 and Affidavit of Facts Relating to Title recorded October 17, 2005 in Liber 1315 at Page 309. First Amendment to Memorandum of PCS Site Agreement recorded July 29, 2010 in Liber 1517 Page 846. Memorandum of Agreement to expand Leased Premises recorded in Liber 1561 at Page 1144, First Amendment of Site Designation supplement to Master Lease and Sublease Agreement recorded in Liber 1561 at Page 1145. (Affects subject property and is plotted hereon.)

(6) Terms and Conditions contained Warranty Deed as disclosed by instrument recorded in Liber 292 at page 105. (Affects subject property, is plotted hereon and includes restrictive covenants and rights to maintain public utility facilities.)

(10) Terms and Conditions contained in Grant of Easement recorded in Liber 1561 at Page 682. (Affects subject property and is plotted hereon.)

LEGAL DESCRIPTION: 6507 JEFFERSON AVE. TAX ID #11-33-40-830

Situated in the *Township of Larkin, Midland County, Michigan:

Beginning 870 feet North and 212 feet West of the Southeast corner of Section 33, T15N, R2E; thence 127 feet West; thence 216 feet South; thence 128.83 feet North East; thence 194.50 feet North to the point of beginning, being in the Southeast 1/4 of the Southeast 1/4 of Section 33.

6507 Jefferson Ave., Midland, MI, 48642

11-33-40-830

Assurance Note: The above legal description describes the same property as in Schedule A of Title Commitment No. 1522132-A of Superior Title and Settlement Agency bearing an effective date of April 15, 2015 at 8:00 A.M.

* Now City of Midland

NOTES CORRESPONDING TO SCHEDULE B:
6507 JEFFERSON AVE., TAX ID #11-33-40-830

(2) Terms and Conditions and easement contained in instrument recorded in Liber 292 at page 105. (Affects subject property, is plotted hereon and includes restrictive covenants and rights to maintain public utility facilities.)

(6) Easement as recited in Instrument recorded in Liber 1012 at Page 1257. (Does not affect subject property. Easement is the same document recited under Schedule B – Item (1) for Parcel 1522131 and is plotted hereon)

LEGAL DESCRIPTION: 6511 JEFFERSON AVE. TAX ID #11-33-40-840

Situated in the *Township of Larkin, Midland County, Michigan:

Commencing at a point 870 feet North of the Southeast corner of Section 33, T15N, R2E, running thence West 212 feet; thence South 194.5 feet; thence Northeasterly along the North right of way line of Airport Road to the East Section line; thence North along the East Section Line to the Place of Beginning. EXCEPT that part deeded for roadway purpose along the East side of subject property.

6511 Jefferson Ave., Midland, MI, 48642

11-33-40-840

Assurance Note: The above legal description describes the same property as in Schedule A of Title Commitment No. 1522132 of Superior Title and Settlement Agency bearing an effective date of April 15, 2015 at 8:00 A.M.

* Now City of Midland

NOTES CORRESPONDING TO SCHEDULE B:
6511 JEFFERSON AVE., TAX ID #11-33-40-840

(4) Terms and Conditions in Zoning Board of Appeals recorded in Liber 1247 at Page 649. (Affects subject property but does include any plottable easements or restrictions.)

(5) Terms and Conditions contained in Highway Easement recorded in Liber 241 at Page 398. (Lies adjacent to subject property and is plotted hereon.)

(6) Terms and Conditions and Easements contained in Instrument recorded in Liber 292 at Page 105. (Affects subject property, is plotted hereon and includes restrictive covenants and rights to maintain public utility facilities.)

LEGAL DESCRIPTION: 6615 JEFFERSON AVE. TAX ID #11-33-40-810

Property located in the *Township of Larkin Charter, County of Midland Midland, State of Michigan:

Commencing 870 feet North of the Southeast corner of Section 33, Town 15 North, Range 2 East, thence West 264 feet, thence North 165 feet, thence East 264 feet, thence South 165 feet to the point of beginning, *Larkin Township, Midland County, Michigan.

Assurance Note: The above legal description describes the same property as in Schedule A of Title Commitment No. 62800 of Crossroads Title Agency bearing an effective date of March 26, 2015 at 8:00 A.M.

* Now City of Midland

NOTES CORRESPONDING TO SCHEDULE B:
6515 JEFFERSON AVE., TAX ID #11-33-40-810

Schedule B – Section II Exceptions of Crossroads Title Agency, Commitment No.: 62800, bearing an effective date of March 26, 2015 at 8:00 A.M, does not contain any plottable easements or restrictions.

LEGAL DESCRIPTION: 6601 JEFFERSON AVE. TAX ID #11-33-40-800

Situated in the *Township of Larkin, Midland County, Michigan:

Commencing at a point 1035 feet North of the Southeast corner of Section 33, T15N, R2E; running thence West 344 feet; thence North 285 feet; thence East 80 feet; thence South 165 feet; thence East 264 feet; thence South 120 feet to the place of beginning, being part of the Southeast 1/4 of the Southeast 1/4 of said Section 33.

6601 Jefferson Ave., Midland, MI, 48642

11-22-40-800

Assurance Note: The above legal description describes the same property as in Schedule A of Title Commitment No. 1522129 of Superior Title and Settlement Agency bearing an effective date of April 15, 2015 at 8:00 A.M.

* Now City of Midland

NOTES CORRESPONDING TO SCHEDULE B:
6601 JEFFERSON AVE., TAX ID #11-33-40-800

(2) Terms and Conditions in Reciprocal Driveway Easement recorded in Liber 1387 at Page 728. (Affects and benefits subject property and is plotted hereon.)

(3) Terms and Conditions contained in Easement Agreement recorded in Liber 1317 at Page 720. (Affects subject property and the enclosed drain is shown hereon – Easement width is undefined.)

(A) Siebert Drain right of way per Minutes of Survey dated May 22, 1913 and Minutes of Survey dated May 15, 1913. (Affects and benefits subject property. Width undefined – 3 rods each side of the centerline recommended by the Drain Commissioner.)

LEGAL DESCRIPTION: 6605 JEFFERSON AVE. TAX ID #11-33-40-001

Situated in the City of Midland, Midland County, Michigan:

Commencing at the Northeast corner of the South 1/2 of the Southeast 1/4 of Section 33, Township 15 North, Range 2 East, and running thence West on South 1/8 line of Section 16 rods; thence South and parallel with East line of said Section 10 rods; thence East and at right angles with last line 16 rods to the East line of said Section; thence North on East line of said Section 10 rods to the place of beginning, which parcel is also described as: Commencing 1320 feet North of the Southeast corner of Section 33, T15N, R2E; thence West 264 feet; thence South 165 feet; thence East 264 feet; thence North feet to beginning.

6605 Jefferson Avenue, Midland, MI, 48642

11-33-40-001

Assurance Note: The above legal description describes the same property as in Schedule A of Title Commitment No. 1520962 of Superior Title and Settlement Agency bearing an effective date of April 15, 2015 at 8:00 A.M.

NOTES CORRESPONDING TO SCHEDULE B:
6605 JEFFERSON AVE., TAX ID #11-33-40-001

(2) Terms and Conditions contained in Easement Agreement recorded in Liber 1317 at Page 718. (Affects subject property and the enclosed drain is shown hereon. Easement width is undefined.)

(4) Terms and Conditions contained in Reciprocal Driveway Easement Agreement recorded in Liber 1387 at Page 728. (Affects and benefits subject property and is plotted hereon.)

(A) Siebert Drain right of way per Minutes of Survey dated May 22, 1913 and Minutes of Survey dated May 15, 1913. (Affects and benefits subject property. Width undefined – 3 rods each side of the centerline recommended by Drain Commissioner.)

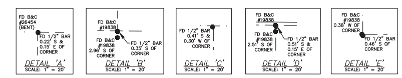
OVERALL LEGAL DESCRIPTION: AS SURVEYED

Part of the Southeast 1/4 of Section 33, T15N-R2E, City of Midland, Midland County, Michigan, being more particularly described as follows; Commencing at the Southeast Corner of Section 33; thence N00°01'06"W, 870.00 feet along the East line of Section 33 to the Point of Beginning of the Parcel to be described; thence continuing N00°01'06"W, 448.55 feet along the East line of Section 33 to the Northeast corner of the South 1/2 of the Southeast corner of Section 33; thence N89°36'42"W, 779.49 feet along the North line of the South 1/2 of the Southeast corner of Section 33 to the Southerly line of Joe Mann Boulevard (66 foot wide Right of Way); thence 206.52 feet along the South Line of Joe Mann Boulevard and a curve to the right, said curve having a radius of 633.00 feet, a delta angle of 18°41'37" and a chord of S81°02'52"W, 205.61 feet; thence N89°36'19"W, 43.78 feet along the South line of Joe Mann Boulevard; thence S00°07'47"W, 519.49 feet; thence N89°31'34"W, 139.11 feet; thence S00°13'34"W, 238.78 feet; thence S89°31'34"E, 503.86 feet along the North line of US-10 (variable width Limited Access Highway); thence N00°01'06"W, 71.65 feet along the North of US-10 thence N80°33'40"E, 597.04 feet along the North line of Airport Road (variable width Right of Way); thence N00°01'06"W, 170.28 feet along the West line of Jefferson Avenue (variable width Right of Way); thence S89°28'06"E, 75.00 feet to the Point of Beginning.

TREE NO.	TYPE	SIZE	CANOPY	CONDITION
1671	SPRUCE	14"	22'	GOOD
1675	SPRUCE	14"	22'	GOOD
1686	SPRUCE	16"	28'	GOOD
1689	BOX ELDER	32"	8'	DEAD
1691	BOX ELDER	32"	33'	GOOD
1694	SPRUCE	17"	28'	GOOD
1972	PINE	16"	20'	GOOD
1973	MAPLE	16"	30'	GOOD
1974	PINE	20"	30'	GOOD
1975	PINE	20"	30'	GOOD
1976	PINE	17"	20'	GOOD
1977	MAPLE	12"	24'	GOOD
1978	MAPLE	8"	30'	GOOD
1979	MAPLE	14"	20'	GOOD
1980	MAPLE	14"	20'	GOOD
1981	PINE	11"	15'	GOOD
1982	PINE	15"	20'	GOOD
1983	PINE	20"	30'	GOOD
1984	MAPLE	18"	25'	GOOD
1985	MAPLE	10"	35'	GOOD
1986	PINE	24"	40'	GOOD
1987	PINE	22"	38'	GOOD
1988	PINE	22"	38'	GOOD
1989	PINE	15"	24'	GOOD
1992	MAPLE	10"	50'	GOOD
1993	PINE	12"	24'	GOOD
1994	PINE	13"	18'	GOOD
1995	PINE	6"	8'	FAIR
1996	PINE	10"	9'	GOOD
1997	PINE	12"	10'	FAIR
1998	PINE	9"	10'	GOOD
1999	PINE	16"	20'	GOOD
2000	PINE	10"	30'	GOOD
2001	PINE	18"	30'	GOOD
2002	PINE	13"	24'	GOOD
2003	PINE	16"	24'	GOOD
2004	PINE	9"	8'	DEAD
2005	PINE	6"	6'	GOOD
2006	SPRUCE	13"	10'	FAIR
2007	PINE	9"	6'	GOOD
2008	PINE	12"	15'	DEAD
2009	PINE	24"	25'	GOOD
2010	PINE	14"	15'	POOR
2011	PINE	18"	15'	DEAD
2012	PINE	16"	25'	GOOD
2014	SPRUCE	6"	15'	GOOD
2015	PINE	9"	10'	DEAD
2016	PINE	14"	15'	GOOD
2017	PINE	10"	4'	DEAD
2018	PINE	18"	15'	DEAD
2019	PINE	14"	15'	DEAD
2020	PINE	8"	4'	DEAD
2021	PINE	14"	15'	DEAD
2022	PINE	18"	15'	DEAD
2023	BOX ELDER	10"	20'	GOOD
2024	BOX ELDER	10"	5'	POOR
2025	PINE	20"	20'	FAIR
2026	PINE	14"	30'	DEAD
2027	ELM	9"	30'	GOOD
2028	PINE	20"	25'	GOOD
2029	PINE	20"	25'	GOOD
2030	PINE	20"	25'	GOOD
2031	PINE	14"	15'	GOOD
2032	PINE	14"	15'	GOOD
2033	PINE	14"	15'	GOOD
2034	PINE	20"	25'	GOOD
2035	PINE	20"	25'	GOOD
2036	PINE	18"	25'	GOOD
2037	PINE	22"	35'	GOOD
2038	PINE	23"	30'	GOOD
2039	PINE	14"	30'	GOOD
2040	PINE	20"	30'	GOOD
2041	PINE	22"	30'	POOR
2042	PINE	22"	30'	GOOD
2043	PINE	22"	30'	GOOD
2044	MAPLE	11"	30'	GOOD
2045	BOX ELDER	10"	35'	GOOD
2046	PINE	9"	20'	GOOD
2047	BOX ELDER	6"	8'	GOOD
2048	PINE	20"	34'	GOOD
2049	PINE	20"	34'	GOOD
2050	MAPLE	8"	20'	GOOD
2051	MAPLE	14"	30'	GOOD
2052	MAPLE	11"	35'	GOOD
2053	PINE	24"	40'	GOOD
2054	BOX ELDER	10"	24'	GOOD
2055	BOX ELDER	10"	24'	GOOD
2056	WILLOW	10"	20'	GOOD
2057	MAPLE	18"	15'	POOR
2058	ASH	10"	12'	DEAD
2059	PINE	22"	30'	GOOD
2060	ASH	10"	20'	GOOD
2061	ASH	15"	20'	GOOD
2062	ASH	15"	28'	POOR
2063	PINE	36"	5'	DEAD
2068	PINE	30"	40'	GOOD

TREE NO.	TYPE	SIZE	CANOPY	CONDITION
2080	PINE	26"	40'	GOOD
2081	CEDAR	12"	1'	DEAD
2082	CEDAR	12"	18'	GOOD
2086	ASH	18"	25'	POOR
2087	MAPLE	24"	45'	FAIR
2106	MAPLE	12"	20'	GOOD
2107	MAPLE	12"	20'	GOOD
2108	OAK	12"	25'	GOOD
2109	SPRUCE	10"	16'	FAIR
2110	SPRUCE	14"	1'	DEAD
2134	POPLAR	12"	20'	GOOD
2135	POPLAR	8"	12'	GOOD
2136	POPLAR	15"	22'	GOOD
2137	POPLAR	12"	30'	GOOD
2138	POPLAR	8"	15'	GOOD
2161	ELM	22"	45'	FAIR
2162	ELM	10"	40'	GOOD
2163	BOX ELDER	18"	52'	GOOD
2168	POPLAR	7"	10'	GOOD
2169	POPLAR	7"	10'	GOOD
2171	POPLAR	7"	10'	GOOD
2172	POPLAR	7"	10'	GOOD
2173	POPLAR	11"	15'	GOOD
2174	POPLAR	11"	15'	GOOD
2175	POPLAR	8"	10'	GOOD
2178	POPLAR	8"	10'	GOOD
2179	POPLAR	8"	10'	GOOD
2180	POPLAR	8"	10'	GOOD
2181	POPLAR	12"	15'	GOOD
2182	POPLAR	12"	15'	GOOD
2183	POPLAR	5"	8'	GOOD
2184	POPLAR	5"	8'	GOOD
2185	POPLAR	6"	8'	GOOD
2186	BIRCH	5"	8'	GOOD
2187	BIRCH	5"	8'	GOOD
2188	BIRCH	5"	8'	GOOD
2190	MAPLE	11"	40'	GOOD
2192	ELM	10"	22'	GOOD
2194	ELM	10"	22'	GOOD
2195	ELM	10"	22'	GOOD
2215	ELM	30"	50'	GOOD
2216	ELM	13"	40'	GOOD
2219	ELM	9"	35'	GOOD
2220	ELM	10"	25'	GOOD
2221	ELM	10"	25'	GOOD
2222	ELM	10"	25'	GOOD
2223	APPLE	10"	25'	GOOD
2224	ELM	10"	25'	GOOD
2225	ELM	10"	25'	GOOD
2226	ELM	10"	25'	GOOD
2227	ELM	10"	25'	GOOD
2228	ELM	10"	25'	GOOD
2232	ELM	24"	45'	GOOD
2233	ELM	12"	45'	GOOD
2234	BOX ELDER	24"	55'	GOOD
2235	ELM	14"	40'	GOOD
2238	SPRUCE	14"	35'	GOOD
2241	SPRUCE	24"	40'	GOOD
2243	SPRUCE	17"	35'	GOOD
2245	SPRUCE	12"	28'	GOOD
2247	STUMP	48"	0'	DEAD
2253	STUMP	48"	0'	DEAD
2254	STUMP	48"	0'	DEAD
2256	CEDAR	12"	18'	GOOD
2258	ELM	15"	25'	GOOD
2259	ELM	15"	25'	GOOD
2260	POPLAR	48"	65'	GOOD
2268	STUMP	14"	0'	DEAD
2269	STUMP	13"	0'	DEAD
2270	STUMP	18"	0'	DEAD
2272	CEDAR	10"	12'	GOOD
2274	CEDAR	10"	12'	GOOD
2275	POPLAR	13"	25'	GOOD
2276	POPLAR	36"	45'	GOOD
2529	MAPLE	14"	25'	GOOD
2555	SPRUCE	13"	22'	GOOD
2556	MAPLE	15"	30'	GOOD
2567	MAPLE	15"	30'	GOOD
2570	CEDAR	8"	14'	GOOD
2571	CEDAR	8"	8'	GOOD
2572	POPLAR	8"	14'	FAIR
2573	LOCUST	16"	50'	GOOD
2574	BOX ELDER	20"	48'	GOOD
2575	SPRUCE	12"	20'	GOOD
2576	SPURCE	10"	18'	GOOD
2577	SPRUCE	17"	28'	GOOD
2578	SPRUCE	15"	24'	GOOD
2579	SPRUCE	8"	16'	FAIR
2580	SPRUCE	12"	16'	GOOD
2581	SPRUCE	12"	16'	GOOD
2584	SPRUCE	10"	14'	GOOD
2585	SPRUCE	10"	14'	GOOD
2625	BOX ELDER	17"	50'	GOOD
3070	PINE	5"	9'	GOOD
3071	PINE	5"	9'	GOOD
3072	PINE	5"	9'	GOOD

SITE LOCATION MAP
NOT TO SCALE



ALTA/ACSM LAND TITLE SURVEY CERTIFICATE:

To: The Kroger Co. of Michigan, a Michigan corporation; The Kroger Co., an Ohio corporation; Superior Title and Settlement Agency; Crossroads Title Agency (as to Parcel #11-33-40-810); and Fidelity National Title Insurance Company:

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 5, 6(b), 7(a), 7(b)(1), 7(c), 8, 9, 10(a), 11(b), 13, and 14 of Table A thereof. The field work was completed on April 28, 2015.

Wendy S. Fuller
Professional Surveyor No. 47969
email: fuller@lsg-es.com
Date: June 19, 2015
Date of Last Revision:

ZONING DATA:

Zoning Classification: The Properties are currently Zoned: RC – Regional Commercial
Maximum Building Height: None
Setbacks:
Front Setback: 25 Feet
Side Setback: 25 Feet
Rear Setback: 25 Feet
Parking: One (1) space per 180 sq. ft. of usable floor area.
Source: City of Midland Zoning Ordinance
Web Site: http://www.cityofmidlandmi.gov/

NOTE: See Notes Corresponding to Schedule B for 6511 Jefferson Avenue for additional zoning information.

GENERAL NOTES:

1) Bearings were established by holding a course of N00°01'06"W along the East line of Section 33 per the description of record for 315 Joe Mann Boulevard.

2) By graphic plotting only, this property is in Zone(s) X of the Flood Insurance Rate Map, Community Panel No. 2611C0186E, panel was not print and does not bear an effective date and is not in a Special Flood Hazard Area.

3) There was no observable evidence of cemeteries / burial grounds on the subject property.

4) There were no striped parking spaces observed on the subject properties.

SIGNIFICANT OF OBSERVATION:

(A) Billboard extends over easement line on parcel 1522131-A by 7'±, see drawing for detail.

DATE	DESCRIPTION
12/30/15	SITE PLAN SUBMITTAL
2/11/16	PER CITY COMMENTS

REVISIONS

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
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PREPARED FOR:
Kroger
THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER AVENUE, SUITE 110
NOVI, MICHIGAN 48375

TOPOGRAPHIC & ALTA/ACSM LAND TITLE SURVEY
FOR
KROGER D-777 PROPOSED STORE
315 JOE MANN BOULEVARD
MIDLAND, MICHIGAN

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FILE CD1-1_CD1-3.DWG
FIELD WORK JZ / DT
DRAWN BY JML
CHECKED BY DKR
DATE OF SURVEY 4/28/2015
SCALE
HOR. 1" = 60'
VERT. N/A
PROJECT NO. 1636
SHEET NO. CD1.2

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\6 PLANS\CD1-1_CD1-3.DWG – PLOT DATE: 2/11/2016 2:45 PM BY: Michelle Shumaker SCALE: 1:1

STRUCTURE INVENTORY:

STORM SEWER

STM MH 5
RIM ELEVATION: 645.35
S 12" CONC. – 638.05
E 54" CONC. – 637.4±
W 54" CONC. – 637.3±
N 12" CONC. – 638.1±
SW 6" PLASTIC – 639.75

CB 6
RIM ELEVATION: 645.50
N 12" CONC. – 638.45

CB 7
RIM ELEVATION: 646.08
S 12" CONC. – 638.11
E 12" SLCPP – 638.38

CB 8
RIM ELEVATION: 646.62
W 12" SLCPP – 638.63
NE 12" SLCPP – 638.67

CB 9
RIM ELEVATION: 642.53
SW 12" SLCPP – 638.67
E 12" SLCPP – 638.67
N 12" SLCPP – 638.67

CB 10
RIM ELEVATION: 643.56
W 12" SLCPP – 639.45
SE 12" SLCPP – 639.62

CB 11
RIM ELEVATION: 645.01
NW 12" SLCPP – 640.80
NE 12" SLCPP – 640.91
S 10" PVC – 640.99

CB 12
RIM ELEVATION: 647.29
N 10" PVC – 642.66
S 10" PVC – 642.66

CB 13
RIM ELEVATION: 647.33
N 10" PVC – 644.63

STM MH 14
RIM ELEVATION: 648.69
W 54" CONC. – 639.1±
E – (UNABLE TO VERIFY)
N – (UNABLE TO VERIFY)

STM MH 15
RIM ELEVATION: 648.25
W 18" CONC. – 642.58

CB 16
RIM ELEVATION: 644.95
N 6" PLASTIC – 641.40
SW 12" SLCPP – 641.10

STM MH 17
RIM ELEVATION: 648.49
S 43" X 68" CONC. – 639.9±
N 43" X 68" CONC. – 641.7±

STM MH 18
RIM ELEVATION: 648.99
NW 43" X 68" CONC. – 642.5±
S 43" X 68" CONC. – 642.5±
NNE 12" PVC – 642.5±

CB 19
RIM ELEVATION: 644.26
W 12" SLCPP – 640.71
E 6" PLASTIC – 641.16

CB 20
RIM ELEVATION: 646.83
S 12" SLCPP – 640.53
E 12" SLCPP – 640.67

CB 21
RIM ELEVATION: 644.04
NW 6" PVC – 642.53

CB 22
RIM ELEVATION: 644.49
SE 6" PVC – 641.44
NW 12" PVC – 639.44

SANITARY SEWER

SAN MH C
RIM ELEVATION: 644.28
NE 15" CONC. – 631.58
SW 15" CONC. – 631.58
NW 6" PVC – 633.43
SE 6" PVC – 633.48

SAN MH D
RIM ELEVATION: 645.06
NE 15" CONC. – 632.81
SW 15" CONC. – 632.78

SAN MH E
RIM ELEVATION: 646.08
SW 15" CONC. – 633.63
ENE 15" CONC. – 633.63
N 8" PVC – 635.52
S 8" PVC – 635.52

LEGAL DESCRIPTION: (LIBER 1392, PAGE 506)

East 1/2 of South 1/2 of North 1/2 of Southeast 1/4, Section 33, T15N, R2E, lying South of right of way for Joe Mann Boulevard, EXCEPT Beginning 1614.58 feet North & 33 feet West of Southeast Section corner, thence West 117.24 feet, Westerly along South line of Joe Mann Boulevard 139.19 feet, East 255.16 feet, North 17 feet to Point of Beginning.

BENCHMARKS:

Control BM – City of Midland Engineering Department Combined Plan for N. Jefferson Avenue. (Sheet 2 of 2) P.K. Nail in power pole on the West side of Jefferson Avenue at house #1589.
Elevation: 651.40 (Datum not specified)

BM 1 – Northeast flange bolt under "S" in "WORKS" on fire hydrant 7'± East of East curb line of Jefferson Avenue, 115'± South of the centerline of Chemical Bank driveway.
Elevation: 650.08

BM 2 – Chiseled "□" on top of East side of Northerly concrete light pole base located 55'± South of Northeast corner of parking lot for #6540 Cinema Drive. Also being opposite West side of detention pond West of subject property.
Elevation: 643.71

BM 3 – Chiseled "□" on Southwest corner of concrete slab under a bench on the South right of way line of Joe Mann Boulevard, 60' West of centerline Alan Ott Drive to the North.
Elevation: 644.99

GENERAL NOTES:

1) A current Title Commitment and Schedule B Section II Supportive Documentation has not been furnished. The affect of easements upon this parcel, other than indicated, are unknown.

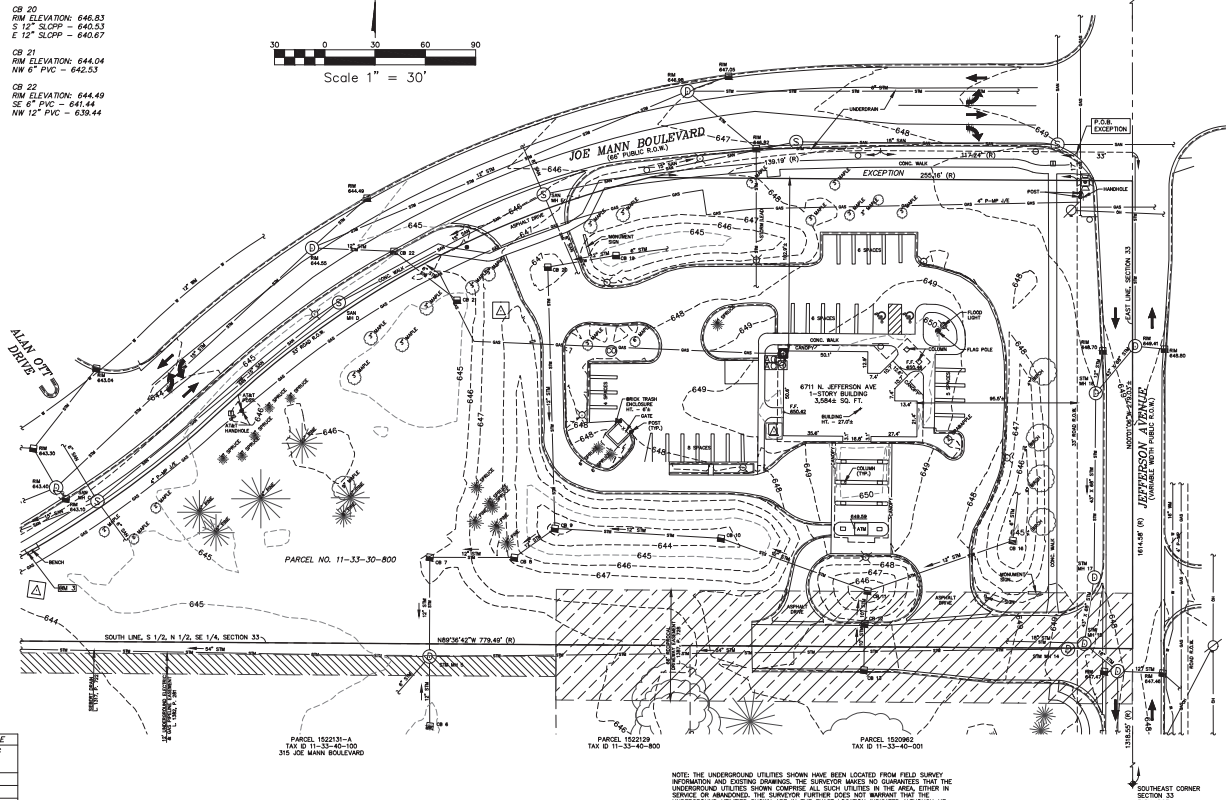
2) Bearings were established by holding a course of N00°01'06"W along the East line of Section 33 per the description of record for 315 Joe Mann Boulevard.

3) By graphic plotting only, this property is in Zone(s) X of the Flood Insurance Rate Map, Community Panel No. 26111C0186E, panel was not print and does not bear an effective date and is not in a Special Flood Hazard.

4) A certified boundary survey has not been performed by this office. The relationship of features to the parcel boundaries are approximate.

SITE LOCATION MAP
NOT TO SCALE

30 0 30 60 90
Scale 1" = 30'



PARKING SPACE TABLE	
TYPE OF SPACE	EXISTING STRIPED SPACES
REGULAR	29
HANDICAP	2
TOTAL	31

NOTE: THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN ANY STRUCTURE INVENTORY SHOWN HEREON.

LEGEND:

- (D) = STORM MANHOLE
- = CATCHBASIN
- STM = STORM LINE
- (S) = SANITARY MANHOLE
- (C) = SANITARY CLEANOUT
- SAN = SANITARY LINE
- (E) = ELECTRIC MANHOLE
- = UTILITY POLE
- = GUY WIRE
- OH = OVERHEAD UTILITY LINE
- UG = UNDERGROUND UTILITY LINE
- (A) = TRANSFORMER
- (AC) = AC-UNIT
- (T) = TELEPHONE MANHOLE
- = ROOF DRAIN
- = TELEPHONE PEDESTAL
- = ELECTRIC PEDESTAL
- = ELECTRIC METER
- = LIGHT POLE
- = SIGN
- = MONUMENT SIGN
- (W) = WATER MANHOLE
- = WATER METER
- W = WATER LINE
- (V) = WATER VALVE
- = FIRE HYDRANT
- (M) = MONITORING WELL
- = GAS METER
- (GV) = GAS VALVE
- GAS = GAS LINE
- = FENCE LINE
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = CURB AND GUTTER
- = TREE LINE
- = SET IRON & CAP #47069
- = FOUND IRON AS NOTED
- = SECTION CORNER
- = DISTANCE NOT TO SCALE
- = YARDBASIN
- (P) = POST INDICATOR VALVE
- (W) = WALL HYDRANT
- = MAIL BOX
- = SATELLITE DISH
- = ASPHALT
- = CONCRETE
- (R) = RECORDED
- (M) = MEASURED

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REVISIONS		
2/11/16	PER CITY COMMENTS	
11/25/15	SITE PLAN SUBMITTAL	
DATE	REVISION	

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:
THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER AVENUE, SUITE 110
NOVI, MICHIGAN 48375

TOPOGRAPHIC SURVEY OF CHEMICAL BANK
6711 N. JEFFERSON AVENUE
MIDLAND, MICHIGAN 48642

FILE	CD1-1, CD1-3.DWG
FIELD WORK	JZ/DT
DRAWN BY	JML
CHECKED BY	DKR
DATE OF SURVEY	10/20/2015
SCALE	
HOR.	1" = 30'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	CD1.3

FILE: L:\1636 (KROGER D-277 MIDLAND)\CVS PLANS\CD1-1_CD1-3.DWG – PLOT DATE: 2/11/2016 2:46 PM BY: Michelle Shumaker SCALE: 1:1

NOTES

1. BENCHMARKS
CONTROL BENCHMARK – CITY OF MIDLAND ENGINEERING DEPARTMENT COMBINED PLAN FOR N. JEFFERSON AVENUE, (SHEET 2 OF 2) P.K. NAIL IN POWER POLE ON THE WEST SIDE OF JEFFERSON AVENUE AT HOUSE #1569.
ELEVATION: 651.40 (DATUM NOT SPECIFIED)

BENCHMARK #1 – NORTHEAST FLANGE BOLT UNDER "S" IN "WORKS" ON FIRE HYDRANT 7'± EAST OF EAST CURB LINE OF JEFFERSON AVENUE, 115'± SOUTH OF THE CENTERLINE OF CHEMICAL BANK DRIVEWAY.
ELEVATION: 650.08

BENCHMARK # 2 – CHISELED "□" ON TOP OF EAST SIDE OF NORTHERLY CONCRETE LIGHT POLE BASE LOCATED 55'± SOUTH OF NORTHEAST CORNER OF PARKING LOT FOR #0940 CINEMA DRIVE, ALSO BEING OPPOSITE WEST SIDE OF DETENTION POND WEST OF SUBJECT PROPERTY.
ELEVATION: 643.71

BENCHMARK # 3 – CHISELED "□" ON SOUTHWEST CORNER OF CONCRETE SLAB UNDER A BENCH ON THE SOUTH RIGHT OF WAY LINE OF JOE MANN BOULEVARD, 60' WEST OF CENTERLINE ALAN OTT DRIVE TO THE NORTH.
ELEVATION: 644.99

2. THE CONTRACTOR SHALL CALL "MISS DIG" AT 811 OR 1-800-482-7171 AT LEAST THREE (3) WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO CONSTRUCTION.

3. LSG ENGINEERS & SURVEYORS WILL NOT BE RESPONSIBLE FOR FIELD DESIGN CHANGES MADE BY THE CONTRACTOR OR THE CONTRACTOR'S SURVEYOR WHERE THESE DESIGN CHANGES HAVE NOT BEEN APPROVED BY LSG ENGINEERS & SURVEYORS.

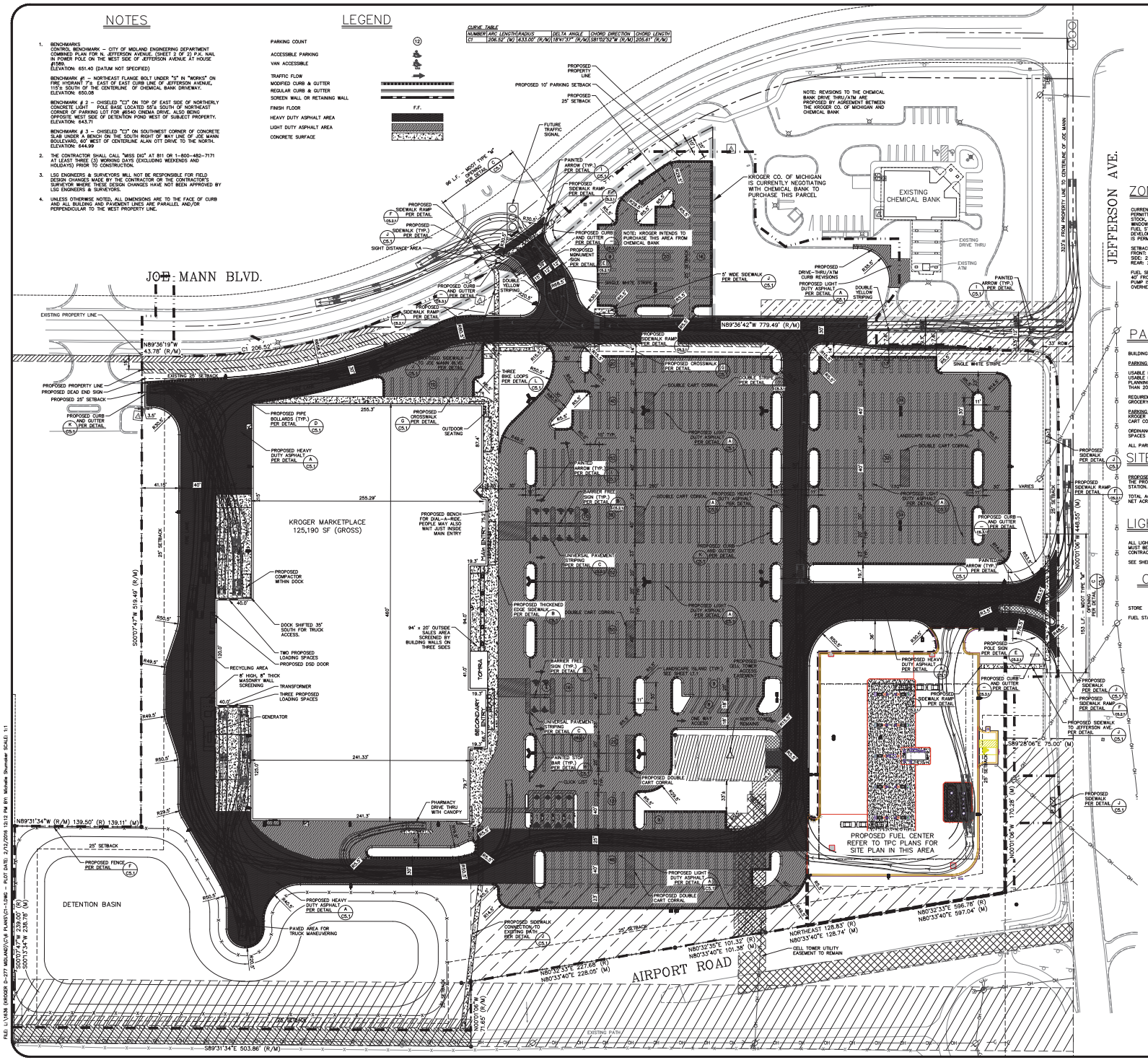
4. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO THE FACE OF CURB AND ALL BUILDING AND PAVEMENT LINES ARE PARALLEL AND/OR PERPENDICULAR TO THE WEST PROPERTY LINE.

LEGEND

PARKING COUNT
ACCESSIBLE PARKING
VAN ACCESSIBLE
TRAFFIC FLOW
MODIFIED CURB & GUTTER
REGULAR CURB & GUTTER
SCREEN WALL OR RETAINING WALL
FINISH FLOOR
HEAVY DUTY ASPHALT AREA
LIGHT DUTY ASPHALT AREA
CONCRETE SURFACE

CURVE TABLE

NUMBER	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD DIRECTION	CHORD LENGTH
C1	206.52' (M)	633.05' (R/M)	18°41'37" (R/M)	S81°02'52"W (R/M)	205.61' (R/M)



Scale 1" = 40'

ZONING NOTES

CURRENT ZONING IS RC – REGIONAL COMMERCIAL
PERMITTED USES INCLUDE: GROCERY STORES, OUTDOOR SALES OF NURSERY STOCK, GARDEN SUPPLIES, AND PRODUCE, AND PHARMACIES WITH DRIVE UP WINDOWS.
FUEL STATIONS ARE A PERMITTED USE SUBJECT TO ADDITIONAL SITE DEVELOPMENT STANDARDS FOR SETBACKS AND SCREENING. ONE ACCESS DRIVE IS PERMITTED, CORNER LOTS MAY HAVE TWO.

SETBACKS:
FRONT: 25'
SIDE: 25'
REAR: 25'

FUEL SETBACKS:
40' FROM RESIDENTIAL ZONING OR USE
PUMP ISLANDS: 30' FROM LOT LINE
OVERHEAD CANOPIES: 20' FROM ROW LINE

PARKING

BUILDING AREA – 125,190 S.F. (GROSS)

PARKING REQUIRED BY ORDINANCE

USABLE FLOOR ARE IS DEFINED AS 80% OF THE GROSS FLOOR AREA.
USABLE FLOOR AREA – 100,152
PLANNING COMMISSION APPROVAL IS REQUIRED TO EXCEED THE REQUIRED PARKING COUNT BY MORE THAN 20%.

REQUIREMENT	SPACES	MAX.
GROCERY OR CONVENIENCE STORES: 1 SPACE PER 180 SQ. FT. USABLE.	556	668

PARKING PROVIDED
KROGER SPACES 596 (INCLUDING 2 AT FUEL STATION) (4.44 SPACES PER 1000 GROSS S.F.)
CART CORRALS ARE NOT INCLUDED IN PARKING SPACE COUNT.

ORDINANCE REQUIRES PARKING SPACES TO BE 9'x18' MIN. WITH 20' AISLES
SPACES SHOWN ARE 10'x20' WITH 23' AISLES (KROGER STANDARD.)

ALL PARKING WILL BE DOUBLE STRIPED PER CITY OF MIDLAND STANDARDS.

SITE PLAN NOTES

PROPOSED LAND USE
THE PROPOSED LAND USE IS COMMERCIAL, INCLUDING A KROGER MARKETPLACE STORE AND FUEL STATION. ONE EXISTING CELL TOWER WILL REMAIN ON SITE.

TOTAL ACREAGE: 17.1± ACRES
NET ACREAGE: 16.7± ACRES

LIGHTING NOTES

ALL LIGHT POLES, FIXTURES, AND ANCHOR BOLTS ARE PROVIDED BY THE OWNER, KROGER, AND MUST BE COORDINATED, RECEIVED, HANDLED, ASSEMBLED, AND INSTALLED BY THE SITE CONTRACTOR. ALL WARRANTY WORK SHALL BE THE SITE CONTRACTOR'S RESPONSIBILITY.

SEE SHEET E1.7 SITE LIGHTING PLAN FOR MOUNTING HEIGHT.

CONSTRUCTION SEQUENCE

	PROPOSED CONSTRUCTION START	PROPOSED GRAND OPENING
STORE	SEPTEMBER 2016	AUGUST 2017
FUEL STATION	MAY 2017	AUGUST 2017

HATCH LEGEND

CELL TOWER EASEMENT
CELL TOWER INGRESS/EGRESS, INSTALLATION & MAINTENANCE EASEMENT
PROPOSED CELL TOWER ACCESS EASEMENT
CELL TOWER 20' INGRESS/EGRESS & UTILITY EASEMENT
CITY OF MIDLAND 20' SIDEWALK/BICYCLE PATHWAY EASEMENT
10' PUBLIC UTILITY EASEMENT
70' DOW CHEMICAL EASEMENT (TO BE ABANDONED)
MICHIGAN STATE HIGHWAY COMMISSIONER DEED RESTRICTIONS (MDOT)
MDOT RELEASE
66' RECIPROCAL DRIVEWAY EASEMENT
12' UNDERGROUND ELECTRIC & GAS PIPELINE EASEMENT
7' PUBLIC UTILITY EASEMENT

VARIANCES

KROGER WILL REQUEST A VARIANCE FOR BUILDING SIGNS

DATE	REVISIONS/SUBMITTALS	
3/31/16	PER CITY COMMENTS	MLS
2/5/16	ADDED TOWN	MLS
12/28/15	SITE PLAN SUBMITTAL	MLS
12/18/15	FIRST	MLS

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX. (517) 393-2808
www.lsg-es.com

PREPARED FOR: Kroger

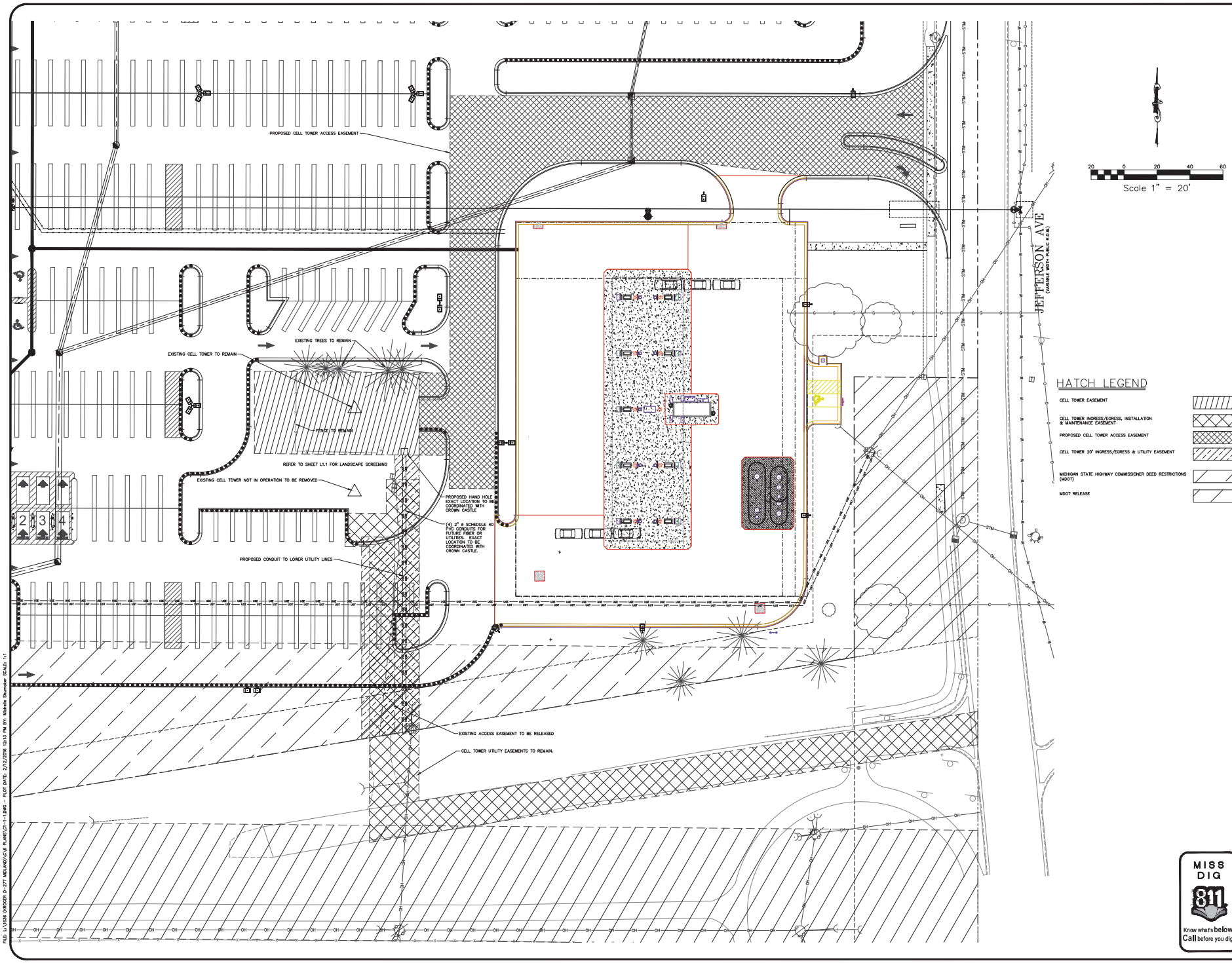
THE KROGER COMPANY
40399 GRAND RIVER AVE.
NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

SITE PLAN
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

FILE	C1-1.DWG
DESIGNED BY	MLS
DRAWN BY	SEP/WRW
CHECKED BY	ASB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
SCALE VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.1

FILE: L:\1636 (KROGER D-277) MIDLAND\CV\B PLANS\C1-1.DWG – PLOT DATE: 2/12/2016 12:12 PM BY: Michelle Shumaker SCALE: 1:1



DATE	REVISIONS/SUBMITTALS	BY
12/17/14	FOR CITY COMMENTS	MLS
12/18/15	RE SUBMITTAL	MLS
DATE	DESCRIPTION	BY

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX. (517) 393-2608
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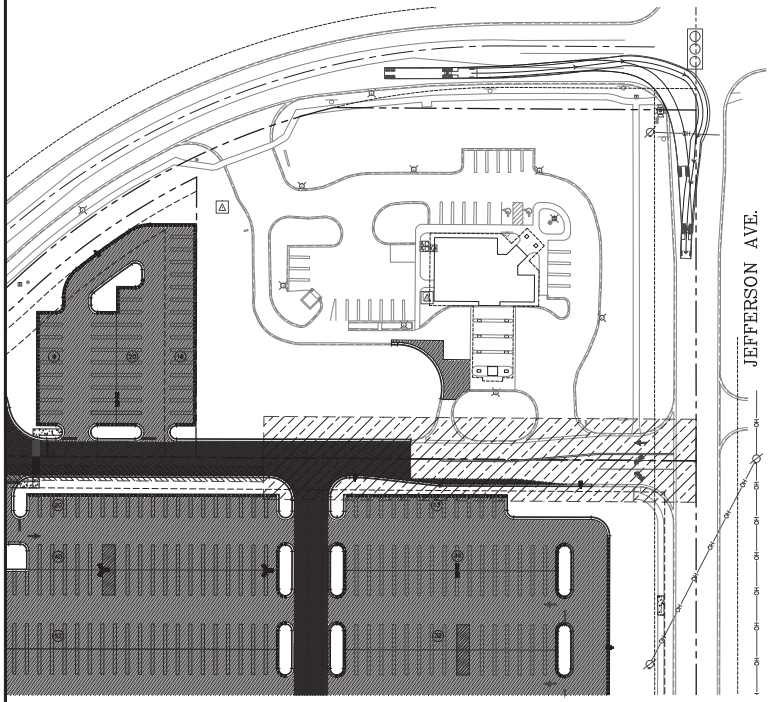
CELL TOWER DETAIL PLAN
FOR
KROGER #-777
315 JEFFERSON BOULEVARD
MIDLAND, MI 48642

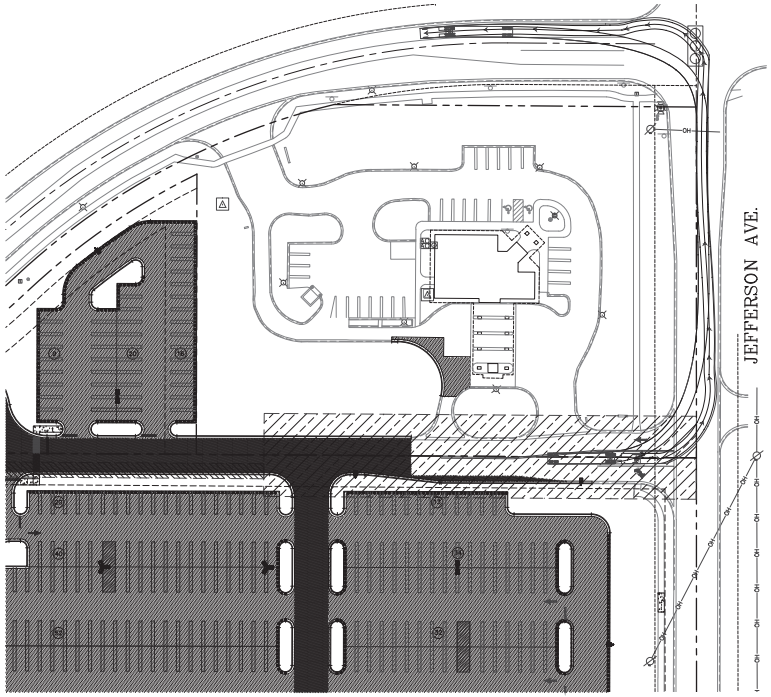
MISS DIG 811
Know what's below. Call before you dig.

