Planning Commission

Planning Commission Meeting Agenda
Hartland Township Hall
Thursday, April 08, 2021
7:00 PM

1. Call to Order
2. Pledge of Allegiance
3. Roll Call
4. Approval of the Agenda
5. Approval of Meeting Minutes
   a. Planning Commission Minutes of March 11, 2021
6. Call to Public
7. Public Hearing
   a. Site Plan with Special Land Use Application #21-003 (Hungry Howie's)
8. Call to Public
9. Planner's Report
10. Committee Reports
11. Adjournment

HARTLAND TOWNSHIP PLANNING COMMISSION DRAFT REGULAR MEETING MINUTES

March 11, 2021 – 7:00 p.m.

This meeting was held via video conference in compliance with the Department of Health and Human Resources Emergency Order of February 4, 2021 under MCL 333.2253

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1. **Call to Order: Chair Fox called the meeting to order at approximately 7:05 p.m.**

2. **Pledge of Allegiance:**

3. **Roll Call and Recognition of Visitors:**
   Present – Commissioners Fox (via video from Hartland Township, MI), Grissim (Hartland Township, MI), LaRose (Hartland Township, MI), McMullen (Hartland Township, MI), Murphy (Hartland Township, MI)
   Absent – Commissioners Mitchell, Voight

4. **Approval of the Agenda:**
   A Motion to approve the March 11, 2021 Planning Commission Regular Meeting Agenda was made by Commissioner LaRose and seconded by Commissioner Murphy. Motion carried unanimously.

5. **Approval of the Minutes:**
   a. Planning Commission Minutes of February 11, 2021
   A Motion to approve the February 11, 2021 Planning Commission Meeting Minutes was made by Commissioner LaRose and seconded by Commissioner Grissim. Motion carried unanimously.

6. **Call to Public:**
   None

7. **Public Hearing:**
   a. **Site Plan Application #20-011 Villas of Hartland Planned Development (PD) – Preliminary Site Plan.** A request for Preliminary Planned Development approval for a 55-unit residential development on two parcels; 4708-19-300-013 and 4708-19-300-014, totaling approximately 24.51 acres, in Section 19 of the Township.

   Chair Fox explained the Public Hearing process.

   Chair Fox opened the Public Hearing at 7:11 PM stating all noticing requirements have been met.

   Director Langer summarized the request, location and process stating the following:
   - Located north of M-59 and east of Hacker Road.
   - Planned Development (PD) is a three-step process: Concept, Preliminary and Final. Each review is before both the Planning Commission and the Township Board.
   - Tonight, is the Preliminary phase which requires a Public Hearing.

   Wayne Perry of Desine, Inc. representing the Applicant, Joe Rotondo stated the following:

- Development is at the Preliminary stage.
- Currently proposed as a 55-unit condominium development with private roads, a gated community.
- Mr. Rotundo feels this provides a style of ownership that is desired by buyers in today's market.
- High quality single-family homes without large lawn areas.

Chair Fox confirmed that all of the written communications will be included in the record of this meeting.

Call to Public

- Henry Nykiel, N Hacker Road, Oceola Township; commented on some experiencing lack of connectivity for the meeting.
- Roger Myers, Attorney representing Walnut Ridge Homeowner's Association, Michigan Avenue, Howell; stated the following:
  - Concerns about connecting road and unrestricted gate to private roads within Walnut Ridge.
  - Walnut Ridge HOA will not grant ingress-egress access per Condition #6 of the proposed resolution.
  - Would prefer a restricted gate with unpaved emergency access connecting the two developments.
- Jim Jablonski, N Hacker Road, Oceola Township; expressed concerns about runoff negatively impacting existing wetlands and ponds. Would like the State of Michigan Department of Environment, Great Lakes and Energy (EGLE) to review the project.
- Henry Nykiel, N Hacker Road, Oceola Township; expressed concerns with [unintelligible] runoff negatively impacting existing wetlands and ponds and would like the developer to test the pond water, future flooding, and increased traffic.
- James Quigley, Hacker Road, Hartland Township; expressed concerns about the safety of foot traffic on Hacker Road, increased vehicle traffic, and increased trespass onto his property.
- Derek Niederquell, Walnut View Drive, Hartland Township; concerned about increased traffic due to connecting road.
- Sue LaRoy, Walnut View Drive, Hartland Township; concerned about increased traffic and safety due to connecting road.
- Joe Napieralski, Walnut View Drive, Hartland Township; agrees with previous comments, has concerns about connecting road (annex), speeding traffic, about not being able to have their concerns heard by the neighboring HOA, construction traffic in Walnut Ridge, and wear and tear on the existing roads.
- Dennis Pate, Walnut Ridge HOA President, Walnut View Drive, Hartland Township; his members are concerned about traffic and safety, tired of construction and all that comes with it, maintenance of the private road, opposed to connecting road.
- Steven Cotter, N Hacker Road, Oceola Township stated the following:
  - Feels this development is not compatible with the intent of the zoning.
  - Concerned about construction noise, increased traffic, light pollution, runoff into ponds and wetlands.
  - Request the Planning Commission require a buffer with a berm and evergreens, consider relocating the entrance farther to the south.

- Courtney Samson, Walnut View Drive, Hartland Township; concerned about safety and traffic.
- Gary LaRoy, Walnut View Drive, Hartland Township; concerned about traffic and safety as their development has sidewalks on one side of the street only.
- Aaron Harkness, Torrey Pine Court, Hartland Township; oppose the connecting road, concerned about traffic and safety.
- Chris Lucier, Walnut View Drive, Hartland Township; concerned about traffic, safety and preserving the family-friendly character of their development.

Chair Fox closed the Public Hearing at 7:59 PM

Chair Fox referred to the staff memorandum dated March 4, 2021.

Eligibility Criteria (Section 3.1.18.B.)

1. **Recognizable Benefits.** *The planned development shall result in a recognizable and substantial benefit to the ultimate uses of the project and to the community and shall result in a higher quality of development than could be achieved under conventional zoning.*

   The applicant outlined the community benefits that the Villas of Hartland PD will provide as listed below:
   - Preservation of natural features as open space areas.
   - Provision of a low to no maintenance community that is in demand in Hartland Township by professionals and senior citizens.
   - Luxury homes comprised of high-quality materials.
   - Residents of the development may provide an increase in utilization of local businesses as they engage in the Hartland community.
   - Provision of vehicular and pedestrian connections to the adjacent residential development, Walnut Ridge Estates PD, plus sidewalks are provided within the Villas development.
   - Extension of municipal sanitary sewer and water service to accommodate the proposed development, built to the Township and County standards.

2. **Minimum Size**. *Planned Developments must be a minimum of 20 acres of contiguous land.*

   The proposed project is approximately 24.51 acres in size, thus complying with the minimum size requirement.

3. **Use of Public Services**. *The proposed type and density of use shall not result in an unreasonable increase in the use of public services, facilities and utilities, and shall not place an unreasonable burden upon the subject site, surrounding land, property owners and occupants, or the natural environment.*

   - Review letter from Livingston County Road Commission (LCRC), dated September 29, 2020, outlines their comments and lists the required modifications to the proposed plans.
   - Hartland DPW will manage a water capacity study for the total fifty-five (55) units (earlier modeling was based on forty (40) units.)

- Developer will be required to upgrade the existing pump station with the purchase and installation of two new (2) pumps to provide the additional sewer capacity.
- Director Langer stated the following about Traffic:
  - It is anticipated development will not rise to the level of requiring a Traffic Study with the recent addition of a traffic signal at Hacker Road and Highland Road.
  - When Walnut Ridge was originally proposed, the two developers discussed the connection between the two developments and planned for it.
  - Concept was to have a connection to Hacker Road where a signal would eventually be installed at M-59 allowing the residents of Walnut Ridge the ability to make a safe and efficient left turn with the aid of a traffic light during peak times of traffic on M-59.

4. **Compatibility with Comprehensive Plan.** *The proposed development shall not have an adverse impact upon the Comprehensive Plan for the Township. Notwithstanding this requirement, the Township may approve a Planned Development proposal that includes uses which are not called for on the Future Land Use Map, provided that the Planning Commission and Township Board determine that such a deviation from the Future Land Use Map is justified in light of the current planning and development objectives of the Township.*

   Chair Fox stated this development shall not have an adverse impact on the Comprehensive Plan; this will be discussed in detail later in the meeting.

5. **Unified Control.** *The proposed development shall be under single ownership or control such that there is a single person or entity having responsibility for completing the project, or assuring completion of the project, in conformity with the Ordinance.*

   The applicant has provided a copy of the Warranty Deed which shows the sole ownership of the subject property (two parcels) is under Hacker Road, LLC.

Planned Development Design Standards (Section 3.1.18.C.)

1. **Permitted Uses.** *The predominant use on the site shall be consistent with the uses specified for the parcel on the Township's Comprehensive Plan for Future Land Uses.*

   Chair Fox stated the following:
   - Single-family residential is compatible with the Comprehensive Plan and would be permitted.
   - Fairly consistent with other Medium Suburban Density Residential (MSDR) developments in the area such as Walnut Ridge Estates PD, Hartland Estates, San Marino Estates, Meadow View Estates, Fiddler Grove, and Autumn Woods.

2. **Residential Density**. *Residential density in a planned development shall be consistent with the density designation within the Township's Comprehensive Plan.*

   Director Langer stated the following:

- Preliminary Plan proposes a density of 2.24 dwelling units per acre exceeds the density allowed for in the MSDR, density of 1 to 2 dwelling units per acre.
- Planned Development process allows the applicant to seek up to a forty percent (40%) bonus density.
- Without the bonus density, forty-nine (49) dwelling units would be allowed.
- With the maximum bonus density, sixty-nine (69) dwelling units could be allowed.
- Proposed development has fifty-five (55) dwelling units; consideration of a density bonus is applicable.
- Planning Commission, and ultimately the Township Board, must decide if the project meets the requirements for the density bonus.
- If the density bonus is awarded, this development will be consistent with the Future Land Use Map (FLUM). If not, it would then be inconsistent with the FLUM.
- More information in the staff report for historical reference.

Commissioner LaRose expressed the following concerns:

- Density bonus is being considered but a waiver for some Landscaping requirements has been requested.
- Trying to understand the grading plan and proposed drainage, unsure if greater density can be accommodated.
- Building envelopes shown are pretty close together compared to what the Zoning Ordinance generally allows.

The Applicant stated the following:

- Building envelopes being proposed rather than lots.
- Various house designs provided which are all smaller than the building envelopes.
- Everything related to the residence must be constructed within the envelope depicted.
- Envelope will not be filled completely but decks and porches must be contained within that area.
- Envelope approach allows for some flexibility rather than proposing a specific footprint.
- Separation between units will not be less than what is depicted but probably more based on the house sizes provided.
- Conventional drainage is planned as the site is regraded, front to the road, back toward the rear.
- Not requesting a reduction in Landscaping but rather a modification which is up to the Planning Commission; change in percentage of deciduous trees to evergreen. They feel it is a better mix, but if the Planning Commission does not agree, they will comply.
- Feels the street trees cannot be placed in the location the Zoning Ordinance requires.

Commissioner LaRose asked if there is anything in the by-laws requiring a certain distance between the houses. The Applicant replied there are no setbacks but the minimum distance between building envelopes is fourteen (14) feet. Chair Fox asked the Applicant to confirm the house designs proposed do not fill the building envelopes left to right. The Applicant concurred.

3. **Design Details.** *The applicant shall prepare a detailed description of design details to be implemented in the proposed planned development, to be presented in a Pattern Book.*

Chair Fox stated the Applicant has provided three (3) elevation plans giving some direction as to the look of this development. Mr. Rotondo also built Hartland Estates, a neighboring development to the east. The quality of that development speaks to what is being proposed here.

4. **Minimum Yard Requirements.**

Chair Fox stated the following:

- Setback from Hacker Road is 125 feet exceeding the standard of 50 feet.
- Along the perimeter the standard is 40 feet; proposed is 50.4 feet (east) 41.0 feet. (north) 44.3 feet (south).
- Along an internal collector or local road 40 feet is required; 23.5 feet is the proposed setback from private road as measured to closest point of unit envelope

Commissioner Murphy asked the Applicant if any elements can exceed the building envelope. The Applicant stated the driveway, and sidewalks only. Commissioner Murphy asked if any elevated building materials could extend outside of the envelope. The Applicant stated if it is a deck or any other part of the house, it cannot extend outside of the building envelope.

Commissioner Murphy asked if there is enough room to walk around an average sized or larger vehicle parked in the driveway without covering the sidewalk. The Applicant stated they believe there is enough room.

Commissioner Murphy asked if sidewalks are planned for both sides of the street. The Applicant affirmed they are.

5. **Distances Between Buildings.** *Spacing requirements for buildings in a planned development are outlined in Section 3.1.18.C.vi.b. Any detached single-family structure shall be located at least thirty (30) feet from any other detached single-family structure and shall provide a minimum side yard of fifteen (15) feet on both sides.*

The Planning Commission briefly discussed the possibility of two houses being 14 feet apart if pushed to the extreme edges of the envelopes.

6. Building Height. *No building in a planned development shall be greater than thirty-five (35) feet in height.*

Chair Fox stated with two-stories they will meet the height limitation.

7. **Landscaping.**

Chair Fox stated the Landscaping would be discussed in depth later in the meeting.

8. **Open Space.** *Open space shall be provided to complement and accentuate the high-quality design of the proposed planned development. At minimum the planned development shall provide open space consistent with the previous zoning designation for the site.*

Director Langer stated the following:

- Two separate Ordinances apply:
  - Section 3.1.18.C.vi.f. CA Conservation Agriculture requires 85% but is more for traditional developments
  - Section 3.15 Residential Condominium Developments requires 25% with 10% usable open space
  - Proposed is 42% open space and 15.3% usable open space.

9. **Natural Features**. *Consistent with the stated intentions for creation of these regulation, the preservation of the natural features of the Township are an important planning consideration. A PD proposal must consider the natural topography and geologic features, scenic vistas, trees and other vegetation and natural drainage patterns that exist on the site and propose a development pattern which preserves and avoids disruption of those natural features as much as possible.*

   Director Langer stated the following:

   - Two types of wetlands present on the site: regulated and nonregulated.
   - Only the Michigan Department of Environment, Great Lakes and Energy (EGLE) can determine if a wetland is regulated or nonregulated.
   - Several are present on the site.
   - Applicant intends to fill some and not others.
   - Off-site wetland in the vicinity of the connection road would be partially filled.
   - Tree Inventory indicates the Applicant intends to keep some existing trees on the exterior portions of the site as part of the required screening as well as others throughout the site.

   Commissioner LaRose expressed concern with proposed walkouts in the vicinity of wetlands.

10. **Sidewalks and Pedestrian Access.** *The applicant must demonstrate the PD site and all uses within the site will be connected to any existing pedestrian and nonmotorized vehicle paths and trails within a public right-of-way or easement open to the public.*

    Chair Fox stated a five-foot-wide sidewalk is shown on both sides of the street and a sidewalk on the north side of the future road will connect Walnut Ridge Estates and The Villas of Hartland.

Requirements for Preliminary Review (Section 3.1.18.E.ii)

1. **Stormwater and Drainage Systems.**
   Commissioner LaRose expressed the following concerns:
   - Wetland areas could cause potential flooding.
   - Drainage between the homes.
   - Wetland across Hacker Road.
   - One retention basin soil boring started at 14.5 feet, what kind of soils were present in those 14.5 feet, only the last 1.5 feet was sandy soils. Unsure if the retention basin will work as designed. Needs more review.

- Not opposed to the development but not yet comfortable with the information and reviews provided.
- Potential impact of water downstream, it appears the pond does not have much room for additional water.

The Applicant stated the reason they proposed a retention basin rather than a detention basin was specifically to avoid any downstream impacts. The basin is designed in accordance with Livingston County Drain Commission specifications. It holds a 100-year storm, has an excess of three feet of freeboard and will hold at least two 100-year storms prior to any potential failure occurring. The soils are clay on top with sand underneath. All the way to the east to Hartland Estates there is sand underneath the clay. The soil borings confirm an extensive layer of sand capable of handing the run-off. Additionally, the Drain Commissioner now requires they create an infiltration chamber system at the bottom of the basin in the sand so even if the native sands at the bottom of the basin begin to plug off, the retention basin does not fail from an infiltration standpoint, the basin will continue to function.

Director Langer asked the Applicant about the overflow or outlet on the site plan towards Hacker Road and how that might work. The Applicant replied that is a requirement of the Livingston County Drain Code for any stormwater management system, retention or detention basin, you are required to provide an emergency overflow that would function should it ever need to. Normally in a detention basin situation, there is a significant possibility they could be put into use as detention basins do not have infiltration capability, that is why they have an outlet. They are designed to handle one 100-year storm. This retention basin is designed to handle one 100-year storm only to the high level and then there is over another three feet of storage for a second 100-year storm event. With the infiltration chamber system in the bottom, this system is anticipated never to use the required emergency overflow.

2. **Fiscal Impacts.**
   Chair Fox stated the following:
   - The Applicant stated the proposed development will bring revenue to the Township via taxes which will also benefit the school district.
   - Schools will not be impacted much as it is intended for residents 55 and older.
   - As some local residents relocate to this development, other housing will become available also increasing the tax base.

3. **Other.**

   Internal Vehicular Circulation
   Director Langer stated the following:
   - Difficult to talk about The Villas without Walnut Ridge Estates
   - Walnut Estates is required to have a secondary access due to the number of units.
   - Two options were given: an emergency access that would connect to the church in case the main road was blocked, or a connection to the west.
   - Two units were reserved for the access; whichever one was used, the other could be converted into another site for a home.

- Timetable in place of six years, if the property was not developed in that time frame, then the site could be used as a home site and the church option would be used.
- Same is true with The Villas; they also need a secondary access.
- Connection will serve both.
- The connection would also serve as a way for Walnut Ridge residents to make a safe left turn onto M-59 during peak traffic using the newly installed signal at Hacker Road.
- Roads for The Villas were designed for traffic calming to reduce speeding.
- Developer for The Villas is proposing a gated community.
- Will open automatically for any vehicle, if there was a loss of power, the gates can be manually opened.
- If gate system were one that would not allow traffic to flow through, consideration should be given to a secondary access for The Villas. The developer chose one that does allow all traffic to pass through.
- Comprehensive Plan states it is best for the community to have interconnectivity between neighborhoods to create better access for emergency vehicles, school buses, and mail carriers.
- Having interconnectivity is generally thought to reduce conflict points with major roadways such as M-59.
- Encourages walkability between subdivisions.
- Gates will act as a speed reducing device but also accomplish interconnectivity.

Char Fox added the following:

- Served on the Planning Commission during the review of Walnut Ridge Estates and can provide some history and context for the connection decision.
- Concept of the connecting road is Walnut Ridge is the benefactor from the traffic safety standpoint.
- Unlikely Villas residents would travel east through Walnut Ridge, other than possible church attendance.
- Safe alternative for teen drivers traveling back to the school complex during peak traffic times on M-59.
- Not stating a position, just sharing information.

Landscaping (Section 5.11)

A. Landscaping of Divider Medians (Sec. 5.11.2.A.vii.)
Chair Fox asked if a crossover should be added like Hartland Estates to allow vehicles to turn around and not enter the gate area. The Applicant stated the Hartland Estates gate was originally not intended to open for all vehicles, so the crossover was needed to exit the gate entry area. School buses were not intended to enter the community, so the turnaround had to be large enough to accommodate a school bus. That situation is not present in The Villas of Hartland as the gates are an aesthetic amenity and will open for all vehicles.

B. Greenbelt Landscaping (Sec. 5.11.2.C.i.)
Commissioner Grissim offered the following comments:
    - Hacker Road north of the entrance is an approximate 20-foot-wide gravel road cradled on either side by large mature Hickory and Oak trees which is a huge traffic calming feature.

- Understands the desire to pave the road per Livingston County requirements but now it will be 35 feet wide with acceleration/deceleration lanes making it 47 feet wide in places.
- Due to the water main and utilities, the trees are pushed back to 50 feet making it feel like a highway.
- Going to increase speed, not be as safe, and will not have the feel it has today.
- Would like to see the shade trees as close to the road as they can to minimize the impact and bring back the character that is there today.

C. Canopy trees along Internal Roadways (Sec. 5.11.2.C.ii.)
Commissioner Grissim stated the following:

- Visited both Walnut Ridge and Hartland Estates.
- Ordinance requests street trees be within 15 feet of the edge of the road for the same reason, a traffic calming device and to create the street environment.
- Applicant stated they cannot plant trees over the utilities in the right of way.
  [Photos of Walnut Ridge and Hartland Estates were compared]
- Areas with the trees in the right of way create a much better feel to the road; trees farther back feel like a highway and can encourage traffic to go faster.
- It can be done. Really pushing for those trees to be with 15 feet of the road.

The Applicant stated the following:

- It is the developer's desire to plant the trees between the sidewalk and the edge of the road; unfortunately, the Township Engineering Standards do not allow trees in the public utility easements.
- Caught between the Zoning Ordinance and the Township Engineering Standards.
- Open to do whatever the Planning Commission decides but cannot satisfy all parties involved.

Chair Fox asked what occurs in other communities.

The Applicant stated often sewer is under the pavement, but Hartland does not favor that placement of sanitary sewer. Placement is preferred back of curb, same with water main. Or there are communities that do not restrict the placement of trees within public utilities. There is lots of variability.

Director Langer commented they spoke with the Public Works Director who restated they do not prefer to have trees planted over water or sewer mains, but he did review the depth of the utilities and is willing to work with the Applicant and the Planning Commission to find a place for the trees.

Commissioner Mitchell stated he agrees with Commissioner Grissim and prefers the trees in between the sidewalk and the edge of the road, it is much more pleasant; he hopes they can work with Public Works to find an appropriate location.

Commissioner Murphy stated he too agrees with Commissioner Grissim and appreciates her comments. Whether it is the entrance to Hacker Road or the internal roadway, he agrees with both Commissioners Grissim and Mitchell.

Commissioner LaRose stated the following:

- Opposed to putting trees over the infrastructure.
- More costly to repair.
- People get very attached to trees and object when they are removed for a repair.
- Reason is root systems can cause damage those utilities.
- Her preference would be to avoid the utilities.

Commissioner Grissim disagreed responding with the following:

- Utilities are down quite deep.
- Root systems typically stay within the top three feet; utilities are down about five feet.
- Has not found it to be that expensive to remove a tree to do a repair and it does not happen very often.
- In many different developments there is an understanding if there is a problem, it is a non-issue with the developments she has been involved with.
- Would like to push the same issue along Hacker Road to keep the character.

Bob West, Township Manager commented the following:

- Familiar with Hartland Township Public Works.
- Positioning not only for the water main and sewer main but also for the private infrastructure. Tree roots can grow and damage sidewalks which can cause an issue with replacement and the homeowner.
- Where there is curb and gutter, those can be impacted.
- Root system may not be deep, but the edge drain is also not deep.
- Public Works will work with the Planning Commission and the Applicant but that is the recommendation.

The Planning Commission briefly discussed other communities that have street trees close to the road.

Commissioner McMullen agreed with Commissioner Grissim, she likes the look and has not seen too many issues with street trees and utilities.

Commissioner Murphy asked if items could be adjusted, utilities, sidewalk, to find a compromise, maybe trees that are slower growing with different root structure, to satisfy both departments.

Commissioner Grissim replied there are tree varieties that have more compatible root structures than others. She also commented the distance between the sidewalk and edge of road is ten feet which is much larger than some; usually five feet. Yes, different trees can be utilized, and elements can be moved around.

Chair Fox summarized saying he is hearing the Planning Commission would like to see the trees closer to the street between the sidewalk and the road, there could be a possible tree selection that would minimize impact to utilities and sidewalks.

D. Buffering or Screening (Sec. 5.11.2.G.i.)
Commissioner Grissim stated she believes the screening on the north and south with the existing trees remaining and the supplemental trees as shown should be adequate. The way the retention area is laid out, it should meet the Ordinance.

Street Lighting

Director Langer asked if the concerns about light trespass to the west are addressed in the Site Plan. Commission Grissim stated yes, there is a long distance, there are only two pole lights near the entrance, the rest are from the residences. She does not feel there will be light trespass; there are no streets lights in this development.

Architecture/Building Materials (Sec. 5.24)

Chair Fox stated according to the renderings submitted they look similar to what we have seen before; they seem to be very high quality and nice-looking units. The Planning Commission agreed.

Chair Fox asked if the Applicant had any comments on the consulting review letters. The Applicant had none.

Director Langer stated there is a lot to take in and appreciated participants' patience as well as all the comments shared and submitted. Hopefully, the Township and the Applicant can ultimately reach something that is good for the community.

Chair Fox agreed. He feels they need to send the Applicant back to do a few things.

The Planning Commission briefly discussed the proposed distance from the edge of the right of way to the building envelope. The Planning Commission is satisfied with the distance shown.

Commissioner McMullen stated the following:
- She has a problem with the gates; it is not truly a gated community.
- Gate is not a welcoming factor.
- Perception of not being inclusive to the community.
- Promotes a lack of diversity.
- She does not think that people move to Hartland to be in a gated area, sectioned off from the community.

Commissioner Mitchell stated the following:
- Was not originally in favor of the gates but feels better about them after this discussion.
- Not coded.
- Will visually discourage through traffic.
- Not a safety issue.

Commissioner LaRose restated her concerns about Landscaping that can hopefully be worked out. Also, she would like to see a more detailed review of the stormwater design by Livingston County Drain Commission. She felt the Engineering review was vague and she would like to see a more in-depth review. It can be a pretty substantial change if something has to be redesigned following a drainage review.

Chair Fox stated he is not prepared to make a recommendation to the Board tonight. He asked if the Planning Commission is comfortable asking the Applicant to do some of the things requested, Landscaping modification, drainage review.

Commissioner Mitchell stated he would like to see an updated Landscaping Plan showing the trees closer to the road as Commission Grissim has requested.

Commissioner LaRose stated she appreciates the people who spoke this evening about traffic and safety, she has children too and understands their comments. Nevertheless, she feels the connection road is a strong benefit and will be safer from a travel perspective as kids are learning to drive. The design does promote driving slower.

Commissioner Grissim agreed with Commissioner LaRose and the Planning Director. She grew up in a development where the streets were connected, and it still felt like a neighborhood. One of the community goals is to have a walkable and driving network. She wants to encourage the connection.

Commissioner Murphy stated he also agrees. He too was a Planning Commissioner when Walnut Ridge Estates was going through the approval process and recalls the discussion of the connector road being a benefit for those in Walnut Ridge trying to make a left turn during peak traffic, especially for newer drivers. It is a plus for safety. Also, as Commissioner Grissim mentioned, the neighborhood aspect. He feels Commission Grissim painted a good picture of how to use Landscaping to close in the open area of the entrance somewhat. He also would like to see what can be done to get the street trees between the sidewalk and the edge of the road as recommended by Commissioner Grissim.

Director Langer stated since we have asked the Applicant to make some modifications, he would ask the Planning Commissioners to listen to the Public Comment later tonight. Maybe some of the residents did not know the history of the connection road and maybe some will have a rebuttal. He would ask that they keep an open mind. It is a very important topic and worth taking some time to think about.

Commissioner Mitchell stated it should be pointed out that construction traffic will not be passing through Walnut Ridge.

The Applicant stated he had no further comments other than he would appreciate direction from the Planning Commission. There are a number of issues the easiest being placing the street trees on the other side of the sidewalk. Regarding the connection, they need some direction, or they can move forward.

Commissioner Mitchell clarified he is only in favor of the access if it has the electric gates that open up, it should not be a wide-open access.

Chair Fox asked if the Applicant needed any additional clarification. The Applicant stated he understands the Planning Commission position on the access and the rest of the comments they can work through.

Chair Fox stated this item will return to the Planning Commission at a later date, the difference being tonight was a Public Hearing that requires noticing property owners within 300 feet of the proposed project. The next meeting will not be a Public Hearing so there will not be a written notification. Interested residents can access the Hartland Township website and view upcoming agenda items. It will appear as Site Plan Application #20-011 Villas of Hartland

Planned Development (PD) – Preliminary Site Plan. Today was different as it was a Public Hearing. It will take much longer than a week or two to return.

The Planning Commission chose not to make a recommendation on Preliminary Planned Development.

8. **Call to Public:**
   - Joe Napieralski, Walnut View Drive, Hartland Township; appreciated the history, still strongly opposed to the annex. Will follow up with the Homeowners and additional communications. Does not agree with the traffic benefit going all the way down to Hacker Road to make a left turn.
   - Henry Nykiel, N Hacker Road, Oceola Township; still very concerned about water running over the road. He believes that eventually the water will reach the overflow. When filling wetlands, the water has to go somewhere. Concerned about the pond. Could be an issue in the future.

9. **Planner's Report:**
   None

10. **Committee Reports:**
    None

11. **Adjournment:**
    A Motion to adjourn was made by Commissioner Mitchell and seconded by Commissioner Murphy. Motion carried unanimously. The meeting was adjourned at approximately 9:50 p.m.

Hartland Township Planning Commission Meeting Agenda Memorandum

Submitted By: Troy Langer, Planning Director

Subject: Site Plan with Special Land Use Application #21-003 (Hungry Howie's)

Date: April 1, 2021

Recommended Action

Move to recommend approval of Site Plan with Special Land Use Application #21-003, a request to construct a multi-tenant building approximately 4,550 square feet in size, with retail/office space and two (2) carry out restaurants, each having drive-through/pick-up service, as a special land use, on a vacant parcel in Section 22 of the Township, north of Highland Road and East of Bella Vita Drive (Parcel ID #4708-22-400-025). The recommendation for approval is based on the following findings:

1. The proposed special land use, carry out restaurant with drive-through service, meets the intent and purposes of the Ordinance as well as the specific Special Use standards outlined in Section 6.6 (Special Uses) and the Planning Commission has determined the proposed drive lanes do not have to comply with the standards in Section 4.28 (Fast Food and Drive-through Restaurants), as the proposed drive lanes are of a different nature, but still shall be permitted as a special land use in the GC-General Commercial zoning district.

2. The proposed use is compatible with the existing and future land uses in the vicinity.

3. The proposed use will be served by public sanitary sewer and municipal water. The proposed use will be adequately served by existing essential facilities and public services, and the Fire Department has no objection.

4. The proposed use will not be detrimental, hazardous, or disturbing to the existing or future neighboring uses, persons, or the public welfare.

5. The proposed use will not create additional requirements at public cost for public facilities as the proposed site will be served by public sanitary sewer and municipal water.

Approval is subject to the following conditions:

1. The proposed Special Land Use, restaurant with drive-through service, is subject to approval by the Township Board.

2. The applicant shall adequately address the outstanding items noted in the Planning Department's memorandum, dated April 1, 2021. Revised plans if necessary, shall be subject to an administrative review by the Planning staff prior to the issuance of a land use permit.

3. The applicant understands and is in full agreement that the drive lanes as indicated on the site plans shall not be used for a drive-through restaurant, as outlined in Section 4.28 of the Ordinance, unless the site plan has been modified to comply with the Ordinance and approved by the Planning Commission.

4. A land use permit is required after approval of the Site Plan and Special Use Permit and prior to construction.

5. Applicant complies with any requirements of the Department of Public Works Director, Township Engineering Consultant (HRC), Hartland Deerfield Fire Authority, and all other government agencies, as applicable.

6. (Any other conditions the Planning Commission deems necessary)

Discussion

Applicant: Steve Peterson

Site Description

The subject property, approximately 1.25 acres in size, is located on the north side of Highland Road, east of Arena Drive in Section 22 of the Township (Parcel ID #4708-22-400-025). The western boundary of the site is defined by a private road, Bella Vita Drive (the assumed road name although labeled as Golden Court on the plans), which provides the only access to the subject site via two (2) proposed driveways. This property is considered a corner lot with approximately 228.48 lineal feet along Highland Road and approximately 362.78 lineal feet along the private road.

The private road provides access to three (3) additional parcels, including Bella Vita Senior Living facility which is north and west of the subject site (2799 Bella Vita Drive). The remaining two (2) parcels are vacant.

The subject site is zoned GC-General Commercial, as is the parcel directly west of the site, on the west side of the private road (Parcel ID #4708-22-400-026). The property associated with Bella Vita Senior Living is zoned CA-Conservation Agriculture, as is the vacant parcel north of Bella Vita (Parcel ID #4708-22-400-028). The adjacent property east of the Hungry Howie's site is zoned CA-Conservation Agriculture.

The Future Land Use Map (FLUM) designates the subject parcel and the parcel west of Bella Vita Drive as Office. The adjacent parcel to the north (Bella Vita Senior Living) is shown as Multiple Family Residential. Adjacent land east of the subject parcel is designated as Office where there is frontage along Highland Road and north of that, the FLUM shows Multiple Family Residential as the category designation.

Overview and Background Information

Historically, the subject parcel was originally part of an approximate 20.7-acre parcel, which had been occupied by Fairway Golf, a driving range. The driving range was approved by the Township as a conditional use permit in the early 1960's and operated until its closure around 2017. In 2017, the property was purchased (20.7 acres) and the new owner submitted an application to construct a nursing home, Bella Vita Senior Living (SP/SUP Application #17-016). Approximately 15.7 acres of the property, northern section, is zoned CA-Conservation Agriculture. The remaining five (5) acres, the southern portion along Highland Road, is zoned GC-General Commercial.

Site Plan with Special Land Use Application #17-016

On November 16, 2017, the Planning Commission recommended approval of the Special Use Permit #17-016 for construction of the Bella Vita Senior Living Facility, an approximate 41,500 square foot nursing home. On December 5, 2017, the Hartland Township Board approved Special Use Permit #17-016 for the

Bella Vita Senior Living Facility. The approved plan for the nursing home facility showed the building being located approximately in the center of the CA-zoned portion of the 20.7-acre site. A private access drive, commencing from Highland Road and ending at the parking lot of the nursing home, provided sole access to the facility.

Site Plan Application #20-004 (Private Road)
The existing private access drive, as approved under SP/SUP #17-016, was constructed according to private road standards and was inspected by the Township Engineer Consultant. In 2020, the property owner submitted a request for the approval of a private road under Site Plan Application #20-004. Essentially the private road request included approval of the built portion of the road (private access drive) and the construction of an extension of said road to the north, ending in a cul-de-sac. The intent of the private road was to provide access to four (4) parcels, which would be created under a separate land division application. Approval of the private road request had to be secured before the land division application could be considered.

On June 11, 2020, the Planning Commission recommended approval of Site Plan Application #20-004, a request to construct a private road, which is intended to provide access to four (4) parcels, to be created under a separate land division application.

On Tuesday, June 16, 2020, the Township Board approved Site Plan Application #20-004.

Land Division Application #20-004
LD #20-004 was a request for the division of the 20.7-acre parcel into four (4) separate parcels. Vehicular access to each parcel is provided via the private road, which was approved under SP #20-004. Two (2) of the parcels are zoned GC and have frontage along Highland Road and the private road. The other two (2) parcels are zoned CA and include the Bella Vita Senior Living facility and a vacant parcel north of said property. The land division request was approved by the Township in January 2021.

The proposed Hungry Howie's project is located in the southeast parcel of this land division request.

Proposed Use
The applicant is requesting to construct a multi-tenant building, with two (2) carry out type restaurants, each having drive-through service. One (1) drive-through service window is on the west side of the building for Tenant 1 and the other is on the east side of the building for Tenant 3 (Hungry Howie's). Tenant 2 is shown as office-retail use. Per Section 3.1.14D.xiv., a restaurant with drive-in or drive-through service is considered a special land use in the GC-General Commercial zoning district. Additional standards for fast-food and drive-through restaurants are provided in Section 4.28 of the Zoning Ordinance.

The proposed project also requires site plan approval thus there are two application elements: special land use and site plan approval for the proposed multi-tenant commercial building with two (2) carry out restaurants, each having a drive-through service. Although there are technically two elements, all are incorporated into one combined site plan which will be reviewed and approved concurrently.

Per the Hartland Township Zoning Ordinance and the State Enabling Act, a public hearing is required for the special land use application. Given the requirements for publishing a notice for the special land use, the public hearing has been scheduled for the April 8, 2021 Planning Commission meeting.

Request
The applicant is requesting site plan with special land use approval to construct a multi-tenant building,

approximately 4,550 square feet in size, with a retail/office tenant space and two (2) carry out restaurants each with a drive-through service window and stacking spaces.

Per the applicant each restaurant is similar to a carry out restaurant, in that patrons will place food orders on-line or by phone to place an order. The orders will be picked inside the store or via the drive-through window. The applicant has termed this a pick-up restaurant. Dining-in does not appear to be an option. Also, there will not be an option to drive-up to a menu board and place an order. A menu board and ordering station are not shown on the plan for either restaurant. The floorplan for Hungry Howie's does not show tables or seating thus a dining-in option is not proposed. A floor plan for Tenant 1 was not provided.

The parking regulations in Section 5.8.4.H. provide the parking formula for various types of restaurants. A restaurant-carry out or delicatessen with less than six (6) tables and/or booths, requires six (6) parking spaces plus one (1) space for each employee on the peak shift. Stacking spaces are not listed as required for this type of use, which one would assume is because a menu board is not an option for the ordering of food, thus stacking spaces are not necessary. The Ordinance does not provide a specific parking formula for this type of restaurant, where food is pre-ordered and picked up in the store or at the drive-through window, without an ordering board option.

The proposed plan shows three (3) stacking spaces for Tenant 1 and two (2) stacking spaces for Hungry Howie's (Tenant 3). The proposed parking calculations are based on the specific uses shown on the plan: Tenant 1 (carry out restaurant); Tenant 2 (retail); and Tenant 3 (carry out restaurant). Each carry out use requires ten (10) parking spaces. The retail use requires five (5) spaces, for a total of 25 parking spaces. Twenty-six (26) parking spaces are proposed.

Another approach is to calculate parking for the multi-tenant building using the parking formula for retail or office uses and use the total square footage of the building (Gross Floor Area). Using this formula (1 parking space for each 300 feet of gross floor area), would eliminate the need to re-evaluate the parking calculations based on an individual use, should there be changes in the tenant mix in the future. Both parking formulas are provided and discussed under the Off-Street Parking section in this memorandum.

Of consideration though is the possibility of a pick-up restaurant transitioning to a traditional style fast food restaurant with an ordering board option and drive-through service window. In this case, a different parking formula applies, which requires more parking spaces plus ten (10) stacking spaces in proximity of the ordering station. Spatially, the proposed plan could not accommodate additional stacking or parking spaces. The Planning Commission should take this into consideration when reviewing the project and determine if language should be provided regarding what types of restaurants could be allowed.

The hours of operation for Hungry Howie's are Sunday through Thursday, from 11:00 a.m. to 10:00 p.m.; and Friday and Saturday from 11:00 a.m. to 12:00 midnight. Per the applicant it is anticipated that Tenant 1 will be of similar use. Tenant 2 will be a mercantile or business use, with the hours to be determined.

Approval Procedure

The proposed use, restaurant with drive-in or drive-through service, requires approval from the Township Board for the special land use. The Planning Commission will review the special land use and make a recommendation to the Township Board.

The project also requires the site plan to be reviewed by the Planning Commission who will make a final decision on the site plan. The plans will be reviewed using the development standards of the GC-General Commercial zoning district (Section 3.1.14.), standards associated with fast-food and drive-through

restaurants (Section 4.28), and all applicable zoning standards in the Zoning Ordinance.

SPECIAL LAND USE REVIEW – General Standards

In accordance with Section 6.6, Special Uses, of the Hartland Township Zoning Ordinance, the following standards shall serve the Planning Commission and Township Board as the basis for decisions involving such uses. The standards are provided below, and the applicant has submitted a letter, as a separate attachment, which addresses the special use criteria.

A. Be harmonious and in accordance with the objectives, intent, and purposes of this Ordinance.
B. Be compatible with the natural environment and existing and future land uses in the vicinity.
C. Be compatible with the Hartland Township Comprehensive Plan.
D. Be served adequately by essential facilities and public 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 adequately provide any such service.
E. Not be detrimental, hazardous, or disturbing to the existing or future neighboring uses, person, property, or the public welfare.
F. Not create additional requirements at public cost for public facilities and services that will be detrimental to the economic welfare of the community.

The Planning Department believes the proposed use can and will meet the criteria listed above for the special land use request. The applicant has provided responses to the Special Land Use general standards as an attachment. The applicant will be responsible for all applicable approvals and permits from other agencies and departments for the proposed use.

SPECIAL LAND USE REVIEW – Applicable Site Standards

In addition to a finding by the Planning Commission and Township Board that the criteria above have been satisfied, the Use Standards of Section 4.28, Fast-food and Drive-through restaurants, apply.
Those standards are listed below, followed by staff's findings on each standard.

Fast-food and Drive-through Restaurants (Section 4.28)

1. Minimum Frontage. The site shall have a minimum of two hundred (200) feet of frontage on a paved major thoroughfare unless accessed via a service drive or marginal access road.

   The subject site complies with this standard, having approximately 228.48 feet of frontage on Highland Road and 362.78 feet of frontage along the private road.

2. Location of driveways. Ingress and egress points shall be located at least sixty (60) feet from the intersection of any two (2) streets (measured from the nearest right-of-way line). The use of secondary access drives in accordance with Section 5.10.2 is required.

   The most southern of the two (2) commercial driveways into the site is located approximately 47 feet from the right-of way line of Highland Road and does not comply with this standard.

3. Control of Sound Level. Devises for the transmission of voices shall be so directed or muffled as to prevent sound from being audible beyond the boundaries of the site.

   Ordering stations are not shown on the submitted plans.

4. Stacking space and lanes shall be provided as specified in Section 5.8, Off-Street Parking Requirements. Additionally, the site design must allow for unimpeded circulation around the building outside of the drive-through lanes.

   The two (2) proposed restaurants provide carry out service/pick up service and each restaurant has its own drive-through window. Per Section 5.8.4.H., the restaurant category for carry-out or delicatessen, with less than six (6) tables or booths, does not require stacking spaces.

   The proposed plan shows three (3) stacking spaces for Tenant 1 and two (2) stacking spaces for Tenant 3. A 12-foot-wide by-pass lane is provided on the east side of the stacking spaces for Tenant 3. A by-pass lane is not provided for Tenant 1. Drive aisles (24 feet wide) are provided around the building and should allow for adequate circulation. The applicant has stated that both of the drive lanes are designed for carry-out assistance for customers. Customers would not drive into the drive-lane, order food, and then proceed to a window to pay and obtain their order. Instead, customers would either place an order online or call from their home, and then drive to the restaurant and use the drive lane to pick up their order. In this scenario, the drive lane functions differently than a drive-through restaurant would. As such, the site plan does not comply with the required stacking spaces that would normally be required for a drive-through restaurant. The applicant is asking the Planning Commission to make a determination that the proposed drive lanes are somewhat different than drive-through lanes for a restaurant; and therefore, would be acceptable, as proposed.

SITE PLAN REVIEW – Applicable Site Standards

The applicable site standards include those standards related to the proposed use, restaurant with drive-in or drive-through service, as outlined in Section 3.1.14 (GC-General Commercial); Section 4.28 of the Zoning Ordinance, as discussed above; and all applicable zoning standards in the Zoning Ordinance.

In this case the applicant is requesting site plan with special land use approval to construct a multi-tenant building, approximately 4,549 square feet in size, with two (2) carry out restaurants each with a drive-through service.

Impact Assessment

No impact assessment was submitted, nor required, for the proposed use.

Traffic Generation

A traffic impact assessment was not required for the proposed use.

