AGENDA

Grand Haven Charter Township Planning Commission
Monday, July 17, 2017 – 7:00 p.m.

I. Call to Order

II. Roll Call

III. Pledge to the Flag

IV. Approval of the April 17, 2017 Meeting Minutes

V. Correspondence
   A. Port Sheldon Township – Master Plan Public Hearing
   B. Mark and Karen Yoder – Ehlert Rezoning Application
   C. Charles and Peggy Tyler – Deur Special Land Use Application

VI. Brief Public Comments & Questions (Limited to 3 minutes)

VII. Public Hearing
   A. Rezoning – R-4 to R-1 – Wood
   B. Rezoning – RR to AG – Ehlert
   C. Special Land Use – Group Day Care – Deur
   D. Special Land Use – Ag in RR District – Bradley
   E. Special Land Use – Indoor Recreation in C-1 District – Wilbur
   F. PUD – Regency at Grand Haven

VIII. Old Business
   A. Rezoning – R-4 to R-1 – Wood
   B. Rezoning – RR to AG – Ehlert
   C. Special Land Use – Group Day Care – Deur
   D. Special Land Use – Ag in RR District – Bradley
   E. Special Land Use – Indoor Recreation in C-1 District – Wilbur
   F. PUD – Regency at Grand Haven

IX. Reports
   A. Attorney's Report
   B. Staff Report
   C. Other

X. Extended Public Comments & Questions (Limited to 4 minutes)

XI. Adjournment

Note: Persons wishing to speak at public hearings, on agenda items, or extended comments, must fill out a "Speakers Form" located on the counter. Completed forms must be submitted to the Zoning Administrator prior to the meeting.

MEETING MINUTES
GRAND HAVEN CHARTER TOWNSHIP
PLANNING COMMISSION
JUNE 19, 2017

I. CALL TO ORDER

Cousins called the meeting of the Grand Haven Charter Township Planning Commission to order at 7:00 p.m.

II. ROLL CALL

Members present: Cousins, LaMourie, Robertson, Kieft, Wilson, Reenders, Chalifoux and Wagenmaker
Members absent: Taylor
Also present: Community Development Director Fedewa and Attorney Bultje

Without objection, Cousins instructed Fedewa to record the minutes.

III. PLEDGE TO THE FLAG

IV. APPROVAL OF MINUTES

Without objection, the minutes of the May 15, 2017 meeting were approved.

V. CORRESPONDENCE – None

VI. PUBLIC COMMENTS ON AGENDA ITEMS ONLY – None

VII. OLD BUSINESS

A. Special Land Use Amendment – Ag in RR District – Loftis

Wagenmaker recused himself because family members live within the notice area. It should be noted that Kieft previously recused himself, but it was later determined he was not within the notice area and was eligible to vote on this application.

Motion by Robertson, supported by Wilson to **approve** the Special Land Use Amendment application to allow an Agricultural operation in the Rural Residential zoning district on 13.26 acres of property located at Parcel No. 70-07-22-100-023. This will expand the existing operation into a total of 26.71 acres. This approval is based on the application meeting the applicable requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance. This motion is subject to, and incorporates, the following report.

REPORT

1. This approval is based on the affirmative findings that each of the following standards of Section 19.05 have been fulfilled:

A. The proposed use is consistent with, and promotes the intent and purpose of this Ordinance.

B. The proposed use is of such location, size, density, and character as to be compatible with adjacent uses of land and the orderly development of the district in which situated and of adjacent districts.

C. The proposed use does not have a substantially detrimental effect upon, nor substantially impair the value of, neighborhood property.

D. The proposed use is reasonably compatible with the natural environment of the subject premises and adjacent premises.

E. The proposed use does not unduly interfere with provision of adequate light or air, nor overcrowd land or cause a severe concentration of population.

F. The proposed use does not interfere or unduly burden water supply facilities, sewage collection and disposal systems, park and recreational facilities, and other public services.

G. The proposed use is such that traffic to, from, and on the premises and the assembly of persons relation to such use will not be hazardous, or inconvenient to the neighborhood, nor unduly conflict with the normal traffic of the neighborhood, considering, among other things: safe and convenient routes for pedestrian traffic, particularly of children, the relationship of the proposed use to main thoroughfares and to streets and intersections, and the general character and intensity of the existing and potential development of the neighborhood.

H. The proposed use is consistent with the health, safety, and welfare of the Township.

2. The application meets the site plan review standards of Section 23.06 of the Zoning Ordinance. Specifically, the Planning Commission finds as follows:

A. The uses proposed will not adversely affect the public health, safety, or welfare. Uses and structures located on the site take into account topography, size of the property, the uses on adjoining property and the relationship and size of buildings to the site. The site will be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted in this ordinance.

B. Safe, convenient, uncontested, and well defined vehicular and pedestrian circulation is provided for ingress/egress points and within the site. Drives, streets and other circulation routes are designed to promote safe and efficient traffic operations within the site and at ingress/egress points.

C. The arrangement of public or private vehicular and pedestrian connections to existing or planned streets in the area are planned to provide a safe and efficient circulation system for traffic within the township.

D. Removal or alterations of significant natural features are restricted to those areas which are reasonably necessary to develop the site in accordance with the requirements of this Ordinance. The Planning Commission has required that landscaping, buffers, and/or greenbelts be preserved and/or provided to ensure that proposed uses will be adequately buffered from one another and from surrounding public and private property.

E. Areas of natural drainage such as swales, wetlands, ponds, or swamps are protected and preserved insofar as practical in their natural state to provide areas for natural habitat, preserve drainage patterns and maintain the natural characteristics of the land.

F. The site plan provides reasonable visual and sound privacy for all dwelling units located therein and adjacent thereto. Landscaping shall be used, as appropriate, to accomplish these purposes.

G. All buildings and groups of buildings are arranged so as to permit necessary emergency vehicle access as requested by the fire department.

H. All streets and driveways are developed in accordance with the Ottawa County Road Commission specifications, as appropriate.

I. Appropriate measures have been taken to ensure that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Provisions have been made to accommodate storm water, prevent erosion and the formation of dust.

J. Exterior lighting is arranged so that it is deflected away from adjacent properties and so it does not interfere with the vision of motorists along adjacent streets, and consists of sharp cut-off fixtures.

K. All loading and unloading areas and outside storage areas, including areas for the storage of trash, which face or are visible from residential districts or public streets, are screened.

L. Entrances and exits are provided at appropriate locations so as to maximize the convenience and safety for persons entering or leaving the site.

M. The site plans conform to all applicable requirements of County, State, Federal, and Township statutes and ordinances.

N. As appropriate, fencing has been required by the Planning Commission around the boundaries of the development to minimize or prevent trespassing or other adverse effects on adjacent lands.

O. The general purposes and spirit of this Ordinance and the Master Plan of the Township are maintained.

Wagenmaker rejoined the Planning Commission.

VIII. REPORTS

A. Attorney Report – None

B. Staff Report – None

C. Other – None

IX. EXTENDED PUBLIC COMMENTS ON NON-AGENDA ITEMS ONLY

Dave Rickard – 11487 Loggers Trail, has questions related to accessory buildings within front yards.

- Questions the reason they are not permitted within front yards.
- Believes if certain criteria are met a person should be able to put an accessory building within the front yard. For example, a dead-end street, a private road, accessory building matches dwelling, additional screening, etc.
- Has a wooded lot and does not want to remove additional trees and pour more impervious surface to construct the building in the rear yard.
- Feels the Zoning Ordinance needs to use common sense.

The Planning Commission then began to discuss this subject, and noted the following:

- It was noted the Township spent a lot of time developing these regulations and what appears to be common sense for one property may not translate the same way on another.
- Attorney Bultje provided a few examples of how this subject is addressed in other communities—specify provisions in the accessory building regulations, special land use, etc.
- Issuing variances in this situation is not the correct method because a precedence is set, but a special land use permit would not set a precedence.
- Fedewa indicated that residents regularly request to have accessory buildings in front yards and generally use the same three arguments:
    - the building will match the dwelling,
    - the lot is wooded and cannot be seen from the road; and
    - the lot is large and cannot be seen from the road.

  Concerns related to these arguments are:
    - aesthetics are subjective,
    - the lot can be clear cut, which would make the building visible from the road; and
    - the lot could be divided, which could make the building visible from the road.

  If these three concerns occurred the basis for allowing the building in the front yard would be removed. A method to protect those common arguments must be found to move forward.
- The Planning Commission directed Fedewa to contact other municipalities and gather information on how they address this subject to determine if it is a direction the Township wants to pursue.

X. ADJOURNMENT

Without objection, the meeting adjourned at 7:32 p.m.

Respectfully submitted,

Stacey Fedewa

Stacey Fedewa
Acting Recording Secretary

16201 PORT SHELDON STREET
WEST OLIVE, MICHIGAN 49460

TELEPHONE 616-399-6121
FAX 616-399-7173

PORT SHELDON TOWNSHIP
OTTAWA COUNTY

NOTICE OF PUBLIC HEARING PORT SHELDON TOWNSHIP PLANNING COMMISSION
Please take notice that a Public Hearing will be held at the Port Sheldon Township Hall, 16201 Port Sheldon Street, West Olive, Michigan, by the Port Sheldon Township Planning Commission on Wednesday July 26, 2017 at 6:00 p.m. to hear and consider the following matter(s):

1. A revised MASTER PLAN for the Township. Copies of the proposed changes are available at the township office during regular business hours and on the township website at portsheldontwp.org.

Any persons interested in these matters may appear at such hearings in person or by agent or attorney. Written comments will be received at the Township Office until the night of the hearing. Copies of the application and other documentation are on file at the township office for public inspection during regular business hours. Direct phone inquiries to the Port Sheldon Township Building and Zoning Administrator at 616-399-6121. Individuals with disabilities requiring auxiliary aids or services should contact the Township by calling 616-399-6121.

Kathy Van Voorst

Kathy Van Voorst Clerk, 7/7/17

From:	mark@marky30.com
To:	Stacey Fedewa
Cc:	karen
Subject:	Rezoning application for 70-07-14-200-039
Date:	Tuesday, July 11, 2017 12:34:08 PM

Hello Stacey (sfedewa@ght.org),

Please forward a copy of this to Bill Cousins.

Regarding the rezoning request to change this property from rural residential to agricultural, we oppose rezoning. The adjacent properties in the area have been trending towards residential at a rapid rate for the last 10 years due to demand for housing. Examples are both Hunter Woods and Cutter Park. This shift has most certainly helped increased the tax base for the township. The move to using nearby land for agriculture seems backwards from that trend. Depending on the intended use of the property for agriculture, we are concerned about reducing our property value, and possible air pollution should the owner chose to have farm animals. Lastly, the South entrance to our subdivision is across the street from the proposed agriculture. It is one of two heavy traffic intersections. The entrance is not marked with a good sign (yet). If the farming across the street is not well kept, I fear the subdivision entrance will have a bad appearance....again affecting our property value.

Please take these things into consideration as you make your decision regarding this rezoning.

Thank you,

Mark and Karen Yoder
12987 Woodrush Court
Grand Haven, MI 49417
616-402-5253

July 13, 2017

Stacey Fedewa, Community Development Director
Grand Haven Charter Township
13300 168th Avenue
Grand Haven, MI 49417

RE: Special Land Use application to expand the existing day care into a Group Day Care Home, which would permit 7-12 children. The proposed location of this activity is at Parcel No. 70-03-33-300-051, 14736 Lakeshore Drive.

Dear Ms. Fedewa:

For the reasons cited below, we oppose the referenced application.

We are the only adjoining private landowner and only other home sharing a private road with the applicants. One of the main reasons we purchased our house as our retirement home was its relative seclusion and the fact that we were one of only two houses sharing a private road. We reasonably anticipated that the private road would only be used by the families owning the two properties.

We oppose granting the Special Land Use Permit which would entail potentially doubling the number of children the business could care for, and thus doubling the unauthorized vehicles that are currently using and impacting the private road, on several grounds:

1. The Grand Haven Charter Township Zoning and Private Roads and Driveways Ordinances

Chapter 19 of The Grand Haven Charter Township Zoning Ordinance provides for the potential approval of "Special Land Uses" subject to such uses meeting the standards contained therein under Section 19.05. Further specific requirements are enumerated in Section 19.07.

Group Day Care Homes are permissible as a Special Land Use subject to meeting the Standards enumerated in Section 19.05 AND the standards for Group Day Care Homes under Subsection 19.07.15 - Group Day Care Homes. (Relevant provisions at Attachment A)

A. Subsection 19.05.3 requires that *"The proposed use shall not have a substantially detrimental effect upon, nor substantially impair the value of, neighborhood property."*

In this case, the proposed use has several detrimental effects upon, and substantially impairs the value of our neighboring property, as detailed below.

B. Subsection 19.05.7 requires that:

" The proposed use shall be such that traffic to, from, and on the premises and the assembly of persons relating to such use will not be hazardous, or inconvenient to the neighborhood, nor unduly conflict

with the normal traffic of the neighborhood, considering, among other things: safe and convenient routes for pedestrian traffic, particularly of children, the relationship of the proposed use to main thoroughfares and to streets and intersections, and, the general character and intensity of the existing and potential development of the neighborhood."

In this case, due to the topography of the land, the narrow width of the road, and the ravine with no guardrails next to the pole barn and directly across from the pole barn, the proposed use, which would result in drastically increasing the number of cars using the private road, would unquestionably create hazards to traffic and pedestrians using the private road and the Bike Path which the road crosses and would, inconvenience our neighboring property, as detailed below. These hazards are particularly concerning since each of the vehicles will be transporting young children.

C. Subsection 19.07.15 (G) requires that:

"G. The use shall be supported by certain infrastructure features, including paved roads, natural gas, and municipal water and, if available, sanitary sewer."

We have been advised by the Township Office that the applicant's home is not supplied with municipal water; prior occupants of the property advised us that their only source of water was a well.

D. Subsection 19.07. 15 B4(e) 6 requires that:

"e) A group day care home will not cause unreasonable traffic problems or concerns, based upon an evaluation of existing and proposed parking, traffic patterns, the proximity of other family day care homes, and the traffic resulting from other land uses within the one thousand five hundred (1,500) feet separation requirement."

Although this requirement is placed under a provision regarding proximity of group day care homes, it establishes a clear requirement that no group day care home can cause unreasonable traffic problems or concerns, based upon an evaluation of existing and proposed traffic patterns, and the traffic resulting from other land uses. It would be anomalous and indeed nonsensical to interpret this provision as stating a group day care home can cause unreasonable traffic patterns or concerns as long as it is not in close proximity to other group day care homes.

Such an interpretation would conflict with the general purposes of the statute and Section 1905 in particular.

Chapter 30 of The Grand Haven Charter Township Ordinance provides for the use of potential approval of Private Roads and Driveways subject to such uses meeting the standards contained therein under Section 1905. (Relevant provisions at Attachment B)

A. Subsection 2.4 defines "private: as:

"Private": When used with the terms "driveway" or "road", means that the driveway or road is not generally open to the public, but rather, is intended for the use or convenience of a limited number of persons, such as those who own land that abuts to or has access by means of the road or driveway.

B. Subsection 4.2.A of the Ordinance governs private roads for safety and other purposes. It requires certain minimum width requirements which are not applicable to the private road we share with the applicants because it pre-existed the date of the ordinance and thus is grandfathered pursuant to the provisions of Subsection 30.0405.7.

Notwithstanding the foregoing, the Ordinance recognizes how vital the width of the road must be - it states:

A. Roads which serve less than four premises. Private roads with less than four premises shall be at least sixteen and one - half feet (16.5') in width for each premises served and the width must be maintained for the entire length of the road (e. g., a private road which serves two premises must be at least thirty - three feet (33') in width over its entire length; a private road which serves three premises must be at least forty -nine and one - half feet (49.5') in width over its entire length.

B. Roads which serve four (4) or more premises. Private roads which serve four (4) or more premises must be at least sixty - six feet (66') in width for the entire length of the road.

We will leave it up to the Commission what the addition of twelve (12) cars would be in terms of additional residences for the purposes of determining what the width of the road should be for such traffic.

2. Covenanted permissible use of Private Drive

Quite apart from the municipal law violations, approval of the application would be contrary to an existing Private Drive Maintenance Agreement (Agreement) dated December 19, 2013, recorded in the Register of Deeds of Ottawa County, MI (Attachment C)

In 2013 we were contacted by a Realtor representing the Owner of the property in question who was selling the property. The Realtor advised us that the Owner wanted us to sign a road maintenance agreement with him.. We told the Realtor we were not interested because the Owner had refused to sign a similar agreement with the owners of our property when they were selling the house to us. The Realtor then advised that a road agreement was required by the Veterans Administration to provide a mortgage to a family who wished to purchase the property. Not wishing to deprive a family of a VA mortgage, and in an attempt to be good neighbors, we negotiated and executed the Agreement with Counsel representing the Owner/Seller. We insisted on inclusion of the non-commercial use language because of our concerns regarding the safety issues surrounding more than a couple of vehicles using the drive and because of concerns regarding the impact such use would have on maintenance and replacement costs.

The Agreement specifically states it is a covenant running with the land and binding on subsequent property owners: It further requires that:

"Use of the private drive by the Parcel Owners shall be limited to non-commercial, personal use only . . . ."

A Group Child Care Home is a for-profit business and the use of the private road by the current Parcel Owners to accommodate the customers of their business is a "commercial use" and in clear violation of the Agreement.

We have suffered the violation of the Agreement in an attempt to be good neighbors - potentially doubling the number of violations as proposed in the Permit Application, (and likely tripling the number of vehicles the private road was constructed to service) is beyond our intention to be a good neighbor - being good neighbors is reciprocal.

Tripling the number of vehicles using the private road will triple the wear and tear and hasten the time when the road will have to be replaced, which will cause us great financial harm.

3. Safety Issues

A. The private road is only wide enough to accommodate one vehicle;

B. There is a blind approach both when driving over the dune from Lakeshore Drive to the residences and from the residences to Lakeshore Drive;

C. Cars use the private road unannounced from approximately 6:30 - 9:00 a.m. and from approximately 3:00 to 6:30 p.m. - neither we nor the business customers ever know when another vehicle will be encountered in the blind approach to the hill, and be forced to back down the road.

D. Tripling the traffic crossing the Bike Path will inevitably increase hazards to bicyclists and walkers on the Bike Path and tripling the traffic turning into the road will increase the likelihood of traffic accidents (the owners of both residences have been rear-ended while stopped on Lakeshore Drive with turn signal activated attempting to make a left turn into the private road).

4. Disturbing the Peaceful and Quiet Enjoyment of our Property

Increased use of the private road by customers of the Child Care business will interfere with the peaceful and quiet enjoyment of our property (Photos/Videos at Attachment D - MEDIA)

A. We have absorbed the expense of plowing and sometimes salting the road from Lakeshore to our driveway - we sold one car and replaced it with one with all wheel drive because of the slippery and dangerous condition of the private road in the winter.

B. Use of the private road in the winter by an increasing number of vehicles compresses the snow and makes the road more hazardous and more difficult to navigate.

B. Invariably one or more of the applicant's customers gets stuck trying to get over the dune and blocks the road.

C. Regardless of the weather, when one of applicants customers encounters another customer, they back into our driveway to let the other car pass - this happens multiple times a week, morning and

evening; they have broken reflective lights we place out for plowing, and driven onto our lawn.

D. We use the road daily to walk to Lakeshore Drive to get newspapers and the mail, and we move a garbage container up and down the road weekly. Due to the narrow width of the road and blind spots, it is hazardous enough with a single car using the road - given the current violation of the Agreement it is six times as hazardous. Doubling that number of cars makes every walk down the road that much more risky for us.

In summary, this application should not be granted for the reasons enumerated: it violates the Township Zoning Ordinance; it violates the contractual agreement governing use of the private road; it will cause an early destruction of the road surface which was not constructed to bear such traffic; it will pose an increased risk of accidents, and it will further interfere with our peaceful and quiet enjoyment of our property.

We have no animus toward the Duers, but if they wanted to run a Child Care Business they should have purchased a property that did not require use of a narrow, restricted private driveway and they should have read the very Private Drive Maintenance Agreement that we only executed as an accommodation to them so that they could purchase their house in the first place.

If the Deurs desire to expand their business, they should rent a suitable facility with appropriate accommodations, including safe and unrestricted ingress and egress.

We should not suffer additional hardship and concerns regarding the reasonable use of our own property.

Nothing in this opposition to the approval of a Special Land use may be construed to limit our ability to take such legal action as may be necessary to strictly enforce the terms of the Private Drive Maintenance Agreement.

We respectfully submit that for all of the reasons provided above, the Grand Haven Charter Township Planning Commission should deny the Deur application for a Special Land Use permit.

Sincerely,

Charles and Peggy Tyler

Charles K. Tyler (Date) July 13, 2017

Peggy L.B. Tyler (Date) July 13, 2017

ATTACHMENT A

4. The Planning Commission may, when presented with an application for a proposal to be constructed in phases, grant approval to such project without regard to the one (1) year time limits set forth in subsection 2 above. The Planning Commission shall determine that the project cannot be practically developed as separate projects and that the subject and surrounding premises will be best served by a phased approval. The Planning Commission shall specify in its decision the period of validity for each phase. Should the applicant fail to timely complete any phase of an approved project, the decision of the Planning Commission for all subsequent phases shall be of no further validity.

5. Revocation. Any permit issued under this Ordinance may be revoked by the Township Planning Commission for any violation of this Ordinance after notice of the violation is provided and an opportunity for a hearing before the Township Planning Commission is provided. If the violation involves an immediate danger to the public health, safety, or welfare, the permit may be revoked immediately, provided that the person holding the permit is provided with an opportunity for a subsequent hearing before the Township Planning Commission. A request for such a hearing shall be filed with the Township within five (5) days following the revocation. The hearing shall be noticed in accordance with the Zoning Act as required for special land uses.

15.1904 SECTION 19.04 FEES

All applications to the Planning Commission for approval of special land uses or other matter shall be accompanied by payment of such fees as shall from time to time be established by resolution of the Township Board.

15.1905 SECTION 19.05 STANDARDS FOR SPECIAL LAND USES

Authorization applications for special land uses shall not be approved until the Planning Commission shall find that all of the following standards are satisfied:

1. The proposed use shall be consistent with, and promote the intent and purpose of this Ordinance.

2. The proposed use shall be of such location, size, density, and character as to be compatible with adjacent uses of land and the orderly development of the district in which situated and of adjacent districts.

3. The proposed use shall not have a substantially detrimental effect upon, nor substantially impair the value of, neighborhood property.

4. The proposed use shall be reasonably compatible with the natural environment of the subject premises and adjacent premises.

5. The proposed use shall not unduly interfere with provision of adequate light

or air, nor overcrowd land or cause a severe concentration of population.

6. The proposed use shall not interfere with or unduly burden water supply facilities, sewage collection and disposal systems, park and recreational facilities, and other public services.

7. The proposed use shall be such that traffic to, from, and on the premises and the assembly of persons relating to such use will not be hazardous, or inconvenient to the neighborhood, nor unduly conflict with the normal traffic of the neighborhood, considering, among other things: safe and convenient routes for pedestrian traffic, particularly of children, the relationship of the proposed use to main thoroughfares and to streets and intersections, and, the general character and intensity of the existing and potential development of the neighborhood.

8. The proposed use shall be consistent with the health, safety, and welfare of the Township.

15.1906 SECTION 19.06 CONDITIONS ON SPECIAL LAND USES

1. The Planning Commission may impose reasonable conditions in conjunction with the approval of a special land use. Conditions imposed shall meet the requirements of the Zoning Act. The Planning Commission shall maintain a record of all conditions attached to a special land use approval.

2. The conditions imposed with respect to the approval of a land use or activity shall be recorded in the record of the approval action, and shall remain unchanged except upon the application for a new special land use which alters the approval originally granted by the Planning Commission in accordance with the requirements of this Chapter.

3. The Planning Commission may require that the special land use be connected to the Townships municipal water and sanitary sewer facilities, if available. The Townships municipal water and sanitary sewer facilities shall be determined to be available if there is municipal water supply main or sanitary sewer line to which connection can be made within two thousand, seven hundred (2,700) feet of the nearest property line of the parcel on which the special land use is to be located.

15.1907 SECTION 19.07 SPECIAL LAND USE SPECIFIC REQUIREMENTS

1. Agriculture.
2. Bed and Breakfast Establishments.
3. Billboards.
4. Bus Terminals.
5. Cemeteries and Mausoleums.
6. Child Care or Day Care Centers (amend. by ord. no. 362 eff. September 22,

C. The lot area used for parking, display, or storage shall be provided with a permanent, durable and dustless surface, and shall be graded and drained so as to dispose of all surface water.

D. Access driveways shall be located no less than fifty (50) feet from the nearest part of the intersection of any street or any other driveway, as measured along the property line, to any other non-residential driveway.

