# CHARTER TOWNSHIP OF YPSILANTI PLANNING COMMISSION

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**SALLY RICHIE**
**BILL SINKULE**
**LAURENCE KRIEG**
**ELIZABETH EL-ASSADI**
**STAN ELDRIDGE**
**GLORIA PETERSON**
**MUDDASAR TAWAKKUL**

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**February 11, 2020**

**Regular Meeting – 6:30 p.m.**

**Ypsilanti Township Civic Center**
**7200 S. Huron River Drive**
**Ypsilanti, MI 48197**

# CHARTER TOWNSHIP OF YPSILANTI

## PLANNING COMMISSION

**7200 S. Huron River Drive, Ypsilanti, MI 48197**

## *REGULAR MEETING AGENDA*

**TUESDAY, FEBRUARY 11, 2020**
**6:30 P.M.**

1. CALL TO ORDER

2. ROLL CALL

3. APPROVAL OF THE TUESDAY, JANUARY 28, 2020 REGULAR MEETING MINUTES

4. APPROVAL OF AGENDA

5. PUBLIC HEARINGS AND PLAN REVIEW

   A. **PRELIMINARY SITE PLAN AND SPECIAL LAND USE – GROUP 10 MANAGEMENT – 2169 WASHTENAW AVENUE –** TO CONSIDER THE PRELIMINARY SITE PLAN AND SPECIAL LAND USE PERMIT FOR THE CONSTRUCTION OF A 4,200 SQUARE FOOT GAS STATION AND CONVENIENCE STORE LOCATED AT 2169 WASHTENAW AVENUE, PARCEL K-11-06-478-001.

   B. **ZONING ORDINANCE TEXT AMENDMENT –** TO CONSIDER RECOMMENDATION TO THE TOWNSHIP BOARD OF TRUSTEES A ZONING ORDINANCE TEXT AMENDMENT REGARDING SECTION 306, SCHEDULE OF USES, TO PERMIT MEDICAL MARIHUANA DISPENSARIES AND MEDICAL MARIHUANA NURSERIES AS A SPECIAL USE SUBJECT TO CONDITIONS IN SECTION 1841 IN THE I-C, INDUSTRIAL COMMERCIAL, ZONING DISTRICT AND PROHIBIT MEDICAL MARIHUANA DISPENSARIES AND MEDICAL MARIHUANA NURSERIES AS A SPECIAL USE SUBJECT TO CONDITIONS IN SECTION 1841 IN THE I-1, LIGHT INDUSTRIAL, AND I-2, GENERAL INDUSTRIAL, ZONING DISTRICTS.

   C. **PRELIMINARY SITE PLAN – ANDY ANDRE – 460 AND 350 JOE HALL DRIVE –** TO CONSIDER THE PRELIMINARY SITE PLAN FOR THE CONSTRUCTION OF A 107-ROOM, 4-STORY HOLIDAY INN EXPRESS AND SUITES HOTEL FOR A SITE ZONED TC-1, TOWN CENTER, LOCATED AT 460 AND 350 JOE HALL DRIVE, PARCEL K-11-38-363-003 AND K-11-38-363-029.

6. OLD BUSINESS

7. NEW BUSINESS

8. OPEN DISCUSSION FOR ISSUES NOT ON THE AGENDA

   A. CORRESPONDENCE RECEIVED
   B. PLANNING COMMISSION MEMBERS
   C. MEMBERS OF THE AUDIENCE

9. TOWNSHIP BOARD REPRESENTATIVE REPORT

10. ZONING BOARD OF APPEALS REPRESENTATIVE REPORT

11. TOWNSHIP ATTORNEY REPORT

12. PLANNING DEPARTMENT REPORT

13. OTHER BUSINESS

14. ADJOURNMENT

**THERE IS NO WORK SESSION**

# CALL TO ORDER
# AND
# ROLL CALL

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1. The meeting is called to order by the Planning Commission chair and roll call is taken.

# APPROVAL OF AGENDA

1. Commissioners approve current agenda

**CHARTER TOWNSHIP OF YPSILANTI**
**PLANNING COMMISSION**
**MINUTES OF THE JANUARY 28, 2020 REGULAR MEETING**

Vice Chair Sally Richie called the regular meeting to order at 6:30 pm in the Ypsilanti Township Civic Center Board Room 7200 S. Huron River Drive, Ypsilanti Township.

Commissioners Present: Commissioners Sally Richie, Bill Sinkule, Laurence Krieg, Muddasar Tawakkul, Elizabeth El-Assadi, Gloria Peterson and Stan Eldridge

Commissioners Absent: None

Others in Attendance: Dennis McLain, Township Attorney; Jason Iacoangeli, Planning Director and Charlotte Wilson, Planning and Development Coordinator

**1. CALL TO ORDER**

Commissioner Richie welcomed Elizabeth El-Assadi to the Planning Commission.

**2. ROLL CALL**

**3. APPROVAL OF THE JANUARY 14, 2020 REGULAR MEETING MINUTES**

**A motion was made by Commissioner Krieg supported by Commissioner Peterson to approve the minutes of the January 14, 2020 Regular Meeting with the following amendments:**

1. **On page two of the meeting minutes where the microphone malfunctioned, Dennis McLain said the church would be allowed to locate within 1,000 feet of an existing dispensary and the dispensary would not be required to move.**
2. **On page three of the meeting minutes where the microphone malfunctioned, Dennis McLain said massage therapists are licensed and massage parlors are unlicensed.**

**The motion carried unanimously.**

**4. APPROVAL OF AGENDA**

**A motion was made by Commissioner Eldridge supported by Commissioner Peterson to approve the agenda. The motion carried unanimously.**

**5. PUBLIC HEARINGS AND PLAN REVIEW**

**A. None**

**6. OLD BUSINESS**

**A. None**

**7. NEW BUSINESS**

**A. YPSILANTI TOWNSHIP NON-MOTORIZED PLAN –** TO MAKE A RECOMMENDATION TO THE TOWNSHIP BOARD OF TRUSTEES ON THE DRAFT NON-MOTORIZED PLAN.

Jason Iacoangeli, Planning Director, asked if the Planning Commission had comments or questions regarding the draft Non-Motorized Plan. He acknowledged comments from Commissioner Krieg were received by email and incorporated into the most recent version of the draft.

Commissioner Richie said she was concerned about pedestrian safety at the mid-block crossing near Rosewood Avenue across Ecorse Road. She said drivers rarely stop for pedestrians. She asked if more signage would be appropriate to warn drivers of the upcoming crosswalk. She read a section of the Uniform Traffic Code for Cities,

Townships, and Villages "When traffic-control signals are not in place or are not in operation, the driver of a vehicle shall yield the right-of-way, slowing down or stopping if need be to to yield, to a pedestrian crossing the roadway within a crosswalk when the pedestrian is on the half of the roadway on which the vehicle is traveling or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger, but a pedestrian shall not suddenly leave a curb or other place of safety and walk or run into a path of a vehicle that is so close that it is impossible for the driver to yield."

Mr. Iacoangeli said he can add an appendix to the Non-Motorized Plan to include applicable Michigan State law with regards to motorists and pedestrians for educational purposes.

**A motion was made by Commissioner Sinkule, supported by Commissioner Peterson to recommend approval of the Non-Motorized Plan to the Township Board of Trustees. The motion carried unanimously.**

### B. ELECTION OF OFFICERS

**A motion was made by Commissioner Eldridge, supported by Commissioner Krieg to have Commissioner Richie serve as Chair, Commissioner Sinkule serve as Vice Chair, and Commissioner Krieg serve as Secretary. The motion carried unanimously.**

## 8. OPEN DISCUSSION FOR ISSUES NOT ON THE AGENDA

### A. CORRESPONDENCE RECEIVED

None

### B. PLANNING COMMISSION MEMBERS

Commissioner Krieg stated the importance of accurately recording the meeting minutes, especially when the attorney gives an opinion.

Commissioner Richie said the meeting minutes are more summarized than they have been in the past. She said she wondered if a summary of the meeting minutes versus word-for-word is a better practice.

### C. MEMBERS OF THE AUDIENCE

Kyle, 332 East Jefferson, Ann Arbor, MI, said that video recordings of public meetings would be helpful instead of relying on a recorder.

## 9. TOWNSHIP BOARD REPRESENTATIVE REPORT

None

## 10. ZONING BOARD OF APPEALS REPRESENTATIVE REPORT

None

## 11. TOWNSHIP ATTORNEY REPORT

None

## 12. PLANNING DEPARTMENT REPORT

Mr. Iacoangeli said the American Center for Mobility (ACM) may request a special use permit from the Planning Commission for an event space where a short term garage addition was planned.

## 13. OTHER BUSINESS

None

**A motion was made by a Commissioner Peterson, supported by Commissioner Eldridge to adjourn the meeting. The motion carried unanimously.**

The meeting was adjourned at approximately 6:46pm

Respectfully submitted,
Charlotte Wilson
Planning and Development Coordinator

Recommended for approval as corrected
Laurence J. Krieg, Secretary
Ypsilanti Township Planning Commission

# PUBLIC HEARINGS AND SITE PLAN REVIEW

# CHARTER TOWNSHIP OF YPSILANTI

## OFFICE OF COMMUNITY STANDARDS

Building Safety • Planning & Zoning • Ordinance Enforcement

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**Staff Report**
**College Sunoco – Convenience store and gas station**
**2169 Washtenaw Avenue**
**Preliminary Site Plan and Special Land Use Review**

February 5, 2020

*CASE LOCATION AND SUMMARY*

The Office of Community Standards is in receipt of a preliminary site plan application from Group 10 Management to permit the construction of a 4,200 square foot convenience store and gas station for a site zoned B-3, General Business, located at 2169 Washtenaw Avenue, K-11-06-478-001.

*APPLICANT*

Group 10 Management, Mike Koza
29200 Northwestern Highway #450
Southfield, MI 48034

*CROSS REFERENCES*

Zoning Ordinance citations:

- Article XI, Section 1100, B-3 General Business District
- Article XXI, Section 2115, Site Plan Review
- Article XXI, Section 2119, Special Land Uses

*ANALYSIS*

The plan has been reviewed by Township staff and consultants in accordance with our procedures.

**Planning Consultants (Carlisle/Wortman Associates):** CWA has reviewed the preliminary site plan and special land use permit in their letter dated December 9, 2019 and recommends the Planning Commission consider if the applicant has made enough building and site improvements to meet the intent of the ReImagine Washtenaw Plan, Township Master Plan, and meet the required special use standards.

**Engineering Consultants (OHM):** The Township Engineer recommended approval for this stage of the process in their January 9, 2020 review letter. Engineer Matt Parks also offers minor comments relating to detailed engineering.

**Ypsilanti Community Utilities Authority:** YCUA stated no comment in an email dated December 19, 2019.

**Ypsilanti Township Fire Department:** YTFD reviewing agent Dan Kimball recommended approval conditionally in a letter dated January 8, 2020.

**Washtenaw County Water Resources Commission:** WCWRC offered comments relating to detailed engineering in their review dated February 8, 2019.

**Washtenaw County Road Commission**: WCRC states the plans have met technical approval in their letter dated November 16, 2018.

**Michigan Department of Transportation:** MDOT offered preliminary approval.

***Suggested motions:*** *The following suggested motions and conditions are provided to assist the Planning Commission in making the most appropriate motion for this application. The Commission may utilize, add or reject any conditions suggested herein, as they deem appropriate.*

*Motion to table: Please note the preliminary site plan and the special land use permit are two separate motions.*

*"I move to table the request for **preliminary site plan** approval for construction of a 4,200 square foot gas station and convenience store for a site zoned B-3, General Business, located at 2169 Washtenaw Avenue, parcel K-11-06-478-001, to consider the comments presented by the Planning Commission during discussion of the project"*

*"I move to table the request for **special land use permit** approval for construction of a 4,200 square foot gas station and convenience store for a site zoned B-3, General Business, located at 2169 Washtenaw Avenue, parcel K-11-06-478-001, to consider the comments presented by the Planning Commission during discussion of the project"*

*Motion to approve: Please note the preliminary site plan and the special land use permit are two separate motions.*

*"I move to approve the request for **preliminary site plan** approval for construction of a 4,200 square foot gas station and convenience store for a site zoned B-3, General Business, located at 2169 Washtenaw Avenue, parcel K-11-06-478-001, with the following conditions:*

1. *All exterior lighting fixtures shall be turned off between the hours of 11:00 p.m. and sunrise, except where used for security purposes or where the use of the property continues after 11:00 p.m.*

2. *Applicant shall obtain applicable Washtenaw County Water Resources Commission, Washtenaw County Road Commission, and Michigan Department of Transportation permits.*
3. _____"

*"I move to approve the request for **special land use permit** approval for construction of a 4,200 square foot gas station and convenience store for a site zoned B-3, General Business, located at 2169 Washtenaw Avenue, parcel K-11-06-478-001, with the following conditions:*

1. _____

2. _____"

*<u>Motion to deny:</u> Please note the preliminary site plan and the special land use permit are two separate motions.*

*"I move to deny the request for **preliminary site plan** approval for construction of a 4,200 square foot gas station and convenience store for a site zoned B-3, General Business, located at 2169 Washtenaw Avenue, parcel K-11-06-478-001, due to the following reasons:*

1._____

2._____"

*"I move to deny the request for **special land use permit** approval for construction of a 4,200 square foot gas station and convenience store for a site zoned B-3, General Business, located at 2169 Washtenaw Avenue, parcel K-11-06-478-001, due to the following reasons:*

1._____

2._____"

Respectfully submitted,

*Charlotte Wilson*

Charlotte Wilson
Planning and Development Coordinator

Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

Date: September 18, 2018
November 12, 2018
January 6, 2020

# Preliminary Site Plan and Special Use Review
# For
# Ypsilanti Charter Township, Michigan

## GENERAL INFORMATION

| | |
|---|---|
| **Applicant:** | Group 10 Management |
| **Project Name:** | College Sunoco |
| **Plan Date:** | December 9, 2019 |
| **Location:** | Southeast corner of Washtenaw Avenue and N. Hewitt Road |
| **Zoning:** | B-3, General Commercial |
| **Action Requested:** | Special Use and Preliminary Site Plan Approval |

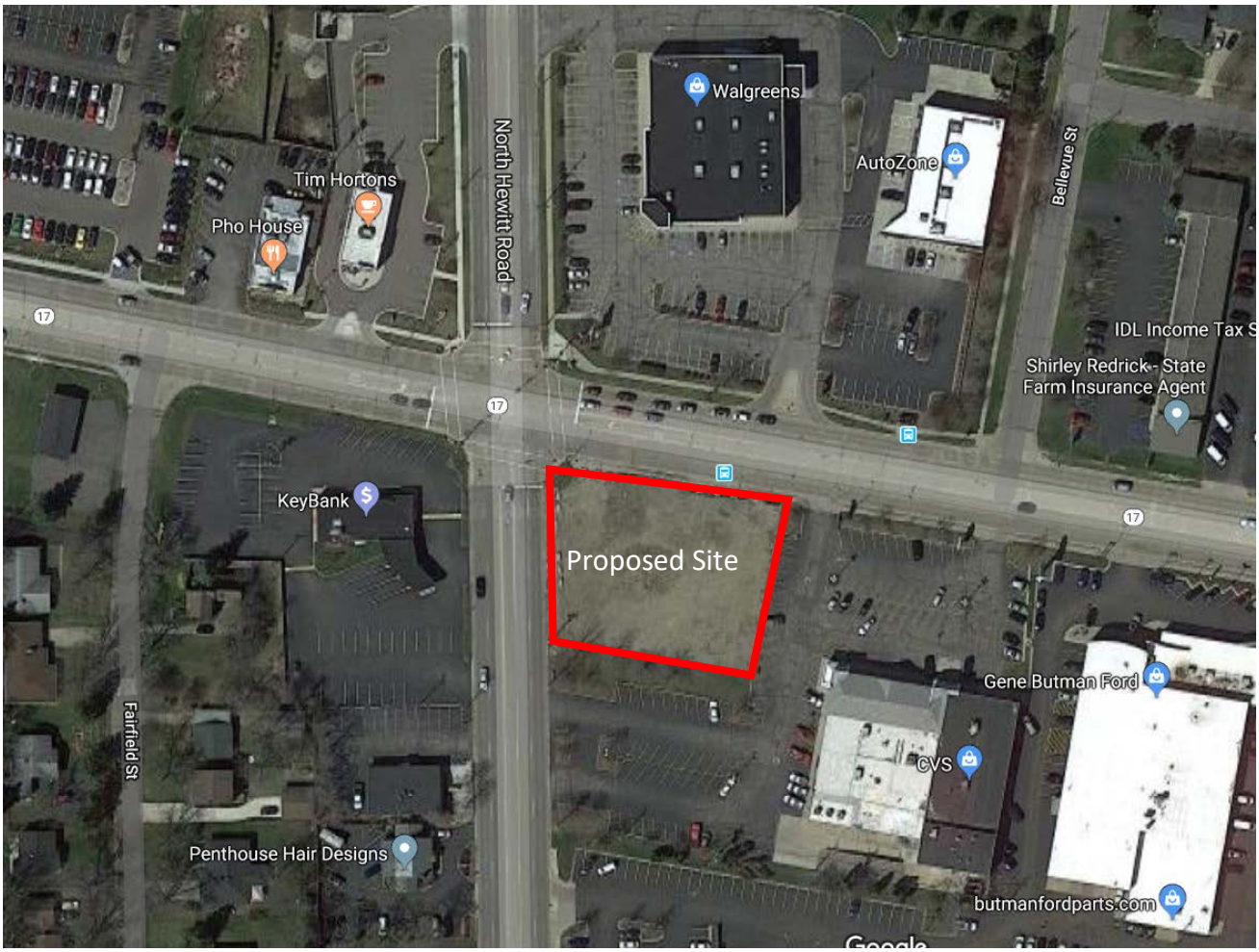
## PROJECT AND SITE DESCRIPTION

An application has been submitted for the construction of a gas station on an 0.71-acre parcel located on the southeast corner of Washtenaw Avenue and N. Hewitt Road. The proposal includes a 4,200 sq/ft gas station/convenience store and eight (8) pumps, which is a reduction from the originally proposes 5,400 sq/ft gas station. The parcel was improved with a former gas station but has been cleared for development.

The site is zoned B-3, General Commercial, per Section 306 the proposed use is a principal use permitted subject to special conditions, and subject to specific use provisions outlined in Section 1829. The Planning Commission review for granting a Special Land Use are stated in Section 2119 and are identified in the content of this review.

Please note that this project received preliminary site plan approval on December 16, 2015. However, the applicant never received final site plan approval and the preliminary site plan approval has expired. CWA did not review the original preliminary site plan. We have been asked by the Township to review this project as a new application. The application was last considered in January 2019. The Special Use for the project was denied. See section below for more details.

**Location of Subject Property:**




**Surrounding Property Details:**

| Direction | Zoning | Use |
|---|---|---|
| North | City of Ypsilanti | Walgreens |
| South | B-3, General Business | CVS |
| East | B-3, General Business | CVS |
| West | B-3, General Business | Bank |

**Size of Site:**

The area for the proposed development is approximately 0.71-acres.

**Current Use of Site:**

The subject parcel is vacant land.

**Proposed Use of Site:**

The proposed use will be a gas station and convenience store. No auto repair will be conducted on site.

## PREVIOUS PLANNING COMMISSION REVIEW

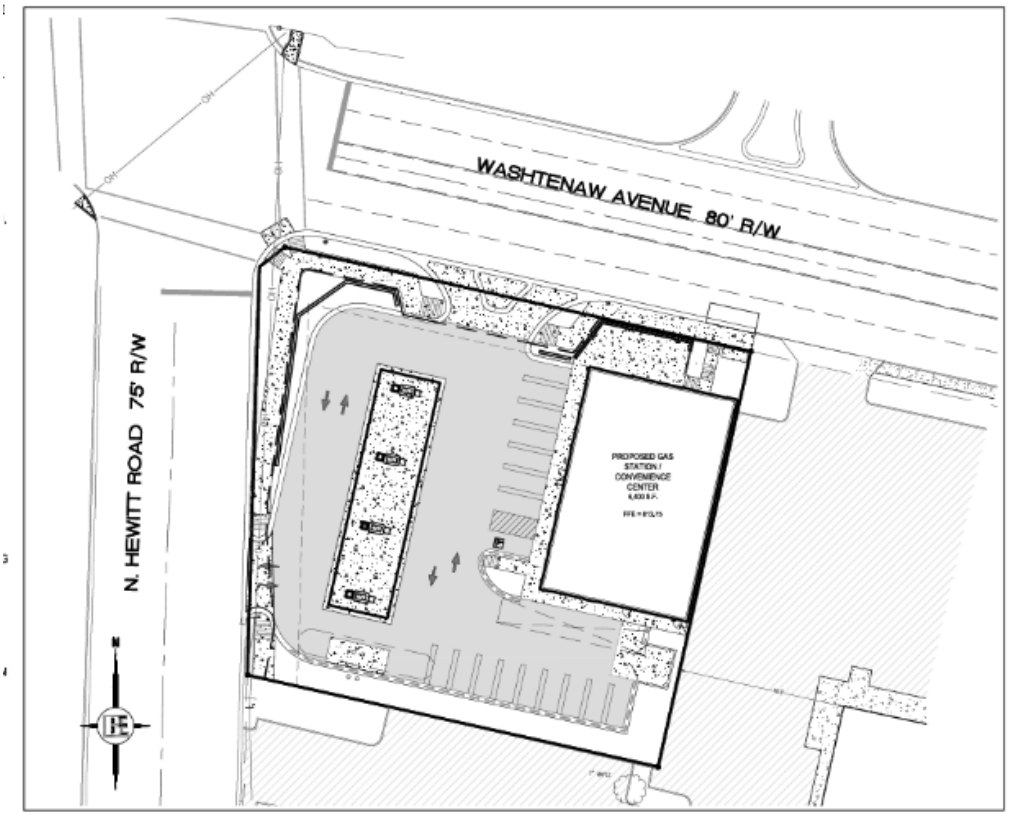
The application was last considered in January 2019. The Special Use for the project was denied. Discussion by the Planning Commission for denying the Special Use included:

- Size and scale of building
- Lack of parking based on size of building
- Lack of accommodation for AAATA Super Stop
- Inconsistent with Re-Imagine Washtenaw Plan:
    - Building location as building should be at hard corner of Washtenaw and Hewitt
    - Building design
    - Pumps should not be visible or better screened
    - Lack of pedestrian amenities, particularly in relation of building location

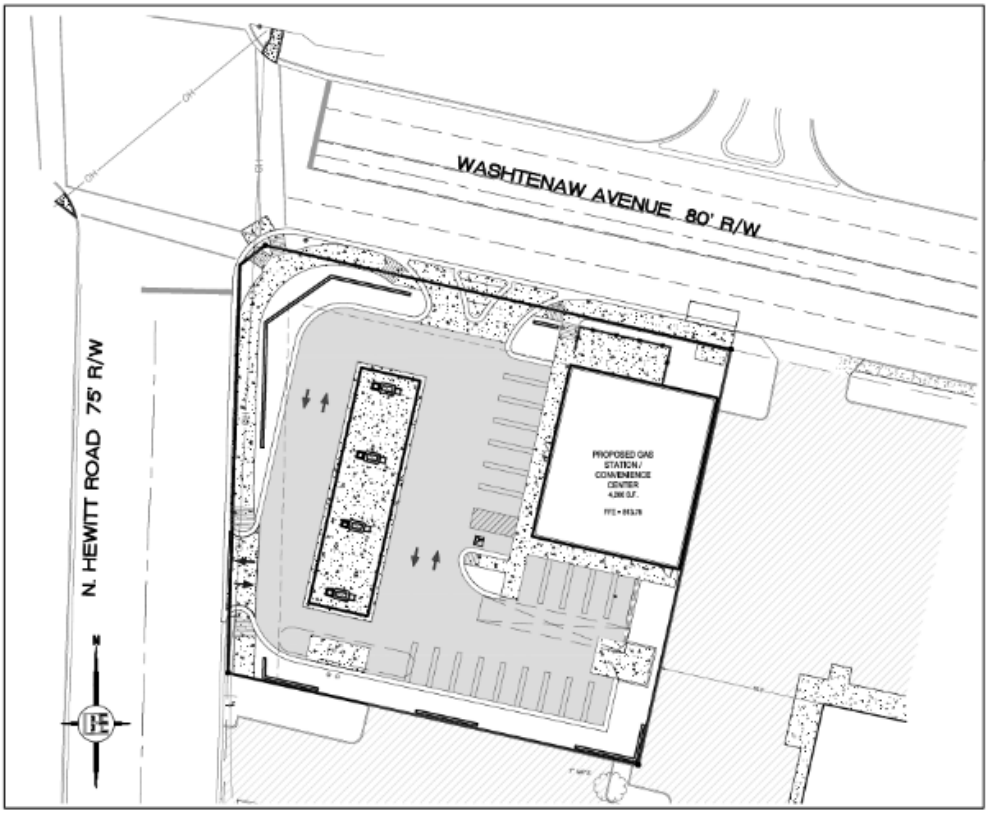
## SITE PLAN CHANGES

Based on the discussion from the Planning Commission in January 2019, the applicant has amended their site plan. Changes include:

- Reduced building size from 5400 sq/ft to 4200 sq/ft
- Added five parking spaces to bring parking in compliance
- Increase sidewalk width on Washtenaw to 8-feet and Hewitt to 9-feet
- Added additional landscaping and knee wall along southern property line
- Increased space for the bus stop and provided concrete pad for bench seating
- Revised elevations
- Added concreate walk along southern side of building




**January 2019 Submittal**
**-Special use denied**




**January 2020 Submittal**

## NATURAL RESOURCES & UTILITIES

**Topography:** The subject parcel relatively flat in all directions.

**Woodlands:** The site has been cleared. There were no trees as the site was previously developed.

**Wetlands:** There are no wetlands located on the subject parcel.

***Items to be Addressed:*** *None*

## BUILDING AND SITE ARRANGEMENT

The building is located in the northeast corner of the site. The pumps and canopy are centrally located on the site. Access to the site will be via a right-in/right-out on Washtenaw and a full access off N. Hewitt.

***Items to be Addressed:*** *None*

## MASTER PLAN

Per the 2014 future land use map, the use for the subject parcel is designated as Urban Commercial Corridor. Per the updated the draft 2040 Master Plan the site is identified as Regional Mixed Use Corridors :

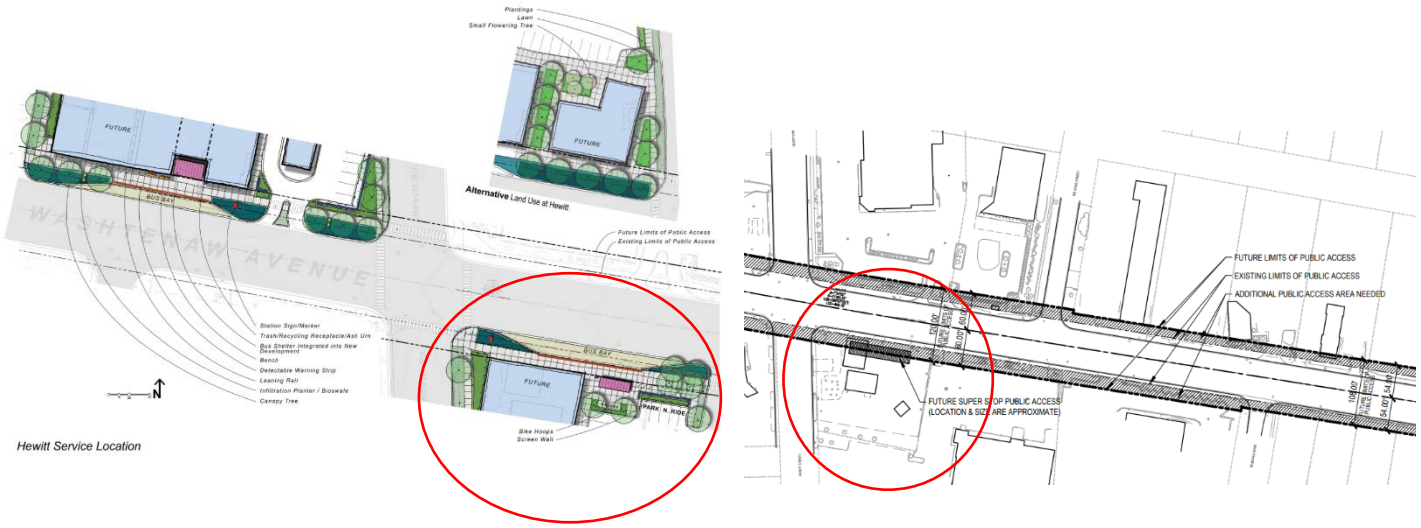
*Mixed Use Corridors are developed transportation arteries, with a mixture of residential, commercial, office and employment uses. The intent is to improve the function, investment value and aesthetics of corridor. There are two types of Mixed Use Corridors: Neighborhood and Regional.*

Various elements of the master plan in relation to the site plan and ReImagine Washtenaw are identified in this report.

***Items to be Addressed:*** *None*

## REIMAGINE WASHTENAW

The site is located on Washtenaw and included in the ReImagine Washtenaw plan, and specifically the Township-adopted 2014 Corridor Improvement Study. The 2014 Corridor Improvement Study identifies this as a node, which promotes buildings placed at the hard corner, and right-of-way acquisition for sidewalk and AAATA transit improvements. Furthermore, this corner has been identified as a Super Stop location.




The township-adopted 2014 Corridor Improvement Study shows the acquisition of ROW and the location of a Super Stop at this site.

The applicant has increased the space for a bus stop and added a concreate pad. They were not able to place the bus pull-off lane on Washtenaw as it would eliminate all access to the site from Washtenaw. The applicant has provided additional detail as to why they can't meet the 2014 Corridor Improvement Study in their October 31, 2018 memo.

The applicant has noted that the proposed use of the site as a gas station does not lend itself to meet the vision of the Improvement Plan. The applicant notes that placing the gas station at the hard corner is not an option as gas stations, and specifically pumps, need visibility. We have reviewed and approved gas stations that place the building up front with the pumps behind. See example below:







***Items to be Addressed:*** *Planning Commission to consider if the applicant has made enough building and site improvements to meet the intent of the ReImagine Washtenaw Plan.*

## HEIGHT, BULK, DENSITY AND AREA

Outside of the ReImagine Washtenaw intent for the building to be placed at the hard corner, we find the structure and design layout the meets the height, bulk, density and area zoning ordinance requirements.

| | | Required / Allowed | Provided | Complies with Ordinance |
|---|---|---|---|---|
| **Lot Area** | | N/A | 0.71 Acres | Complies |
| **Setback** | Front (north) | 20 feet | 20 Feet | Complies |
| | Front (east) | 20 Feet | + 20 Feet | Complies |
| | Side (east) | 0 Feet (if no windows or doors) | 1.00 Foot | Complies |
| | Rear | 20 Feet | 72 Feet | Complies |
| **Building Height (Feet)** | | 25 Feet | 22 feet | Complies |
| **Building Height (Stories)** | | 2 | 1 | Complies |
| **Distance between buildings** | | N/A | N/A | Complies |

***Items to be Addressed:*** *None*

## SITE ACCESS, CIRCULATION, AND TRAFFIC IMPACTS

The site has approximately 200 linear feet of frontage on Washtenaw Avenue, and approximately 165 linear feet of frontage on N. Hewitt Rd. The applicant proposes a right-in/right-out on Washtenaw and a full access off N. Hewitt The applicant is required to obtain approvals from Washtenaw County Road Commission and MDOT for work in the N. Hewitt Road and Washtenaw Avenue right-of-way.

The applicant has applied the required turning template to ensure the parking lot is maneuverable for the largest vehicle accessing the site (i.e. fire truck, garbage truck, etc.). Site access and circulation should be confirmed by the Township Fire Marshall.

***Items to be Addressed:*** *None*

## NON-MOTORIZED ACCESS

Per Section 2114.5 of the zoning ordinance, *concrete paved safety paths for bicycles and pedestrians not less than eight feet wide shall be provided on both sides of all major and secondary thoroughfares as designated on the master plan of future land use*. Washtenaw Avenue and Hewitt is designated as an arterial/major street and therefore installation of an eight (8) foot wide concrete safety path is required. The applicant has provided the required 8-foot path on Washtenaw and Hewitt.

***Items to be Addressed:*** *None*

## PARKING

Per Section 2104 2.d.(1) the parking requirement is as follows:

| Parking Requirements | Number of Spaces Required | Number of Spaces Provided | Compliance |
|---|---|---|---|
| Gas Station | One (1) space per employee + one (1) space per 100 s.f. of retail floor area in addition to space provided at each fuel pump dispenser =<br><br>22 spaces + 8 spaces at pumps | 22 spaces plus 8 spaces at pumps | Complies |
| Barrier-Free Spaces | 1 space | 1 space | Complies |
| Loading spaces | 1 space | 1 space | Complies |

***Items to be Addressed:*** *None*

## EXTERIOR LIGHTING

The site plan indicates two (2) parking lot lights mounted on poles, eleven (11) building mounted lights, and sixteen (16) canopy lights.

Photometrics have been met; however, all exterior lighting fixtures in non-residential districts shall be turned off between the hours of 11:00 p.m. and sunrise, except where used for security purposes or where the use of the property continues after 11:00 p.m.

***Items to be Addressed:*** *Confirm ability to reduce lighting.*

## LANDSCAPE STANDARDS AND REQUIREMENTS

Upon thorough review of the site plan landscape requirements, we have determined the landscape plan provided meets the general intent and minimum requirements of the zoning ordinance. Applicant proposes a 2.5' high screen wall along Hewitt and Washtenaw, and a decorative fence on Washtenaw to enclose the outdoor seating area. Plan has been stamped by a licensed landscape architect

***Items to be Addressed:*** *None*

## BUILDING ELEVATIONS AND FLOOR PLAN

The applicant has provided building elevations and a floor plan. Per the Schedule Regulating Exterior Building Wall Materials in Section 2125 (8), the building is primarily masonry.

***Items to be Addressed:*** *None*

## DUMPSTER ENCLOSURE

The dumpster will be enclosed with a masonry wall that matches masonry on the building.

***Items to be Addressed:*** *None*

## GAS STATIONS STANDARDS

Section 1829 outlines specific standards for Gas Stations uses:

A. Gasoline service stations shall directly abut a major thoroughfare as designated in the township's major thoroughfare plan

**CWA Comment:** Both Washtenaw and Hewitt are major thoroughfares

B. The minimum lot area for gasoline service stations shall be 15,000 square feet for stations having no more than two service bays and no more than two pump islands. There shall be added 3,000 square feet for each additional service bay and 1,500 square feet for each additional pump island. At least one street lot line shall be at least 150 feet in length along one major thoroughfare. The lot shall be so shaped and the station so arranged, as to provide ample space for vehicles which are required to wait.

**CWA Comment:** The application has met all requirements

C. The driveway or curb cuts for access to a service station shall not be permitted at such locations that will tend to create traffic hazards in the streets immediately adjacent thereto. Entrances shall be located no less than ten feet from an adjoining property line, 25 feet if adjacent to residential districts, as extended to the curb or pavement. Entrances shall also be no less than 25 feet from an intersection street right-of-way line extended to the curb or pavement.

**CWA Comment:** The application has met all requirements; however curb-cuts shall be approved by the Washtenaw County Road Commission and/or MDOT.

D. A four-foot six-inch masonry obscuring wall shall be provided and maintained on those property lines adjacent to or abutting a residential district.

**CWA Comment:** Not applicable

## SPECIAL LAND USE REVIEW STANDARDS

The Planning Commission shall review the particular circumstances and facts of each proposed use in terms of the following standards and required findings, and with respect to any additional standards set forth in the ordinance. The Planning Commission shall find and report adequate data, information, and evidence showing that the proposed use meets all required standards and:

a. Will be harmonious, and in accordance with the objectives, intent, and purpose of this ordinance.

b. Will be compatible with a natural environment and existing and future land uses in the vicinity.

c. Will be compatible with the township master plans.

d. Will be served adequately by essential public facilities and services, such as highways, streets, police and fire protection, drainage ways and structures, refuse disposal, or that the persons or agencies

responsible for the establishment of the proposed use shall be able to provide adequately for such services.

e. Will not be detrimental, hazardous, or disturbing to existing or future neighboring uses, persons, property, or the public welfare.

f. Will not create additional requirements at public costs for public facilities and services that will be detrimental to the economic welfare of the community.

The Planning Commission has the authority to approve, approve with conditions or deny the application for a special land use. In granting a special land use permit, the Planning Commission shall impose any conditions it deems necessary to achieve the objective and standards of this ordinance and identify said conditions in a motion.

## AGENCY APPROVALS

The applicant will need to obtain the preliminary approvals from the following agencies:

(1) YCUA
(2) Washtenaw County Road Commission
(3) Washtenaw County Water Resources Commission
(4) MDOT

***Items to be Addressed:*** *Provide township with outside agency approvals*

## SUMMARY

As previously noted the application was previously denied. Discussion by the Planning Commission for denying the Special Use included:

- Size and scale of building
- Lack of parking based on size of building
- Lack of accommodation for AAATA Super Stop
- Inconsistent with Re-Imagine Washtenaw Plan:
    - Building location as building should be at hard corner of Washtenaw and Hewitt
    - Building design
    - Pumps should not be visible or better screened
    - Lack of pedestrian amenities, particularly in relation of building location

Based on the discussion from the Planning Commission in January 2019, the applicant has amended their site plan. Changes include:

- Reduced building size from 5400 sq/ft to 4200 sq/ft
- Added five parking spaces to bring parking in compliance
- Increase sidewalk width on Washtenaw to 8-feet and Hewitt to 9-feet
- Added additional landscaping and knee wall along southern property line
- Increased space for the bus stop and provided concrete pad for bench seating
- Revised elevations
- Added concreate walk along southern side of building

This is a special use, and the Planning Commission has discretion of approval based upon the application of the special use standards. Planning Commission to consider if the applicant has made enough building

and site improvements to meet the intent of the ReImagine Washtenaw Plan, Township Master Plan, and meet the required special use standards.

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**CARLISLE/WORTMAN ASSOC., INC.**
**Benjamin R. Carlisle, AICP, LEED AP**
**Principal**

January 9, 2020

Ms. Charlotte Wilson
Township Planner
Charter Township of Ypsilanti
7200 S. Huron River Drive
Ypsilanti, MI 48197

RE: Sunoco Gas Station
Site Plan Review #1

Dear Ms. Wilson:

We have completed a review of the plans dated December 9, 2019 for the proposed College Sunoco located at the southeastern corner of Washtenaw Avenue and N. Hewitt Road. The plans were prepared by Boss Engineering, received by OHM Advisors on December 19, 2019, and were reviewed with respect to the Ypsilanti Township Engineering Standards and Design Specifications. The last submitted plans were previously received and approved on September 20, 2018; however, the applicant's application has expired and this review will renew their site plan application. At this time, the plans are recommended for approval for the Planning Commission's consideration.

A brief description of the project has been provided below (Section A), followed by our preliminary detailed engineering comments (Section B) and a list of anticipated required permits and approvals (Section C). Comments in Section B are detailed in nature, do not influence the overall site layout, and can be addressed during the detailed engineering drawing submittal.

## A. PROJECT AND SITE DESCRIPTION

The applicant is proposing to construct a new 4,200 square-foot convenience center and gas station located at 2169 Washtenaw Avenue. In 2016, the old building was demolished as well as the removal of the underground tank under state fire marshal permit and supervision. The gas station will have a small patio adjacent to Washtenaw Avenue, and to the north of the convenience store. The applicant is also proposing eight (8) gas pumps and a pedestrian sidewalk along both N. Hewitt Road and Washtenaw Avenue.

The applicant is proposing service connections to existing water and sanitary lines along the south side of Washtenaw Avenue. A stormwater conveyance system is also being proposed and it will outlet to the existing catch basin on the southeast corner of the intersection of Washtenaw Avenue and N. Hewitt Road.

## B. PRELIMINARY DETAILED ENGINEERING COMMENTS:

### General

1. The applicant shall note that structural calculations are required for any retaining wall exceeding 24-inches in height. It currently appears that the proposed retaining wall located at the northeast corner of the site (Sheet C4) exceeds this standard and shall have accompanied calculations in the plan set.

2. The applicant shall provide an overlay of existing and proposed utilities in the landscaping plan sheet to ensure that trees shall not be planted directly above any proposed or existing utilities (Sheet C6). As

the plans have proposed private utility services, the applicant shall note that owner will be responsible for all future maintenance, including tree root removal.

## C. REQUIRED PERMITS/APPROVALS

The following is a listing of the permits and other outside agency reviews that are anticipated to be required for the construction of this project. Copies of all permits and outside agency reviews and/or waiver letters shall be sent to the Ypsilanti Township Office of Community Standards Department, and Orchard, Hiltz, and McCliment (Email: elliot.smith@ohm-advisors.com).

- The stormwater management system may require the review and approval from the Washtenaw County Water Resources Commissioner's Office.
- A Washtenaw County Road Commission permit will be required for work within the N. Hewitt Rd ROW.
- A MDOT permit will be required for work within the Washtenaw Ave ROW.
- The sanitary sewer and water service leads will require the review and approval by the Ypsilanti Communities Utility Authority.
- A Soil Erosion and Sedimentation Control permit shall be secured from the Ypsilanti Township Office of Community Standards.
- The Ypsilanti Township Fire Department shall review the plans with regards to the circulation and all fire protection aspects.
- The Township's Planner will review, approve, and inspect the landscaping for this site.
- An MDEQ permit will be required for the installation of the new underground gas storage tanks.
- If dewatering should be needed, the contractor/applicant shall be responsible for obtaining the necessary approvals from the Township and the Township Engineer, permission from all impacted adjacent properties and/or permits from MDOT, WCWRC's office, or the WCRC.
- Record plans shall be provided to the Township Engineer following the completion of construction of all project phases.

Should you have any questions regarding this matter, please contact this office at (734) 466-4580.

Sincerely,
OHM Advisors

Matthew D. Parks, P.E.

Elliot Smith

MDP/ERS

cc: Mike Radzik, Township Community Standards Director
Brenda Stumbo, Township Supervisor
Karen Lovejoy Roe, Township Clerk
Larry Doe, Township Treasurer
Michael Hoffmeister, Township Residential Services Director
Lisa Stanfield, Township Deputy Clerk
Debbie Graham, Township Deputy Supervisor
Tammie Keen, Township Community Standards Executive Coordinator
Doug Winters, Township Attorney
Scott Westover, P.E., YCUA
Gary Streight, P.E., WCRC
Andrew Hodges, MDOT (hodgesa@michigan.gov)
Theresa Marsik, P.E., WCWRC

Scott Tousignant, P.E., Owner's Engineer, Boss Engineering, 3121 E Grand River Ave, Howell MI 48843
Jack Knowles, Owner, Hewitt Investment LLC, 29200 Northwestern Hwy, Ste 450, Southfield, MI 48034
File

P:\0000_0100\SITE_YpsilantiTwp\2015\0098151050_College_Sunoco_MUNI\2019 Submittal\01_SP\Sunoco Gas Station_Plan Review_2020-01-09.docx

# CHARTER TOWNSHIP OF YPSILANTI FIRE DEPARTMENT

## BUREAU OF FIRE PREVENTION

222 South Ford Boulevard, Ypsilanti, MI 48198

January 8, 2020

Charlotte Wilson, Township Planner
Charter Township of Ypsilanti
7200 S. Huron River Drive
Ypsilanti, MI 48197

RE: Preliminary (non-residential) Site Plan Review #1

| | |
|---|---|
| Project Name: | Sunoco Gas Station |
| Project Location: | 2169 Washtenaw Avenue |
| Plan Date: | 12/9/2019 |
| Project Number: | 15-080 |
| Applicable Codes: | IFC 2018 |
| Contractor: | Jeffery A. Scott |
| Contractor Address: | 32316 Grand River Ave. Suite 200 Farmington, MI 48336 |

## Status of Review

**Status of review:** Approved Conditionally (see comments)

Pages C1 thru C18 and A100 thru A200 were reviewed.

**Comments:** On Final Inspection gas attendant's field of view shall comply with IFC 2018 2304.2.4. Obstructions to view. Dispensing devices shall be in clear view of the attendant at all times. Obstructions shall not be placed between the dispensing area and the attendant.

## Site Coverage - Hydrants

**Comments:** Meets IFC 2018 code requirements.

## Site Coverage - Access

**Comments:** Meets IFC 2018 code requirements.

## Interior

**Comments:** Meets IFC 2018 code requirements.

Respectfully submitted,

Dan Kimball, Fire Marshal
Charter Township of Ypsilanti Fire Department
CFPS, CFI II, CFPE

**Zimbra** **cwilson@ytown.org**

## RE: 2169 Washtenaw - K-11-06-478-001 - SPR #1 - Sunoco

**From :** Scott Westover <SWestover@ycua.org> Thu, Dec 19, 2019 04:00 PM
**Subject :** RE: 2169 Washtenaw - K-11-06-478-001 - SPR #1 - Sunoco 2 attachments
**To :** Charlotte Wilson <cwilson@ytown.org>
**Cc :** 'Mike Radzik (mradzik@ytown.org)' <mradzik@ytown.org>

I thought a preconstruction meeting was conducted months ago for this project?

Anyway, the plan looks exactly the same with regards to water and sewer. No comments from YCUA.

**SCOTT WESTOVER** | Engineering Manager
Telephone: (734) 484-4600 ext. 220 | Facsimile: (734) 484-3369
swestover@ycua.org

**Ypsilanti Community Utilities Authority**
**2777 State Road | Ypsilanti, Michigan USA 48198-9112**
**www.ycua.org**

This Internet message and any attachments may contain information that is confidential and/or legally privileged. It is intended for use only by the named recipients. If you are not a named recipient, please notify me immediately, and do not use this message or any attachments for any purpose, or distribute or otherwise disclose its contents to any person, or copy or store it in any medium. Neither this information block, the typed name of the sender or anything else in this message is intended to constitute an electronic signature for purposes of the Uniform Electronic Transactions Act or the Electronic Signatures in Global and National Commerce Act ("E-Sign"). The recipient should check this email and any attachments for the presence of viruses. YCUA accepts no liability for any damage caused by any virus transmitted by this email. Thank you.

---

**From:** Charlotte Wilson [mailto:cwilson@ytown.org]
**Sent:** Thursday, December 19, 2019 9:24 AM
**To:** Benjamin Carlisle <bcarlisle@cwaplan.com>; Megan Masson-Minock <mmasson-minock@cwaplan.com>; Matt Parks <matt.parks@ohm-advisors.com>; Elliot Smith <Elliot.Smith@ohm-advisors.com>; Scott Westover <SWestover@ycua.org>; Daniel Kimball <dkimball@ytown.org>; Eric R. Copeland <ecopeland@ytown.org>; Theresa M. Marsik <marsikt@washtenaw.org>
**Cc:** Michael Radzik <mradzik@ytown.org>; Brenda Stumbo <bstumbo@ytown.org>
**Subject:** 2169 Washtenaw - K-11-06-478-001 - SPR #1 - Sunoco

Good morning,

Ypsilanti Township is in receipt of plans/fees for the revised Sunoco gas station preliminary site plans at 2169 Washtenaw Avenue - K-11-06-478-001. They are ready for distribution/pick-up.

Reviews are due on January 9, 2020.

Thank you,
Charlotte M. Wilson, AICP
Planning and Development Coordinator

Office of Community Standards
734-485-3943
Tilden R. Stumbo Civic Center
7200 S. Huron River Dr.
Ypsilanti, MI 48197

---

Charter Township of Ypsilanti

**EVAN N. PRATT, P.E.**

WATER RESOURCES COMMISSIONER
705 North Zeeb Road
P.O. Box 8645
Ann Arbor, MI 48107-8645

email: drains@ewashtenaw.org
http://drain.ewashtenaw.org

HARRY SHEEHAN
Chief Deputy Water Resources Commissioner

SCOTT A. MILLER, P.E.
Deputy Water Resources Commissioner

Telephone 734.222.6860
Fax 734.222.6803

February 8, 2019

Mr. Scott Tousignant, P.E.
Boss Engineering
3121 E. Grand River Avenue
Howell, Michigan 48843

RE: Proposed Gas Station –
N. Hewitt and Washtenaw
Ypsilanti Township, Michigan
WCWRC Project No. 4852

Dear Mr. Tousignant:

This office has reviewed the site plans for the above referenced project to be located in Ypsilanti Township. These plans have a job number of 15-080, a date of January 18, 2019, and were received on January 22, 2019. As a result of our review, we would like to offer the following comments:

1. The design plans are technically correct and do not require revisions at this time. An approval letter will be issued upon payment of the attached invoices.
2. Please see the attached invoices for the current and outstanding fees. Please remit these fees upon receipt of the accompanying invoices. As requested, the invoices are being submitted directly to Group 10 Management.

If you have any questions, please contact our office.

Sincerely,

Theresa M. Marsik, P.E.
Storm Water Engineer
(approval\Proposed Gas Station rev2)

cc: Jack Knowles, Group 10 Management
Charlotte Wilson, Ypsilanti Township Office of Community Standards
Michael Radzik, Ypsilanti Township Office of Community Standards
Ben Carlisle, Ypsilanti Township Planning and Development (Carlisle Wortman)

COMMISSIONERS
DOUGLAS E. FULLER
CHAIR

BARBARA RYAN FULLER
VICE-CHAIR

RODRICK K. GREEN
MEMBER

**WASHTENAW COUNTY**
**BOARD OF COUNTY ROAD COMMISSIONERS**
555 NORTH ZEEB ROAD
ANN ARBOR, MICHIGAN 48103
WWW.WCROADS.ORG
TELEPHONE (734) 761-1500
FAX (734) 761-3737

SHERYL SODERHOLM SIDDALL, P.E.
MANAGING DIRECTOR
COUNTY HIGHWAY ENGINEER

MATTHEW F. MACDONELL, P.E.
DIRECTOR OF ENGINEERING

JAMES D. HARMON, P.E.
DIRECTOR OF OPERATIONS

DANIEL D. ACKERMAN
DIRECTOR OF FINANCE & IT

November 16, 2018

**Boss Engineering**
3121 E. Grand River Ave.
Howell, MI 48843

**Attention: Scott Tousignant, P.E.**

**Regarding: WCRC Permit Application #11616 Gas Station/Convenience Store**
**Ypsilanti Township**

Dear Mr. Tousignant:

This letter is provided in response to the applicant's site plan submittal for the above referenced project. The site plan has been reviewed and meets the technical approval of the WCRC. The following administrative items must be addressed in accordance with the WCRC Procedures & Regulations for Permit Activities (PRPA):

- An administrative/inspection deposit in the amount of $500 must be submitted.
- Surety in the amount of $5,000 must be submitted by either cash/check or a letter of credit.
- The name, contact information and insurance for the contractor who will be doing the work must be submitted.

Once the above items have been completed a permit may be issued. No work within the ROW shall occur until a permit has been issued. If you have any questions, please do not hesitate to contact me at (734) 327.6692.

Sincerely,

Gary Streight, P.E.
Project Manager

Cc: Mike Koza / Hewitt Investments, LLC
Karen Lovejoy-Roe / Charter Township of Ypsilanti Clerk
Mike Radzik / Charter Township of Ypsilanti Planner
Nancy Wyrybkowski / Charter Township of Ypsilanti
Charlotte Wilson / Charter Township of Ypsilanti Planning
Matt Parks, P.E. / OHM
Mark McCulloch, P.E. / WCRC Senior Project Manager - Permits

# SITE PLAN SET
# FOR
# PROPOSED GAS STATION / CONVENIENCE STORE
## PART OF SE. 1/4, SECTION 6, T.3S., R.7E.
## YPSILANTI TWP., WASHTENAW COUNTY, MICHIGAN

## PROPERTY DESCRIPTION:

PART OF SECTION 6, T.3S., R.7E., YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE S.E. CORNER OF SAID SECTION 6; THENCE N.88°09'00"W. 946.57 FEET ALONG THE SOUTH LINE OF SAID SECTION 6; THENCE N.01°43'00"E. 781.13 FEET; THENCE N.77°24'00"W. 684.31 FEET; THENCE N.01°43'00"E. 295.50 FEET. TO THE POINT OF BEGINNING; THENCE S.01°43'00"W. 162.50 FEET; THENCE S.77°24'00"E. 167.43 FEET; THENCE N.12°36'00"E. 169.40 FEET; THENCE N.77°24'00"W. 190 FEET; THENCE SOUTHWESTERLY TO THE POINT OF BEGINNING.

## CONSTRUCTION NOTES

THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING NOTES AND ANY WORK INVOLVED SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

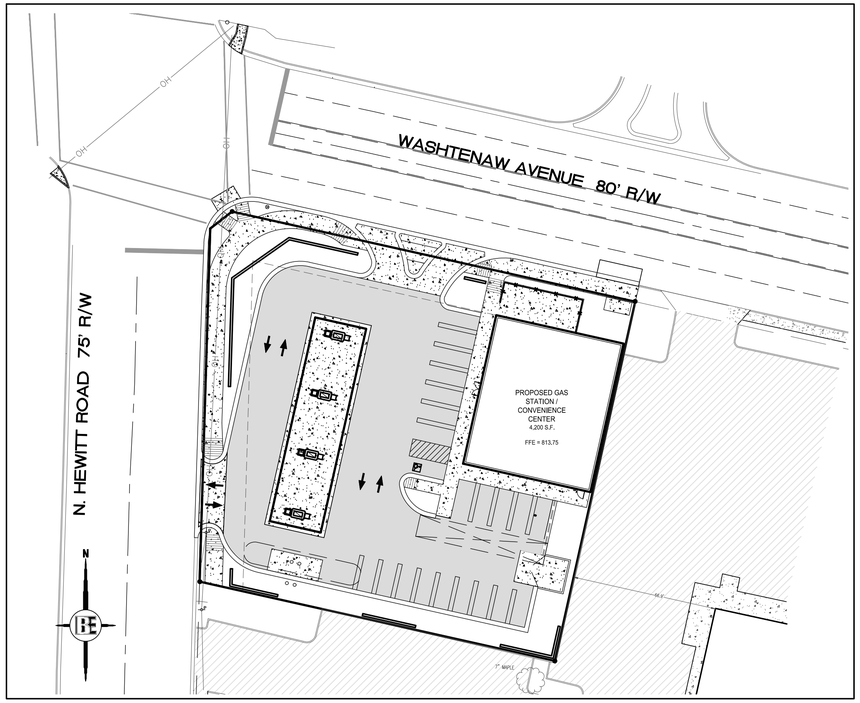
1. THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.
2. DO NOT SCALE THESE DRAWINGS AS IT IS A REPRODUCTION AND SUBJECT TO DISTORTION.
3. A GRADING PERMIT FOR SOIL EROSION-SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
4. IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
5. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS AND SPECIFICATIONS.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
7. PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY DESIGNED AND CONSTRUCTED.
8. ALL BARRIER-FREE FEATURES SHALL BE CONSTRUCTED TO MEET ALL LOCAL, STATE AND A.D.A. REQUIREMENTS.
9. ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
10. THE CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND RIGHTS-OF-WAY, PUBLIC OR PRIVATE, PRIOR TO THE START OF CONSTRUCTION.
11. THE CONTRACTOR SHALL COORDINATE WITH ALL OWNERS TO DETERMINE THE LOCATION OF EXISTING LANDSCAPING, IRRIGATION LINES & PRIVATE UTILITY LINES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING LANDSCAPING, IRRIGATION LINES, AND PRIVATE UTILITY LINES.
12. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT.
13. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
14. THE CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
15. THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
16. ALL EXCAVATION UNDER, WITHIN 3 FEET OF PUBLIC PAVEMENT OR WITHIN A 1 ON 1 SLOPE TO PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOT CLASS II).
17. ALL PAVEMENT REPLACEMENT AND OTHER WORKS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWNSHIP, INCLUDING THE LATEST MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
18. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
19. NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR ANY DELAY OR INCONVENIENCE DUE TO THE MATERIAL SHORTAGES OR RESPONSIBLE DELAYS DUE TO THE OPERATIONS OF SUCH OTHER PARTIES DOING WORK INDICATED OR SHOWN ON THE PLANS OR IN THE SPECIFICATION OR FOR ANY REASONABLE DELAYS IN CONSTRUCTION DUE TO THE ENCOUNTERING OR EXISTING UTILITIES THAT MAY OR MAY NOT BE SHOWN ON THE PLANS.
20. DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT.
21. IF WORK EXTENDS BEYOND NOVEMBER 15, NO COMPENSATION WILL BE DUE TO THE CONTRACTOR FOR ANY WINTER PROTECTION MEASURES THAT MAY BE REQUIRED BY THE ENGINEER.
22. NO TREES ARE TO BE REMOVED UNTIL MARKED IN THE FIELD BY THE ENGINEER.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PROPERTY BEYOND THE CONSTRUCTION LIMITS INCLUDING BUT NOT LIMITED TO EXISTING FENCE, LAWN, TREES AND SHRUBBERY.
24. ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE NORMAL CONSTRUCTION LIMITS OF THE PROJECT SHALL BE SODDED OR SEEDED AS SPECIFIED OR DIRECTED BY THE ENGINEER.
25. ALL ROOTS, STUMPS AND OTHER OBJECTIONABLE MATERIALS SHALL BE REMOVED AND THE HOLE BACKFILLED WITH SUITABLE MATERIAL. WHERE GRADE CORRECTION IS REQUIRED, THE SUBGRADE SHALL BE CUT TO CONFORM TO THE CROSS-SECTION AS SHOWN IN THE PLANS.
26. TRAFFIC SHALL BE MAINTAINED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SIGNS AND TRAFFIC CONTROL DEVICES. FLAG PERSONS SHALL BE PROVIDED BY THE CONTRACTOR IF DETERMINED NECESSARY BY THE ENGINEER. ALL SIGNS SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AT NO COST TO THE TOWNSHIP. NO WORK SHALL BE DONE UNLESS THE APPROPRIATE TRAFFIC CONTROL DEVICES ARE IN PLACE.
27. ALL DEMOLISHED MATERIALS AND SOIL SPOILS SHALL BE REMOVED FROM THE SITE AT NO ADDITIONAL COST, AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
28. AFTER REMOVAL OF TOPSOIL, THE SUBGRADE SHALL BE COMPACTED TO 95% OF ITS UNIT WEIGHT.
29. ALL GRADING IN THE PLANS SHALL BE DONE AS PART OF THIS CONTRACT. ALL DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SUBGRADE PRIOR TO COMPACTING.
30. NO SEEDING SHALL BE DONE AFTER OCTOBER 15 WITHOUT APPROVAL OF THE ENGINEER.
31. ANY EXISTING APPURTENANCES SUCH AS MANHOLES, GATE VALVES, ETC. SHALL BE ADJUSTED TO THE PROPOSED GRADE AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
32. SOIL EROSION MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION HAS BEEN RE-ESTABLISHED.
33. ALL PERMANENT SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE MICHIGAN MUTCD MANUAL AND SHALL BE INCIDENTAL TO THE CONTRACT.

## MDOT CONSTRUCTION NOTES:

1. A LANE CLOSURE/NOTIFICATION REQUEST FORM A MINIMUM OF 5 DAYS PRIOR TO ANY LANE CLOSURE. SUBMIT THE FORM BY EMAIL TO THE BRIGHTON TSC OPERATIONS/TRAFFIC & SAFETY UNIT FOR REVIEW AND APPROVAL.
2. SINGLE LANE CLOSURES ON EB M-17 WILL ONLY BE PERMITTED MONDAY THROUGH THURSDAY BETWEEN 9:00 AM AND 3:00 PM
3. NO LANE CLOSURES WILL BE PERMITTED ON M-17 WHEN THERE ARE OTHER LANE CLOSURES ON M-17 WITHIN 3 MILES OF THIS LOCATION
4. ALL EXISTING PERMANENT MDOT SIGNS DAMAGED OR LOST BY THE CONTRACTOR MUST BE REPLACE IN KIND ON NEW SUPPORTS AT THE CONTRACTORS EXPENSE.
5. NO WORK OR LANE CLOSURES WILL BE PERMITTED ON M-17 DURING THE INDEPENDENCE DAY, LABOR DAY, THANKSGIVING, CHRISTMAS OR ANY OTHER STATE DESIGNATED HOLIDAY PERIOD, IN ADDITION, NO LANE CLOSURES WILL BE PERMITTED DURING HOME FOOTBALL EVENTS AT RYNEARSON STADIUM ON THE EASTERN MICHIGAN CAMPUS. THE CONTRACTOR IS RESPONSIBLE TO VERIFY DATES OF THESE EVENTS.
6. ALL EXISTING PAVEMENT MARKINGS THAT ARE REMOVED FOR TRAFFIC CONTROL OR OBLITERATED DURING CONSTRUCTION OPERATIONS MUST BE REPLACED WITH WATERBORNE FOR THE LONGITUDINAL, LANE LINES AND OVERLAY COLD PLASTIC FOR SPECIAL MARKINGS (ONLY,STOP BAR, ARROWS, ETC.). THE SPECIAL MARKINGS INCLUDE THE PAVEMENT MARKINGS ON HEWITT ROAD.
7. TEMPORARY WARNING, REGULATORY, AND GUIDE SIGNS NOT REQUIRED FOR A PARTICULAR LANE OR SHOULDER CLOSURE MUST BE REMOVED, COVERED OR LAID DOWN WITH THE LEGS REMOVED.
8. DURING THE LANE CLOSURES ACCESS FOR EMERGENCY VEHICLES (FIRE, AMBULANCE, POLICE) MUST BE MAINTAINED TO ADJACENT HOMES, BUSINESSES AND SUBDIVISIONS AT ALL TIMES, IN ADDITION, ACCESS TO ALL COMMERCIAL AND RESIDENTIAL DRIVES SHALL BE MAINTAINED AT ALL TIMES.
9. ALL TRAFFIC CONTROL DEVICES AND THEIR USAGE MUST CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), 2011 EDITION.
10. ACCESS TO ALL RESIDENTIAL AND COMMERCIAL DRIVES MUST BE MAINTAINED AT ALL TIMES.
11. ALL SIGN MATERIALS AND SUPPORTS MUST MEET NCHRP-350 CRASH WORTHY REQUIREMENTS.

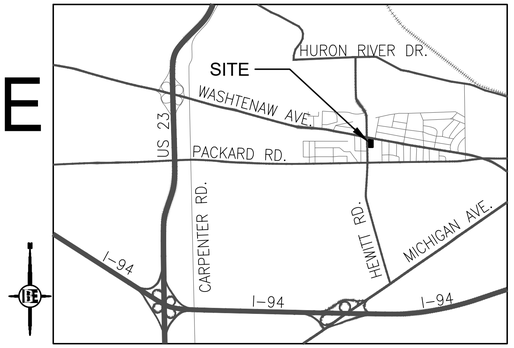
## INDEMNIFICATION STATEMENT

THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.




OVERALL SITE MAP

NO SCALE




LOCATION MAP

NO SCALE

## SHEET INDEX


| SHEET NO. | DESCRIPTION |
|---|---|
| 1 | COVER SHEET |
| 2 | SITE PLAN |
| 3 | GRADING & DRAINAGE PLAN |
| 4 | UTILITY PLAN |
| 5 | SOIL EROSION CONTROL PLAN |
| 6 | LANDSCAPE PLAN |
| 7 | LIGHTING PLAN |
| 8 | EXISTING CONDITIONS & DEMOLITION PLAN |
| 9 | CONSTRUCTION DETAILS |
| 10 | CONSTRUCTION DETAILS |
| 11 | STORM WATER ANALYSIS |
| 12 | STORM CALCULATIONS – EXISTING |
| 12A | STORM CALCULATIONS – PROPOSED |
| 13 | MDOT CONSTRUCTION DETAILS |
| 14 | MDOT CONSTRUCTION DETAILS |
| 15 | MDOT CONSTRUCTION DETAILS |
| 16 | MDOT CONSTRUCTION DETAILS |
| 17 | YPSILANTI TOWNSHIP CONSTRUCTION DETAILS |
| 18 | YPSILANTI TOWNSHIP CONSTRUCTION DETAILS |
| | PLANS PREPARED BY ARCHITECT |
| A-100 | PROPOSED FLOOR PLAN |
| A-200 | EXTERIOR ELEVATIONS |


## PERMITS REQUIRED

WCRC - R.O.W.
MDOT - R.O.W.
WCWRC - R.O.W.
YCUA - SEWER & WATER

## PREPARED FOR:

HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
CONTACT: JACK KNOWLES
248.855.2100

## ARCHITECT:

JEFFERY A. SCOTT ARCHITECTS P.C.
32316 GRAND RIVER AVE, SUITE 200
FARMINGTON, MI 48336
CONTACT: STEPHAN HOFFMAN
PHONE: 248-476-8800

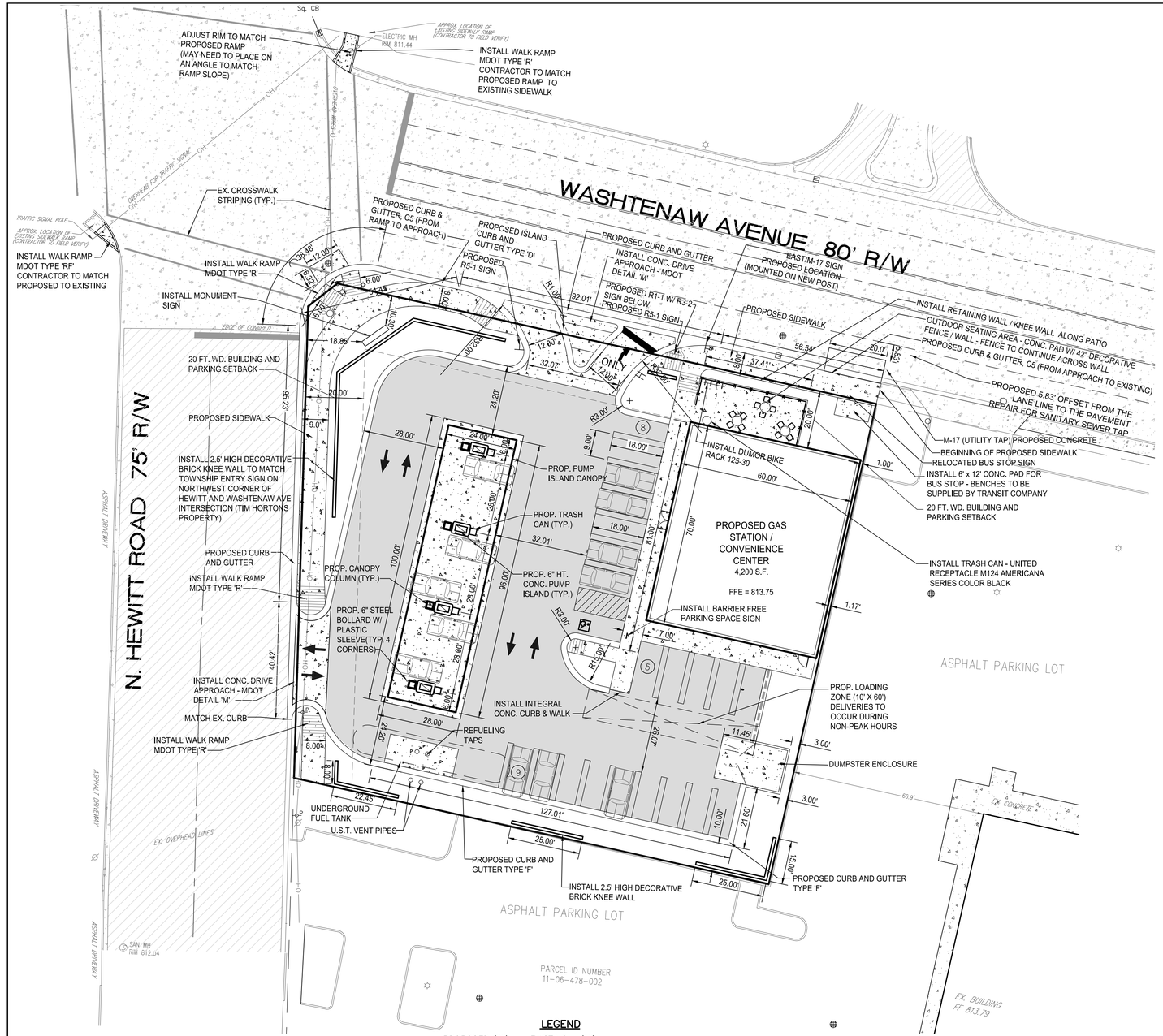
## PREPARED BY:

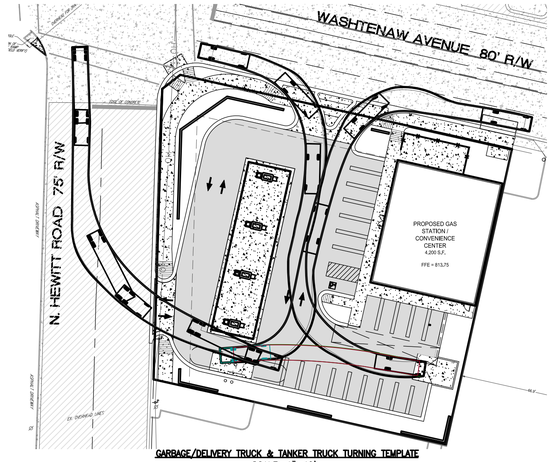

BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670
CONTACT: SCOTT TOUSIGNANT, PE


| NO | BY | CK | REVISION | DATE |
|---|---|---|---|---|
| | | | | |

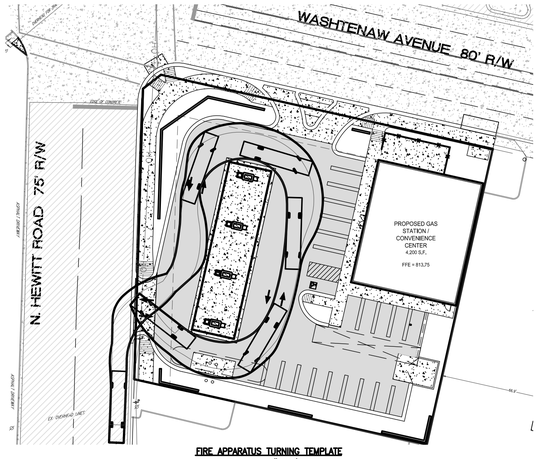
C1

ISSUE DATE: 12-9-19
JOB NO. 15-080




GARBAGE/DELIVERY TRUCK & TANKER TRUCK TURNING TEMPLATE
SCALE: 1"=40'




FIRE APPARATUS TURNING TEMPLATE
SCALE: 1"=40'

SCALE: 1 INCH = 20 FEET

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THEIR ACCURACY OR AS TO THE EXISTENCE OF OTHER UTILITIES NOT SHOWN THEREON. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO. NO PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATIONS SHOWN ON THE PLANS DIFFER SUBSTANTIALLY FROM THE PLANS.

MISS DIG 811 — 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 It's the law!

## NOTES:

1. DECORATIVE WALL BRICK SHALL MATCH THE EXISTING "WELCOME TO YPSILANTI TOWNSHIP" BRICK ON THE ADJACENT TIM HORTON'S PROPERTY.
2. A DEVELOPMENT AGREEMENT WITH THE TOWNSHIP OUTLINING ANY CONDITIONS WITH APPROVAL SHALL BE SUBMITTED INCLUDING RECORDED EASEMENTS AND PROPERTY MAINTENANCE AGREEMENT/MAINTENANCE SCHEDULE WITH LANGUAGE PROHIBITING THE USE OF WINDOW SIGNAGE.
3. HIGH DEFINITION SECURITY CAMERAS SHALL BE INSTALLED ON THE EXTERIOR AND INTERIOR OF THE BUILDING.

## LEGEND

| PROPOSED (PR) | EXISTING (EX) | |
|---|---|---|
| ● | | MANHOLE |
| ■ | | INLET / CATCHBASIN |
| | | FLARED END-SECTION |
| | | GATE VALVE |
| | | HYDRANT |
| | | UTILITY POLE |
| | | FENCE |
| | | SIGN |
| | | LIMITS OF GRADING/CLEARING |
| | | CONCRETE |
| | | ASPHALT |
| | | MODIFIED CURB |
| | | EX. OVERHEAD |
| | | EX. FENCE |
| | | EX. GAS |
| | | EX. HYDRANT |
| | | EX. CATCH BASIN |
| | | EX. SANITARY MANHOLE |
| | | EX. STORM MANHOLE |
| | | EX. SIGN |
| | | EX. GATE VALVE |
| | | EX. LIGHT POLE |
| | | EX. UTILITY POLE |

## SITE DATA

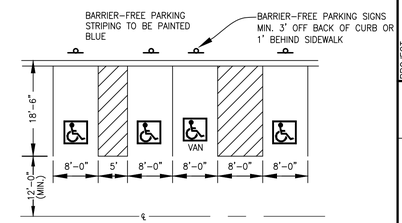
| | | EXISTING/REQUIRED | PROPOSED |
|---|---|---|---|
| 1. | ZONED: | B-3 (GENERAL BUSINESS) | B-3 (GENERAL BUSINESS) |
| 2. | MIN. LOT AREA REQUIRED: | NONE | 31,072 S.F. |
| 3. | MIN. LOT WIDTH REQUIRED: | NONE | 162.50 FT. |
| 4. | MAXIMUM HEIGHT: | 2 STORY OR 25 FT. | 22 FT. |
| 5. | SETBACKS | | |
| FRONT: | | 20 FT. (BUILDING & PARKING) | 20.00 FT. |
| SIDE: | | 0 FT. (10 FT. WHEN WINDOWS OR DOORS PROPOSED) | 1.00 FT. |
| REAR: | | 20 FT. | 72.07 FT. |
| 6. | MAX. LOT COVERAGE BY BUILDING: | NONE | 13.5% |
| 7. | USE: | GAS STATION | GAS STATION /CONVENIENCE STORE |
| 8. | PARKING REQUIREMENTS | | |

REQUIRED - 1 SPACE FOR EACH EMPLOYEE PLUS ONE FOR EACH 100 S.F. OF FLOOR AREA USED FOR CASHIER, OFFICE OR RETAIL SALE OF FOOD & BEVERAGE. 3 EMPLOYEES PLUS 1,900 S.F. / 100 = 22 SPACE REQUIRED
PROVIDED - 22 SPACES (INCLUDES 1 BARRIER-FREE SPACE).