Dimensional Requirements (GC-General Commercial; Section 3.1.14)

Lot Size (Sec. 3.1.14)

- Required – 40,000 sq. ft. w/o sewer; or 20,000 sq. ft. with sewer
- Proposed – 1.25 acres (54,450 sq. ft.) with public sewer
- Meets Requirement? Yes
- Comment – (none)

Frontage (Sec. 3.1.14)

- Required – minimum lot width of 120 feet
- Proposed – lot width is approximately 190 feet (parallel to Highland Road at 80 ft. setback)
- Meets Requirement? – Yes
- Comment – (none)

Building Setbacks (Sec. 3.1.14)

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (south) Highland Road	80'	80'	Yes
Front (west) Private road	50'	50'	Yes
Rear (north) w/ sewer	0'	140'	Yes
Side (east)	15'	40'	Yes

Building Height (Sec. 3.1.14)

- Required – 35 feet or 2½ stories, whichever is less
- Proposed – 21'-6" at tallest point
- Meets Requirement? – Yes
- Comment – (none)

Lot Coverage (Sec. 3.1.14)

- Required – principal structure: 75% max.
- Proposed – 8.3%
- Meets Requirement? – Yes
- Comment – (none)

Site Requirements

Dumpster Enclosure (Sec. 5.7)

- Required – dumpster designed, enclosed, and screened per requirements; dumpster materials must match the building.
- Proposed – 7' by 16' concrete pad in front of dumpster, with 6-foot-high brick with split face block enclosure with materials that match the building; and solid, reinforced gates comprised of synthetic wood. Landscaping is provided around the enclosure with shrubs.
- Meets Requirement? – Yes
- Comment – (none)

Off-Street Parking (Sec. 5.8, for office/retail use; carry out restaurant uses)

Calculations by individual use:

- Required – 1 space per each 300 sq. ft. of gross floor area (GFA) for office/retail use; 6 spaces plus 1 space for each employee on peak shift for carry out restaurant or delicatessen use, with less than 6 tables and/or booths
  EQUATES TO: 25 parking spaces REQUIRED (Retail - Tenant 2): 1,400 sq. ft. GFA ÷ 300 = 5 spaces PLUS carry out restaurant (Tenant 1) = 10 spaces and carry out restaurant (Tenant 3) = 10 spaces
- Proposed – 26 parking spaces, 10' X 20', and 5 pick-up stacking spaces
- Meets Requirement? – Yes

Calculations using retail/office formula for GFA (Gross Floor Area) of building (4,550 sq. ft.):

- Required – 1 space per each 300 sq. ft. of gross floor area for office/retail use;
  EQUATES TO: 14 parking spaces REQUIRED (GFA of building 4,550 sq. ft. ÷ 300 = 14 spaces
- Proposed – 26 parking spaces, 10' X 20', and 5 pick-up stacking spaces

- Meets Requirement? – **TBD**
- Comment – parking needs met for the proposed plan, using both parking formulas. The applicant is asking the Planning Commission to make a determination that the proposed drive lanes are somewhat different than drive-through lanes for a restaurant; and therefore, would be acceptable, as proposed. Determination by Planning Commission required as to what types of restaurant uses could be permitted on this site, given the potential parking and stacking limitations.

Barrier-Free Parking

- Required – barrier-free spaces in a location most accessible to the building entrance, with at least 1 space van-accessible (1 barrier-free space required per 25 parking spaces)
- Proposed – 2 barrier-free spaces, both van accessible, nearest the entrance (south side of sparking lot)
- Meets Requirement? – Yes
- Comment – (none)

Parking Lot / Driveway / Internal Roads Setbacks (Sec. 5.8.3.)

- Required – off-street parking in commercial districts may only be located in a side or rear yard or non-required front yard; may not be permitted within 20' of a single-family district, nor within 10' of a road ROW, or 25' from a front lot line, nor 10' from a side or rear lot line.

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (south)	25'	25'	Yes
Side (east) Adjacent to CA zoning	20'	20'	Yes

- Meets Requirement? – Yes
- Comment – (none)

Loading (Sec. 5.9)

- Required – 1 loading space (10' X 50') required for up to 10,000 sq. ft. of floor area (for industrial use)
- Proposed – loading zone (10' by 50') on north side of building
- Meets Requirement? – Yes
- Comment – (none)

Access Management and Non-Residential Driveway Standards (Sec. 5.10)

- Required – Per Sec. 5.10.5.C., the minimum access spacing between commercial driveways on a street with a posted speed limit of 25 MPH or greater is 120 feet (private road-speed not posted)
- Proposed – the 2 proposed driveways have access off the private road and are approximately 120 feet apart (near edge to near edge of each driveway)
- Meets Requirement? – Yes
- Comment – (none)

Landscaping and Screening (Sec. 5.11)

A. Greenbelt Landscaping (Sec. 5.11.C.)

Calculations for Greenbelt along Highland Road

- Required – within the first 30 feet of the property, 1 canopy tree for every 30 ft of lineal of frontage; 3 small deciduous ornamental trees or large deciduous or evergreen shrubs for the

initial 40 ft., and 1 per 20 ft. thereafter, for 228' of frontage along Highland Road. EQUATES TO: 8 canopy trees and 13 additional ornamental trees, or large deciduous or evergreen shrubs REQUIRED

- Proposed – 8 canopy trees; 13 ornamental trees; 44 deciduous shrubs, and 32 large evergreen shrubs within first 30 feet
- Meets Requirement? – Yes
- Comment – The total plant count exceeds the required number of ornamental trees and shrubs. To be noted, the evergreen shrubs labeled as TMD (Dense Yew) could also be counted toward the required screening of the parking lot (Perimeter Landscaping Sec. 5.11.2.E.ii.a.). Planning Commission to determine if the evergreen shrubs can be also counted as fulfilling requirement for Perimeter Landscaping (screening of parking lot).

Calculations for Greenbelt along private road

- Required – within the first 30 feet of the property, 1 canopy tree for every 30 ft of lineal of frontage; 3 small deciduous ornamental trees or large deciduous or evergreen shrubs for the initial 40 ft., and 1 per 20 ft. thereafter, for 326' of frontage along the private road. EQUATES TO: 11 canopy trees and 17 additional ornamental trees, or large deciduous or evergreen shrubs REQUIRED
- Proposed – 11 canopy trees (4 existing, 7 proposed); 57 medium shrubs within first 30 feet
- Meets Requirement? – Yes, for number of plants; evergreen shrub species too short if also counted as evergreen shrub screen for parking area-see notes below
- Comment – An evergreen shrub screen could be counted for the Greenbelt requirement as well as for the Perimeter Landscaping requirement (screening of the parking lot), however the proposed shrub (JT-Tamarax Juniper) is too short and will not reach the required 3-foot height within two years of planting, to serve as the required screening of the parking lot. An alternate evergreen shrub species should be chosen, possibly TMD (Dense Yew) to meet the height and screening requirement. Planning Commission to determine if the evergreen shrubs in the Greenbelt can be also counted for the Perimeter Landscaping (screening of parking lot), if a compliant evergreen shrub species was used.

B. Foundation Landscaping (Sec. 5.11.2.D.)

- Required – must equal 60% of the front and sides of the proposed building where facing road or adjacent to parking lot; must be 8-10 ft. in width, and consist of 1 ornamental or columnar tree, and 6 medium or 8 small shrubs for every 30 ft.; 147 ft. of building perimeter (used west, northwest, and south building dimensions). Foundation perimeter 147 ft. X 60% = 88 ft. EQUATES TO: 3 ornamental/columnar trees; PLUS 24 small shrubs or 17 medium shrubs REQUIRED.
- Proposed –
  South: 4 curbed planters are installed in the sidewalk next to the drive aisle, with the edge of each curbed planter approximately 6.63 feet from the building. Two (2) planter beds have a total of 10 small shrubs PLUS 2 planter beds are planted with a sedge plant. Curbed planter beds are 3 feet wide and required width is 8-10 ft.
  West of building, in adjacent parking island: 10 medium/large shrubs and 9 small shrubs (closest to west side of island)
  Northwest of building: 17 small shrubs
  North portion of parking lot in landscape beds near dumpster enclosure: 3 ornamental trees plus 10 large shrubs.
- Meets Requirement? – **TBD**
- Comment – The total plant count exceeds the required number of ornamental trees and shrubs however the plants are not located around the building foundation. Due to spatial constraints

foundation landscaping is planted in other areas on the site. The plans did not clearly identify which plants are being counted as foundation plantings, in areas noted as "planted in the north portion of the parking lot", thus staff made the best attempt to interpret that note and designate which plants would be counted. Also, the planter beds on the south side of the building do not meet the required minimum width of 8 feet. Planning Commission to determine if the proposed arrangement is consistent with the intent of the Ordinance standards for Foundation Landscaping, and if the planter bed width is acceptable.

C. Parking Lot Landscaping (Sec. 5.11.2.E.i.)
- Required – landscaped end caps for parking areas of 10 or more spaces; 1 canopy tree per 180 sq. ft. of interior area, with 50% of the interior area covered with small and medium evergreen and deciduous shrubs. The remaining landscape area may include a combination of groundcover, perennials, annuals, lawn and mulch plants.
- EQUATES TO: 10 canopy trees and parking islands with a mix of small and medium deciduous shrubs and perennial plants.
- Proposed – 10 canopy trees and a mix of deciduous shrubs and perennial plants that provide the required coverage.
- Meets Requirement? – Yes, with changes noted below
- Comment – several parking islands are planted primarily with perennial flowers and/or deciduous shrubs. Evergreen shrubs should be incorporated into each area to provide seasonal interest. The west endcap of the parking area west of the building should be widened to 10 feet in order to meet the landscape requirements and one (1) canopy tree should be located there.

D. Perimeter Landscaping – For areas visible from a public road (facing Highland Road and private road; Sec. 5.11.2.E.ii.a.)

Calculations for Perimeter Landscaping – parking lot facing Highland Road
- Required – Landscape berm planted with a combination of evergreen and deciduous shrubs to effectively screen parking lot; or evergreen hedge row a minimum 3 ft. in height; or decorative screen wall
- Proposed – 3-ft. evergreen hedge row along parking lot facing Highland Road, in Greenbelt Landscaping area
- Meets Requirement – Yes; see note below
- Comment – Evergreen shrubs in hedge row area under consideration as also counting towards required landscaping in the Greenbelt Landscaping area. Planning Commission to determine if the evergreen shrubs can be also counted as fulfilling requirement for Greenbelt Landscaping.

Calculations for Perimeter Landscaping – parking lot facing private road
- Required – Landscape berm planted with a combination of evergreen and deciduous shrubs to effectively screen parking lot; or evergreen hedge row a minimum 3 ft. in height; or decorative screen wall
- Proposed – 57 evergreen shrubs, intended to fulfill Greenbelt requirements
- Meets Requirement – Yes; see note below
- Comment – An evergreen shrub screen could be counted for the Perimeter Landscaping requirement (screening of the parking lot) as well as Greenbelt requirement, however the proposed shrub (JT-Tamarax Juniper) is too short and will not reach the required 3-foot height within two years of planting, to serve as the required screening of the parking lot. An alternate evergreen shrub species should be chosen, possibly TMD (Dense Yew) to meet the height and screening requirement. Planning Commission to determine if the evergreen shrubs

in the Greenbelt can be also counted for the Perimeter Landscaping (screening of parking lot), if a compliant evergreen shrub species was used.

E. Perimeter Landscaping – For areas not visible from a public road (Sec. 5.11.2.E.ii.b.) – along east side of east access drive in parking lot
   - Required –1 canopy or evergreen tree for every 30 ft., along with understory shrubs for screening purposes for perimeter areas not visible from a ROW. East access drive = 140 ft. EQUATES TO: 5 canopy or evergreen trees and understory shrubs for screening REQUIRED.
   - Proposed – 50 deciduous shrubs plus 36 evergreen trees, planted between two retaining walls
   - Meets Requirement? – Yes
   - Comment – The evergreen trees could also fulfill the requirement for buffering or screening requirement between land uses (see next section). Planning Commission to determine if the this is acceptable.

F. Buffering or Screening (Sec. 5.11.2.G.i.) – screening between land uses (east property line where abutting single family zoned property)
   To be noted, there are two (2) proposed boulder landscape walls, placed between the back of the curb of the eastern access drive aisle and the property line. Each wall is approximately 30 inches in height and planting areas are provided. A 4-foot-wide area is provided between the back of curb and the first boulder wall, and a 7-foot-wide planting area is shown between that boulder wall and the second boulder wall. The second boulder wall terminates approximately one (1) foot from the east property line.

   - Required – evergreen trees planted in staggered or clustered pattern with varying tree heights, planted in landscape bed associated with a boulder landscape wall
   - Proposed – combination of 2 different evergreen trees, varying in height from 8ft. to 20 ft., placed in the planting area between the first and second boulder wall. A row of shrubs and lawn are proposed between the back of curb and the first boulder wall.
   - Meets Requirement? – Yes
   - Comment – The evergreen trees could also fulfill the requirement for perimeter screening requirement. Planning Commission to determine if the this is acceptable.

     Staff would suggest the row of deciduous shrubs by the lawn area could be eliminated and replaced with lawn between the back of curb and the first boulder wall, as this area is limited in width and the shrubs could overtake the space.

G. Screening of Ground Mounted Equipment (Sec. 5.11.2.G.iii.)
   - Required – screening on three sides for utility cabinets (if 30 inches or more in height)
   - Proposed – large evergreen shrubs (15 ft. height) on the sides of the transformer pad
   - Meets Requirement? – Yes
   - Comment – (none)

H. Detention/Retention Area Landscaping – NA (detention provided off-site)

I. Other landscaping comments
   Staff is concerned about too much plant material in some areas on the site and intends to work with applicant on possible reduction of plant material prior to the submittal of the construction plans.

Sidewalks and Pathways (Sec. 5.12)

- Required – the Planning Commission may require sidewalks or safety paths as a condition of site plan approval
- Proposed – a 5-ft. wide concrete sidewalk shown along the perimeter of the building on the north; 10-ft. wide sidewalk shown on south side of building, where four (4) curbed planters are also located; 5 ft. wide sidewalk from parking lot on south side of site to connect to proposed 8-ft. wide bituminous safety/bike path within Highland Road right-of-way
- Meets Requirement? – Yes
- Comment – (none)

Lighting (Sec. 5.13)

A. Intensity
   - Required – max. 0.5 fc along property line adjacent to residential; or max.1.0 fc along property line adjacent to non-residential; average fc between 2.4 and 3.6 in main parking area and an average of 5.0 fc at main building entrance; may not exceed 10 fc on site
   - Proposed – photometric plan indicates an average of 0.1 fc along all property lines; average of 3.2 fc in the parking area; and average of 5.1 fc at building entrance. Footcandle value less than 10 fc throughout the site
   - Meets Requirement? – Yes
   - Comment – Photometric plan states the light intensity (footcandle values) were taken at ground level, and the Ordinance requires light intensity to be measured at five (5) feet above ground level. A revised plan should be required as part of the construction set of plans.

B. Fixture Height
   - Required – 25' or the height of the principal building, whichever is less, measured from the ground level to the centerline of the light source
   - Proposed – 20' total height (light poles plus base)
   - Meets Requirement? – Yes
   - Comment – (none)

C. Fixture Type
   - Required – details of all lighting fixtures needed including specifications for shielding, wattage and illumination
   - Proposed – specifications for proposed LED light fixtures are shown on the photometric plan for light pole fixture, wall mounted light fixtures, and light bollards.
   - Meets Requirement? – Yes
   - Comment – Light fixture A (wall mounted cylinder) is not permitted to emit light from the top of the cylinder (description on the cut sheet was not clear if this was a possibility). The light bollards should be shown on the site plan and landscape plan.

Water Supply and Wastewater Disposal (Sec. 5.16)

The proposed development will be served municipal water and sanitary sewer.

Architecture / Building Materials (Sec. 5.24)

Architecture Comments:

- Façade Materials Calculation – façade materials must comply with the specifications for Façade Materials Group #1; percentages are proposed as follows:

Materials Group #1: Proposed Façade Materials by Percentage by Elevation

Group #1	Clay Brick (30% min.) Clay brick prop.	Decorative concrete masonry unit (Split faced-25% max.)	Decorative concrete masonry unit (smooth face, Accent Block, B-3)*****	Glass/Entries (50% max.)	Molded cornices/trim (15% Max.)
East	78.5%	13.0%	0.5%	1.0%	7.0%
South	53.6%	6.7%	1.4%	31.3%	7.0%
West	77.9%	12.8%	0.8%	1.5%	7.0%
NW	74.9%	10.5%	0.0%	7.6%	7.0%
North	76.0%	11.2%	0.0%	6.1%	6.7%

* Ground, polished or burnished concrete masonry units forming an accent element in the building's design may be permitted with Planning Commission approval.

- Colors: the renderings illustrate earth tone colors as required; all specifications are provided.
- Materials: percentages are listed for each elevation side as indicated by the table; specifications on all materials are provided.
- Meets Requirement? – **TBD**
- Comment – Planning Commission approval required for the use of smooth face decorative concrete masonry unit (Accent Block B-3), as an accent element.

Other Requirements-Zoning Ordinance Standards
Nothing additional at this time.

Hartland Township DPW Review
A review letter is provided from the Hartland Township DPW Director, dated January 19, 2021.

Hartland Township Engineer's Review (HRC)
The Township Engineer (HRC) has reviewed the Preliminary PD plans and recommends approval subject to items being addressed in the letter dated January 22, 2021.

Hartland Deerfield Fire Authority Review
The Hartland Deerfield Fire Authority has reviewed the plans and provided comments in the letter dated March 18, 2021. Approval is subject to the contingencies being addressed as outlined in the letter.

Attachments:
1. DPW Review letter, dated January 19, 2021 -*PDF version only*
2. Township Engineer (HRC) letter dated January 22, 2021-*PDF version only*
3. Hartland Deerfield Fire Authority letter, dated March 18, 2021-*PDF version only*
4. Applicant Summary letter dated March 30, 2021 – *PDF version only*
5. Site Plans dated March 12, 2021

CC:
HRC, Twp Engineer (via email)
M. Luce, Twp DPW Director (via email)
A. Carroll, Hartland FD Fire Chief (via email)

DEPARTMENT OF PUBLIC WORKS

Michael Luce, Public Works Director
2655 Clark Road
Hartland MI 48353
Phone: (810) 632-7498

TO:	Planning Department
DATE:	01/19/2021
DEVELOPMENT NAME:	Hungry Howies
PIN#:	11935 Highland Rd
APPLICATION #:	21-003
REVIEW TYPE:	Site Plan

The Department of Public Works (DPW) has reviewed the site plans for the proposed Hungry Howie's Restaurant. This 4,549 square takeout food restaurants would require 6.83 Water and 6.83 Sewer REUs. Parcel 4708-21-401-006 does not have any REUs assigned to it.

	Sewer REUs	Water REUs
Owned	0	0
Required	6.83	6.83
# REUs Needed	6.83	6.83
Cost Each	$9,439.20	$5,816.01
Total Due Each	$64,469.74	$39,723.35
TOTAL REU COST	**$104,193.09**	

Public Works approves the above plans subject to applicant securing the required number of REUs and the inclusion of the following details on the site plans and construction plans:

Prior to interior construction, applicant will be required to purchase a 2" water meter from the Township. Please contact the Public Works Department (810-632-7498) to purchase the water meter.

Please feel free to contact me with any further questions or comments regarding this matter, and thank you for your time.

Michael Luce
Public Works Director

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

STREET: 105 W. Grand River
Howell, MI 48843
PHONE: 517-552-9199
WEBSITE: hrcengr.com

January 22, 2021

Hartland Township
2655 Clark Road
Hartland, MI 48353

Attn: Mr. Troy Langer, Planning Director

Re: Site Plan Review
Hungry Howies – Bella Vita Outlot

HRC Job No 20210089.02

Dear Mr. Langer:

As requested, this office has reviewed the site plan for the above project as prepared Desine, Inc. (plans dated December 29, 2021). The following items will need to be addressed:

General

1. All permits are to be obtained prior to the start of construction. At this time, the permits for this development may include EGLE Water Main, LCDC Sanitary Sewer, and LCDC Soil Erosion.

2. Applicable standard detail sheets shall be attached to the plans.

3. Plans shall be signed and sealed by a professional engineer or architect licensed to practice in the State of Michigan.

Water Supply

1. The water supply improvements must be designed in accordance with the Hartland Township Engineering Design Standards.

2. The fire hydrant coverage must be reviewed and approved by the Hartland Area Fire Department.

3. The water main for the fire hydrant may need to be 8-inch diameter if the run is longer than 75 feet. The connection to the existing main will need to be done with a tapping, sleeve, valve and well.

Sanitary Sewer

1. The sanitary sewer improvements must be designed in accordance with the Hartland Township Engineering Design Standards and reviewed by the Livingston County Drain Commission.

2. Livingston County Drain Commission standard detail sheets must be included with the plan set.

3. The plans show the sanitary sewer connecting to an existing sewer lead. This lead was installed to service the outlot on the west side of the Golden Court. The connection from this building need to connect directly to the sanitary sewer and not the existing lead. Further discussions with the LCDC will need to determine the actual connection location. An easement may need to be dedicated that convers the existing lead across this property (if one does not exist).

Storm Drainage

1. The proposed storm water collection and detention systems must be designed in accordance with the Hartland Township and Livingston County Engineering Design Standards.

Paving & Grading

1. The proposed paving and grading improvements must be designed in accordance with Hartland Township Engineering Design Standards.

Subject to these items being addressed in the construction plans, we have no objection to the approval of the preliminary site plan. One (1) complete set of the construction plans should be submitted to the Township Planning Department for review.

If you have any questions or require any additional information, please contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

Michael P. Darga, P.E.

MPD/mpd

pc: Hartland Twp;, B. West, M. Wyatt, M. Luce
HRC; R. Alix, File

HARTLAND DEERFIELD FIRE AUTHORITY

FIRE MARSHALS OFFICE

Hartland Area Fire Dept.
3205 Hartland Road
Hartland, MI. 48353-1825

Voice: (810) 632-7676
E-Mail: jwhitbeck@hartlandareafire.com

To: Hartland Township Planning Commission
Attn: Zoning Department

Re: Hungry Howie's Plaza Request for Site Plan Review
Highland Road, Hartland MI 48353

March 18, 2021

This office has reviewed the Hartland Plaza Site Plan dated March 9, 2021.

We have the following comments regarding Unit #1, Unit #2 and Unit #3.

1. An address visible from the center of Highland Rd. right-of-way. Numbers shall be a minimum of 6 inches high, or at a height and width required to be visible from the centerline by a person with corrected or uncorrected 20/20 vision, (Ordinance #77-505.1)
2. As it is already serviced by municipal water, we highly recommend evaluating the cost comparison and numerous substantial advantages to a fire suppression system throughout the building. Aside from the obvious protection of life and property, there are many cost savings in construction, along with insurance cost savings that will exceed the cost of the system day one or over the next few years.
3. All emergency lighting and exit signage to be wired to a dedicated and labeled circuit breaker. (Ordinance #77-506.1.2)
4. A Supra Brand lock box to be installed prior to obtaining the certificate of occupancy. An order form can be supplied by the Fire Department to be ordered. (Ordinance #77-506.1)
5. A LadderPort Ladder Receiver (Type 1, Type 2, Type 3 or Type 4) would be installed for equipment and/or appliances installed on the rooftop, in a location as agreed upon by this office. (MBC306.5 & Ordinance #77-5401.1) Exception: If the commercial building is 100% protected by an approved automatic fire suppression system, the access may be located in the interior of the building. (Ordinance #77-504.1.1.1) The Ladder Port is on the current plans.
6. Plans for a Commercial Hood Suppression System shall be submitted to Brighton Fire Department for review. Once approved the set of plans shall be picked up and taken to the Livingston County Building Department to pull a permit. *Note: UL300 system tests will be conducted using a "wet test" using an agent recommended by the manufacturer. (Ordinance #77-105.7.1.1)
7. Once structural work is complete, contact this office to schedule an Emergency Services Communications Test, the results of which may require a bi-directional amplifier be installed for interior emergency communications. (Ordinance #77-509)
8. Ensure that all corners are serviceable by the turning radius requirements for our apparatus. Requirements are sent separately in an attached document.
9. On page 18 in the site plan, the schematics for a dry hydrant should not be considered for this project and has been crossed off.
10. The street name will have to be confirmed for the alarm system to send the proper signal for dispatch to correctly notify emergency services.
11. Outside doors should be labeled to signify the address of the occupancy or if it is a mechanical room.

The Fire Marshals office approves with the above contingencies the submittal. Any revised drawings affecting the Fire Department must be submitted for review.

Yours In Fire Safety,

Jennifer Whitbeck
Fire Inspector

jeffery a. scott architects p.c.
architects ▪ engineers

MEMORANDUM

TO: Troy Langer, Planning Director
Planning Department
2655 Clark Rd
Hartland, MI 48353

FROM: Jeffery A. Scott, AIA
Jeffery A. Scott Architects P.C.

Daniel J. Westendorf
Jeffery A. Scott Architects P.C.

DATE: March 30th, 2021

RE: Hungry Howie's Plaza
11935 Highland Rd
Email from planning director dated 03/23/2021

JSA Project No.: 20082

RESPONSE MEMO for (Email from planning director dated 03/23/2021)

Planning Department Special Use Standards, Issued on 03/23/2021
Issued By – Troy Langer, Planning Director:

1) **Provide a summary of the business model for the "pick-up" style restaurant, explaining that style of restaurant, how it differs from a fast-food/other restaurant with drive-through service and ordering stations/menu board; how food ordering and pick-up will occur, whether dining-in is an option, how many tables for dining-in, and generally the hours of operation for Hungry Howie's at least.**

Response: *This project proposes to relocate the existing Hungry Howie's restaurant from the shopping center down the road to the proposed new building. The operations would be similar to that of the existing restaurant with the addition of a drive -up pick-up window. Hungry Howie's drive-up window and the window proposed for the future tenant on the other side of the building will be pick-up service only with no ordering or menu boards and therefore do not provide the vehicle stacking required of a full drive-thru facility. Customers will place an order for carry-out ahead of time via phone or internet and be provided a pick-up time, thereby eliminating wait times and stacked cars. When the customers arrive they will have the option to either park and walk into the restaurant to pick up their order or*

drive their vehicle up to the window. There are currently no proposed dine-in tables. Hungry Howie's is open Sunday thru Thursday 11am to 10pm and Friday/Saturday 11am to 12 midnight. It is anticipated that Tenant 1 (West side) will be of similar use and Tenant 2 (middle) will be a mercantile or business use.

2) **In accordance with Section 6.6, Special Uses, of the Hartland Township Zoning Ordinance, the following standards shall serve the Planning Commission and Township Board as the basis for decisions involving such uses. The standards are provided below and responses to each criteria are requested from the applicant.**

   a. **Be harmonious and in accordance with the objectives, intent, and purposes of this ordinance.**

      Response: *Through multiple design iterations and discussions with the city staff, the site and building designs for this irregularly shaped parcel have been massaged to provide a quality, functional design that complies with the ordinance. A special land use is being requested to grant drive-up pick-up windows on the East and West sides which will allow more flexibility for the tenants. The pick-up windows will improve safety by reducing the number of pedestrians walking thru the parking lot. Additionally, the pick-up windows will reducing the amount of parking spaces needed.*

   b. **Be compatible with the natural environment and existing and future land uses in the vicinity.**

      Response: *The site is located on M-59 at the transition from commercial to office use and has the ability to accommodate either (or both) as the needs of the community change. The perimeter landscaping includes a landscaped rock retailing wall along the East property line bordering a CA- Conservation Agricultural site.*

   c. **Be compatible with the Hartland Township Comprehensive Plan.**

      Response: *The Hartland Township Comprehensive Plan encourages green space visible from the road as is provided by the landscape buffer along M-59 and Golden Circle. The site shares the existing joint access road (Golden Court) instead of requiring an individual curb cut along M-59. It also requires clay brick construction which is proposed along with other quality building materials. The proposed project broke up the parking field by creating multiple smaller parking areas separated by landscaped areas as is encouraged by the township's Comprehensive Plan. Additionally*

   d. **Be served adequately by essential facilities and public 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 adequately provide any such service.**

      Response: *The existing drive aisle (Golden Court) and the proposed utilities will adequately service the proposed development.*

e. Not be detrimental, hazardous, or disturbing to the existing or future neighboring uses, person, property, or the public welfare.

Response: *The proposed development is typical of other users along M-59 and in line with the township's Comprehensive Plan.*

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

Response: *The proposed development of the existing vacant site will increase the township tax base and not cause unreasonable strain on city services.*

Should you have any additional questions regarding this matter, please contact our office.

END OF MEMORANDUM

SITE AND CONSTRUCTION PLANS FOR

11935 HIGHLAND ROAD

HUNGRY HOWIES - HARTLAND, MI.

A PART OF THE SOUTHWEST 1/4 OF SECTION 22, T 3 N, R 6 E, HARTLAND TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

LEGAL DESCRIPTION

PART OF THE SOUTHWEST 1/4 OF SECTION 22, T03N–R06E, HARTLAND TOWNSHIP, LIVINGSTON COUNT, MICHIGAN, BEING FURTHER DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION; THENCE S88°17'15"E 2613.00 FEET ALONG THE EAST–WEST 1/4 LINE OF SAID SECTION; THENCE N88°44'10" 545.79 FEET ALONG THE EAST–WEST 1/4 LINE OF SAID SECTION; THENCE S01°00'12"W 1286.35 FEET TO THE POINT OF BEGINNING; THENCE S01°00'12"W 299.07 FEET TO THE NORTH RIGHT OF WAY LINE OF HIGHLAND ROAD (M–59); THENCE ALONG THE ARC OF A CURVE TO LEFT AN ARC DISTANCE OF 228.48 FEET, SAID CURVE HAVING A RADIUS OF 7799.50 FEET, CHORD BEARING AND DISTANCE OF S87°30'11"W 228.47 FEET AND CENTRAL ANGLE OF 01°40'42";THENCE ALONG THE ARC OF A CURVE TO RIGHT AN ARC DISTANCE .OF 36.5 FEET, SAID CURVE HAVING A RADIUS OF 126.53 FEET, CHORD BEARING AND DISTANCE OF N04°53'33"W 36.37 FEET AND CENTRAL ANGLE OF 16°31'42"; THENCE ALONG THE ARC OF A CURVE TO RIGHT AN ARC DISTANCE OF 152.58 FEET, SAID CURVE HAVING A RADIUS OF 230.00 FEET, CHORD BEARING AND DISTANCE OF N20°30'01"E 149.80 FEET AND CENTRAL ANGLE OF 38°00'37"; THENCE N39°30'59"E 155.41 FEET; THENCE ALONG THE ARC OF A CURVE TO LEFT AN ARC DISTANCE OF 18.29 FEET, SAID CURVE HAVING A RADIUS OF 230.00 FEET, CHORD BEARING AND DISTANCE OF N37°14'19"E 18.28 FEET AND CENTRAL ANGLE OF 04°33'21; THENCE S 88°27'0r E, 74.23 FEET TO THE POINT OF BEGINNING, CONTAINING 1.25 ACRES, MORE OR LESS.

SUBJECT TO AN EASEMENT FOR INGRESS–EGRESS BEING FURTHER DESCRIBED AS PART OF THE SOUTHWEST 1/4 OF SECTION 22, T03N–R06E, HARTLAND TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN, BEING FURTHER DESCRIBED AS:

COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION; THENCE S88°17'15"E 2521.92 FEET ALONG THE EAST–WEST 1/4 LINE OF SAID SECTION; THENCE S01°32'53"W 1653.55 TO THE RIGHT OF WAY LINE OF HIGHLAND ROAD (M–59); THENCE ALONG THE ARC OF CURVE TO THE RIGHT AN ARC DISTANCE OF 307.28 FEET, SAID CURVE HAVING A RADIUS OF 7799.50 FEET, CHORD BEARING AND DISTANCE OF N85°18'28"E 307.26 FEET AND CENTRAL ANGLE OF 02°15'26"; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 41.15 FEET, SAID CURVE HAVING A RADIUS OF 70.00 FEET, CHORD BEARING AND DISTANCE OF N18°20'45"E, 40.56 FEET AND CENTRAL ANGLE OF 33°40'45"; THENCE ALONG THE ARC OF CURVE TO THE RIGHT AN ARC DISTANCE OF 162.53 FEET, SAID CURVE HAVING A RADIUS OF 245.00 FEET, CHORD BEARING AND DISTANCE OF N20°30'41'E 159.57 FEET AND CENTRAL ANGLE Of 38°00'37"; THENCE N39°30'59'E 155.41 FEET; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 144.52 FEET, SAID CURVE HAVING A RADIUS OF 215.00 FEET, CHORD BEARING AND DISTANCE OF N20°15'35"E 141.81 FEET AND CENTRAL ANGLE Of 38°30'47"; THENCE N01°00'12"E 401.32 FEET; THENCE S88°26'16"E 30.00 FEET; THENCE S01°00'12" W 401.32 FEET; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 164.68 FEET, SAID CURVE HAVING A RADIUS OF 245.00 FEET, CHORD BEARING AND DISTANCE OF S20°15'35"W 161.60 FEET AND CENTRAL ANGLE OF 38°30'47"; THENCE 89°30'59"W 165.41 FEET; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 121.07 FEET, SAID CURVE HAVING A RADIUS OF 215.00 FEET, CHORD BEARING AND DISTANCE OF S23°23'03"W 119.48 FEET AND CENTRAL ANGLE OF 32°15'52"; THENCE ALONG THE ARC OF CURVE TO THE RIGHT AN ARC DISTANCE OF 60;07 FEET, SAID CURVE HAVING A RADIUS OF 70.00 FEET, CHORD BEARING AND DISTANCE OF S17°19'50" E, 58.24 FEET AND CENTRAL ANGLE OF 49°09'54", THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 61.85 FEET, SAID CURVE HAVING A RADIUS OF 7799.50 FEET, CHORD BEARING AND DISTANCE OF S86°39'49'W 61.85 FEET AND CENTRAL ANGLE OF 00°27'16" TO THE POINT OF BEGINNING.

LEGAL DESCRIPTION OF RECORD PROVIDED BY CLIENT. SURVEYOR WAS NOT SUPPLIED WITH A TITLE SEARCH AT THIS TIME. REFER TO THE CURRENT POLICY FOR TITLE INSURANCE FOR PROOF OF OWNERSHIP AND ALL ENCUMBRANCES AFFECTING TITLE TO THE SURVEYED PARCEL.

LOCATION MAP
SCALE: 1" = 2000'

SHEET INDEX

STATE OF MICHIGAN
WAYNE M. PERRY
ENGINEER
No. 34036
LICENSED PROFESSIONAL ENGINEER

OWNER/DEVELOPER
8351 PETERSON INVESTMENT GROUP, LLC
1151 STONE BARN
MILFORD, MI. 48380

ARCHITECT
JEFFERY SCOTT ARCHITECTS, P.C.
32316 GRAND RIVER AVE. STE. 200
FARMINGTON, MI. 48336
(248) 476-8800

CIVIL ENGINEER/LAND SURVEYOR
DESINE INC.
2183 PLESS DRIVE
BRIGHTON, MI. 48114
(810) 227-9533

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

REVISED	SCALE: N/A
02-12-21	PROJECT No.: 9203954
03-09-21	DWG NAME: 3954-COV
	PRINT: MAR. 09, 2021

EXISTING UTILITY STRUCTURE INVENTORY

INVERTS

STORM MANHOLE #1
NORTHERLY RIM 976.94
INVERTS
NORTHERLY 12" RCP 974.19
SOUTHERLY 12" RCP 970.64

CATCH BASIN #2
ROAD SIDE RIM 976.73
INVERTS
SOUTHERLY 12" RCP 974.58

GATE VALVE WELL #3
NORTHERLY RIM 966.12
INVERTS
N'LY – S'LY 12" IRON 960.92

GATE VALVE WELL #4
NORTHERLY RIM 973.52
INVERTS
E'LY – W'LY 12" IRON 968.39

CATCH BASIN #5
ROAD SIDE RIM 972.28
INVERTS
NORTHWESTERLY 12" RCP 967.03

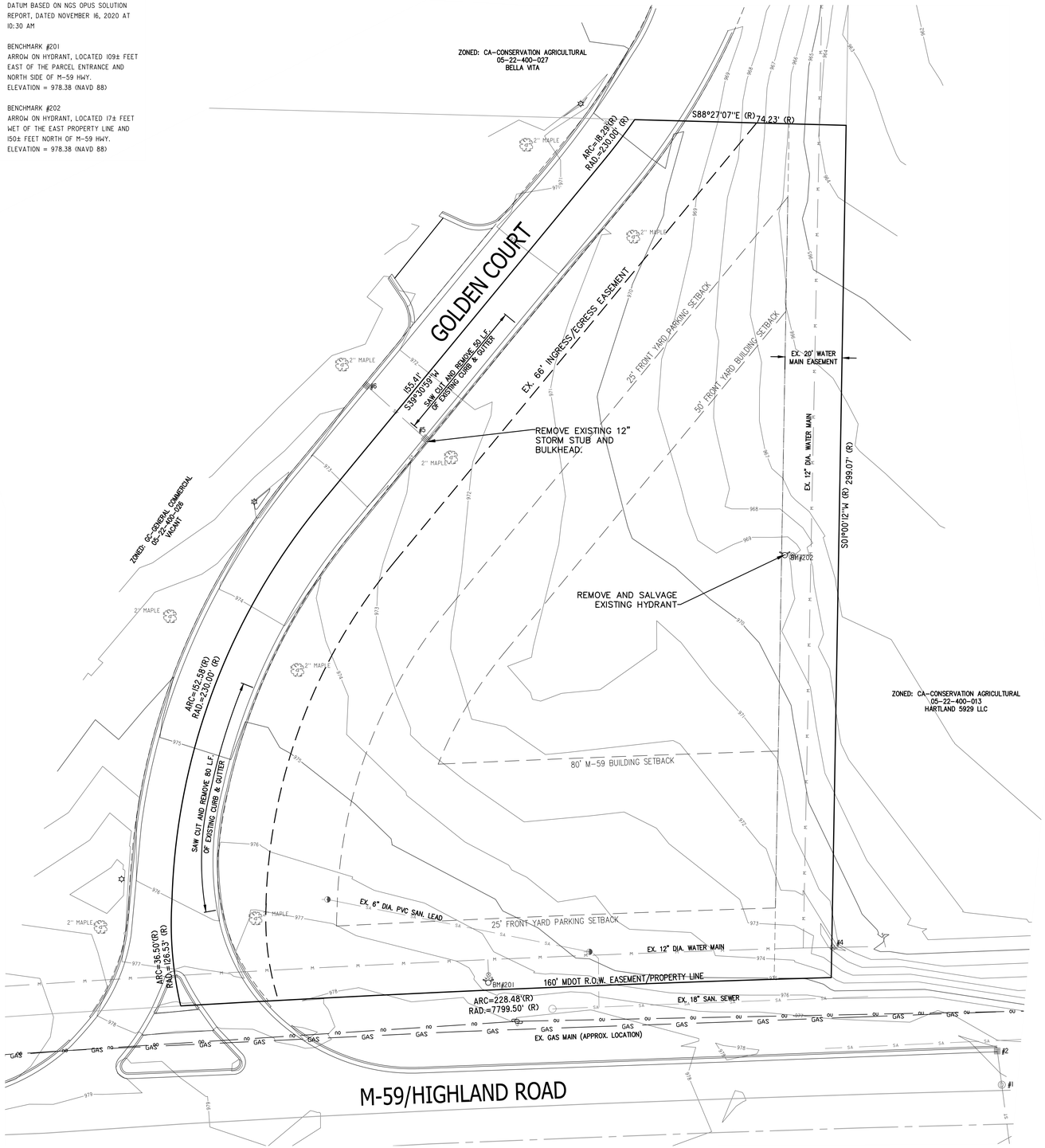
CATCH BASIN #6
GUTTER 972.13
INVERTS
NORTHEASTERLY 18" RCP 966.73
WESTERLY 18" RCP 967.08
SOUTHEASTERLY 12" RCP (CAN'T SEE PIPE)

BENCHMARK

DATUM BASED ON NGS OPUS SOLUTION REPORT, DATED NOVEMBER 16, 2020 AT 10:30 AM

BENCHMARK #201
ARROW ON HYDRANT, LOCATED 109± FEET EAST OF THE PARCEL ENTRANCE AND NORTH SIDE OF M-59 HWY.
ELEVATION = 978.38 (NAVD 88)

BENCHMARK #202
ARROW ON HYDRANT, LOCATED 17± FEET WET OF THE EAST PROPERTY LINE AND 150± FEET NORTH OF M-59 HWY.
ELEVATION = 978.38 (NAVD 88)



GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

LEGEND

= MISC. STRUCTURE (AS LABELED)
= SIGN
= LIGHT BASE
= STREET LIGHT
= UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX)
= UTILITY MANHOLE (AS LABELED)
= UTILITY POLE W/GUY WIRE
= OVERHEAD UTILITY LINES (ELECTRIC/PHONE/CABLE)
= U/G UTILITY LINES (ELECTRIC/PHONE/CABLE)
= DECIDUOUS TREE W/IDENTIFIER
= CONIFEROUS TREE W/IDENTIFIER
= DECIDUOUS SHRUB
= EXISTING TREE DRIP LINE
= FENCE (CHAIN LINK UNLESS OTHERWISE STATED)
= EDGE OF GRAVEL
= CONCRETE CURB (UNLESS OTHERWISE STATED)
= SANITARY SEWER MANHOLE W/IDENTIFIER
= SANITARY SEWER PIPE
= CLEAN OUT
= STORM WATER MANHOLE W/IDENTIFIER
= CATCH BASIN W/IDENTIFIER
= FLARED END SECTION
= STORM WATER DRAINAGE PIPE
= HYDRANT
= WATER SHUT OFF
= WATER VALVE
= WATER VALVE BOX
= WATER MAIN
= GAS SHUT OFF
= U/G GAS
= SPOT ELEVATION
= EXISTING 1' CONTOUR
= EXISTING 5' CONTOUR

DEMOLITION NOTES:

1. The demolition specifications of the Local Municipality are a part of this work. Refer to the General Notes on the project plans for additional requirements.

2. Contractor shall contact the MISS DIG locating system, DIGGERS HOTLINE or other appropriate local underground utility locating Agency, a minimum of three (3) working days prior to performing demolition work. Existing utility information on the project plans may be from information disclosed to this firm by the Utility Companies, Local, County or State Agencies, and/or various other sources. No guarantee is given as to the completeness or accuracy thereof. Prior to construction, locations and depths of all existing utilities (in possible conflict with the proposed improvements) shall be verified in the field.

3. Contractor shall contact the appropriate Agencies to coordinate disconnect of the electric, gas, phone, cable and other public utilities as necessary prior to performing demolition work.

4. Contractor shall contact the appropriate Agencies to coordinate removal and/or relocation of any underground and/or overhead public utility lines as necessary prior to performing demolition work.

5. Contractor shall recycle and/or dispose of all demolition debris in accordance with the appropriate Local, County, State and Federal regulations.

6. All bituminous and concrete pavement to be removed shall be saw cut at the limits of removal to provide for a clean straight edge for future abutment.

7. All existing irrigation lines to be removed shall be terminated at the limits of demolition or as necessary to allow for construction of the proposed site improvements. Ends of pipe shall be capped and the location of marked for future connection.

8. All existing water main and sanitary sewer to be removed shall be terminated at the limits of demolition or as indicated on the project plans. Temporary plugs shall be installed in the ends of pipe in accordance with the appropriate Agency and the locations of marked for future connection. Permanent plugs shall be installed in the ends of pipe in accordance with the appropriate Agency. The Contractor shall record the location of all permanent plugs and provide the location information to the appropriate Agency.

9. All existing storm sewer to be removed shall be terminated at the limits of demolition or as indicated on the project plans. Temporary plugs shall be installed in the ends of pipe in accordance with the appropriate Agency and the locations of marked for future connection. Permanent bulkheads shall be installed in the ends of pipe and/or openings in terminating structures in accordance with the appropriate Agency. The Contractor shall record the location of all permanent bulkheads and provide the location information to the appropriate Agency.