FILE	C1-1-1.DWG
DESIGNED BY	MLS
DRAWN BY	SDF/MRW
CHECKED BY	AGB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 20'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.1.1

FILE: L:\1636 (KROGER 5-277 MIDLAND)\CVR PLANS\C1-1-1.DWG - PLOT DATE: 2/12/2016 12:13 PM BY: Michele Shumaker SCALE: 1:1



EASTBOUND JOE MANN TRUCK DETAIL (A / C1.1.2)



NORTHBOUND JEFFERSON TRUCK DETAIL (B / C1.1.2)

40 0 40 80 120

Scale 1" = 40'

NO.	DATE	REVISIONS/SUBMITTALS
1	2/12/16	FOR CITY COMMENTS

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3135 PINE TREE ROAD
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LANSING, MI 48911
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INTERSECTION TRUCK PLAN

FOR

KROGER D-777

315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

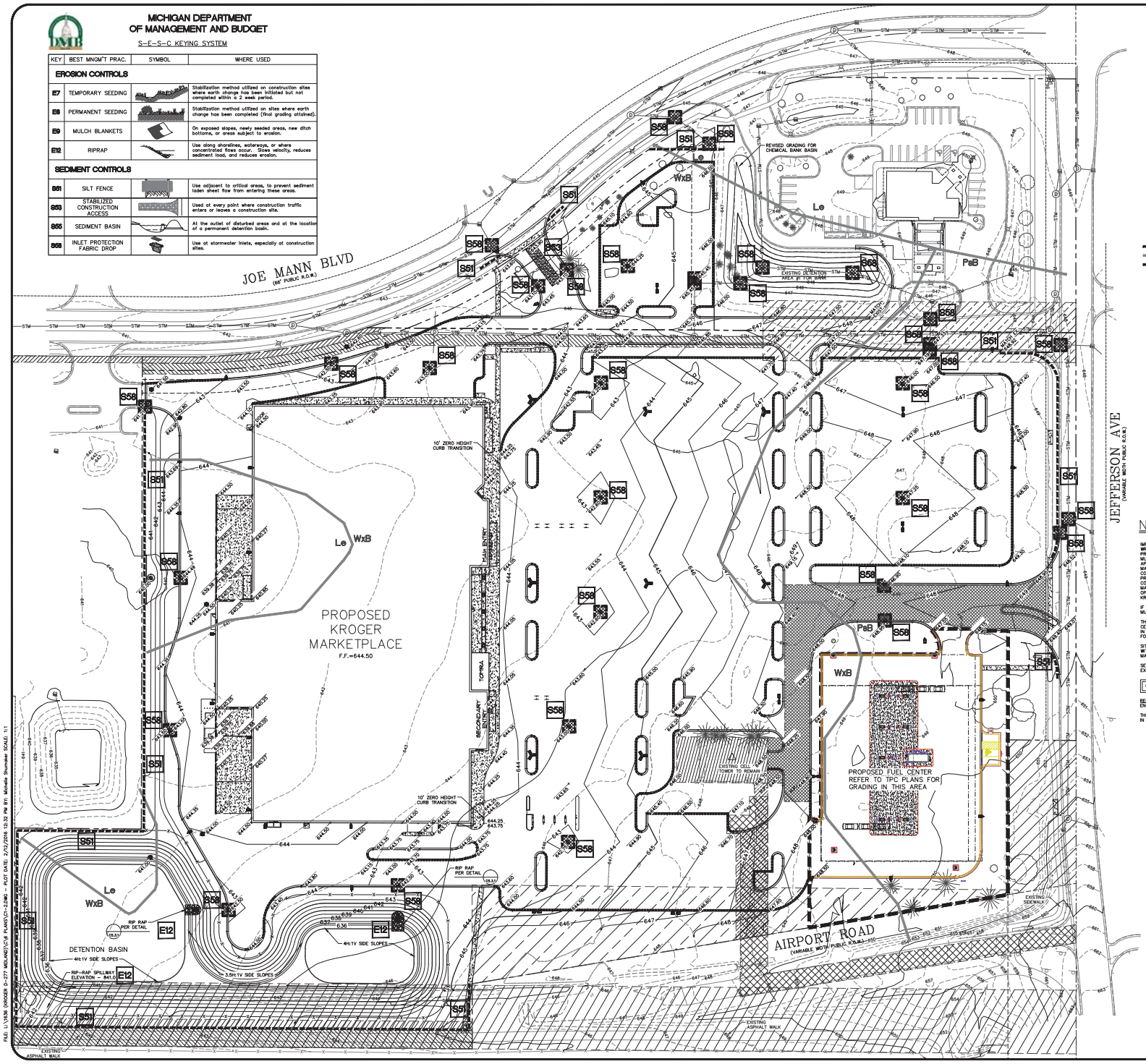
FILE	C1-1-2.DWG
DESIGNED BY	MLS
DRAWN BY	SEP/WRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.1.2

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\8 PLANS\C1-1-2.DWG - PLOT DATE: 2/12/2016 11:49 AM BY: Michelle Shumaker SCALE: 1:1

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S-E-S-C KEYING SYSTEM

KEY	BEST MNGM'T PRAC.	SYMBOL	WHERE USED
EROSION CONTROLS			
E7	TEMPORARY SEEDING		Stabilization method utilized on construction sites where earth change has been initiated but not completed within a 2 week period.
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment load, and reduces erosion.
SEDIMENT CONTROLS			
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S55	SEDIMENT BASIN		At the outlet of disturbed areas and at the location of a permanent detention basin.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.



40 0 40 80 120

Scale 1" = 40'

LEGEND

- INLET PROTECTION AT CB
- 36 — REFERS TO THE APPROPRIATE M.D.M.B S.E.S.C. KEYING SYSTEM DETAIL (SEE THIS SHEET)
- SILT FENCE
- NRCS SOIL BOUNDARY
- LIMITS OF EARTH CHANGE (18.2 ACRES)

SCS SOIL TYPES

Le	LENAWEE SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES
PeB	PIPESTONE SAND, ERIE-HURON LAKE PLAIN, 0 TO 3 PERCENT SLOPES
WxB	WIXOM LOAMY SAND, 0 TO 3 PERCENT SLOPES

NOTES

IMPORTING FILL MATERIAL FROM AN OFF-SITE LOCATION WITHOUT PRIOR WRITTEN APPROVAL FROM THE KROGER PROJECT MANAGER IS STRICTLY PROHIBITED. IDENTIFICATION OF OFF-SITE BORROW LOCATIONS AND MATERIAL MUST BE COORDINATED AND DOCUMENTED THROUGH THE SWPPP. A KROGER APPROVED TESTING FIRM MUST VERIFY THE SUITABILITY OF ALL OFF-SITE MATERIAL. THIS INCLUDES AN ANALYSIS TO INSURE THAT NO ENVIRONMENTAL CONTAMINATION IS PRESENT. IF ANY MATERIAL IS BOUGHT ON SITE WITHOUT PRIOR WRITTEN APPROVAL OF THE KROGER PROJECT MANAGER, THE CONTRACTOR WILL BEAR ALL COSTS ASSOCIATED WITH REMOVING THE MATERIAL, TESTING FOR CONTAMINATION, MONITORING THE CLEAN-UP OPERATION, DISPOSAL IN AN APPROVED LANDFILL, AND CERTIFYING THAT THE KROGER SITE IS ENVIRONMENTALLY CLEAN.

IF REQUESTED, THE KROGER PROJECT MANAGER OR KROGER'S CONSULTANTS MUST BE GRANTED UNFETTERED ACCESS TO ANY AND ALL BORROW SITES.

THE KROGER APPROVED TESTING AGENCY AND PROJECT SURVEYOR MUST CERTIFY THE BUILDING PAD USING THE "PAD CERTIFICATION FORM", INCLUDED IN THE PROJECT SPECIFICATIONS, PRIOR TO THE COMMENCEMENT OF BUILDING FOUNDATIONS.

SITE CONTRACTOR TO COORDINATE ALL ACCESS, PARKING, AND STAGING AREAS WITH THE BUILDING GENERAL CONTRACTOR AND THE KROGER PROJECT MANAGER.

SESC CONTROLS MUST BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE, OR EXTERIOR BUILDING DEMOLITION.

CITY OF MIDLAND S.E.S.C PERMIT NO. PENDING

RECEIVING WATER
ENCLOSED SIEBERT DRAIN, RUNNING ALONG THE NORTH SIDE OF THE SITE.

THE PHASE I REPORT DID NOT IDENTIFY ANY POTENTIAL WETLAND AREAS ON OR IN THE VICINITY OF THE SITE.

NOTES

1. BENCHMARKS
   CONTROL BENCHMARK – CITY OF MIDLAND ENGINEERING DEPARTMENT COMBINED PLAN FOR N. JEFFERSON AVENUE. (SHEET 2 OF 2) P.K. NAIL IN POWER POLE ON THE WEST SIDE OF JEFFERSON AVENUE AT HOUSE #1589.
   ELEVATION: 651.40 (DATUM NOT SPECIFIED)

   BENCHMARK #1 – NORTHEAST FLANGE BOLT UNDER "S" IN "HOWKS" ON FIRE HYDRANT 7'± EAST OF EAST CURB LINE OF JEFFERSON AVENUE. 115'± SOUTH OF THE CENTERLINE OF CHEMICAL BANK DRIVEWAY.
   ELEVATION: 650.08

   BENCHMARK # 2 – CHISELED "CT" ON TOP OF EAST SIDE OF NORTHERLY CONCRETE LIGHT POLE BASE LOCATED 50'± SOUTH OF NORTHEAST CORNER OF PARKING LOT FOR #5540 CINEMA DRIVE, ALSO BEING OPPOSITE WEST SIDE OF DETENTION POND WEST OF SUBJECT PROPERTY.
   ELEVATION: 643.71

   BENCHMARK # 3 – CHISELED "CT" ON SOUTHWEST CORNER OF CONCRETE SLAB UNDER A BENCH ON THE SOUTH RIGHT OF WAY LINE OF JOE MANN BOULEVARD, 60' WEST OF CENTERLINE ALAN OTT DRIVE TO THE NORTH.
   ELEVATION: 644.99
2. THE CONTRACTOR SHALL CALL "MISS DIG" AT 811 OR 1-800-482-7171 AT LEAST THREE (3) WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO CONSTRUCTION.
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MISS DIG 811
Know what's below. Call before you dig.

DATE	REVISIONS/SUBMITTALS	
3/11/16	FOR CITY COMMENTS	MLS
1/28/16	ARCHITECTURAL COORDINATION	MLS
12/29/15	SITE PLAN SUBMITTAL	BB
DATE	REVISIONS/SUBMITTALS	BY

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PREPARED FOR: Kroger

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GRADING AND SESC PLAN

FOR

KROGER D-777

315 JOE MANN BOULEVARD
MIDLAND, MI 48642

FILE	C1-2.DWG
DESIGNED BY	MLS/EAI
DRAWN BY	SEP/WRW
CHECKED BY	ASB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.2

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\8 PLANS\C1-2.DWG – PLOT DATE: 2/12/2016 12:32 PM BY: Michelle Shumaker SCALE: 1:1

SITE DETENTION CALCULATIONS

Development Data - Postdeveloped Condition (Site) Revised 20160210

SUBAREA	AREA sf	AREA acres	RUNOFF COEFF. C	A x C	AREA sq.mi.
Grass	184352	4.23	0.30	1.27	0.0066
Roof	119926	2.75	0.90	2.48	0.0043
Paved	410452	9.42	0.90	8.48	0.0147
Pond	32058	0.74	1.00	0.74	0.0011
Totals		17.14 acres		12.96	0.0268 sq. mi.

Weighted C 0.756

% Impervious Area 0.753

Allowable Outflow (0.2 CFS/Acre) 3.429

Development Data - Postdeveloped Condition (Offsite) Revised 20160204

SUBAREA	AREA sf	AREA acres	RUNOFF COEFF. C	A x C	AREA sq.mi.
Grass	47641	1.09	0.30	0.33	0.0017
Roof	0	0.00	0.90	0.00	0.0000
Paved	9942	0.23	0.90	0.21	0.0004
Pond	0	0.00	1.00	0.00	0.0000
Totals		1.32 acres		0.53	0.0021 sq. mi.

Weighted C 0.404

OFFSITE AREA INCLUDES THE AIRPORT ROAD RIGHT OF WAY IN THE SOUTHEAST CORNER.\
(AREA B ON C1.2.2)

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 02 / 10 / 2016

Pond No. 1 - Detention Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 636.45 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	636.45	32,058	0	0
0.55	637.00	34,473	18,290	18,290
1.55	638.00	38,975	36,697	54,987
2.55	639.00	43,582	41,253	96,240
3.55	640.00	48,295	45,914	142,154
4.55	641.00	53,115	50,681	192,835
5.55	642.00	58,036	55,552	248,387

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 636.45	0.00	0.00	0.00
Length (ft)	= 0.50	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	636.45	0.00	---	---	---	---	---	---	---	---	---	0.000
0.55	18,290	637.00	0.78 ic	---	---	---	---	---	---	---	---	---	0.779
1.55	54,987	638.00	1.86 ic	---	---	---	---	---	---	---	---	---	1.864
2.55	96,240	639.00	2.50 ic	---	---	---	---	---	---	---	---	---	2.502
3.55	142,154	640.00	3.07 ic	---	---	---	---	---	---	---	---	---	3.074
4.55	192,835	641.00	3.45 ic	---	---	---	---	---	---	---	---	---	3.451
5.55	248,387	642.00	3.84 ic	---	---	---	---	---	---	---	---	---	3.838

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	109.86	2	718	267,724	----	----	----	Onsite Area
2	SCS Runoff	6.240	2	716	12,622	----	----	----	Offsite Area In
3	Combine	116.08	2	718	280,346	1, 2	----	----	Combined Area In
4	Reservoir	3.296	2	848	268,357	1	640.83	174,550	Pond w/ Onsite Only
5	Reservoir	3.387	2	858	278,953	3	640.60	182,583	Pond w/ On & Offsite

Pond Prelim 20151230.gpw — Return Period: 100 Year — Wednesday, 02 / 10 / 2016

LSG ENGINEERS & SURVEYORS
SCS CN to Rational C Conversion
Storm Event: 10 YEAR
Location: Midland, MI

Precipitation (inches) (10-year, 24 hour storm)	P =	3.34 inches
Time of Concentration (minutes)	t =	20 minutes
Rainfall Intensity (in/hr)	i =	3.07 in/hr
Unit Peak Discharge (cfs/sq.mi/inches)	q' =	635 cfs/sq.mi/inches

CN	S	C	CN	S	C
98	0.20	1.00	64	5.63	0.20
97	0.31	0.97	63	5.87	0.19
96	0.42	0.93	62	6.13	0.18
95	0.53	0.90	61	6.39	0.16
94	0.64	0.86	60	6.67	0.15
93	0.75	0.83	59	6.95	0.14
92	0.87	0.80	58	7.24	0.13
91	0.99	0.77	57	7.54	0.12
90	1.11	0.74	56	7.86	0.10
89	1.24	0.71	55	8.18	0.09
88	1.36	0.69	54	8.52	0.09
87	1.49	0.66	53	8.87	0.08
86	1.63	0.63	52	9.23	0.07
85	1.76	0.61	51	9.61	0.06
84	1.90	0.58	50	10.00	0.05
83	2.05	0.56	49	10.41	0.04
82	2.20	0.53	48	10.83	0.04
81	2.35	0.51	47	11.28	0.03
80	2.50	0.49	46	11.74	0.02
79	2.66	0.47	45	12.22	0.02
78	2.82	0.44	44	12.73	0.01
77	2.99	0.42	43	13.26	0.01
76	3.16	0.40	42	13.81	0.01
75	3.33	0.38	41	14.39	0.00
74	3.51	0.36	40	15.00	0.00
73	3.70	0.35	39	15.64	0.00
72	3.89	0.33	38	16.32	0.00
71	4.08	0.31	37	17.03	0.00
70	4.29	0.29	36	17.78	0.00
69	4.49	0.28	35	18.57	0.00
68	4.71	0.26	34	19.41	0.01
67	4.93	0.25	33	20.30	0.01
66	5.15	0.23	32	21.25	0.01
65	5.38	0.22	31	22.26	0.02

NORTH PARKING LOT DETENTION CALCULATIONS

KROGER TO PURCHASE LAND FROM CHEMICAL BANK

Development Data - Postdeveloped Condition (UG Storage) Revised 20160204

SUBAREA	AREA sf	AREA acres	RUNOFF COEFF. C	A x C	AREA sq.mi.
Grass	12866	0.30	0.30	0.09	0.0005
Roof	0	0.00	0.90	0.00	0.0000
Paved	27723	0.64	0.90	0.57	0.0010
Pond	0	0.00	1.00	0.00	0.0000
Totals		0.93 acres		0.66	0.0015 sq. mi.

Weighted C 0.710

% Impervious Area 0.683

Allowable Outflow (0.2 CFS/Acre) 0.186

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Thursday, 02 / 11 / 2016

Pond No. 1 - UG Detention

Pond Data

UG Chambers -Invert elev. = 638.25 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 100.00 ft, No. Barrels = 8, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 638.25 ft, Width = 4.50 ft, Height = 3.50 ft, Voids = 39.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	638.25	n/a	0	0
0.36	638.61	n/a	620	620
0.72	638.97	n/a	905	1,525
1.07	639.32	n/a	1,011	2,536
1.43	639.68	n/a	1,063	3,600
1.79	640.04	n/a	1,075	4,674
2.15	640.40	n/a	1,048	5,723
2.51	640.76	n/a	977	6,699
2.86	641.11	n/a	838	7,538
3.22	641.47	n/a	524	8,062
3.58	641.83	n/a	422	8,484

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 2.00	0.00	0.00	0.00
Span (in)	= 2.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 638.50	0.00	0.00	0.00
Length (ft)	= 0.50	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	638.25	0.00	---	---	---	---	---	---	---	---	---	0.000
0.36	620	638.61	0.02 ic	---	---	---	---	---	---	---	---	---	0.017
0.72	1,525	638.97	0.06 ic	---	---	---	---	---	---	---	---	---	0.065
1.07	2,536	639.32	0.09 ic	---	---	---	---	---	---	---	---	---	0.090
1.43	3,600	639.68	0.11 ic	---	---	---	---	---	---	---	---	---	0.110
1.79	4,674	640.04	0.13 ic	---	---	---	---	---	---	---	---	---	0.127
2.15	5,723	640.40	0.14 ic	---	---	---	---	---	---	---	---	---	0.141
2.51	6,699	640.76	0.15 ic	---	---	---	---	---	---	---	---	---	0.155
2.86	7,538	641.11	0.17 ic	---	---	---	---	---	---	---	---	---	0.167
3.22	8,062	641.47	0.18 ic	---	---	---	---	---	---	---	---	---	0.179
3.58	8,484	641.83	0.19 ic	---	---	---	---	---	---	---	---	---	0.189

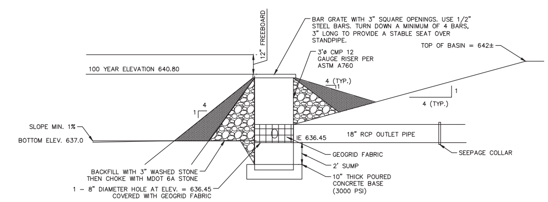
Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	6.051	2	716	12,840	----	----	----	North Parking & Drive Area
2	Reservoir	0.184	2	830	12,479	1	641.65	8,268	UG Detention

UG Det Prelim 20151230.gpw — Return Period: 100 Year — Thursday, 02 / 11 / 2016



DETENTION BASIN RISER/OUTLET CONTROL STRUCTURE DETAIL (A / C1.2.1)

THE BASIN WAS DESIGNED WITH A WET BOTTOM AT ELEVATION 635 TO PROVIDE WATER QUALITY.

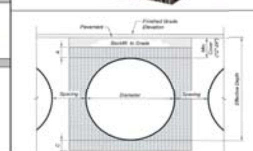
DYODS™ Design Your Own Detention System — CONTECH CMP DETENTION SYSTEMS

For design assistance, drawings, and pricing send completed worksheet to: dyods@contech-cpi.com

Project Summary		
Date:	2/10/2016	
Project Name:	Midland Kroger D-277	
City / County:	Midland	
State:	MI	
Designed By:	EAI	
Company:	LSG Engineers & Surveyors	
Telephone:	517-393-2902	Enter Information in Blue Cells
Corrugated Metal Pipe Calculator		
Storage Volume Required (cf):	8,484	
Limiting Width (ft):	45.00	
Invert Depth Below Asphalt (ft):	6.00	
Solid or Perforated Pipe:	Perforated	
Shape Or Diameter (in):	36	7.07 ft² Pipe Area
Number Of Headers:	2	
Spacing between Barrels (ft):	1.50	
Stone Width Around Perimeter of System (ft):	1	
Depth A: Porous Stone Above Pipe (in):	6	
Depth C: Porous Stone Below Pipe (in):	6	
Stone Porosity (0 to 40%):	40	
System Sizing		
Pipe Storage:	6,277 cf	
Porous Stone Storage:	2,336 cf	
Total Storage Provided:	8,613 cf	101.5% Of Required Storage
Number of Barrels:	8 barrels	
Length per Barrel:	90.0 ft	
Length Per Header:	36.0 ft	
Rectangular Footprint (W x L):	41 ft x 98 ft	
CONTECH Materials		
Total CMP Footage:	888 ft	
Approximate Total Pieces:	40 pcs	
Approximate Coupling Bands:	47 bands	
Approximate Truckloads:	4 trucks	
Construction Quantities**		
Total Excavation:	893 cy	
Porous Stone Backfill For Storage:	288 cy stone	
Backfill to Grade Excluding Stone:	372 cy fill	

**Construction quantities are approximate and should be verified upon final design

© 2007 CONTECH Stormwater Solutions



System Layout

Barrel 12	0
Barrel 11	0
Barrel 10	0
Barrel 9	
Barrel 8	90
Barrel 7	90
Barrel 6	90
Barrel 5	90
Barrel 4	90
Barrel 3	90
Barrel 2	90
Barrel 1	90

Barrel Footage (w/o headers)

UNDERGROUND DETENTION BASIN DETAIL (B / C1.2.1)

REVISIONS/SUBMITTALS		
DATE	DESCRIPTION	BY
12/30/15	SITE PLAN SUBMITTAL	WRW
2/11/16	PER CITY COMMENTS	MLS

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:

Kroger

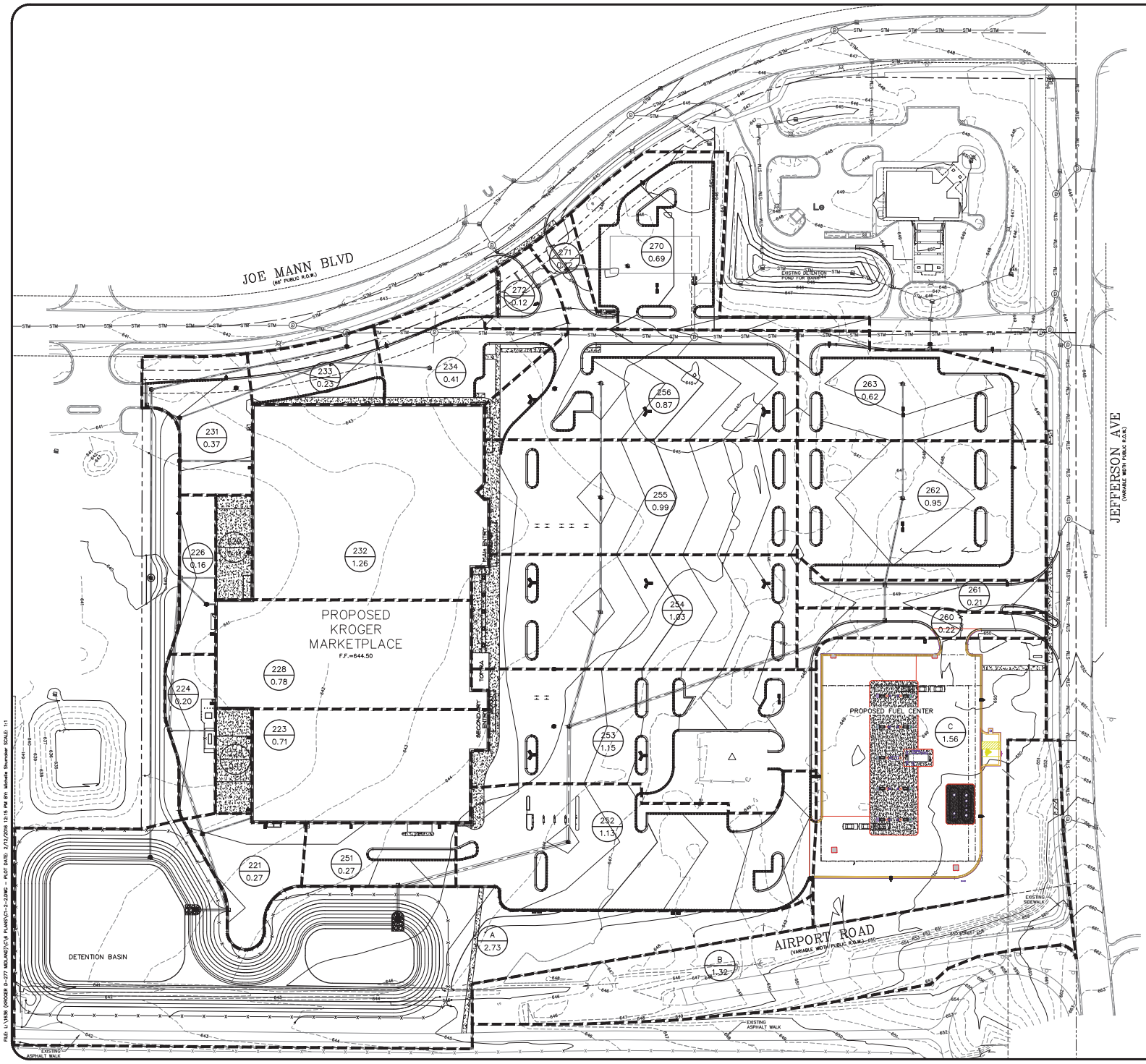
THE KROGER COMPANY
40399 GRAND RIVER AVE.
NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

DRAINAGE AREA CALCULATIONS AND DETAILS
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

FILE	C1-2-1.DWG
DESIGNED BY	EAI
DRAWN BY	SEP/WRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	N/A
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.2.1

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\6 PLANS\C1-2-1.DWG - PLOT DATE: 2/12/2016 1:10 PM BY: Michelle Shumaker SCALE: 1:1



40 0 40 80 120

Scale 1" = 40'

LEGEND

DRAINAGE BASIN BOUNDARY

BASIN DESIGNATION ..... –

BASIN AREA IN ACRES 2.52

NOTES

1. BENCHMARKS
   CONTROL BENCHMARK – CITY OF MIDLAND ENGINEERING DEPARTMENT COMBINED PLAN FOR N. JEFFERSON AVENUE. (SHEET 2 OF 2) P.K. NAIL IN POWER POLE ON THE WEST SIDE OF JEFFERSON AVENUE AT HOUSE #1588.
   ELEVATION: 651.40 (DATUM NOT SPECIFIED)

   BENCHMARK #1 – NORTHEAST FLANGE BOLT UNDER "S" IN "WORKS" ON FIRE HYDRANT 7'± EAST OF EAST CURB LINE OF JEFFERSON AVENUE, 115'± SOUTH OF THE CENTERLINE OF CHEMICAL BANK DRIVEWAY.
   ELEVATION: 650.08

   BENCHMARK # 2 – CHISELED "□" ON TOP OF EAST SIDE OF NORTHERLY CONCRETE LIGHT POLE BASE LOCATED 55'± SOUTH OF NORTHEAST CORNER OF PARKING LOT FOR #6340 CINEMA DRIVE. ALSO BEING OPPOSITE WEST SIDE OF DETENTION POND WEST OF SUBJECT PROPERTY.
   ELEVATION: 643.71

   BENCHMARK # 3 – CHISELED "□" ON SOUTHWEST CORNER OF CONCRETE SLAB UNDER A BENCH ON THE SOUTH RIGHT OF WAY LINE OF JOE MANN BOULEVARD, 60' WEST OF CENTERLINE ALAN OTT DRIVE TO THE NORTH.
   ELEVATION: 644.99
2. THE CONTRACTOR SHALL CALL "MISS DIG" AT 811 OR 1-800-482-7171 AT LEAST THREE (3) WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO CONSTRUCTION.
3. LSG ENGINEERS & SURVEYORS WILL NOT BE RESPONSIBLE FOR FIELD DESIGN CHANGES MADE BY THE CONTRACTOR OR THE CONTRACTOR'S SURVEYOR WHERE THESE DESIGN CHANGES HAVE NOT BEEN APPROVED BY LSG ENGINEERS & SURVEYORS.
4. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO THE FACE OF CURB AND ALL BUILDING AND PAVEMENT LINES ARE PARALLEL AND/OR PERPENDICULAR TO THE WEST PROPERTY LINE.

DATE	REVISIONS/SUBMITTALS	BY
2/11/16	PER CITY COMMENTS	EAI
12/28/15	SITE PLAN SUBMITTAL	EAI

LSG Engineers & Surveyors
3135 PINE TREE ROAD
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PREPARED FOR:
Kroger

THE KROGER COMPANY
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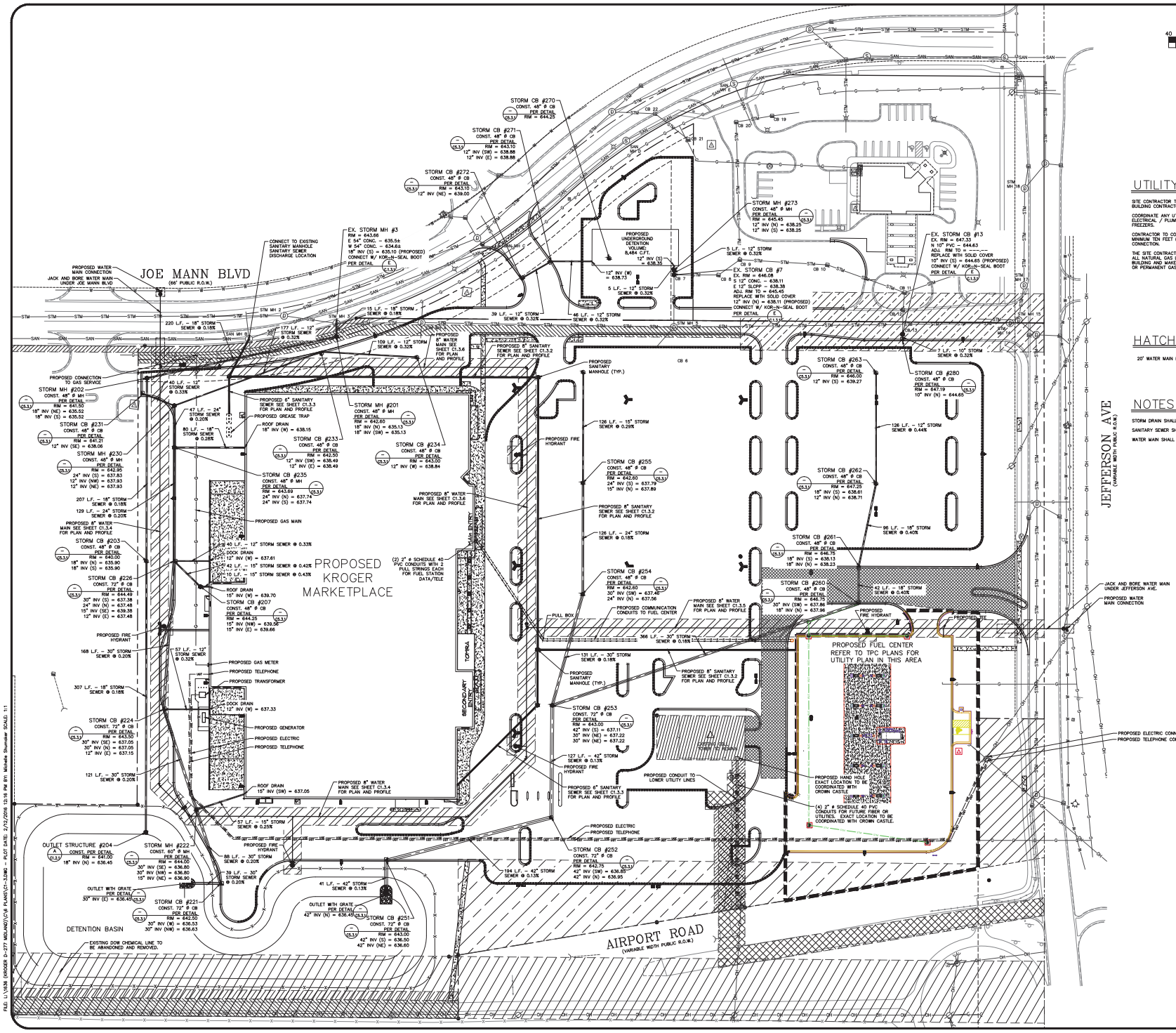
NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

DRAINAGE AREA PLAN
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

FILE	C1-2-2.DWG
DESIGNED BY	EAI
DRAWN BY	SEP/WRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.2.2

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\8 PLANS\C1-2-2.DWG – PLOT DATE: 2/12/2016 12:15 PM BY: Michelle Shumaker SCALE: 1:1



UTILITY NOTES

SITE CONTRACTOR TO COORDINATE ALL UTILITY TIE-INS WITH THE APPROPRIATE BUILDING CONTRACTOR, ARCHITECT, AND KROGER PROJECT MANAGER.

COORDINATE ANY UTILITIES THAT CROSS EXTERIOR WALLS WITH MECHANICAL / ELECTRICAL / PLUMBING PLANS. MAKE SURE LINES ARE NOT UNDER FREEZERS.

CONTRACTOR TO COORDINATE WITH BUILDING ELECTRICIAN AND PROVIDE A MINIMUM TEN FEET (10') EXTRA LENGTH OF CABLES FOR FINAL ELECTRIC CONNECTION.

THE SITE CONTRACTOR MUST COORDINATE THE TIMING AND INSTALLATION OF ALL NATURAL GAS LINES WITH THE GENERAL CONTRACTOR(S) FOR THE BUILDING AND MAKE ALL NECESSARY SCHEDULE ADJUSTMENTS FOR TEMPORARY OR PERMANENT GAS LINE PER THE PROJECT SCHEDULE.

HATCH LEGEND

20' WATER MAIN EASEMENT

NOTES

STORM DRAIN SHALL BE ASTM C-76 CLASS III OR BETTER UNLESS OTHERWISE NOTED.

SANITARY SEWER SHALL BE PVC SDR 26 UNLESS OTHERWISE NOTED.

WATER MAIN SHALL BE CLASS 50 DUCTILE IRON UNLESS OTHERWISE NOTED.

DATE	REVISIONS/SUBMITTALS
3/31/14	PER CITY COMMENTS
1/28/14	ARCHITECTURAL CORRECTION
12/26/13	SITE PLAN SUBMITTAL

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
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PREPARED FOR: Kroger

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NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

UTILITY PLAN
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

FILE	C1-3.DWG
DESIGNED BY	MLS
DRAWN BY	BRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE	
HOR.	1" = 40'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.3

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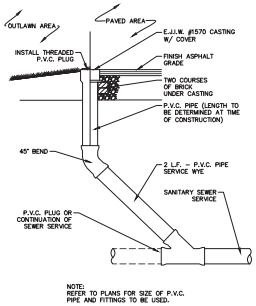
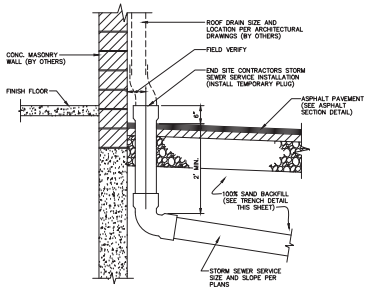
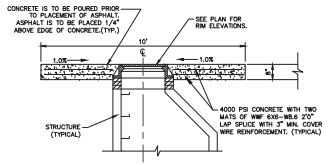


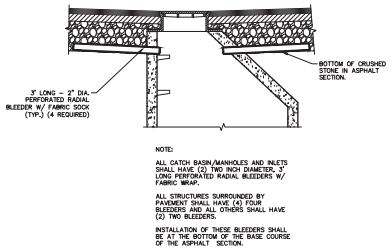
CLEAN OUT DETAIL (A / C1.3.1)



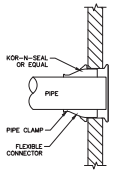
STORM SEWER SERVICE DETAIL (B / C1.3.1)



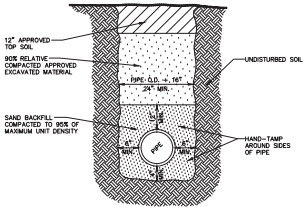
STRUCTURE COLLAR (C / C1.3.1)
(NOT TO SCALE)



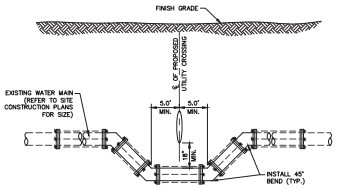
BLEEDER INSTALLATION DETAIL (D / C1.3.1)
(NOT TO SCALE)



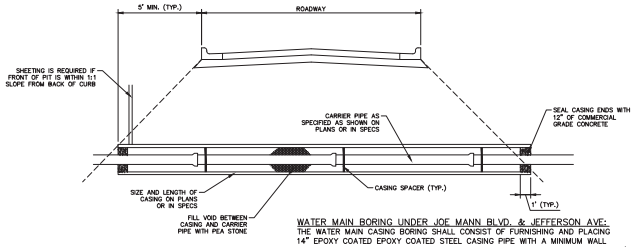
PIPE TO PIPE CONNECTOR (E / C1.3.1)



TYPICAL TRENCH DETAIL (F / C1.3.1)

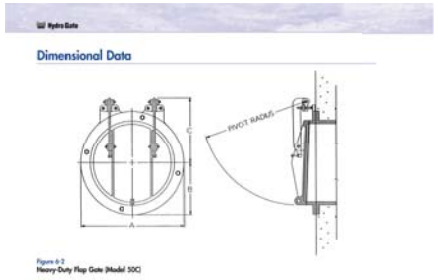


WATER MAIN LOWERING DETAIL (H / C1.3.1)
(NOT TO SCALE)



WATER MAIN JACK AND BORE DETAIL (I / C1.3.1)

WATER MAIN BORING UNDER JOE MANN BLVD. & JEFFERSON AVE:
THE WATER MAIN CASING BORING SHALL CONSIST OF FURNISHING AND PLACING 14" EPOXY COATED EPOXY COATED STEEL CASING PIPE WITH A MINIMUM WALL THICKNESS OF 0.25 INCHES BY THE JACK AND BORE METHOD TO A MINIMUM OF 5' BEHIND THE CURB ON EACH SIDE OF THE STREET. ALL JOINTS ON THE CASING PIPE SHALL BE WELDED. THE BORE PIT SHALL BE PROTECTED WITH STEEL SHEET PILING TO MINIMIZE DAMAGE TO THE SURROUNDING AREAS. THE BORING SHALL BE COMPLETED IN ACCORDANCE WITH M.D.O.T. "PROVISIONS FOR BORE AND JACK CONSTRUCTION IN CONNECTION WITH PERMIT OPERATIONS". THE ANNULAR SPACE BETWEEN THE WATER MAIN AND CASING SHALL BE FILLED WITH PEA STONE. BOTH ENDS OF THE CASING SHALL BE BULKHEADED WITH 12" OF COMMERCIAL GRADE CONCRETE. THE WATER MAIN PIPE SHALL BE INSTALLED IN THE CENTER OF THE CASING PIPE WITH CASING SPACERS (WOOD SPACERS WILL NOT BE ALLOWED). THE METHOD OF PLACEMENT OF THE WATER MAIN WITHIN THE CASING PIPE SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.