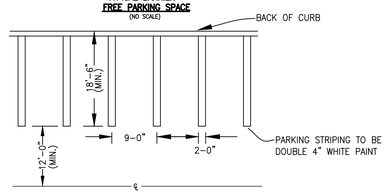
9. VEHICLE FUELING STATIONS: 8

THERE ARE NO KNOWN EXISTING EASEMENTS ON SITE.

ALL PROPOSED SIGNS SHALL MEET TOWNSHIP REGULATIONS AND REQUIRE A SIGN PERMIT FROM THE TOWNSHIP.




TYPICAL BARRIER FREE PARKING SPACE
(NO SCALE)




TYPICAL PARKING SPACE


BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670


PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE

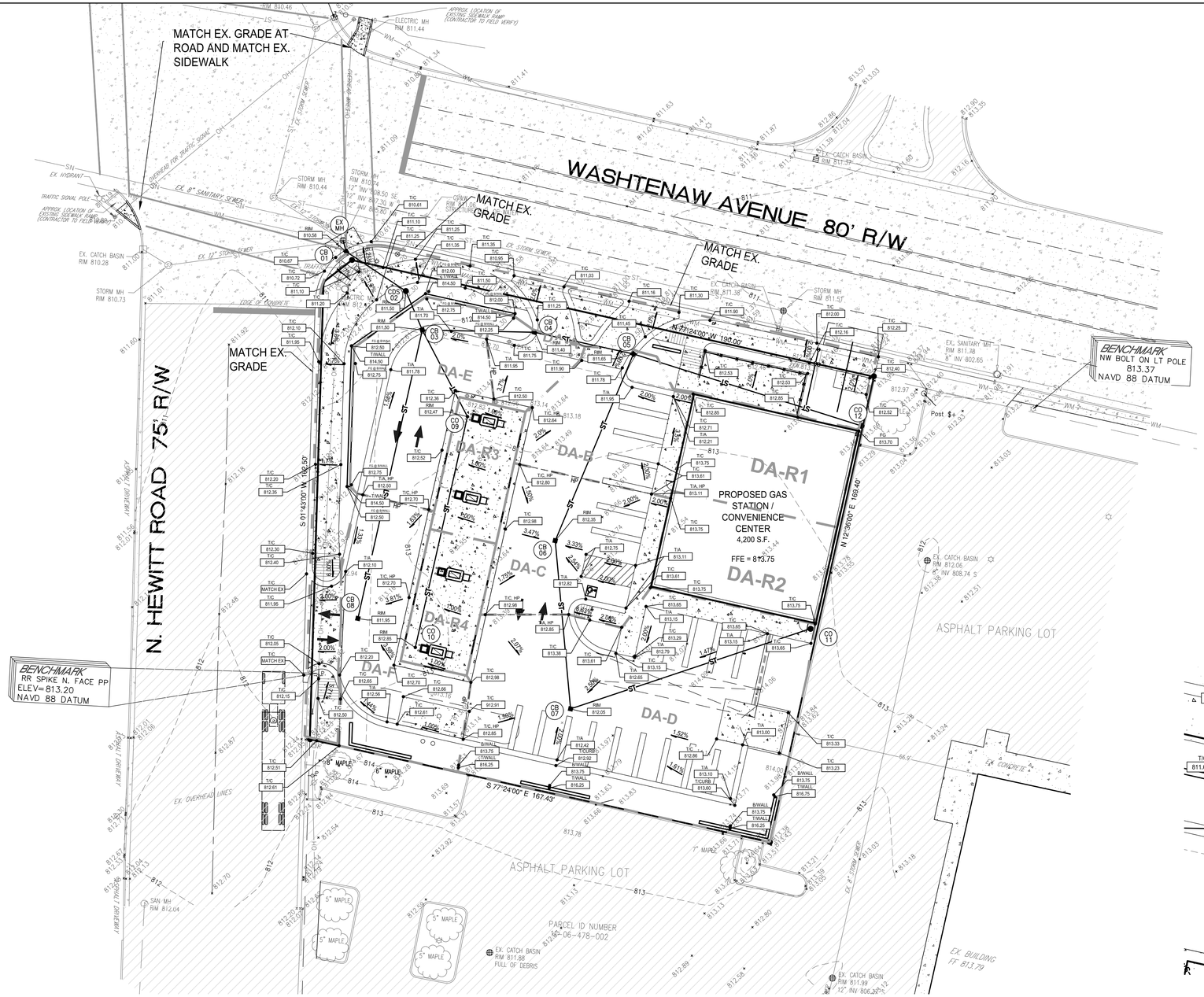
PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI. 48034
248.855.2100

TITLE: SITE PLAN

| NO. | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C2

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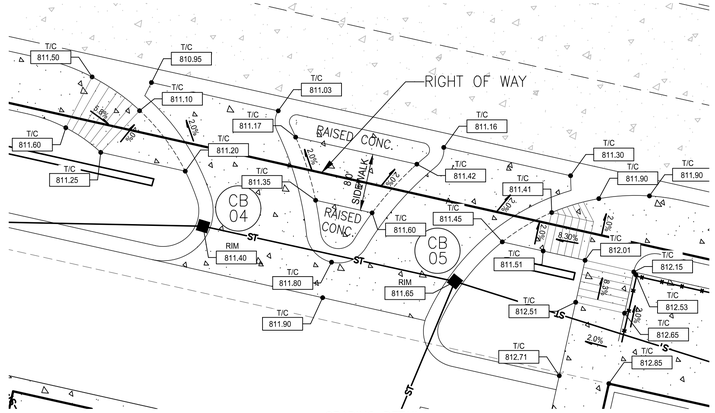

## LEGEND

| PROPOSED (PR) | EXISTING (EX) | |
|---|---|---|
| 900 | 900 | CONTOUR |
| | | STORM DRAINAGE FLOW |
| T/C XXX.XX | + 922.08 | SPOT ELEVATION |
| FF | FF | FINISHED FLOOR ELEVATION |
| FG | FG | FINISHED GRADE ELEVATION |
| T/A | T/A | TOP OF ASPHALT |
| T/C | T/C | TOP OF CURB / CONCRETE |
| T/W | T/W | TOP OF WALK |
| F/L | F/L | FLOW LINE |
| T/P | T/P | TOP OF PIPE |
| B/P | B/P | BOTTOM OF PIPE |
| RIM | RIM | RIM ELEVATION |
| INV | INV | INVERT ELEVATION |
| MH | MH | MANHOLE STRUCTURE |
| IN | IN | INLET STRUCTURE |
| CB | CB | CATCHBASIN STRUCTURE |
| RY | RY | REARYARD STRUCTURE |
| ES | ES | END–SECTION |
| GV | GV | GATEVALVE STRUCTURE |
| HY | HY | HYDRANT |
| UP | UP | UTILITY POLE |
| SN | SN | SANITARY SEWER |
| SL | SL | SANITARY LEAD |
| ST | ST | STORM SEWER |
| WM | WM | WATER MAIN |
| WL | WL | WATER LEAD |
| G | G | GAS |
| OH | OH | OVERHEAD WIRE |
| | | MANHOLE |
| | | INLET / CATCHBASIN |
| | | GATE VALVE |
| | | HYDRANT |
| | | UTILITY POLE |
| | | FENCE |
| | | SIGN |
| TBR | NFV | NOT FIELD VERIFIED TO BE REMOVED |
| CB 05 | | STORM SEWER LABEL |
| 54T | | SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY) |
| | | SILT FENCE |
| | | LIMITS OF GRADING/CLEARING |
| | | CONCRETE |
| | | ASPHALT |
| | | LIMITS OF DRAINAGE AREAS |

SCALE: 1 INCH = 20 FEET

GRADING NOTE:
ALL SIDEWALKS AND RAMPS PROPOSED ON SITE SHALL BE DESIGNED AND CONSTRUCTED IN COMPLIANCE WITH THE CURRENT ADA GUIDELINES AND REGULATIONS.

TOPOGRAPHIC SURVEY PROVIDED BY
MICKALICH ENGINEERING, INC.




GRADING DETAIL
SCALE: 1"=10'

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS GIVEN THAT ALL UTILITIES ARE SHOWN AND THE ENGINEER ASSUMES NO RESPONSIBILITY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR CONTACTING ALL UTILITIES AS REQUIRED BY LAW AND FOR LOCATING ANY AND ALL PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATIONS OF EXISTING UTILITIES DIFFER SIGNIFICANTLY FROM THE PLANS.

BEFORE YOU DIG
3 WORKING DAYS
CALL MISS DIG
1-800-482-7171
IT'S THE LAW!!! IT'S A GOOD IDEA!!!


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Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670


PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR:
HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100

TITLE: GRADING & DRAINAGE PLAN

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C3

DISCHARGE INTO MDOT RIGHT OF WAY

EXISTING 10 YR STORM DISCHARGE

| DRAIN AREA | ACRES A | AREA IMPERV 0.95 | AREA PERV 0.45 | RUNOFF COEFF C | EQUIV. AREA A * C | INTEN-SITY I | TIME OF CONC. $T_C$ | ADD'L RUNOFF Q | RUNOFF (CFS) Q |
|---|---|---|---|---|---|---|---|---|---|
| 10YR EX | 0.748 | 0.640 | 0.108 | 0.88 | 0.657 | 3.89 | 20.00 | | 2.55 |

EXISTING 10 YR STORM DISCHARGE = 2.55 CFS

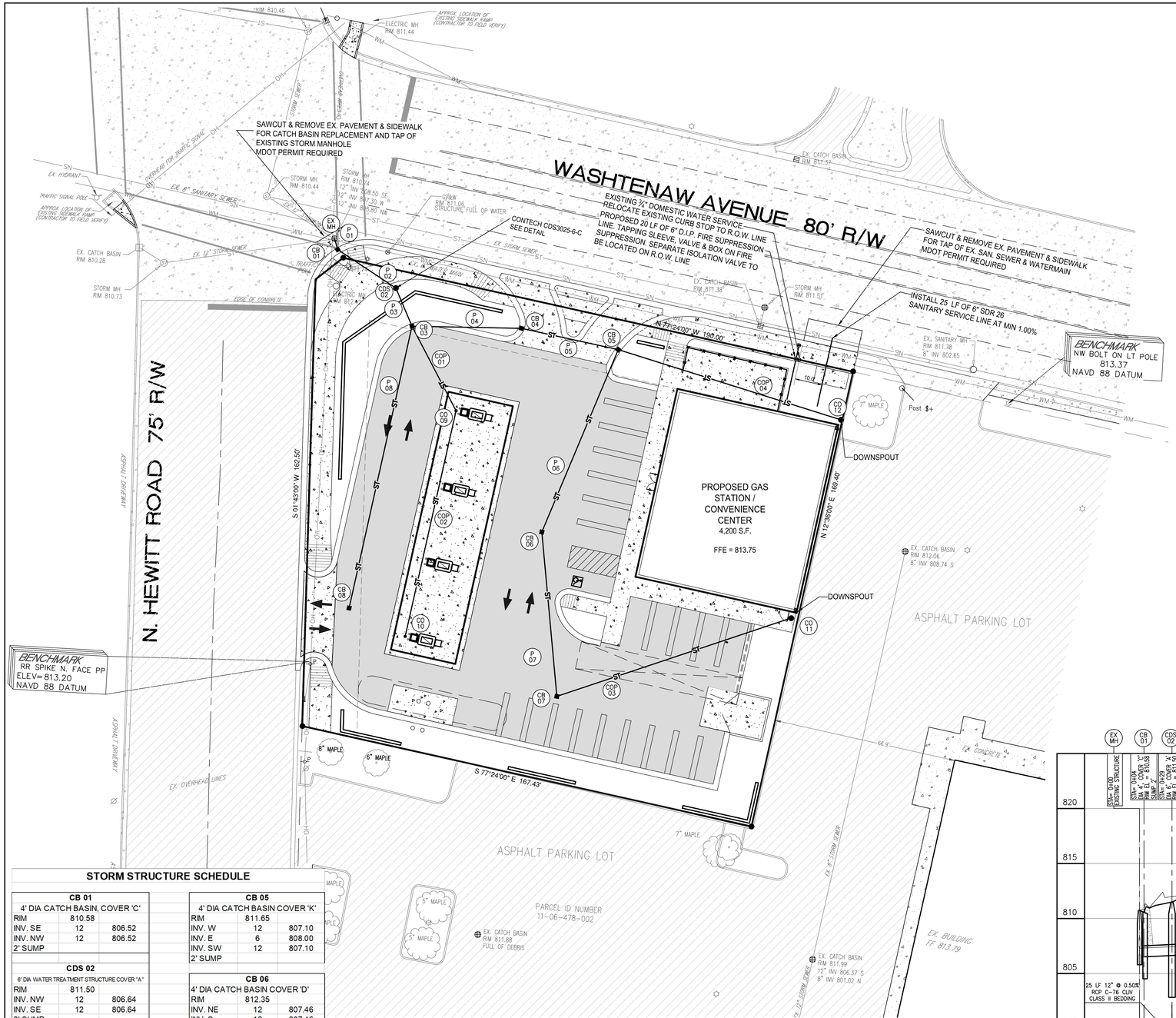
PROPOSED 10 YR STORM DISCHARGE

THE PROPOSED DISCHARGE FROM THE SITE FROM THE STORM CALCULATIONS IS 2.52 CFS.

THIS IS A REDUCTION IN FLOW TO MDOT RIGHT OF WAY.

| PIPE | FROM | TO | DRAIN AREA | ACRES A | AREA IMPERV 0.95 | AREA PERV 0.45 | RUNOFF COEFF C | EQUIV. AREA A * C | INTEN-SITY I | TIME OF CONC. $T_C$ | ADD'L RUNOFF Q | RUNOFF (CFS) Q | PIPE LENGTH (LF) | PIPE DIA. (IN) | VELOCITY FLOWING FULL (FPS) | HYDRAULIC GRADIENT SLOPE % | ACTUAL SLOPE USED | MANNING COEFFICIENT "n" | MANNING FLOW CAPACITY | MANNING'S VELOCITY (FT/SEC) | TIME (MIN) | HG ELEV UPPER END | HG ELEV LOWER END | RIM ELEV UPPER END | INVERT UPPER END | INVERT LOWER END | DROP DISTANCE (FT) | RIM-INV | RIM-HG >1 | PIPE COVER >2.667 | FLOW THRU COVER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COP 03 | CO 11 | CB 07 | R2 | 0.048 | 0.048 | 0.0000 | 0.95 | 0.046 | 3.89 | 20.00 | | 0.18 | 90 | 6 | 3.51 | 0.72% | 2.00% | 0.009 | 1.15 | 5.85 | 0.26 | 810.36 | 808.56 | 813.75 | 809.96 | 808.16 | | 3.79 | 3.39 | 3.29 | 0.18 |
| P 07 | CB 07 | CB 06 | D | 0.189 | 0.143 | 0.0466 | 0.83 | 0.157 | 3.87 | 20.26 | | 0.78 | 60 | 12 | 2.41 | 0.28% | 0.50% | 0.013 | 2.53 | 3.22 | 0.31 | 808.56 | 808.26 | 812.05 | 807.76 | 807.46 | | 4.29 | 3.49 | 3.29 | 0.61 |
| P 06 | CB 06 | CB 05 | C | 0.064 | 0.064 | 0.0000 | 0.95 | 0.061 | 3.84 | 20.57 | | 1.02 | 72 | 12 | 2.57 | 0.32% | 0.50% | 0.013 | 2.53 | 3.22 | 0.37 | 808.26 | 807.90 | 812.35 | 807.46 | 807.10 | | 4.89 | 4.09 | 3.89 | 0.24 |
| P 05 | CB 05 | CB 04 | B | 0.058 | 0.057 | 0.0018 | 0.93 | 0.055 | 3.81 | 20.94 | 0.18 | 1.41 | 36 | 12 | 2.86 | 0.40% | 0.50% | 0.013 | 2.53 | 3.22 | 0.19 | 807.90 | 807.72 | 811.65 | 807.10 | 806.92 | | 4.55 | 3.75 | 3.55 | 0.21 |
| P 04 | CB 04 | CB 03 | A | 0.017 | 0.017 | 0.0002 | 0.94 | 0.016 | 3.79 | 21.13 | | 1.47 | 40 | 12 | 2.93 | 0.41% | 0.50% | 0.013 | 2.53 | 3.22 | 0.21 | 807.72 | 807.52 | 811.40 | 806.92 | 806.72 | | 4.48 | 3.68 | 3.48 | 0.06 |
| P 03 | CB 03 | CDS 02 | E | 0.061 | 0.046 | 0.0143 | 0.83 | 0.05 | 3.78 | 21.33 | 0.43 | 2.08 | 15 | 12 | 3.18 | 0.49% | 0.50% | 0.013 | 2.53 | 3.22 | 0.08 | 807.52 | 807.44 | 811.50 | 806.72 | 806.64 | | 4.78 | 3.98 | 3.78 | 0.19 |
| P 02 | CDS 02 | CB 01 | - | - | - | - | - | - | 3.77 | 21.41 | | 2.08 | 25 | 12 | 3.18 | 0.49% | 0.50% | 0.013 | 2.53 | 3.22 | 0.13 | 807.44 | 807.32 | 811.50 | 806.64 | 806.52 | | 4.86 | 4.06 | 3.86 | 0.00 |
| P 01 | CB 01 | EX MH | 1 | 0.140 | 0.104 | 0.0360 | 0.82 | 0.115 | 3.76 | 21.54 | | 2.52 | 4 | 12 | 3.22 | 0.50% | 0.50% | 0.013 | 2.53 | 3.22 | 0.02 | 807.32 | 807.30 | 810.58 | 806.52 | 806.50 | | 4.06 | 3.26 | 3.06 | 0.43 |
| P 08 | CB 08 | CB 03 | F | 0.068 | 0.057 | 0.0112 | 0.87 | 0.059 | 3.89 | 20.00 | | 0.23 | 105 | 12 | 1.77 | 0.15% | 0.50% | 0.013 | 2.53 | 3.22 | 0.54 | 808.04 | 807.52 | 811.95 | 807.24 | 806.72 | | 4.71 | 3.91 | 3.71 | 0.23 |
| COP 04 | CO 12 | CB 05 | R1 | 0.048 | 0.048 | 0.0000 | 0.95 | 0.046 | 3.89 | 20.00 | | 0.18 | 85 | 6 | 3.51 | 0.72% | 2.00% | 0.009 | 1.15 | 5.85 | 0.24 | 810.10 | 808.40 | 813.75 | 809.70 | 808.00 | 0.50 | 4.05 | 3.65 | 3.55 | 0.18 |
| COP 02 | CO 10 | CO 09 | R4 | 0.026 | 0.026 | 0.0000 | 0.95 | 0.025 | 3.89 | 20.00 | | 0.10 | 84 | 6 | 2.28 | 0.30% | 1.00% | 0.009 | 0.81 | 4.14 | 0.34 | 809.56 | 808.72 | 812.85 | 809.16 | 808.32 | | 3.69 | 3.29 | 3.19 | 0.10 |
| COP 01 | CO 09 | CB 03 | R3 | 0.026 | 0.026 | 0.0000 | 0.95 | 0.025 | 3.86 | 20.34 | | 0.19 | 35 | 6 | 3.51 | 0.72% | 2.00% | 0.009 | 1.15 | 5.85 | 0.10 | 808.72 | 808.04 | 812.47 | 808.32 | 807.62 | 0.50 | 4.15 | 3.75 | 3.65 | 0.10 |

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SCALE: 1 INCH = 20 FEET

## STORM WATER NARRATIVE:

THE EXISTING RUNOFF FROM THE SITE IS CURRENTLY UN-DETAINED SHEET FLOW INTO THE HEWITT ROAD AND WASHTENAW ROAD RIGHT OF WAYS. THE PROPOSED IMPERVIOUS ( 24,425 SF) IS LESS THAN THE EXISTING IMPERVIOUS ON THE SITE ( 26,470 SF) WHICH WILL REDUCE THE RUNOFF FROM THE SITE. THE PROPOSED RUNOFF WILL FLOW THROUGH THE STORM SEWERS AND WILL BE TRAVEL THROUGH A CONTECH PRETREATMENT STRUCTURE BEFORE FLOWING INTO THE EXISTING MANHOLE. IN BOTH EXISTING AND PROPOSED CONDITIONS THE RUNOFF ENDS UP FLOWING THROUGH THE EXISTING STORM STRUCTURES AT THE INTERSECTION BUT IN THE PROPOSED RUNOFF WILL BE A LESSER AMOUNT OF PRE-TREATED RUNOFF.

N

## LEGEND

| PROPOSED (PR) | EXISTING (EX) | |
|---|---|---|
| 900 | 900 | CONTOUR |
| T/C | | STORM DRAINAGE FLOW |
| XXX.XX | + 922.08 | SPOT ELEVATION |
| FF | FF | FINISHED FLOOR ELEVATION |
| FG | FG | FINISHED GRADE ELEVATION |
| T/A | T/A | TOP OF ASPHALT |
| T/C | T/C | TOP OF CURB / CONCRETE |
| T/W | T/W | TOP OF WALK |
| F/L | F/L | FLOW LINE |
| T/P | T/P | TOP OF PIPE |
| B/P | B/P | BOTTOM OF PIPE |
| RIM | RIM | RIM ELEVATION |
| INV | INV | INVERT ELEVATION |
| MH | MH | MANHOLE STRUCTURE |
| IN | IN | INLET STRUCTURE |
| CB | CB | CATCHBASIN STRUCTURE |
| RY | RY | REARYARD STRUCTURE |
| ES | ES | END--SECTION |
| GV | GV | GATEVALVE STRUCTURE |
| HY | HY | HYDRANT |
| UP | UP | UTILITY POLE |
| SN | SN | SANITARY SEWER |
| SL | SL | SANITARY LEAD |
| ST | ST | STORM SEWER |
| WM | WM | WATER MAIN |
| WL | WL | WATER LEAD |
| G | G | GAS |
| OH | OH | OVERHEAD WIRE |
| ● | ○ | MANHOLE |
| ■ | □ | INLET / CATCHBASIN |
| ⊕ | ⊗ | GATE VALVE |
| ◆ | ☼ | HYDRANT |
| ✦ | ✧ | UTILITY POLE |
| X X | X | FENCE |
| ▲ | ⊥ | SIGN |
| TBR | NFV | NOT FIELD VERIFIED TO BE REMOVED |
| SR 01 | | STORM SEWER LABEL |
| 54T | | SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY) |
| | | SILT FENCE |
| | | LIMITS OF GRADING/CLEARING |
| | | MODIFIED CURB |
| | | CONCRETE |
| | | ASPHALT |

## STORM STRUCTURE SCHEDULE

| CB 01 | | |
|---|---|---|
| 4' DIA CATCH BASIN, COVER 'C' | | |
| RIM | 810.58 | |
| INV. SE | 12 | 806.52 |
| INV. NW | 12 | 806.52 |
| 2' SUMP | | |

| CDS 02 | | |
|---|---|---|
| 6' DIA WATER TREATMENT STRUCTURE COVER "A" | | |
| RIM | 811.50 | |
| INV. NW | 12 | 806.64 |
| INV. SE | 12 | 806.64 |
| 2' SUMP | | |

| CB 03 | | |
|---|---|---|
| 5' DIA CATCH BASIN, COVER 'K' | | |
| RIM | 811.50 | |
| INV. NW | 12 | 806.72 |
| INV. E | 12 | 806.72 |
| INV. SW | 12 | 806.72 |
| INV. SE | 6 | 807.62 |
| 2' SUMP | | |

| CB 04 | | |
|---|---|---|
| 4' DIA CATCH BASIN, COVER 'K' | | |
| RIM | 811.40 | |
| INV. W | 12 | 806.92 |
| INV. E | 12 | 806.92 |
| 2' SUMP | | |

| CB 05 | | |
|---|---|---|
| 4' DIA CATCH BASIN COVER 'K' | | |
| RIM | 811.65 | |
| INV. W | 12 | 807.10 |
| INV. E | 6 | 808.00 |
| INV. SW | 12 | 807.10 |
| 2' SUMP | | |

| CB 06 | | |
|---|---|---|
| 4' DIA CATCH BASIN COVER 'D' | | |
| RIM | 812.35 | |
| INV. NE | 12 | 807.46 |
| INV. S | 12 | 807.46 |
| 2' SUMP | | |

| CB 07 | | |
|---|---|---|
| 4' DIA CATCH BASIN, COVER 'D' | | |
| RIM | 812.05 | |
| INV. N | 12 | 807.76 |
| INV. NE | 6 | 808.16 |
| 2' SUMP | | |

| CB 08 | | |
|---|---|---|
| 2' DIA CATCH BASIN, COVER 'D' | | |
| RIM | 811.95 | |
| INV. NE | 12 | 807.24 |
| 2' SUMP | | |

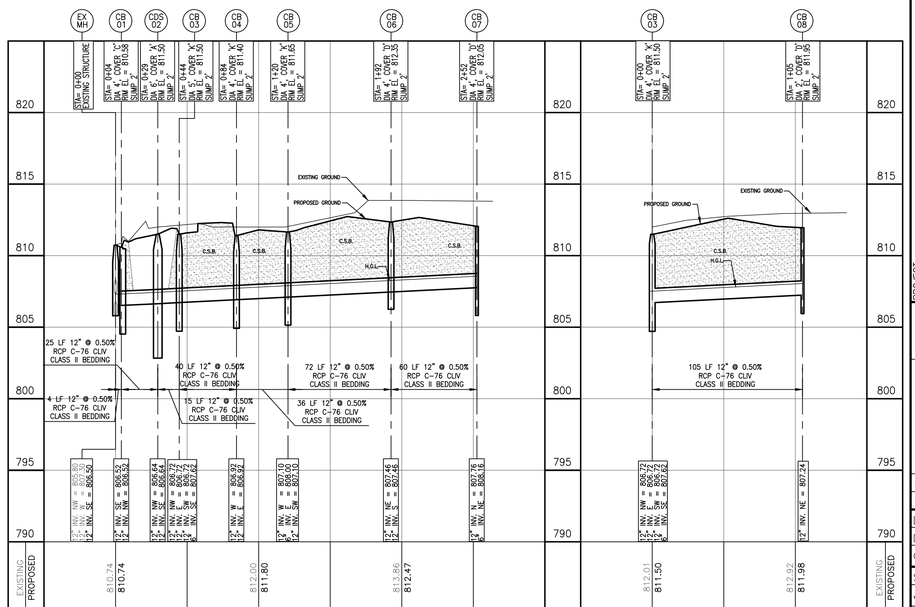
| EXISTING MH | | |
|---|---|---|
| EXISTING STRUCTURE | | |
| RIM | EX. | |
| EX. INV. NW | 12 | 805.80 |
| EX. INV. W | 12 | 807.30 |
| INV. SE | 12 | 806.50 |

## STORM SEWER PIPE SCHEDULE

| PIPE | LENGTH | SIZE | TYPE | SLOPE |
|---|---|---|---|---|
| P 01 | 4 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| P 02 | 25 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| P 03 | 15 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| P 04 | 40 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| P 05 | 36 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| P 06 | 72 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| P 07 | 60 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| P 08 | 105 FT. | 12 IN. | RCP C-76 CL.IV | 0.50% |
| COP 01 | 35 FT. | 6 IN. | PVC SCH 40 | 2.00% |
| COP 02 | 84 FT. | 6 IN. | PVC SCH 40 | 1.00% |
| COP 03 | 90 FT. | 6 IN. | PVC SCH 40 | 2.00% |
| COP 04 | 85 FT. | 6 IN. | PVC SCH 40 | 2.00% |

UTILITY NOTES:

1. STORM SEWER MANHOLES AND CATCH BASINS SHALL BE OF PRECAST WALL SECTIONS.
2. 90° DOWN TURNED ELBOWS SHALL BE INSTALLED ON ALL OUTLET PIPES IN ALL CATCH BASINS. SEE DETAIL SHEET C9.
3. OWNER SHALL BE RESPONSIBLE FOR FUTURE MAINTENANCE ON ALL PRIVATE UTILITIES AND UTILITY SERVICES, INCLUDING TREE ROOT REMOVAL.




PROFILE
SCALE 1" = 50' H
1" = 5' V

PROFILE
SCALE 1" = 50' H
1" = 5' V

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE COMPLETENESS OR ACCURACY OF THE INFORMATION SHOWN THEREON. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING ANY WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR TO PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCES SHOWN ON THE PLANS DIFFER SUBSTANTIALLY FROM THE FIELD.

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 IT'S THE LAW!!! (MICHIGAN PUBLIC ACT 53 OF 1974, AS AMENDED)

BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670

PROJECT
PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR
HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI. 48034
248.855.2100

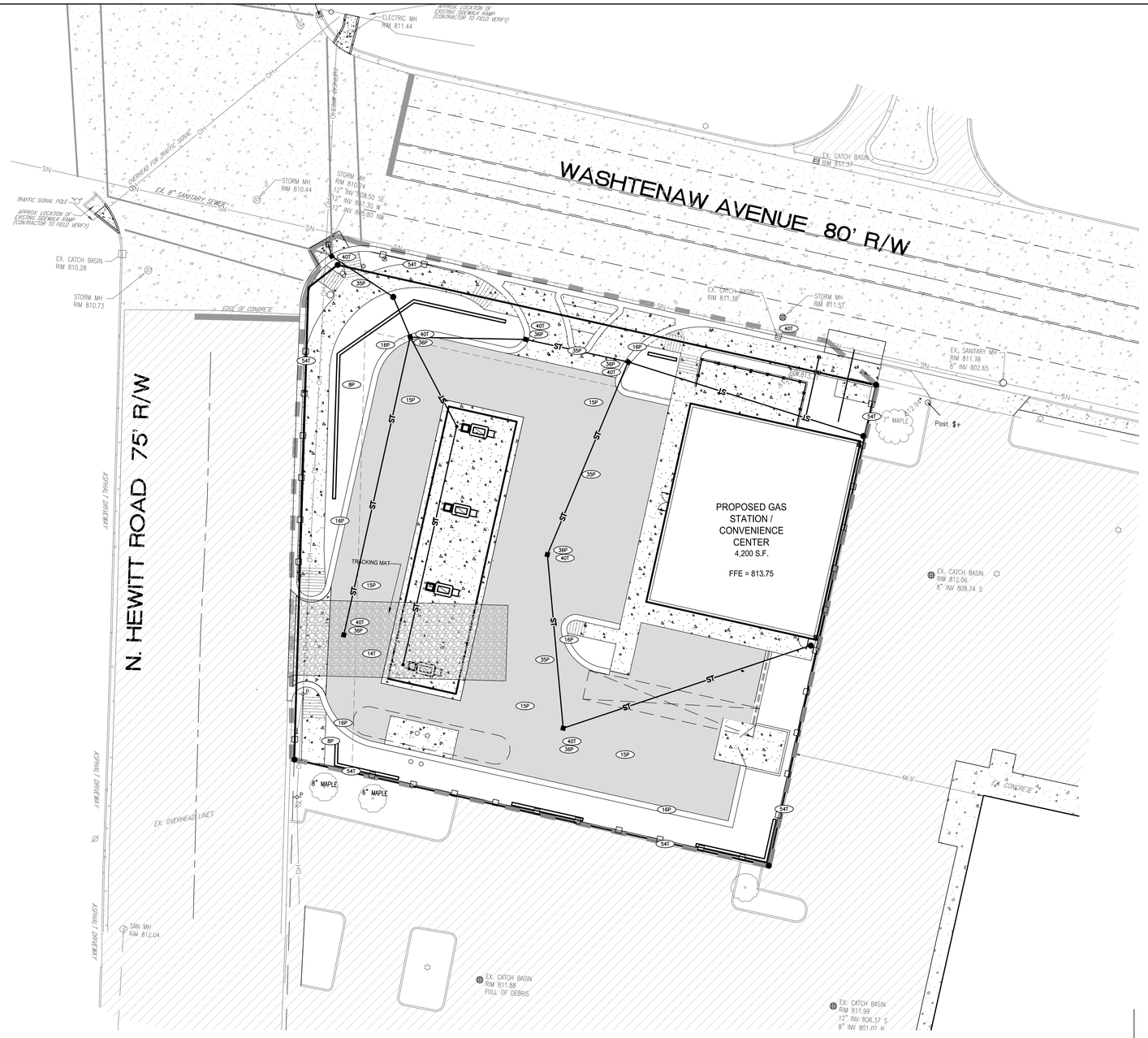
TITLE
UTILITY PLAN & PROFILE

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
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SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C4

BOSS Engineering

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## LEGEND

| PROPOSED (PR) | EXISTING (EX) | |
|---|---|---|
| 900 | 900 | CONTOUR |
| T/C | | STORM DRAINAGE FLOW |
| XXX.XX | + 922.08 | SPOT ELEVATION |
| FF | FF | FINISHED FLOOR ELEVATION |
| FG | FG | FINISHED GRADE ELEVATION |
| T/A | T/A | TOP OF ASPHALT |
| T/C | T/C | TOP OF CURB / CONCRETE |
| T/W | T/W | TOP OF WALK |
| F/L | F/L | FLOW LINE |
| T/P | T/P | TOP OF PIPE |
| B/P | B/P | BOTTOM OF PIPE |
| RIM | RIM | RIM ELEVATION |
| INV | INV | INVERT ELEVATION |
| MH | MH | MANHOLE STRUCTURE |
| IN | IN | INLET STRUCTURE |
| CB | CB | CATCHBASIN STRUCTURE |
| RY | RY | REARYARD STRUCTURE |
| ES | ES | END-SECTION |
| GV | GV | GATEVALVE STRUCTURE |
| HY | HY | HYDRANT |
| UP | UP | UTILITY POLE |
| SN | SN | SANITARY SEWER |
| SL | SL | SANITARY LEAD |
| ST | ST | STORM SEWER |
| WM | WM | WATER MAIN |
| WL | WL | WATER LEAD |
| G | G | GAS |
| OH | OH | OVERHEAD WIRE |
| ● | ○ | MANHOLE |
| ■ | □ | INLET / CATCHBASIN |
| ⊗ | ⊗ | GATE VALVE |
| ✱ | ✱ | HYDRANT |
| ✦ | ✦ | UTILITY POLE |
| X—X | X—X | FENCE |
| | ⊥ | SIGN |
| TBR | NFV | NOT FIELD VERIFIED TO BE REMOVED |
| CB 01 | | STORM SEWER LABEL |
| 54T | | SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY) |
| | | SILT FENCE |
| | | LIMITS OF GRADING/CLEARING |
| | | CONCRETE |
| | | ASPHALT |
| | | MODIFIED CURB |

SCALE: 1 INCH = 20 FEET

N

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE TO THE ACCURACY OR COMPLETENESS OF THIS INFORMATION SHOWN THEREON. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL PRESERVE AND PROTECT ALL PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCES APPEAR INSUFFICIENT. DETERMINE SUFFICIENCY FROM THE PLANS.

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## CONSTRUCTION SEQUENCE

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT EROSION IS MINIMIZED AND THAT COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES IS MAINTAINED THROUGHOUT EXECUTION OF THIS PROJECT.

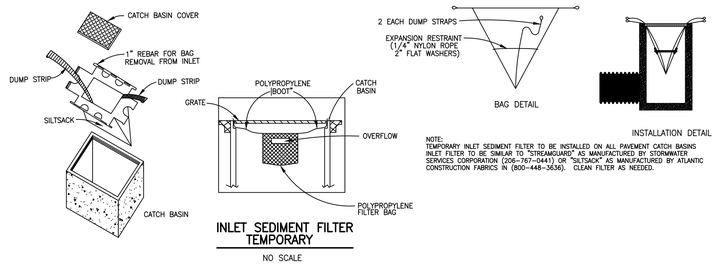
| | | |
|---|---|---|
| 1 DAY | 1. | INSTALL SILT FENCE AND STORM DRAINAGE PROTECTION. |
| 10 DAYS | 2. | SITE DEMOLITION |
| 10 DAYS | 3. | INSTALL DETENTION BASIN & STORM SEWER, & INLET PROTECTION |
| 90 DAYS | 4. | BEGIN BUILDING CONSTRUCTION |
| 5 DAYS | 5. | ROUGH GRADE |
| 5 DAYS | 6. | INSTALL PAVEMENT AND WALKS |
| 1 DAY | 7. | FINE GRADE, SPREAD TOPSOIL AND SEED. |
| 1 DAY | 8. | REMOVE ALL EROSION CONTROL STRUCTURES. |
| 1 DAY | 9. | REMOVE ACCUMULATED SILT FROM ALL EXISTING DRAINAGE. |

## CONTROLS & MEASURES POST CONSTRUCTION SEQUENCE

| ACTIVITY | WEEKLY | MONTHLY | AS REQUIRED |
|---|---|---|---|
| MAINTAIN LANDSCAPING, REPLACE MULCH | X | X | X |
| CLEAN INLETS | | X | X |
| COLLECT LITTER | X | | X |
| SWEEP PARKING LOT | | X | X |

## CONTROLS & MEASURES NARRATIVE

| ACTIVITY | DESCRIPTION |
|---|---|
| MAINTAIN LANDSCAPING, REPLACE MULCH | COLLECT GRASS, TREE, AND SHRUB CLIPPINGS. DISPOSE IN APPROVED CONTAINER. REPLACE DEAD SOD, TREES AND SHRUBS. |
| CLEAN INLETS | REMOVE LITTER, SEDIMENT, AND DEBRIS. DISPOSE OF IN APPROVED LANDFILL. |
| COLLECT LITTER | DISPOSE OF WITH INLET DEBRIS. |
| SWEEP PARKING LOT | REMOVE MUD, DIRT, GREASE AND OIL WITH PERIODIC SWEEPING |
| DUST CONTROL | SPRINKLE WATER AS NEEDED |

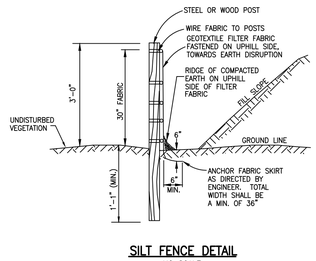



INLET SEDIMENT FILTER TEMPORARY

NO SCALE

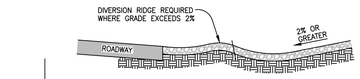



NOTE:
TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL PAVEMENT CATCH BASINS INLET FILTER TO BE SIMILAR TO "STREAMGUARD" AS MANUFACTURED BY STORMWATER SERVICES CORPORATION (206-767-0441) OR "SILTSACK" AS MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS IN (800-448-3636). CLEAN FILTER AS NEEDED.

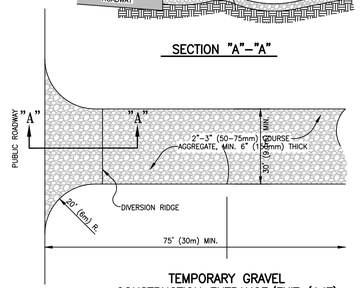



SILT FENCE DETAIL

NO SCALE




SECTION "A"–"A"




TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (14T)

NO SCALE

## SOIL EROSION CONTROL MEASURES

| | | |
|---|---|---|
| 1 | STRIPPING & STOCKPILING TOPSOIL | TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION STOCKPILE SHOULD BE TEMPORARILY SEEDED |
| 6 | SEEDING WITH MULCH AND/OR MATTING | FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED |
| 8 | SODDING | PROVIDES IMMEDIATE PROTECTION CAN BE USED ON STEEP SLOPES WHERE SEED MAY BE DIFFICULT TO ESTABLISH EASY TO PLACE, MAY BE REPAIRED IF DAMAGED SHOULD INCLUDE PREPARED TOPSOIL BED |
| 14 | AGGREGATE COVER | STABILIZES SOIL SURFACE, THUS MINIMIZING EROSION PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS |
| 15 | PAVING | PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VELOCITY IRREGULAR SURFACE WILL HELP SLOW VELOCITY |
| 16 | CURB & GUTTER | KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY |
| 35 | STORM SEWER | SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONDUCTS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTFALL LOCATION USE CATCH BASINS TO COLLECT SEDIMENT |
| 36 | CATCH BASIN, DRAIN INLET | COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET |
| 40 | INLET SEDIMENT FILTER | EASY TO SHAPE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED |
| 54 | SILT FENCE | USES GEOTEXTILE FABRIC AND POST OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE DETAIL THIS SHEET) |

T = TEMPORARY P = PERMANENT

TOTAL AREA OF DISTURBANCE = 0.77 AC. (33,396 SF)


BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670


PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100

TITLE: SOIL EROSION CONTROL PLAN

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C5

BOSS Engineering

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## GENERAL LANDSCAPE NOTES:

1. ALL PLANT MATERIAL SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF THE GOVERNING MUNICIPALITY AND SHALL BE NURSERY GROWN. ALL SIZES AND MEASUREMENTS SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS. ALL PLANT MATERIAL SHALL BE OF SELECTED SPECIMEN QUALITY AND HAVE A NORMAL HABIT OF GROWTH. ALL PLANT MATERIAL IS SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
2. ALL PLANT MATERIALS SHALL BE BALLED AND BURLAPPED STOCK OR CONTAINER STOCK. NO BARE ROOT STOCK IS PERMITTED. ALL PLANT BALLS SHALL BE FIRM, INTACT AND SECURELY WRAPPED AND BOUND.
3. ALL PLANT BEDS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND OTHER EXTRANEOUS OBJECTS AND POOR SOILS TO A MINIMUM DEPTH OF 12 INCHES AND BACKFILLED TO GRADE WITH PLANTING MIX (SEE BELOW).
4. PLANTING MIXTURE SHALL CONSIST OF 4 PARTS TOPSOIL FROM ON SITE, 1 PART PEAT, AND 5 POUNDS OF SUPERPHOSPHATE PER CUBIC YARD OF MIX. INGREDIENTS SHALL BE THOROUGHLY BLENDED TO A UNIFORM CONSISTENCY.
5. ALL PLANT BEDS AND INDIVIDUAL PLANTS SHALL BE MULCHED WITH A 4 INCH LAYER OF SHREDDED BARK MULCH.
6. ALL PLANTS AND PLANT BEDS SHALL BE THOROUGHLY WATERED UPON COMPLETION OF PLANTING AND STAKING OPERATIONS.
7. THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR A PERIOD OF 1 YEAR FROM THE DATE THE WORK IS ACCEPTED, IN WRITING, BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE, WITHOUT COST TO THE OWNER, WITHIN A SPECIFIED PERIOD TIME, ALL DEAD PLANTS, AND ALL PLANTS NOT IN A VIGOROUS, THRIVING CONDITION, AS DETERMINED BY THE LANDSCAPE ARCHITECT DURING AND AT THE END OF THE GUARANTEE PERIOD. REPLACEMENT STOCK SHALL CONFORM TO THE ORIGINAL REQUIREMENTS.
8. EDGING, WHERE NOTED ON THE PLANS, SHALL BE BLACK ALUMINUM EDGING, 3/16" X 4". INSTALL PER MANUFACTURER'S INSTRUCTIONS. ALL EDGING SHALL BE INSTALLED IN STRAIGHT LINES OR SMOOTH CURVES WITHOUT IRREGULARITIES.
9. SOD SHALL BE DENSE, WELL ROOTED TURF, FREE OF WEEDS. IT SHALL BE COMPRISED OF A BLEND OF AT LEAST TWO KENTUCKY BLUEGRASSES AND ONE FESCUE. IT SHALL HAVE A UNIFORM THICKNESS OF 3/4 INCH, AND CUT IN UNIFORM STRIPS NOT LESS THAN 10 INCHES BY 18 INCHES. SOD SHALL BE KEPT MOIST AND LAID WITHIN 36 HOURS AFTER CUTTING.

   IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ALL SODDED AREAS THAT BROWN OUT OR HAVE NOT FIRMLY KNITTED TO THE SOIL BASE WITHIN A PERIOD OF ONE MONTH SHALL BE REPLACED BY THE CONTRACTOR, AT NO COST TO THE OWNER.
10. ALL AREAS OF THE SITE THAT BECOME DISTURBED DURING CONSTRUCTION AND ARE NOT TO BE PAVED, STONED, LANDSCAPED, OR SODDED SHALL BE SEEDED AND MULCHED.

    SEED MIXTURE SHALL BE AS FOLLOWS:

    KENTUCKY BLUEGRASS (CHOOSE 3 VARIETIES):

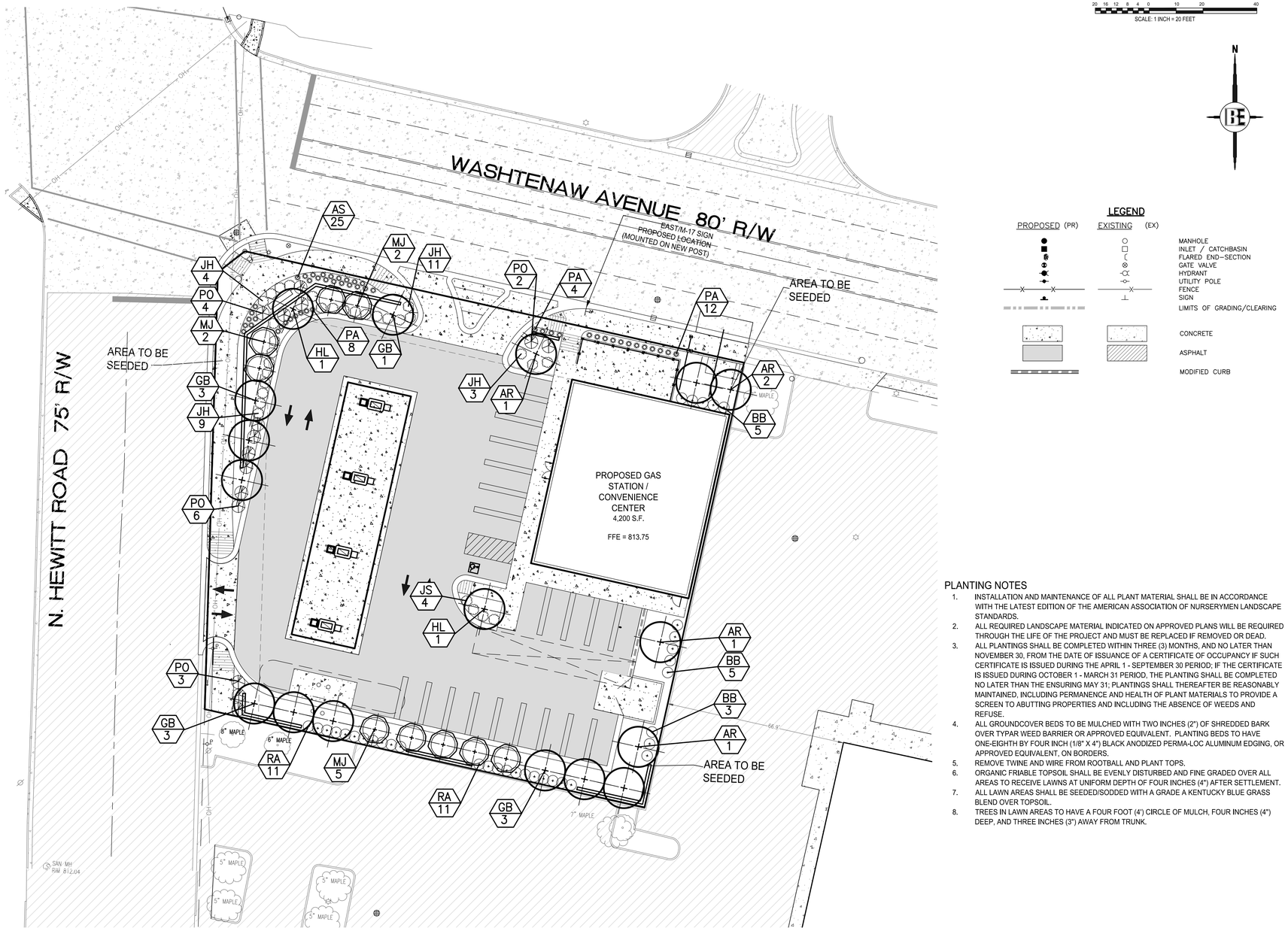
| | |
|---|---|
| ADELPHI, RUGBY, GLADE OR PARADE) | 30% |
| RUBY RED OR DAWSON RED FINE FESCUE | 30% |
| ATLANTA RED FESCUE | 20% |
| PENNFINE PERENNIAL RYE | 20% |

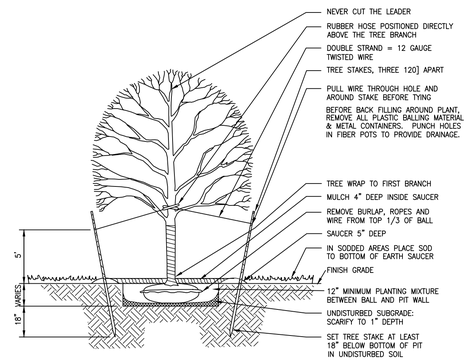
    THE ABOVE SEED MIXTURE SHALL BE SOWN AT A RATE OF 250 POUNDS PER ACRE. PRIOR TO SEEDING, THE TOPSOIL LAYER SHALL BE FERTILIZED WITH A COMMERCIAL FERTILIZER WITH A 10–20– 10 ANALYSIS:

    10% NITROGEN: A MINIMUM OF 25% FROM A UREAFORMALDEHYDE SOURCE
    20% PHOSPHATE
    10% POTASH: SOURCE TO BE POTASSIUM SULFATE OR POTASSIUM NITRATE.

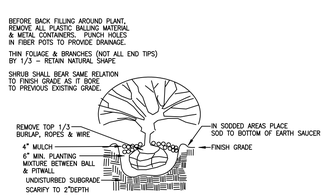
    THE FIRST FERTILIZER APPLICATION SHALL BE AT A RATE OF 10 POUNDS OF BULK FERTILIZER PER 1000 SQUARE FEET.

    IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ANY PART OF THE AREA THAT FAILS TO SHOW A UNIFORM GERMINATION SHALL BE RESEEDED AND SUCH RESEEDING SHALL CONTINUE UNTIL A DENSE LAWN IS ESTABLISHED. DAMAGE TO SEEDED AREAS RESULTING FROM EROSION SHALL BE REPAIRED BY THE CONTRACTOR.
11. ALL AREAS OF THE SITE SCHEDULED FOR SEEDING OR SODDING SHALL FIRST RECEIVE A 4 INCH LAYER OF CLEAN, FRIABLE TOPSOIL. THIS SOIL SHALL BE DISCED AND SHALL BE GRADED IN CONFORMANCE WITH THE GRADING PLAN.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL UTILITIES AND TO INFORM THE LANDSCAPE ARCHITECT OF ANY CONFLICTS PRIOR TO COMMENCING LANDSCAPING.
13. ALL PLANT MATERIALS SHALL BE FREE OF WEEDS, INSECTS AND DISEASE.
14. ALL LANDSCAPED AREAS ARE TO BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM.




**DECIDUOUS TREE PLANTING DETAIL**
(NO SCALE)




**SHRUB PLANTING DETAIL**
(NO SCALE)

## PLANT LIST

| KEY | QUAN. | BOTANICAL NAME | COMMON NAME | SIZE | REMARK |
|---|---|---|---|---|---|
| **TREES** | | | | | |
| AR | 5 | Acer Rubrum 'Armstrong' | Armstrong Red Maple | 2.5" cal. | B&B |
| GB | 10 | Gingko Biloba 'Sky Tower' | Sky Tower Gingko Tree | 2.5" cal. | B&B |
| HL | 2 | Gleditsea Tria. Iner. 'Shademaster' | Shademaster Honeylocust | 2.5" cal. | B&B |
| MJ | 9 | Malus 'Jewelcole' | Red Jewel Crabapple | 2.0" cal. | B&B |
| **SHRUBS** | | | | | |
| BB | 13 | Euonymus Alatus 'Compacta' | Compact Burning Bush | 30–36" ht. | 4' Spacing |
| JH | 27 | Juniperus Horizontalis 'Wiltonii' | Creeping Juniper | 15–18"sprd. | |
| JS | 4 | Juniperus Chin. Var. 'Sargentii' | Sargent Juniper | 15–18"sprd. | |
| PO | 15 | Physocarpus Opulifolius 'Little Devil' | Little Devil Ninebark | 18–24" ht. | |
| RA | 22 | Ribes Alpinum | Alpine Currant | 18–24" ht. | 3' Spacing |
| **PERENNIALS** | | | | | |
| AS | 25 | Artemisia Schmidtiana 'Silvermound' | Silvermound Artemisia | No. 2 | Cont. |
| PA | 24 | Pennisetum Alopecuroides 'Hameln' | Dwarf Fountain Grass | No. 3 | Cont. |




## LEGEND

| PROPOSED (PR) | EXISTING (EX) | |
|---|---|---|
| | | MANHOLE |
| | | INLET / CATCHBASIN |
| | | FLARED END–SECTION |
| | | GATE VALVE |
| | | HYDRANT |
| | | UTILITY POLE |
| | | FENCE |
| | | SIGN |
| | | LIMITS OF GRADING/CLEARING |
| | | CONCRETE |
| | | ASPHALT |
| | | MODIFIED CURB |

## PLANTING NOTES

1. INSTALLATION AND MAINTENANCE OF ALL PLANT MATERIAL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.
2. ALL REQUIRED LANDSCAPE MATERIAL INDICATED ON APPROVED PLANS WILL BE REQUIRED THROUGH THE LIFE OF THE PROJECT AND MUST BE REPLACED IF REMOVED OR DEAD.
3. ALL PLANTINGS SHALL BE COMPLETED WITHIN THREE (3) MONTHS, AND NO LATER THAN NOVEMBER 30, FROM THE DATE OF ISSUANCE OF A CERTIFICATE OF OCCUPANCY IF SUCH CERTIFICATE IS ISSUED DURING THE APRIL 1 - SEPTEMBER 30 PERIOD; IF THE CERTIFICATE IS ISSUED DURING OCTOBER 1 - MARCH 31 PERIOD, THE PLANTING SHALL BE COMPLETED NO LATER THAN THE ENSURING MAY 31; PLANTINGS SHALL THEREAFTER BE REASONABLY MAINTAINED, INCLUDING PERMANENCE AND HEALTH OF PLANT MATERIALS TO PROVIDE A SCREEN TO ABUTTING PROPERTIES AND INCLUDING THE ABSENCE OF WEEDS AND REFUSE.
4. ALL GROUNDCOVER BEDS TO BE MULCHED WITH TWO INCHES (2") OF SHREDDED BARK OVER TYPAR WEED BARRIER OR APPROVED EQUIVALENT. PLANTING BEDS TO HAVE ONE-EIGHTH BY FOUR INCH (1/8" X 4") BLACK ANODIZED PERMA-LOC ALUMINUM EDGING, OR APPROVED EQUIVALENT, ON BORDERS.
5. REMOVE TWINE AND WIRE FROM ROOTBALL AND PLANT TOPS.
6. ORGANIC FRIABLE TOPSOIL SHALL BE EVENLY DISTURBED AND FINE GRADED OVER ALL AREAS TO RECEIVE LAWNS AT UNIFORM DEPTH OF FOUR INCHES (4") AFTER SETTLEMENT.
7. ALL LAWN AREAS SHALL BE SEEDED/SODDED WITH A GRADE A KENTUCKY BLUE GRASS BLEND OVER TOPSOIL.
8. TREES IN LAWN AREAS TO HAVE A FOUR FOOT (4') CIRCLE OF MULCH, FOUR INCHES (4") DEEP, AND THREE INCHES (3") AWAY FROM TRUNK.

**Landscape Requirements**

General Landscaping
Requirement: 1 tree per 1,000 SF and 1 shrub per 500 SF of lawn area
Provided: 3,224 SF lawn area = 7 trees and 30 shrubs

Street Yard Landscaping
Requirement: 1 deciduous tree/ 40 LF of frontage,
1 ornamental tree/ 100 LF of frontage,
1 shrub / 10 LF of frontage
Provided: N Hewitt Rd = ±160 LF = 4 trees & 2 ornamental trees & 16 shrubs
Washtenaw Ave = ±190 LF = 5 trees & 2 ornamental trees & 19 shrubs

Landscape Buffer
Not required in this B-3 District

Parking Lot Landscaping
Requirement: 1 tree / 3,000 SF of paved parking lot surface
Provided: 17,087 SF / 3,000 = 6 trees

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THEIR ACCURACY OR TO THE FACT THAT ALL UTILITIES ARE SHOWN THEREON. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR ASCERTAINING THE EXACT LOCATION OF ALL UTILITIES AND FOR AVOIDING ANY PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCE BETWEEN EXISTING AND PROPOSED IMPROVEMENTS IS LESS THAN SHOWN ON THE PLANS.

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Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670


PROJECT
PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR
HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100

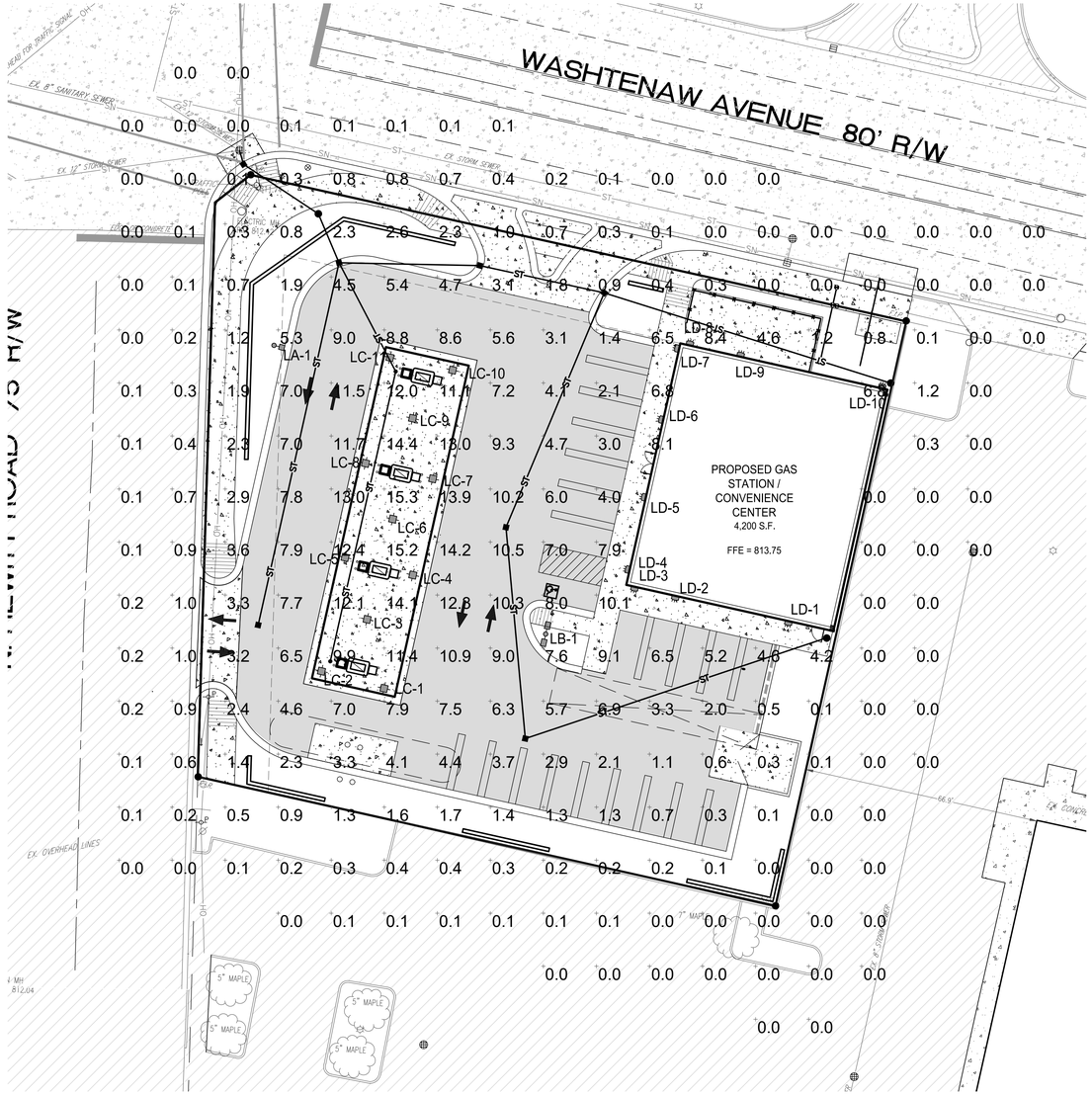
TITLE
LANDSCAPE PLAN

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C6

BOSS Engineering

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## LUMINAIRE SCHEDULE

| SYMBOL | LABEL | QTY. | DESCRIPTION | CATALOG NUMBER | LAMP | LUMENS | LLF | POLE HEIGHT | BASE HEIGHT | TOTAL HEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|
| | LA | 1 | DSX1 LED WITH (2) 30 LED LIGHT ENGINES, TYPE TFTM OPTIC, 4000K, @ 1050mA WITH HOUSE SIDE SHIELD | DSX1 LED 60C 1000 40K TFTM MVOLT HS | LED | ABSOLUTE | .93 | 18' | 2' | 20' |
| | LB | 1 | DSX1 LED WITH (2) 30 LED LIGHT ENGINES, TYPE T5M OPTIC, 4000K, @ 1050mA WITH HOUSE SIDE SHIELD | DSX1 LED 60C 1000 40K T5M MVOLT HS | LED | ABSOLUTE | .93 | 18' | 2' | 20' |
| | LC | 11 | KACM LED WITH 40 LEDs, @700mA, 4000K, AND TYPE R5 OPTICS | KACM LED 40C 700 40K R 5 MVOLT | LED | ABSOLUTE | .93 | 16' | 0' | 16' |
| | LD | 10 | WALL SCONCE – HINKLEY LIGHTING ARIA 2305KZ – LED | HINKLEY LIGHTING ARIA 2305KZ-LED | LED | ABSOLUTE | .93 | 8' | 0' | 8' |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

ALL IES FILES PROVIDED BY MANUFACTURER FOR CALCULATION OF LIGHTING LEVEL.

## SITE LIGHTING SUMMARY

LIGHTING LEVELS ARE SHOWN IN FOOTCANDLES AT 5' ABOVE GRADE

MAXIMUM PAVED LIGHT LEVEL: 15.9 FC.
MINIMUM PAVED LIGHT LEVEL: 0.1 FC.

MAX. LIGHT LEVEL AT THE PROPERTY LINE: 1.0 FC.
MIN. LIGHT LEVEL AT THE PROPERTY LINE: 0.0 FC.

## GENERAL LIGHTING NOTES

1. THE LIGHTING PATTERN REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS.
2. ALL POLES ARE TO BE MOUNTED ON CONCRETE PEDESTALS 2' ABOVE GRADE IN PARKING LOTS AS SHOWN IN DETAIL.
3. ALL POLES LOCATED OUTSIDE OF THE PARKING AREA SHALL BE LOCATED 3' FROM BACK OF CURB OR EDGE OF SIDEWALKS.
4. SHOP DRAWINGS FOR THE ELECTRICAL WIRING OF THE POLES NEED TO BE SUBMITTED TO THE ENGINEER FOR COORDINATION OF UNDERGROUND CONDUIT AND APPROVAL OF LAYOUT.

## LEGEND

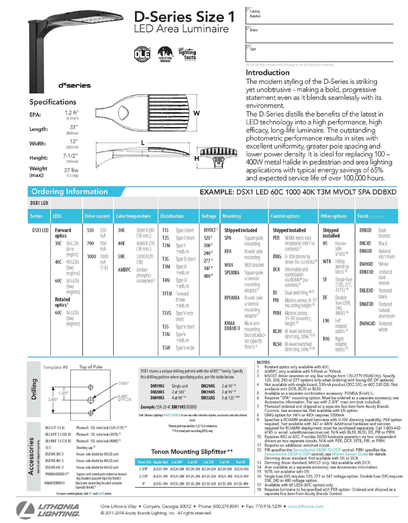
SCALE: 1 INCH = 20 FEET

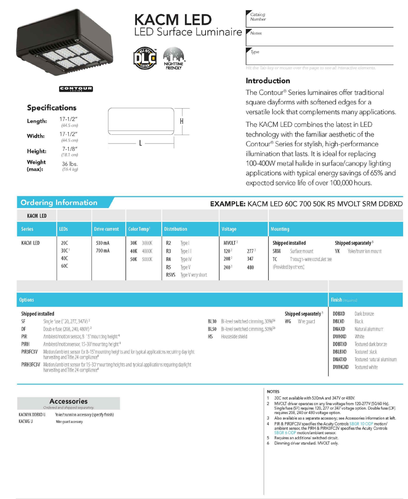
| PROPOSED (PR) | EXISTING (EX) | |
|---|---|---|
| ● | ○ | MANHOLE |
| ■ | □ | INLET / CATCHBASIN |
| | | FLARED END-SECTION |
| | | GATE VALVE |
| | | HYDRANT |
| | | UTILITY POLE |
| X | X | FENCE |
| | | SIGN |
| | | LIMITS OF GRADING/CLEARING |
| | | CONCRETE |
| | | ASPHALT |
| | | MODIFIED CURB |
| | | DOUBLE FIXTURE LIGHT POLE |
| | | SINGLE FIXTURE LIGHT FIXTURE |
| | | WALL MOUNTED LIGHT FIXTURE |
| | | GROUND LIGHT FIXTURE |
| 0.1 | | FOOT CANDLES ON SITE |
| 2.5 | | FOOT CANDLES OFF SITE |
| 5 | | FOOT CANDLES CONTOURS |
| | | CANOPY MOUNTED LIGHT FIXTURE |

N

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION SHOWN THEREON. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR ASCERTAINING THE LOCATION AND ELEVATION OF ALL UTILITIES AND STRUCTURES AND NO PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCE BETWEEN UTILITIES APPEARS INSUFFICIENT FOR THE PLANS.

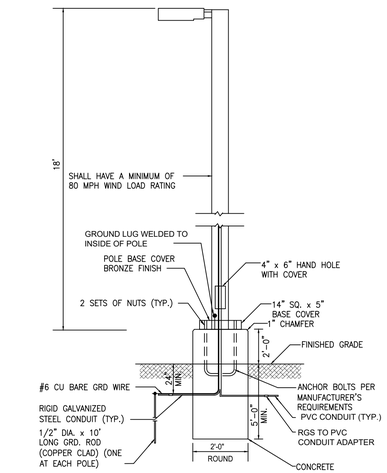
MISS DIG 811
BE SAFE. CALL MISS DIG 1-800-482-7171
WORKING DAYS BEFORE YOU DIG
IT'S THE LAW!!! IT'S FREE!!! IT MAKES SENSE!!!










BOX LIGHT FIXTURE DETAIL (TYP.)
(NO SCALE)

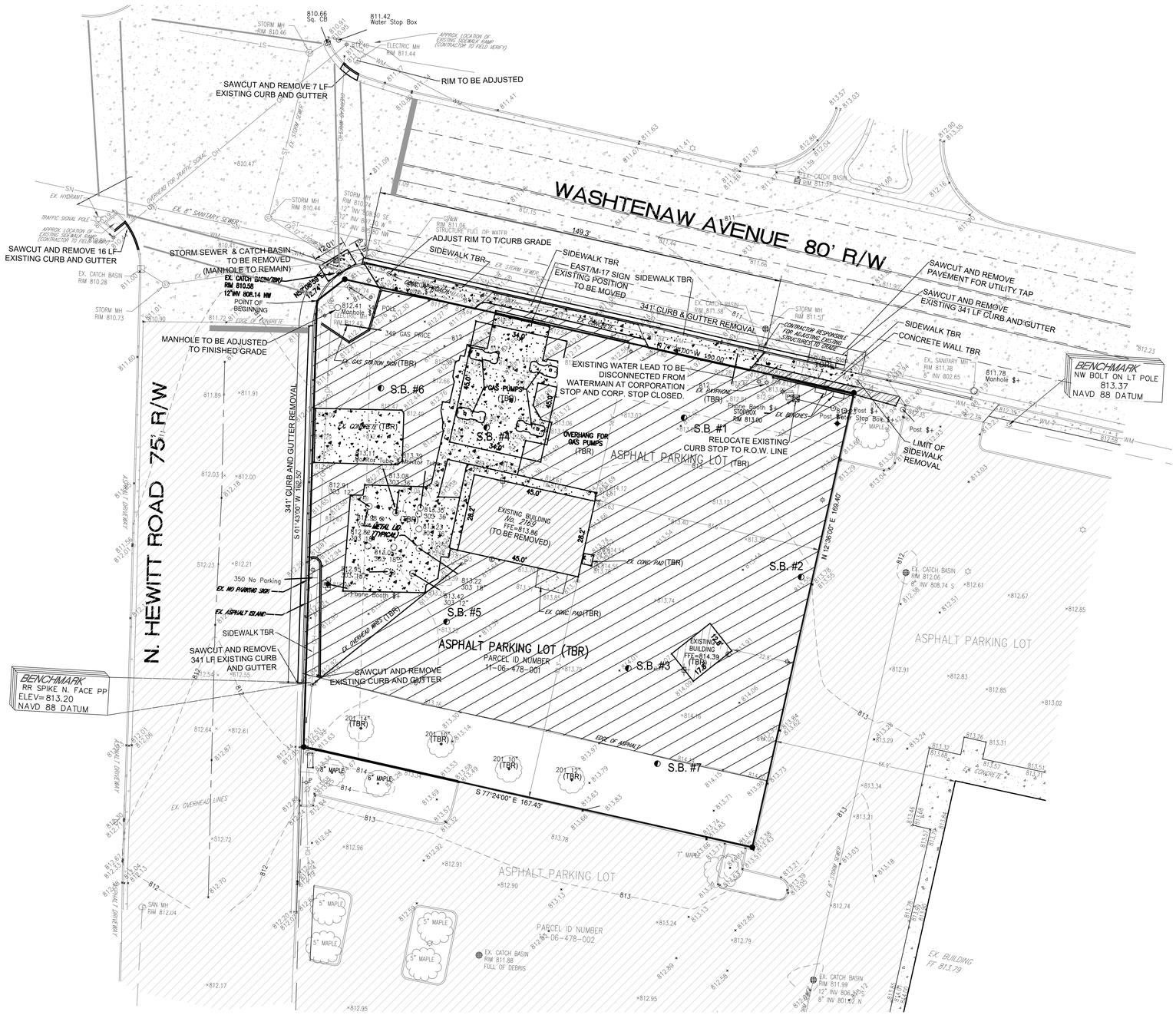
BEBOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670

PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI. 48034
248.855.2100
TITLE: LIGHTING PLAN

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C7

G:\15-080\dwg\15-080_Base.dwg, 12/6/2019 3:35:28 PM




## LEGEND

- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- POWER POLE
- GUY WIRE
- LIGHT POLE
- HYDRANT
- GATE VALVE
- MANHOLE
- STORM CATCH BASIN (ROUND)
- STORM CATCH BASIN (SQUARE)
- TRANSFORMER PAD
- U.G. ELECTRIC MARKER
- U.G. GAS MARKER
- TELEPHONE RISER
- SIGN
- CABLE TV RISER
- DECIDUOUS TREE
- CONIFEROUS TREE
- STEEL ROD SET
- STEEL ROD/PIPE FOUND
- SECTION CORNER
- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- GAS MAIN
- OVERHEAD WIRES
- FENCE
- LIBER
- PAGE
- INGHAM COUNTY RECORDS
- (M) MEASURED
- (R) RECORD PER PLAT "HOLT FARMS NO. 1"
- (R2) RECORD PER KEM-TEC ALTA SURVEY
- ASPHALT
- DEMOLITION
- CONCRETE
- TBR TO BE REMOVED

SOILS INFORMATION:
ST. CLAIR CLAY LOAM (StB), 2% TO 6% SLOPES
-ENTIRE SITE

MDOT REMOVAL NOTE:
1. ALL CURB AND GUTTER REMOVAL AND PAVEMENT REMOVALS WITHIN MDOT RIGHT OF WAY REQUIRE SAW CUTS.
2. CONTRACTOR MUST COORDINATE WITH M.D.O.T. WHEN REMOVING AND RELOCATING THE EXISTING M17 SIGN.

DEMOLITION NOTES:
1. CONTRACTOR TO COORDINATE WITH ENVIRONMENTAL COMPANY SERVICING THE SITE, THE RELOCATION OR REMOVAL OF MONITORING WELLS IN CONFLICT WITH SITE IMPROVEMENTS, ALL MONITORING WELLS THAT ARE TO REMAIN, ADJUST RIM TO PROPOSED GRADE.
2. EXISTING BUILDING SANITARY LEAD SHALL BE ABANDONED FROM INSIDE THE SANITARY SEWER USING A CURED-IN-PLACE PIPE (CIPP) SPOT LINER SUCH AS "PIPE PATCH" OR APPROVED EQUAL.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR LOCATING ALL UTILITIES AND STRUCTURES AND FOR PROTECTING THEM. NO PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATIONS SHOWN ON THE PLANS DIFFER SIGNIFICANTLY FROM THE FIELD.