10. All existing light sources to be removed shall have their power cables removed up to the power source or properly terminated for future connection at the limits of demolition or as necessary to allow for construction of the proposed site improvements. Removal and termination of power cables shall be performed in accordance with local electric codes.

11. All existing utility meters to be removed shall be properly removed to allow for reuse. Any existing utility meters that are not to be reused as a part of this project shall be returned to the appropriate Agency.

12. All trenches and/or excavations resulting from the demolition of underground utilities, building foundations, etc., that are located within the 1 on 1 influence zone of proposed structures, paved areas and/or other areas subject to vehicular traffic shall be backfilled with MDOT Class III granular material (or better) to the proposed subgrade elevation. Backfill shall be shall be placed using the controlled density method (12" maximum lifts, compacted to 95% maximum unit weight, modified proctor).

NOTE:
THERE ARE NO 8" DIAMETER TREES LOCATED ON THE SUBJECT PARCEL.

811 Know what's below. Call before you dig.
3 WORKING DAYS BEFORE YOU DIG
CALL 811 OR 1-800-482-7171 (TOLL FREE)
OR VISIT CALL811.COM

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

DESIGN: WMP	REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION
DRAFT: L.F.						
CHECK: WMP						

11395 HIGHLAND ROAD
HUNGRY HOWIES
HARTLAND, MI.

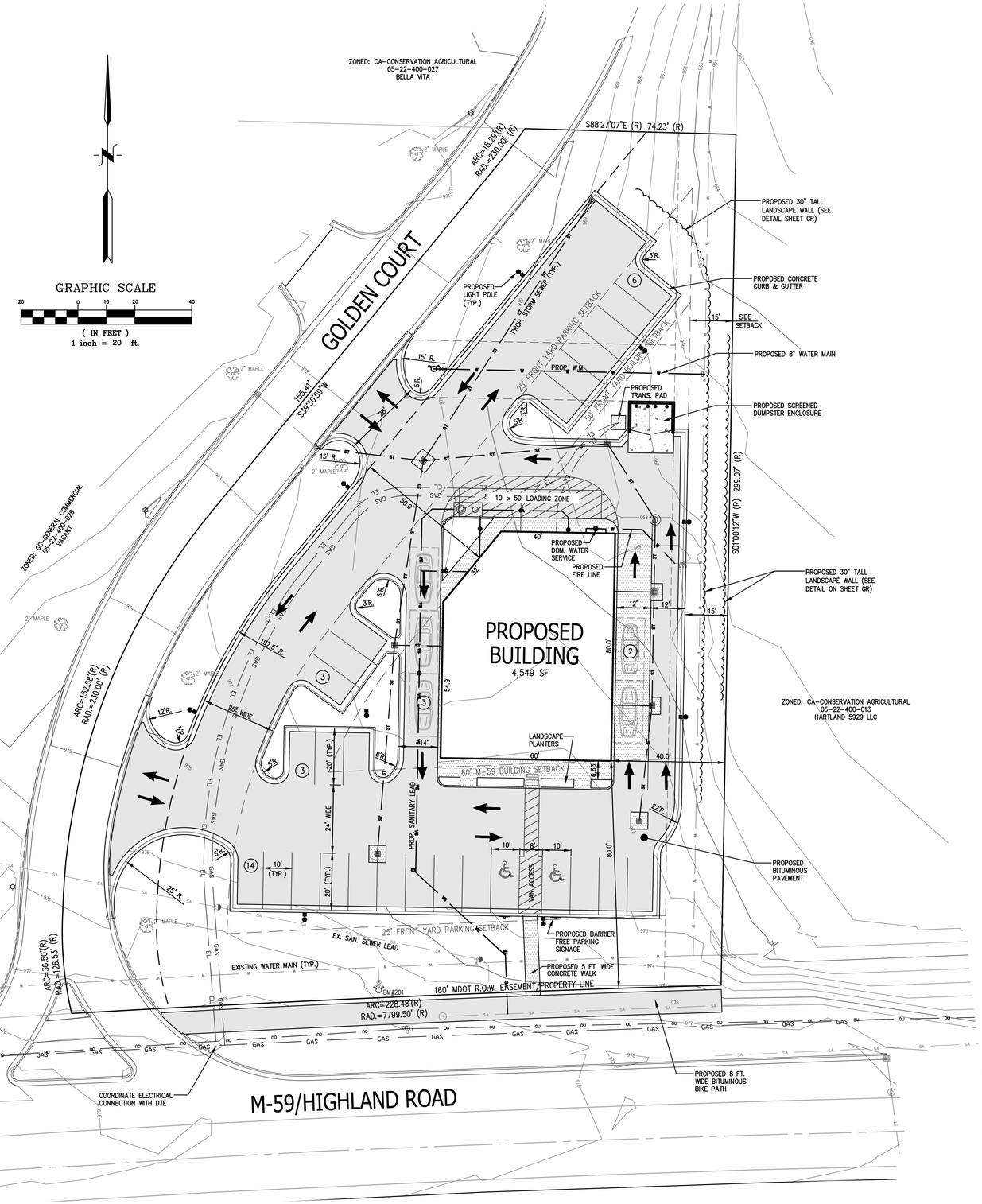
EXISTING CONDITIONS AND DEMOLITION PLAN

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC

1151 STONE BARN
MILFORD, MI. 48380

SCALE: 1"=20'
PROJECT No.: 9203954
DWG NAME: 3954-EX
ISSUED: DEC. 29, 2020

EX



LEGEND

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- = SIGN
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- = STREET LIGHT
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- = UTILITY MANHOLE (AS LABELED)
- = UTILITY POLE W/GUY WIRE
- = OVERHEAD UTILITY LINES (ELECTRIC/PHONE/CABLE)
- = U/G UTILITY LINES (ELECTRIC/PHONE/CABLE)
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- = CONIFEROUS TREE W/IDENTIFIER
- = DECIDUOUS SHRUB
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- = EDGE OF GRAVEL
- = CONCRETE CURB (UNLESS OTHERWISE STATED)
- = SANITARY SEWER MANHOLE W/IDENTIFIER
- = SANITARY SEWER PIPE
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- = STORM WATER MANHOLE W/IDENTIFIER
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- = FLARED END SECTION
- = STORM WATER DRAINAGE PIPE
- = HYDRANT
- = WATER SHUT OFF
- = WATER VALVE
- = WATER VALVE BOX
- = WATER MAIN
- = GAS SHUT OFF
- = U/G GAS
- = SPOT ELEVATION
- = EXISTING 1' CONTOUR
- = EXISTING 5' CONTOUR
- = PROPOSED LIGHT POLE
- = PROPOSED WATER MAIN
- = PROPOSED STORM SEWER
- = PROPOSED STORM STRUCTURES
- = PROPOSED CONCRETE WALK
- = PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- = PROPOSED STANDARD DUTY BITUMINOUS PAVEMENT

SITE DATA:

PROJECT AREA: 1.25 ac.
CURRENT ZONING: GC GENERAL COMMERCIAL
PROPOSED USE: RETAIL; FOOD SERVICE
GROUND FLOOR AREA: 4,549 sq.ft.

		PROPOSED	REQUIRED
BUILDING HEIGHT:		SEE ARCH. PLANS	35 FEET
LOT COVERAGE:		8.3%	75%
SETBACKS:	M-59	80.0'	80 FT.
	GOLDEN CT.	50.0'	50 FT.
	SIDE	40.0'	15 FT.
	REAR	141.3'	N/A

PERCENT OF LOT COVERAGE OF BUILDINGS: 8.3%

IMPERVIOUS AREA: 29,742 SQ. FT. = 54.5%

PARKING REQUIREMENTS:

TENANT 1 (CARRY-OUT)	=	10 SPACES
TENANT 2 (OFFICE/RETAIL)	=	5 SPACES
TENANT 3 (CARRY-OUT)	=	10 SPACES
TOTAL PARKING REQ'D.	=	25 SPACES
PROVIDED PARKING:	=	**26 SPACES**

BENCHMARK

DATUM BASED ON NGS OPUS SOLUTION REPORT, DATED NOVEMBER 16, 2020 AT 10:30 AM

BENCHMARK #201
ARROW ON HYDRANT, LOCATED 109± FEET EAST OF THE PARCEL ENTRANCE AND NORTH SIDE OF M-59 HWY.
ELEVATION = 978.38 (NAVD 88)

BENCHMARK #202
ARROW ON HYDRANT, LOCATED 17± FEET WET OF THE EAST PROPERTY LINE AND 150± FEET NORTH OF M-59 HWY.
ELEVATION = 978.38 (NAVD 88)

811 Know what's below. Call before you dig.
3 WORKING DAYS BEFORE YOU DIG
CALL 811 OR 1-800-482-7171 (TOLL FREE)
OR VISIT CALL811.COM

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

REVISION #	DATE	REVISION-DESCRIPTION
	02-12-21	REVISED PER SITE PLAN REVIEW COMMENTS
	03-09-21	REVISED PER SITE PLAN REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

DESIGN: WMP
DRAFT: L.F.
CHECK: WMP

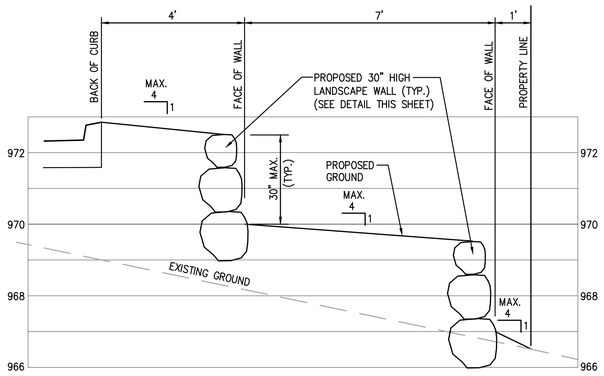
11935 HIGHLAND ROAD
HUNGRY HOWIES
HARTLAND TOWNSHIP

SITE PLAN

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC
1151 STONE BARN
MILFORD, MI. 48380

SCALE: 1"=20'
PROJECT No.: 9203954
DWG NAME: 3954-SP
ISSUED: MAR. 09, 2021

SP



LANDSCAPE WALL CROSS-SECTION A-A

SCALE: 1" = 2'

ROCK SIZE DESIGNATION

WALL HEIGHT "H" (FEET)	MINIMUM ROCK SIZE (MAN) POSITION A	POSITION B	POSITION C
1	2	1	--
2	3	1	--
3	3	2	--
4	4	2	2
5	4	3	2
6	4	3	2

ROCK SIZE DESCRIPTION

ROCK SIZE	ROCK WEIGHT	AVERAGE DIMENSION
1-MAN	50-200 lbs.	12"-18"
2-MAN	200-700 lbs.	18"-28"
3-MAN	700-2,000 lbs.	28"-36"
4-MAN	2,000-4,000 lbs.	36"-48"
5-MAN	4,000-6,000 lbs.	48"-54"
6-MAN	6,000-8,000 lbs.	54"-60"

ROCKERY WALL NOTES:

1. Non-reinforced gravity rockery walls shall not exceed 30 inches in height.

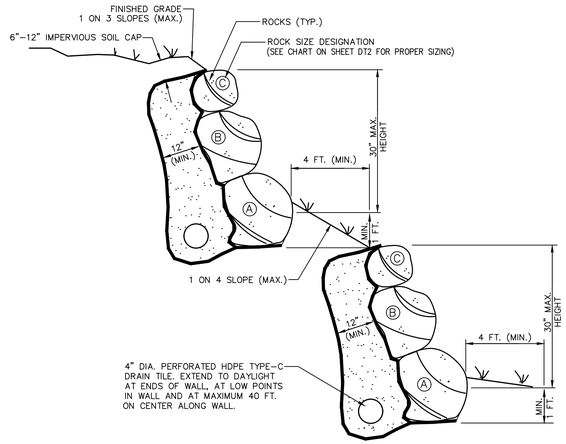
2. The face of the rockery wall shall have a minimum batter of 15 degrees from vertical.

3. Rockery walls shall be constructed on stable suitable soils or engineered fill. Unsuitable soils found within the 1 on 1 influence zone of the base of the wall, such as muck, peat, topsoil, marl, silt or other unstable materials shall be excavated and replaced up to the proposed subgrade elevation with MDOT Class III granular material compacted to 95% maximum unit weight, modified proctor.

4. Rocks shall be installed with the largest rocks at the base of the wall and then progressively smaller rocks as the height of the wall increases. Rocks utilized in construction of the rockery wall shall meet or exceed the minimum rock size requirements based on the wall height as specified in the Rock Size Description and Rock Size Designation Charts. Rocks shall be of sufficient quality and strength and shall be free of cracks, seams and foliation.

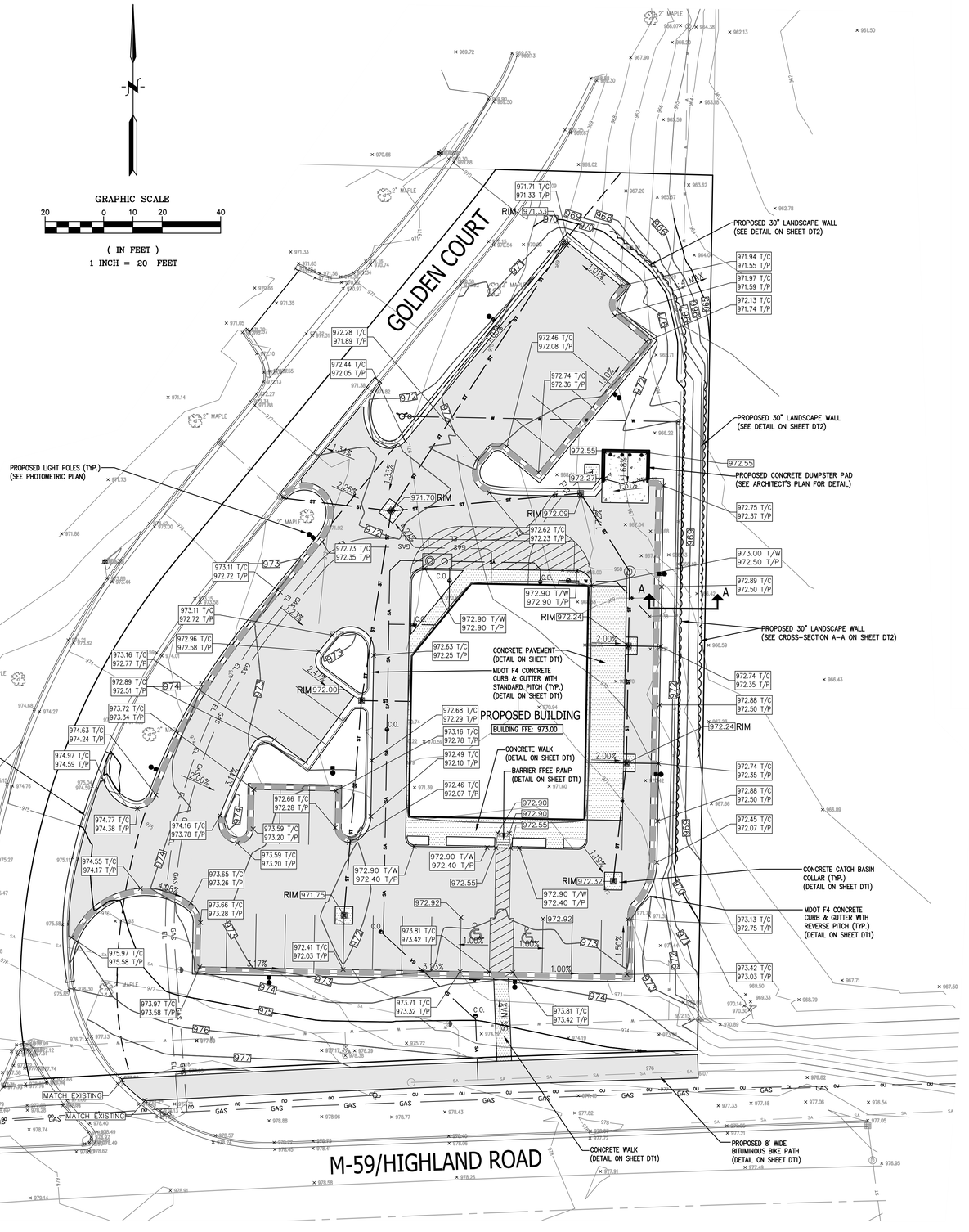
5. The base course of rocks shall be embedded a minimum of 12" into the acceptable subgrade soils as measured at a point 4 feet in front of the face of wall. The long dimensions of the rock shall extend into the slope behind the rockery wall for maximum stability. Subsequent courses of rocks shall be placed to lock into the rocks in the lower course or tier.

6. Proper drainage shall be provided behind the wall including a minimum of 12" of free draining aggregate the entire height of the wall and a 4" minimum diameter drain tile behind the base of wall. The drain tile shall be extended beyond the face of wall to daylight at the ends of the wall, low points and at a maximum of 40 feet on center. Finish grade at the face of wall shall be graded to direct drainage away from the wall and shall not exceed a 1 on 3 slope.



LANDSCAPE WALL DETAIL

NOT TO SCALE



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- = GAS SHUT OFF
- = U/G GAS
- = SPOT ELEVATION
- = EXISTING 1' CONTOUR
- = EXISTING 5' CONTOUR
- = PROPOSED LIGHT POLE
- = PROPOSED WATER MAIN
- = PROPOSED STORM SEWER
- = PROPOSED STORM STRUCTURES
- = TOP OF WALK / TOP OF PAVEMENT
- = TOP OF CURB / TOP OF PAVEMENT
- = TOP OF WALL
- = BOTTOM OF WALL
- = PROPOSED 1' CONTOUR
- = PROPOSED 5' CONTOUR
- = PROPOSED CONCRETE CURB & GUTTER W/STD. PITCH
- = PROPOSED CONCRETE CURB & GUTTER W/REV. PITCH
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CIVIL ENGINEERS
LAND SURVEYORS
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BRIGHTON, MICHIGAN 48114

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DESIGN: WMP
DRAFT: L.F.
CHECK: WMP

HUNGRY HOWIES
HARTLAND, MI.

GRADING PLAN

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC

1151 STONE BARN
MILFORD, MI. 48380

SCALE: 1"=20'
PROJECT No.: 9203954
DWG NAME: 3954-GR
ISSUED: MAR. 09, 2021

GR

EXISTING UTILITY INVENTORY

INVERTS

STORM MANHOLE #1
NORTHERLY RIM 976.94
INVERTS
NORTHERLY 12" RCP 974.19
SOUTHERLY 12" RCP 970.64

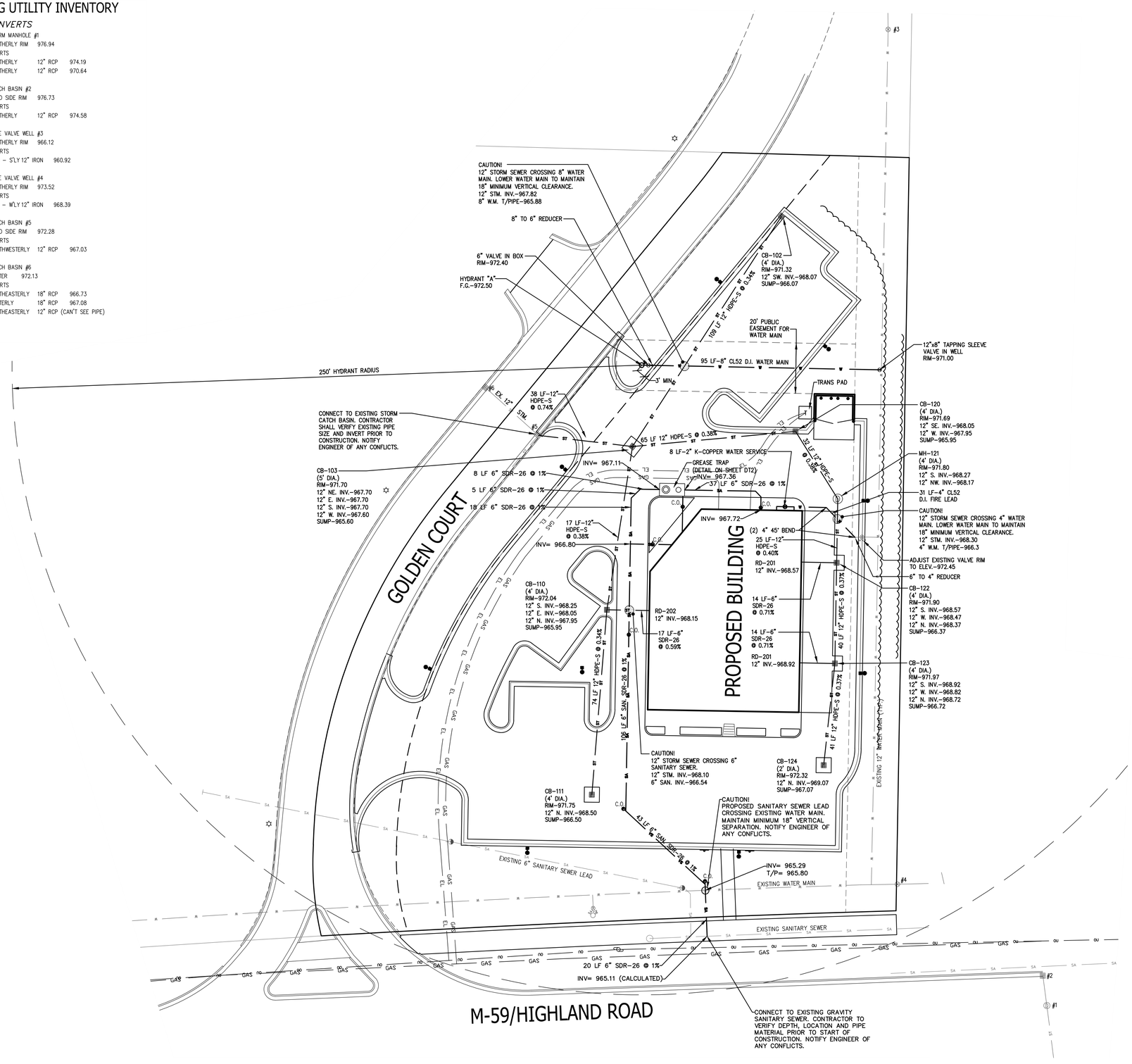
CATCH BASIN #2
ROAD SIDE RIM 976.73
INVERTS
SOUTHERLY 12" RCP 974.58

GATE VALVE WELL #3
NORTHERLY RIM 966.12
INVERTS
N'LY – S'LY 12" IRON 960.92

GATE VALVE WELL #4
NORTHERLY RIM 973.52
INVERTS
E'LY – W'LY 12" IRON 968.39

CATCH BASIN #5
ROAD SIDE RIM 972.28
INVERTS
NORTHWESTERLY 12" RCP 967.03

CATCH BASIN #6
GUTTER 972.13
INVERTS
NORTHEASTERLY 18" RCP 966.73
WESTERLY 18" RCP 967.08
SOUTHEASTERLY 12" RCP (CAN'T SEE PIPE)



GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

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- = PROPOSED WATER MAIN
- = PROPOSED STORM SEWER
- = PROPOSED STORM STRUCTURES

SANITARY REU CALCULATIONS

STRUCTURE / CASTING SCHEDULE

Structure	Diameter	Casting Type
Storm Sewer		
CB102 & 120	4 ft	EJIW 7000-M1-T1
MH121	4 ft	EJIW 1020 (FRAME) / TYPE-A (SOLID COVER)
CB103, CB110, CB111, & CB122	4 ft	EJIW 1020 (FRAME) / TYPE M1 (FLAT GRATE)
CB124	2 ft	EJIW 1020 (FRAME) / TYPE M1 (FLAT GRATE)
8" DIA. ROOF DRAIN CLEANOUT (CO):		EJIW 1578Z-A
Sanitary Sewer		
CLEANOUT (C.O.)		EJIW 1574 A
MANHOLE (MH)		EJIW 1040 (SANITARY WATERTIGHT)

SANITARY REU CALCULATIONS

	Sewer REUs	Water REUs
Owned	0	0
Required	6.83	6.83
# REUs Needed	6.83	6.83
Cost Each	$9,439.20	$5,816.01
Total Due Each	$64,469.74	$39,723.35
TOTAL REU COST	**$104,193.09**	

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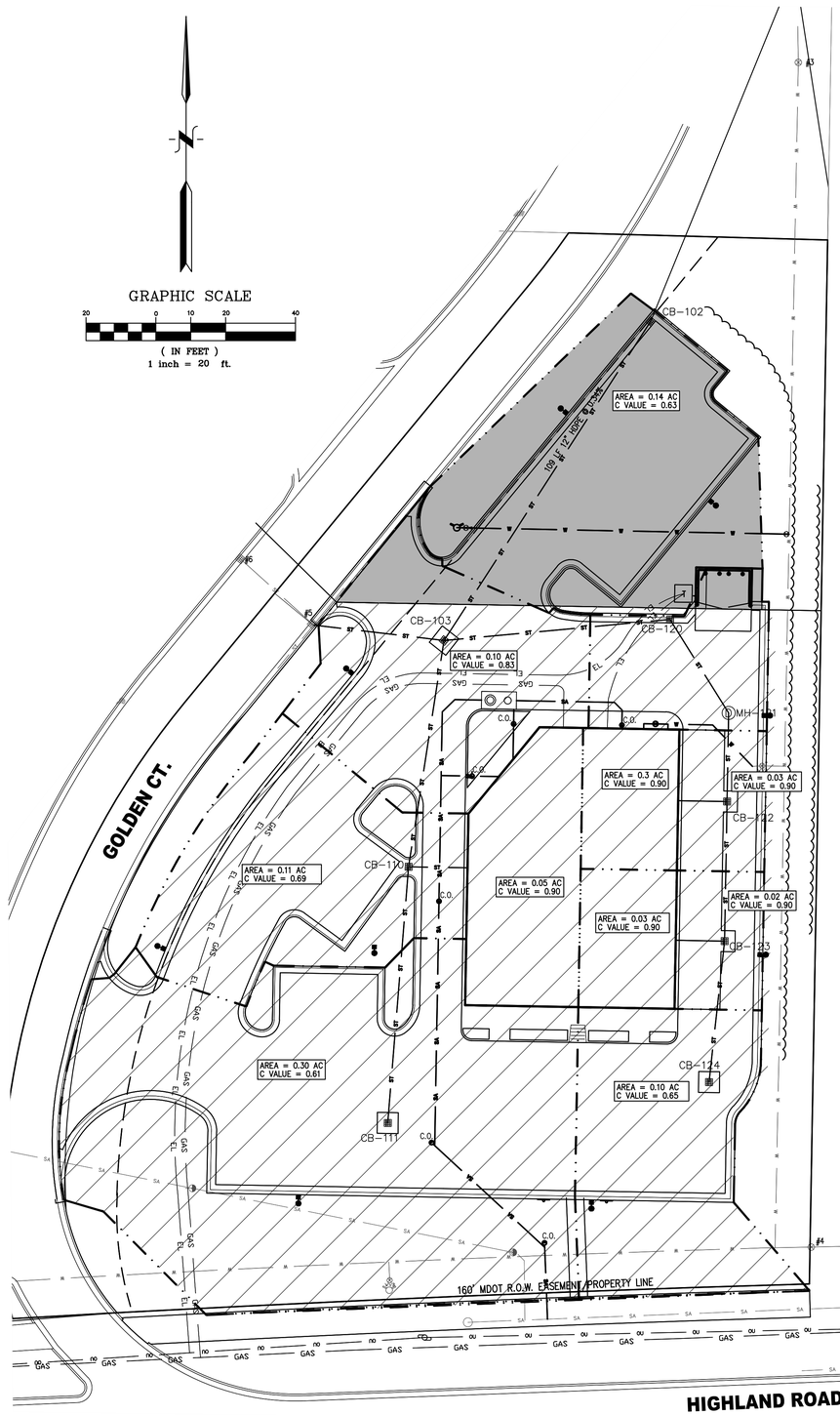

C-VALUE CALCULATIOIN:

DEVELOPMENT AREA DESIGNED C-VALUE								
"Area"	0.70 Gravel	0.90 Pavement	0.80 Building	0.20 Lawn	0.15 Woods	1.00 Water	(ACRES) Area	"C" Factor*
North							*0.15*	*0.30*
South							*0.79*	*0.70*

* Values taken from CHMP design calculations. Assumed C-Values taken from CHMP Construction Drawings

TOTAL AREA = *0.95*

RUN-OFF COEFFICIENT = *0.64*

DEVELOPMENT AREA PROPOSED C-VALUE								
"Area"	0.70 Gravel	0.90 Pavement	0.80 Building	0.20 Lawn	0.15 Woods	1.00 Water	(ACRES) Area	"C" Factor
Total Area	0.00	0.68	0.00	0.26	0.00	0.00	*0.95*	0.71

TOTAL AREA = *0.95*

RUN-OFF COEFFICIENT = *0.71*

LEGEND

NORTH AREA – C VALUE 0.30

SOUTH AREA – C VALUE 0.70

PROPOSED DRAINAGE AREAS

RUN OFF VOLUME CALCULATIOIN:

OLD RUN OFF VOLUME CALCULATIOIN:

DEVELOPMENT AREA DESIGNED 100 YR. VOLUME CALCULATION

Tributary Area (A) = 0.95 Acres

Run-off Coefficient (C) = 0.64

Design Constant (Ki) = 0.60

Allowable Outflow Rate (Qo)* = 0.19 cfs

LCDC REQUIREMENTS

100 YEAR STORM						
1	2	3	4	5	6	7
Duration (Minutes)	Duration (Seconds)	Intensity (100- yr Storm) (In/Hr)	Col. #2 x Col. #3 (Inches)	Inflow Volume = Col. #4 x Ki (Cu. Ft.)	Outflow Volume = Col. #2 x Qo (Cu. Ft.)	Storage Volume = Col. #5 - Col. #6 (Cu. Ft.)
5	300	9.17	2,750	1,651	57	1,594
10	600	7.86	4,714	2,830	113	2,717
15	900	6.88	6,188	3,714	170	3,544
20	1,200	6.11	7,333	4,402	227	4,176
30	1,800	5.00	9,000	5,403	340	5,063
60	3,600	3.24	11,647	6,992	680	6,311
90	5,400	2.39	12,913	7,752	1,021	6,731
120	7,200	1.90	13,655	8,197	1,361	***6,837***
180	10,800	1.34	14,488	8,697	2,041	6,656
240	14,400	1.04	14,943	8,971	2,722	6,249

Note: > Figures in Columns (3) are computed by the formula **I = 275 / (t + 25)** (i.e. 100=yr Curve)

* Allowable outflow rate Qo is computed by one of the following cases:

Case 1: Qo = capacity of existing discharge conduit or channel. _____ cfs / Acre

Case 2: Qo = q * A where q = Permissible discharge rate per acre of tributary area = 0.20 cfs / Acre

NEW RUN OFF VOLUME CALCULATIOIN:

DEVELOPMENT AREA PROPOSED 100 YR. VOLUME CALCULATION

Tributary Area (A) = 0.95 Acres

Run-off Coefficient (C) = 0.71

Design Constant (Ki) = 0.67

Allowable Outflow Rate (Qo)* = 0.19 cfs

LCDC REQUIREMENTS

100 YEAR STORM						
1	2	3	4	5	6	7
Duration (Minutes)	Duration (Seconds)	Intensity (100- yr Storm) (In/Hr)	Col. #2 x Col. #3 (Inches)	Inflow Volume = Col. #4 x Ki (Cu. Ft.)	Outflow Volume = Col. #2 x Qo (Cu. Ft.)	Storage Volume = Col. #5 - Col. #6 (Cu. Ft.)
5	300	9.17	2,750	1,834	57	1,777
10	600	7.86	4,714	3,144	113	3,030
15	900	6.88	6,188	4,126	170	3,956
20	1,200	6.11	7,333	4,890	227	4,663
30	1,800	5.00	9,000	6,001	340	5,661
60	3,600	3.24	11,647	7,766	680	7,086
90	5,400	2.39	12,913	8,611	1,021	7,590
120	7,200	1.90	13,655	9,105	1,361	***7,745***
180	10,800	1.34	14,488	9,661	2,041	7,619
240	14,400	1.04	14,943	9,964	2,722	7,243

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STORMWATER NOTES:

ADDITIONAL VOLUME WILL BE GENERATED BY DEVELOPING PORTIONS OFF SITE:

PROPOSED VOLUME GENERATED (NEW C VALUES) – FORMER ASSUMED VOLUME GENERATED (OLD C VALUES) = ADDITIONAL VOLUME GENERATED BY DEVELOPMENT.

7,745 – 6,837 = 908 CU. FT. ADDITIONAL

DETENTION BASIN INFO:

100–YEAR VOLUME PER CHMP CALCULATIONS = 50,266 CU. FT.
NEW 100–YEAR VOLUME POST PROPOSED DEVELOPMENT = 50,266 + 908 = 51,174 CU. FT.
DETENTION BASIN VOLUME PROVIDED PER CHMP CALCULATIONS = 55,427 CU. FT.

PIPE CAPACITY CALCULATIONS:

Hartland Township Hungry Howie's

Design Criteria: **10 yr event (I = 175/t + 25)** **RCP n=** 0.013 **SLCPP n=** 0.010

From MH# CB# FES#	To MH# CB# FES#	Inc. 0.00 "A"	"C"	Eqv. Area 100% CA	Total Area 100% CA	T Time Min.	I Inch Per Hour	Q (CIA) c.f.s.	Dia. of pipe inch	Slope pipe %	Slope H.G. %	Length of line ft.	Vel. Flow full ft./sec.	Time of flow min.	Cap of pipe c.f.s.	H.G. Elev. upper end	Ground Elev. Upper end	Ground Elev. Lower end	Invert Elev. Upper end	Invert Elev. Lower end
CB124	CB123	0.10	0.65	0.06	0.06	15.0	4.38	0.28	12	0.37	0.01	41	2.74	0.2	2.15	969.92	972.32	971.97	969.07	968.92
RD201	CB123	0.03	0.90	0.02	0.02	15.0	4.38	0.10	12	0.71	0.00	14	3.83	0.1	3.01	969.82	-	971.97	968.92	968.82
CB123	CB122	0.02	0.90	0.02	0.11	15.2	4.35	0.47	12	0.37	0.02	40	2.78	0.2	2.18	969.58	971.97	971.90	968.72	968.57
RD200	CB122	0.03	0.90	0.02	0.02	15.2	4.35	0.10	12	0.71	0.00	14	3.83	0.1	3.01	969.47	-	971.90	968.57	968.47
CB122	MH121	0.03	0.90	0.02	0.15	20.0	3.89	0.60	12	0.40	0.03	25	2.87	0.1	2.25	969.30	971.90	971.80	968.37	968.27
MH121	CB120	0.00	0.00	0.00	0.15	20.1	3.88	0.59	12	0.38	0.03	32	2.78	0.2	2.18	969.30	971.80	971.69	968.17	968.05
CB120	CB103	0.05	0.89	0.04	0.19	15.3	4.34	0.84	12	0.38	0.06	65	2.81	0.4	2.21	969.32	971.69	971.70	967.95	967.70
CB111	CB110	0.30	0.61	0.18	0.18	15.7	4.30	0.79	12	0.34	0.05	74	2.64	0.5	2.07	969.29	971.75	972.40	968.50	968.25
RD202	CB110	0.05	0.90	0.05	0.05	16.2	4.25	0.21	12	0.59	0.00	17	3.48	0.1	2.73	969.05	-	972.04	968.15	968.05
CB110	CB103	0.11	0.69	0.07	0.31	20.0	3.89	1.19	12	0.38	0.11	66	2.79	0.4	2.19	968.77	972.04	971.70	967.95	967.70
CB102	CB103	0.14	0.63	0.09	0.09	20.0	3.89	0.33	12	0.34	0.01	109	2.64	0.7	2.08	968.71	971.32	971.70	968.07	967.70
CB103	EX CB5	0.10	0.83	0.09	0.67	15.0	4.38	2.94	12	0.74	0.68	38	3.89	0.2	3.06	968.58	971.70	972.40	967.60	967.32
EX CB5	EX CB6	0.10	0.90	0.09	0.76	15.2	4.36	3.32	12	0.80	0.87	28	4.23	0.1	3.19	968.24	972.40	972.40	967.22	967.00

STORM STRUCTURE TABLE

CB102
RIM: 971.32

CB103
RIM: 971.70

CB110
RIM: 972.40

CB111
RIM: 971.75

CB120
RIM: 971.69

MH121
RIM: 971.80

CB122
RIM: 971.90

CB123
RIM: 971.97

CB124
RIM: 972.32

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DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

DESIGN:WMP
DRAFT: L.F.
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION
	02–12–21	REVISED PER SITE PLAN REVIEW COMMENTS
	03–09–21	REVISED PER SITE PLAN REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

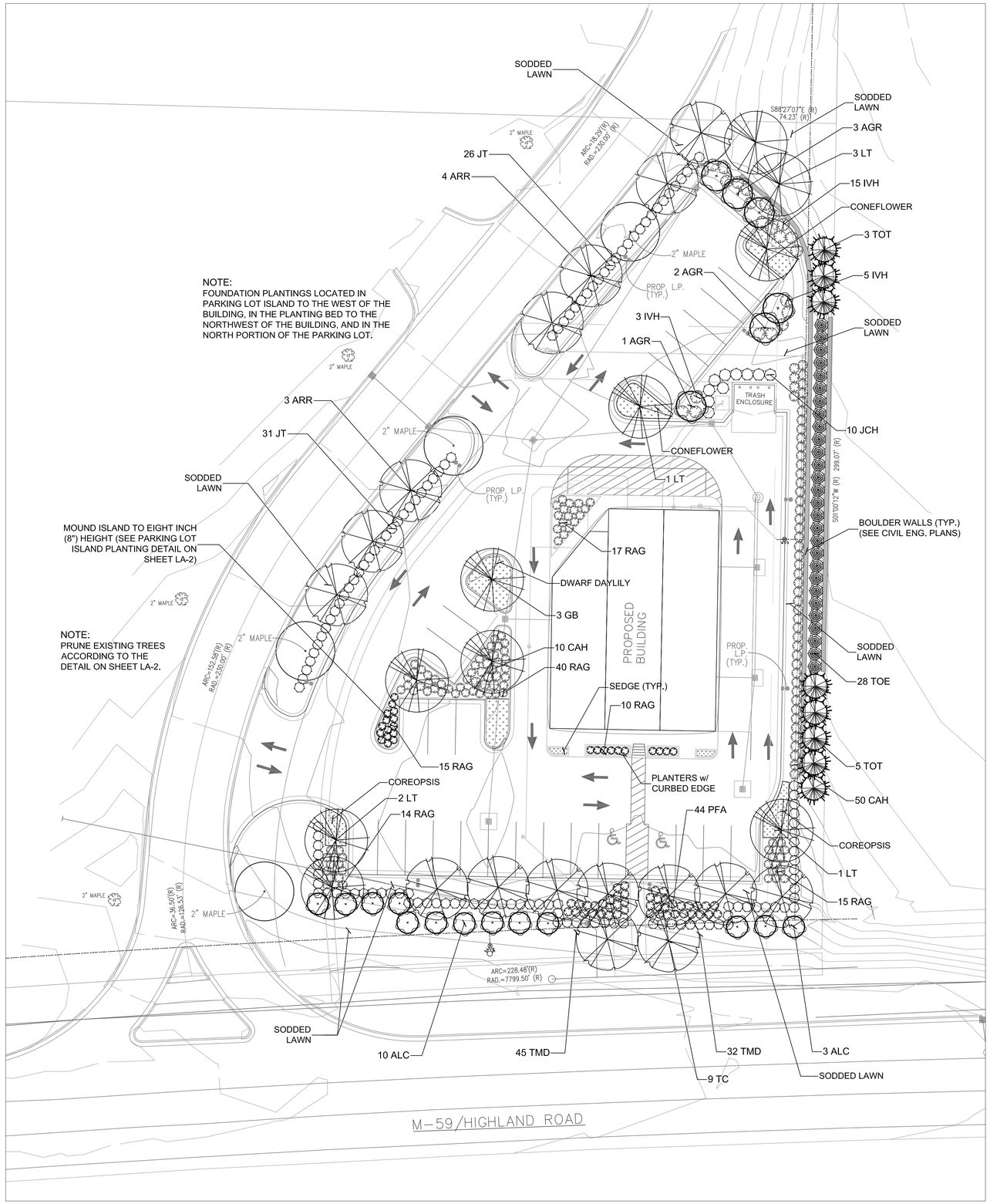
11935 HIGHLAND ROAD
HUNGRY HOWIES
HARTLAND, MI.

STORMWATER CALCULATIONS
PLAN

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC
1151 STONE BARN
MILFORD, MI. 48380

SCALE: 1"=20'
PROJECT No.: 9203954
DWG NAME: 3954-SW
ISSUED: MAR. 09, 2021

SW



LANDSCAPE PLANTING PLAN scale: 1" = 20'

PLANT LIST

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE
GREENBELT (Highland Road)				
ALC	13	*Amelanchier laevis* 'Cumulus'	Cumulus Serviceberry	2" cal. B&B
PFA	44	*Potentilla fruticosa* 'Abbottswood'	Abbottswood Shrub Cinquefoil	24" ht., 3 gal. pot
RAG	29	*Rhus aromatica* 'Gro-Low'	Gro-Low Fragrant Sumac	24" ht., 3 gal. pot
TC	9	*Tilia cordata* 'Greenspire'	Greenspire European Linden	3" cal. B&B
GREENBELT (Golden Court)				
ARR	7	*Acer rubrum* 'Red Sunset'	Red Sunset Red Maple	3" cal. B&B
FOUNDATION PLANTING (South elevation - in grade level planters)				
RAG	10	*Rhus aromatica* 'Gro-Low'	Gro-Low Fragrant Sumac	24" ht., 3 gal. pot
CP	38	*Carex pensylvanica*	Pennsylvania Sedge	1 gal. pot, 18" o.c.
FOUNDATION PLANTING (Remaining elevations - in parking lot island west & north of building)				
AGR*	6	*Amelanchier x grandiflora* 'Robin Hill'	Robin Hill Apple Serviceberry	2" cal. B&B
CAH	10	*Clethra alnifolia* 'Hummingbird'	Hummingbird Summersweet	30" ht. B&B
RAG	57	*Rhus aromatica* 'Gro-Low'	Gro-Low Fragrant Sumac	24" ht., 3 gal. pot
INTERIOR PARKING LOT PLANTING				
GB	4	*Gingko biloba* 'Autumn Gold'	Autumn Gold Maidenhair Tree	3" cal. B&B
LT	6	*Liriodendron tulipifera*	Tuliptree	3" cal. B&B
IVH	23	*Itea virginiania* 'Henry's Garnet'	Henry's Garnet Sweetspire	30" ht. B&B
RAG	15	*Rhus aromatica* 'Gro-Low'	Gro-Low Fragrant Sumac	24" ht., 3 gal. pot
CVM	98	*Coreopsis verticillata* 'Moonbeam'	Moonbeam Threadleaf Coreopsis	1 gal. pot, 24" o.c.
EPM	110	*Echinacea purpureum* 'Pixie Meadowbrite'	Pixie Meadowbrite Purple Coneflower	1 gal. pot, 30" o.c.
HHR	116	*Hemerocallis sp.* 'Happy Returns'	Happy Returns Dwarf Daylily	1 gal. pot, 30" o.c.
PERIMETER PARKING LOT PLANTING				
JT	57	*Juniperus tamariscifolia*	Tamarax Juniper	24" spr., 3 gal. pot
TMD	77	*Taxus x media* 'Densiformis'	Densiformis Yew	30" ht. B&B
BUFFER PLANTING				
CAH	50	*Clethra alnifolia* 'Hummingbird'	Hummingbird Summersweet	30" ht. B&B
TOT	8	*Thuja occidentalis* 'Techny'	Techny Upright Arborvitae	8' ht. B&B
TOE	28	*Thuja occidentalis* 'Emerald'	Emerald Green Upright Arborvitae	6' ht. B&B
GENERAL SITE PLANTING				
JCH	10	*Juniperus chinensis* 'Hetz Columnaris'	Hetz Columnar Upright Juniper	4' ht. B&B

* Located in north portion of the parking lot but counted as foundation planting.