FLAP GATE DETAIL (G / C1.3.1)
(NOT TO SCALE)

MANHOLE/CATCH BASIN CASTING SCHEDULE

DESIGNATION	MH E.J.I.W. #1040 W/ TYPE A SOLID COVER	CURB CB E.J.I.W. #7000 W/ TYPE M GRATE	LOT CB E.J.I.W. #1040 W/ TYPE M GRATE	DITCH CB E.J.I.W. #7000 W/ TYPE M GRATE
201	▬			
202	▬			
203				▬
221		▬		
222	▬			
224		▬		
226		▬		
227	▬			
230	▬			
231		▬		
233		▬		
234			▬	
251		▬		
252			▬	
253			▬	
254			▬	
255			▬	
256			▬	
260		▬		
261		▬		
262			▬	
263			▬	
270			▬	
271		▬		
272		▬		
273	▬			
280		▬		

MISS DIG 811
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REVISIONS/SUBMITTALS			
DATE	DESCRIPTION	BY	
12/17/14	PER CITY COMMENTS		

LSG Engineers & Surveyors
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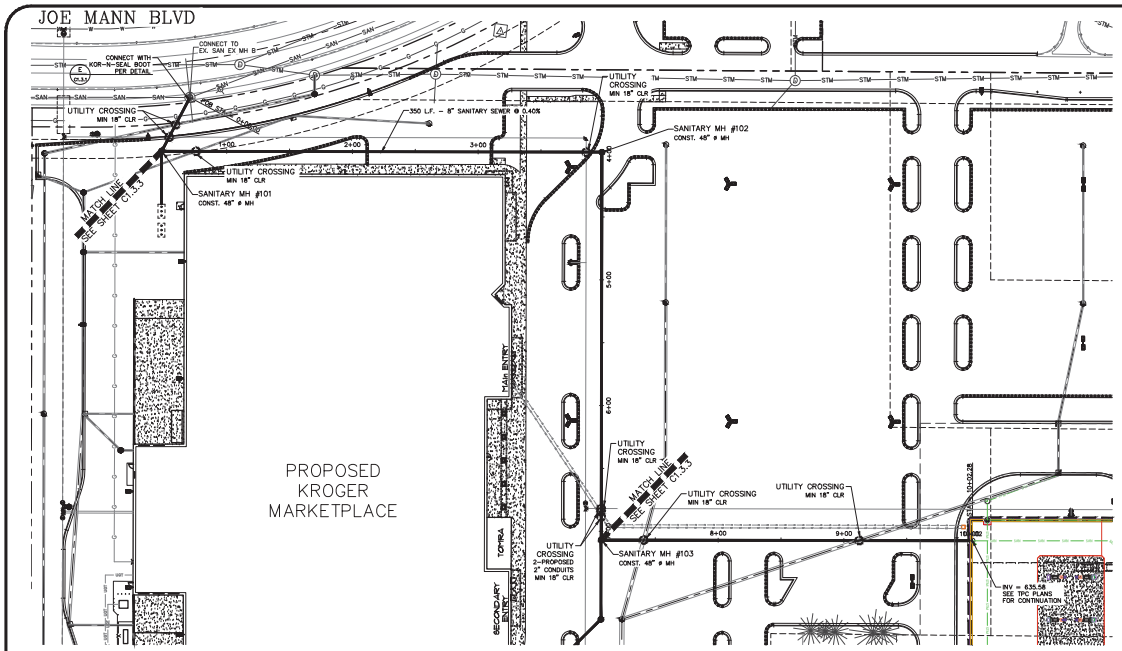
LANSING, MI 48911
PH. (517) 393-2902
FAX. (517) 393-2608
www.lsg-es.com

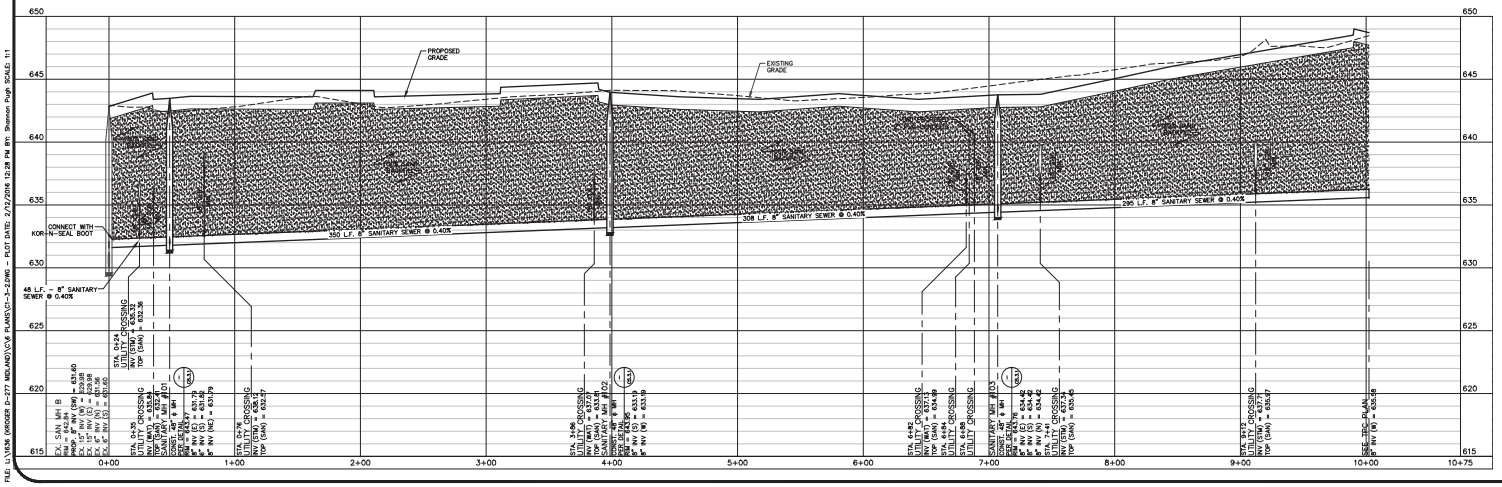
PREPARED FOR:
Kroger
THE KROGER COMPANY
40399 GRAND RIVER AVE.
NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

UTILITY DETAILS
FOR
KROGER #-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

FILE	C1-3-1.DWG
DESIGNED BY	MLS
DRAWN BY	WRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	N/A
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C.1.3.1

FILE: L:\1636 (KROGER 0-277 MIDLAND)\CVR PLANS\C1-3-1.DWG – PLOT DATE: 2/12/2016 12:17 PM BY: Michelle Shumaker SCALE: 1:1





DATE	REVISIONS/SUBMITTALS	BY
2/12/14	PER CITY COMMENTS	MRW

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
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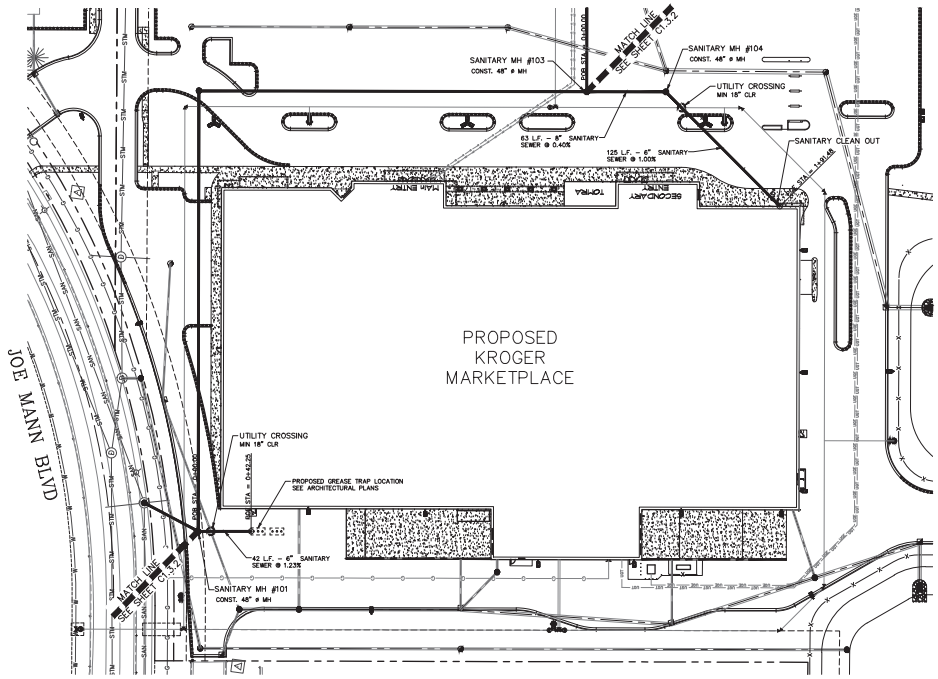
PREPARED FOR:
Kroger
THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER RD.
SUITE 110
NOVI, MI 48375
PHONE (248) 536-1500

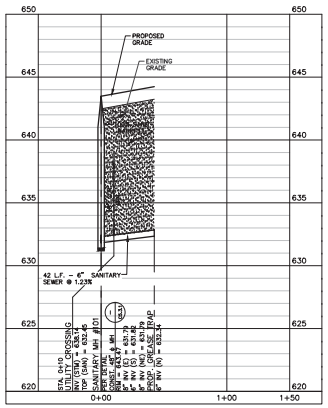
SANITARY SEWER PLAN AND PROFILE
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

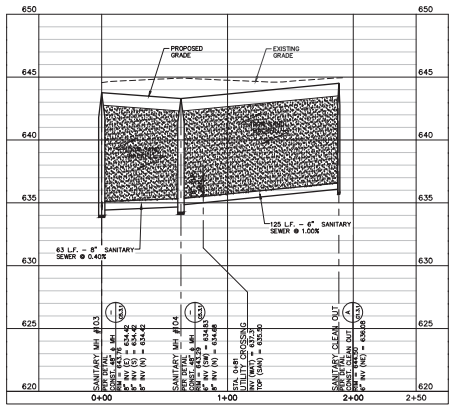
MISS DIG 811
Know what's below. Call before you dig.

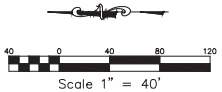
FILE	C1-3-2.DWG
DESIGNED BY	MLS
DRAWN BY	MRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
VERT.	1" = 4'
PROJECT NO.	1636
SHEET NO.	C1.3.2

FILE: L:\1636 (KROGER D-777 MIDLAND)\C\# PLANS\C1-3-2.DWG - PLOT DATE: 2/12/2014 12:28 PM BY: Shannon Pugh SCALE: 1:1









DATE	REVISIONS/SUBMITTALS	BY
2/12/16	PER CITY COMMENTS	MRW

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:

THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER RD.
SUITE 110
NOVI, MI 48375
PHONE: (248) 536-1500

SANITARY SEWER PLAN AND PROFILE

FOR

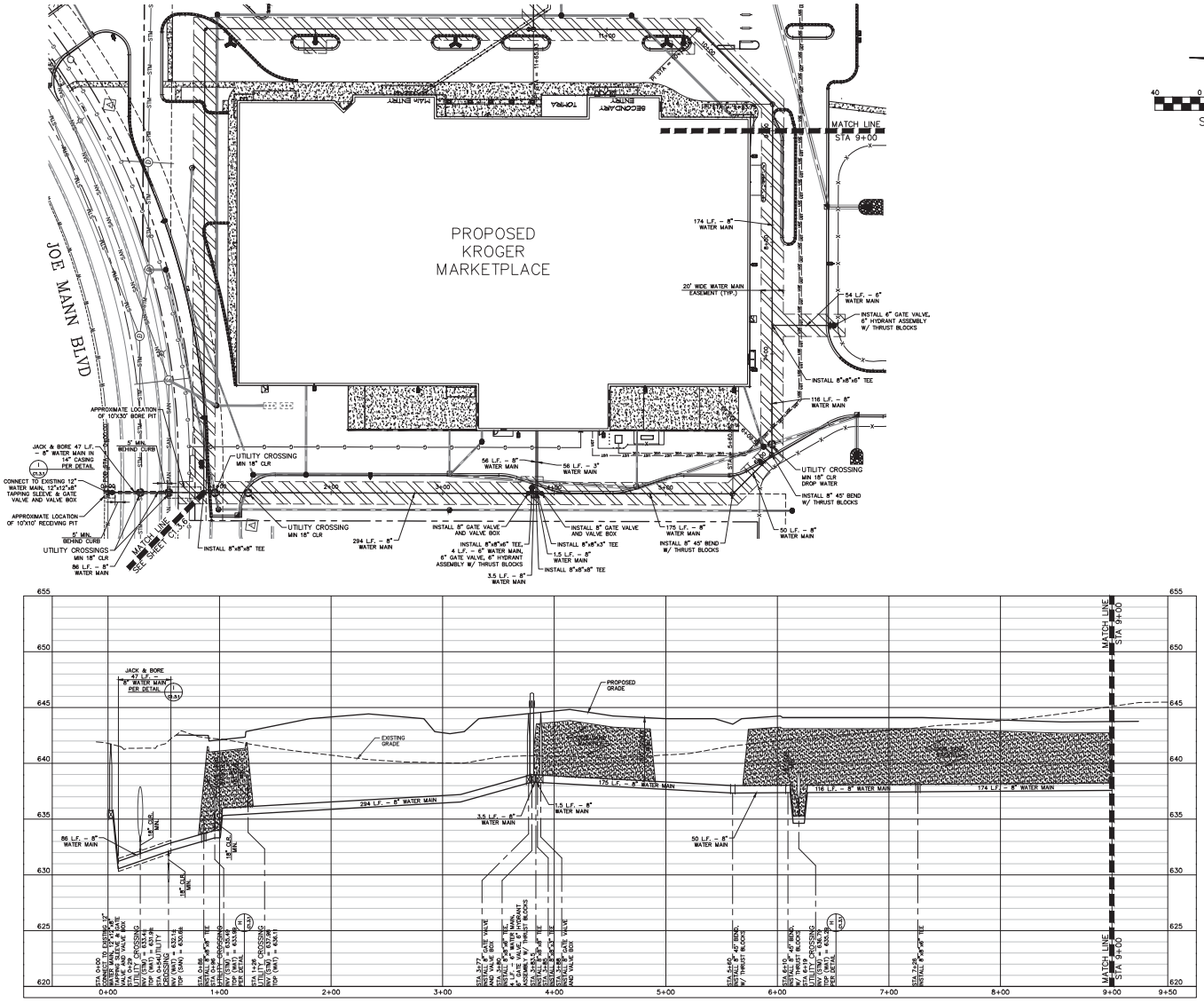
KROGER D-777

315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

FILE	C1-3-3.DWG
DESIGNED BY	MLS
DRAWN BY	MRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
VERT.	1" = 4'
PROJECT NO.	1636
SHEET NO.	C1.3.3

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\8 PLANS\C1-3-3.DWG - PLOT DATE: 2/12/2016 12:41 PM BY: Shannon Pugh SCALE: 1:1



Scale 1" = 40'

DATE	REVISIONS/SUBMITTALS	BY
3/11/16	FOR CITY COMMENTS	MRW

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:

THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER RD.
SUITE 110
NOVI, MI 48375
PHONE: (248) 536-1500

WATER MAIN PLAN AND PROFILE
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

FILE	C1-3-4.DWG
DESIGNED BY	MLS
DRAWN BY	MRW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
VERT.	1" = 4'
PROJECT NO.	1636
SHEET NO.	C1.3.4

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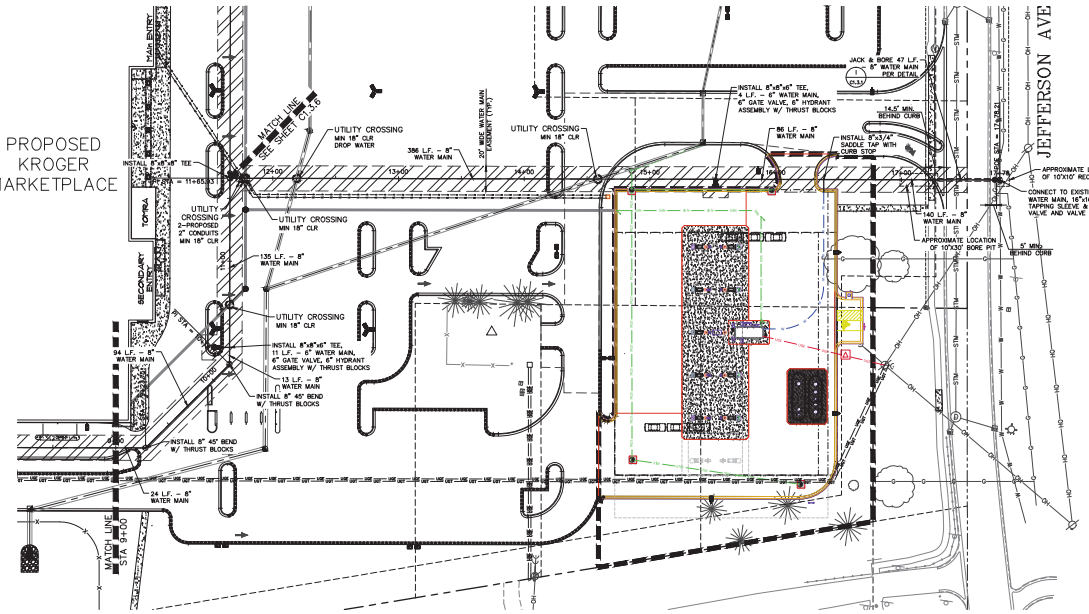

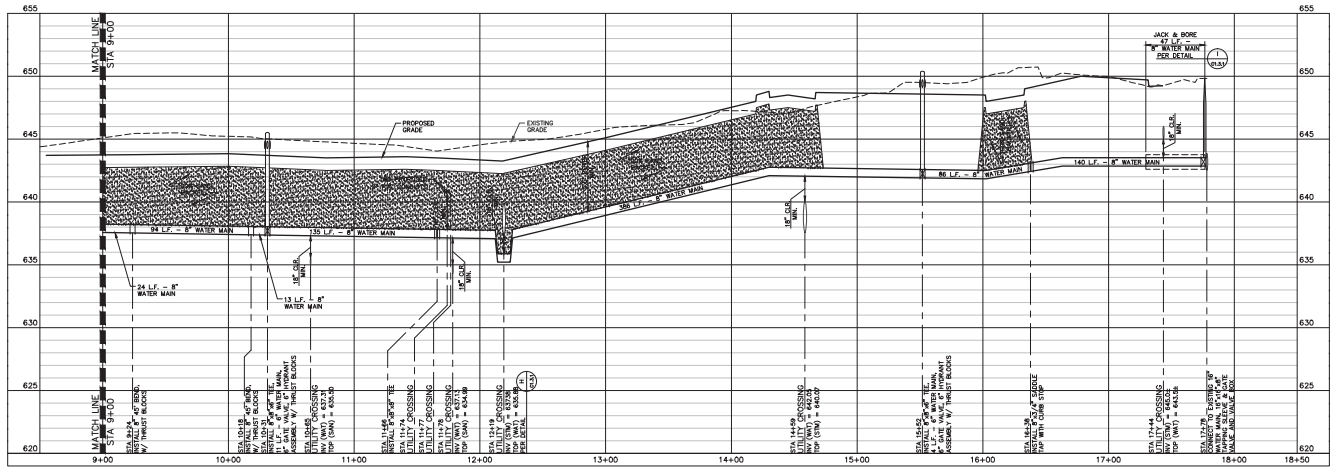

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:
Kroger

THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER RD.
SUITE 110
NOVI, MI 48375
PHONE: (248) 536-1500

WATER MAIN PLAN AND PROFILE
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

DATE	STATUS	REVISIONS/SUBMITTALS	BY
		FOR CITY COMMENTS	MRW

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

FILE	C1-3-5.DWG
DESIGNED BY	MLS
DRAWN BY	MRW
CHECKED BY	ADB
DATE	PRELIMINARY
SCALE HOR.	1" = 40'
VERT.	1" = 4'
PROJECT NO.	1636
SHEET NO.	C1.3.5

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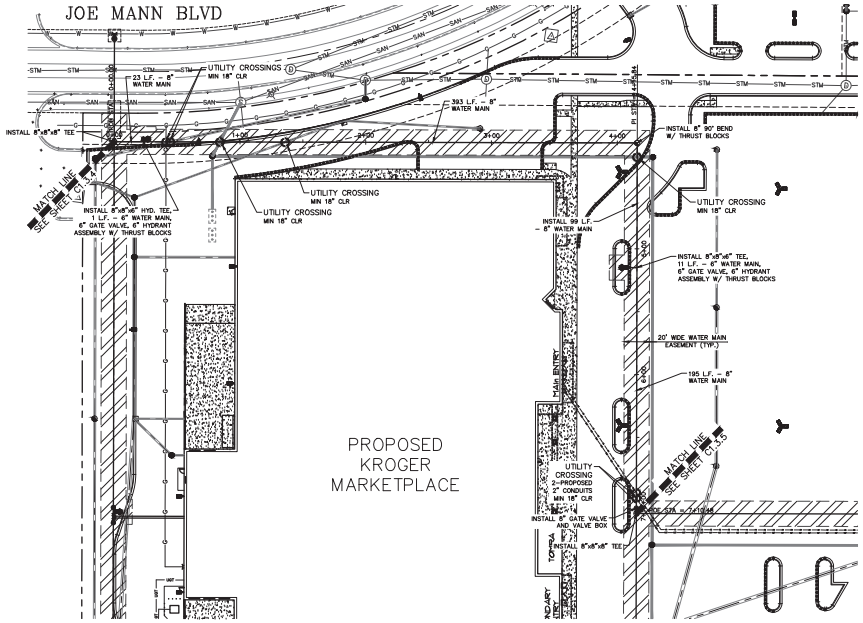
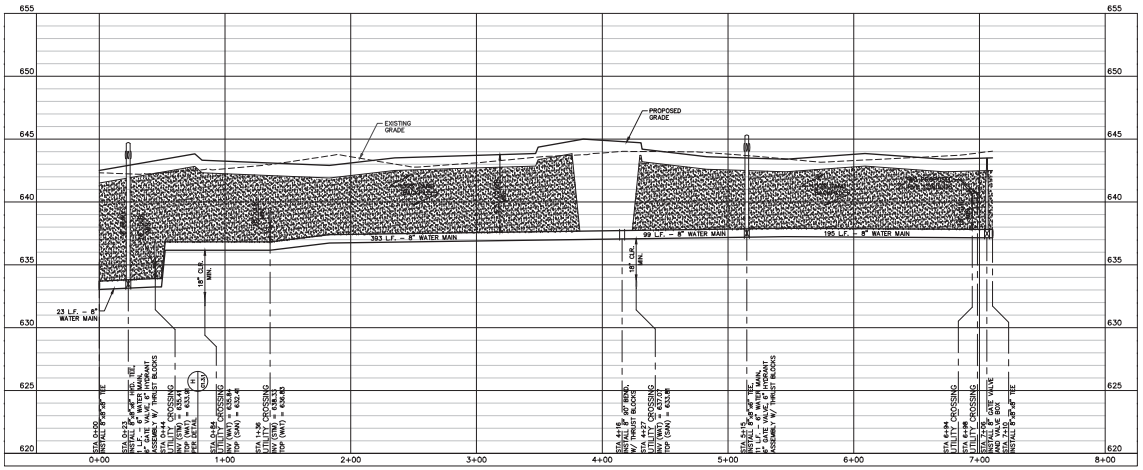
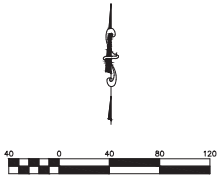






DATE	REVISIONS/SUBMITTALS	BY
2/12/16	FOR CITY COMMENTS	MRW

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:

THE KROGER CO. OF MICHIGAN
40399 GRAND RIVER RD.
SUITE 110
NOVI, MI 48375
PHONE: (248) 536-1500

WATER MAIN PLAN AND PROFILE

FOR

KROGER D-777

315 JOE MANN BOULEVARD
MIDLAND, MI 48642

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

FILE	C1-3-6.DWG
DESIGNED BY	MLS
DRAWN BY	MRW
CHECKED BY	ADB
DATE	PRELIMINARY
SCALE HOR.	1" = 40'
SCALE VERT.	1" = 4'
PROJECT NO.	1636
SHEET NO.	C1.3.6

FILE: L:\1636 (KROGER D-277 MIDLAND)\C\8 PLANS\C1-3-6.DWG – PLOT DATE: 2/12/2016 12:44 PM BY: Shannon Pugh SCALE: 1:1

STANDARD EROSION AND SEDIMENTATION CONTROL PLAN NOTES

1. CONTROL BENCHMARK –
   CITY OF MIDLAND ENGINEERING DEPARTMENT COMBINED PLAN FOR N. JEFFERSON AVENUE. (SHEET 2 OF 2) P.K. NAIL IN POWER POLE ON THE WEST SIDE OF JEFFERSON AVENUE AT HOUSE #1589.
   ELEVATION: 651.40 (DATUM NOT SPECIFIED)
2. SITE BENCHMARK #1 –
   NORTHEAST FLANGE BOLT UNDER "S" IN "WORKS" ON FIRE HYDRANT 7'± EAST OF EAST CURB LINE OF JEFFERSON AVENUE, 115'± SOUTH OF THE CENTERLINE OF CHEMICAL BANK DRIVEWAY.
   ELEVATION: 650.08
3. SITE BENCHMARK #2 –
   CHISELED " " ON TOP OF EAST SIDE OF NORTHERLY CONCRETE LIGHT POLE BASE LOCATED 55'± SOUTH OF NORTHEAST CORNER OF PARKING LOT FOR #8540 CINEMA DRIVE. ALSO BEING OPPOSITE WEST SIDE OF DETENTION POND WEST OF SUBJECT PROPERTY.
   ELEVATION: 643.71
4. SITE BENCHMARK #3 –
   CHISELED " " ON SOUTHWEST CORNER OF CONCRETE SLAB UNDER A BENCH ON THE SOUTH RIGHT OF WAY LINE OF JOE MANN BOULEVARD, 60' WEST OF CENTERLINE ALAN OTT DRIVE TO THE NORTH.
   ELEVATION: 644.99
5. CONTRACTOR IS TO CONTACT MIDLAND COUNTY AND THE CITY OF MIDLAND AT LEAST THREE (3) DAYS PRIOR TO THE START OF CONSTRUCTION.
6. THE SITE IS MADE UP OF LENAWEE SILTY CLAY LOAM, PIPESTONE SAND, ERIE–HURON LAKE PLAIN, AND WIXOM LOAMY SAND WHICH ARE CONSIDERED LOW TO MODERATE EROSIVE SOILS.
7. FOR LAND AREAS POSSESSING SLOPES EXCEEDING 15% THE CONTRACTOR SHALL:
   - A. PROTECT AND STABILIZE AREAS THAT HAVE A HIGH POTENTIAL FOR SOIL EROSION.
   - B. ASSURE STRUCTURAL SAFETY AND MINIMIZE HARM TO THE ENVIRONMENT ASSOCIATED WITH THE DEVELOPMENT.
   - C. MINIMIZE GRADING THROUGHOUT THE SITE.
   - D. PROTECT AND PRESERVE ANY VALUABLE NATURAL WILDLIFE AND/OR PLANT HABITATS WHICH COINCIDES WITH THE STEEP–SLOPE AREAS OF THE SITE.
   - E. PROTECT WATER QUALITY ON AND AROUND THE SITE FROM THE ADVERSE EFFECTS OF THE PROPOSED USE.
   - F. PROTECT ANY STEEP SLOPES ON ADJOINING PROPERTIES.
8. ALL SLOPES GREATER THAN 6:1 SHALL BE SEEDED AND STABILIZED IMMEDIATELY AFTER GRADE IS ESTABLISHED.
9. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL SOIL EROSION CONTROL MEASURES ON A WEEKLY BASIS. DURING CONSTRUCTION OWNER SHALL MAINTAIN ALL PERMANENT S.E.C. MEASURES AFTER CONSTRUCTION IS COMPLETE.
10. ALL TEMPORARY S.E.C. MEASURES SHALL BE MAINTAINED 30 DAYS AFTER CONSTRUCTION IS COMPLETE OR UNTIL GRADED AREAS ARE STABILIZED. AT THIS TIME OWNER IS RESPONSIBLE FOR REMOVAL AND PROPER DISPOSAL OF THESE S.E.C. MEASURES.
11. ALL GRADED AREAS EXPOSED FOR MORE THAN 20 DAYS SHALL HAVE STRAW MULCH APPLIED AT THE RATE OF 3 TONS / ACRE. AREAS NOT AT FINISHED GRADE AND WHICH WILL BE DISTURBED AGAIN WITHIN ONE YEAR MUST BE SEEDED AND MULCHED WITH QUICK GROWING TEMPORARY SEEDING MIXTURE AND MULCH. AREAS WHICH ARE AT FINISHED GRADE AND WILL NOT BE DISTURBED FOR A YEAR MUST BE SEEDED AND MULCHED WITH A PERMANENT SEED MIXTURE.
12. ONLY LIMITED DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO THE SITE FOR GRADING AND TO CONSTRUCT SEDIMENT BASINS, SEDIMENT TRAPS, DIVERSION TERRACES, INTERCEPTOR CHANNELS, AND/OR CHANNELS OF CONVEYANCE AS APPROPRIATE.
13. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITH THE TRIBUTARY AREAS OF THOSE CONTROLS.
14. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST BE STABILIZED IMMEDIATELY.
15. SILT FABRIC FENCE MUST BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST EXTEND AT LEAST 10 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
16. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
17. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET.
18. STORM WATER INLETS WHICH DO NOT DISCHARGE TO SEDIMENT TRAPS OR BASINS, MUST BE PROTECTED UNTIL THE TRIBUTARY AREAS ARE STABILIZED.
19. SEDIMENT MUST BE REMOVED FROM INLET PROTECTION AFTER EACH STORM EVENT.
20. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
21. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE STABILIZED IMMEDIATELY.
22. DIVERSIONS, CHANNELS, SEDIMENTATION BASINS, SEDIMENT TRAPS, AND STOCKPILES MUST BE STABILIZED IMMEDIATELY.
23. HAY OR STRAW MULCH MUST BE APPLIED AT RATES OF AT LEAST 3 TONS/ACRE.
24. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROL AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING, MUST BE PERFORMED IMMEDIATELY.

STABILIZATION INFORMATION

INTERIM STABILIZATION (TEMPORARY SEEDING)				
SEED	TYPES	% BY WEIGHT	RATES	DATES
FORMULA E	ANNUAL RYEGRASS	100%	10.0 LBS./100 SY	MARCH 15 TO OCT 15
LIME	PULVERIZED AG. LIMESTONE		800 LBS/ACRE	
FERTILIZER	10–20–20		140 LBS/ACRE	
MULCH	HAY OR STRAW		3 TONS/ACRE FOR AREAS EXPOSED MORE THAN 20 DAYS	
PERMANENT STABILIZATION (PERMANENT SEEDING)				
SEED	TYPES	% BY WEIGHT	RATES	DATES
FORMULA B	PERENNIAL RYE GRASS	20%	4.0 LBS./1000 SY	MARCH 15 TO JUNE 1
	CREEPING RED FESCUE	30%	6.0 LBS./1000 SY	AUGUST 1 TO OCT 15
OR	KENTUCKY BLUE GRASS	50%	11.0 LBS./1000 SY	
FORMULA D	TALL FESCUE	70%	15.0 LBS./1000 SY	MARCH 15 TO JUNE 1
	CREEPING RED FESCUE	30%	6.0 LBS./1000 SY	AUGUST 1 TO OCT 15
LIME	PULVERIZED AG. LIME STONE		800 LBS./ACRE	
FERTILIZER	10–20–20		140 LBS/ACRE	
MULCH	HAY OR STRAW		3 TONS/ACRE FOR AREAS EXPOSED MORE THAN 20 DAYS	
PERMANENT STABILIZATION (ROCK RIP–RAP SLOPE PROTECTION)				
WHERE NOTED, PLACE ROCK RIP–RAP SLOPE PROTECTION ON ONE LAYER OF MIRAFI FILTERWEAVE 400 OR EQUAL.				

SOIL EROSION CONTROL SCHEDULE

THIS NARRATIVE IS TO ACCOMPANY THE EROSION AND SEDIMENTATION CONTROL PLAN FOR THE KROGER STORE #D–777 PREPARED BY LSG ENGINEERS & SURVEYORS OF LANSING, MICHIGAN, AND SHALL BE CONSIDERED A PART OF THE EROSION AND SEDIMENTATION CONTROL PLAN.

THE PROJECT SITE IS LOCATED IN SECTION 33, T15N, R2E, MIDLAND COUNTY, CITY OF MIDLAND, MICHIGAN.

I. GENERAL STATEMENT OF THE PROJECT

A. THE PROPOSED IMPROVEMENTS WITHIN THE SITE INCLUDE DEMOLITION OF EXISTING RESIDENTIAL STRUCTURES, WATER WELLS, AND SEPTIC TANKS; CONSTRUCTION OF BUILDING, INSTALLATION OF UTILITIES, STORM STRUCTURES, DETENTION BASIN, PAVING OF THE PARKING LOT, AND LANDSCAPING.

B. THE AREAS OF PROPOSED EARTH DISTURBANCE ARE SHOWN ON THE SOIL EROSION CONTROL PLAN.

C. THE STORM WATER MANAGEMENT FACILITIES WILL CONSIST OF A DETENTION BASIN IN THE SOUTHWEST CORNER.

D. THE STORM WATER CALCULATIONS FOR THE SITE WERE PREPARED IN ACCORDANCE WITH THE CITY OF MIDLAND STORMWATER REGULATIONS.

E. ACCELERATED EROSION AND SEDIMENTATION SHALL BE LIMITED BY THE STABILIZATION OF DISTURBED AREAS AS SOON AS POSSIBLE. IN ADDITION, LIMITS OF EARTHMOVING HAVE BEEN IDENTIFIED FOR EACH PHASE OF THE SOIL EROSION CONTROL PLAN. THE CONTRACTOR SHALL NOTE THE SCHEDULE FOR EARTHMOVING AND INTERIM STABILIZATION AND THE RESTRICTIONS IMPOSED ON STARTING THE NEXT PHASE.

F. ALL DISTURBED AREAS INTENDED TO BE LAWN OR GRASS AREAS SHALL, IMMEDIATELY AFTER FINAL GRADING, BE SEEDED PER THE PERMANENT STABILIZATION MIX AND MAINTAINED.

G. CONSTRUCTION ON THIS PROJECT SHOULD BEGIN IN JULY 2016.

II. TOPOGRAPHIC FEATURES OF THE PROJECT AREA

THE LOCATION OF THE SITE, CONTOURS, PROPERTY LINES, ACREAGE AND ALL OTHER PHYSICAL FEATURES WERE LOCATED BY THE USE OF GROUND OBSERVATION AND ARE SHOWN ON THE PLAN.

III. TYPES, DEPTH, SLOPE AND AREAL EXTENT OF SOILS.

THE ENTIRE SITE IS MADE UP OF LENAWEE SILTY CLAY LOAM, PIPESTONE SAND, ERIE–HURON LAKE PLAIN, AND WIXOM LOAMY SAND.

IV. PROPOSED ALTERATION TO THE AREA

ALL PROPOSED ALTERATIONS ARE SHOWN ON THE PLAN. PROPOSED GRADES HAVE BEEN SELECTED KEEPING IN MIND THE EXISTING DRAINAGE PATTERNS. THE GRADING PLAN WILL INDICATE THE FINAL GRADES OF THE SITE.

V. AMOUNT OF RUNOFF FROM THE PROJECT AREA AND THE UPSTREAM WATERSHED

THE AMOUNTS OF RUNOFF FROM THE PROJECT AREA OR FROM THE UPSTREAM WATERSHED WILL BE KEPT TO A MINIMUM BY THE USE OF SOIL EROSION CONTROL MEASURES.

VI. STAGING OF EARTHMOVING ACTIVITIES

PHASE I 1 WEEK (SEPTEMBER 2016 – OCTOBER 2016)

MASS GRADING.

BEGIN CONSTRUCTION OF BUILDING.

TEMPORARY AND PERMANENT SEEDING OF AREAS NOTED ON PLAN.

PHASE II (OCTOBER 2016 – FEBRUARY 15, 2017)

MASS GRADING OPERATION FOR SITE. EXCAVATE DETENTION AREA.

BEGIN UTILITY INSTALLATION IN THE ORDER OF SANITARY SEWER, STORM SEWER, AND WATER MAIN.

CONTINUE CONSTRUCTION OF BUILDING.

CONTINUE TEMPORARY AND PERMANENT SEEDING OF AREAS NOTED ON PLANS.

PHASE III (FEBRUARY 16, 2017 – JULY 1, 2017)

CONTINUE CONSTRUCTION OF UTILITIES.

CONTINUE TEMPORARY AND PERMANENT SEEDING OF AREAS NOTED ON PLANS.

COMPLETE CONSTRUCTION OF BUILDING.

COMPLETE CONSTRUCTION AND TESTING OF UTILITIES.

INSTALL CURB AND GUTTER, AND PAVING.

INSTALL LANDSCAPING.

VII. TEMPORARY CONTROL MEASURES AND FACILITIES FOR USE DURING EARTHMOVING

A. TOPSOIL STOCKPILES: STOCKPILES SHALL BE USED TO CONTAIN ALL STRIPPED TOPSOIL IN A LIMITED AREA IN ORDER TO KEEP THE DISTURBED AREA TO A MINIMUM. STOCKPILES THAT WILL EXIST BETWEEN 20 DAYS AND 12 MONTHS SHALL BE STABILIZED WITH A TEMPORARY COVER CROP OF GRASS AS SET FORTH IN THE INTERIM STABILIZATION GUIDELINES.

B. STABILIZED CONSTRUCTION ENTRANCES: THIS ENTRANCE PROTECTION FACILITY SHALL BE USED TO KEEP STORMWATER FROM FLOWING UNCHECKED FOR THE SITE AND TO COLLECT SEDIMENT OFF THE CONSTRUCTION VEHICLES.

C. SILT FENCES: SILT FENCES SHALL BE LOCATED AS SHOWN ON THE PLAN TO SLOW RUNOFF FROM DRAINAGE WAYS AND EXPOSED BANKS AND TO PREVENT SEDIMENT FROM FLOWING ONTO ADJACENT PROPERTIES.

D. TEMPORARY SEEDING: SEE TEMPORARY SEEDING AS NOTED ON THE PLANS.

VIII. PERMANENT CONTROL MEASURES AND FACILITIES FOR LONG TERM PROTECTION

A. PERMANENT STABILIZATION OR PERMANENT SEEDING: SEE PERMANENT STABILIZATION AS NOTED ON PLANS.

B. MULCH: HAY OR STRAW MULCH SHALL BE APPLIED TO SEEDING AREAS TO HELP ESTABLISH A PERMANENT GRASS COVER AND TO PREVENT EROSION. IT SHALL BE APPLIED AT THE RATE OF 3 TONS PER ACRE.

C. EROSION CONTROL BLANKETS OR FABRIC: IN AREAS WHERE THE SLOPE EXCEEDS 3H:1V, NORTH AMERICAN GREEN S75 SOIL EROSION CONTROL BLANKET SHALL BE INSTALLED TO PREVENT EROSION.

D. SOD: IN AREAS WHERE STABILIZATION IS FOUND TO BE DIFFICULT, THE DEVELOPER MAY INSTALL SOD. SOD MATERIAL, PLACEMENT AND STAKING SHALL CONFORM TO THE GUIDELINE SPECIFICATIONS FOR SODDING BY THE AMERICAN SOD PRODUCERS ASSOCIATION.

E. PERMANENT STABILIZATION: ENERGY DISSIPATERS OR ROCK RIP RAP SLOPE PROTECTION: SEE PERMANENT STABILIZATION AS NOTED IN THE PLANS. ROCK RIP RAP SLOPE PROTECTION INVOLVES THE PLACEMENT OF ROCK RIP RAP ON GEOTECHNICAL FABRIC.

IX. MAINTENANCE PROGRAM FOR THE CONTROL FACILITIES, INCLUDING DISPOSAL OF MATERIALS REMOVED FROM THE CONTROL FACILITIES.

A. ALL SEDIMENT AND EROSION CONTROL FACILITIES SHALL BE CHECKED FOR DAMAGE AFTER EACH STORM. ALL FACILITIES THAT ARE DAMAGED, CLOGGED OR CAN NO LONGER PERFORM THE FILTRATION OR SEDIMENTATION OF SUSPENDED SOILS SHALL BE REPLACED.

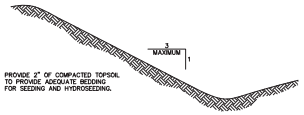
B. ANY PERMANENT SEEDED AREAS THAT BECOME ERODED SHALL HAVE THE TOPSOIL REPLACED, THE GRASS SEED RESOWN AND MULCH REAPPLIED, OR AT THE DIRECTION OF THE OWNER, SOD MAY BE INSTALLED.

X. EQUITABLE OWNER/ DEVELOPER/RESPONSIBLE PARTY

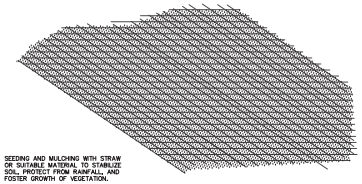
DANIEL CARPER
THE KROGER COMPANY OF MICHIGAN
40399 GRAND RIVER AVENUE.
NOVI, MICHIGAN 48375

PHONE: (248) 957–2275
FAX: (248) 957–2266

NOTE:
ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE STABILIZED IMMEDIATELY. DURING NON–GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS.

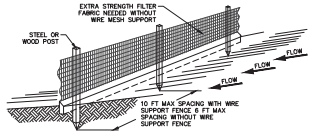


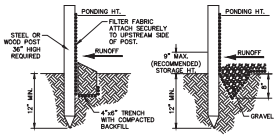
TOPSOILING



SEEDING & MULCHING

SEEDING (A / C1.4)





STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL

ALTERNATE DETAIL
TRENCH WITH GRAVEL

NOTES:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF–SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

SILT FENCE (B / C1.4)

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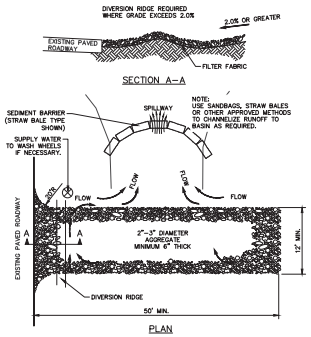


PLAN

NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT–OF–WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY GRAVEL
CONSTRUCTION ENTRANCE/EXIT (C / C1.4)

© 1994 JOHN McCULLAH

DATE	REVISIONS/SUBMITTALS	BY	NO.
2/11/16	PER CITY COMMENTS		
12/28/15	SITE PLAN SUBMITTAL		

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393–2902
FAX (517) 393–2608
www.lsg–es.com

PREPARED FOR:
Kroger

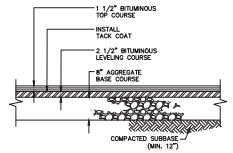
THE KROGER COMPANY
40399 GRAND RIVER AVE.
NOVI, MI 48375
PH: (248) 536–1500
FAX: (248) 957–2255

SESC NOTES AND DETAILS
FOR
KROGER D–777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

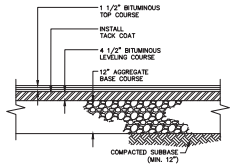
MISS DIG 811
Know what's below. Call before you dig.

FILE	C1–4.DWG
DESIGNED BY	MLS
DRAWN BY	SEP
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	N/A
SCALE VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C1.4

FILE: L:\1636 (KROGER D–277 MIDLAND)\C\8 PLANS\C1–4.DWG – PLOT DATE: 2/11/2016 2:34 PM BY: Michelle Shumaker SCALE: 1:1



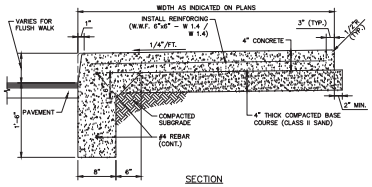
LIGHT DUTY PAVEMENT SECTION



HEAVY DUTY PAVEMENT SECTION

MATERIAL TYPES
BIT. TOP COURSE NO. MDOT 36A TOP
BIT. LEVELING COURSE NO. 3C LIGHT DUTY LEVELING
BIT. LEVELING COURSE NO. 2C HEAVY DUTY LEVELING
AGG. BASE COURSE 21AA
ALL MATERIAL DESIGNATIONS REFER TO M.D.O.T. STANDARD SPECIFICATIONS FOR CONSTRUCTION, CURRENT EDITION

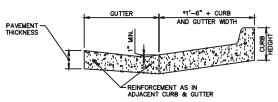
SITE PAVEMENT SECTIONS (A / C5.1)



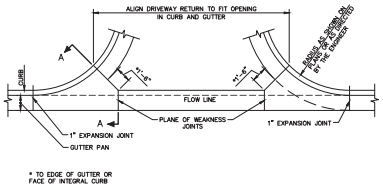
SECTION

THICKENED EDGE SIDEWALK DETAIL (B / C5.1)

(NOT TO SCALE)



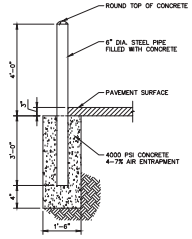
SECTION A–A



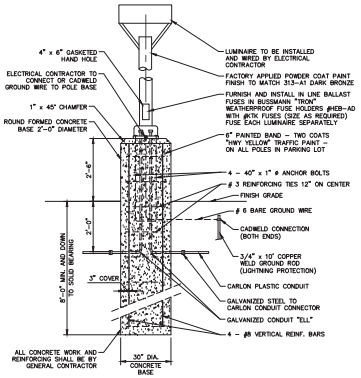
M.D.O.T.

CONCRETE DRIVEWAY OPENING

DETAIL M (C / C5.1)



PIPE BOLLARD DETAIL (D / C5.1)



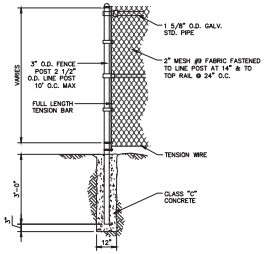
NOTES:

1. LIGHTING BASE AND BASE PLATE TO BE PAINTED YELLOW.
2. LIGHTING POLE MUST HAVE FACTORY FINISH. FIELD PAINTED POLES ARE NOT ACCEPTABLE.
3. EDGE OF BASE SHALL BE 2' FROM BACK OF CURB FOR POLES LOCATED ALONG CURB LINE.
4. PLACE PARKING LOT LOCATOR SIGN ON EACH LIGHT POLE WITHIN THE PARKING LOT AT A HEIGHT OF 15' ABOVE FINISH PAVING.

PARKING LOT LIGHTING W/ CONCRETE BASE (E / C5.1)

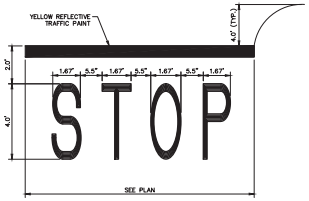
CHAIN LINK FENCE

1. HEIGHT SHALL BE AS REQUIRED BY STANDARD 6'–0" WIRE FABRIC AROUND PERIMETER OF DETENTION BASIN.
2. FABRIC SHALL BE #9 GAUGE, CHAIN LINK OPEN HEARTH STEEL WIRE, HOT-DIPPED GALVANIZED AFTER WEAVING WITH MINIMUM COATING OF 2.0 OUNCE OF ZINC PER SQUARE FOOT OR ALUMINUM COATING WITH 0.40 OUNCES PER SQUARE FOOT, WOVEN IN 2" DIAMOND MESH.
3. CORNER, TERMINAL, GATE AND PULL POSTS SHALL BE 3.5"x3.5" ROLL FORMED STEEL SECTION, WEIGHT 4.8 LBS. PER FOOT.
4. INTERMEDIATE POSTS SHALL BE 2.25"x1.70" ROLL FORMED STEEL "C" SECTION, WEIGHT 2.64 LBS. PER FOOT.
5. TOP, INTERMEDIATE AND BOTTOM RAILS SHALL BE 1.625"x1.25" ROLL FORMED STEEL "C" SECTION, WEIGHT 1.37 LBS. PER FOOT.
6. CONCRETE FOR SETTING POSTS SHALL BE PORTLAND CEMENT COMPLYING WITH ASTM C-150, AGGREGATES COMPLYING WITH ASTM C-33, AND CLEAN WATER. MIX MATERIALS TO OBTAIN CONCRETE WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2500 PSI.
7. STRETCHER BAR BANDS, TIE WIRES, HOG RINGS, COUPLINGS, NUTS, STRETCHER BARS, BOLTS AND MISCELLANEOUS FASTENING DEVICES SHALL BE MANUFACTURER'S STANDARD FOR HEAVY CONSTRUCTION FENCE.
8. SWING GATES SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   A. 2" O.D. STEEL PIPE 2.72 LBS. PER FOOT, HOT-DIPPED GALVANIZED. EACH FRAME TO BE EQUIPPED WITH 3/8" DIAMETER ADJUSTABLE TRUSS RODS.
   B. HINGES SHALL BE HOT-DIPPED GALVANIZED PRESSED STEEL OR MALLEABLE IRON TO SUIT GATE SIZE, NON-LIFT-OFF TYPE. HINGES SHALL BE OFFSET TO PERMIT 180 DEGREE OPENING. PROVIDE ONE (1) PAIR OF HINGES PER LEAF.
   C. LATCH SHALL BE FORKED TYPE TO PERMIT OPERATION FROM EITHER SIDE WITH PROVISIONS TO LOCK BOTH LEAVES WITH PADLOCK.
   D. AT DOUBLE SWING GATE.
1. PLUNGER ROD W/TLUSH PLATE ANCHOR.
2. ONE AUTOMATIC GATE KEEPER PER LEAF.
9. ACCEPTABLE MANUFACTURERS: ANCHOR FENCE, CYCLONE FENCE, PAGE FENCE AND HACKNEY CORPORATION.