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 IT'S THE LAW!!! IT'S A GOOD IDEA!!!

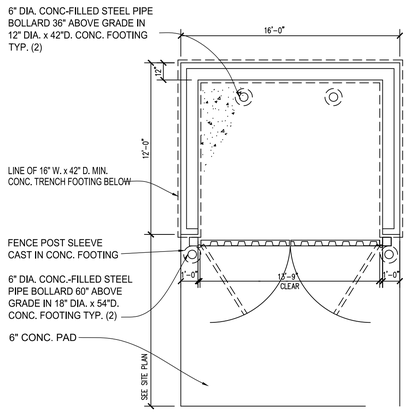

BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670


PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI. 48034
248.855.2100
TITLE: EXISTING CONDITIONS & DEMOLITION PLAN

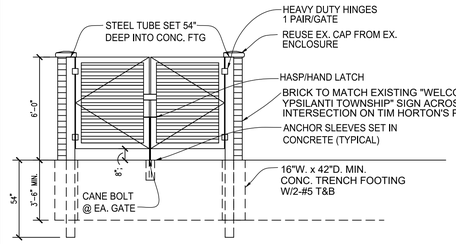
| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C8

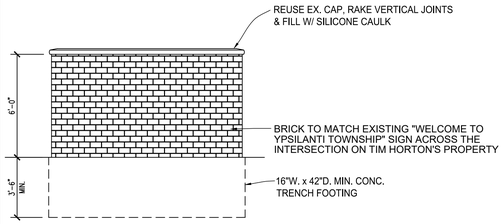
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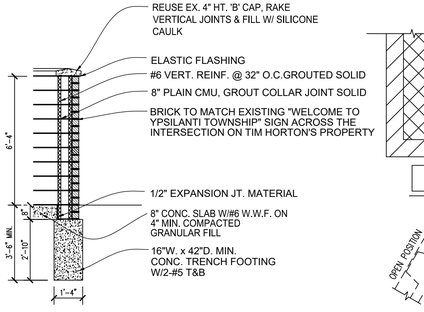

## REFUSE ENCLOSURE PLAN
NO SCALE



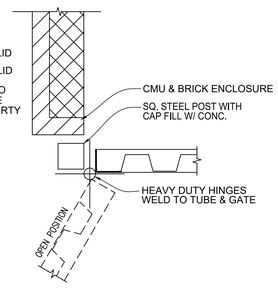

## REFUSE ENCLOSURE FRONT ELEVATION
NO SCALE



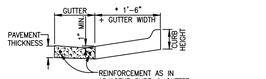

## REFUSE ENCLOSURE REAR ELEVATION
NO SCALE

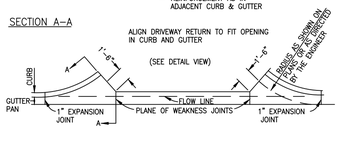



## REFUSE ENCLOSURE WALL SECTION
NO SCALE



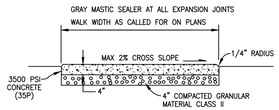

## GATE POST DETAIL
NO SCALE



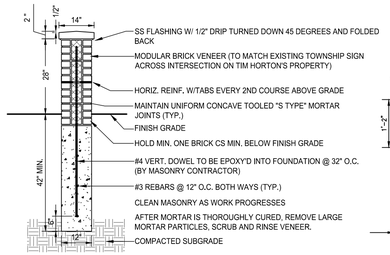




* TO EDGE OF GUTTER OR FACE OF INTEGRAL CURB.

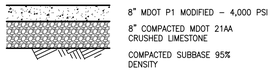
## CONCRETE DRIVEWAY OPENING – MDOT STANDARD II–42, DETAIL "M"
(NO SCALE)



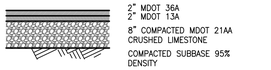

## 4" CONCRETE SIDEWALK
(NO SCALE)




## DECORATIVE BRICK KNEE WALL DETAIL
(NO SCALE)

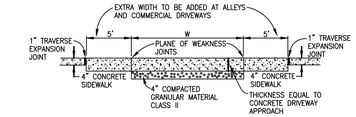



## CONCRETE APPROACH CROSS SECTION
(NO SCALE)

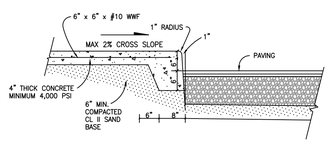



## ASPHALT SECTION
(NO SCALE)

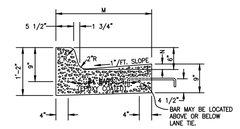
NOTE: FOR CROSS–SECTIONS WITHIN THE MDOT RIGHT OF WAY SEE SHEET C13




## THICKENED CONCRETE SIDEWALK
(NO SCALE)

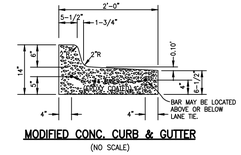



## INTEGRAL CONCRETE WALK / CURB DETAIL
(NO SCALE)

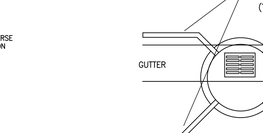



| DETAIL | DIMENSIONS M | N | LANE TIES | CONCRETE CU.YD./LIN.FT. |
|---|---|---|---|---|
| F1 | 1'–8" | 7/8" | AS SHOWN | 0.0484 |
| F2 | 1'–8" | 7/8" | OMITTED | 0.0484 |
| F3 | 2'–0" | 1 3/8" | AS SHOWN | 0.0610 |
| F4 | 2'–0" | 1 3/8" | OMITTED | 0.0610 |
| F5 | 2'–6" | 1 7/8" | AS SHOWN | 0.0737 |
| F6 | 2'–6" | 1 7/8" | OMITTED | 0.0737 |

## CONCRETE CURB & GUTTER TYPE F
(NO SCALE)

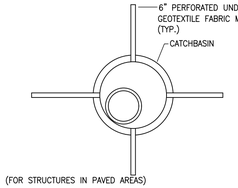



## MODIFIED CONC. CURB & GUTTER
(NO SCALE)



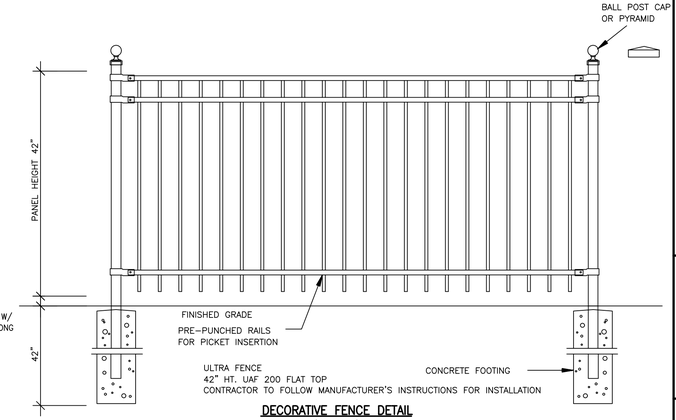

(FOR STRUCTURES IN CURBS)

## STORM STRUCTURE UNDER DRAIN DETAIL
NO SCALE

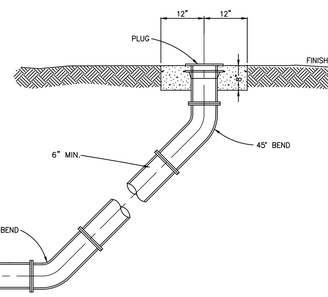



(FOR STRUCTURES IN PAVED AREAS)

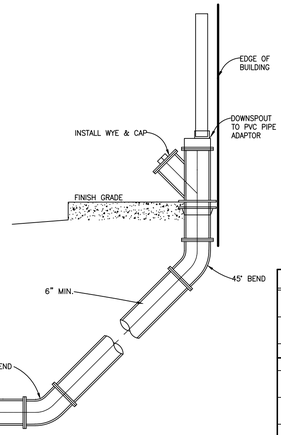
## STORM STRUCTURE UNDER DRAIN DETAIL
NO SCALE




## DECORATIVE FENCE DETAIL
(NO SCALE)

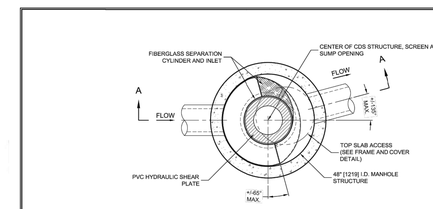



## STORM SEWER CLEANOUT

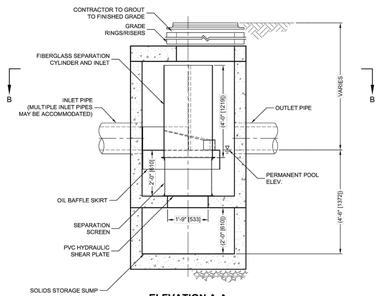



## ROOF DRAIN CLEANOUT DETAIL
NO SCALE

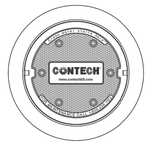
| STRUCTURE FRAMES & COVERS | | | | | |
|---|---|---|---|---|---|
| COVER | TYPE | USE | MANUFACTURER OR EQUAL EAST JORDAN | MANUFACTURER OR EQUAL NEENAH | TYPE OF COVER OR GRATE |
| A NO SCALE | MH | ALL | 1040–B | R–1415 | ~~SANITARY SELF SEALING STORM–VENTED~~ |
| ~~B~~ | ~~CB & INLET~~ | ~~TYPE B2 CURB~~ | ~~7085~~ | ~~R–3038–A~~ | |
| K | CB & INLET | TYPE C & F CURB | 7045 | R–3031–B | FLAT GRATE WITH VERT. 4" OPEN THROAT |
| C | CB & INLET | VALLEY CURB | 7065 | R–3034–B | |
| D | CB & INLET | PARKING LOTS | 1020–MI | R–2560–D | FLAT GRATE |
| ~~E~~ | ~~CB & INLET~~ | ~~MIN AREA OR DITCH~~ | ~~1020–01~~ | | BEEHIVE GRATE 4" HIGH |




## PLAN VIEW B-B
N.T.S.




## ELEVATION A-A
N.T.S.




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

| CDS2015-4-C DESIGN NOTES |
|---|
| THE STANDARD CDS2015-4-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS. |
| **CONFIGURATION DESCRIPTION** |
| GRATED INLET ONLY (NO INLET PIPE) |
| GRATED INLET WITH INLET PIPE OR PIPES |
| CURB INLET ONLY (NO INLET PIPE) |
| CURB INLET WITH INLET PIPE OR PIPES |
| SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION) |
| SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS |

| SITE SPECIFIC DATA REQUIREMENTS | | | |
|---|---|---|---|
| STRUCTURE ID | | | |
| WATER QUALITY FLOW RATE (CFS OR L/s) | | | * |
| PEAK FLOW RATE (CFS OR L/s) | | | * |
| 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 ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET H520 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE INSTALL AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. 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.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-4-C
INLINE CDS
STANDARD DETAIL

CDS 02

## EJIW's Storm Water Management Products and NPDES Phase II





EJIW has a variety of drainage products to assist municipalities in gaining NPDES Phase II compliance through the use of Best Management Practices (BMPs). EJIW offers a wide range of cast iron grates, ADA grates, catch basins and curb inlets permanently cast with a fish image and "DUMP NO WASTE/ DRAINS TO WATERWAYS" message. EJIW castings are a low cost means to discourage illicit dumping. Unlike stenciling or other short-lived approaches, our environmentally friendly designs serve as an enduring reminder against dumping. Your existing standards can be customized with anti-dumping messages and fish and fowl images, maintaining complete interchangeability with your installed base while building public awareness of pollution and its impact on your local waterways.

The Clean Water Act provides funds for local governments to solve drainage and storm sewer problems. In order to qualify for funds, municipalities must demonstrate that any new construction also educates the public on the dangers of pollutants in storm water. To satisfy this requirement, EJIW provides a permanent, cast-iron message against illicit dumping.

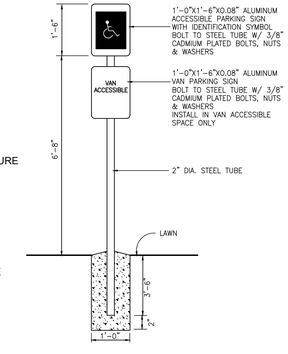
## Flow Capacities of Inlet Grates

Selecting and specifying the proper type of inlet grates for drainage is an important part of a stormwater management design plan. East Jordan Iron Works manufactures many different types and sizes of inlet drainage grates to meet your design needs. See pages 254 - 261 for a listing of EJIW drainage tables for round grates and catch basins.

The flow capacity of any inlet grate in a sump, or ponded condition, is a function of the depth of water over the grate and the open area of the grate. For this calculation, the orifice equation is used. The orifice equation can be used to determine the flow through a grate.

$Q = CA\sqrt{(2gd)}$ where Q = flow
C = orifice coefficient
A = open area of grate (ft²)
g = acceleration due to gravity (32.2 ft/sec²)
d = depth of water over grate (feet)

## COVER DETAILS:




## HANDICAP PARKING SIGN DETAIL
(NO SCALE)

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN AND LOCATED AS ACCURATELY AS POSSIBLE. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR ESTABLISHING THE EXACT LOCATION OF ALL EXISTING UTILITIES AND FOR AVOIDING ANY DAMAGE TO THE PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCE BETWEEN UTILITIES APPEARS INSUFFICIENT FROM THE PLANS.

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BEBOSS Engineering
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3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670

PROJECT
PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR
HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100
TITLE
CONSTRUCTION DETAILS

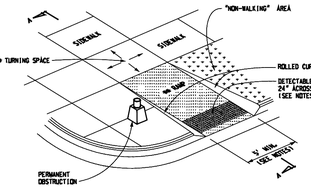
| NO | BY | REVISION PER | DATE |
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JOB NO. 15–080
DATE 12/9/19
SHEET NO. C9

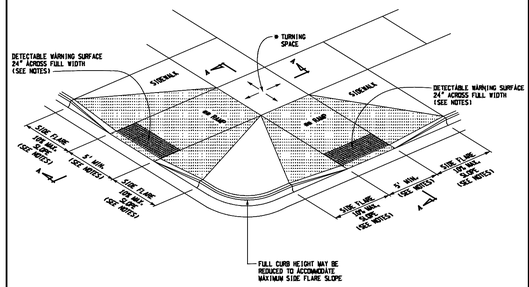
BOSS Engineering

* MAXIMUM TURNING SPACE SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.




## SIDEWALK RAMP TYPE R
(ROLLED SIDES)

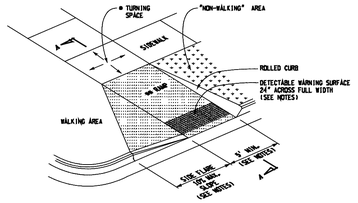



## SIDEWALK RAMP TYPE F
(FLARED SIDES, TWO RAMPS SHOWN)

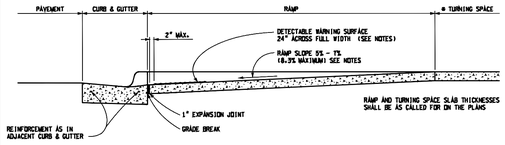
| | | | | |
|---|---|---|---|---|
| MDOT | DEPARTMENT DIRECTOR Kirk T. Steudle | MICHIGAN DEPARTMENT OF TRANSPORTATION<br>BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR<br>SIDEWALK RAMP AND DETECTABLE WARNING DETAILS | | |
| PREPARED BY DESIGN DIVISION | APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES | 9-30-2014 T.R.S.S. APPROVAL | T-1-2014 PLAN DATE | R-28-I |
| DRAWN BY: R.L.T. | APPROVED BY: DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT | | | SHEET 1 OF 7 |
| CHECKED BY: R.K.P. | | | | |

* MAXIMUM TURNING SPACE SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

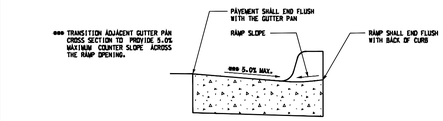
** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.




## SIDEWALK RAMP TYPE RF
(ROLLED / FLARED SIDES)




## SECTION A-A

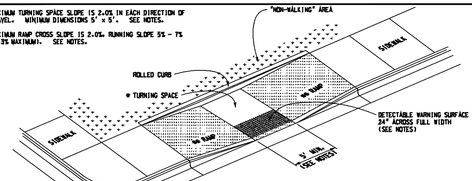



## SECTION THROUGH CURB CUT
(TYPICAL ALL RAMP TYPES)

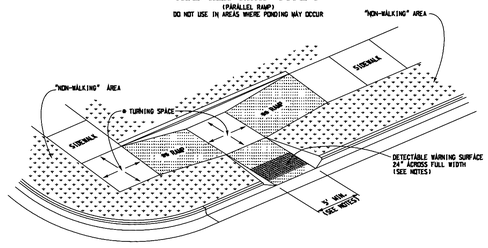
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|---|---|---|---|---|
| | | MICHIGAN DEPARTMENT OF TRANSPORTATION<br>BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR<br>SIDEWALK RAMP AND DETECTABLE WARNING DETAILS | | |
| | | 9-30-2014 T.R.S.S. APPROVAL | T-1-2014 PLAN DATE | R-28-I |
| | | | | SHEET 2 OF 7 |

* MAXIMUM TURNING SPACE SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

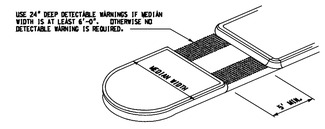
** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.




## SIDEWALK RAMP TYPE P
(PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR

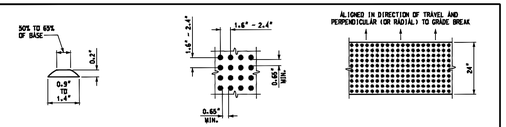



## SIDEWALK RAMP TYPE C
(COMBINATION RAMP)




## SIDEWALK RAMP TYPE M
(MEDIAN ISLAND)

| | | | | |
|---|---|---|---|---|
| | | MICHIGAN DEPARTMENT OF TRANSPORTATION<br>BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR<br>SIDEWALK RAMP AND DETECTABLE WARNING DETAILS | | |
| | | 9-30-2014 T.R.S.S. APPROVAL | T-1-2014 PLAN DATE | R-28-I |
| | | | | SHEET 3 OF 7 |




DOME SECTION | DOME SPACING | DOME ALIGNMENT

## DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, WHERE CONDITIONS PERMIT. IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

PROVIDE TURNING SPACES WHERE PEDESTRIAN TURNING MOVEMENTS ARE REQUIRED.

WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND TURNING SPACES TO NOT LESS THAN 4' x 4'.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET, NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5.0%. MAINTAIN THE NORMAL GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

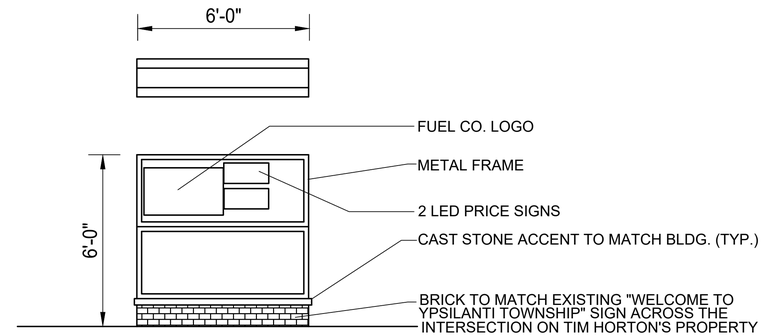
THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

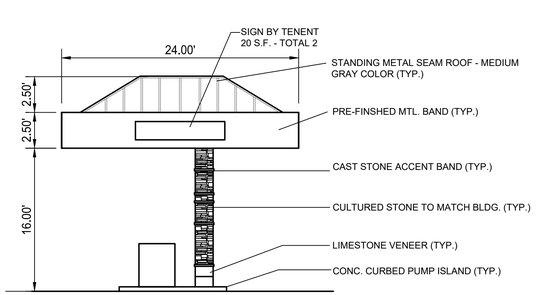
FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS, WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

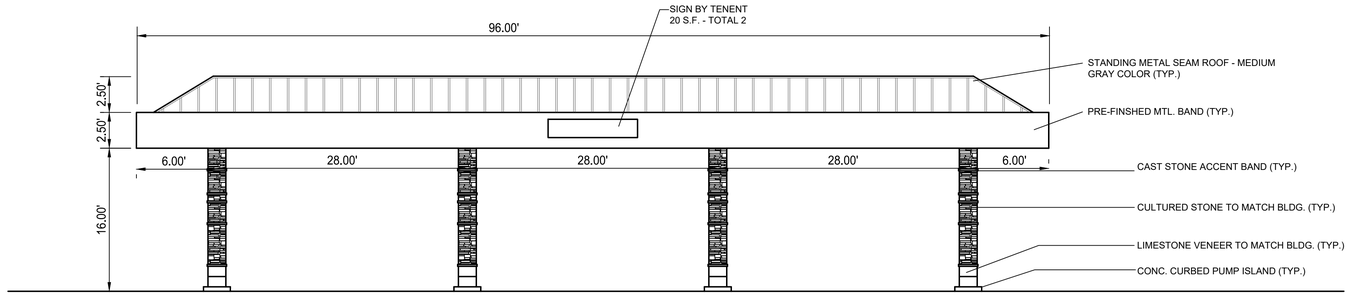
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| | | MICHIGAN DEPARTMENT OF TRANSPORTATION<br>BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR<br>SIDEWALK RAMP AND DETECTABLE WARNING DETAILS | | |
| | | 9-30-2014 T.R.S.S. APPROVAL | T-1-2014 PLAN DATE | R-28-I |
| | | | | SHEET 1 OF 7 |




## PROPOSED MONUMENT SIGN
NO SCALE




## PROPOSED ISLAND CANOPY - NORTH SIDE
NO SCALE




## PROPOSED ISLAND CANOPY - WEST SIDE
NO SCALE

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING ANY PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCE BETWEEN UTILITIES IS LESS THAN SHOWN ON THE PLANS.

BEFORE YOU DIG CALL MISS DIG 3 WORKING DAYS 1-800-482-7171 IT'S THE LAW!!!

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Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670

PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100

TITLE: CONSTRUCTION DETAILS

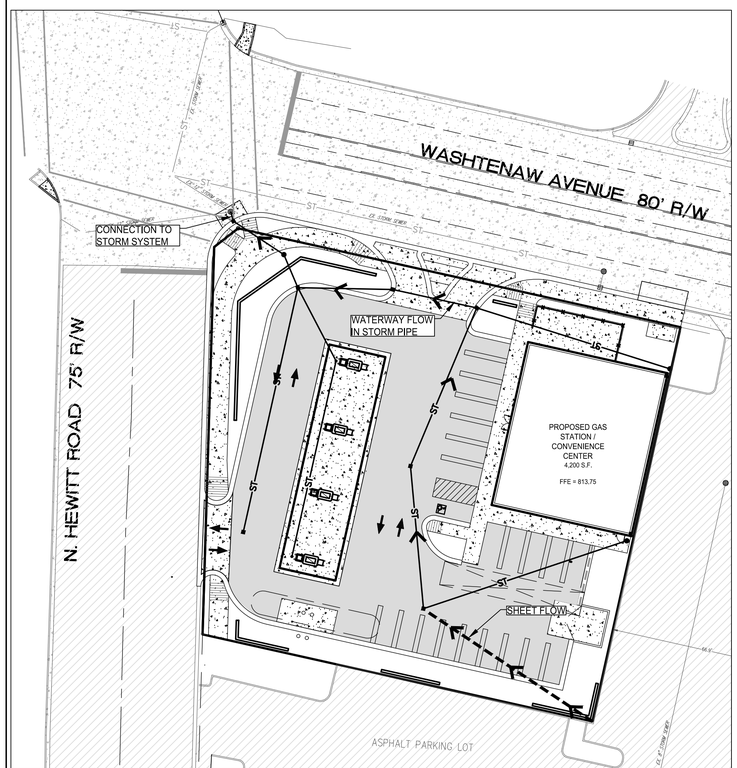
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DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C10




PRE–DEVELOPMENT DRAINAGE PATTERN

SCALE: 1"=30'




POST–DEVELOPMENT DRAINAGE PATTERN

SCALE: 1"=30'

## PRE–DEVELOPMENT NARRATIVE:

IN THE PRE–DEVELOPED CONDITION, THE SITE IS AN OLD GAS STATION WITH A MAJORITY OF THE SITE BEING IMPERVIOUS SURFACES. THERE ARE NO EXISTING STORM STRUCTURES ON–SITE. ALL STORM WATER SHEET FLOWS EITHER WESTERLY TO THE HEWITT ROAD CURB LINE OR NORTHERLY TO THE WASHTENAW AVE CURB LINE. ALL FRONTAGE ON HEWITT ROAD AND WASHTENAW AVE FLOWS TOWARDS THE INTERSECTION WHERE AN EXISTING STORM CATCH BASIN IS LOCATED. THIS STORM STRUCTURE IS PRESUMED TO BE A 2' DIAMETER INLET STRUCTURE AND WILL NEED TO BE REPLACED WITH A 4' DIAMETER STRUCTURE. THIS STORM SYSTEM IS WITHIN MDOT RIGHT–OF–WAY AND IS UNDER THE JURISDICTION OF MDOT. THE STORM SEWER FLOWS NORTHWESTERLY. THE SMALL SECTION OF PIPE CONNECTING THE EXISTING CATCH BASIN TO THE EXISTING STORM MANHOLE HAS AN INVERTED SLOPE PER THE TOPOGRAPHIC SURVEY PERFORMED BY MICKALICH ENGINEERING, INC. AND SHALL BE REPLACED AS A PART OF THIS PROJECT.

FROM THE FURTHEST POINT, THERE IS 185 LINEAL FEET OF SHEET FLOW TO THE CURB LINE WHERE IT CONCENTRATES TO A WATERWAY FLOW FOR 105 LINEAL FEET INTO THE EXISTING CATCH BASIN.

IN THE PRE–DEVELOPED CONDITION, UTILIZING A HYDROLOGIC SOIL GROUP D (C=0.45) AND IMPERVIOUS FACTOR OF 0.95, THE AMOUNT OF RUNOFF SHEET FLOWING INTO THE ROAD CURB LINES AND ULTIMATELY THE EXISTING CATCH BASIN IS 2.55 CFS (10–YR STORM EVENT).

## POST–DEVELOPMENT NARRATIVE:

IN THE POST–DEVELOPED CONDITION, THE SITE IS TO BE RE–DEVELOPED INTO A GAS STATION/CONVENIENCE STORE USE. A STORM SEWER SYSTEM IS PROPOSED FOR CATCHMENT AND TRANSMITTAL OF THE SITE'S STORM WATER. THE STORM SEWER SYSTEM IS PROPOSED TO CONNECT INTO THE EXISTING STORM SEWER SYSTEM AT THE NORTHEAST CORNER OF THE HEWITT ROAD/WASHTENAW AVENUE INTERSECTION. THIS EXISTING STORM SEWER SYSTEM IS UNDER THE JURISDICTION OF MDOT.

FROM THE FURTHEST POINT ON THE SITE (THE SOUTHEAST CORNER) THERE IS 85 LINEAL FEET OF SHEET FLOW INTO THE PROPOSED CATCH BASIN. ONCE IN THE STORM SEWER SYSTEM, THERE IS 263 LINEAL FEET OF WATERWAY FLOW TO THE CONNECTION POINT IN THE MDOT SYSTEM.

AS A RESULT OF THIS SITE'S RE–DEVELOPMENT, THERE IS A SLIGHT OVERALL REDUCTION IN IMPERVIOUS SURFACES. FROM THESE REDUCED IMPERVIOUS SURFACES IS REDUCED FLOW RATES AND VOLUMES INTO THE MDOT STORM SEWER SYSTEM. SEE SUMMARY BELOW FOR PRE– AND POST–DEVELOPMENT VALUES.

FINALLY, IN ADDITION TO A REDUCTION IN STORM WATER RATE AND VOLUME BEING DISCHARGED INTO THE MDOT STORM SEWER SYSTEM, THERE IS AN IMPROVEMENT IN STORM WATER QUALITY. IN THE PRE–DEVELOPED CONDITION, ALL FLOW WAS SHEET FLOW OFF THE SITE INTO THE ROAD CURB LINES. IN THE POST–DEVELOPED CONDITION, A MECHANICAL PRE–TREATMENT UNIT IS BEING INSTALLED TO SETTLE SOLIDS AND RETAIN FLOATABLES FROM FLOWING INTO THE MDOT SYSTEM. SEE MECHANICAL PRE–TREATMENT CALCULATIONS ON THIS SHEET FOR MORE DATA.

IN ORDER FOR THE STORM SYSTEM TO WORK AS DESIGNED, IT SHALL BE MAINTAINED AS OUTLINED BELOW IN THE "LONG–TERM STORM WATER MAINTENANCE PLAN".

## SUMMARY:

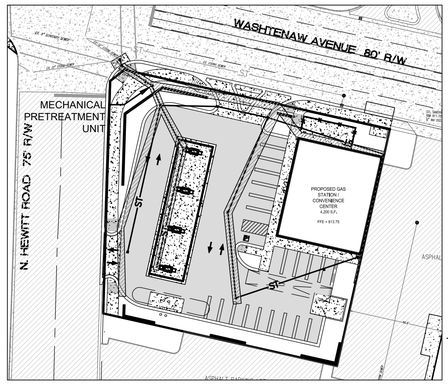
PRE–DEVELOPMENT SITE FLOW RATE INTO CATCH BASIN AT INTERSECTION = 2.55 CFS (SEE EXISTING CALCULATION ON SHEET C3)
POST–DEVELOPMENT SITE FLOW RATE INTO THE CATCH BASIN AT INTERSECTION = 2.52 CFS (FROM STORM SEWER CALCULATIONS ON SHEET C3).

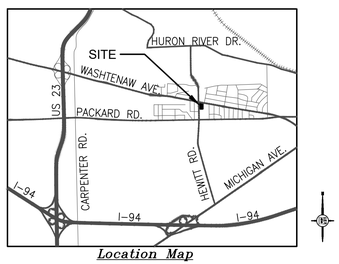
PER THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER "COMPUTATIONAL REQUIREMENTS FOR STORMWATER MANAGEMENT SYSTEMS":
THE PRE–DEVELOPMENT TOTAL REQUIRED DETENTION VOLUME(WORKSHEET W13) IS 14,880 CFT. (AS SEEN ON SHEET C12 OF THESE PLANS)
THE POST–DEVELOPMENT TOTAL REQUIRED DETENTION VOLUME(WORKSHEET W13) IS 14,868 CFT. (AS SEEN ON SHEET C12A OF THESE PLANS)

## LONG–TERM STORM WATER MAINTENANCE PLAN

# EXHIBIT A

***PHYSICAL LIMITS OF STORM WATER MAINTENANCE SYSTEM***




*Location Map*

PROPERTY DESCRIPTION AS SUPPLIED:

PART OF SECTION 6, T.3S., R.7E., YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE S.E. CORNER OF SAID SECTION 6; THENCE N.88°09'00"W. 946.57 FEET ALONG THE SOUTH LINE OF SAID SECTION 6; THENCE N.01°43'00"E. 781.13 FEET; THENCE N.77°24'00"W. 684.31 FEET; THENCE N.01°43'00"E. 295.50 FEET, TO THE POINT OF BEGINNING; THENCE S.01°43'00"W. 162.50 FEET; THENCE S.77°24'00"E. 167.43 FEET; THENCE N.12°36'00"E. 169.40 FEET; THENCE N.77°24'00"W. 190 FEET; THENCE SOUTHWESTERLY TO THE POINT OF BEGINNING.

*LEGEND*

OWNER RESPONSIBILITY

STORM SEWER —ST—

| CLIENT: | DESCRIPTION: |
|---|---|
| HEWITT INVESTMENT LLC | PROPOSED GAS STATION/CONVENIENCE STORE, YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN |
| JOB NO. 15–080 | DATE 1/18/19 |
| SHEET 1 OF 2 | DR. ST CHKD. |

BEBOSS Engineering — Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE. HOWELL, MI. 48843 800.246.6735 FAX 517.548.1670

# EXHIBIT B

***STORM WATER MANAGEMENT SYSTEM LONG–TERM MAINTENANCE PLAN***

Property Owner: HEWITT INVESTMENT LLC
29200 Northwestern Hwy., Suite 450
Southfield, MI 48034

**A. Physical Limits of the Storm Water Management System**

The storm water management system (SWMS) subject to this Long–term Maintenance Plan (Plan) is depicted on Exhibit A to the Permit and includes without limitation the storm sewers, manholes, catch basins, manufactured treatment system, and pipes that convey the storm water from the site to the existing storm sewer system.

For purposes of this Plan, this storm water management system and all of its components as shown on Exhibit A is referred to as HEWITT INVESTMENT LLC's SWMS.

**B. Time Frame for Long–Term Maintenance Responsibility**

HEWITT INVESTMENT LLC is responsible for maintaining the HEWITT INVESTMENT LLC's SWMS. Long–term maintenance continues in perpetuity and its obligations are binding upon successors and assigns.

**C. Long–Term Maintenance Plan and Schedule**

Table 1 identifies the maintenance activities to be performed, organized by category (monitoring/inspections, preventative maintenance, and remedial actions). Table 1 also identifies site–specific work needed to ensure that the storm water management system functions properly. Table 2 identifies funds necessary for ongoing maintenance activities for the storm sewer system.

## TABLE 1

STORM WATER MANAGEMENT SYSTEM LONG–TERM MAINTENANCE SCHEDULE

| Maintenance Activities | System Components: Storm Collection System (Sewers, Catch Basins, Manholes) | Manufactured Treatment System | Pavement Areas | Frequency |
|---|---|---|---|---|
| **Monitoring / Inspection** | | | | |
| Inspect for Sediment Accumulation/ Clogging | X | X | | Semi–Annual |
| Inspect for Floatables, Dead Vegetation and Debris | X | X | | Semi–Annual |
| Inspect for Erosion and Integrity of System | X | | | Annually |
| Ensure means of access for Maintenance Remain Clear/Open | X | X | | Annually |
| **Preventative Maintenance** | | | | |
| Remove Accumulated Sediment | X | X | | As Needed* |
| Remove Floatables, Dead Vegetation and Debris | X | X | | As Needed |
| Sweeping of Paved Surfaces | | | X | As Needed |
| **Remedial Actions** | | | | |
| Structural Repairs | X | X | X | As Needed |
| Make Adjustments/Repairs to Ensure Proper Functioning | X | X | X | As Needed |

**Notes:**
* Manufactured treatment system to be cleaned according to manufacturer's recommendations; at a minimum, whenever sediments accumulate to a depth of 6–12 inches, or if sediment resuspension is observed.

## TABLE 2

LONG–TERM MAINTENANCE BUDGET

| Item | Frequency | Unit Cost | Unit | Cost |
|---|---|---|---|---|
| Visual Inspection | Semi–Annual | $100/hr | 1 hr (EA) | $200 |
| Structure/Pipe Cleaning | As Needed | $400/hr | 2 hr | $800 |
| | | | Yearly Budget | $1,000 |

| CLIENT: | DESCRIPTION: |
|---|---|
| HEWITT INVESTMENT LLC | PROPOSED GAS STATION/CONVENIENCE STORE, YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN |
| JOB NO. 15–080 | DATE 1/18/19 |
| SHEET 2 OF 2 | DR. ST CHKD. |

BEBOSS Engineering — Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE. HOWELL, MI. 48843 800.246.6735 FAX 517.548.1670

## MECHANICAL PRE–TREATMENT WATER QUALITY CALCULATIONS

**CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION**
**BASED ON THE RATIONAL RAINFALL METHOD**
**BASED ON AN AVERAGE PARTICLE SIZE OF 110 MICRONS**
**PROPOSED GAS STATION/ CONVENIENCE STORE**
**YPSILANTI, MI**
**for SYSTEM:**

CONTECH ENGINEERED SOLUTIONS — CDS

| | | | | | |
|---|---|---|---|---|---|
| Area | 0.59 | acres | CDS Model | 2015-4 | |
| Weighted C | 0.90 | | Particle size | 110 | microns |
| Tc | 20 | minutes | First Flush | 0.53 | cfs |
| | | | Treatment Flow Before Bypass | 0.98 | cfs |

| Rainfall Intensity[1] (in/hr) | Percent Rainfall Volume[1] | Cumulative Rainfall Volume | Total Flowrate (cfs) | Removal Efficiency (%) | Incremental Removal (%) |
|---|---|---|---|---|---|
| 0.02 | 12.53% | 12.53% | 0.01 | 100.00 | 12.53 |
| 0.04 | 11.32% | 23.85% | 0.02 | 100.00 | 11.32 |
| 0.06 | 10.08% | 33.93% | 0.03 | 100.00 | 10.08 |
| 0.08 | 7.49% | 41.42% | 0.04 | 99.94 | 7.49 |
| 0.10 | 7.44% | 48.86% | 0.05 | 99.58 | 7.41 |
| 0.12 | 5.31% | 54.17% | 0.06 | 99.22 | 5.27 |
| 0.14 | 4.18% | 58.35% | 0.07 | 98.86 | 4.13 |
| 0.16 | 4.82% | 63.17% | 0.08 | 98.50 | 4.75 |
| 0.18 | 3.40% | 66.57% | 0.10 | 98.14 | 3.34 |
| 0.20 | 2.89% | 69.46% | 0.11 | 97.78 | 2.83 |
| 0.25 | 6.22% | 75.68% | 0.13 | 96.88 | 6.03 |
| 0.30 | 4.12% | 79.80% | 0.16 | 95.97 | 3.95 |
| 0.35 | 3.37% | 83.17% | 0.19 | 95.07 | 3.20 |
| 0.40 | 2.90% | 86.07% | 0.21 | 94.2 | 2.7 |
| 0.45 | 2.65% | 88.72% | 0.24 | 93.3 | 2.5 |
| 0.50 | 1.68% | 90.40% | 0.27 | 92.4 | 1.6 |
| 0.75 | 5.11% | 95.51% | 0.40 | 87.9 | 4.5 |
| 1.00 | 2.18% | 97.69% | 0.53 | 83.4 | 1.8 |
| 1.50 | 1.50% | 99.19% | 0.80 | 68.2 | 1.0 |
| 2.00 | 0.50% | 99.69% | 1.06 | 51.2 | 0.3 |
| 2.10 | 0.31% | 100.00% | 1.12 | 48.7 | 0.2 |
| | | | | | 96.81 |
| | | | | Removal Efficiency Adjustment[2] = | 6.5% |
| | | | | Predicted % Annual Rainfall Treated = | 93.1% |
| | | | | **Predicted Net Annual Load Removal Efficiency =** | **90.4%** |

1 - Based on 26 Years of Rainfall Data from NCDC Station Ann Arbor University of Michigan
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

**Project:** Gas Station - Ypsilanti
**Location:** *Ypsilanti, MI*
**Prepared For:** Boss Engineering

**Purpose:** To calculate the first flush runoff flow rate (WQF) over a given site area. In this situation the WQV to be analyzed is the runoff produced by the first \1" of rainfall.

**Reference:** United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

**Given:**

| Structure Name | A (acres) | A (miles²) | Runoff Coefficient | Percent Imp. (%)* | $t_c$ (min) | $t_c$ (hr) |
|---|---|---|---|---|---|---|
| CDS 2 | 0.59 | 0.00092 | 0.90 | 93.33 | 20.0 | 0.333 |
| | | 0.00000 | | -26.67 | | 0.000 |
| | | 0.00000 | | -26.67 | | 0.000 |

* Assumes runoff coefficient of 0.3 for pervious areas and 0.9 for impervious areas.

**Procedure:**

The Water Quality Flow (WQF) is calculated using the Water Quality Volume (WQV). This WQV, converted to watershed inches, is substituted for the runoff depth (Q) in the Natural Resources Conservation Service (formerly Soil Conservation Service), TR-55 Gr

1. Compute WQV in watershed inches using the following equation:

$$WQV = P * R$$

where: WQV = water quality volume (watershed inches)
P = design precipitation (inches)
R = volumetric runoff coefficient = 0.05 + 0.009(I)
I = percent impervious cover

| Structure Name | Percent Imp. (%) | R | P (in) | WQV (in) | WQV (CF) |
|---|---|---|---|---|---|
| CDS 2 | 93.33 | 0.890 | 1 | 0.890 | 1,896.42 |
| 0 | -26.67 | -0.190 | | 0.000 | - |
| 0 | -26.67 | -0.190 | | 0.000 | - |

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10+5P+10Q-10(Q^2+1.25QP)^{0.5}]$$

where: CN = Runoff Curve Number
P = design precipitation (inches)
Q = runoff depth (watershed inches)

| Structure Name | Q (in) | CN |
|---|---|---|
| CDS 2 | 0.890 | 99.02 |
| 0 | 0.000 | 100.00 |
| 0 | 0.000 | 100.00 |

3. Using computed CN, read initial abstraction ($I_a$) from Table 4-1 in Chapter 4 of TR-55; compute $I_a/P$, interpolating when appropriate.

| Structure Name | $I_a$ (in) | $I_a/P$ |
|---|---|---|
| CDS 2 | 0.041 | 0.041 |
| 0 | | #DIV/0! |
| 0 | | #DIV/0! |

4. Compute the time of concentration ($t_c$) in hours and the drainage area in square miles. A minimum $t_c$ of 0.167 hours (10 minutes) should be used.

| Structure Name | $t_c$ (hr) | A (miles²) |
|---|---|---|
| CDS 2 | 0.333 | 0.00092 |
| 0 | 0.167 | 0.00000 |
| 0 | 0.167 | 0.00000 |

5. Read the unit peak discharge ($q_u$) from Exhibit 4-III in Chapter 4 of TR-55 for appropriate $t_c$ for type II rainfall distribution.

| Structure Name | $t_c$ (hr) | $I_a/P$ | $q_u$ (csm/in) |
|---|---|---|---|
| CDS 2 | 0.333 | 0.041 | 645 |
| 0 | 0.167 | #DIV/0! | |
| 0 | 0.167 | #DIV/0! | |

6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQF) from the following equation:

$$WQF = (q_u)*(A)*(Q)$$

where: WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (cfs/mi²/inch)
A = drainage area (mi²)
Q = runoff depth (watershed inches)

| Structure Name | $q_u$ (csm/in) | A (miles²) | Q (in) | WQF (cfs) |
|---|---|---|---|---|
| CDS 2 | 645 | 0.00092 | 0.890 | 0.53 |
| 0 | 0 | 0.00000 | 0.000 | 0.00 |
| 0 | 0 | 0.00000 | 0.000 | 0.00 |

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS GIVEN AS TO THE ACCURACY OR COMPLETENESS OF ANY INFORMATION CONTAINED THEREON. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES AND FOR AVOIDING ANY AND ALL PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCES BETWEEN UTILITIES APPEAR INSUFFICIENT FROM THE PLANS.

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3121 E. GRAND RIVER AVE. HOWELL, MI. 48843 800.246.6735 FAX 517.548.1670

PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100
TITLE: STORM WATER ANALYSIS

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 30'
JOB NO. 15–080
DATE 12/9/19
SHEET NO. C11

BOSS Engineering

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EXISTING

## Section IV: Computational Requirements For Stormwater Management Systems

# Part E.

## STANDARD METHOD RUNOFF VOLUME WORK SHEETS

### W1 Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Total Site Area = 0.75 ac

Total Site Area Excluding "Self- Crediting" BMPs = 0.75 ac[A]

**Rational Method Variables[B]**

| Cover Type | Soil Type | Area (ft²) | Area(ac) | Runoff Coefficient (c) | (C) (Area) |
|---|---|---|---|---|---|
| GRASS | D | 4705 | 0.11 | 0.45 | 0.05 |
| ROOF/PVMT | D | 27,881 | 0.64 | 0.95 | 0.61 |

Total - ∑(C)(Area) = 0.66
Area Total - ∑ac or ∑sf = 0.75
Weighted C - ∑(C)(Area)/∑ac or ∑sf = 0.88

**NRCS Variables[C]**

| Pervious Cover Type | Soil Type | Area (ft²) | Area(ac) | Curve Number | (CN) (Area) |
|---|---|---|---|---|---|
| GRASS | D | 4,705 | 0.11 | 80 | 8.8 |

Total - ∑(CN)(Area) = 8.8
Area Total - ∑ac or ∑sf = 0.11
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 80

| Impervious Cover | Soil Type | Area (ft²) | Area(ac) | Curve Number | (CN) (Area) |
|---|---|---|---|---|---|
| ROOF/PVMT | D | 27,881 | 0.64 | 98 | 62.7 |

Total - ∑(CN)(Area) = 62.7
Area Total - ∑ac or ∑sf = 0.64
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 98

[A] Use this area for the remainder of the runoff calculations
[B] Required for first flush runoff calculations
[C] Required for bankfull and 100-year runoff calculations



## Section IV: Computational Requirements For Stormwater Management Systems

### W2 Standard Method Runoff Volume Calculations

First Flush Runoff Calculations ($V_{ff}$)

A. $V_{ff} = (1")\left(\frac{1'}{12"}\right)\left(\frac{43560 ft^2}{1ac}\right)AC$ $\quad V_{ff} = (1")\left(\frac{1'}{12"}\right)\left(\frac{43560 ft^2}{1ac}\right)(0.75)(0.88)$

$V_{ff} = 2596 ft^3$

A = Total Site Areas (ac) excluding "Self-Crediting" BMPs from Worksheet 1
C= Weighted Runoff Coefficient from Worksheet 1



## Section IV: Computational Requirements For Stormwater Management Systems

### W3 Standard Method Runoff Volume Calculations

Pre-development Bankfull Runoff Calculations. ($V_{bf(pre)}$)

A. 2 year/24 hour storm event $P = 2.35in$

B. The pre-development land cover will be **Good Cover Woods or Meadow**. Determine the associated soil hydrologic group for the entire site and choose the curve number. $CN = 78$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{78} - 10$ $\quad S = 2.82 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q = \frac{(2.35-(0.2)(_))^2}{(2.35+(0.8)(_))}$ $\quad Q = 0.69 in$

E. Total Site Area (sf) excluding "Self- Crediting" BMPs $Area = 22,586 sf$

F. $V_{bf(pre)} = Q(1/12)Area$ $\quad V_{bf(pre)} = (_)(1/12)(_)$ $\quad V_{bf(pre)} = 1274 ft^3$



## Section IV: Computational Requirements For Stormwater Management Systems

### W4 Standard Method Runoff Volume Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf(per-post)}$)

A. 2 year/24 hour storm event $P = 2.35in$

B. Pervious Cover CN From Worksheet 1 $CN = 80$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{80} - 10$ $\quad S = 2.5 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q = \frac{(2.35-(0.2)(_))^2}{(2.35+(0.8)(_))}$ $\quad Q = 0.79 in$

E. Pervious Cover Area from Worksheet 1 $Area = 4705 sf$

F. $V_{bf(per-post)} = Q(1/12)Area$ $\quad V_{bf(per-post)} = (_)(1/12)(_)$ $\quad V_{bf(per-post)} = 310 ft^3$



## Section IV: Computational Requirements For Stormwater Management Systems

### W5 Standard Method Runoff Volume Calculations

Impervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf(imp-post)}$)

A. 2 year/24 hour storm event $P = 2.35in$

B. Impervious Cover CN From Worksheet 1 $CN = 98$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{98} - 10$ $\quad S = 0.2 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q = \frac{(2.35-(0.2)(_))^2}{(2.35+(0.8)(_))}$ $\quad Q = 2.13 in$

E. Impervious Cover Area from Worksheet 1 $Area = 27,881 sf$

F. $V_{bf(imp-post)} = Q(1/12)Area$ $\quad V_{bf(imp-post)} = (_)(1/12)(_)$ $\quad V_{bf(imp-post)} = 4949 ft^3$



## Section IV: Computational Requirements For Stormwater Management Systems

### W6 Standard Method Runoff Volume Calculations

Pervious Cover Post-Development 100-year Storm Runoff Calculations ($V_{100\text{-per-post}}$)

A. 100-year Storm Event $P = 5.11in$

B. Pervious Cover CN From Worksheet 1 $CN = 80$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{80} - 10$ $\quad S = 2.5 in$

D. $Q_{100\text{-per}} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q_{100\text{-per}} = \frac{(5.11-(0.2)(_))^2}{(5.11+0.8(_))}$ $\quad Q_{100\text{-per}} = 2.99 in$

E. Pervious Cover Area from Worksheet 1 $Area = 4705 sf$

F. $V_{100\text{-per-post}} = Q(1/12)Area$ $\quad V_{100\text{-per-post}} = 2.99(_)(1/12)(_)$ $\quad V_{100\text{-per-post}} = 1172 ft^3$



## Section IV: Computational Requirements For Stormwater Management Systems

### W7 Standard Method Runoff Volume Calculations

Impervious Cover Post-Development 100-year Storm Runoff Calculations ($V_{100\text{-imp-post}}$)

A. 100-year Storm Event $P = 5.11in$

B. Impervious Cover CN From Worksheet 1 $CN = 98$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{98} - 10$ $\quad S = 0.2 in$

D. $Q_{100\text{-imp}} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q_{100\text{-imp}} = \frac{(5.11-(0.2)(_))^2}{(5.11+0.8(_))}$ $\quad Q_{100\text{-imp}} = 4.83 in$

E. Impervious Cover CN From Worksheet 1 $Area = 27,881 sf$

F. $V_{100\text{-imp-post}} = Q(1/12)Area$ $\quad V_{100\text{-imp-post}} = 4.83(_)(1/12)(_)$ $\quad V_{100\text{-imp-post}} = 11338 ft^3$



## Section IV: Computational Requirements For Stormwater Management Systems

### W8 Standard Method Runoff Volume Calculations

Determine Time of Concentration for Applicable Flow Types ($T_{c\,(hr)}$)

| Flow Type | K | Change in Elevation | Length (L) | Slope % (S) | $S^{1/2}$ | $V=K*S^{1/2}$ | $T_c=L/(V*3600)$ |
|---|---|---|---|---|---|---|---|
| Sheet Flow* | 0.48 | 2.36 | 185 | 1.28 | 1.13 | 0.54 | 0.095 |
| Waterway | 1.2 | 1.0 | 105 | 0.95 | 0.97 | 1.16 | 0.025 |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
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| Waterway | 1.2 | | | | | | |
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| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |

*Sheet flow cannot exceed 300 feet. Anything beyond this is considered waterway.

Total Time of Concentration ($T_{c\,(hr)}$) = 0.120



## Section IV: Computational Requirements For Stormwater Management Systems

### W9 Standard Method Runoff Volume Calculations

Runoff Summary & Onsite Infiltration Requirement

**A. Runoff Summary from Previous Worksheets**

First Flush Volume ($V_{ff}$) 2596 ft³
Pre-Development Bankfull Runoff Volume ($V_{bf(pre)}$) 1274 ft³
Pervious Cover Post-Development Bankfull Volume ($V_{bf(per-post)}$) 310 ft³
Impervious Cover Post-Development Bankfull Volume ($V_{bf(imp-post)}$) 4949 ft³

**Total BF Volume ($V_{bf-post}$)** 5259 ft³

Pervious Cover Post-Development 100-year Volume ($V_{100\text{-per-post}}$) 1172 ft³
Impervious Cover Post-Development 100-year Volume ($V_{100\text{-imp-post}}$) 11338 ft³

**Total 100-year Volume ($V_{100}$)** 12,510 ft³

**B. Determine Onsite Infiltration Requirement**

Subtract the Pre-Development Bankfull from the Post-Development Bankfull volume

Total Post-Development Bankfull Volume ($V_{bf(post)}$) 5259 ft³
Pre-Development Bankfull Runoff Volume ($V_{bf(pre)}$) 1874 ft³
Bankfull Volume Difference 3385 ft³

Compare the Bankfull Volume Difference with the First Flush Volume. The **greater** of the two is the Onsite Infiltration Requirement.

Onsite Infiltration Requirement ($V_{inf}$) 3385 ft³



## Section IV: Computational Requirements For Stormwater Management Systems

### W10 Standard Method Runoff Volume Calculations

Detention/Retention Requirement

**Detention**

A. $Q_p = 238.6 T_c^{0.62}$ $\quad Q_p = 238.6(0.08)^{0.62}$ Peak of the Unit Hydrograph $\quad Q_p = 37.5 cfs/_{ft.\,-\,mi^2}$

B. Total Site Area (ac) excluding "Self-Crediting" BMPs $Area = 0.75 ac$

C. $Q_{100} = Q_{100\text{-per}} + Q_{100\text{-imp}}$ $\quad Q_{100} = 2.99 + 4.83$

Note: $Q_{100\text{-per}}$ and $Q_{100\text{-imp}}$ from W6 and W7, respectively $\quad Q_{100} = 7.82 in$

D. Peak Flow (PF) $= \frac{Q_p\left(\frac{tFH}{T_{(tc-mi)^2}}\right)V_{100(in)}Area(ac)}{640}$ $\quad PF = \frac{(37.5)(0.08)(7.82)(0.75)}{640}$ $\quad PF = 12.52 cfs$

E. $\Delta$ = PF (cfs) - 0.15 Area(ac) $\quad \Delta = (12.52) - 0.15(0.75)$ $\quad \Delta = 12.41 cfs$

F. $V_{det} = \frac{\Delta(tFH)}{PF(cfs)} V_{100}(ft^3)$ $\quad V_{det} = \frac{12.41}{12.52}(12,510)$ $\quad V_{det} = 12,400 ft^3$

$V_{det}$ = Calculated Detention ($ft^3$), not including volume reduction credit for infiltration or penalty

Note: Projects/sites where the required infiltration volume cannot be achieved must increase the required detention volume by up to an additional 20%.

**Retention**

A. $V_{ret} = 2(V_{100})$ $\quad V_{ret} = 2(12,510)$ $\quad V_{ret} = 25,020 ft^3$



## Section IV: Computational Requirements For Stormwater Management Systems

### W13 Summary

Site Summary of Infiltration & Detention

**A. Stormwater Management Summary**

Minimum Onsite Infiltration Requirement, $V_{inf}$ 3385 ft³
Designed/Provided Infiltration Volume 0 ft³
% Minimum Required Infiltration Provided 0 %
Total Calculated Detention Volume, $V_{det}$ 12,400 ft³
Net Required Detention Volume
*($V_{det}$ - Designed/Provided Infiltration Volume)* 12,400 ft³

**B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved**

% Required Infiltration NOT provided
*(100% - % Minimum Required Infiltration Provided)* 100 %
Net % Penalty
*(20% x % Required Infiltration NOT Provided)* 20 %
Total Required Detention Volume, including penalty
*[(100% + Net % Penalty) x Net Required Detention Volume)]* 14,880 ft³

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PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI. 48034
248.855.2100

TITLE: STORM CALCULATIONS - EXISTING

| NO | BY | REVISION | PER | DATE |
|---|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE NO SCALE
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C12

PROPOSED

# Part E

## STANDARD METHOD RUNOFF VOLUME WORK SHEETS

## W1 Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Total Site Area = 0.75 ac
Total Site Area Excluding "Self- Crediting" BMPs = 0.75 ac*

**Rational Method Variables[B]**

| Cover Type | Soil Type | Area (ft²) | Area(ac) | Runoff Coefficient (C) | (C) (Area) |
|---|---|---|---|---|---|
| GRASS | D | 4,739 | 0.11 | 0.45 | 0.05 |
| ROOF/PVMT | D | 27,847 | 0.64 | 0.95 | 0.61 |

Total - ∑(C)(Area) = 0.66
Area Total - ∑ac or ∑sf = 0.75
Weighted C - ∑(C)(Area)/∑ac or ∑sf = 0.88

**NRCS Variables[C]**

| Pervious Cover Type | Soil Type | Area (ft²) | Area(ac) | Curve Number | (CN) (Area) |
|---|---|---|---|---|---|
| GRASS | D | 4,739 | 0.11 | 80 | 8.8 |

Total - ∑(CN)(Area) = 8.8
Area Total - ∑ac or ∑sf = 0.11
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 80

**NRCS Variables[C]**

| Impervious Cover Type | Soil Type | Area (ft²) | Area(ac) | Curve Number | (CN) (Area) |
|---|---|---|---|---|---|
| ROOF/PVMT | D | 27,847 | 0.64 | 98 | 62.7 |

Total - ∑(CN)(Area) = 62.7
Area Total - ∑ac or ∑sf = 0.64
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 98

[A] Use this area for the remainder of the runoff calculations
[B] Required for first flush runoff calculations
[C] Required for bankfull and 100-year runoff calculations



## W2 Standard Method Runoff Volume Calculations

First Flush Runoff Calculations ($V_{ff}$)

A. $V_{ff} = (1")\left(\frac{1'}{12"}\right)\left(\frac{43560 ft^2}{1 ac}\right) AC$ $V_{ff} = (1")\left(\frac{1'}{12"}\right)\left(\frac{43560 ft^2}{1 ac}\right)(0.75)(0.88)$

$V_{ff} = 2396 ft^3$

A = Total Site Areas (ac) excluding "Self-Crediting" BMPs from Worksheet 1
C= Weighted Runoff Coefficient from Worksheet 1



## W3 Standard Method Runoff Volume Calculations

Pre-development Bankfull Runoff Calculations ($V_{bf\,pre}$)

A. 2 year/24 hour storm event $P = 2.35in$

B. The pre-development land cover will be **Good Cover Woods or Meadow.** Determine the associated soil hydrologic group for the entire site and choose the curve number. $CN = 78$

C. $S = \frac{1000}{CN} - 10$ $S = \frac{1000}{78} - 10$ $S = 2.82 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $Q = \frac{(2.35-(0.2)(_))^2}{(2.35+(0.8)(_))}$ $Q = 0.69 in$

E. Total Site Area (sf) excluding "Self- Crediting" BMPs $Area = 32,586 sf$

F. $V_{bf\,pre} = Q(1/12)Area$ $V_{bf\,pre} = (_)(1/12)(_)$ $V_{bf\,pre} = 1874 ft^3$



## W4 Standard Method Runoff Volume Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\,per\text{-}post}$)

A. 2 year/24 hour storm event $P = 2.35in$

B. Pervious Cover CN From Worksheet 1 $CN = 80$

C. $S = \frac{1000}{CN} - 10$ $S = \frac{1000}{80} - 10$ $S = 2.5 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $Q = \frac{(2.35-(0.2)(_))^2}{(2.35+(0.8)(_))}$ $Q = 0.79 in$

E. Pervious Cover Area from Worksheet 1 $Area = 4739 sf$

F. $V_{bf\,per\text{-}post} = Q(1/12)Area$ $V_{bf\,per\text{-}post} = (_)(1/12)(_)$ $V_{bf\,per\text{-}post} = 312 ft^3$



## W5 Standard Method Runoff Volume Calculations

Impervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\,imp\text{-}post}$)

A. 2 year/24 hour storm event $P = 2.35in$

B. Impervious Cover CN From Worksheet 1 $CN = 98$

C. $S = \frac{1000}{CN} - 10$ $S = \frac{1000}{98} - 10$ $S = 0.2 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $Q = \frac{(2.35-(0.2)(_))^2}{(2.35+(0.8)(_))}$ $Q = 2.13 in$

E. Impervious Cover Area from Worksheet 1 $Area = 27,847 sf$

F. $V_{bf\,imp\text{-}post} = Q(1/12)Area$ $V_{bf\,imp\text{-}post} = (_)(1/12)(_)$ $V_{bf\,imp\text{-}post} = 4943 ft^3$



## W6 Standard Method Runoff Volume Calculations

Pervious Cover Post-Development 100-year Storm Runoff Calculations ($V_{100\text{-}per\text{-}post}$)

A. 100-year Storm Event $P = 5.11in$

B. Pervious Cover CN From Worksheet 1 $CN = 80$

C. $S = \frac{1000}{CN} - 10$ $S = \frac{1000}{80} - 10$ $S = 2.5 in$

D. $Q_{100\text{-}per} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $Q_{100\text{-}per} = \frac{(5.11-(0.2)(_))^2}{(5.11+0.8(_))}$ $Q_{100\text{-}per} = 2.99 in$

E. Pervious Cover Area from Worksheet 1 $Area = 4739 sf$

F. $V_{100\text{-}per\text{-}post} = Q(1/12)Area$ $V_{100\text{-}per\text{-}post} = (2.99)(_)(1/12)(4739)(_)$ $V_{100\text{-}per\text{-}post} = 1181 ft^3$



## W7 Standard Method Runoff Volume Calculations

Impervious Cover Post-Development 100-year Storm Runoff Calculations ($V_{100\text{-}imp\text{-}post}$)

A. 100-year Storm Event $P = 5.11in$

B. Impervious Cover CN From Worksheet 1 $CN = 98$

C. $S = \frac{1000}{CN} - 10$ $S = \frac{1000}{98} - 10$ $S = 0.2 in$

D. $Q_{100\text{-}imp} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $Q_{100\text{-}imp} = \frac{(5.11-(0.2)(_))^2}{(5.11+0.8(_))}$ $Q_{100\text{-}imp} = 4.88 in$

E. Impervious Cover CN From Worksheet 1 $Area = 27847 sf$

F. $V_{100\text{-}imp\text{-}post} = Q(1/12)Area$ $V_{100\text{-}imp\text{-}post} = (4.88)(_)(1/12)(27847)(_)$ $V_{100\text{-}imp\text{-}post} = 11324 ft^3$



## W8 Standard Method Runoff Volume Calculations

Determine Time of Concentration for Applicable Flow Types ($T_{c\,thru}$)

| Flow Type | K | Change in Elevation | Length (L) | Slope % (S) | $S^{0.5}$ | $V=K*S^{0.5}$ | $T_c=L/(V*3600)$ |
|---|---|---|---|---|---|---|---|
| Sheet Flow* | 0.48 | 1.18 | 85 | 1.39 | 1.18 | 0.57 | 0.041 |
| Waterway | 1.2 | 1.32 | 263 | 0.50 | 0.71 | 0.85 | 0.086 |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
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| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Waterway | 1.2 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
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| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |
| Small Tributary | 2.1 | | | | | | |

*Sheet flow cannot exceed 300 feet. Anything beyond this is considered waterway.

Total Time of Concentration ($T_c$) = 0.127



## W9 Standard Method Runoff Volume Calculations

Runoff Summary & Onsite Infiltration Requirement

**A. Runoff Summary from Previous Worksheets**

| | |
|---|---|
| First Flush Volume ($V_{ff}$) | 2,396 ft³ |
| Pre-Development Bankfull Runoff Volume ($V_{bf\,pre}$) | 1,874 ft³ |
| Pervious Cover Post-Development Bankfull Volume ($V_{bf\,per\text{-}post}$) | 312 ft³ |
| Impervious Cover Post-Development Bankfull Volume ($V_{bf\,imp\text{-}post}$) | 4943 ft³ |
| **Total BF Volume ($V_{bf\,post}$)** | 5255 ft³ |
| Pervious Cover Post-Development 100-year Volume ($V_{100\,per\text{-}post}$) | 1181 ft³ |
| Impervious Cover Post-Development 100-year Volume ($V_{100\,imp\text{-}post}$) | 11324 ft³ |
| **Total 100-year Volume ($V_{100}$)** | 12,505 ft³ |

**B. Determine Onsite Infiltration Requirement**

Subtract the Pre-Development Bankfull from the Post-Development Bankfull volume

| | |
|---|---|
| Total Post-Development Bankfull Volume ($V_{bf\,post}$) | 5255 ft³ |
| Pre-Development Bankfull Runoff Volume ($V_{bf\,pre}$) | 1874 ft³ |
| Bankfull Volume Difference | 3,381 ft³ |

Compare the Bankfull Volume Difference with the First Flush Volume. The **greater** of the two is the Onsite Infiltration Requirement.

Onsite Infiltration Requirement ($V_{oir}$) 3381 ft³



## W10 Standard Method Runoff Volume Calculations

Detention/Retention Requirement

**Detention**

A. $Q_p = 238.6 T_c^{-0.82}$ $Q_p = 238.6(0.127)^{-0.82}$
Peak of the Unit Hydrograph $Q_p = 1285.8 ft^3/s/in - mi^2$

B. *Total Site Area (ac) excluding "Self-Crediting" BMPs* $Area = 0.75 ac$

C. $Q_{100} = Q_{100\,per} + Q_{100\,imp}$ $Q_{100} = 2.99 + 4.88$
Note: $Q_{100\text{-}per}$ and $Q_{100\,imp}$ from W6 and W7, respectively $Q_{100} = 7.87 in$

D. $Peak\ Flow\ (PF) = \frac{Q_p\left(\frac{cfs}{in-mi^2}\right)Q_{100(in)}Area(ac)}{640}$ $PF = \frac{(1285.8)(7.87)(0.75)}{640}$ $PF = 11.95 cfs$

E. $\Delta$ = PF (cfs) - 0.15 Area(ac) $\Delta = (11.95) - 0.15(0.75)$ $\Delta = 11.84 cfs$

F. $V_{det} = \frac{\Delta(cfs)}{PF(cfs)} V_{100}(ft^3)$ $V_{det} = \frac{11.84}{11.95}(12,505)$ $V_{det} = 12,389 ft^3$

$V_{det}$ = Calculated Detention ($ft^3$), not including volume reduction credit for infiltration or penalty

Note: Projects/sites where the required infiltration volume cannot be achieved must increase the required detention volume by up to an additional 20%.

**Retention**

A. $V_{ret} = 2(V_{oir})$ $V_{ret} = 2(12,505)$ $V_{ret} = 25,010 ft^3$



## W13 Summary

Site Summary of Infiltration & Detention

**A. Stormwater Management Summary**

| | | |
|---|---|---|
| Minimum Onsite Infiltration Requirement, $V_{oir}$ | 3,381 | ft³ |
| Designed/Provided Infiltration Volume | 0 | ft³ |
| % Minimum Required Infiltration Provided | 0 | % |
| Total Calculated Detention Volume, $V_{det}$ | 12,390 | ft³ |
| Net Required Detention Volume ($V_{det}$ - *Designed/Provided Infiltration Volume*) | 12,390 | ft³ |

**B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved**

| | | |
|---|---|---|
| % Required Infiltration NOT provided (*100% - % Minimum Required Infiltration Provided*) | 100 | % |
| Net % Penalty (*20% x % Required Infiltration NOT Provided*) | 20 | % |
| Total Required Detention Volume, Including penalty [*(100% + Net % Penalty) x Net Required Detention Volume*)] | 14,868 | ft³ |

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES AND OTHER OBSTRUCTIONS AND PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCES APPEAR INSUFFICIENT. DIG SAFELY! MAKE THE CALL.
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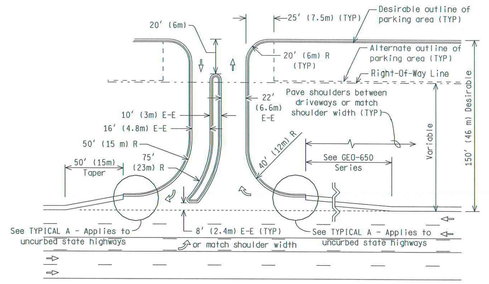
PROJECT
PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR
HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100
TITLE
STORM CALCULATIONS - PROPOSED

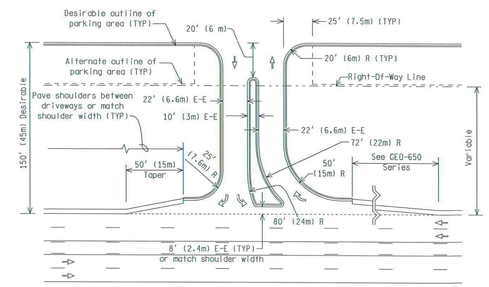
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DATE 12/9/19
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## DIRECTIONAL DRIVEWAYS AT HIGHWAYS WITHOUT CURB



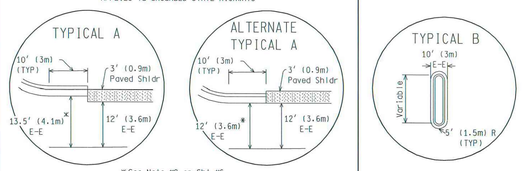




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| MDOT Michigan Department of Transportation TRAFFIC AND SAFETY | BY: John C. Kindel ENGINEER OF DELIVERY<br>BY: Mark A. VanPortfliet ENGINEER OF DEVELOPMENT | GEOMETRIC DESIGN GUIDE FOR COMMERCIAL DRIVEWAYS | |
| DRAWN BY:<br>CHECKED BY: IG/JAT<br>FILE:PW RD TS Geo/mdot traf GEO-680-B.dgn | REV. 01/20/2010 | 06/03/2010 PLAN DATE: | GEO-680-B SHEET 1 OF 6 |

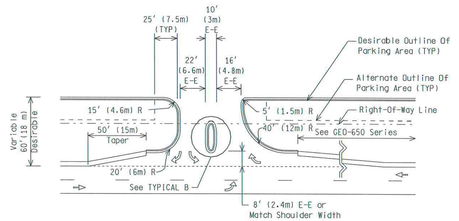
## CURB RETURN OFFSET DETAILS

APPLIES TO UNCURBED STATE HIGHWAYS

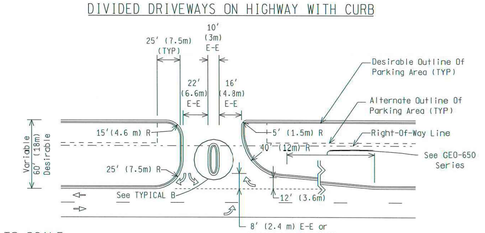



*See Note #9 on Sht #6

## DIVIDED DRIVEWAYS ON HIGHWAY WITHOUT CURB

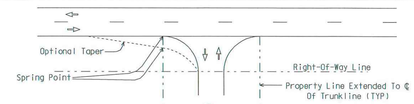



## DIVIDED DRIVEWAYS ON HIGHWAY WITH CURB



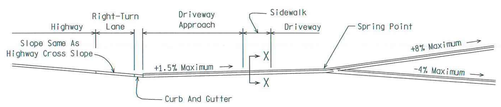

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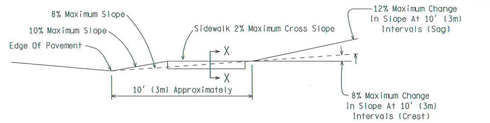

* Driveways For Each Property Including Radii, Must Be Located Within These Limits Unless Written Permission Of The Adjacent Property Owner Is Obtained

## HIGHWAY FRONTAGE



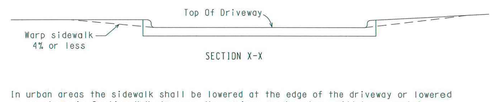

## COMMERCIAL DRIVEWAY PROFILE FOR MAJOR TRAFFIC GENERATORS

Over (100) Peak Hour Directional Trips




When transverse slope is less than 1.5%, longitudinal drainage must be provided. See also R-29-Series.

## LOW VOLUME COMMERCIAL OR RESIDENTIAL DRIVEWAY SLOPES




In urban areas the sidewalk shall be lowered at the edge of the driveway or lowered as shown in Section X-X whenever the maximum grades shown will be exceeded. See also R-28-Series when sidewalk ramps are required.