E. All exterior lighting shall be erected and hooded so as to shield the glare of such lights from view by adjacent property.

F. Any materials or equipment stored or displayed outside of an enclosed building shall not extend into any required yard or occupy any required vehicle parking or maneuvering areas.

15. Group Day Care Homes.

A. The group day care home shall be licensed or registered under the Child Care Organization Act, being Act 116 of the Public Acts of 1973, as amended. A statement from the appropriate licensing agency that a license has been applied for by the special land use applicant and has been approved pending compliance with the Township's zoning requirements shall be sufficient.

B. The group day care home shall not be located closer than one thousand five hundred (1,500) feet to any of the following:

1) An adult foster care small group home or foster care large group home, licensed under the Adult Foster Care Licensing Act, being Act 218 of the Public Acts of 1979, as amended.

2) A facility which offers substance abuse treatment and rehabilitation service to seven (7) or more people, licensed under Article 6 of the Public Health Code, being Act 368 of the Public Acts of 1978, as amended.

3) A community correction center, resident home, halfway house, or other similar facility which houses an inmate population under the jurisdiction of the Department of Corrections or of the Ottawa County Sheriff.

4) Another group day care home licensed under the Child Care Organization Act, Act 116 of 1973, as amended. Provided, however, that the Planning Commission may approve the special land use application for the operation of no more than

one (1) group day care home within one thousand five hundred (1,500) feet of another group day care home, if the application meets the following criteria:

a) There are no other adult foster care small group homes or adult foster care large group homes within one thousand, five hundred feet (1,500) feet of either of the two (2) group day care homes;

b) There are no facilities offering substance abuse and treatment services within one thousand five hundred (1,500) feet of either of the two (2) group day care homes;

c) There are no community correction centers, resident homes, halfway houses, or other similar facility which houses an inmate population under the jurisdiction of the Department of Corrections or the Ottawa County Sheriff within one thousand five hundred (1,500) feet of either of the group day care homes;

d) The group day care homes must be separated by a distance of at least five hundred (500) feet, measured between the nearest property lines of the two (2) premises on which the group day care homes will be conducted, if the second one is approved;

e) A group day care home will not cause unreasonable traffic problems or concerns, based upon an evaluation of existing and proposed parking, traffic patterns, the proximity of other family day care homes, and the traffic resulting from other land uses within the one thousand five hundred (1,500) feet separation requirement.

f) For the purposes of this subsection, the separation requirements shall be measured from the driveway of the applicant to the driveway of the nearest licensed facility described above in paragraphs (1) through (4), along the shortest route from one to the other along a road, street or place maintained by the State of Michigan or any political subdivision of the State and generally open to use by the public as a matter of right for the purpose of vehicular traffic, but not including an alley. For the purpose of this subsection, a private street shall be treated as a public road, street, or place

only for the purpose of making the measurement required by this subsection.

g) A group day care home shall have appropriate fencing for the safety of the children in the group day care home. This fencing shall, at a minimum, meet the requirements of this Ordinance or any other Ordinance of the Township which pertains to fencing. Additional fencing may be required if it is determined to be reasonably necessary for the protection of the children. A statement from the applicant that fencing will be installed as required by the appropriate state agency as a condition of issuance by the agency of a license to the applicant shall be sufficient to meet this requirement. Provided, however, that any special land use permit granted shall require that the fencing be installed before children are actually receiving care at the applicant's home.

C. The group day care home's appearance shall be compatible with the visible characteristics of other homes in the neighborhood. Further, if approval is granted, the appearance of the group day care home shall be maintained so that it continues to be compatible with the visible characteristics of other homes in the neighborhood.

D. The group day care home shall not exceed sixteen (16) hours of operation during a twenty-four (24) hour period. The Planning Commission may impose reasonable conditions to limit but not prohibit the operation of a group day care home between the hours of 10:00 p.m. and 6:00 a.m. so as to minimize noise, light and other activities which have potential to disturb neighbors during those hours.

E. The group day care home shall meet the minimum requirements of this Ordinance or any other Ordinance of Grand Haven Charter Township or other law or regulation governing signs and used by a group day care home to identify itself.

F. The group day care home shall meet the off-street parking accommodations requirements of this Ordinance or any other Ordinance of Grand Haven Charter Township or other law or regulation governing the provision of off-street parking accommodations for employees of the group day care home. Any parking spaces required may be installed after approval of the special land use, but in such event they must be installed before children are actually receiving care at the applicant's home.

G. The use shall be supported by certain infrastructure features, including paved roads, natural gas, and municipal water and, if available, sanitary sewer.

16. Hotels and Motels.

A. Minimum lot area shall be two (2) acres and minimum lot width shall be one hundred fifty (150) feet.

B. Parking areas shall be setback at least thirty (30) feet from any property line, and shall be landscaped in accordance with Section 20.13 (Landscaping Requirements).

C. Accessory restaurants, lounges, or retail stores may be permitted. Additional off-street parking will be required for any such use.

D. Access driveways shall be located at least seventy-five (75) feet from the nearest part of the intersection of any street or any other driveway, as measured along the property line, to any other non-residential driveway.

E. All exterior lighting shall be erected and hooded so as to shield the glare of such lights from spilling onto adjacent property.

F. The use shall be supported by certain infrastructure features, including paved roads, natural gas, and municipal water and sanitary sewer.

17. Indoor Recreation, Exercise and Athletic Facilities.

Indoor recreation uses such as tennis courts, ice-skating rinks, court sports facilities and dance or gymnastics academies. Accessory facilities that are clearly in support of the primary use, such as sporting goods shops, food service and party/banquet facilities serving patrons of the indoor recreation use, spectator accommodations, changing/locker rooms and shower areas and accessory offices may also be allowed. An indoor recreation use may be permitted in accordance with all of the following requirements.

A. The use shall include a designated pickup and drop-off area for all patrons, providing safe and clearly designated access to the site and building.

B. In determining the number of required parking spaces the Planning Commission may take into account the hours of operation and types of activities conducted on the site. A parking-demand study, provided by the applicant, may be required to determine parking requirements.

ATTACHMENT B

30.0400 **PRIVATE ROADS AND DRIVEWAYS**
TOWNSHIP OF GRAND HAVEN, MICHIGAN
ord no. 262 eff. Apr. 27, 1997

An Ordinance to provide regulations for private roads and driveways.

30.0401 **Sec. 1 TITLE**

This Ordinance shall be known and referred to as the "Grand Haven Charter Township Private Roads and Driveways Ordinance"

30.0402 **Sec. 2 DEFINITIONS**

As used in this Ordinance, the following words and phrases shall have the definitions hereinafter provided:

1. "Driveway": The route, way, ingress/egress, etc., which is used to provide vehicular access from a public or private street, road, highway, boulevard, or avenue to a structure.

2. "Lateral Crown": The slope of the horizontal cross-section of a private road or driveway, measured from the highest point of the road's or driveway's upper surface to the lowest point of the road's or driveway's upper surface.

3. "Owner(s)": The persons, firm, or corporation who has legal or equitable title to the land over which a private drive or road is laid out or constructed.

4. "Private": When used with the terms "driveway" or "road", means that the driveway or road is not generally open to the public, but rather, is intended for the use or convenience of a limited number of persons, such as those who own land that abuts to or has access by means of the road or driveway.

5. "Serve": A private road is considered to serve a premises if the private road crosses or is adjacent to and abutting the premises and therefore is able to access the premises, whether or not the premises is actually or potentially accessed by any other private road, or by any public street or road.

   A. By adding this definition to the Ordinance, effective April 18, 2003, the Township will promote the public purpose of ensuring that private roads meet the requirements of this Ordinance even if the private roads is expanded after initial construction to serve premises which also have alternative accesses.

   B. If any private road in existence when this definition is added to the Ordinance, no longer complies with this Ordinance because of this

and passable. "Clear and passable" shall mean that the area is free of roots, brush, shrubs, trees, obstructions, or any other debris.

E. The private driveway shall have a minimum lateral crown of 0.4 percent (0.4%) and a maximum lateral crown of seven percent (7.0%).

4. Radius of Turns: On all driveways which exceed one hundred feet (100') in length, if the driveway has any turns, the driveway must be reviewed by the Township Fire and Rescue Department to insure that the Township's equipment can readily traverse the driveway at least to a point within one hundred feet (100') of the structure served by the driveway. The Township Fire Chief shall have the discretion to deny approval of any proposed driveway which cannot be readily traversed by the equipment of the Township Fire and Rescue Department due to severity of turns or inadequate radius of the turns in the proposed driveway. The review by the Township Fire Chief shall be based on the then current standards or requirements of the Ottawa County Road Commission for public streets and roads.

30.0404 Sec. 4 STANDARDS AND REQUIREMENTS FOR PRIVATE ROADS

All private roads shall be subject to the following standards and requirements:

1. Maximum Number of Premises. A private road may serve no more than twenty-four (24) premises.

2. Minimum Width. The minimum width of a private road shall be as follows:

A. Roads which serve less than four premises. Private roads with less than four premises shall be at least sixteen and one-half feet (16.5') in width for each premises served and the width must be maintained for the entire length of the road (e. g., a private road which serves two premises must be at least thirty-three feet (33') in width over its entire length; a private road which serves three premises must be at least forty-nine and one-half feet (49.5') in width over its entire length.

B. Roads which serve four (4) or more premises. Private roads which serve four (4) or more premises must be at least sixty-six feet (66') in width for the entire length of the road.

C. Roads which potentially will serve four (4) or more premises. Notwithstanding Section 4.2.A above, private roads which serve less than four (4) premises but which potentially will serve four (4) or more premises must be at least sixty-six feet (66') in width for their

driveway from the edge of the public or private road that is nearest to the property served by the driveway to the nearest side of the primary structure served by the driveway.

2. The length of a private road shall be measured along the centerline of the road from the nearest edge of the public road that the private road touches to the end of the private road.

3. Access to property by means of more than one (1) private road is not permitted unless specifically approved by the Township Board, based on the advice and recommendation of the Township's Public Works Department and Fire and Rescue Department.

4. All private roads are to be registered with the Township's Fire and Rescue Department. The name of a private road shall be established only with the approval of the Township's Fire and Rescue Department in order to avoid confusion or duplication of names. A copy of the easement required by Section Four (C) (9), above, shall be provided to the Township.

5. All private drives which exceed one hundred feet (100') in length and all private roads are subject to periodic inspection by the Township's Fire and Rescue Department in order to ensure that the road is being properly maintained. If the Fire Chief determines that a private road is not being properly maintained in accordance with the requirements of this Ordinance, the Fire Chief shall give notice of the deficiency to the record owners of all parcels which are served by the private road.

6. As used in this Ordinance, the terms "maintenance" and "repair" include, but are not limited to, the following: snow removal, tree trimming, tree removal, and reconstruction of a private driveway or road.

7. This Ordinance shall apply to all driveways and roads which are constructed after the effective date of this Ordinance, and to all driveways and roads lawfully existing at the time of the effective date of this Ordinance if such existing driveway or road is improved, extended, or expanded to serve a greater number of parcels.

8. The Township Superintendent, the Township Fire Chief, and the Township Zoning Administrator/Building Inspector are authorized to enforce the provisions of this Ordinance.

30.0406 Sec. 6 COMPLIANCE

1. The owner(s) of the land over which the private road which serves four (4) or more premises is to be constructed shall provide the Township with

ATTACHMENT C

8467693
Tx:4189748
1/3/2014 10:37:00 AM

2014-0000288
FILED/SEALED FOR RECORD IN
OTTAWA COUNTY, MI
DANIEL C. KRUEGER
COUNTY CLERK/REGISTER OF DEEDS
01/03/2014 AT 2:01 PM
AGREEMENT 29.00

PRIVATE DRIVE MAINTENANCE AGREEMENT

THIS AGREEMENT ("**Agreement**") is made as of the 19th day of December, 2013, and is entered into by and between **JLF REALTY GROUP, LLC**, a New York limited liability company, of 1542 – 53rd Street, Brooklyn, New York 11219 ("**JLF**"), and **CHARLES K. TYLER AND PEGGY L. TYLER**, husband and wife, of 14730 Lakeshore Drive, Grand Haven, Michigan 49417 ("**Tyler**").

Background

A. JLF is the owner of a parcel of real property commonly known as 14736 Lakeshore Drive, Grand Haven, Michigan, Permanent Parcel No. 70-03-33-300-051, and legally described on the attached Exhibit A (the "**JLF Parcel**").

B. Tyler is the owner of a parcel of real property commonly known as 14730 Lakeshore Drive, Grand Haven, Michigan, Permanent Parcel No. 70-03-33-300-046, and legally described on the attached Exhibit B (the "**Tyler Parcel**").

C. The JLF Parcel and the Tyler Parcel are contiguous to one another. Each parcel may be referred to herein as a "**Parcel**", or collectively as "**Parcels**".

D. The fee owner of a Parcel is referred to herein as a "**Parcel Owner**", and collectively as "**Parcel Owners**".

E. The Parcels benefit from all or a part of a private drive located within an easement for ingress and egress (the "**Private Drive**").

F. The Parcel Owners desire to make provisions for the maintenance of the Private Drive, in accordance with the following Agreement.

Agreement

THEREFORE, for and in consideration of the terms and conditions herein, the parties agree as follows:

1. The Parcel Owners shall share the maintenance costs related to the Private Drive in accordance with the provisions of this Agreement (the "**Maintenance Expenses**").

(1)

2. The Maintenance Expenses for the Private Drive shall be borne in the following manner:

1. JLF Parcel Owner 60%.
2. Tyler Parcel Owner 40%.

3. Maintenance Expenses are limited to the cost of snow plowing the Private Drive. If other maintenance, such as filling potholes or paving, is required, the parties shall mutually agree on those Maintenance Expenses prior to commencing the work.

4. The Parcel Owner incurring any such agreed-upon Maintenance Expenses may submit a statement to the other Parcel Owner describing the Maintenance Expenses incurred. The non-performing Parcel Owner shall pay that Owner's share of sums due hereunder within fifteen (15) days after receipt of a statement showing the amount to be paid.

5. There are no intended third party beneficiaries of this Agreement. This Agreement describes the rights and duties only of the Parcel Owners.

6. Use of the Private Drive by the Parcel Owners shall be limited to non-commercial, personal use only, and commercial vehicles may not use the private drive (other than in connection with making deliveries or providing services to a Parcel Owner). The Private Drive may be used only for ingress, egress and utilities, and not for parking.

7. This Agreement is intended to benefit and burden the Parcels and shall run with the land. This Agreement shall be binding upon and inure to the benefit of the respective heirs, personal representatives, successors and assigns of the parties hereto, including all subsequent Parcel Owners. All notices relating to this Agreement shall be in writing and shall be sent by U.S. Mail, postage prepaid, and shall be effective upon mailing. This Agreement shall be governed by Michigan law.

8. In consideration of Charles K. Tyler and Peggy L. Tyler executing this Agreement, the JLF Parcel Owner shall defend, indemnify, and hold the Tyler Parcel Owner harmless from and against any and all claims, suits, actions, or liabilities for injury or death of any person and for loss of or damage to property which arise out of use of the Private Drive by third parties, including tenants of the servient estate, but excluding the Tyler Parcel Owners and their invitees. This obligation shall be binding on the JLF Parcel Owner and all subsequent owners of the JLF Parcel.

9. This Agreement is exempt from County Real Estate Transfer Tax by virtue of MCL 207.505(a); and exempt from State Real Estate Transfer Tax by virtue of MCL 207.526(a).

10. This Agreement may be executed in multiple counterparts, each of which shall be deemed to be an original Agreement, and all of which shall constitute one Agreement.

[signatures appear on the following page]

JLF PARCEL OWNER:

JLF REALTY GROUP, LLC,
a Michigan limited liability company

By: _____
Jacques Freund

Its: Sole Member and Manager

STATE OF New York)
COUNTY OF KINGS)

The foregoing instrument was acknowledged by me this 19 day of Dec., 2013, by Jacques Freund, the Sole Member and Manager of JLF Realty Group, LLC, a New York limited liability company, on behalf of the company.

_____

Notary Public, _____ County
Acting in _____
My commission expires: _____

SAMUEL FLAKS
Notary Public, State of New York
No. 24-01FL4901944
Qualified in Kings County
Commission Expires July 27, 2017

[NOTARY SEAL]

6684385.7

TYLER PARCEL OWNER:

Charles K. Tyler

Peggy L. Tyler

STATE OF MICHIGAN)
)
COUNTY OF Ottawa)

The foregoing instrument was acknowledged by me this 19th day of December _____, 2013, by Charles K. Tyler and Peggy L. Tyler, husband and wife.

Notary Public, _____ County, _____
Acting in _____, County, _____
My commission expires: _____

CATHERINE A. COX
Notary Public, State of Michigan
County of Ottawa
My Commission Expires Oct. 28, 2017
Acting in the County of Ottawa

Drafted by and when recorded return to:
Peter A. Schmidt, Esq.
VarnumLLP
PO Box 352
Grand Rapids, MI 49501-0352
616-336-6411

6684385.7

EXHIBIT A to
PRIVATE DRIVE MAINTENANCE AGREEMENT

(Legal Description of JLF Parcel)

Property located in Grand Haven Township, Ottawa County, Michigan, described as follows:

That part of the North 1/2 of the Northwest 1/4 of the Southwest 1/4 of Section 33, Town 8 North, Range 16 West, described as beginning at a point on the East and West 1/4 line of said Section 33, South 89°02'27" East 550.00 feet from the West 1/4 corner of said Section 33; thence South 89°02'27" East 390 feet more or less to the West line of the C & O Railroad being Point "A", thence recommencing at the point of beginning; thence South 01°06'04" West 290.53 feet; thence South 70°27'23" West 57.10 feet; thence South 01°06'04" West 348.73 feet; thence South 88°58'54" East 521.0 feet more or less to the West line of the C & O Railroad; thence Northwesterly along said West line of C & O Railroad 663.0 feet more or less to Point "A", being the point of ending.

Together with an easement for ingress, egress, and public utilities described as beginning at a point on the West line of said Section 33, South 01°06'04" West 351.00 feet from the West 1/4 corner of said Section 33; thence South 89°02'27" East 200.00 feet; thence North 70°27'23" East 374.02 feet; thence South 01°06'04" West 70.53 feet; thence South 70°27'23" West 361.08 feet; thence North 89°02'27" West 212.10 feet; thence North 01°06' East 66.00 feet to the point of beginning.

EXHIBIT B to
PRIVATE DRIVE MAINTENANCE AGREEMENT

(Legal Description of Tyler Parcel)

Property located in Grand Haven Township, Ottawa County, Michigan, described as follows:

That part of the North 1/2 of the Northwest 1/4 of the Southwest 1/4 of Section 33, Town 8 North, Range 16 West, described as beginning at a point which is South 01 degrees 06 minutes 04 seconds West along the West line of said Section 33, 417.00 feet AND South 89 degrees 02 minutes 27 seconds East 212.10 feet AND North 70 degrees 27 minutes 23 seconds East 21.85 feet from the West 1/4 corner of said Section 33, thence North 70 degrees 27 minutes 23 seconds East 282.13 feet, thence South 01 degrees 06 minutes 04 seconds West 248.73 feet, thence North 88 degrees 58 minutes 54 seconds West 246.56 feet, thence North 05 degrees 33 minutes 10 seconds West 150.63 feet to the Point of Beginning.

Together with and Subject to an easement for ingress, egress and public utilities described as beginning at a point on the West line of said Section 33 South 01 degrees 06 minutes 04 seconds West 351.00 feet from the West 1/4 corner of said Section 33, thence South 89 degrees 02 minutes 27 seconds East 200.00 feet, thence North 70 degrees 27 minutes 23 seconds East 374.02 feet, thence South 01 degrees 06 minutes 04 seconds West 70.53 feet, thence South 70 degrees 27 minutes 23 seconds West 361.08 feet, thence North 89 degrees 02 minutes 27 seconds West 212.10 feet, thence North 01 degrees 06 minutes 04 seconds East 66.00 feet to the Point of Beginning.

GRAND HAVEN CHARTER TOWNSHIP

Community Development Memo

DATE: July 12, 2017

TO: Planning Commission

FROM: Stacey Fedewa, Community Development Director

RE: Wood – Rezoning Application (R-4 to R-1)

BACKGROUND

The applicant, Steve Wood, requests to rezone his 2.65 acre parcel at 14608 Lakeshore Drive (70-03-33-300-059) from Multiple Family (R-4) to Single Family (R-1).

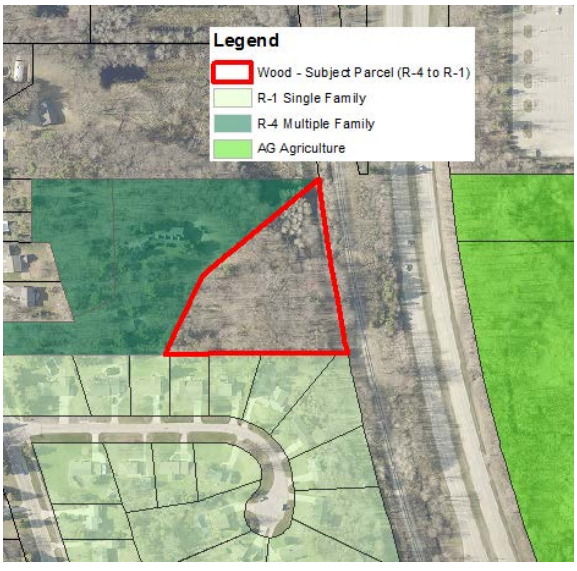
The rezoning application was tested against the "Three C's" evaluation method.

COMPATIBILITY

*Is the proposed rezoning **compatible** with the existing developments or zoning in the surrounding area?*

The zoning for parcels that border the applicants' parcel is:

Direction	Current Zoning	Existing Use
North	R-4	Single Family
South	R-1	Single Family
East	AG	Vacant Land
West	R-1	Single Family



The 2016 Future Land Use Map has master-planned the subject parcel for Medium Density Residential, which corresponds to zoning districts R-1 and R-2.

CONSISTENCY

*Is the proposed rezoning **consistent** with the goals and objectives of the Master Plan and does it coincide with the Future Land Use Map in terms of an appropriate use of the land?*

The proposed rezoning is consistent with surrounding land uses and the Statement of Purpose narrative for the R-1 district, which includes:

- The purpose of the R-1 District is to encourage an environment of low-density single-family dwellings, with other residentially related facilities and activities primarily of service to the residents in the area.

CAPABILITY

*Does the proposed rezoning require an extension of public sewer and water, roadway improvements, or enhanced fire and police protection, and if so, is it in an area **capable** of being provided with such services?*

Parcels within the R-1 District should be supported by certain infrastructure features, including paved roads, natural gas, municipal water, and if available sanitary sewer.

This parcel is only accessed via a driveway easement and does not have frontage on Lakeshore Drive. Staff will need to discuss whether or not the Township is logistically able to supply the property with public water. Sanitary sewer is not available.

SAMPLE MOTIONS

If the Planning Commission finds the rezoning application meets the applicable standards, the following motion can be offered:

> **Motion** to recommend to the Township Board **approval** of the Wood rezoning application of parcel 70-03-33-300-059 from Multiple Family (R-4) to Single Family (R-1) based on the application meeting applicable rezoning requirements and standards of the Grand Haven Charter Township Zoning Ordinance, Master Plan, and Future Land Use Map.

If the Planning Commission finds the rezoning application does not meet the applicable standards, the following motion can be offered:

> **Motion** to recommend to the Township Board **denial** of the Wood rezoning application of parcel 70-03-33-300-059 from Multiple Family (R-4) to Single Family (R-1) because the application does not meet the requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance, Master Plan, and Future Land Use Map.

If the Planning Commission finds the rezoning application is premature or needs revisions, the following motion can be offered:

> **Motion** to **table** of the Wood rezoning application, and direct the applicant to address the following items:
>
> 1. *List the items*…

Please contact me prior to the meeting if you have questions.

Clear Form

Print

GRAND HAVEN CHARTER TOWNSHIP

RECEIVED 6/27/17

REZONING APPLICATION

Application Type	Fee	Escrow*
Rezoning	$150	$500

Applicant Information

Name: Steve Wood

Phone: 513-702-2197 Fax: n/a

Address: 13 Lakeview Ave Norton Shores, MI 49444

Email Address: slwood1382@gmail.com

Owner Information *(If different from applicant)*

Name: _____

Phone: _____ Fax: _____

Address: _____

Property Information

Address/Location: 14608 Lakeshore Drive Grand Haven, MI

Parcel Number: 70 - 03 - 33 - 300 - 059 Size *(acres)*: 2.65

Current Zoning: R4 Zoning Requested: R1

Adjacent Zoning: *North*: R1 *South*: R1 *East*: ? *West*: R1

Master-Planned Zoning: _____ Consistent with Master Plan? _____

Other Information

Does Property Abut Township Border? No

Present Use of the Subject Property? vacant land

Number & Type of Existing Structures? None

Subject Property Located on a Paved Road? Yes, via 16.5' wide easement for ingress, egres

Municipal Water within 2,700 Feet of Subject Property? Yes

Municipal Sewer within 2,700 Feet of Subject Property? ?