LANDSCAPE CALCULATIONS:

GREENBELT

Hartland Road (228.48 l.f.)
* One (1) canopy tree for every 30 l.f. or portion thereof of lot frontage equals 8 trees
* Three (3) ornamental trees or large shrubs for the initial 40 l.f. equals 3 ornamental trees
* One (1) ornamental tree or large shrub for every 20 l.f. of remaining frontage equals 9 trees

Golden Court (326.27 l.f.)
* One (1) canopy tree for every 30 l.f. or portion thereof of lot frontage equals 11 trees

FOUNDATION PLANTING (130 l.f.)

South Elevation (60 l.f.)
* One (1) ornamental tree per 30 l.f. equals 2 trees
* Eight (8) small shrubs per 30 l.f. equals 16 shrubs

Remaining Elevations (208 l.f.)
* Sixty percent (60%) of building frontage to include foundation plantings equals 125 l.f.
* One (1) ornamental tree per 30 l.f. equals 4 trees
* Six (6) medium shrubs or eight (8) small shrubs per 30 l.f. equals 25 medium shrubs or 33 small shrubs

PARKING LOT LANDSCAPING & PERIMETER PLANTING

Landscaping within Parking Lots (1,828 sq. ft.)
* One (1) deciduous shade tree or ornamental tree shall be provided for each 180 sq. ft. of interior planting island
* 1,828 sq. ft. divided by 1 tree per 180 sq. ft. equals 10 trees
* Fifty percent (50%) of the interior planting island to consist of small and medium shrubs
* 914 sq. ft. divided by 1 shrub per 16 sq. ft. equals 57 shrubs
* Fifty percent (50%) of the interior planting island to consist of groundcover, perennials, annuals, or mulch
* 914 sq. ft. divided by 1 perennial per 4 sq. ft. equals 230 perennials

Perimeter Planting for Parking Lots
* For parking lots visible from a public street, a berm, wall, or evergreen hedge (30" min. ht.) will be installed
* For parking lots not visible from a public street, one (1) tree shall be installed for every 30 l.f.

NOTE:
* See Sheet LA-2 for notes, typical unit planting detail and corresponding plant list, planting details, landscape berm detail, and pruning detail.

20' 0' 20' 40' 60' north
scale: 1" = 20'

date: December 30, 2020
revised:
02-24-2021 Revise for Township review.
03-11-2021 Revise for Township review.

LANDSCAPE PLAN FOR:
Jeffery A. Scott Architects
32316 Grand River Ave.
Suite 200
Farmington, Michigan 48336
(248) 476-8800

LANDSCAPE PLAN BY:
Nagy Devlin Land Design
31736 West Chicago Ave.
Livonia, Michigan 48150
(734) 634-9208

PROJECT LOCATION:
Hungry Howie's
Retail Center
11935 Highland Road
Hartland Township,
Michigan

STATE OF MICHIGAN J. BRIAN DEVLIN NO.1260 REGISTERED LANDSCAPE ARCHITECT
AUTOCAD SIGNATURE ORIGINAL IN BLUE

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LA-1: LANDSCAPE PLANTING PLAN

* Base data provided by Desine, Inc.

LANDSCAPE DEVELOPMENT NOTES:

PLANTING

1. Installation of all plant material shall be in accordance with the latest edition of the *American Association of Nurserymen Standards for Nursery Stock* and with the specifications set forth by Hartland Township, Michigan.
2. The plant materials shall conform to the type stated on the plant list. Sizes shall be the minimum stated on the plant list or larger. All measurements shall be in accordance with the latest edition of the *American Association of Nurserymen Standards for Nursery Stock.*
3. The plant material shall be nursery grown and inspected by the Owner's representative before planting. The Owner's representative reserves the right to reject any plant material at any time.
4. Plants designated "B&B" shall be balled and burlapped with firm balls of earth.
5. Dig shrub pits one foot (1') larger than the shrub rootball, tree pits three (3) times the width of the tree rootball and backfill with one (1) part topsoil and one (1) part soil from excavated pit. Plant trees and shrubs at the same grade level at which they were planted at the nursery. If wet, clay soils are evident, plant trees and shrubs slightly higher.
6. The Contractor is responsible for planting the materials at the correct grades and spacing. The plants shall be oriented to give the best appearance.
7. When the plant has been properly set, the pit shall be backfilled with the topsoil mixture, gradually filling, patting, and settling with water.
8. Trees in lawn areas to have a four foot (4') circle of mulch, four inches (4') deep, and three inches (3") away from the trunk. Shrub beds are to be mulched with shredded bark mulch to a minimum depth of three inches (3"). Only natural color shredded hardwood bark mulch will be accepted.
9. Remove all twine, wire, and burlap from the top one third (1/3) of tree and shrub root balls and from tree trunks. Remove all non-biodegradable material such as plastic or nylon completely from branches and stems.
10. All plant materials shall be pruned and injuries repaired. The amount of pruning shall be limited to the removal of dead or injured limbs and to compensate for the loss of roots from transplanting. Cuts should be flush, leaving no stubs. Cuts over three quarters of an inch (3/4") shall be painted with tree paint. Shrubs along the site perimeter shall be allowed to grow together in a natural form.
11. Organic, friable topsoil shall be evenly distributed and fine graded over all areas to receive lawns at uniform depth of four inches (4") after settlement.
12. All lawn areas shall be seeded with a Grade A Kentucky Blue Grass blend over the topsoil. Existing lawn in generally good condition but with bare, sparse, or weedy areas must be renovated by filling in low areas, raking, overseeding, and top dressing all sparse and bare spots and continuing with a weed and feed program.
13. 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 April1 thru September 30 period; if the certificate is issued during the October 1 thru March 31 period, the planting shall be completed no later than the ensuing 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.
14. Plant trees and shrubs no closer than the following minimum distances from sidewalks, curbs, and parking stalls:
    a. Shade/Canopy Trees — Three feet (3')
    b. Ornamental/Flowering Trees — Five feet (5')
    c. Evergreen Trees — Ten feet (10')
    d. Evergreen/Flowering Shrubs — Four feet (4').
    Trees and shrubs shall not be planted within ten feet (10') of a fire hydrant.
15. Backfill directly behind all curbs and along sidewalks and compact to the to of curbs or walk to support vehicle and pedestrian weight without settling.
16. All landscape areas, especially parking lot islands and landscape beds next to buildings shall be excavated of all building materials and poor soils to a depth of twelve inches to eighteen inches (12"-18") and backfilled with good, medium-textured planting soil (loam or light yellow clay loam). Add four inches to six inches (4"-6") of topsoil over the fill material and crown a minimum of six inches (6") above the top of curbs and/or walks after earth settling unless otherwise noted on the landscape plan.
17. Conversion of all asphalt and gravel areas to landscape planting beds shall be done in the following manner: a. Remove all asphalt, gravel, and compacted earth to a depth of six inches to eighteen inches (6"-18") depending on the depth of the sub base and dispose of off site; b. Call the Township for an inspection prior to backfilling; c. Replace excavated material with good, medium-textured planting soil (loam or light yellow clay loam) to a minimum of two inches (2") above the top of the curb and sidewalk, add four inches to six inches (4"-6") of topsoil and crown to a minimum of six inches (6") above the adjacent curb and walk after earth settling, unless otherwise noted on the landscape plan. If conversion from asphalt to landscape occurs in or between an existing landscape area(s), replace excavated material from four inches to six inches (4"-6") below adjacent existing grade with good, medium-textured planting soil (loam or light yellow clay loam) and add four inches to six inches (4"-6") of topsoil to meet existing grades after earth settling.
18. Edging shall consist of Ryerson Steel edging, Perma-Loc aluminum edging, spaded edge, or approved equivalent.
19. Elevate the rootballs of Yew shrubs to allow for better drainage.

MATERIAL

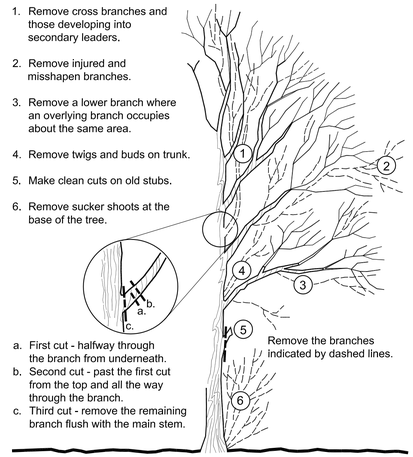
1. Required landscape material shall satisfy the criteria of the *American Association of Nurserymen Standards for Nursery Stock* and be: a. Nursery grown; b. State Department of Agriculture inspected; c. No. 1 grade material with a straight, unscarred trunk, and well-developed uniform crown (park grade trees will not be accepted); d. Staked, wrapped, watered, and mulched according to the details provided; and e. Guaranteed for one (1) year.
2. Topsoil shall be friable, fertile soil of clay loam character containing at least five percent (5%) but not more than twenty percent (20%) by weight of organic matter with a pH range between 6.0 and 7.0. The topsoil shall be free from clay lumps, coarse sand, plant roots, sticks, and other foreign materials.
3. The seed mixture shall consist of the following types and proportions: Kentucky Blue Grass blend "Baron/Sheri/Adelphi" @ sixty percent (60%), Chewing Fescue @ twenty-five percent (25%), Creeping Red Fescue @ ten percent (10%), and Perennial Rye Grass @ five percent (5%). Weed content shall not exceed one percent (1%). The mix shall be applied at a rate of 200 pounds per acre.
4. Sod shall be two (2) year old "Baron/Sheri/Adelphi" Kentucky Blue Grass blend grown in a sod nursery on loam soil.
5. Proposed perennials shall be full, well-rooted plants.
6. Callery Pear (*Pyrus calleryana*) and Norway Maple (*Acer platanoides*) shall not be substituted for any tree species in the plant list. Contact the Landscape Architect for acceptable plant substitutions.

GENERAL

1. Do not plant deciduous or evergreen trees directly over utility lines or under overhead wires. Maintain a six foot (6') distance from the centerline of utilities and twenty feet (20') from the centerline of overhead wires for planting holes. Call MISS DIG forty-eight (48) hours prior to landscape construction for field location of utility lines.
2. The Contractor agrees to guarantee all plant material for a period of one (1) year. At that time, the Owner's representative reserves the right for a final inspection. Plant material with twenty-five percent (25%) die back, as determined by the Owner's representative shall be replaced. This guarantee includes the furnishing of new plants, labor, and materials. These new plants shall also be guaranteed for a period of one (1) year.
3. The work shall consist of providing all necessary materials, labor, equipment, tools, and supervision required for the completion as indicated on the drawings.
4. All landscape areas including parking lot islands shall be irrigated by an automatic underground irrigation system. Lawns and shrub/landscape areas shall be watered by separate zones to minimize overwatering.
5. All written dimensions override scale dimensions on the plans.
6. Report all changes, substitutions, or deletions to the Owner's representative.
7. All bidders must inspect the site and report any discrepancies to the Owner's representative.
8. All specifications are subject to change due to existing conditions.
9. The Owner's representative reserves the right to approve all plant material.
10. All ground mounted mechanical units shall be screened on three (3) sides with living plant material.

MAINTENANCE OF GENERAL LANDSCAPE AREAS

1. The Owner of the landscaping shall perpetually maintain such landscaping in good condition so as to present a healthy, neat, and orderly appearance, free from refuse and debris.
2. The Owner shall conduct a seasonal landscape maintenance program including regular lawn cutting (at least once per week during the growing season), pruning at appropriate times, watering, and snow removal during winter.
3. The Contractor is responsible for watering and maintenance of all seed areas until a minimum of ninety percent (90%) coverage, as determined by the Owner's representative.
4. All diseased and/or dead material shall be removed within sixty (60) days following notification and shall be replaced within the next appropriate planting season or within one (1) year, whichever comes first.
5. Any debris such as lawn clippings, fallen leaves, fallen limbs, and litter shall be removed from the site on a weekly basis at the appropriate season.
6. All planting beds shall be maintained by removing weeds, fertilizing, and replenishing mulch as needed.
7. Annual beds shall be kept free of weeds and mulched with sphagnum peat of a neutral pH as needed. Perennial beds shall be kept free of weeds and mulched with fine textured shredded bark as needed. Cut spent flower stalks from perennial plants at regular intervals.

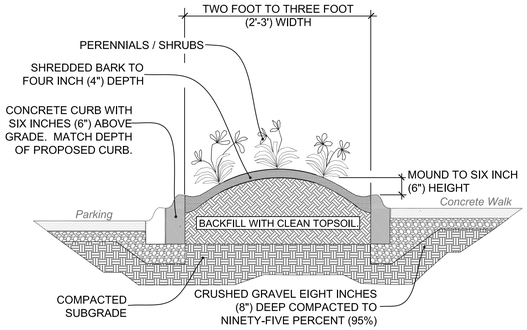


1. Remove cross branches and those developing into secondary leaders.
2. Remove injured and misshapen branches.
3. Remove a lower branch where an overlying branch occupies about the same area.
4. Remove twigs and buds on trunk.
5. Make clean cuts on old stubs.
6. Remove sucker shoots at the base of the tree.

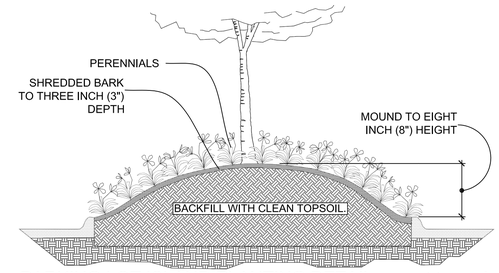
a. First cut - halfway through the branch from underneath.
b. Second cut - past the first cut from the top and all the way through the branch.
c. Third cut - remove the remaining branch flush with the main stem.

Remove the branches indicated by dashed lines.

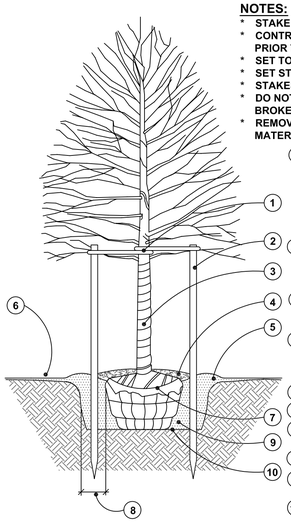
PRUNING DETAIL not to scale



PLANTER ISLAND DETAIL not to scale



PARKING LOT ISLAND PLANTING DETAIL not to scale

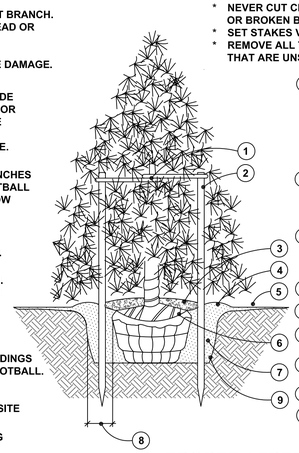


NOTES:

* STAKE TREES UNDER FOUR INCH (4") CALIPER.
* CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.
* SET TOP OF BALL THREE INCHES (3") ABOVE FINISH GRADE.
* SET STAKES VERTICAL & EVENLY SPACED.
* STAKES OR GUYS TO BE SECURED ABOVE THE FIRST BRANCH.
* DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.
* REMOVE ALL TAGS, STRING, PLASTICS, AND OTHER MATERIALS THAT ARE UNSIGHTLY OR COULD CAUSE DAMAGE.

1. STAKE TREE JUST BELOW FIRST BRANCH USING TWO INCH TO THREE INCH (2"-3") WIDE BELT-LIKE MATERIAL OF NYLON, PLASTIC, OR OTHER ACCEPTABLE MATERIAL. (NO WIRE OR HOSE TO BE USED TO GUY TREES.) THREE (3) GUYS EVENLY SPACED PER TREE. REMOVE AFTER ONE (1) WINTER SEASON.
2. 2 x 2 HARDWOOD STAKES. POSITION SIX INCHES TO EIGHT INCHES (6"-8") OUTSIDE OF ROOTBALL AND EXTEND EIGHTEEN INCHES (18") BELOW TREE PIT INTO UNDISTURBED SOIL.
3. APPLY TREE WRAP AND SECURE WITH A BIODEGRADABLE MATERIAL AT TOP AND BOTTOM. REMOVE AFTER ONE (1) WINTER.
4. SHREDDED BARK MULCH OF A NATURAL COLOR AT FOUR INCH (4") MINIMUM DEPTH. LEAVE A THREE INCH (3") CIRCLE OF BARE SOIL AT THE BASE OF THE TREE.
5. MOUND TO FORM TREE SAUCER.
6. FINISH GRADE SLOPED AWAY FROM TREE.
7. CUT AND REMOVE WIRE, BURLAP, AND BINDINGS FROM THE TOP ONE-THIRD (1/3) OF THE ROOTBALL.
8. WIDTH OF ROOTBALL ON EACH SIDE.
9. PLANTING MIX SHALL BE AMMENDED PER SITE CONDITIONS AND PLANT REQUIREMENTS.
10. SCARIFY BOTTOM AND SIDES OF PLANTING PIT TO FOUR INCH (4") DEPTH.

DECIDUOUS TREE



NOTES:

* STAKE ALL EVERGREEN TREES UNDER TWELVE FEET (12') HIGH. GUY ALL EVERGREEN TREES TWELVE FEET (12') HIGH AND OVER.
* CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.
* NEVER CUT CENTRAL LEADER. PRUNE ONLY TO REMOVE DEAD OR BROKEN BRANCHES.
* SET STAKES VERTICAL AND EVENLY SPACED.
* REMOVE ALL TAGS, STRING, PLASTICS, AND OTHER MATERIALS THAT ARE UNSIGHTLY OR COULD CAUSE GIRDLING.

1. STAKE TREE AS INDICATED USING TWO INCH TO THREE INCH (2"-3") WIDE BELT-LIKE MATERIAL OF NYLON, PLASTIC, OR OTHER ACCEPTABLE MATERIAL. (NO WIRE OR HOSE TO BE USED TO GUY TREES.) THREE (3) GUYS EVENLY SPACED PER TREE. REMOVE AFTER ONE (1) WINTER SEASON.
2. 2 x 2 HARDWOOD STAKES. POSITION SIX INCHES TO EIGHT INCHES (6"-8") OUTSIDE OF ROOTBALL AND EXTEND EIGHTEEN INCHES (18") BELOW TREE PIT INTO UNDISTURBED SOIL.
3. SHREDDED BARK MULCH OF A NATURAL COLOR AT FOUR INCH (4") MINIMUM DEPTH. LEAVE A THREE INCH (3") CIRCLE OF BARE SOIL AT THE BASE OF THE TREE.
4. MOUND TO FORM TREE SAUCER.
5. FINISH GRADE SLOPED AWAY FROM TREE.
6. CUT AND REMOVE WIRE, BURLAP, AND BINDINGS FROM THE TOP ONE-THIRD (1/3) OF THE ROOTBALL.
7. PLANTING MIX SHALL BE AMMENDED PER SITE CONDITIONS AND PLANT REQUIREMENTS.
8. WIDTH OF ROOTBALL ON EACH SIDE.
9. SCARIFY BOTTOM AND SIDES OF PLANTING PIT TO FOUR INCH (4") DEPTH.

EVERGREEN TREE

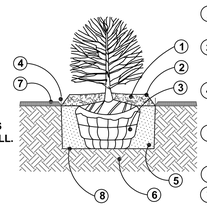
PLANTING DETAILS not to scale

GENERAL NOTES FOR ALL PLANTINGS:

* DO NOT CUT CENTRAL LEADER.
* REMOVE ALL TAGS, STRINGS,PLASTICS, AND ANY OTHER NON-BIODEGRADABLE MATERIALS (EXCEPT LABEL FOR PLANT NAME) FROM PLANT STEMS OR CROWN WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.
* PLANTS SHALL BEAR THE SAME RELATION TO FINISH GRADE AS IT BORE TO THE PREVIOUS GRADE IN THE NURSERY. SET THE BASE OF THE PLANT SLIGHTLY HIGHER THAN EXISTING GRADE IF PLANTING IN CLAY SOILS.
* CENTER THE ROOTBALL IN THE PLANTING HOLE. LEAVE THE BOTTOM OF THE PLANTING HOLE FIRM. USE WATER TO SETTLE THE PLANTING MIX AND REMOVE ANY AIR POCKETS AND FIRMLY SET THE TREE OR SHRUB. GENTLY TAMP IF NEEDED.

NOTE:

* CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.

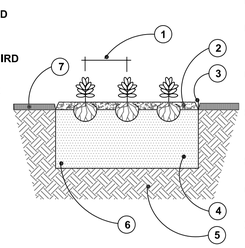


1. SHREDDED BARK MULCH AT FOUR INCH (4") MINIMUM DEPTH. MULCH SHALL BE NATURAL IN COLOR.
2. FORM A SAUCER WITH MULCH AND SOIL AROUND SHRUB BED.
3. CUT AND REMOVE BURLAP AND BINDINGS FROM THE TOP ONE-THIRD (1/3) OF THE ROOTBALL.
4. 3/16" x 4" ALUMINUM EDGING (OR APPROVED EQUIVALENT) OR SPADED EDGE.
5. EXCAVATE PLANTING HOLE AND BACKFILL WITH PREPARED PLANTING MIX.
6. UNDISTURBED SUBGRADE.
7. LAWN.
8. SCARIFY SUBGRADE.

SHRUB

NOTE:

* CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.
* PERENNIALS TO BE PLANTED UP TO THE EDGE OF THE SAUCER AROUND A TREE OR SHRUB BED.



1. SEE PLANT LIST FOR SPACING DISTANCE.
2. SHREDDED HARDWOOD BARK OF A NATURAL COLOR MULCH AT FOUR INCH (4") MINIMUM DEPTH.
3. 3/16" x 4" ALUMINUM EDGING (OR APPROVED EQUIVALENT) OR SPADED EDGE.
4. EXCAVATE PLANTING BED AND BACKFILL WITH PREPARED PLANTING MIX AT A TEN INCH (10") DEPTH.
5. UNDISTURBED SUBGRADE.
6. PLANTING MIX TO CONSIST OF EQUAL PARTS OF SAND, LEAF COMPOST, AND NATIVE SOIL.
7. LAWN.

ANNUAL / PERENNIAL / GROUNDCOVER

not to scale

NOTE:
* See Sheet LA- 1: LANDSCAPE PLANTING PLAN for overall planting plan, plant list, and summary of landscape requirements.

date: March 11, 2021
revised:

scale: as indicated

Know what's below. Call before you dig.

LANDSCAPE PLAN FOR:
Jeffery A. Scott Architects
32316 Grand River Ave.
Suite 200
Farmington, Michigan 48336
(248) 476-8800

PROJECT LOCATION:
Hungry Howie's
Retail Center
11935 Highland Road
Hartland Township,
Michigan

LANDSCAPE PLAN BY:
Nagy Devlin Land Design
31736 West Chicago Ave.
Livonia, Michigan 48150
(734) 634-9208

STATE OF MICHIGAN · J. BRIAN DEVLIN NO.1260 · REGISTERED LANDSCAPE ARCHITECT

AUTOCAD SIGNATURE ORIGINAL IN BLUE

LA-2: LANDSCAPE NOTES & DETAILS

Plan View
Scale - 1" = 20ft

General Note

1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"
3. LIGHTING ALTERNATES REQUIRE NEW PHOTOMETRIC CALCULATION AND RESUBMISSION TO CITY FOR APPROVAL.

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT 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. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.

FOR ORDERING INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

Statistics

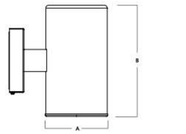
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
Front Entrance	+	5.1 fc	9.1 fc	2.3 fc	4.0:1	2.2:1	0.6:1
Grade	+	0.6 fc	10.1 fc	0.0 fc	N/A	N/A	0.1:1
Parking & Drives	✕	3.2 fc	10.1 fc	0.3 fc	33.7:1	10.7:1	0.3:1
Property Line	+	0.1 fc	0.3 fc	0.0 fc	N/A	N/A	0.3:1

Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Lamp	Mounting Height
○	A	9	Spectrum Lighting	C0611XT WALL SCONCE	LED	8'-0"
▭	B	3	Lithonia Lighting	WDGE2 LED WALL SCONCE	LED	20'-0"
▯	C	1	Lithonia Lighting	DSX0 LED AREA LIGHT	LED	20'-0"
▯	D	5	Lithonia Lighting	DSX0 LED AREA LIGHT	LED	20'-0"
▯	E	3	Lithonia Lighting	DSX0 LED AREA LIGHT	LED	20'-0"
○	F	6	Lithonia Lighting	DSXB LED BOLLARD	LED	AT GRADE

HUNGRY HOWIE'S HARTLAND
SITE PHOTOMETRIC PLAN
PREPARED FOR: DESINE INC.
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer
DS/KB
Date
12/21/2020
rev. 3/11/2021
Scale
Not to Scale
Drawing No.
#20-57054 V2
1 of 2



A	B
6.2 157.5 mm	11.1 281.9 mm

Fixture Weight*: 8.3 lbs

6" ROUND DIRECT
FOCUSED ILLUMINATION

cylinders

C0611XT - WALL MOUNT

TYPE: A

APPLICATION
6" round x 11" high cylinder luminaire for accent and focused illumination.

FEATURES
Spectrum's Cylinder series provides traditional architectural style with high performance and energy efficient illumination. Rugged design with flexible mounting, finish and LED options make these extremely versatile fixtures. Two stage optical system design delivers smooth general illumination.

FINISH
Multi-stage polyester powder-coat process applied on our dedicated paint lines. See mounting and color pages for standard finishes. All exposed materials are chromate pretreated to resist corrosion.

ELECTRONICS
LED system features Xicato LED module with proprietary phosphor technology that provides consistent stable color with CCT control of +/- 100K over life of the light engine. Base CRI is 83 with 2-step MacAdam Ellipse binning. High CRI is 98 with 1 x 2-step MacAdam Ellipse binning. Variety of electronic 120V/277V and dimming drivers.

CONSTRUCTION
Fabricated seamless aluminum fixture housing. Specular primary reflector provides high efficiency illumination. Stainless steel hardware with galvanized steel brackets to resist corrosion. Trim formed from .063 thick high purity aluminum and finished to specification.

CODE COMPLIANCE
BAA compliant. ETL certified to meet US and Canadian standards. Suitable for dry or damp locations. Wet Location Option. Manufactured and tested to UL standards No. 1598/8750.

LUMENS / WATTAGE DATA

PART NUMBER	SOURCE LUMENS	DELIVERED LUMENS[2]	SYSTEM WATTS[3]	LPW
C0611XT10L	1000	691	9.3	76
C0611XT13L	1300	931	13.0	72
C0611XT20L	2000	1433	21.7	66
C0611XT30L	3000	2149	32.6	66

SERIES	LUMENS[1]	CCT	OPTICS	DRIVER / DIMMING[2]	OPTIONS[5]	TRIM	MOUNTING[13]	FINISH[14]
C0611XT	**10L** 1000 Lm **13L** 1300 Lm **20L** 2000 Lm **30L**[6] 3000 Lm	83 CRI **27K** 2700K **30K** 3000K **35K** 3500K **40K** 4000K 98 CRI **27HK** 2700K **30HK** 3000K **35HK** 3500K **40HK** 4000K	**XN**[7] 12° **ND** 20° **MD** 37° **WD** 42° **XW** 57°	**EX** Electronic Driver, 120V/277V **DS10X** 10%, 0-10V, 120V/277V **DO10X** 1%, 0-10V, 120V/277V **DS2W1** ELV/MLV, 120V	**WL** Wet Location **FS** Fuse Holder and Fuse	**TSG**[7] Semi Diffuse Low Iridescent Clear **TCY** Same Color as Cylinder **TCC** Custom Color LENS **NL**[11] No Lens **GL**[11] Clear Glass Lens **SO**[11] Micro Prism Solite™ Lens **FG** Frosted Glass Lens	**WM3** Wall Mount 3" Extension **WM5** Wall Mount 5" Extension EMERGENCY BATTERY OPTIONS **EMRM** 7W Remote EM **EMEN** 7W Remote with Enclosure	**MW**[15] Matte White **MB**[15] Matte Black **PT**[15] Platinum Silver **CC** Custom Color See Page 5 for Full Range of Color Options (63-00095)

EXAMPLE: C0611XT20L35KWDEXTSGSOWM3MW

NOTES:
1 Nominal Source Lumens At Any CCT. 2 Nominal Delivered Lumens at 83 CRI at Any CCT with MD-TSG-NL. 3 At 83 CRI. 4 Open Aperture Only: NL. 5 20L Max. 6 13L Max.NN not Available with 98 CRI Option. 7 Consult Factory for Additional Options. 8 See Product Options Page for Details. 9 Standard Finish. 10 Not Available with WL. 11 20L Max.Standard Lens for XN, ND. 12 20L Max.Standard Lens for MD, WD, XW. 13 See Mounting Page for Details on Components and Finishes. 14 See Color Page for More Options/Consult Factory for Special Finishes. 15 Standard Finishes

SPECTRUM LIGHTING INC.

PROJECT:

TYPE:

Dimensions and values shown are nominal. Spectrum Lighting continually works to improve products and reserves the right to make changes which may alter the performance or appearance of products.

WDGE2 LED
Architectural Wall Sconce

TYPE: B

Catalog Number

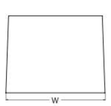
Notes

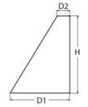
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Depth (D1): 7"
Depth (D2): 1.5"
Height: 9"
Width: 11.5"
Weight: (without options) 13.5 lbs





Introduction

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.

WDGE2 delivers up to 6,000 lumens with a soft, non-pixelated light source, creating a visually comfortable environment. When combined with multiple integrated emergency battery backup options, including an 18W cold temperature option, the WDGE2 becomes the ideal wall-mounted lighting solution for pedestrian scale applications in any environment.

WDGE LED Family Overview

Luminaire	Standard EM, 0°C	Cold EM, -20°C	Sensor	Lumens (4000K) P1	P2	P3	P4	P5	P6
WDGE1 LED	4W	--	--	1,200	2,000	--	--	--	--
WDGE2 LED	10W	18W	Standalone / nLight	1,200	2,000	3,000	4,500	6,000	--
WDGE3 LED	15W	18W	Standalone / nLight	2,500	8,500	10,000	12,000	--	--
WDGE4 LED	--	--	Standalone / nLight	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information

EXAMPLE: WDGE2 LED P3 40K 80CRI VF MVOLT SRM DDBXD

Series	Package	Color Temperature	CRI	Distribution	Voltage	Mounting
WDGE2 LED	**P1**[1] P15W **P2**[1] P25W **P3**[1] P35W **P4**[1] Base with small window (SW) is required to accommodate sensors. See page 2 for more details. **P5**[1]	**27K** 2700K **30K** 3000K **35K** 3500K **40K** 4000K **50K**[2] 5000K	**80CRI** **90CRI**	**VF** Visual comfort forward throw **VW** Visual comfort wide	**MVOLT** 347[3] 480[3]	**Shipped included** **SRM** Surface mounting bracket **ICW** Indirect Canopy/Ceiling Washer bracket (dry/damp locations only)[4] **Shipped separately** **AWS** 3/8inch Architectural wall spacer **BBW** Surface-mounted back box **PBBW** Premium surface-mounted back box (top, left, right conduit entry)

Options			Finish
E4WH Emergency battery backup, CEC compliant (4W, 0°C min) **E10WH** Emergency battery backup, CEC compliant (10W, 0°C min) **E20WC** Emergency battery backup, CEC compliant (18W, -20°C min) **PE**[4] Photocell, Button Type **DS**[4] Dual-switching (comes with 2 drivers and 2 light engines; see page 3 for details) **DMG**[5] 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately) **BCE** Bottom conduit entry for premium back box (PBBW). Total of 4 entry points.	**Standalone Sensors/Controls** (only available with P15W, P25W & P35W) **PIR** Bi-level (100/35%) motion sensor for 8-15' mounting heights. Intended for use on switched circuits with external dusk to dawn switching. **PIRH** Bi-level (100/35%) motion sensor for 15-30' mounting heights. Intended for use on switched circuits with external dusk to dawn switching. **PIR1FC3V** Bi-level (100/35%) motion sensor for 8-15' mounting heights with photocell pre-programmed for dusk to dawn operation. **PIRH1FC3V** Bi-level (100/35%) motion sensor for 15-30' mounting heights with photocell pre-programmed for dusk to dawn operation. **Networked Sensors/Controls** (only available with P15W, P25W & P35W) **NLTAIR2 PIR** nLight AIR Wireless enabled bi-level motion/ambient sensor for 8-15' mounting heights. **NLTAIR2 PIRH** nLight AIR Wireless enabled bi-level motion/ambient sensor for 15-30' mounting heights. See page 4 for out of box functionality	**DDBXD** Dark bronze **DBLXD** Black **DNAXD** Natural aluminum **DWHXD** White **DSSXD** Sandstone **DDBTXD** Textured dark bronze **DBLBXD** Textured black **DNATXD** Textured natural aluminum **DWHGXD** Textured white **DSSTXD** Textured sandstone

D-Series Size 0
LED Area Luminaire

TYPES: C, D & E

Catalog Number

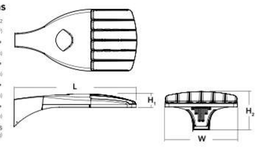
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA: 0.95 ft² (.09 m²)
Length: 26" (66.0 cm)
Width: 13" (33.0 cm)
Height$_1$: 3" (7.62 cm)
Height$_2$: 7" (17.8 cm)
Weight (max): 16 lbs (7.25 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 70% and expected service life of over 100,000 hours.

Ordering Information

EXAMPLE: DSX0 LED P6 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** **P1** P4[1] P7[1] **P2** P5 **P3** P6 **Rotated optics** **P10**[2] P12[2] **P11**[2] P13[2,3]	**30K** 3000 K **40K** 4000 K **50K** 5000 K	**T1S** Type I short (Automotive) **T2S** Type II short **T2M** Type II medium **T3S** Type III short **T3M** Type III medium **T4M** Type IV medium **TFTM** Forward throw medium **T5VS** Type V very short[1] **T5S** Type V short[1] **T5M** Type V medium[1] **T5W** Type V wide[1] **BLC** Backlight control[4] **LCCO** Left corner cutoff[4] **RCCO** Right corner cutoff[4]	**MVOLT**[5,6] 120[3] 208[3] 240[3] 277[3] 347[3] 480[3]	**Shipped included** **SPA** Square pole mounting **RPA** Round pole mounting[7] **WBA** Wall bracket[1] **SPUMBA** Square pole universal mounting adaptor[8] **RPUMBA** Round pole universal mounting adaptor[8] **Shipped separately** **KMA8 DDBXD U** Mast arm mounting bracket adaptor (specify finish)[7]

Control options		Other options	Finish (required)
Shipped installed **NLTAIR2** nLight AIR generation 2 enabled[9,11] **PIRHN** Network, high/low motion/ambient sensor[12] **PER** NEMA twist-lock receptacle only (control ordered separate)[13] **PER5** Five-pin receptacle only (control ordered separate)[13,14] **PER7** Seven-pin receptacle only (leads exit fixture) (control ordered separate)[13,15] **DMG** 0-10V dimming extend out back of housing for external control (control ordered separate)[16] **PIR** High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[9,17] **PIRH** High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[9,17] **PIR1FC3V** High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[9,17] **PIRH1FC3V** High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[9,17] **FAO** Field adjustable output[18]	**Shipped installed** **HS** House-side shield[19] **SF** Single fuse (120, 277, 347V)[3] **DF** Double fuse (208, 240, 480V)[3] **L90** Left rotated optics[1] **R90** Right rotated optics[1] **DDL** Diffused drop lens[18] **HA** 50°C ambient operation[1] **Shipped separately** **BS** Bird spikes[18] **EGS** External glare shield	**DDBXD** Dark bronze **DBLXD** Black **DNAXD** Natural aluminum **DWHXD** White **DDBTXD** Textured dark bronze **DBLBXD** Textured black **DNATXD** Textured natural aluminum **DWHGXD** Textured white

D-Series
LED Bollard

TYPE: F

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Diameter: 8" Round (20.3 cm)
Height: 42" (106.7 cm)
Weight (max): 27 lbs (12.25 kg)

Introduction

The D-Series LED Bollard is a stylish, energy-saving, long-life solution designed to perform the way a bollard should—with zero uplight. An optical leap forward, this full cut-off luminaire will meet the most stringent of lighting codes. The D-Series LED Bollard's rugged construction, durable finish and long-lasting LEDs will provide years of maintenance-free service.

Ordering Information

EXAMPLE: DSXB LED 16C 700 40K SYM MVOLT DDBXD

DSXB LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Control options	Other options	Finish (required)
DSXB LED	**Asymmetric** 12C 12 LEDs[1] **Symmetric** 16C 16 LEDs[1]	**350** 350 mA **450** 450 mA[2,3] **530** 530 mA **700** 700 mA	**30K** 3000 K **40K** 4000 K **50K** 5000 K **AMBPC** Amber phosphor converted **AMBLW** Amber limited wavelength[3,4]	**ASY** Asymmetric[5] **SYM** Symmetric[5]	**MVOLT**[6] **120**[3] **208**[3] **240**[3] **277**[3] **347**[3,4]	**Shipped installed** **PE** Photoelectric cell, button type **DMG** 0(1)-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) **ELCW** Emergency battery backup[7]	**Shipped installed** **SF** Single fuse (120, 277, 347V)[3,8] **DF** Double fuse (208, 240V)[3,8] **H24** 24" overall height **H30** 30" overall height **H36** 36" overall height **FG** Ground-fault receptacle **L/AB** Without anchor bolts **L/AB4** 4 bolt retrofit base without anchor bolts[8]	**DWHXD** White **DNAXD** Natural aluminum **DDBXD** Dark bronze **DBLXD** Black **DDBTXD** Textured dark bronze **DBLBXD** Textured black **DNATXD** Textured natural aluminum **DWHGXD** Textured white

Accessories
Ordered and shipped separately

MRAB U Anchor bolts for DSXB[8]

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.

Designer
DS/KB
Date
12/21/2020
rev. 3/11/2021
Scale
Not to Scale
Drawing No.
#20-57054 V2

TIME LINE OF SOIL EROSION CONTROL AND CONSTRUCTION SEQUENCE

CONSTRUCTION & WORK CATEGORIES*	2014				
	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5
1 - OBTAIN PERMITS					
2 - SESC MEASURES					
3 - INSPECT / MAINTAIN					
4 - DEMOLITION WORK					
5 - EARTH WORK					
6 - UTILITIES					
7 - BUILDING					
8 - PAVEMENT					
9 - IRRIGATION					
10 - TOPSOIL/VEGETATION					
11 - LANDSCAPING					
12 - RESTORATION					
13 - PERMIT CLOSURE					

*REFER TO THE MAJOR WORK ITEMS OUTLINED IN THE SOIL EROSION CONTROL AND CONSTRUCTION SEQUENCE NOTES.

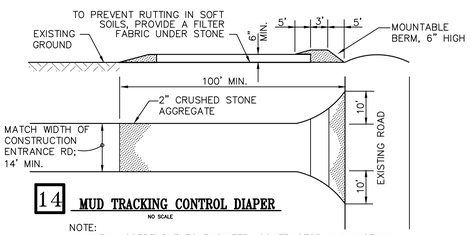
SOIL TYPES

Livingston County, Michigan (MI093)

Livingston County, Michigan (MI093)

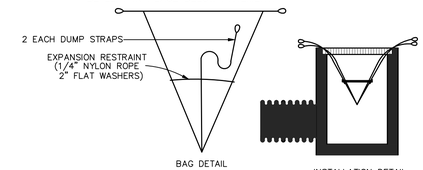
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FoB	Fox sandy loam, 2 to 6 percent slopes	0.1	1.0%
FoC	Fox sandy loam, 6 to 12 percent slopes	0.9	17.5%
MoA	Wawasee loam, 0 to 2 percent slopes	0.4	7.4%
MoB	Wawasee loam, 2 to 6 percent slopes	4.0	74.1%
Totals for Area of Interest		**5.4**	**100.0%**

SOILS MAP
NOT TO SCALE



14 MUD TRACKING CONTROL DIAPER
NO SCALE

NOTE:
A. WHEN ACCEPTABLE TO ENGINEER, CONTRACTOR MAY INSTALL STONE BELOW THE SUBGRADE ELEVATION; THUS STONE MAY BE LEFT IN PLACE BELOW PAVEMENT.