## SIDEWALK LOWERING DETAIL

NOT TO SCALE

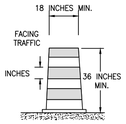
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| MICHIGAN DEPARTMENT OF TRANSPORTATION TRAFFIC AND SAFETY GEOMETRIC DESIGN GUIDE | | 06/03/2010 PLAN DATE: | GEO-680-B SHEET 5 OF 6 |
| FILE:PW RD TS Geo/mdot traf GEO-680-B.dgn | REV. 01/20/2010 | | |



## LIGHTED ARROW PANEL

(NO SCALE)

NOTE:
ADVANCED WARNING ARROW BOARD SHALL BE DISPLAY TYPE C, 96 x 48 INCHES. WHEN OPERATING, SET TO FLASHING ARROW MODE

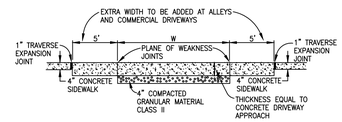



## DRUM

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## M.D.O.T. R.O.W CROSS SECTION DETAILS:

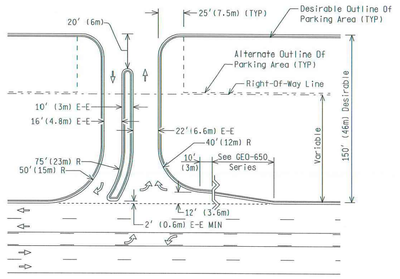
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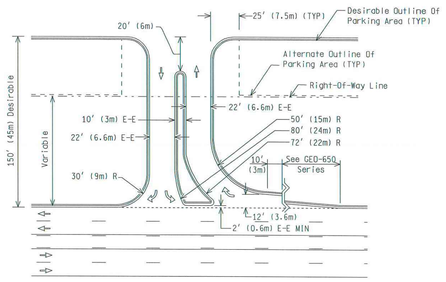



## THICKENED CONCRETE SIDEWALK

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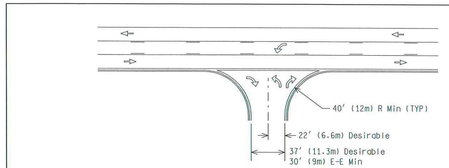
## DIRECTIONAL DRIVEWAYS AT HIGHWAYS WITH CURB



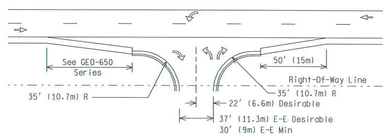

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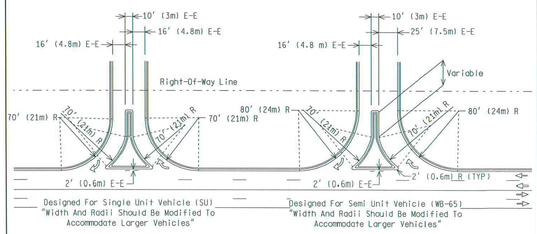



(For Three Lanes, Width Should Be 39' (11.7m) Min)

## TWO-WAY DRIVEWAYS ON HIGHWAYS WITH CURB




## TWO-WAY DRIVEWAYS ON HIGHWAYS WITHOUT CURB




## RIGHT-IN RIGHT-OUT DRIVEWAYS WITH CURB

NOT TO SCALE

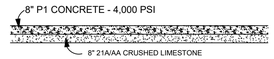
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NOTES:

1. The Region or TSC Traffic Engineer shall determine the necessary signing and pavement marking requirements to ensure that the driveway will operate safely and efficiently. The property owner shall erect and maintain all required signing and pavement markings as a condition of the driveway permit.
2. Consult the Region or TSC Traffic Engineer whenever:
   A. There is a question as to which type of driveway a commercial establishment should use.
   B. Operational conflicts with existing or anticipated future driveways across the highway may occur.
3. Suitable median crossovers may be required on divided highways as per Geometric Design Guide GEO-670-Series.
4. For dimensions not shown on this guide, refer to the document "Administrative Rules Regulating Driveways, Banners, and Parades On And Over Highways".
5. One-way driveways should be complemented with a well designed angle parking area to encourage one-way operation.
6. Driveway widths and radii shall be designed for the proper design vehicle. Where proper radii can not be provided, increase the drive throat width.
7. In urban areas a partial arc radius should be used when the distance from the edge of pavement to the sidewalks is between 5' (1.5m) and 20' (6m). When this distance is less than 5' (1.5m), consult the Region or TSC Traffic and Safety Engineer to determine the width and radii of the driveway.
8. See MDOT Construction Permit Manual.
9. Alternate Typical A may be used when construction and maintenance issues make the 13.5' (4.1m) curb setback undesirable.
10. For divided driveways, the desirable area of separating islands is 75ft$^2$ (7m$^2$), preferably 100ft$^2$ (9m$^2$). The island width shall not be less than 4' (1.2m).
11. To eliminate left turns locking up from the cross street or driveways at unsignalized divided drives, the left turning vehicles should be headed up across from each other.
12. Current AASHTO "A Policy on Geometric Design of Highways and Streets" and MDOT Guidelines should be used for sight distance requirements.
13. These design concepts are for new construction. Where modifications may be needed for retrofitting to existing road features, consult the Geometric Review and Congestion Analysis Unit, Division of Operations.

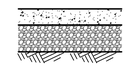
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| FILE:PW RD TS Geo/mdot traf GEO-680-B.dgn | REV. 01/20/2010 | | |



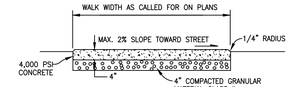

## CONCRETE DRIVE APPROACH DETAIL

(NO SCALE)




## M-17 (UTILITY TAP) CONCRETE CROSS SECTION

(NO SCALE)




## 4" CONCRETE SIDEWALK

(NO SCALE)

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS GIVEN AS TO THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR THEREOF. THE CONTRACTOR SHALL ASCERTAIN THE EXACT LOCATION OF ALL PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATIONS SHOWN ON THESE DRAWINGS APPEAR INCORRECT FROM THE FIELD.

MISS DIG
811 OR 1-800-482-7171
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
IT'S THE LAW!
(It's also the smart thing to do.)
MEMBER


BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670


PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100

TITLE: MDOT CONSTRUCTION DETAILS

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C13

BOSS Engineering

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## MINIMUM MERGING TAPER LENGTH "L" (FEET)

| OFFSET | POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) | | | | | | | | | | TAPER LENGTH "L" IN FEET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FEET | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | |
| 1 | 10 | 15 | 20 | 27 | 45 | 50 | 55 | 60 | 65 | 70 | |
| 2 | 21 | 30 | 41 | 53 | 90 | 100 | 110 | 120 | 130 | 140 | |
| 3 | 31 | 45 | 61 | 80 | 135 | 150 | 165 | 180 | 195 | 210 | |
| 4 | 42 | 60 | 82 | 107 | 180 | 200 | 220 | 240 | 260 | 280 | |
| 5 | 52 | 75 | 102 | 133 | 225 | 250 | 275 | 300 | 325 | 350 | |
| 6 | 63 | 90 | 123 | 160 | 270 | 300 | 330 | 360 | 390 | 420 | |
| 7 | 73 | 105 | 143 | 187 | 315 | 350 | 385 | 420 | 455 | 490 | |
| 8 | 83 | 120 | 163 | 213 | 360 | 400 | 440 | 480 | 520 | 560 | |
| 9 | 94 | 135 | 184 | 240 | 405 | 450 | 495 | 540 | 585 | 630 | |
| 10 | 104 | 150 | 204 | 267 | 450 | 500 | 550 | 600 | 650 | 700 | |
| 11 | 115 | 165 | 225 | 293 | 495 | 550 | 605 | 660 | 715 | 770 | |
| 12 | 125 | 180 | 245 | 320 | 540 | 600 | 660 | 720 | 780 | 840 | |
| 13 | 135 | 195 | 266 | 347 | 585 | 650 | 715 | 780 | 845 | 910 | |
| 14 | 146 | 210 | 286 | 374 | 630 | 700 | 770 | 840 | 910 | 980 | |
| 15 | 157 | 225 | 307 | 400 | 675 | 750 | 825 | 900 | 975 | 1050 | |

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

"L" = $\frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

TYPES OF TAPERS

UPSTREAM TAPERS
- MERGING TAPER
- SHIFTING TAPER
- SHOULDER TAPER
- TWO-WAY TRAFFIC TAPER

DOWNSTREAM TAPERS (USE IS OPTIONAL)

TAPER LENGTH

- L – MINIMUM
- 1/2 L – MINIMUM
- 1/3 L – MINIMUM
- 100 ' – MAXIMUM
- 100 ' – MINIMUM (PER LANE)

MDOT Michigan Department of Transportation | TRAFFIC AND SAFETY | MAINTAINING TRAFFIC TYPICAL | TABLES FOR "L", "D" AND "B" VALUES

DRAWN BY: CON:AE:djf | JUNE 2006 | M0020a | SHEET 1 OF 2
CHECKED BY: BMM | PLAN DATE:
FILE: K:/DGN/TSR/STDS/ENGLISH/WNTTRF/M0020a.dgn REV. 08/21/2006

## DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D" AND LENGTH OF LONGITUDINAL BUFFER SPACE ON "WHERE WORKERS PRESENT" SEQUENCES

| "D" | POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DISTANCES | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
| D (FEET) | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 |

## GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"

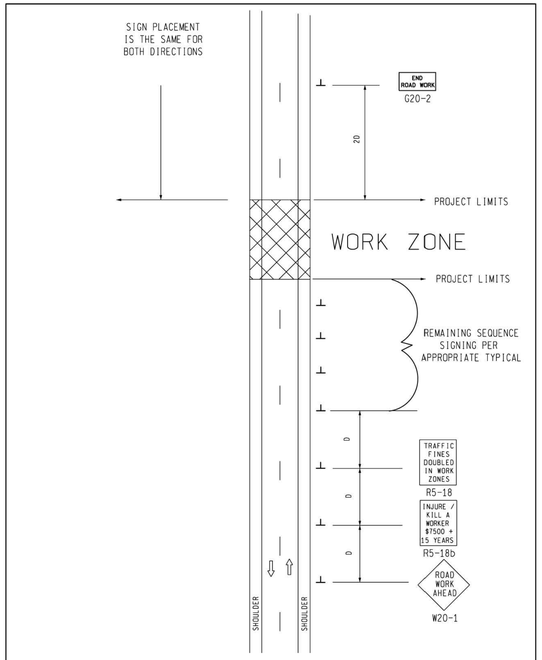
| SPEED* MPH | LENGTH FEET |
|---|---|
| 20 | 33 |
| 25 | 50 |
| 30 | 83 |
| 35 | 132 |
| 40 | 181 |
| 45 | 230 |
| 50 | 279 |
| 55 | 329 |
| 60 | 411 |
| 65 | 476 |
| 70 | 542 |

* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

MDOT Michigan Department of Transportation | TRAFFIC AND SAFETY | MAINTAINING TRAFFIC TYPICAL | TABLES FOR "L", "D" AND "B" VALUES

DRAWN BY: CON:AE:djf | JUNE 2006 | M0020a | SHEET 2 OF 2
CHECKED BY: BMM | PLAN DATE:
FILE: K:/DGN/TSR/STDS/ENGLISH/WNTTRF/M0020a.dgn REV. 08/21/2006




SIGN = 48 ft2 – TYPE B FOR ONE DIRECTION OF TRAFFIC
W20-1 QUANTITY INCLUDED WITH APPROPRIATE TYPICAL FOR SEQUENCE SIGNING

NOT TO SCALE

MDOT Michigan Department of Transportation | TRAFFIC AND SAFETY | MAINTAINING TRAFFIC TYPICAL | TYPICAL ADVANCE SIGNING TREATMENT FOR INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS WHERE ALL TRAFFIC CONTROL DEVICES ARE REMOVED AT END OF EACH WORK DAY ON AN UNDIVIDED TWO-WAY ROADWAY

DRAWN BY: CON:AE:djf | OCTOBER 2011 | M0050a | SHEET 1 OF 2
CHECKED BY: BMM:CRB | PLAN DATE:
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0050a.dgn REV. 10/13/2011

### NOTES

30. THE APPROPRIATE ADVANCE SIGNING SEQUENCE(S), (M0030a THROUGH M0080a) SHALL BE USED ON ALL PROJECTS.

35. THESE SIGNS ARE INTENDED TO BE USED WITHIN THE LIMITS OF THE TEMPORARY SEQUENCE SIGNING AS IS SHOWN ON 1 OF 2. THESE SIGNS ARE NOT TO BE INTERMINGLED WITH ANY OTHER TEMPORARY SEQUENCE SIGNING EXCEPT AS SHOWN.

### SIGN SIZES

G20-2 – 48" x 24"
R5-18 – 48" x 60"
R5-18b – 48" x 60"
W20-1 – 48" x 48"

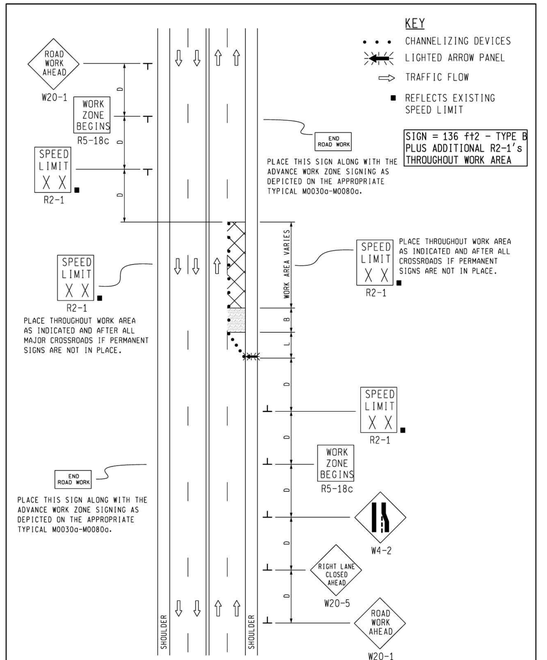
NOT TO SCALE

MDOT Michigan Department of Transportation | TRAFFIC AND SAFETY | MAINTAINING TRAFFIC TYPICAL | TYPICAL ADVANCE SIGNING TREATMENT FOR INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS WHERE ALL TRAFFIC CONTROL DEVICES ARE REMOVED AT END OF EACH WORK DAY ON AN UNDIVIDED TWO-WAY ROADWAY

DRAWN BY: CON:AE:djf | OCTOBER 2011 | M0050a | SHEET 2 OF 2
CHECKED BY: BMM:CRB | PLAN DATE:
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0050a.dgn REV. 10/13/2011

KEY
- CHANNELIZING DEVICES
- LIGHTED ARROW PANEL
- TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT

SIGN = 136 ft2 – TYPE B PLUS ADDITIONAL R2-1's THROUGHOUT WORK AREA




NOT TO SCALE

MDOT Michigan Department of Transportation | TRAFFIC AND SAFETY | MAINTAINING TRAFFIC TYPICAL | TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf | OCTOBER 2011 | M0240a | SHEET 1 OF 2
CHECKED BY: BMM:CRB | PLAN DATE:
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0240a.dgn REV. 10/11/2011

### NOTES

1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

### SIGN SIZES

DIAMOND WARNING – 48" x 48"
R2-1 REGULATORY – 48" x 60"
R5-18c REGULATORY – 48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation | TRAFFIC AND SAFETY | MAINTAINING TRAFFIC TYPICAL | TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf | OCTOBER 2011 | M0240a | SHEET 2 OF 2
CHECKED BY: BMM:CRB | PLAN DATE:
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0240a.dgn REV. 10/11/2011

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS GIVEN AS TO THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR ASCERTAINING THE EXACT LOCATION OF ALL EXISTING UTILITIES AND FOR AVOIDING ANY DAMAGE TO THE PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCES SHOWN ARE INSUFFICIENT OR DISPUTED BY OTHER PARTIES.

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Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670


PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100

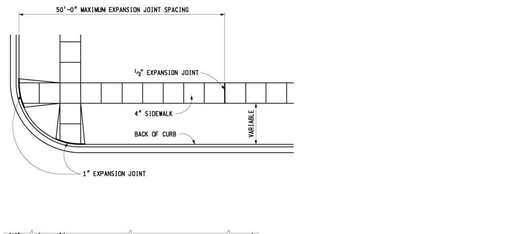
TITLE: MDOT CONSTRUCTION DETAILS

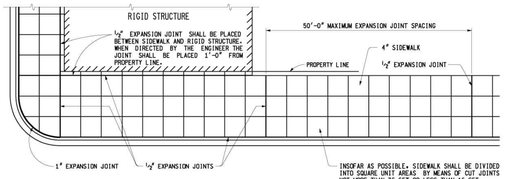
| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE 1" = 20'
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C14

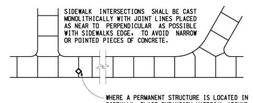
BOSS Engineering

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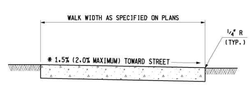



LOCATION OF JOINTS IN CONCRETE SIDEWALK

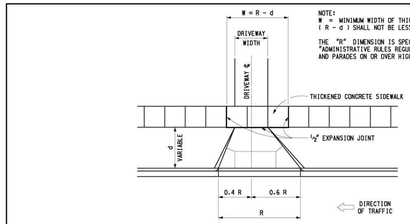



TYPICAL SIDEWALK JOINT LAYOUTS

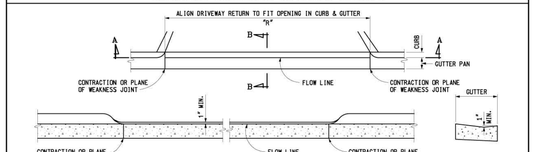



4" CONCRETE SIDEWALK

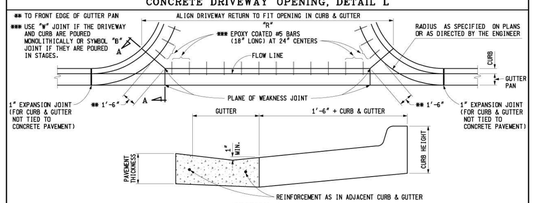
| | | | |
|---|---|---|---|
| PREPARED BY DESIGN DIVISION | DEPARTMENT DIRECTOR Kirk T. Steudle | MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK | |
| DRAWN BY: B.L.T. | APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES | 9-30-2014 F.H.W.A. APPROVAL | 7-1-2014 PLAN DATE |
| CHECKED BY: K.V.P. | APPROVED BY: DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT | R-29-I | SHEET 1 OF 4 |




CONCRETE DRIVEWAY OPENING LAYOUT



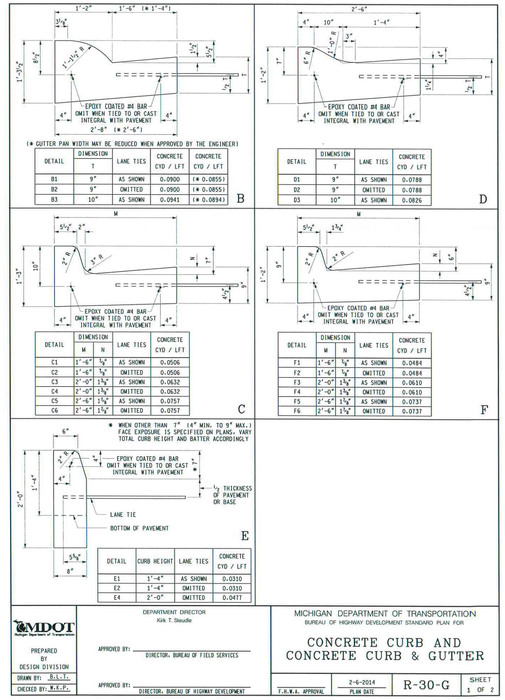

CONCRETE DRIVEWAY OPENING, DETAIL L




CONCRETE DRIVEWAY OPENING, DETAIL M

NOTE:
FOR ROADWAYS WITH CONCRETE PAVEMENTS, LONGITUDINAL LANE TIES WILL BE CONTINUOUS THROUGH THE DRIVEWAY OPENING AND THE SPACING OF THE #5 BARS IN CONCRETE DRIVEWAYS SHALL BE ADJUSTED TO AVOID CONFLICT WITH THE LONGITUDINAL LANE TIES.

| | | | |
|---|---|---|---|
| | | MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK | |
| | | 9-30-2014 F.H.W.A. APPROVAL | 7-1-2014 PLAN DATE |
| | | R-29-I | SHEET 2 OF 4 |




| DETAIL | DIMENSION T | LANE TIES | CONCRETE CYD / LFT |
|---|---|---|---|
| B1 | 9" | AS SHOWN | 0.0900 (* 0.0855) |
| B2 | 9" | OMITTED | 0.0900 (* 0.0855) |
| B3 | 10" | AS SHOWN | 0.0941 (* 0.0894) |

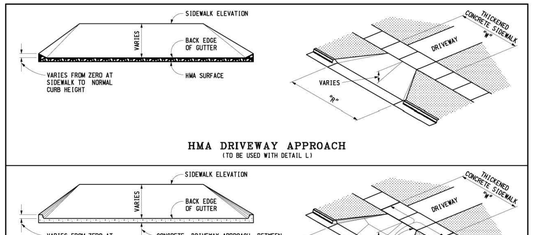
| DETAIL | DIMENSION T | LANE TIES | CONCRETE CYD / LFT |
|---|---|---|---|
| D1 | 9" | AS SHOWN | 0.0788 |
| D2 | 9" | OMITTED | 0.0788 |
| D3 | 10" | AS SHOWN | 0.0826 |

| DETAIL | DIMENSION W | DIMENSION N | LANE TIES | CONCRETE CYD / LFT |
|---|---|---|---|---|
| C1 | 1'-6" | 3" | AS SHOWN | 0.0506 |
| C2 | 1'-6" | 3" | OMITTED | 0.0506 |
| C3 | 2'-0" | 1¾" | AS SHOWN | 0.0632 |
| C4 | 2'-0" | 1¾" | OMITTED | 0.0632 |
| C5 | 2'-6" | 1¾" | AS SHOWN | 0.0757 |
| C6 | 2'-6" | 1¾" | OMITTED | 0.0757 |

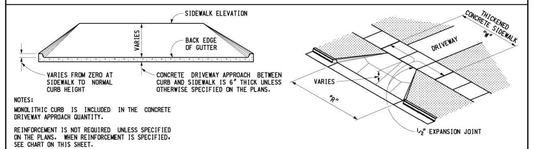
| DETAIL | DIMENSION W | DIMENSION N | LANE TIES | CONCRETE CYD / LFT |
|---|---|---|---|---|
| F1 | 1'-6" | 3" | AS SHOWN | 0.0484 |
| F2 | 1'-6" | 3" | OMITTED | 0.0484 |
| F3 | 2'-0" | 1¾" | AS SHOWN | 0.0610 |
| F4 | 2'-0" | 1¾" | OMITTED | 0.0610 |
| F5 | 2'-6" | 1¾" | AS SHOWN | 0.0737 |
| F6 | 2'-6" | 1¾" | OMITTED | 0.0737 |

| DETAIL | CURB HEIGHT | LANE TIES | CONCRETE CYD / LFT |
|---|---|---|---|
| E1 | 1'-4" | AS SHOWN | 0.0310 |
| E2 | 1'-4" | OMITTED | 0.0310 |
| E4 | 2'-0" | OMITTED | 0.0417 |

| | | | |
|---|---|---|---|
| PREPARED BY DESIGN DIVISION | DEPARTMENT DIRECTOR Kirk T. Steudle | MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR CONCRETE CURB AND CONCRETE CURB & GUTTER | |
| DRAWN BY: B.L.T. | APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES | F.H.W.A. APPROVAL | 2-6-2014 PLAN DATE |
| CHECKED BY: K.V.P. | APPROVED BY: DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT | R-30-G | SHEET 1 OF 2 |



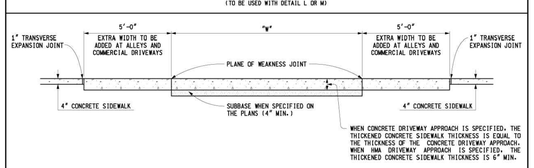

HMA DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L)



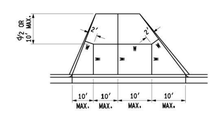

NOTES:
MONOLITHIC CURB IS INCLUDED IN THE CONCRETE DRIVEWAY APPROACH QUANTITY.

REINFORCEMENT IS NOT REQUIRED UNLESS SPECIFIED ON THE PLANS. WHEN REINFORCEMENT IS SPECIFIED, SEE CHART ON THIS SHEET.

CONCRETE DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L OR M)




THICKENED CONCRETE SIDEWALK



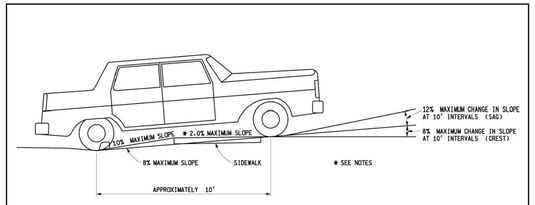

ADJUST DRIVEWAY JOINTS AS NEEDED TO ALIGN WITH ANY COINCIDING TRANSVERSE PAVEMENT JOINTS.

JOINT LAYOUT IS AS INDICATED OR AS DIRECTED BY THE ENGINEER.

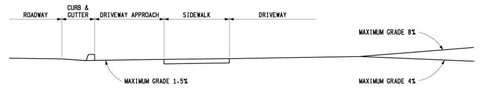
INTERMEDIATE DRIVEWAY JOINT DETAILS

| REINFORCEMENT FOR CONCRETE DRIVEWAYS | | |
|---|---|---|
| CONCRETE DRIVEWAY THICKNESS | WIRE SIZE (6" x 6" MESH) | AVERAGE WEIGHT (LBS/100 SFT) |
| LESS THAN 8" | W1.4 | 21 |
| | W2.9 | 42 |
| 8" OR GREATER | USE WIRE FABRIC REINFORCEMENT SPECIFIED ON STANDARD PLAN R-37-SERIES | |

| | | | |
|---|---|---|---|
| | | MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK | |
| | | 9-30-2014 F.H.W.A. APPROVAL | 7-1-2014 PLAN DATE |
| | | R-29-I | SHEET 3 OF 4 |




LOW VOLUME COMMERCIAL OR RESIDENTIAL DRIVEWAY SLOPES




COMMERCIAL DRIVEWAY PROFILE FOR MAJOR TRAFFIC GENERATORS

NOTES:

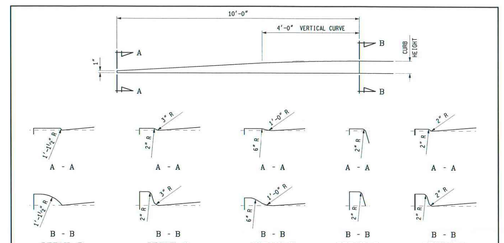
FOR DRIVEWAY DESIGN REFER ALSO TO "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANNERS, AND PARADES ON OR OVER HIGHWAYS" AND GEOMETRIC DESIGN G-680-SERIES, COMMERCIAL DRIVEWAYS.

FOR CURB AND GUTTER DETAILS, SEE STANDARD PLAN R-30-SERIES.

TRANSVERSE SIDEWALK SLOPES ARE TYPICALLY 1.5% (2.0% MAXIMUM). IN ORDER TO MEET SITE CONDITIONS, IF THE TRANSVERSE SLOPE IS REQUIRED TO BE LESS THAN 1.5%, LONGITUDINAL DRAINAGE MUST BE PROVIDED.

WHEN SETTING GRADES FOR COMMERCIAL DRIVES, THE TYPES OF VEHICLES USING THE DRIVE SHOULD BE CONSIDERED.

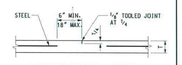
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|---|---|---|---|
| | | MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK | |
| | | 9-30-2014 F.H.W.A. APPROVAL | 7-1-2014 PLAN DATE |
| | | R-29-I | SHEET 4 OF 4 |




CONCRETE CURB, CURB AND GUTTER ENDINGS




1" FIBER JOINT FILLER




CONTRACTION JOINT

NOTES:

CURB AND GUTTER RADII SHALL BE DIMENSIONED TO THE FRONT EDGE OF THE GUTTER PAN OR EDGE OF PAVEMENT.

CONCRETE CURB AND GUTTER ENDINGS WILL BE PAID FOR IN LINEAR FEET OF THE ADJACENT CURB DETAIL.

JOINTS SHALL BE PLACED AT RIGHT ANGLES TO THE EDGE OF CONCRETE CURB AND GUTTER.

JOINTS DETAILED ON THE PLANS SHALL SUPERSEDE THOSE SPECIFIED ON THIS STANDARD PLAN.

BOTTOM SLOPE OF CURB AND GUTTER STRUCTURE MAY BE THE SAME SLOPE AS BOTTOM OF PAVEMENT. BACK OF CURB AND VERTICAL EDGE OF GUTTER PAN MAY HAVE A MAXIMUM ½" BATTER TO FACILITATE FORMING.

WHEN CURB AND GUTTER IS CAST INTEGRALLY, SEE CURRENT STANDARD PLAN R-31-SERIES.

ALL JOINTS FOR CURB OR CURB AND GUTTER ARE INCLUDED IN THE PAY ITEM FOR THE CURB OR CURB AND GUTTER.

JOINTS IN CURB OR CURB AND GUTTER NOT TIED TO CONCRETE PAVEMENT: ADJACENT TO CONCRETE BASE COURSE; OR ADJACENT TO HMA PAVEMENT:

A. PLACE 1" FIBER JOINT FILLER AT 400' MAXIMUM INTERVALS.

B. PLACE 1" FIBER JOINT FILLER AT SPRING POINTS OF INTERSECTING STREETS.

C. PLACE ½" ISOLATION JOINT AT CATCH BASINS PER STANDARD PLAN R-37-SERIES.

D. PLACE CONTRACTION JOINTS AT 40' MAXIMUM INTERVALS.

JOINTS IN CURB OR CURB AND GUTTER TIED TO JOINTED PAVEMENT

A. PLACE 1" FIBER JOINT FILLER OPPOSITE ALL TRANSVERSE EXPANSION JOINTS IN PAVEMENT.

B. PLACE ½" ISOLATION JOINT AT CATCH BASINS PER STANDARD PLAN R-37-SERIES.

C. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT.

D. A SYMBOL (B) JOINT SHALL BE PLACED BETWEEN CURB OR CURB AND GUTTER AND ADJACENT CONCRETE PAVEMENT AS SPECIFIED ON STANDARD PLAN R-41-SERIES.

| | | | |
|---|---|---|---|
| | | MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR CONCRETE CURB AND CONCRETE CURB & GUTTER | |
| | | F.H.W.A. APPROVAL | 2-6-2014 PLAN DATE |
| | | R-30-G | SHEET 2 OF 2 |

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS GIVEN THAT ALL UTILITIES ARE SHOWN, OR IF SHOWN, ARE CORRECTLY LOCATED THEREON. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR ESTABLISHING THE EXACT LOCATION OF ALL UTILITIES AND SHALL PROTECT ANY AND ALL PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE CLEARANCES APPEAR INSUFFICIENT. THE CONTRACTOR SHALL CONTACT MISS DIG AT LEAST 3 WORKING DAYS BEFORE DIGGING.

MISS DIG 811 BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 IT'S THE LAW!! IT'S FREE!! IT'S A COURTESY OF MISSDIG MEMBERS

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670

PROJECT
PROPOSED GAS STATION / CONVENIENCE STORE

PREPARED FOR
HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.552.2100

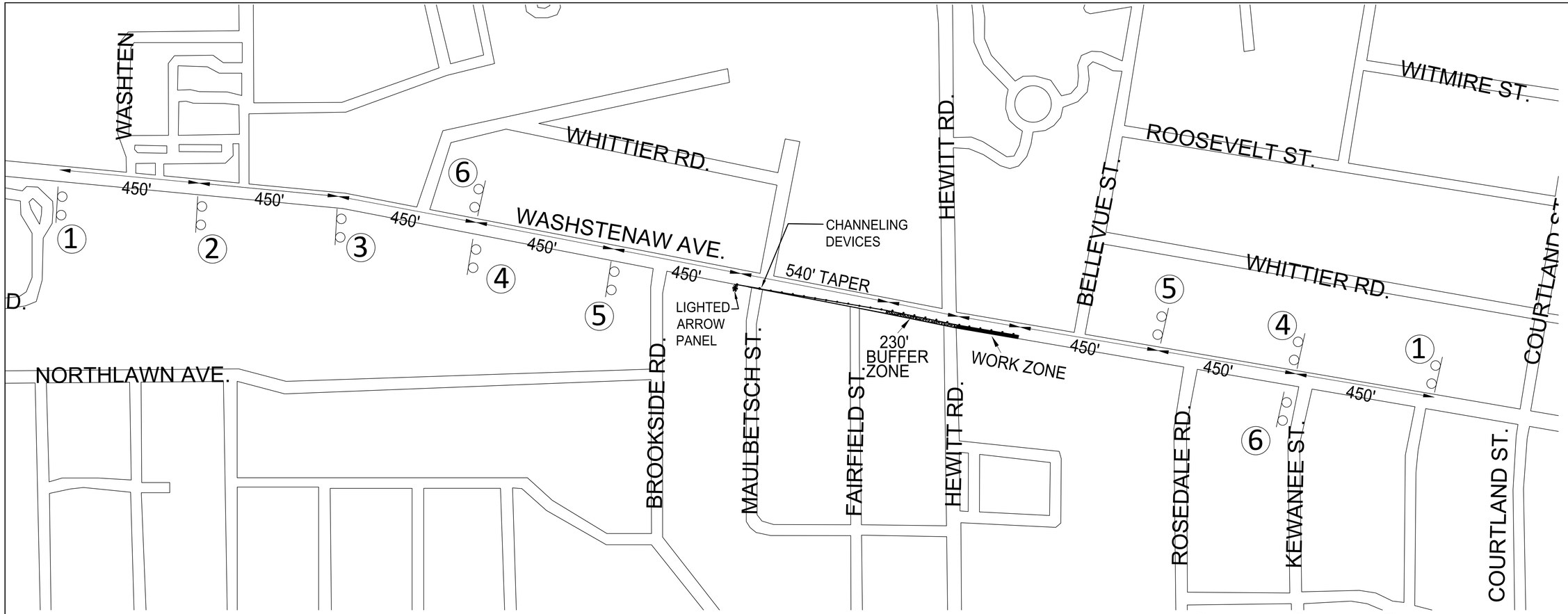
TITLE
MDOT CONSTRUCTION DETAILS

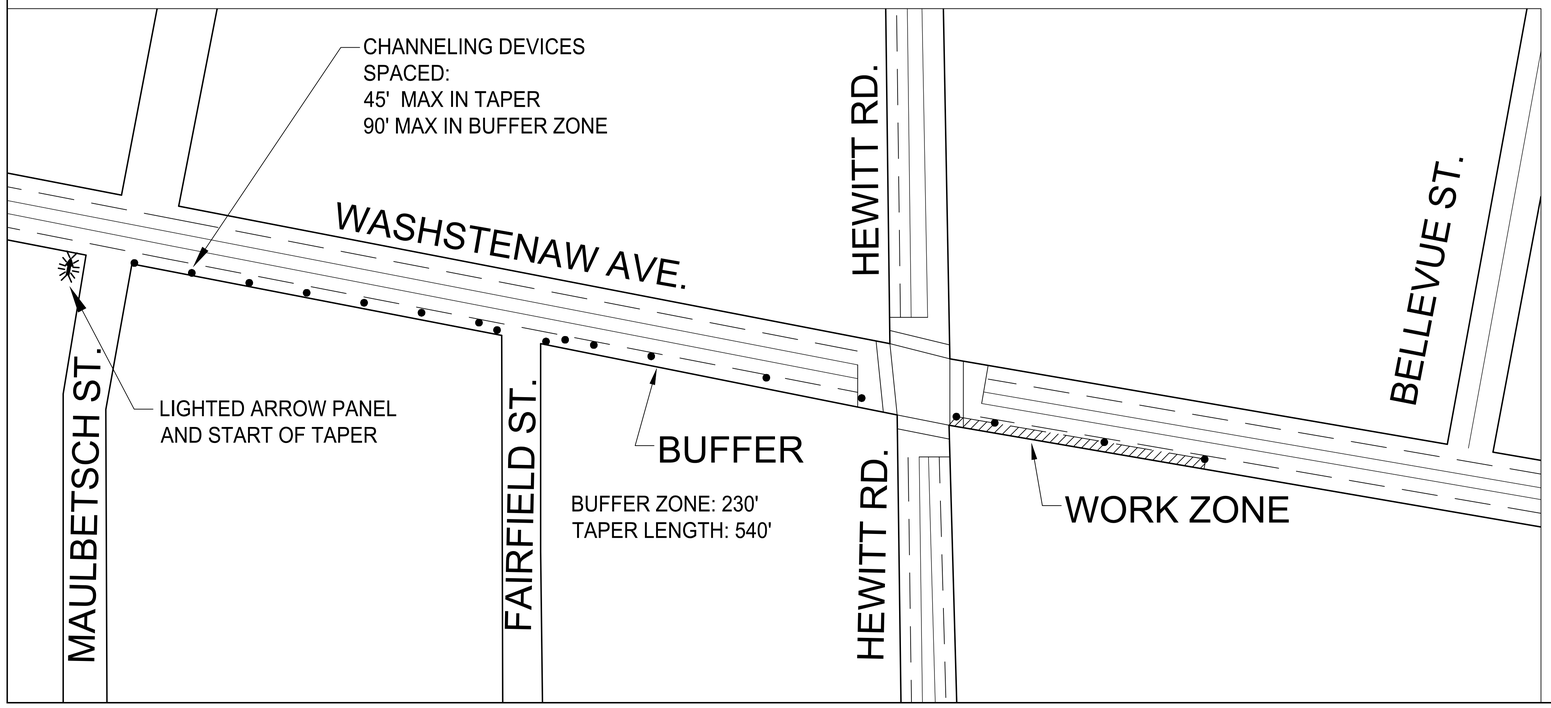
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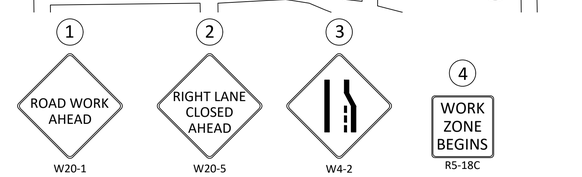
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JOB NO. 15-080
DATE 12/9/19
SHEET NO. C15

BOSS Engineering

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| MATERIAL REQUIRED | SFT |
|---|---|
| 2 - W20-1 | 32 |
| 1 - W20-5 | 16 |
| 1 - W4-2 | 16 |
| 2 - R5-18c | 32 |
| 2 - R2-1* (SPEED LIMIT 45) | 40 |
| 2 - G20-2 | 40 |

| SIGNS THIS SHEET BY CONTRACTOR | | |
|---|---|---|
| ITEM | UNIT | QTY |
| Sign, Type B, Temp, Prismatic, Furn | SF | 176 |
| Sign, Type B, Temp, Prismatic, Oper | SF | 176 |

## MDOT CONSTRUCTION NOTES:

1. A LANE CLOSURE/NOTIFICATION REQUEST FORM A MINIMUM OF 5 DAYS PRIOR TO ANY LANE CLOSURE. SUBMIT THE FORM BY EMAIL TO THE BRIGHTON TSC OPERATIONS/TRAFFIC & SAFETY UNIT FOR REVIEW AND APPROVAL.
2. SINGLE LANE CLOSURES ON EB M-17 WILL ONLY BE PERMITTED MONDAY THROUGH THURSDAY BETWEEN 9:00 AM AND 3:00 PM
3. NO LANE CLOSURES WILL BE PERMITTED ON M-17 WHEN THERE ARE OTHER LANE CLOSURES ON M-17 WITHIN 3 MILES OF THIS LOCATION
4. ALL EXISTING PERMANENT MDOT SIGNS DAMAGED OR LOST BY THE CONTRACTOR MUST BE REPLACE IN KIND ON NEW SUPPORTS AT THE CONTRACTORS EXPENSE.
5. NO WORK OR LANE CLOSURES WILL BE PERMITTED ON M-17 DURING THE INDEPENDENCE DAY, LABOR DAY, THANKSGIVING, CHRISTMAS OR ANY OTHER STATE DESIGNATED HOLIDAY PERIOD. IN ADDITION, NO LANE CLOSURES WILL BE PERMITTED DURING EASTERN MICHIGAN HOME FOOTBALL EVENTS AT RYNEARSON STADIUM ON THE EASTERN MICHIGAN CAMPUS. THE CONTRACTOR IS RESPONSIBLE TO VERIFY DATES OF THESE EVENTS.
6. ALL EXISTING PAVEMENT MARKINGS THAT ARE REMOVED FOR TRAFFIC CONTROL OR OBLITERATED DURING CONSTRUCTION OPERATIONS MUST BE REPLACED WITH WATERBORNE FOR THE LONGITUDINAL, LANE LINES AND OVERLAY COLD PLASTIC FOR SPECIAL MARKINGS (ONLY,STOP BAR, ARROWS, ETC.). THE SPECIAL MARKINGS INCLUDE THE PAVEMENT MARKINGS ON HEWITT ROAD.
7. TEMPORARY WARNING, REGULATORY, AND GUIDE SIGNS NOT REQUIRED FOR A PARTICULAR LANE OR SHOULDER CLOSURE MUST BE REMOVED, COVERED OR LAID DOWN WITH THE LEGS REMOVED.
8. DURING THE LANE CLOSURES ACCESS FOR EMERGENCY VEHICLES (FIRE, AMBULANCE, POLICE) MUST BE MAINTAINED TO ADJACENT HOMES, BUSINESSES AND SUBDIVISIONS AT ALL TIMES. IN ADDITION, ACCESS TO ALL COMMERCIAL AND RESIDENTIAL DRIVES SHALL BE MAINTAINED AT ALL TIMES.
9. ALL TRAFFIC CONTROL DEVICES AND THEIR USAGE MUST CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), 2011 EDITION.
10. ACCESS TO ALL RESIDENTIAL AND COMMERCIAL DRIVES MUST BE MAINTAINED AT ALL TIMES.
11. ALL SIGN MATERIALS AND SUPPORTS MUST MEET NCHRP-350 CRASH WORTHY REQUIREMENTS.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THEIR COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES AND SHALL MAKE NO CLAIM FOR ANY PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATIONS ARE FOUND TO BE SUBSTANTIALLY FROM THE PLANS.
3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
IT'S THE LAW!

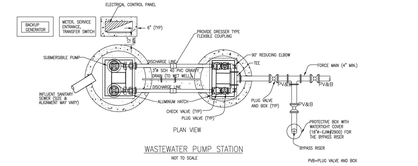
BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670

PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI 48034
248.855.2100
TITLE: MDOT CONSTRUCTION DETAILS

| NO | BY | REVISION PER | DATE |
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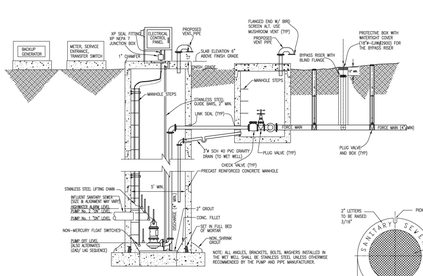
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PLAN VIEW

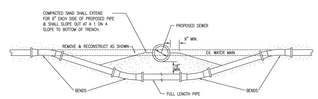
WASTEWATER PUMP STATION
NOT TO SCALE



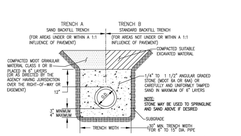

PROFILE VIEW
WASTEWATER PUMP STATION
NOT TO SCALE




ELEVATION
SANITARY SEWER CLEANOUT
NOT TO SCALE

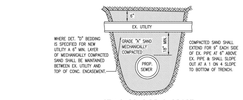



RELOCATION OF WATER MAIN
SANITARY OR STORM




FLEXIBLE PIPE (8" TO 15" DIA SOLID WALL PVC PIPE)
STANDARD BEDDING AND TRENCH BACKFILL DETAIL
NOT TO SCALE

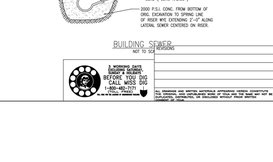
RIGID PIPE (18" DIAMETER AND LARGER CONCRETE)
STANDARD BEDDING AND TRENCH BACKFILL DETAIL
NOT TO SCALE




STANDARD PIPE SUPPORT
SANITARY OR STORM




STANDARD FRAME & COVER
E.J.I.W. #1040 OR
1040 Z.P.T. AS REQ'D.




BUILDING SEWER
NOT TO SCALE

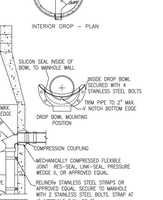



SANITARY MANHOLE
ON EXISTING SEWERS 8" THRU 42"
NOT TO SCALE

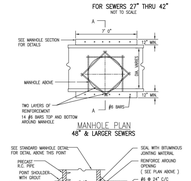



SANITARY MANHOLE
FOR SEWERS 27" THRU 42"
NOT TO SCALE

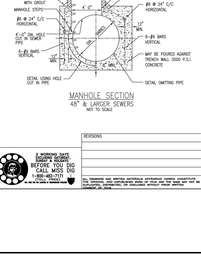
SANITARY MANHOLE
FOR SEWERS 8" THRU 24"
NOT TO SCALE




VENT ASSEMBLY
NOT TO SCALE




MANHOLE PLAN
45° & LARGER SEWERS

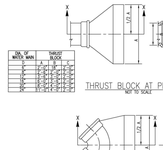



MANHOLE SECTION
45° & LARGER SEWERS
NOT TO SCALE

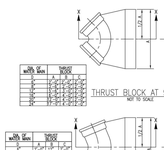
**SANITARY SEWER NOTES**

1. ALL MANHOLE RIMS SHALL BE SET TO GRADE AS FURNISHED BY THE ENGINEER.
2. RISERS ON SANITARY SEWERS SHALL BE INSTALLED WHERE SEWER IS OVER 8' DEEP TO A DEPTH OF 8'.
3. PLACE ONE 4" WYE FOR EACH LOT ON SANITARY SEWERS UNLESS OTHERWISE SPECIFIED.
4. ALL MANHOLES SHALL USE ECCENTRIC CONES PLACED TOWARD THE PROPERTY LINE UNLESS OTHERWISE NOTED.
5. INFILTRATION FOR ANY SECTION OF SEWERS BETWEEN MANHOLES SHALL NOT EXCEED 200 GALLONS PER INCH DIAMETER PER MILE OF SEWER PER 24 HRS.
6. NO FOOTING DRAINS SHALL BE CONNECTED TO THE BUILDING SEWER.
7. DIFFERENTIAL OF EXCAVATION AROUND EXISTING MANHOLES SHALL NOT EXCEED 6 FEET.
8. NO CONNECTION RECEIVING STORM WATER, SURFACE WATER, OR GROUND WATER SHALL BE MADE TO SANITARY SEWERS.
9. ALL SEWERS SHALL BE SUBJECT TO AIR INFILTRATION OR EXFILTRATION TESTS, OR A COMBINATION OF SAME, PRIOR TO ACCEPTANCE. ALL SEWERS UNDER 24" DIAMETER SHALL BE SUBJECTED TO INFILTRATION TESTS. ALL SEWERS 24" DIAMETER OR LARGER SHALL BE SUBJECTED TO EXFILTRATION TESTS. WHERE THE TOP OF THE SEWER IS OVER 2 FEET, SHALL BE SUBJECTED TO INFILTRATION TESTS. ALL SEWERS OF 24" DIAMETER OR LESS WHERE THE GROUND WATER LEVEL ABOVE THE TOP OF THE SEWER IS 2 FEET OR LESS, SHALL BE SUBJECTED TO AIR TESTS OR EXFILTRATION TESTS.
10. ALL SEWER SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE AUTHORITY HAVING JURISDICTION AND ANY OTHER AGENCY HAVING JURISDICTION OVER CONSTRUCTION AREA.
11. ALL SEWERS SHALL BE TELEVISED, WITH TEST RESULTS APPROVED BY THE COUNTY AGENCY PRIOR TO PLACING THE SEWER IN SERVICE.
12. ALL STUBS SHALL HAVE A WATER AND AIR TIGHT BULKHEAD.
13. NO SEWER SHALL BE CONSTRUCTED LESS THAN 10" IN DIAMETER WITHOUT SPECIFIC WRITTEN APPROVAL OF YCUA.

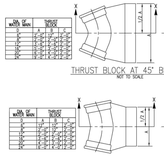


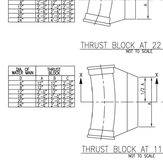

THRUST BLOCK AT PLUG
NOT TO SCALE



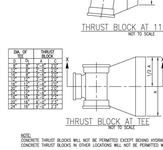

THRUST BLOCK AT 90° BEND
NOT TO SCALE




THRUST BLOCK AT 45° BEND
NOT TO SCALE



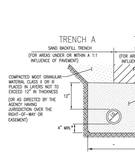

THRUST BLOCK AT 22 1/2° BEND
NOT TO SCALE




THRUST BLOCK AT 11 1/4° BEND
NOT TO SCALE

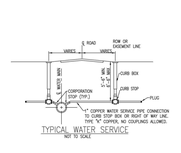



THRUST BLOCK AT TEE
NOTE:
CONCRETE THRUST BLOCKS WILL NOT BE PERMITTED EXCEPT BEHIND HYDRANT SHOES AND TAPPING SLEEVES. USE OF CONCRETE THRUST BLOCKS IN OTHER LOCATIONS WILL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF YCUA.

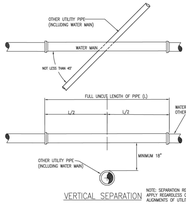



BEDDING AND TRENCH BACKFILL DETAIL
FOR WATER MAIN
NOT TO SCALE

**NOTE: IF THE EXISTING SUBGRADE MATERIAL MEETS THE REQUIREMENTS FOR MOST GRANULAR MATERIAL CLASS II SAND(N.M. 6" THICK), THEN THE WATER MAIN MAY BE LAID DIRECTLY ON THE COMPACTED EXISTING SUBGRADE MATERIAL.**

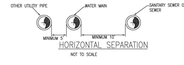



TYPICAL WATER SERVICE
NOT TO SCALE

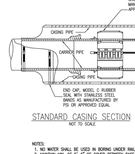



VERTICAL SEPARATION
NOTE: SEPARATION REQUIREMENTS APPLY REGARDLESS OF VERTICAL ALIGNMENTS OF UTILITIES.

WATER MAIN CROSSING OTHER UTILITIES

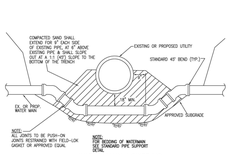



HORIZONTAL SEPARATION
NOT TO SCALE

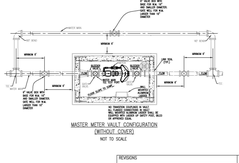


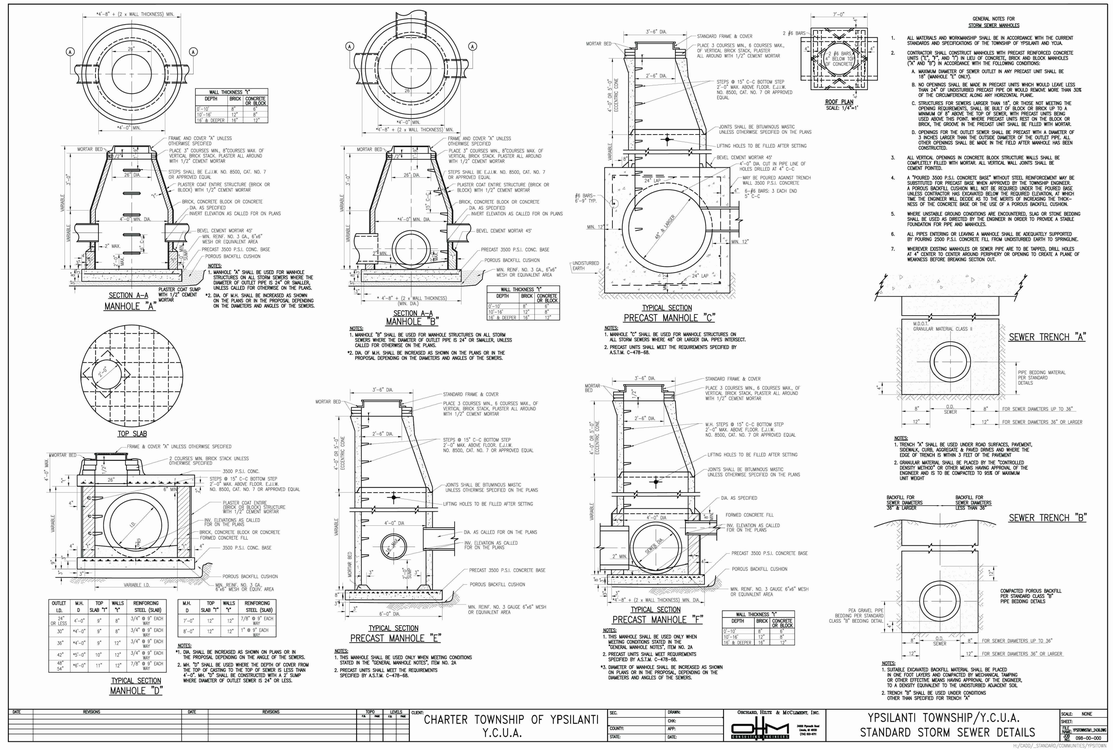

STANDARD CASING SECTION
NOTES:
1. THIS WATER MAIN SHALL BE USED IN BORING UNDER RAILROADS, DUAL MAINTAIN MIN. OF 6'-0" OF COVER BETWEEN BACK OF RAIL & TOP OF CASING.
2. THE ENDS OF THE CASING SHALL BE SUITABLY PROTECTED AGAINST THE ENTRANCE OF FOREIGN MATERIAL, BUT SHALL NOT BE WATERTIGHT.
3. CASING SPACERS AND END SEALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

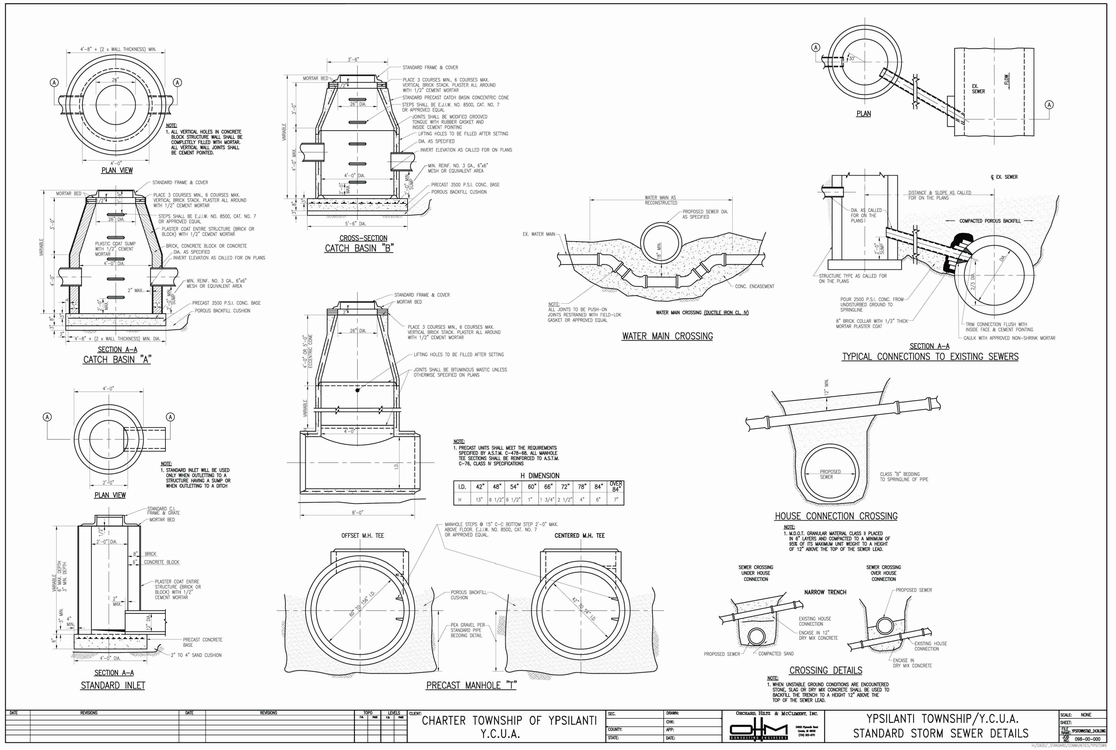
| DIA. OF WATER MAIN | MIN. CASING DIA. | RAILROAD MIN. WALL THICK. |
|---|---|---|
| 4" | 12" | 0.250" |
| 6" | 16" | 0.312" |
| 8" | 20" | 0.375" |
| 12" | 24" | 0.375" |
| 16" | 30" | 0.500" |




WATER MAIN LOWERING
NOTE:
ALL JOINTS TO BE PUSH-ON JOINTS RESTRAINED WITH FIELD-LOK GASKET OR APPROVED EQUAL
NOTE:
FOR BEDDING OF WATERMAIN SEE STANDARD PIPE SUPPORT DETAIL


4" MIN.
4" MIN.
4" MIN.




H DIMENSION

| I.D. | 42" | 48" | 54" | 60" | 66" | 72" | 78" | 84" | OVER 84" |
|---|---|---|---|---|---|---|---|---|---|
| H | 12" | 6 1/2" | 6 1/2" | 1" | 1 3/4" | 2 1/2" | 4" | 6" | 7" |

| OUTLET I.D. | M.H. DIA. | TOP SLAB "T" | WALLS "W" | REINFORCING STEEL (SLAB) |
|---|---|---|---|---|
| 24" OR LESS | 4'-0" | 8" | 8" | 7/8" @ 9" EACH WAY |
| 30" | 4'-0" | 8" | 8" | 3/4" @ 9" EACH WAY |
| 36" | 4'-0" | 8" | 10" | 3/4" @ 9" EACH WAY |
| 42" | 4'-0" | 10" | 12" | 3/4" @ 9" EACH WAY |
| 48" | 4'-0" | 11" | 13" | 7/8" @ 9" EACH WAY |
| 54" | 4'-0" | 12" | 13" | 1" @ 9" EACH WAY |

| M.H. DIA. | TOP SLAB "T" | WALLS "W" | REINFORCING STEEL (SLAB) |
|---|---|---|---|
| 5'-0" | 12" | 12" | 1" @ 9" EACH WAY |
| 6'-0" | 13" | 13" | 1" @ 9" EACH WAY |

| DEPTH | BRICK | CONCRETE OR BLOCK |
|---|---|---|
| 0'-10" | 4" | 6" |
| 10'-16" | 8" | 8" |
| 16' & DEEPER | 12" | 12" |

| DEPTH | BRICK | CONCRETE OR BLOCK |
|---|---|---|
| 0'-10" | 4" | 6" |
| 10'-16" | 8" | 8" |
| 16' & DEEPER | 12" | 12" |

| DEPTH | BRICK | CONCRETE OR BLOCK |
|---|---|---|
| 0'-10" | 4" | 6" |
| 10'-16" | 8" | 8" |
| 16' & DEEPER | 12" | 12" |

| DATE | REVISIONS | DATE | REVISIONS | TWP | VIL | T/V | VLG | LEVELS | TWP | VIL | T/V | VLG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |

CLIENT: CHARTER TOWNSHIP OF YPSILANTI Y.C.U.A.

SEC: | DRAWN: | CHK: | COUNTY: | APP: | DWG: | DATE:

Orchard, Hiltz & McCliment, Inc. 34000 Plymouth Road Livonia, MI 48150 (734) 522-6711 (734) 522-6427 FAX

YPSILANTI TOWNSHIP/Y.C.U.A. STANDARD STORM SEWER DETAILS

SCALE: NONE | SHEET: | PROJECT: 15-080-00-0000 | TASK: 15-080-00-0000

H:\PROJ_STANDARD_COMMUNITIES_PYSTORM

GENERAL NOTES

1. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING ANY PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATIONS SHOWN ON THE PLANS ARE SUBSTANTIALLY FROM THE FIELD.

BEFORE YOU DIG 3 WORKING DAYS CALL MISS DIG 1-800-482-7171 IT'S THE LAW!!! IT'S FREE!!! IT'S A GOOD IDEA!!!

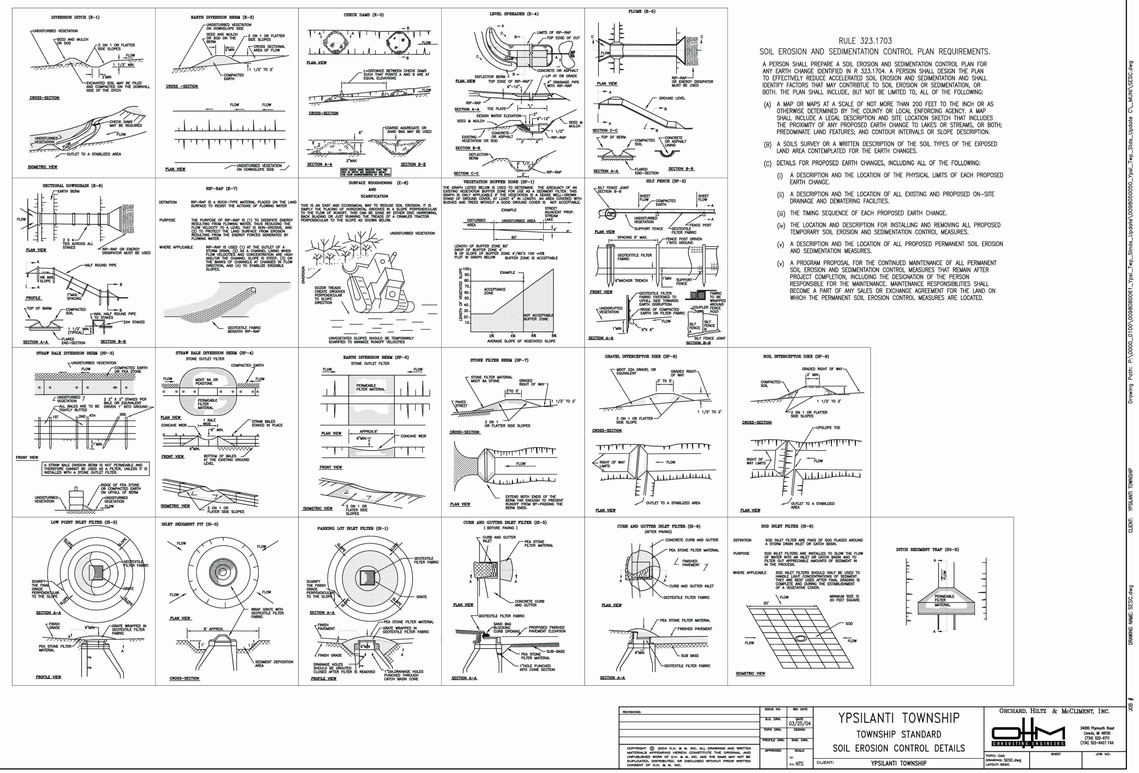
BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
800.246.6735 FAX 517.548.1670

PROJECT: PROPOSED GAS STATION / CONVENIENCE STORE
PREPARED FOR: HEWITT INVESTMENT LLC
29200 NORTHWESTERN HWY., STE. 450
SOUTHFIELD, MI. 48034
248.855.2100

TITLE: YPSILANTI TOWNSHIP CONSTRUCTION DETAILS

| NO | BY | REVISION PER | DATE |
|---|---|---|---|

DESIGNED BY: ST
DRAWN BY: ST
CHECKED BY:
SCALE NTS
JOB NO. 15-080
DATE 12/9/19
SHEET NO. C18




RULE 323.1703

SOIL EROSION AND SEDIMENTATION CONTROL PLAN REQUIREMENTS.

A PERSON SHALL PREPARE A SOIL EROSION AND SEDIMENTATION CONTROL PLAN FOR ANY EARTH CHANGE IDENTIFIED IN R 323.1704. A PERSON SHALL DESIGN THE PLAN TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND SEDIMENTATION AND SHALL IDENTIFY FACTORS THAT MAY CONTRIBUTE TO SOIL EROSION OR SEDIMENTATION, OR BOTH. THE PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL OF THE FOLLOWING:

(A) A MAP OR MAPS AT A SCALE OF NOT MORE THAN 200 FEET TO THE INCH OR AS OTHERWISE DETERMINED BY THE COUNTY OR LOCAL ENFORCING AGENCY. A MAP SHALL INCLUDE A LEGAL DESCRIPTION AND SITE LOCATION SKETCH THAT INCLUDES THE PROXIMITY OF ANY PROPOSED EARTH CHANGE TO LAKES OR STREAMS, OR BOTH; PREDOMINATE LAND FEATURES; AND CONTOUR INTERVALS OR SLOPE DESCRIPTION.

(B) A SOILS SURVEY OR A WRITTEN DESCRIPTION OF THE SOIL TYPES OF THE EXPOSED LAND AREA CONTEMPLATED FOR THE EARTH CHANGES.

(C) DETAILS FOR PROPOSED EARTH CHANGES, INCLUDING ALL OF THE FOLLOWING:

(i) A DESCRIPTION AND THE LOCATION OF THE PHYSICAL LIMITS OF EACH PROPOSED EARTH CHANGE.

(ii) A DESCRIPTION AND THE LOCATION OF ALL EXISTING AND PROPOSED ON-SITE DRAINAGE AND DEWATERING FACILITIES.

(iii) THE TIMING SEQUENCE OF EACH PROPOSED EARTH CHANGE.

(iv) THE LOCATION AND DESCRIPTION FOR INSTALLING AND REMOVING ALL PROPOSED TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES.

(v) A DESCRIPTION AND THE LOCATION OF ALL PROPOSED PERMANENT SOIL EROSION AND SEDIMENTATION MEASURES.

(v) A PROGRAM PROPOSAL FOR THE CONTINUED MAINTENANCE OF ALL PERMANENT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES THAT REMAIN AFTER PROJECT COMPLETION, INCLUDING THE DESIGNATION OF THE PERSON RESPONSIBLE FOR THE MAINTENANCE. MAINTENANCE RESPONSIBILITIES SHALL BECOME A PART OF ANY SALES OR EXCHANGE AGREEMENT FOR THE LAND ON WHICH THE PERMANENT SOIL EROSION CONTROL MEASURES ARE LOCATED.

| REVISIONS | SCALE NO. | AM DATE |
|---|---|---|
| | N.S. DRG. | 03/20/04 |
| | TOPO DRG. | REVISED |
| | PROFILE DRG. | DRAWN |
| | APPROVED | SCALE |
| | | N. NTS |

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YPSILANTI TOWNSHIP
TOWNSHIP STANDARD
SOIL EROSION CONTROL DETAILS

CLIENT: YPSILANTI TOWNSHIP

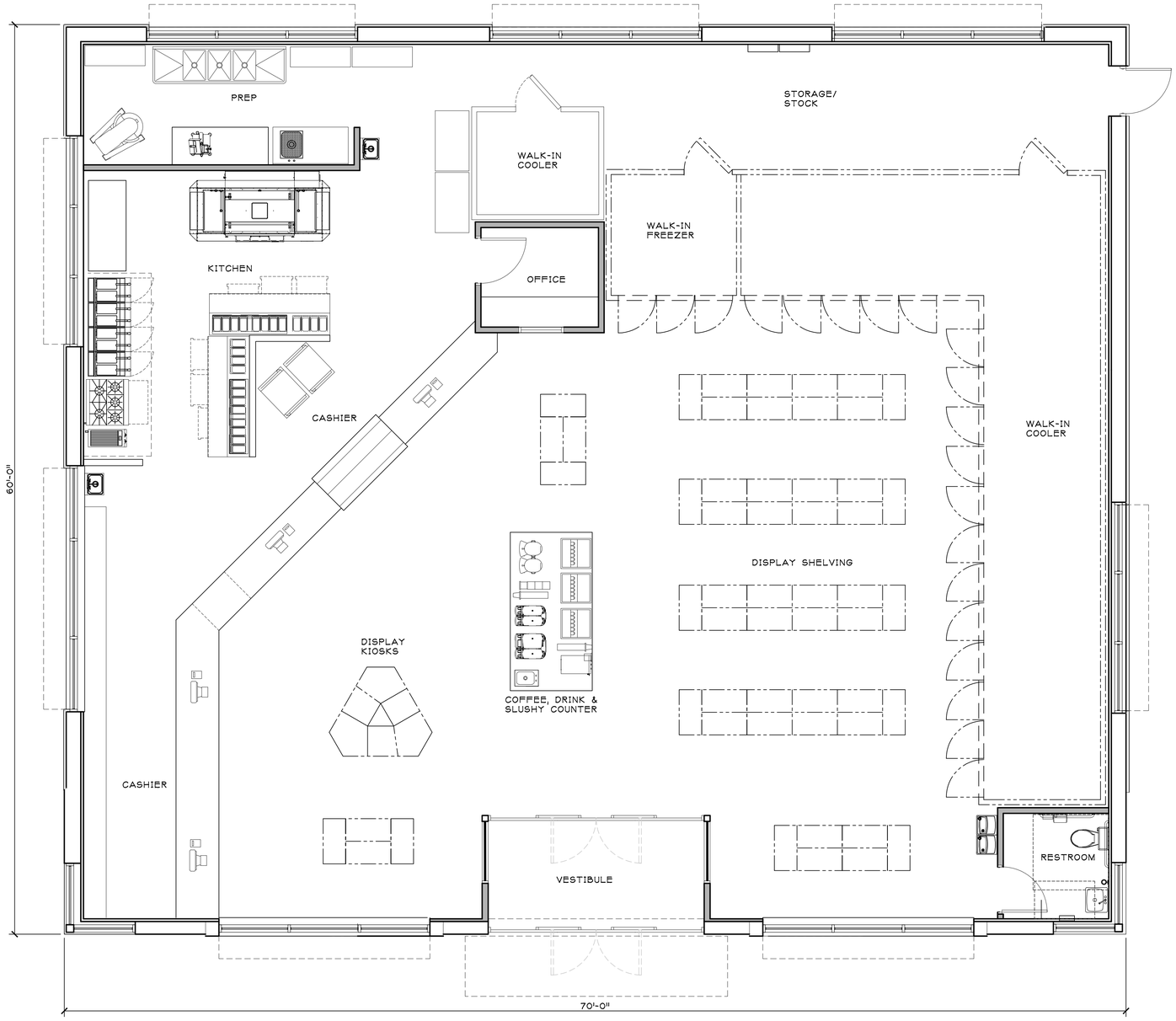
Orchard, Hiltz & McCliment, Inc. 34000 Plymouth Road Livonia, MI 48150 (734) 522-6711 (734) 522-6427 FAX

TOPO DWG: 15-080-00-0000.dwg
LAYOUT: SEDC

84827 | JOB NO.

DRAWING NAME: SESC.dwg | CLIENT: YPSILANTI TOWNSHIP | JOB #

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**FLOOR PLAN**
SCALE: 1/4" = 1'-0"

ARCHITECT:
jeffery a. scott
architects p.c.
32316 grand river ave.
suite 200
farmington, mi 48336
248-476-8800
JSCOTTARCHITECTS.COM
copyright © 2018

SHEET TITLE:
FLOOR PLAN

PROJECT:
GAS STATION -
CONVENIENCE STORE
WASHTENAW AVE.
YPSILANTI, MI

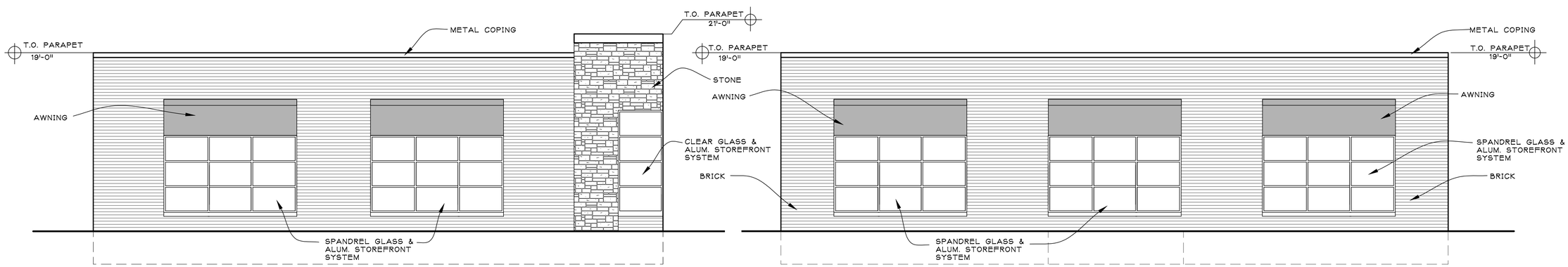
ISSUED FOR:
SPA 12-6-2019

STATE OF MICHIGAN
JEFFERY A. SCOTT
ARCHITECT
No. 38645
LICENSED ARCHITECT

DO NOT SCALE PRINTS
USE FIGURED DIMENSIONS ONLY

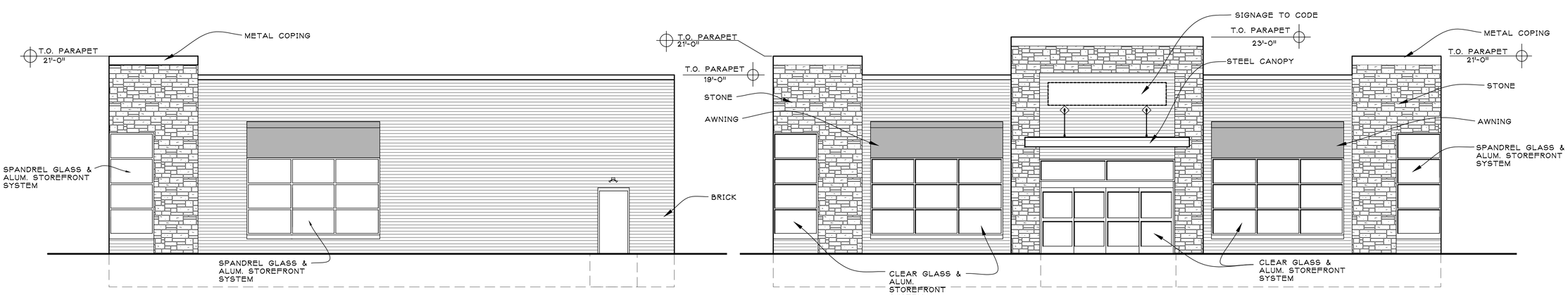
JOB NO.
19082

SHEET NO.
A100




## NORTH ELEVATION
SCALE: 3/16" = 1'-0"

## EAST ELEVATION
SCALE: 3/16" = 1'-0"




## SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

## WEST ELEVATION
SCALE: 3/16" = 1'-0"

ARCHITECT:

jeffery a. scott
architects p.c.

32316 grand river ave.
suite 200
farmington, mi 48336
248-476-8800
JSCOTTARCHITECTS.COM

copyright © 2018

SHEET TITLE:

# EXTERIOR ELEVATIONS

PROJECT:

GAS STATION -
CONVENIENCE STORE
WASHTENAW AVE.
YPSILANTI, MI

ISSUED FOR:

| | |
|---|---|
| SPA | 12-6-2019 |

STATE OF MICHIGAN
JEFFERY A. SCOTT
ARCHITECT
No. 38645
LICENSED ARCHITECT

DO NOT SCALE PRINTS
USE FIGURED DIMENSIONS ONLY

JOB NO.

19082

SHEET NO.