NOTE: The architect, engineer, planner, or designer shall be responsible for utilizing the Township Ordinance books and following requirements for zoning amendments and procedures as stated in Section 27.08. Please submit fourteen (14) copies of the required information with the application.

I hereby attest the information on this application is, to the best of my knowledge, true and accurate.

Signature of applicant 06/27/17 *Date*

** To cover cost of legal and consulting fees, may be increased as necessary*

Last Revised 2/8/2016

NOTICE

IF I PLAN TO SPLIT THE PARCEL(S) AFTER THE ZONING APPROVALS ARE GRANTED, I REALIZE THAT I MUST APPLY FOR A LAND DIVISION WITH THE ASSESSING DEPARTMENT. ALL LAND DIVISION REQUIREMENTS MUST BE CONFORMED TO BEFORE PROCEEDING WITH FURTHER DEVELOPMENT.

_____ 06/27/17

Signature of applicant *Date*

For Office Use Only

Date Received _____ Fee Paid? _____

Materials Received: Site Plans _____ Location Map _____

Survey _____ Legal Description _____

Dated copy of approved minutes sent to applicant? _____ Date Sent _____

PLANNING COMMISSION USE ONLY

Approval _____

Tabled _____

Denied _____

Conditional Approval _____

The following conditions shall be met for approval:

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____

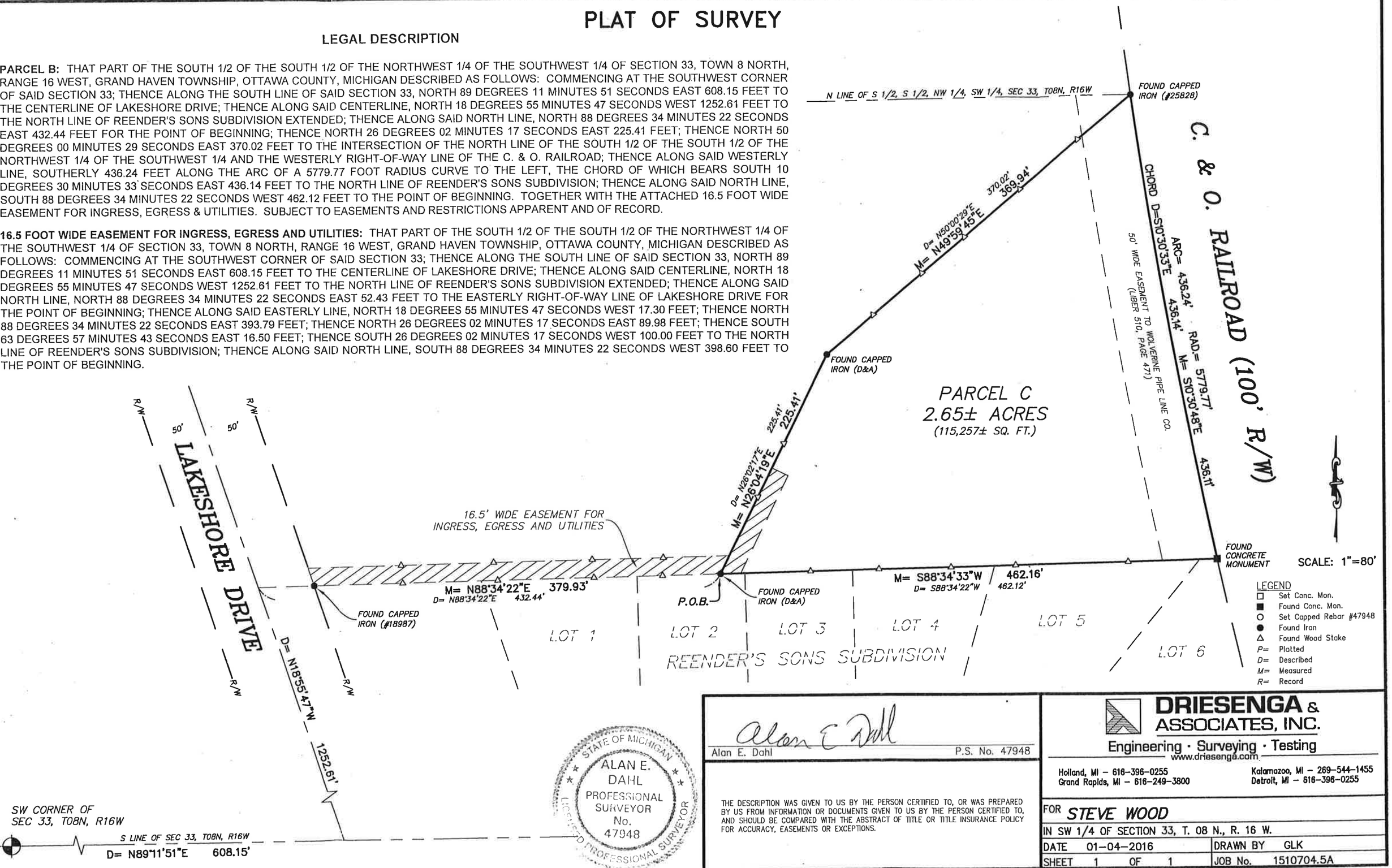
Signature of Planning Commission Chair *Date*

PLAT OF SURVEY

LEGAL DESCRIPTION

PARCEL B: THAT PART OF THE SOUTH 1/2 OF THE SOUTH 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 33, TOWN 8 NORTH, RANGE 16 WEST, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 33; THENCE ALONG THE SOUTH LINE OF SAID SECTION 33, NORTH 89 DEGREES 11 MINUTES 51 SECONDS EAST 608.15 FEET TO THE CENTERLINE OF LAKESHORE DRIVE; THENCE ALONG SAID CENTERLINE, NORTH 18 DEGREES 55 MINUTES 47 SECONDS WEST 1252.61 FEET TO THE NORTH LINE OF REENDER'S SONS SUBDIVISION EXTENDED; THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 34 MINUTES 22 SECONDS EAST 432.44 FEET FOR THE POINT OF BEGINNING; THENCE NORTH 26 DEGREES 02 MINUTES 17 SECONDS EAST 225.41 FEET; THENCE NORTH 50 DEGREES 00 MINUTES 29 SECONDS EAST 370.02 FEET TO THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 1/2 OF THE SOUTH 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 AND THE WESTERLY RIGHT-OF-WAY LINE OF THE C. & O. RAILROAD; THENCE ALONG SAID WESTERLY LINE, SOUTHERLY 436.24 FEET ALONG THE ARC OF A 5779.77 FOOT RADIUS CURVE TO THE LEFT, THE CHORD OF WHICH BEARS SOUTH 10 DEGREES 30 MINUTES 33 SECONDS EAST 436.14 FEET TO THE NORTH LINE OF REENDER'S SONS SUBDIVISION; THENCE ALONG SAID NORTH LINE, SOUTH 88 DEGREES 34 MINUTES 22 SECONDS WEST 462.12 FEET TO THE POINT OF BEGINNING. TOGETHER WITH THE ATTACHED 16.5 FOOT WIDE EASEMENT FOR INGRESS, EGRESS & UTILITIES. SUBJECT TO EASEMENTS AND RESTRICTIONS APPARENT AND OF RECORD.

16.5 FOOT WIDE EASEMENT FOR INGRESS, EGRESS AND UTILITIES: THAT PART OF THE SOUTH 1/2 OF THE SOUTH 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 33, TOWN 8 NORTH, RANGE 16 WEST, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 33; THENCE ALONG THE SOUTH LINE OF SAID SECTION 33, NORTH 89 DEGREES 11 MINUTES 51 SECONDS EAST 608.15 FEET TO THE CENTERLINE OF LAKESHORE DRIVE; THENCE ALONG SAID CENTERLINE, NORTH 18 DEGREES 55 MINUTES 47 SECONDS WEST 1252.61 FEET TO THE NORTH LINE OF REENDER'S SONS SUBDIVISION EXTENDED; THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 34 MINUTES 22 SECONDS EAST 52.43 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF LAKESHORE DRIVE FOR THE POINT OF BEGINNING; THENCE ALONG SAID EASTERLY LINE, NORTH 18 DEGREES 55 MINUTES 47 SECONDS WEST 17.30 FEET; THENCE NORTH 88 DEGREES 34 MINUTES 22 SECONDS EAST 393.79 FEET; THENCE NORTH 26 DEGREES 02 MINUTES 17 SECONDS EAST 89.98 FEET; THENCE SOUTH 63 DEGREES 57 MINUTES 43 SECONDS EAST 16.50 FEET; THENCE SOUTH 26 DEGREES 02 MINUTES 17 SECONDS WEST 100.00 FEET TO THE NORTH LINE OF REENDER'S SONS SUBDIVISION; THENCE ALONG SAID NORTH LINE, SOUTH 88 DEGREES 34 MINUTES 22 SECONDS WEST 398.60 FEET TO THE POINT OF BEGINNING.



STATE OF MICHIGAN
ALAN E. DAHL
PROFESSIONAL SURVEYOR
No. 47948
LICENSED PROFESSIONAL SURVEYOR

Alan E. Dahl
Alan E. Dahl P.S. No. 47948

THE DESCRIPTION WAS GIVEN TO US BY THE PERSON CERTIFIED TO, OR WAS PREPARED BY US FROM INFORMATION OR DOCUMENTS GIVEN TO US BY THE PERSON CERTIFIED TO, AND SHOULD BE COMPARED WITH THE ABSTRACT OF TITLE OR TITLE INSURANCE POLICY FOR ACCURACY, EASEMENTS OR EXCEPTIONS.

DRIESENGA & ASSOCIATES, INC.
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Detroit, MI – 616-396-0255

FOR *STEVE WOOD*
IN SW 1/4 OF SECTION 33, T. 08 N., R. 16 W.
DATE 01-04-2016 | DRAWN BY GLK
SHEET 1 OF 1 | JOB No. 1510704.5A

File Name: N:\Holland\Projects\2015\1510704.5A\dwg\1510704-BNDY.dwg Last Saved: 1/4/2016 11:15:24 AM

GRAND HAVEN CHARTER TOWNSHIP

Community Development Memo

DATE: July 12, 2017

TO: Planning Commission

FROM: Stacey Fedewa, Community Development Director

RE: Ehlert – Rezoning Application (RR to AG)

BACKGROUND

The applicant, John Ehlert, requests to rezone his 24.2 acre of land located on the south portion of the Lincoln Street and Mariposa Street intesection. The new Parcel No. is 70-07-14-200-039. This parcel number was issued in July after the applicant closed on the purchase of two lots, which he combined into the -039 property.

The original parcels that were combined into the -039 parcel consist of 70-07-14-200-023 (*19.2 acres*) and 70-07-14-200-025 (*5 acres*). Ultimately, the applicant is proposing to relocate the horses he owns onto this property, and remove them from their current boarding location. The rezoning application was tested against the "Three C's" evaluation method.

COMPATIBILITY

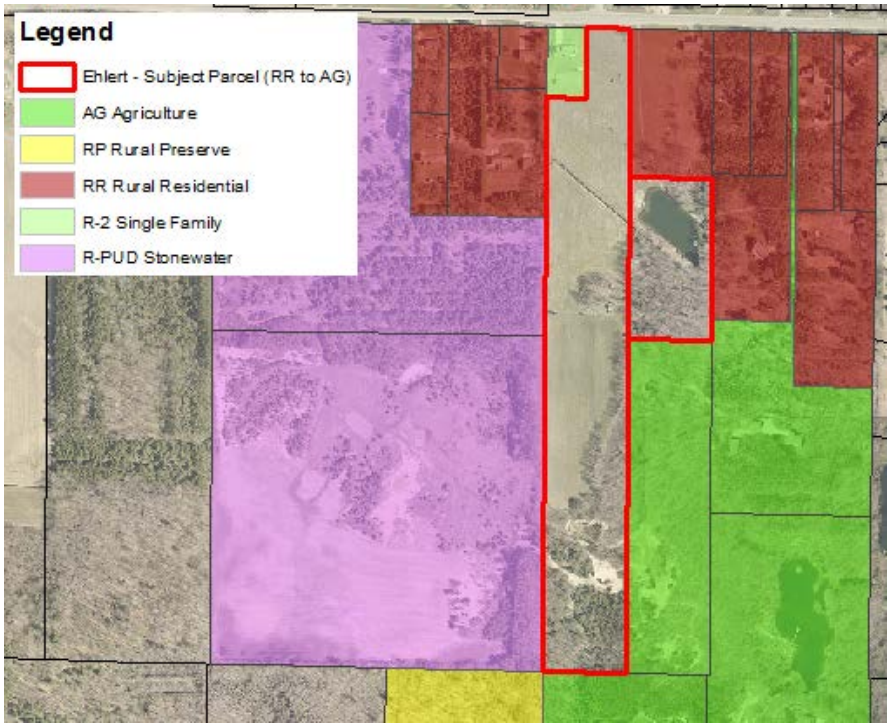
*Is the proposed rezoning **compatible** with the existing developments or zoning in the surrounding area?* The zoning for parcels that border the applicants' parcel is:

Direction	Current Zoning	Existing Use
North	RR & R-1	Single Family
South	AG	Vacant Land & Blueberries
East	RR & AG	Residential & Agriculture
West	RR, R-2, PUD	Single Family & Future Stonewater Residential PUD

The 2016 Future Land Use Map has master-planned the subject parcel for Agricultural Preservation, which corresponds to the Agricultural (AG) zoning district.

Consistency

*Is the proposed rezoning **consistent** with the goals and objectives of the Master Plan and does it coincide with the Future Land Use Map in terms of an appropriate use of the land?*



The proposed rezoning is consistent with surrounding land uses and the Statement of Purpose narrative for the AG district, which includes:

- The AG District is designed for those open areas of the Township where farming, dairying, forestry operations and other rural type activities exist and should be preserved or encouraged.
- Large vacant areas, fallow land and wooded areas may also be included.
- Although the demand for other uses in these districts may ultimately outweigh their use as zoned, any such zoning changes should be made cautiously with the realization that adequate food supply is essential to the health and welfare of the Township, Country, State and Nation.
- This district is not intended to be used for residential housing; although some residential housing is allowed it is permitted when subordinate to some other agricultural use which is being conducted on the parcel or lot.

The applicants' proposal for the keeping of horses, a domestic-farm type animal is consistent with an Agricultural use. Perhaps in the future the applicant will work towards building a single-family dwelling, but that will be several years from now.

CAPABILITY

*Does the proposed rezoning require an extension of public sewer and water, roadway improvements, or enhanced fire and police protection, and if so, is it in an area **capable** of being provided with such services?*

Parcels within the AG District are not recommended to be supported by any type of infrastructure. That said, Lincoln Street does have municipal water, and after the Stonewater developer extends sanitary sewer from adjacent developments it will become available. However, again staff would need to discuss logistics with the property owner to determine if it is feasible to connect either of those utilities because of the long length of the property.

SAMPLE MOTIONS

If the Planning Commission finds the rezoning application meets the applicable standards, the following motion can be offered:

> **Motion** to recommend to the Township Board **approval** of the Ehlert rezoning application of parcel 70-07-14-200-039 from Rural Residential (RR) to Agricultural (AG) based on the application meeting applicable rezoning requirements and standards of the Grand Haven Charter Township Zoning Ordinance, Master Plan, and Future Land Use Map.

If the Planning Commission finds the rezoning application does not meet the applicable standards, the following motion can be offered:

> **Motion** to recommend to the Township Board **denial** of the Ehlert rezoning application of parcel 70-07-14-200-039 from Rural Residential (RR) to Agricultural (AG) because the application does not meet the requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance, Master Plan, and Future Land Use Map.

If the Planning Commission finds the rezoning application is premature or needs revisions, the following motion can be offered:

> **Motion** to **table** of the Ehlert rezoning application, and direct the applicant to address the following items:
>
> 1. *List the items…*

GRAND HAVEN CHARTER TOWNSHIP

REZONING APPLICATION

Application Type	Fee	Escrow*
Rezoning	$150	$500

Applicant Information

Name JOHN EHLERT

Phone 616-844-2695 Fax —

Address 11853 GARNSEY AVENUE

Email Address JOHNEHLERTMD@HOTMAIL.COM (no caps)

Owner Information *(If different from applicant)*

Name

Phone Fax

Address

Property Information

Address/Location 0 Lincoln

Parcel Number 70-07-14-200-039 Size *(acres)* 24.2

Current Zoning RP/RR Zoning Requested AG

Adjacent Zoning *North:* RR&R-1 *South:* AG *East:* RR & AG *West:* RR, R-2, PUD

Master-Planned Zoning Ag Preservation Consistent with Master Plan? Y

Other Information

Does Property Abut Township Border? NO

Present Use of the Subject Property? AG/Vacant land

Number & Type of Existing Structures? 1 SHED (to be removed)

Subject Property Located on a Paved Road? Yes

Municipal Water within 2,700 Feet of Subject Property? Yes

Municipal Sewer within 2,700 Feet of Subject Property? Yes* after extended by stonewater Developer

NOTE: The architect, engineer, planner, or designer shall be responsible for utilizing the Township Ordinance books and following requirements for zoning amendments and procedures as stated in Section 27.08. Please submit fourteen (14) copies of the required information with the application.

I hereby attest the information on this application is, to the best of my knowledge, true and accurate.

John Ehlert — 6-28-2017

Signature of applicant *Date*

** To cover cost of legal and consulting fees, may be increased as necessary*

NOTICE

IF I PLAN TO SPLIT THE PARCEL(S) AFTER THE ZONING APPROVALS ARE GRANTED, I REALIZE THAT I MUST APPLY FOR A LAND DIVISION WITH THE ASSESSING DEPARTMENT. ALL LAND DIVISION REQUIREMENTS MUST BE CONFORMED TO BEFORE PROCEEDING WITH FURTHER DEVELOPMENT.

_____ 6-28-2017 (no plan to split)

Signature of applicant *Date*

For Office Use Only

Date Received _____ Fee Paid? _____

Materials Received: Site Plans _____ Location Map _____

Survey _____ Legal Description _____

Dated copy of approved minutes sent to applicant? _____ Date Sent _____

PLANNING COMMISSION USE ONLY

Approval _____

Tabled _____

Denied _____

Conditional Approval _____

The following conditions shall be met for approval:

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____

Signature of Planning Commission Chair *Date*

County of Ottawa
Geographic Information Systems

Property Mapping Printout

Legend
- Parcels_

Notes

1: 6,541

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

0.2 Miles 0 0.08

NAD_1983_StatePlane_Michigan_South_FIPS_2113_Feet_Intl

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GRAND HAVEN CHARTER TOWNSHIP

Community Development Memo

DATE: July 12, 2017

TO: Planning Commission

FROM: Stacey Fedewa, Community Development Director

RE: Special Land Use – Group Day Care Home – Deur

PROPERTY DETAILS			
Property Address	**Parcel Number**	**Parcel Size**	**Application Type**
14736 Lakeshore	70-03-33-300-051	7 Acres	Special Land Use
Existing Zoning	**Existing Land Use**	**Existing Infrastructure**	**Existing Site Improvements**
Multiple Family (R-4)	Single Family + Family Day Care	Paved Roadway	SF Dwelling Accessory Building
Master-Planned Zoning	**Surrounding Zoning & Land Uses**		
	Direction	Zoning	Land Use
High Density Residential	N	R-PUD	43 North Apartments
	S	R-4	Single Family
	E	C-1	Campground
	W	R-4 & R-1	43 North Apartments & Single Family

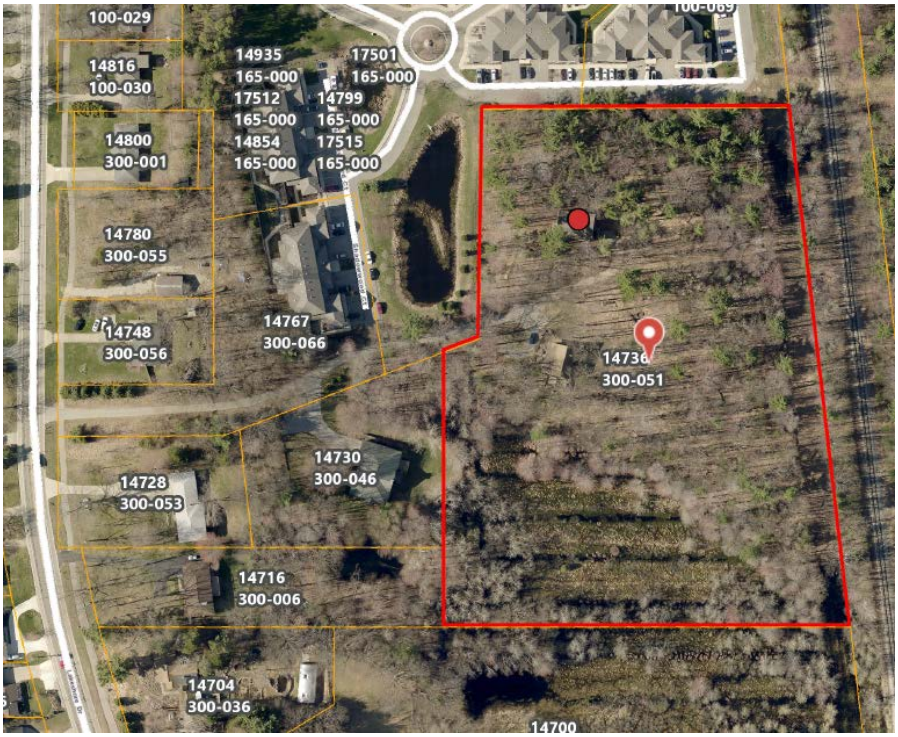
PROPOSED SPECIAL LAND USE

The applicant currently operates a state-licensed family day care facility in her home. This classification allows 1 – 6 children under her care. Deur is requesting to expand her business to a state-licensed group day care home, which would allow a total of 7 – 12 children.

Part of the process the State of Michigan requires is the applicant receiving a special land use application from the local government prior to approving the elevated license to allow additional children.

SPECIAL LAND USE REQUIREMENTS

The State of Michigan and Michigan Zoning Enabling Act (MZEA) are very clear that if certain provisions are met the local government is <u>required to issue the permit</u>. There are limited land uses the State of Michigan and MZEA have this type of control over, so it is important to be aware.



Specific requirements for Section 19.07.15. It is important to note as well, that all but one of the SLU provisions the Township has in the Zoning Ordinance are valid, but one is not legal and will be removed with the new update and cannot be considered by the Planning Commission. It has to do with infrastructure, and that will be described in more detail below:

1. Confirmation the State licensing agency has received an application for the group day care home, and is approved pending the issuance of a special land use permit from the Township.
2. Home cannot be located closer than 1,500 feet from any of the following (this is reviewed by the State prior to their issuance of a license):
    a. Adult foster care home
    b. Substance abuse treatment center
    c. Halfway house, or the like, housing an inmate population
    d. Another licensed group day care home, except the Planning Commission can override this if certain conditions are met.
        i. This item is not necessary to consider because another group day care home is not located within the 1,500 feet.
3. Home's appearance must be consistent with the surrounding neighborhood.
4. Business cannot exceed 16-hours of operation within a 24-hour period.
    a. The Township can only prohibit this business from operating between the hours of 10pm – 6pm.
5. Must comply with other GHT ordinances, including signage.

6. Must provide adequate parking for the homeowner and employees.
7. Shall be supported by certain infrastructure features including paved roads, natural gas, municipal water, and if available sanitary sewer.
    a. **This provision is <u>not</u> in compliance with the MZEA requirements for this land use. Thus, this provision <u>cannot</u> be considered for this application**.
    b. Subject parcel does have a paved road and natural gas, but cannot gain access to municipal water because of the lack of road frontage. However, the applicant does have a high-quality water purification system. Sanitary sewer is not available.

Tyler Correspondence

As you'll notice, correspondence was received from an adjacent property owner concerning the application. To ensure the Planning Commission has all the information needed to consider the Tyler objection the following should be noted:

- It is a private driveway, and not a private road. Regardless, any type of private-party agreement cannot be considered by the Commission.
    - Section 27.06…the [Township] shall not refuse to issue a permit when conditions imposed by this Ordinance are complied with by the applicant despite violations of contracts such as covenants or private agreements which may occur upon the granting of said permit.

Again, as previously mentioned, much of the local governments authority to regulate a Group Day Care business is preempted by the State of Michigan and Michigan Zoning Enabling Act and because the owner appears to comply with all of the Special Land Use provisions established by the MZEA, staff recommends the Planning Commission approve this application.