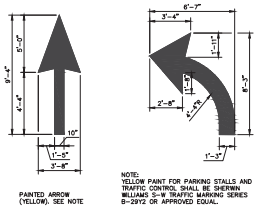


CHAIN LINK FENCE DETAIL (F / C5.1)

CROSSWALK DETAIL (G / C5.1)

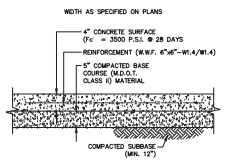


STOP & STOP BAR PAINTING DETAIL (H / C5.1)



NOTE:
YELLOW PAINT FOR PARKING STALLS AND TRAFFIC CONTROL SHALL BE SHERWIN WILLIAMS S-W TRAFFIC MARKING SERIES B-29V2 OR APPROVED EQUAL.

PAINTED ARROW DETAIL (I / C5.1)



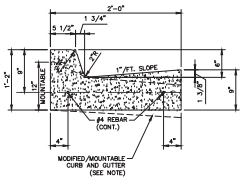
SECTION

CONCRETE SURFACE (J / C5.1)

(NOT TO SCALE)

CONTRACTION AND EXPANSION JOINT NOTES:

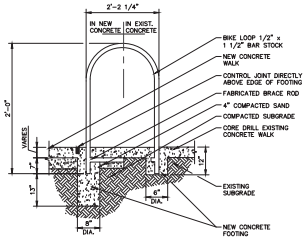
1. PLACE 1" FIBER JOINT FILLER AT 40' MAXIMUM INTERVALS OR AT ALL CONSTRUCTION JOINTS.
2. PLACE 1" FIBER JOINT FILLER AT SPRING POINTS OF CURB RETURNS (AND INTERSECTING STREETS)
3. PLACE 1" FIBER JOINT FILLER IN ADJACENT CONTRACTION JOINTS EACH SIDE OF CATCH BASINS.
4. PLACE CONTRACTION JOINTS AT 40' MAXIMUM INTERVALS. (NO SAW CUT JOINTS ALLOWED)



NOTE:
MODIFIED/MOUNTABLE CURB AND GUTTER SHALL BE THE SAME DETAIL BUT THE GUTTER SHALL SLOPE AWAY FROM THE CURB FACE @ 1"/FT.

M.D.O.T. F–4

CURB & GUTTER DETAIL (K / C5.1)



NOTE:
WHEN INSTALLING BIKE LOOPS IN EXISTING PAVEMENT, REMOVE FABRICATED BRACE ROD PER SPECIFICATIONS.

BIKE LOOP (L / C5.1)

DATE	BY	REVISIONS/SUBMITTALS
12/17/15	MWB	FOR CITY COMMENTS
12/21/15	MWB	SITE PLAN CONTROL

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH: (517) 393-2902
FAX: (517) 393-2608
www.lsg-es.com

PREPARED FOR:
Kroger

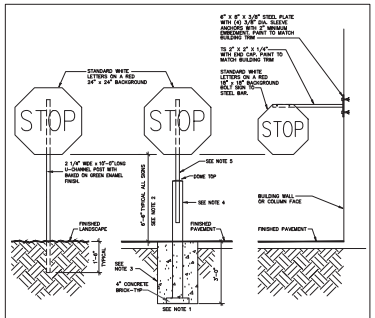
THE KROGER COMPANY
40399 GRAND RIVER AVE.
NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

MISCELLANEOUS DETAILS
FOR
KROGER #D-777
315 STERLING HEIGHTS BLVD
MIDLAND, MI 48642

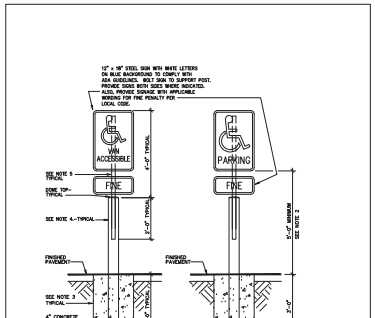
MISS DIG 811
Know what's below. Call before you dig.

FILE	C5-1.DWG
DESIGNED BY	MLS
DRAWN BY	WEW
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	N/A
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	C5.1

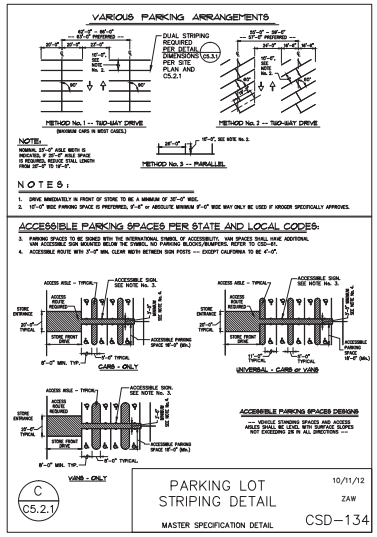
FILE: L:\1636 (KROGER D-277 MIDLAND)\C\8 PLANS\C5-1.DWG – PLOT DATE: 2/11/2016 2:34 PM BY: Michelle Stumpfer SCALE: 1:1



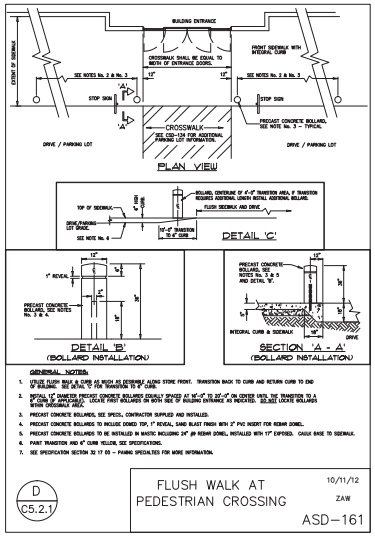
A C5.2.1 — TRAFFIC CONTROL SIGNS — MASTER SPECIFICATION DETAIL — 8/8/11 — ZAW — CSD-60



B C5.2.1 — PARKING STALL SIGNS — 8/8/11 — ZAW — CSD-61

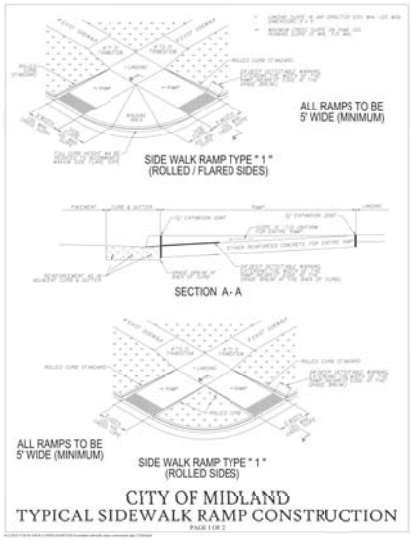


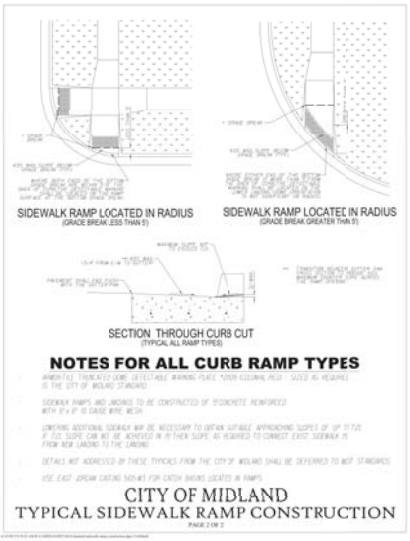
C C5.2.1 — PARKING LOT STRIPING DETAIL — MASTER SPECIFICATION DETAIL — 10/11/12 — ZAW — CSD-134



D C5.2.1 — FLUSH WALK AT PEDESTRIAN CROSSING — 10/11/12 — ZAW — ASD-161

E C5.2.1 — MARKETPLACE SIGN DETAILS (NOT TO SCALE)





F C5.2.1 — SIDEWALK RAMP DETAIL (NOT TO SCALE)

DATE	BY	REVISIONS/SUBMITTALS
1/7/16	MLS	FOR CITY COMMENTS
12/11/15	MLS	SITE PLAN CONTROL

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH: (517) 393-2902
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PREPARED FOR: Kroger
THE KROGER COMPANY
40399 GRAND RIVER AVE.
NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

CIVIL STANDARD DETAILS
FOR
KROGER D-777
315 S. MAIN & BUTLER BOULEVARD
MIDLAND, MI 48642

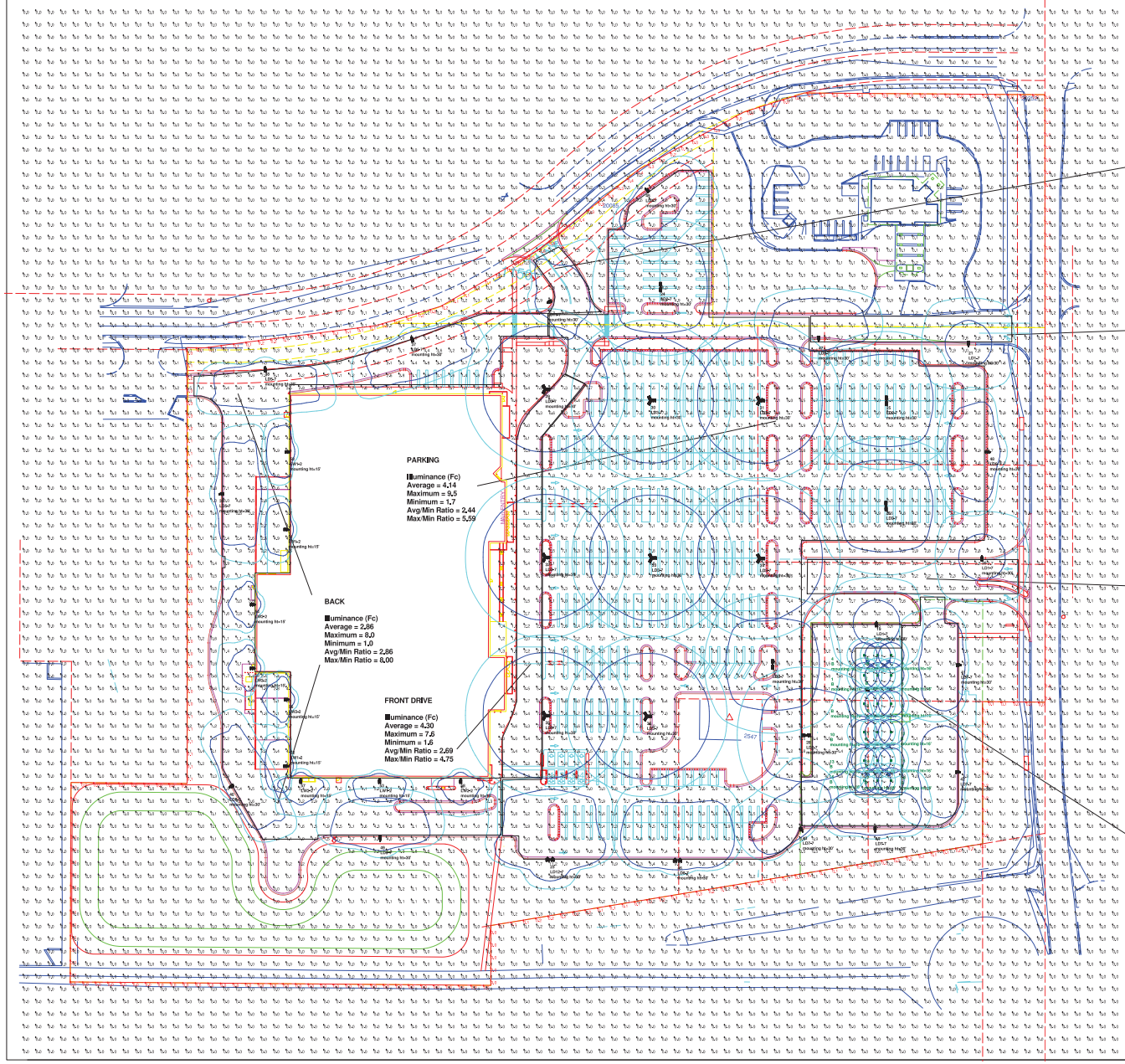
MISS DIG 811
Know what's below. Call before you dig.

FILE: C5-2-1.DWG
DESIGNED BY: MLS
DRAWN BY: WEW
CHECKED BY: ADB
DATE: PRELIMINARY
SCALE
HOR. N/A
VERT. N/A
PROJECT NO. 1636
SHEET NO. C5.2.1

FILE: L:\ACAD (KROGER D-277 MIDLAND)\CVR PLANS\C5-2-1.DWG – PLOT DATE: 2/11/2016 2:35 PM BY: Michelle Shumaker SCALE: 1:1

Luminaire Schedule							
Symbol	Qty	Label	Arrangement	Lum. Watts	Lum. Lumens	LLF	Description
	8	LD3-7	3 @ 120 DEGREES	370	38230	0.912	QTY 3 GLEON-AE-07-LED-VOLT-SWQ 3@120
	3	LD9-7	SINGLE	370	36303	0.912	GLEON-AE-07-LED-E1-T3
	4	LD5-7	SINGLE	370	36298	0.912	GLEON-AE-07-LED-VOLT-SL3
	3	LD1-7	SINGLE	370	38230	0.912	GLEON-AE-07-LED-VOLT-SWQ
	5	LD2-7	BACK-BACK	370	38230	0.912	QTY 2 GLEON-AE-07-LED-VOLT-SWQ
	1	LD8-7	ROTATED OPTICS	370	34488	0.912	QTY 2 GLEON-AE-07-LED-VOLT-SL4-L90 & GLEON-AE-07-LED-VOLT-SL4-R90
	1	LD11-7	SINGLE	370	36514	0.912	GLEON-AE-07-LED-VOLT-T4FT
	1	LD12-7	ROTATED OPTICS	370	36514	0.912	QTY 2 GLEON-AE-07-LED-VOLT-T4FT-L90 & GLEON-AE-07-LED-VOLT-T4FT-R90
	5	LD7-7	SINGLE	370	34488	0.912	GLEON-AE-07-LED-VOLT-SL4
	5	LW2-2	SINGLE	107	10562	0.912	GLEON-AE-02-LED-VOLT-T4FT
	4	LW1-2	SINGLE	107	10501	0.912	GLEON-AE-02-LED-VOLT-T3
	18	B	SINGLE	114	13554	0.400	CRUS-SC-LED-SS-CW-UE DIMMED 60%

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ALL CALC PTS	Illuminance	Fc	1.21	13.2	0.0	N.A.	N.A.
CANOPY @ 5 FT AFG	Illuminance	Fc	12.10	19.9	4.2	2.88	4.74
PL 5' AFG	Illuminance	Fc	0.10	0.8	0.0	N.A.	N.A.
PUMP_VERTICAL	Illuminance	Fc	5.48	5.6	5.2	1.05	1.08
BACK	Illuminance	Fc	2.86	8.0	1.0	2.86	8.00
ENTRANCE 1	Illuminance	Fc	2.44	3.7	1.4	1.74	2.64
ENTRANCE 2	Illuminance	Fc	2.84	5.2	1.5	1.89	3.47
ENTRANCE 3	Illuminance	Fc	3.73	5.9	2.0	1.87	2.95
FRONT DRIVE	Illuminance	Fc	4.30	7.6	1.6	2.69	4.75
FUEL CENTER	Illuminance	Fc	4.00	5.9	1.8	2.22	3.28
PARKING	Illuminance	Fc	4.14	9.5	1.7	2.44	5.59



Luminaire Location Summary						
LumNo	Label	X	Y	Z	Orient	Tilt
1	B	1027.419	460.572	16	0	0
2	B	1043.419	460.572	16	0	0
3	B	1059.419	460.572	16	0	0
4	B	1027.419	484.616	16	0	0
5	B	1043.419	484.616	16	0	0
6	B	1059.419	484.616	16	0	0
7	B	1027.419	426.6	16	0	0
8	B	1043.419	426.6	16	0	0
9	B	1059.419	426.6	16	0	0
10	B	1027.419	392.568	16	0	0
11	B	1043.419	392.568	16	0	0
12	B	1059.419	392.568	16	0	0
13	B	1027.419	358.595	16	0	0
14	B	1043.419	358.595	16	0	0
15	B	1059.419	358.595	16	0	0
16	B	1027.419	334.67	16	0	0
17	B	1043.419	334.67	16	0	0
18	B	1059.419	334.67	16	0	0
19	LD1-7	1041.76	524.951	30	270	0
20	LD1-7	1168.086	603.956	30	270	0
21	LD1-7	1151.956	855.399	30	90	0
22	LD11-7	647.623	907.401	30	21.593	0
23	LD12-7	650.827	239.994	30	90	0
24	LD2-7	783.124	925.997	30	90	0
25	LD2-7	1053.579	789.782	30	90	0
26	LD2-7	1053.208	663.678	30	90	0
27	LD2-7	917.335	474.052	30	90	0
28	LD2-7	957.615	389.084	30	0	0
29	LD3-7	645.073	803.551	30	0	0
30	LD3-7	771.656	790.241	30	0	0
31	LD3-7	901.952	789.895	30	0	0
32	LD3-7	645.073	602.051	30	0	0
33	LD3-7	772.684	601.341	30	0	0
34	LD3-7	902.095	600.946	30	0	0
35	LD3-7	645.134	412.562	30	0	0
36	LD3-7	766.802	411.727	30	0	0
37	LD5-7	484.698	865.69	30	289.027	0
38	LD5-7	309.374	830.227	30	272.073	0
39	LD5-7	254.646	678.27	30	0	0
40	LD5-7	266.85	326.794	30	27.25	0
41	LD7-7	1143.028	473.178	30	180	0
42	LD7-7	1142.186	345.079	30	180	0
43	LD7-7	953.411	274.288	30	130.463	0
44	LD7-7	1040.214	273.867	30	90	0
45	LD7-7	765.241	1043.898	30	314.635	0
46	LD8-7	803.482	238.741	30	90	0
47	LD9-7	972.451	861.328	30	90	0
48	LD9-7	1177.581	728.529	30	180	0
49	LD9-7	447.492	263.012	30	90	0
50	LW1-2	339.158	728.52	15	180	0
51	LW1-2	337.366	635.578	15	180	0
52	LW1-2	337.267	352.169	15	180	0
53	LW1-2	446.556	337.234	15	270	0
54	LW2-2	297.219	545.724	15	180	0
55	LW2-2	297.12	469.418	15	180	0
56	LW2-2	337.765	431.862	15	180	0
57	LW2-2	352.2	337.234	15	270	0
58	LW2-2	543.717	337.234	15	270	0

Project manager to specify fixture voltage for each fixture type

SCALE 1" = 50'

50 25 0 50 100

EATON
Applications Engineering
1121 Highway 74 South
Peachtree City, GA 30269
tel no: 770-486-4579
fax no: 770-486-4599
e-mail:
mkt-lightingapplications@Eaton.com

Lighting application drawings are being provided to the recipient of this disclaimer.
All data provided is based on information provided by others and is subject to the uncertainties inherent in CAD and the additional digital data used to produce a lighting application.
All digital CAD data appears to be extremely accurate, however, this apparent accuracy is an artifact of the techniques used to generate it, and is in no way intended to imply correspondence between the digital data and the physical world. Lighting application drawings are based on estimated reflectance values for interior applications or estimated pole heights for exterior applications, unless measured data is provided by others. Lighting application drawings are based on nominal or average values for lamp output, input voltage, ballast variances, manufacturing tolerances and application variances. If a professional lighting designer is required, it is the responsibility of the recipient of this drawing to provide it.

Sheet No:
P-1

Photometric and lighting fixture plan

Project Name:
KROGER D777
MIDLAND, MI

Client:
WENDY NORMAN

Drawn By:
Arnel Uy

Date:
2/11/2016

Project No:
1502488G2.AGI

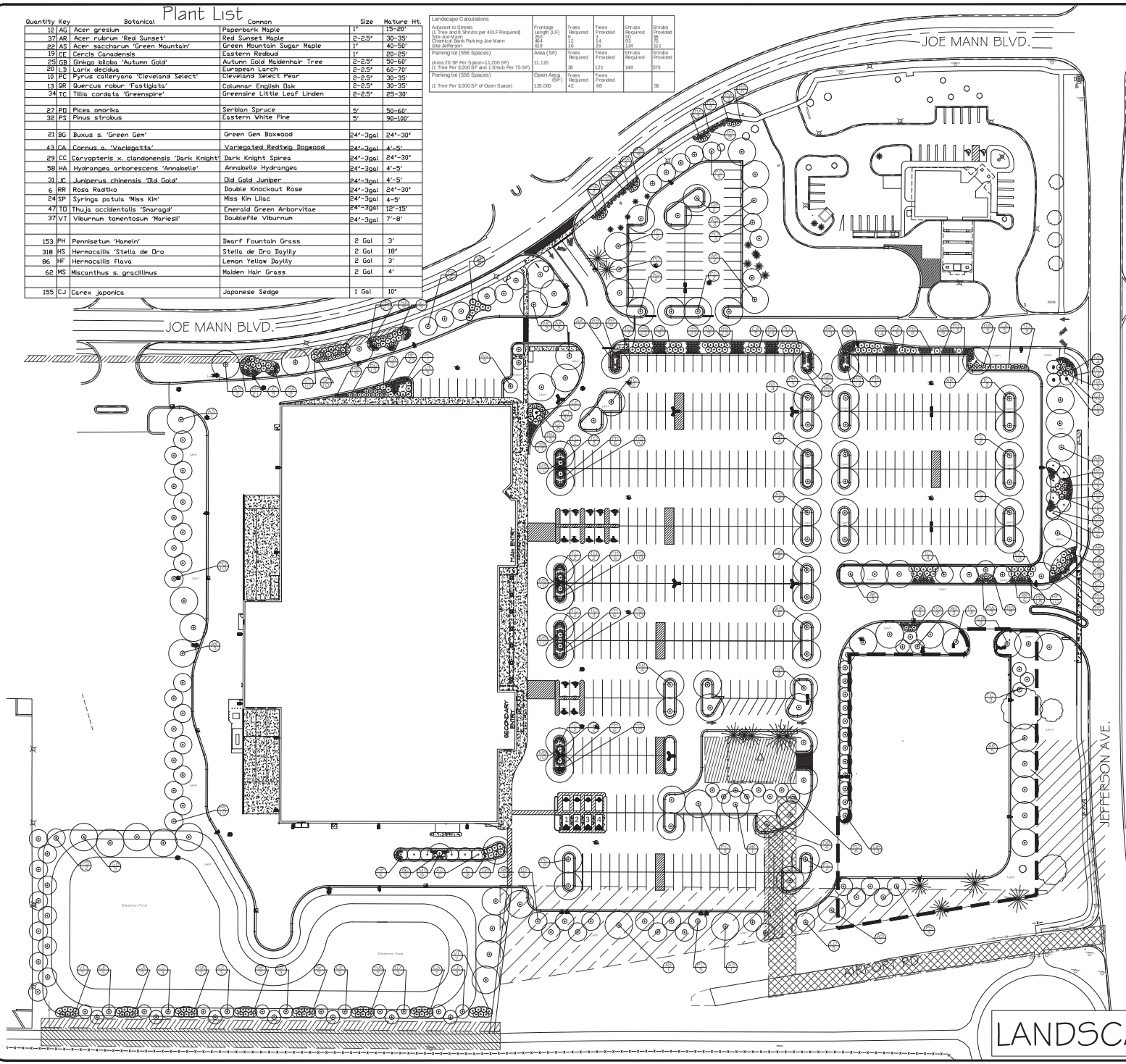
Plant List

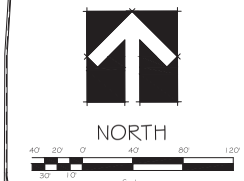
Quantity	Key	Botanical	Common	Size	Mature Ht.
12	AG	Acer gresium	Paperbark Maple	1"	15-20'
37	AR	Acer rubrum 'Red Sunset'	Red Sunset Maple	2-2.5"	30-35'
22	AS	Acer saccharum 'Green Mountain'	Green Mountain Sugar Maple	1"	40-50'
19	CE	Cercis Canadensis	Eastern Redbud	1"	20-25'
25	GB	Ginkgo biloba 'Autumn Gold'	Autumn Gold Maidenhair Tree	2-2.5"	50-60'
20	LD	Larix decidua	European Larch	2-2.5"	60-70'
10	PC	Pyrus calleryana 'Cleveland Select'	Cleveland Select Pear	2-2.5"	30-35'
13	QR	Quercus robur 'Fastigiata'	Columnar English Oak	2-2.5"	30-35'
34	TC	Tilia cordata 'Greenspire'	Greenspire Little Leaf Linden	2-2.5"	25-30'
27	PD	Picea omorika	Serbian Spruce	5'	50-60'
32	PS	Pinus strobus	Eastern White Pine	5'	90-100'
21	BG	Buxus s. 'Green Gem'	Green Gem Boxwood	24"-3gal	24"-30"
43	CA	Cornus a. 'Variegatta'	Variegated Redtwig Dogwood	24"-3gal	4'-5'
29	CC	Caryopteris x. clandonensis 'Dark Knight'	Dark Knight Spirea	24"-3gal	24"-30"
58	HA	Hydrangea arborescens 'Annabelle'	Annabelle Hydrangea	24"-3gal	4'-5'
31	JC	Juniperus chinensis 'Old Gold'	Old Gold Juniper	24"-3gal	4'-5'
6	RR	Rosa Radtko	Double Knockout Rose	24"-3gal	24"-30"
24	SP	Syringa patula 'Miss Kim'	Miss Kim Lilac	24"-3gal	4-5'
47	TO	Thuja occidentalis 'Smaragd'	Emerald Green Arborvitae	24"-3gal	12'-15'
37	VT	Viburnum tomentosum 'Mariesii'	Doublefile Viburnum	24"-3gal	7'-8'
153	PH	Pennisetum 'Hameln'	Dwarf Fountain Grass	2 Gal	3'
318	HS	Hermocallis 'Stella de Oro	Stella de Oro Daylily	2 Gal	18"
86	HF	Hermocallis flava	Lemon Yellow Daylily	2 Gal	3'
62	MS	Miscanthus s. gracillimus	Maiden Hair Grass	2 Gal	4'
155	CJ	Carex japonica	Japanese Sedge	1 Gal	10"

Landscape Calculations					
Adjacent to Streets (1 Tree and 8 Shrubs per 40LF Required)	Frontage Length (LF)	Trees Required	Trees Provided	Shrubs Required	Shrubs Provided
Site-Joe Mann	560	14	14	90	90
Chemical Bank Parking-Joe Mann	464	12	14	93	93
Site-Jefferson	619	16	26	124	111
Parking lot (556 Spaces)	Area (SF)	Trees Required	Trees Provided	Shrubs Required	Shrubs Provided
(Area 20 SF Per Space=11,120 SF) (1 Tree Per 3,000 SF and 1 Shrub Per 75 SF)	11,120	38	121	148	575
Parking lot (556 Spaces)	Open Area (SF)	Trees Required	Trees Provided		
(1 Tree Per 3,000 SF of Open Space)	125,000	42	88		96

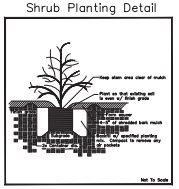
General Notes:

1. Start of work indicates acceptance of existing conditions/left by other contractors. If conditions are not acceptable, contact the General Contractor.
2. Contractor is responsible for verifying quantities. The quantity on the drawing is the quantity to be installed.
3. All plant material to meet American Nursery Standards. Landscape Contractor to warranty plant material for 12 months from Date of Store Opening or Final Project Acceptance, whichever is longer.
4. Landscape Contractor is responsible for finish grade and verifying positive drainage.
5. Landscape Contractor to install 4" of topsoil in all lawn areas, 8" of topsoil in all bed areas and 12" in parking lot islands.
   All lawn areas to be seeded with Spartan Grade A seed (or equal). Seeding must be completed between April 15th and June 15th or August 15th and October 15th.
6. Twice ground Red Pine Bark Mulch (or equal) will be placed in landscape beds and around all plant material unless otherwise specified on drawing.
   Install bark mulch a minimum of 3" deep.
7. Edging Edging by Dy-Cha (or equal) will be installed between all lawn areas and plant beds.
8. For further information regarding specifications, see...

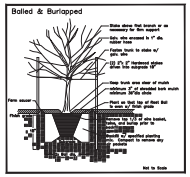




Shrub Planting Detail



Tree Planting Detail



Perennial/Grass Planting Detail

72 HOURS
(3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL-FREE)

LEGEND
KEY LEGEND
= Plant Key
= Quantity
= Proposed Tree
Existing Tree =
= Proposed Shrub
= Proposed Perennial/Orn Grass

Outdoor Living, Inc.
2730 Alpha Access
Lansing, MI 48911-3420B
Phone
(517)484-0230

Tim Banfield LA ASLA
Detail : LA #3001000890

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

LANDSCAPE PLAN

DATE	REVISIONS/SUBMITTALS
2/11/16	RD CITY COMMENTS
12/28/15	SITE PLAN SUBMITTAL

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

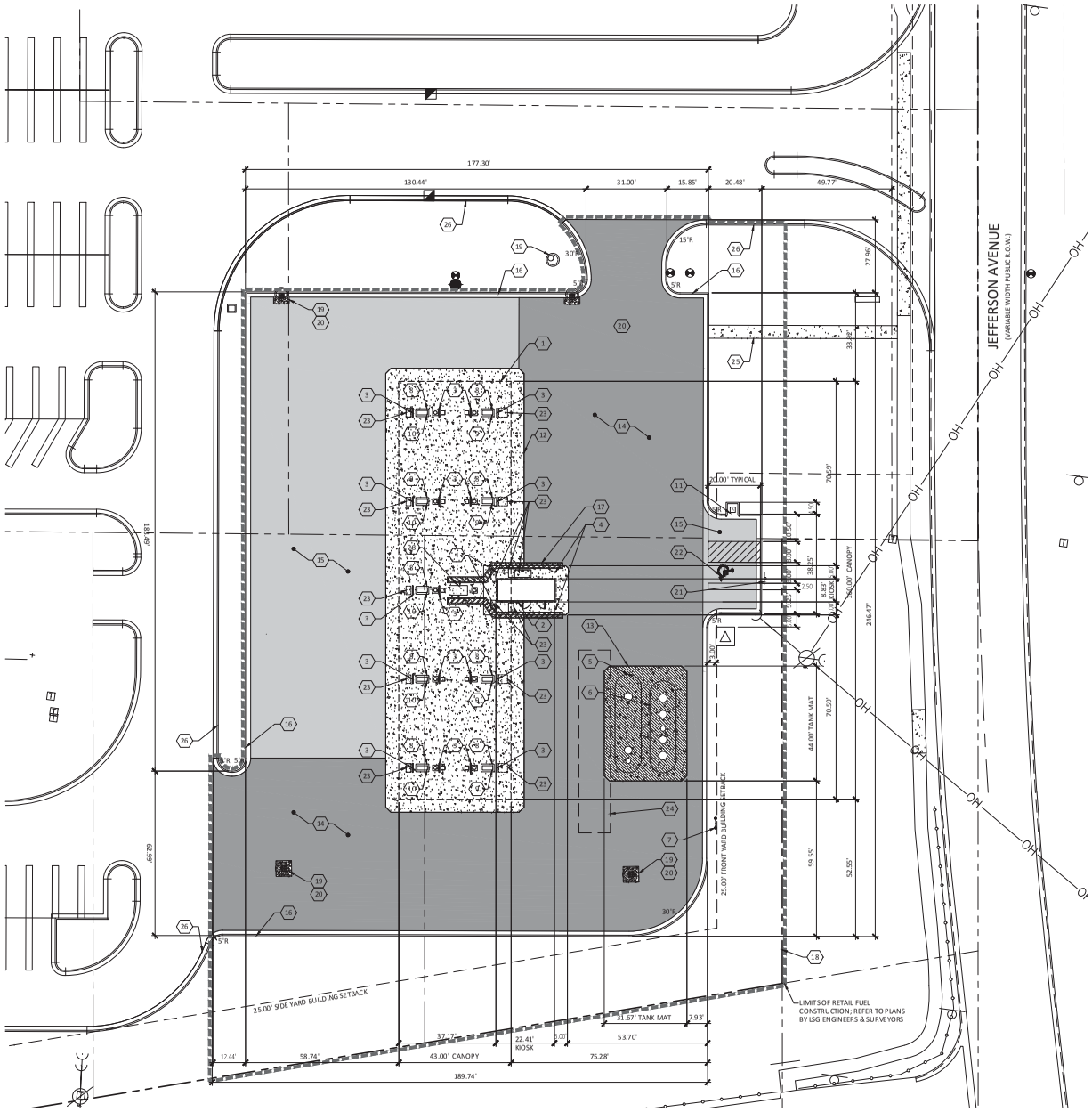
PREPARED FOR: Kroger

THE KROGER COMPANY
40399 GRAND RIVER AVE.
NOVI, MI 48375
PH: (248) 536-1500
FAX: (248) 957-2255

LANDSCAPE PLAN
FOR
KROGER D-777
315 JOE MANN BOULEVARD
MIDLAND, MI 48642

FILE	L1-1296
DESIGNED BY	MLS
DRAWN BY	SEP
CHECKED BY	ADB
DATE	DECEMBER 30, 2015
SCALE HOR.	1" = 40'
VERT.	N/A
PROJECT NO.	1636
SHEET NO.	L1.1

FILE: L:\1636 (KROGER D-277 MIDLAND)\CVS PLANS\L1-LDNG - PLOT DATE: 2/11/2016 2:23 PM BY: Michelle Shumaker SCALE: 1:1



DIMENSION CONTROL SITE PLAN

SCALE: 1" = 20'-0"

PROPOSED SITE IMPROVEMENTS:

1. CANOPY, CANOPY COLUMNS AND FOOTINGS. SEE CONSTRUCTION IMPROVEMENT PLAN ON SHEET A1.01.
2. TRANSACTION KIOSK. SEE KIOSK EQUIPMENT AND KIOSK FOUNDATION PLANS ON SHEET A1.01.
3. U-SHAPED BOLLARD AT CANOPY COLUMNS. SEE DETAILS 2/A1.1, 5/T8.0 AND 5/T8.1.
4. KIOSK BOLLARD. SEE KIOSK EQUIPMENT PLAN ON SHEET A1.01 FOR LOCATIONS.
5. 20,000 GALLON DOUBLE-WALL UNDERGROUND STORAGE TANK (UNLEADED). SEE SHEET T3.0.
6. 18,000 GALLON DOUBLE-WALL SPLIT UNDERGROUND STORAGE TANK 8,000 GALLONS PREMIUM/10,000 GALLONS DIESEL. SEE SHEET T3.1.
7. TANK VENT RISER. SEE DETAIL 3/T4.0.
8. 3.00' X 5.00' DISPENSER ISLAND WITH STAINLESS STEEL ISLAND FORMS. SEE CONSTRUCTION IMPROVEMENT PLAN ON SHEET A1.1 AND DETAILS 6/T8.0 AND 6/T8.1.
9. GASOLINE DISPENSER WITH CARD READER. SEE DISPENSER AND PIPING DETAILS ON SHEET T8.1.
10. MULTI-PRODUCT DISPENSER (3+1 GASOLINE/DIESEL) WITH CARD READER. SEE DISPENSER AND PIPING DETAILS ON SHEET T8.1.
11. AIR TOWER, ALL ASSOCIATED EQUIPMENT AND UTILITIES REQUIRED TO PROVIDE PROPER SERVICE. SEE DETAIL 1/A3.0.
12. CONCRETE DISPENSER MAT. SEE MATERIAL SCHEDULE NOTE 3/T1.0.
13. CONCRETE TANK MAT. SEE MATERIAL SCHEDULE NOTE 2Q/T1.0.
14. HEAVY DUTY BITUMINOUS PAVEMENT. SEE DETAIL 2D/C5.00.
15. LIGHT DUTY BITUMINOUS PAVEMENT. SEE DETAIL 2C/C5.00.
16. CONCRETE CURB AND GUTTER. SEE DETAIL 3/C5.00.
17. PAINTED PEDESTRIAN WARNING ZONE. SEE DETAIL 8/A3.0.
18. ALL DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE EAST PROPERTY LINE UNLESS OTHERWISE NOTED.
19. STORM WATER MANAGEMENT STRUCTURE. REFER TO STORM WATER MANAGEMENT PLAN, C1.31.
20. CONCRETE COLLAR. SEE DETAIL 5/C5.01.
21. PROVIDE AND INSTALL BARRIER-FREE VAN ACCESSIBLE SIGN. SEE DETAIL 5/C5.00.
22. BARRIER-FREE VAN ACCESSIBLE PARKING SPACE.
23. OUTDOOR SALES. SEE CONSTRUCTION AND EQUIPMENT PLAN ON SHEET A1.01.
24. 12.0'X7.0.0' LOADING ZONE.
25. CONCRETE SIDEWALK BY OTHERS.
26. CONCRETE CURB BY OTHERS.

PAVING LEGEND (PHASE 1 FUEL CENTER):

- LIGHT DUTY BITUMINOUS PAVEMENT.
- HEAVY DUTY BITUMINOUS PAVEMENT.
- CONCRETE PAVEMENT TANK MAT.
- CONCRETE PAVEMENT DISPENSER MAT.

The Project Collaborative

37704 Hills Tech Drive
Farmington Hills, Michigan 48331

248.252.1411 Telephone info@tpcorp.edu.com

REVISIONS

NO.	DATE	DESCRIPTION
0	12.31.2015	SITE PLAN SUBMITTAL
1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 62010062109
LICENSED PROFESSIONAL ENGINEER

Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

DIMENSION CONTROL
SITE PLAN
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777.A
DATE:	10.30.2015
CAD FILE:	C1.20.dwg
PROJECT MANAGER:	M. PISKO

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SHEET NUMBER

C1.20

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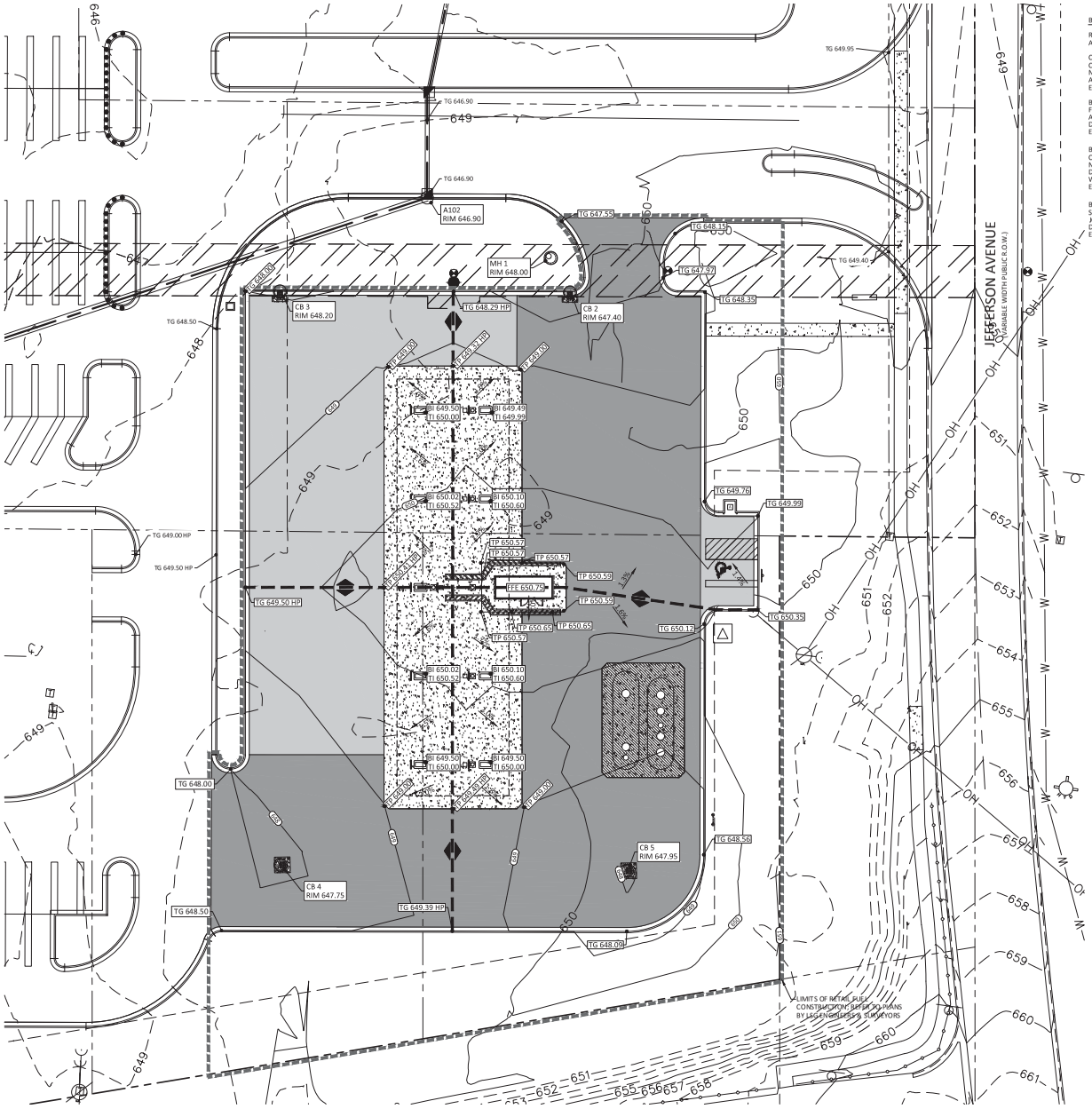

GRADING PLAN

SCALE: 1" = 20'-0"

BENCHMARKS:

REFERENCE LSG ENGINEERS AND SURVEYORS TOPOGRAPHIC & ALTA/ACSM LAND TITLE SURVEY CD1.1

CONTROL BM - CITY OF MIDLAND ENGINEERING DEPARTMENT COMBINED PLAN FOR N. JEFFERSON AVENUE. (SHEET 2 OF 2) P.K. NAIL IN POWER POLE ON THE WEST SIDE OF JEFFERSON AVENUE AT HOUSE #1989.
ELEVATION: 651.40 (DATUM NOT SPECIFIED)

BM 1 - NORTHEAST FLANGE BOLT UNDER "S" IN "WORKS" ON FIRE HYDRANT 7'± EAST OF EAST CURB LINE ON JEFFERSON AVENUE, 115'± SOUTH OF THE CENTERLINE OF CHEMICAL BANK DRIVEWAY.
ELEVATION: 650.08

BM 2 - CHISELED "□" ON TOP OF EAST SIDE OF NORTHERLY CONCRETE LIGHT POLE BASE LOCATED 55'± SOUTH OF NORTHEAST CORENER OF PARKING LOT FOR #6540 CINEMA DRIVE. ALSO BEING OPPOSITE WEST SIDE OF DETENTION POND WEST OF SUBJECT PROPERTY.
ELEVATION: 643.71

BM 3 - CHISELED "□" ON SOUTHWEST CORENER OF CONCRETE SLAB UNDER A BENCH ON THE SOUTH RIGHT OF WAY LINE OF JOE MANN BOULEVARD, 60' WEST OF CENTERLINE ALN OTT DRIVE TO TEH NORTH.
ELEVATION: 644.99

GRADING NOTES:

1. REFER TO SHEET C1.2 PREPARED BY LSG ENGINEERS AND SURVEYORS FOR EROSION CONTROL NOTES AND DETAILS.
2. VERIFY REQUIRED SPOT ELEVATIONS/GRADING IN THE VICINITY OF THE BUILDING WITH THE ARCHITECTURAL PLANS.
3. ALL MATERIALS AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH THE DRAWINGS AND PROJECT MANUAL, AND WITH LOCAL JURISDICTIONAL AUTHORITY STANDARDS AND SPECIFICATIONS.
4. ALL PROPOSED SPOT ELEVATIONS IN PAVED AREAS ARE TO TOP OF PAVEMENT UNLESS NOTED OTHERWISE.
5. THE PROJECT SITE SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AT ALL TIMES, ENSURING NO AREAS OF STANDING WATER.
6. THE GENERAL CONTRACTOR SHALL, AT HIS OR HER EXPENSE, RESTORE ANY AND ALL STRUCTURES, PIPE, UTILITY, PAVEMENT, CURB, SIDEWALK, LANDSCAPED AREA, ETC. DISTURBED WITHIN THE SITE AND/OR ADJOINING PROPERTIES DURING DEMOLITION OR CONSTRUCTION. SUCH FACILITIES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE AFFECTED OWNER(S).
7. UNDERDRAINS MAY BE ADDED, IF DETERMINED NECESSARY BY THE GENERAL CONTRACTOR AND AUTHORIZED BY THE OWNER'S REPRESENTATIVE, AFTER SUBGRADE IS ROUGH GRADED.
8. UNLESS OTHERWISE EXPRESSLY INDICATED HEREON, FINISHED GRADES ARE TO MATCH ADJACENT EXISTING GRADES.
9. THE GENERAL CONTRACTOR SHALL PRESERVE EXISTING VEGETATION WHERE POSSIBLE AND/OR AS NOTED ON DRAWINGS. SEE SESC PLAN ON SHEET C1.11 FOR LIMIT OF DISTURBANCE. PROTECT EXISTING TREES TO REMAIN WITH TEMPORARY FENCING PLACED AT THE DRIP LINE. NO GROUND DISTURBANCE OR STORAGE OF MATERIAL SHALL OCCUR WITHIN THE DRIP LINE LIMITS, UNLESS HEREON EXPRESSLY INDICATED OTHERWISE.
10. ALL EXCAVATION IS CONSIDERED UNCLASSIFIED AND THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL MEANS, METHODS AND MATERIALS OF CONSTRUCTION TO COMPLETE THE CONSTRUCTION PER THE DRAWINGS AND PROJECT MANUAL. ADDITIONALLY, THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE OFF-SITE DISPOSAL OF EXCESS OR UNSUITABLE MATERIAL, AS WELL AS THE IMPORTATION OF ANY BORROW MATERIAL NECESSARY TO COMPLETE THE PROJECT.