A200

Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

**MEMORANDUM**

**To:** **Charter Township of Ypsilanti Planning Commission**

**From:** **Megan Masson-Minock, AICP**

**Subject:** **Information on Proposed Zoning Ordinance Amendment for Medical Marihuana Uses Public Hearing**

**Date:** **February 5, 2020**

---

Please find attached a zoning ordinance amendment to restrict medical marihuana uses as special lad uses in the I-C zoning district only, when they meet the provisions of Section 1841. Currently, medical marihuana uses are allowed as special land uses in the I-1 and I-2 zoning districts, subject to the provisions of Section 1841. The attached map shows the location of the I-1, I-2 and I-C zoning districts. The proposed zoning ordinance amendment would limit the potential location of medical marihuana uses to the I-C zoning district (dark gray area in the northeast corner of the Township, between the railroad to the north, Wiard Road to the west, the Township border to the west and State Street or the highway ramp to the South).

As we discussed in January, this proposed amendment applies to ***medical*** marihuana, not recreational marihuana. The Township Board has agreed to opt out on the recreational marijuana question until later this year. Medical marihuana uses would continue to be special land uses, which requires a public hearing and the Planning Commission has discretion to deny an application if it does not meet the standards in Section 2119 of the Zoning Ordinance. No changes are proposed to Section 1841 (see attached), which requires medical marihuana uses to be 1,000 feet from another as well as from the following:

- Any church, synagogue, mosque or any house of worship.
- Any school, public or private, having a curriculum including kindergarten or any one or more of the grades one through 12.
- Any child care organization.
- Any public library.
- Any residentially zoned district or residential use.
- Any community college, university or professional school.

2/5/2020 Memorandum for Ypsilanti Township Planning Commission
Information on Proposed Zoning Ordinance Amendment for Medical Marihuana Uses Public Hearing

Due to anticipated changes of use on James L. Hart Parkway (place of worship ceasing at 770 and 660 James L. Hart Parkway and the Girl Scouts leaving 550 James L. Hart Parkway), medical marihuana uses may be able to locate on land zoned I-1 in the Township Center or Township Core area under current zoning. The Development Team (Supervisor, Clerk, Treasurer, Attorney, planning consultant and staff ) and the Planning Commission have discussed limiting medical marihuana uses to the I-C district previously, as part of the ongoing zoning ordinance rewrite. However, based on current timelines, we anticipate that the new zoning ordinance will not be adopted until late 2020.

We are prepared to give a short presentation before the public hearing scheduled on this amendment at your upcoming meeting on February 11, 2020. In the meanwhile, do not hesitate to contact me at mmasson-minock@cwaplan.com or 734-646-3163 with any questions or comments.

Sincerely,

**CARLISLE/WORTMAN ASSOC., INC.**
**Megan Masson-Minock, AICP**
**Planner**

Attachments: Proposed Medical Marihuana Zoning Ordinance Amendment
Ypsilanti Township map with I-1, I-2 and I-C Zoning Districts
Section 1841 of Zoning Ordinance of the Charter Township of Ypsilanti

Date: December 10, 2019
Rev:

# PROPOSED ORDINANCE 2020-XYZ

***An Ordinance Amending the Zoning Code of the Charter Township of Ypsilanti***

The Charter Township of Ypsilanti hereby ordains that the Ypsilanti Township Zoning Code, adopted May 18, 1994, shall be amended as follows:

**SECTION 1. AMENDMENT TO TOWNSHIP ZONING ORDINANCE ARTICLE III:** Township Zoning Ordinance Article III, "Zoning Districts and Map" by amending Section 306 "Schedule of Uses", sub-section 5, table "Industrial Districts Use Table", "Retail and Services" as follows:

| **Industrial Districts Use Table** | **IRO** | **I-1** | **I-2** | **I-3** | **I-C** | **Notes** |
|---|---|---|---|---|---|---|
| P= Permitted Use S=Special Conditional Use A= Accessory Use -- = Not permitted | | | | | | |
| **Retail and Services** | | | | | | |
| Adult entertainment facilities | | | | | S | Subject to conditions in Section 1844 |
| Adult/Child Day Care Center + Preschools | S | S | | | | |
| Commercial kennels | | P | P | | | |
| Massage establishment | | | | | S | Subject to conditions in Section 1845 |
| Medical marihuana dispensaries and medical marihuana nurseries | | ~~S~~ | ~~S~~ | | S | Subject to conditions in Section 1841 |
| Pawnbroker, secondhand dealer and junk dealer facilities | | | | | S | Subject to conditions in Section 1846 |
| Personal service establishments | S | | | | | Permitted as accessory use only in IRO, subject to conditions in Section 1837 |
| Retail | S | | | | | Such uses shall comprise not more than 20 percent of the land area of an overall development, subject to conditions in Section 1837 |
| Tattoo facilities | | | | | S | Subject to conditions in Section 1847 |

**SECTION 3. SEVERABILITY.** In the event that any one or more sections, provisions, phrases or words of this ordinance shall be found to be invalid by a Court of competent jurisdiction, such holding shall not affect the validity nor the enforceability of the remaining sections, provisions, phrases or words of this Ordinance unless expressly so determined by a Court of competent jurisdiction.

**SECTION 4. PUBLICATION.** This ordinance shall be published in a newspaper of general circulation as required by law.

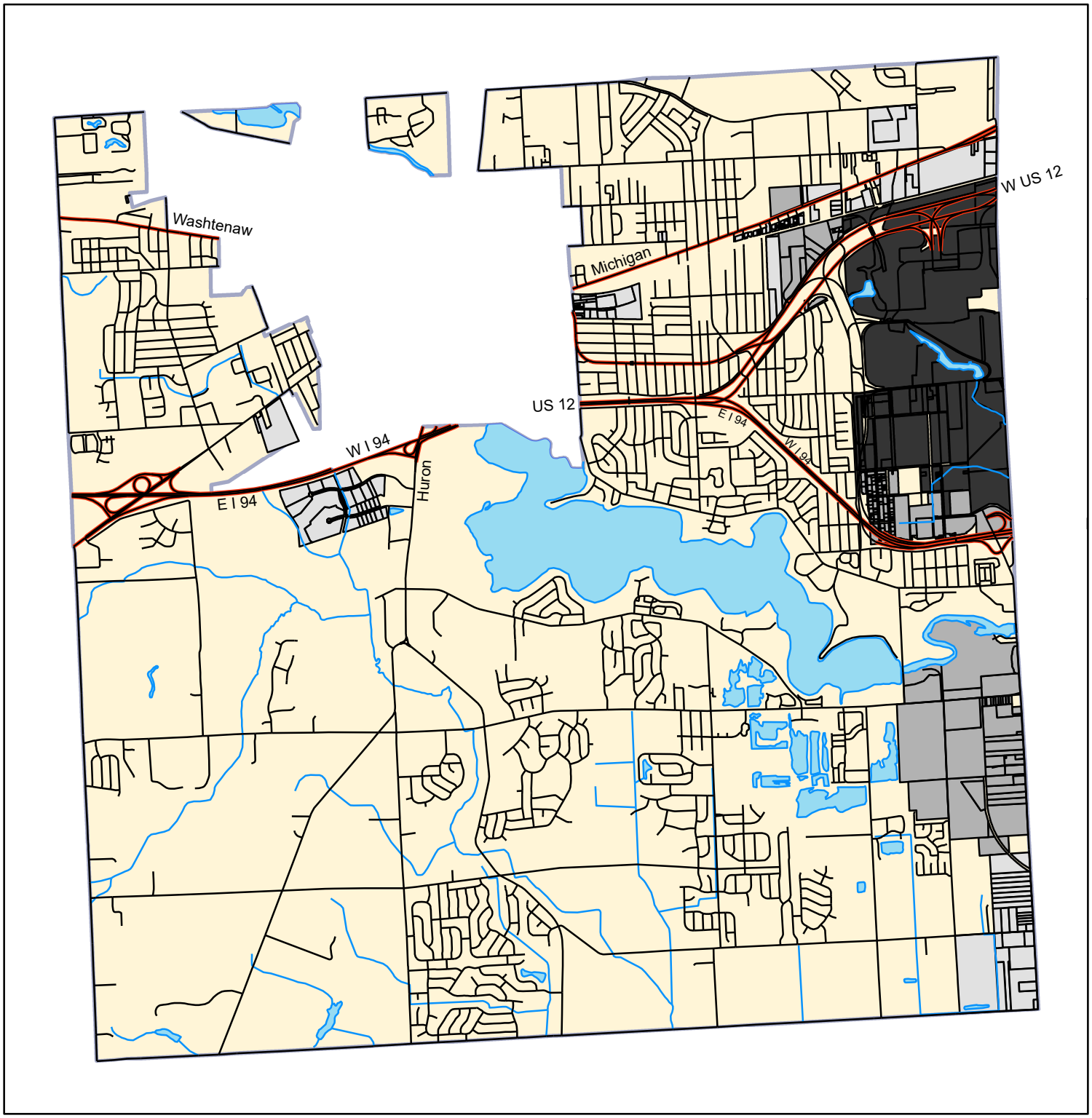
~~Text~~ is proposed for deletion
Text is proposed to be added

**SECTION 5. EFFECTIVE DATE:** This ordinance shall become effective upon publication in a newspaper of general circulation as required by law.

**SECTION 6. REPEAL:** All Ordinances or parts of Ordinances in conflict herewith are hereby repealed.

DRAFT

~~Text~~ is proposed for deletion
**Text** is proposed to be added




Current

I-1

I-2

Proposed

I-C

# Ypsilanti Township

## Potential Zoning Amendment: Marijuana Facilities

N

0 0.5 1 2 Miles

Carlisle/Wortman Associates
February 05, 2020

Source: Washtenaw County GIS

Section 1841 of the Ypsilanti Charter Township Zoning Ordinance

Sec. 1841. - Medical marihuana dispensaries and medical marihuana nurseries:

a. No medical marihuana dispensary or medical marihuana nursery shall be located within 1,000 feet of any other medical marihuana dispensary or medical marihuana nursery nor within 1,000 feet of any of the following uses:

   (1) Any church, synagogue, mosque or any house of worship.

   (2) Any school, public or private, having a curriculum including kindergarten or any one or more of the grades one through 12.

   (3) Any child care organization.

   (4) Any public library.

   (5) Any residentially zoned district or residential use.

   (6) Any community college, university or professional school.

b. All activity related to a medical marihuana dispensary or medical marihuana nursery including, but not limited to, growing shall be done indoors in a locked structure.

c. Medical marihuana dispensary and medical marihuana nurseries shall be operated in compliance with the provisions of the Michigan Department of Community Health and the Medical Marihuana Act, MCL 333.26421 et seq.

d. Smoking, inhalation, or consumption of medical marihuana shall not be allowed on the site of the medical marihuana dispensary or medical marihuana nursery.

e. No qualifying patients under the age of 18 shall be permitted in the medical marihuana dispensary or medical marihuana nursery at any time except in the presence of qualifying patient's parent or legal guardian or their primary caregiver.

f. No retail sales of drug paraphernalia are permitted at the medical marihuana dispensary or medical marihuana nursery, except to qualifying patients or their primary caregivers.

g. Each medical marihuana dispensary or medical marihuana nursery shall display in a manner legible and visible to its clientele:

   (1) Notice that qualifying patients under the age of 18 are not allowed in the medical marihuana dispensary or medical marihuana nursery except in the presence of his/her parent or legal guardian;

   (2) No consumption, inhalation or consumption of medical marihuana shall occur within the vicinity of the medical marihuana dispensary or medical marihuana nursery.

h. Only operators and their employees, qualifying patients, parents or guardians of qualifying patients under 18 years of age, and their primary caregiver may be permitted to enter a medical marihuana dispensary or medical marihuana nursery for the purpose of obtaining medical marihuana or other goods or products associated with its use.

i. Medical marihuana nurseries can grow a maximum of 72 marihuana plants.

# CHARTER TOWNSHIP OF YPSILANTI

## OFFICE OF COMMUNITY STANDARDS

Building Safety • Planning & Zoning • Ordinance Enforcement

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**Staff Report**
**Holiday Inn Express and Suites**
**460 and 350 Joe Hall Drive**
**Preliminary Site Plan**

February 5, 2020

*CASE LOCATION AND SUMMARY*

The Office of Community Standards is in receipt of a preliminary site plan application from Andy Andre to permit the construction of a 107-room, 4-story Holiday Inn Express and Suites hotel for a site zoned TC-1, Town Center, located at 460 and 350 Joe Hall Drive, parcels K-11-38-363-003 and K-11-38-363-029.

*APPLICANT*

Andy Andre
2600 Auburn Road, Suite 160
Auburn Hills, MI 48326

*CROSS REFERENCES*

Zoning Ordinance citations:

- Article XI-D, Section 1170, Town Center District
- Article XXI, Section 2115, Site Plan Review

***Suggested motions:*** *The following suggested motions and conditions are provided to assist the Planning Commission in making the most appropriate motion for this application. The Commission may utilize, add or reject any conditions suggested herein, as they deem appropriate.*

*Motion to table: Please note the preliminary site plan and the special land use permit are two separate motions.*

*"I move to table the request for preliminary site plan approval for construction of a 107-room, 4-story Holiday Inn Express and Suites hotel for a site zoned TC-1, Town Center, located at 460 and 350 Joe Hall Drive, parcels K-11-38-363-003 and K-11-38-363-029, to consider the comments presented by the Planning Commission during discussion of the project."*

*<u>Motion to approve</u>: Please note the preliminary site plan and the special land use permit are two separate motions.*

*"I move to approve the request for preliminary site plan approval for construction of a 107-room, 4-story Holiday Inn Express and Suites hotel for a site zoned TC-1, Town Center, located at 460 and 350 Joe Hall Drive, parcels K-11-38-363-003 and K-11-38-363-029, with the following conditions:*

1. *The applicant shall combine parcels K-11-38-363-003 and K-11-38-363-029.*
2. *The Planning Commission approves the three (3) at-grade lights that are intended to light a flagpole since such fixtures would enhance the aesthetics of the site and would not cause off-site glare or light pollution.*
3. *The applicant shall contribute $43,600 to the Township tree fund for the removal of 109 trees since the ability to provide the tree replacements on-site is not feasible.*
4. *Applicant shall obtain applicable Washtenaw County Water Resources Commission, Washtenaw County Road Commission, and Michigan Department of Environment, Great Lakes, and Energy permits.*
5. *If acceptable to the franchise, the applicant shall install video cameras covering all exterior parking areas, store records of the video for 45 days and make said records available to law enforcement upon request.*
6. *_____"*

*<u>Motion to deny:</u> Please note the preliminary site plan and the special land use permit are two separate motions.*

*"I move to deny the request for preliminary site plan approval for construction of a 107-room, 4-story Holiday Inn Express and Suites hotel for a site zoned TC-1, Town Center, located at 460 and 350 Joe Hall Drive, parcels K-11-38-363-003 and K-11-38-363-029, due to the following reasons:*

*1._____*

*2._____"*

Respectfully submitted,

*Charlotte Wilson*

Charlotte Wilson
Planning and Development Coordinator

# *Director's Report*

| | |
|---|---|
| Project Name: | Holiday Inn Express |
| Description: | 107-room, 4-story hotel |
| Date of Agenda this packet pertains to: | February 11, 2020 |

- ☐ Public Hearing
- ☐ Initial Submittal
- ☐ Revised Plans
- ☑ Preliminary Approval
- ☐ Final Approval

- ☐ Special Land Use
- ☐ Rezoning
- ☐ Tentative Preliminary Plat
- ☐ Final Preliminary Plat
- ☐ Other _____

| Contact | Consultants & Departments | Approval | Denial | Approved w/ Conditions | Comments |
|---|---|---|---|---|---|
| Jason Iacoangeli | Planning Director | ✔ | | | |
| OHM / Stantec | Engineering Consultant | | | ✔ | See 1/27/20 letter |
| Carlisle/Wortman Associates | Planning Consultant | | | ✔ | See 1/24/20 letter |
| Gary Streight | WCRC | | | ✔ | See 12/19/19 review |
| Dan Kimball | Fire Department | ✔ | | | See 1/28/20 letter |
| Scott Westover | YCUA | | | ✔ | See 1/30/20 letter |
| Theresa Marsik | WCWRC | ✔ | | | See 1/7/20 letter |
| Dave Bellers | Building Official | | | | N/A |
| Brian McCleery | Assessing Department | | | ✔ | See 1/17/20 email |
| | | | | | |

**Planning Director's Recommended Action**: The preliminary site plan will be placed on the February 11, 2020 Planning Commission agenda. The applicant must obtain outside agency permits prior to final site plan approval, including an EGLE permit.

ARCHITECTS. ENGINEERS. PLANNERS.

OHM Advancing Communities®

January 27, 2020

Mr. Jason Iacoangeli
Township Planning Director
Charter Township of Ypsilanti
7200 S. Huron River Drive
Ypsilanti, MI 48197

RE: **Holiday Inn Express & Suites**
Site Plan Review #3

Dear Mr. Iacoangeli:

We have completed the third site plan review of the plans dated August 14, 2019, with a revision date of January 14, 2020, and stamped received by OHM Advisors on January 16, 2020. At this time, the plans are recommended for approval for the Planning Commission's consideration.

A brief description of the project has been provided below (Section A), followed by our comments (Section B), and a list of anticipated required permits and approvals (Section C). Comments in Section B are detailed in nature, do not influence the overall site layout, and can be addressed during the detailed engineering drawing submittal.

## A. PROJECT AND SITE DESCRIPTION

The applicant is proposing to develop the vacant lot located at 460 Joe Hall Drive into a 4-story Holiday Inn Express & Suites hotel. The hotel will consist of 107 guest rooms with associated parking and utility improvements. One (1) entrance drive is being proposed to the site from Joe Hall Drive.

A sanitary sewer service is being proposed from the existing 12-inch sanitary main along the eastern side of the proposed building. A water main loop is being proposed around the building with two (2) connections to the existing 12-inch water main to the east and to the south of the proposed building. An underground detention basin is also being proposed for stormwater management with connection into a Washtenaw County Water Resource Commissioner's (WCWRC) Office drainage system.

## B. PRELIMINARY DETAILED ENGINEERING PLAN COMMENTS

The following comments shall be addressed by the applicant during the detailed engineering drawing submittal, and do not affect the recommendation for approval to the Township of Ypsilanti Planning Commission. It should be noted that this is not an all-inclusive list and additional comments may be generated as new information is presented.

1. The applicant shall include profiles of all proposed utilities (water, sanitary, storm) including length, diameter, invert/rim elevations, slope, material, and utility crossings. The stormwater profiles shall also include the hydraulic grade line.

2. For verification that the proposed subsurface basin can withstand the anticipated vehicle loads, the applicant shall provide the manufacturer's specification and manufacturer's allowable depth schedule for review and approval.

3. The applicant shall verify that the tributary area of the building envelope is accounted for within the drainage area acreages and corresponding stormwater calculations.

4. The applicant shall clarify if cleanouts are being proposed for the underground detention basin. If so, their locations and standard detail shall be provided on the plans.

5. The applicant shall note that the proposed EV Charging Station shall be van accessible per ADA Standards. The applicant shall also include a detail of the proposed EV Charging Station on the plans.

6. The applicant shall provide a signed and sealed certificate of outlet for the proposed stormwater system.

7. The applicant shall include ADA compliant details for the proposed sidewalk and ramps (i.e. current MDOT R-28-J Series) on the plans.

8. The applicant shall provide a copy of all proposed easement sketches and legal descriptions (water, sanitary, etc.) to this office, as well as the Township, for review and approval prior to construction commencing. The applicant shall also provide a copy of all existing easement documentation to this office for the project file.

9. Applicable Ypsilanti Township Standard Detail Sheets, including SESC, shall be included in the plan set. The applicant shall verify any details provided on the plan set do not conflict with the Ypsilanti Township Standard Detail Sheets. If so, the Ypsilanti Township Standard Detail Sheets shall govern.

## C. REQUIRED PERMITS & APPROVALS

The following outside agency reviews and permits will be required for the project. Copies of any correspondence between the applicant and the review agencies, as well as the permit or waiver, shall be sent to both the Township and OHM Advisors (email: elliot.smith@ohm-advisors.com).

- **Ypsilanti Township Board of Trustees (BOT):** After approval of the site plan by the Township Planning Commission, detailed engineering drawings are required and approvals from all applicable agencies will be required for BOT approval.
- **Ypsilanti Community Utilities Authority (YCUA):** Review and approval is required for the proposed water main and associated service, as well as the proposed sanitary service.
- **Ypsilanti Township Fire Department:** Review and approval is required. *Site Plan Approval letter sent by YTFD on October 16, 2019.*
- **Washtenaw County Water Resources Commissioner's Office (WCWRC):** Review and approval is required. *Site Plan Approval letter sent by WCWRC on January 7, 2020.*
- **Washtenaw County Road Commission (WCRC):** Review and approval is required. *Site Plan Approval letter sent by WCRC on December 12, 2019.*
- **Environment, Great Lakes, and Energy (EGLE):** An EGLE Act 399 Permit will be required for construction of all public water main improvements.
- **Ypsilanti Township Office of Community Standards:** A Soil Erosion and Sedimentation Control (SESC) Permit shall be secured from the Ypsilanti Township Office of Community Standards prior to construction. *Site Plan Approval letter sent by YCUA on October 3, 2019.*
- **Ypsilanti Township Planner:** Review and approval is required.
- If dewatering should be needed, the contractor/applicant shall be responsible for obtaining necessary approvals from the Township and the Township Engineer, permission from all impacted adjacent properties and/or permits from the WCWRC's Office or the WCRC.
- Record plans shall be provided to the Township Engineer following the completion of construction.

Should you have any questions regarding this matter, please contact this office at (734) 466-4580.

Sincerely,
OHM Advisors

Matthew D. Parks, P.E.

Elliot Smith

MDP/ERS

cc: Charlotte Wilson, Township Planning & Development Coordinator
Mike Radzik, Township Community Standards Director
Brenda Stumbo, Township Supervisor
Karen Lovejoy Roe, Township Clerk
Larry Doe, Township Treasurer
Michael Hoffmeister, Township Residential Services Director
Lisa Stanfield, Township Deputy Clerk
Debbie Graham, Township Deputy Supervisor
Tammie Keen, Township Community Standards Executive Coordinator
Dan Kimball, Township Fire Marshall
Doug Winters, Township Attorney
Scott Westover, P.E., YCUA
Gary Streight, P.E., WCRC
Theresa Marsik, P.E., WCWRC
Andrew Andre, P.E., Engineer, Stellar Development LLC, 2600 Auburn Road, Suite 160, Auburn Hills MI 48326
Jimmy Asmar, Ypsilanti Superior Hospitality, LLC, 2600 Auburn Road, Suite 240, Auburn Hills MI 48326
File

P:\0000_0100\SITE_YpsilantiTwp\2019\0098191040_Holiday_Inn_Express_&_Suites\MUNI\01_SITE\SP#3\Holiday Inn_SP#3_2020-01-27.docx

Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

Date: September 5, 2019
October 16, 2019
January 24, 2020

# Preliminary Site Plan Review

# For

# Ypsilanti Charter Township, Michigan

**Applicant:** Ypsilanti Superior Hospitality 2, LLC

**Project Name:** Holiday Inn

**Plan Date:** January 14, 2020

**Location:** 460 Joe Hall Drive (K-11-38-363-029, K-11-38-363-003)

**Zoning:** Town Center 1 (TC-1)

**Action Requested:** Preliminary Site Plan Approval

## PROJECT AND SITE DESCRIPTION

An application has been submitted for a 107-room, 4-story Holiday Inn with off-street parking. The site consists of two (2) parcels, totally approximately 4.68 acres. The site is bisected by a 80-foot wide county drain, a 40-foot wide public utility easement, and a 25-foot wide private utility easement. The site is currently vacant, and directly west of the strip mall that includes the Leo's Coney Island, Jet's Pizza, and Powerhouse Gym.

The site will be accessed by one (1) point of entry off Joe Hall Drive to the south. The hotel is noted as being served with 111 parking spaces and will also feature a pool and patio area.

The site is currently zoned Town Center 1 and the Future Land Use Map indicates it as being General Commercial and Industrial. The TC-1 Zone is a non-residential zone for the northern portion of the Huron Street Corridor nearest the I-94 interchange. This district is intended for a mixture of commercial, office, research and development and recreational uses. It serves at the entryway to the town center transitioning from the north. The proposed use as a hotel is a permitted.

**Location of Subject Property:**
An aerial photo is shown below depicting the site located 460 Joe Hall Drive.



**Surrounding Property Details:**

| Direction | Master Plan | Zoning | Use |
|---|---|---|---|
| North | General Commercial<br>Industrial | TC-1, Town Center 1<br>I-1, Light Industrial | Vacant<br>Office / Light Industrial |
| South | Industrial | B-3, General Business<br>I-1, Light Industrial | Vacant |
| East | General Commercial | B-3, General Business | Commercial |
| West | Industrial | I-1, Light Industrial | Vacant |

**Size of Site:**
The total area of the subject site is +/- 4.68 acres (203,861 sq/ft).

**Current Use of Site:**
The site is currently vacant.

**Proposed Use of Site:**
An application has been submitted for a 107-room, 4-story Holiday Inn hotel.

***Items to be Addressed:*** *Provide land dimensions and total acreage on site information table.*

## MASTER PLAN

The future land use plan designates the proposed site as two (2) future land use designations: General Commercial and Industrial. These designations are summarized below.

General Commercial: Businesses which serve the Community at large, with land uses on larger sites that have convenient access to regional transportation routes via various transportation modes. Developments in these areas are intended to be clustered into an integrated center, rather than allowed to sprawl into an undesirable commercial strip pattern of development. They also need to be buffered from any nearby residential areas. This designation includes grocery stores, gasoline service stations, auto service uses, restaurants and large retail centers. Appropriate uses also include heavier commercial uses such as "big box" commercial establishments.

Industrial: The intent of the Industrial designation is to continue development of a wide range of Industrial uses such as:

- Heavier industrial uses will be located around the Willow Run Airport.
- Areas for general industrial and large scale manufacturing are provided along the northern portion of the Rawsonville Road corridor and adjacent areas along Textile Road.
- Light industrial uses will be located along the southern portion of the Rawsonville Road corridor and other outlying areas such as along Michigan Avenue and in the Washtenaw Business Park on Huron Street.
  New development and expansion of existing business should be designed to take into consideration offsetting the impacts of intense uses through architectural and landscaping enhancements and screening of outdoor activities.

The use is consistent with the Master Plan's future land use goals as its design accommodates for various modes of transportation, and its form is comparable to that of "big box" commercial establishments. Additionally, the site is shown as maintaining a significant amount of green space which, in partnership with section 1177, will appropriately enhance and screen the site.

***Items to be Addressed:*** *None*

## NATURAL RESOURCES

**Topography:** Elevation of the site increases from the southwest to the northeast by nearly ten (10) feet.

**Woodlands:** The site has a significant amount of woodland area. The applicant has differentiated between trees to remain and trees to be removed on sheet L1.0, and has also provided tree protection information. Additionally, sheet L1.1 depicts a corresponding tree survey table.

**Wetlands:** The applicant has completed a wetland delineation report that finds there are two regulated (0.29 and 0.05 acres) wetlands onsite. The 0.29-acre wetland is located in northeast corner of the site. The 0.05-acre wetland is located in the northwest corner of the site. The applicant's wetland consultant Nativeedge, in a review dtated September 27, 2019 notes

that both wetland A and wetland A are within 500 feet of a waterbody and are regulated by EGLE. A permit from EGLE is required.

***Items to be Addressed:*** *Obtain permit from EGLE*

## HEIGHT, BULK, DENSITY AND AREA

We find the structure and design layout the meets the height, bulk, density and area zoning ordinance requirements. As part of the final site plan approval, lot consolidation will be required.

| | | Required / Allowed | Provided | Complies with Ordinance |
|---|---|---|---|---|
| **Setback** | Front | 0 to 75 feet | >0 feet | Complies |
| | Side (east) | 10 Feet | >10 feet | Complies |
| | Side (west) | 10 Feet | >10 feet | Complies |
| | Rear | 25 Feet | >25 feet | Complies |
| **Building Height (Feet)** | | 20-75 Feet | 44 feet | Complies |
| **Building Height (Stories)** | | 6 | 4 | Complies |
| **Parking Location** | | One row allowed in front yard | One row in front yard | Complies |

***Items to be Addressed:*** *None.*

## SITE ACCESS, CIRCULATION, AND TRAFFIC IMPACTS

The site will be accessed by one (1) point of entry off Joe Hall Drive to the south. A traffic study has been submitted. A single, 24-foot wide lane is shown providing movement around the perimeter of the hotel. At the structure's front entrance, a 22-foot wide drop-off lane is shown. Turning radii for fire trucks have been included. We defer further comment to the Fire Department regarding turning radii and site access.

***Items to be Addressed:*** *Township Engineer and Fire Department to review circulation and turning radii.*

## NON-MOTORIZED ACCESS

The applicant is proposing the installation of a five (5) foot concrete sidewalk along Joe Hall Drive as well as along the site's east boundary which will be connected to the Hampton Inn sidewalk, which is just north of this site. A seven (7) foot wide concrete curb walk has also been proposed along the structure's perimeter. Crosswalks are shown at the site's main point of entry allowing for safe pedestrian movement throughout the site.

***Items to be Addressed:*** *None*

## PARKING AND LOADING

Section 13.06.G of the Zoning Ordinance requires:

**Parking**

| | Required | Provided |
|---|---|---|
| Hotel :<br>1 space per each unit plus one space per employee plus space required for accessory uses such as a bar, restaurant, meeting rooms, etc. | 107 rooms = 107 spaces<br>4 employees = 4 spaces<br><br>Total = 111 | 111 |
| Barrier Free | 5 | 5 |
| Loading | 10 sqft per front foot of building to be located in the rear | 0 |
| Bicycle facility (as set forth in Section 1175.8) | As set forth in Section 1175.8 | Provided near building entrance |
| **Total** | **111 spaces** | **111 spaces** |

The applicant has provided the required amount of parking. All parking spaces are indicated as having a width of nine (9) feet, and a length of eighteen (18) feet as required for proposed parking patterns on site.

**Loading**

The applicant has not indicated any loading area on site. Per Section 2106, a loading space is required for any use involving the receipt or distribution of vehicles or materials or merchandise. The applicant notes that a loading space is not required for operational purposes due to limited amount of deliveries. Because the site does not receive materials or merchandise, we find that loading space is not required.

***Items to be Addressed:*** *None.*

## LIGHTING

A lighting plan is provided on sheet C3.1. A total of 34 light fixtures are shown on site. Twenty-one (21) are bollard lights around the building, ten (10) are parking lot lights, and three (3) are at-grade lights. The at-grade lights are intended to light a flagpole.

Footcandle requirements have been met. All lighting fixtures according to section 2110(2)(a) shall be fully shielded and directly downward. The Planning Commission should determine whether the three (3) fixtures intended to be at-grade should be replaced, as they do not meet this requirement. The Planning Commission may approve decorative light fixtures as an alternative to shielded fixtures, provided that such fixtures would enhance the aesthetics of the site and would not cause off-site glare or light pollution.

***Items to be Addressed:*** *Planning Commission to review design of three (3) at-grade lighting fixtures.*

## LANDSCAPING AND OPEN SPACE STANDARDS AND REQUIREMENTS

| | Required | Provided | Complies |
|---|---|---|---|
| Plan prepared and stamped by registered Landscape Architect | Plan prepared and stamped by registered Landscape Architect | Plan prepared and stamped by registered Landscape Architect | Complies |
| General: 1 tree per 1000 sf of lawn area and 1 shrub per 500 sf of lawn area | 2,483 sf of lawn = 3 trees and 5 shrubs | 3 trees and 5 shrubs | Complies |
| Street Yard Landscaping: 1 large dec tree per 40 lf of frontage, 1 orn tree per 100 lf of frontage, 1 shrub per 10 lf of frontage | 407 lf = 11 dec trees, 2 orn and 41 shrubs | 11 dec trees, 5 orn, 56 shrubs | Complies |
| Parking Lot: 1 large dec tree per 3000 sf of pavement | 40,075 sf = 13 trees | 13 trees | Complies |
| Detention Pond: 1 dec or evg tree and 10 shrubs per 50 lf of top of bank | Not applicable | Not applicable | Not applicable |
| Tree Mitigation: 1 to 1 replacement | 109 trees to be removed = 109 trees to be replaced.<br>Refer to note** | 109 trees to be removed = 109 trees to be replaced.<br>Refer to note** | Refer to note* |

*The applicant notes that "Due to the number of easements that are located throughout the property, the ability to provide the tree replacements on-site is not feasible. Therefore, it is proposed that contribute to the Township tree fund be made for the necessary tree replacements."*

The location of replacement trees shall be subject to the approval of the township and shall be such as to provide the optimum enhancement, preservation and protection of woodland area. Where woodland densities permit, tree relocation or replacement shall be within the same woodland area as the removed plants.

Where tree relocation or replacement is not feasible within the woodland area, or on the property where the activity is to be conducted, or on other approved property within the township, the permit grantee shall pay into the township tree fund monies for tree replacement in a per-tree amount representing the current market value for the tree replacement that would be utilized for the maintenance and preservation of woodland areas and the planting and maintenance of trees within the township.

**Open Space**

As set forth in Section 1177, developments within the Town Center District require the provision of open space. For non-residential developments, a minimum of 15 percent of the land area for open spaces such as plazas, pavilions, common greens or parks. The applicant has provided a small pavilion within the greenbelt along Joe Hall Drive, and additional open space adjacent to Joe Hall Drive.

***Items to be Addressed:*** *Planning Commission to determine whether off-site mitigation for tree replacement is appropriate.*

## FLOOR PLANS AND ELEVATIONS

Floor plans and elevations have been provided on sheets A111 through A201. The structure is primarily brick and stone. Colors have been differentiated and include white brick, "river rock" brick, dark bronze brick and limestone brick.

There are very detailed and prescribed architectural requirements within the Town Center District. These are set forth in Section 1174. Applicable requirements include:

a. *Front Façade Requirements:*
    1. *Buildings shall front onto the sidewalk with windows, doors, and architectural detailing customary of traditional storefronts and contain varying materials, and appearances.*
    2. *All buildings shall have a main entrance that is located on at least one street front.*
    3. *Main entrances shall have design details that enhance the appearance and prominence of the entrance so that it is recognizable from the street and parking areas.*
    4. *For buildings longer than 100 feet, there shall be a minimum of one usable entrance every full 50 feet of frontage and architectural variation shall be provided to visually break the building up.*
b. *Corner Buildings (does not apply)*
c. *Building Materials:*
    1. *The following exterior finish materials are required on the front facade and any facade facing a street, or parking area. These requirements do not include areas devoted to windows and doors. These requirements apply in lieu of section 2125.*
    2. *All walls exposed to public view from the street, or parking area shall be constructed of not less than 75 percent modular brick or stone, not including window or door areas.*
    3. *Panel brick and tilt-up brick textured paneling shall not be permitted.*
    4. *The remaining facade may include wood siding or fiber cement siding.*
    5. *Exterior insulation finish systems (EFIS) may be used for architectural detailing above the first floor only.*
    6. *Buildings that have upper stories shall be designed to create a distinct and separated ground floor area through the use of accent such as a cornice, change in material or textures, or an awning or canopy between the first and second stories.*
d. *Windows and doors.*
    1. *No less than 70 percent of the storefront/ground floor front facade shall be clear glass panels and doorway.*
    2. *Required window areas shall be either windows that allow views into retail space, working areas or lobbies, pedestrian entrances, or display windows set into the wall.*
    3. *Windows shall not be blocked with opaque materials or the back or shelving units.*
    4. *The bottom of the first floor window must be no more than four feet above the adjacent exterior grade.*

5. *Openings above the first story shall be a maximum of 50 percent of the total facade area.*

e. *Roof design.*
   1. *Unless otherwise approved by the planning commission, buildings should have flat roof appearance from the street with a decorative cornice that is designed proportionate to the size of the building and length of the wall.*
   2. *The planning commission may permit a pitched roof. Mansard roofs shall not be permitted on single story buildings. Pitched roofs shall not be permitted with eaves below a height of 20 feet.*
   3. *Flat roofs shall be enclosed by parapets.*
   4. *All rooftop mounted equipment shall be screened from view on all sides of the building.*
   5. *Parapets and other screening treatment shall use high quality building materials and shall blend with the design of the building in terms of color, materials, scale and height.*

We note that section 1174.3, permits the Planning Commission to approve deviations *to the architectural requirements of this section in order to achieve the objectives of this the town center district through the use of creativity and flexibility in development and design. Each deviation shall be evaluated based upon all of the following criteria:*

f. *Innovations in architectural design may be permitted, provided the building design shall be in keeping with the desired character of the town center, as articulated in the master plan, and the proposed building fits within the context of adjacent buildings along the block.*
g. *The building shall be oriented towards the front sidewalk and maintain or enhance the continuity of the pedestrian-oriented environment.*
h. *The exterior finish materials shall be of equal or better quality and durability as those permitted herein, with the intent to allow for new technologies in building material while maintaining the desired character of the town center.*
i. *Ground floor windows shall be provided along the front sidewalk to maintain the pedestrian orientation of the streetscape and upper story windows shall not be incompatible with the rhythm and proportions of windows on other buildings along the block. The ground floor front facade window and door requirement may be reduced for research and development uses.*

The applicant's architect has provided a narrative that provides additional details to confirm compliance with Town Center District architectural standards.

***Items to be Addressed:*** *None*

## DUMPSTER ENCLOSER AND OTHER FEATURES

The site plan contains a trash enclosure in the site's northwest corner. The dumpster enclosure detail shown on sheet C6.0 as being constructed of CMU to match the building.

***Items to be Addressed:*** *None*

## STORMWATER AND UTILITIES

We defer to the Washtenaw County Water Resource Commission, Township Engineer and YUCA regarding stormwater and utilities; though we note that there are a significant amount of easements on site. These include six (6) in the site's northeast portion, and two (2) along the site's south boundary.

***Items to be Addressed:*** *None.*

## RECOMMENDATIONS

We recommend that the applicant provide the following information prior to scheduling Preliminary Site Plan review by the Planning Commission:

1. *Obtain a permit from EGLE*

Once the required information is submitted, the Planning Commission will also consider the following waivers as part of the site plan application:

1. *Planning Commission to determine whether off-site mitigation for tree replacement is appropriate*
2. *Planning Commission to review design of three (3) at-grade lighting fixtures*

Ben R. Carl

**CARLISLE/WORTMAN ASSOC., INC.**
**Benjamin R. Carlisle, AICP, LEED AP**
**Principal**

COMMISSIONERS
DOUGLAS E. FULLER
CHAIR

BARBARA RYAN FULLER
VICE-CHAIR

RODRICK K. GREEN
MEMBER

**WASHTENAW COUNTY**
**BOARD OF COUNTY ROAD COMMISSIONERS**
555 NORTH ZEEB ROAD
ANN ARBOR, MICHIGAN 48103
WWW.WCROADS.ORG
TELEPHONE (734) 761-1500
FAX (734) 761-3737

SHERYL SODERHOLM SIDDALL, P.E.
MANAGING DIRECTOR

MATTHEW F. MACDONELL, P.E.
DIRECTOR OF ENGINEERING
COUNTY HIGHWAY ENGINEER

JAMES D. HARMON, P.E.
DIRECTOR OF OPERATIONS

DANIEL D. ACKERMAN
DIRECTOR OF FINANCE & IT

December 12, 2019

**Rowe**
27280 Haggerty Road
Suite C-2
Farmington Hills, MI 48331

**Attention: Mike Labadie, P.E.**

**Regarding: WCRC Permit Application #16123 for Holiday Inn – Joe Hall Road**
**Ypsilanti Township**

Dear Mr. Labadie:

This letter is provided in response to the applicant's Traffic Impact Study (TIS) for the above referenced project. Our Traffic & Safety department has reviewed the TIS and has approved the TIS with the following comments:

- Anticipated build-out year for the proposed 107-room hotel is 2021.;
- The revised study addressed concerns described in the original review memo and documented requested information.;
- Proposed development will have a minimal impact on the operation of the following intersections that are under MDOT's jurisdiction:
  -Huron St. at EB I-94 exit ramp;
  -Huron St. at WB I-94 exit ramp;
  -Hamilton St. at WB I-94 exit ramp
- Huron Road at James L. Hart intersection is experiencing unacceptable level of services during peak hours. The TIS indicates that impacts anticipated by the proposed development at this location can be mitigated by signal retiming;
- Huron Road at Joe Hall Drive intersection is experiencing unacceptable level of services. It currently meets Warrant 1B – Eight Hour Vehicular Volume, Warrant 2 – Four Hour Vehicular Volume, and Warrant 3B – Peak Hour Vehicular Volume for a traffic signal. Proposed development will significantly increase delay for the eastbound approach and overall intersection delay, therefore mitigation will be required. Installation of an actuated traffic signal will allow all approaches to operate at an acceptable level of service during the peak hours;

The TIS is approved with the above described mitigation strategy. No work shall take place until a permit has been issued. If you have any questions, please do not hesitate to contact me at (734) 327.6692.

Sincerely,

Gary Stiff

Gary Streight, P.E.
Project Manager

Cc: Jimmy Asmar / Applicant
Mike Radzik / Charter Township of Ypsilanti Planner
Charlotte Wilson / Charter Township of Ypsilanti Planning
Ben Carlisle / CWA
Matt Parks, P.E. / OHM
Brent Schlack, P.E. / Assistant Director of Engineering
Mark McCulloch, P.E. / WCRC Senior Project Manager - Permits

# CHARTER TOWNSHIP OF YPSILANTI FIRE DEPARTMENT

## BUREAU OF FIRE PREVENTION

222 South Ford Boulevard, Ypsilanti, MI 48198

January 28, 2020

Charlotte Wilson, Township Planner
Charter Township of Ypsilanti
7200 S. Huron River Drive
Ypsilanti, MI 48197

RE: Preliminary (non-residential) Site Plan Review #3

| | |
|---|---|
| Project Name: | Holiday Inn Express & Suites |
| Project Location: | 460/350 Joe Hall Drive |
| Plan Date: | 1/14/2020 |
| Project Number: | SD-18-110 |
| Applicable Codes: | IFC 2012 |
| Contractor: | Stellar Development, LLC |
| Contractor Address: | 2600 Auburn Hills, MI 48326 |

## Status of Review

**Status of review:** Approved as Submitted

## Site Coverage - Hydrants

**Comments: Page C 5 was reviewed.**

## Site Coverage - Access

**Comments:** Page C 3

Respectfully submitted,

Dan Kimball, Fire Marshal
Charter Township of Ypsilanti Fire Department
CFPS, CFI II, CFPE

Dedicated to Providing Top Quality, Cost Effective, and
Environmentally Safe Water and Wastewater Services to Our Customers

YPSILANTI COMMUNITY UTILITIES AUTHORITY

2777 STATE ROAD
YPSILANTI, MICHIGAN 48198-9112
TELEPHONE: 734-484-4600
WEBSITE: www.ycua.org

January 30, 2020

**VIA ELECTRONIC MAIL**

Mr. Jason Iacoangelai, Planning Director
Office of Community Standards
CHARTER TOWNSHIP OF YPSILANTI
7200 S. Huron River Drive
Ypsilanti, MI 48197

Re: Preliminary (non-residential) Site Plan Review #3
**Holiday Inn Express**
Charter Township of Ypsilanti (Plan Date: 01-14-2020)

Dear Mr. Iacoangeli:

In response to the memorandum from your office dated January 16, 2020, we have reviewed the referenced plans with regards to water supply and wastewater system design. The plans are acceptable to the Authority for this stage of review. However, the following comments need to be addressed by the Applicant and/or the Applicant's design engineer prior to Detailed Engineering plans being deemed acceptable to the Authority.

1. It appears that the required water main looping and hydrant coverage could be provided with significantly less new pipe. A marked-up copy of plan sheet C5.0 is enclosed.
2. A complete itemized building plumbing fixture count shall be provided to justify the proposed 4" diameter domestic water service.
3. Landscape features located in water main or sanitary sewer easements is unacceptable.

Enclosed is an Estimate of Costs – Application for Services, dated July 8, 2019, indicating connection fees for the proposed building addition. Please note that the total cash price for connection fees, **$38,473.57 plus the construction phase escrow deposit, Authority administration fee, and record plan guarantee**, must be paid to the Authority by the Applicant, with a receipt delivered to the Township, before either the building or soil and grading permit is issued. The construction phase escrow deposit and associated fees and deposits and the entity responsible for maintaining those accounts will be determined during the Detailed Engineering phase of the project in conjunction with your office and the Township Engineer. Should there be any questions please contact this office.

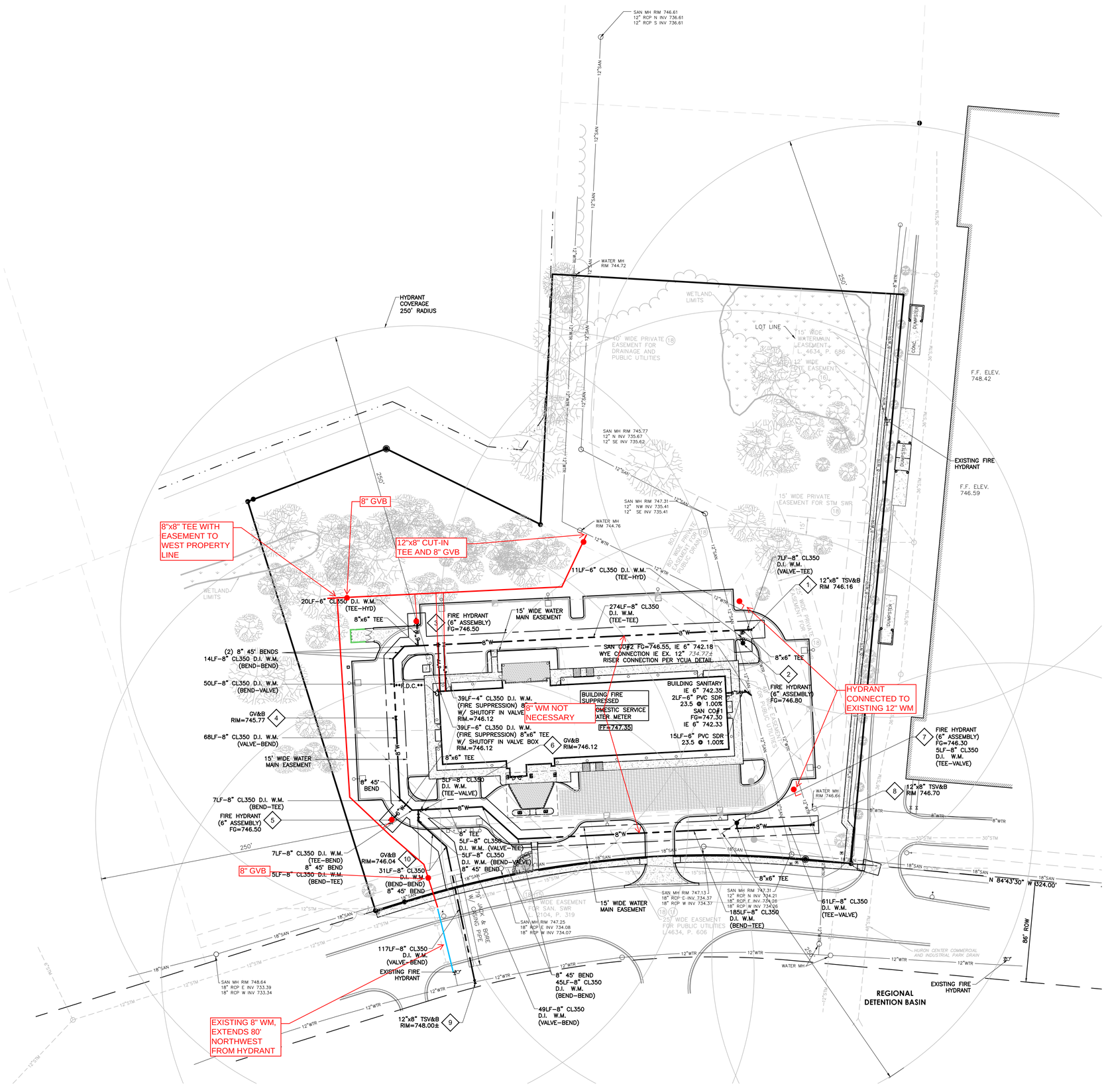
Sincerely,

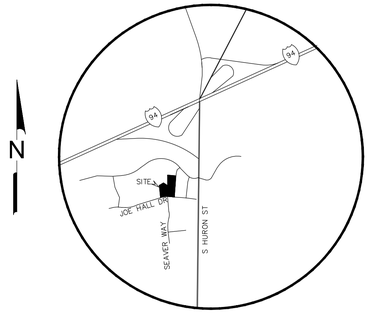
SDW Digital Signature

SCOTT D. WESTOVER, P.E., Engineering Manager
Ypsilanti Community Utilities Authority

cc: Mr. Jeff Castro, Mr. Mike Shaffer, File
Mr. Mike Radzik, Ms. Charlotte Wilson, Charter Township of Ypsilanti
Mr. Eric Copeland, Mr. Dan Kimball, Township Fire Department
Mr. Doug Winters, Esq., Township Legal Counsel
Mr. Matt Parks, P.E., Township Engineer
Mr. Gary Streight, P.E., WCRC
Ms. Theresa Marsik, P.E., WCWRC
Mr. Jimmy Asmar, Applicant
Mr. Andy Andre, P.E., Applicant's design engineer

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## LOCATION MAP

NOT TO SCALE

## WATER BASIS OF DESIGN

***PROPOSED BUILDING***

| USAGE | AREA | | UNIT FACTOR | R.E.U. |
|---|---|---|---|---|
| Hotel | 100 | rooms | 0.25 units per room | 25.00 |
| Swimming Pool | 700 | sf | 3.00 units / 1000 sf | 2.10 |
| | | | | 27.10 |
| | | | Rounded= | *28.00* |

*POPULATION EQUIVALENT* = 3.5 Persons per R.E.U.
*POPULATION* = 98.0 Persons
*AVERAGE FLOW RATE* = 100 Gallons per capita per day
*AVERAGE FLOW* = 9,800.00 GPD 0.0098 MGD
*PEAK FACTOR* = 18 + SQRT(P) / 4 + SQRT (P) = 4.25
*PEAK FLOW* = 41,610.44 GPD = 0.04161 MGD

## SANITARY BASIS OF DESIGN

***PROPOSED BUILDING***

| USAGE | AREA | | UNIT FACTOR | R.E.U. |
|---|---|---|---|---|
| Hotel | 100 | rooms | 0.25 units per room | 25.00 |
| Swimming Pool | 700 | sf | 3.00 units / 1000 sf | 2.10 |
| | | | | 27.10 |
| | | | Rounded= | *28.00* |

**PROPOSED SANITARY SEWER**

*POPULATION EQUIVALENT* = 3.5 Persons per R.E.U.
*POPULATION* = 98.0 Persons
*AVERAGE FLOW RATE* = 100 Gallons per capita per day
*AVERAGE FLOW* = 9,800.00 GPD
*PEAK FACTOR* = 18 + SQRT(P) / 4 + SQRT (P) = 4.25
*PEAK FLOW* = 41,610.44 GPD = 0.062 CFS 6"@1.00%(cfs) = 0.73

GENERAL NOTES

1. REFER TO ARCHITECTURAL PLANS TO VERIFY BUILDING DIMENSIONS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL PERMITS AND POST ALL BONDS PRIOR TO CONSTRUCTION, OR ENSURE THAT ALL REQUIRED PERMITS AND BONDS HAVE BEEN OBTAINED PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING MISS-DIG AT 1-800-482-7171 AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATION.
4. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE LOCATED BY HAND DIGGING.
5. DIMENSIONS ARE TO FACE OF CURB, OUTSIDE FACE OF BUILDING, EDGE OF PAVEMENT, CENTER OF STRUCTURE OR OTHERWISE INDICATED.
6. ALL WORK SHALL CONFORM TO THE YPSILANTI TOWNSHIP STANDARDS AND SPECIFICATIONS.

YCUA NOTE

WATER MAIN PIPE MATERIAL SHALL BE PRESSURE CLASS 350 DUCTILE IRON

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

0' 40' 80' 120'
SCALE: 1" = 40'

THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE BASED ON RECORDS PROVIDED BY THE UTILITY OWNERS AND VISIBLE EVIDENCE OBTAINED IN THE FIELD. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED TO THE COMPLETENESS OR ACCURACY THEREOF.

STELLAR DEVELOPMENT, LLC
2600 AUBURN ROAD, SUITE 160
AUBURN HILLS, MI 48326
PH 810-444-7815
FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
YPSILANTI SUPERIOR HOSPITALITY 2, LLC
2600 AUBURN ROAD, SUITE 240
AUBURN HILLS, MI 48326
PH 248-419-5551

# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

THESE PLANS AND SPECIFICATIONS, AS INSTRUMENTS OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF THE ENGINEER WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXECUTED OR NOT. THE REPRODUCTION, PUBLICATION OR USE OF THESE PLANS AND SPECIFICATIONS, OR ANY PORTIONS THEREOF, WITHOUT THE EXPRESS WRITTEN CONSENT OF THE ENGINEER IS PROHIBITED. ANY UNAUTHORIZED REPRODUCTION, PUBLICATION OR USE SHALL BE AT THE RISK OF THE USER AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO THE ENGINEER. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING COPYRIGHT, ARE HEREBY EXPRESSLY RESERVED BY THE ENGINEER.

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| ISSUED FOR | DATE |
|---|---|
| PSPA | 08/14/19 |
| FIRE DEPT. | 08/30/19 |
| WCWRC | 09/25/19 |
| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : 1"=40'
JOB NO : SD-18-110

SHEET TITLE :
UTILITY PLAN

SHEET
C5.0

**EVAN N. PRATT, P.E.**

WATER RESOURCES COMMISSIONER
705 North Zeeb Road
P.O. Box 8645
Ann Arbor, MI 48107-8645

email: drains@ewashtenaw.org
http://drain.ewashtenaw.org

HARRY SHEEHAN
Chief Deputy Water Resources Commissioner

SCOTT A. MILLER, P.E.
Deputy Water Resources Commissioner

Telephone 734.222.6860
Fax 734.222.6803

January 7, 2020

Mr. Andrew Andre, P.E.
Stellar Development, LLC
2600 Auburn Road, Suite 160
Auburn Hills, Michigan 48326

RE: Holiday Inn Express
Ypsilanti Township
WCWRC Project No. 5135

Dear Mr. Andre:

This office has reviewed the site plans for the above referenced project to be located in Ypsilanti Township. These plans have a job number of SD-18-110, a date of December 18, 2019, and were received on December 18, 2019. As a result of our review, we would like to offer the following comments:

1. The design plans are technically correct and do not require revisions at this time. Please note any future revisions should be submitted to our office for further review.
2. Please see the attached invoice for the current fees and remit these fees upon receipt. As requested, the invoice is being submitted directly to Ypsilanti Superior Hospitality, LLC.

If you have any questions, please contact our office.

Sincerely,

Theresa M. Marsik, P.E.
Storm Water Engineer
(permit\Holiday Inn Express rev2)

cc: Jimmy Asmar, Ypsilanti Superior Hospitality, LLC
Charlotte Wilson, Ypsilanti Township Office of Community Standards
Michael Radzik, Ypsilanti Township Office of Community Standards
Ben Carlisle, Ypsilanti Township Planning and Development (Carlisle Wortman Associates)
Eliot Smith, Ypsilanti Township Engineer (OHM)

**Zimbra** **cwilson@ytown.org**

**Re: Preliminary Site Plan Review #3 - 460 & 350 Joe Hall Drive - K-11-38-363-003 & K-11-38-363-029 - Holiday Inn Express and Suites**

**From :** Brian McCleery <bmccleery@ytown.org> Fri, Jan 17, 2020 11:28 AM
**Subject :** Re: Preliminary Site Plan Review #3 - 460 & 350 Joe Hall Drive - K-11-38-363-003 & K-11-38-363-029 - Holiday Inn Express and Suites
**To :** Charlotte Wilson <cwilson@ytown.org>

I drew up the description that is on the survey you submitted with the plans. It is sufficient for our purposes. I would just need the other items listed to complete the combination.

Brian

Brian McCleery
Deputy Assessor
Ypsilanti Township
734-487-4927

---

**From:** "Brian McCleery" <bmccleery@ytown.org>
**To:** "Charlotte Wilson" <cwilson@ytown.org>
**Sent:** Friday, January 17, 2020 10:55:43 AM
**Subject:** Re: Preliminary Site Plan Review #3 - 460 & 350 Joe Hall Drive - K-11-38-363-003 & K-11-38-363-029 - Holiday Inn Express and Suites

Charlotte,

As discussed previously, as part of the development agreement, the two parcels should be combined as the property line will run thru the proposed building. This will require the attached Land Division Application submitted, the attached Land Division Tax Certificate filled out by Washtenaw County Treasurers Office, a survey describing the parcels as one and the land division fee of $125. Should you or the property owner have any questions, please feel free to contact me by phone or e-mail.

Brian

Brian McCleery
Deputy Assessor
Ypsilanti Township
734-487-4927

---

**From:** "Charlotte Wilson" <cwilson@ytown.org>
**To:** "Megan Masson-Minock" <mmasson-minock@cwaplan.com>, "bcarlisle" <bcarlisle@cwaplan.com>, "Eric R. Copeland" <ecopeland@ytown.org>, "Daniel Kimball" <dkimball@ytown.org>, "Matt Parks" <matt.parks@ohm-advisors.com>, "Elliot Smith" <Elliot.Smith@ohm-advisors.com>, "swestover" <SWestover@ycua.org>, "Jeff Castro" <JCastro@ycua.org>, "Brian McCleery" <bmccleery@ytown.org>, "Linda Gosselin" <lgosselin@ytown.org>
**Cc:** "McClain & Winters" <mcwinlaw@gmail.com>, "Karen Lovejoy Roe" <klovejoyroe@ytown.org>, "Larry Doe" <ldoe@ytown.org>, "Brenda Stumbo" <bstumbo@ytown.org>, "Michael Radzik" <mradzik@ytown.org>, "mccullochm" <mccullochm@wcroads.org>, "Gary Streight" <streightg@wcroads.org>, "Dave Bellers" <dbellers@ytown.org>, "Theresa M. Marsik" <marsikt@washtenaw.org>
**Sent:** Thursday, January 16, 2020 2:15:25 PM
**Subject:** Preliminary Site Plan Review #3 - 460 & 350 Joe Hall Drive - K-11-38-363-003 & K-11-38-363-029 - Holiday Inn Express and Suites

Good afternoon,

The preliminary site plan review #3 plans for the Holiday Inn Express and Suites project at 460 & 350 Joe Hall Drive are available for pickup and distribution.

Reviews are due on January 30, 2020.

Thank you,
Charlotte M. Wilson, AICP
Planning and Development Coordinator

Office of Community Standards
734-485-3943
Tilden R. Stumbo Civic Center
7200 S. Huron River Dr.
Ypsilanti, MI 48197

---

# HOLIDAY INN EXPRESS & SUITES

## 460 JOE HALL DRIVE

## YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

## PRELIMINARY SITE PLAN APPROVAL

### APPLICANT

YPSILANTI SUPERIOR HOSPITALITY 2, LLC
2600 AUBURN ROAD, SUITE 240
AUBURN HILLS, MI 48326

CONTACT: JIMMY ASMAR
PHONE: (248) 419-5551

### ARCHITECT

TSA HOSPITALITY
1420 WASHINGTON BLVD., #430
DETROIT, MI 48226

CONTACT: BENJAMIN BERR
PHONE: (313) 974-6456

### CIVIL ENGINEER

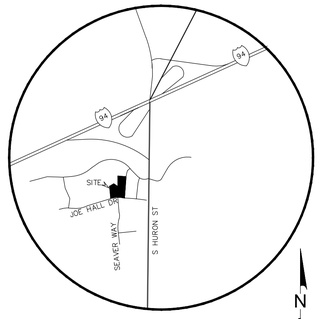
STELLAR DEVELOPMENT, LLC
2600 AUBURN ROAD, SUITE 160
AUBURN HILLS, MI 48326

CONTACT: ANDREW ANDRE, P.E.
PHONE: (810) 444-7815

STATE OF MICHIGAN
ANDREW ANDRE
ENGINEER
No. 47380
LICENSED PROFESSIONAL ENGINEER

ANDREW ANDRE, P.E.
MICHIGAN PE 47380
(SEAL PERTAINS TO PLANS AS PREPARED BY STELLAR DEVELOPMENT, LLC)

| STANDARD LEGEND | | |
|---|---|---|
| DESCRIPTION | PROPOSED | EXISTING |
| BUILDING | | |
| STORM SEWER | — — 12" — — | ——12"—— |
| SANITARY SEWER | ——S—— | ——S—— |
| WATER | ——W—— | ——W—— |
| GAS LINE | ——G—— | ——G—— |
| ELECTRIC LINE | ——E—— | ——E—— |
| TELEPHONE LINE | ——T—— | ——T—— |
| MANHOLE | ● | ○ |
| CATCH BASIN | ◕ ◪ | ⊘ ⊘ |
| ENDSECTION | | ▷ |
| FIRE HYDRANT | ✹ | ▽ |
| GATE VALVE & WELL | ⊕ | ⊗ |
| UTILITY POLE | ●— | ○— |
| UTILITY RISER | | ⊠ |
| SIGN | —• | —▫ |
| LIGHT POLE | •—□ | ☼ |
| CURB & GUTTER | | |
| FENCE | —x—x—x—x— | —x—x—x—x— |
| SILT FENCE | —\\—\\— | |
| TREE – DECIDUOUS | AS NOTED ON PLANS | |
| TREE LINE | | |
| SPOT ELEVATION | + 100.00 | ×100.00 |
| CONTOUR LINE | 100 | 100 |
| SECTION CORNER | | |
| FOUND PROPERTY IRON | | ○ |
| SET PROPERTY IRON | | ● |
| GAS METER | | ◎ |
| ELECTRICAL METER | | © |
| TELEPHONE RISER | | TPED |
| MAILBOX | | ▤ |
| SOIL BORING LOCATION | | ⊕ |




**LOCATION MAP**

NOT TO SCALE

### DRAWING INDEX

| | |
|---|---|
| C1.0 | COVER SHEET |
| C2.0 | SURVEY PLAN |
| C3.0 | SITE LAYOUT AND PAVING PLAN |
| C3.1 | SITE LIGHTING PLAN |
| C4.0 | GRADING PLAN |
| C4.1 | ENLARGED GRADING PLAN |
| C4.2 | EROSION CONTROL PLAN |
| C5.0 | UTILITY PLAN |
| C5.1 | STORM MANAGEMENT PLAN |
| C5.2 | STORM MANAGEMENT CALCULATIONS |
| C5.3 | STORM MANAGEMENT DETAILS |
| C5.4 | INFILTRATION TESTING |
| C5.5 | INFILTRATION TESTING |
| C5.6 | INFILTRATION TESTING |
| C6.0 | SITE DETAILS |
| L1.0 | TREE SURVEY PLAN |
| L1.1 | TREE SURVEY TABLE |
| L2.0 | LANDSCAPE PLAN AND DETAILS |

PLANS PREPARED BY TSA HOSPITALITY
HOLIDAY INN EXPRESS & SUITES

| | |
|---|---|
| A-111 | FLOOR PLAN - LEVEL 1 |
| A-112 | FLOOR PLAN - LEVEL 2 |
| A-113 | FLOOR PLAN - LEVEL 3 |
| A-114 | FLOOR PLAN - LEVEL 4 |
| A-200 | EXTERIOR ELEVATIONS |
| A-201 | EXTERIOR ELEVATIONS |

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

THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE BASED ON RECORDS PROVIDED BY THE UTILITY OWNERS AND VISIBLE EVIDENCE OBTAINED IN THE FIELD. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED TO THE COMPLETENESS OR ACCURACY THEREOF.

**UTILITY CONTACTS**

**TELEPHONE**
AT & T
421 E. GRAND RIVER
HOWELL, MI 48843

**GAS AND ELECTRIC**
DTE DETROIT EDISON
ONE ENERGY PLAZA
DETROIT, MICHIGAN 48226
(800) 477-4747

**ZONING**
YPSILANTI TOWNSHIP
PLANNING & ZONING DEPT.
7200 S HURON RIVER DR
YPSILANTI, MI 48197
(734) 485-3943

**WATER/SEWER**
YPSILANTI COMMUNITY
UTILITIES AUTHORITY
2777 STATE RD.
YPSILANTI, MI 48198
(734) 484-4600

**FURNISHED DESCRIPTION**

MICHIGAN TITLE INSURANCE AGENCY, INC.
FIRST AMERICAN TITLE INSURANCE COMPANY
FILE NO. 32-206619
COMMITMENT DATE: DECEMBER 23, 2016 AT 8:00 AM

THE LAND REFERRED TO IN THIS COMMITMENT IS LOCATED IN THE CITY OF YPSILANTI, COUNTY OF WASHTENAW, STATE OF MICHIGAN, IS DESCRIBED AS FOLLOWS: PART OF LOT 2 AND LOT 3 OF "WASHTENAW BUSINESS PARK", AS RECORDED LIBER 33 OF PLATS, PAGES 19 THRU 27 WASHTENAW COUNTY RECORDS, AND PART OF LOT 9 AND PART OF LOT 10, HURON CENTER COMMERCIAL & INDUSTRIAL PARK", AS RECORDED IN LIBER 26 OF PLATS PAGES 66 THRU 68, WASHTENAW COUNTY RECORDS, YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 2 OF "WASHTENAW BUSINESS PARK", THENCE ALONG THE NORTHERLY LINE OF JOE HALL DRIVE, NORTH 84 DEGREES 43 MINUTES 30 SECONDS WEST 324.00 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING ALONG THE NORTHERLY LINE OF JOE HALL DRIVE THE FOLLOWING THREE (3) COURSES: ONE (1) NORTH 84 DEGREES 43 MINUTES 30 SECONDS WEST 38.64 FEET, TWO (2) ALONG THE AVE. OF A CURVE TO THE LEFT 8.31 FEET, RADIUS 868.00 FEET, CENTRAL ANGLE 00 DEGREE 32 MINUTES 53 SECONDS, CHORD BEARS NORTH 84 DEGREES 59 MINUTES 57 SECONDS WEST 8.31 FEET TO THE SOUTHWEST CORNER OF LOT 2 AND THREE (3) CONTINUING ALONG THE ARC OF A CURVE TO THE LEFT, 167.12 FEET RADIUS 866.00 FEET, CENTRAL ANGLE 11 DEGREES 03 MINUTE 53 SECONDS CHORD BEARS SOUTH 89 DEGREES 12 MINUTES 40 SECONDS 166.86 FEET; THENCE NORTH 09 DEGREES 40 MINUTES 01 SECOND WEST 288.28 FEET TO THE SOUTHWEST CORNER OF LOT 9 OF "HURON CENTER COMMERCIAL & INDUSTRIAL PARK; THENCE ALONG THE WEST LINE OF LOT 9; NORTH 02 DEGREES 44 MINUTES 15 SECONDS EAST 356.53 FEET; THENCE SOUTH 86 DEGREES 41 MINUTES 10 SECONDS EAST 303.17 FEET; THENCE SOUTH 05 DEGREES 16 MINUTES 30 SECONDS WEST 855.47 FEET TO A POINT ON THE NORTH LINE OF SAID LOT 2, SAID POINT BEING SOUTH 84 DEGREES 23 MINUTES 35 SECONDS EAST 93.27 FEET FROM THE NORTHWEST CORNER OF LOT 2.

EXCEPT;
PART OF LOT 9 AND PART OF LOT 10, HURON CENTER COMMERCIAL & INDUSTRIAL PARK, AS RECORDED IN LIBER 26 OF PLATS, PAGES 66, 67 AND 68, WASHTENAW COUNTY RECORDS, DESCRIBED AS: COMMENCING AT THE NORTHWEST CORNER OF LOT 9, HURON CENTER COMMERCIAL & INDUSTRIAL PARK; THENCE SOUTH 02 DEGREES 44 MINUTES 15 SECONDS WEST ALONG THE WESTERLY LINE OF SAID LOT 9, 324.00 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE SOUTH 86 DEGREES 41 MINUTES 10 SECONDS EAST, 303.17 FEET; THENCE SOUTH 05 DEGREES 16 MINUTES 30 SECONDS WEST, 145.31 FEET; THENCE NORTH 86 DEGREES 41 MINUTES 10 SECONDS WEST, 296.74 FEET TO THE WESTERLY LINE OF SAID LOT 9; THENCE NORTH 02 DEGREES 44 MINUTES 15 SECONDS EAST ALONG THE WESTERLY LINE OF SAID LOT 9, 145.23 FEET BACK TO THE POINT OF BEGINNING OF THIS DESCRIPTION.

**UTILITY NOTE**

THE UTILITY LOCATIONS AS HEREON SHOWN ARE BASED ON FIELD OBSERVATIONS AND A CAREFUL REVIEW OF MUNICIPAL AND UTILITY RECORDS. HOWEVER, IT IS NOT POSSIBLE TO DETERMINE THE PRECISE SIZE, LOCATION, DEPTH, PRESSURE, OR ANY OTHER CHARACTERISTICS OF UNDERGROUND UTILITIES, TANKS OR SEPTIC FIELDS WITHOUT EXCAVATION. THEREFORE, WE CANNOT GUARANTEE THE ACCURACY OF COMPLETENESS OF THE BURIED UTILITY INFORMATION HEREON SHOWN. THE CONTRACTOR SHALL CALL MISS DIG (1-800-482-7171) A MINIMUM OF THREE WORKING DAYS PRIOR TO ANY EXCAVATION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THESE UTILITY LOCATIONS PRIOR TO CONSTRUCTION AND MAKE EVERY EFFORT TO PROTECT AND/OR RELOCATE THEM AS REQUIRED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER/SURVEYOR AS SOON AS POSSIBLE IN THE EVENT A DISCREPANCY IS FOUND.

**FLOODPLAIN INFORMATION**

YPSILANTI TOWNSHIP
WASHTENAW COUNTY, MICHIGAN
MAP NUMBER: 26161C0426E
EFFECTIVE DATE: 4/3/2012
FLOOD ZONE: X
AREA OF MINIMAL FLOOD HAZARD (PER FIRM)

**BENCHMARKS**

**B.M. #1** - ARROW ON HYD ON THE S. SIDE OF JOE HALL DR. 50' E. OF THE SW OF PROP.
ELEV. 749.56 NAVD 88

**B.M. #2** - ARROW ON HYD ON THE 110'± S. OF THE NE OF OF PROP.
ELEV. 749.56 NAVD 88


STELLAR DEVELOPMENT, LLC

2600 AUBURN ROAD, SUITE 160
AUBURN HILLS, MI 48326
PH 810-444-7815
FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
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HOLIDAY INN EXPRESS & SUITES
460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

Holiday Inn Express & Suites


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| ISSUED FOR | DATE |
|---|---|
| PSPA | 08/14/19 |
| WCWRC | 09/25/19 |
| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : NTS
JOB NO : SD-18-110
SHEET TITLE :
COVER SHEET

SHEET
C1.0

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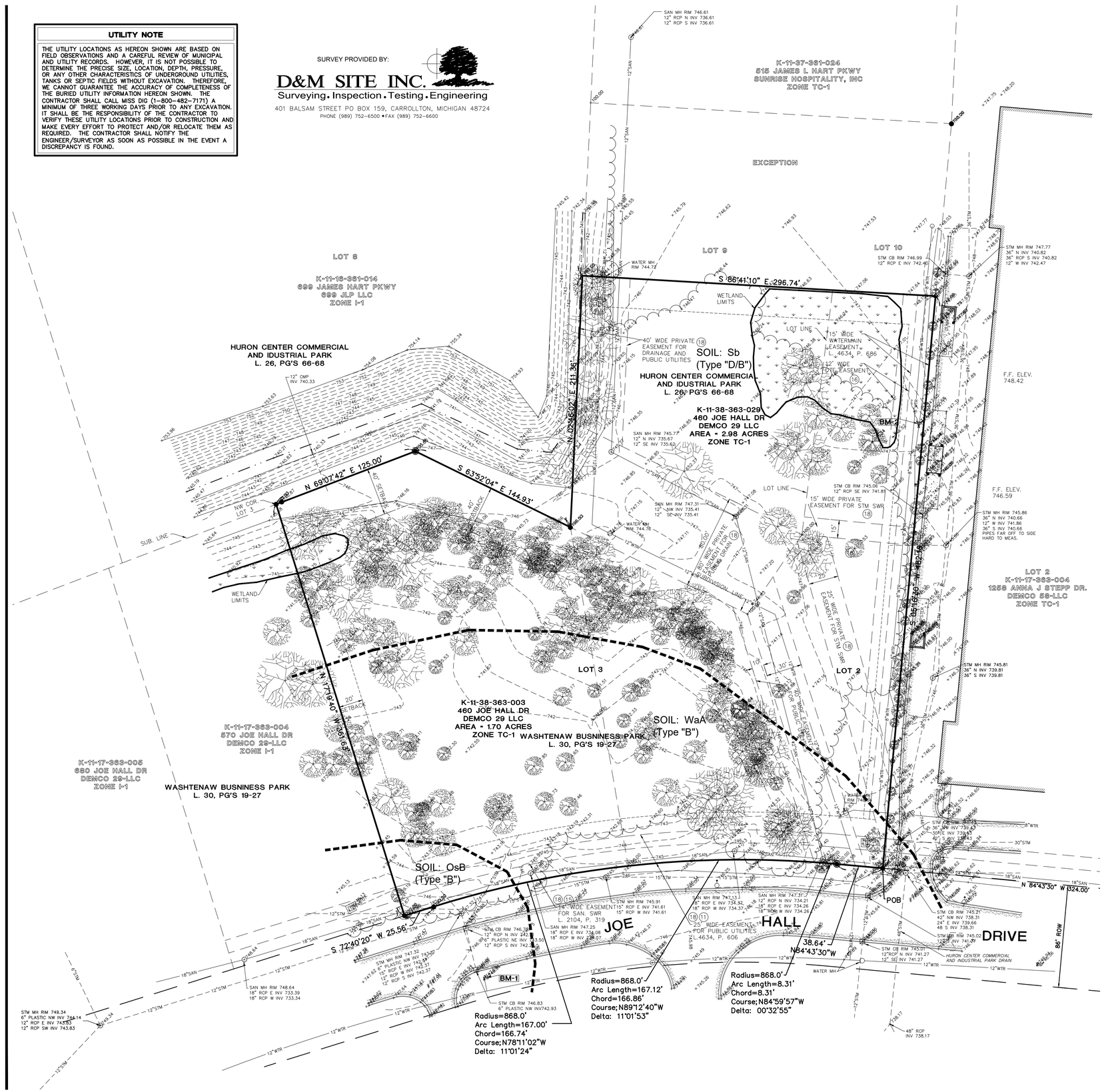

SURVEY PROVIDED BY:

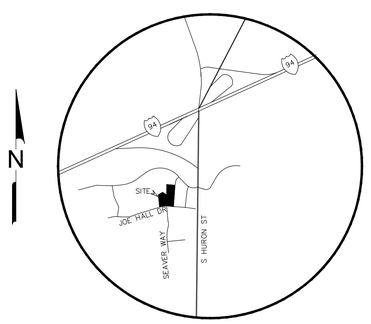
D&M SITE INC.