SAMPLE MOTIONS

If the Planning Commission finds the application meets the applicable standards, the following motion can be offered:

> **Motion** to **<u>approve</u>** the Special Land Use application to allow Group Day Care Home on 7-acres of property located at 14736 Lakeshore Drive. This approval is based on the application meeting the applicable requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance. This motion is subject to, and incorporates, the following report.

If the Planning Commission finds the application does not meet the applicable standards, the following motion can be offered:

Motion to direct staff to draft a formal motion and report, which will **deny** the Special Land Use application, with those discussion points which will be reflected in the meeting minutes. This will be reviewed and considered for adoption at the next meeting.

If the Planning Commission finds the application is in need of revisions before a determination can be made, the following motion can be offered:

Motion to **table** the Special Land Use application, and direct the applicant to make the following revisions:

1. *List the revisions.*

REPORT OF FINDINGS (*TO BE USED WITH A MOTION FOR APPROVAL*)

1. This approval is based on the affirmative findings that each of the following standards of Section 19.05 have been fulfilled:
   A. The proposed use is consistent with, and promotes the intent and purpose of this Ordinance.
   B. The proposed use is of such location, size, density, and character as to be compatible with adjacent uses of land and the orderly development of the district in which situated and of adjacent districts.
   C. The proposed use does not have a substantially detrimental effect upon, nor substantially impair the value of, neighborhood property.
   D. The proposed use is reasonably compatible with the natural environment of the subject premises and adjacent premises.
   E. The proposed use does not unduly interfere with provision of adequate light or air, nor overcrowd land or cause a severe concentration of population.
   F. The proposed use does not interfere or unduly burden water supply facilities, sewage collection and disposal systems, park and recreational facilities, and other public services.
   G. The proposed use is such that traffic to, from, and on the premises and the assembly of persons relation to such use will not be hazardous, or inconvenient to the neighborhood, nor unduly conflict with the normal traffic of the neighborhood, considering, among other things: safe and convenient routes for pedestrian traffic, particularly of children, the relationship of the proposed use to main thoroughfares and to streets and intersections, and the general character and intensity of the existing and potential development of the neighborhood.
   H. The proposed use is consistent with the health, safety, and welfare of the Township.
2. The application meets the site plan review standards of Section 23.06 of the Zoning Ordinance. Specifically, the Planning Commission finds as follows:
   A. The uses proposed will not adversely affect the public health, safety, or welfare. Uses and structures located on the site take into account topography, size of the property, the uses on adjoining property and the relationship and size of buildings to the site. The site

will be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted in this ordinance.

B. Safe, convenient, uncontested, and well defined vehicular and pedestrian circulation is provided for ingress/egress points and within the site. Drives, streets and other circulation routes are designed to promote safe and efficient traffic operations within the site and at ingress/egress points.

C. The arrangement of public or private vehicular and pedestrian connections to existing or planned streets in the area are planned to provide a safe and efficient circulation system for traffic within the township.

D. Removal or alterations of significant natural features are restricted to those areas which are reasonably necessary to develop the site in accordance with the requirements of this Ordinance. The Planning Commission has required that landscaping, buffers, and/or greenbelts be preserved and/or provided to ensure that proposed uses will be adequately buffered from one another and from surrounding public and private property.

E. Areas of natural drainage such as swales, wetlands, ponds, or swamps are protected and preserved insofar as practical in their natural state to provide areas for natural habitat, preserve drainage patterns and maintain the natural characteristics of the land.

F. The site plan provides reasonable visual and sound privacy for all dwelling units located therein and adjacent thereto. Landscaping shall be used, as appropriate, to accomplish these purposes.

G. All buildings and groups of buildings are arranged so as to permit necessary emergency vehicle access as requested by the fire department.

H. All streets and driveways are developed in accordance with the Ottawa County Road Commission specifications, as appropriate.

I. Appropriate measures have been taken to ensure that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Provisions have been made to accommodate storm water, prevent erosion and the formation of dust.

J. Exterior lighting is arranged so that it is deflected away from adjacent properties and so it does not interfere with the vision of motorists along adjacent streets, and consists of sharp cut-off fixtures.

K. All loading and unloading areas and outside storage areas, including areas for the storage of trash, which face or are visible from residential districts or public streets, are screened.

L. Entrances and exits are provided at appropriate locations so as to maximize the convenience and safety for persons entering or leaving the site.

M. The site plans conform to all applicable requirements of County, State, Federal, and Township statutes and ordinances.

N. As appropriate, fencing has been required by the Planning Commission around the boundaries of the development to minimize or prevent trespassing or other adverse effects on adjacent lands.

O. The general purposes and spirit of this Ordinance and the Master Plan of the Township are maintained.

Clear Form

Print

GRAND HAVEN CHARTER TOWNSHIP

SPECIAL LAND USE APPLICATION

Application Type	Fee	Escrow*
Original	$125	$1,000
Amendment	$100	$500

Sewer Escrow**	
Main Extension	$5,000
Lift Station	$2,000

Applicant Information

Name Kristine Deur

Phone 616-335-4888 Fax

Address 14736 Lakeshore Dr.

Email Address inthewoodsdaycaregh@gmail.com

Owner Information *(If different from applicant)*

Name

Phone Fax

Address

Property Information

Address/Location 14736 Lakeshore Dr.

Parcel Number 70-03-33-300-051 Size *(acres)* 7

Current Zoning R-4 Master-Planned Zoning HDR

Description of Proposed Use/Request *(attach additional pages as needed)*

Home is currently used as a single family home daycare, as defined by the State of Michigan. I would like to turn it into a family home daycare, as described by the State of Michigan.

NOTE: The architect, engineer, planner, or designer shall be responsible for utilizing the Township Ordinance books and following all applicable requirements, including those of Chapters 19 and 23 of the Zoning Ordinance. Initially, submit five copies of the required information for staff review. Once staff has granted tentative approval, additional copies will be required as requested by staff.

I hereby attest the information on this application is, to the best of my knowledge, true and accurate.

Kristine Deur — *Signature of applicant*

6-20-17 — *Date*

** To cover cost of legal and consulting fees, may be increased as necessary*

*** If approval of this application requires/includes the extension of a municipal sanitary sewer main, an additional $5,000.00 escrow fee shall be required, and an additional $2,000.00 escrow fee shall be required for the installation of a lift station.*

From: Kristi Deur
To: Stacey Fedewa
Subject: Fwd: RE: Family to Group Home Questions
Date: Wednesday, July 12, 2017 7:00:27 PM

---------- Forwarded message ----------
From: "Arens, Rachel (LARA)" <ArensR@michigan.gov>
Date: May 31, 2017 10:38 AM
Subject: RE: Family to Group Home Questions
To: "Kristi Deur" <inthewoodsdaycaregh@gmail.com>
Cc:

Hi Kristi-

Thanks for the email! So, it is kind of an easy time for you to make the switch, since your family home license is up for renewal and you've already submitted the paperwork! The only things you need to send in order to request the change to a group home are the following:

1) Child Care Application (BCAL-3970)

2) Supplemental Application Information Family/Group Child Care Homes (BCAL-3737

3) Zoning approval for Group Child Care Homes (BCAL-3748

4) The difference between the family home application fee and the group home application fee. The family home application fee (which you already submitted for this renewal coming up) will be applied to the group home application.

Have you attended orientation since January 2006? If so, you will not have to take it again unless you wish to do so. If you took it prior to that time, you will have to take orientation again in order to be issued a group license.

Once I receive your paperwork from Lansing, I can schedule a time with you for me to come out and do your inspection. You cannot begin caring for more than 6 children until I come out and do a full inspection to approve you. You have to be in full compliance before I can issue you a group license. When you are issued an original group license, it is issued as a 6 month provisional license. Then I will have to come out and do another full inspection in order to fully approve you for a regular 2 year license. With group licenses, you have a full renewal inspection every 2 years and then in the off year we come out to do a short interim inspection. At that inspection we just look at safe sleep, diapering, programing and fire safety, so it's not a long inspection.

You are correct, besides the things I mentioned above, the only real differences between a home and group license is the zoning permit and capacity of the home, the rules that apply to having an assistant caregiver, and maintaining appropriate ratios.

I hope I've answered your questions! If not, feel free to email me back.

Thanks,

Rachel Arens

Child Care Licensing Consultant

350 Ottawa NW, Unit #13

Grand Rapids, MI 49503-2337

Phone: 616-916-5074

Fax: 616-356-0101

From: Kristi Deur [mailto:inthewoodsdaycaregh@gmail.com]
Sent: Monday, May 29, 2017 3:26 PM
To: Arens, Rachel (LARA) <ArensR@michigan.gov>
Subject: Family to Group Home Questions

Hello Rachel, I hope you had a nice holiday.

I am starting to contemplate applying for a group home daycare license. My family home license is up in July and I already sent in the renewal paperwork.

I was going through the differences and I don't see too many between home and family daycare.

The ones I do see are needing more space per child, which I have, needing a zoning permit, and requirements related to hiring and having assistants.

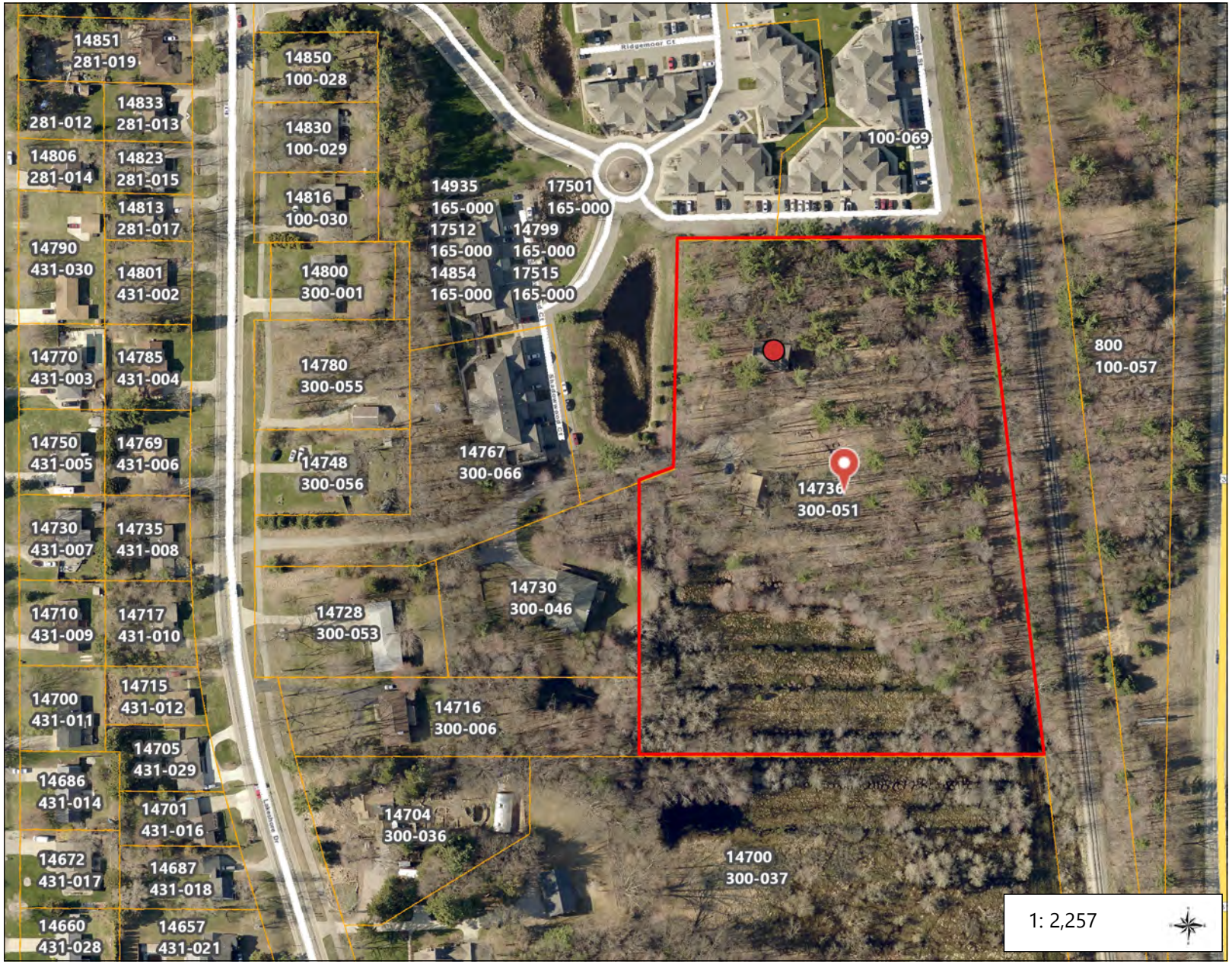
If I receive a zoning permit/permission, would I be okay to refile right away for a group family home? I feel like maybe I'm missing something.

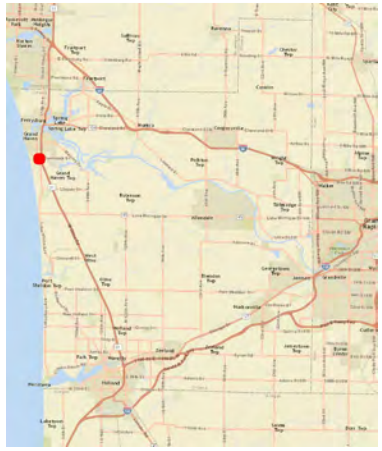
Kind Regards,

Kristi Deur

County of Ottawa
Geographic Information Systems

Property Mapping Printout





Legend

- Parcels

Notes

376.2 0 188.08 376.2 Feet

NAD_1983_StatePlane_Michigan_South_FIPS_2113_Feet_Intl

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GRAND HAVEN CHARTER TOWNSHIP

Community Development Memo

DATE: July 13, 2017

TO: Planning Commission

FROM: Stacey Fedewa, Community Development Director

RE: Special Land Use – Agriculture in RR District – Bradley

PROPERTY DETAILS			
Property Address	**Parcel Number**	**Parcel Size**	**Application Type**
12240 152nd Ave	70-07-13-300-020	12.3 Acres	Special Land Use
Existing Zoning	**Existing Land Use**	**Existing Infrastructure**	**Existing Site Improvements**
Rural Residential (RR)	Single Family & Hobby Farming	Unpaved Roadway	Single Family Dwelling Pole Barn
Master-Planned Zoning	**Surrounding Zoning & Land Uses**		
	Direction	Zoning	Land Use
Agricultural Preservation	N	RR	Single Family
	S	RR	Single Family
	E	RR	Single Family
	W	RR	Single Family

PROPOSED SPECIAL LAND USE

Recently, the applicants experienced a fire that destroyed one of their two pole barns. Thankfully no one was hurt, and all their animals were safe. It is important to note, the property owner has had a small hobby-farm operation for decades, which classifies that use as legally nonconforming.

With that, staff recommended the applicant apply for the Special Land Use to conduct agriculture on this property to solve two problems:

1. Replace the barn that was lost in the fire
2. Ensure their ag-related retirement plan is achievable

Currently, as a non-SLU property the applicant is only entitled to 2 buildings that have a combined total floor area of 1,600 sqft. The barn lost in the fire was must larger than the remaining 800 sqft the applicant is allowed.

The applicants' retirement plans will expand upon their legally nonconforming hobby farm use, which is to grow fruits, vegetables, herbs, mushrooms, and honey bee hives to sell at local farmer's markets.

The Ag-related designation will allow the applicant to build a larger building than what is required under the current ordinance.

SPECIAL LAND USE REQUIREMENTS

There are only two special land use requirements associated with an Agriculture use in a residential zoning district—(1) Shall have a minimum of 10 acres; and (2) Keeping of livestock is not permitted. The applicant has satisfied both criteria.

As previously mentioned, the property owner lost their barn in a fire this year, which has hindered their typical crop growing operation. The applicant typically grows one or more of the following crops—rye, buckwheat, and black oil sun flowers—but due to the loss of their barn they could not plant those crops this year. However, they do have a vegetable garden and the beginning of an orchard. If this application is approved, it will allow them to rebuild their barn and restart their crop business.

It is important to note—this property is considered legally nonconforming with respect to domestic farm-type animals. The applicant does have horses, chickens, and turkeys. The Bradley's have had this operation since they originally purchased the property in 1994.

Thus, the second special land use requirement has a non-traditional role in this application. The applicant is not requesting to permission to keep new livestock, but they do have "grandfathered" livestock that can, and will, remain on the property.

In summary, this property has been legally nonconforming for many years, and although this application will bring them closer to compliance with the current zoning ordinance they will not reach full compliance due to the protections provided by their grandfather status.

SAMPLE MOTIONS

If the Planning Commission finds the application meets the applicable standards, the following motion can be offered:

> **Motion** to **approve** the Special Land Use application to allow an Agricultural operation in the Rural Residential zoning district on 12.3-acres of property located at 12240 152nd Avenue, Parcel No. 70-07-13-300-020. This approval is based on the application meeting the applicable requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance. This motion is subject to, and incorporates, the following report.

If the Planning Commission finds the application does not meet the applicable standards, the following motion can be offered:

> **Motion** to direct staff to draft a formal motion and report, which will **deny** the Special Land Use application, with those discussion points which will be reflected in the meeting minutes. This will be reviewed and considered for adoption at the next meeting.

If the Planning Commission finds the application is in need of revisions before a determination can be made, the following motion can be offered:

> **Motion** to **table** the Special Land Use application, and direct the applicant to make the following revisions:
>
> 1. *List the revisions.*

REPORT OF FINDINGS (*TO BE USED WITH A MOTION FOR APPROVAL*)

1. This approval is based on the affirmative findings that each of the following standards of Section 19.05 have been fulfilled:
    A. The proposed use is consistent with, and promotes the intent and purpose of this Ordinance.
    B. The proposed use is of such location, size, density, and character as to be compatible with adjacent uses of land and the orderly development of the district in which situated and of adjacent districts.
    C. The proposed use does not have a substantially detrimental effect upon, nor substantially impair the value of, neighborhood property.
    D. The proposed use is reasonably compatible with the natural environment of the subject premises and adjacent premises.
    E. The proposed use does not unduly interfere with provision of adequate light or air, nor overcrowd land or cause a severe concentration of population.
    F. The proposed use does not interfere or unduly burden water supply facilities, sewage collection and disposal systems, park and recreational facilities, and other public services.
    G. The proposed use is such that traffic to, from, and on the premises and the assembly of persons relation to such use will not be hazardous, or inconvenient to the neighborhood, nor unduly conflict with the normal traffic of the neighborhood, considering, among other things: safe and convenient routes for pedestrian traffic, particularly of children, the relationship of the proposed use to main thoroughfares and to streets and intersections, and the general character and intensity of the existing and potential development of the neighborhood.
    H. The proposed use is consistent with the health, safety, and welfare of the Township.
2. The application meets the site plan review standards of Section 23.06 of the Zoning Ordinance. Specifically, the Planning Commission finds as follows:
    A. The uses proposed will not adversely affect the public health, safety, or welfare. Uses and structures located on the site take into account topography, size of the property, the uses on adjoining property and the relationship and size of buildings to the site. The site will be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted in this ordinance.
    B. Safe, convenient, uncontested, and well defined vehicular and pedestrian circulation is provided for ingress/egress points and within the site. Drives, streets and other circulation

routes are designed to promote safe and efficient traffic operations within the site and at ingress/egress points.

C. The arrangement of public or private vehicular and pedestrian connections to existing or planned streets in the area are planned to provide a safe and efficient circulation system for traffic within the township.

D. Removal or alterations of significant natural features are restricted to those areas which are reasonably necessary to develop the site in accordance with the requirements of this Ordinance. The Planning Commission has required that landscaping, buffers, and/or greenbelts be preserved and/or provided to ensure that proposed uses will be adequately buffered from one another and from surrounding public and private property.

E. Areas of natural drainage such as swales, wetlands, ponds, or swamps are protected and preserved insofar as practical in their natural state to provide areas for natural habitat, preserve drainage patterns and maintain the natural characteristics of the land.

F. The site plan provides reasonable visual and sound privacy for all dwelling units located therein and adjacent thereto. Landscaping shall be used, as appropriate, to accomplish these purposes.

G. All buildings and groups of buildings are arranged so as to permit necessary emergency vehicle access as requested by the fire department.

H. All streets and driveways are developed in accordance with the Ottawa County Road Commission specifications, as appropriate.

I. Appropriate measures have been taken to ensure that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Provisions have been made to accommodate storm water, prevent erosion and the formation of dust.

J. Exterior lighting is arranged so that it is deflected away from adjacent properties and so it does not interfere with the vision of motorists along adjacent streets, and consists of sharp cut-off fixtures.

K. All loading and unloading areas and outside storage areas, including areas for the storage of trash, which face or are visible from residential districts or public streets, are screened.

L. Entrances and exits are provided at appropriate locations so as to maximize the convenience and safety for persons entering or leaving the site.

M. The site plans conform to all applicable requirements of County, State, Federal, and Township statutes and ordinances.

N. As appropriate, fencing has been required by the Planning Commission around the boundaries of the development to minimize or prevent trespassing or other adverse effects on adjacent lands.

O. The general purposes and spirit of this Ordinance and the Master Plan of the Township are maintained.

Clear Form

Print

GRAND HAVEN CHARTER TOWNSHIP

SPECIAL LAND USE APPLICATION

Application Type	Fee	Escrow*
Original	$125	$1,000
Amendment	$100	$500

Sewer Escrow**	
Main Extension	$5,000
Lift Station	$2,000

Applicant Information

Name: Vincent and Linda Bradley

Phone: 616-437-0027 Fax:

Address: 12240 152nd Ave ,West Olive Mi 49460

Email Address: bradley0966@sbcglobal.net

Owner Information *(If different from applicant)*

Name:

Phone: Fax:

Address:

Property Information

Address/Location: 12240 152nd Ave ,West Olive Mi 49460

Parcel Number: 70 - 07 - 13 - 300 - 020 Size *(acres)* 12.259

Current Zoning: RR Master-Planned Zoning:

Description of Proposed Use/Request *(attach additional pages as needed)*

To build a replacement for pole building to house poultry,horses and related feed and equipment for care of animals.

NOTE: The architect, engineer, planner, or designer shall be responsible for utilizing the Township Ordinance books and following all applicable requirements, including those of Chapters 19 and 23 of the Zoning Ordinance. Initially, submit five copies of the required information for staff review. Once staff has granted tentative approval, additional copies will be required as requested by staff.

I hereby attest the information on this application is, to the best of my knowledge, true and accurate.