58 INLET SEDIMENT FILTER
NOT TO SCALE

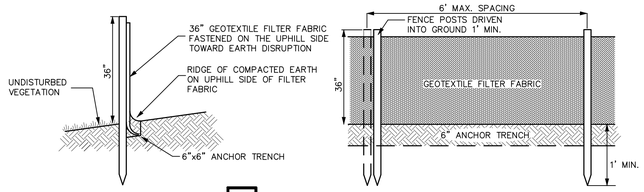
LEGAL DESCRIPTION

SITUATED IN THE TOWNSHIP OF HARTLAND, COUNTY OF LIVINGSTON AND STATE OF MICHIGAN, AND DESCRIBED AS FOLLOWS:

PARCEL ONE DESCRIPTION
(CURRENTLY PART OF 4708-22-300-018)

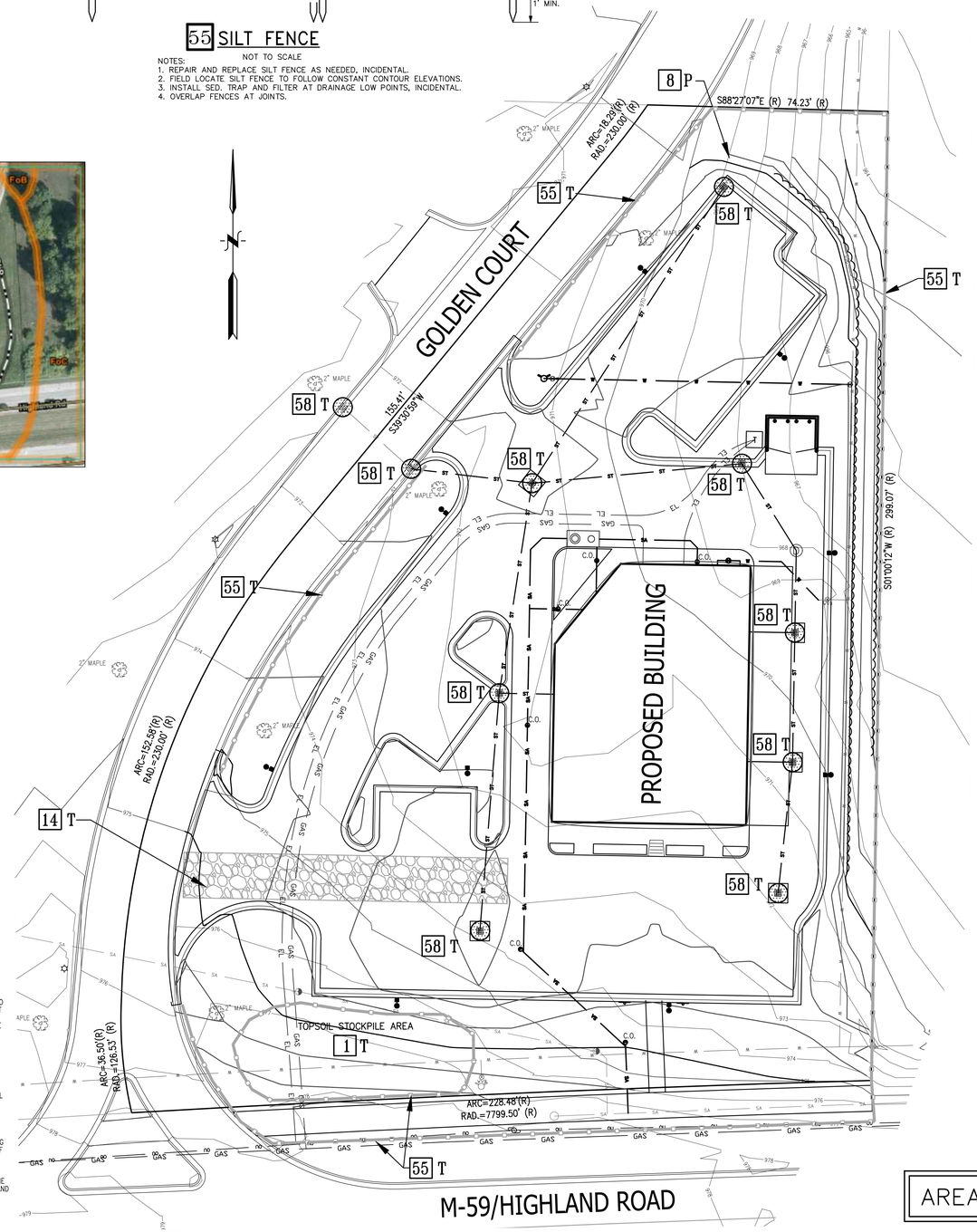
PART OF THE SOUTHWEST 1/4 OF SECTION 22, T03N-R06E, HARTLAND TOWNSHIP, LIVINGSTON COUNT, MICHIGAN, BEING FURTHER DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION; THENCE S88°17'15"E 2613.00 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION; THENCE N88°44'10"E 545.79 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION; THENCE S01°00'12"W 1286.35 FEET TO THE POINT OF BEGINNING; THENCE S01°00'12"W 299.07 FEET TO THE NORTH RIGHT OF WAY LINE OF HIGHLAND ROAD (M-59); THENCE ALONG THE ARC OF A CURVE TO LEFT AN ARC DISTANCE OF 228.48 FEET, SAID CURVE HAVING A RADIUS OF 7799.50 FEET, CHORD BEARING AND DISTANCE OF S87°30'11"W 228.47 FEET AND CENTRAL ANGLE OF 01°40'42"; THENCE ALONG THE ARC OF A CURVE TO RIGHT AN ARC DISTANCE OF 36.5 FEET, SAID CURVE HAVING A RADIUS OF 126.53 FEET, CHORD BEARING AND DISTANCE OF N04°53'33"W 36.37 FEET AND CENTRAL ANGLE OF 16°31'42"; THENCE ALONG THE ARC OF A CURVE TO RIGHT AN ARC DISTANCE OF 152.58 FEET, SAID CURVE HAVING A RADIUS OF 230.00 FEET, CHORD BEARING AND DISTANCE OF N20°30'01"E 149.80 FEET AND CENTRAL ANGLE OF 38°00'37"; THENCE N39°30'59"E 155.41 FEET; THENCE ALONG THE ARC OF A CURVE TO LEFT AN ARC DISTANCE OF 18.29 FEET, SAID CURVE HAVING A RADIUS OF 230.00 FEET, CHORD BEARING AND DISTANCE OF N37°14'19"E 18.28 FEET AND CENTRAL ANGLE OF 04°33'21"; THENCE S 88°27'0r E, 74.23 FEET TO THE POINT OF BEGINNING, CONTAINING 1.25 ACRES, MORE OR LESS.
SUBJECT TO AN EASEMENT FOR INGRESS-EGRESS BEING FURTHER DESCRIBED AS PART OF THE SOUTHWEST 1/4 OF SECTION 22, T03N-R06E, HARTLAND TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN, BEING FURTHER DESCRIBED AS:
COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION; THENCE S88°17'15"E 2521.92 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION; THENCE S01°32'53"W 1653.55 TO THE RIGHT OF WAY LINE OF HIGHLAND ROAD (M-59); THENCE ALONG THE ARC OF CURVE TO THE RIGHT AN ARC DISTANCE OF 307.28 FEET, SAID CURVE HAVING A RADIUS OF 7799.50 FEET, CHORD BEARING AND DISTANCE OF N85°18'28"E 307.26 FEET AND CENTRAL ANGLE OF 02°15'26"; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 41.15 FEET, SAID CURVE HAVING A RADIUS OF 70.00 FEET, CHORD BEARING AND DISTANCE OF N18°20'45"E, 40.56 FEET AND CENTRAL ANGLE OF 33°40'45"; THENCE ALONG THE ARC OF CURVE TO THE RIGHT AN ARC DISTANCE OF 162.53 FEET, SAID CURVE HAVING A RADIUS OF 245.00 FEET, CHORD BEARING AND DISTANCE OF N20°30'41"E 159.57 FEET AND CENTRAL ANGLE OF 38°00'37"; THENCE N39°30'59"E 150.41 FEET; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 144.52 FEET, SAID CURVE HAVING A RADIUS OF 215.00 FEET, CHORD BEARING AND DISTANCE OF N20°15'35"E 141.81 FEET AND CENTRAL ANGLE OF 38°30'47"; THENCE N01°00'12"E 401.32 FEET; THENCE S88°26'16"E 30.00 FEET; THENCE S01°00'12"W 401.32 FEET; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 164.68 FEET, SAID CURVE HAVING A RADIUS OF 245.00 FEET, CHORD BEARING AND DISTANCE OF S20°15'35"W 161.60 FEET AND CENTRAL ANGLE OF 38°30'47"; THENCE S39°30'59"W 165.41 FEET; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 121.07 FEET, SAID CURVE HAVING A RADIUS OF 215.00 FEET, CHORD BEARING AND DISTANCE OF S23°23'03"W 119.48 FEET AND CENTRAL ANGLE OF 32°15'52"; THENCE ALONG THE ARC OF CURVE TO THE RIGHT AN ARC DISTANCE OF 60.07 FEET, SAID CURVE HAVING A RADIUS OF 70.00 FEET, CHORD BEARING AND DISTANCE OF S17°19'50"E, 58.24 FEET AND CENTRAL ANGLE OF 49°09'54"; THENCE ALONG THE ARC OF CURVE TO THE LEFT AN ARC DISTANCE OF 61.85 FEET, SAID CURVE HAVING A RADIUS OF 7799.50 FEET, CHORD BEARING AND DISTANCE OF S86°39'49"W 61.85 FEET AND CENTRAL ANGLE OF 00°27'16" TO THE POINT OF BEGINNING.

LEGAL DESCRIPTION OF RECORD PROVIDED BY CLIENT. SURVEYOR WAS NOT SUPPLIED WITH A TITLE SEARCH AT THIS TIME. REFER TO THE CURRENT POLICY FOR TITLE INSURANCE FOR PROOF OF OWNERSHIP AND ALL ENCUMBRANCES AFFECTING TITLE TO THE SURVEYED PARCEL.



55 SILT FENCE
NOT TO SCALE

NOTES:
1. REPAIR AND REPLACE SILT FENCE AS NEEDED, INCIDENTAL.
2. FIELD LOCATE SILT FENCE TO FOLLOW CONSTANT CONTOUR ELEVATIONS.
3. INSTALL SED. TRAP AND FILTER AT DRAINAGE LOW POINTS, INCIDENTAL.
4. OVERLAP FENCES AT JOINTS.



SOIL EROSION MEASURES

1	STRIPPING & STOCKPILING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BERROW AREAS TO ACT AS A DIVERSION STOCKPILE SHOULD BE TEMPORARILY SEEDED
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
55	SEDIDYKE SILT FENCE	USES GEOTEXTILE AND POSTS OR POLES MAY BE CONSTRUCTED OR PREFABRICATED EASY TO CONSTRUCT AND LOCATE AS NECESSARY
58	INLET SEDIMENT FILTER	USES PREFABRICATED GEOTEXTILE SACKS FILTERS SEDIMENT FROM RUNOFF AT CATCH BASIN INLET EASY TO INSTALL AND MAINTAIN

T=TEMPORARY P=PERMANENT

36" SILT FENCE

AREA OF DISTURBANCE=1.18 AC.

MAINTENANCE NOTES FOR SOIL EROSION CONTROL MEASURES:

The Construction Site and all Soil Erosion Control Measures shall be inspected periodically in accordance with the appropriate local municipality/authority and the DEQ NPDES rules and regulations. At a MINIMUM, inspections shall be performed once a week and within 24 hours following a storm event resulting in 1" of rainfall or greater. Inspections shall be performed throughout the duration of the construction process and until the site is completely stabilized. Following construction, the owner (or it's assignee) shall periodically inspect all permanent soil erosion control measures to ensure proper operation.

CATCH BASINS: Catch basins shall be inspected for accumulation of solids and sediment. Solids and sediment shall be removed from the catch basins by vacuum or adductor cleaning. Cleaning should be performed before the catch basin sumps are half full.

MUD TRACKING CONTROL DEVICE / CONSTRUCTION ACCESS: Mud tracking control devices shall be inspected for significant mud accumulation and to ensure the access is not eroding into public rights of way or drainage features. Add additional layers of stone or remove and replace stone each time the stone becomes covered with mud. All sediment dropped or eroded onto public rights of way shall be removed immediately. Sweeping of the public rights or way and/or paved access route shall be performed as necessary to maintain the access route free of sediment and debris.

SEEDING: Newly seeded areas shall be inspected until substantial vegetative growth is obtained. Seeded areas shall be inspected to ensure erosion is not occurring in the seeded area and vegetative growth is promoted. Eroded areas shall be finish graded as necessary to removal erosion channels or gulleys and new seed placed as soon as weather permits.

SILT FENCE: Silt fencing shall be inspected for soil accumulation/clogging, undercutting, overtopping and sagging. Soil accumulation shall be removed from the face of the silt fence each time it reaches half the height of the fence. Removed sediment shall be disposed of in a stable upland site or added to a spoils stockpile. When undercutting occurs, grade out areas of concentrated flow upstream of the silt fence to remove channels and/or gulleys and repair or replace silt fence ensuring proper trenching techniques are utilized. Silt fencing, which sags, falls over or is not staked in shall be repaired or replaced immediately. Silt fencing fabric, which decomposes or becomes ineffective, shall be removed and replaced with new fabric immediately. Silt fencing shall be removed once vegetation is well established and the up-slope area is fully stabilized.

SOD: Newly sodded areas shall be inspected to ensure sod is maturing. Sod shall be inspected for failure, erosion or damage. Slipping or eroding sod on steep slopes shall be immediately repaired or replaced and staked in place. Damaged or failed sod shall be immediately replaced.

STOCKPILES: Temporary and permanent topsoil and spoils stockpiles shall be seeded to promote vegetative growth. Stockpiles shall be inspected to ensure excessive erosion has not occurred. When runoff or wind erosion is evident, reduce the side slopes of the stockpile or stabilize the stockpile with pieces of staked sod laid perpendicular to the slope. When filter fencing is used around a stockpile, the fencing shall be inspected to ensure piping has not occurred under the fencing and to ensure the fencing has not collapsed due to soil slippage or access by construction equipment. Repair or replace damaged fencing immediately. Berms at the base of stockpiles, which become damaged, shall be replaced.

STORM STRUCTURE INLET FILTER: Inlet filters shall be inspected for sediment accumulation, clogging and damage. When stone is used in conjunction with inlet filter fabric, replace the stone each time it becomes clogged with sediment. Clean or replace the inlet filter fabric each time it becomes clogged with sediment. Reinstall or replace fallen filter fabrics immediately. Replace damaged filter fabrics immediately.

SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

1. The Soil Erosion and Sedimentation Control Specifications of the appropriate Local, County and/or State Agencies are a part of this work. Refer to the General Notes on the Project Plans for additional requirements.

2. The Soil Erosion and Sedimentation Control (SESC) Permit Holder shall be responsible for compliance with the SESC Permit requirements for the duration of the project and until receipt of final approval from the Permitting Agency. For any site with an earth disturbance area of 1 acre or greater, the SESC Permit Holder shall retain a Certified Storm Water Operator in accordance with the SESC Permit requirements. The Certified Storm Water Operator shall perform routine inspections of the site and the SESC measures and file inspection reports in accordance with the SESC permit requirements. For any site with an earth disturbance area of 5 acres or greater, the SESC Permit Holder shall file a National Pollutant Discharge Elimination System (NPDES) Notice of Coverage Form with the State DEQ prior to any earth disruption.

3. The Contractor shall install the appropriate Soil Erosion Control Measures in accordance with the Project Plans prior to massive earth disruption, including but not limited to; silt fence, mud tracking control mats and sediment filters on existing storm sewer structures. Demolition work may be necessary prior to installation of some soil erosion control measures. In such cases, postpone installation of affected soil erosion control measures until immediately following demolition work. Refer to the Project Plans and the Soil Erosion Control and Construction Sequence for additional requirements.

4. The Contractor shall schedule work so as to minimize the period of time that an area is exposed and disturbed. The Contractor shall observe the grading limits and limits of disturbance in accordance with the Project Plans. The Contractor shall maintain an undisturbed vegetative buffer around the work when shown on the Project Plans.

5. The Contractor shall install and maintain Soil Erosion Control Measures in accordance with the Project Plans during the appropriate phases of construction. The Project Plans show the minimum requirements for Soil Erosion Control Measures. The Contractor shall install additional Soil Erosion Control Measures as necessary due to site conditions and as directed by the Permitting Agency and/or Engineer. The Contractor shall perform routine inspection and maintenance of all Soil Erosion Control Measures to ensure compliance with the permit requirements and proper operation of the Soil Erosion Control Measures.

6. The Contractor shall strip and stockpile topsoil from all areas of proposed disturbance. Topsoil stockpiles shall be located in accordance with the Project Plans. Topsoil stockpiles shall be stabilized with vegetative growth (or matted with straw during the non-growing season) to prevent wind and water erosion. A temporary diversion berm and/or silt fence shall encompass all earthen material stockpiles, including but not limited to topsoil, sand and gravel.

7. The Contractor shall install Soil Erosion Control Measures associated with the proposed storm sewer system during storm sewer construction. Inlet structure filters shall be installed immediately following completion of each storm inlet structure. Riprap shall be installed immediately following the installation of each flared end section with the following exception: Storm drain outlets that do NOT empty into a Retention, Detention or Sedimentation Basin shall have a temporary 5' wide x 10' long x 3' deep sump installed at the termination of the storm sewer. Upon completion of the stabilization work, the sump area shall be filled and riprap shall be installed in accordance with the Project Plans.

8. The Contractor shall install filter stone around the storm basin control structure(s) in accordance with the Project Plans immediately following installation of the control structure(s). The filter stone shall be monitored for sediment build up. The filter stone may need to be cleaned and/or replaced as site conditions require and as directed by the Permitting Agency and/or the Engineer.

9. All disturbed areas outside of paved areas shall be restored within 15 days of finish grading. Proposed vegetative areas shall be restored with a minimum of 3-inches of topsoil, then seeded and mulched; unless noted otherwise on the Project Plans. During the non-growing season, temporary stabilization shall be provided using straw matting or as directed by the Permitting Agency and/or the Engineer.

Seeding, Fertilizer and Mulch Bare Ground Ratio:
This information is provided as minimum guidance for acceptable application rates. Actual amounts depending on soil conditions and site topography shall be detailed on the construction plans.
Top-Soil 3 inches in depth.
Grass Seed 210 lbs. per acre.
Fertilizer 150 lbs. per acre.
Straw Mulch 3" in depth 1.5 to 2 tons per acre
(All mulch must have a tie down, such as tackifier, net binding, etc.)
Hydro-Seeding: Hydro-seeding is not acceptable for slopes exceeding 1%, in such cases; stabilization shall be done with seed and straw mulch with a tackifier.

10. Following complete site restoration and stabilization; sediment shall be removed from all storm sewer structures, paved areas and storm basins. The SESC Permit Holder shall contact the Permitting Agency to request closure of the SESC Permit. For any site with an earth disturbance area of 5 acres or greater, the SESC Permit Holder shall file a NPDES Notice of Termination Form with the State DEQ.

SOIL EROSION CONTROL AND CONSTRUCTION SEQUENCE:

1. Obtain all necessary Soil Erosion and Sedimentation Control related permits from the appropriate Local, County and/or State Agencies. Refer to the General Notes on the project plans for additional requirements.

2. Prior to commencement of any earth disruption install Silt Fence and Mud Tracking Control Device(s) in accordance with the Soil Erosion and Sedimentation Control Plan.

3. Construct Retention/Detention and Sedimentation Basins, including associated spillways, in accordance with the project plans. Finish grade and establish vegetative growth in Retention/Detention and Sedimentation Basins prior to massive earth disruption. Install temporary Soil Erosion Control Measures as necessary to stabilize Retention/Detention and Sedimentation Basins.

4. Strip and stockpile topsoil. Perform mass grading and land balancing. Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

5. Install proposed underground utilities. (i.e.; storm and sanitary sewer, water main, etc.) Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

6. Construct building(s) if required on the project plans. Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

7. Construct roadways and/or parking areas. Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

8. Finish grade all disturbed areas outside of pavement. Perform final restoration, including placement of topsoil and establishment of vegetative growth outside of pavement.

9. Following establishment of sufficient vegetative ground cover and receipt of approval from the Permitting Agency, remove all *temporary* Soil Erosion Control Measures, clean all storm sewer structures and repair all permanent Soil Erosion Control Measures.

DESINE INC
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CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

REVISION #	DATE	REVISION-DESCRIPTION
	02-12-21	REVISED PER SITE PLAN REVIEW COMMENTS
	03-09-21	REVISED PER SITE PLAN REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

DESIGN: WMP
DRAFT: L.F.
CHECK: WMP

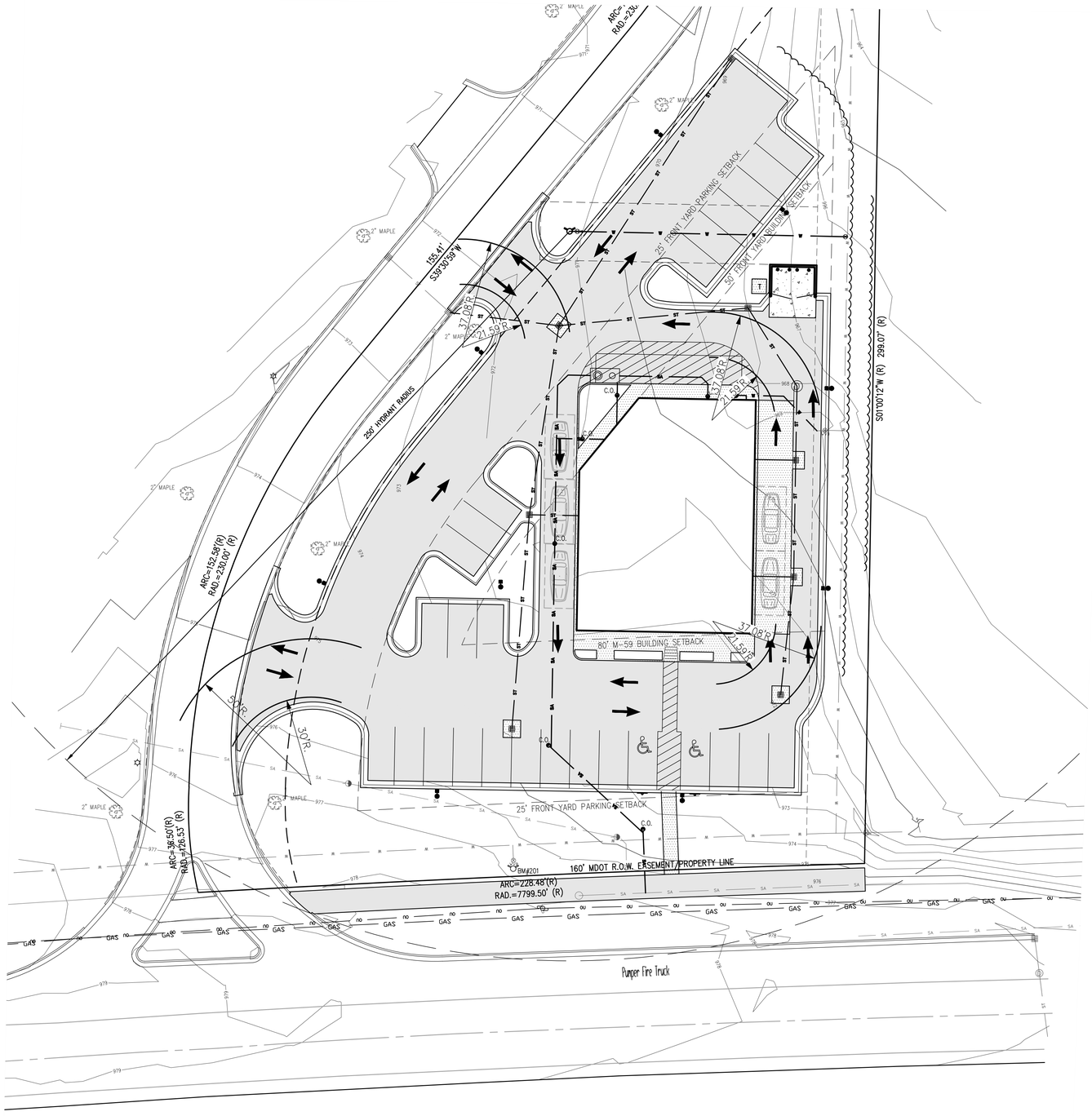
11395 HIGHLAND ROAD
HUNGRY HOWIES
HARTLAND, MI.

SOIL EROSION AND WATERSHED PLAN, NOTES AND DETAILS

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC
1151 STONE BARN
MILFORD, MI. 48380

SCALE: 1"=20'
PROJECT No.: 9203954
DWG NAME: 3954-SE
ISSUED: MAR. 09, 2021

SE



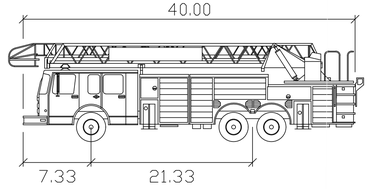
GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

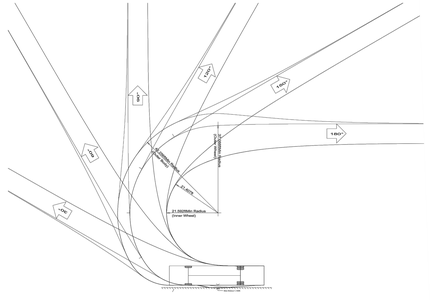
LEGEND

- = MISC. STRUCTURE (AS LABELED)
- = SIGN
- = LIGHT BASE
- = STREET LIGHT
- = UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX)
- = UTILITY MANHOLE (AS LABELED)
- = UTILITY POLE W/GUY WIRE
- = OVERHEAD UTILITY LINES (ELECTRIC/PHONE/CABLE)
- = U/G UTILITY LINES (ELECTRIC/PHONE/CABLE)
- = DECIDUOUS TREE W/IDENTIFIER
- = CONIFEROUS TREE W/IDENTIFIER
- = DECIDUOUS SHRUB
- = EXISTING TREE DRIP LINE
- = FENCE (CHAIN LINK UNLESS OTHERWISE STATED)
- = EDGE OF GRAVEL
- = CONCRETE CURB (UNLESS OTHERWISE STATED)
- = SANITARY SEWER MANHOLE W/IDENTIFIER
- = SANITARY SEWER PIPE
- = CLEAN OUT
- = STORM WATER MANHOLE W/IDENTIFIER
- = CATCH BASIN W/IDENTIFIER
- = FLARED END SECTION
- = STORM WATER DRAINAGE PIPE
- = HYDRANT
- = WATER SHUT OFF
- = WATER VALVE
- = WATER VALVE BOX
- = WATER MAIN
- = GAS SHUT OFF
- = U/G GAS
- = SPOT ELEVATION
- = EXISTING 1' CONTOUR
- = EXISTING 5' CONTOUR
- = PROPOSED LIGHT POLE
- = PROPOSED WATER MAIN
- = PROPOSED STORM SEWER
- = PROPOSED STORM STRUCTURES
- = PROPOSED CONCRETE WALK
- = PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- = PROPOSED STANDARD DUTY BITUMINOUS PAVEMENT



40 FT FIRE feet

Width	: 9.77
Track	: 7.84
Lock to Lock Time	: 6.00
Steering Angle	: 45.00



BENCHMARK

DATUM BASED ON NGS OPUS SOLUTION REPORT, DATED NOVEMBER 16, 2020 AT 10:30 AM

BENCHMARK #201
ARROW ON HYDRANT, LOCATED 109± FEET EAST OF THE PARCEL ENTRANCE AND NORTH SIDE OF M-59 HWY.
ELEVATION = 978.38 (NAVD 88)

BENCHMARK #202
ARROW ON HYDRANT, LOCATED 17± FEET WET OF THE EAST PROPERTY LINE AND 150± FEET NORTH OF M-59 HWY.
ELEVATION = 978.38 (NAVD 88)

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LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

DESIGN:WMP
DRAFT: L.F.
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION
	02-12-21	REVISED PER SITE PLAN REVIEW COMMENTS
	03-09-21	REVISED PER SITE PLAN REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

11935 HIGHLAND ROAD
HUNGRY HOWIES
HARTLAND TOWNSHIP

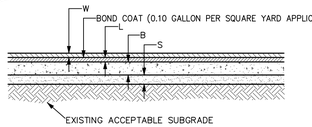
FIRE APPARATUS MOVEMENT PLAN

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC

1151 STONE BARN
MILFORD, MI. 48380

SCALE: 1"=30'
PROJECT No.: 9203954
DWG NAME: 3954-SP
ISSUED: MAR. 09, 2021

FA



BITUMINOUS PAVEMENT CROSS SECTION

NOT TO SCALE

KEY	DESCRIPTION	MATERIAL SPECIFICATION	MINIMUM COMPACTED THICKNESS
W	WEARING COURSE	MDOT 13A	2"
L	LEVELING COURSE	MDOT 13A	2"
B	AGGREGATE BASE	MDOT 21AA	8"
S	GRANULAR SUBBASE	N/A	N/A

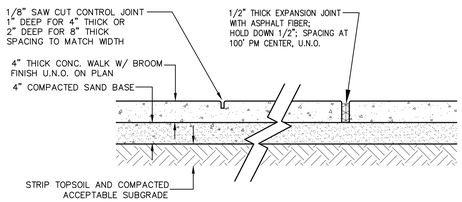
BITUMINOUS PAVEMENT NOTES:

1. The construction specifications of the appropriate Local Municipality are a part of this work. Refer to the General Notes, Road and/or Parking Lot Construction Notes and Typical Road and/or Pavement Cross Section details on the project plans for additional requirements.

2. Unsuitable soils found within the 1 on 1 influence zone of the pavement, such as muck, peat, topsoil, marl, silt or other unstable materials shall be excavated and replaced up to the proposed subgrade elevation with MDOT Class III granular material compacted to 95% maximum unit weight, modified proctor.

3. Contractor shall proof roll prepared subgrade as directed by Engineer. Unacceptable areas of subgrade shall be undercut and replaced as directed by Engineer.

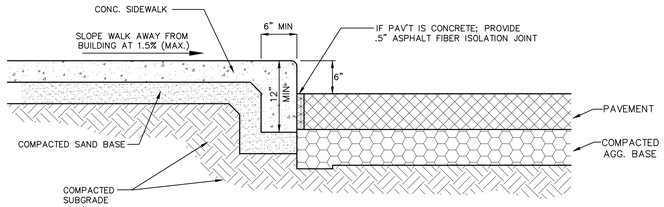
4. Owner/Developer may delay placement of the bituminous wearing course outside of the public road right of way. Repair of the bituminous leveling course may be necessary due to any delay in placement of the bituminous wearing course. Substantial repair to the bituminous leveling course may be necessary if placement of the bituminous wearing course is delayed for more than 12 months after placement of the bituminous leveling course. The bituminous leveling course shall be repaired as directed by Engineer prior to placement of the bituminous wearing course.



SIDEWALK CROSS SECTION

NOT TO SCALE

NOTES:
1. SEE PLAN FOR WIDTH OF SIDEWALK.
2. PROVIDE CONCRETE TYPE PER LOCAL CODE. (3500 PSI AIR ENTRAINED)



THICKENED EDGE WALK & ISOLATION JOINT DETAIL

NOT TO SCALE

SIDEWALK CROSS SECTION NOTES:

1. The construction specifications of the Local Municipality are a part of this work. Refer to the General Notes and the Sidewalk Cross Section Details on the Project Plans for additional requirements.

2. Sidewalk widths may vary. See the Project Plans for the proposed sidewalk width at each location. Increase sidewalks to 6" minimum thickness at driveways and other areas exposed to vehicular traffic.

3. The existing subgrade soils shall be prepared prior to placement of the granular subbase. Unsuitable soils found within the 1 on 1 influence zone of the proposed sidewalk areas, such as muck, peat, topsoil, marl, silt or other unstable materials shall be excavated and replaced with structural fill. Structural fill shall be MDOT Class II granular material placed in accordance with the General Notes on the Project Plans.

4. The sidewalk compacted subbase material shall be MDOT CL II sand. No subbase material substitutions shall be permitted without prior written approval of the Project Engineer and receipt of the Owner's Authorization. The subbase shall be compacted to a minimum of 95% of the maximum unit weight, modified proctor.

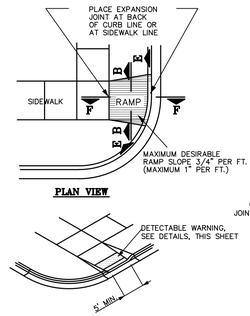
5. Concrete material shall be MDOT P1 (I-A) 6.0 sack concrete pavement mixture with a minimum 28 day design compressive strength of 4,000 PSI and 6.5% (+/-1.5%) entrained air. The Contractor shall submit the concrete mix design and aggregate mechanical analysis report to the Material Testing Engineer and/or Project Engineer for review and approval prior to use.

6. Install transverse contraction control joints in accordance with the Sidewalk Cross Section Detail. Space contraction control joints to match sidewalk width, but no greater than 10' on center. Tool joints in fresh concrete or saw cut within 8 hours.

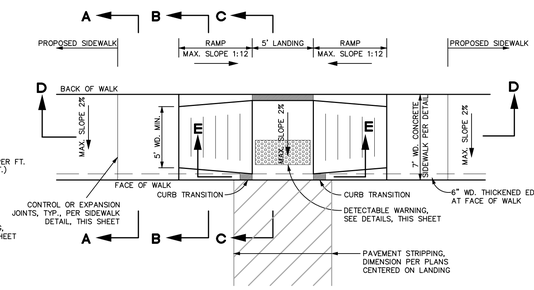
7. Install transverse expansion control joints in accordance with the Sidewalk Cross Section Detail. Space expansion control joints at 50 feet on center maximum. Transverse expansion control joints shall be 1/2" thick asphalt fiber joint filler matching entire sidewalk cross section.

8. Provide 1" asphalt fiber control joint between concrete sidewalks and all other concrete structures, such as concrete building foundations, concrete curb and concrete driveways.

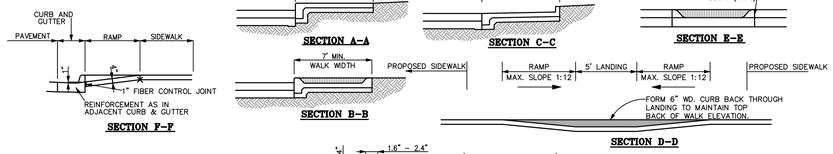
9. Construct all Barrier Free Sidewalk Ramps in accordance with the American Disabilities Act and the Barrier Free Design Requirements of the appropriate Local, County or State Agency with jurisdiction over the project. Refer to MDOT Standard Plan R-28, latest revision.

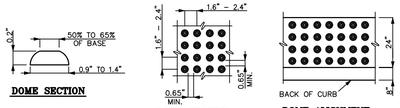


PLAN VIEW, TYP. A RAMP



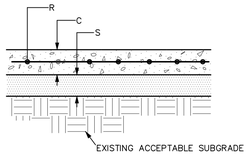
PLAN VIEW, TYP. B RAMP





BARRIER FREE RAMP AND DETECTABLE WARNING DETAILS

NOT TO SCALE



CONCRETE PAVEMENT CROSS-SECTION

NOT TO SCALE

KEY	DESCRIPTION	MATERIAL SPECIFICATION	MINIMUM THICKNESS
R	REINFORCEMENT	N/A	N/A
C	CONCRETE	MDOT 601, P1	8"
S	AGG. BASE	21AA	6"

CONCRETE PAVEMENT NOTES:

1. The construction specifications of the appropriate Local Municipality are a part of this work. Refer to the General Notes, Road and/or Parking Lot Construction Notes and Typical Road and/or Pavement Cross Section details on the project plans for additional requirements.

2. Unsuitable soils found within the 1 on 1 influence zone of the pavement, such as muck, peat, topsoil, marl, silt or other unstable materials shall be excavated and replaced up to the proposed subgrade elevation with MDOT Class II granular material compacted to 95% maximum unit weight, modified proctor.

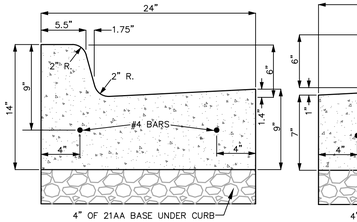
3. Contractor shall proof roll prepared subgrade as directed by Engineer. Unacceptable areas of subgrade shall be undercut and replaced as directed by Engineer.

4. Concrete material shall meet or exceed the specification requirements of the appropriate Local Municipality. If not specified by the Local Municipality, then the concrete material shall be MDOT P1 (I-A) 6.0 sack concrete pavement mixture with a minimum 28 day design compressive strength of 4,000 PSI and 6.5% (+/-1.5%) entrained air. Contractor shall submit concrete mix design and aggregate mechanical analysis report to the Local Municipality and Engineer for review and approval prior to use.

5. Install transverse contraction control joints in accordance with the Local Municipality requirements. If not specified by the Local Municipality, then install transverse contraction control joints in curb with 1" minimum depth at 10' on center. Tool joints in fresh concrete or saw cut within 8 hours.

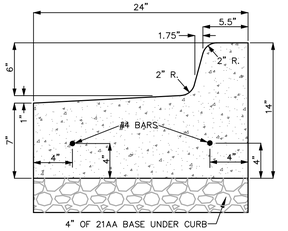
6. Install transverse expansion control joints in accordance with the Local Municipality requirements. If not specified by the Local Municipality, then install transverse expansion control joints in curb as follows: 300' maximum on center. Transverse expansion control joints shall be 1" thick asphalt fiber joint filler matching entire concrete cross section.

7. Provide lane ties when specified on the Project Plans, otherwise provide 0.5" asphalt fiber control joint between concrete pavement and all other concrete structures, such as concrete curb, sidewalks and concrete driveways.



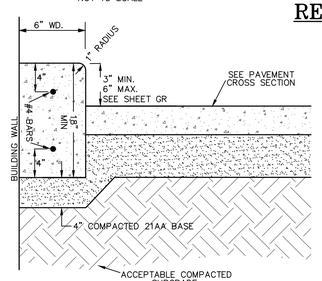
CONC. CURB DETAIL -MDOT TYPE F

NOT TO SCALE



CONC. CURB DETAIL -MDOT TYPE F REVERSE PITCH

NOT TO SCALE



NOTE:
REFER TO "PRIVATE DEVELOPMENT CURB NOTES" WITHIN CONSTRUCTION DOCUMENTS FOR SPECIFICATIONS.

DRIVE-THRU CURB

NOT TO SCALE

PRIVATE DEVELOPMENT CURB NOTES:

1. Refer to the project plans for the proposed locations of the specific curb types.

2. The construction specifications of the appropriate Local Municipality are a part of this work. Refer to the Private Road Construction Notes and/or Driveway and Parking Lot Construction Notes and the General Notes on the project plans for additional requirements.

3. Concrete material shall meet or exceed the specification requirements of the appropriate Local Municipality. Unless specified otherwise by the Local Municipality, concrete material shall be air-entrained and shall have a minimum 28-day class design strength of 3500 psi. Contractor shall submit concrete mix design and aggregate mechanical analysis report to the Local Municipality and Engineer for review and approval prior to use.

4. Install transverse contraction control joints in accordance with the Local Municipality requirements. If not specified by the Local Municipality, then install transverse contraction control joints in curb with 1" minimum depth at 10' on center. Tool joints in fresh concrete or saw cut within 8 hours.

5. Install transverse expansion control joints in accordance with the Local Municipality requirements. If not specified by the Local Municipality, then install transverse expansion control joints in curb as follows: 300' maximum on center, at spring points of intersecting streets and within 10' on each side of catch basins. Transverse expansion control joints shall be 1" thick asphalt fiber joint filler matching entire curb cross section.

6. Provide 0.5" asphalt fiber control joint between back of curb and all other concrete structures, such as concrete sidewalks and concrete driveways.

7. Curb Contractor shall provide final adjustment of catch basin castings in curb line. Castings shall be tuck pointed to structure water tight with concrete or mortar inside and outside of casting.

8. Install curb cuts for all existing and proposed sidewalks and pedestrian ramps in accordance with the American Disabilities Act and the Barrier Free Design requirements of the appropriate Local, County and/or State Agency. Install curb cuts for all existing and proposed vehicular ramps and drives as noted on the project plans.

DRIVEWAY AND PARKING LOT CONSTRUCTION NOTES:

1. The grading, driveway and parking lot specifications of the Local Municipality are a part of this work. Refer to the General Notes on the project plans for additional requirements.

2. Driveway and Parking Lot work shall include site clearing of vegetation and tree stumps; stripping and stockpiling of topsoil for reuse; mass grading cuts and fills; removal of unsuitable soils from the paved surface influence area; culvert placement; subgrade preparation including fine grading and proof roll; subgrade undercuts and/or placement of geotextile fabric if needed; placement and preparation of granular subbase and aggregate base courses including fine grading and compaction; placement of concrete curb and gutter; watering of aggregate base within 24 hours of paving to obtain optimum moisture content; bituminous and/or concrete pavement including placement, compaction and bond coats; cleaning of bituminous pavements between courses if needed; preparation, finish work and restoration as needed to connect to existing pavements, ditches, driveways, etc.; adjustment of storm and utility structure castings to match finish grade; placement of shoulders and finish grading of ditches; pavement markings; topsoil placement; seed & mulch; site cleanup; restoration; and other work as shown on the project plans and specifications.

3. Existing and proposed grades shown in the driveway profile view(s) are along the centerline of each driveway. Refer to the plan view and curve tables on the project plans for horizontal alignment and curve data. Proposed contours for ditches, curbs, driveway crown and pavement slope may not be shown in the plan view and/or grading plan.

4. Contractor shall coordinate scheduling a Pre-Construction Meeting with Engineer prior to commencement of driveway and/or parking lot work.

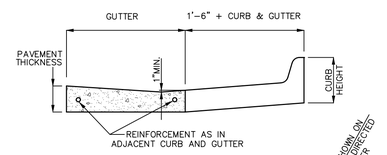
5. Contractor shall coordinate construction staking, testing, documentation submittal and observation with the appropriate Agency, Surveyor and/or Engineer as required for construction, certification and/or acceptance of the driveway(s) and/or parking lot(s). All materials used and work done shall meet or exceed the requirements and specifications noted on the project plans. Any materials used or work done that does not meet said requirements and/or specifications shall be replaced and/or redone at Contractor's expense. The Owner/Developer may wait for test results, certifications and/or Agency reviews prior to accepting work.

6. Contractor shall take all appropriate job site safety precautions. Refer to the Traffic Control specifications of the appropriate Regulatory Agency for work within a public road right of way.

7. Contractor shall take precautions to prevent contamination of driveway and/or parking lot materials during handling, installation and construction procedures. Contaminated materials shall be removed and replaced at Contractor's expense.

8. Clear vision areas shall be created where required; refer to the Clear Vision Area detail on the project plans. Relocate existing signs/utilities as acceptable to the appropriate Agency. Owner/Developer shall coordinate installation of permanent street signage after completion of roadwork.

9. When side slopes within utility easements exceed 1 on 10 (10%), Contractor shall rough grade a flat shelf within the easement area as acceptable to Engineer and restore following underground utility installation.



CONCRETE DRIVEWAY OPENING - MDOT DETAIL "M"

NOT TO SCALE

MDOT DETAIL "M" DRIVEWAY OPENING NOTES:

1. The construction specifications of the Local Municipality are a part of this work. Refer to MDOT Standard Plan R-29, latest revision, the Concrete Curb Notes, General Notes and "M" Opening Details on the Project Plans for additional requirements.

2. The Bituminous Pavement Contractor shall hand tamp the bituminous pavement adjacent to the concrete gutter to ensure proper compaction of the bituminous material in areas that are not accessible by a roller.

3. The Concrete Opening shall not be exposed to vehicular traffic until the concrete has reached at least 75% of the design flexural strength.

GENERAL NOTES:

1. Contractor shall perform the work in accordance with the requirements of the appropriate Local, County and State Agencies and all other Government and Regulatory Agencies with jurisdiction over the project. Contractor shall notify the appropriate Agencies in advance of each stage of work in accordance with each Agency's requirements.

2. Contractor shall comply with all permit, insurance, licensing and inspection requirements associated with the work. Prior to construction, Contractor and Owner/Developer shall determine who is responsible for obtaining each required permit. Contractor shall verify that the each required permit has been obtained prior to commencement of the stage of work associated with the required permit(s).

3. Contractor shall furnish liability insurance and property damage insurance to save harmless the Owner, Developer, Architect, Engineer, Surveyor and Government Agencies for any accident occurring during the construction period. Refer to the appropriate Local, County and State Agencies for additional requirements. Copies of insurance certifications shall be made available to the Owner/Developer.

4. Contractor shall conduct and perform work in a safe and competent manner. Contractor shall perform all necessary measures to provide for traffic and pedestrian safety from the start of work and through substantial completion. Contractor shall determine procedures and provide safety equipment such as traffic controls, warning devices, temporary pavement markings and signs as needed. Contractor shall comply with the safety standards of the State Department of Labor, the occupational health standards of the State Department of Health and safety regulations of the appropriate Local, County, State and Federal Agencies. Refer to the safety specifications of the appropriate Regulatory Agencies. The Contractor shall designate a qualified employee with complete job site authority over the work and safety precautions; said designated employee shall be on site at all times during the work.

5. Contractor shall coordinate scheduling of all work in the proper sequence, including work by Subcontractors. Additional costs due to improper planning by Contractor or work done out of sequence as determined by standard acceptable construction practices, shall be Contractor's responsibility.

6. Contractor shall contact the MISS DIG locating system, or other appropriate local underground utility locating Agency, a minimum of three (3) working days prior to construction. Existing utility information on the project plans may be from information disclosed to this firm by the Utility Companies, Local, County or State Agencies, and/or various other sources. No guarantee is given as to the completeness or accuracy thereof. Prior to construction, locations and depths of all existing utilities (in possible conflict with the proposed improvements) shall be verified in the field.