Surveying • Inspection • Testing • Engineering

401 BALSAM STREET PO BOX 159, CARROLLTON, MICHIGAN 48724

PHONE (989) 752-6500 • FAX (989) 752-6600


## LOCATION MAP

NOT TO SCALE

## LEGEND

| | |
|---|---|
| | MONUMENT / SECTION CORNER |
| ● | FOUND PROPERTY IRON |
| O | SET PROPERTY IRON |
| | EXISTING CATCHBASIN |
| | EXISTING MANHOLE/CATCHBASIN |
| | EXISTING MANHOLE |
| | EXISTING HYDRANT |
| | EXISTING VALVE |
| SAN | EXISTING SANITARY SEWER |
| STM | EXISTING STORM SEWER |
| WTR | EXISTING WATERMAIN |
| X | EXISTING FENCE LINE |
| ELEC | EXISTING UNDERGROUND ELECTRIC LINE |
| GAS | EXISTING UNDERGROUND GAS LINE |
| TELE | EXISTING UNDERGROUND TELEPHONE LINE |
| | EXISTING CENTERLINE |
| OHW | EXISTING OVERHEAD ELECTRICAL WIRES |
| | EXISTING MAILBOX / NEWSPAPER BOX |
| | EXISTING SIGN |
| | EXISTING DECIDUOUS TREES |
| | EXISTING CONIFEROUS TREES |
| | EXISTING UTILITY POWER POLE |
| | EXISTING TELEPHONE RISER |

## FLOODPLAIN INFORMATION

YPSILANTI TOWNSHIP
WASHTENAW COUNTY, MICHIGAN
MAP NUMBER: 26161C0426E
EFFECTIVE DATE: 4/3/2012
FLOOD ZONE: X
AREA OF MINIMAL FLOOD HAZARD (PER FIRM)

## BENCHMARKS

**B.M. #1** - ARROW ON HYD ON THE S. SIDE OF JOE HALL DR. 50' E. OF THE SW OF PROP.
ELEV. 749.56 NAVD 88

**B.M. #2** - ARROW ON HYD ON THE 110'± S. OF THE NE OF OF PROP.
ELEV. 749.56 NAVD 88

## ZONING INFORMATION

ZONED-TC-1 TOWN CENTER
SETBACKS-
FRONT: - 0'
REAR: - 25'
SIDE: - 10' WHERE A FIRE WALL IS NOT PROVIDED

## CERTIFICATION

TO: STELLAR DEVELOPMENT, LLC, A MICHIGAN LIMITED LIABILITY COMPANY, AND MICHIGAN TITLE INSURANCE AGENCY, INC.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND THE FIELD WORK WAS COMPLETED ON 11/06/2017.

DATE OF PLAT OR MAP: 02/14/2019

BRIAN D FERGUSON, PS #26454
401 BALSAM ROAD P.O. 159
CARROLLTON, MI 48724
PHONE: (989) 752-6500

STATE OF MICHIGAN — BRIAN D FERGUSON — LAND SURVEYOR — NO. 26454 — PROFESSIONAL SURVEYOR

## FURNISHED DESCRIPTION

MICHIGAN TITLE INSURANCE AGENCY, INC.
FIRST AMERICAN TITLE INSURANCE COMPANY
FILE NO. 32-206609
COMMITMENT DATE: DECEMBER 23, 2016 AT 8:00 AM

THE LAND REFERRED TO IN THIS COMMITMENT IS LOCATED IN THE CITY OF YPSILANTI, COUNTY OF WASHTENAW, STATE OF MICHIGAN, IS DESCRIBED AS FOLLOWS: PART OF LOT 2 AND LOT 3 OF "WASHTENAW BUSINESS PARK", AS RECORDED LIBER 33 OF PLATS, PAGES 19 THRU 27 WASHTENAW COUNTY RECORDS, AND PART OF LOT 9 AND PART OF LOT 10, HURON CENTER COMMERCIAL & INDUSTRIAL PARK", AS RECORDED IN LIBER 26 OF PLATS PAGES 66 THRU 68, WASHTENAW COUNTY RECORDS, YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 2 OF "WASHTENAW BUSINESS PARK", THENCE ALONG THE NORTHERLY LINE OF JOE HALL DRIVE, NORTH 84 DEGREES 43 MINUTES 30 SECONDS WEST 324.00 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING ALONG THE NORTHERLY LINE OF JOE HALL DRIVE THE FOLLOWING THREE (3) COURSES: ONE (1) NORTH 84 DEGREES 43 MINUTES 30 SECONDS WEST 38.64 FEET, TWO (2) ALONG THE ARC OF A CURVE TO THE LEFT 8.31 FEET, RADIUS 868.00 FEET, CENTRAL ANGLE 00 DEGREE 32 MINUTES 53 SECONDS, CHORD BEARS NORTH 84 DEGREES 59 MINUTES 57 SECONDS WEST 8.31 FEET TO THE SOUTHWEST CORNER OF LOT 2 AND THREE (3) CONTINUING ALONG THE ARC OF A CURVE TO THE LEFT, 167.12 FEET RADIUS 868.00 FEET, CENTRAL ANGLE 11 DEGREES 01 MINUTE 53 SECONDS CHORD BEARS SOUTH 89 DEGREES 12 MINUTES 40 SECONDS 166.86 FEET; THENCE NORTH 09 DEGREES 40 MINUTES 01 SECOND WEST 288.28 FEET TO THE SOUTHWEST CORNER OF LOT 9 OF "HURON CENTER COMMERCIAL & INDUSTRIAL PARK; THENCE ALONG THE WEST LINE OF LOT 9; NORTH 02 DEGREES 44 MINUTES 15 SECONDS EAST 356.53 FEET; THENCE SOUTH 86 DEGREES 41 MINUTES 10 SECONDS EAST 303.17 FEET; THENCE SOUTH 05 DEGREES 16 MINUTES 30 SECONDS WEST 855.47 FEET TO A POINT ON THE NORTH LINE OF SAID LOT 2, SAID POINT BEING SOUTH 84 DEGREES 23 MINUTES 35 SECONDS EAST 93.27 FEET FROM THE NORTHWEST CORNER OF LOT 2.

EXCEPT;
PART OF LOT 9 AND PART OF LOT 10, HURON CENTER COMMERCIAL & INDUSTRIAL PARK, AS RECORDED IN LIBER 26 OF PLATS, PAGES 66, 67 AND 68, WASHTENAW COUNTY RECORDS, DESCRIBED AS: COMMENCING AT THE NORTHWEST CORNER OF LOT 9, HURON CENTER COMMERCIAL & INDUSTRIAL PARK; THENCE SOUTH 02 DEGREES 44 MINUTES 15 SECONDS WEST ALONG THE WESTERLY LINE OF SAID LOT 9, 324.00 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE SOUTH 86 DEGREES 41 MINUTES 10 SECONDS EAST, 303.17 FEET; THENCE SOUTH 05 DEGREES 16 MINUTES 30 SECONDS WEST, 145.31 FEET; THENCE NORTH 86 DEGREES 41 MINUTES 10 SECONDS WEST, 296.74 FEET TO THE WESTERLY LINE OF SAID LOT 9; THENCE NORTH 02 DEGREES 44 MINUTES 15 SECONDS EAST ALONG THE WESTERLY LINE OF SAID LOT 9, 145.23 FEET BACK TO THE POINT OF BEGINNING OF THIS DESCRIPTION.

## SCHEDULE "B" EXCEPTIONS

MICHIGAN TITLE INSURANCE AGENCY, INC.
FIRST AMERICAN TITLE INSURANCE COMPANY
FILE NO. 32-206609
COMMITMENT DATE: DECEMBER 23, 2016 AT 8:00 AM

11. TERMS, CONDITIONS AND PROVISIONS OF PUBLIC UTILITY EASEMENT GRANTED TO THE YPSILANTI COMMUNITY UTILITIES AUTHORITY AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 4634, PAGE 606, WASHTENAW COUNTY RECORDS. AS SHOWN

15. SANITARY SEWER EASEMENT IN FAVOR OF THE CHARTER TOWNSHIP OF YPSILANTI AND THE COVENANTS, CONDITIONS AND RESTRICTIONS CONTAINED IN INSTRUMENT RECORDED IN LIBER 2104, PAGE 319, WASHTENAW COUNTY RECORDS. AS SHOWN

16. UNDERGROUND RESIDENTIAL DISTRIBUTION RIGHT OF WAY AGREEMENT IN FAVOR OF THE DETROIT EDISON COMPANY AND THE COVENANTS, CONDITIONS AND RESTRICTIONS CONTAINED IN INSTRUMENT RECORDED IN LIBER 2408, PAGE 181, WASHTENAW COUNTY RECORDS. AS SHOWN

17. TERMS AND CONDITIONS CONTAINED IN KROGER EASEMENT AND MAINTENANCE AGREEMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 4962, PAGE 274, WASHTENAW COUNTY RECORDS. AS SHOWN

18. EASEMENTS ARE RESERVED OVER SUBJECT PROPERTY AS REFERENCED ON THE PLAT. AS SHOWN

## UTILITY CONTACTS

**TELEPHONE**
AT & T
421 E. GRAND RIVER
HOWELL, MI 48843

**GAS AND ELECTRIC**
DTE DETROIT EDISON
ONE ENERGY PLAZA
DETROIT, MICHIGAN 48226
(800) 477-4747

**ZONING**
YPSILANTI TOWNSHIP
PLANNING & ZONING DEPT.
7200 S HURON RIVER DR
YPSILANTI, MI 48197
(734) 485-3943

**WATER/SEWER**
YPSILANTI COMMUNITY
UTILITIES AUTHORITY
2777 STATE RD.
YPSILANTI, MI 48198
(734) 484-4600

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

0' 40' 80' 120'
SCALE: 1" = 40'


STELLAR DEVELOPMENT, LLC

2600 AUBURN ROAD, SUITE 160
AUBURN HILLS, MI 48326
PH 810-444-7815
FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
YPSILANTI SUPERIOR HOSPITALITY 2, LLC
2600 AUBURN ROAD, SUITE 240
AUBURN HILLS, MI 48326
PH 248-419-5551


# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE

YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN


THE CONTENTS OF THIS PLAN ARE THE PROPERTY OF STELLAR DEVELOPMENT AND SHALL NOT BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN CONSENT OF STELLAR DEVELOPMENT. ANY UNAUTHORIZED REUSE OF THESE PLANS WITHOUT THE WRITTEN CONSENT OF STELLAR DEVELOPMENT SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO STELLAR DEVELOPMENT AND ITS CONSULTANTS. THE USER SHALL INDEMNIFY AND HOLD HARMLESS STELLAR DEVELOPMENT AND ITS CONSULTANTS FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

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| ISSUED FOR | DATE |
|---|---|
| PRE-APPLICATION | 01/04/19 |
| PSPA | 08/14/19 |
| WCWRC | 09/25/19 |
| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

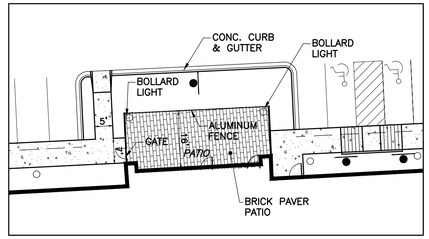
DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : 1"=40'
JOB NO : SD-18-110

SHEET TITLE :
SURVEY PLAN

SHEET
C2.0

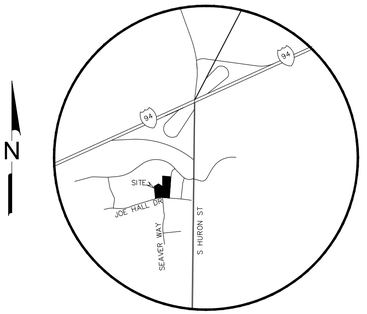
## ENLARGED PLAZA DETAIL

SCALE: 1" = 20'



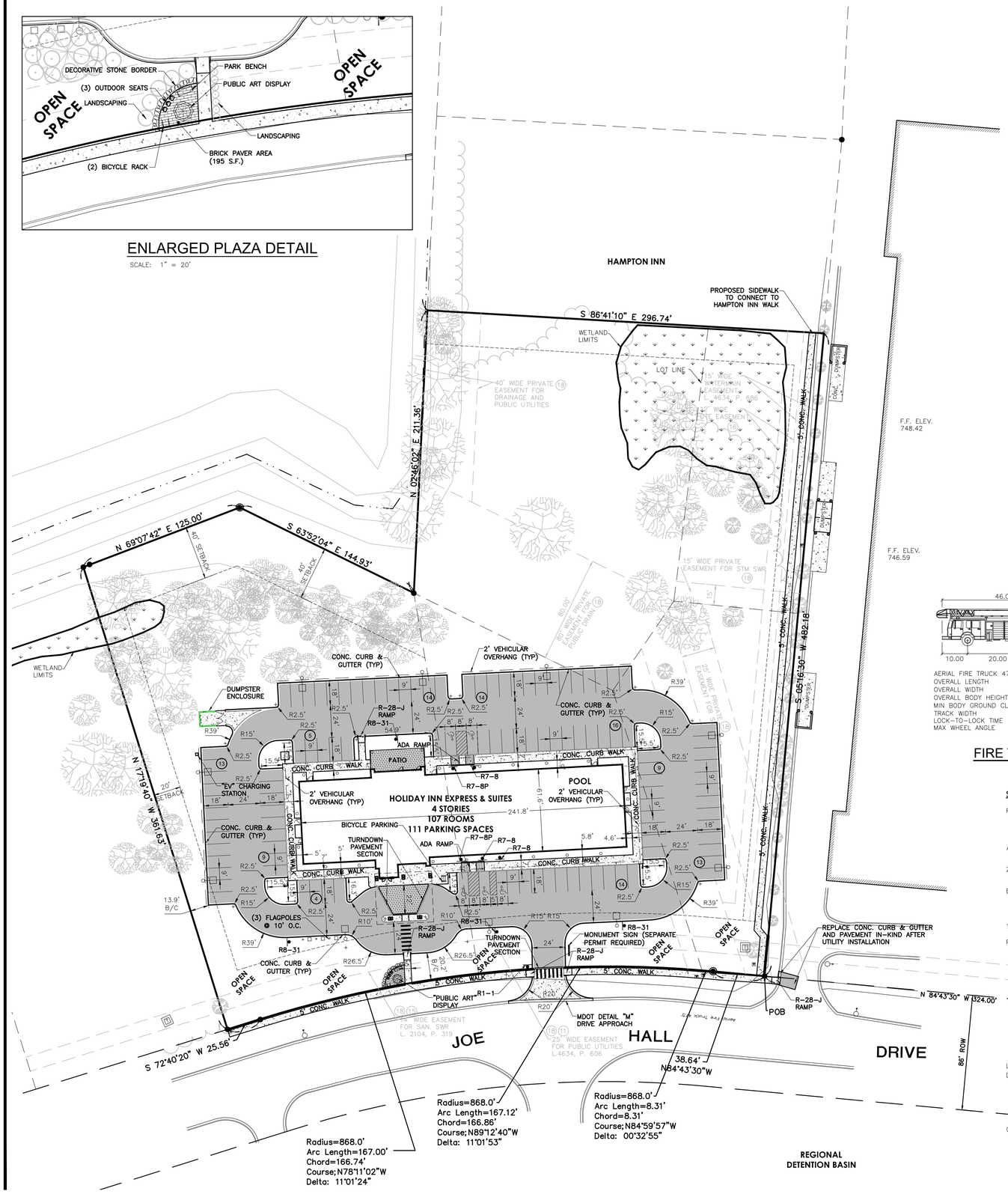

## ENLARGED PATIO DETAIL

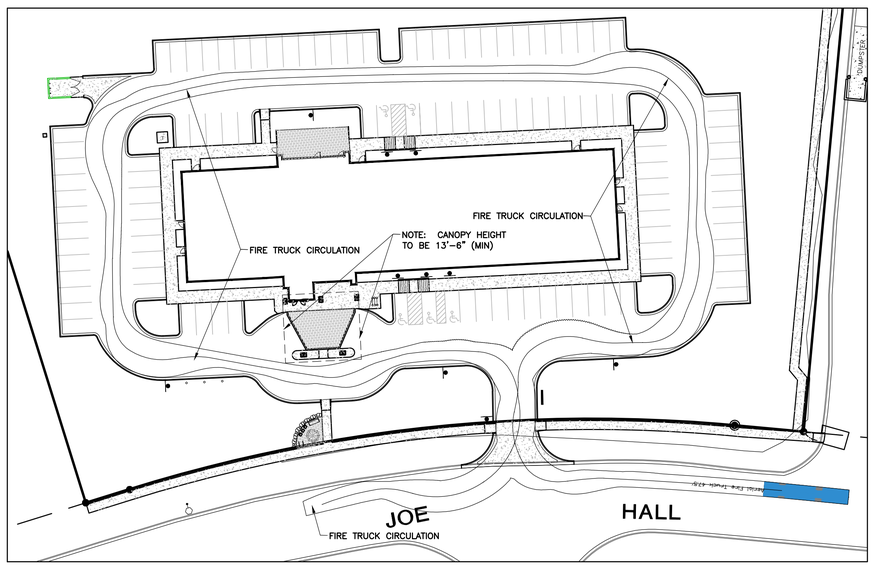
SCALE: 1" = 20'




## LOCATION MAP

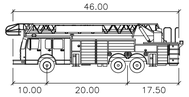
NOT TO SCALE




## FIRE TRUCK CIRCULATION

SCALE: 1" = 40'




## FIRE TRUCK

| | |
|---|---|
| AERIAL FIRE TRUCK 47.5' | |
| OVERALL LENGTH | 47.500' |
| OVERALL WIDTH | 8.167' |
| OVERALL BODY HEIGHT | 7.500' |
| MIN BODY GROUND CLEARANCE | 0.750' |
| TRACK WIDTH | 8.167' |
| LOCK-TO-LOCK TIME | 5.00sec |
| MAX WHEEL ANGLE | 45deg |

### SITE INFORMATION

PROPERTY:
K-11-38-363-003 (ZONED TC-1): 1.70 AC
K-11-38-363-029 (ZONED TC-1): 2.98 AC
TOTAL COMBINED AREA = 4.68 ACRES

ADDRESS:
460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

ZONING:
CURRENT: TC-1

BUILDING DATA:
1ST FLOOR: 15,397 S.F.
2ND FLOOR: 15,265 S.F.
3RD FLOOR: 15,265 S.F.
4TH FLOOR: 15,265 S.F.
TOTAL: 61,1925 S.F.

PARKING DATA:
REQUIRED
HOTEL ROOMS
1.0 SPACES PER ROOM (107 ROOMS) = 107 SPACES
EMPLOYEES
4 EMPLOYEES / 1 = 4 SPACES
REQUIRED = 111 SPACES

PROVIDED
ACCESSIBLE SPACES (8'X18') = 5
STANDARD SPACES (9'X18') = 106
TOTAL = 111 SPACES

LOADING AREA:
DEDICATED LOADING ZONE IS NOT REQUIRED FOR OPERATIONAL PURPOSES OF THE HOTEL DUE TO THE LIMITED AMOUNT OF DELIVERIES THAT ARE PLANNED. THERE IS NO RESTAURANT AND ONLY CONTINENTAL BREAKFAST IS SERVED, THEREFORE FOOD SERVICE DELIVERIES ARE ONLY REQUIRED ON A WEEKLY BASIS. LAUNDRY SERVICES ARE NEEDED ON A BI-WEEKLY BASIS. DELIVERY TIMES ARE COORDINATED WITH NON-PEAK GUEST HOURS.

OPEN SPACE
REQUIRED
DEVELOPED AREA = 2.42 ACRES; @ 15% OPEN SPACE = 0.363 AC = 15,812 S.F.
PROVIDED
FRONT COMMON GREENSPACE AREA W/ PUBLIC PAVILION = 16,142 S.F.

### GENERAL NOTES

1. REFER TO ARCHITECTURAL PLANS TO VERIFY BUILDING DIMENSIONS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL PERMITS AND POST ALL BONDS PRIOR TO CONSTRUCTION, OR ENSURE THAT ALL REQUIRED PERMITS AND BONDS HAVE BEEN OBTAINED PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING MISS-DIG AT 1-800-482-7171 AT LEAST 3 WORKING DAYS PRIOR TO EXCAVATION.
4. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE LOCATED BY HAND DIGGING.
5. DIMENSIONS ARE TO FACE OF CURB, OUTSIDE FACE OF BUILDING, EDGE OF PAVEMENT, CENTER OF STRUCTURE OR OTHERWISE INDICATED.
6. ALL PAVING MATERIALS AND OPERATIONS SHALL BE IN CONFORMANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.
7. PARKING STALL SPACES TO BE 4" SOLID YELLOW PAINT STRIPES. HANDICAP PARKING TO BE 4" SOLID BLUE PAINT STRIPES W/ BARRIER FREE STRIPPING OF 4" SOLID BLUE @ 2' O.C. ON 45° ANGLE.
8. ALL WORK SHALL CONFORM TO THE YPSILANTI TOWNSHIP STANDARDS AND SPECIFICATIONS.

### YPSILANTI TOWNSHIP NOTES

1. PROPERTY OWNER WILL INSTALL EXTERIOR SECURITY CAMERAS OVERLOOKING THE PARKING LOT AND HOTEL ENTRANCES/EXITS.
2. ALL SURVEILLANCE VIDEO GATHERED BY THE ONSITE SECURITY CAMERAS SHALL BE MADE AVAILABLE TO LAW ENFORCEMENT FOR THE PURPOSE OF A CRIMINAL INVESTIGATION, UPON REQUEST. ANY RECORDING SYSTEM SHOULD BE CAPABLE OF SAVING ALL RECORDING DATA FOR NOT LESS T THAN 30 DAYS.

### WAIVER REQUEST

A WAIVER FROM SECTION 1174.1.a.(4) IS REQUESTED FOR THE BUILDING REQUIREMENT OF MINIMUM OF ONE USABLE ENTRANCE EVERY FULL 50 FEET OF FRONTAGE FOR BUILDINGS LONGER THAN 100 FEET. THE WAIVER IS REQUESTED DUE TO THE DIFFICULTY OF INCORPORATING ADDITIONAL ENTRANCES ALONG THE FRONTAGE BASED ON THE CONFLICT OF GUESTROOM AND COMMON AREA LOCATIONS. IT IS UNDERSTOOD THAT OTHER HOTELS IN THE TC-1 DISTRICT HAVE RECEIVED THE WAIVER FROM THE PLANNING COMMISSION.

### PAVEMENT INFORMATION

BITUMINOUS PAVEMENT

CONCRETE PAVEMENT

PAVERS

| TRAFFIC CONTROL SIGN TABLE | |
|---|---|
| DESCRIPTION | MMUTCD |
| HANDICAP | R7-8 |
| HANDICAP (VAN) | R7-8P |
| STOP SIGN | R1-1 |
| NO PARKING FIRE LANE | R8-31 |

ALL TRAFFIC SIGNAGE SHALL COMPLY WITH THE CURRENT MMUTCD STANDARDS

Know what's below. Call before you dig.

0' 40' 80' 120'

SCALE: 1" = 40'


STELLAR DEVELOPMENT, LLC

2600 AUBURN ROAD, SUITE 160
AUBURN HILLS, MI 48326
PH 810-444-7815
FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
YPSILANTI SUPERIOR HOSPITALITY 2, LLC
2600 AUBURN ROAD, SUITE 240
AUBURN HILLS, MI 48326
PH 248-419-5551


# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN


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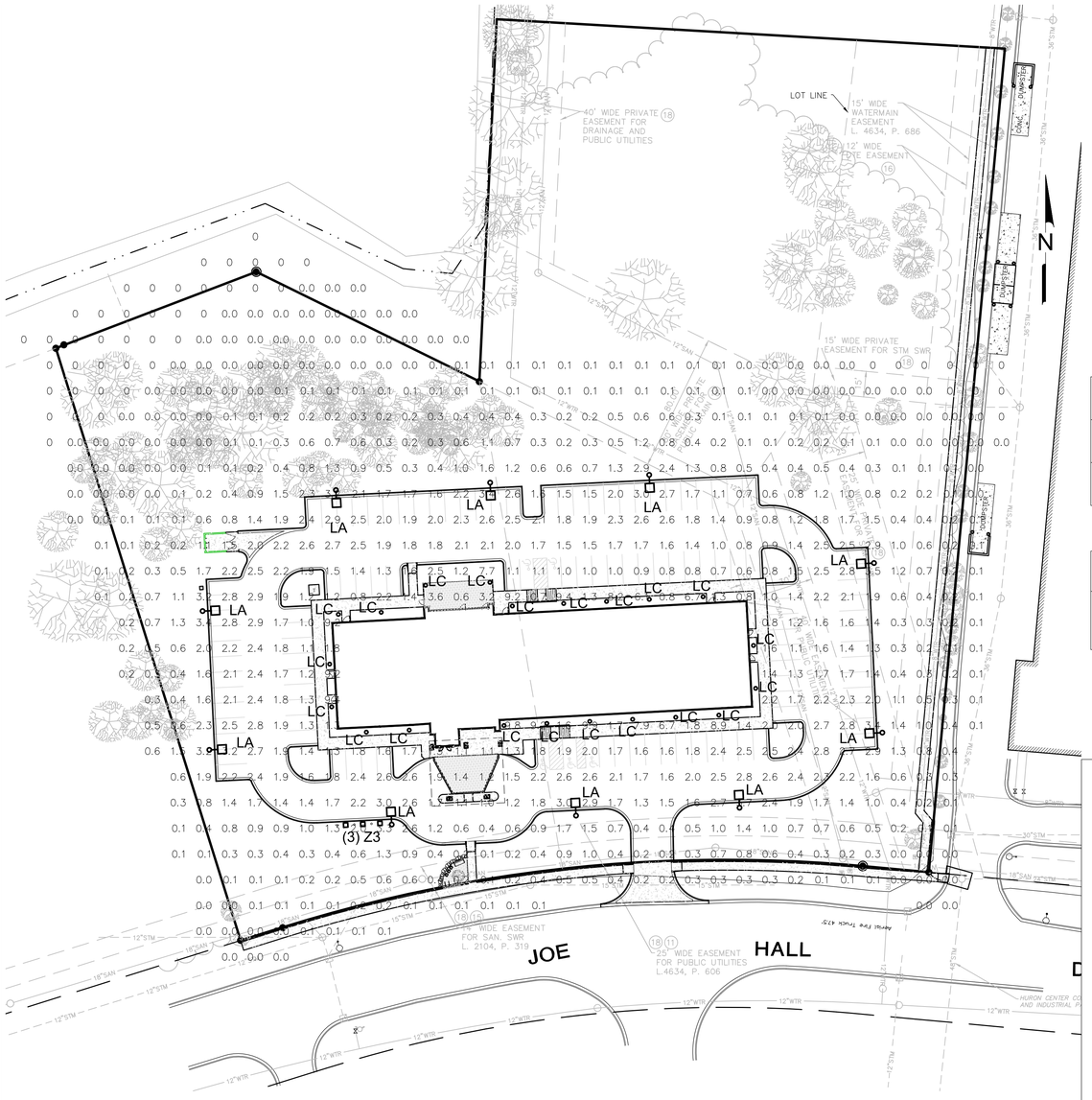
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| ISSUED FOR | DATE |
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| PRE-APPLICATION | 01/04/19 |
| PSPA | 08/14/19 |
| FIRE DEPT. | 08/30/19 |
| WCWRC | 09/25/19 |
| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| TWP REVIEW | 01/10/20 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : 1"=40'
JOB NO : SD-18-110

SHEET TITLE :
SITE LAYOUT AND PAVING PLAN

SHEET
C3.0




| | | | |
|---|---|---|---|
| LA | LED AREA LIGHT | LITHONIA | DSX1 LED P4 40K TFTM MVOLT PIRH1FC3V (BI-LEVEL, MOTION/AMBIENT SENSOR ENABLED @ 1 FOOT-CANDLE) |
| LC | EXTERIOR DECORATIVE BOLLARD | LITHONIA | KBC8 LED 16C 530 50K SYM MVOLT |
| Z3 | FLAGPOLE LIGHTING | LITHONIA | PDX10 B 18LED WHT53K NSP FLC |

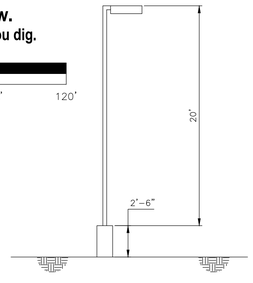
NOTE: CONTRACTOR SHALL PROVIDE INDICATED LIGHTING OR OTHERWISE APPROVED EQUAL.

| AVERAGE | MAXIMUM | MINIMUM |
|---|---|---|
| 1.02 FC | 9.9 FC | 0.0 FC |

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

0' 40' 80' 120'

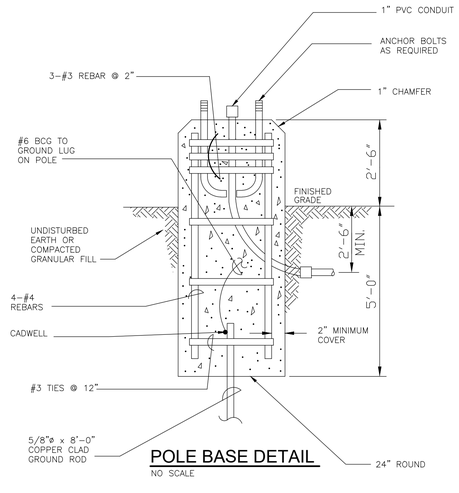
SCALE: 1" = 40'




NOTE:
1. CONTRACTOR SHALL PROVIDE INDICATED LIGHTING OR OTHERWISE APPROVED EQUAL.
2. WHEN ADJACENT TO CURB, LIGHT POLE BASES ARE 3-FEET FROM B/C TO CENTER OF BASE.

## LIGHT POLE AND LAMP DETAIL

NO SCALE




## POLE BASE DETAIL

NO SCALE



# PARADOX 10

19W LED
10" Architectural In-Grade

IP67

**Suitable For Wet Locations**

| CATALOG NUMBER | |
|---|---|
| NOTES | |
| TYPE | |

**Specifications**

| | |
|---|---|
| L: | 18" 457 mm |
| W: | 12" 305 mm |
| H: | 12" 305 mm |



## DESCRIPTION

Hydrel's Paradox Series sealed modular in-grade luminaires are multi-purpose units designed for up lighting architectural and landscape features. These units can be flush mounted into a variety of substrates including concrete or tile, or landscape materials, and are ideal when aperture size or luminaire depth is a priority.

## ORDERING INFORMATION

**EXAMPLE:** PDX10 B 18LED WHT30K MVOLT NSP FLC 34S

| Model* | Door Material* | LED Type* | LED Color* | Voltage* | Light Distribution* |
|---|---|---|---|---|---|
| **PDX10** | **SS** Stainless Steel<br>**BSS**[1] Brushed Stainless Steel<br>**B** Bronze | **18LED** 18 Chip LED array | **WHT30K** 3000K CCT<br>**WHT41K** 4100K CCT<br>**WHT53K** 5300K CCT<br>**AMBPC** Phosphor Converted Amber<br>**BLU** Blue<br>**GRN** Green<br>**RED** Red | **MVOLT** (120 - 277V) | **NSP** Narrow Spot<br>**MFL** Medium Flood<br>**FL** Flood<br>**WFL** Wide Flood<br>**VWFL**[2] Very Wide Flood (no optics)<br>**HSP** Horizontal Spot<br>**HFL** Horizontal Flood |

| Lens* | Conduit Entries* | Accessories | Options | Listing |
|---|---|---|---|---|
| **FLC** Flat Lens Clear<br>**FLCAS**[3] Flat Lens Clear, Anti-Slip<br>**FLCSR**[3,4] Flat Lens Frosted, Slip Resistant | **34S** Two 3/4" NPT Side (Standard)<br>**25S**[4] Two 25mm Side | **Internal**<br>**IHL** Internal Honeycomb Louver<br>**FRF** Frosted Filter<br>**External**<br>**RG** Decorative Rock Guard | **LDIM** 0-10V Dimming | **IEC**[4] International Electrotechnical Commission |

*Required Catagories
Notes:
1 Not available with Decorative Rock Guard.
2 FRF filter needed with VWFL
3 Meets ADA requirements for coefficient of friction.
4 Only for use in 50HZ applications.

HYDREL
9144 Deering Avenue, Second Floor • Chatsworth, CA 91311
Phone: 866.533.9901 • www.hydrel.com

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Rev. 03/27/17
PDX10_LED_MONO



# D-Series Size 1

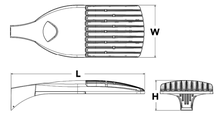
LED Area Luminaire

| | |
|---|---|
| Catalog Number | |
| Notes | |
| Type | |

Hit the Tab key or mouse over the page to see all interactive elements.

**Specifications**

| | |
|---|---|
| EPA: | 1.01 ft² (0.09 m²) |
| Length: | 33" (83.8 cm) |
| Width: | 13" (33.0 cm) |
| Height: | 7-1/2" (19.0 cm) |
| Weight (max): | 27 lbs (12.2 kg) |




## A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[2]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

A+ Capable options indicated by this color background.

## Ordering Information

**EXAMPLE:** DSX1 LED P7 40K T3M MVOLT SPA DDBXD

**DSX1LED**

| Series | LEDs | Color temperature | Distribution | Voltage | Mounting |
|---|---|---|---|---|---|
| DSX1 LED | **Forward optics**<br>P1 P4 P7<br>P2 P5 P8<br>P3 P6 P9<br>**Rotated optics**<br>P10[7] P12[7]<br>P11[7] P13[7] | **30K** 3000 K<br>**40K** 4000 K<br>**50K** 5000 K<br>**AMBPC** Amber phosphor converted[3] | T1S Type I short<br>T2S Type II short<br>T2M Type II medium<br>T3S Type III short<br>T3M Type III medium<br>T4M Type IV medium<br>TFTM Forward throw medium<br>T5VS Type V very short<br>T5S Type V short<br>T5M Type V medium<br>T5W Type V wide<br>BLC Backlight control[3,5]<br>LCCO Left corner cutoff[3,5]<br>RCCO Right corner cutoff[3,5] | **MVOLT**[4,6] 120[4] 208[4,6] 240[4,6] 277[4] 347[4,6,7] 480[4,6,7] | **Shipped included**<br>SPA Square pole mounting<br>RPA Round pole mounting<br>WBA Wall bracket<br>SPUMBA Square pole universal mounting adaptor[8]<br>RPUMBA Round pole universal mounting adaptor[8]<br>**Shipped separately**<br>KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[9] |

| Control options | | Other options | Finish (required) |
|---|---|---|---|
| **Shipped installed**<br>NLTAIR2 nLight AIR generation 2 enabled[10]<br>PER NEMA twist-lock receptacle only (controls ordered separate)[11]<br>PER5 Five-wire receptacle only (controls ordered separate)[11]<br>PER7 Seven-wire receptacle only (controls ordered separate)[11,12]<br>DMG 0-10V dimming extend out back of housing for external control (leads exit fixture)<br>DS Dual switching[13,14]<br>PIR Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[3,15,16]<br>PIRH Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[3,15,16]<br>PIRHN Network, Bi-Level motion/ambient sensor[17]<br>PIR1FC3V Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[3,15,16] | PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[3,15,16]<br>BL30 Bi-level switched dimming, 30%[3,16,18]<br>BL50 Bi-level switched dimming, 50%[3,16,18]<br>PNMTD3 Part night, dim till dawn[3,16]<br>PNMTSD3 Part night, dim 5 hrs[3,16]<br>PNMT6D3 Part night, dim 6 hrs[3,16]<br>PNMT7D3 Part night, dim 7 hrs[3,16]<br>FAO Field adjustable output[18] | **Shipped installed**<br>HS House-side shield[19]<br>SF Single fuse (120, 277, 347V)[4]<br>DF Double fuse (208, 240, 480V)[4]<br>L90 Left rotated optics[5]<br>R90 Right rotated optics[5]<br>**Shipped separately**<br>BS Bird spikes[20]<br>EGS External glare shield[20] | DDBXD Dark bronze<br>DBLXD Black<br>DNAXD Natural aluminum<br>DWHXD White<br>DDBTXD Textured dark bronze<br>DBLBXD Textured black<br>DNATXD Textured natural aluminum<br>DWHGXD Textured white<br>**Stripingg** [9]<br>SDDB Dark bronze<br>SDWH White<br>SDBL Black<br>SDNA Natural aluminum<br>SDTG Tennis green<br>SDBR Bright red<br>SDBUA Dark blue<br>SDYLB Yellow |

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DSX1-LED
Rev. 03/21/18
Page 1 of 7



# KBC8 LED

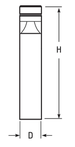
LED Specification Bollard

| | |
|---|---|
| Catalog Number | |
| Notes | |
| Type | |

Hit the Tab key or mouse over the page to see all interactive elements.

**Specifications**

| | |
|---|---|
| | 8" Round (20.3 cm) |
| Height: | 42" (106.7 cm) |
| Weight (max): | 27lbs (12.23 kg) |




## Introduction

The KBC8 Bollard is a stylish, fully integrated LED solution for walkways. It features a sleek, modern design and is carefully engineered to provide long-lasting, energy-efficient lighting with a variety of optical and control options for customized performance.

With an expected service life of over 20 years of nighttime use and up to 70% in energy savings over comparable 100W metal halide luminaires, the KBC8 Bollard is a reliable, low-maintenance lighting solution that produces sites that are exceptionally illuminated.

## Ordering Information

**EXAMPLE:** KBC8 LED 16C 700 40K SYM MVOLT DDBXD

**KBC8 LED**

| Series | LEDs | Drive current | Color temperature | Distribution | Voltage | Control options | Other options | Finish (required) |
|---|---|---|---|---|---|---|---|---|
| KBC8 LED | **Asymmetric**<br>12C 12 LEDs[1]<br>**Symmetric**<br>16C 16 LEDs[2] | 350 350 mA<br>450 450 mA[3,4]<br>530 530 mA<br>700 700 mA | 30K 3000 K<br>40K 4000 K<br>50K 5000 K<br>AMBPC Amber phosphor converted<br>AMBLW Amber limited wavelength[3,5] | ASY Asymmetric[1]<br>SYM Symmetric[2] | MVOLT[1] 120[1] 208[1] 240[1] 277[1] 347[6] | **Shipped installed**<br>PE Photoelectric cell, button type<br>DMG 0-10V dimming driver (no controls)<br>ELCW Emergency battery backup[6] | **Shipped installed**<br>SF Single fuse (120, 277, 347V)[4,7]<br>DF Double fuse (208, 240V)[4,7]<br>H24 24" overall height<br>H30 30" overall height<br>H36 36" overall height<br>FG Ground-fault festoon outlet<br>L/AB Without anchor bolts (3 bolt base)<br>L/AB4 4 bolt retrofit base without anchor bolts[8] | DWHXD White<br>DNAXD Natural aluminum<br>DDBXD Dark bronze<br>DBLXD Black<br>DDBTXD Textured dark bronze<br>DBLBXD Textured black<br>DNATXD Textured natural aluminum<br>DWHGXD Textured white<br>**Stripingg** [9]<br>SDDB Dark bronze<br>SDWH White<br>SDBL Black<br>SDNA Natural aluminum<br>SDTG Tennis green<br>SDBR Bright red<br>SDBUA Dark blue<br>SDYLB Yellow |

## Accessories

Ordered and shipped separately.

MRAB U Anchor bolts for KBC8 LED[9]

NOTES
1 Only available in the 12C, ASY version.
2 Only available in the 16C, SYM version.
3 Only available with 450 AMBLW version.
4 Not available with ELCW.
5 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options), or photocontrol (PE option).
6 Not available with 347V. Not available with fusing. Not available with 450 AMBLW.
7 Single fuse (SF) requires 120, 277, or 347 voltage option. Double fuse (DF) requires 208 or 240 voltage option.
8 MRAB U not available with L/AB4 option.
9 Striping is available only in the colors listed.

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# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE

YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

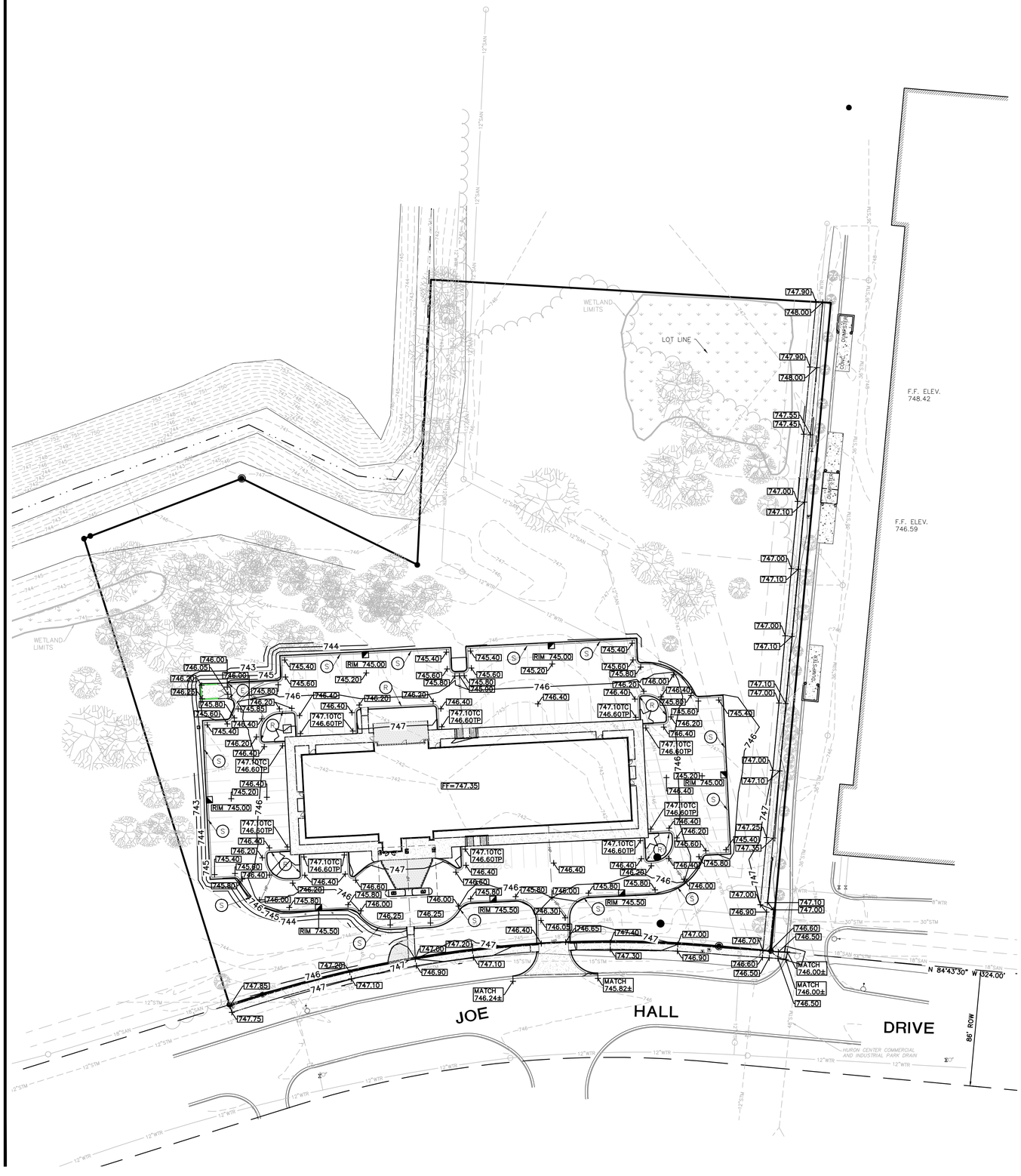
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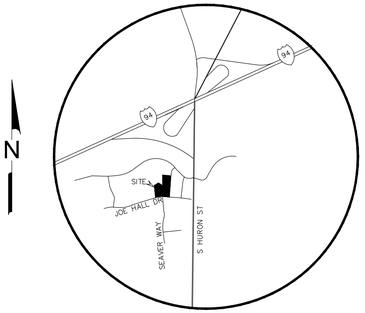
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| PSPA | 08/14/19 |
| WCWRC | 09/25/19 |
| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : 1"=40'
JOB NO : SD-18-110

SHEET TITLE :
SITE LIGHTING PLAN

SHEET
C3.1




**LOCATION MAP**

NOT TO SCALE

| BENCHMARKS |
|---|
| B.M. #1 - ARROW ON HYD ON THE S. SIDE OF JOE HALL DR. 50' E. OF THE SW OF PROP. ELEV. 749.56 NAVD 88 |
| B.M. #2 - ARROW ON HYD ON THE 110'± S. OF THE NE OF OF PROP. ELEV. 749.56 NAVD 88 |

GRADING NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE YPSILANTI TOWNSHIP AND MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS.
2. SPOT ELEVATIONS INDICATE TOP OF PAVEMENT UNLESS OTHERWISE INDICATED:
   TC = TOP OF CURB
   TP = TOP OF PAVEMENT
3. CURB AND GUTTER LEGEND
   (S) = STANDARD CURB AND GUTTER
   (R) = REVERSE SLOPE CURB AND GUTTER
   (T) = 5' TRANSITION FROM STANDARD TO REVERSE
   (E) = CURB END TRANSITION
   (G) = GUTTER PAN
4. REFER TO LANDSCAPE PLAN FOR LANDSCAPE TREATMENT AND PLACEMENT.

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

0' 40' 80' 120'

SCALE: 1" = 40'

THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE BASED ON RECORDS PROVIDED BY THE UTILITY OWNERS AND VISIBLE EVIDENCE OBTAINED IN THE FIELD. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED TO THE COMPLETENESS OR ACCURACY THEREOF.


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# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE

YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN


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| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

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|---|---|
| DATE : | |
| DRAWN : | ACA |
| CHECKED : | ACA |
| SCALE : | 1"=40' |
| JOB NO : | SD-18-110 |
| SHEET TITLE : | GRADING PLAN |
| SHEET | C4.0 |

| BENCHMARKS |
|---|
| B.M. #1 - ARROW ON HYD ON THE S. SIDE OF JOE HALL DR. 50' E. OF THE SW OF PROP. ELEV. 749.56 NAVD 88 |
| B.M. #2 - ARROW ON HYD ON THE 110'± S. OF THE NE OF OF PROP. ELEV. 749.56 NAVD 88 |

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# HOLIDAY INN EXPRESS & SUITES

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CHECKED : ACA
SCALE : 1"=10'
JOB NO : SD-18-110

SHEET TITLE :
ENLARGED GRADING PLAN

SHEET
C4.1




## CONSTRUCTION SEQUENCE

1. CONDUCT SOIL EROSION AND SEDIMENTATION CONTROL PRE-GRADING KICK-OFF MEETING WITH YPSILANTI TOWNSHIP.
2. PROVIDE EROSION CONTROL MEASURES THAT WILL BE USED AS PART OF THIS WORK. INSTALL ADDITIONAL MEASURES AS REQUIRED BY THESE DRAWINGS AND AS FIELD CONDITIONS DICTATE IN ACCORDANCE WITH THE YPSILANTI TOWNSHIP AND WASHTENAW COUNTY WATER RESOURCE COMMISSION STANDARDS.
3. REMOVE STRUCTURES, FOUNDATIONS, PAVEMENT AND THE INDICATED UTILITY LINES AND STRUCTURES FULL-DEPTH. REMOVE TREES, SHRUBS, STUMPS AND ROOT SYSTEMS TO MINIMUM DEPTH OF 42" AND LEGALLY DISPOSE OFF-SITE. PROTECT TREES TO REMAIN WITH CONSTRUCTION FENCING PLACED AROUND PERIPHERY OF TREE DRIP-LINE.
4. IMPLEMENT TEMPORARY SOIL EROSION CONTROL MEASURES, INCLUDING SILT FENCE INSTALLATION AND GRAVEL ACCESS DRIVE.
5. STRIP TOPSOIL AND STOCKPILE.
6. INSTALL WATER MAIN COMPLETE.
7. INSTALL TEMPORARY SEDIMENT BASIN.
8. BEGIN FOUNDATION INSTALLATION AND BUILDING CONSTRUCTION.
9. BEGIN INSTALLATION OF STORM SEWER SYSTEM. IMMEDIATELY INSTALL INLET FILTERS ON ALL CATCH BASINS.
10. INSTALL SANITARY SEWER.
11. INSTALL ALL OTHER UTILITIES.
12. INSTALL UNDERGROUND DETENTION SYSTEM COMPLETE.
13. INSTALL ALL PAVEMENT.
14. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL HAVE PERMANENT STABILIZATION COMPLETED WITHIN 5 DAYS OF FINAL GRADE.
15. DAILY, OR AS REQUIRED, CONSTRUCT AND MAINTAIN TEMPORARY BERMS, DRAINS, SILT FENCE, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
16. COMPLETE INSTALLATION OF PERMANENT EROSION CONTROL MEASURES. PERFORM PAVEMENT INSTALLATION.
17. FINISH GRADE, REDISTRIBUTE TOPSOIL AND ESTABLISH VEGETATION ON ALL DISTURBED GROUND AREAS.
18. CLEAN PAVEMENT AND STORM SEWERS OF ALL SEDIMENT.
19. REMOVE SOIL EROSION CONTROL MEASURES AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.
20. INSTALL LANDSCAPING.
21. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL SOIL EROSION CONTROL MEASURES ARE INSTALLED AND MAINTAINED.

## MAINTENANCE NOTES

1. SOIL STOCKPILES
PERIODIC INSPECTIONS SHOULD BE DONE TO ENSURE EXCESSIVE EROSION HAS NOT OCCURRED. IF RUNOFF OR WIND EROSION HAS OCCURRED, REDUCE THE SIDE SLOPES OF THE SPOIL PILE, OR RE-STABILIZE THE STOCKPILE BY PROVIDING TEMPORARY SEEDING.

WHEN FILTER FENCING IS USED AROUND A SPOIL PILE, PERIODIC CHECKS SHOULD BE MADE TO ENSURE THAT PIPING HAS NOT OCCURRED UNDER THE FENCING, AND TO ENSURE THE FENCE HAS NOT COLLAPSED DUE TO SOIL SLIPPAGE OR ACCESS BY CONSTRUCTION EQUIPMENT. REPAIR ANY DAMAGED FENCING IMMEDIATELY.

BERMS AT THE BASE OF THE SPOIL PILE WHICH BECOME DAMAGED SHOULD BE REPLACED.

2. DUST CONTROL
TO PREVENT DUST FROM BECOMING A PUBLIC NUISANCE AND CAUSING OFF-SITE DAMAGES, DUST CONTROL SHOULD BE ONGOING DURING EARTH CHANGE ACTIVITIES.

3. SILT FENCE
SILT FENCE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SILT FENCES SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND SEVERAL TIMES DURING PROLONGED RAINFALLS.

IF THE FENCE IS SAGGING OR THE SOIL HAS REACHED ONE HALF (1/2) THE HEIGHT OF THE FABRIC, THE SOIL BEHIND THE FABRIC MUST BE REMOVED AND DISPOSED OF IN A STABLE UPLAND SITE. THE SOIL CAN BE ADDED TO THE SOIL STOCKPILE.

IF THE FABRIC IS BEING UNDERCUT (I.E. IF WATER IS SEEPING UNDER THE FENCE), THE FENCE SHOULD BE REMOVED AND REINSTALLED FOLLOWING THE PROCEDURES GIVEN ABOVE.

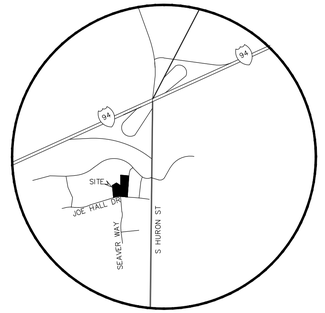
FABRIC WHICH DECOMPOSES OR OTHERWISE BECOMES INEFFECTIVE SHOULD BE REMOVED AND REPLACED WITH NEW FILTER FABRIC IMMEDIATELY.

SILT FENCES SHOULD BE REMOVED ONCE VEGETATION IS WELL ESTABLISHED AND THE UP-SLOPE AREA IS FULLY STABILIZED.

4. SEEDING
NEWLY SEEDED AREAS NEED TO BE INSPECTED FREQUENTLY FOR THE FIRST FEW MONTHS TO ENSURE THE GRASS IS GROWING. IF THE SEEDED AREA IS DAMAGED DUE TO RUNOFF, ADDITIONAL STORMWATER MEASURES MAY BE NEEDED. SPOT SEEDED CAN BE DONE ON SMALL AREAS TO FILL IN BARE SPOTS WHERE GRASS DIDN'T GROW PROPERLY.

5. MULCHING
MULCHED AREAS SHOULD BE CHECKED FOLLOWING EACH RAIN TO ENSURE THE MULCH IS STAYING IN PLACE. ADDITIONAL TACKING MATERIALS OR NETTING MAY NEED TO BE APPLIED TO HOLD THE MULCH IN PLACE.

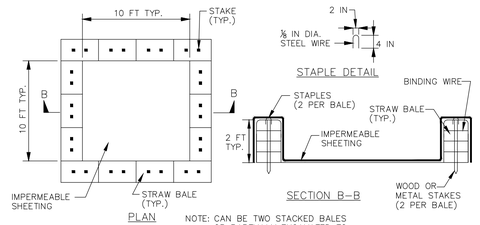
6. CONSTRUCTION ENTRANCE
PROPER MAINTENANCE MAY INCLUDE ADDING ADDITIONAL LAYERS OF STONE WHEN THE ORIGINAL STONE BECOMES COVERED WITH MUD. AFTER EACH STORM EVENT, INSPECT THE ROAD FOR EROSION AND MAKE ANY NECESSARY REPAIRS. ALL SEDIMENT DROPPED OR ERODED ONTO PUBLIC RIGHT-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY SWEEPING.




## LOCATION MAP
NOT TO SCALE

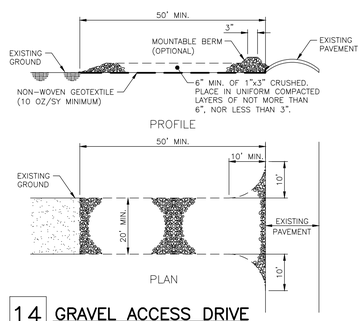
## SOIL EROSION & SEDIMENTATION CONTROL NOTES

1. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH YPSILANTI TOWNSHIP AND WASHTENAW COUNTY WATER RESOURCE COMMISSIONER'S STANDARDS AND SPECIFICATIONS.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES. ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. ANY EROSION OR SEDIMENT FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES AND OTHER EARTH CHANGES HAVE BEEN ESTABLISHED.
5. AFTER ALL TEMPORARY EROSION CONTROL MEASURES HAVE BEEN INSTALLED, THE CONTRACTOR SHALL CONTACT YPSILANTI TOWNSHIP FOR AN INSTALLATION INSPECTION.
6. DUST CONTROL SHALL BE EXERCISED AT ALL TIMES WITHIN THE PROJECT BY THE CONTRACTOR.
7. ALL MUD, DIRT AND DEBRIS TRACKED ONTO EXISTING ROADS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR NO LESS THAN ON A DAILY BASIS. ALL MUD, DIRT AND DEBRIS TRACKED OR SPILLED ONTO PAVED SURFACES WITHIN THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
8. PERMANENT EROSION CONTROL MEASURES SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR EARTH MOVING ACTIVITY HAS BEEN COMPLETED. A FINAL INSPECTION SHALL BE SCHEDULED BY THE CONTRACTOR.
9. YPSILANTI TOWNSHIP SHALL INSPECT ALL SOIL EROSION CONTROL MEASURES. UPON THEIR DIRECTION, ADDITIONAL MEASURES SHALL BE CONSTRUCTED AND MAINTENANCE WORK SHALL BE PERFORMED TO ENSURE COMPLIANCE WITH ALL PERMIT REQUIREMENTS.




NOTE: CAN BE TWO STACKED BALES OR PARTIALLY EXCAVATED TO REACH 2 FT DEPTH

## CONCRETE WASHOUT
NO SCALE




14 GRAVEL ACCESS DRIVE
NO SCALE

## SOIL CONDITIONS

Sb: SEBEWA LOAM, 0-2 PERCENT SLOPES
WoA: WASEPI SANDY LOAM, 0-4 PERCENT SLOPES
OsB: OSHTEMO SANDY LOAM, 0-6 PERCENT SLOPES
OBTAINED FROM USDA (NRCS) "WEB SOIL SURVEY"
WASHTENAW COUNTY, MICHIGAN (MI161)

## SOIL EROSION CONTROL MEASURES

REFER TO THE YPSILANTI TOWNSHIP STANDARD SOIL EROSION CONTROL DETAILS

SP-2 SILT FENCE
SI-5 CURB AND GUTTER INLET FILTER

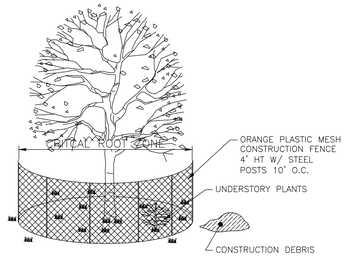
REFERENCE: MICHIGAN UNIFIED KEYING SYSTEM FOR EROSION AND SEDIMENT CONTROL MEASURES

| | | |
|---|---|---|
| 14 | AGGREGATE COVER | STABILIZES SOIL SURFACES, THUS MINIMIZING EROSION PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS |

SOIL EROSION & SEDIMENTATION CONTROL
OPERATION TIME SCHEDULE

TOTAL DISTURBED AREA = 2.3-ACRES ±

| CONSTRUCTION SEQUENCE | APR 2020 | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN 2020 | FEB | MAR | APR | MAY | JUN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SESC PRE-GRADING MTG WITH CITY | | | | | | | | | | | | | | | |
| TEMPORARY EROSION CONTROL MEASURES | | | | | | | | | | | | | | | |
| CLEAR & GRUB | | | | | | | | | | | | | | | |
| STRIP & STOCKPILE TOPSOIL / ROUGH GRADE | | | | | | | | | | | | | | | |
| WATER MAIN (COMPLETE) | | | | | | | | | | | | | | | |
| TEMPORARY SEDIMENT BASIN | | | | | | | | | | | | | | | |
| STORM SEWER SYSTEM | | | | | | | | | | | | | | | |
| UNDERGROUND DETENTION | | | | | | | | | | | | | | | |
| FOUNDATION / BLDG. CONSTRUCTION | | | | | | | | | | | | | | | |
| SANITARY SEWER | | | | | | | | | | | | | | | |
| INSTALL ALL OTHER UTILITIES | | | | | | | | | | | | | | | |
| SITE CONSTRUCTION & PAVEMENT | | | | | | | | | | | | | | | |
| PERMANENT EROSION CONTROL MEASURES | | | | | | | | | | | | | | | |
| FINISH GRADING | | | | | | | | | | | | | | | |
| LANDSCAPING | | | | | | | | | | | | | | | |




NOTES:
1. TREE PROTECTION SHALL BE ERECTED PRIOR TO START OF CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
2. NO ACTIVITIES, INCLUDING GRADE CHANGES, MAY OCCUR WITHIN THE CRITICAL ROOT ZONE OF PROTECTED TREES.
3. CONSTRUCTION DEBRIS SHALL REMAIN OUTSIDE OF THE PROTECTIVE FENCING AT ALL TIMES.

## TREE PROTECTION
NO SCALE

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Know what's below. Call before you dig.

0' 40' 80' 120'
SCALE: 1" = 40'


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PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
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# HOLIDAY INN EXPRESS & SUITES
460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

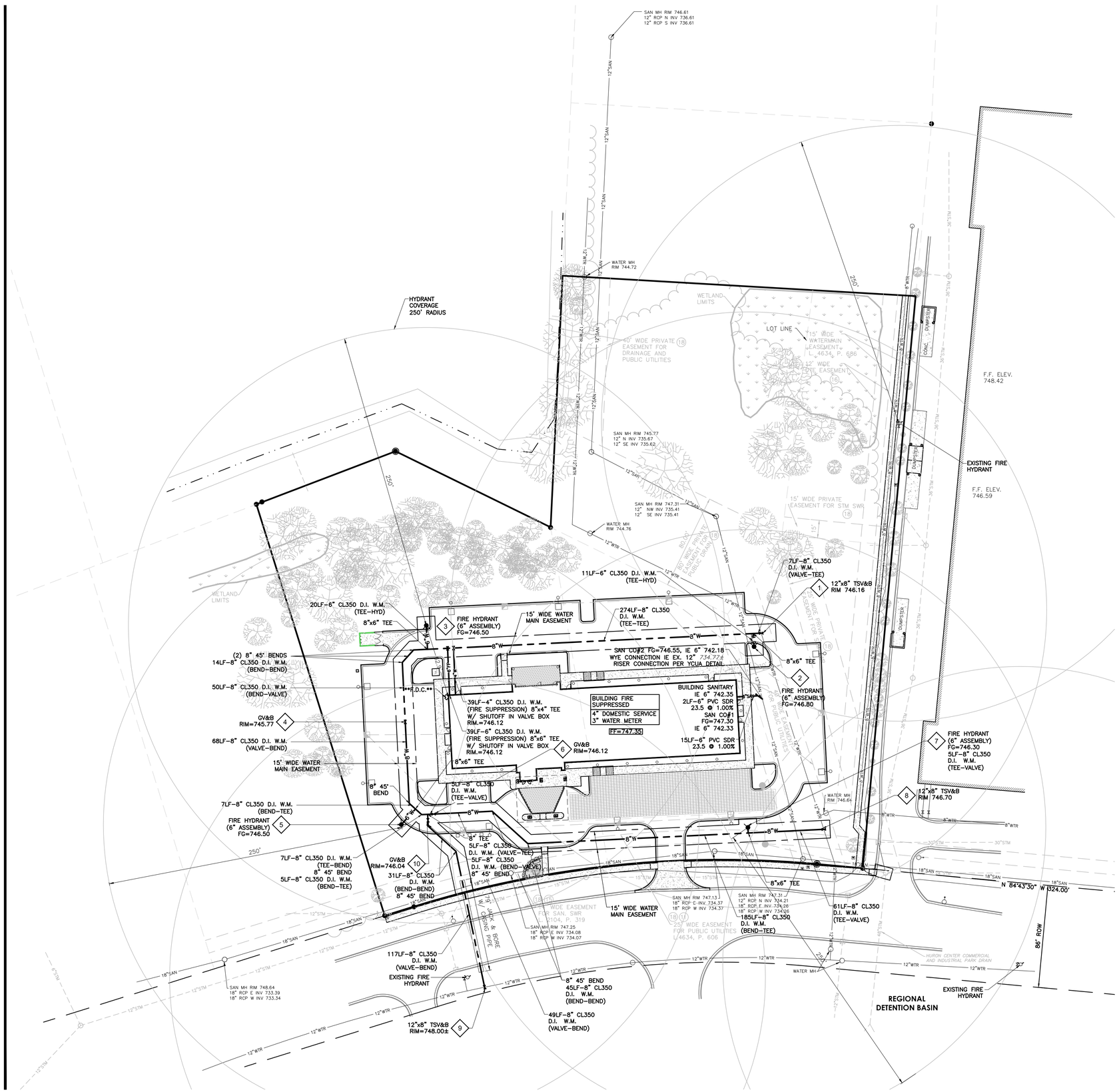

THESE PLANS ATTEMPT TO INTERPRET AND FOLLOW THE REQUIREMENTS OF ALL THE REVIEWING AGENCIES AND UTILITY COMPANIES INVOLVED. HOWEVER, IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL FEDERAL, STATE, COUNTY AND LOCAL LAWS, CODES AND REGULATIONS. THE CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE THE RELOCATION OF ANY CONFLICTING UTILITIES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PUBLIC AND PRIVATE PROPERTY AND SHALL REPAIR OR REPLACE ALL DAMAGED PROPERTY AS NEARLY AS POSSIBLE TO ITS ORIGINAL CONDITION WHETHER SHOWN ON THESE DRAWINGS OR NOT.

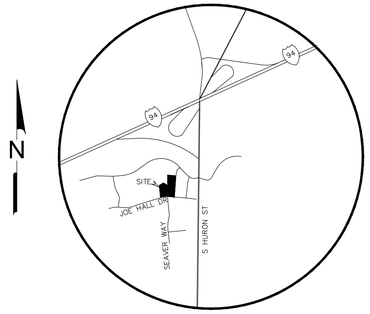
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| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : 1"=40'
JOB NO : SD-18-110
SHEET TITLE :
EROSION CONTROL PLAN

SHEET
C4.2




## LOCATION MAP

NOT TO SCALE

## WATER BASIS OF DESIGN

***PROPOSED BUILDING***

| USAGE | AREA | | UNIT FACTOR | R.E.U. |
|---|---|---|---|---|
| Hotel | 100 | rooms | 0.25 units per room | 25.00 |
| Swimming Pool | 700 | sf | 3.00 units / 1000 sf | 2.10 |
| | | | | 27.10 |
| | | | Rounded= | *28.00* |

| | | |
|---|---|---|
| *POPULATION EQUIVALENT* = | 3.5 | Persons per R.E.U. |
| *POPULATION* = | 98.0 | Persons |
| *AVERAGE FLOW RATE* = | 100 | Gallons per capita per day |
| *AVERAGE FLOW* = | 9,800.00 | GPD 0.0098 MGD |
| *PEAK FACTOR* = | 18 + SQRT(P) / 4 + SQRT (P) = | 4.25 |
| *PEAK FLOW* = | 41,610.44 | GPD = 0.04161 MGD |

## SANITARY BASIS OF DESIGN

***PROPOSED BUILDING***

| USAGE | AREA | | UNIT FACTOR | R.E.U. |
|---|---|---|---|---|
| Hotel | 100 | rooms | 0.25 units per room | 25.00 |
| Swimming Pool | 700 | sf | 3.00 units / 1000 sf | 2.10 |
| | | | | 27.10 |
| | | | Rounded= | *28.00* |

**PROPOSED SANITARY SEWER**

| | | |
|---|---|---|
| *POPULATION EQUIVALENT* = | 3.5 | Persons per R.E.U. |
| *POPULATION* = | 98.0 | Persons |
| *AVERAGE FLOW RATE* = | 100 | Gallons per capita per day |
| *AVERAGE FLOW* = | 9,800.00 | GPD |
| *PEAK FACTOR* = | 18 + SQRT(P) / 4 + SQRT (P) = | 4.25 |
| *PEAK FLOW* = | 41,610.44 | GPD = 0.062 CFS 6"@1.00%(cfs) = 0.73 |

## GENERAL NOTES

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4. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE LOCATED BY HAND DIGGING.
5. DIMENSIONS ARE TO FACE OF CURB, OUTSIDE FACE OF BUILDING, EDGE OF PAVEMENT, CENTER OF STRUCTURE OR OTHERWISE INDICATED.
6. ALL WORK SHALL CONFORM TO THE YPSILANTI TOWNSHIP STANDARDS AND SPECIFICATIONS.

## YCUA NOTE

WATER MAIN PIPE MATERIAL SHALL BE PRESSURE CLASS 350 DUCTILE IRON

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# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE

YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

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| PSPA | 01/14/20 |

DATE :

DRAWN : ACA

CHECKED : ACA

SCALE : 1"=40'

JOB NO : SD-18-110

SHEET TITLE :

UTILITY PLAN

SHEET

C5.0




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6. ALL WORK SHALL CONFORM TO THE YPSILANTI TOWNSHIP STANDARDS AND SPECIFICATIONS.
7. HDPE STORM SEWER SHALL BE CORRUGATED WITH SMOOTH INTERIOR MEETING THE REQUIREMENTS OF AASHTO M294 AND HAVE SOIL-TIGHT JOINTS.

## YPSILANTI TOWNSHIP NOTES

1. ALL CATCH BASIN COVERS SHALL INCLUDE THE PHRASE "DUMP NO WASTE, DRAINS TO RIVER".

## DRAINAGE NARRATIVE

THE EXISTING SITE IS PRESENTLY VACANT. THE PROPOSED DEVELOPMENT WOULD INCLUDE A NEW 4-STORY HOTEL WITH ASSOCIATED PARKING. THE OVERALL WEIGHTED RUNOFF COEFFICIENT INCREASES AS A RESULT OF THE PROPOSED DEVELOPMENT. THE COMPUTED COEFFICIENT OF 0.72 WOULD BE THE RESULT OF THE PROPOSED LAYOUT.

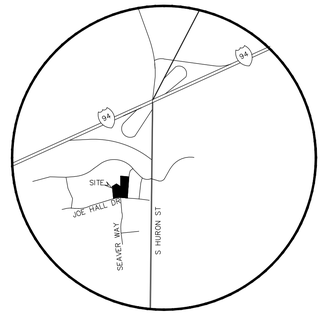
WITH THE INCREASE IN RUNOFF GENERATED, BOTH STORM QUALITY AND QUANTITY ARE BEING EVALUATED WITH THE DESIGN. STORM WATER QUALITY DEVICES ARE INCORPORATED WITHIN THE PLAN TO REMOVE POINT SOURCE POLLUTANTS FROM STORM SEWER SYSTEM PRIOR TO CONVEYANCE TO THE DETENTION SYSTEM.

UNDERGROUND DETENTION SYSTEM CONSISTING OF A STACKED CHAMBER SYSTEM THAT PROMOTES INFILTRATION, PROVIDES FLOOD CONTROL, AND IMPROVES WATER QUALITY OF SITE STORM DISCHARGE.

RESTRICTED DISCHARGE FROM THE UNDERGROUND DETENTION SYSTEM IS PROPOSED WITH CONNECTION INTO A DRAINAGE SYSTEM UNDER THE JURISDICTION OF THE WAHSTENAW COUNTY WATER RESOURCE COMMISSIONER'S OFFICE.

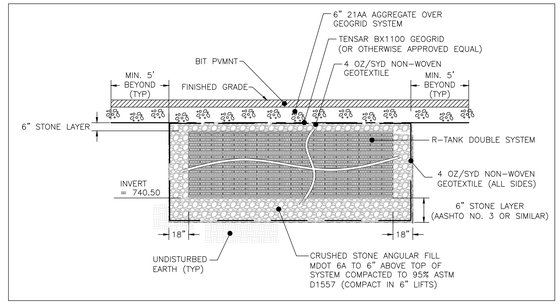
## COORDINATION NOTE

UNDERGROUND CONTRACTOR SHALL COORDINATE WITH ADJACENT PROPERTY OWNERS PRIOR TO CONSTRUCTION IN ORDER TO MINIMIZE DISRUPTION AND MAINTAIN ACCESS TO SURROUNDING BUSINESSES.