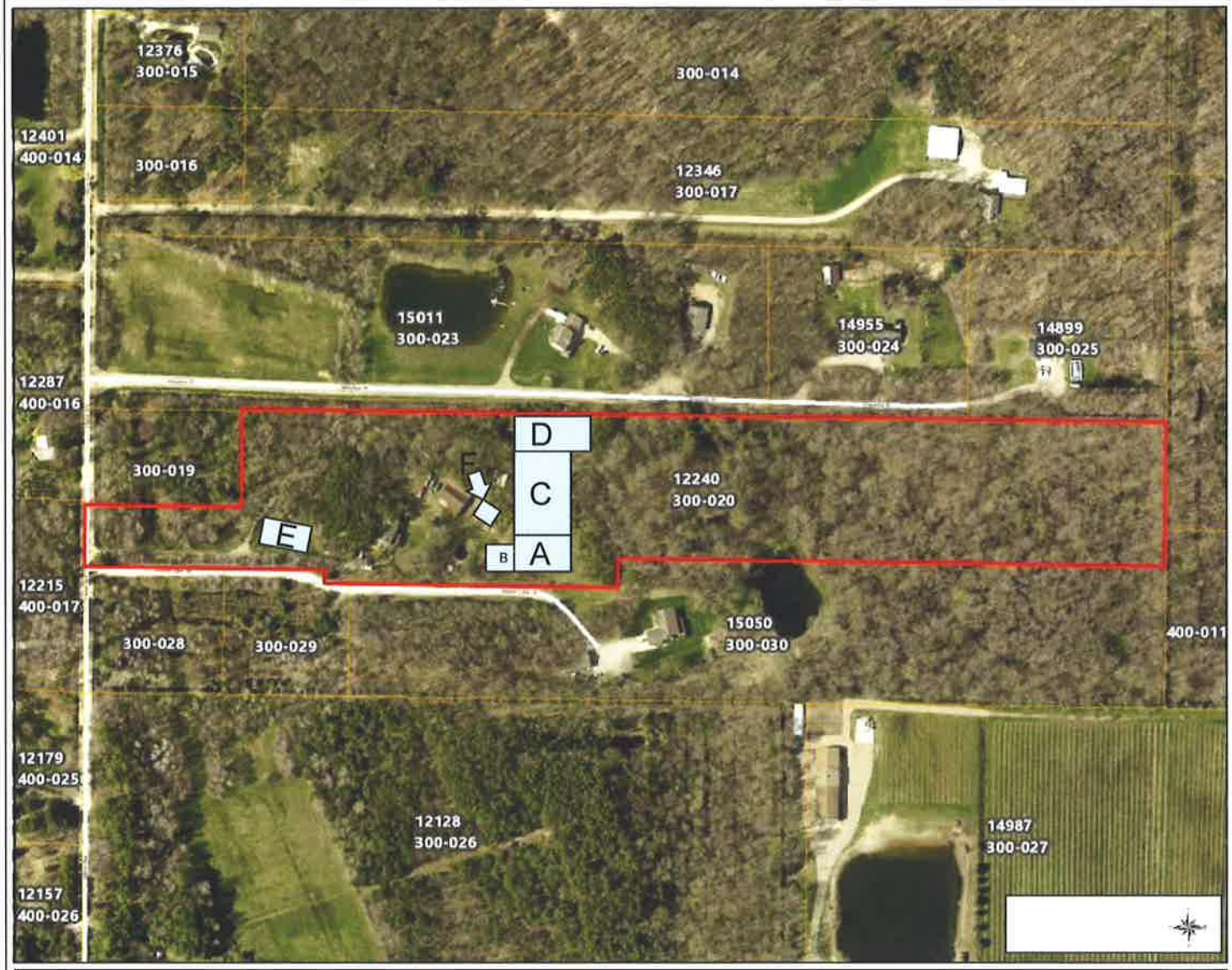
V. Vince Bradley — 6-22-17

Signature of applicant *Date*

** To cover cost of legal and consulting fees, may be increased as necessary*

*** If approval of this application requires/includes the extension of a municipal sanitary sewer main, an additional $5,000.00 escrow fee shall be required, and an additional $2,000.00 escrow fee shall be required for the installation of a lift station.*

County of Ottawa
Geographic Information Systems



A= Grain crops, buckwheat, rye
B= Vegetables
C=Horse pasture
D= Pollinator Habitat
E= Orchard/
F= Proposed barn

current or otherwise reliable

GRAND HAVEN CHARTER TOWNSHIP

Community Development Memo

DATE: July 13, 2017

TO: Planning Commission

FROM: Stacey Fedewa, Community Development Director

RE: Special Land Use – Indoor Exercise Facility – Fit Body Bootcamp

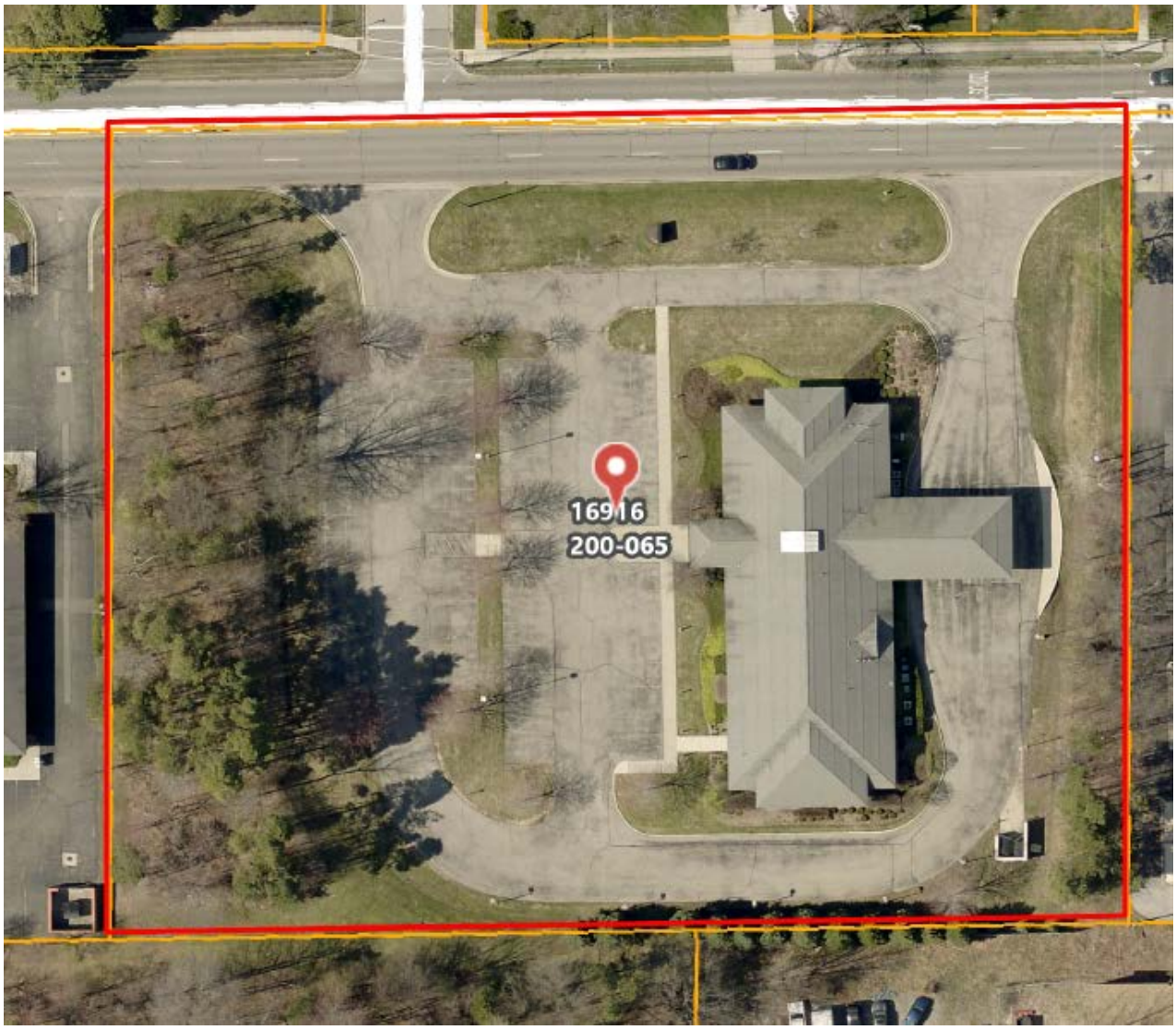
PROPERTY DETAILS			
Property Address	**Parcel Number**	**Parcel Size**	**Application Type**
16916 Robbins Rd	70-03-33-200-065	3.25 Acres	Special Land Use
Existing Zoning	**Existing Land Use**	**Existing Infrastructure**	**Existing Site Improvements**
C-1 Commercial	Office Building	Paved Roadway, Municipal Water, Sanitary Sewer	Office Building
Master-Planned Zoning	**Surrounding Zoning & Land Uses**		
	Direction	Zoning	Land Use
Office/Service	N	SFR (City)	Single Family (City)
	S	C-1 & I-1A	Vehicle Repair & Single Family
	E	C-1	Store ‘n Locks & Office Building
	W	C-1	Office Building

PROPOSED SPECIAL LAND USE

The applicant currently operates an indoor exercise facility on Robbins Road within the City of Grand Haven. The applicant wants to relocate in order to merge the exercise facility with their administrative offices in order to have a centralized location.

The Fit Body Bootcamp business is an exercise facility that falls somewhere between a traditional gym and cross-fit.

SPECIAL LAND USE REQUIREMENTS



This Special Land Use (SLU) encompasses a wide range of indoor uses relate to recreation, exercise, and athletic facilities, so some of the provisions may not be applicable to the applicant's proposal.

REGULATION	COMPLIANCE
Designated pickup and drop-off area for patrons	Parking Lot
No. of Parking Spaces (*PC can take into account the hours of operation and type of activities conducted on site, and may require a parking study to determine the number of spaces needed*)	67 Spaces
Tournaments shall only be held during evenings and weekends. No parking permitted on adjacent property	N/A
Commission may determine days and hours of operation to minimize noise and traffic congestion	Likely N/A
Minimum lot size = 1 acre	3.25-acres
No outdoor recreation permitted	Compliant

No outside storage permitted in the required front or side yards	Compliant
Parking, display, and storage areas shall be hard surfaced	Compliant
10% of site must be landscaped	27% landscaped
Use shall be screened	Existing Woodline
Outdoor lighting shall comply with Chapter 20A	N/A (*existing*)
Access points shall be at least 200-feet from any intersection	Hopkins St & Barbara St are within 200-feet
Only 1 access point is permitted.	2 Existing Entrances
Off-street parking shall be safe for pedestrians and ease vehicular maneuvering	Compliant
Additional off-street parking required for accessory facilities	N/A
Provisions Applicable to Use in C-1 District	
Minimum 70% exterior finish material shall have facing brick, cut stone, etc.	Compliant
Landscaping shall be provided along 30% of walls visible from street	Compliant
Vehicles, materials, and equipment must be stored within a building or behind a fence that is at least 1 foot above the object it is screening	N/A (*no storage*)
On corner lot—provisions to front yards shall apply	Compliant

In summary, the site is compliant with two exceptions that are due to existing site conditions. The site was a former bank, which was designed with two entrances because of a one-way drive through. The second exception is there are two intersections within 200-feet of the site.

What's Next?

As you know, many portions of this Zoning Ordinance lean towards new development, and not the reuse of existing sites. This is evident in the two Special Land Use requirements this application is unable to meet (*number of entrances, and proximity to intersections*).

The Planning Commission has 3 choices moving forward:

1. Variance – apply for a variance from the two provisions;
2. Text Amendment – direct staff to draft a text amendment to modify, or remove, many of the prohibitive special land use provisions that deter the reuse of existing sites; or
    a. *This selection would require direction from the Planning Commission as to how the provisions would be modified or removed*
    b. *This selection could conditionally approve the application subject to the adoption of the text amendments*

3. Table/Deny – table, or deny, the application because it does not comply with all of the special land use provisions.

SAMPLE MOTIONS

Conditionally Approve with Variance

If the Planning Commission finds the application meets the applicable standards, the following motion can be offered:

> **Motion** to **conditionally approve** the Special Land Use application to allow an Indoor Exercise Facility with Ancillary Administrative Offices at 16916 Robbins Road. This approval is based on the application meeting the applicable requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance. This action is based upon the findings and other information included in the Planning Commission report. Approval is subject to the following conditions:
>
> 1. Applicant shall apply for, and receive, a variance from Sections 19.07.17.K and 19.07.17.L concerning the number of access points and proximity to adjacent intersections.

Conditionally Approve with Text Amendment

If the Planning Commission finds the application meets the applicable standards, the following motion can be offered:

> **Motion** to **conditionally approve** the Special Land Use application to allow an Indoor Exercise Facility with Ancillary Administrative Offices at 16916 Robbins Road. This approval is based on the application meeting the applicable requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance. This action is based upon the findings and other information included in the Planning Commission report. Approval is subject to the following conditions:

1. A Zoning Text Amendment Ordinance to modify, and/or remove, certain restrictive provisions within the Special Land Use Chapter shall be adopted and become effective prior to the business moving into the property.

Deny for Noncompliance

If the Planning Commission finds the application does not meet the applicable standards, the following motion can be offered:

> **Motion** to direct staff to draft a formal motion and report, which will **deny** the Special Land Use application, with those discussion points which will be reflected in the meeting minutes. This will be reviewed and considered for adoption at the next meeting.

Table for Revisions

If the Planning Commission finds the application is in need of revisions before a determination can be made, the following motion can be offered:

> **Motion** to **table** the Special Land Use application, and direct the applicant to make the following revisions:
>
> 1. *Pursuant to Section 19.07.17.L provide a traffic study to justify the second driveway entrance, or revise the site plan to show that one entrance will be closed.*
> 2. *Apply for, and receive, a variance from Section 19.07.17.K, which would allow this use to be located within 200 feet of an intersection.*
> 3. *List other the revisions.*

REPORT OF FINDINGS (*TO BE USED WITH A MOTION FOR APPROVAL*)

1. This approval is based on the affirmative findings that each of the following standards of Section 19.05 have been fulfilled:
   A. The proposed use is consistent with, and promotes the intent and purpose of this Ordinance.
   B. The proposed use is of such location, size, density, and character as to be compatible with adjacent uses of land and the orderly development of the district in which situated and of adjacent districts.
   C. The proposed use does not have a substantially detrimental effect upon, nor substantially impair the value of, neighborhood property.
   D. The proposed use is reasonably compatible with the natural environment of the subject premises and adjacent premises.

E. The proposed use does not unduly interfere with provision of adequate light or air, nor overcrowd land or cause a severe concentration of population.

F. The proposed use does not interfere or unduly burden water supply facilities, sewage collection and disposal systems, park and recreational facilities, and other public services.

G. The proposed use is such that traffic to, from, and on the premises and the assembly of persons relation to such use will not be hazardous, or inconvenient to the neighborhood, nor unduly conflict with the normal traffic of the neighborhood, considering, among other things: safe and convenient routes for pedestrian traffic, particularly of children, the relationship of the proposed use to main thoroughfares and to streets and intersections, and the general character and intensity of the existing and potential development of the neighborhood.

H. The proposed use is consistent with the health, safety, and welfare of the Township.

2. The application meets the site plan review standards of Section 23.06 of the Zoning Ordinance. Specifically, the Planning Commission finds as follows:

A. The uses proposed will not adversely affect the public health, safety, or welfare. Uses and structures located on the site take into account topography, size of the property, the uses on adjoining property and the relationship and size of buildings to the site. The site will be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted in this ordinance.

B. Safe, convenient, uncontested, and well defined vehicular and pedestrian circulation is provided for ingress/egress points and within the site. Drives, streets and other circulation routes are designed to promote safe and efficient traffic operations within the site and at ingress/egress points.

C. The arrangement of public or private vehicular and pedestrian connections to existing or planned streets in the area are planned to provide a safe and efficient circulation system for traffic within the township.

D. Removal or alterations of significant natural features are restricted to those areas which are reasonably necessary to develop the site in accordance with the requirements of this Ordinance. The Planning Commission has required that landscaping, buffers, and/or greenbelts be preserved and/or provided to ensure that proposed uses will be adequately buffered from one another and from surrounding public and private property.

E. Areas of natural drainage such as swales, wetlands, ponds, or swamps are protected and preserved insofar as practical in their natural state to provide areas for natural habitat, preserve drainage patterns and maintain the natural characteristics of the land.

F. The site plan provides reasonable visual and sound privacy for all dwelling units located therein and adjacent thereto. Landscaping shall be used, as appropriate, to accomplish these purposes.

G. All buildings and groups of buildings are arranged so as to permit necessary emergency vehicle access as requested by the fire department.

H. All streets and driveways are developed in accordance with the Ottawa County Road Commission specifications, as appropriate.

I. Appropriate measures have been taken to ensure that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Provisions have been made to accommodate storm water, prevent erosion and the formation of dust.

J. Exterior lighting is arranged so that it is deflected away from adjacent properties and so it does not interfere with the vision of motorists along adjacent streets, and consists of sharp cut-off fixtures.

K. All loading and unloading areas and outside storage areas, including areas for the storage of trash, which face or are visible from residential districts or public streets, are screened.

L. Entrances and exits are provided at appropriate locations so as to maximize the convenience and safety for persons entering or leaving the site.

M. The site plans conform to all applicable requirements of County, State, Federal, and Township statutes and ordinances.

N. As appropriate, fencing has been required by the Planning Commission around the boundaries of the development to minimize or prevent trespassing or other adverse effects on adjacent lands.

O. The general purposes and spirit of this Ordinance and the Master Plan of the Township are maintained.

Clear Form

Print

GRAND HAVEN CHARTER TOWNSHIP

SPECIAL LAND USE APPLICATION

RECEIVED 6/27/17

Application Type	Fee	Escrow*
Original	$125	$1,000
Amendment	$100	$500

Sewer Escrow**	
Main Extension	$5,000
Lift Station	$2,000

Applicant Information

Name: Matt Wilbur

Phone: 231-343-7388 Fax: _____

Address: 32 Meadows DR

Email Address: mattf66c@gmail.com

Owner Information *(If different from applicant)*

Name: B Cubed of Michigan, LLC

Phone: 616.638.8844 Fax: N/A

Address: 16920 Ferris St. Grand Haven, MI 49417

Property Information

Address/Location: 16916 Robbins Rd. Grand Haven, MI. 49417

Parcel Number: 70-03-33-200-065 Size *(acres)*: 3.14

Current Zoning: 201-Commercial Master-Planned Zoning: _____

Description of Proposed Use/Request *(attach additional pages as needed)*

Administrative offices for entire Fitbody company (for entire west Michigan operation) & as workout space for Grand Haven operation.

NOTE: The architect, engineer, planner, or designer shall be responsible for utilizing the Township Ordinance books and following all applicable requirements, including those of Chapters 19 and 23 of the Zoning Ordinance. Initially, submit five copies of the required information for staff review. Once staff has granted tentative approval, additional copies will be required as requested by staff.

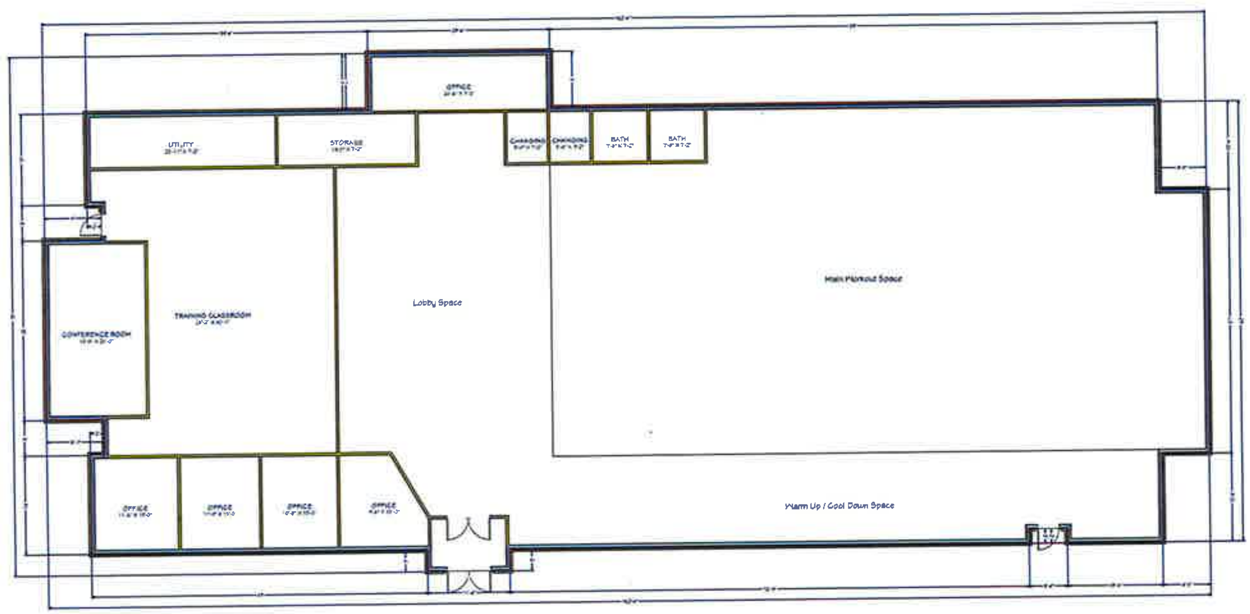
I hereby attest the information on this application is, to the best of my knowledge, true and accurate.

Matthew Wilbur — *Signature of applicant*

6/26/2017 — *Date*

** To cover cost of legal and consulting fees, may be increased as necessary*

*** If approval of this application requires/includes the extension of a municipal sanitary sewer main, an additional $5,000.00 escrow fee shall be required, and an additional $2,000.00 escrow fee shall be required for the installation of a lift station.*



SCALE: 1/8" = 1'

BEECHAM BUILDERS, LLC
14938 SANDSTONE RD
GRAND HAVEN, MICHIGAN 49417
PHONE 616-638-3457

FIT BODY BOOT CAMP
ROBBINS RD.
GRAND HAVEN, MI 49417

SHEET NO.
A1

GRAND HAVEN CHARTER TOWNSHIP

Community Development Memo

DATE: July 14, 2017

TO: Planning Commission

FROM: Stacey Fedewa, Community Development Director

RE: PUD – Housing for the Elderly – Regency at Grand Haven

PROPERTY DETAILS			
Property Address	**Parcel Number**	**Parcel Size**	**Application Type**
17049 Comstock	70-03-33-200-085*	10.44 Acres*	Residential PUD
Existing Zoning	**Existing Land Use**	**Existing/Proposed Infrastructure**	**Existing Site Improvements**
AG & RR	Vacant Land	Paved Roadway Municipal Water Sanitary Sewer	N/A Barns demolished in 2016
Master-Planned Zoning	**Surrounding Zoning & Land Uses**		
	Direction	Zoning	Land Use
High Density Residential PUD	N	RR	Single Family
	S	I-1	Industrial
	E	R-PUD	Multi-Family Apartments
	W	RR	Undeveloped land Single Family (*to be demolished*)

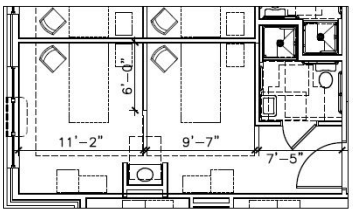
* Currently, parcel -085 is 8.5-acres yet 10.44-acres is shown above. A land division was approved prior to the developer ensuring there was enough land available for the designated open space. The site plans provided in this packet contain the revised parcel lines. In the coming months, the lot lines will be adjusted again giving the subject parcel a total of 10-44-acres, which will also result in a new parcel number.

PUD PROPOSAL – HOUSING FOR THE ELDERLY

The development falls under the "Housing for the Elderly" category of the PUD Chapter. Although the Zoning Ordinance does not specifically address this land use, it is a skilled nursing care facility, which places it into the Nursing or Convalescent Homes land use category.

The development would consist of a 73,796 sqft one-story building that would accommodate 120 beds:

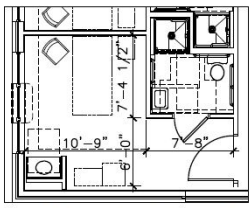
- 38 private rooms
- 6 private bariatric rooms
- 38 semi-private rooms (*76 beds*)



TYPICAL SEMI-PRIVATE ROOM
SCALE: NTS

In addition, the development is proposing a future wing that would add another 20 beds bringing the total to 140.

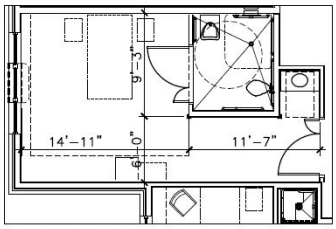
According to the developer, approximately 70% would be rehabilitation patients that stay 30-days or less; with the remaining 30% comprised of long-term patients in need of skilled nursing care.



TYPICAL PRIVATE ROOM
SCALE: NTS

Typical Rooms

The minimum room size for this type of facility is 200 sqft, which the developer exceeds.