7. Contractor shall coordinate scheduling a Pre-Construction Meeting with Engineer prior to commencement of work.

8. The Local Municipality, County and/or State in which the project is located may require an Engineer's Certification of construction of the proposed site improvements. Contractor shall verify the certification requirements with Engineer prior to commencement of work. Contractor shall coordinate construction staking, testing, documentation submittal and observation with the appropriate Agency, Surveyor and/or Engineer as required for Engineer's Certification and Government Agency Acceptance. All materials used and work done shall meet or exceed the requirements of certification and acceptance, the contract documents and the material specifications noted on the project plans. Any materials used or work done that does not meet said requirements, contract documents and/or specifications shall be replaced and/or redone at Contractor's expense. The Owner/Developer may wait for test results, certifications and/or Agency reviews prior to accepting work.

9. Engineer may provide subsurface soil evaluation results, if available, to Contractor upon request. Subsurface soil evaluation results, soils maps and/or any other documentation does NOT guarantee existing soil conditions or that sufficient, acceptable on-site granular material is available for use as structural fill, pipe bedding, pipe backfill, road subbase or use as any other granular material specified on the project plans. On-site granular material that meets or exceeds the material specifications noted on the project plans may be used as structural fill, pipe bedding, pipe backfill and/or road subbase material. On-site granular material shall be stockpiled and tested as acceptable to the appropriate Agency and/or Engineer prior to use.

10. During the performance of their work, Contractor shall be solely responsible for determining soil conditions and appropriate construction methods based on the actual field conditions. Contractor shall furnish, install and maintain sheeting, shoring, bracing and/or other tools and equipment and/or construction techniques as needed for the safety and protection of the workers, pedestrians and vehicular traffic and for protection of adjacent structures and site improvements.

11. Contractor shall install temporary and permanent soil erosion and sedimentation control devices at the appropriate stages of construction in accordance with the appropriate regulatory Agencies. Refer to Soil Erosion and Sedimentation Control Plans and Notes on the project plans.

12. Structural fill shall be placed as specified on the project plans and within the 1 on 1 influence zone of all structures, paved areas and other areas subject to vehicular traffic. Structural fill shall be placed using the controlled density method (12" maximum lifts, compacted to 95% maximum unit weight, modified proctor). Fill material shall meet or exceed the specifications noted on the project plans or as directed by Engineer when not specified on the project plans.

13. All existing monuments, property corners, ground control and benchmarks shall be protected and preserved; and if disturbed by Contractor, shall be restored at Contractor's expense. Contractor shall notify Surveyor of any conflicts between existing monuments, property corners, ground control and/or benchmarks and the proposed site improvements.

14. Contractor shall notify Owner/Developer and Engineer immediately upon encountering any field conditions, which are inconsistent with the project plans and/or specifications.

15. When noted on the project plans for demolition and/or removal, Contractor shall remove existing structures, building and debris and recycle and/or dispose of in accordance with Local, County, State and Federal regulations.

16. Contractor shall remove excess construction materials and debris from site and perform restoration in accordance with the project plans and specifications. Disposing of excess materials and debris shall be performed in accordance with Local, County, State and Federal regulations.

17. Construction access to the site shall be located as acceptable to the Owner/Developer and to the appropriate Local, County and/or State Agency with jurisdiction over the road(s) providing access to the site. Construction access shall be maintained and cleaned in accordance with the appropriate Local, County and/or State Agencies and as directed by Owner/Developer and/or Engineer.

18. Contractor shall take necessary precautions to protect all site improvements from heavy equipment and construction procedures. Damage resulting from Contractor actions shall be repaired at Contractor's expense.

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2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION

DESIGN: WMP
DRAFT: L.F.
CHECK: WMP

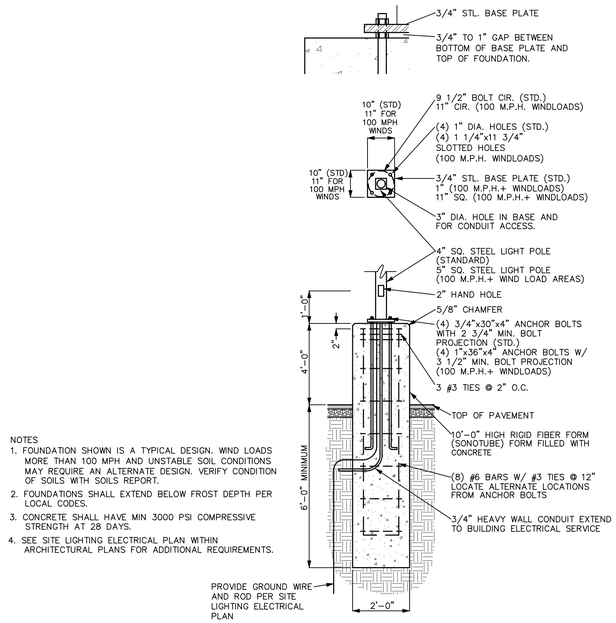
11935 HIGHLAND ROAD
HUNGRY HOWIES
HARTLAND, MI.

SITE DEVELOMENT NOTES AND DETAILS

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC
1151 STONE BARN
MILFORD, MI. 48380

SCALE: N/A
PROJECT No.: 9203954
DWG NAME: 3954-DTS
ISSUED: DEC. 29, 2020

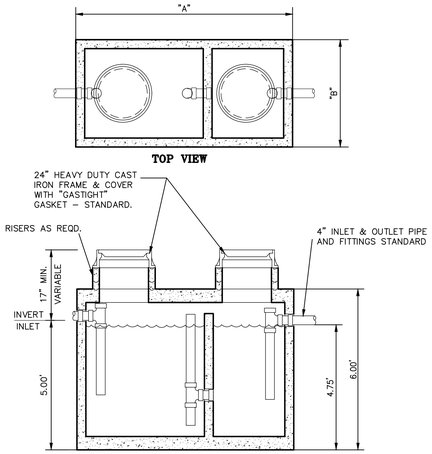
DT1



NOTES
1. FOUNDATION SHOWN IS A TYPICAL DESIGN. WIND LOADS MORE THAN 100 MPH AND UNSTABLE SOIL CONDITIONS MAY REQUIRE AN ALTERNATE DESIGN. VERIFY CONDITION OF SOILS WITH SOILS REPORT.
2. FOUNDATIONS SHALL EXTEND BELOW FROST DEPTH PER LOCAL CODES.
3. CONCRETE SHALL HAVE MIN 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
4. SEE SITE LIGHTING ELECTRICAL PLAN WITHIN ARCHITECTURAL PLANS FOR ADDITIONAL REQUIREMENTS.

LIGHT POLE BASE STANDARD DETAIL

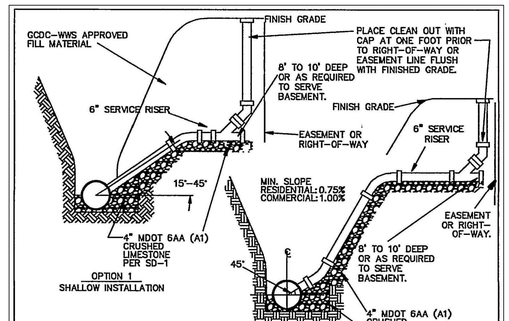
NOT TO SCALE



G.T. SIZE	DIM. "A"	DIM. "B"
500 GALLON	6'–2"	4'–2"
750 GALLON	8'–1"	4'–0"
1000 GALLON	8'–2"	5'–1"
1200 GALLON	8'–6"	5'–9"

EXTERIOR GREASE TRAP

NOT TO SCALE

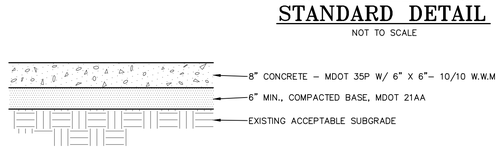


NOTES

1. THE ENGINEER & CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING CURRENT LOT SPLITS AND ENSURING THAT ALL LOTS ON BOTH SIDES OF THE ROAD ARE SERVICED WITH SANITARY SEWER TO THEIR RESPECTIVE RIGHT–OF–WAY LINE OR EASEMENT LINE.
2. SERVICE RISERS SHALL BE 6" PVC WITH A MINIMUM SDR OF 26, OR OTHER AS REQUIRED FOR DEPTH. ONLY WYE CONNECTIONS TO THE MAINLINE SEWER ARE ACCEPTABLE.
3. THE LOCATION OF ALL SERVICE RISERS SHALL BE MARKED WITH A 2"x4"x14' MARKER, WITH A ⅜" X 12" STEEL ROD PLACED 1' BELOW THE SURFACE, ALONG WITH WITNESS POINTS SUPPLIED TO GCDC–WWS. THE 2"x4"x14' MARKER SHALL EXTEND FROM THE INVERT OF THE LEAD TO A MINIMUM OF 4' ABOVE FINISH GRADE. THE SERVICE RISER SHALL TERMINATE WITHIN 1' OF THE EASEMENT OR RIGHT–OF–WAY LINE WITH AN AIRTIGHT PLUG. SERVICE RISERS WITHIN EASEMENTS SHALL BE EXTENDED A MINIMUM OF ONE PIPE LENGTH FROM THE MAIN LINE SEWER OR TO THE EDGE OF THE RIGHT–OF–WAY OR EASEMENT, WHICHEVER IS LONGER.
4. SERVICE RISERS MEASUREMENT IS HORIZONTAL ALONG THE CENTERLINE OF THE LEAD AS CONSTRUCTED FROM THE MAIN TO THE PLUG. PAYMENT SHALL BE MEASURED HORIZONTAL, NOT VERTICAL.
5. THERE SHALL BE NO 90° BENDS ALLOWED IN THE SERVICE RISERS.
6. CLEAN OUTS ARE REQUIRED EVERY 90 FEET OR AT BENDS.
7. FOR NEW DEVELOPMENTS, PLACE A 2"x4"x14' MARKER AT THE END OF THE LEAD. THE CLEAN OUTS SHALL BE INSTALLED AT THE TIME THE SERVICE LEAD IS EXTENDED TO THE HOUSE.
8. EXISTING HOUSES SHALL BE PROVIDED WITH CLEAN–OUTS.

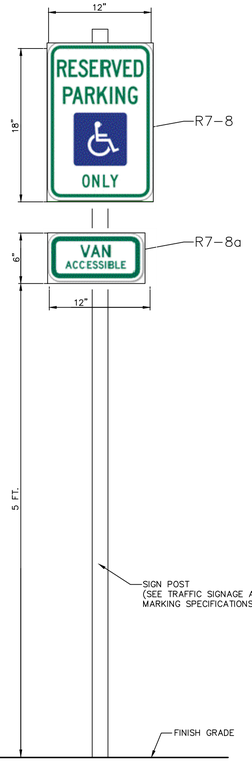
SD–3
RISER AND SERVICE LEAD

08/01/2008 SANITARY



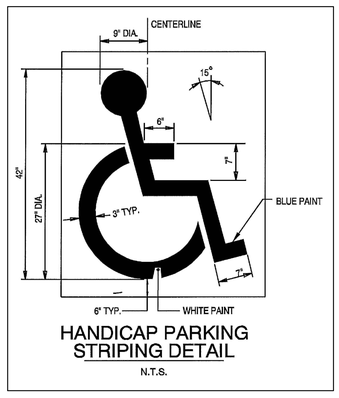
DUMPSTER PAD CROSS SECTION

NOT TO SCALE



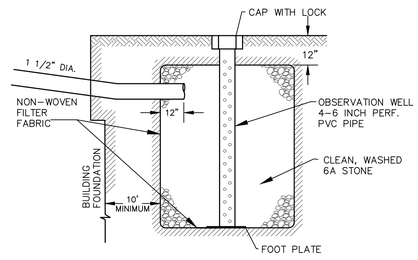
BARRIER FREE PARKING SIGN DETAIL

NOT TO SCALE



HANDICAP PARKING STRIPING DETAIL

N.T.S.

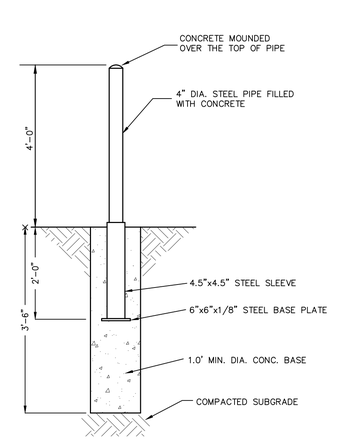


DRY WELL DETAIL

NOT TO SCALE

NOTES:
1. Drywells can be constructed by excavating an area in the ground and backfilling as shown on the detail. Pre–cast concrete and plastic drywell tanks can also be utilized.
2. All drywells must be a minimum of 10 feet from the house or building.
3. The bottom of the drywell must be 4 feet above the seasonally high groundwater level.
4. Soil corings, borings or test pits must be performed to determine the adequacy of the soil to accept the design flow rates.
5. Generally, soils in the area of the drywell should be in the SCS Class A or B range.
6. Refer to computations for drywell sizing.

DRYWELL COMPUTATIONS	
Storage Required:	
Amount of water used during regeneration:	50 gal.
Assumed regenerations per day:	7
Total cubic feet of discharge per day:	46.79 cf
Storage Provided:	
Type of Stone:	6A washed
Void Volume:	40% (dumped, corrected)
Required amount of 6A stone:	117 cf
Summary: Contractor shall provide a drywell with at least 117 cubic feet of 6A stone per the detail above.	



GUARD POST DETAIL

NOT TO SCALE

NOTE:
PAINT ALL EXTERIOR SURFACES WITH ONE COAT METAL PRIMER AND ONE COAT EXT. PAINT

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BRIGHTON, MICHIGAN 48114

REVISION #	DATE	REVISION-DESCRIPTION
	02–12–21	REVISED PER SITE PLAN REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

DESIGN: WMP
DRAFT: L.F.
CHECK: WMP

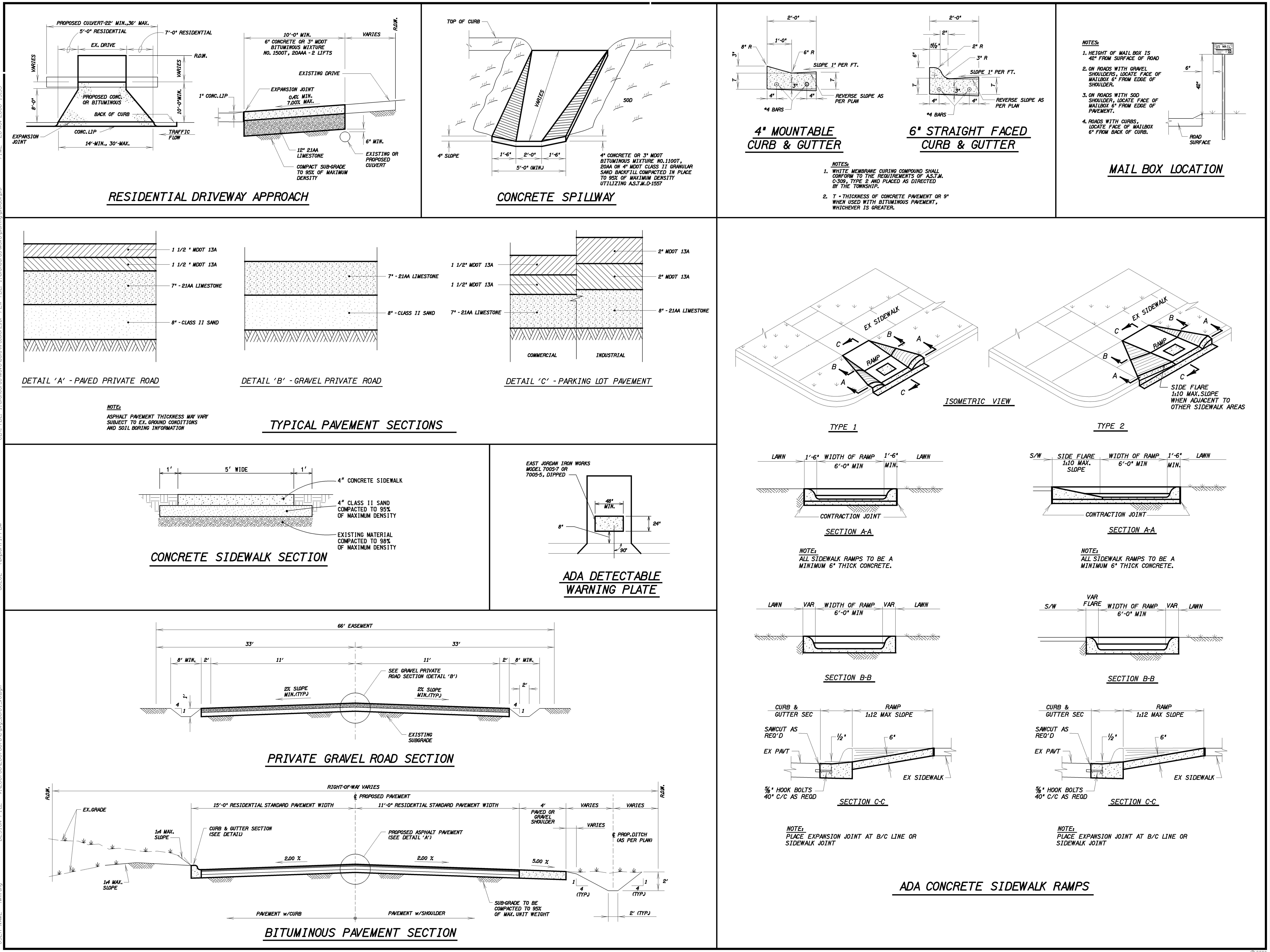
11935 HIGHLAND ROAD
HUNGRY HOWIES
HARTLAND, MI.

SITE DEVELOMENT NOTES AND DETAILS

CLIENT:
8351 PETERSON INVESTMENT GROUP, LLC
1151 STONE BARN
MILFORD, MI. 48380

SCALE: N/A
PROJECT No.: 9203954
DWG NAME: 3954-DTS
ISSUED: FEB. 12, 2021

DT2



PROPOSED CULVERT-22' MIN., 36' MAX.
5'-0" RESIDENTIAL
7'-0" RESIDENTIAL
EX. DRIVE
R.O.W.
VARIES
PROPOSED CONC. OR BITUMINOUS
BACK OF CURB
CONC. LIP
EXPANSION JOINT
14'-MIN., 30'-MAX.
TRAFFIC FLOW
10'-0" MIN.
6" CONCRETE OR 3" MDOT BITUMINOUS MIXTURE NO. 1500T, 20AAA - 2 LIFTS
EXISTING DRIVE
EXPANSION JOINT
0.4% MIN. 7.00% MAX.
1" CONC. LIP
6" MIN.
12" 21AA LIMESTONE
COMPACT SUB-GRADE TO 95% OF MAXIMUM DENSITY
EXISTING OR PROPOSED CULVERT
RESIDENTIAL DRIVEWAY APPROACH
TOP OF CURB
VARIES
SOD
4" SLOPE
1'-6" 2'-0" 1'-6"
5'-0" (MIN.)
4" CONCRETE OR 3" MDOT BITUMINOUS MIXTURE NO.1100T, 20AA ON 4" MDOT CLASS II GRANULAR SAND BACKFILL COMPACTED IN PLACE TO 95% OF MAXIMUM DENSITY UTILIZING A.S.T.M.D-1557
CONCRETE SPILLWAY
2'-0" 1'-0" 8" R 6" R 3" T SLOPE 1" PER FT. 4" 3" 4" REVERSE SLOPE AS PER PLAN #4 BARS
4" MOUNTABLE CURB & GUTTER
2'-0" 2" 5½" 2" R 3" R 6" SLOPE 1" PER FT. T 4" 3" 4" REVERSE SLOPE AS PER PLAN #4 BARS
6" STRAIGHT FACED CURB & GUTTER
NOTES:
1. WHITE MEMBRANE CURING COMPOUND SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. C-309, TYPE 2 AND PLACED AS DIRECTED BY THE TOWNSHIP.
2. T - THICKNESS OF CONCRETE PAVEMENT OR 9" WHEN USED WITH BITUMINOUS PAVEMENT, WHICHEVER IS GREATER.
NOTES:
1. HEIGHT OF MAIL BOX IS 42" FROM SURFACE OF ROAD
2. ON ROADS WITH GRAVEL SHOULDERS, LOCATE FACE OF MAILBOX 6" FROM EDGE OF SHOULDER.
3. ON ROADS WITH SOD SHOULDER, LOCATE FACE OF MAILBOX 6" FROM EDGE OF PAVEMENT.
4. ROADS WITH CURBS, LOCATE FACE OF MAILBOX 6" FROM BACK OF CURB.
US MAIL
6"
42"
ROAD SURFACE
MAIL BOX LOCATION
1 1/2" MDOT 13A
1 1/2" MDOT 13A
7" - 21AA LIMESTONE
8" - CLASS II SAND
DETAIL 'A' - PAVED PRIVATE ROAD
7" - 21AA LIMESTONE
8" - CLASS II SAND
DETAIL 'B' - GRAVEL PRIVATE ROAD
1 1/2" MDOT 13A
1 1/2" MDOT 13A
7" - 21AA LIMESTONE
2" MDOT 13A
2" MDOT 13A
8" - 21AA LIMESTONE
COMMERCIAL
INDUSTRIAL
DETAIL 'C' - PARKING LOT PAVEMENT
NOTE:
ASPHALT PAVEMENT THICKNESS MAY VARY SUBJECT TO EX. GROUND CONDITIONS AND SOIL BORING INFORMATION
TYPICAL PAVEMENT SECTIONS
1' 5' WIDE 1'
4" CONCRETE SIDEWALK
4" CLASS II SAND COMPACTED TO 95% OF MAXIMUM DENSITY
EXISTING MATERIAL COMPACTED TO 98% OF MAXIMUM DENSITY
CONCRETE SIDEWALK SECTION
EAST JORDAN IRON WORKS MODEL 7005-7 OR 7005-5, DIPPED
48" MIN.
24"
8"
90°
ADA DETECTABLE WARNING PLATE
66' EASEMENT
33' 33'
8' MIN. 2' 11' 11' 2' 8' MIN.
SEE GRAVEL PRIVATE ROAD SECTION (DETAIL 'B')
2% SLOPE MIN.(TYP.)
2% SLOPE MIN.(TYP.)
2'
4 1
EXISTING SUBGRADE
PRIVATE GRAVEL ROAD SECTION
RIGHT-OF-WAY VARIES
℄ PROPOSED PAVEMENT
R.O.W.
EX.GRADE
15'-0" RESIDENTIAL STANDARD PAVEMENT WIDTH
11'-0" RESIDENTIAL STANDARD PAVEMENT WIDTH
4' PAVED OR GRAVEL SHOULDER
VARIES
VARIES
VARIES
1:4 MAX. SLOPE
CURB & GUTTER SECTION (SEE DETAIL)
PROPOSED ASPHALT PAVEMENT (SEE DETAIL 'A')
℄ PROP. DITCH (AS PER PLAN)
2.00 %
2.00 %
5.00 %
1:4 MAX. SLOPE
1 4 (TYP.)
4 1 (TYP.)
2'
PAVEMENT w/CURB
PAVEMENT w/SHOULDER
SUB-GRADE TO BE COMPACTED TO 95% OF MAX. UNIT WEIGHT
2' (TYP.)
BITUMINOUS PAVEMENT SECTION
EX SIDEWALK
C B A RAMP
TYPE 1
ISOMETRIC VIEW
EX SIDEWALK
C B A RAMP
SIDE FLARE 1:10 MAX. SLOPE WHEN ADJACENT TO OTHER SIDEWALK AREAS
TYPE 2
LAWN 1'-6" WIDTH OF RAMP 6'-0" MIN 1'-6" MIN. LAWN
CONTRACTION JOINT
SECTION A-A
NOTE:
ALL SIDEWALK RAMPS TO BE A MINIMUM 6" THICK CONCRETE.
S/W SIDE FLARE 1:10 MAX. SLOPE WIDTH OF RAMP 6'-0" MIN 1'-6" MIN. LAWN
CONTRACTION JOINT
SECTION A-A
NOTE:
ALL SIDEWALK RAMPS TO BE A MINIMUM 6" THICK CONCRETE.
LAWN VAR WIDTH OF RAMP 6'-0" MIN VAR LAWN
SECTION B-B
S/W VAR FLARE WIDTH OF RAMP 6'-0" MIN VAR LAWN
SECTION B-B
CURB & GUTTER SEC
RAMP 1:12 MAX SLOPE
SAWCUT AS REQ'D
½"
6"
EX PAVT
EX SIDEWALK
⅝" HOOK BOLTS 40" C/C AS REQD
SECTION C-C
NOTE:
PLACE EXPANSION JOINT AT B/C LINE OR SIDEWALK JOINT
CURB & GUTTER SEC
RAMP 1:12 MAX SLOPE
SAWCUT AS REQ'D
½"
6"
EX PAVT
EX SIDEWALK
⅝" HOOK BOLTS 40" C/C AS REQD
SECTION C-C
NOTE:
PLACE EXPANSION JOINT AT B/C LINE OR SIDEWALK JOINT
ADA CONCRETE SIDEWALK RAMPS

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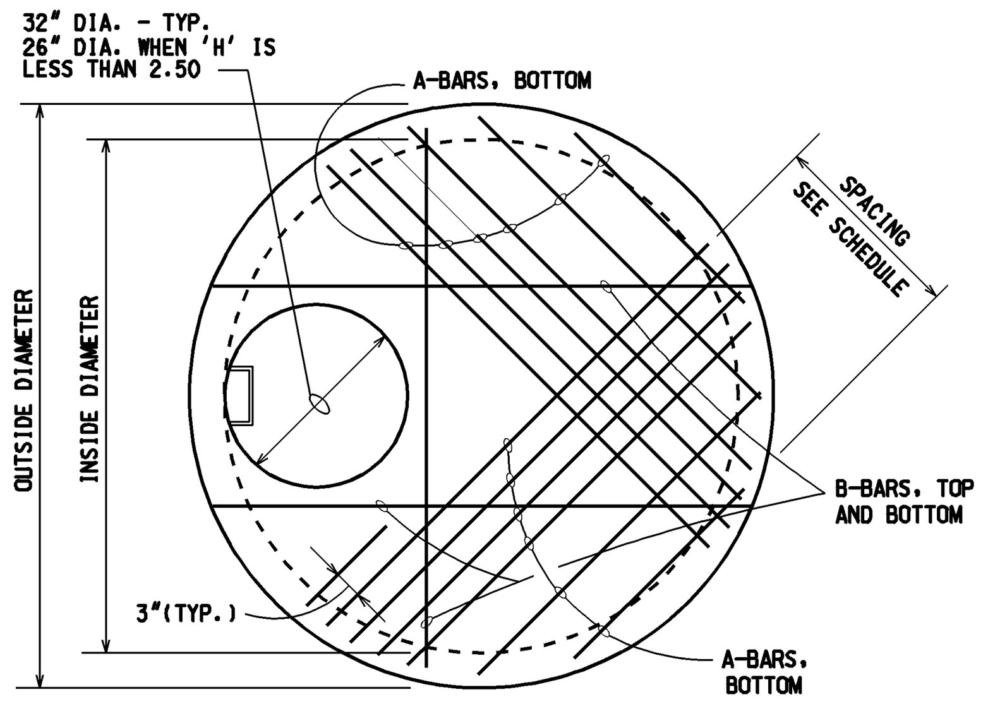
11-18-08	ADOPTED BY TOWNSHIP BOARD
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	
DRAWN	J. REC
CHECKED	J. HEINTZ
APPROVED	J. BOOTH

HARTLAND TOWNSHIP

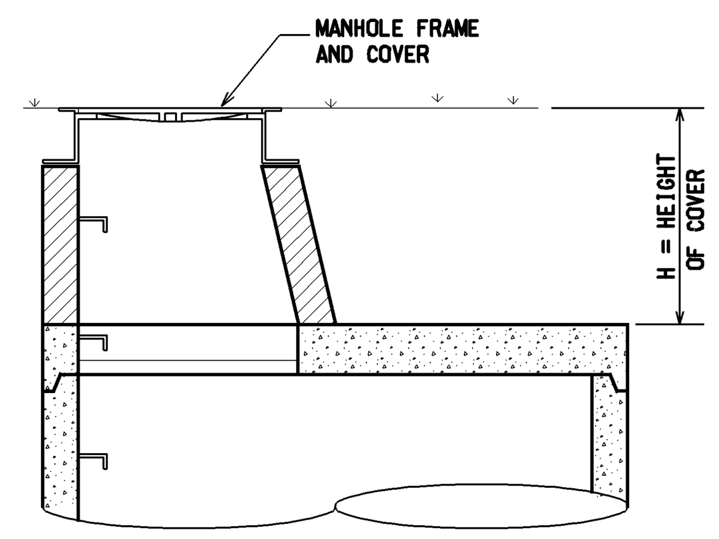
STANDARD CONSTRUCTION DETAILS

PAVEMENT STANDARDS

HRC JOB NO. 20070878	SCALE NONE
DATE JULY 2008	SHEET NO. 1 OF 1



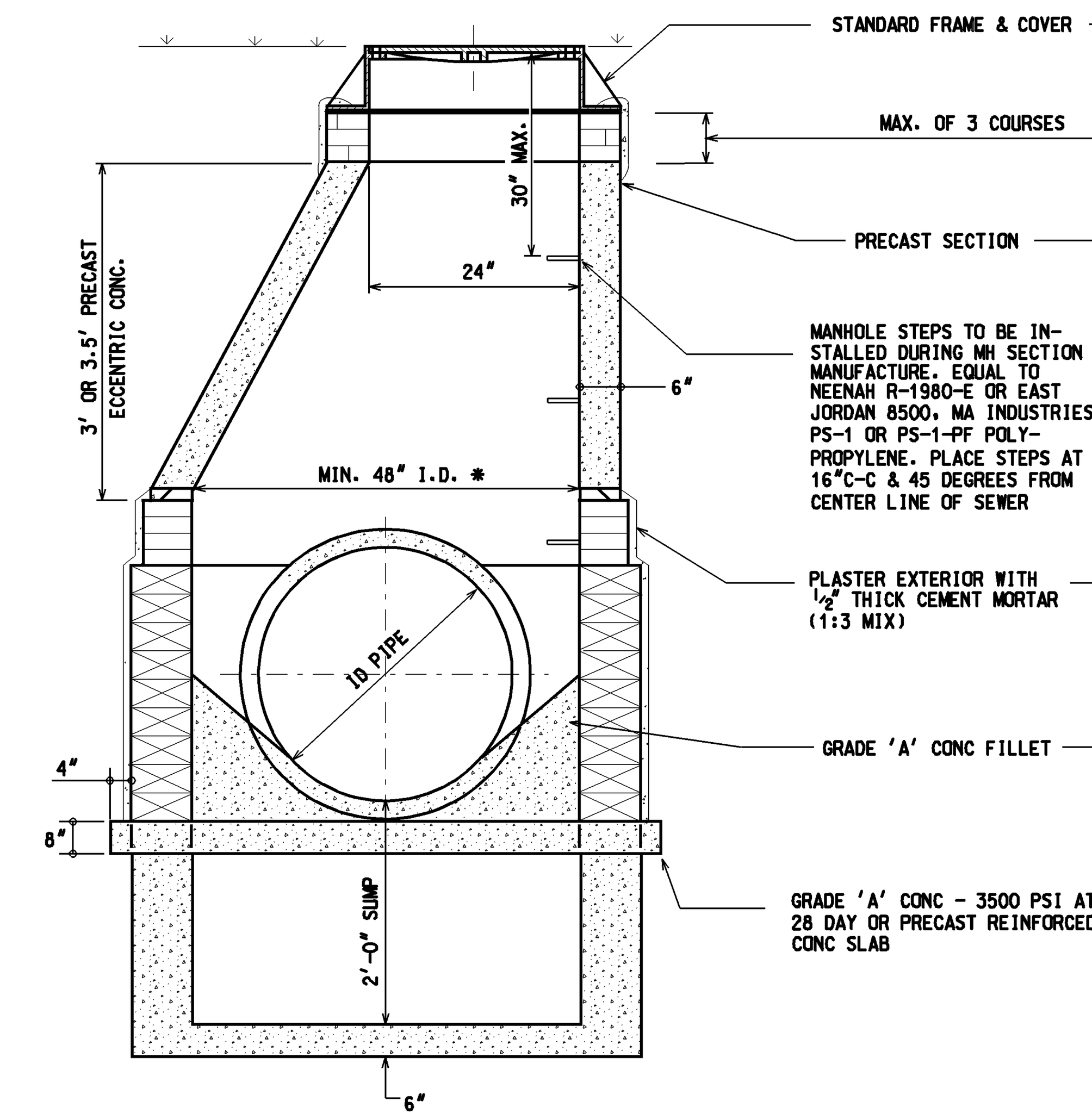
PLAN



SECTION

INSIDE DIA.	SLAB THICKNESS	MAX. HEIGHT OF COVER	REINFORCEMENT		
			A-BARS EA. SIDE		B-BARS TOP & BOTTOM
			NO. SIZE	SPACING	
4'-0"	8"	8'-0"	(4)-#5	3 @ 3"	(3)-#5
5'-0"	8"	8'-0"	(6)-#5	3 @ 3" 2 @ 6"	(3)-#5
6'-0"	8"	8'-0"	(5)-#6	4 @ 8"	(3)-#5
7'-0"	8"	8'-0"	(7)-#6	6 @ 6"	(3)-#5
8'-0"	8"	8'-0"	(9)-#6	8 @ 6"	(3)-#5
9'-0"	10"	8'-0"	(11)-#6	10 @ 6"	(3)-#5
10'-0"	10"	8'-0"	(13)-#7	12 @ 6"	(3)-#5

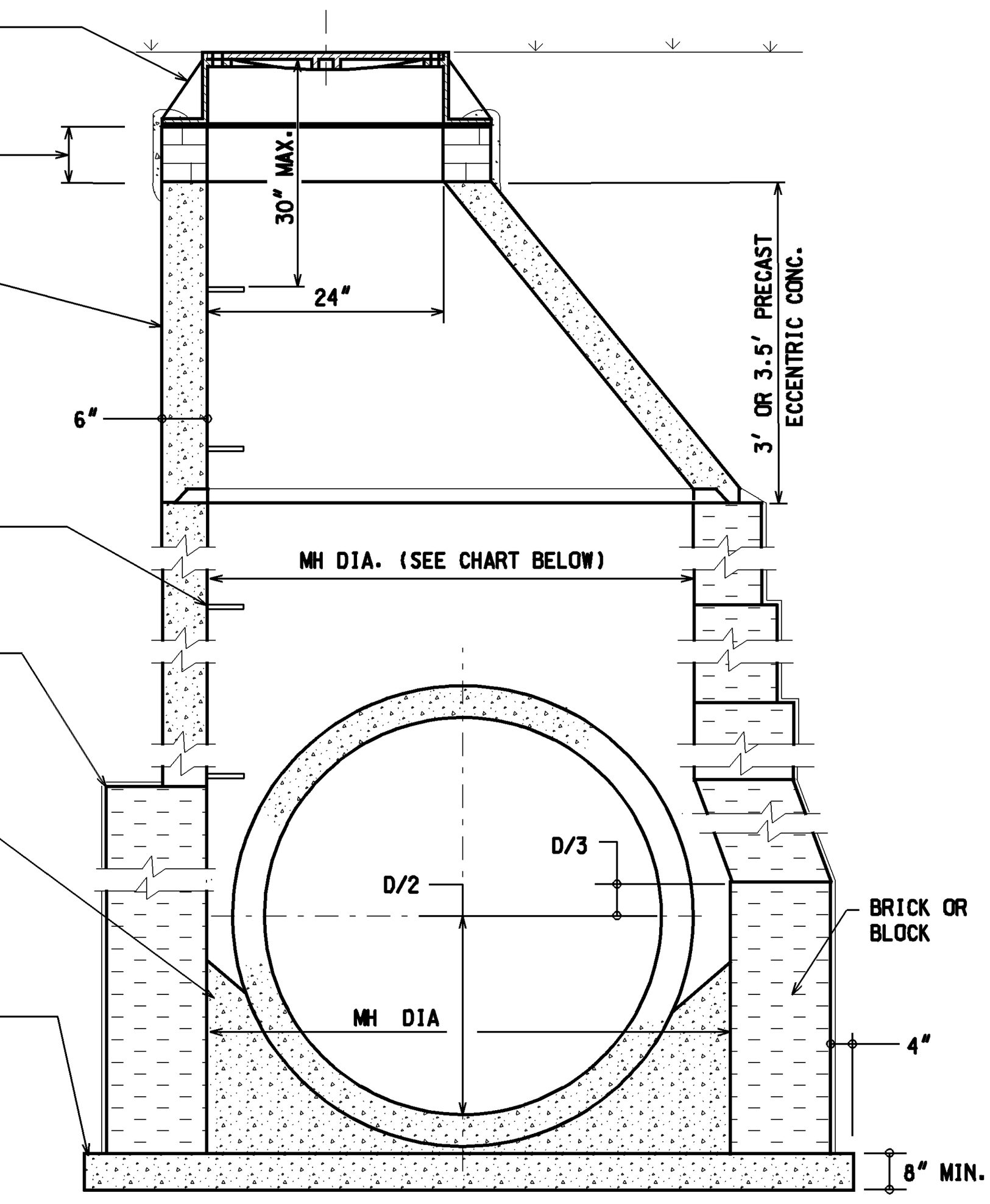
MANHOLE REINFORCEMENT DETAIL



30" & LARGER PIPE SHALL BE POINTED INSIDE

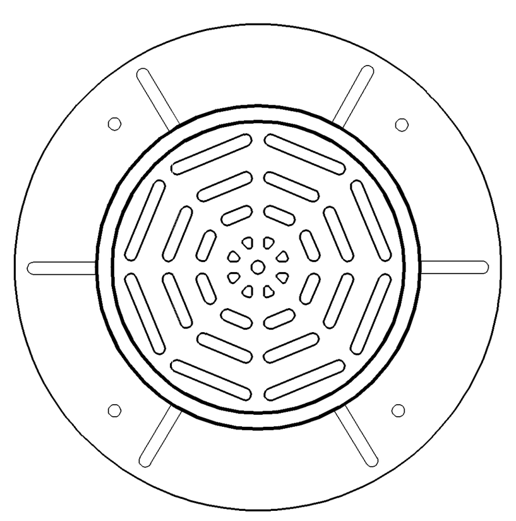
* FOR 30" AND 36" PIPE, MH DIAMETER = 5'-0"

STORM MANHOLE FOR 42" PIPE AND SMALLER

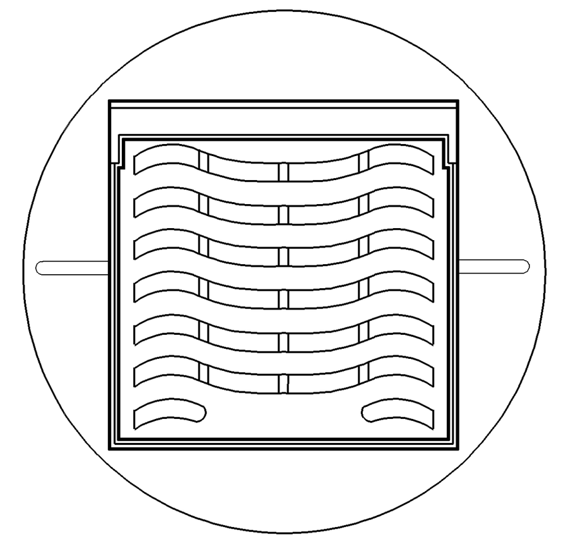


MH DIA	72"	78"	84"	96"	102"	108"	126"
D=SEWER PIPE ID SIZE	48"	54"	60"	66"	72"	84"	96"

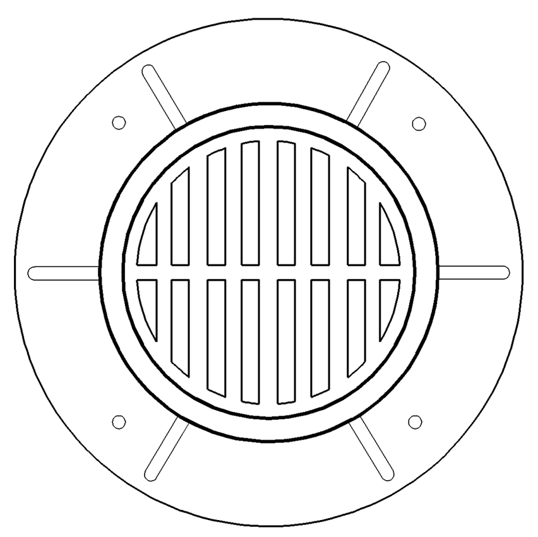
STORM MANHOLE FOR 48" PIPE AND LARGER



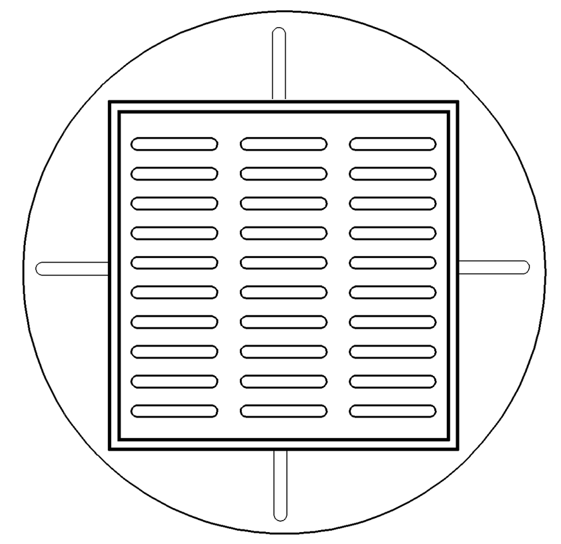
CATCH BASINS AND INLETS WITHIN PAVED DRIVING AREAS FRAME & COVER EJIW #1040 WITH TYPE 'M-1' GRATE



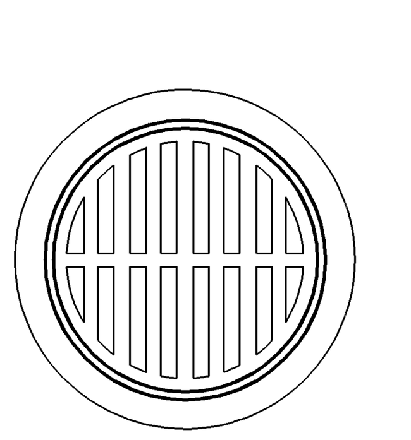
CURBED PAVEMENT SECTION FRAME & COVER EJIW #7045 WITH TYPE 'M-1' FOR 6" HIGH BACK CURB



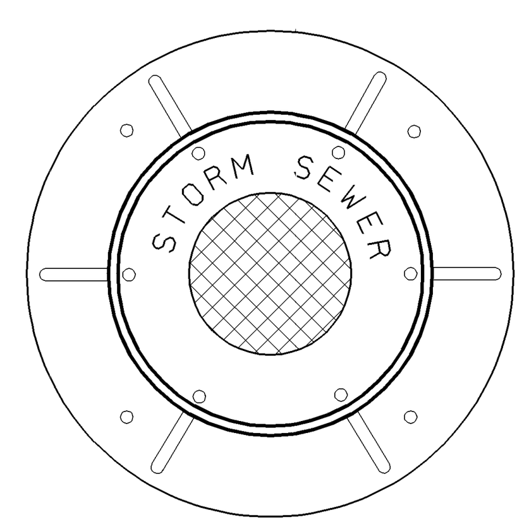
REAR YARD FRAME & COVER EJIW #1040 WITH TYPE 'N' GRATE



CURBED PAVEMENT SECTION FRAME & COVER EJIW #7300 WITH TYPE "M" FOR 4" MOUNTABLE CURB



REAR YARD FRAME & COVER FOR 2'-0" DIA. INLET EJIW #1130 WITH TYPE 'N' GRATE

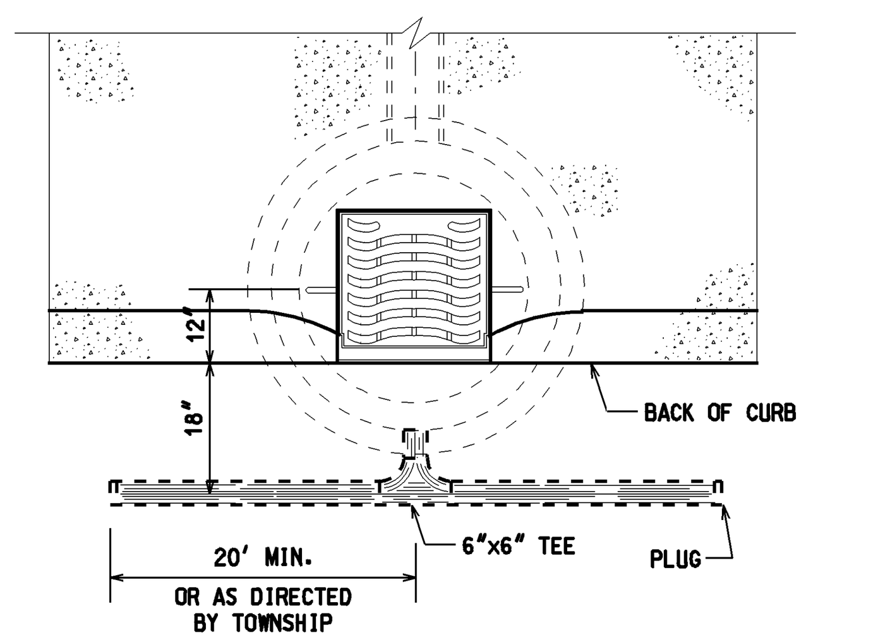


STORM SEWER FRAME & COVER EJIW #1040 WITH TYPE 'B' COVER

FRAME AND COVER

NOTE:

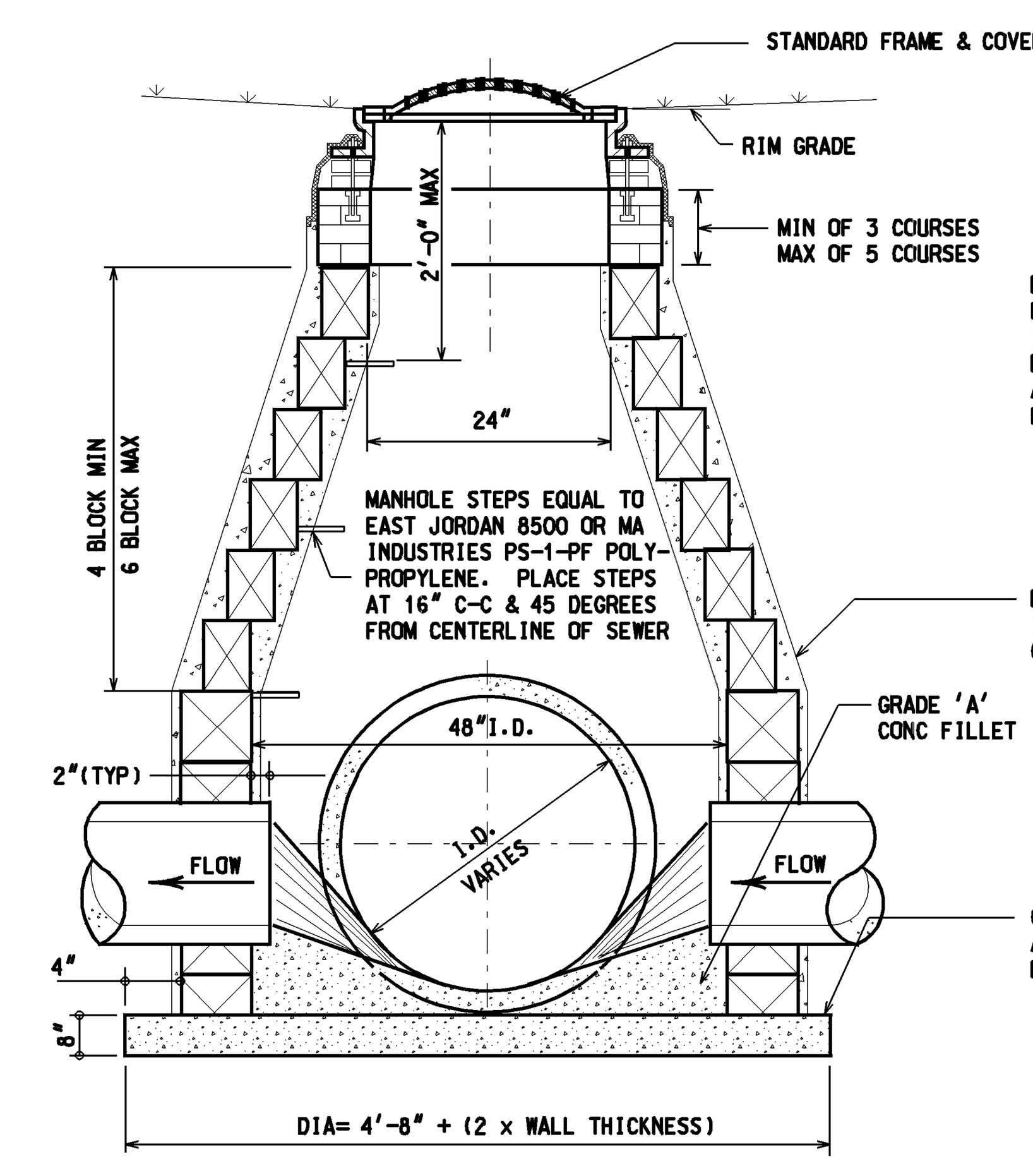
ALL STORM COVERS TO HAVE "DUMP NO WASTE" LETTERING AND TROUT IMAGE.