## LOCATION MAP

NOT TO SCALE




## UNDERGROUND DETENTION SECTION

NO SCALE

## STORM SEWER CALCULATIONS

$Q_R = C * I * A$

$Q_P = A \times 1.486/n \times R^{2/3} \times S^{1/2}$

I = 175/(T + 25) for **10 year storm event**

| AREA NO. | FROM MH/CB | TO MH/CB | AREA A acres | COEFF. C * | A x C | AREA TOTAL At acres | COEFF. Wt Cw | At x Cw | TIME $t_c$ min. | INT. I in/hr | n | FLOW $Q_R$ Q=CIA c.f.s. | PIPE CAP. $Q_P$ c.f.s. | PIPE LENGTH ft | PIPE DIA. in. | PIPE SLOPE % | VEL. FULL ft/sec | TIME FLOW min. | RIM ELEV HIGH ft | RIM ELEV LOW ft | H.G.L. 10-YEAR HIGH END HGL | H.G.L. 10-YEAR LOW END HGL | INVERT ELEV. HIGH END INV | INVERT ELEV. LOW END INV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DA1 | 1 | 2 | 0.29 | 0.77 | 0.22 | 0.29 | 0.77 | 0.22 | 15.00 | 4.38 | 0.011 | 0.97 | 3.74 | 138 | 15 | 0.24% | 3.05 | 0.75 | 745.00 | 745.00 | 742.94 | 742.53 | 741.72 | 741.39 |
| DA2 | 2 | 3 | 0.39 | 0.72 | 0.28 | 0.68 | 0.74 | 0.51 | 15.75 | 4.29 | 0.011 | 2.18 | 3.74 | 160 | 15 | 0.24% | 3.05 | 0.87 | 745.00 | 745.00 | 742.43 | 741.95 | 741.29 | 740.90 |
| DA3 | 3 | 100 | 0.36 | 0.65 | 0.23 | 1.04 | 0.71 | 0.74 | 16.63 | 4.20 | 0.011 | 3.11 | 3.74 | 79 | 15 | 0.24% | 3.05 | 0.43 | 745.00 | 746.80 | 741.85 | 741.61 | 740.80 | 740.61 |
| - - - | 100 | DET | 0.00 | 0.00 | 0.00 | 1.04 | 0.71 | 0.74 | 17.06 | 4.16 | 0.011 | 3.08 | 3.74 | 5 | 15 | 0.24% | 3.05 | 0.03 | 746.80 | 746.30 | 741.51 | 741.50 | 740.51 | 740.50 |
| DA4 | 4 | 5 | 0.60 | 0.88 | 0.52 | 0.60 | 0.88 | 0.52 | 15.00 | 4.38 | 0.011 | 2.30 | 3.74 | 114 | 15 | 0.24% | 3.05 | 0.62 | 745.00 | 745.80 | 743.03 | 742.69 | 741.81 | 741.54 |
| DA5 | 5 | 6 | 0.30 | 0.54 | 0.16 | 0.89 | 0.77 | 0.68 | 15.62 | 4.31 | 0.011 | 2.94 | 3.74 | 129 | 15 | 0.24% | 3.05 | 0.71 | 745.80 | 745.80 | 742.59 | 742.20 | 741.44 | 741.13 |
| DA6 | 6 | 7 | 0.22 | 0.74 | 0.16 | 1.11 | 0.76 | 0.85 | 16.33 | 4.23 | 0.011 | 3.59 | 4.39 | 95 | 15 | 0.33% | 3.57 | 0.44 | 745.80 | 745.50 | 742.00 | 741.62 | 740.93 | 740.62 |
| DA7 | 7 | DET | 0.26 | 0.56 | 0.15 | 1.37 | 0.72 | 0.99 | 16.77 | 4.19 | 0.011 | 4.16 | 4.39 | 5 | 15 | 0.33% | 3.57 | 0.02 | 745.50 | 745.85 | 741.52 | 741.50 | 740.52 | 740.50 |

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0' 40' 80' 120'

SCALE: 1" = 40'

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# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE

YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN


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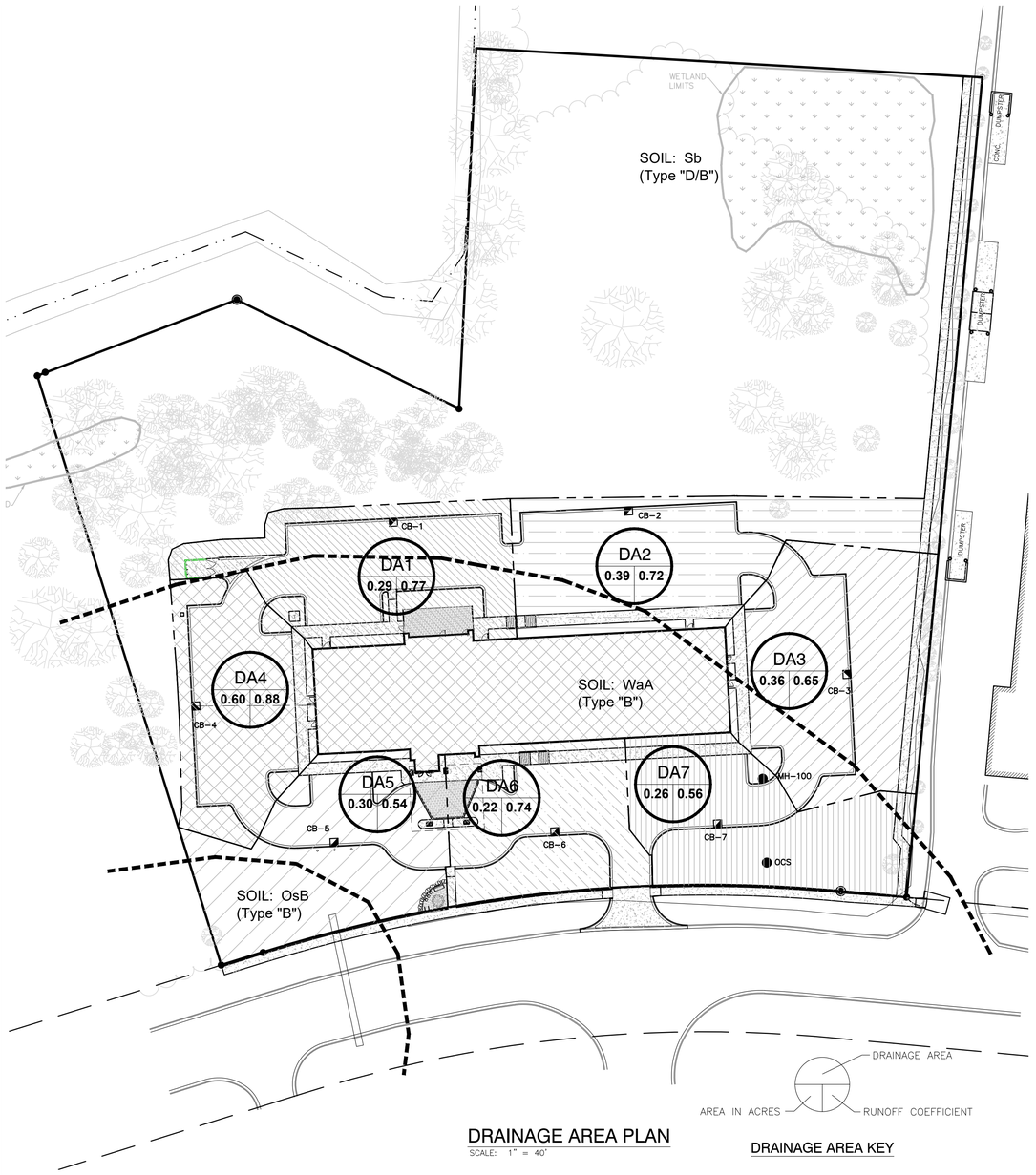
JOB NO : SD-18-110

SHEET TITLE :

STORM MANAGEMENT PLAN

SHEET

C5.1




## DRAINAGE AREA PLAN

SCALE: 1" = 40'

DRAINAGE AREA KEY

## DRAINAGE AREAS

| Drainage Area | Area Total (S.F.) | Pervious Area (S.F.) | Pavement Area (S.F.) | Roof Area (S.F.) | C Perv | C Pavement | C Roof | *Area Total (acres)* | *Cw* |
|---|---|---|---|---|---|---|---|---|---|
| DA1 | 12621 | 3542 | 9079 | 0 | 0.30 | 0.95 | 0.95 | *0.29* | *0.77* |
| DA2 | 17135 | 6002 | 11134 | 0 | 0.30 | 0.95 | 0.95 | *0.39* | *0.72* |
| DA3 | 15626 | 7152 | 8473 | 0 | 0.30 | 0.95 | 0.95 | *0.36* | *0.65* |
| DA4 | 25939 | 2767 | 7774 | 15398 | 0.30 | 0.95 | 0.95 | *0.60* | *0.88* |
| DA5 | 12858 | 8203 | 4655 | 0 | 0.30 | 0.95 | 0.95 | *0.30* | *0.54* |
| DA6 | 9703 | 3142 | 6561 | 0 | 0.30 | 0.95 | 0.95 | *0.22* | *0.74* |
| DA7 | 11322 | 6773 | 4549 | 0 | 0.30 | 0.95 | 0.95 | *0.26* | *0.56* |
| | | | | | | | | 2.42 | *0.72* |

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# DETENTION CALCULATIONS

**DETENTION CALCULATIONS: HOLIDAY INN EXPRESS & SUITES - YPSILANTI TOWNSHIP**

Design Basis: Use the Washtenaw County Water Resource Commissioner Design Criteria (10/17/16)

**W1 Determining Cover Types, Areas, Curve Numbers and Runoff Coefficients**

Proposed Site Conditions

| Surface | Area (s.f.) | Area (acre) |
|---|---|---|
| Impervious | 67,623.0 | 1.552 |
| Pervious | 37,580.4 | 0.863 |
| | 105,203.4 | 2.415 |

Rational Method

| Cover Type | Soil Type | Area (s.f.) | Area (acre) | C | C * A |
|---|---|---|---|---|---|
| Lawn | Soil Group "D/B" | 11,908.31 | 0.27 | 0.45 | 0.1230 |
| Lawn | Soil Group "B" | 25,672.12 | 0.59 | 0.25 | 0.1473 |
| Pavement | - - - | 67,623.00 | 1.55 | 0.95 | 1.4748 |

NRCS Method

| Cover Type | Soil Type | Area (s.f.) | Area (acre) | CN | CN * A |
|---|---|---|---|---|---|
| Lawn | Soil Group "D/B" | 11,908.31 | 0.27 | 80 | 21.8702 |
| Lawn | Soil Group "B" | 25,672.12 | 0.59 | 61 | 35.9504 |
| Pavement | - - - | 67,623.0 | 1.55 | 98 | 152.1362 |

| | |
|---|---|
| Weighted Runoff Coefficient | 0.72 |
| Pervious Curve Number | 67 |
| Impervious Curve Number | 98 |
| Weighted Runoff Curve Number | 86.93 |

**W2 First Flush Runoff Calculation**

Volume = (1")(1/12)(43560 sf/acre) x A x C = 6335 cf

**W3 Pre-Development Bankfull Runoff Calculations**

A. 2 year / 24 hour storm event (P) = 2.35 in
B. Pre-Development Curve Number (CN) = 64
Land cover will be "Good" Woods or Meadow

| Soil Group | Area (s.f.) | CN |
|---|---|---|
| "B" | 75,310.86 | 58 |
| "D/B" | 29892.57 | 80 |

C. S = (1000 / CN) - 10 = 5.63 in
D. Q = (P - (0.2 x S))^2 / (P + 0.8S) = 0.22 in
E. Total Site Area excluding Self-Crediting BMPs = 105,203.4 sf
F. Vbf pre = Q x (1/12) x Area = 1,921 cf

**W4 Pervious Cover Post-Development Bankfull Runoff Calculations**

A. 2 year / 24 hour storm event (P) = 2.35 in
B. Pervious Cover CN from W1 = 67
C. S = (1000 / CN) - 10 = 4.92 in
D. Q = (P - (0.2 x S))^2 / (P + 0.8S) = 0.30 in
E. Total Site Area excluding Self-Crediting BMPs = 37,580.4 sf
F. Vbf per post = Q x (1/12) x Area = 929 cf

**W5 Impervious Cover Post-Development Bankfull Runoff Calculations**

A. 2 year / 24 hour storm event (P) = 2.35 in
B. Impervious Cover CN from W1 = 98
C. S = (1000 / CN) - 10 = 0.20 in
D. Q = (P - (0.2 x S))^2 / (P + 0.8S) = 2.12 in
E. Total Site Area excluding Self-Crediting BMPs = 67,623.0 sf
F. Vbf imper post = Q x (1/12) x Area = 11,956 cf

**W6 Pervious Cover Post-Development 100-year Storm Runoff Calculations**

A. 100 year Storm Event (P) = 5.11 in
B. Pervious Cover CN from W1 = 67.0206313
C. S = (1000 / CN) - 10 = 4.92 in
D. Q = (P - (0.2 x S))^2 / (P + 0.8S) = 1.88 in
E. Total Site Area excluding Self-Crediting BMPs = 37,580.4 sf
F. V100 per post = Q x (1/12) x Area = 5,893 cf

**W7 Impervious Cover Post-Development 100-year Storm Runoff Calculations**

A. 100 year Storm Event (P) = 5.11 in
B. Impervious Cover CN from W1 = 98
C. S = (1000 / CN) - 10 = 0.20 in
D. Q = (P - (0.2 x S))^2 / (P + 0.85) = 4.87 in
E. Total Site Area excluding Self-Crediting BMPs = 67,623.0 sf
F. V100 per post = Q x (1/12) x Area = 27,461 cf

**W8 Determine Time of Concentration for Applicable Flow Types**

Time of Concentration from Storm Sewer Calculations (Tc) = 15.96 min
Time of Concentration converted to hours (Tc) = 0.27 hr

**W9 Runoff Summary & Onsite Infiltration Requirement**

A. Runoff Summary from Previous Worksheets

| | |
|---|---|
| First Flush Volume (Vff) | = 6,335 cf |
| Pre-Development Banfull Runoff Volume (Vbf pre) | = 1,921 cf |
| Pervious Cover Post-Development Bankfull Volume (Vbf per post) | = 929 cf |
| Impervious Cover Post-Development Bankfull Volume (Vbf imp post) | = 11,956 cf |
| Total BF Volume (Vbf post) | = 12,885 cf |
| Pervious Cover Post-Development 100-Year Volume (V100 per post) | = 5,893 cf |
| Impervious Cover Post-Development Bankfull Volume (Vbf imp post) | = 27,461 cf |
| Total 100-Year Volume (V100) | = 33,353 cf |

B. Determine Onsite Infiltration Requirement

| | |
|---|---|
| Total Post-Development Bankfull Volume (Vbf post) | = 12,885 cf |
| Pre-Development Banfull Runoff Volume (Vbf pre) | = 1,921 cf |
| Bankfull Volume Difference | = 10,965 cf |
| Greater of First Flush Volume & Banfull Volume Difference (Vinf) | = 10,965 cf |

**W10 Detention/Retention Requirements**

A. Qp = 238.6 x Tc ^-0.82 = 707 cfs/in-mi^2
B. Total Site Area excluding Self-Crediting BMPs = 2.42 acres
C. Q100 = Q100 per + Q100 imp = 6.75 in
D. Peak Flow (PF) = (Qp x Q100 x A) / 640 = 18.02 cfs
E. Delta = PF - (0.15 x A) = 17.65 cfs
F. Vdet = ((Delta / PF) x V100) = 32,683 cf

*Note: Sites where the required infiltration volume cannot be achieved must increase the required detention volume by up to an additional 20%.

**W11 Standard Method Runoff Volume Calculations**

| Proposed BMP | Area (s.f.) | Storage Vol (c.f.) | Avg Infil Rate (in / hour) | Infil Vol (c.f.) | Total Vol Red. (c.f.) |
|---|---|---|---|---|---|
| Pervious Pavement w/ Infiltration Bed | - - - | - - - | - - - | - - - | - - - |
| Infiltration Basin | - - - | - - - | - - - | - - - | - - - |
| Subsurface Infiltration Bed | 8,455 | 1,268 | 6.00 | 25,365 | 26,633 |
| Infiltration Trench | - - - | - - - | - - - | - - - | - - - |
| Bioretention Systems | - - - | - - - | - - - | - - - | - - - |
| Rain Gardens | - - - | - - - | - - - | - - - | - - - |
| Dry Well | - - - | - - - | - - - | - - - | - - - |
| Bioswale | - - - | - - - | - - - | - - - | - - - |
| Vegetated Filter Strip | - - - | - - - | - - - | - - - | - - - |
| Vegetative Roof | - - - | - - - | - - - | - - - | - - - |

Total Volume Reduction Credit by Proposed Structural BMPs = 26,633
Runoff Volume Infiltration Requirement (Vinf) (Worksheet 9) = 10,965 cf
Runoff Volume Credit = 15,668 cf

**W12 Natural Features Inventory**

| Existing Natural Resources | Mapped | Total Area | Protected/Undist. |
|---|---|---|---|
| Waterbodies | NA | - - - | - - - |
| Floodplains | NA | - - - | - - - |
| Riparian Areas | NA | - - - | - - - |
| Wetlands | NA | - - - | - - - |
| Woodlands** | NA | - - - | - - - |
| Natural Drainage Area | NA | - - - | - - - |
| Steep Slopes, 15%-25% | NA | - - - | - - - |
| Steep Slopes, >25% | NA | - - - | - - - |
| Special Habitat Areas | NA | - - - | - - - |
| Other | NA | - - - | - - - |

**W13 Summary**

A. Stormwater Management Summary

| | | |
|---|---|---|
| Minimum Onsite Infiltration Requirement, Vinf | = | 10,965 cf |
| Designed/Provided Infiltration Volume | = | 26,633 cf |
| % Minimum Required Infiltration Provided | = | 243% |
| Total Calculated Detention Volume, Vdet | = | 32,683 cf |
| Net Required Detention Volume (Vdet - Designed/Provided Inf. Vol) | = | 6,049 cf |

B. Detention Volume Increase where infiltration volume cannot be achieved

| | | |
|---|---|---|
| % Required Infiltration NOT provided | = | 0.0% |
| Net % Penalty (20% x %Required Infiltration NOT Provided) | = | 0.0% |
| Total Required Detention Volume, Including Penalty | = | 6,049 cf |
| TOTAL REQUIRED DETENTION VOLUME | = | 6,049 cf |

**Infiltration Bed**

| | | |
|---|---|---|
| Surface Area Factor (SAF) | = | 8 |
| Minimum Surface Area (Contributing Imp Area / SAF) | = | 8,453 s.f. |
| Infiltration Bed Bottom Area: | = | 8,455 s.f. |
| Infiltration Design Rate: | = | 6.0 in/hour |
| Average Infiltration Rate from field testing: 12.0 | | |
| Factor of Safety: 2 | | |
| Infiltration Bed Volume (Infil. Area x Depth Underdrain Mat * 30% Voids) | = | 1,268 cf |
| Depth of underdrain material | = | 0.50 ft |
| Infiltration Volume (Bed Bot. Area x Infil Rate x Infil. Period x 1/12) | = | 25,365 cf |
| Infiltration Period | = | 6 hr |
| Impervious Loading Ratio (Impervious Area / Infiltration Bed Area) [Max 8:1 | = | 8 : 1 |
| Total Loading Ratio (Total Area / Infiltration Bed Area) [Max 10:1] | = | 12 : 1 |

**Underground Detention System**

R Tank Pent Vol= 8.69 cf / unit R Tank Unit: Double (2) Module H-20
Provided # of units = 1763
R Tank Volume = 15,320 cf
Stone Volume = 4275 cf (utilizing 25% stone void volume)

| | | |
|---|---|---|
| Above = | 1057 cf | 370.904024 |
| Sides = | 2161 cf | |
| Below = | 1057 cf | |

Total Storage Vol = 19,595

| | | |
|---|---|---|
| TOTAL PROVIDED DETENTION VOLUME | = | 19,595 cf |

Measured Groundwater Elevation = 736.8 (TP-2)
Groundwater Isolation = 3 feet
Min. Bottom of BMP/Detention = 739.80
Bottom of Stone Below Detention = 740.00
Bottom of R Tank Elevation (X bot)= 740.50
First Flush Elevation (Xff) = 741.41
Bankfull Flood Elevation (Xbf)= 742.35
100-Year Flood Elevation (X100)= 741.37
Top of R Tank 743.32
Min. Finished Grade @ Underground Det = 744.99

**Outlet Control Structure - Single Stage Outlet**

1) Flow restrictor wall

2) "First Flush" runoff will be fully infiltrated
First Flush Volume = 6335 cf
Infiltration Volume 25,365 cf

3) "Bankfull Flood" runoff will be fully infiltrated
Bankfull Flood Volume = 12,885 cf
Infiltration Volume = 25,365 cf

4) Flow restrictor wall outlet sizing for "100-Year Storm" runoff

| | | |
|---|---|---|
| Qa = Q 100 = (0.15 cfs / acre) * a | = | 0.362 cfs |
| A 100 = Q 100 / (0.62 * (2 * g * (X100 - Xbot))^.5) | = | 0.07803586 |
| Diameter of 100-Year Storm orifice | = | 1.25 inches |
| Area of 100-Year Storm orfice | = | 0.0085 sf |
| Maximum #orifice = A 100 / Aorifice | = | 9.2 |
| Number of orifice holes | = | 9 @ Elev = 742.35 |
| Q100 = 0.62(#100 orifice)(A100 orifice)*((2*g*h100tot)^.5) | = | 0.3561 cfs |
| T100 act = V100 / Q100 | = | 4.7 hours |

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DATE :
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CHECKED : ACA
SCALE : 1"=40'
JOB NO : SD-18-110

SHEET TITLE :
STORM MANAGEMENT CALCULATIONS

SHEET
C5.2

| TASK: | STREETS | STORM SEWER SYSTEM | CATCH BASIN INLET CASINGS | OUTFLOW CONTROL STRUCTURES | STORM WATER QUALITY UNIT | UNDERGROUND DETENTION | COMPONENTS: SCHEDULE: |
|---|---|---|---|---|---|---|---|
| INSPECT FOR SEDIMENT ACCUMULATION | | X | | X | X | X | WEEKLY |
| REMOVAL OF SEDIMENT ACCUMULATION | | X | | X | X | X | AS NEED & PRIOR TO TURNOVER |
| INSPECT FOR FLOATABLES AND DEBRIS | | X | X | X | X | X | QUARTERLY |
| CLEANING OF FLOATABLES AND DEBRIS | | X | X | X | X | X | QUARTERLY AND AT TURNOVER |
| INSPECTION FOR EROSION | | | | X | X | X | WEEKLY |
| REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES | | | | | X | X | AS NEEDED & PRIOR TO TURNOVER |
| REPLACEMENT OF GRAVEL JACKETS | | | | X | | | AS NEEDED |
| CLEAN STREETS | X | | | | | | AS NEEDED |
| INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS–BUILT PLANS (BY PROFESSIONAL ENGINEER W/ INFO AVAILABLE TO TOWNSHIP) | | X | | X | X | X | ANNUALLY AND AT TURNOVER |
| MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION | | X | | X | X | X | AS NEEDED |

AS NEEDED = WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE (1) FOOT DEPTH.

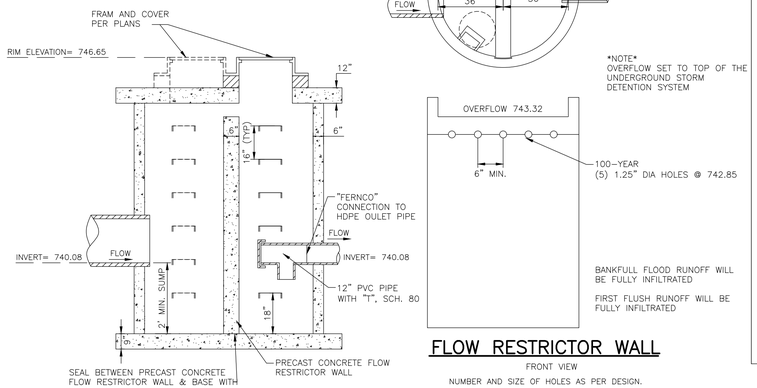
## CONSTRUCTION MAINTENANCE SCHEDULE

| TASK: | STREETS | STORM SEWER SYSTEM | CATCH BASIN INLET CASINGS | OUTFLOW CONTROL STRUCTURES | STORM WATER QUALITY UNIT | UNDERGROUND DETENTION | COMPONENTS: SCHEDULE: |
|---|---|---|---|---|---|---|---|
| INSPECT FOR SEDIMENT ACCUMULATION | | X | | X | X | X | ANNUALLY |
| REMOVAL OF SEDIMENT ACCUMULATION | | X | | X | X | X | EVERY 5–10 YEARS AS NEEDED |
| INSPECT FOR FLOATABLES AND DEBRIS | | X | X | X | X | X | ANNUALLY |
| CLEANING OF FLOATABLES AND DEBRIS | | X | X | X | X | X | ANNUALLY |
| INSPECTION FOR EROSION | | | | X | X | X | ANNUALLY |
| REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES | | | | | X | X | AS NEEDED |
| REPLACEMENT OF GRAVEL JACKETS | | | | X | | | EVERY 3–5 YEARS AS NEEDED |
| CLEAN STREETS | X | | | | | | SEMI–ANNUALLY |
| INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS–BUILT PLANS (BY PROFESSIONAL ENGINEER W/ INFO AVAILABLE TO TOWNSHIP) | | X | | X | X | X | ANNUALLY |
| INSPECT INFILTRATION BASIN FOLLOWING STORMS OF 1–INCH OR MORE | | | | | | X | AFTER OCCURRENCE / AS NEEDED |
| MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION | | X | | X | X | X | AS NEEDED |
| KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES ARE REPORT TO TOWNSHIP | | X | X | X | X | X | ANNUALLY |
| KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS, REPORT TO TOWNSHIP | | X | X | X | X | X | ANNUALLY |
| TOWNSHIP REVIEWS COST EFFECTIVENESS OF THE PREVENTATIVE MAINTENANCE PROGRAM AND MAKES ADJUSTMENTS AS NEEDED | | X | X | X | X | X | ANNUALLY |
| TOWNSHIP TO HAVE A PROFESSIONAL ENGINEER CARRY OUT EMERGENCY INSPECTIONS UPON IDENTIFICATION OF SEVERE PROBLEMS | | X | X | X | X | X | AS NEEDED |

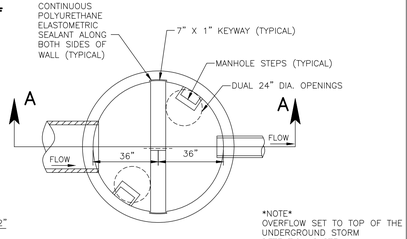
MAINTENANCE AFTER CONSTRUCTION WILL BE RESPONSIBILITY OF THE APPLICANT.

**THE COSTS ANTICIPATED TO ADDRESS THE ITEMS OUTLINED IN THE MAINTENANCE SCHEDULE ABOVE IS PROJECTED TO BE $3,500 ANNUALLY**

## MAINTENANCE SCHEDULE




SECTION A–A




*NOTE*
OVERFLOW SET TO TOP OF THE UNDERGROUND STORM DETENTION SYSTEM




FLOW RESTRICTOR WALL

FRONT VIEW

NUMBER AND SIZE OF HOLES AS PER DESIGN.

FLOW RESTRICTOR WITH OVERFLOW

OUTLET CONTROL STRUCTURE

NO SCALE

Inspired by LIX

Hydro International

# First Defense®

Cost-effective stormwater treatment with adaptability to meet demanding site requirements

## Product Profile

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes sediment total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations to accommodate a wide range of pipe sizes, peak flows and depth constraints (Table 1, next page).

## Components

1. Inlet Grate (optional)
2. Inlet Chute
3. Inlet Pipe (optional)
4. Floatables Draw Off Slot (not pictured)
5. Precast Vortex Chamber
6. Internal Bypass
7. Outlet Chute
8. Outlet Pipe
9. Oil and Floatables Storage
10. Sediment Storage Sump

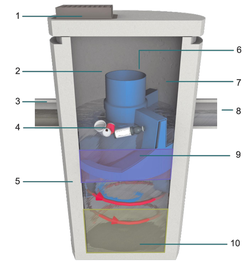



Fig.1 The First Defense® has internal components designed to efficiently capture pollutants and prevent washout at peak flows.

## Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

## Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for "offline" arrangements using separate junction manholes
- Proven to prevent pollutant washout at up to 500% of its treatment flow
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

## How it Works

The First Defense® has internal components designed to remove and retain gross debris, total suspended solids (TSS) and hydrocarbons (Fig.1).

Contaminated stormwater runoff enters the inlet chute from a surface grate and/or inlet pipe. The inlet chute introduces flow into the chamber tangentially to create a low energy vortex flow regime (magenta arrow) that directs sediment into the sump while oils, floating trash and debris rise to the surface.

Treated stormwater exits through a submerged outlet chute located opposite to the direction of the rotating flow (blue arrow). Enhanced vortex separation is provided by forcing the rotating flow within the vessel to follow the longest path possible rather than directly from inlet to outlet.

Higher flows bypass the treatment chamber to prevent turbulence and washout of captured pollutants. An integral bypass conveys infrequent peak flows directly to the outlet chute, eliminating the need for, and expense of, external bypass control structures. A floatables draw off slot functions to convey floatables into the treatment chamber prior to bypass.

**Stormwater Solutions**
Turning Water Around...®

# First Defense®

## Maintenance

The First Defense® needs minimal maintenance, but like all structural best management practices maintenance is necessary for the long-term protection of the environment.

Sediments captured by the First Defense® are stored in the sump; floatable trash and hydrocarbons are stored on the surface of the standing water. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.2).

More information can be found in the First Defense® Operation and Maintenance Manual, available at http://www.hydro-int.com/us/products/first-defense.



Fig.2 Maintenance is performed with a vactor truck.

## First Defense® Sizing & Design

**Design Options for Inlet and Internal Bypass Arrangements**

For maximum flexibility the First Defense® inlet and internal bypass arrangements are available in two configurations (Fig.3a & 3b). Model parameters and design criteria are shown in Table 1.

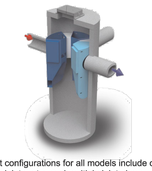


Fig.3a Inlet configurations for all models include options for inlet grates and multiple inlet pipes.

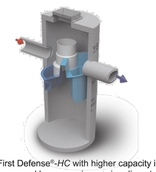


Fig.3b First Defense®-*HC* with higher capacity internal bypass and larger maximum pipe diameter.

Table 1. First Defense® Models and Design Criteria.

| First Defense® Model Number | Diameter | Typical Flow Rates for TSS Treatment 106µm | Typical Flow Rates for TSS Treatment 230µm | Peak Online Flow Rate | Maximum Pipe Diameter[1] | Oil Storage Capacity | Typical Sediment Storage Capacity[2] | Minimum Distance from Outlet Invert to Top of Rim[3] | Standard Distance from Outlet Invert to Sump Floor |
|---|---|---|---|---|---|---|---|---|---|
| | (ft / m) | (cfs / L/s) | (cfs / L/s) | (cfs / L/s) | (in / mm) | (gal / L) | (yd³ / m³) | (ft / m) | (ft / m) |
| FD-4 | 4 / 1.2 | 0.7 / 20 | 1.2 / 34 | 6 / 170 | 18 / 450 | 180 / 681 | 1.3 / 1.0 | 3.1 / 1.1 | 5.47 / 1.7 |
| FD-4HC | | | | 18 / 510 | 24 / 600 | 191 / 723 | | 2.3 - 3.9 / 0.7 - 1.2 | |
| FD-6 | 6 / 1.8 | 2.2 / 63 | 3.8 / 108 | 18 / 510 | 24 / 600 | 420 / 1,590 | 3.3 / 2.5 | 4.0 / 1.2 | 6.52 / 2.0 |
| FD-6HC | | | | 32 / 906 | 30 / 750 | 496 / 1,878 | | 3.0 - 5.1 / 0.9 - 1.6 | |

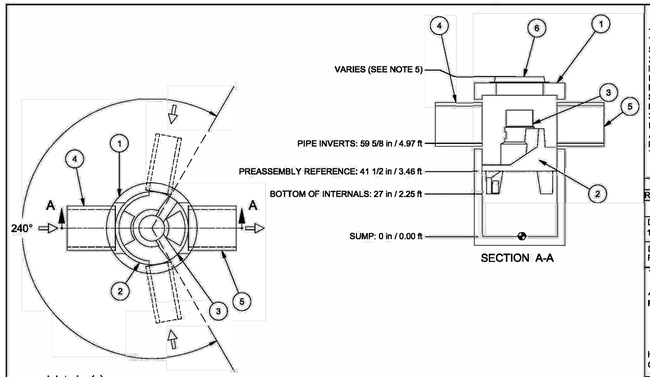
[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]The minimum distance for the 4HC and 6HC models depends on pipe diameter.

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com

**Stormwater Solutions**
Turning Water Around...®
FDSS1502/F

FIRST DEFENSE PRE-TREATMENT UNITS

NO SCALE




| Parts List | | |
|---|---|---|
| ITEM | SIZE (in) | DESCRIPTION |
| 1 | 48 | I.D. PRECAST MANHOLE |
| 2 | | LEDGER SUPPORT |
| 3 | | SEPARATION MODULE |
| 4 | 24 | INLET PIPE (BY OTHERS) |
| 5 | 24 | OUTLET PIPE (BY OTHERS) |
| 6 | 30 | FRAME AND COVER (OR GRATE) (ROUND) |

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**Notes**
1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

| REV | BY | DATE | DESCRIPTION |
|---|---|---|---|
| A | JL | 11/5/15 | SUMP DEPTH |

REVISION HISTORY

| Date | Scale |
|---|---|
| 11/25/14 | 1/4" = 1'0" |

| Drawn | Checked | Approved |
|---|---|---|
| RC | | |

Title

4-FT DIAMETER
FIRST DEFENSE

HIGH CAPACITY
GENERAL ARRANGEMENT

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific fabrication drawings.
2. The diameter of the inlet & outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plans).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plans).
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PRODUCT SPECIFICATIONS:
A. The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
B. The treatment system shall fit within the limits of excavation (area and depth) as shown in the project plans and will not exceed the dimensions for the design flow rates specified herein.
C. The treatment system shall remove greater than or equal to 80% of TSS based on the Target Particle Size (TPS) of 106 microns and/or 80% of TSS based on the TPS of 230 microns at 0.7 cfs and 1.2 cfs, respectively.
D. The treatment system shall convey the Peak On-line Flow Rates of up to 18 cfs without causing upstream surcharge conditions. Full-scale independent laboratory scour testing shall demonstrate effluent control of less than or equal to 5 mg/L for all flows up to 200% of MTFR-106.
E. The treatment system shall be capable of capturing and retaining fine silt and sand size particles. Analysis of captured sediment from full-scale field installations shall demonstrate particle sizes predominately in the 20-micron range

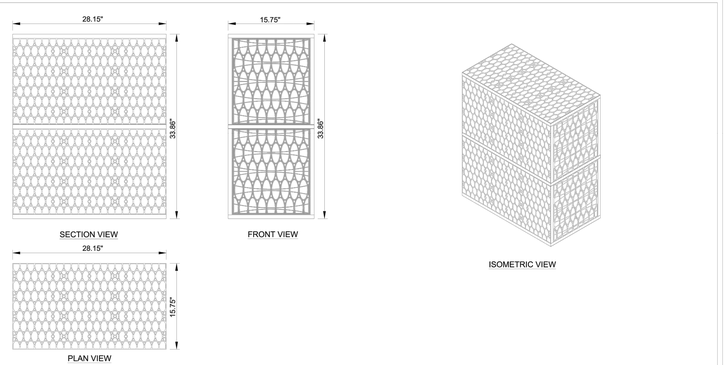
Hydro International

Stormwater Solutions
94 Hutchins Drive
Portland, Maine 04102
Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

CAD Ref: F-4HC-MAX
Project No.: xx-xxxx
Drawing No. F-4HCS1 Rev. A

FIRST DEFENSE FD-4HC

NO SCALE




**MODULE DATA**

**GEOMETRY:** LENGTH = 28.15 IN. (715 MM)
WIDTH = 15.75 IN. (400 MM)
HEIGHT = 33.86 IN. (860 MM)
TANK VOLUME = 8.69 CF
STORAGE VOLUME = 8.25 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 90%

**LOAD RATING:** 33.4 PSI, (MODULE ONLY)
HS25, (WITH ACF COVER SYSTEM)

**MATERIAL:** 100% RECYCLED POLYPROPYLENE

**SMALL PLATES PER SEGMENT/TOTAL:** 5/10

ACF ENVIRONMENTAL
LET'S GET IT DONE

R-TANK$^{HD}$ - DOUBLE MODULE

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com 5/16

R-TANK DOUBLE MODULE

NO SCALE

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FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
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YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

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JOB NO : SD-18-110

SHEET TITLE :
STORM MANAGEMENT DETAILS

SHEET
C5.3

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September 19, 2019
Project No. 191392

Stellar Hospitality Ypsilanti 2, LLC
2600 Auburn Road, Suite 240
Auburn Hills, MI 48326

Attention: Mr. Andy Andre, P.E.

Reference: Holiday Inn Express & Suites – Infiltration Testing
Ypsilanti Township, Michigan

Dear Mr. Andre:

We have completed a field investigation and infiltration testing for the above-referenced project. The proposed site is located at 460 Joe Hall Drive in Ypsilanti Township, Michigan as shown on the attached location plan, Figure No. 1.

At the time of our field work, the property was largely wooded and undeveloped except for a utility easement at the east of the site which was cleared of trees. A stream of shallow water was present along the northwest boundary of the site running approximately southwest to northeast. The site, in general, sloped down from the boundaries toward the interior, with elevations ranging from 747 ft to 742 ft. Four test pits were excavated using an excavator with a 2 ft wide bucket. Test pit locations are shown on the attached location plan, Figure No. 1. Test pits were extended to depths ranging from 8.5 to 9.0 ft below the existing grade.

A summary of the subsurface conditions encountered within the test pits is provided. The attached test pit logs contain detailed soil descriptions. Elevation survey data for the test pit surface and the infiltration tests was provided by Stellar Hospitality. Some variation in subsurface conditions may be expected.

In general, the test pits encountered 8 to 18 inches of silty topsoil. Beneath the surficial material, sandy soils were generally encountered. The encountered sandy soil generally consisted of poorly graded sand with silt (SP-SM) or silty sand (SM). Lean clay with sand (CL) was encountered in Test Pit TP-1 below the topsoil to a depth of 2.0 ft below the ground surface.

Ground water was encountered in the test pits at depths of 5.5 to 6.0 ft below the ground surface.



Infiltration tests were performed within each test pit using the double ring method outlined in the Washtenaw County Water Resource Commissioner's Procedures and Design Criteria for Storm Water Management. WCWRC guidelines specify that rainfall levels must be less than 0.5 inches for the 24 hours prior to testing. Per nearby rain gauges, there was no rainfall in the 24 hours prior to tests performed on September 3 and September 5 and approximately 0.25 inches of rainfall in the 24 hours prior to tests performed on September 4.

The double ring infiltration tests were performed at depths ranging from 2.2 to 3.4 ft below existing grade. Two concentric rings were used to perform the test with either a 6-inch outer ring diameter and 4-inch inner ring diameter or a 12-inch outer ring diameter and 6-inch inner ring diameter. The purpose of the outer ring is to prevent divergent flow of water from the inner ring while water level in the inner ring is monitored to calculate a one dimensional infiltration rate. The test areas were presoaked for 60 minutes. The infiltration tests were performed with an initial head ranging from 6 to 24 inches. Measurement intervals of 10 minutes were used based on the measured water level drop in the last 30 minutes of the presoak. For each test, readings were taken until stabilized infiltration rates were achieved. The individual infiltration test reports are attached. Test pits were backfilled to the surface with excavated soil at the conclusion of testing. A summary of the stabilized infiltration rates, average rate, and design rate (safety factor of 2) for each Test Pit are listed in Table 1, below.

***Table 1 – Infiltration Test Results***

| Test Pit | Test No. | Stabilized Infiltration Rate (in/hr) | Average Infiltration Rate (in/hr) | Design Infiltration Rate (in/hr) |
|---|---|---|---|---|
| TP-1 | 1.1 | 7 1/2 | 12 | 6 |
| | 1.2 | 16 1/2 | | |
| TP-2 | 2.1 | 22 1/2 | 22 1/2 | 10* |
| | 2.2 | 22 1/2 | | |
| TP-3 | 3.1 | 16 1/2 | 20 1/4 | 10* |
| | 3.2 | 24 | | |
| TP-4 | 4.1 | 16 1/2 | 21 | 10* |
| | 4.2 | 25 1/2 | | |

*WCWRC Procedures and Design Criteria for Stormwater Management specify a maximum design infiltration rate of 10 in/hr.



We appreciate the opportunity to provide this service to you on this project. Should you have any questions or require further assistance, please contact our office.

Sincerely,

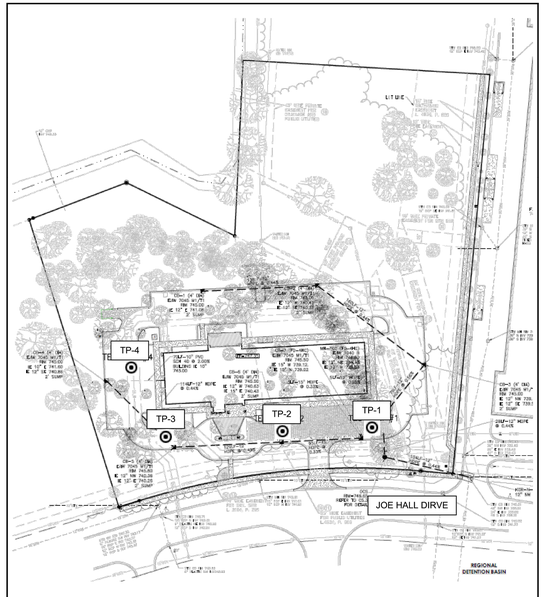
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STATE OF MICHIGAN
ROBERT J. WARREN
ENGINEER
No. 64300
LICENSED PROFESSIONAL ENGINEER

Robert J. Warren, P.E.
Project Engineer

Daniel S. Elliott, P.E.
SE Michigan Manager

Attachments: Figure No. 1 - Location Plan
Infiltration Test Reports
Soil Classification Chart
Test Pit Logs




LEGEND
⊙ TEST PIT (TYP)

N

NOTE: DRAWING PREPARED BY STELLAR DEVELOPMENT AND DATED 8-16-19

| | | |
|---|---|---|
| TITLE: LOCATION PLAN | | PROJECT: HOLIDAY INN EXPRESS & SUITES, YPSILANTI |
| SCALE: NTS | DATE: 9-19-19 | PROJECT NO.: 191392 |
| FIG. NO.: 1 | DR. BY: RW | REV. BY: RW |

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**Project No.:** 191392
**Test No.:** 1.1
**Date:** 09/04/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

**DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD**

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 4.0
OUTER DIAMETER (IN): 6.0

GROUND SURFACE ELEV. (FT): 742.4
TEST ELEV. (FT): 739.0
GROUNDWATER ELEV. (FT): 736.4

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
|---|---|---|---|
| 10:00 | 1 1/2 | 10 | 9 |
| 20:00 | 1 1/4 | 10 | 7 1/2 |
| 30:00 | 1 1/4 | 10 | 7 1/2 |
| 40:00 | 1 1/4 | 10 | 7 1/2 |

REMARKS: Initial head: 24"
Water level drop last 30 minutes presoak: 3.5"

**TESTED BY:** H. Albalawi **REVIEWED BY:** R. Warren

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**Project No.:** 191392
**Test No.:** 1.2
**Date:** 09/04/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

**DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD**

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 4.0
OUTER DIAMETER (IN): 6.0

GROUND SURFACE ELEV. (FT): 742.4
TEST ELEV. (FT): 739.0
GROUNDWATER ELEV. (FT): 736.4

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
|---|---|---|---|
| 10:00 | 2 3/4 | 10 | 16 1/2 |
| 20:00 | 2 3/4 | 10 | 16 1/2 |
| 30:00 | 2 3/4 | 10 | 16 1/2 |
| 40:00 | 2 3/4 | 10 | 16 1/2 |

REMARKS: Initial head: 24"
Water level drop last 30 minutes presoak: 6"

**TESTED BY:** H. Albalawi **REVIEWED BY:** R. Warren

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# HOLIDAY INN EXPRESS & SUITES
460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

Holiday Inn Express & Suites

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**Project No.:** 191392
**Test No.:** 2.1
**Date:** 09/03/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

## DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 6.0
OUTER DIAMETER (IN): 12.0
GROUND SURFACE ELEV. (FT): 742.3
TEST ELEV. (FT): 739.8
GROUNDWATER ELEV. (FT): 736.8

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
|---|---|---|---|
| 10:00 | 4 1/4 | 10 | 25 1/2 |
| 20:00 | 4 | 10 | 24 |
| 30:00 | 3 3/4 | 10 | 22 1/2 |
| 40:00 | 3 3/4 | 10 | 22 1/2 |
| 50:00 | 3 3/4 | 10 | 22 1/2 |

REMARKS: Initial head: 6"
Water level drop last 30 minutes presoak: 6"

**TESTED BY:** P. Gjoka **REVIEWED BY:** R. Warren

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**Project No.:** 191392
**Test No.:** 2.2
**Date:** 09/03/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

## DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 6.0
OUTER DIAMETER (IN): 12.0
GROUND SURFACE ELEV. (FT): 742.3
TEST ELEV. (FT): 739.8
GROUNDWATER ELEV. (FT): 736.8

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
|---|---|---|---|
| 10:00 | 3 3/4 | 10 | 22 1/2 |
| 20:00 | 3 3/4 | 10 | 22 1/2 |
| 30:00 | 3 3/4 | 10 | 22 1/2 |
| 40:00 | 3 3/4 | 10 | 22 1/2 |

REMARKS: Initial head: 6"
Water level drop last 30 minutes presoak: 6"

**TESTED BY:** P. Gjoka **REVIEWED BY:** R. Warren

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**Project No.:** 191392
**Test No.:** 3.1
**Date:** 09/04/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

## DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 4.0
OUTER DIAMETER (IN): 6.0
GROUND SURFACE ELEV. (FT): 742.6
TEST ELEV. (FT): 740.4
GROUNDWATER ELEV. (FT): 736.6

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
|---|---|---|---|
| 10:00 | 3 1/4 | 10 | 19 1/2 |
| 20:00 | 3 | 10 | 18 |
| 30:00 | 2 3/4 | 10 | 16 1/2 |
| 40:00 | 2 3/4 | 10 | 16 1/2 |
| 50:00 | 2 3/4 | 10 | 16 1/2 |

REMARKS: Initial head: 24"
Water level drop last 30 minutes presoak: 7"

**TESTED BY:** H. Albalawi **REVIEWED BY:** R. Warren

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**Project No.:** 191392
**Test No.:** 3.2
**Date:** 09/04/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

## DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 4.0
OUTER DIAMETER (IN): 6.0
GROUND SURFACE ELEV. (FT): 742.6
TEST ELEV. (FT): 740.4
GROUNDWATER ELEV. (FT): 736.6

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
|---|---|---|---|
| 10:00 | 4 1/4 | 10 | 25 1/2 |
| 20:00 | 4 | 10 | 24 |
| 30:00 | 4 | 10 | 24 |
| 40:00 | 4 | 10 | 24 |

REMARKS: Initial head: 24"
Water level drop last 30 minutes presoak: 9"

**TESTED BY:** H. Albalawi **REVIEWED BY:** R. Warren

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**Project No.:** 191392
**Test No.:** 4.1
**Date:** 09/05/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

## DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 4.0
OUTER DIAMETER (IN): 6.0
GROUND SURFACE ELEV. (FT): 742.2
TEST ELEV. (FT): 739.0
GROUNDWATER ELEV. (FT): 736.2

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
|---|---|---|---|
| 10:00 | 3 | 10 | 18 |
| 20:00 | 2 3/4 | 10 | 16 1/2 |
| 30:00 | 2 3/4 | 10 | 16 1/2 |
| 40:00 | 2 3/4 | 10 | 16 1/2 |

REMARKS: Initial head: 24"
Water level drop last 30 minutes presoak: 8"

**TESTED BY:** H. Albalawi **REVIEWED BY:** R. Warren

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**Project No.:** 191392
**Test No.:** 4.2
**Date:** 09/05/19

**Project:** Holiday Inn Express and Suites Ypsilanti
**Client:** Stellar Hospitality Ypsilanti 2, LLC
**Contractor:**
**Engineer/Architect:**

## DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD

PRE-TEST SOAKING DURATION (MIN): 60
INNER DIAMETER (IN): 4.0
OUTER DIAMETER (IN): 6.0
GROUND SURFACE ELEV. (FT): 742.2
TEST ELEV. (FT): 739.0
GROUNDWATER ELEV. (FT): 736.2

SOIL DESCRIPTION: Brown poorly graded sand with silt

**TABLE 1: TEST DATA**

| TIME (MIN:SEC) | WATER DROP (IN) | TIME INTERVAL (MIN) | INFILTRATION RATE* (IN/HR) |
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| 10:00 | 4 1/4 | 10 | 25 1/2 |
| 20:00 | 4 1/4 | 10 | 25 1/2 |
| 30:00 | 4 1/4 | 10 | 25 1/2 |
| 40:00 | 4 1/4 | 10 | 25 1/2 |

REMARKS: Initial head: 24"
Water level drop last 30 minutes presoak: 10"

**TESTED BY:** H. Albalawi **REVIEWED BY:** R. Warren

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# HOLIDAY INN EXPRESS & SUITES

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**ASTM D2488 Soil Classification Chart - Coarse Grained Soil:**

| Primary Soil Type | Group Name and (Group Symbol) | Criteria |
|---|---|---|
| GRAVEL | Well-graded GRAVEL (GW)<br>Poorly graded GRAVEL (GP) | <5% fines, <15% sand |
| | Well-graded GRAVEL with sand (GW)<br>Poorly-graded GRAVEL with sand (GP) | <5% fines, >15% sand |
| | Well-graded GRAVEL with silt (GW-GM)<br>Poorly graded GRAVEL with silt (GP-GM)<br>Well-graded GRAVEL with clay (GW-GC)<br>Poorly-graded GRAVEL with clay (GP-GC) | 10% fines, <15% sand |
| | Well-graded GRAVEL with silt and sand (GW-GM)<br>Poorly graded GRAVEL with silt and sand (GP-GM)<br>Well-graded GRAVEL with clay and sand (GW-GC)<br>Poorly-graded GRAVEL with clay and sand (GP-GC) | 10% fines, >15% sand |
| | Silty GRAVEL (GM)<br>Clayey GRAVEL (GC) | >15% fines, <15% sand |
| | Silty GRAVEL with sand (GM)<br>Clayey GRAVEL with sand (GC) | >15% fines, >15% sand |
| SAND | Well-graded SAND (SW)<br>Poorly-graded SAND (SP) | <5% fines, <15% gravel |
| | Well-graded SAND with gravel (SW)<br>Poorly-graded SAND with gravel (SP) | <5% fines, >15% gravel |
| | Well-graded SAND with silt (SW-SM)<br>Poorly-graded SAND with silt (SP-SM)<br>Well-graded SAND with clay (SW-SC)<br>Poorly-graded SAND with clay (SP-SC) | 10% fines, <15% gravel |
| | Well-graded SAND with silt and gravel (SW-SM)<br>Poorly-graded SAND with silt and gravel (SP-SM)<br>Well-graded SAND with clay and gravel (SW-SC)<br>Poorly-graded SAND with clay and gravel (SP-SC) | 10% fines, >15% gravel |
| | Silty SAND (SM)<br>Clayey SAND (SC) | >15% fines, <15% gravel |
| | Silty SAND with gravel<br>Clayey SAND with gravel | >15% fines, >15% gravel |

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**ASTM D2488 Soil Classification Outline - Fine Grained Soil:**

| Primary Soil Type | Group Name and (Group Symbol) | Criteria |
|---|---|---|
| SILT | SILT (ML)<br>Elastic SILT (MH) | <15% plus No. 200 |
| | SILT with sand (ML)<br>Elastic SILT with sand (MH) | 15-25% plus No. 200, % sand > % gravel |
| | SILT with gravel (ML)<br>Elastic SILT with gravel (MH) | 15-25% plus No. 200, % gravel >% sand |
| | Sandy SILT (ML)<br>Sandy Elastic SILT (MH) | >30% plus No. 200, % sand > % gravel, <15% gravel |
| | Sandy SILT with gravel (ML)<br>Sandy Elastic SILT with gravel (MH) | >30% plus No. 200, % sand > % gravel, >15% gravel |
| | Gravelly SILT (ML)<br>Gravelly Elastic SILT (MH) | >30% plus No. 200, % gravel > % sand, <15% sand |
| | Gravelly SILT with sand (ML)<br>Gravelly Elastic SILT with sand (MH) | >30% plus No. 200, % gravel > % sand, >15% sand |
| CLAY | Lean CLAY (CL)<br>Fat CLAY (CH) | <15% plus No. 200 |
| | Lean CLAY with sand (CL)<br>Fat CLAY with sand (CH) | 15-25% plus No. 200, % sand > % gravel |
| | Lean CLAY with gravel (CL)<br>Fat CLAY with gravel (CH) | 15-25% plus No. 200, % gravel >% sand |
| | Sandy lean CLAY (CL)<br>Sandy fat CLAY (CH) | >30% plus No. 200, % sand > % gravel, <15% gravel |
| | Sandy lean CLAY with gravel (CL)<br>Sandy fat CLAY with gravel (CH) | >30% plus No. 200, % sand > % gravel, >15% gravel |
| | Gravelly lean CLAY (CL)<br>Gravelly fat CLAY (CH) | >30% plus No. 200, % gravel > % sand, <15% sand |
| | Gravelly lean CLAY with sand (CL)<br>Gravelly fat CLAY with sand (CL) | >30% plus No. 200, % gravel > % sand, >15% sand |

Note: Percentages are based on estimated amounts of fines, sand and gravel to the nearest 5%

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**LOG OF TEST PIT**

**Project No.:** 191392
**Test Pit No.:** TP-1
**Sheet:** 1 of 1

Project: Holiday Inn Express and Suites
Client: Stellar Hospitality Ypsilanti 2 LLC
Location: Ypsilanti Township, Michigan
Drill Type: Excavator
Crew Chief: Field Eng.: RW Rev. By:RW
Coordinates:
Elevation: 742.4 ft Datum: NAVD 88 (GPS Observation)
Notes:
Plugging Record: Backfilled test pit with excavated soil.

Date Begin:08/29/19 Date End: 08/29/19

| Tooling | Type | Dia. | Groundwater, ft. | |
|---|---|---|---|---|
| Excavator | Bucket | 2' | During | None |
| | | | End | 6 |
| | | | Seepage | |
| | | | Date | Depth, ft. |

Depth Excavated: 9.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100% QP = Calibrated Penetrometer (tons/sq. ft.)

| Elev. FT. | Depth FT. | Sample Number | Recov. FT. | Dyn. Cone Eq. "N": ASTM STP 399 | *USCS Group Symbol | *DESCRIPTION | QP tsf | MST % | DD pcf | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 741.9 | 0.5 | | | | | 8" Silty Topsoil 0.7 | | | | Roots encountered to 2.0' |
| 741.4 | 1.0 | | | | CL | Brown lean CLAY with sand; mostly clayey fines, little medium to fine sand, moist 2.0 | | | | |
| 740.9 | 1.5 | | | | | | | | | |
| 740.4 | 2.0 | | | | | | | | | |
| 739.9 | 2.5 | | | | SP-SM | Brown poorly graded SAND with silt; mostly coarse to fine sand, few coarse to fine gravel, few silty fines, moist 4.5 | | | | COBBLE at 3' |
| 739.4 | 3.0 | | | | | | | | | |
| 738.9 | 3.5 | | | | | | | | | |
| 738.4 | 4.0 | | | | | | | | | |
| 737.9 | 4.5 | | | | SM | Brown silty SAND; mostly fine sand, some silty fines, moist 9.0 | | | | |
| 737.4 | 5.0 | | | | | | | | | |
| 736.9 | 5.5 | | | | | | | | | |
| 736.4 | 6.0 | | | | | | | | | |
| 735.9 | 6.5 | | | | | | | | | |
| 735.4 | 7.0 | | | | | | | | | |
| 734.9 | 7.5 | | | | | | | | | |
| 734.4 | 8.0 | | | | | | | | | |
| 733.9 | 8.5 | | | | | | | | | |
| 733.4 | 9.0 | | | | | End of Test Pit | | | | |

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

**LOG OF TEST PIT**

**Project No.:** 191392
**Test Pit No.:** TP-2
**Sheet:** 1 of 1

Project: Holiday Inn Express and Suites
Client: Stellar Hospitality Ypsilanti 2 LLC
Location: Ypsilanti Township, Michigan
Drill Type: Excavator
Crew Chief: Field Eng.: RW Rev. By:RW
Coordinates:
Elevation: 742.3 ft Datum: NAVD 88 (GPS Observation)
Notes:
Plugging Record: Backfilled test pit with excavated soil.

Date Begin:08/29/19 Date End: 08/29/19

| Tooling | Type | Dia. | Groundwater, ft. | |
|---|---|---|---|---|
| Excavator | Bucket | 2' | During | None |
| | | | End | 5.5 |
| | | | Seepage | |
| | | | Date | Depth, ft. |

Depth Excavated: 8.5 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100% QP = Calibrated Penetrometer (tons/sq. ft.)

| Elev. FT. | Depth FT. | Sample Number | Recov. FT. | Dyn. Cone Eq. "N": ASTM STP 399 | *USCS Group Symbol | *DESCRIPTION | QP tsf | MST % | DD pcf | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 741.8 | 0.5 | | | | | 16" Silty Topsoil 1.3 | | | | Roots encountered to 2.0' |
| 741.3 | 1.0 | | | | | | | | | |
| 740.8 | 1.5 | | | | SM | Brown silty SAND; mostly coarse to fine sand, some silty fines, moist 2.2 | | | | |
| 740.3 | 2.0 | | | | | | | | | |
| 739.8 | 2.5 | | | | SP-SM | Brown poorly graded SAND with silt; mostly coarse to fine sand, few silty fines, moist 4.5 | | | | |
| 739.3 | 3.0 | | | | | | | | | |
| 738.8 | 3.5 | | | | | | | | | |
| 738.3 | 4.0 | | | | | | | | | |
| 737.8 | 4.5 | | | | | | | | | |
| 737.3 | 5.0 | | | | SM | Brown silty SAND; mostly fine sand, some silty fines, moist 8.5 | | | | |
| 736.8 | 5.5 | | | | | | | | | |
| 736.3 | 6.0 | | | | | | | | | |
| 735.8 | 6.5 | | | | | | | | | |
| 735.3 | 7.0 | | | | | | | | | |
| 734.8 | 7.5 | | | | | | | | | |
| 734.3 | 8.0 | | | | | | | | | |
| 733.8 | 8.5 | | | | | End of Test Pit | | | | |

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

**LOG OF TEST PIT**

**Project No.:** 191392
**Test Pit No.:** TP-3
**Sheet:** 1 of 1

Project: Holiday Inn Express and Suites
Client: Stellar Hospitality Ypsilanti 2 LLC
Location: Ypsilanti Township, Michigan
Drill Type: Excavator
Crew Chief: Field Eng.: RW Rev. By:RW
Coordinates:
Elevation: 742.6 ft Datum: NAVD 88 (GPS Observation)
Notes:
Plugging Record: Backfilled test pit with excavated soil.

Date Begin:08/29/19 Date End: 08/29/19

| Tooling | Type | Dia. | Groundwater, ft. | |
|---|---|---|---|---|
| Excavator | Bucket | 2' | During | None |
| | | | End | 6 |
| | | | Seepage | |
| | | | Date | Depth, ft. |

Depth Excavated: 9.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100% QP = Calibrated Penetrometer (tons/sq. ft.)

| Elev. FT. | Depth FT. | Sample Number | Recov. FT. | Dyn. Cone Eq. "N": ASTM STP 399 | *USCS Group Symbol | *DESCRIPTION | QP tsf | MST % | DD pcf | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 742.1 | 0.5 | | | | | 18" Silty Topsoil 1.5 | | | | Roots encountered to 3.5' |
| 741.6 | 1.0 | | | | | | | | | |
| 741.1 | 1.5 | | | | SP-SM | Brown poorly graded SAND with silt; mostly coarse to fine sand, few coarse to fine gravel, few silty fines, moist 3.5 | | | | COBBLE at 2.5' |
| 740.6 | 2.0 | | | | | | | | | |
| 740.1 | 2.5 | | | | | | | | | |
| 739.6 | 3.0 | | | | | | | | | |
| 739.1 | 3.5 | | | | SM | Brown silty SAND; mostly fine sand, some silty fines, moist 9.0 | | | | |
| 738.6 | 4.0 | | | | | | | | | |
| 738.1 | 4.5 | | | | | | | | | |
| 737.6 | 5.0 | | | | | | | | | |
| 737.1 | 5.5 | | | | | | | | | |
| 736.6 | 6.0 | | | | | | | | | |
| 736.1 | 6.5 | | | | | | | | | |
| 735.6 | 7.0 | | | | | | | | | |
| 735.1 | 7.5 | | | | | | | | | |
| 734.6 | 8.0 | | | | | | | | | |
| 734.1 | 8.5 | | | | | | | | | |
| 733.6 | 9.0 | | | | | End of Test Pit | | | | |

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

**LOG OF TEST PIT**

**Project No.:** 191392
**Test Pit No.:** TP-4
**Sheet:** 1 of 1

Project: Holiday Inn Express and Suites
Client: Stellar Hospitality Ypsilanti 2 LLC
Location: Ypsilanti Township, Michigan
Drill Type: Excavator
Crew Chief: Field Eng.: RW Rev. By:RW
Coordinates:
Elevation: 742.2 ft Datum: NAVD 88 (GPS Observation)
Notes:
Plugging Record: Backfilled test pit with excavated soil.

Date Begin:08/29/19 Date End: 08/29/19

| Tooling | Type | Dia. | Groundwater, ft. | |
|---|---|---|---|---|
| Excavator | Bucket | 2' | During | None |
| | | | End | 6 |
| | | | Seepage | |
| | | | Date | Depth, ft. |

Depth Excavated: 9.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100% QP = Calibrated Penetrometer (tons/sq. ft.)

| Elev. FT. | Depth FT. | Sample Number | Recov. FT. | Dyn. Cone Eq. "N": ASTM STP 399 | *USCS Group Symbol | *DESCRIPTION | QP tsf | MST % | DD pcf | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 741.7 | 0.5 | | | | | 18" Silty Topsoil 1.5 | | | | Roots encountered to 2.0' |
| 741.2 | 1.0 | | | | | | | | | |
| 740.7 | 1.5 | | | | SP-SM | Brown poorly graded SAND with silt; mostly coarse to fine sand, few coarse to fine gravel, few silty fines, moist 3.5 | | | | |
| 740.2 | 2.0 | | | | | | | | | |
| 739.7 | 2.5 | | | | | | | | | |
| 739.2 | 3.0 | | | | | | | | | |
| 738.7 | 3.5 | | | | SM | Brown silty SAND; mostly fine sand, some silty fines, moist Grades gray 9.0 | | | | |
| 738.2 | 4.0 | | | | | | | | | |
| 737.7 | 4.5 | | | | | | | | | |
| 737.2 | 5.0 | | | | | | | | | |
| 736.7 | 5.5 | | | | | | | | | |
| 736.2 | 6.0 | | | | | | | | | |
| 735.7 | 6.5 | | | | | | | | | |
| 735.2 | 7.0 | | | | | | | | | |
| 734.7 | 7.5 | | | | | | | | | |
| 734.2 | 8.0 | | | | | | | | | |
| 733.7 | 8.5 | | | | | | | | | |
| 733.2 | 9.0 | | | | | End of Test Pit | | | | |

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.


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FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
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# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN


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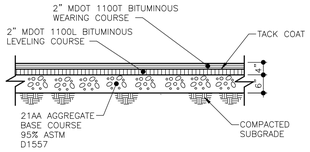
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| ISSUED FOR | DATE |
|---|---|
| WCWRC | 09/25/19 |
| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : NTS
JOB NO : SD-18-110

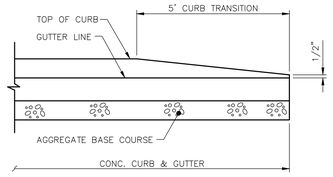
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INFILTRATION TESTING

SHEET
C5.6

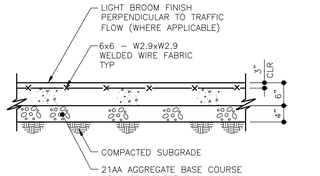



NOTE: A GEOTECHNICAL REPORT WITH PAVEMENT DESIGN RECOMMENDATIONS WAS NOT AVAILABLE, THEREFORE THE PAVEMENT SECTION REPRESENTS THE MINIMUM STANDARDS RECOMMENDED.

## BITUMINOUS PAVEMENT
NO SCALE



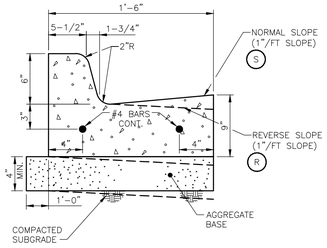

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NO SCALE



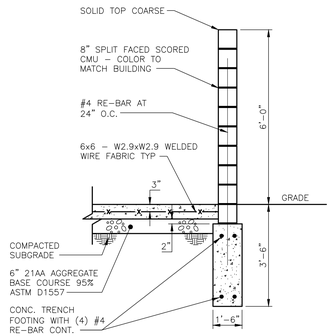

NOTE: A GEOTECHNICAL REPORT WITH PAVEMENT DESIGN RECOMMENDATIONS WAS NOT AVAILABLE, THEREFORE THE PAVEMENT SECTION REPRESENTS THE MINIMUM STANDARDS RECOMMENDED.

CONCRETE SHALL BE 3500 PSI

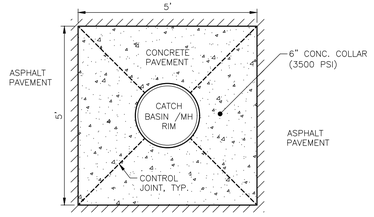
## CONCRETE PAVEMENT
NO SCALE




## CONC. CURB & GUTTER
NO SCALE

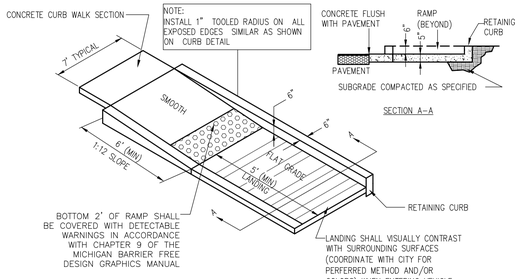



## DUMPSTER WALL

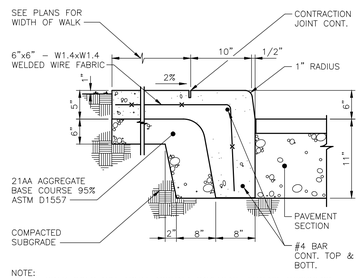



NOTE: CONCRETE COLLAR AT ALL STRUCTURES IN PAVEMENT

## CONCRETE COLLAR
NO SCALE

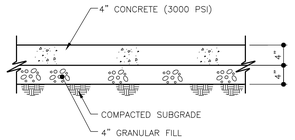



## BARRIER FREE RAMP
NO SCALE



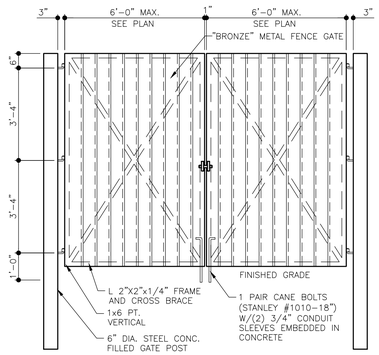

NOTE:
WHERE WALK DOES NOT ABUTT ASPHALT PAVEMENT, EXTEND THICKNESS FOR REQUIRED WIDTH AND OMIT CURB PORTION. CONTRACTION JOINTS TO BE 2 1/2" DEEP, SPACED AT 5' INTERVALS (TOOLED). EXPANSION JOINTS TO BE 1/2 " PREMOLDED FILLER, SPACED A MAXIMUM OF 30' APART.

## CONCRETE CURB WALK
NO SCALE

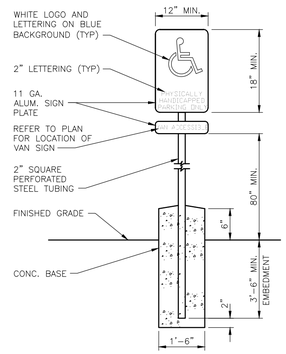



NOTE:
CONTRACTION JOINT SHALL BE 1/4"x2 3/4" DEEP, SPACED AT 5'–0" INTERVALS. EXPANSION JOINTS SHALL BE 1/2" PREMOLDED FILLER, SPACED AT A MAXIMUM 30' APART. EXPANSION JOINTS TO BE PLACED BETWEEN NEW AND EXISTING CONCRETE.

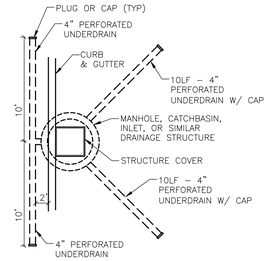
## CONCRETE WALK
NO SCALE



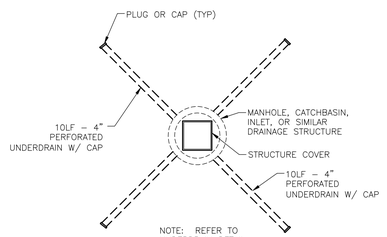

## DUMPSTER GATE DETAIL
NO SCALE



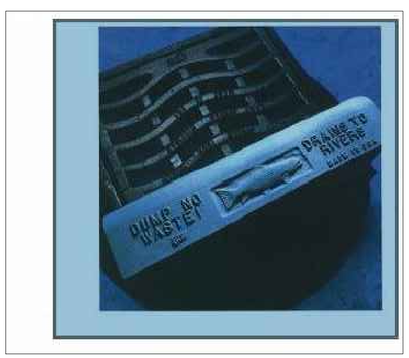

## TYPICAL HANDICAP SIGN
NO SCALE




## TYP CURB CATCH BASIN UNDERDRAIN
NO SCALE

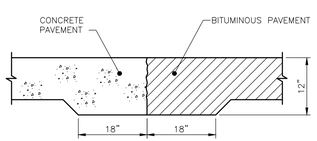



## TYP CURB CATCH BASIN UNDERDRAIN
NO SCALE

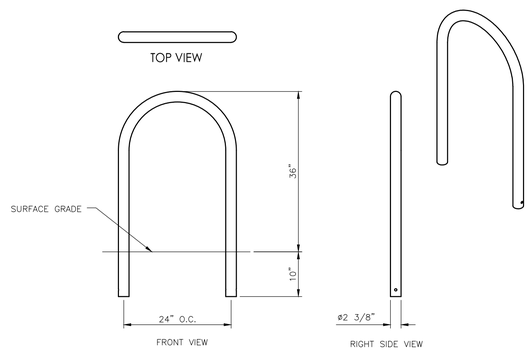



## CATCH BASIN COVER DETAIL
NO SCALE

NOTES:
ALL CATCH BASIN COVERS SHALL INCLUDE THE PHRASE "DUMP NO WASTE, DRAINS TO RIVER".



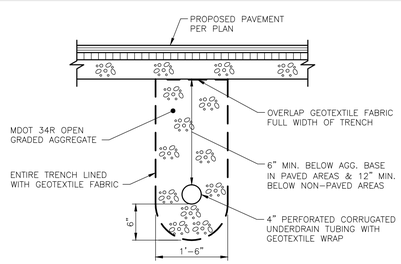

## TURNDOWN PAVEMENT SECTION
NO SCALE




## BIKE RACK
NO SCALE

MATERIAL LIST:
1. TUBING– ø 2 3/8"x.154" WALL STEEL TUBING

NOTES:
APEX BIKE RACK BY SITE SCAPES,
PRODUCT NO. AP2–02–EM
PLACE RACK MINIMUM OF 24" FROM WALL




## UNDERDRAIN
NO SCALE


STELLAR DEVELOPMENT, LLC

2600 AUBURN ROAD, SUITE 160
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PH 810-444-7815
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PREPARED UNDER THE DIRECTION OF:
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MI #47380

APPLICANT:
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2600 AUBURN ROAD, SUITE 240
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PH 248-419-5551


# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN


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| WCWRC | 09/25/19 |
| PSPA | 09/27/19 |
| WCWRC | 12/18/19 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : NTS
JOB NO : SD-18-110

SHEET TITLE :
**SITE DETAILS**

SHEET
C6.0




## SITE VEGETATION STATEMENT

SITE VEGETATION SURVEY PERFORMED BY NATIVE EDGE, LLC ON NOVEMBER 1, 2018. VEGETATIVE SURVEY FOCUSED ON IDENTIFYING VEGETATION PROTECTED UNDER THE YPSILANTI TOWNSHIP WOODLANDS PROTECTION ORDINANCE.

THE SUBJECT PROPERTY HAS HABITAT AREAS WHICH APPLY TO THE WOODLANDS PROTECTION ORDINANCE, INCLUDING:

- CANOPY COVER GREATER THAN 10,000 SQUARE FEET FORMED BY TREES, A MAJORITY OF WHICH HAVE A D.B.H. OF EIGHT INCHES OR GREATER.
- PRIMARY AND SECONDARY LINKAGE STRIPS.
- TREES GREATER THAN EIGHT INCHES D.B.H. WITHIN 20 FEET OF THE ROAD'S EDGE.

DUE TO THE PRESENCE OF VEGETATION PROTECTED UNDER THE WOODLANDS PROTECTION ORDINANCE, ALL TREES ON-SITE GREATER THAN EIGHT INCHES D.B.H. WERE TAGGED IN THE FIELD WITH THEIR IDENTIFYING NUMBERS, PRIMARY AND SECONDARY LINKAGE STRIPS WERE IDENTIFIED AND CATALOGED, AND A GENERAL DESCRIPTION OF THE CHARACTER, QUALITY, AND COMPOSITION OF THE EXISTING SITE VEGETATION WAS RECORDED.

### COMMUNITY TYPES ON-SITE

THERE ARE TWO PRIMARY COMMUNITY TYPES ON THE SUBJECT PROPERTY: FORESTED AREAS, AND OPEN FALLOW-FIELD AREAS.