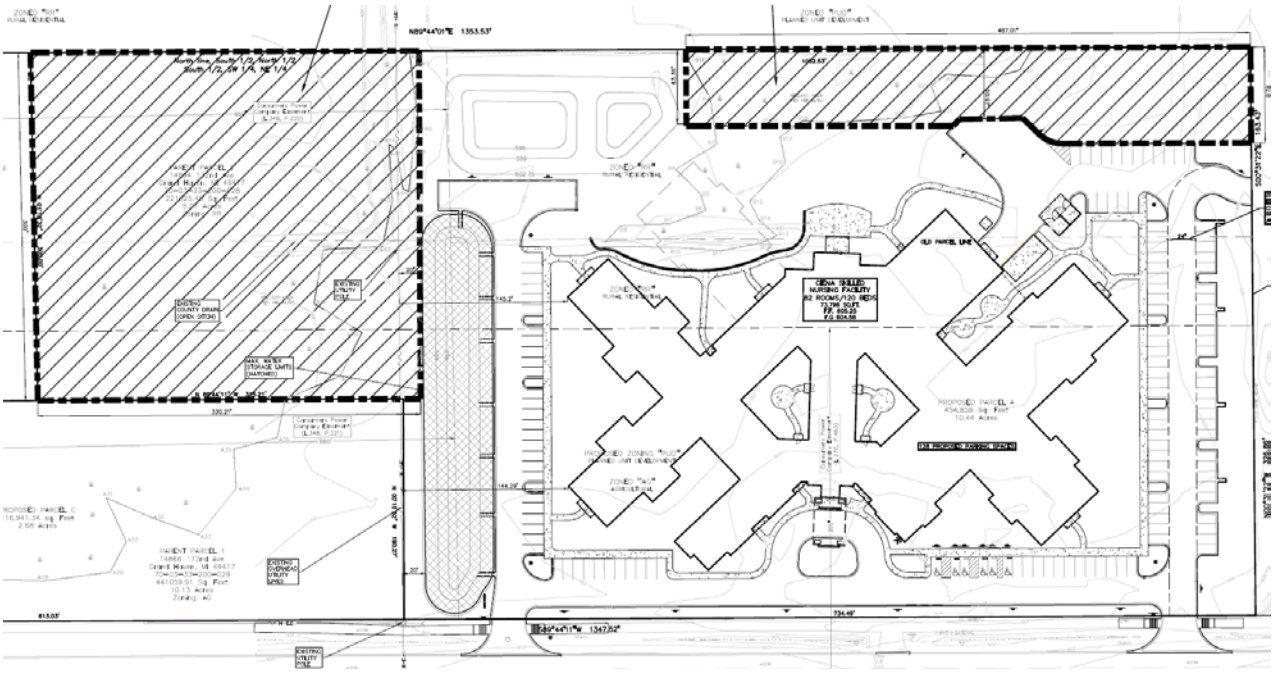


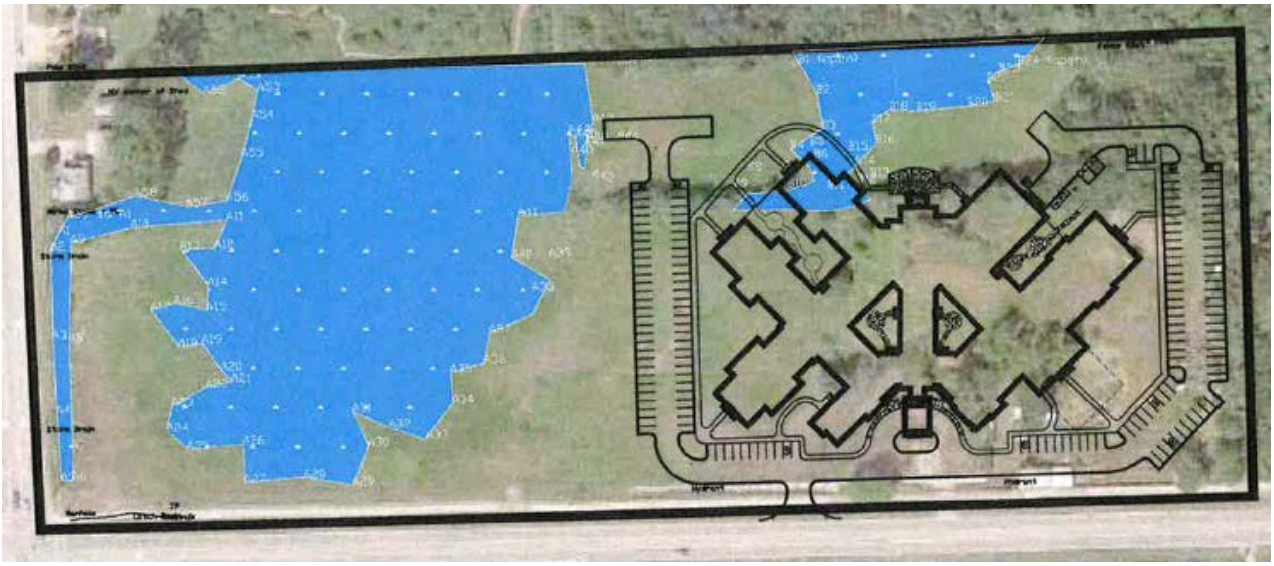
TYPICAL BARIATRIC ROOM
SCALE: NTS

- Private Room 246 sqft
- Private Bariatric 382 sqft
- Semi-Private Room 382 sqft

Open Space

The PUD Ordinance requires a minimum 20% open space, and the developer is proposing 3.09 acres, or 24%. Of this land, the majority is regulated wetland, which is compliant with the PUD goal of preserving significant natural areas.





Parking

The parking schedule for a Convalescent or Nursing Home = 1 space for every 2 beds; or 60 spaces. Typically, this land use assumes the patients will all be long-term care, which means staff and visitors would be the only vehicles that need to be parked.

However, because the majority of the patients will be short-term they may have their own personal vehicle, and based on the developers experience these patients receive more frequent visitors than long-term patients.

Thus, the developer is requesting a departure from the parking schedule to allow a total of 128 spaces, or 53% more parking than the ordinance allows. Now, if the parking schedule is adjusted to separate the short-term and long-term patients:

Use	Schedule	Short-Term (70% or 84 beds) vs Long-Term (30% or 36 beds)
Nursing Home	1 per 2 beds	18 spaces
Hospital	2 per 1 bed	168 spaces

Based upon this analysis, the Commission will need to determine if 128 spaces are reasonable.

Driveways

Section 17.05.4.A provides for the access provisions, which indicates that only 1 driveway is permitted per street opening. However, it also indicates that additional driveways may be permitted provided that it is permitted to share access within other uses on adjacent properties.

The developer is proposing 2 driveways along Comstock with the eastern driveway having an internal connection with Piper Lakes apartments.

The Planning Commission will need to make a determination if the second driveway is permissible.

Consumers Energy Easements

It should be noted this property is significantly encumbered by Consumers Energy easements. The developer has been diligent in contacting their company to either revise, or release, their easement. Unfortunately, it has been very difficult to resolve this with Consumers and the best correspondence that has been received so far was the need to relocate the detention basin east of the existing overhead utility line.

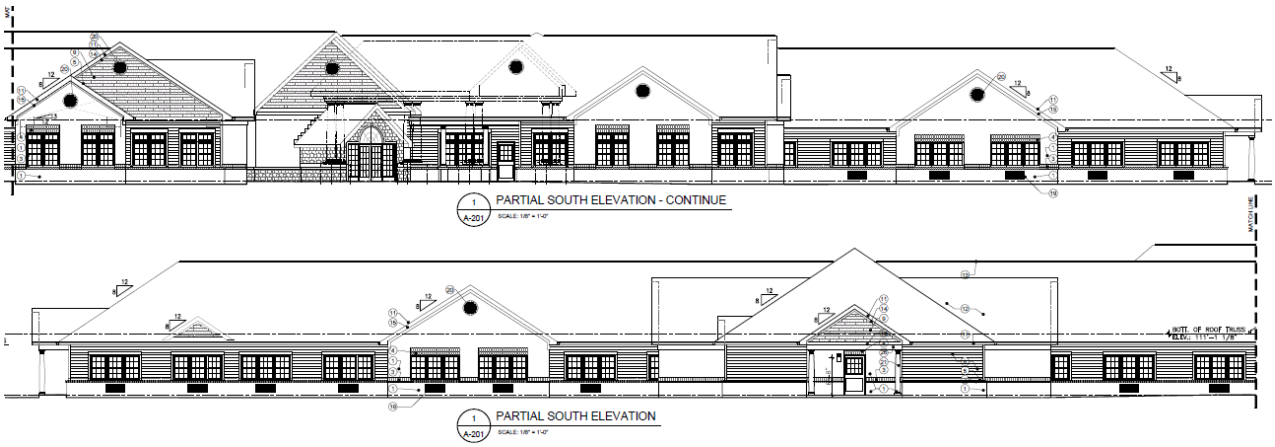
The developer complied and eliminated a row of parking in order to accommodate Consumers request. Since the plans have been revised, there has not been any response from Consumers as to how this easement will be handled.

Certificate of Need (CON)

The easement and PUD public hearing actually tie into the developers CON. The original CON was granted in 2014, and the developer has requested several extensions. However, according to the developer they have reached a point where the State is unlikely to grant additional extensions without PUD approval.

Thus, once the open space requirement was satisfied, and the developer provided evidence that Consumers was not responding to easement requests staff scheduled the public hearing to hopefully avoid noncompliance with the States CON program.

The second hope is that Consumers will not require significant revisions to the development, but if they do the applicant will need to return for a Major PUD Amendment. As mentioned though, there could be a lot to lose with the State if the PUD hearing is delayed any longer waiting for Consumers to respond.



REQUESTED DEPARTURES

Below is a list of all the departures being requested from the developer along with staff comments. Each of these will need to be considered and a finding made for each request.

No.	Section	Request	Staff Comments
1	19.07.28.E	Allow a 41’ front yard setback	This SLU provision requires a 75’ setback for all buildings. Due to regulated wetlands near the rear lot line the applicant is requesting to move the building closer to the street to reduce the wetland impact.
2	19.07.28.H	Allow off-street parking within the front yard	This SLU provision prohibits parking in the front yard. Again, due to the regulated wetland in the rear yard it may be beneficial to locate spaces in the front yard to reduce the wetland impact.
3	20.02.2	Allow parking within the required side yard	Departure request #1 establishes a 75’ setback. The building has been situated to reduce its impact on the regulated wetland areas, which results in off-street parking lots within the required side yards. Allowing the parking in these areas may be beneficial to reduce the wetland impact.

STAFF REQUEST

Considering all the information provided about the Consumers Energy easements, designated open space, and CON expiration—priorities shifted on this project to schedule a public hearing. As such, there are a number of small punch-list items that need to be addressed.

The items are listed below—the Commission needs to decide if these items should be revised on the plans before the Board hearing, or if it is acceptable to have the revisions provided in the final set of documentation that would occur when/if the project is fully approved.

1. Photometrics:
    a. Add property lines to Sheet E-1.
    b. Canopy lighting must be flush-mounted.
    c. All pole-mounted lighting along the east boundary line shall have side shielding installed to prevent light trespass on the adjacent property.
    d. All pole-mounted lighting along the south boundary line abutting Comstock shall have side shielding installed (*except for those lights nearest the driveway openings*) to prevent light trespass on the roadway.
2. Sign luminaire shall be revised to comply with Sections 20A.5.2 and 20A.510—externally illuminated signs shall be lit from the top of the sign downward and be fully shielded.
    a. Ground-mounted, up-cast fixtures are not permitted.
3. Parking lot perimeter landscaping along Comstock Street shall be revised to create a more natural appearance rather than planting them in a straight line.
4. Correct the landscaping for the islands within the east parking lot. Ground cover and trees are shown on the parking spaces, but should be relocated to the new islands on the west

section of this parking lot. There shall be 1 deciduous tree planted within each of the 7 islands.

5. Retaining wall height shall be specified. Plans note a variable height, but that height is not specified on the plan sheets. It is unknown if any portion of the wall will exceed Township regulations.
6. Sheet C-4.0: specify if soil will be brought in, or removed, from the site; and re-add the missing text boxes that were provided on the 2/7/17 plan set.
7. Provide a construction schedule that includes months, and years rather than number of days' certain activities require.
8. Correct the project size—everything should reference a 10.44-acre size.

SAMPLE MOTIONS

If the Planning Commission finds the Regency at Grand Haven application meets the applicable standards, the following motion can be offered:

> **Motion** to direct staff to draft a formal motion and report, which will recommend **conditional approval** of the Regency at Grand Haven PUD application, with those Zoning Ordinance compliance departures which were discussed and will be reflected in the meeting minutes. This will be reviewed and considered for adoption at the next meeting. Lastly, the Planning Commission directs staff to publish the notice of public hearing for the Township Board. Minimally, the project will be subject to the following conditions:
>
> 1. Must obtain permits from all applicable agencies including the OCRC, OCWRC, State of Michigan etc. Permits shall be obtained before building permits are issued.
> 2. The Developer shall enter into a PUD Contract with the Township, which will be drafted by the Township Attorney and approved by the Township Board prior to receiving a building permit.
> 3. A revised Open Space Conveyance will be submitted and approved by the Township Attorney prior to the issuance of a building permit.
> 4. *List additional conditions.*

If the Planning Commission finds the Regency at Grand Haven PUD application does not meet the applicable standards, the following motion can be offered:

> **Motion** to recommend to the Township Board **denial** of the Regency at Grand Haven PUD, and direct staff to draft a formal motion and report with those discussion points which will be reflected in the meeting minutes. This will be reviewed and considered for adoption at the next meeting.

If the Planning Commission finds the applicant must make revisions to the PUD application, the following motion can be offered:

Motion to **table** the Regency at Grand Haven PUD application, and direct the applicant to make the following revisions:

1. *List the revisions.*

Please contact me if this information raises questions.

Clear Form

Print

GRAND HAVEN CHARTER TOWNSHIP

PLANNED UNIT DEVELOPMENT (PUD) APPLICATION

Application Type	Fee	Escrow*
Overlay Zone	$310	$2,500
Non-Overlay Zone	$300	$1,500

Sewer Escrow**	
Main Extension	$5,000
Lift Station	$2,000

Applicant Information

Name: Grand Haven Senior Leasing, LLC

Phone: (248) 262-2357 Fax: (248) 263-2557

Address: 4000 Town Center, Suite 700, Southfield, MI, 48075

Email Address: thunt3@cienahmi.com

Owner Information *(If different from applicant)*

Name:

Phone: Fax:

Address:

Property Information

Address/Location: N. side of Comstock, E. of 172nd Ave.

Parcel Number: 70 - 03 - 33 - 200 - 28&29 Size *(acres)*: 15.2

Current Zoning: AG Zoning Requested: PUD

Adjacent Zoning: *North*: RR *South*: I-1 *East*: PUD *West*: PUD

Master-Planned Zoning: Consistent with Master Plan?

Other Information

Does Property Abut Township Border? Yes. East property line.

Present Use of the Subject Property? Vacant land.

Number & Type of Existing Structures? None.

Subject Property Located on a Paved Road? Yes

Municipal Water within 2,700 Feet of Subject Property? Yes.

Municipal Sewer within 2,700 Feet of Subject Property? Yes.

NOTE: The architect, engineer, planner, or designer shall be responsible for utilizing the Township Ordinance Books and following the procedures and requirements as specified in Chapters 17 and 23 (*and Chapter 15A if located in the Overlay Zone*), and any other applicable ordinances. Initially, submit five copies of the required information for staff review. Once staff has granted tentative approval, additional copies will be required as requested by staff.

I hereby attest the information on this application is, to the best of my knowledge, true and accurate.

Signature of applicant

2/7/2017

Date

Last Revised 2/8/2016

** To cover cost of legal and consulting fees, may be increased as necessary*

*** If approval of this application requires/includes the extension of a municipal sanitary sewer main, an additional $5,000.00 escrow fee shall be required, and an additional $2,000.00 escrow fee shall be required for the installation of a lift station.*

NOTICE

IF I PLAN TO SPLIT THE PARCEL(S) AFTER THE ZONING APPROVALS ARE GRANTED, I REALIZE THAT I MUST APPLY FOR A LAND DIVISION WITH THE ASSESSING DEPARTMENT. ALL LAND DIVISION REQUIREMENTS MUST BE CONFORMED TO BEFORE PROCEEDING WITH FURTHER DEVELOPMENT.

_____ 2/7/2017

Signature of applicant *Date*

For Office Use Only

Date Received 2/9/2017 Fee Paid? Yes

Materials Received: Site Plans ✓ Location Map ✓

Survey ✓ Legal Description ✓

Dated copy of approved minutes sent to applicant? _____ Date Sent _____

PLANNING COMMISSION USE ONLY

Approval _____

Tabled _____

Denied _____

Conditional Approval _____

The following conditions shall be met for approval:

_____

_____

_____

_____

_____

_____

_____ _____

Signature of Planning Commission Chair *Date*

FINAL SITE PLANS FOR

CIENA REGENCY AT GRAND HAVEN

PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T8N, R16W

GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DEVELOPER:

GRAND HAVEN SENIOR LEASING, LLC
4000 TOWN CENTER, SUITE 700
SOUTHFIELD, MI 48075

ARCHITECT:

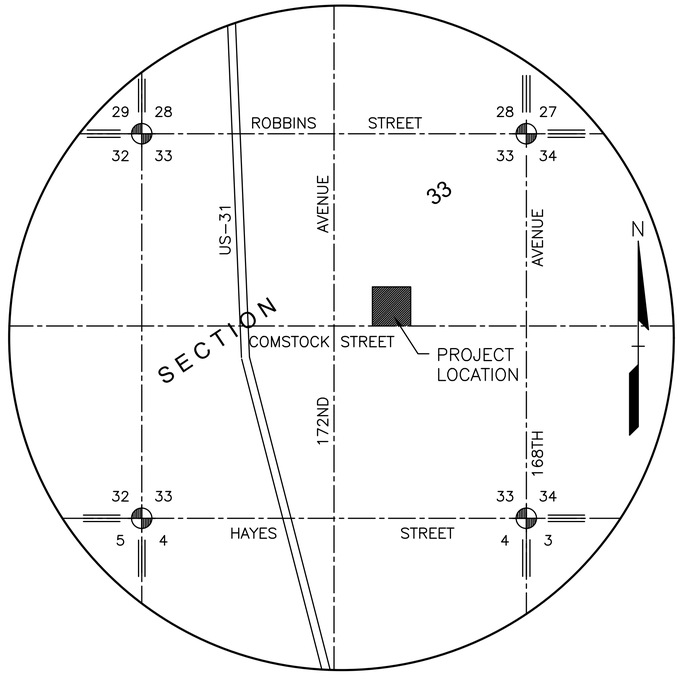
NSA ARCHITECTS, ENGINEERS, PLANNERS
23761 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335
CONTACT: ROY BAKER, AIA, NCARB
PHONE: (248) 477-2444
EMAIL: RBAKER@NSA-AE.COM

CIVIL ENGINEER:

PEA, INC.
7927 NEMCO WAY, SUITE 115
BRIGHTON, MI 48116
CONTACT: SCOTT PERUSKI, PE
PHONE: (517) 546-8583 EXT. 204
FAX: (517) 546-8973
EMAIL: SPERUSKI@PEAINC.COM

LANDSCAPE ARCHITECT:

KENNETH WEIKAL LANDSCAPE ARCHITECTURE
33203 BIDDESTONE LANE
FARMINGTON HILLS, MI 48334
CONTACT: KEN WEIKAL
PHONE: (248) 477-3600
CELL: (313) 820-2311



LOCATION MAP
NO SCALE

INDEX OF DRAWINGS:

COVER	COVER SHEET
C-1.0	OVERALL TOPOGRAPHIC SURVEY
C-1.1	TOPOGRAPHIC SURVEY
C-2.0	DEMOLITION PLAN
C-3.0	OVERALL SITE PLAN
C-3.1	DIMENSION AND PAVING PLAN
C-4.0	GRADING PLAN
C-4.1	GRADING DETAIL
C-5.0	SOIL EROSION CONTROL PLAN
C-6.0	UTILITY PLAN
C-6.1	ROOF LEAD PLAN
C-7.0	UTILITY PROFILES
C-8.0	STORM WATER MANAGEMENT PLAN
C-8.1	DRAINAGE AREA PLAN
C-9.0	SITE DETAILS
C-9.1	BARRIER FREE SITE DETAILS
C-10.0	CONSTRUCTION DETAILS
C-10.1	CONSTRUCTION DETAILS
C-10.2	CONSTRUCTION DETAILS

ARCHITECTURAL PLANS BY NSA:

A-100	OVERALL FLOOR PLAN
A-201	EXTERIOR ELEVATIONS
A-202	EXTERIOR ELEVATIONS
A-203	EXTERIOR ELEVATIONS
A-204	EXTERIOR ELEVATIONS
A-205	ARCHITECTURAL SITE PLAN AND SITE DETAILS
A-300	SITE SIGNAGE
E-1	SITE LIGHTING PHOTOMETRICS PLANS AND DETAILS

LANDSCAPE PLANS BY HAGENBUCH WEIKAL LANDSCAPE ARCHITECTURE

L-100	COVER SHEET
L-101	HARDSCAPE LAYOUT PLAN
L-102	HARDSCAPE LAYOUT PLAN
L-103	HARDSCAPE LAYOUT PLAN
L-104	HARDSCAPE LAYOUT PLAN
L-301	SITE PLANTING PLAN
L-302	CALCULATIONS, PLANT LISTS & DETAILS
L-310	ENTRANCE PLANS
L-311	WEST INTERIOR COURTYARD PLANS
L-312	EAST INTERIOR COURTYARD PLANS
L-313	EXTERIOR COURTYARD PLANS
L-601	SPECIFICATIONS
L-602	SPECIFICATIONS
L-603	SPECIFICATIONS
L-604	SPECIFICATIONS
L-605	SPECIFICATIONS
L-606	SPECIFICATIONS
L-607	STANDARDS
L-608	STANDARDS

PROJECT NARRATIVE:

GRAND HAVEN SENIOR LEASING, LLC IS PROPOSING TO CONSTRUCT A NEW 120 BED, 73,796 S.F. SKILLED NURSING FACILITY IN GRAND HAVEN TOWNSHIP, EAST OF 172ND AVENUE AT 17049 COMSTOCK STREET. THE 8.25 ACRE PARCEL IS CURRENTLY ZONED AGRICULTURAL AND IS PROPOSED TO BE DEVELOPED UNDER THE TOWNSHIP REQUIREMENTS FOR PUD-RESIDENTIAL.

THE APPLICANT HAS STRIVED TO MEET AS MANY OF THE PUD-RESIDENTIAL REQUIREMENTS IN THE ORDINANCE. BELOW IS A LIST OF DEPARTURES FROM THE ORDINANCE THAT THE APPLICANT IS REQUESTING AS A CONDITION OF APPROVAL OF THIS FINAL SITE PLAN.

1. 19.07.28.E: 75' MINIMUM FRONT SETBACK REQUIREMENT; THE APPLICANT IS REQUESTING A DEPARTURE FROM THE REQUIREMENT (41.43' PROPOSED FRONT SETBACK) DUE TO EXISTING REGULATED WETLANDS IN THE NORTHERN PORTION OF THE SITE. IN ORDER TO MEET THE SETBACK REQUIREMENT, THE APPLICANT WOULD HAVE TO DISTURB AND REMOVE A SIGNIFICANT PORTION THE WETLANDS.

2. 19.07.28.H: OFF-STREET PARKING SHALL BE IN THE SIDE OR REAR YARDS; THE APPLICANT IS REQUESTING TWENTY (23) STANDARD PARKING SPACES AND SIX (6) ACCESSIBLE PARKING SPACES BE ALLOWED IN FRONT OF THE BUILDING. DUE THE PRESENCE OF EXISTING WETLANDS IN THE NORTHERN PORTION OF THE SITE, ESTABLISHING PARKING IN THE REAR OF THE BUILDING WOULD WOULD REQUIRE WETLAND DISTURBANCE AND REMOVAL.

3. 17.05.4.A-B: SITE IS LIMITED TO ONE DRIVEWAY; THE APPLICANT IS REQUESTING TWO DRIVEWAYS BE ALLOWED DUE TO: THE CONFIGURATION OF THE PROPOSED BUILDING, MANEUVERING AREAS REQUIRED FOR DELIVERIES AND EMERGENCY VEHICLES AND THE PRESENCE OF EXISTING WETLANDS THAT HINDER SITE CIRCULATION.

NOT FOR CONSTRUCTION

XREF: S:\PROJECTS\2016\2016-199\DWG\TOPOBASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-BASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-TBLK-16199.DWG

REVISIONS

No.	BY	CHK	DESCRIPTION	DATE
4	SAP	SP	REV. PARCELS & OPEN SPACE	6-29-17
3	RLS	SP	PER PLANNING REVIEW	5-10-17
2	RLS	SP	REVISED PER CONSUMERS	5-10-17
1	SP	SP	REVISED SITE PLAN SUBMITTAL	4-12-17

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60088
LICENSED PROFESSIONAL ENGINEER

CAUTION!!
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FARMINGTON HILLS, MI 48335

COVER SHEET
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	DN.	SUR.	P.M.	RLS
SP	SP	KTR		

S:\PROJECTS\2016\2016-199 CIENA GRAND HAVEN TWP-2450\dwg\Construction\(COVER) COVER-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: N/A

DRAWING NUMBER:
COVER

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #1
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 375 FEET EAST OF 172ND AVENUE.
ELEV. – 603.39

BM #2
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 300 FEET WEST OF EAST PARCEL LINE.
ELEV. – 604.33

PROPERTY DESCRIPTION:

(PER GOWER PROFESSIONAL SURVEYING, P.C.)

ORIGINAL PARENT DESCRIPTIONS

PARCEL 1:
Parcel ID: 70-03-33-200-029
The South one-half (S 1/2) of the South one-half (S 1/2) of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan.

PARCEL 2:
Parcel ID: 70-03-33-200-028
The South 1/2 of the North 1/2 of the South 1/2 of the Southwest 1/4 of the Northeast 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan.

PROPOSED DESCRIPTIONS

PARCEL A:
That part of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the East and West 1/4 line S89°44'11"W, 1347.52 feet from the East 1/4 corner of said Section 33; thence S89°44'11"W, 734.49 feet continuing along said 1/4 line; thence N00°15'52"W, 490.24 feet to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 732.28 feet along said North line to the East line of said Southwest 1/4 of the Northeast 1/4; thence S00°31'22"E, 490.28 feet along said East line to the East and West 1/4 line of said Section 33 and the Point of Beginning, containing 8.25 acres of land. Subject to easements, restrictions and rights of way of record.