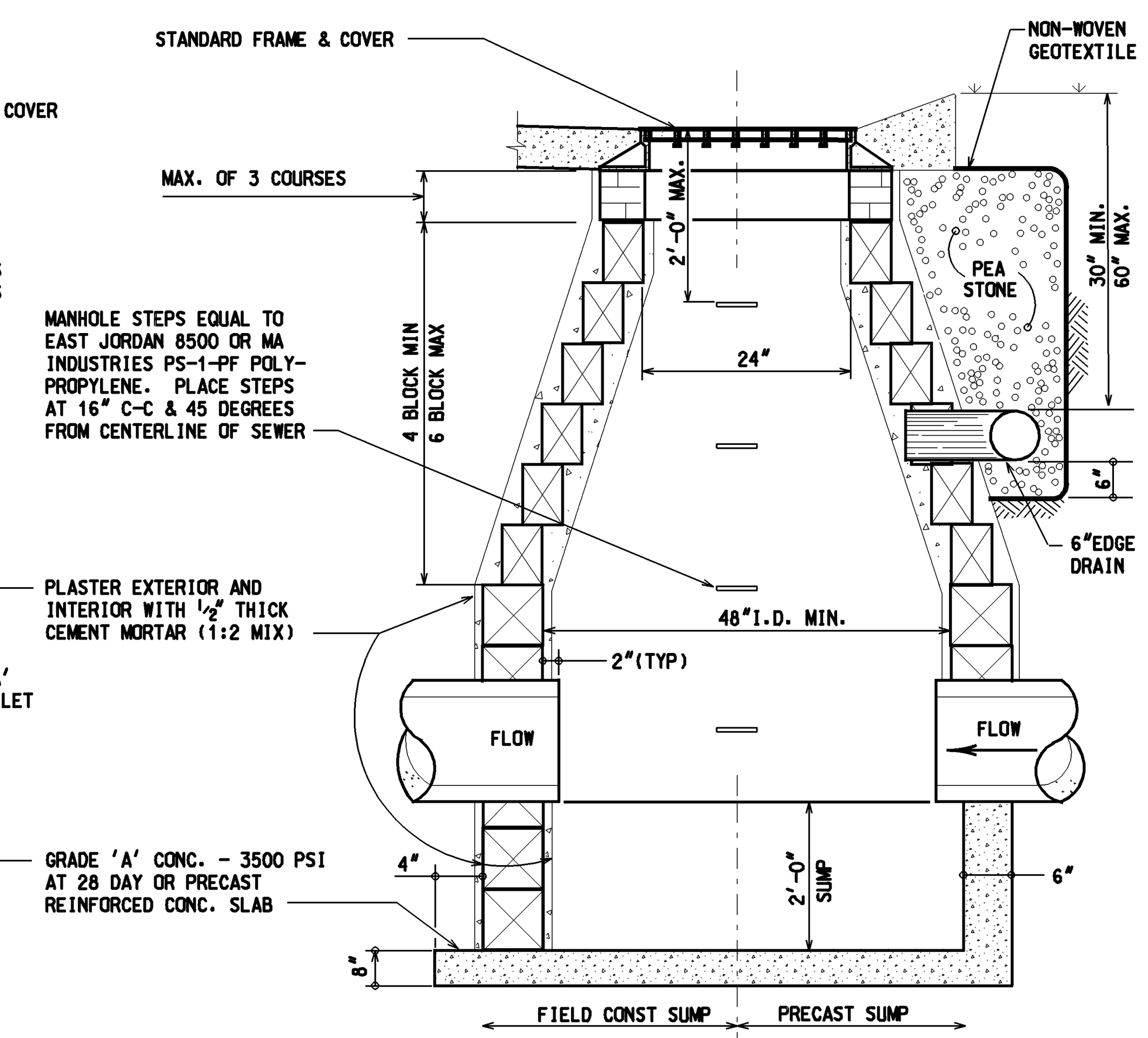
NOTES:

1. LENGTH OF 6" EDGE DRAIN TO BE 20' IN EACH DIRECTION OR AS DETERMINED BY THE TOWNSHIP IN THE FIELD.
2. EDGE DRAIN SHALL BE INSTALLED AT ALL CATCH BASINS & INLETS WITHIN LIMITS OF PAVEMENT OF A ROADWAY.
3. 6" EDGE DRAIN TO BE CORRUGATED PLASTIC PIPE WITH FOUR ROWS OF SLOTTED PERFORATIONS, OR APPROVED EQUAL.
4. THE AGGREGATE SURROUNDING THE 6" EDGE DRAIN SHALL BE WRAPPED WITH A NON-WOVEN GEOTEXTILE FABRIC, GEOTEX 801 OR APPROVED EQUAL.

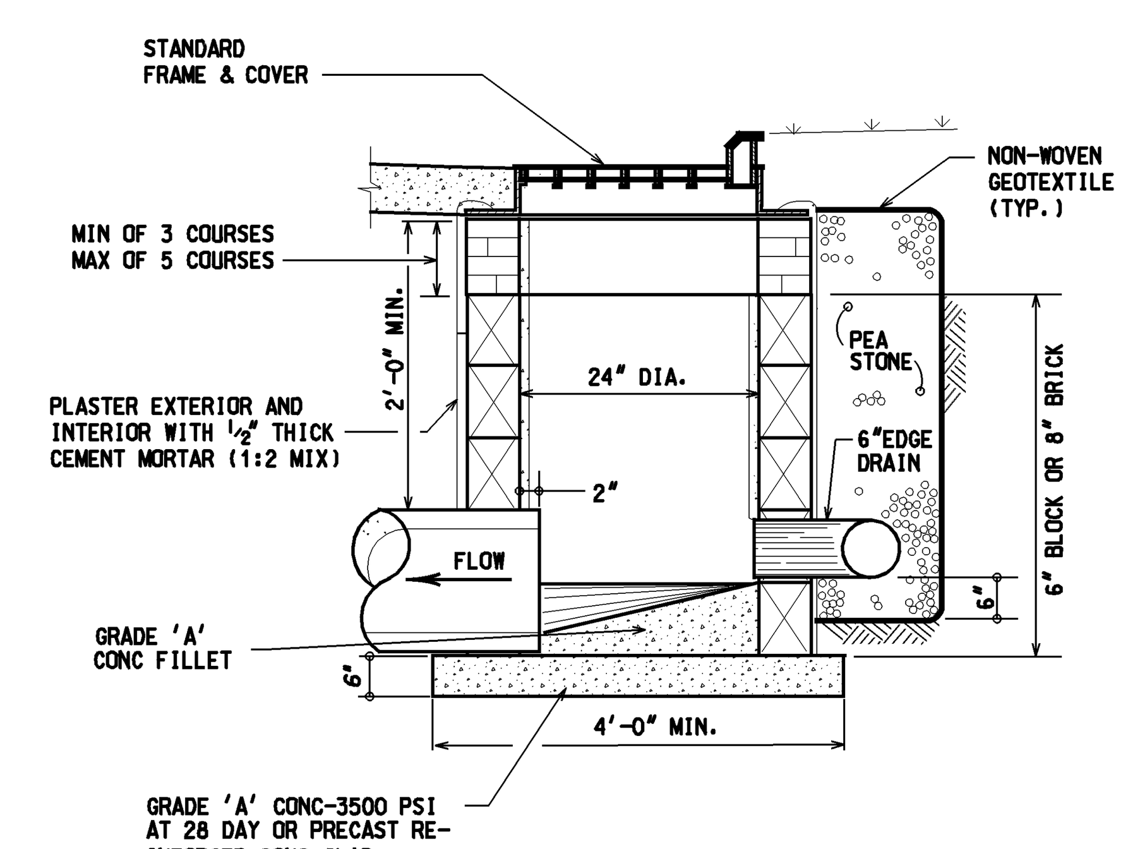
6" EDGE DRAIN



YARD CATCH BASIN



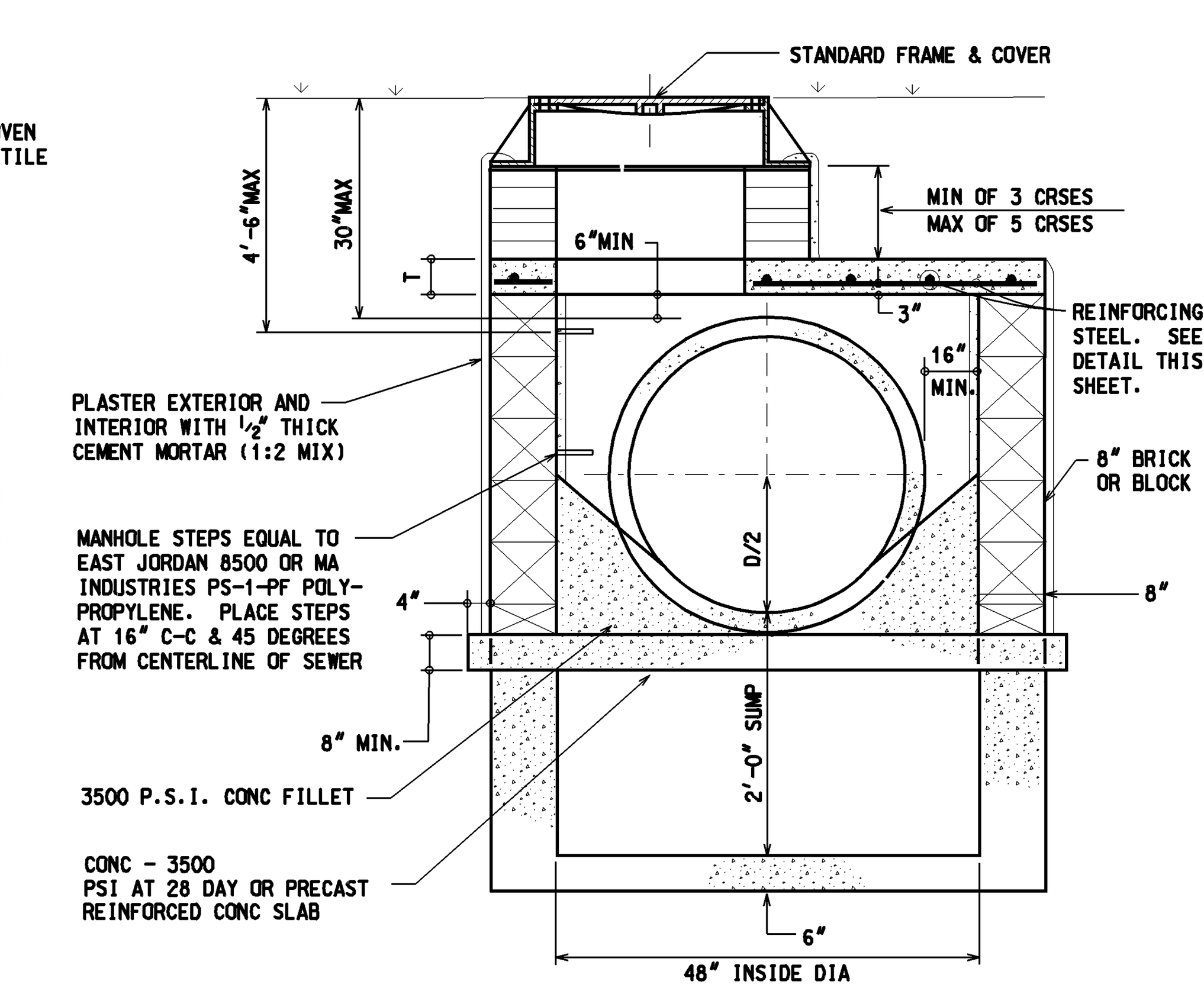
PAVEMENT CATCH BASIN



NOTES:

1. IF CLEARANCE IS LESS THAN 2'-0" BETWEEN SUB-GRADE & TOP OF PIPE BACKFILL WILL SHALL CONSIST OF A DRY SAND-CEMENT MIXTURE COMPACTED IN PLACE
2. 4" M.D.O.T. GRANULAR MATERIAL CLASS II OR 6A AGGREGATE BEDDING REQUIRED UNDER ALL STRUCTURES UNLESS OTHERWISE DIRECTED.

LOW HEAD INLET



LOW-HEAD STORM SEWER STRUCTURE

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11-18-08	ADOPTED BY TOWNSHIP BOARD

DESIGNED	
DRAWN	J. REC
CHECKED	J. HEINTZ
APPROVED	J. BOOTH

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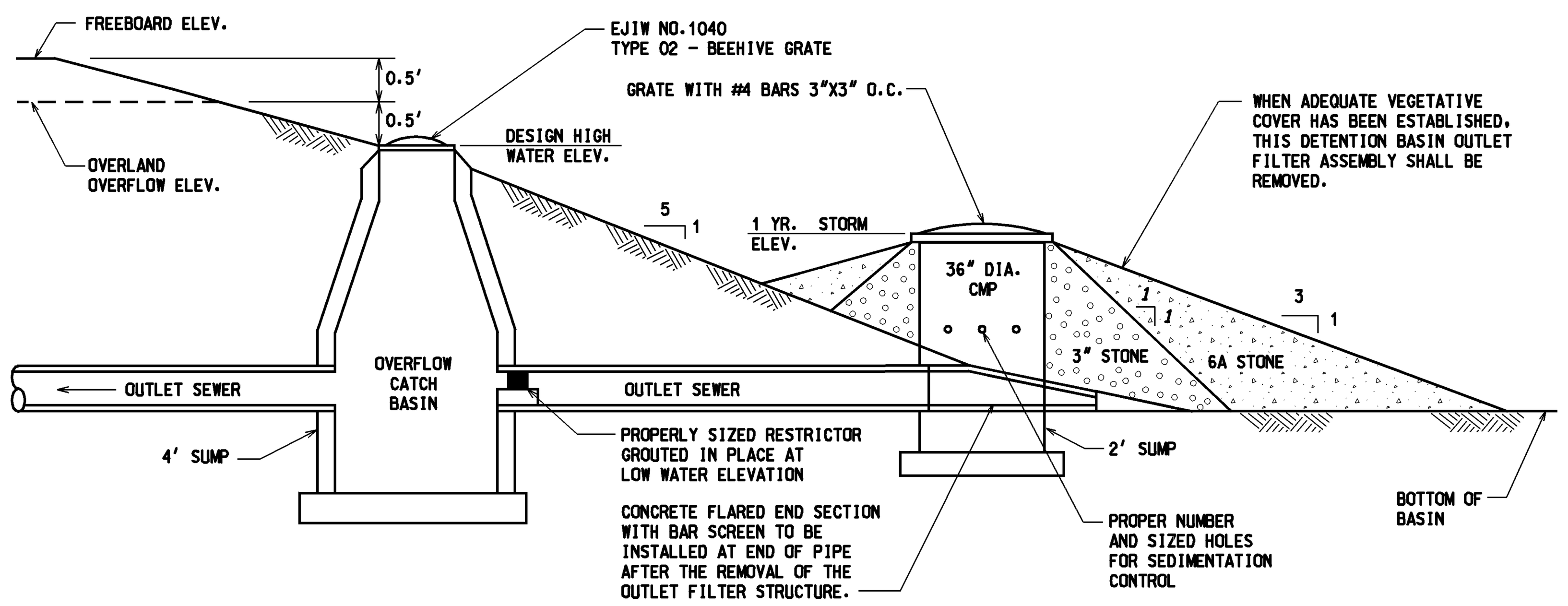
HARTLAND TOWNSHIP

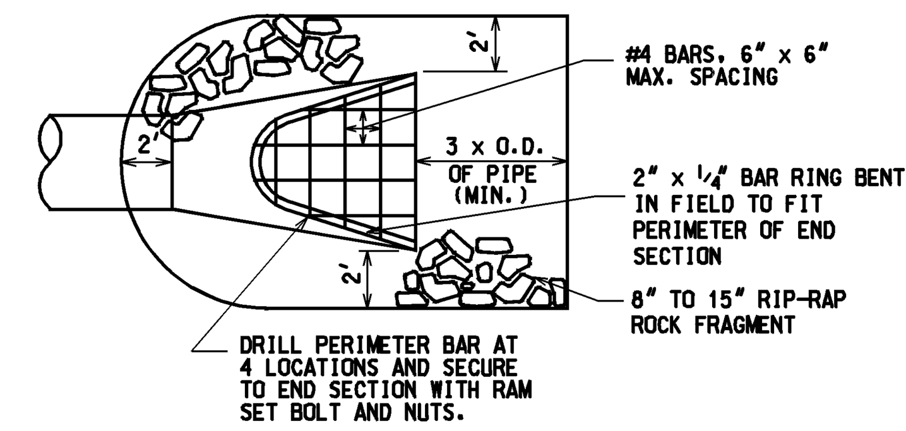
STANDARD CONSTRUCTION DETAILS

STORM SEWER STANDARDS

HRC JOB NO. 20070878	SCALE NONE
DATE JULY 2008	SHEET NO. 1 OF 2



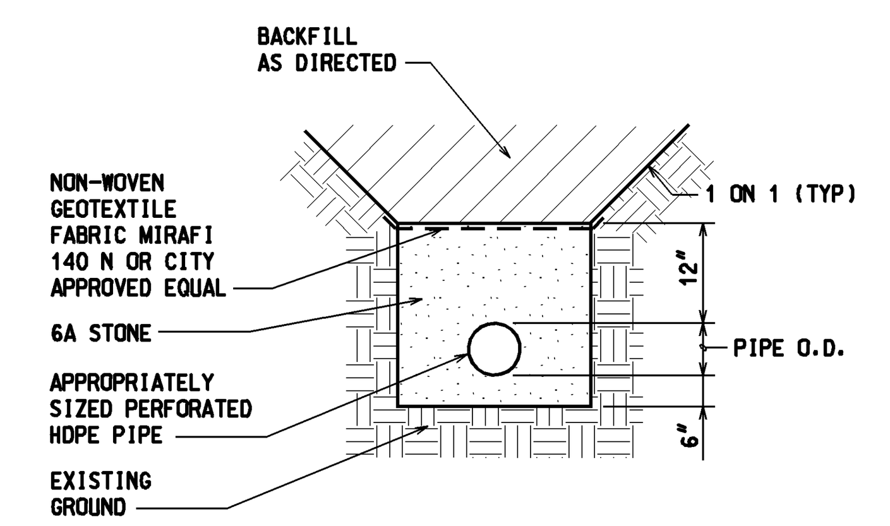
DETENTION BASIN OUTLET STRUCTURE DETAIL



END SECTION AND BAR SCREEN DETAIL

STORM SEWER NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT ENGINEERING DESIGN STANDARDS AND SPECIFICATIONS OF HARTLAND TOWNSHIP.
2. IT SHALL BE THE OWNER'S ENGINEER AND CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES.
3. ALL SEWER TRENCHES UNDER THE 45 DEGREE ZONE OF INFLUENCE LINE OF EXISTING OR PROPOSED PAVEMENTS, BIKE PATHS, SIDEWALKS OR DRIVE APPROACHES SHALL BE BACKFILLED WITH MDOT CLASS II SAND COMPACTED TO AT LEAST 95% OF MAXIMUM UNIT WEIGHT.
4. JOINTS FOR STORM SEWER SHALL BE PREMIUM JOINTS (TONGUE AND GROOVE WITH RUBBER GASKETS).
5. LEAD MATERIAL SHALL BE SCHED 40 PVC OR DR 26.
6. ALLOWABLE PIPE MATERIAL FOR STORM SEWERS SHALL BE:
   A. C-76 REINFORCED CONCRETE PIPE CONFORMING TO CLASSES III, IV OR V.
   B. PERFORATED HIGH DENSITY POLYETHYLENE WITH SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATION MEETING REQUIREMENTS OF ASTM F2306. BEDDING AND BACKFILL SHALL BE AS SHOWN IN THE FOLLOWING DETAIL:



HDPE BEDDING DETAIL

NOTE A: BELOW A POINT 12" ABOVE THE TOP OF THE PIPE, THE TRENCH WIDTH SHALL PROVIDE A CLEARANCE OF NOT LESS THAN 6" BETWEEN PIPE & TRENCH. TRENCH WIDTH SHALL NOT EXCEED THAT SHOWN IN THE MAXIMUM TRENCH WIDTH TABLE.

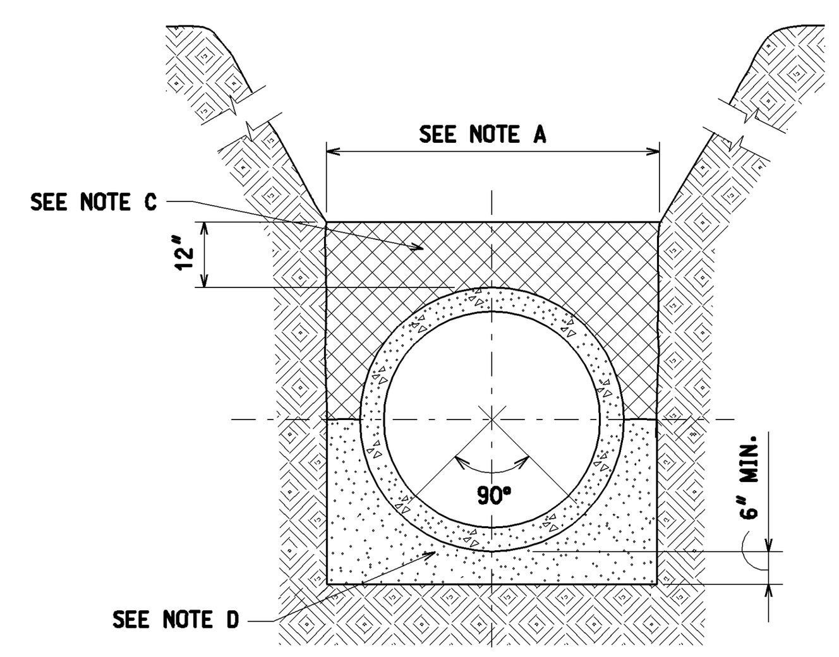
NOTE B: PIPE BEDDING MATERIALS SHOWN THUS [pattern] SHALL MEET 2003 M.D.O.T. TABLE 902-3 REQUIREMENTS FOR CLASS II COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT AS DETERMINED BY METHODS PER THE CURRENT MDOT DENSITY CONTROL HANDBOOK.

NOTE C: PIPE BEDDING BACKFILL MATERIALS SHOWN THUS [pattern] SHALL BE SELECTED EXCAVATED MATERIAL (EXCEPT BLUE CLAY); WHERE TRENCH "A" IS SPECIFIED, SPECIAL TRENCH "A" BACKFILL MATERIAL SHALL BE USED FOR PIPE BEDDING BACKFILL.

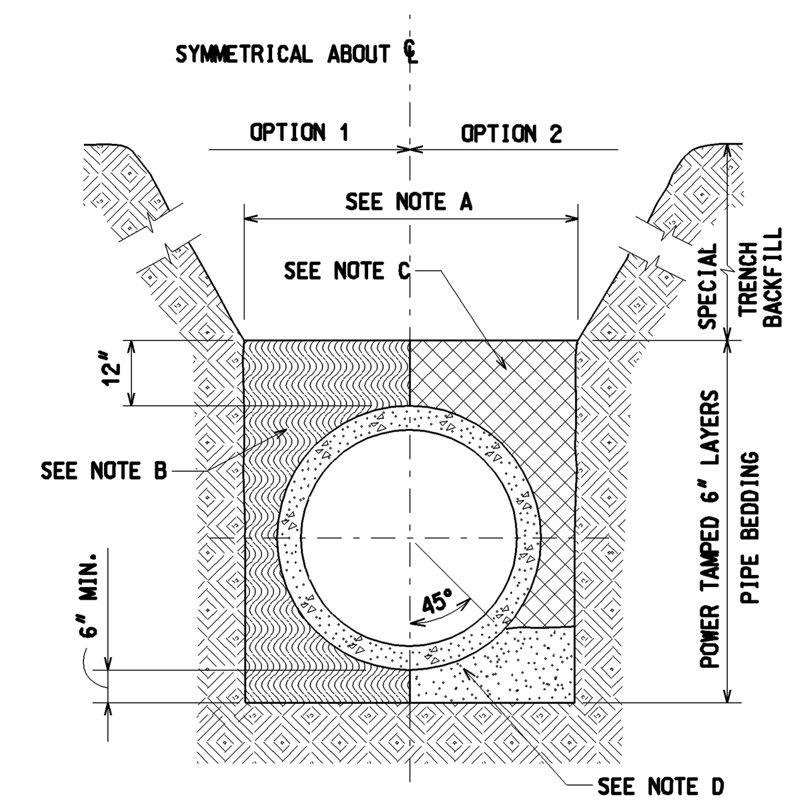
NOTE D: PIPE BEDDING CUSHION MATERIALS SHOWN THUS [pattern] SHALL CONSIST OF MEETING THE GRADING AND PHYSICAL REQUIREMENTS OF 2003 M.D.O.T. TABLE 902-1 & TABLE 902-2, COARSE AGGREGATE 6A, BLAST FURNACE SLAG OR CRUSHED STONE CONTAINING SUFFICIENT SMALLER SIZED AGGREGATE TO PREVENT MIGRATION OF EARTH OR BACKFILL MATERIAL INTO BEDDING MATERIAL & CAREFULLY PREPARED SO THAT THE ENTIRE BOTTOM 1/4 OF THE PIPE WILL BEAR AGAINST THE CUSHION. THE TYPE & THICKNESS OF THE BEDDING SHALL BE AS REQUIRED TO MAINTAIN CORRECT ALIGNMENT & GRADE & SHALL NOT BE LESS THAN 6". (THIS BEDDING CUSHION SUPERCEDES CUSHION REQUIRED BY THE SPECIFICATIONS.)

TYPES OF BEDDING

STANDARD PIPE BEDDING SHALL BE USED EXCEPT WHERE THE OTHER TYPES OF PIPE BEDDING ARE CALLED FOR ON THE PLANS & PROFILES



STANDARD BEDDING
CIRCULAR PIPE - 24" DIA. & LARGER



STANDARD BEDDING
CIRCULAR PIPE - 21" DIA. & SMALLER

TRENCH	TRENCH BACKFILL
TRENCH "A" (SPECIAL)	BANK RUN SAND MEETING THE REQUIREMENTS OF 2003 M.D.O.T. TABLE 902-3 GRADING REQUIREMENTS FOR GRANULAR MATERIALS CLASS II. MATERIALS SHALL BE PLACED IN ACCORDANCE WITH 2003 M.D.O.T. 205.03-H-4a. FOR CONTROLLED DENSITY METHOD WITH EACH LAYER COMPACTED TO 95 PERCENT OF MAXIMUM UNIT WEIGHT AS DETERMINED BY METHODS PER THE CURRENT MDOT DENSITY CONTROL HANDBOOK
TRENCH "B" (STANDARD)	SUITABLE EXCAVATED MATERIAL (EXCLUDING BLUE CLAY) PLACED IN ONE FOOT LAYERS WITH EACH LAYER COMPACTED BY APPROVED MECHANICAL METHODS TO A DENSITY EQUIVALENT TO THE UNDISTURBED ADJACENT SOIL.

TRENCH BACKFILL NOTES:

SPECIAL BACKFILL FOR TRENCHES (TRENCH "A") SHALL BE USED AT ALL LOCATIONS CALLED FOR ON THE PLANS & REQUIRED IN THE SPECIFICATIONS.

WHERE NOTED ON THE PLANS OR PROFILES THUS: |← TRENCH "A" →| TRENCH "A" SHALL BE USED AT LOCATIONS REQUIRED BY THE SPECIFICATIONS. TRENCH "B" SHALL BE USED FOR THE BALANCE OF THE WORK.

WHERE TRENCH IS IN SAND OR GRAVEL THE MAXIMUM TRENCH WIDTH AT TOP OF PIPE SHALL NOT EXCEED O.D. PLUS 24".

TYPES OF PIPES & JOINTS

PIPE					JOINT	
MATERIAL	SIZE (ROUND)	SPEC.	CLASS	REMARKS	DESCRIPTION	SPEC.
REINFORCED CONCRETE	12" - 144"	A.S.T.M. C76	III - V		MODIFIED GROOVE TONGUE WITH RUBBER GASKET.	A.S.T.M. C443 *
	12" - 144"	M.D.O.T. 8.08.03	III - V	SPECIAL DESIGNS SUPPLEMENT A.S.T.M. C-76	INSIDE CEMENT POINTING FOR 42" DIA & LARGER PIPE.	

* EXCEPT AS SUCH SPECIFICATIONS RELATE TO INFILTRATION LIMITATIONS.

TRENCH BEDDING & BACKFILL

MAXIMUM TRENCH WIDTH TABLE (IN.)

PIPE I.D.	TRENCH WIDTH
4 -12	32
15	36
18	39
21	43
24	46
27	50
30	53
36	68
42	75
48	82
54	89
60	96
66	103
72	110

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DESIGNED
DRAWN J. REC
CHECKED J. HEINTZ
APPROVED J. BOOTH
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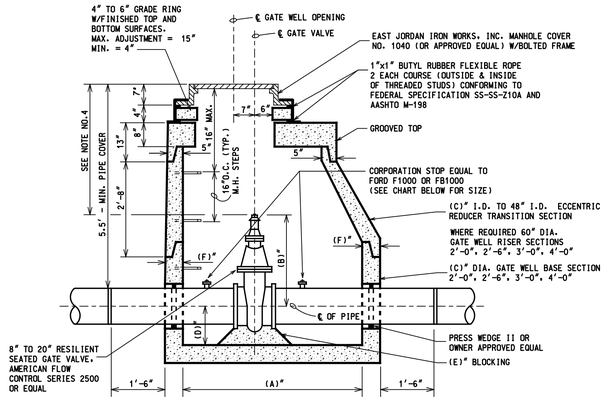
HARTLAND TOWNSHIP

STANDARD CONSTRUCTION DETAILS

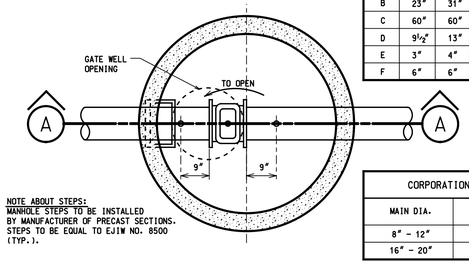
STORM SEWER STANDARDS

HRC JOB NO. 20070878 | SCALE NONE
DATE JULY 2008 | SHEET NO. 2 OF 2



GATE WELL (A - A)

GATE WELL DIMENSIONS - INCHES				
DIM.	GATE WELL SIZES			
	6" & 8"	12"	16"	20"
A	5'-0"	5'-0"	6'-0"	6'-0"
B	23"	31"	40"	43"
C	60"	60"	72"	72"
D	9½"	13"	15"	17"
E	3"	4"	4"	4"
F	6"	6"	7"	7"



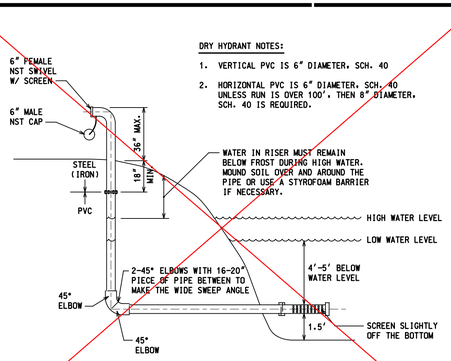
NOTE ABOUT STEPS:
MANHOLE STEPS TO BE INSTALLED BY MANUFACTURER OF PRECAST SECTIONS. STEPS TO BE EQUAL TO EJIW NO. 8500 (TYP.).

CORPORATION STOP	
MAIN DIA.	CORPORATION SIZE
8" - 12"	1"
16" - 20"	2" W/SADDLE

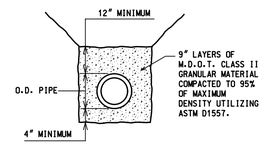
PLAN OF GATE WELL

DRY HYDRANT NOTES:

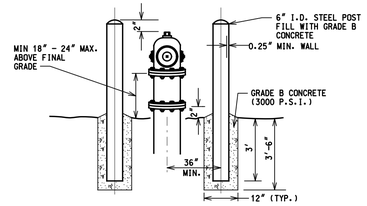
1. VERTICAL PVC IS 6" DIAMETER, SCH. 40
2. HORIZONTAL PVC IS 6" DIAMETER, SCH. 40 UNLESS RUN IS OVER 100', THEN 8" DIAMETER, SCH. 40 IS REQUIRED.



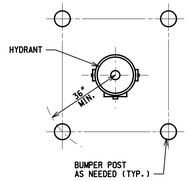
DRY HYDRANT DETAIL



STANDARD BEDDING FOR WATER PIPE



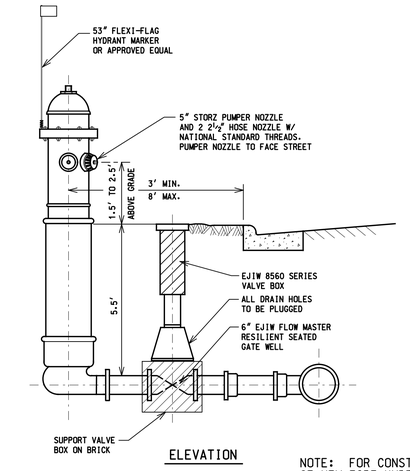
ELEVATION



PLAN

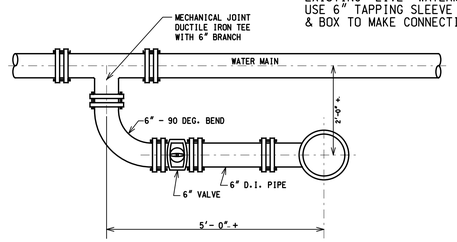
NOTE: BUMPER POSTS SHALL BE PLACED AT A MINIMUM DISTANCE OF 36" FROM THE CENTER OF THE HYDRANT.

FIRE HYDRANT GUARD POSTS DETAIL



ELEVATION

NOTE: FOR CONSTRUCTION OF NEW FIRE HYDRANT TO EXISTING "LIVE" WATERMAIN, USE 6" TAPPING SLEEVE VALVE & BOX TO MAKE CONNECTION.



PLAN

"L" HYDRANT CONNECTION

W-9

6-16-11	UPDATED HYDRANT MODEL
11-18-08	ADOPTED BY TOWNSHIP BOARD
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	
DRAWN	J. REC
CHECKED	J. HEINTZ
APPROVED	J. BOOTH

W:\20070878\20070878\C\wm_det01_V8.dgn

HRC
HUBBELL, ROTH & CLARK, INC
Consulting Engineers
105 W. GRAND RIVER AVE.
HOWELL, MICHIGAN 48843
PHONE: (248) 454-6300
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FAX: (517) 552-6099
WEB SITE: http://www.hrc-engr.com

HARTLAND TOWNSHIP

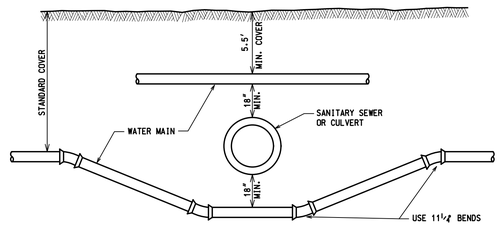
STANDARD CONSTRUCTION DETAILS

WATER MAIN STANDARDS

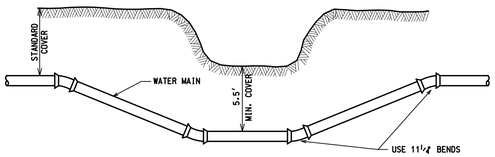
HRC JOB NO. 20070878	SCALE NONE
DATE JULY 2008	SHEET NO. 1 OF 4

GENERAL NOTES:

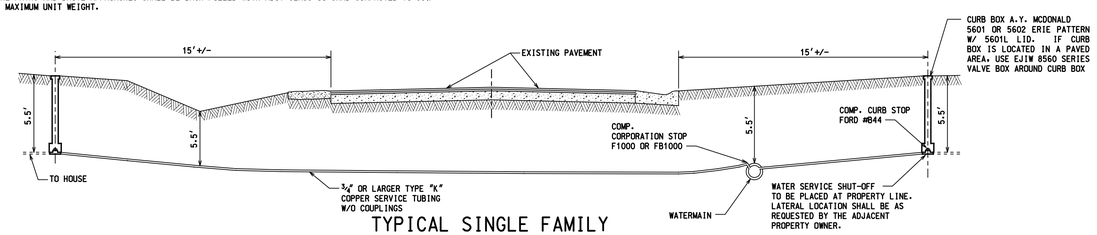
1. ALL CONSTRUCTION PROCEDURES AND MATERIALS USED SHALL CONFORM TO HARTLAND TOWNSHIP CURRENT ENGINEERING DESIGN STANDARDS AND SPECIFICATIONS.
2. ALL HYDRANTS SHALL BE EAST JORDAN IRON WORKS MODEL 5BR-250. SELF DRAINING HYDRANTS SHALL NOT BE USED.
3. ALL HYDRANTS SHALL BE PAINTED IN ACCORDANCE WITH THE CAP PAINTING SCHEDULE. THE BODY OF THE HYDRANT SHALL BE PAINTED RED.
4. ALL GATE VALVES WITH OPERATING NUTS AT A DISTANCE GREATER THAN 5.5 FEET BELOW GROUND SURFACE SHALL BE PROVIDED WITH AN EXTENSION STEM. THE LENGTH OF THE STEM SHALL BE SUCH THAT IT WILL BE WITHIN 5.5 FEET OF THE GROUND SURFACE WHEN AN EXTENSION IS USED. THE EXTENSION STEM SHALL BE MECHANICALLY ATTACHED TO THE OPERATING NUT. DETAILS OF THE EXTENSION STEM AND METHOD OF INSTALLATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
5. FOR PIPE DIAMETERS 20" AND SMALLER, DUCTILE IRON PIPE SHALL BE CLASS 54 DOUBLE CEMENT LINED WITH TWO BRASS WEDGES PER JOINT. MINIMUM DEPTH COVER IS 5.5 FEET BELOW FINISHED GRADE. MAXIMUM DEPTH OF COVER IS 8.5 FEET.
6. THE CONTRACTOR SHALL OBTAIN A WATER MAIN CONSTRUCTION PERMIT AND WATER USE PERMIT PRIOR TO THE START OF CONSTRUCTUTION FROM HARTLAND TOWNSHIP.
7. THE CONTRACTOR SHALL NOTIFY HARTLAND TOWNSHIP FOR TAP INSPECTION TO THE EXISTING WATER MAIN. PRESSURE TEST WITNESS, BACTERIOLOGICAL SAMPLING AND FOR FINAL INSPECTION. (MINIMUM 48 HOURS PRIOR NOTICE IS REQUIRED).
8. FOR NON TOWNSHIP ADMINISTERED PROJECTS, ALL 2 INCH AND SMALLER WATER SERVICE CONNECTIONS ARE MADE BY THE TOWNSHIP WATER SYSTEM PERSONNEL AFTER WATER MAIN ACCEPTANCE AND APPLICABLE PERMITS ARE OBTAINED.
9. ALL NECESSARY EASEMENTS SHALL BE PROVIDED IN THE NAME OF HARTLAND TOWNSHIP AND/OR ITS AGENT FOR THE INSTALLATION, OPERATION AND MAINTENACE OF THE PROVIDED WATER MAINS BEFORE ACCEPTANCE OF THE WATER MAIN DISTRIBUTION SYSTEM.
10. THE DESIGN ENGINEER SHALL FURNISH HARTLAND TOWNSHIP WITH REPRODUCABLE AND ELECTRONIC VERSIONS OF 'RECORD DRAWINGS' FOR THE WATER MAIN PLANS PER TOWNSHIP STANDARDS UPON JOB COMPLETION. PLANS SHALL LOCATE ALL WATER MAINS, HYDRANTS AND GATE VALVES PER TOWNSHIP 'RECORD DRAWING' STANDARDS.
11. ALL REQUIRED CROSS CONNECTION AND CONTROL DEVICES SHALL BE INSTALLED AS REQUIRED BY HARTLAND TOWNSHIP AND IN ACCORDANCE WITH THE STANDARDS OF THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY.
12. THE CONTRACTOR SHALL NOTIFY HARTLAND TOWNSHIP OR THEIR AGENT 48 HOURS PRIOR TO THE START OF CONSTRUCTION AND REQUEST INSPECTION.
13. ALL TRENCHES WITHIN 45 DEGREE LINE OF INFLUENCE OF EXISTING OR PROPOSED PAVEMENTS, SIDEWALKS, BIKE PATHS AND DRIVE APPROACHES SHALL BE BACK FILLED WITH MDOT CLASS II SAND COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT.