FORESTED AREAS: THE FORESTED AREAS ARE DOMINATED BY BOX ELDER (Acer negundo) AND COMMON BUCKTHORN (Rhamnus cathartica), WITH A FEW CONCENTRATED POCKETS OF EASTERN COTTONWOOD (Populus deltoides). BOX ELDER IS A TREE SPECIES NATIVE TO MICHIGAN, BUT IS CONSIDERED SOMEWHAT OF A NUISANCE SPECIES, AS IT IS WEAK-WOODED, FAST-GROWING, AND TENDS TO HAVE A 'WEEDY' UNKEMPT HABIT. COMMON BUCKTHORN IS AN INVASIVE SHRUB AND DOMINATES THE SHRUB LAYER OF THE FORESTED AREAS, ALLOWING LITTLE ELSE TO GROW IN THESE AREAS. EASTERN COTTONWOOD IS A NATIVE TREE SPECIES WITH A FAVORABLE HABIT, AND IS MORE PREVALENT ON THE EASTERN PORTION OF THE PROPERTY OUTSIDE OF THE PROPOSED DEVELOPMENT AREAS. DUE TO THE COMPOSITION OF THE DOMINANT SPECIES OF THE PRIMARY FORESTED AREA ON-SITE, WE CONSIDER THIS FORESTED AREA TO BE OF VERY LOW-QUALITY, WITH VERY FEW HIGH-QUALITY SPECIES PRESENT.

FALLOW-FIELD AREAS: THE FALLOW-FIELD AREAS ARE DOMINATED BY GRASSES AND FORBS, WITH SHRUBS AND POCKETS OF TREES SCATTERED THROUGHOUT. THIS COMMUNITY TYPE IS CONCENTRATED ON THE NORTHEASTERN PORTION OF THE SITE, NEARLY EXCLUSIVELY OUTSIDE OF THE PROPOSED PROJECT AREA. THE DOMINANT TREES IN THIS AREA ARE EASTERN COTTONWOODS, WHICH ARE IN POCKETS WITHIN THIS AREA. THERE ARE POCKETS OF SHRUBS INCLUDING COMMON BUCKTHORN AND SILKY DOGWOOD (Cornus amomum), BUT THIS AREA IS DOMINATED BY A DIVERSE COMMUNITY OF GRASSES AND FORBS. DOMINANT PERENNIALS INCLUDE GOLDENRODS (Solidago spp.), WITH COMMON FIELD GRASSES AND INVASIVE FORBS DOMINATING THE OPEN AREAS.

### LINKAGE STRIPS

ON-SITE THERE IS ONE PRIMARY LINKAGE STRIP AND ONE SECONDARY LINKAGE STRIP, AS INDICATED ON THE ADJACENT PLAN.

THE PRIMARY LINKAGE STRIP IS ALONG JOE HALL DRIVE AND HAS THE FOLLOWING COMPOSITION: TREE LAYER – DOMINATED BY BOX ELDER, SOME EASTERN COTTONWOOD PRESENT. SHRUB LAYER – DOMINATED BY COMMON BUCKTHORN, POCKETS OF SILKY DOGWOOD AND STAGHORN SUMAC (Rhus typhina) ALSO PRESENT. PERENNIAL LAYER – DOMINATED BY GOLDENROD, COMMON FIELD GRASSES, AND COMMON ROADSIDE WEEDS.

THE SECONDARY LINKAGE STRIP IS LOCATED ALONG THE CREEK RUNNING N/S NEAR THE NORTH CENTRAL PORTION OF THE PROJECT SITE (OUTSIDE OF THE LIMITS OF DISTURBANCE), AND HAS THE FOLLOWING COMPOSITION: TREE LAYER – DOMINATED BY EASTERN COTTONWOOD. SHRUB LAYER – DOMINATED BY COMMON BUCKTHORN AND SILKY DOGWOOD. PERENNIAL LAYER – DOMINATED BY COMMON FIELD GRASSES.

## REPLACEMENT VEGETATION

NUMBER OF TREES TO BE CUT WHICH HAVE A D.B.H. OF EIGHT INCHES OR MORE: 109 TREES
NUMBER OF MITIGATION TREES REQUIRED: 109 TREES OF 2" D.B.H. OR MORE

NUMBER OF SHRUBS TO BE CUT WITHIN LINKAGE STRIPS: TO BE DETERMINED.
NUMBER OF SHRUBS TO BE REPLACED WITHIN LINKAGE STRIPS: TO BE DETERMINED – SEE PROPOSED LANDSCAPE PLAN.

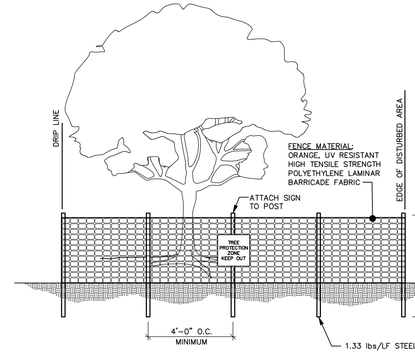
- THE MAJORITY OF SHRUBS TO BE REMOVED WITHIN LINKAGE STRIPS WILL BE COMMON BUCKTHORN, WHICH ARE INVASIVE SPECIES, AND THEREFORE WOULD NOT BE SUBJECT TO STANDARD REPLACEMENT REQUIREMENTS. THE GOAL OF OUR MITIGATION PLAN WILL BE TO RE-PLANT THE LINKAGE STRIPS WITH NATIVE VEGETATION WHICH WILL HELP TO RESTORE IMPACTS TO LINKAGE STRIPS, WHILE WORKING WITH THE NEEDS OF THE PROPOSED DEVELOPMENT TO STRIKE A BALANCE WHICH HAS AN OVERALL POSITIVE IMPACT ON THE PROJECT AREA.

## TREE/VEGETATION PROTECTION

TREES AND VEGETATION WITHIN LINKAGE STRIPS WHICH ARE NOT PROPOSED FOR REMOVAL SHALL BE PROTECTED DURING ALL CONSTRUCTION ACTIVITIES. PROTECTION MEASURES SHALL BE INSTALLED BY THE CONTRACTOR PRIOR TO THE BEGINNING OF CONSTRUCTION ACTIVITIES AND SHALL BE INSPECTED AND APPROVED BY THE OWNERS REPRESENTATIVE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. PROTECTION MEASURES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.

TREES TO BE PROTECTED SHALL HAVE TREE PROTECTION FENCING INSTALLED AT THEIR DRIP LINES (SEE DETAIL BELOW). NO CONSTRUCTION ACTIVITIES WILL BE PERMITTED WITHIN THE TREE'S DRIP LINE. IN INSTANCES WHERE CONSTRUCTION ACTIVITIES REQUIRE IMPACTS TO THE ROOT ZONE (DRIP LINE) OF A TREE TO BE PROTECTED, THESE IMPACTS SHALL BE APPROVED WITH THE TOWNSHIP PRIOR TO IMPACTING THE ROOT ZONE AREA. IF IMPACTS TO THE ROOT ZONE CAUSE A DECLINE IN HEALTH TO THE TREE, THE TREE SHALL BE REMOVED AND REPLACED ACCORDING TO THE MITIGATION REQUIREMENTS OF THE WOODLAND PROTECTION ORDINANCE.

SHRUBS AND VEGETATION WITHIN LINKAGE STRIPS TO BE PROTECTED SHALL BE DELINEATED WITH FLAGGING TAPE TO SHOW THE AREAS WHICH SHALL NOT BE IMPACTED. INVASIVE VEGETATION WITHIN LINKAGE STRIPS SHALL BE IDENTIFIED AND CLEANED OUT AS DESIRED BY THE CLIENT – EVEN WITHIN PROTECTED AREAS.




NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS ILLUSTRATED.
2. INSTALL TREE PROTECTION FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. SPACE TREE PROTECTION ZONE SIGNS A MINIMUM OF ONE EVERY 300 FEET. THE SIZE OF EACH SIGN MUST BE A MINIMUM OF 2' x 2' AND BE VISIBLE FROM BOTH SIDES OF THE FENCE. THE SIGN MUST CONTAIN THE FOLLOWING LANGUAGE IN BOTH ENGLISH & SPANISH: "TREE PROTECTION ZONE, KEEP OUT".
3. THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
4. TREE PROTECTION FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.

TREE PROTECTION FENCING DETAIL

TREE SURVEY LEGEND

469-470 — TREE ID(S) – AS TAGGED IN THE FIELD (SEE TREE LIST ON SHEET L1.1)

EXISTING TREE TO BE PRESERVED

EXISTING TREE TO BE REMOVED

NATIVEDGE
ECOLOGICALLY INSPIRED DESIGN

SITE VEGETATION SURVEY PERFORMED BY LICENSED LANDSCAPE ARCHITECT WES LANDON, ASLA OF NATIVE EDGE, LLC ON NOVEMBER 1, 2018.

NATIVE EDGE, LLC
PO BOX 140021
GRAND RAPIDS, MI 49514

Know what's below. Call before you dig.

0' 30' 60' 90'
SCALE: 1" = 30'

STELLAR DEVELOPMENT, LLC
2600 AUBURN ROAD, SUITE 160
AUBURN HILLS, MI 48326
PH 810-444-7815
FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
YPSILANTI SUPERIOR HOSPITALITY 2, LLC
2600 AUBURN ROAD, SUITE 240
AUBURN HILLS, MI 48326
PH 248-419-5551

# HOLIDAY INN EXPRESS & SUITES
460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

Holiday Inn Express & Suites

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| ISSUED FOR | DATE |
|---|---|
| INTERNAL REVIEW | 12/18/18 |
| PSPA | 01/14/20 |

DATE : 01/14/20
DRAWN : ACA
CHECKED : ACA
SCALE : 1"=30'
JOB NO : SD-18-110

SHEET TITLE :
TREE SURVEY PLAN

SHEET
L1.0

## Joe Hall Drive Tree Survey

| Tree ID | DBH | Scientific Name | Common Name | Condition | Density / Spacing | Remove? |
|---|---|---|---|---|---|---|
| 001 | 9 | *Populus deltoides* | Eastern Cottonwood | Good | 30'+ | |
| 002 | 9 | *Morus alba* | White Mulberry | Good | 30'+ | Y |
| 003 | 11 | *Acer negundo* | Box Elder | Good | 30'+ | Y |
| 004 | 18 | *Acer negundo* | Box Elder | Fair, trunk partially dead | 15' | Y |
| 005 | 18 | *Acer negundo* | Box Elder | Good, Multiple Trunk | 15' | Y |
| 006 | 14 | *Acer negundo* | Box Elder | Good, Multiple Trunk | 20' | Y |
| 007 | 8 | *Acer negundo* | Box Elder | Good | 20' | Y |
| 008 | 14 | *Acer negundo* | Box Elder | Fair, Severely leaning, some dead wood | 10' | Y |
| 009 | 10 | *Acer negundo* | Box Elder | Poor, Trunk Broken 1/2 way up | 10' | Y |
| 010 | 9 | *Acer negundo* | Box Elder | Good | 10' | Y |
| 011 | 13 | *Acer negundo* | Box Elder | Poor, Mult. Trunk, Dead wood on trunk | 15' | Y |
| 012 | 10 | *Acer negundo* | Box Elder | Good | 15' | Y |
| 013 | 13 | *Acer negundo* | Box Elder | Fair, some dead wood | 15' | Y |
| 014 | 21 | *Acer negundo* | Box Elder | Good | 15' | Y |
| 015 | 10 | *Acer negundo* | Box Elder | Good | 15' | Y |
| 016 | 18 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 15' | Y |
| 017 | 13 | *Acer negundo* | Box Elder | Fair, some dead wood | 15' | Y |
| 018 | 8 | *Acer negundo* | Box Elder | Good | 15' | Y |
| 019 | 9 | *Acer negundo* | Box Elder | Good | 15' | Y |
| 020 | 28 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | Y |
| 021 | 25 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | Y |
| 022 | 9 | *Populus deltoides* | Eastern Cottonwood | Fair, some dead wood | 50' | Y |
| 023 | 11 | *Acer negundo* | Box Elder | Poor, Lots of dead wood | 40' | Y |
| 024 | 8 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 025 | 9 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 026 | 9 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 027 | 11 | *Acer negundo* | Box Elder | Poor, Broken near base | 30' | Y |
| 028 | 9 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 029 | 20 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 030 | 18 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 031 | 11 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 032 | 10 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 033 | 11 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 034 | 8 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 035 | 11 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 036 | 12 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 037 | 16 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 038 | 19 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 039 | 12 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 040 | 11 | *Acer negundo* | Box Elder | Poor, Leaning | 30' | Y |
| 041 | 8 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 042 | 9 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 043 | 14 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 30' | Y |
| 044 | 13 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 30' | Y |
| 045 | 13 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 30' | Y |
| 046 | 9 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 047 | 11 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 048 | 19 | *Acer negundo* | Box Elder | Poor, Leaning, dead wood | 30' | Y |
| 049 | 14 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 050 | 10 | *Acer saccharinum* | Silver Maple | Good | 35' | Y |

## Joe Hall Drive Tree Survey

| Tree ID | DBH | Scientific Name | Common Name | Condition | Density / Spacing | Remove? |
|---|---|---|---|---|---|---|
| 051 | 15 | *Acer negundo* | Box Elder | Poor, Broken Trunk, Dead Wood | 30' | Y |
| 052 | 14 | *Acer saccharinum* | Silver Maple | Good, Mult. Trunk | 30' | Y |
| 053 | 34 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 054 | 11 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 055 | 18 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 056 | 17 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 057 | 11 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 058 | 15 | *Acer negundo* | Box Elder | Good | 30' | |
| 059 | 14 | *Acer negundo* | Box Elder | Good | 30' | |
| 060 | 11 | *Acer negundo* | Box Elder | Good | 30' | |
| 061 | 10 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 062 | 10 | *Acer negundo* | Box Elder | Good | 30' | |
| 063 | 11 | *Acer negundo* | Box Elder | Good | 30' | |
| 064 | 22 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 065 | 17 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 066 | 21 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | Y |
| 067 | 11 | *Acer saccharinum* | Silver Maple | Good | 30' | Y |
| 068 | 9 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 30' | Y |
| 069 | 10 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 30' | Y |
| 070 | 10 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 071 | 9 | *Acer negundo* | Box Elder | Good | 30' | Y |
| 072 | 6 | *Acer negundo* | Box Elder | Good | 30' | |
| 073 | 9 | *Acer negundo* | Box Elder | Good | 30' | |
| 074 | 9 | *Acer negundo* | Box Elder | Good | 30' | |
| 075 | 12 | *Acer negundo* | Box Elder | Good | 30' | |
| 076 | 14 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 30' | |
| 077 | 15 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 30' | |
| 078 | 16 | *Acer negundo* | Box Elder | Good | 30' | |
| 079 | 13 | *Acer negundo* | Box Elder | Poor, Broken Branches, Dead Wood | 30' | |
| 080 | 17 | *Acer negundo* | Box Elder | Good | 30' | |
| 081 | 13 | *Acer negundo* | Box Elder | Good | 30' | |
| 082 | 11 | *Acer negundo* | Box Elder | Good | 30' | |
| 083 | 11 | *Acer negundo* | Box Elder | Good | 30' | |
| 084 | 11 | *Acer negundo* | Box Elder | Good | 30' | |
| 085 | 7 | *Acer negundo* | Box Elder | Good | 25' | |
| 086 | 9 | *Acer negundo* | Box Elder | Good | 25' | |
| 087 | 17 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 25' | |
| 088 | 17 | *Acer negundo* | Box Elder | Good | 25' | |
| 089 | 11 | *Acer negundo* | Box Elder | Good | 25' | |
| 090 | 12 | *Acer negundo* | Box Elder | Good | 25' | |
| 091 | 13 | *Acer negundo* | Box Elder | Poor, Severely leaning, dead wood | 25' | |
| 092 | 14 | *Acer negundo* | Box Elder | Good | 25' | |
| 093 | 13 | *Acer negundo* | Box Elder | Good | 25' | |
| 094 | 8 | *Acer negundo* | Box Elder | Good | 25' | |
| 095 | 9 | *Acer negundo* | Box Elder | Good | 25' | |
| 096 | 13 | *Acer negundo* | Box Elder | Good | 25' | |
| 097 | 11 | *Acer negundo* | Box Elder | Good | 25' | |
| 098 | 15 | *Acer negundo* | Box Elder | Good | 25' | |
| 099 | 14 | *Acer negundo* | Box Elder | Good | 25' | Y |
| 100 | 15 | *Acer negundo* | Box Elder | Good | 25' | Y |

## Joe Hall Drive Tree Survey

| Tree ID | DBH | Scientific Name | Common Name | Condition | Density / Spacing | Remove? |
|---|---|---|---|---|---|---|
| 401 | 14 | *Acer negundo* | Box Elder | Good | 25' | Y |
| 402 | 14 | *Acer negundo* | Box Elder | Good | 25' | Y |
| 403 | 16 | *Acer negundo* | Box Elder | Good | 25' | Y |
| 404 | 9 | *Acer negundo* | Box Elder | Good | 25' | Y |
| 405 | 9 | *Malus spp.* | Wild Crabapple | Good | 25' | Y |
| 406 | 25 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 25' | Y |
| 407 | 15 | *Prunus serotina* | Black Cherry | Good | 25' | Y |
| 408 | 17 | *Acer negundo* | Box Elder | Good | 25' | |
| 409 | 17 | *Quercus bicolor* | Swamp White Oak | Good | 25' | Y |
| 410 | 13 | *Quercus bicolor* | Swamp White Oak | Good | 25' | Y |
| 411 | 16 | *Quercus bicolor* | Swamp White Oak | Good | 25' | Y |
| 412 | 11 | *Acer negundo* | Box Elder | Fair, Leaning Trunk | 25' | |
| 413 | 17 | *Acer negundo* | Box Elder | Good | 25' | |
| 414 | 13 | *Acer negundo* | Box Elder | Good | 25' | |
| 415 | 15 | *Acer negundo* | Box Elder | Good | 25' | |
| 416 | 19 | *Acer negundo* | Box Elder | Good | 25' | |
| 417 | 15 | *Acer negundo* | Box Elder | Good | 25' | |
| 418 | 12 | *Acer negundo* | Box Elder | Good | 25' | |
| 419 | 13 | *Acer negundo* | Box Elder | Good | 25' | |
| 420 | 21 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 25' | |
| 421 | 31 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 422 | 21 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 423 | 12 | *Acer negundo* | Box Elder | Good | 25' | |
| 424 | 12 | *Acer negundo* | Box Elder | Good | 25' | |
| 425 | 22 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 426 | 14 | *Acer negundo* | Box Elder | Good | 25' | |
| 427 | 11 | *Acer negundo* | Box Elder | Good | 25' | |
| 428 | 21 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 25' | |
| 429 | 13 | *Acer negundo* | Box Elder | Good | 25' | |
| 430 | 10 | *Acer negundo* | Box Elder | Good | 25' | |
| 431 | 13 | *Acer negundo* | Box Elder | Poor, Lots of dead wood | 25' | |
| 432 | 11 | *Acer negundo* | Box Elder | Good | 40' | |
| 433 | 12 | *Acer negundo* | Box Elder | Good | 40' | |
| 434 | 10 | *Acer negundo* | Box Elder | Good | 40' | |
| 435 | 18 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | |
| 436 | 45 | *Populus deltoides* | Eastern Cottonwood | Good, very large, mult. Trunk | 40' | |
| 437 | 22 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | |
| 438 | 15 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | |
| 439 | 9 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | |
| 440 | 9 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | |
| 441 | 12 | *Acer negundo* | Box Elder | Fair, some dead wood | 40' | |
| 442 | 13 | *Prunus serotina* | Black Cherry | Good | 40' | |
| 443 | 15 | *Acer saccharinum* | Silver Maple | Good | 40' | |
| 444 | 10 | *Acer negundo* | Box Elder | Good | 40' | |
| 445 | 9 | *Acer negundo* | Box Elder | Poor, lots of dead wood | 40' | Y |
| 446 | 9 | *Acer negundo* | Box Elder | Poor, lots of dead wood | 40' | Y |
| 447 | 8 | *Fraxinus pennsyvanica* | Green Ash | Good | 40' | Y |
| 448 | 10 | *Ulmus pumila* | Siberian Elm | Good | 40' | Y |
| 449 | 9 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 450 | 17 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | Y |

## Joe Hall Drive Tree Survey

| Tree ID | DBH | Scientific Name | Common Name | Condition | Density / Spacing | Remove? |
|---|---|---|---|---|---|---|
| 451 | 10 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 452 | 10 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 453 | 9 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 454 | 11 | *Ulmus pumila* | Siberian Elm | Good | 40' | Y |
| 455 | 11 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 456 | 12 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | Y |
| 457 | 9 | *Ulmus pumila* | Siberian Elm | Good | 40' | Y |
| 458 | 10 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | |
| 459 | 10 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 460 | 13 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | Y |
| 461 | 9 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 462 | 10 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 40' | |
| 463 | 10 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 464 | 9 | *Acer negundo* | Box Elder | Poor, Lots of dead wood | 40' | Y |
| 465 | 11 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 466 | 9 | *Acer negundo* | Box Elder | Fair, some dead wood | 40' | Y |
| 467 | 8 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 468 | 8 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 469 | 11 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 470 | 10 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 471 | 9 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 472 | 11 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 473 | 11 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 474 | 9 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 475 | 8 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 476 | 9 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 477 | 19 | *Populus deltoides* | Eastern Cottonwood | | 40' | Y |
| 478 | 9 | *Acer negundo* | Box Elder | Good | 40' | Y |
| 479 | 12 | *Acer negundo* | Box Elder | Good | 40' | |
| 480 | 17 | *Acer negundo* | Box Elder | Good | 40' | |
| 481 | 18 | *Acer negundo* | Box Elder | Good | 40' | |
| 482 | 17 | *Acer negundo* | Box Elder | Poor, Lots of dead wood | 40' | |
| 483 | 21 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 484 | 20 | *Populus deltoides* | Eastern Cottonwood | Good | 50' | |
| 485 | 11 | *Acer negundo* | Box Elder | Good | 50' | |
| 486 | 30 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 487 | 26 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 488 | 16 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 50' | |
| 489 | 24 | *Acer negundo* | Box Elder | Good, Mult. Trunk | 50' | |
| 490 | 14 | *Acer negundo* | Box Elder | Poor, severely leaning | 50' | |
| 491 | 25 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 492 | 13 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 493 | 23 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 494 | 14 | *Populus deltoides* | Eastern Cottonwood | Good | 50' | |
| 495 | 13 | *Populus deltoides* | Eastern Cottonwood | Good | 50' | |
| 496 | 14 | *Populus deltoides* | Eastern Cottonwood | Good | 50' | |
| 497 | 12 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 498 | 14 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 499 | 13 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 500 | 11 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 501 | 17 | *Populus deltoides* | Eastern Cottonwood | Good | 30' | |
| 502 | 9 | *Populus deltoides* | Eastern Cottonwood | Good | 50' | |
| 503 | 9 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 504 | 10 | *Ulmus pumila* | Siberian Elm | Good | 40' | |
| 505 | 26 | *Populus deltoides* | Eastern Cottonwood | Good, Mult. Trunk | 50' | |
| 506 | 17 | *Populus deltoides* | Eastern Cottonwood | Good | 50' | |
| 507 | 18 | *Populus deltoides* | Eastern Cottonwood | Good | 50' | |
| 508 | 9 | *Ulmus pumila* | Siberian Elm | Good | 40' | |

REPLACEMENT VEGETATION

NUMBER OF TREES TO BE CUT WHICH HAVE A D.B.H. OF EIGHT INCHES OR MORE: 109 TREES
NUMBER OF MITIGATION TREES REQUIRED: 109 TREES OF 2" D.B.H. OR MORE

Know what's below.
Call before you dig.


STELLAR DEVELOPMENT, LLC

2600 AUBURN ROAD, SUITE 160
AUBURN HILLS, MI 48326
PH 810-444-7815
FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
YPSILANTI SUPERIOR HOSPITALITY 2, LLC
2600 AUBURN ROAD, SUITE 240
AUBURN HILLS, MI 48326
PH 248-419-5551


# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

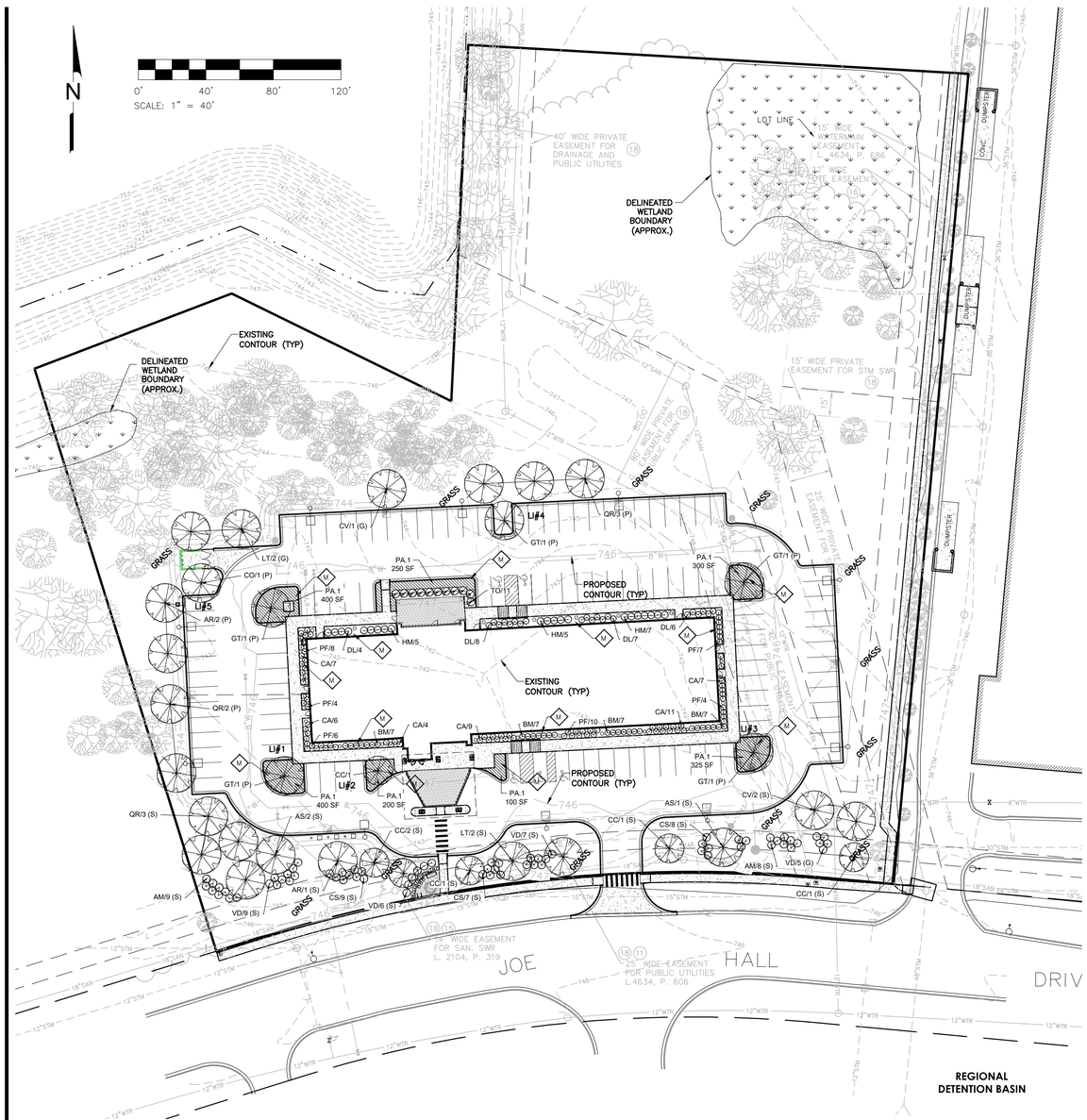

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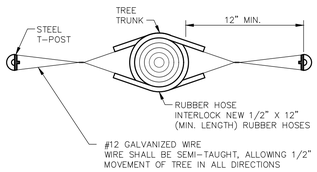

| ISSUED FOR | DATE |
|---|---|
| INTERNAL REVIEW | 12/18/18 |
| PSPA | 01/14/20 |

DATE : 01/14/20
DRAWN : ACA
CHECKED : ACA
SCALE : NTS
JOB NO : SD-18-110

SHEET TITLE :
TREE SURVEY TABLE

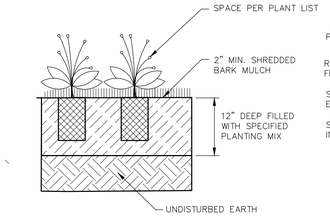
SHEET
L1.1



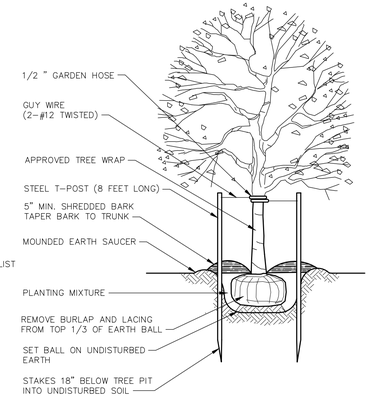

## BRACING DETAIL

SCALE: NONE




## PERENNIAL PLANTING BED

SCALE: NONE

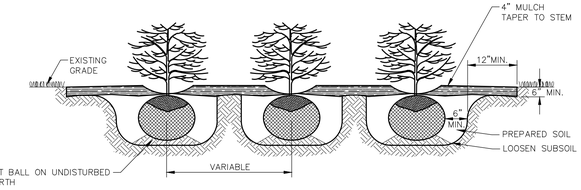



## DECIDUOUS TREE PLANTING

SCALE: NONE

### KEY NOTES

- DECIDUOUS TREE
- EVERGREEN NARROW SHURB
- SHRUB
- PERENNIAL
- (M) MULCH (SHREDDED BARK) 3" DEPTH
- (G) GENERAL PLANTINGS
- (S) STREET PLANTINGS
- (P) PARKING LOT TREES




## SHRUB BED DETAIL

SCALE: NONE

- FIRST AND SECOND WATERING AND CULTIVATION SHALL INCLUDE SHRUB BEDS.
- CUT 6" X 12" (MIN.) EDGING AROUND THE PERMETER OF ALL SHRUB BEDS SHOWN ON THE PLANS. SPRAY A NON-PERSISTANT GLYPHOSATE HERBICIDE TO ENTIRE SHRUB BEDS PRIOR TO PLANTING AND BARK PLACEMENT.
- SHRUB BEDS ARE TO BE PAID FOR BY THE PAY ITEM 'SITE PREPARATION'.
- ALL PLANTS SHALL BE SET PLUMB AND HAVE THE BEST SIDE OF PLANT FACING THE MAIN VIEWING DIRECTION.

## PLANTING SCHEDULE

| TREES | | | | | |
|---|---|---|---|---|---|
| Qty. | Key | Scientific Name | Common Name | Size & Condition | Spacing |
| 3 | AR | *Acer rubrum* | Red Maple | 2.5" Cal., B&B | AS |
| 3 | AS | *Acer saccharum* | Sugar Maple | 2.5" Cal., B&B | AS |
| 3 | CV | *Carya ovata* | Shagbark Hickory | 2.5" Cal., B&B | AS |
| 1 | CO | *Celtic occidentalis* | Common Hackberry | 2.5" Cal., B&B | AS |
| 6 | CC | *Cercis canadensis* | Eastern Redbud | 2" Cal., B&B | AS |
| 5 | GT | *Gleditsia tricanthos var. inermis 'Suncole'* | Sunburst Honeylocust | 2.5" Cal., B&B | AS |
| 4 | LT | *Liriodendron tulipifera* | Tulip Tree | 2.5" Cal., B&B | AS |
| 8 | QR | *Quercus rubra* | Northern Red Oak | 2.5" Cal., B&B | AS |
| 11 | TO | *Thuja occidentalis 'Mission'* | Techny Arborvitae | 6' Ht., B&B | 6' |

| SHRUBS | | | | | |
|---|---|---|---|---|---|
| Qty. | Key | Scientific Name | Common Name | Size & Condition | Spacing |
| 17 | AM | *Aronia melanocarpa 'Autumn Magic'* | Autumn Magic Black Chokeberry | 30" Ht., Cont. | 4' O.C. |
| 28 | BM | *Buxus microphylla 'Winter Gem'* | Winter Gem Boxwood | 30" Ht., Cont. | 3' O.C. |
| 44 | CA | *Ceanothus americanus* | New Jersey Tea | 24" Ht., Cont. | 30-36" O.C. |
| 24 | CS | *Cornus sericea 'Arctic Fire'* | Arctic Fire Red Osier Dogwood | 30" Ht., Cont. | 3' O.C. |
| 25 | DL | *Dierville lonicera* | Northern Bush Honeysuckle | 24" Ht., Cont. | 3' O.C. |
| 39 | PF | *Potentilla fruticosa 'McKay's White'* | McKay's White Potentilla | 24" Ht., Cont. | 3' O.C. |
| 27 | VD | *Viburnum dentatum 'Christom' Blue Muffin* | Blue Muffin Viburnum | 30" Ht., Cont. | 4-5' O.C. |

| PERENNIAL PLANTING AREA 1 - PA.A (1,975 sf) | | | | |
|---|---|---|---|---|
| Qty. | % of Area | Scientific Name | Common Name | Size / Spacing / Grouping |
| 150 | 8 | *Asclepias tuberosa* | Butterfly Weed | Deep Cell Plug / 12" O.C. / 7-9 per group |
| 150 | 12 | *Rudbeckia fulgida* | Orange Coneflower | Deep Cell Plug / 15" O.C. / 5 per group |
| 695 | 80 | *Sporobolus heterolepis* | Prairie Dropseed | Deep Cell Plug / 18" O.C. / 5-7 per group |

**PERENNIAL PLUG PLANTING NOTES**

1) NATIVE PERENNIALS SHALL BE PLANTED USING DEEP CELL PLUGS PURCHASED IN 38-CELL OR 50-CELL PLUG FLATS. QUARTS, GALLONS, OR LARGER SIZES WILL NOT BE ACCEPTED UNLESS APPROVED BY CLIENT'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
2) NATIVE PERENNIALS SHALL BE SOURCED FROM A LOCAL OR REGIONAL NATIVE PLANT PRODUCER. PLANTS FROM COMMERCIAL LANDSCAPE SUPPLY NURSERIES SHALL NOT BE ACCEPTED, AS THEY WILL NOT BE OF A NATIVE PLANT STOCK. NURSERIES TO SOURCE PLANT MATERIAL FROM IN ORDER OF PREFERENCE ARE AS FOLLOWS: WILDTYPE (MASON, MI), CARDNO (WALKERTON, IN), HIDDEN SAVANNAH (KALAMAZOO, MI), AND PRAIRIE NURSERY (NEWTON, WI). OTHER NATIVE PLANT NURSERIES WILL ALSO BE ACCEPTED IF IT CAN BE VERIFIED THEY PRODUCE STRAIGHT-NATIVE PLANT SPECIES.
3) BUTTERFLY WEED AND ORANGE CONEFLOWER TO BE PLANTED IN POCKETS WITHIN THE PRAIRIE DROPSEED AREAS. EVENLY DISTRIBUTE THE FLOWERING PLANTS THROUGHOUT THE PLANTING AREAS TO ENSURE A BALANCED LOOK.
4) NATIVE PERENNIALS TO BE INSTALLED IN A 'NATURALISTIC' FASHION, WHICH ADHERES TO THE PROPER SPACING, BUT DOES NOT PLANT IN EASILY DEFINED ROWS. FLOWERING AND GRASS SPECIES SHALL BE BALANCED THROUGHOUT THE PLANTING AREA SO THEY APPEAR BALANCED, UNIFORM, AND NATURAL.

### 2108 LANDSCAPE REQUIREMENTS

**2A GENERAL** (G)
1 TREE / 1000 SF LAWN AREA
1 SHRUB / 500 SF LAWN AREA
REQUIRED = 2,483 / 1000 SF = 3 TREES
REQUIRED = 2,480 / 500 SF = 5 SHRUBS
PROVIDED = 3 TREES
PROVIDED = 5 SHRUBS

**2B STREET YARD (S)**
1 LARGE DECIDUOUS TREE / 40 LF FRONTAGE
1 ORNAMENTAL TREE / 100 LF FRONTAGE
1 SHRUB / 10 LF FRONTGAGE

REQUIRED
JOE HALL DRIVE
407 / 40 = 11 DECIDUOUS TREES
407 / 400 = 5 ORNAMENTAL TREES
407 / 10 = 41 SHRUBS
PROVIDED = 11 DECIDUOUS TREES
PROVIDED = 5 ORNAMENTAL TREES
PROVIDED = 56 SHRUBS

**2G PARKING LOT ISLANDS EVERY 10 SPACES +/- WITHIN PARKING LOT OR 10' OF PARKING AREA (P)**
1 LARGE DECIDUOUS TREE / 3000 SF PAVEMENT ISLANDS, 5' IN ANY DIRECTION
150 SF MINIMUM
REQUIRED
40,075 SF / 3000 SF = 13 TREES
PROVIDED = 13

**REPLACEMENT TREES**
DUE TO THE LARGE AMOUNT OF UTILITY EASEMENTS ON THE PROPERTY, THE MITIGATION OF REMOVED TREES AS REPLACEMENT ON THE SITE IS NOT PRACTICAL. THE DEVELOPER WILL PROVIDE OFF-SITE MITIGATION IN COOPERATION WITH THE TOWNSHIP.

### GENERAL NOTES

1. CONTRACTOR TO PROVIDE DESIGN AND INSTALLATION OF UNDERGROUND IRRIGATION SYSTEM IN ACCORDANCE WITH BRAND FRANCHISE SPECIFICATIONS AND REGULATORY AGENCY REQUIREMENTS. ALL LANDSCAPING AND LAWN AREAS TO BE IRRIGATED. IRRIGATION CONTROL PANEL SHALL BE LOCATED WITHIN THE BUILDING.
2. ALL GREEN SPACES AND PLANTING AREAS SHALL BE IRRIGATED.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL PERMITS AND POST ALL BONDS PRIOR TO CONSTRUCTION.
4. REFER TO PLUMBING PLANS FOR LOCATION OF IRRIGATION METER.
5. ALL LAWN AREAS TO BE SEEDED OR SODDED WITH SPECIES NORMALLY GROWN AS PERMANENT LAWNS IN WASHTENAW COUNTY. GRASS, SOD, AND SEED SHALL BE CLEAN AND FREE OF WEEDS, NOXIOUS PESTS, AND DISEASES. MULCH WITH ½" OF CLEAN STRAW IN SEEDED AREAS.
6. SPACE ALL SHRUBS AS INDICATED ON THE PLANTING LIST.
7. ALL DISTURBED LAWN AREAS SHALL BE RESTORED TO AT LEAST PREVIOUS CONDITION IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
8. THE GENERAL CONTRACTOR SHALL INCLUDE TOPSOIL IN BASE BID. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE AMOUNT OF TOPSOIL AVAILABLE ON-SITE.
9. A WEED BARRIER SHALL BE INSTALLED IN ALL MULCHED AND NON LAWN AREAS.
10. SEE BRAND FRANCHISE STANDARDS FOR ADDITIONAL INFORMATION.




WESLEY K LANDON, ASLA
NATIVE EDGE, LLC
REG. NO 1603

THIS SEAL COVERS THE LANDSCAPE PLAN ONLY, AND DOES NOT COVER OTHER SITE DESIGN FEATURES FOR THIS PROJECT.

### DESCRIPTION

THIS WORK SHALL CONSIST OF PROVIDING ALL NECESSARY MATERIALS, LABOR, EQUIPMENT, TOOLS AND SUPERVISION REQUIRED FOR THE EXECUTION AND GUARANTEE OF ALL PLANTINGS AND RELATED WORK AS SHOWN ON THE DRAWINGS.

PLANT MATERIALS SHALL CONFORM TO THE SIZES STATED ON THE PLANT LIST AND SHALL BE OF A MINIMUM SIZE OR LARGER. ALL MEASUREMENTS OF SPREAD, CALIPER, BALL SIZE, TRUNK CROWN RATIO, QUALITY DESIGNATIONS, ETC., SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "ANSI STANDARDS FOR NURSERY STOCK". PLANT MATERIAL SHALL BE NURSERY GROWN AND INSPECTED BY THE OWNER'S REPRESENTATIVE AT THE SITE PRIOR TO PLANTING. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL AT ANY TIME.

NURSERY STOCK SHALL BE PREPARED FOR SHIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT ANSI SPECIFICATION Z60.1 AND SHALL BE ENCLOSED OR COVERED DURING TRANSPORTATION TO PREVENT DRYING.

### SITE PREPARATION

THE CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED UTILITY LOCATIONS PRIOR TO CONSTRUCTION AND PROTECT AND REPAIR UTILITIES ENCOUNTERED DURING CONSTRUCTION WHETHER SHOWN ON THE PLANS OR NOT.

INDIVIDUAL HOLES SHALL BE CENTERED AT STAKED PLANT LOCATIONS. CONTRACTOR IS TO STAKE PRIOR TO PLACEMENT OF PLANT MATERIAL AND OBTAIN APPROVAL FROM THE OWNER'S REPRESENTATIVE. PLANTING HOLES SHALL BE DUG LARGE ENOUGH TO PERMIT PLACING PREPARED TOPSOIL 18" LATERALLY BEYOND THE ENDS OF THE ROOT BALLS FOR SHADE AND EVERGREEN TREES AND 6" LATERALLY FOR SHRUBS UNLESS OTHERWISE SPECIFIED.

EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE AT THE TIME THE HOLE IS DUG. THE PLANTING HOLE SHALL BE BACKFILLED WITH PREPARED TOPSOIL THE SAME DAY THEY ARE DUG.

TOPSOIL SHALL AT FERTILE, FRIABLE NATURAL TOPSOIL OF CLAY LOAM CHARACTER CONTAINING AT LEAST 5% BUT NOT MORE THAN 20% BY WEIGHT OF ORGANIC MATTER WITH A PH RANGE FROM 6.0 TO 7.0. TOPSOIL SHALL BE FREE OF CLAY LUMPS, COURSE SAND, STONES, PLANT ROOTS, STICKS OR OTHER FOREIGN MATTER.

### CARE FOR PLANTS BEFORE PLANTING

PLANTS DESIGNATED "BB" SHALL BE BALLED AND BURLAPPED WITH FIRM NATURAL BALLS OF EARTH. CRACKED, LOOSENED OR BROKEN BALLS SHALL NOT BE PLANTED. THEY SHALL BE MARKED WITH SPRAY PAINT AND IMMEDIATELY REMOVED FROM THE JOB SITE. IMMEDIATELY FOLLOWING DELIVERY AT THE JOB SITE, ALL PLANTS THAT WILL NOT BE PLANTED THAT SAME DAY SHALL BE "HEELED IN" WITH SHREDDED BARK OR MOIST SOIL AND KEPT MOIST UNTIL PLANTED.

THE TRUNKS AND BRANCHES OF ALL TREES SHALL BE PROTECTED FROM INJURY OF ANY KIND DURING ALL OPERATIONS. THE OWNER'S REPRESENTATIVE SHALL REJECT ANY TREES THAT ARE INJURED.

### PLANTING

THE CONTRACTOR IS RESPONSIBLE FOR PLANTING MATERIALS PLUMB. SET THE TOP OF THE ROOT BALL AT OR SLIGHTLY HIGHER THAN THE SURROUNDING GRADE. PLANTS SHALL BE FACED TO GIVE THE BEST APPEARANCE OR RELATIONSHIP TO ADJACENT STRUCTURES. NO FILLING WILL BE PERMITTED AROUND TRUNK OR STEMS. WHEN THE PLANT HAS BEEN PROPERLY SET, THE HOLE SHALL BE BACKFILLED TO 1/2 THE DEPTH OF THE BALL WITH PREPARED TOPSOIL MIXTURE, FIRMLY PACKED AND WATERED-IN AT TIME OF PLANTING. LOOSE AND REMOVE BURLAP AND LACING FROM UPPER 1/3 OF THE ROOT BALL. BACKFILL WITH PREPARED TOPSOIL, WHICH AFTER COMPACTION IS FLUSH WITH THE SURROUNDING GROUND.

NO TREES OR SHRUBS TO BE PLANTED DIRECTLY OVER BURIED UTILITIES. CENTER OF TREES TO BE PLACED A MINIMUM OF 8' FROM BURIED UTILITIES AND SHRUBS TO BE A MINIMUM OF 3' FROM BURIED UTILITIES. CONTRACTOR TO CONFIRM LOCATION OF UTILITIES ADJACENT TO PLANTING AREAS AND CONFIRM PROPER BUFFER SPACE AND ENSURE PROPER DEPTH OF COVER TO BURIED UTILITIES.

### MULCHING

ALL TREES AND SHRUBS SHALL BE ENCIRCLED WITH A 5" MINIMUM COVERING OF NON-DYED SHREDDED BARK MULCH TO 6" OUTSIDE THE PLANTING HOLE, 6" CIRCUMFERENCE OF BASE SOIL AT TRUNK. ALL PERENNIAL BEDS SHALL HAVE A 3" LAYER OF SHREDDED BARK MULCH. SUBMIT SAMPLE TO THE OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE PLACEMENT. WOOD CHIPS SHALL NOT BE ALLOWED ON THIS JOB.

### WRAPPING DECIDUOUS TREES

TREE WRAP SHALL COVER TRUNKS OF ALL DECIDUOUS TREES BEGINNING BELOW THE SOIL LINE JUST ABOVE THE ROOTS. TIE WITH TWINE IN 5 PLACES, INCLUDING THE TOP AND BOTTOM OF WRAPPING. MASKING TAPE OR WIRE WILL NOT BE ALLOWED.

### BRACING AND GUYING

GUYING SHALL BE EMPLOYED TO PREVENT LEANING OR LOOSENING OF THE TREE FROM THE BALL. BRACING MATERIAL SHALL BE T-POSTS PAINTED GREEN. GUYING MATERIAL SHALL BE 12 GAUGE WIRE AND GARDEN HOSE 1/2 INCH DIAMETER. GUY WIRE SHALL BE ENCASED IN HOSE TO PREVENT DIRECT CONTACT WITH THE TREE. DECIDUOUS TREES SHALL BE BRACED OR GUYED IMMEDIATELY AFTER THE TREE WRAPPING IS COMPLETE. REMOVE GUYING AND TREE WRAP AFTER ONE FULL GROWING SEASON.

### PRUNING

UPON COMPLETION, ALL PLANT MATERIAL MUST BE PRUNED. THE AMOUNT OF PRUNING SHALL BE LIMITED TO THE MINIMUM NECESSARY TO REMOVE DEAD OR INJURED BRANCHES AND TO COMPENSATE FOR THE LOSS OF ROOTS FROM TRANSPLANTING. ALL CUTS SHALL BE MADE FLUSH LEAVING NOT STUBS. PRUNING PAINT SHALL NOT BE USED.

### FINISHING AND CLEANING UP

IMMEDIATELY UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL CLEAN UP THE AREA OF SURPLUS MATERIALS. THE CONTRACTOR SHALL REPAIR AND RE-ESTABLISH LAWN IN RUTTED AREAS.

### WARRANTY

THE LANDSCAPE INSTALLATION CONTRACTOR SHALL REPLACE ALL UNHEALTHY VEGETATION AND PLANTINGS WITHIN ONE (1) YEAR OF INITIAL PLANTING OR SUBSEQUENT PLANTING PERIOD.

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

**THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE BASED ON RECORDS PROVIDED BY THE UTILITY OWNERS AND VISIBLE EVIDENCE OBTAINED IN THE FIELD. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED TO THE COMPLETENESS OR ACCURACY THEREOF.**


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AUBURN HILLS, MI 48326
PH 810-444-7815
FX 248-553-4218

PREPARED UNDER THE DIRECTION OF:
ANDREW ANDRE, P.E.
MI #47380

APPLICANT:
YPSILANTI SUPERIOR HOSPITALITY 2, LLC
2600 AUBURN ROAD, SUITE 240
AUBURN HILLS, MI 48326
PH 248-419-5551


# HOLIDAY INN EXPRESS & SUITES

460 JOE HALL DRIVE
YPSILANTI TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

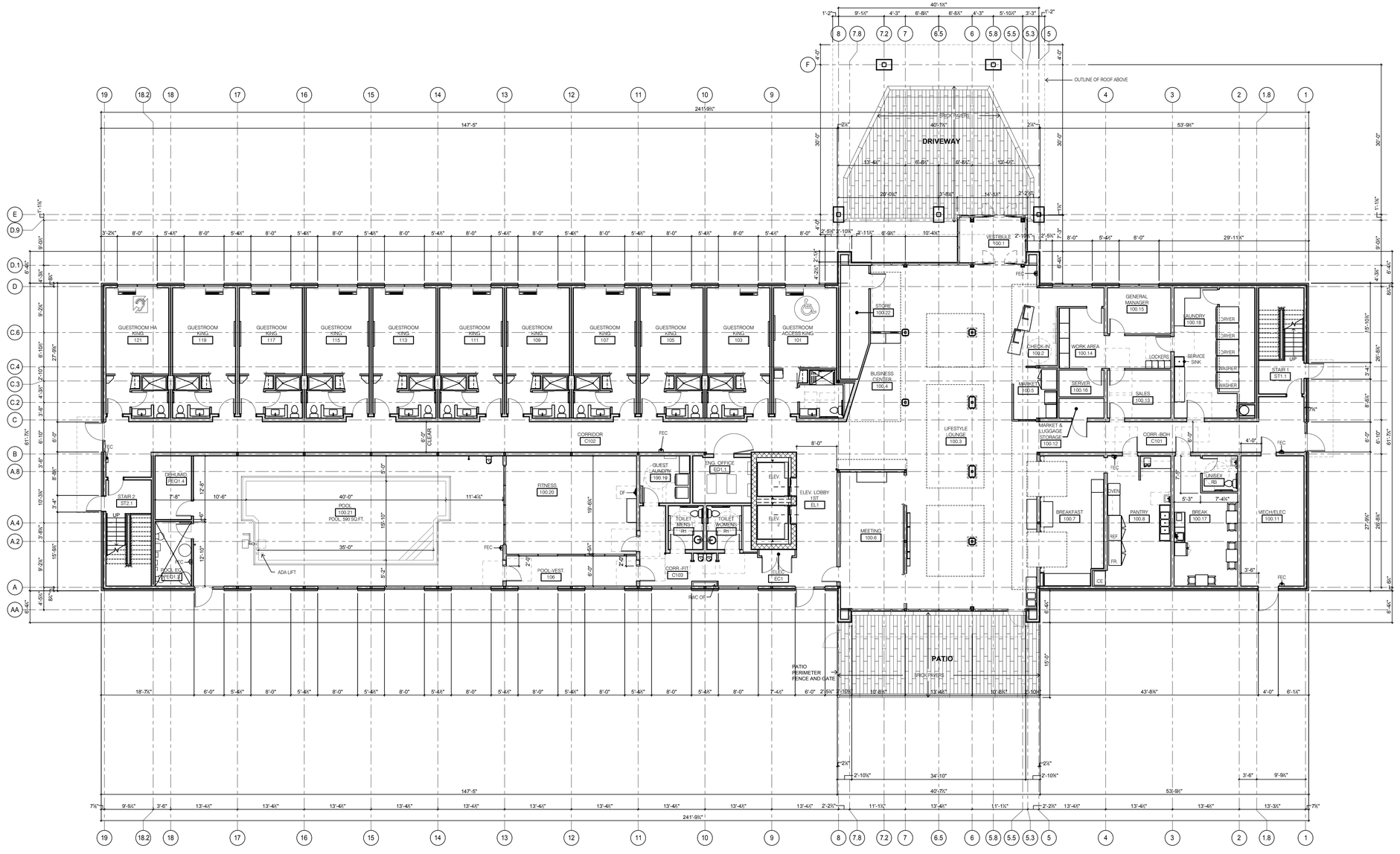

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| ISSUED FOR | DATE |
|---|---|
| PSPA | 08/14/19 |
| WCWRC | 09/25/19 |
| PSPA | 01/14/20 |

DATE :
DRAWN : ACA
CHECKED : ACA
SCALE : 1"=40'
JOB NO : SD-18-110

SHEET TITLE :
LANDSCAPE PLAN AND DETAILS

SHEET
L2.0




LEVEL 1 FLOOR PLAN
3/32" = 1'-0"


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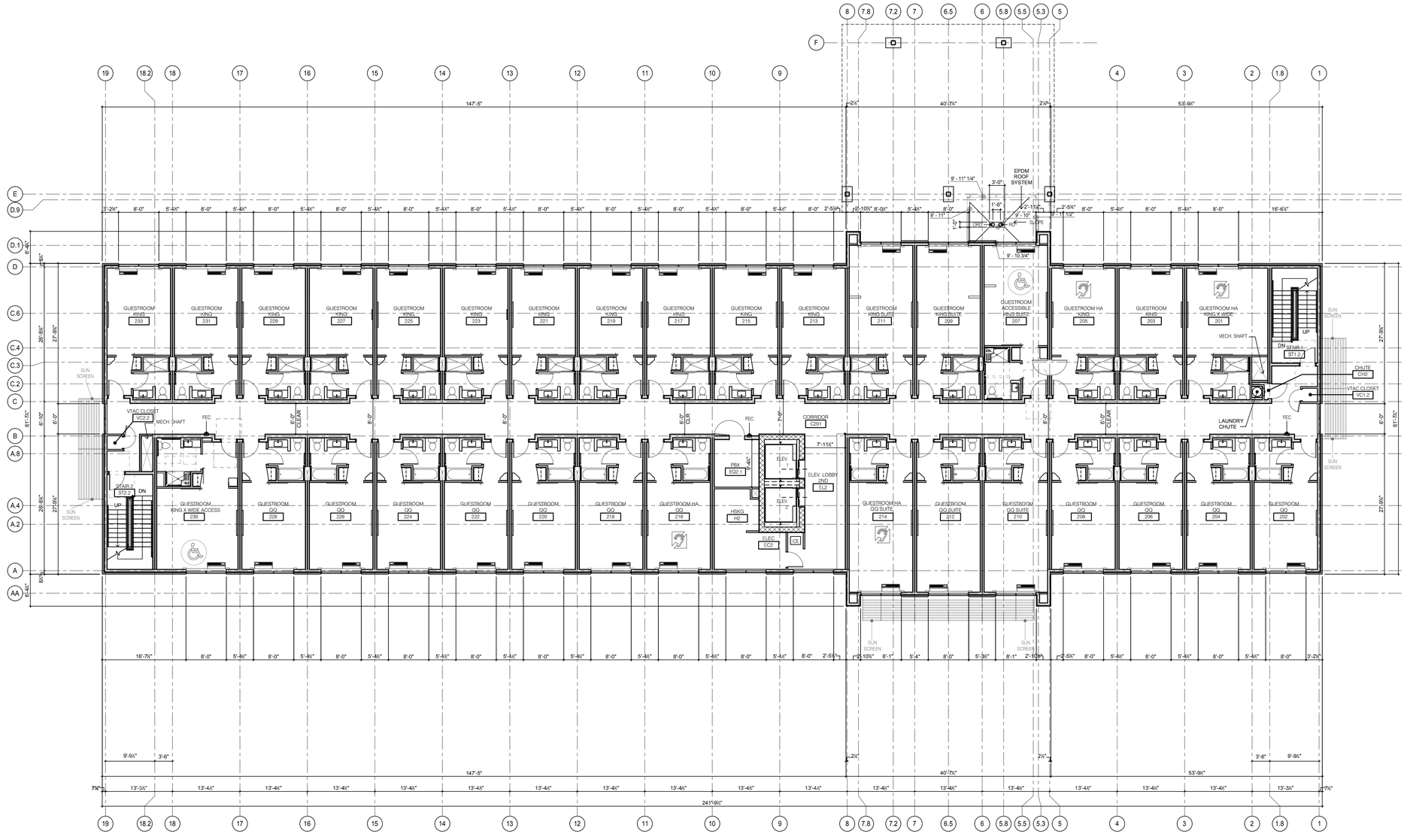
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Floor Plan - Level 1

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PLAN NORTH / TRUE NORTH

LEVEL 2 FLOOR PLAN
3/32" = 1'-0"

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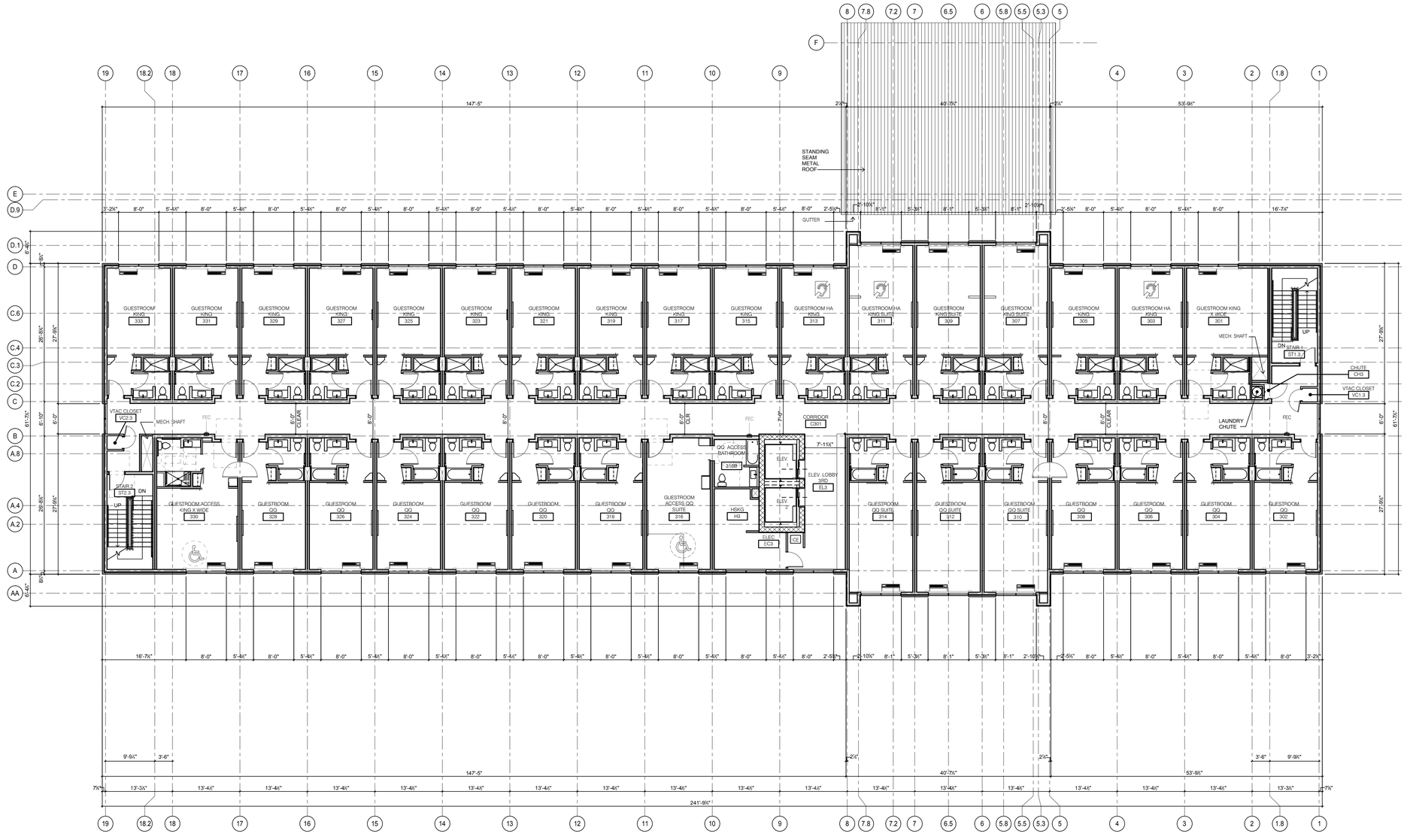
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**PLAN NORTH** **TRUE NORTH**

LEVEL 3 FLOOR PLAN
3/32" = 1'-0"


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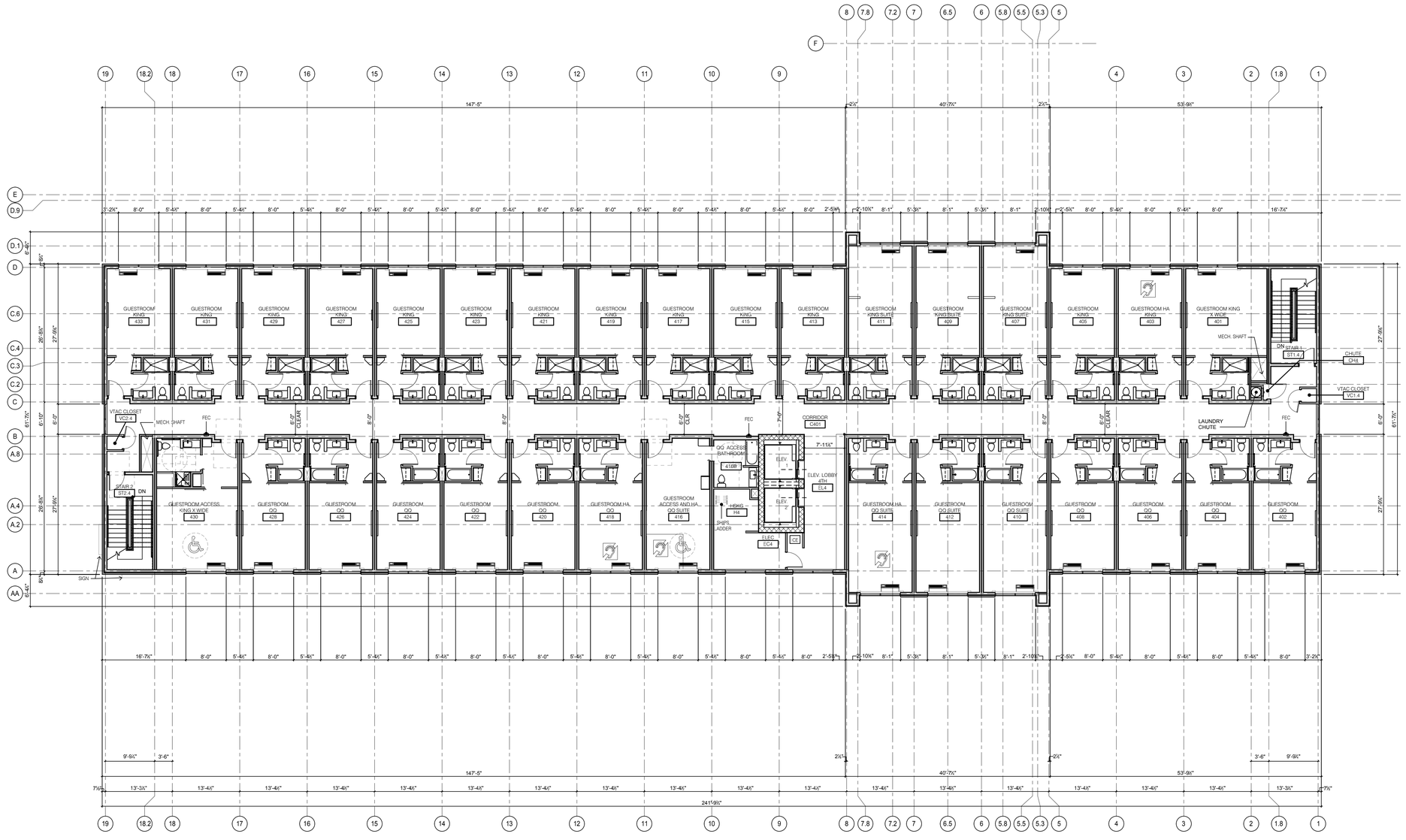
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PLAN NORTH / TRUE NORTH

LEVEL 4 FLOOR PLAN
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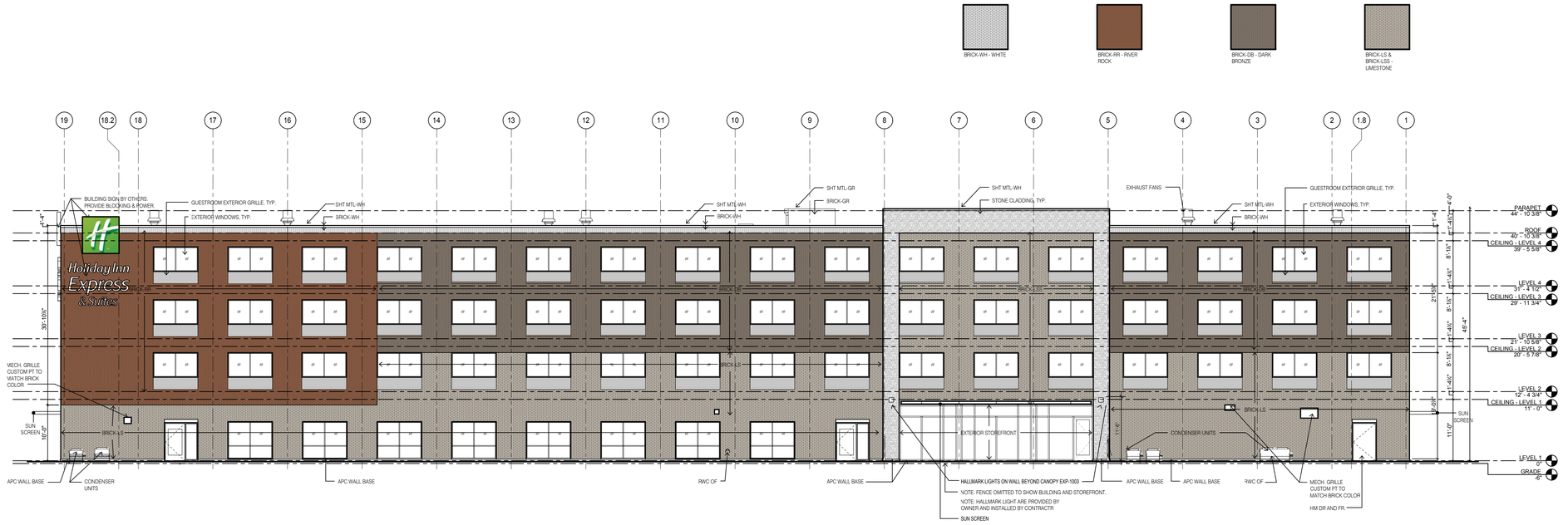
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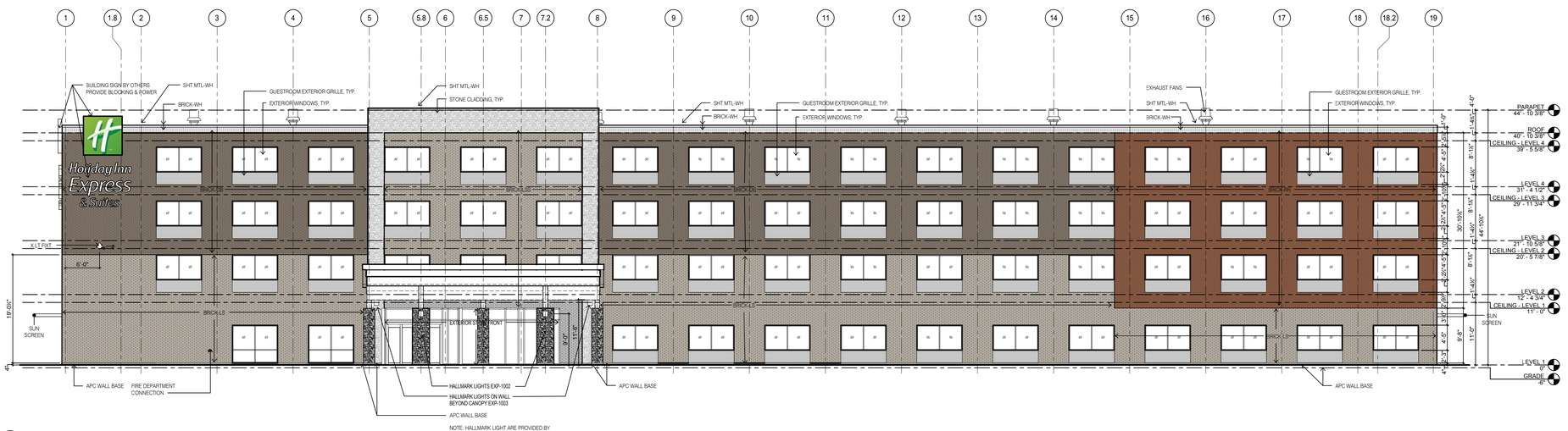
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2 EXTERIOR ELEVATION, REAR/NORTH
3/32" = 1'-0"




1 EXTERIOR ELEVATION, FRONT/SOUTH
3/32" = 1'-0"

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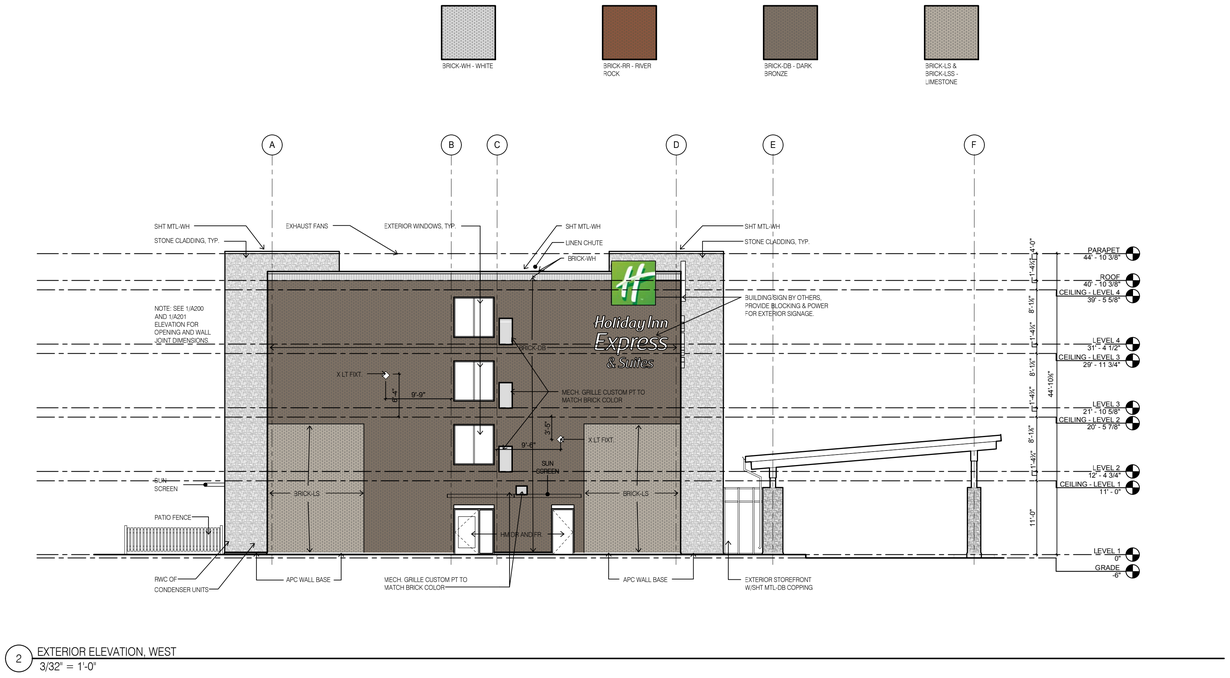
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DRAWING
Exterior Elevations

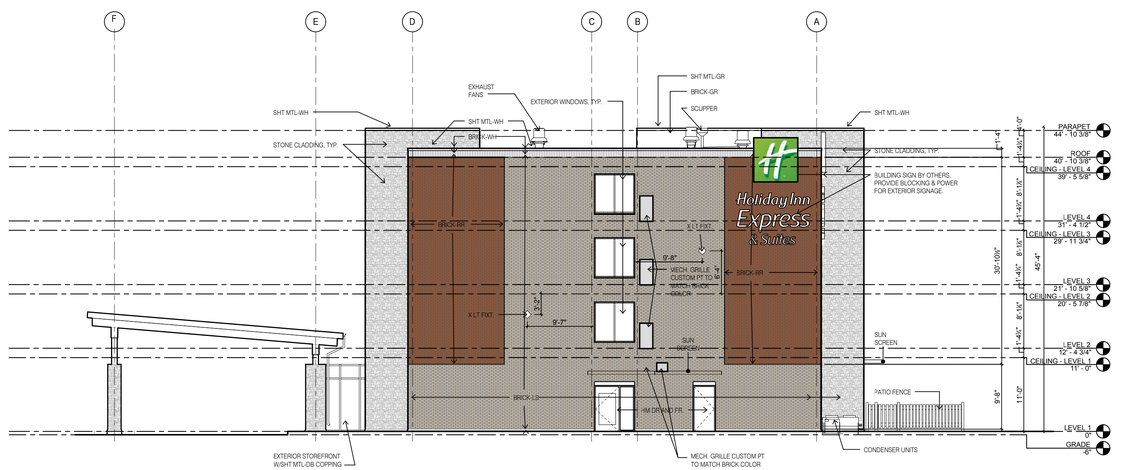
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2 EXTERIOR ELEVATION, WEST
3/32" = 1'-0"




1 EXTERIOR ELEVATION, EAST
3/32" = 1'-0"

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A-201

# OLD BUSINESS

A. NONE

# NEW BUSINESS

A. NONE

# OPEN DISCUSSION

A. NONE

# PLANNING DEPARTMENT

REPORT

# TOWNSHIP BOARD REPRESENTATIVE REPORT

THERE IS NO WRITTEN REPORT

# TOWNSHIP ATTORNEY REPORT

THERE IS NO WRITTEN REPORT

# ZONING BOARD OF APPEALS REPRESENTATIVE REPORT

THERE IS NO WRITTEN REPORT

# OTHER BUSINESS

1. Any other business that may come before the Planning Commission