PARCEL B:
That part of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the East and West 1/4 line S89°44'11"W, 2082.01 feet from the East 1/4 corner of said Section 33; thence S89°44'11"W, 613.03 feet continuing along said 1/4 line to the North and South 1/4 line of said Section 33; thence N01°13'32"W, 189.28 feet along said 1/4 line; thence N89°44'01"E, 301.00 feet; thence N01°13'32"W, 301.00 feet to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 320.25 feet along said North line; thence S01°15'52"E, 490.24 feet to the East and West 1/4 line of said Section 33 and the Point of Beginning, containing 4.87 acres of land. Subject to the rights of the public in 172nd Avenue over the West 33 feet thereof and also subject to easements, restrictions and rights of way of record.

PARCEL C:
That part of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the North and South 1/4 line being S89°44'11"W, 2695.04 feet along the East and West 1/4 line and N01°13'32"W, 189.28 feet along said North and South 1/4 line from the East 1/4 corner of said Section 33; thence N01°13'32"W, 301.00 feet continuing along said 1/4 line to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 301.00 feet along said North line; thence S01°13'32"E, 301.00 feet; thence S89°44'11"W, 301.00 feet to said North and South 1/4 line of said Section 33 and the Point of Beginning, containing 2.08 acres of land. Subject to the rights of the public in 172nd Avenue over the West 33 feet thereof and also subject to easements, restrictions and rights of way of record.

LEGEND

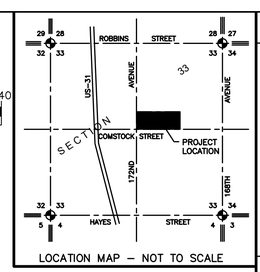
- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET
- SEC. CORNER FOUND
- R RECORDED
- M MEASURED
- C CALCULATED

EXISTING

- ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UNDERGROUND CABLE TV, CATV PEDESTAL
- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS MAIN, VALVE & GAS LINE MARKER
- WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN
- POST INDICATOR VALVE
- WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- 816.06 SPOT ELEVATION
- 670 CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- CONC. CONCRETE
- ASPH. ASPHALT
- GRAVEL GRAVEL SHOULDER
- WETLAND

N

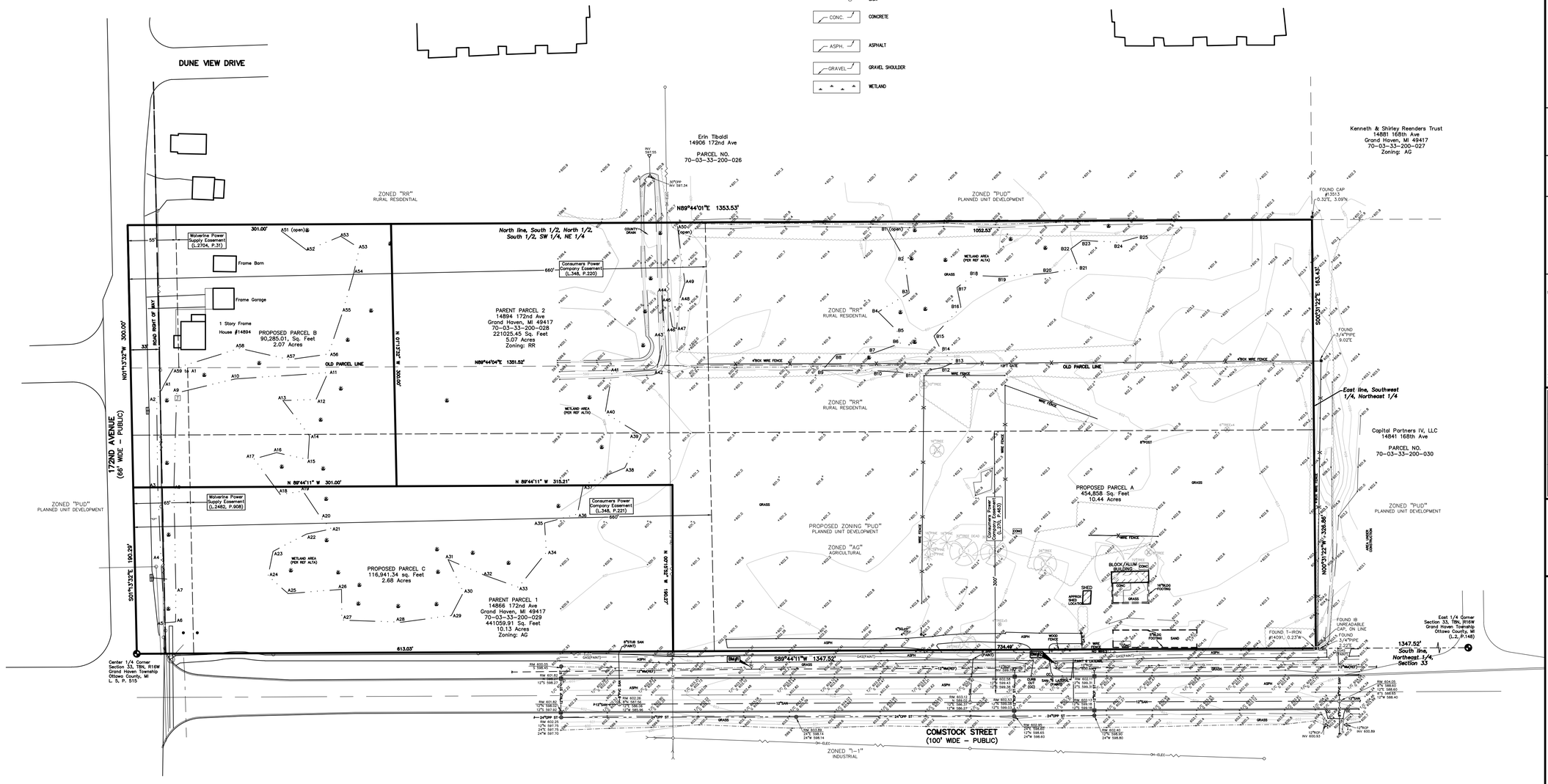
GRAPHIC SCALE
–60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.



LOCATION MAP – NOT TO SCALE

No.	BY	CHK	DESCRIPTION	DATE
5	RLS		REV. PARCELS & OPEN SPACE	6-29-17
4	SP		REVISED PER CONSUMERS	5-10-17
3	RLS		REVISED SITE PLAN SUBMITTAL	4-12-17
2	SP			
1	BY			

REVISIONS



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OVERALL TOPOGRAPHIC SURVEY
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	SP	DN.	SP	SUR.	KTR	P.M.	RLS

L:\PROJECTS\2016\2016-199 GTEA GRAND HAVEN, TWP-SAS\Dwg\Construction\(C-1.0) OVERALL - TOPO-16199.dwg

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ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 60'

DRAWING NUMBER:
C-1.0

REFERENCE DRAWINGS

ALTA/ACSM LAND TITLE SURVEY BY GPS SURVEYING, DATED 12/24/15
XREF: S:\PROJECTS\2016\2016-199\DWG\TOPOBASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-BASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-TBLK-16199.DWG

NOT FOR CONSTRUCTION

BENCHMARKS
(GPS DERIVED – NAVD88)

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ELEV. – 603.39

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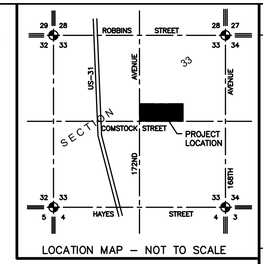
GRAPHIC SCALE
−40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



LOCATION MAP – NOT TO SCALE

ON-SITE SOILS:
Gm – GRANBY LOAMY SAND
CovabB – COVERT–PIPESTONE SANDS (0%–6% SLOPES)
Gn – GRANBY FINE SANDY LOAM

LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING

–OH–ELEC–	ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
–UG–CATV–	UNDERGROUND CABLE TV, CATV PEDESTAL
–UG–PHONE–	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
–UG–ELEC–	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
	GAS MAIN, VALVE & GAS LINE MARKER
	WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
	SANITARY SEWER, CLEANOUT & MANHOLE
	STORM SEWER, CLEANOUT & MANHOLE
	COMBINED SEWER & MANHOLE
	SQUARE, ROUND & BEEHIVE CATCH BASIN
	POST INDICATOR VALVE
	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
M T I	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
	UNIDENTIFIED STRUCTURE
816.06	SPOT ELEVATION
670	CONTOUR LINE
	FENCE
	GUARD RAIL
	STREET LIGHT
	SIGN
CONC.	CONCRETE
ASPH.	ASPHALT
GRAVEL	GRAVEL SHOULDER
	WETLAND

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2430 Rochester Ct, Ste 100
Troy, MI 48083-1872
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No.	BY	DESCRIPTION	DATE
4	SAP	REV. PARCELS & OPEN SPACE	6-29-17
3	RLS	REVISED PER PLANNING	5-10-17
2	RLS	REVISED PER CONSUMERS	4-12-17
1	SP	REVISED SITE PLAN SUBMITTAL	

REVISIONS

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23761 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335

TOPOGRAPHIC SURVEY
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	SP	DN.	SP	SUR.	KTR	P.M.	RLS

S:\PROJECTS\2016\2016-199 DENA GRAND HAVEN, TWP-SAS\Dwg\Construction\(C-1.1) TOPO-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

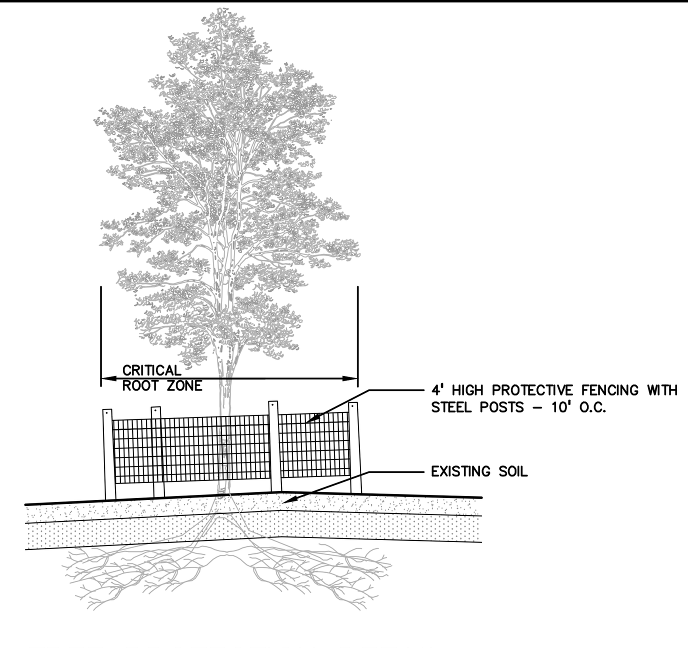
PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-1.1

NOT FOR CONSTRUCTION

REFERENCE DRAWINGS
ALTA/ACSM LAND TITLE SURVEY BY GPS SURVEYING, DATED 12/24/15
XREF: S:\PROJECTS\2016\2016-199\DWG\TOPOBASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-BASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-TBLK-16199.DWG



TREE PROTECTION WILL BE ERECTED PRIOR TO START OF CONSTRUCTION ACTIVITIES AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.

NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY TREE DESIGNATED TO REMAIN; INCLUDING, BUT NOT LIMITED TO PLACING SOLVENTS, BUILDING MATERIAL, CONSTRUCTION EQUIPMENT OR SOIL DEPOSITS WITHIN DRIP LINES.

GRADE CHANGES MAY NOT OCCUR WITHIN THE DRIP LINE OF PROTECTED TREES.

DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY DEVICE OR WIRE TO ANY REMAINING TREE.

ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE OF THE PROTECTIVE FENCING.

TREES LOCATED ON ADJACENT PROPERTY THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED.

TREES TO BE PRESERVED SHALL BE IDENTIFIED WITH FLAGGING PRIOR TO THE TREE CLEARING OPERATIONS.

PROVIDE FENCE AROUND CRITICAL ROOT ZONE OF TREE.

FENCE SHALL BE PLACED IN A CIRCLE WITH A RADIUS OF 1' PER 1" DIAMETER OF THE TREE MEASURED AT 4.5' ABOVE GROUND.

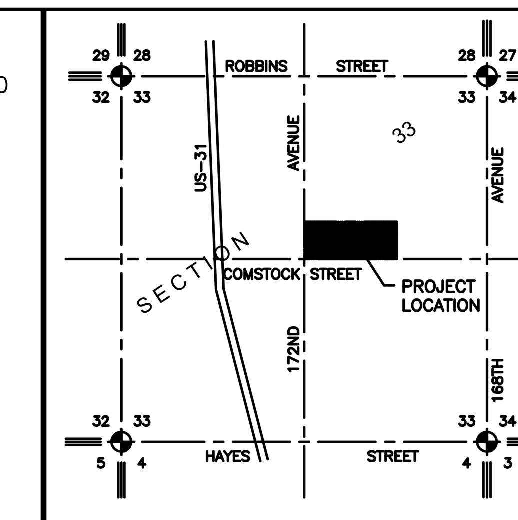
TREE PROTECTION DETAIL
NOT TO SCALE

DEMOLITION LEGEND:

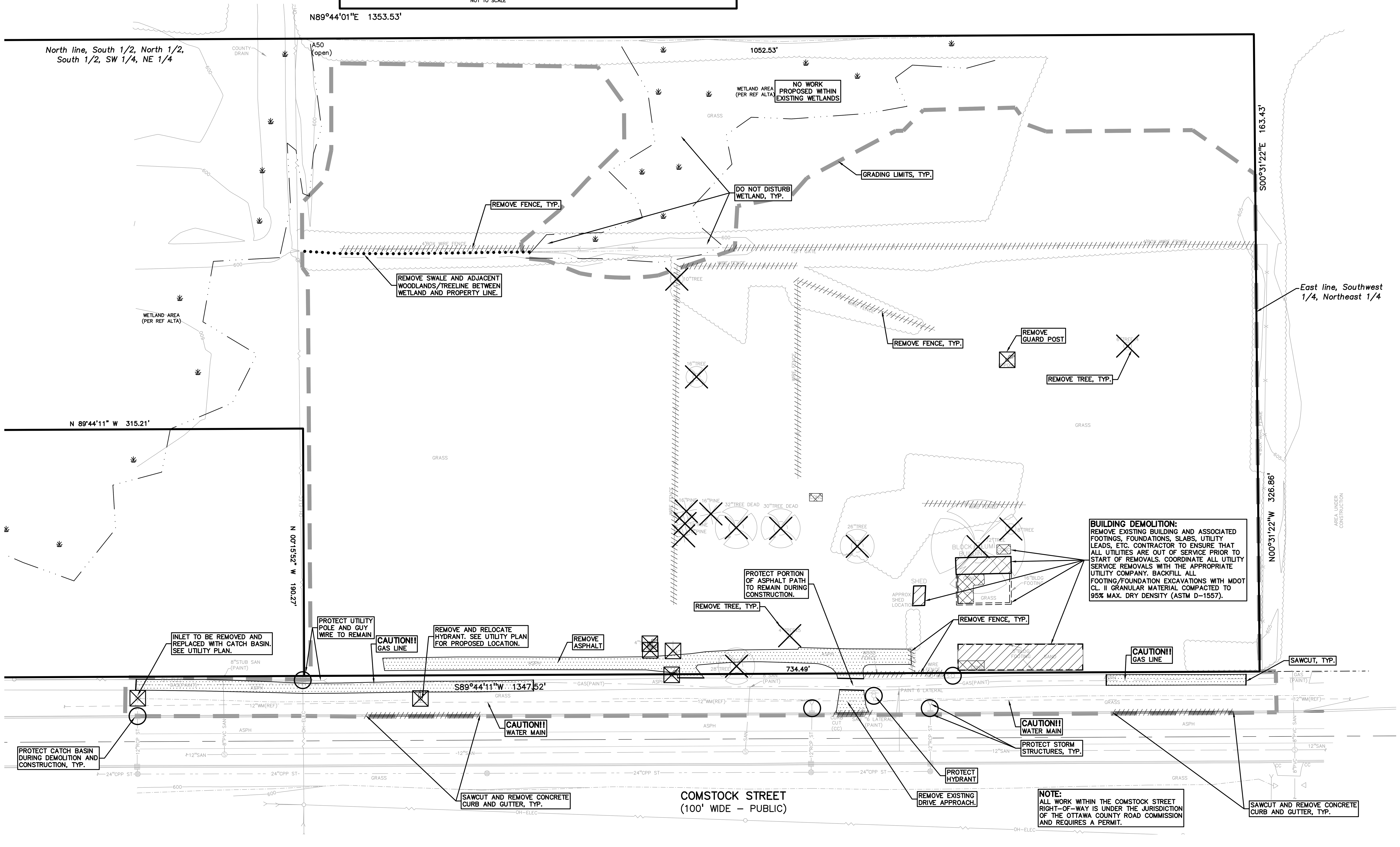
- ITEM TO BE PROTECTED
- ITEM TO BE REMOVED
- CURB/FENCE REMOVAL
- CONCRETE PAVEMENT AND SIDEWALK REMOVAL
- AREA OR ITEMS TO BE REMOVED
- REMOVE SWALE
- ASPHALT REMOVAL
- TREE REMOVAL
- SAWCUT LINE

N

GRAPHIC SCALE
-40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



LOCATION MAP – NOT TO SCALE



LEGEND

- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET
- SEC. CORNER FOUND
- R RECORDED
- M MEASURED
- C CALCULATED

EXISTING

- ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UNDERGROUND CABLE TV, CATV PEDESTAL
- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS MAIN, VALVE & GAS LINE MARKER
- WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN
- POST INDICATOR VALVE
- WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- CONCRETE
- ASPHALT
- WETLAND

GENERAL DEMOLITION NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:

1. ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
2. ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
3. STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
4. SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
5. REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
6. REFER TO THIS SHEET FOR TREE PROTECTION DETAILS.
7. THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15' OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) LATEST EDITION.
10. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
11. ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
12. REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH DETROIT EDISON OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
13. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
14. THE CONTRACTOR SHALL NOTIFY MISS DIG, THE TOWNSHIP ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

NOT FOR CONSTRUCTION

REFERENCE DRAWINGS

ALTA/ACSM LAND TITLE SURVEY BY GPS SURVEYING, DATED 12/24/15
XREF: S:\PROJECTS\2016\2016-199\DWG\TOPOBASE-16199.DWG
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REVISIONS

No.	BY	CHK	DESCRIPTION	DATE
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3	RLS		HFES PRELIMINARY	5-10-17
2	RLS		REVISED PER CONSUMERS	4-13-17
1	SP		REVISED SITE PLAN SUBMITTAL	3-14-17

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

CAUTION!!
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CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

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DEMOLITION PLAN
REGENCY AT GRAND HAVEN TWP.

PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	DN.	SUR.	P.M.
SP	SP	KTR	RLS

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-2.0

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #1
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 375 FEET EAST OF 172ND AVENUE.
ELEV. – 603.39

BM #2
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 300 FEET WEST OF EAST PARCEL LINE.
ELEV. – 604.33

PROPERTY DESCRIPTION:

(PER GOWER PROFESSIONAL SURVEYING, P.C.)

ORIGINAL PARENT DESCRIPTIONS

PARCEL 1:
Parcel ID: 70–03–33–200–029
The South one–half (S 1/2) of the South one–half (S 1/2) of the Southwest one–quarter (SW 1/4) of the Northeast one–quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan.

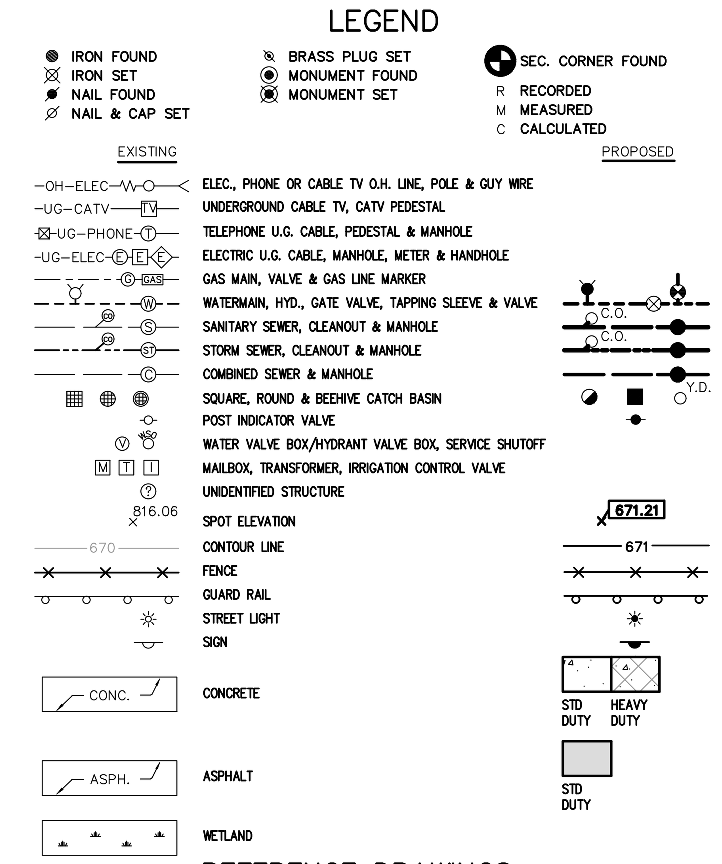
PARCEL 2:
Parcel ID: 70–03–33–200–028
The South 1/2 of the North 1/2 of the South 1/2 of the Southwest 1/4 of the Northeast 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan.

PROPOSED DESCRIPTIONS

PARCEL A:
That part of the Southwest one–quarter (SW 1/4) of the Northeast one–quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the East and West 1/4 line S89°44'11"W, 1347.52 feet from the East 1/4 corner of said Section 33; thence S89°44'11"W, 734.49 feet continuing along said 1/4 line; thence N00°15'52"W, 490.24 feet to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 732.28 feet along said North line to the East line of said Southwest 1/4 of the Northeast 1/4; thence S00°31'22"E, 490.28 feet along said East line to the East and West 1/4 line of said Section 33 and the Point of Beginning, containing 8.25 acres of land. Subject to easements, restrictions and rights of way of record.

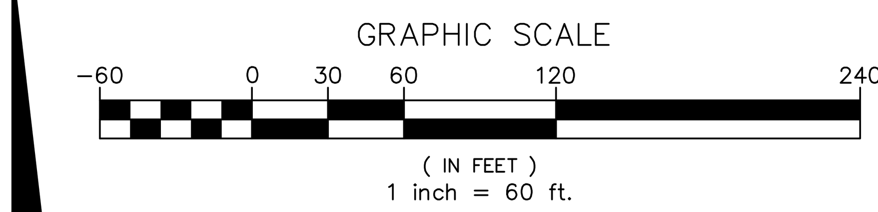
PARCEL B:
That part of the Southwest one–quarter (SW 1/4) of the Northeast one–quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the East and West 1/4 line S89°44'11"W, 2082.01 feet from the East 1/4 corner of said Section 33; thence S89°44'11"W, 613.03 feet continuing along said 1/4 line to the North and South 1/4 line of said Section 33; thence N01°13'32"W, 189.28 feet along said 1/4 line; thence N89°44'011"E, 301.00 feet; thence N01°13'32"W, 301.00 feet to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 320.25 feet along said North line; thence S01°15'52"E, 490.24 feet to the East and West 1/4 line of said Section 33 and the Point of Beginning, containing 4.87 acres of land. Subject to the rights of the public in 172nd Avenue over the West 33 feet thereof and also subject to easements, restrictions and rights of way of record.

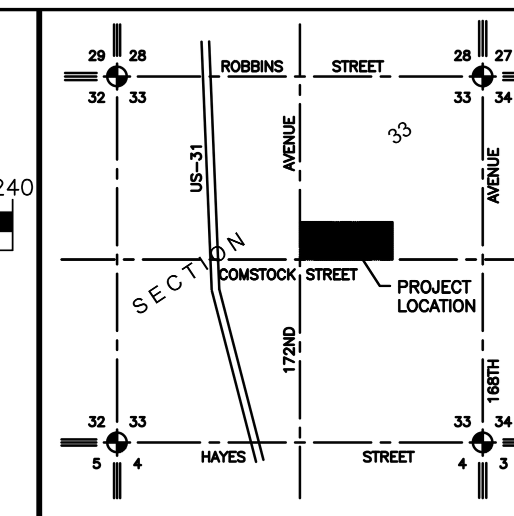
PARCEL C:
That part of the Southwest one–quarter (SW 1/4) of the Northeast one–quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the North and South 1/4 line being S89°44'11"W, 2695.04 feet along the East and West 1/4 line and N01°13'32"W, 189.28 feet along said North and South 1/4 line from the East 1/4 corner of said Section 33; thence N01°13'32"W, 301.00 feet continuing along said 1/4 line to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 301.00 feet along said North line; thence S01°13'32"E, 301.00 feet; thence S89°44'11"W, 301.00 feet to said North and South 1/4 line of said Section 33 and the Point of Beginning, containing 2.08 acres of land. Subject to the rights of the public in 172nd Avenue over the West 33 feet thereof and also subject to easements, restrictions and rights of way of record.