FUEL GRADING DESIGN STANDARDS:

1. PROVIDE POSITIVE DRAINAGE AWAY FROM FUEL CENTER CONCRETE PAD(S). PER GRADING/SECTION DRAWINGS, 1%-3% SLOPE IS TYPICAL WITH A MAXIMUM SLOPE OF 5%. UNLESS EXPRESSLY AUTHORIZED BY THE OWNER'S REPRESENTATIVE, SURFACE WATER SHALL NOT DRAIN THROUGH THE FUEL/CANOPY AREAS.
2. PROVIDE MAXIMUM OF 2% SLOPES/GRADES ACROSS FUEL CENTER CONCRETE PADS (UNDER CANOPY AREA), WHILE MAINTAINING POSITIVE DRAINAGE AWAY FROM THE FUEL CENTER KIOSK AND DISPENSER ISLANDS. GRADES AT TANK PAD SHALL NOT EXCEED 3% SLOPE.
3. SPECIAL ATTENTION IS REQUIRED AT THE DOORWAY OF THE KIOSK. IN GENERAL, THE KIOSK FINISH FLOOR IS TO BE 1" HIGHER THAN THE SURROUNDING EXTERIOR GRADE. SLOPE DRIVEWAY PAVING TO MEET THE FINISH FLOOR GRADE AT ANY DOORWAY, AND COORDINATE WITH FUEL CENTER CONTRACTOR. ADA GUIDELINES MUST BE VERIFIED FOR DOOR ENTRANCES AND FOR THE CUSTOMER SERVICE DRAWER AT THE KIOSK WINDOW.

SITE SPECIFIC GRADING GENERAL NOTES:

THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE REPAIR OF ANY EXISTING SITE IMPROVEMENTS THAT MAY BE DISTURBED DURING CONSTRUCTION. THIS SHALL INCLUDE, AND IS NOT NECESSARILY LIMITED TO:
(A) EXISTING CURB THAT MAY BE DISTURBED DURING INSTALLATION OF VENT STANDS, AIR STANDS, ETC.,
(B) EXISTING ASPHALT THAT MAY BE DISTURBED DURING TANK INSTALLATION,
(C) EXISTING LANDSCAPING,
(D) EXISTING LIGHT STANDARD(S) AND WIRING.

GRADING LEGEND:

BW	FINISHED GRADE AT BASE OF WALL
FG	FINISHED GRADE
FL	DITCH FLOW LINE
BI	PUMP ISLAND BOTTOM
TI	PUMP ISLAND TOP
TP	TOP OF PAVEMENT
TC	TOP OF CURB
TG	TOP OF CURB GUTTER
RIM	UNDERGROUND STRUCTURE RIM
TW	TOP OF WALK
FFE	FINISHED FLOOR ELEVATION
ME	MATCH EXISTING
2.0%	PROPOSED SLOPE
XXX.XX	PROPOSED GRADE BY OTHERS
XXX.XX	PROPOSED GRADE BY FUEL GC

The Project Collaborative
37704 Hills Tech Drive
Farmington Hills, Michigan 48331
248.352.1411 Telephone info@tpcprojects.com

REVISIONS

NO.	DATE	DESCRIPTION
0	12.31.2015	SITE PLAN SUBMITTAL
1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 6201062109
LICENSED PROFESSIONAL ENGINEER
Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

GRADING PLAN
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777-X
DATE:	10.30.2015
CAD FILE:	C1.30.DWG
PROJECT MANAGER:	M. PISKO

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SHEET NUMBER

C1.30

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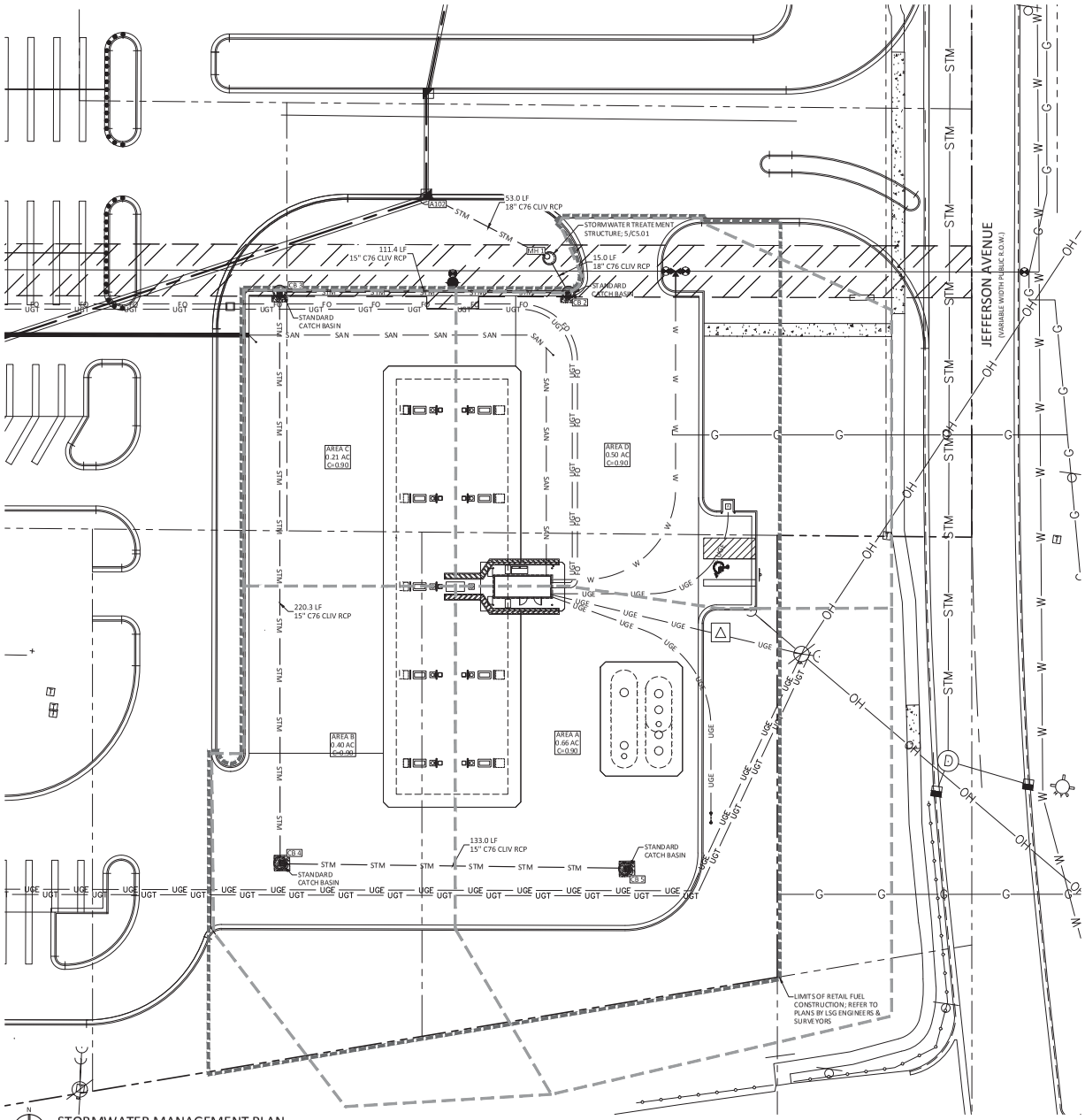

STORMWATER MANAGEMENT PLAN

SCALE: 1" = 20'-0"

NOTES:

ALL STORMWATER STRUCTURE, PIPES AND ASSOCIATED APPURTANCES TO BE PROVIDED AND INSTALLED PER CITY OF MIDLAND ENGINEERING DEPATERMENT STANDARD DETAILS UNLESS OTHERWISE SPECIFIED.

PROVIDE INLET FILTERS ON ALL PROPOSED INLETS. FILTERS SHALL BE REGULARLY MAINTAINED AND REMAIN IN PLACE UNTIL FINAL GRADES HAVE BEEN ESTABLISHED.

The Project Collaborative

37704 Hills Tech Drive
Farmington Hills, Michigan 48331

248.352.1411 Telephone info@tpcprojects.com

REVISIONS

NO.	DATE	DESCRIPTION
0	12.31.2015	SITE PLAN SUBMITTAL
1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 6201062109
LICENSED PROFESSIONAL ENGINEER

Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

STORM WATER MANAGEMENT PLAN FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777.A
DATE:	10.30.2015
CAD FILE:	C1.31.dwg
PROJECT MANAGER:	M. PISKO

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C1.31

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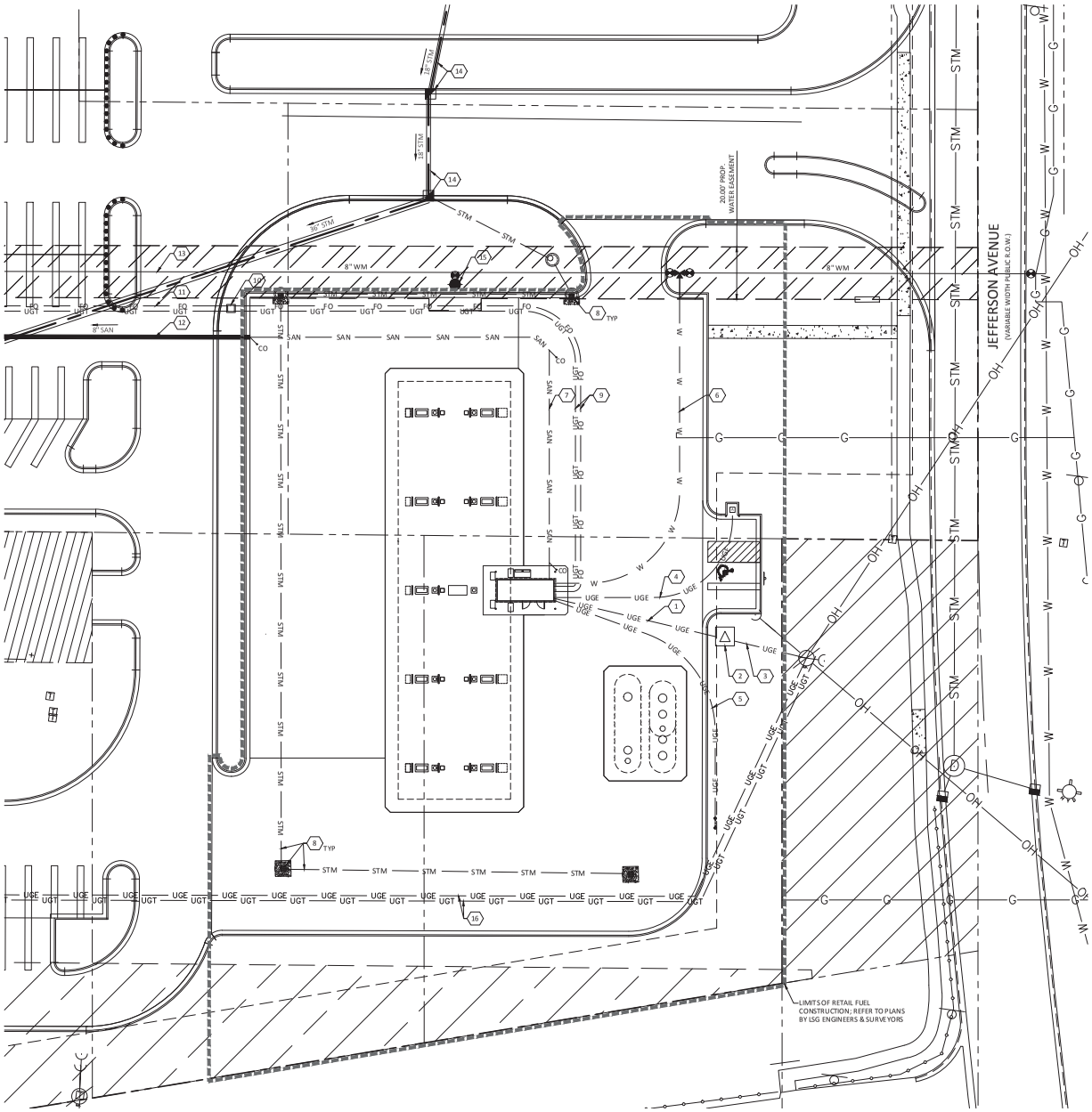

UTILITY PLAN

SCALE: 1" = 20'-0"

X PROPOSED SITE IMPROVEMENTS:

1. PROVIDE AND INSTALL TWO (2) 4" SCHEDULE 40 PVC CONDUIT (WITH TWO (2) PULL STRINGS EACH) FOR ELECTRIC SUPPLY FROM THE TRANSFORMER TO THE FUEL CENTER KIOSK. FIELD VERIFY AND COORDINATE EXACT CONDUIT ROUTING WITH KROGER CONSTRUCTION REPRESENTATIVE. REFER TO KIOSK POWER AND LIGHTING PLAN ON SHEET E1.0 AND THE LINE DIAGRAM(S) AND PANEL SCHEDULE(S) ON SHEET E2.0 FOR STUB-UP LOCATIONS AND ELECTRICAL LOAD REQUIREMENTS.
2. PER UTILITY COMPANY TEMPLATE, PROVIDE AND INSTALL 6'-2" WIDE X 5'-2" DEEP X 6½" THICK CONCRETE TRANSFORMER PAD. CONCRETE MIX SHALL BE 6-BAG WITH MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.
3. PROVIDE AND INSTALL TWO (2) 4" SCHEDULE 40 PVC CONDUITS FROM UTILITY SERVICE TO TRANSFORMER PAD; COORDINATE SERVICE LOCATION WITH UTILITY. PROVIDE AND INSTALL EMPTY CONDUITS WITH (1) PULL STRING EACH PER UTILITY COMPANY DESIGN STANDARDS. UTILITY COMPANY TO PULL WIRES AND MAKE FINAL CONNECTION AS REQUIRED TO ENERGIZE TRANSFORMER.
4. PROVIDE AND INSTALL ONE (1) 3/4" SCHEDULE 40 PVC CONDUIT FROM FUEL CENTER KIOSK TO AIR COMPRESSOR FOR 120V POWER.
5. PROVIDE AND INSTALL TWO (2) 3/4" SCHEDULE 40 PVC CONDUIT FROM FUEL CENTER KIOSK TO TANK VENT.
6. PROVIDE AND INSTALL 3/4" TYPE K COPPER WATER SERVICE LINE (MIN. DEPTH 5.0'); MAKE CONNECTION TO WATER MAIN INSTALLED BY OTHERS; PROVIDE MINIMUM 18" CLEARANCE AT ALL UTILITY CROSSINGS. INSTALL PER CITY OF MIDLAND REQUIREMENTS.
7. PROVIDE AND INSTALL SANITARY SEWER SERVICE (MIN SLOPE = 1.0%) WITH CLEANOUTS LOCATED 5.0' OUTSIDE OF FOUNDATION AND AT EVERY HORIZONTAL AND VERTICAL BEND. MAKE CONNECTION TO SANITARY STRUCTURE INSTALLED BY OTHERS. INSTALL PER CITY OF MIDLAND REQUIREMENTS.
8. STORMWATER MANAGEMENT SYSTEM. REFER TO STORMWATER MANAGEMENT PLAN, C-1.31.
9. PROVIDE AND INSTALL TWO (2) 2" SCHEDULE 40 PVC CONDUITS (WITH TWO (2) PULL STRINGS EACH) FOR COMMUNICATION LINES FROM ELECTRICAL PULL BOX TO THE FUEL CENTER KIOSK. THERE SHOULD BE NO MORE THAN TWO (2) 90° TURNS (STANDARD FOR FIBER AND TELEPHONE CABLE). REFER TO ELECTRICAL PLANS AND DETAILS ON SHEET E1.0 FOR ADDITIONAL INFORMATION.
10. 36"x36"x36" ELECTRICAL PULL BOX INSTALLED BY OTHERS.
11. TWO (2) 2" SCHEDULE 40 PVC CONDUITS FOR COMMUNICATION LINES INSTALLED BY OTHERS.
12. SANITARY SEWER INSTALLED BY OTHERS.
13. WATER MAIN INSTALLED BY OTHERS.
14. STORM SEWER INSTALLED BY OTHERS.
15. HYDRANT INSTALLED BY OTHERS.
16. UNDERGROUND ELECTRIC AND TELEPHONE CONDUITS FOR KROGER STORE BY OTHERS.

NOTE:

FOR ALL EXISTING EASEMENT LIBER AND PAGE NUMBERS, REFER TO TOPOGRAPHIC & ALTA/ASCM LAND TITLE SURVEY BY LSG ENGINEERS AND SURVEYORS.

The Project Collaborative

37704 Hills Tech Drive
Farmington Hills, Michigan 48331

248.252.1411 Telephone info@tpcprojects.com

REVISIONS

NO.	DATE	DESCRIPTION
0	02.31.2015	SITE PLAN SUBMITTAL
1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 6201062109
LICENSED PROFESSIONAL ENGINEER

Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

UTILITY PLAN
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777-X
DATE:	10.30.2015
CAD FILE:	C1.40.dwg
PROJECT MANAGER:	M. PISKO

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SHEET NUMBER

C1.40

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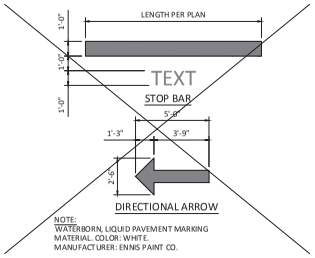
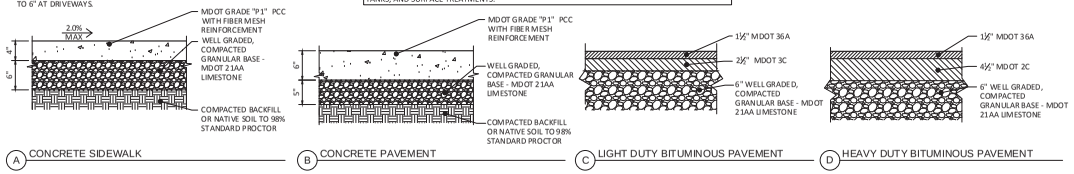


NOTE:
WATERBORN, LIQUID PAVEMENT MARKING MATERIAL. COLOR: WHITE.
MANUFACTURER: ENNIS PAINT CO.

1 N/A STOP BAR PAVEMENT MARKING
SCALE: 1/4" = 1'-0"

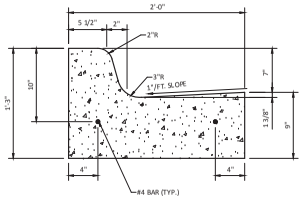
GEOTECHNICAL CONSTRUCTION NOTE

PAVING SECTIONS PER GEOTECHNICAL SOIL REPORT RECOMMENDATIONS; REFER TO GEOTECHNICAL SOIL REPORT FOR SUBGRADE PREPARATION RECOMMENDATIONS FOR FOOTINGS, TRENCHES, APRONS, TANKS, AND SURFACE TREATMENTS.

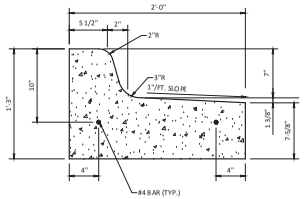


A CONCRETE SIDEWALK
B CONCRETE PAVEMENT
C LIGHT DUTY BITUMINOUS PAVEMENT
D HEAVY DUTY BITUMINOUS PAVEMENT

2 C1.20 PAVING DETAILS
SCALE: 1" = 1'-0"

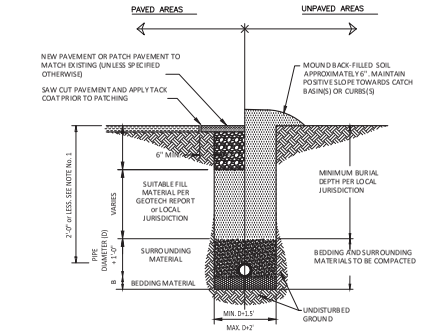


B CURB AND GUTTER (SPLASH)



A CURB AND GUTTER (SPILL)

3 C1.20 CURB AND GUTTER DETAIL
SCALE: 1 1/2 " = 1'-0"



NOTES:

1. THE SURROUND MATERIAL MUST BE INSTALLED TO THE PAVEMENT BASE ELEVATION IF THERE IS LESS THAN 2'-0" OF FILL OVER THE PIPE.
2. COMPACT ALL BACK FILL UNDERNEATH, AROUND AND ABOVE PROPOSE PIPES TO 95% STANDARD PROCTOR IN PAVED AND STRUCTURAL AREAS, 90% STANDARD PROCTOR IN UNPAVED OR NON-STRUCTURAL AREAS. THE UPPER 12" OF TRENCH BACKFILL MATERIAL IN PAVED/STRUCTURAL AREAS MUST BE COMPACTED TO 98% STANDARD PROCTOR (ASTM-698).
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. ALL SUITABLE FILL SHOULD NOT CONTAIN STONES GREATER THAN 4" IN DIAMETER, FROZEN LUMPS, AND SHALL CONTAIN A MINIMAL AMOUNT OF ORGANIC MATERIALS (LESS THAN 3%).
5. MATERIAL IS TO BE PLACED AT NO MORE THAN 8" INTERVALS AND COMPACTED BEFORE PLACING NEXT LAYER.

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 OR LEDGE	"B" OR "C"	6"	SAND OR "C"
RCP PIPE IN CLAY	"B" OR "C"	6"	SAND
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:

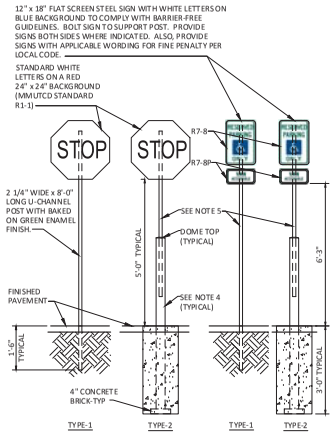
"A": GRAVEL OR EXCAVATED MATERIAL WHICH HAS NO STONES GREATER THAN 1.5" DIAMETER.

"B": MDOT 25A

"C": CRUSHED STONE WITH 100% PASSING A 1" SQUARE SIEVE AND 0-5% PASSING A 1/4" SQUARE SIEVE, PEA GRAVEL, OR OTHER NATURAL FREE DRAINING STONE MATERIAL WITH LESS THAN 10% P200 (PASSING No. 200 SIEVE).

SAND: MDOT CLASS II GRANULAR MATERIAL

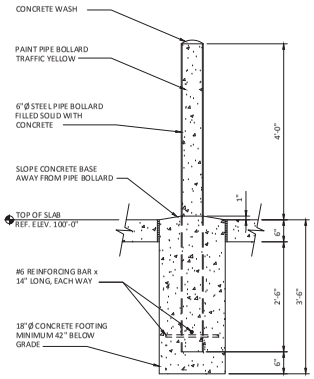
4 C1.40 TRENCH DETAIL
SCALE: NO SCALE



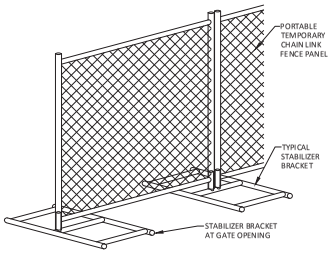
NOTES:

1. INSTALL ALL SIGNS WHERE INDICATED ON SITE PLAN.
2. ADJUST MOUNTING HEIGHTS TO MEET LOCAL CODES WHERE APPLICABLE.
3. SET ALL POSTS IN 16" DIAMETER x 36" DEEP CONCRETE FOUNDATION.
4. INSTALL ALL SIGN PANELS A MINIMUM OF 1.0' BEHIND FACE OF CURB, AND BARRIER-FREE SIGNS A MINIMUM OF 2.0' BEHIND BACK OF CURB.
5. 4" x 6'-0" CONCRETE FILLED STEEL POST CENTERED IN FOUNDATION, PAINTED YELLOW, SEE SPECS.
6. 2 1/4" WIDE x 6'-0" LONG U-CHANNEL POST WITH BAKED ON GREEN ENAMEL FINISH.
7. TYPE 1 - LIGHT DUTY -- LANDSCAPED AREAS and AREAS NOT SUBJECT TO TRUCK TRAFFIC.
   TYPE 2 - HEAVY DUTY -- PAVED AREAS and AREAS SUBJECT TO TRUCK TRAFFIC or NOT PROTECTED IN LANDSCAPED AREAS.

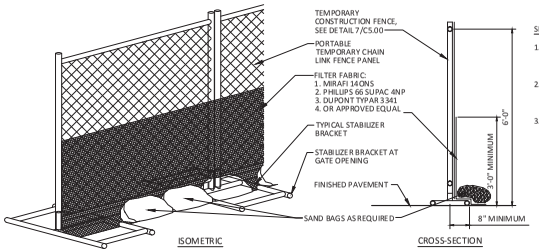
5 C1.20 TYPICAL SIGN DETAILS
NO SCALE



6 C1.20 BOLLARD DETAIL
SCALE: 3/4" = 1'-0"



7 C1.11 CONSTRUCTION FENCE
SCALE: NO SCALE



SILT FENCE NOTES:

1. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
3. MAINTENANCE SHALL BE PERFORMED AS NOTED IN THE EROSION CONTROL PLAN. COLLECTED MATERIAL SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

8 C1.11 SILT FENCE DETAILS
SCALE: NO SCALE

The Project Collaborative

37704 Hills Tech Drive
Farmington Hills, Michigan 48331

248.252.1411 Telephone info@projectcc.com

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1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 62010621 09
LICENSED PROFESSIONAL ENGINEER
Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

SITE DETAILS
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777-X
DATE:	10.30.2015
CAD FILE:	C5.00.dwg
PROJECT MANAGER:	M. PISKO

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SHEET NUMBER

C5.00

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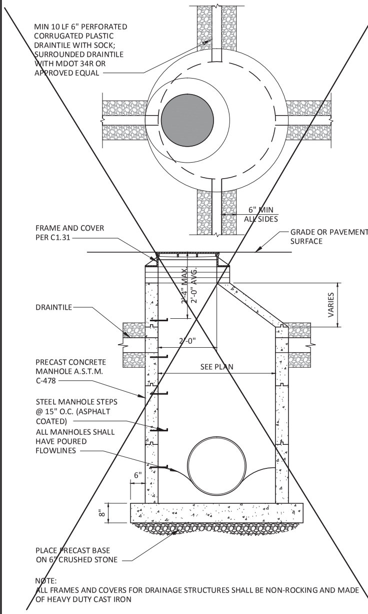
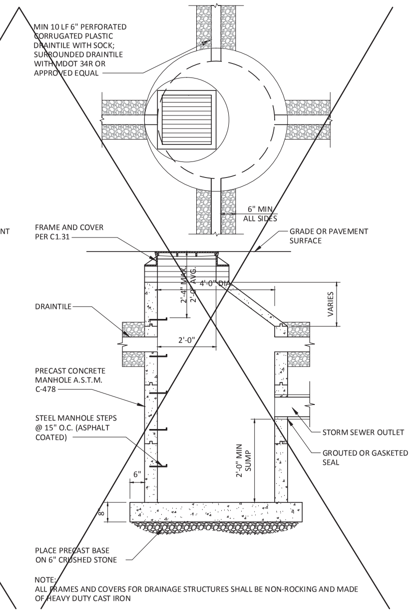


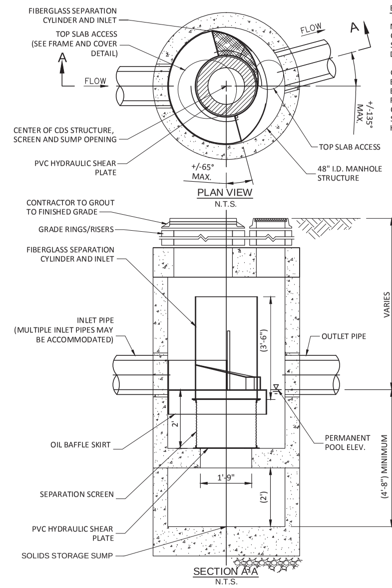
NOTE:
ALL FRAMES AND COVERS FOR DRAINAGE STRUCTURES SHALL BE NON-ROCKING AND MADE OF HEAVY DUTY CAST IRON

1 N/A MANHOLE DETAIL
SCALE: NO SCALE



NOTE:
ALL FRAMES AND COVERS FOR DRAINAGE STRUCTURES SHALL BE NON-ROCKING AND MADE OF HEAVY DUTY CAST IRON

2 C1.31 CATCH BASIN DETAIL
SCALE: NO SCALE



BID NOTE:

MUNICIPAL APPROVAL BASED ON CONTECH ENGINEERED SOLUTIONS, LLC DRAWINGS AND DETAILS.

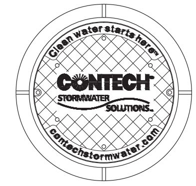
GENERAL CONTRACTOR MAY ELECT TO USE OWNER APPROVED EQUALS AND WILL BE RESPONSIBLE FOR PERMIT REVIEW AND COORDINATION OF ALTERNATE SYSTEMS WITH AUTHORITIES HAVING JURISDICTION.

CDS2015-4 DESIGN NOTES

CDS2015-4 RATED TREATMENT CAPACITY PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY IS 10.0 CFS. IF THE SITE CONDITIONS EXCEED 10.0 CFS, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD CDS2015-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

DESIGNATION (MODEL SUFFIX)	CONFIGURATION DESCRIPTION
G	GRATED INLET ONLY (NO INLET PIPE)
GP	GRATED INLET WITH INLET PIPE OR PIPES
K	CURB INLET ONLY (NO INLET PIPE)
KP	CURB INLET WITH INLET PIPE OR PIPES



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

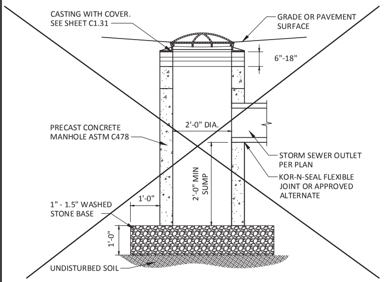
STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS)			*
PEAK FLOW RATE (CFS)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*
NOTES/SPECIAL REQUIREMENTS:			

* PER ENGINEER OF RECORD

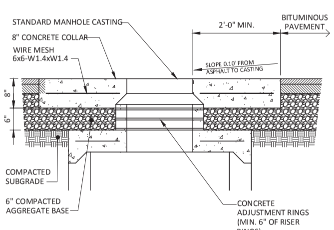
GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH STORMWATER SOLUTIONS REPRESENTATIVE. www.contechstormwater.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE AND CASTINGS SHALL MEET AASHTO HS20 LOAD RATING.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

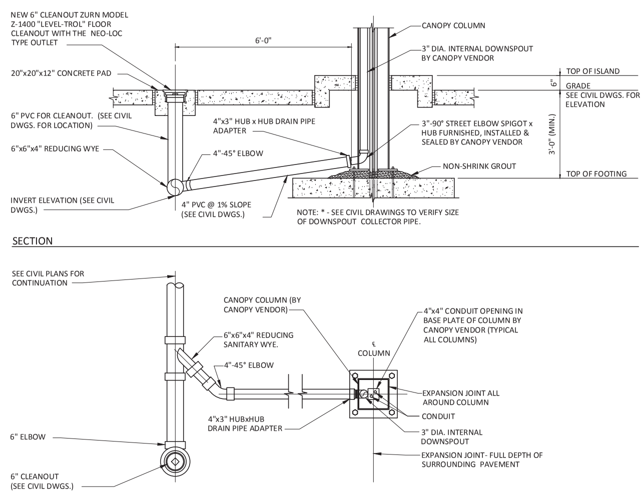
3 C1.31 PRECAST CONCRETE WATER QUALITY SYSTEM STANDARD DETAIL
SCALE: NO SCALE



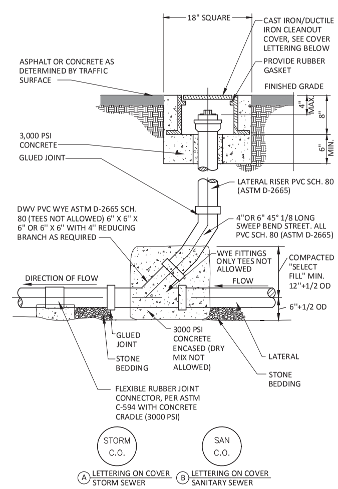
4 C1.31 LEACH BASIN STRUCTURE
SCALE: NO SCALE



5 C1.20 CONCRETE COLLAR DETAIL
SCALE: NO SCALE

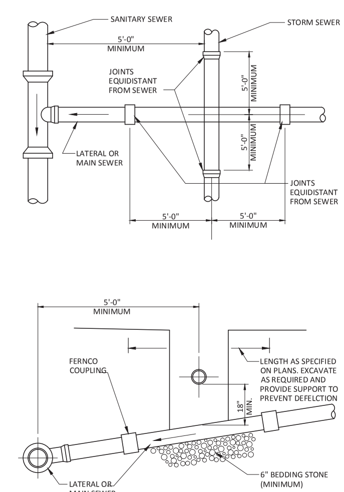


6 C1.31 DOWNSPOUT CONNECTION TO STORM LINE DETAIL
SCALE: NO SCALE



NOTE:
IT IS RECOMMENDED THAT ALL SOLVENT WELD JOINTS BE MADE AS FOLLOWS:
A. CLEAN DRY HUBS & SPOTS.
B. PRIMER APPLIED TO PARTS BEING CONNECTED.
C. PVC SOLVENT WELD CEMENT APPLIED DIRECTLY OVER PRIMER.
D. PVC TYPE I IS COMPATIBLE FOR SOLVENT WELDING TO SDR-21 OR ANY OTHER PVC TYPE I PIPE MADE TO "STEEL PIPE" OUTSIDE DIMENSIONS.

7 C1.31 CLEAN-OUT FOR TRAFFIC AREA ASSEMBLY DETAIL
SCALE: NO SCALE



8 C1.31 STORM/SANITARY SEWER CROSSING DETAIL
SCALE: NO SCALE

The Project Collaborative
37704 Hills Tech Drive
Farmington Hills, Michigan 48331
248.252.1411 Telephone info@tprojectc.com

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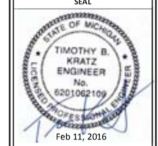

CUSTOMER
Kroger

PROJECT DESCRIPTION
KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION
315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE
SITE DETAILS
FUEL CENTER

SHEET MANAGEMENT

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PROJECT MANAGER:	M. PISKO

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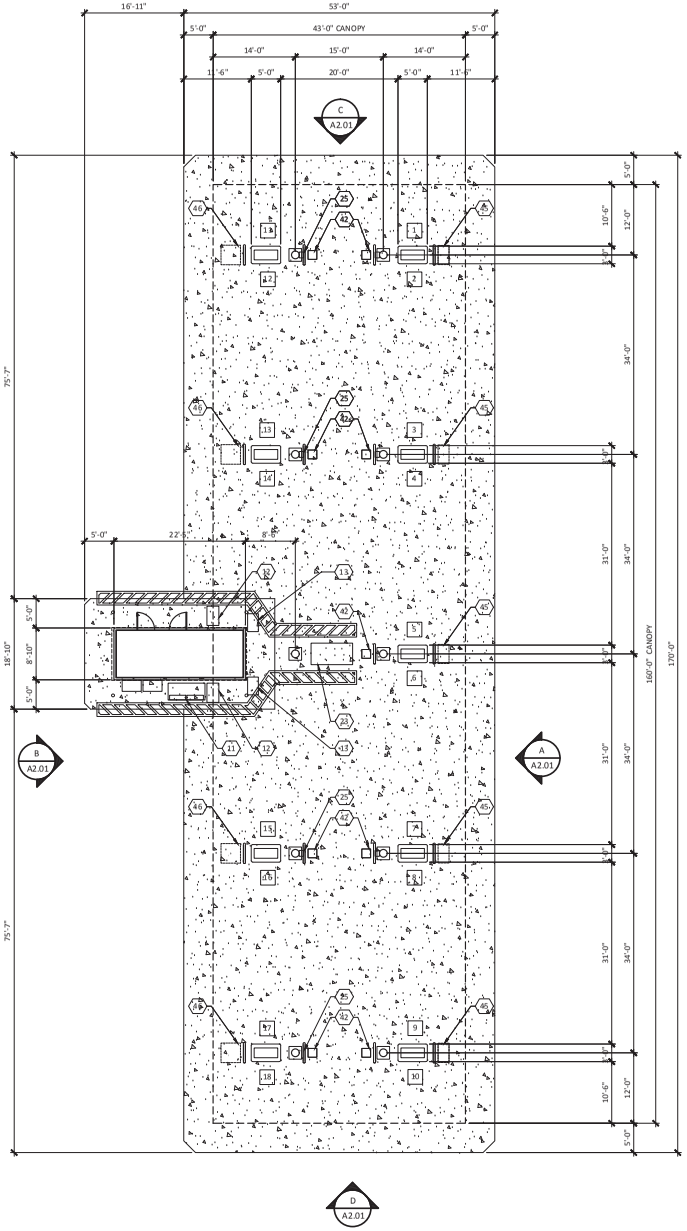
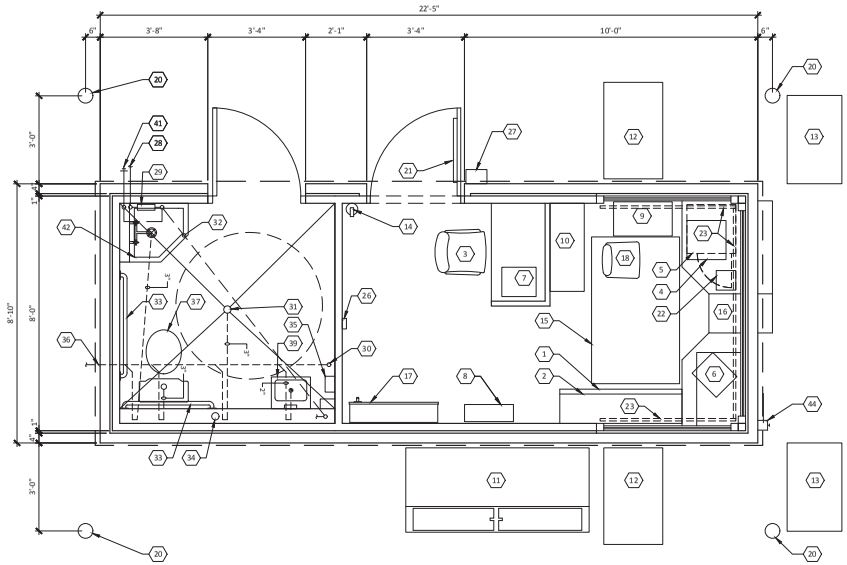


CONSTRUCTION IMPROVEMENT PLAN

SCALE: 1" = 10'-0"

EQUIPMENT LEGEND
(ALL EQUIPMENT FURNISHED BY OWNER UNLESS OTHERWISE NOTED.)

1. 4' STORAGE RACK (BY GENERAL CONTRACTOR.)
2. CANDY RACK.
3. CHAIR.
4. LOTTO MACHINE.
5. SAFE.
6. P.O.S. REGISTER.
7. P.O.S. - BACK OFFICE UNIT.
8. TANK MONITOR.
9. CIGARETTE CARTON MERCHANDISER.
10. CIGARETTE PACK MERCHANDISER.
11. 46 CU. FT. ICE MERCHANDISER. (17.97 SQ. FT. FOOTPRINT)
12. LARGE BEVERAGE COOLER. SODA POP - COKE/PEPSI (BY VENDOR). (5.59 SQ. FT. FOOTPRINT).
13. SMALL BEVERAGE COOLER ENERGY DRINK/JUICE (BY VENDOR). (6.62 SQ. FT. FOOTPRINT)
14. 2A:20BC FIRE EXTINGUISHER (BY GENERAL CONTRACTOR. QUANTITIES AND LOCATIONS INSTALLED PER LOCAL CODE.)
15. ANTI-FATIGUE MAT.
16. DEAL TRAY / MERCHANDISE DRAWER.
17. PANELBOARD.
18. STOOL.
19. SHELF ABOVE.
20. 6"Ø PIPE BOLLARD (TYPICAL 4, BY GENERAL CONTRACTOR.)
21. BULLETIN BOARD (GENERAL CONTRACTOR TO MOUNT ABOVE PEEPHOLE.)
22. INTERCOM MASTER STATION.
23. DOUBLE REACH-IN CABINET. (BY VENDOR) (25.97 SQ. FT. FOOTPRINT.)
24. NOT USED.
25. 2A:20BC FIRE EXTINGUISHER IN STEEL CABINET (TYPICAL 2.) GENERAL CONTRACTOR TO MOUNT BOTTOM 32" ABOVE FINISH GRADE.
26. CIGARETTE MERCHANDISING SIGN PANELS.
27. INTRUSION ALARM KEYPAD.
28. KNOX-BOX, MODEL 3227. KNOX-BOX 3200 SERIES, HINGED DOOR MODEL, RECESSED MOUNT, WITH DOOR TAMPER SWITCH. FIRE DEPARTMENT AUTHORIZATION REQUIRED PRIOR TO GC ORDERING AND INSTALLATION. (IF REQUIRED)
29. GRAB BARS (TYPICAL. INSTALLED BY KIOSK MANUFACTURER.)
30. WATER CLOSET (BY GENERAL CONTRACTOR.) AMERICAN STANDARD MODEL #2377.100 (WHITE.) PROVIDE WITH OPEN-FRONT SEAT (WHITE) AND POLISHED CHROME WATER SUPPLY/STOP.
31. LAVATORY (INSTALLED BY KIOSK MANUFACTURER.)
32. ½" COLD WATER SERVICE (BY GENERAL CONTRACTOR) TO PUBLIC CONNECTION. SEE SITE UTILITY PLAN ON SHEET C1.40 FOR CONTINUATION.
33. ½" BACKFLOW PREVENTER APPROVED BY LOCAL AUTHORITIES (BY GENERAL CONTRACTOR.) INSTALL DEVICE A MINIMUM OF 36" TO A MAXIMUM OF 48" A.F.F. THE DEVICE SHALL HAVE A MINIMUM OF 24" OF CLEAR SPACE IN FRONT OF DEVICE FROM FLOOR TO CEILING.
34. 4"Ø FLOOR CLEAN-OUT (BY GENERAL CONTRACTOR.)
35. 3"Ø FLOOR DRAIN (BY GENERAL CONTRACTOR.) JAY R. SMITH #2005-B.
36. ¾"Ø COLD WATER LINE UNDERSLAB (BY GENERAL CONTRACTOR.)
37. GC TO CONNECT VENT LINES FROM FLOOR DRAINS AND WATER CLOSET TO 3" VENT THROUGH ROOF BY KIOSK MANUFACTURER.
38. NOT USED.
39. INSTANTANEOUS ELECTRIC WATER HEATER (INSTALLED BY KIOSK MANUFACTURER.)
40. CONNECT 4"Ø WASTE LINE (BY GENERAL CONTRACTOR) TO CITY SEWER. SEE SITE UTILITY PLAN ON SHEET C-400 FOR CONTINUATION.
41. JANITOR SINK, FAUCET, AND TRIM. SUPPLIED BY KIOSK MANUFACTURER, INSTALLED BY GC.
42. WASTE RECEPTACLE / WINDSHIELD SERVICE CENTER.
43. EMERGENCY 911 CALL BOX MOUNT CENTERLINE AT +48" A.F.G. (IF REQUIRED)
44. E-STOP (BY OTHERS)
45. NESTING CAGE WITH 2 PULL OUT SHELVES. (6.09 SQ. FT.)
    SEASONAL SALES:
    - -KROGER BOTTLED WATER
    - -FIREWOOD
    - -5.0 GALLON GAS CANS (EMPTY)
    - -WINDSHIELD WASHING SOLVENT
    - -ROCK SALT
46. PALLET CAGE. (16.88 SQ. FT.)
    SEASONAL SALES:
    - -KROGER BOTTLED WATER
    - -FIREWOOD
    - -5.0 GALLON GAS CANS (EMPTY)
    - -WINDSHIELD WASHING SOLVENT
    - -ROCK SALT



KIOSK EQUIPMENT PLAN

SCALE: 1/2" = 1'-0"

The Project Collaborative

37704 Hills Tech Drive
Farmington Hills, Michigan 48331

248.352.1411 Telephone info@tpcprojects.com

REVISIONS

NO.	DATE	DESCRIPTION
0	12.31.2015	SITE PLAN SUBMITTAL
1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 6201062109
LICENSED PROFESSIONAL ENGINEER

Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

CONSTRUCTION AND EQUIPMENT PLAN
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777.A
DATE:	10.30.2015
CAD FILE:	A1.01.dwg
PROJECT MANAGER:	M. PISKO

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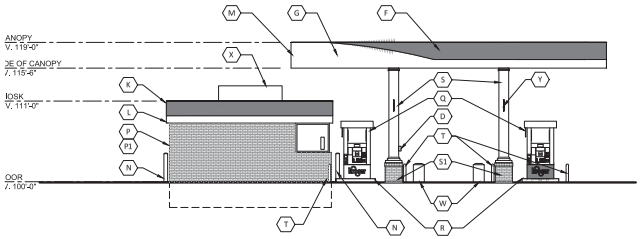
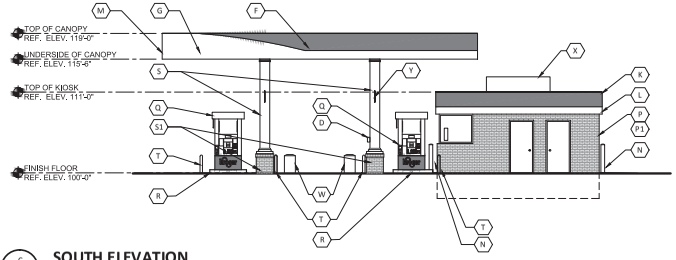


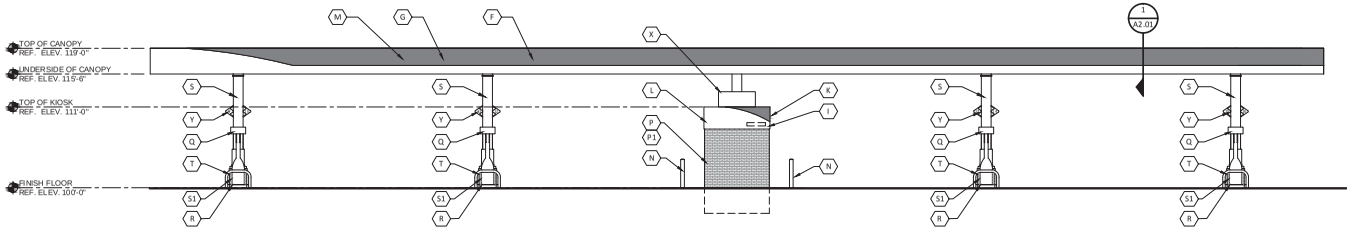
D A1.01 **NORTH ELEVATION**

SCALE: 1/8" = 1'-0"