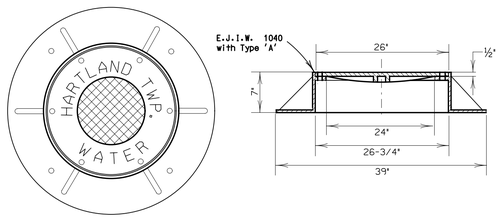
SEWER OR CULVERT CROSSING



DITCH AND STREAM CROSSING



TYPICAL SINGLE FAMILY WATER SERVICE CONNECTION



TYPE "H" GATE WELL COVER

PIPE RESTRAINT SCHEDULE GROUND BURIED PRESSURE PIPE - DUCTILE IRON							
PIPE DIAMETER	TEES, 90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS	DEAD ENDS	REDUCERS (ONE SIZE REDUCTION)*	REDUCERS (TWO SIZE REDUCTION)*
4	11	5	2	1	28	-	-
6	16	7	3	2	41	21	-
8	21	9	4	2	52	21	49
12	30	12	6	3	75	40	81
16	38	16	8	4	97	41	96
20	46	19	9	5	118	42	94
24	54	22	11	5	139	42	92
30	65	27	13	6	169	59	117
36	75	31	15	7	197	59	132

LENGTHS OF PIPE RESTRAINT ARE GIVEN IN FEET.

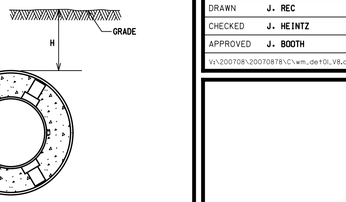
IF REQUIRED PIPE DIAMETER IS NOT LISTED IN THIS TABLE, THE NEXT LARGEST PIPE DIAMETER SHALL BE USED.

THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER). FOR OTHER TEST PRESSURES, ALL VALUES TO BE INCREASED OR DECREASED PROPORTIONALTY.

THE VALUES PROVIDED OF RESTRAINT LENGTH ARE IN EACH DIRECTION FROM THE POINT OF DEFLECTION OR TERMINATION EXCEPT FOR TEES, AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE STEM.

* SIZE REDUCTION IS BASED UPON THE PIPE DIAMETER SHOWN IN THIS TABLE.

BASED UPON: INTERNAL PRESSURE: 180
PIPE DEPTH: 5
BEDDING CLASS: TYPE 4
SOIL TYPE: GOOD SAND
SAFETY FACTOR: 2



SECTION

NO SCALE

ALL VOIDS BETWEEN THE WATER MAIN AND THE CASING PIPE SHALL BE FILLED WITH LEAN GROUT. EACH END OF THE CASING SHALL BE SEALED WITH A WATER-TIGHT REMOVABLE SEAL, MANUFACTURED BY CASCADE WATERWORKS MFG. CO. OR APPROVED EQUAL

ALLOWABLE HEIGHT OF COVER (H.) IN FT., FOR STEEL CASING										
WALL THICKNESS (IN.)		STEEL CASING OUTSIDE DIAMETER (IN.)								
FRACT.	DEC.	12	14	16	18	20	24	28	30	36	42
	.1875	39	30	24	21	19	17	16			
1/4	.250	50	50	39	31	27	21	19	18	16	
5/16	.3125			50	48	39	28	23	21	18	17
	.375				50	50	39	29	27	22	19
	.4375						50	39	34	26	21
	.500							50	44	31	25
9/16	.5625								50	39	30
5/8	.625									48	35

TYPICAL TUNNEL CASING DETAIL

NOTES:

1. CASING PIPE JOINTS TO BE FULLY WELDED AROUND THE CIRCUMFERENCE BY A CERTIFIED WELDER.
2. THE DIAMETER OF THE BORE CASING SHALL BE A MINIMUM OF 8" LARGER THAN THE WATER MAIN TO ACCOMMODATE STAINLESS STEEL CASING SPACER.
3. A 4" MIN. DIA. PVC GROUT FILL TUBE SHALL BE INSTALLED AT EACH END OF THE CASING. FLOWABLE FILL SHALL BE INSERTED FROM ONE END UNTIL ALL AIR IS REMOVED FROM CASING.

TYPICAL WATER MAIN TUNNEL CASING DETAIL

PROPOSED PROJECT:

MULTI-TENANT BUILDING

HIGHLAND ROAD, HARTLAND, MICHIGAN

PARCEL NUMBER: 4708-22-400-025

LIST OF CONTACTS

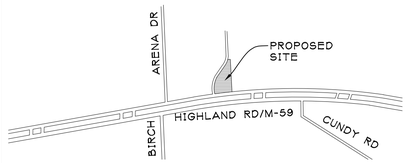
ARCHITECT-ENGINEER:

jeffery a. scott architects p.c.
32316 grand river ave. suite 200
farmington, michigan 48336-3261
(248) 476-8800 JSCOTTARCHITECTS.COM

OWNER:

PETERSON INVESTMENT GROUP, LLC
ATTN: MIKE PETERSON
1151 STONE BARN
MILFORD, MI 48380

LOCATION MAP/KEY PLAN



LOCATION MAP
NO SCALE

SITE DATA

PARCEL ID:	4708-22-400-025	
CURRENT ZONING:	GC - GENERAL COMMERCIAL	
LOT SIZE:	54,544 SQ.FT. (1.25 ACRES)	
BUILDING AREA:	4,550 SQ.FT.	
LOT COVERAGE: ALLOWED: 75.0%	PROVIDED: 8.3%	

SETBACKS

PARKING	REQUIRED	PROVIDED
SOUTH (FRONT)	25 FT.	25 FT.
WEST (FRONT)	25 FT.	25 FT.
NORTH (BACK)	10 FT.	45 FT.
EAST (SIDE)	20 FT.	23 FT.
BUILDING	**REQUIRED**	**PROVIDED**
SOUTH (FRONT)	80 FT.	80 FT.
WEST (FRONT)	50 FT.	50 FT.
NORTH (BACK)	40 FT.	142 FT.
EAST (SIDE)	15 FT.	40 FT.

PARKING

REQUIRED

TENANT 1: (CARRY-OUT)	6 + 1/EMP.	=10
TENANT 2: (RETAIL)	1/300 SQ.FT. GROSS	=5
TENANT 3: (CARRY-OUT)	6 + 1/EMP.	=10
TOTAL PARKING REQUIRED BY USE:		=25

PROVIDED

STANDARD:	24
PICK-UP STACKING:	5
ACCESSIBLE:	2
TOTAL PARKING PROVIDED:	31 SPACES

BUILDING DATA

USE GROUP: (301-312)	B - BUSINESS
CONSTRUCTION TYPE: (601)	5B
FIRE PROTECTION: (903.3)	NON-SPRINKLED
SEPARATION:	NON-SEPARATED

LEASE AREAS:

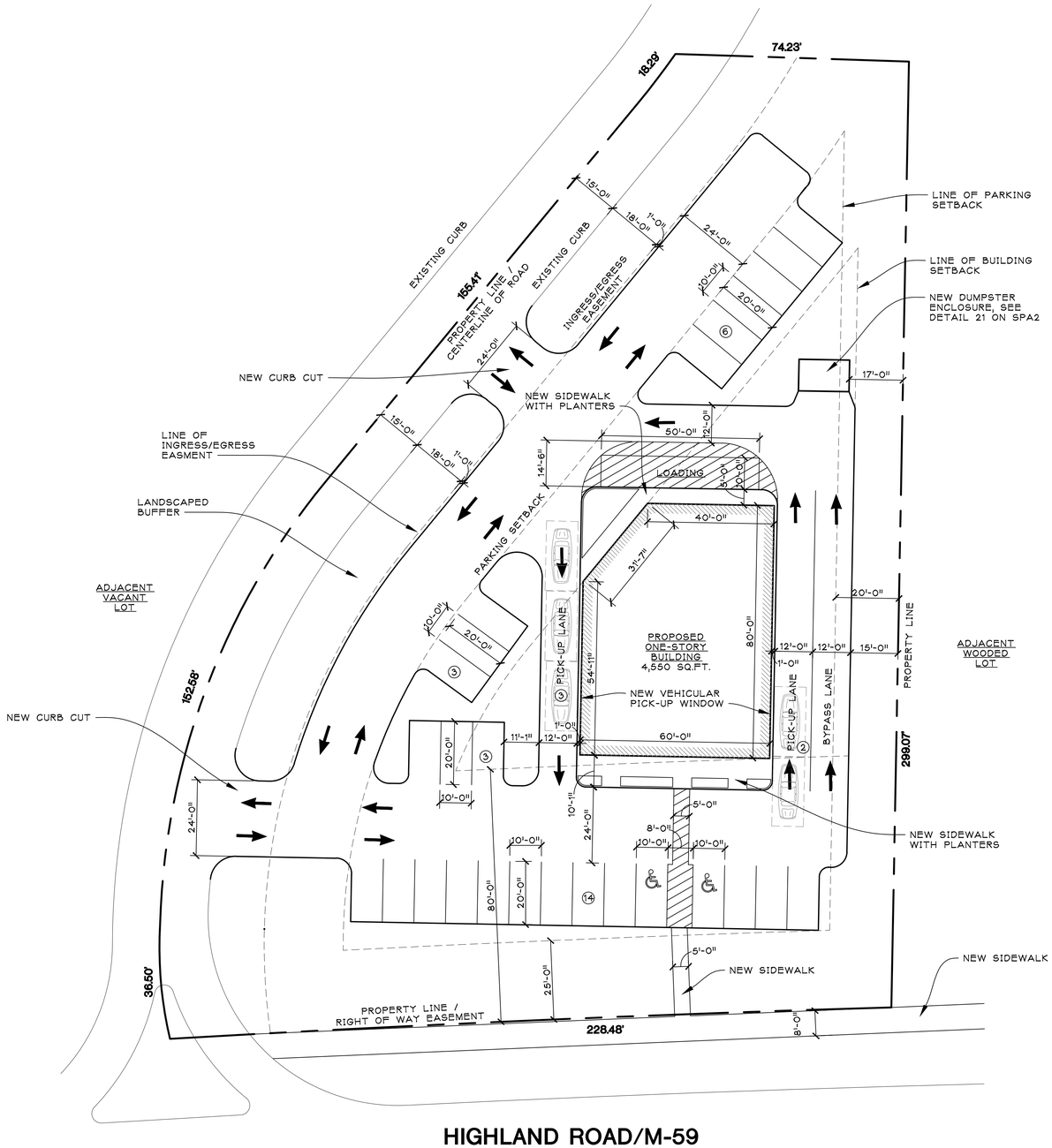
TENANT 1:	1,370 SQ.FT.
TENANT 2:	1,496 SQ.FT.
TENANT 3:	1,653 SQ.FT.
LANDLORD:	31 SQ.FT.
TOTAL BUILDING AREA:	4,550 SQ.FT.

FLOOR AREAS:

ALLOWED: (TABLE 506.2)	9,000 SQ.FT.
PROPOSED:	
TENANT 1:	1,226 SQ.FT.
TENANT 2:	1,400 SQ.FT.
TENANT 3:	1,481 SQ.FT.
LANDLORD:	18 SQ.FT.
TOTAL FLOOR AREA:	4,125 SQ.FT.

OCCUPANT LOAD: (1004.1.2)

TENANT 1: (ESTIMATED)		
STANDING (1/5)	30/5	= 6
KITCHEN (1/200)	975/200	= 5
TENANT 1 TOTAL:		= 11 PERSONS
TENANT 2: (ESTIMATED)		
RETAIL (1/60)	730/60	= 12
STORAGE (1/300)	486/300	= 2
TENANT 2 TOTAL:		= 14 PERSONS
TENANT 3:		
STANDING (1/5)	33/5	=7
KITCHEN (1/200)	1,095/200	=6
TENANT 3 TOTAL:		= 13 PERSONS
TOTAL OCCUPANT LOAD:		= 38 PERSONS



SITE PLAN
SCALE: 1" = 20'-0"

ARCHITECT:
jeffery a. scott architects p.c.
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farmington, mi 48336
248-476-8800
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SHEET TITLE:
ARCHITECTURAL SITE PLAN

PROJECT:
PROPOSED PROJECT: MULTI-TENANT BUILDING
HIGHLAND ROAD HARTLAND, MI

ISSUED FOR:

SITE PLAN APP.	01/05/2021
REVISION	02/26/2021
REVISION	03/12/2021

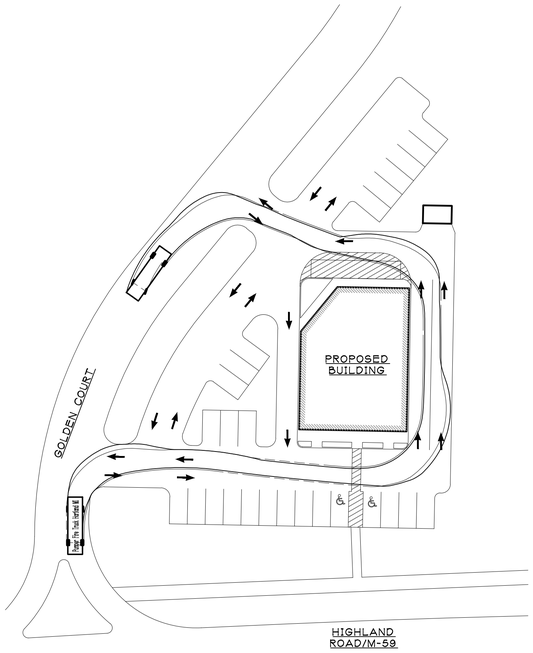
STATE OF MICHIGAN
JEFFERY ARMSTRONG SCOTT
ARCHITECT
No. 1301038645
LICENSED ARCHITECT

DO NOT SCALE PRINTS
USE FIGURED DIMENSIONS ONLY

JOB NO.
20082

SHEET NO.
SPA1

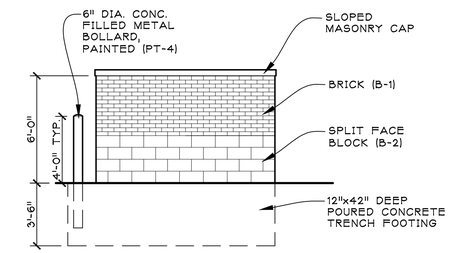
PLOT SIZE: 36"X24"



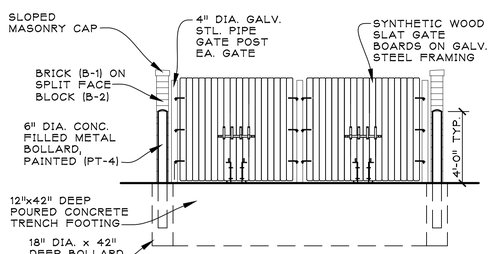
22 SPA2

FIRE DEPARTMENT TRUCK TURN

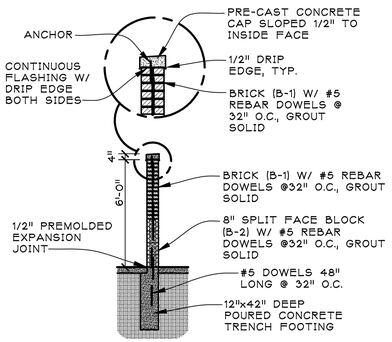
SCALE: 1" = 40'-0"



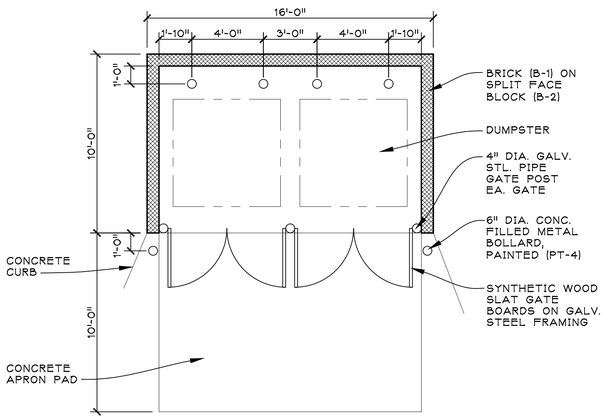
SIDE ELEVATION



FRONT ELEVATION



WALL SECTION

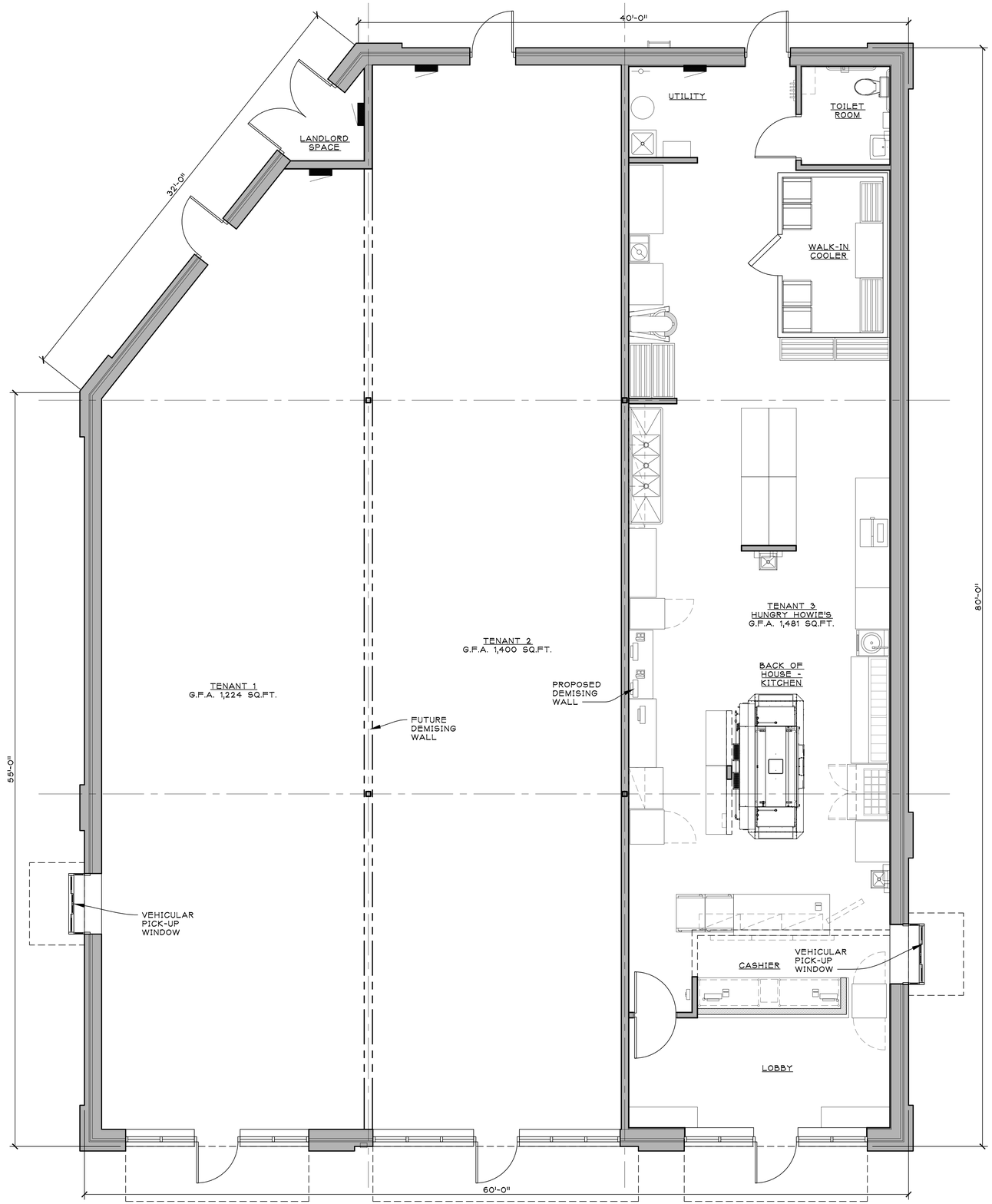


PLAN

21 SPA1

DUMPSTER ENCLOSURE DETAILS

SCALE: 1/4" = 1'-0"



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

SHEET TITLE:

FLOOR PLAN AND SITE DETAILS

PROJECT:

PROPOSED PROJECT:
MULTI-TENANT BUILDING
HIGHLAND ROAD
HARTLAND, MI

ISSUED FOR:

SITE PLAN APP.	01/05/2021
REVISION	02/26/2021
REVISION	03/12/2021

STATE OF MICHIGAN
JEFFERY ARMSTRONG SCOTT
ARCHITECT
No. 1301038645
REGISTERED ARCHITECT

DO NOT SCALE PRINTS
USE FIGURED DIMENSIONS ONLY

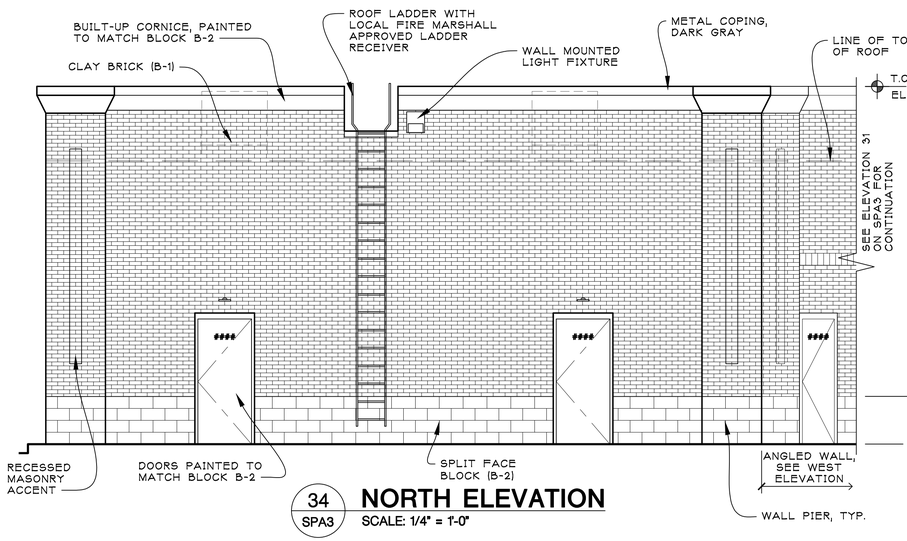
JOB NO.

20082

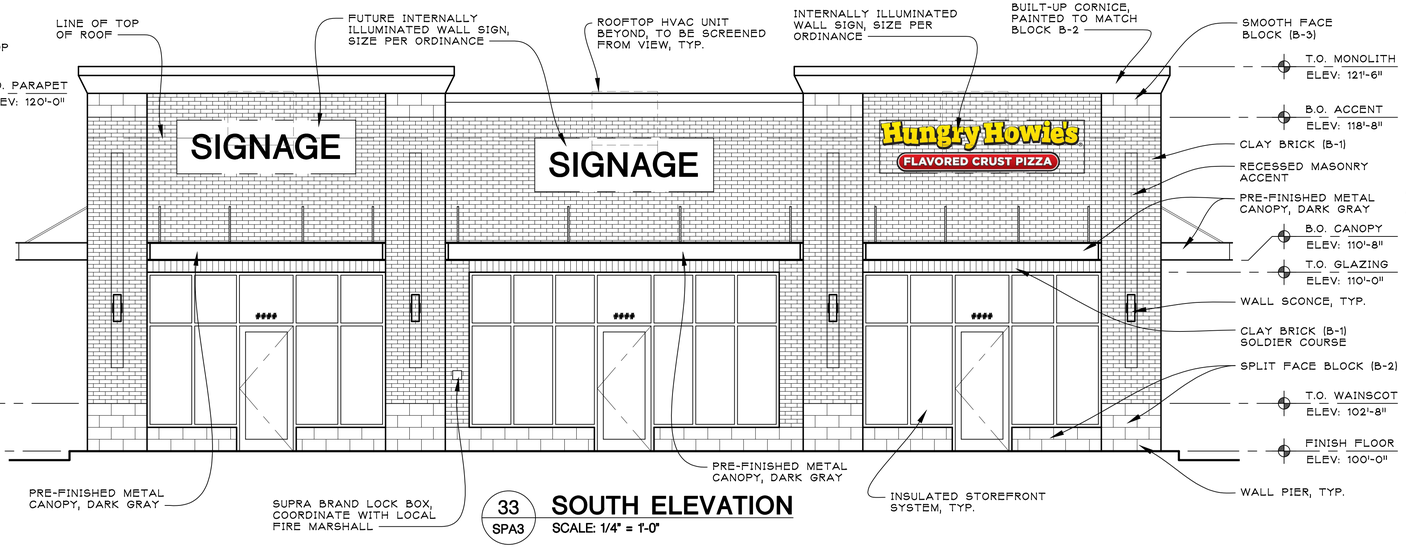
SHEET NO.

SPA2

PLOT SIZE: 36"X24"



34 SPA3 **NORTH ELEVATION**
SCALE: 1/4" = 1'-0"



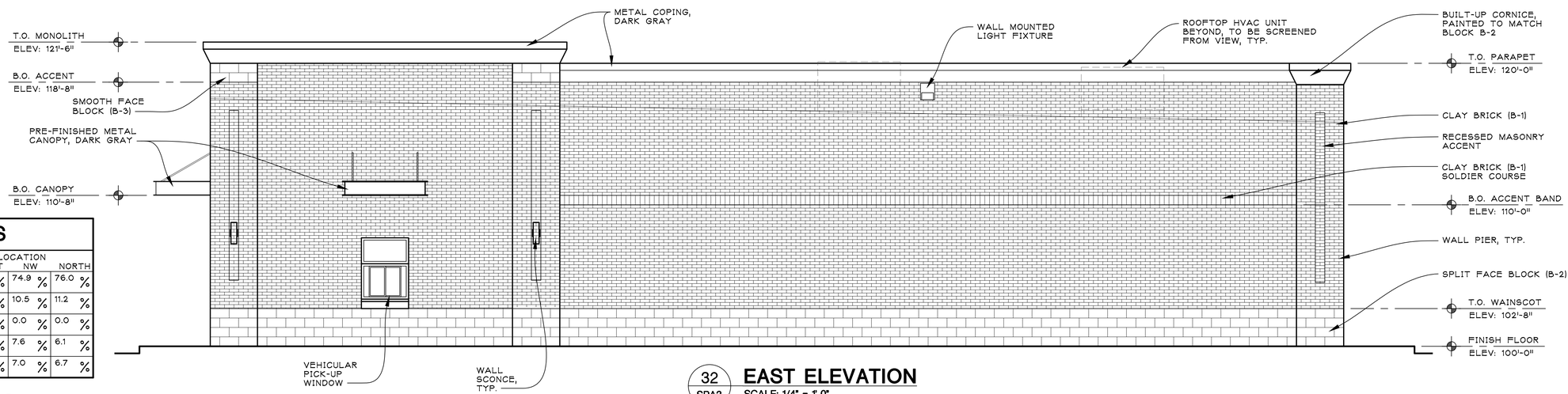
33 SPA3 **SOUTH ELEVATION**
SCALE: 1/4" = 1'-0"

BUILDING MATERIALS

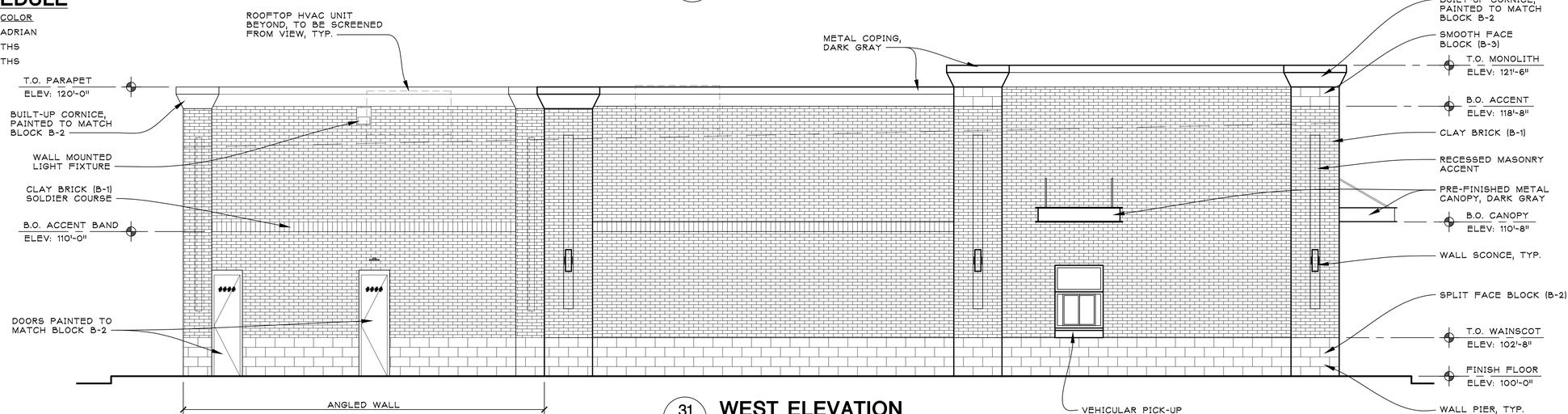
BUILDING MATERIAL	ELEVATION LOCATION EAST	SOUTH	WEST	NW	NORTH
CLAY BRICK (B-1)	78.5 %	53.6 %	77.9 %	74.9 %	76.0 %
SPLIT-FACE BLOCK (B-2)	13.0 %	6.7 %	12.8 %	10.5 %	11.2 %
ACCENT BLOCK (B-3)	0.5 %	1.4 %	0.8 %	0.0 %	0.0 %
WINDOWS/ENTRY	1.0 %	31.3 %	1.5 %	7.6 %	6.1 %
CORNICE/TRIM	7.0 %	7.0 %	7.0 %	7.0 %	6.7 %

EXTERIOR MATERIALS SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	COLOR
B-1	UTILITY BRICK	GLEN-GERY	ADRIAN
B-2	SPLIT-FACE BLOCK	GRAND BLANC CEMENT	THS
B-3	CONCRETE BLOCK	GRAND BLANC CEMENT	THS



32 SPA3 **EAST ELEVATION**
SCALE: 1/4" = 1'-0"



31 SPA3 **WEST ELEVATION**
SCALE: 1/4" = 1'-0"

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suite 200
farmington, mi 48336
248-476-8800
JSCOTTARCHITECTS.COM

SHEET TITLE:
EXTERIOR ELEVATIONS

PROJECT:
PROPOSED PROJECT:
MULTI-TENANT BUILDING
HIGHLAND ROAD
HARTLAND, MI

ISSUED FOR:

SITE PLAN APP.	01/05/2021
REVISION	02/26/2021
REVISION	03/12/2021

STATE OF MICHIGAN
JEFFERY ARMSTRONG SCOTT
ARCHITECT
No. 1301038645
REGISTERED ARCHITECT

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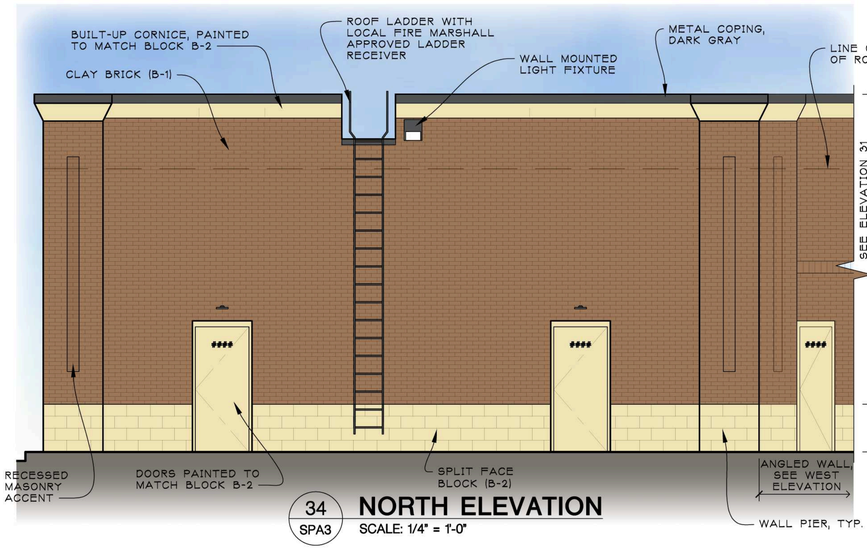
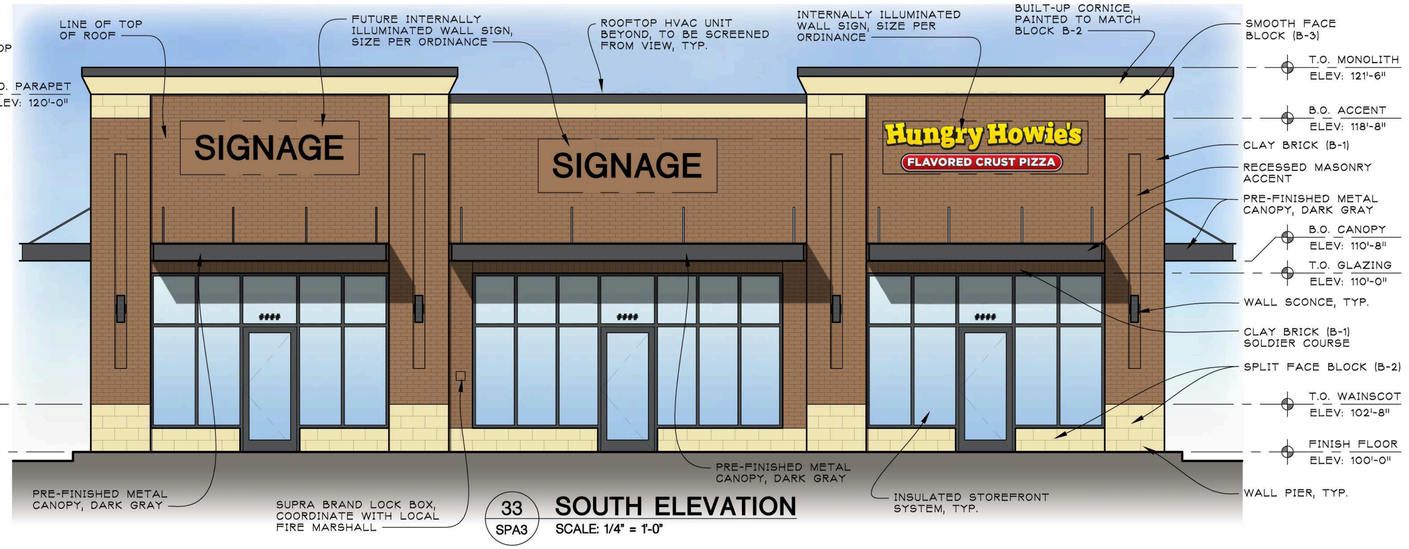
JOB NO.
20082

SHEET NO.
SPA3

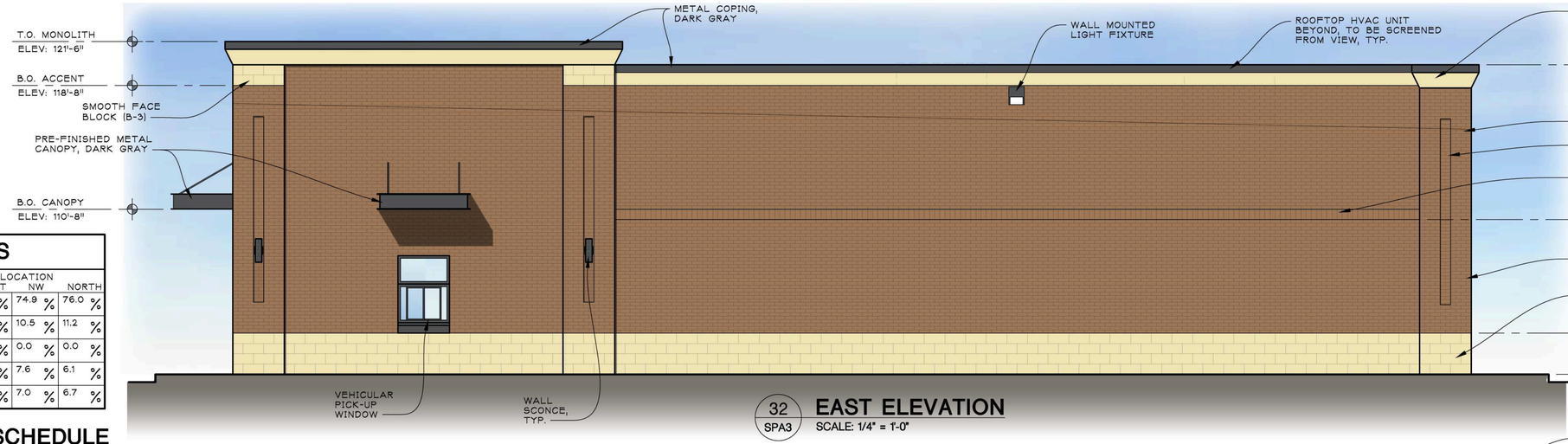
PLOT SIZE: 36"X24"



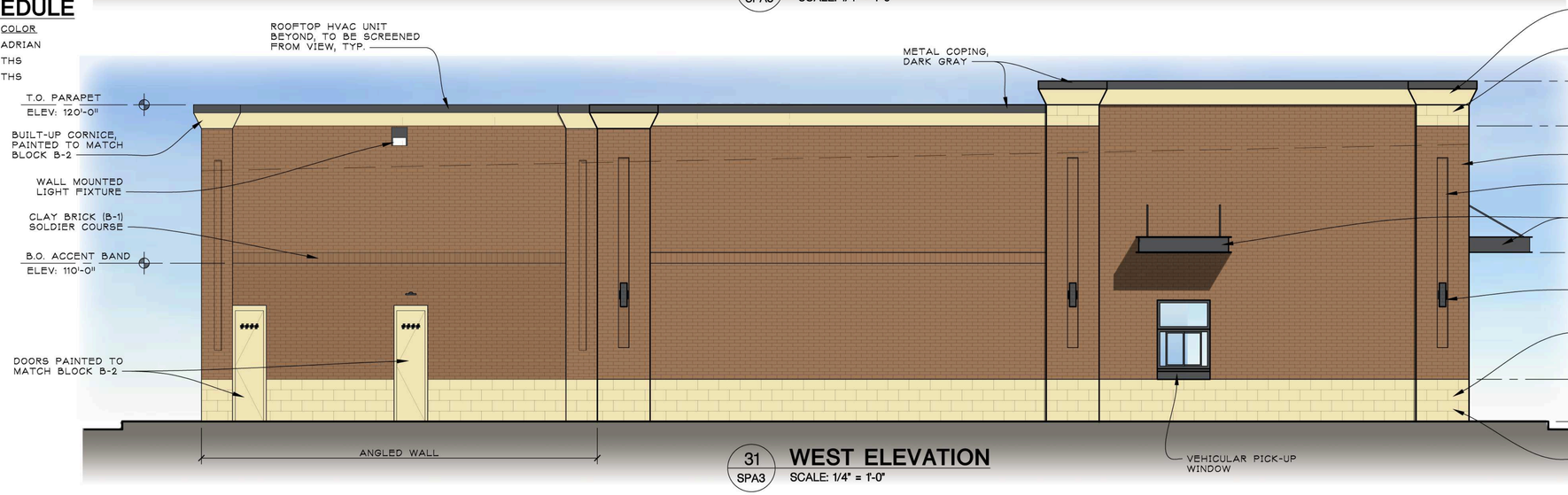
34 SPA3 **NORTH ELEVATION**
SCALE: 1/4" = 1'-0"



33 SPA3 **SOUTH ELEVATION**
SCALE: 1/4" = 1'-0"



32 SPA3 **EAST ELEVATION**
SCALE: 1/4" = 1'-0"



31 SPA3 **WEST ELEVATION**
SCALE: 1/4" = 1'-0"

BUILDING MATERIALS

BUILDING MATERIAL	ELEVATION LOCATION EAST	SOUTH	WEST	NW	NORTH
CLAY BRICK (B-1)	78.5 %	53.6 %	77.9 %	74.9 %	76.0 %
SPLIT-FACE BLOCK (B-2)	13.0 %	6.7 %	12.8 %	10.5 %	11.2 %
ACCENT BLOCK (B-3)	0.5 %	1.4 %	0.8 %	0.0 %	0.0 %
WINDOWS/ENTRY	1.0 %	31.3 %	1.5 %	7.6 %	6.1 %
CORNICE/TRIM	7.0 %	7.0 %	7.0 %	7.0 %	6.7 %

EXTERIOR MATERIALS SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	COLOR
B-1	UTILITY BRICK	GLEN-GERY	ADRIAN
B-2	SPLIT-FACE BLOCK	GRAND BLANC CEMENT	THS
B-3	CONCRETE BLOCK	GRAND BLANC CEMENT	THS

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JSCOTTARCHITECTS.COM

SHEET TITLE:
EXTERIOR ELEVATIONS

PROJECT:
PROPOSED PROJECT:
MULTI-TENANT BUILDING
HIGHLAND ROAD
HARTLAND, MI

ISSUED FOR:

SITE PLAN APP.	01/05/2021
REVISION	02/26/2021
REVISION	03/12/2021

STATE OF MICHIGAN
JEFFERY ARMSTRONG SCOTT
ARCHITECT
No. 1301038645
LICENSED ARCHITECT

DO NOT SCALE PRINTS
USE FIGURED DIMENSIONS ONLY

JOB NO.
20082

SHEET NO.
SPA3

PLOT SIZE: 36"X24"