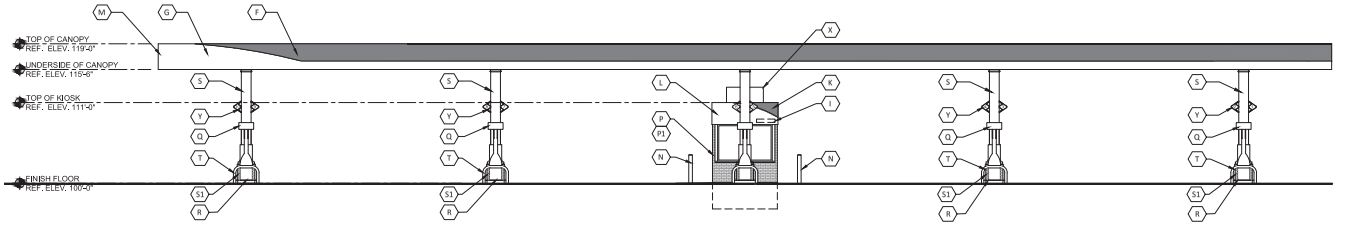
C A1.01 **SOUTH ELEVATION**

SCALE: 1/8" = 1'-0"



B A1.01 **EAST ELEVATION**

SCALE: 1/8" = 1'-0"

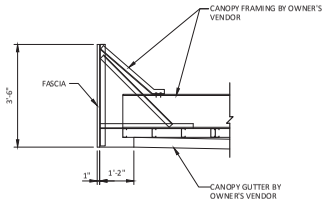


A A1.01 **WEST ELEVATION**

SCALE: 1/8" = 1'-0"

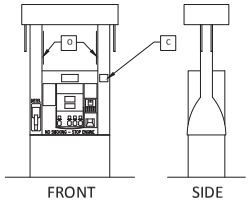
EQUIPMENT SCHEDULE

MARK	DESCRIPTION	COLOR	MANUFACTURER	MODEL	FURNISHED BY	INSTALLED BY
A	NOT USED	-	-	-	-	-
B	NOT USED	-	-	-	-	-
C	STATIC WARNING DECAL	-	WAYNE	-	DISPENSER MANUFACTURER	DISPENSER MANUFACTURER
D	REMOTE PRICE SIGN CONTROL BOX	-	LANDMARK SIGN ALLIANCE, INC.	-	OWNER	SIGN INSTALLER
E	NOT USED	-	-	-	-	-
F	CANOPY FASCIA	RED	-	-	CANOPY FABRICATOR	CANOPY FABRICATOR
G	CANOPY FASCIA	PLATINUM	-	-	CANOPY FABRICATOR	CANOPY FABRICATOR
H	NOT USED	-	-	-	-	-
I	PRE-CUT VINYL ADDRESS DECAL (PER LOCAL ORDINANCE IF REQUIRED)	BLACK	-	-	GENERAL CONTRACTOR	GENERAL CONTRACTOR
J	NOT USED	-	-	-	-	-
K	KIOSK FASCIA	RED	-	-	KIOSK FABRICATOR	KIOSK FABRICATOR
L	KIOSK FASCIA	PLATINUM	-	-	KIOSK FABRICATOR	KIOSK FABRICATOR
M	CANOPY	-	FASHION, INC.	-	CANOPY FABRICATOR	CANOPY FABRICATOR
N	6"Ø BOLLARD	SAFETY RED (G.C. TO PAINT)	-	-	GENERAL CONTRACTOR	-
O	HEALTH AND SAFETY DECAL	-	WAYNE	-	WAYNE	WAYNE
P	KIOSK - PREFABRICATED	ESSENTIAL GRAY - SW6002	SAGEBRUSH	-	KIOSK FABRICATOR	GENERAL CONTRACTOR
P1	KIOSK FACE BRICK VENEER	RED/BROWN	GLEN-GERY BRICK	LAKESHORE SERIES COLOR: WINNETKA OR EQUAL.	GENERAL CONTRACTOR	GENERAL CONTRACTOR
Q	DISPENSER	-	WAYNE	-	OWNER	GENERAL CONTRACTOR
R	ISLAND FORMS	GRAPHITE - SW4017 (G.C. TO PAINT)	OPW	-	OWNER	GENERAL CONTRACTOR
S	CANOPY COLUMNS (G.C. TO PAINT)	ESSENTIAL GRAY - SW6002 (G.C. TO PAINT)	FASHION, INC.	-	CANOPY FABRICATOR	CANOPY FABRICATOR
S1	CANOPY COLUMN BASE	RED/BROWN	-	LAKESHORE SERIES COLOR: WINNETKA OR EQUAL.	GENERAL CONTRACTOR	GENERAL CONTRACTOR
T	4"Ø U-SHAPED BOLLARD (G.C. TO PAINT)	SAFETY RED (G.C. TO PAINT)	RIVERSIDE	-	OWNER	GENERAL CONTRACTOR
U	NOT USED	-	-	-	-	-
V	NOT USED	-	-	-	-	-
W	WASTE RECEPTACLE / WINDSHIELD SERVICE CENTER	-	DCI MARKETING	-	OWNER	GENERAL CONTRACTOR
X	ROOFTOP UNIT SCREEN	OYSTER SHELL	SAGEBRUSH	-	KIOSK FABRICATOR	GENERAL CONTRACTOR
Y	DISPENSER NUMBER FLAG	-	-	-	CANOPY FABRICATOR	GENERAL CONTRACTOR



1 A2.01 **SECTION AT CANOPY FASCIA**

SCALE: 3/8" = 1'-0"



2 A2.01 **DISPENSER ELEVATIONS**

SCALE: 3/8" = 1'-0"

The Project Collaborative

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248.252.1411 Telephone info@tpcprojects.com

REVISIONS

NO.	DATE	DESCRIPTION
0	12.31.2015	SITE PLAN SUBMITTAL
1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 620106209
LICENSED PROFESSIONAL ENGINEER

Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

ELEVATIONS
EXTERIOR
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777.A
DATE:	10.30.2015
CAD FILE:	A2.01.dwg
PROJECT MANAGER:	M. PISKO

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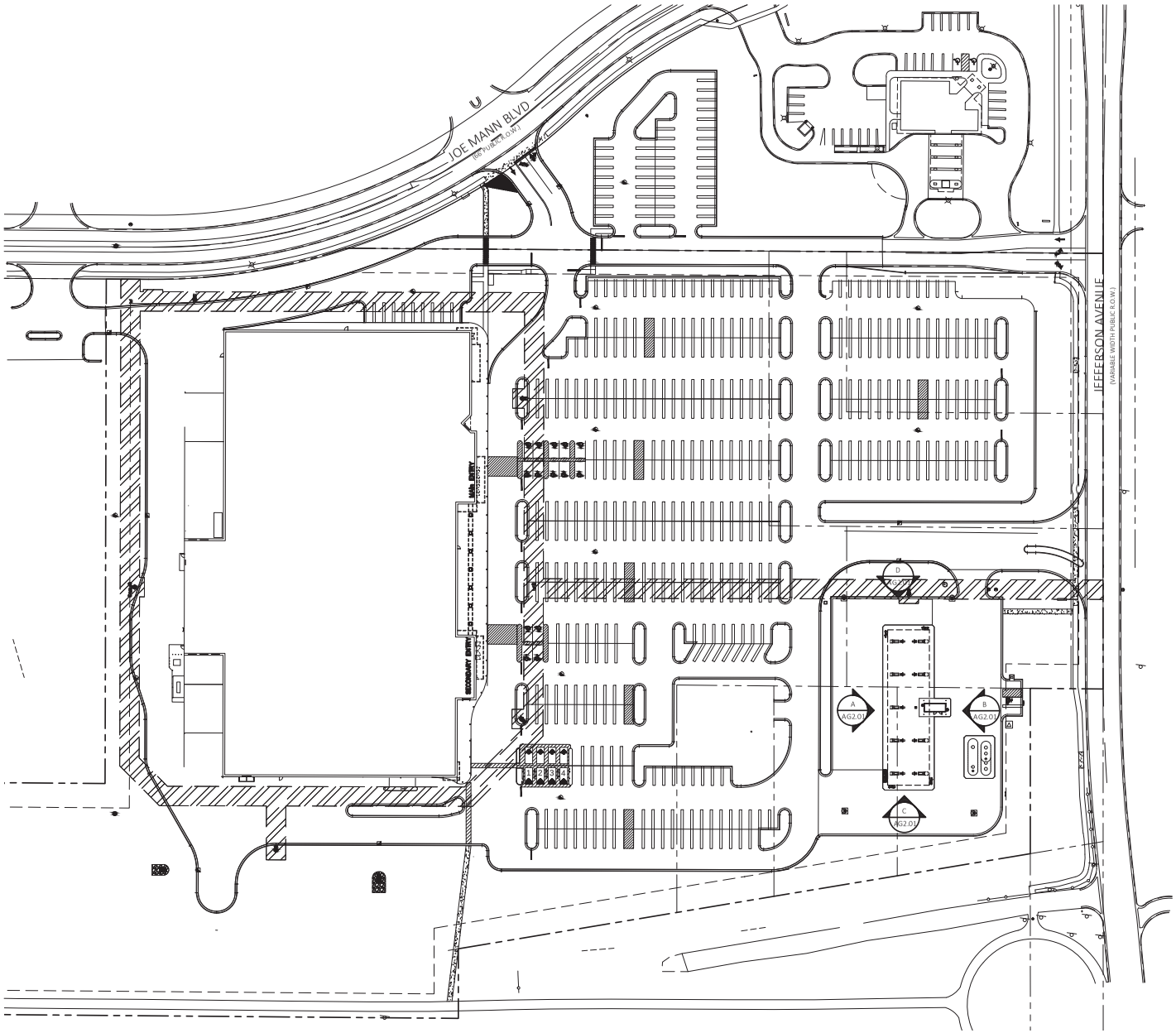

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SIGN PLAN - SITE - FUEL CENTER

SCALE: 1" = 50'-0"

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CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 6201062109
LICENSED PROFESSIONAL ENGINEER

Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

SIGN PLAN - SITE
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777.8
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PROJECT MANAGER:	M. PISKO

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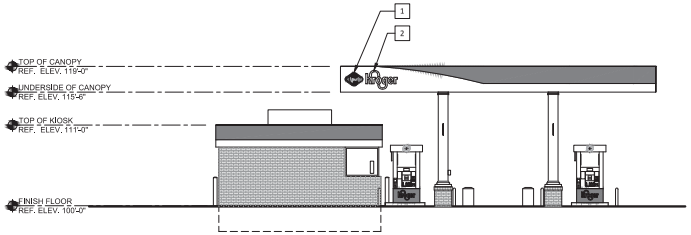

D
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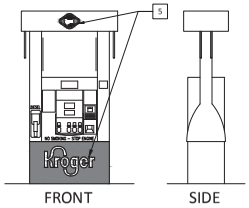
NORTH ELEVATION

SCALE: 1/8" = 1'-0"



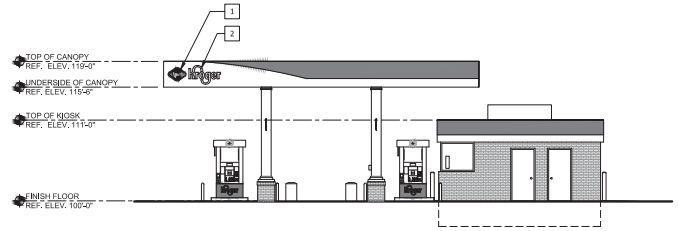
1
AG2.01

DISPENSER ELEVATIONS

SCALE: 3/8" = 1'-0"

ARCHITECTURAL GRAPHICS SCHEDULE

MARK	DESCRIPTION	MANUFACTURER / MATERIAL		NOTES
1	ILLUMINATED LOGO SIGN (CANOPY)	CUMMINGS SIGNS	3.00	SEE DRAWINGS KR512901, KR512902 AND KR512903 ON SHEET AG5.01.
2	ILLUMINATED CHANNEL LETTER SIGN (CANOPY)	CUMMINGS SIGNS	10.83	SEE DRAWINGS 74126.05, KR509901 AND KR509902 ON SHEET AG5.01.
3	ILLUMINATED DIGITAL PRICE SIGN (CANOPY)	LANDMARK SIGN ALLIANCE, INC.	45.50	SEE DRAWING 140817.3 ON SHEET AG5.01.
4	NON-ILLUMINATED LOGO SIGN (KIOSK)	CUMMINGS SIGNS	5.26	SEE DRAWING 53154.54 ON SHEET AG5.01
5	MULTI-PRODUCT DISPENSER GRAPHICS	DRESSER, INC. DRESSER WAYNE "OVATION" FUEL DISPENSER	-	DOOR AND VALANCE GRAPHICS BY DISPENSER MANUFACTURER. SEE DETAIL E ON SHEET AG2.01.
6				



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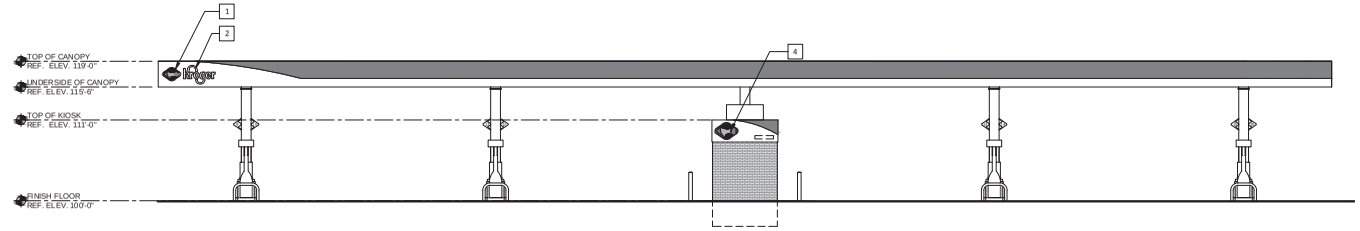
SOUTH ELEVATION

SCALE: 1/8" = 1'-0"



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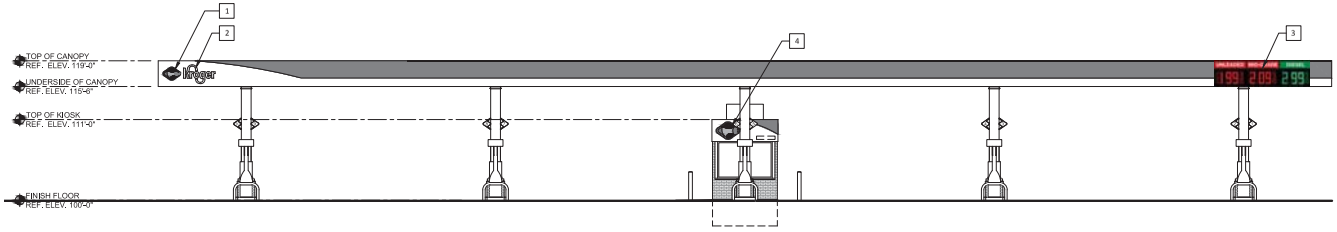
EAST ELEVATION

SCALE: 1/8" = 1'-0"



A
A1.01

WEST ELEVATION

SCALE: 1/8" = 1'-0"

The Project Collaborative

37704 Hills Tech Drive
Farmington Hills, Michigan 48331

248.252.1411 Telephone info@tpcprojects.com

REVISIONS

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1	02.11.2016	PER CITY COMMENTS

CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 6201062109
LICENSED PROFESSIONAL ENGINEER

Feb 11, 2016

CUSTOMER

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

SIGN ELEVATIONS
EXTERIOR
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777.A
DATE:	10.30.2015
CAD FILE:	AG2.01.dwg
PROJECT MANAGER:	M. PISKO

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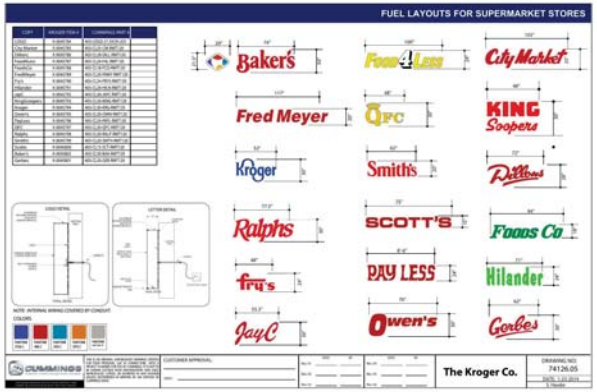

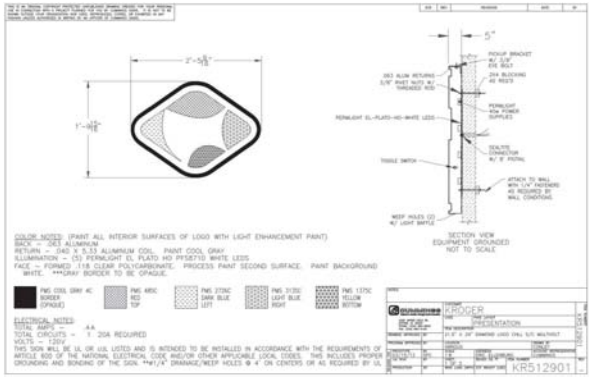

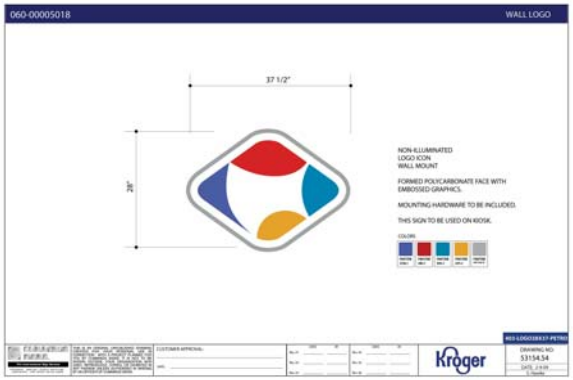

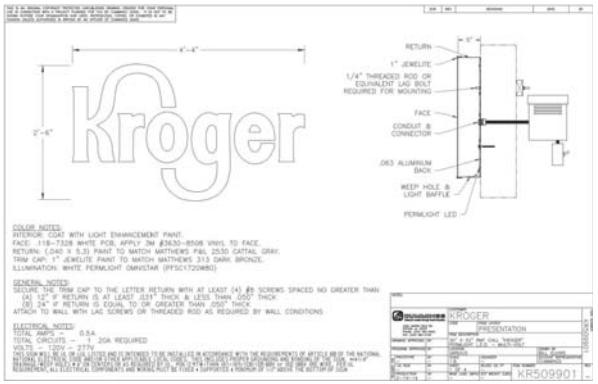

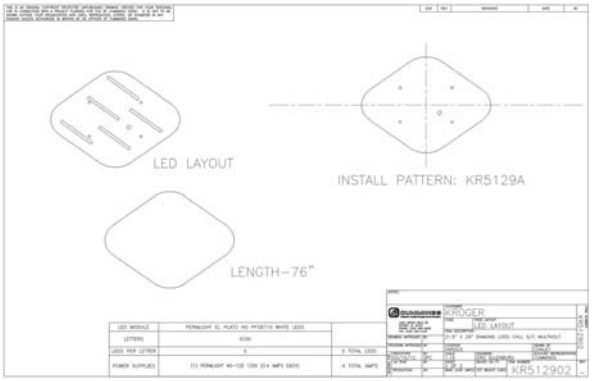

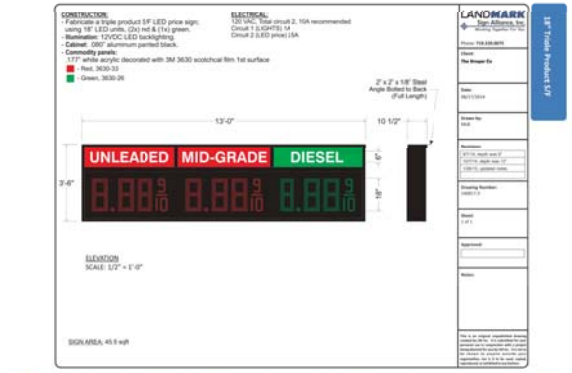

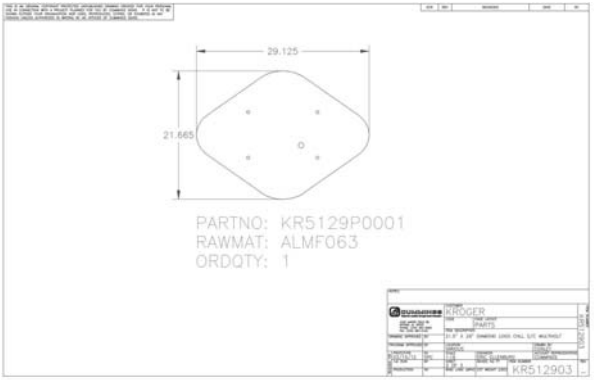

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CONSULTANT

SEAL

STATE OF MICHIGAN
TIMOTHY B. KRATZ
ENGINEER
No. 62010062109
LICENSED PROFESSIONAL ENGINEER
Feb 11, 2016

CUSTOMER

Kroger

PROJECT DESCRIPTION

KROGER D777
RETAIL FUEL CENTER

PROJECT LOCATION

315 JOE MANN BOULEVARD
MIDLAND, MI
48642
(MIDLAND COUNTY)

SHEET TITLE

SIGN DETAILS
FUEL CENTER

SHEET MANAGEMENT

PROJECT NO.:	D777.A
DATE:	10.30.2015
CAD FILE:	AG5.01.dwg
PROJECT MANAGER:	M. PISKO

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SHEET NUMBER

AG5.01

Site Plan SP #345 Date: February 17, 2016

STAFF REPORT TO THE PLANNING COMMISSION

SUBJECT:	Lucky's Steakhouse – Revised Access
APPLICANT:	D & M Site Inc. on behalf of Lucky's Steakhouse
LOCATION:	830 Joe Mann Boulevard
ZONING:	(RC) Regional Commercial
ADJACENT ZONE:	(RC) Regional Commercial
ADJACENT DEV:	North: Hotel East: Vacant land and hotel South: Automobile repair shop and vacant land West: Big box retail

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REPORT

The site plan proposes a Lucky's Steakhouse standalone restaurant of a little under 6,700 square feet on 1.59 acres. The proposal includes 84 parking spaces, of which 4 are barrier-free to meet ordinance requirements. Revised site access is proposed with a driveway directly onto Joe Mann Boulevard. Shared site access with the Residence Inn the north is proposed and internal driveway connections are included with the vacant land to the east. The restaurant will include 244 seats, with 28 of those seats being located on an outdoor patio. Substantial landscaping is also proposed. Stormwater facilities will partially utilize onsite detention as well as the existing detention pond to the north of the Residence Inn, which was originally scaled and built with development of this portion of the site in mind.

The subject property is zoned (RC) Regional Commercial by the City of Midland Zoning Ordinance. Restaurant establishments are identified as a principal permitted use in the RC district. Site plan review and approval under Section 27.02(A) of the Zoning Ordinance is required for this proposed use. Section 27.06(A) of the Zoning Ordinance states that: "The following criteria shall be used as a basis upon which site plans will be reviewed and approved:"

BASIS FOR ACTION

1. **Adequacy of Information**
   The site plan shall include all required information in sufficiently complete and understandable form to provide an accurate description of the proposed uses and structures.

   The site plan contains most of the information required for site plan approval but is deficient in the following areas, all of which are proposed as contingencies and are usually addressed at time of construction:

   - A final stormwater management plan and permit application must be approved by the City Engineering Department.
   - A final soil erosion and sedimentation control permit must be approved by the City Building Department.
   - Shared/cross access easement agreements must be submitted for review and approval by the City Planning Department and the City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval.
   - Public water utility easement documents shall be submitted for review and approval by the City Engineering Department and the City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval.
   - Private stormwater easement documents shall be executed and recorded at the Midland County Register of Deeds to safeguard the stormwater discharge main through the vacant parcel to the east.

2. **Site Design Characteristics**
   All elements of the site design shall be harmoniously and efficiently organized in relation to topography, the size and type of parcel, the character of adjoining property, and the type and size of buildings. The site shall be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted by this Ordinance.

   The proposed development design has been revised in a manner to include direct access onto Joe Mann Boulevard. A shared access connection has been included to the Residence Inn to the north and two driveway stubs have been included for future shared access to the site to the east. Proposed site landscaping has addressed and in some instances exceeded ordinance standards. Parking is compliant with ordinance requirements and appropriate provisions are proposed to meet the needs of pedestrians and bicyclists.

3. **Appearance**
   Landscaping, earth berms, fencing, signs, walls and other similar site features shall be designed and located on the site so that the proposed development is aesthetically pleasing and harmonious with nearby existing or future developments.

   The building orientation and internal layout of the parking areas are considered appropriate for the site. The proposed landscaping plan has designed appropriately for the site and its surrounding areas.

4. **Compliance with District Regulations**
The site plan shall comply with the district requirements for height of building, lot size, lot coverage, density, and all other requirements set forth in the Schedule of Regulations (Article 26.00) unless otherwise provided in this Ordinance.

The project meets all setbacks, lot area, height and other dimensional requirements for the proposed use.

5. **Preservation and Visibility of Natural Features**
Natural features shall be preserved as much as possible, by minimizing tree and soil removal alteration to the natural drainage course and the amount of cutting, filling, and grading.

Currently, this site is largely void of any substantial natural features, including mature trees. The site plan is designed in a way which minimizes soil removal and utilizes the natural drainage course with some modifications.

6. **Privacy**
The site design shall provide reasonable visual and sound privacy. Fences, walls, barriers, and landscaping shall be used, as appropriate if permitted, for the protection and enhancement of property and the safety and privacy of occupants and uses.

There are no required standards for privacy screening for this development given its location within the business district, other than the dumpster screening which as proposed meets ordinance standards. The proposed development is considered appropriate for this vehicle-oriented commercial area of the city.

7. **Emergency Vehicle Access**
All buildings or groups of buildings shall be so arranged as to permit convenient and direct emergency vehicle access.

The Fire Department has reviewed the proposed site plan for adequate emergency vehicle access and is satisfied with the plan as proposed. Adequate access exists on all sides of the proposed building and within all proposed parking areas. An additional fire hydrant has been added to the site within the right-of-way of Joe Mann Boulevard, per the request of the Fire Marshal, to ensure appropriate emergency vehicle access to the site in the event of a fire emergency.

8. **Ingress and Egress**
Every structure or dwelling unit shall be provided with adequate means of ingress and egress via public or private streets and pedestrian walkways.

Revised site access is the main change from the previous site plan approved in December 2015 for this site. The property owner has indicated that shared access from T Moore Drive, as previously approved, negatively impacts the marketability of the vacant land east of the proposed Lucky's Steakhouse restaurant. According to the property owner and his real estate broker, other businesses have indicated interest in the vacant site but expressed dissatisfaction with a shared access driveway across the front portion of the site. Therefore, they are proposing that the site plan be revised to include direct access onto Joe Mann Boulevard. The proposed driveway will service both the Lucky's restaurant and a future use when developed on the vacant property to the east.

City staff maintains the position that shared access via T Moore Drive is the most ideal means of ingress and egress to the subject site as it would not require an additional curb cut onto Joe Mann Boulevard. However, the newly proposed driveway directly onto Joe Mann Boulevard meets ordinance standards for spacing on the same side of the street. Additionally, the driveway is also proposed to be directly-aligned across the street from the existing Belle Tire driveway, meeting ordinance standards for spacing on opposite sides of the street.

The City's traffic consultant has reviewed the revised plans and is satisfied as long as the driveway matches the width of the opposing Belle Tire driveway. To address this concern, the applicant has narrowed the proposed driveway from an original width of 35' down to 28' to match the width of the Belle Tire driveway.

Subsection 27.04.B.1 of the City of Midland Zoning Ordinance states that "upon determination that a site plan is in compliance with the standards and requirements of this Ordinance and other applicable ordinances and laws, the City Council shall approve the site plan". As stated above, the proposed driveway is in compliance with the standards of the Zoning Ordinance. Staff further point out, however, that no additional driveway access to Joe Mann Blvd will be possible in compliance with those same Zoning Ordinance standards for the adjacent and vacant land to the east. Driveway access to that parcel will therefore be required to utilize the driveway proposed by this site plan. Additional site access for the adjacent vacant area will be available via T. Moore Drive, but only opposite the intersection of T. Moore Drive and Ted Doan Drive.

To ensure that shared/cross access is provided in perpetuity between all three sites (including the existing Residence Inn), easement agreements to the satisfaction of the City Planning Department and City Attorney will be required. These agreements will need to provide for permanent easements unless this requirement is waived through further site plan review and approval of the City.

9. **Pedestrian Circulation**
Each site plan shall provide a pedestrian circulation system, which is insulated as completely as is reasonably possible from the vehicular circulation system.

Adequate pedestrian walkways have been provided within the interior of the site as well as connecting to the public sidewalk along Joe Mann Boulevard. The applicant has also included a sidewalk connection to the Residence Inn to the north alongside the proposed shared access driveway, per request of the Planning Commission.

10. **Vehicular and Pedestrian Circulation Layout**
The layout of vehicular and pedestrian circulation systems shall respect the pattern of existing or planned streets or pedestrian or bicycle pathways in the vicinity of the site. The width of streets and drives shall be appropriate for the volume of traffic they will carry in accordance with subsection 3.10. In order to insure public safety and promote efficient traffic flow and turning movements, the applicant may be required to limit street access points or construct a secondary access road.

All internal driveway width standards have been met. Shared/cross access between the Residence Inn, the vacant property to the east, and the Lucky's Steakhouse site is necessary to provide adequate vehicular circulation.

11. **Parking.**
The proposed development shall provide adequate off-street parking in accordance with the requirements in Article 5.00 of this ordinance.

At this time, the parking proposed for the new development is compliant with Article 5.00 of the Zoning Ordinance. A bike rack is also proposed near the front entrance.

12. **Drainage**
The project must comply with the City's Stormwater Ordinance.

When the Residence Inn was originally designed and approved, storm water management plans called a storm water detention pond north of the hotel. This facility was designed and constructed based on an engineering assumption that up to 55% of the total site could be developed as hard surface. Total site, in this context, includes the area on which the Residence Inn has been built, the area on which this proposal has been submitted and the vacant area located immediately east of the now-proposed restaurant. Any additional hard surface area on any of these three sites will be required to provide some form of on-site storm water management.

Development of the subject parcel as proposed would cover well in excess of 55% of the property in hard surface (building, pavement, concrete walks). Additional on-site stormwater management is therefore required and is proposed in the form of surface storage in the parking areas. A shown on Sheet C3.1, the dark shaded areas generally located at each corner of the parcel and centered on the proposed catch basins, would provide this storage. City Engineering standards permit depths of up to 12 inches during a 1% storm event. The proposed storage would be no greater than 9 inches.

Identical to the previous site plan, it should be noted that the stormwater management plans submitted applies only to the subject parcel, which will be divided from the overall site upon site plan approval. At such time as any development occurs on the vacant area to the east of this site, further stormwater management calculations and plans will be required to ensure that the stormwater management capacity of the overall parcel is not exceeded. It is likely that underground storage will be required for the future development to meet required standards. As the adjacent area remains vacant at this time, however, such plans need not be addressed until further development is proposed. Consideration and approval of the current proposed plans as submitted may therefore proceed.

The City Engineering Department has reviewed the revised stormwater management plan and is satisfied with the designs as proposed. Notably, the discharge of a portion of the site to the stormwater main within the Joe Mann Boulevard right-of-way has been removed. All stormwater on the site is now directed to the north via an underground stormwater connection across the vacant parcel to the east and ultimately discharging into the stormwater main within the right-of-way of T Moore Drive. This stormwater main discharges into the pond, noted above, north of the Residence Inn.

Ultimately, a final stormwater management permit must be approved by the City's Engineering Department. Easements providing for the stormwater outlet across the vacant portion of the property will also be required. Final stormwater permitting is typically addressed at the time of construction.

13. **Soil Erosion and Sedimentation**
The proposed development shall include measures to prevent soil erosion and sedimentation during and upon completion of construction, in accordance with current State, County, and City standards.

Soil erosion and sedimentation control details have been submitted for review and approval by the City Building Department. Final design detail and permitting is typically addressed at the time of construction.

14. **Exterior Lighting**
Exterior lighting shall be designed so that it is deflected away from adjoining properties and so that it does not impede vision of drivers along adjacent streets and comply with the provisions in Section 3.12.

The applicant has submitted photometric plans and lighting fixture details that have been reviewed by city staff. The submitted plans demonstrate compliance with city standards.

15. **Public Services**
Adequate services and utilities, including water, sewage disposal, sanitary sewer, and storm water control services, shall be available or provided, and shall be designed with sufficient capacity and durability to properly serve the development. All streets and roads, water, sewer, and drainage systems, and similar facilities shall conform to the design and construction standards of the City.

As previously discussed, a final storm water management permit must be approved by the City Engineering Department. This is typically addressed at final permitting stage.

The City Fire and Utility Departments have indicated that they are satisfied with the proposed utility plans. At the request of the Fire Marshal, two fire hydrants have been added to the site to provide adequate coverage, one in the northwest corner and one within the right-of-way of Joe Mann Boulevard near the proposed driveway.

16. **Screening**
Off-street parking, loading and unloading areas, outside refuse storage areas, and other storage areas shall be screened by walls or landscaping of adequate height and shall comply with Articles 6.00 and 7.00 of this Ordinance. All roof-top mechanical equipment shall be screened from view from all residential districts and public roadways.

The proposed dumpster screening fully meets the City's screening requirements. There are no other screening requirements for the development.

17. **Health and Safety Concerns**
Any use in any zoning district shall comply with all applicable public health, pollution, and safety laws and regulations.

No health and safety concerns have been identified.

18. **Sequence of Development**
All development phases shall be designed in logical sequence to insure that each phase will independently function in a safe, convenient and efficient manner without being dependent upon subsequent improvements in a later phase or on other sites.

The applicant has indicated that this will be built in one phase.

19. **Coordination with Adjacent Sites**
All site features; including circulation, parking, building orientation, landscaping, lighting, utilities, common facilities, and open space shall be coordinated with adjacent properties.

Construction of the proposed access drives will require coordination with the adjoining development and the future development site. The subject site and the surrounding lands are currently under common ownership.

20. **Signs.**
All proposed signs shall be in compliance with the regulations in Article 8.00 of this Ordinance

No specific signage is proposed with this project but location of the proposed ground sign has been given. Signage will be required to comply with city standards and will be permitted through the signage permitting process administered by the City Building Department.

CONTINGENCY ITEMS

Based on consideration of the site plan thus far, staff is of the opinion that the proposal adequately meets city requirements and is designed in a manner which is harmonious with the campus. That said, however, approval of the site plan could be considered subject to the following contingencies:

1. A final stormwater management permit must be approved by the City Engineering Department.
2. A final soil and sedimentation control plan must be approved by the City Building Department.
3. Shared/cross access easement agreements must be submitted for review and approval to the City Planning Department and the City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval,
4. Public water utility easement documents shall be submitted for review and approval by the City Engineering Department and the City Attorney, and executed and recorded at the Midland County Register of Deeds upon approval.
5. Private stormwater easement documents shall be executed and recorded at the Midland County Register of Deeds to safeguard the stormwater discharge main through the vacant parcel to the east.

PLANNING COMMISSION ACTION

Staff currently anticipates that the Planning Commission will hold a public hearing on this request during its regular meeting on February 23, 2016 and will formulate a recommendation to City Council thereafter. If recommended to City Council the same evening, we anticipate that on February 29, 2016 the City Council will consider the site plan and Planning Commission

recommendation. Please note that these dates are merely preliminary and may be adjusted due to Planning Commission action and City Council agenda scheduling.

Respectfully Submitted,

C. Bradley Kaye

C. Bradley Kaye, AICP
Director of Planning and Community Development

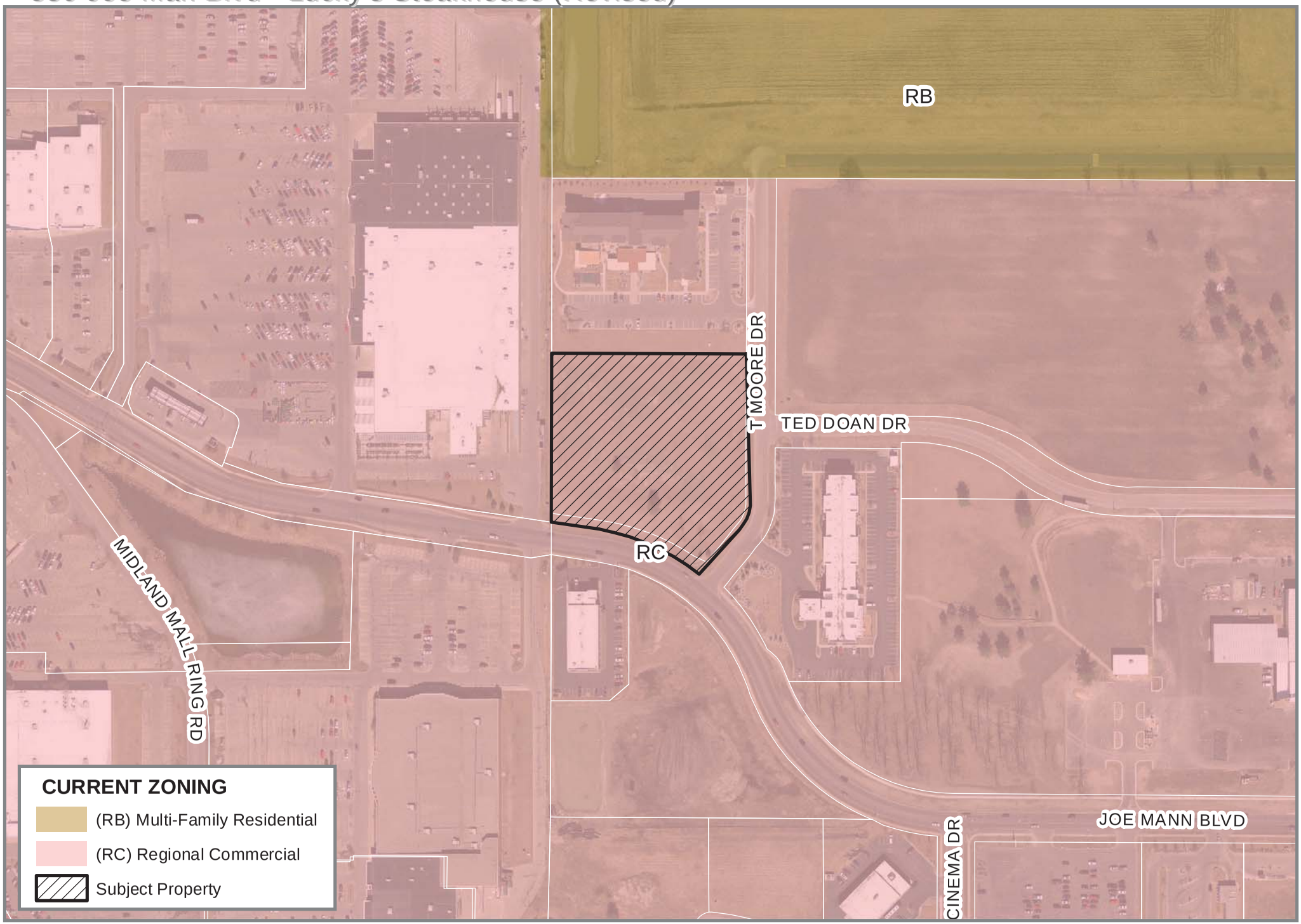
/grm

SP #345 - D & M Site, Inc.

> 830 Joe Man Blvd - Lucky's Steakhouse (Revised)

SP #345 - D & M Site, Inc.

> 830 Joe Man Blvd - Lucky's Steakhouse (Revised)



LUCKY'S STEAKHOUSE

JOE MANN BLVD.

SECTION 33, TOWN 15 NORTH, RANGE 2 EAST
CITY OF MIDLAND, MIDLAND COUNTY, MICHIGAN

OWNER

LUCKY'S RESTAURANT
5291 BARRINGTON DRIVE
ROCHESTER, MI. 48306

CONTACT: LUCKY VASILAKIS
PHONE: (248) 379-2106
EMAIL: seros117@comcast.net

CIVIL ENGINEER

D&M SITE, INC
401 BALSAM STREET
P.O. BOX 159
CARROLLTON, MI 48724

JOHN D MOREY
PHONE: (989) 752-6500
EMAIL: jmorey@dandmsite.com

LEGEND

	MONUMENT / SECTION CORNER
	FOUND PROPERTY IRON
	SET PROPERTY IRON
	EXISTING CATCHBASIN
	PROPOSED CATCHBASIN
	EXISTING MANHOLE/CATCHBASIN
	PROPOSED MANHOLE/CATCHBASIN
	EXISTING MANHOLE
	PROPOSED MANHOLE
	PROPOSED HYDRANT
	EXISTING HYDRANT
	PROPOSED VALVE
	EXISTING VALVE
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	EXISTING STORM SEWER
	PROPOSED WATERMAIN
	PROPOSED STORM SEWER
	EXISTING WATERMAIN
	EXISTING LIGHT POLES
	PROPOSED LIGHT POLES
	PROPOSED ASPHALT
	PROPOSED CONCRETE
	EXISTING CONCRETE SURFACE
	EXISTING BIT SURFACE
	EXISTING FENCE LINE
	UNDERGROUND ELECTRIC LINE
	UNDERGROUND GAS LINE
	UNDERGROUND TELEPHONE LINE
	UNDERGROUND CABLE T.V. LINE
	OVERHEAD ELECTRICAL WIRES
	EXISTING DECIDUOUS TREES
	EXISTING CONIFEROUS TREES
	EXISTING SIGN
	EXISTING UTILITY POWER POLE
	EXISTING TELEPHONE RISER
	PROPOSED FLOW ARROW
	PROPOSED CONTOURS
	PROPOSED MODIFIED CURB AND GUTTER
TC 647.0	PROPOSED TOP OF CURB ELEVATION
FS 646.9	PROPOSED FINISH SURFACE ELEVATION
TW 646.9	PROPOSED TOP OF WALK ELEVATION

BENCHMARKS

B.M. #1 - TOP OF RIM ON MANHOLE AT THE SOUTHEAST CORNER OF JOE MANN BLVD. AND ACCESS DRIVE.
CITY OF MIDLAND ELEV. 637.13

B.M. #2 - ARROW ON HYDRANT LOCATED AT THE NORTHWEST CORNER OF PROPERTY.
CITY OF MIDLAND ELEV. 640.50

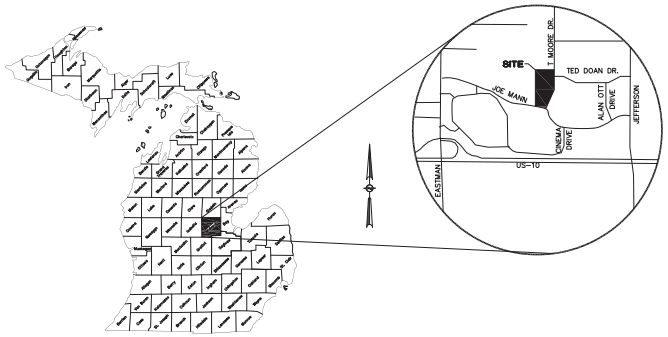
B.M. #3 - TOP OF NUT ON HYDRANT LOCATED AT THE NORTHEAST CORNER OF PROPERTY.
CITY OF MIDLAND ELEV. 643.80

B.M. #4 - TOP OF NUT ON HYDRANT LOCATED NORTH OF THE NORTH PROPERTY PROPERTY LINE.
CITY OF MIDLAND ELEV. 645.31

B.M. #5 - TOP OF NUT ON HYDRANT LOCATED AT THE SOUTHEASTERLY CORNER OF PROPERTY.
CITY OF MIDLAND ELEV. 643.04

FLOODPLAIN INFORMATION

CITY OF MIDLAND – COMMUNITY NUMBER 260140
COUNTY OF MIDLAND, MICHIGAN
MAP NUMBER: 26111C0186E (PANEL NOT PRINTED)



LOCATION MAP
NOT TO SCALE

DRAWING INDEX

C1.0 COVER SHEET
C2.0 TOPOGRAPHIC SURVEY
C3.0 SITE PLAN
C3.1 GRADING
C3.2 UTILITY PLAN
C3.3 SOIL EROSION SEDIMENTATION CONTROL PLAN
C4.0 DETAIL SHEET
C4.1 DETAIL SHEET
C5.0 PHOTOMETRIC PLAN
A1 FLOOR PLAN
A2 PROPOSED ELEVATIONS
L1 LANDSCAPE PLAN
L2 LANDSCAPE DETAILS

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

UTILITY NOTE

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ZONING INFORMATION

ZONED - RC - (REGIONAL COMMERCIAL DISTRICT)

REQUIRED:	PROVIDED:
LOT MINIMUM:	**LOT MINIMUM:**
AREA: – NONE	AREA: – 1.59 ACRES
WIDTH: – NONE	WIDTH: – 200'
MAX HEIGHT:	**MAX HEIGHT:**
FEET: – NONE	FEET: – 26'-8"
SETBACKS:	**SETBACKS:**
FRONT: – 25'	FRONT: – 25'
REAR: – 0'	REAR: – 0'
SIDE: – 0'	SIDE: – 0'

UTILITY CONTACTS

TELEPHONE
AT & T
c/o ENGINEERING DEPARTMENT
ROOM 525A
309 S. WASHINGTON AVE.
SAGINAW, MICHIGAN 48607
ROB AUGUSTINE
(989) 771-5404

GAS AND ELECTRIC
CONSUMERS ENERGY
2400 WOISS STREET
SAGINAW, MICHIGAN 48602
KEVIN COUTURIER – GAS DIV.
(989) 791-5885
GREG SQUANDA ELEC. DIV.
(989) 791-5353

ZONING
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
(989) 837-3300

WATER DEPT.
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
ANDY PARROT
(989) 837-3348

WASTE WTR. DEPT.
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
STEVE SMITH
(989) 837-3504

ENGINEERING DEPT.
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
JOSH FEDRICKSON
(989) 837-3352

SIGNS AND SIGNALS
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
JEFF MURPHY
(989) 837-3354

CABLE TELEVISION
CHARTER COMMUNICATIONS
MARK KELLY
(989) 233-9404

STORM SEWER
MIDLAND COUNTY ROAD COMM.
ENGINEERING DEPT.
2334 NORTH MERIDIAN RD.
MIDLAND, MICHIGAN 48657
(989) 687-9060

DRAIN
MIDLAND COUNTY DRAIN COMM.
ENGINEERING DEPT.
220 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
(989) 832-6770

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

SIMIT	9-30-15
PLANNING COMMISSION SUBMITTAL	11-3-15
REVISED - ADDED JOE MANN	11-20-15
PLANNING COMMISSION RESUBMITTAL	11/30/15
REVISED - ADDED JOE MANN ACCESS	1/7/16
REVISED - ADDED JOE MANN ACCESS	1/27/16
CITY OF MIDLAND PC RESUBMITTAL – NEW DRIVE	1/29/16
CITY OF MIDLAND PC RESUBMITTAL	2/16/16
CONDITIONAL SUBMITTAL	2/17/16

FILE: 2015-358_REV_1-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: M.M.D.
CHECKED BY:
SCALE:
SHEET: 1 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASILAKIS
5291 BARRINGTON DRIVE
ROCHESTER, MI. 48306
(248) 379-2106

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T15N-R2E
CITY OF MIDLAND
MIDLAND COUNTY, MI

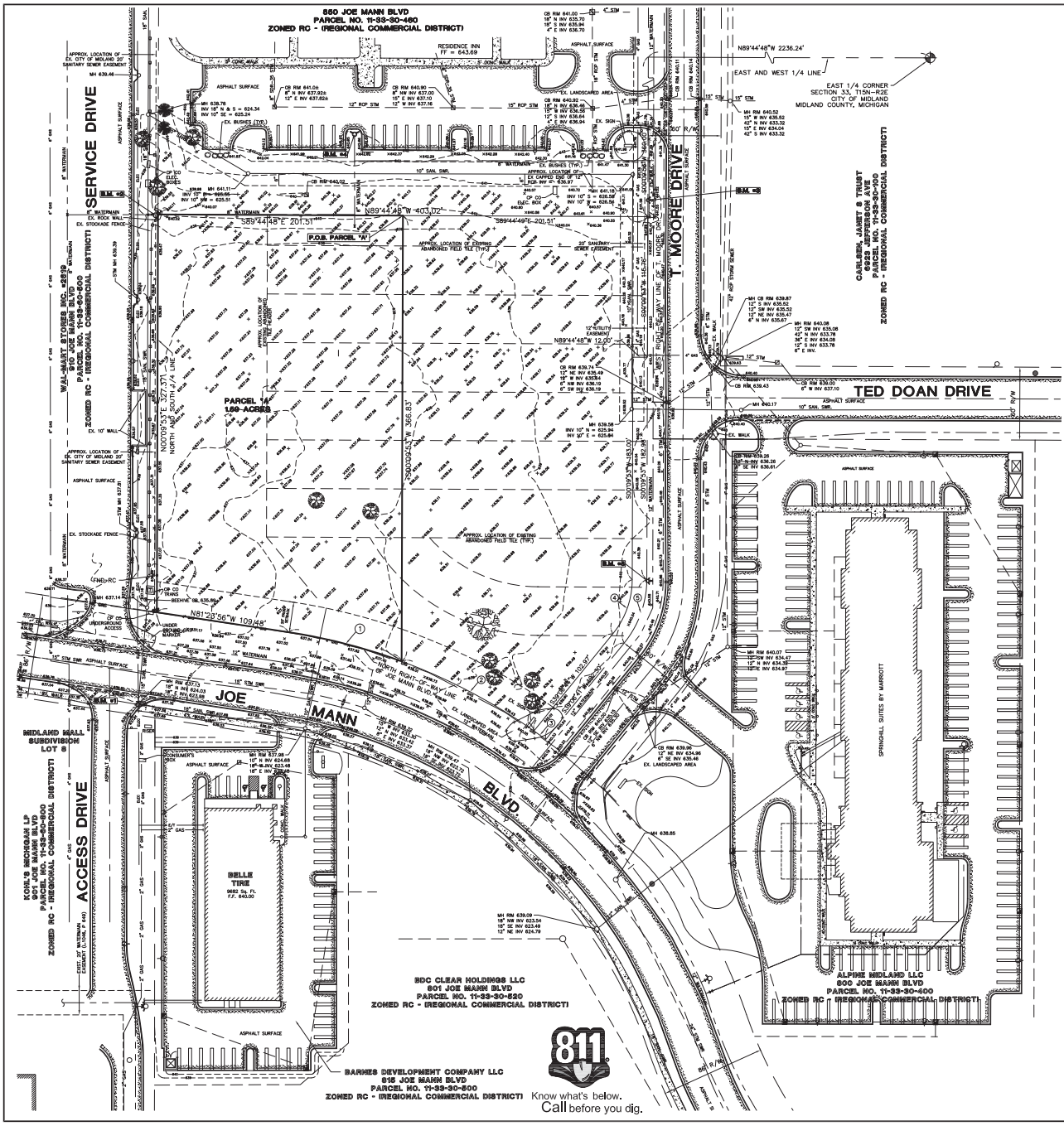
COVER SHEET

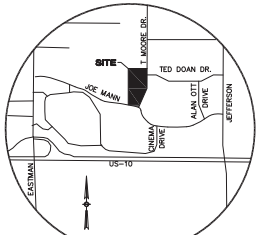
D&M SITE INC.
Surveying · Inspection · Testing · Engineering
401 BALSAM STREET PO BOX 159, CARROLLTON, MICHIGAN 48724
PHONE (989) 752-6500 FAX (989) 752-6600

C1.0

2015.358

(24X36 - 10-29-14)
D AND M SITE
NOT PUBLISHED - ALL RIGHTS RESERVED





LOCATION MAP

NOT TO SCALE

LEGEND

	MONUMENT / SECTION CORNER
	FOUND PROPERTY IRON
	SET PROPERTY IRON
	EXISTING CATCHBASIN
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	EXISTING HYDRANT
	EXISTING VALVE
SAN	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATERMAIN
X X	EXISTING FENCE LINE
CATV	EXISTING UNDERGROUND ELECTRIC LINE
GAS	EXISTING UNDERGROUND GAS LINE
TELE	EXISTING UNDERGROUND TELEPHONE LINE
	EXISTING CENTERLINE
// //	EXISTING OVERHEAD ELECTRICAL WIRES
	EXISTING MAILBOX / NEWSPAPER BOX
	EXISTING SIGN
	EXISTING DECIDUOUS TREES
	EXISTING CONIFEROUS TREES
	EXISTING UTILITY POWER POLE
	EXISTING TELEPHONE RISER
	EXISTING CONCRETE SURFACE
	EXISTING BIT SURFACE

CURVE TABLE

NO.	CHD. BRG.	CHD.	ARC	RADIUS	DELTA ANGLE
1	N75°33'48"W	96.18'	96.35'	473.00'	11°40'16"
2	N62°15'32"W	122.97'	123.32'	473.00'	14°56'17"
3	N54°03'42"W	12.02'	12.02'	473.00'	1°27'22"
4	S19°38'18"W	47.34'	48.26'	71.00'	38°56'53"
5	S19°38'18"W	55.34'	56.42'	83.00'	38°56'53"

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(989) 832-6770

ZONING INFORMATION

ZONED - RC - (REGIONAL COMMERCIAL DISTRICT)

LOT MINIMUM:
AREA:- NONE
WIDTH:- NONE

MAX HEIGHT:
FEET:- NONE

SETBACKS:
FRONT:- 25'
REAR:- 0'
SIDE:- 0'

FURNISHED LEGAL DESCRIPTIONS

PARCEL A DESCRIPTION:
A PARCEL OF LAND IN SOUTHEAST 1/4 OF SECTION 33, T.15N.-R.2E., CITY OF MIDLAND, MIDLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS: TO FIX THE POINT OF BEGINNING COMMENCE AT THE EAST 1/4 CORNER OF SAID SECTION 33, N. 89°-44'-48" W., ON THE EAST AND WEST 1/4 LINE OF SAID SECTION, 2236.24 FEET TO THE INTERSECTION OF SAID EAST AND WEST 1/4 LINE WITH THE WEST RIGHT-OF-WAY LINE OF T. MOORE DRIVE (SO-CALLED); THENCE S. 00°-09'-53" W., ON AND ALONG SAID WEST RIGHT-OF-WAY LINE, 360.00 FEET; THENCE N. 89°-44'-48" W., PARALLEL WITH SAID EAST AND WEST 1/4 LINE, 201.51 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION: THENCE S. 00°-09'-53" W., PARALLEL WITH THE NORTH AND SOUTH 1/4 LINE, 366.83 FEET TO A POINT ON A 473.00 FOOT RADIUS CURVE, BEING THE NORTH RIGHT-OF-WAY LINE OF JOE-MANN BOULEVARD; THENCE NORTHWESTERLY ON AND ALONG THE ARC OF SAID CURVE AND SAID NORTH RIGHT-OF-WAY LINE, 96.35 FEET TO THE POINT OF TANGENCY, SAID ARC BEING SUBTENDED BY A CHORD BEARING N. 75°-33'-48" W., 96.18 FEET TO SAID POINT OF TANGENCY; THENCE CONTINUING ALONG SAID NORTH RIGHT-OF-WAY LINE OF SAID JOE-MANN BOULEVARD N. 81°-23'-56" W., 109.48 FEET TO THE INTERSECTION OF SAID NORTH RIGHT-OF-WAY LINE OF JOE-MANN BOULEVARD AND NORTH AND SOUTH 1/4 LINE; THENCE N. 00°-09'-53" E., ON AND ALONG SAID NORTH AND SOUTH 1/4 LINE, 327.37 FEET; THENCE S. 89°-44'-48" E., PARALLEL WITH SAID EAST AND WEST 1/4 LINE, 201.51 FEET BACK TO THE POINT OF BEGINNING, CONTAINING 1.59 ACRES OF LAND AND BEING SUBJECT TO AND TOGETHER WITH EASEMENTS AND/OR RESTRICTIONS OF RECORD.

CERTIFICATION

I, BRIAN D FERGUSON A PROFESSIONAL SURVEYOR, BEING DULY LICENSED BY THE STATE OF MICHIGAN, DO HEREBY CERTIFY THAT I HAVE CAUSED THE PROPERTY HEREON SHOWN, TO BE SURVEYED AND MAPPED IN ACCORDANCE WITH ALL LOCAL AND STATE ACCEPTED PRACTICES FOR THE ACCURACY OF A SURVEY OF THIS TYPE. I ALSO CERTIFY THAT THE EXISTING CONDITIONS OF THE PROPERTY ARE AS SHOWN HEREON.

BRIAN D FERGUSON, PS #26454 DATE

BENCHMARKS

B.M. #1 - TOP OF RIM ON MANHOLE AT THE SOUTHEAST CORNER OF JOE MANN BLVD. AND ACCESS DRIVE.
CITY OF MIDLAND ELEV. 637.13

B.M. #2 - ARROW ON HYDRANT LOCATED AT THE NORTHWEST CORNER OF PROPERTY.
CITY OF MIDLAND ELEV. 640.50

B.M. #3 - TOP OF NUT ON HYDRANT LOCATED AT THE NORTHEAST CORNER OF PROPERTY.
CITY OF MIDLAND ELEV. 643.80

B.M. #4 - TOP OF NUT ON HYDRANT LOCATED NORTH OF THE NORTH PROPERTY PROPERTY LINE.
CITY OF MIDLAND ELEV. 645.31

B.M. #5 - TOP OF NUT ON HYDRANT LOCATED AT THE SOUTHEASTERLY CORNER OF PROPERTY.
CITY OF MIDLAND ELEV. 643.04

FLOODPLAIN INFORMATION

CITY OF MIDLAND - COMMUNITY NUMBER 260140
COUNTY OF MIDLAND, MICHIGAN
MAP NUMBER: 26111C0186E (PANEL NOT PRINTED)

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

START	9-25-15
PLANNING COMMISSION SUBMITTAL	11-13-15
STORMWATER SUBMITTAL	11-20-15
PLANNING COMMISSION RESUBMITTAL	1/26/16
REVISED 1 MOORE DR ACCESS	1/27/16
REVISED - ADDED JOE MANN ACCESS	1/28/16
REVISED - ADDED ALAN OTT DRIVE	2/01/16
PLANNING COMMISSION RESUBMITTAL	2/11/16
STORMWATER SUBMITTAL	2/15/16

FILE: 2015-358.REV_I-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: MJMcD.
CHECKED BY:
SCALE: 1"=40'
SHEET: 2 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASLAKIS
800 WASHINGTON DRIVE
ROCHESTER, MI 48306
(248) 379-2006

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T15N-R2E
CITY OF MIDLAND
MIDLAND COUNTY, MI

TOPOGRAPHIC SURVEY

D&M SITE INC.
Surveying.Inspection.Testing.Engineering
401 BALSAM STREET PO BOX 159, CARROLLTON, MICHIGAN 48724
PHONE (989) 752-6530 FAX (989) 752-6600

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(24X36TB - 10-29-04)
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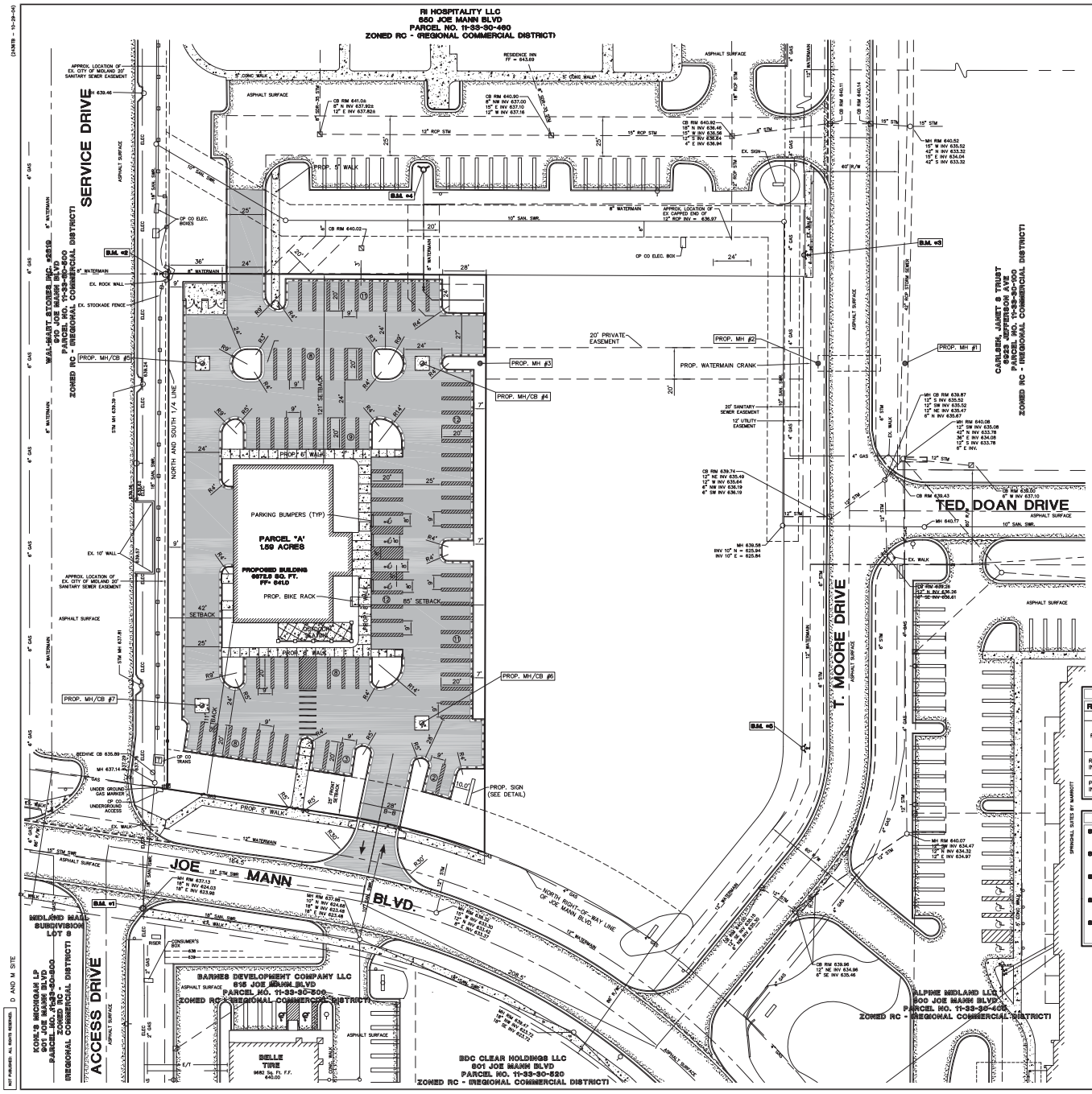

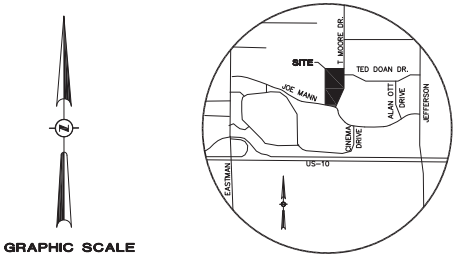

LOCATION MAP

NOT TO SCALE

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 60 ft.

LEGEND

	MONUMENT / SECTION CORNER
	FOUND PROPERTY IRON
	SET PROPERTY IRON
	EXISTING CATCHBASIN
	PROPOSED CATCHBASIN
	EXISTING MANHOLE/CATCHBASIN
	PROPOSED MANHOLE/CATCHBASIN
	EXISTING MANHOLE
	PROPOSED MANHOLE
	PROPOSED HYDRANT
	EXISTING HYDRANT
	PROPOSED VALVE
	EXISTING VALVE
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	EXISTING STORM SEWER
	PROPOSED WATERMAIN
	PROPOSED STORM SEWER
	EXISTING WATERMAIN
	EXISTING LIGHT POLES
	PROPOSED LIGHT POLES
	PROPOSED ASPHALT
	PROPOSED CONCRETE
	EXISTING CONCRETE SURFACE
	EXISTING BIT SURFACE
	EXISTING FENCE LINE
	UNDERGROUND ELECTRIC LINE
	UNDERGROUND GAS LINE
	UNDERGROUND TELEPHONE LINE
	UNDERGROUND CABLE T.V. LINE
	OVERHEAD ELECTRICAL WIRES
	EXISTING DECIDUOUS TREES
	EXISTING CONIFEROUS TREES
	EXISTING SIGN
	EXISTING UTILITY POWER POLE
	EXISTING TELEPHONE RISER
	PROPOSED FLOW ARROW
647	PROPOSED CONTOURS
	PROPOSED MODIFIED CURB AND GUTTER
TC 647.0	PROPOSED TOP OF CURB ELEVATION
FS 646.9	PROPOSED FINISH SURFACE ELEVATION
TW 646.9	PROPOSED TOP OF WALK ELEVATION

PARKING

REQUIRED NUMBER OF PARKING SPACES:

LAND USE	REQUIREMENT	# OF SEATS	# OF EMPLOYEES
RESTAURANT	1 SPACE PER 4 SEATS + 1 SPACE PER EMPLOYEE	244 SEATS	20 PER SHIFT

REQUIRED NUMBER OF PARKING SPACES: 81 PARKING SPACES, INCLUDING 4 ADA SPACES

PROVIDED NUMBER OF PARKING SPACES: 84 PARKING SPACES, INCLUDING 4 ADA SPACES

BENCHMARKS

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CITY OF MIDLAND ELEV. 637.13

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CITY OF MIDLAND ELEV. 643.04

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ZONING INFORMATION

ZONED - RC - (REGIONAL COMMERCIAL DISTRICT)

REQUIRED:
LOT MINIMUM:
AREA:- NONE
WIDTH:- NONE
MAX HEIGHT:
FEET:- NONE
SETBACKS:
FRONT:- 25'
REAR:- 0'
SIDE:- 0'

PROVIDED:
LOT MINIMUM:
AREA:- 1.59 ACRES
WIDTH:- 200'
MAX HEIGHT:
FEET:- 26'-8"
SETBACKS:
FRONT:- 25'
REAR:- 0'
SIDE:- 0'

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

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

FILE: 2015-358.REV_I-7-16	
PROJECT MGR: JDM	
DESIGNED BY: SAL	
DRAWN BY: MAHD.	
CHECKED BY:	
SCALE: 1"=30'	
SHEET: 3 OF 13	

DATE	
8-25-15	PLANNING COMMISSION SUBMITTAL
11-13-15	STORMWATER SUBMITTAL
11-20-15	PLANNING COMMISSION SUBMITTAL
12-18-15	REVISED - ACCESS DRIVE
1/7/16	PLANNING COMMISSION SUBMITTAL
1/18/16	REVISED - ACCESS JOE MANN, ACCESS DRIVE, & PARKING LOT LAYOUT
2/11/16	PLANNING COMMISSION SUBMITTAL
2/15/16	STORMWATER SUBMITTAL

LUCKY'S STEAKHOUSE
LUCKY VASILAKIS
800 BARNETTON DRIVE
ROCHESTER HILLS, MI 48309
(248) 379-2006

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T15N-R2E
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MIDLAND COUNTY, MI

SITE PLAN

D&M SITE INC.
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PHONE (989) 752-6550 • FAX (989) 752-6600

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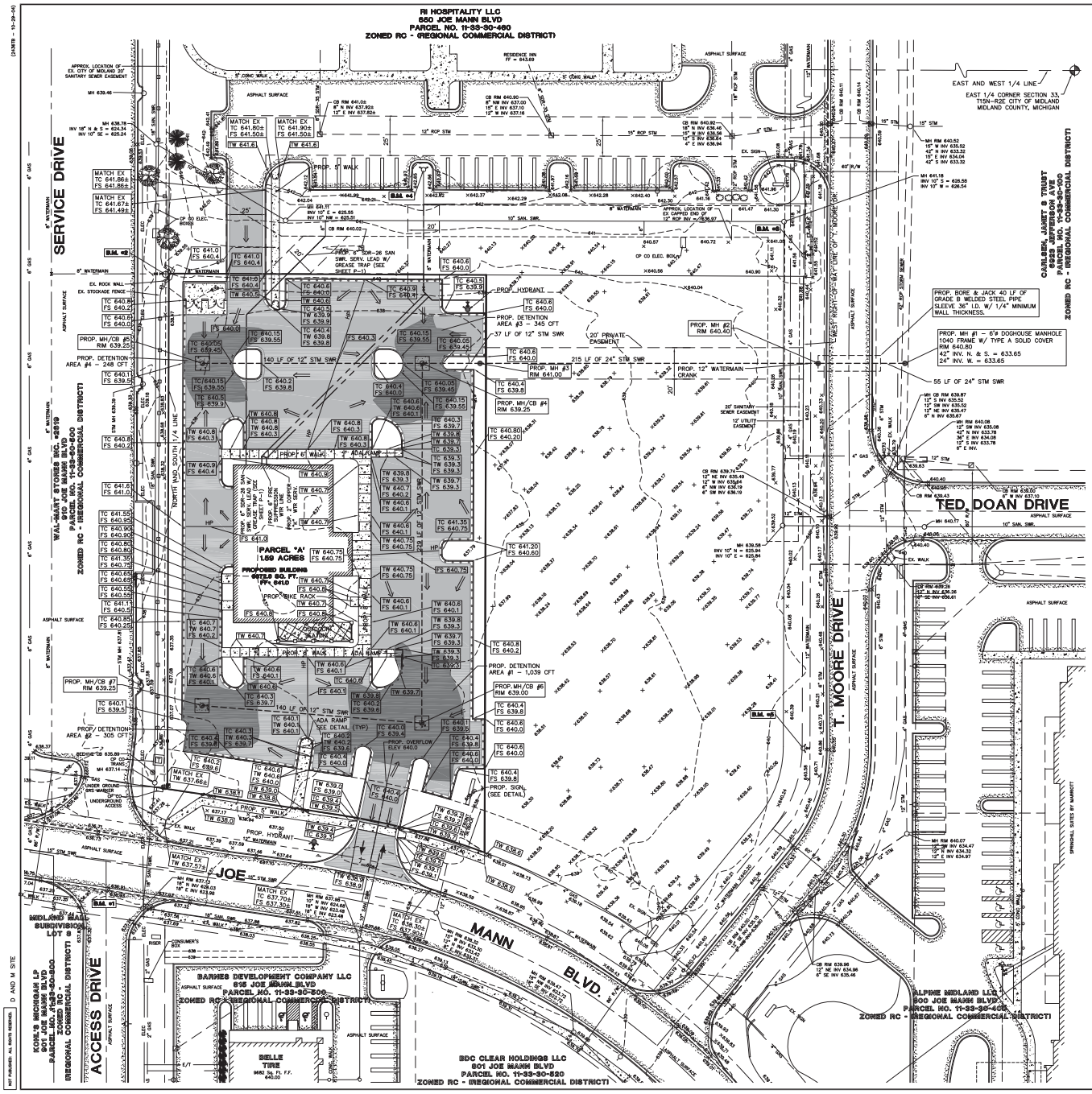


GRAPHIC SCALE

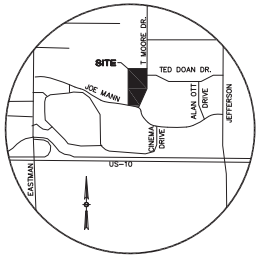
0 15 30 60

(IN FEET)
1 inch = 30 ft.

Know what's below.
Call before you dig.

LOCATION MAP

NOT TO SCALE



LEGEND

	MONUMENT / SECTION CORNER
	FOUND PROPERTY IRON
	SET PROPERTY IRON
	EXISTING CATCHBASIN
	PROPOSED CATCHBASIN
	EXISTING MANHOLE/CATCHBASIN
	PROPOSED MANHOLE/CATCHBASIN
	EXISTING MANHOLE
	PROPOSED MANHOLE
	PROPOSED HYDRANT
	EXISTING HYDRANT
	PROPOSED VALVE
	EXISTING VALVE
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	EXISTING STORM SEWER
	PROPOSED WATERMAIN
	PROPOSED STORM SEWER
	EXISTING WATERMAIN
	EXISTING LIGHT POLES
	PROPOSED LIGHT POLES
	PROPOSED ASPHALT
	PROPOSED CONCRETE
	EXISTING CONCRETE SURFACE
	EXISTING BIT SURFACE
	EXISTING FENCE LINE
E	UNDERGROUND ELECTRIC LINE
G	UNDERGROUND GAS LINE
T	UNDERGROUND TELEPHONE LINE
TV	UNDERGROUND CABLE T.V. LINE
OHW	OVERHEAD ELECTRICAL WIRES
	EXISTING DECIDUOUS TREES
	EXISTING CONIFEROUS TREES
	EXISTING SIGN
	EXISTING UTILITY POWER POLE
	EXISTING TELEPHONE RISER
	PROPOSED FLOW ARROW
647	PROPOSED CONTOURS
	PROPOSED MODIFIED CURB AND GUTTER
TC 647.0	PROPOSED TOP OF CURB ELEVATION
FS 646.9	PROPOSED FINISH SURFACE ELEVATION
TW 646.9	PROPOSED TOP OF WALK ELEVATION

UTILITY CONTACTS

TELEPHONE
AT & T
c/o ENGINEERING DEPARTMENT
ROOM 525A
309 S. WASHINGTON AVE.
SAGINAW, MICHIGAN 48607
ROB AUGUSTINE
(989) 771-5404

GAS AND ELECTRIC
CONSUMERS ENERGY
2400 WEISS STREET
SAGINAW, MICHIGAN 48602
KEVIN COUTURIER - GAS DIV.
(989) 791-5885
GREG SQUANDA ELEC. DIV.
(989) 791-5353

ZONING
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
(989) 837-3300

WATER DEPT.
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
ANDY PARROT
(989) 837-3348

WASTE WTR. DEPT.
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
STEVE SMITH
(989) 837-3504

ENGINEERING DEPT.
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
JOSH FEDRICKSON
(989) 837-3352

SIGNS AND SIGNALS
CITY OF MIDLAND
333 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
JEFF MURPHY
(989) 837-3354

CABLE TELEVISION
CHARTER COMMUNICATIONS
MARK KELLY
(989) 233-9404

STORM SEWER
MIDLAND COUNTY ROAD COMM.
ENGINEERING DEPT.
2334 NORTH MERIDIAN RD.
MIDLAND, MICHIGAN 48657
(989) 687-9060

DRAIN
MIDLAND COUNTY DRAIN COMM.
ENGINEERING DEPT.
220 W. ELLSWORTH ST.
MIDLAND, MICHIGAN 48640
(989) 832-6770

BENCHMARKS

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CITY OF MIDLAND ELEV. 637.13

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CITY OF MIDLAND ELEV. 645.31

B.M. #5 - TOP OF NUT ON HYDRANT LOCATED AT THE SOUTHEASTERLY CORNER OF PROPERTY.
CITY OF MIDLAND ELEV. 643.04

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

DATE	
4-25-15	PLANNING COMMISSION SUBMITTAL
11-13-15	STORMWATER SUBMITTAL
11-20-15	PLANNING COMMISSION RESUBMITTAL
1/08/16	REVISED 1 MOORE DR ACCESS
1/27/16	REVISED - ADDED JOE MANN ACCESS
1/28/16	REVISED - ADDED ACCESS DRIVE, NEW DRIVE
2/01/16	PLANNING COMMISSION RESUBMITTAL
2/10/16	STORMWATER SUBMITTAL

FILE: 2015-358.REV_1-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: MJMcG.
CHECKED BY:
SCALE: 1"=30'
SHEET: 4 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASLAKIS
800 WASHINGTON DRIVE
ROCHESTER, MICHIGAN 48309
(248) 979-2006

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JOE MANN BLVD.
SECTION 33, T15N-R2E
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GRADING PLAN

D&M SITE INC.
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PHONE (989) 752-6550 • FAX (989) 752-6600

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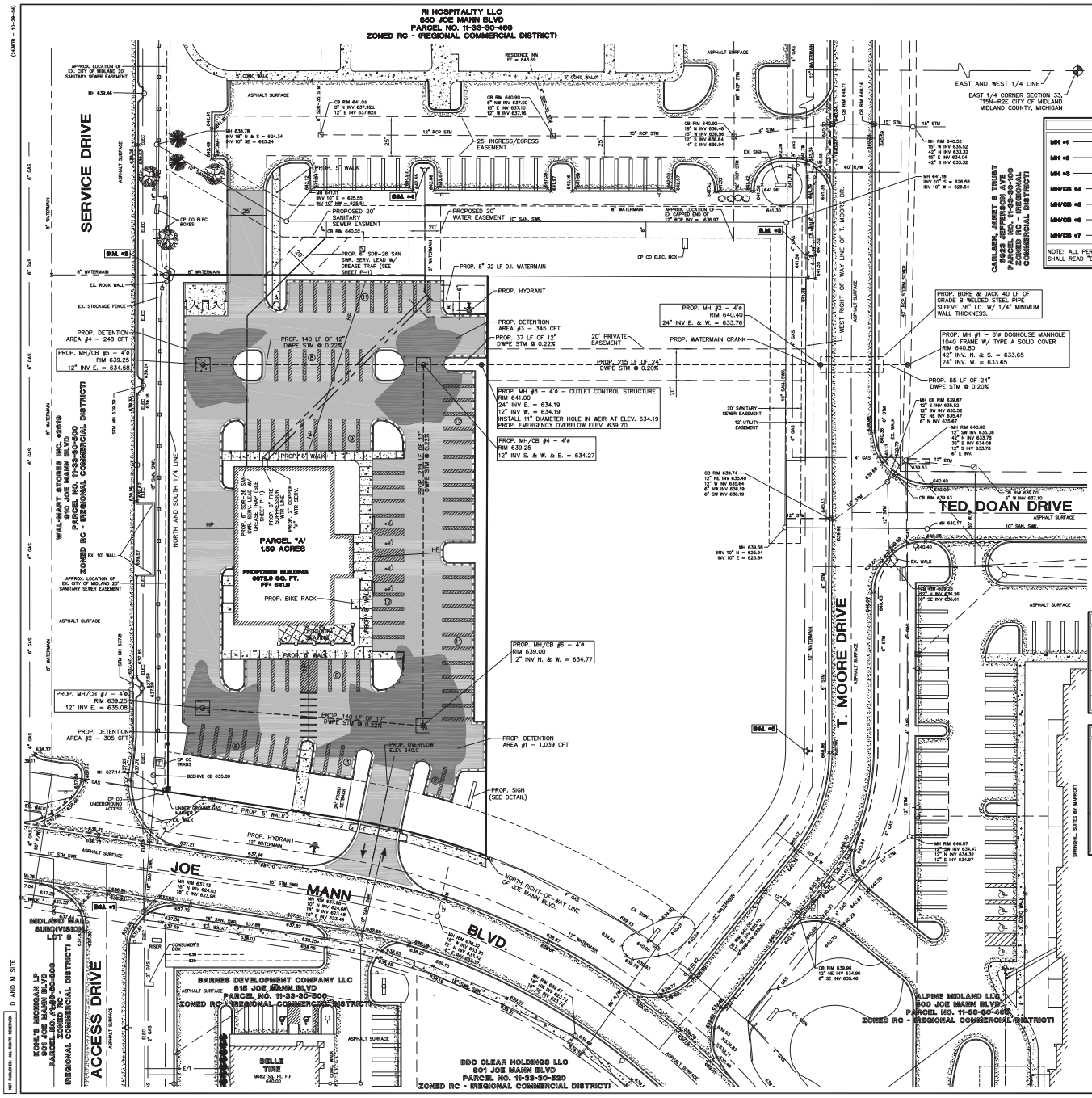


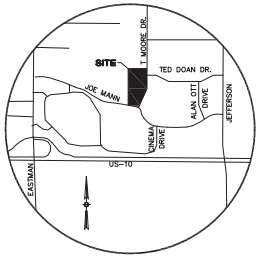
MANHOLE / CATCHBASIN NOTE

MH #1	1040 FRAME W/ TYPE A SOLID COVER
MH #2	1040 FRAME W/ TYPE A SOLID COVER
MH #3	NO FRAME W/ TYPE N OVAL GRATE
MH/CB #4	1040 FRAME W/ TYPE M1 FLAT GRATE
MH/CB #5	1040 FRAME W/ TYPE M1 FLAT GRATE
MH/CB #6	1040 FRAME W/ TYPE M1 FLAT GRATE
MH/CB #7	1040 FRAME W/ TYPE M1 FLAT GRATE

NOTE: ALL PERMANENT CASTINGS SHALL READ "DUMP NO WASTE"

LOCATION MAP

NOT TO SCALE



LEGEND

	MONUMENT / SECTION CORNER
	FOUND PROPERTY IRON
	SET PROPERTY IRON
	EXISTING CATCHBASIN
	PROPOSED CATCHBASIN
	EXISTING MANHOLE/CATCHBASIN
	PROPOSED MANHOLE/CATCHBASIN
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	PROPOSED MANHOLE
	PROPOSED HYDRANT
	EXISTING HYDRANT
	PROPOSED VALVE
	EXISTING VALVE
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	EXISTING STORM SEWER
	PROPOSED WATERMAIN
	PROPOSED STORM SEWER
	EXISTING WATERMAIN
	EXISTING LIGHT POLES
	PROPOSED LIGHT POLES
	PROPOSED ASPHALT
	PROPOSED CONCRETE
	EXISTING CONCRETE SURFACE
	EXISTING BIT SURFACE
	EXISTING FENCE LINE
	UNDERGROUND ELECTRIC LINE
	UNDERGROUND GAS LINE
	UNDERGROUND TELEPHONE LINE
	UNDERGROUND CABLE T.V. LINE
	OVERHEAD ELECTRICAL WIRES
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647	PROPOSED CONTOURS
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TC 647.0	PROPOSED TOP OF CURB ELEVATION
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TW 646.9	PROPOSED TOP OF WALK ELEVATION

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

PROPOSED ON SITE DETENTION

DETENTION AREA VOLUME #1 -	1,039 CFT
DETENTION AREA VOLUME #2 -	305 CFT
DETENTION AREA VOLUME #3 -	345 CFT
DETENTION AREA VOLUME #4 -	248 CFT
PIPE VOLUME -	429 CFT
STRUCTURE VOLUME -	227 CFT
TOTAL VOLUME -	2,593 CFT

BORE AND JACK NOTE

THE STORM WATER CASING SHALL CONSIST OF FURNISHING AND PLACING A 30" EPOXY COATED STEEL CASING PIPE WITH A MINIMUM WALL THICKNESS OF 1/4 (0.25) INCH 5' BEHIND THE CURB ON EACH SIDE OF THE ROADWAY. ALL JOINTS ON THE CASING PIPE SHALL BE WELDED. THE BORE PIT SHALL BE PROTECTED WITH STEEL SHEET PILING TO MINIMIZE DAMAGE TO TEH SURROUNDING AREAS. THE BORING SHALL BE COMPLETED IN ACCORDANCE WITH M.D.O.T. "PROVISIONS FOR BORE AND JACK CONSTRUCTION IN CONNECTION WITH PERMIT OPERATIONS". THE ANNULAR SPACE BETWEEN THE STORM SEWER PIPE AND CASING SHALL BE FILLED WITH PEA STONE. BOTH ENDS OF THE CASING SHALL BE BULKHEADED WITH 12" OF COMMERCIAL GRADE CONCRETE. THE STORM SEWER PIPE SHALL BE INSTALLED IN TEH CENTER OF THE CASING PIPE WITH CASING SPACERS (WOOD SPACERS WILL NOT BE ALLOWED). THE METHOD OF PLACEMENT OF THE STORM SEWER WITHIN THE CASING PIPE SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

UTILITY CONTACTS

TELEPHONE
AT & T
c/o ENGINEERING DEPARTMENT
ROOM 525A
309 S. WASHINGTON AVE.
SAGINAW, MICHIGAN 48607
ROB AUGUSTINE
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811
Know what's below.
Call before you dig.

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

2015	PLANNING COMMISSION SUBMITTAL	9-25-15
	STORMWATER SUBMITTAL	11-13-15
	PLANNING COMMISSION RESUBMITTAL	11-20-15
	REVISED 1 MOORE DR ACCESS	1/28/16
	REVISED - ACCESS JOE MANN ACCESS	1/28/16
	REVISED - ACCESS JOE MANN, NEW DRIVE	2/01/16
	PLANNING COMMISSION RESUBMITTAL	2/10/16
	STORMWATER SUBMITTAL	2/10/16

FILE: 2015-358.REV_I-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: MJH/JD
CHECKED BY:
SCALE: 1"=30'
SHEET: 5 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASLAKIS
800 WASHINGTON DRIVE
ROCHESTER HILLS, MI 48309
(248) 379-2006

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T15N-R2E
CITY OF MIDLAND
MIDLAND COUNTY, MI

UTILITY PLAN

D&M SITE INC.
Surveying . Inspection . Testing . Engineering
401 BALSAM STREET PO BOX 159, CARROLLTON, MICHIGAN 48724
PHONE (989) 752-6550 • FAX (989) 752-6600

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2015.358

(24X36 - 15-25-30)
D AND M SITE
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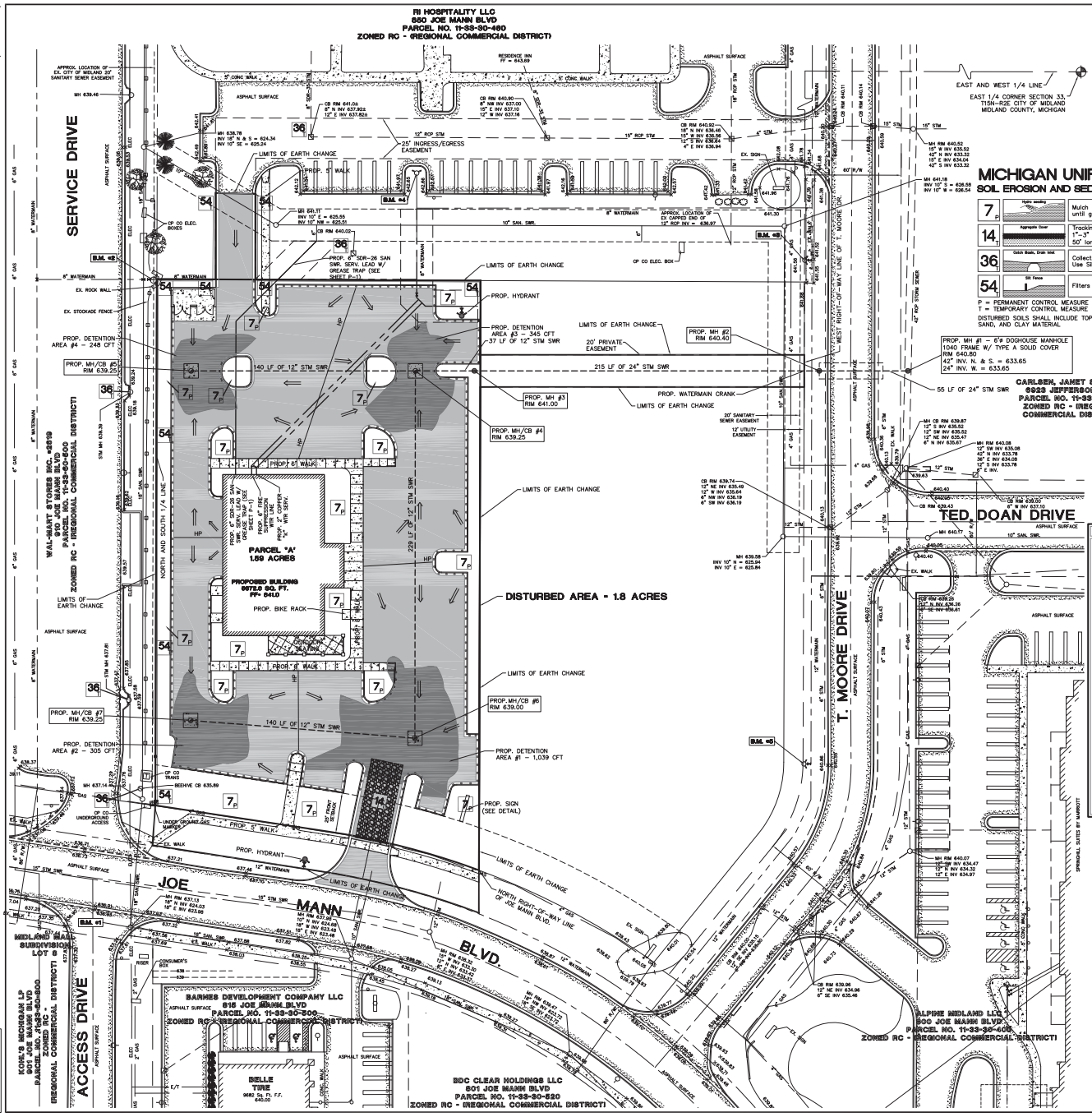

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

ISSUE	
PLANNING COMMISSION SUBMITTAL	1-30-15
STORMWTR SUBMITTAL	11-13-15
PLANNING COMMISSION RESUBMITTAL	11-20-15
STORMWTR SUBMITTAL	12-10-15
REVISED 1 MOORE DR ACCESS	1/27/16
REVISED - ADDED JOE MANN ACCESS	1/28/16
REVISED - ADDED SIDEWALK NEW DRIVE	2/11/16
PLANNING COMMISSION RESUBMITTAL	2/11/16
STORMWTR SUBMITTAL	2/12/16

FILE: 2015-358.REV_I-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: MJMcD.
CHECKED BY:
SCALE: 1"=30'
SHEET: 6 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASILAKIS
800 BASHINGTON DRIVE
ROCHESTER, MI 48309
(248) 379-2006

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T15N-R2E
CITY OF MIDLAND
MIDLAND COUNTY, MI

SOIL EROSION SEDIMENTATION CONTROL PLAN

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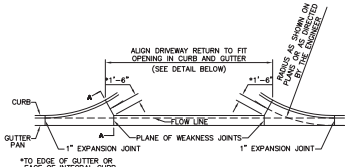
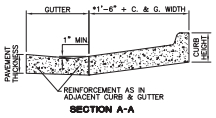
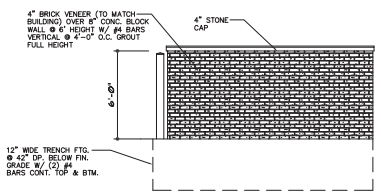


MDOT CONCRETE DRIVEWAY OPENING-DETAIL M

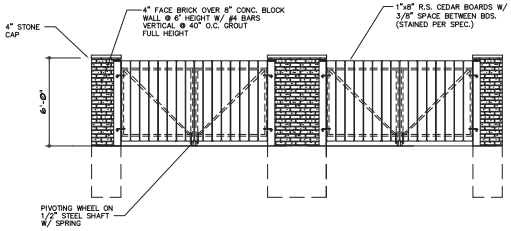
NO SCALE





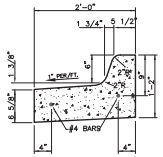
TRASH ENCLOSURE SIDE ELEVATION

SCALE: 1/4" = 1'-0"



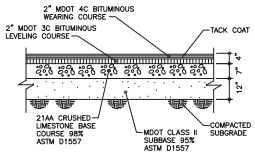
TRASH ENCLOSURE FRONT ELEVATION

SCALE: 1/4" = 1'-0"



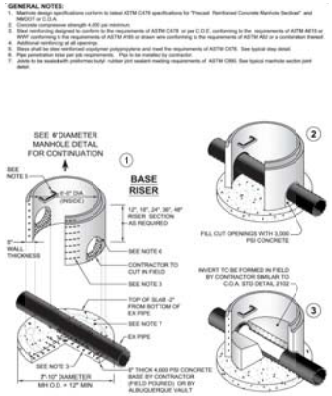
CONCRETE CURB & GUTTER DETAIL
M.D.O.T. F-4 MODIFIED

NO SCALE



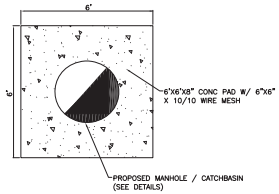
HMA ACCESS DRIVE SECTION

NO SCALE



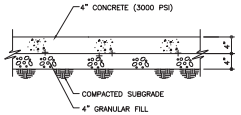
MH #1: 6'Ø DOGHOUSE MANHOLE DETAIL

NO SCALE



MANHOLE / CATCHBASIN CONCRETE SLAB

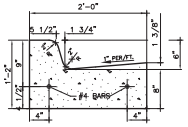
NOT TO SCALE



NOTE:
CONTRACTION JOINT SHALL BE 1/4"x2 3/4" DEEP, SPACED AT 5'-0" INTERVALS. EXPANSION JOINTS SHALL BE 1/2" PREMOLDED FILLER, SPACED AT A MAXIMUM 30' APART. EXPANSION JOINTS TO BE PLACED BETWEEN NEW AND EXISTING CONCRETE.

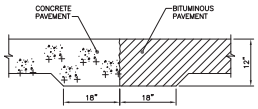
CONCRETE WALK

NO SCALE



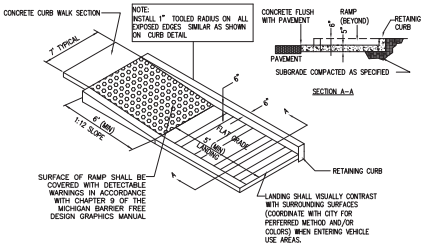
CONCRETE CURB & GUTTER DETAIL
M.D.O.T. F-4

NO SCALE



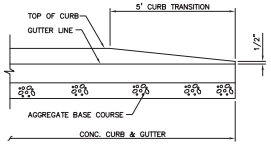
TURNDOWN PAVEMENT SECTION

NO SCALE



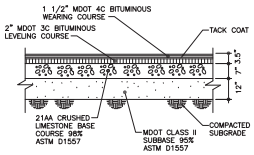
BARRIER FREE RAMP

NO SCALE



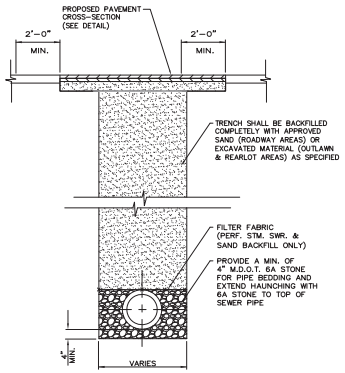
TYPICAL CURB END TRANSITION

NO SCALE



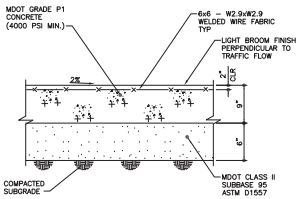
HMA PARKING LOT SECTION

NO SCALE



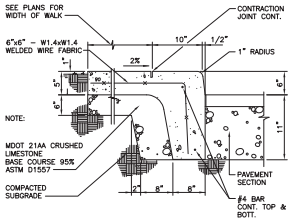
D.W.P.E., P.E., PVC AND A/D 2000
SEWER TRENCH DETAIL

SCALE: 1/2"=1'-0"



CONCRETE DUMPSTER PAD

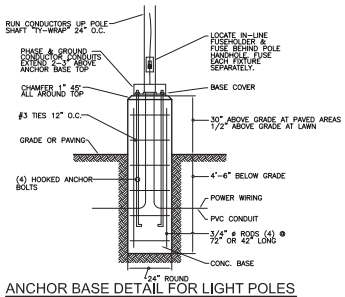
NO SCALE



WHERE WALK DOES NOT ABUTT ASPHALT PAVEMENT, EXTEND THICKNESS FOR REQUIRED WIDTH AND OMIT CURB PORTION. CONTRACTION JOINTS TO BE 2 1/2" DEEP, SPACED AT 5' INTERVALS (TOOLED). EXPANSION JOINTS TO BE 1/2 " PREMOLDED FILLER, SPACED A MAXIMUM OF 30' APART.

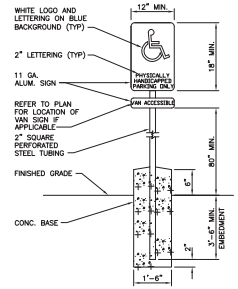
CONCRETE CURB WALK

NO SCALE



ANCHOR BASE DETAIL FOR LIGHT POLES

NOT TO SCALE



TYPICAL HANDICAP SIGN

NO SCALE

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

2087	PLANNING COMMISSION SUBMITTAL	4-30-15
	STORMWATER SUBMITTAL	11-13-15
	PLANNING COMMISSION SUBMITTAL	11-20-15
REVISED 1 MOVE DR ACCESS		1/28/16
REVISED – ADDED JOE MANN ACCESS		1/28/16
REVISED – ADDED 4' SIDEWALK NEW DRIVE		2/11/16
	PLANNING COMMISSION RESUBMITTAL	2/11/16
	STORMWATER SUBMITTAL	2/15/16

FILE: 2015-358.REV_I-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: M.McD.
CHECKED BY:
SCALE:
SHEET: 7 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASILAKIS
8500 BARRINGTON DRIVE
ROSCOMMON, MI 48653
(248) 379-2006

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T18N-R5E
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MIDLAND COUNTY, MI

DETAIL SHEET

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Surveying . Inspection . Testing . Engineering
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D AND M SITE
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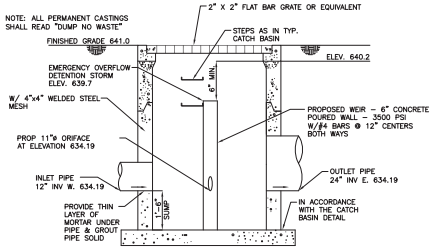
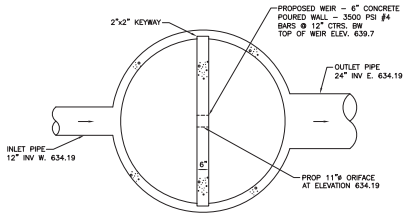
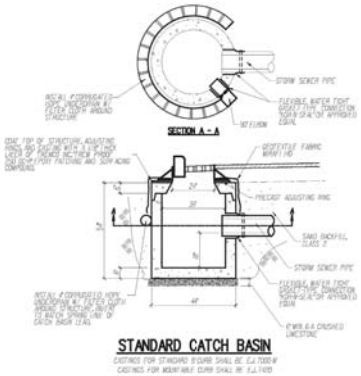


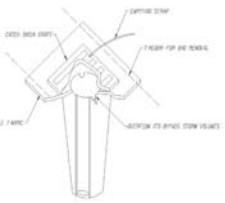
MH #3: 4'Ø OUTLET CONTROL STRUCTURE
NO SCALE



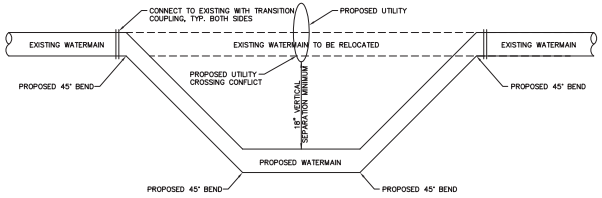
MH #3: 4'Ø OUTLET CONTROL STRUCTURE - TOP VIEW
NO SCALE



STANDARD CATCH BASIN



CATCH BASIN INSERT DETAIL



WATERMAIN CRANK DETAIL
SCALE: NONE

NOTES:

1. TO BE COMPLETED IF VERTICAL SEPARATION BETWEEN PROPOSED STORM SEWER & EXISTING WATERMAIN IS LESS THAN 18 INCHES.

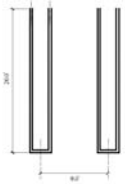
2. TOP 45° BENDS TO BE RODDED TO I-BEAMS OR EQUIVALENT THAT SHALL BE PLACED INTO GROUND A MINIMUM OF 5 FEET.

3. ALL MECHANICAL JOINTS SHALL BE RESTRAINED USING MEGALUG OR EQUAL.

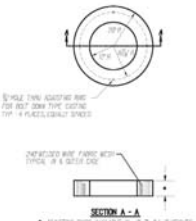
4. REFER TO DETAIL SHEET DW-1656 FOR ALL BEND THRUST BLOCKING DETAILS.

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE TO CITY OF MIDLAND STANDARD SPECIFICATIONS.
2. FOR PROTECTION OF UNDERGROUND UTILITIES THE CONTRACTOR SHALL DIG A TEST PIT A MINIMUM OF 3 WORKING DAYS PRIOR TO EXCAVATION IN THE VICINITY OF UTILITY LINES.
3. THE PROPOSED WATER MAIN SHALL BE INSTALLED A MINIMUM OF 10 FEET HORIZONTALLY AND 18 INCHES VERTICALLY FROM ALL EXISTING OR PROPOSED SEWERS.
4. THE PROPOSED WATER MAIN SHALL BE INSTALLED A MINIMUM OF 5 FEET BELOW TOP OF CURB GRADE.
5. ALL WATER MAIN FITTINGS SHALL BE MECHANICAL RESTRAINED JOINTS INSTALL FIELD LOCK GASKETS AS DETERMINED BY THE FIELD ENGINEER.



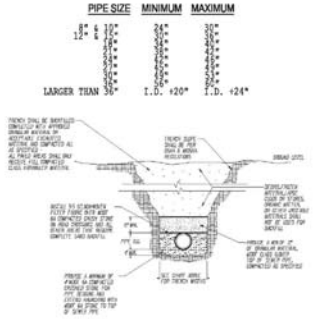
PAVEMENT MARKING DETAIL



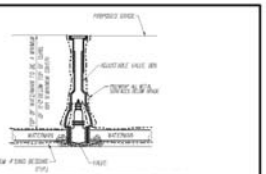
PRE-CAST CONCRETE ADJUSTING RING

TRENCH WIDTH CHART

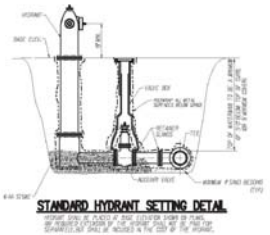
PIPE SIZE	MINIMUM	MAXIMUM
8" & 10"	24"	30"
12" & 15"	26"	32"
18"	28"	34"
21"	30"	36"
24"	32"	38"
27"	34"	40"
30"	36"	42"
36"	38"	44"
42"	40"	46"
48"	42"	48"
54"	44"	50"
60"	46"	52"
66"	48"	54"
72"	50"	56"
LARGER THAN 36"	I.D. +20"	I.D. +24"



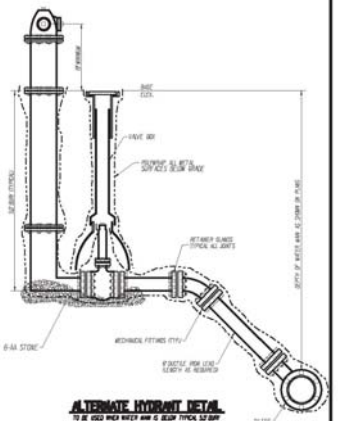
STANDARD PLASTIC PIPE TRENCH DETAIL
APPLICABLE TO ALL PLASTIC PIPE TYPES
INCLUDING BUT NOT LIMITED TO SCH 40 PVC,SDR 26, SDR 35, ETC.



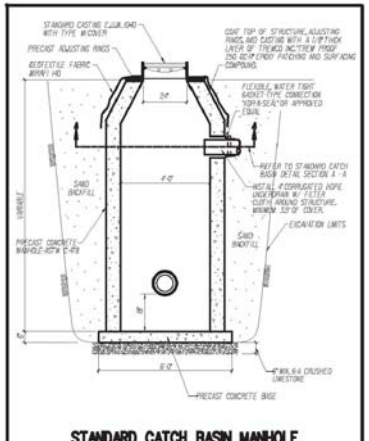
STANDARD VALVE BOX SETTING DETAIL



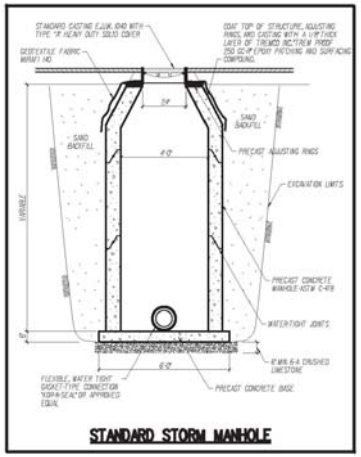
STANDARD HYDRANT SETTING DETAIL



ALTERNATE HYDRANT DETAIL



STANDARD CATCH BASIN MANHOLE



STANDARD STORM MANHOLE

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

DWT	PLANNING COMMISSION SUBMITTAL	9-30-15
STORMWATER SUBMITTAL		11-13-15
PLANNING COMMISSION RESUBMITTAL		11-20-15
REVISED 1 - MOVE DR ACCESS		12/17/15
REVISED 2 - ADDED JOE MANN ACCESS		1/28/16
REVISED 3 - ADDED DRIVE, MOVED DR ACCESS, NEW DRAWING		2/17/16
PLANNING COMMISSION RESUBMITTAL		2/21/16
STORMWATER SUBMITTAL		2/25/16

FILE: 2015-358_REV_I-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: M.M.O.
CHECKED BY:
SCALE:
SHEET: 8 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASILAKIS
6820 BARRINGTON DRIVE
ROSCOMMON, MI 48653
(248) 579-2606

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T18N-R5E
CITY OF MIDLAND
MIDLAND COUNTY, MI

DETAIL SHEET

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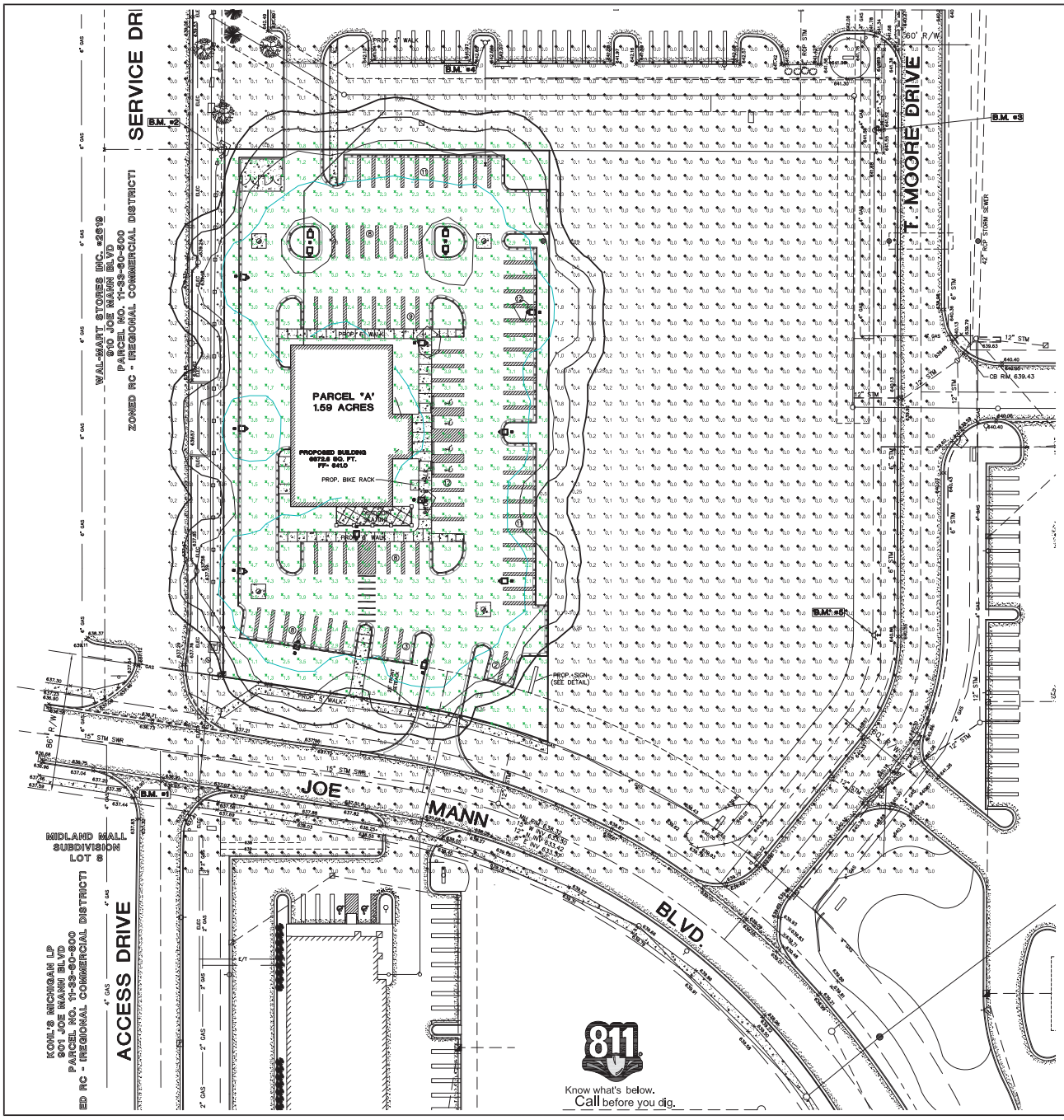
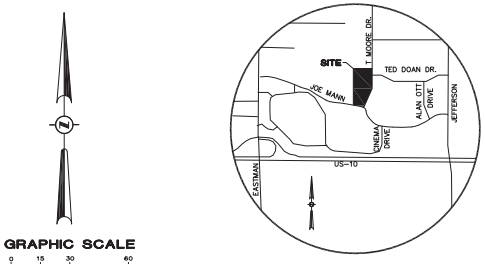




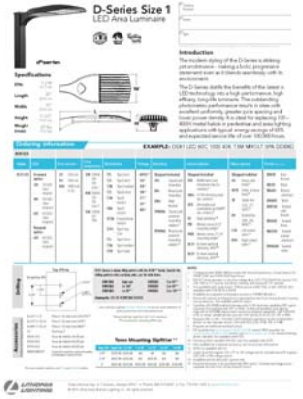
LOCATION MAP

NOT TO SCALE

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 60 ft.



STATISTICS						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #2	+	0.8 fc	7.8 fc	0.0 fc	N / A	N / A
Lucky's Site Area	*	2.7 fc	7.8 fc	0.0 fc	N / A	N / A

LUMINAIRE LOCATIONS										
		Location						Aim		
No.	Label	X	Y	Z	MH	Orientation	Tilt	X	Y	Z
1	A	44.5	14.6	20.0	20.0	16.3	0.0	44.8	15.7	0.0
2	A	123.9	2.4	20.0	20.0	11.7	0.0	124.1	3.5	0.0
3	A	7.1	153.9	20.0	20.0	90.4	0.0	8.2	153.9	0.0
4	B	65.7	269.4	20.0	20.0	181.8	0.0			
5	B	145.1	270.3	20.0	20.0	0.0	0.0			
6	A	196.5	226.1	20.0	20.0	-89.6	0.0	195.3	226.1	0.0
7	A	118.8	207.2	20.0	20.0	91.6	0.0	119.9	207.1	0.0
8	A	118.5	109.7	20.0	20.0	93.7	0.0	119.6	109.6	0.0
9	A	8.0	248.5	20.0	20.0	96.9	0.0	8.1	248.3	0.0
10	A	82.8	93.0	20.0	20.0	181.0	0.0	82.8	91.9	0.0
11	A	6.8	86.0	20.0	20.0	96.5	0.0	7.8	85.9	0.0
12	A	179.2	151.8	20.0	20.0	-90.0	0.0	178.1	151.8	0.0
13	A	179.2	59.4	20.0	20.0	269.5	0.0	178.1	59.4	0.0

LUMINAIRE SCHEDULE									
Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
	A	11	DSX1 LED 40C 1000 50K TFTM MVOLT	DSX1 LED WITH (2) 20 LED LIGHT ENGINES. TYPE TFTM OPTIC. 5000K, @ 700mA	LED	DSX1_LED_40C_1000_50K_TFTM_MVOLT.ies	Absolute	1.00	138
	B	2	DSX1 LED 40C 1000 50K TFTM MVOLT	DSX1 LED WITH (2) 20 LED LIGHT ENGINES. TYPE TFTM OPTIC. 5000K, @ 700mA	LED	DSX1_LED_40C_1000_50K_TFTM_MVOLT.ies	Absolute	1.00	276

PREPARED UNDER THE SUPERVISION OF:

PROJECT LOG

DSMT	PLANNING COMMISION SUBMITTAL	1-30-15
	STORMWATER SUBMITTAL	11-13-15
	PLANNING COMMISION SUBMITTAL	11-20-15
	STORMWATER SUBMITTAL	12/29/15
	REVISED T. MOORE DR ACCESS	1/7/16
	REVISED - ADDED JOE MANN ACCESS	1/26/16
	REVISED - ADDED EASTMAN & NEW DRIVE	2/01/16
	PLANNING COMMISION RESUBMITTAL	2/01/16
	STORMWATER SUBMITTAL	2/15/16

FILE: 2015-358.REV_I-7-16
PROJECT MGR: JDM
DESIGNED BY: SAL
DRAWN BY: MJMcD.
CHECKED BY:
SCALE: 1"=30'
SHEET: 9 OF 13

LUCKY'S STEAKHOUSE
LUCKY VASILAKIS
8800 BARRINGTON DRIVE
ROCHESTER HILLS, MI 48309
(248) 379-2906

LUCKY'S STEAKHOUSE
JOE MANN BLVD.
SECTION 33, T18N-R5E
CITY OF MIDLAND
MIDLAND COUNTY, MI

PHOTOMETRIC PLAN

D&M SITE INC.
Surveying . Inspection . Testing . Engineering
401 BALSAM STREET PO BOX 159, CARROLLTON, MICHIGAN 48724
PHONE (989) 752-4650 / FAX (989) 752-4600

C5.0

2015.358

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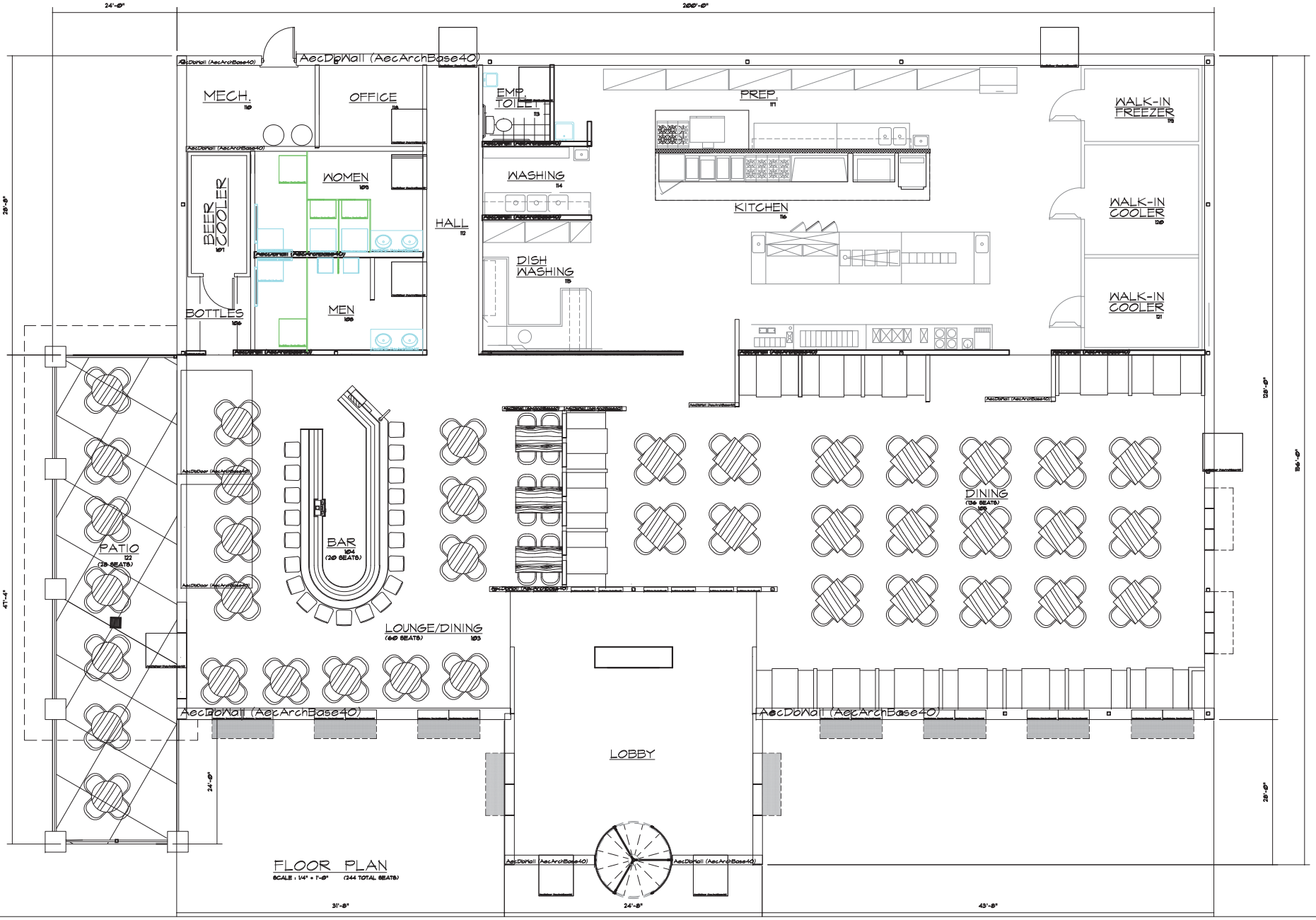


FLOOR PLAN

SCALE : 1/4" = 1'-0" (344 TOTAL SEATS)

REVISIONS

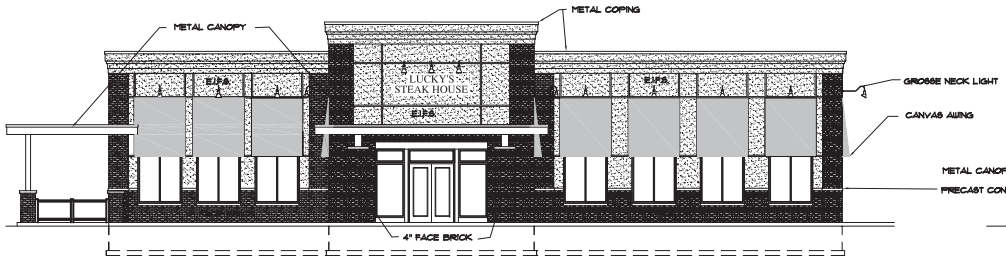
CREEKWOOD ARCHITECTURE, INC.
1111 s. creekwood burton, michigan 48509
tel. (810) 742-0480 fax (810) 742-8393

SHEET TITLE
FLOOR PLAN

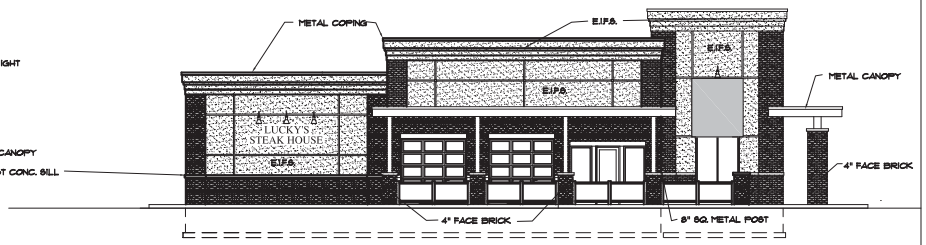
PROJECT
NEW LUCKY'S STEAKHOUSE

DRAWN BY J.S.B.
CHECKED BY R.A.S.

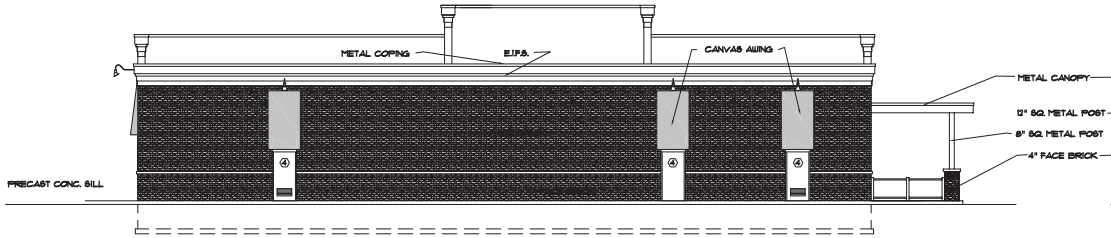
JOB NO. 11052
DATE 12 NOV. 15
SHEET NO.
A1
OF 2



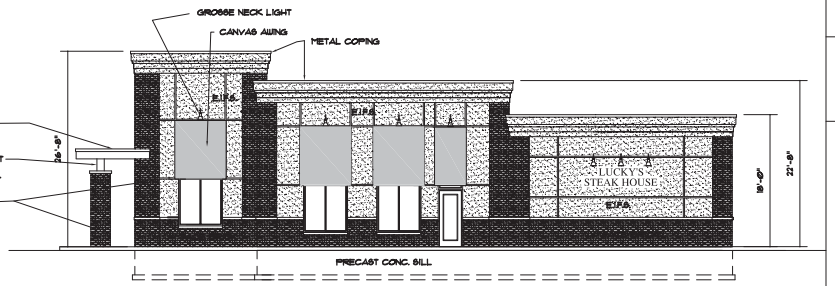
EAST ELEVATION
SCALE: 1/8" = 1'-0"



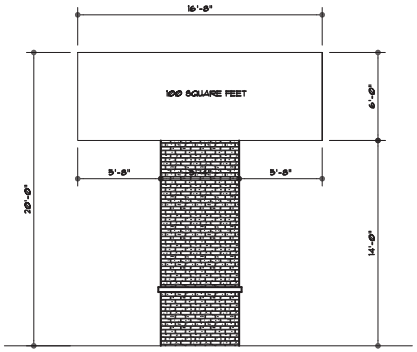
SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



WEST ELEVATION
SCALE: 1/8" = 1'-0"



NORTH ELEVATION
SCALE: 1/8" = 1'-0"



SIGN DETAIL
SCALE: 1/4" = 1'-0"

CREEKWOOD ARCHITECTURE, INC.
1111 s. creekwood burton, michigan 48509
tel. (810) 742-0480 fax (810) 742-8393

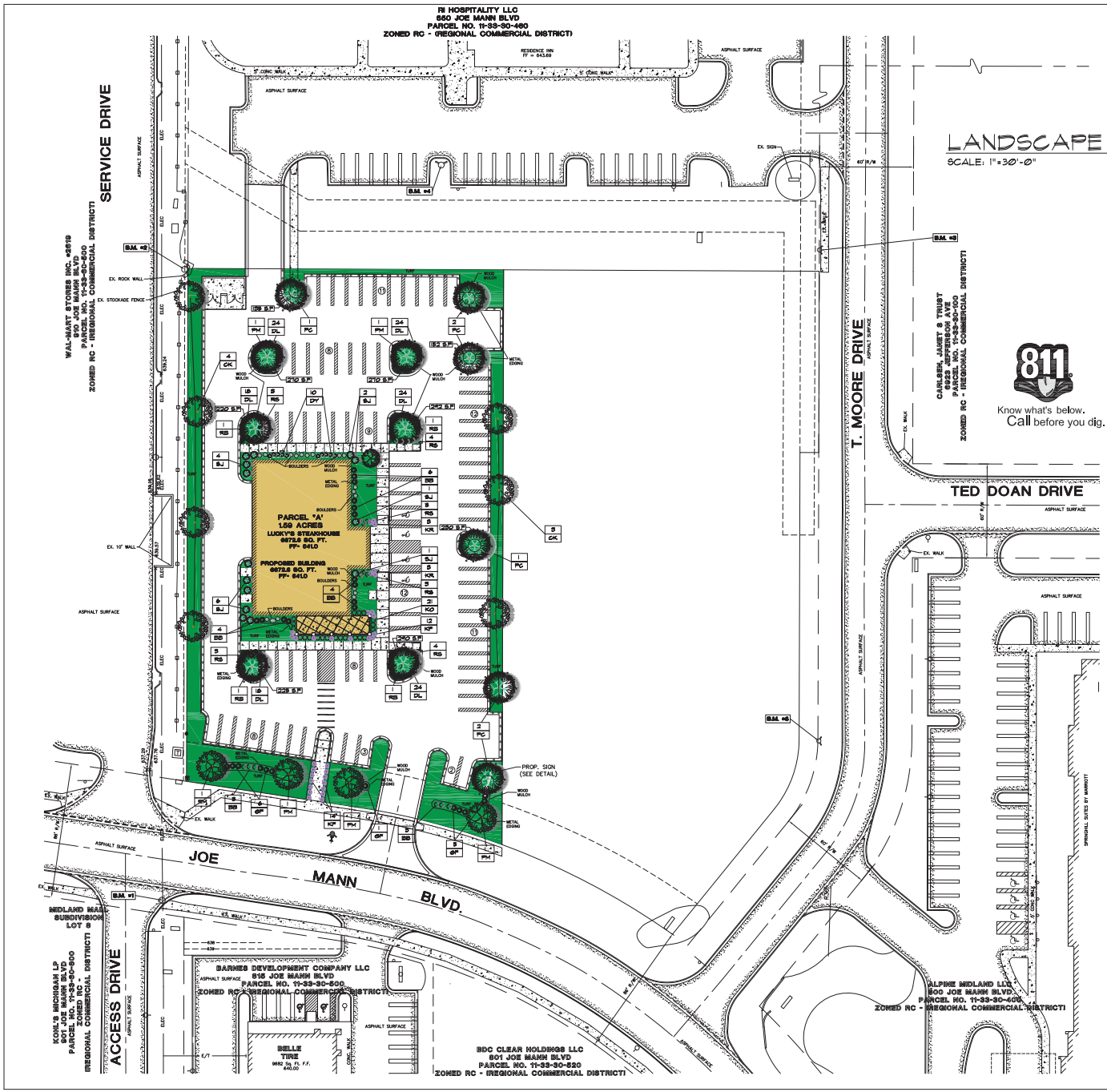
REVISIONS

SHEET TITLE
PROPOSED ELEVATIONS

PROJECT
NEW LUCKY'S STEAKHOUSE

DRAWN BY J.S.B.
CHECKED BY R.A.S.

JOB NO. 15052
DATE 12 OCT 15
SHEET NO.
A2
OF 2



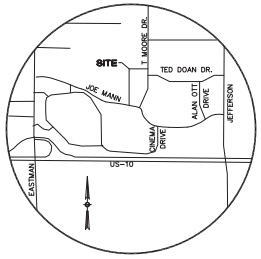
LANDSCAPE PLAN

SCALE: 1"=30'-0"

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.



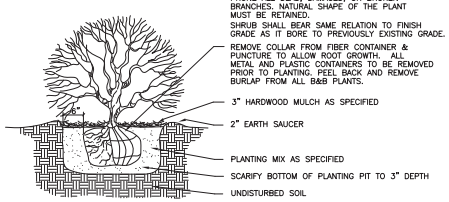
LOCATION MAP

NOT TO SCALE

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

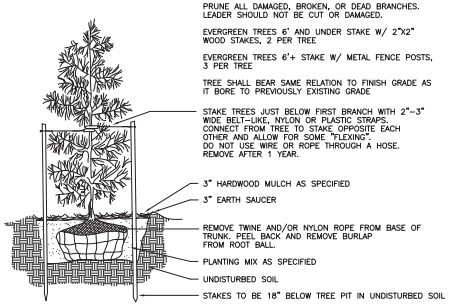
LANDSCAPE LEGEND

	QTY.	BOTANICAL / COMMON NAME	SIZE	SPACING	ROOT	COMMENTS
		TREES				
PB	6	ACER GRISEUM - PAPERBARK MAPLE	2.5" CAL.	AS SHOWN	B&B	
CK	7	ACER PLATANOIDES - 'CRIMSON SENTRY' CRIMSON SENTRY NORWAY MAPLE	2.5" CAL.	AS SHOWN	B&B	
PC	6	PRUS CALLERYANA 'GLEN FORM' PP3484 PEAR 'CHANTILLEER'	2.5" CAL.	AS SHOWN	B&B	
RB	4	CERCIS CANADENSIS 'FOREST PANSY' FOREST PANSY REDBUD	2.5" CAL.	AS SHOWN	B&B	
SJ	14	JUNIPERUS CHINENSIS - 'SPARTAN' SPARTAN JUNIPER	4'-5' HT.	AS SHOWN	CONT.	
		SHRUBS				
RS	30	PEROVSKIA ATRIPLICIFOLIA RUSSIAN SAGE	2 GAL	30" O.C.	CONT.	
KO	21	ROSE, SHRUB, DOUBLE KNOCKOUT PP16202	2 GAL	30" O.C.	CONT.	
GP	12	SPIREA X BUMALDA - 'GOLDFLAME' GOLDFLAME SPIREA	2 GAL	30" O.C.	CONT.	
BB	30	EUONYMUS ALATA - 'COMPACTA' DWARF BURNING BUSH	2 GAL	30" O.C.	CONT.	
DY	10	TAXUS X MEDIA DENSIFORMIS DENSE SPREADING YEW	2 GAL	30" O.C.	CONT.	
		GROUND COVERS/ PERENNIALS/ ORNAMENTAL GRASSES				
KF	28	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	2 GAL	30" O.C.	CONT.	
KR	6	PENNISETUM ORIENTAL 'KARLEY ROSE PP3304 FOUNTAIN KARLEY ROSE	2 GAL	30" O.C.	CONT.	
RS	30	PEROVSKIA ATRIPLICIFOLIA RUSSIAN SAGE	24-30"	30" O.C.	CONT.	
DL	152	HEMEROCALLIS - 'HAPPY RETURNS' HAPPY RETURNS DAYLILY	2 GAL	2' O.C.	CONT.	
	18	MICHIGAN BOULDERS	2'-5'			



SHRUB PLANTING DETAIL

N.T.S.



EVERGREEN TREE PLANTING - DETAIL

CREEKWOOD ARCHITECTURE, INC.
1111 s. creekwood burton, michigan 48509
tel. (810) 742-0480 fax (810) 742-8393

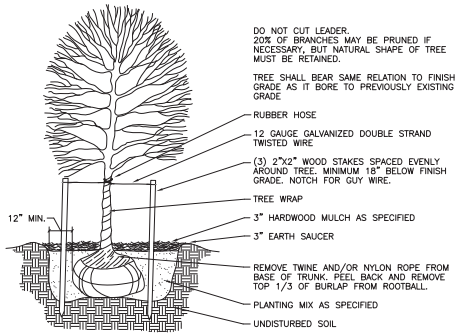
REVISIONS

PROJECT
NEW LUCKY'S STEAKHOUSE

SHEET TITLE
LANDSCAPE PLAN

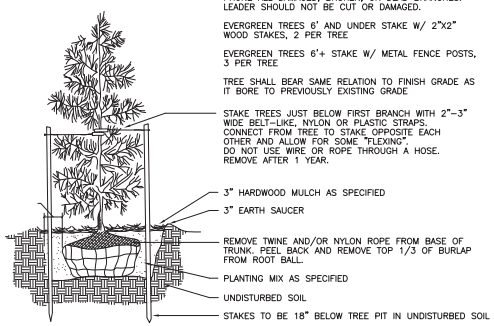
JOB NO. 15052
DATE 12 NOV. 15
DRAWN BY J.S.B.
CHECKED BY R.A.S.

SHEET NO.
L1

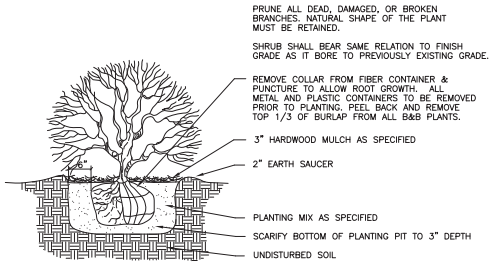


DECIDUOUS TREE PLANTING - DETAIL

N.T.S.



EVERGREEN TREE PLANTING - DETAIL



SHRUB PLANTING DETAIL

N.T.S.

HYDRO-SEEDING SPECIFICATIONS:

1) THE CONTRACTOR SHALL REMOVE ALL WEEDS, STONES OVER 1" IN DIAMETER, ROOTS, BRUSH, STAKES, BUILDING MATERIAL AND OTHER DEBRIS.

2) AREAS INDICATED "TURF" SHALL BE HYDRO-SEEDED WITH A PUMP RATED AND OPERATED AT NO LESS THAN 100 GPM AND NO LESS THAN 100 PSI, WITH A MECHANICAL AGITATOR THAT WILL ENSURE UNIFORM SUSPENSION OF SEED AND FERTILIZER IN WATER. EACH 1000 GALLONS OF SLURRY MIX SHALL CONTAIN 1500 lbs. OF APPROVED CELLULOSE FIBER, 200 lbs. OF THE SPECIFIED SEED MIXTURE AND 500 lbs. OF AN APPROVED 12/12/12 COMMERCIAL FERTILIZER.

   APPLY SEED AND FERTILIZER AT A RATE OF NOT LESS THAN 1000 GALLONS OF SLURRY PER ACRE.

3) FINISH GRADING - AFTER CLEAN UP AND PRIOR TO TOP SOILING, THE CONTRACTOR SHALL FINE GRADE WITH MECHANICAL EQUIPMENT AND HAND RAKING IF REQUIRED TO BRING ALL AREAS TO THE DESIGN GRADES INDICATED O THE SITE PLAN AND NECESSARY TO MAINTAIN POSITIVE DRAINING.

4) TOPSOIL SHALL BE UNIFORMLY SPREAD TO SUPPORT SEED GERMINATION AND PROCEDURE TURF. TOPSOIL SAMPLE MAY BE REQUIRED BY THE LANDSCAPE ARCHITECT AND THE SOURCE DESIGNATION BY THE CONTRACTOR.

5) SEED MIXTURE
   A. 40% KENTUCKY BLUEGRASS
   B. 30% "PENNLAWN" RED FESCUE
   C. 30% "PENNFINE" PERENNIAL REGRESS

6) SEED AND FERTILIZER SHALL BE DELIVERED TO THE SITE IN THE MANUFACTURER'S ORIGINAL SEALED CONTAINERS, STATING MIXTURE COMPONENTS AND PERCENTAGES. SEED AND FERTILIZER OTHERWISE DELIVERED WILL NOT BE ACCEPTED.

7) WATERING

   THE CONTRACTOR HAS THE RESPONSIBILITY OF IRRIGATING THE SEED BED.

8) GUARANTEE

   THE CONTRACTOR SHALL OVERSEED ALL AREAS THAT HAVE BARE SPOTS IN EXCESS OF ONE SQ. FT. IN SIZE.

9) INSPECTION

   THE LANDSCAPE ARCHITECT SHALL BE THE OWNER'S AGENT FOR THIS WORK AND WILL DETERMINE COMPLETION AND ACCEPTANCE OF WORK PERFORMED, AND WILL MAKE CASUAL INSPECTION DURING SEEDING OPERATIONS. PROMPT CLEAN-UP OF THE SITE UPON COMPLETION WILL BE REQUIRED. WALKS AND DRIVES SHALL BE KEPT CLEAN AND PASSABLE.

SITE CONDITIONS:

THE LANDSCAPE CONTRACTOR SHALL NOT OBSTRUCT ROADS, PARKING AREAS OR WALKS WITH MATERIALS, EQUIPMENT OR DEBRIS. THE ENTIRE PARKING AREA MUST BE AVAILABLE FOR CAPACITY USE DURING WORKING HOURS. SPECIAL ARRANGEMENTS WILL BE MADE TO ISOLATE SPECIFIC AREAS REQUIRED FOR CONSTRUCTION. THESE AREAS WILL BE PRE-ARRANGED WITH HIGH ADMINISTRATION BY THE LANDSCAPE ARCHITECT.

GENERAL NOTES:

1) ALL PLANTING AREAS TO RECEIVE EITHER 5" WASHED "COLORADO" RIVER ROCK (3/4"- 1 1/2" DIA.) OR SHREDDED WOOD MULCH AS SPECIFIED ON THE LANDSCAPE PLAN W/ DE-WIT FABRIC WEED BARRIER UNDERLAYMENT. UNLESS OTHERWISE NOTED.

2) ALL LAWN EDGING TO BE COMMERCIAL GRADE METAL

3) GROUND COVER PLANTS TO BE PLANTED IN SOIL MIX (NO STONE AROUND.)

NOTE:

ALL LAWN AND LANDSCAPED AREAS ARE TO BE FULLY IRRIGATED. - SUPPLIER TO PROVIDE SHOP DRAWINGS

GENERAL NOTES

ALL LANDSCAPE AREAS ADJACENT TO DRIVES OR PARKING AREAS ARE TO BE CURBED WITH A MINIMUM 6" CONCRETE CURBING.

ALL PLANTING BEDS ARE TO BE EDGED.

ALL LANDSCAPING IS TO BE CONTINUOUSLY MAINTAINED.

ALL SITE IMPROVEMENTS DETAILED ON THIS PLAN ARE TO BE COMPLETED PRIOR TO THE ISSUANCE OF A FINAL CERTIFICATE OF OCCUPANCY.

ALL RIGHT OF WAY AREAS ARE TO BE SEEDED OR SODDED.

ALL LANDSCAPE AREAS ARE TO BE IRRIGATED WITH AN UNDERGROUND IRRIGATION SYSTEM.

LANDSCAPE NOTES

ALL PLANT MATERIAL SHALL BE TRUE TO NAME, FREE FROM PHYSICAL DAMAGE AND WIND BURN. PLANTS SHALL BE FULL, WELL-BRANCHED, AND IN HEALTHY VIGOROUS GROWING CONDITION.

PLANTS SHALL BE WATERED BEFORE AND AFTER PLANTING IS COMPLETE.

ALL TREES MUST BE STAKED, FERTILIZED AND MULCHED AND SHALL BE GUARANTEED TO EXHIBIT A NORMAL GROWTH CYCLE FOR AT LEAST ONE (1) FULL YEAR FOLLOWING PLANTING.

ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

PROVIDE CLEAN BACK FILL SOIL, USING MATERIAL STOCKPILED ON SITE. SOIL SHALL BE SCREENED AND FREE OF ANY DEBRIS, FOREIGN MATERIAL, AND STONE. "AGRIFORM" TABS OR SIMILAR SLOW-RELEASE FERTILIZER SHALL BE ADDED TO THE PLANTING PITS BEFORE BEING BACKFILLED.

ALL PLANTINGS SHALL BE MULCHED WITH SHREDDED HARDWOOD BARK, SPREAD TO A MINIMUM DEPTH OF 4". MULCH IS TO BE FREE FROM DEBRIS AND FOREIGN MATERIAL, AND SHALL CONTAIN NO PIECES OF INCONSISTENT SIZE.

THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK SHOWN ON THE LANDSCAPE DRAWINGS AND SPECIFICATIONS.

NO SUBSTITUTIONS OR CHANGES OF LOCATION, OR PLANT TYPES SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS PRIOR TO INSTALLATION.

THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL IN A VERTICAL CONDITION THROUGHOUT THE GUARANTEED PERIOD.

THE LANDSCAPE ARCHITECT SHALL HAVE THE RIGHT, AT ANY STAGE OF THE INSTALLATION, TO REJECT ANY WORK OR MATERIAL THAT DOES NOT MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS, IF REQUESTED BY OWNER.

CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING PLANT QUANTITIES TO ENSURE QUANTITIES ON DRAWINGS AND PLANT LIST ARE THE SAME. IN THE EVENT OF A DISCREPANCY, THE QUANTITIES ON THE PLANS SHALL PREVAIL.

THE LANDSCAPE CONTRACTOR SHALL SEED AND MULCH ALL AREAS DISTURBED DURING CONSTRUCTION, THROUGHOUT THE DEVELOPMENT.

A PRE-EMERGENT WEED CONTROL AGENT, "PREEN" OR EQUAL, SHALL BE APPLIED UNIFORMLY TO ALL PLANTING BEDS PRIOR TO MULCHING.

CREEKWOOD ARCHITECTURE, INC.
1111 s. creekwood burton, michigan 48509
tel. (810) 742-0480 fax (810) 742-8393

REVISIONS

SHEET TITLE
LANDSCAPE DETAILS

PROJECT
NEW LUCKY'S STEAKHOUSE

JOB NO. 5052
DATE 12 NOV. 15
DRAWN BY J.S.B.
CHECKED BY R.A.S.

SHEET NO.
L2
12 OF 12