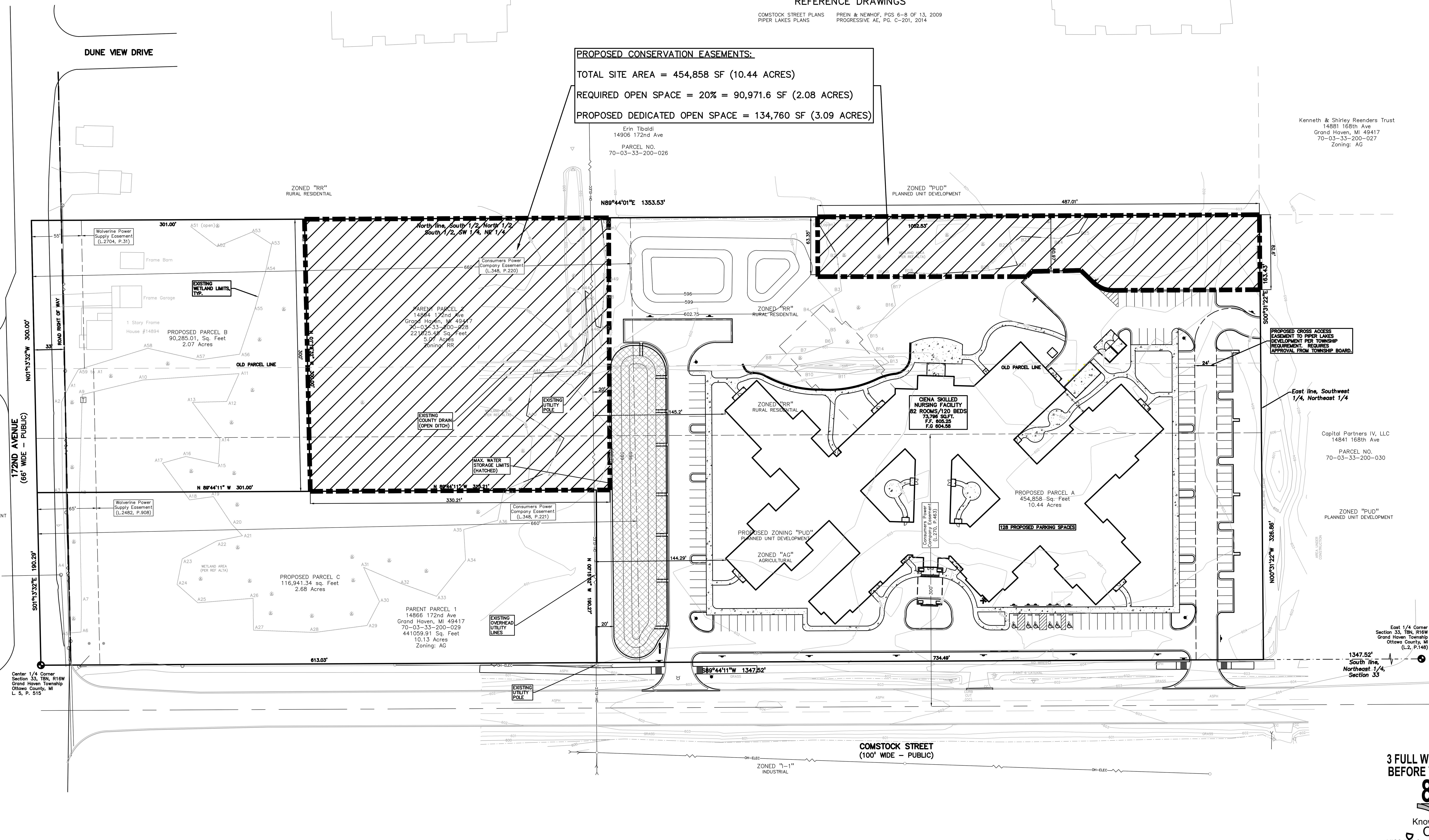
REFERENCE DRAWINGS

COMSTOCK STREET PLANS	PREIN & NEWHOF, PGS 6–8 OF 13, 2009
PIPER LAKES PLANS	PROGRESSIVE AE, PG. C–201, 2014





LOCATION MAP – NOT TO SCALE



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REFERENCE DRAWINGS
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NOT FOR CONSTRUCTION

REVISIONS

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3	RLS		HFES PRELIMINARY	5-10-17
2	RLS		REVISED PER CONSUMERS	4-12-17
1	SP		REVISED SITE PLAN SUBMITTAL	

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OVERALL SITE PLAN
REGENCY AT GRAND HAVEN TWP.

PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES. SP | DN. SP | SUR. KTR | P.M. RLS

S:\PROJECTS\2016\2016–199 CIENA GRAND HAVEN TWP–SAS\Dwg\Construction\(C–3.0) OVERALL SITE–16199–10.44 acres.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 60'

DRAWING NUMBER:
C-3.0

BENCHMARKS
(GPS DERIVED – NAVD88)

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ELEV. – 603.39

BM #2
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 300 FEET WEST OF EAST PARCEL LINE.
ELEV. – 604.33

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.

2. REFER TO SHEETS C–9.0 THROUGH C–10.2 FOR ON–SITE PAVING DETAILS.

3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH GRAND HAVEN TOWNSHIP AND OTTAWA COUNTY CURRENT STANDARDS AND REGULATIONS.

4. THE CONTRACTOR SHALL NOTIFY THE GRAND HAVEN TOWNSHIP ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

5. ANY WORK WITHIN THE COMSTOCK STREET RIGHT–OF–WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OTTAWA COUNTY ROAD COMMISSION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.

6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

SIGN LEGEND:

'STOP' SIGN	2
'BARRIER FREE PARKING' SIGN	3
'VAN ACCESSIBLE' SIGN	4
'NO PARKING FIRE LANE'	5

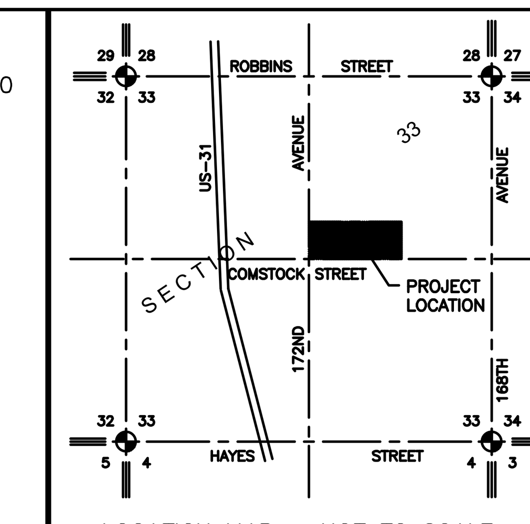
REFER TO SHEET C–9.0 AND C–9.1 FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

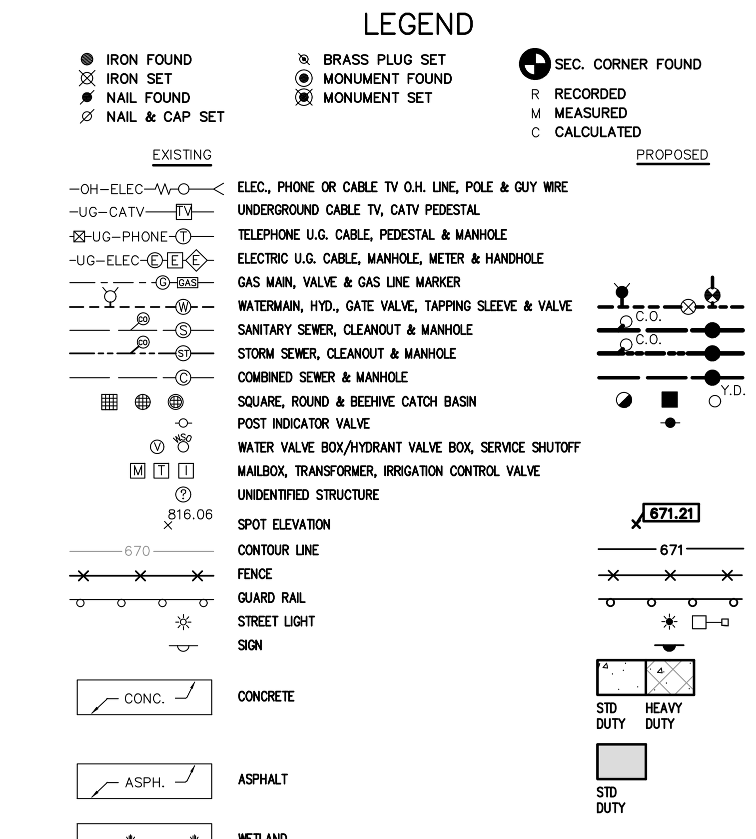
SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE P'	Ⓟ

REFER TO LATEST M.D.O.T. R–28 STANDARD RAMP AND DETECTABLE WARNING DETAILS. REFER TO SHEET C–10.2.

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.



LOCATION MAP – NOT TO SCALE



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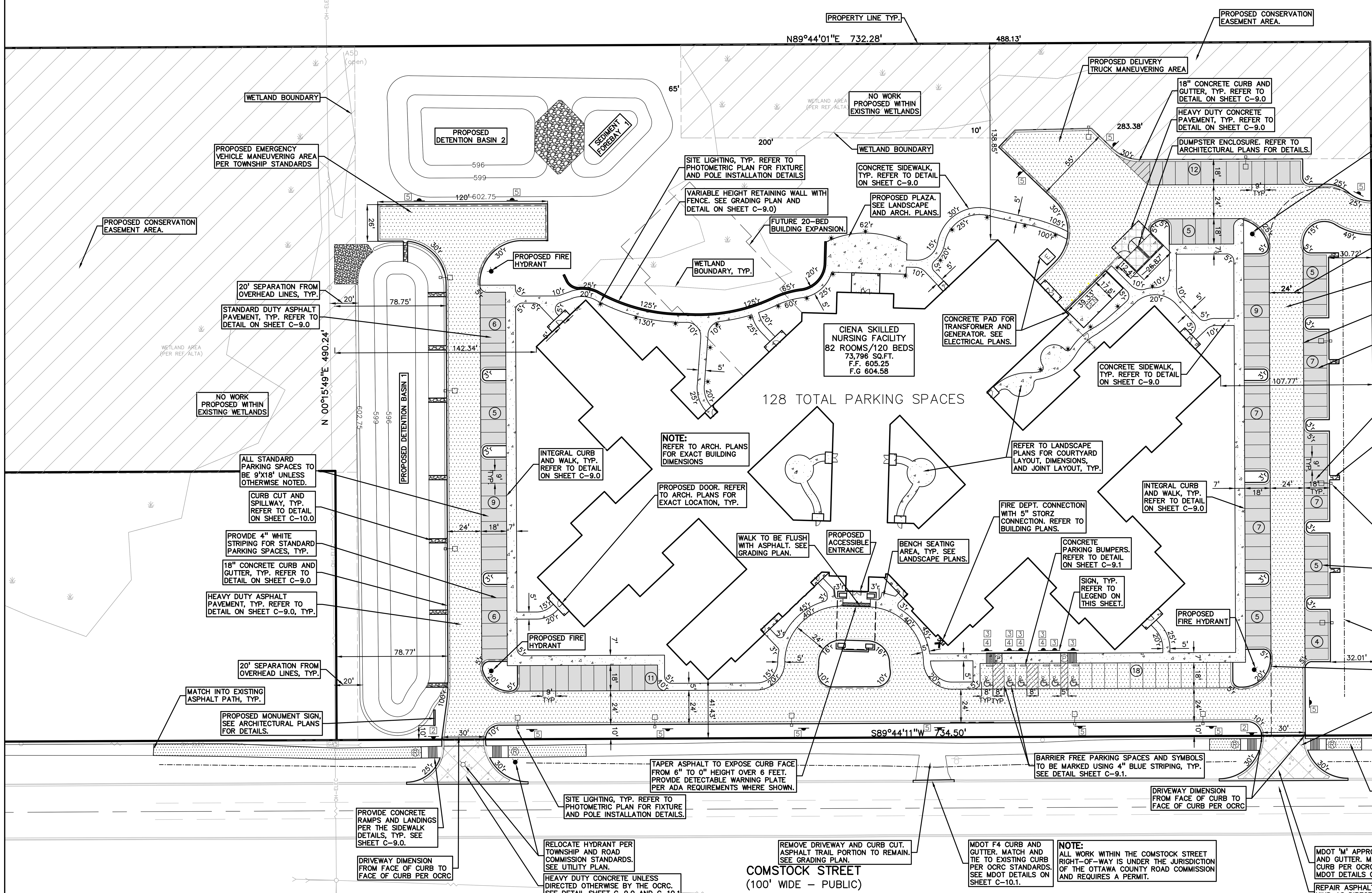

SITE DATA TABLE:

SITE AREA: 8.25 ACRES (359550.2203 SQ.FT.) NET AND GROSS

ZONING: AG (AGRICULTURAL)

PROPOSED USE: PUD–RESIDENTIAL (CONVALESCENT HOME)

BUILDING INFORMATION:
MAXIMUM ALLOWABLE BUILDING HEIGHT = 35 FEET (2.5 STORIES)
PROPOSED BUILDING HEIGHT = 1 STORY

BUILDING FOOTPRINT AREA = 73,796 SQ.FT.

BUILDING LOT COVERAGE = 21%

SETBACK REQUIREMENTS:

PUD–RESIDENTIAL ZONING DISTRICT:

FRONT SETBACK:	75 FEET REQUIRED	41.43' PROVIDED
SIDE SETBACK TOTAL : (BOTH SIDES)	75 FEET REQUIRED	250.11' PROVIDED
REAR SETBACK:	75 FEET REQUIRED	138.85' PROVIDED
PARKING SETBACK	10 FEET SIDEYARD	10.00' PROVIDED

PARKING CALCULATIONS:
CONVALESCENT/NURSING HOME = 1 SPACE PER 2 BEDS.

CONVALESCENT/NURSING HOME =120 BEDS. 120 BEDS/2 + 20 FUTURE BEDS/2 = 70 SPACES REQUIRED

TOTAL PROPOSED PARKING SPACES = 128 SPACES INC. 6 H/C SPACES ACCOUNTS FOR 87 EMPLOYEES MAXIMUM PER SHIFT

LOADING CALCULATIONS:
LOADING REQUIRED = 1 SPACE

LOADING PROVIDED = 1 SPACE

OPEN SPACE:
MINIMUM OPEN SPACE REQUIRED = 20% (71,910 SF)
PROVIDED OPEN SPACE = 24% (86,940 SF)

TRANSITION AREA REQUIREMENTS:
TYPE '2' PROVIDED – "WOODLANDS, NATURAL FEATURES OR LANDSCAPE GREENBELT SUFFICIENT TO PROVIDE AN OBSCURING EFFECT.

SITE SOILS INFORMATION:
ACCORDING TO THE USDA NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY FOR THE NURSING HOME SITE CONSISTS OF THE FOLLOWING SOIL TYPES:

Gn – GRANBY FINE SANDY LOAM
Gm – GRANBY LOAMY SAND

PARKING LOT LANDSCAPING: (SF REQUIRED PROVIDED BY TOWNSHIP)

WEST: REQUIRED: 954 SF (150 SF MIN. PER ISLAND)
PROVIDED: 7 ISLANDS; TOTAL 1,134 SF

EAST: REQUIRED: 1,008 SF (150 SF MIN. PER ISLAND)
PROVIDED: 7 ISLANDS; TOTAL 1,134 SF

3 FULL WORKING DAYS BEFORE YOU DIG CALL 811

Know what's below
Call before you dig
MISS DIG System, Inc.
1-800-482-7171 (TOLL FREE) www.missdig.net

NOT FOR CONSTRUCTION

REFERENCE DRAWINGS
ALTA/ACSM LAND TITLE SURVEY BY GPS SURVEYING, DATED 12/24/15
XREF: S:PROJECTS\2016\2016–199\DWG\TOPOBASE–16199.DWG
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XREF: S:PROJECTS\2016\2016–199\DWG\CONSTRUCTION\X–TBLK–16199.DWG

REVISIONS

No.	BY	CHK	DESCRIPTION	DATE
4	SAP		REV. PARCELS & OPEN SPACE	
3	RLS		HFES PRELIMINARY	6-29-17
2	RLS		REVISED PER CONSUMERS	5-10-17
1	SP		REVISED SITE PLAN SUBMITTAL	4-12-17

STATE OF MICHIGAN ★ SCOTT A. PERUSKI ENGINEER No. 60666 ★ LICENSED PROFESSIONAL ENGINEER
Scott Peruski

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23761 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335

DIMENSION AND PAVING PLAN
REGENCY AT GRAND HAVEN TWP.

PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	SP	DN.	SP	SUR.	KTR	P.M.	RLS

S:\PROJECTS\2016\2016-199 CIENA GRAND HAVEN TWP-SAS\Dwg\Construction\(C-3.1) DIM-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-3.1

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #1
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 375 FEET EAST OF 172ND AVENUE.
ELEV. – 603.39

BM #2
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 300 FEET WEST OF EAST PARCEL LINE.
ELEV. – 604.33

GRAPHIC SCALE
–30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

N

N89°44'01"E 1052.53

S00°31'22"E 163.43'

N00°31'22"W 326.86'

S89°44'11"W 734.50

N 00°15'52" W 190.27'

EXTENDED DETENTION BASIN #2:
602.75 FREEBOARD
602.25 OVERFLOW SPILLWAY CREST TO KIEFT DRAIN
601.75 TOP OF STORAGE
600.38 TOP OF CHANNEL PROTECTION
599.00 BOTTOM OF STORAGE, TOP OF PERMANENT POOL & WATER TABLE
596.00 BOTTOM OF PERMANENT POOL.

EXTENDED DETENTION BASIN #1:
602.75 FREEBOARD
602.25 OVERFLOW SPILLWAY CREST TO KIEFT DRAIN
601.75 TOP OF STORAGE
600.38 TOP OF CHANNEL PROTECTION
599.00 BOTTOM OF STORAGE, TOP OF PERMANENT POOL & WATER TABLE
596.00 BOTTOM OF PERMANENT POOL.

NO WORK PROPOSED WITHIN EXISTING WETLANDS

EXISTING KIEFT COUNTY DRAIN

GRADING T TO EXISTING D LINES, TYP.

SEE WALL DETAIL ON SHEET C–9.0.

CIENA SKILLED NURSING FACILITY
82 ROOMS/120 BEDS
73,796 SQ.FT.
F.F. 605.25
F.G 604.58

OLD PARCEL

REFER TO GRADING DETAIL ON SHEET C–6.1 FOR RAMP DETAILS

SIDEWALK RAMP, TYP. SEE SHEET C–3.0.

COMSTOCK STREET
(100' WIDE – PUBLIC)

NOT FOR CONSTRUCTION

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3	SP	RLS	REVISED PER CONSUMERS	5-10-17
2	RLS	SP	REVISED SITE PLAN SUBMITTAL	4-12-17
1	SP	BY	REVISIONS	

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

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GRADING PLAN
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33 T.8N. R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	DN.	SUR.	P.M.
SP	SP	KTR	RLS

S:\PROJECTS\2016\2016-199 DENA GRAND HAVEN TWP-SAS\Dwg\Construction\C-4.0 GRADING-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 30'

DRAWING NUMBER:
C-4.0

BENCHMARKS
(GPS DERIVED – NAVD88)

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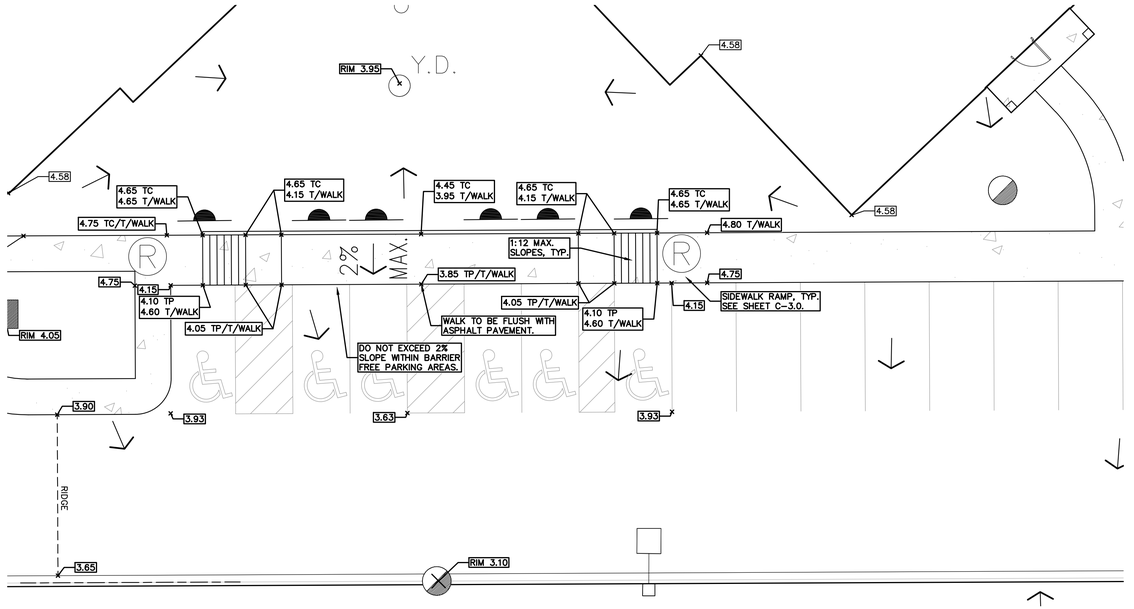
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 375 FEET EAST OF 172ND AVENUE.
ELEV. – 603.39

BM #2
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 300 FEET WEST OF EAST PARCEL LINE.
ELEV. – 604.33

GRAPHIC SCALE
–10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

N



GRADING DETAIL
SCALE 1"=10'

NOT FOR CONSTRUCTION

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3	RLS	MS	PER PLANNING	5-10-17
2	RLS	SP	REVISED PER CONSUMERS	4-12-17
1	SP		REVISED SITE PLAN SUBMITTAL	

REVISIONS

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

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GRADING DETAIL
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DES.	DN.	SUR.	P.M.
SP	SP	KTR	RLS

S:\PROJECTS\2016\2016-199 CENA GRAND HAVEN TWP-SAS\Dwg\Construction\(C-4.0) GRADING-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 10'

DRAWING NUMBER:
C-4.1

PROPERTY DESCRIPTION:

(PER GOWER PROFESSIONAL SURVEYING, P.C.)

ORIGINAL PARENT DESCRIPTIONS

PARCEL 1:
Parcel ID: 70-03-33-200-029
The South one-half (S 1/2) of the South one-half (S 1/2) of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan.

PARCEL 2:
Parcel ID: 70-03-33-200-028
The South 1/2 of the North 1/2 of the South 1/2 of the Southwest 1/4 of the Northeast 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan.

PROPOSED DESCRIPTIONS

PARCEL A:
That part of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the East and West 1/4 line S89°44'11"W, 1347.52 feet from the East 1/4 corner of said Section 33; thence S89°44'11"W, 734.49 feet continuing along said 1/4 line; thence N00°15'52"W, 490.24 feet to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 732.28 feet along said North line to the East line of said Southwest 1/4 of the Northeast 1/4; thence S00°31'22"E, 490.28 feet along said East line to the East and West 1/4 line of said Section 33 and the Point of Beginning, containing 8.25 acres of land. Subject to easements, restrictions and rights of way of record.

PARCEL B:
That part of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the East and West 1/4 line S89°44'11"W, 2082.01 feet from the East 1/4 corner of said Section 33; thence S89°44'11"W, 613.03 feet continuing along said 1/4 line to the North and South 1/4 line of said Section 33; thence N01°13'32"W, 189.28 feet along said 1/4 line; thence N89°44'011"E, 301.00 feet; thence N01°13'32"W, 301.00 feet to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 320.25 feet along said North line; thence S01°15'52"E, 490.24 feet to the East and West 1/4 line of said Section 33 and the Point of Beginning, containing 4.87 acres of land. Subject to the rights of the public in 172nd Avenue over the West 33 feet thereof and also subject to easements, restrictions and rights of way of record.

PARCEL C:
That part of the Southwest one-quarter (SW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning at a point on the North and South 1/4 line being S89°44'11"W, 2695.04 feet along the East and West 1/4 line and N01°13'32"W, 189.28 feet along said North and South 1/4 line from the East 1/4 corner of said Section 33; thence N01°13'32"W, 301.00 feet continuing along said 1/4 line to the North line of the South 1/2 of the North 1/2 of the South 1/2 of said Southwest 1/4 of the Northeast 1/4; thence N89°44'01"E, 301.00 feet along said North line; thence S01°13'32"E, 301.00 feet; thence S89°44'11"W, 301.00 feet to said North and South 1/4 line of said Section 33 and the Point of Beginning, containing 2.08 acres of land. Subject to the rights of the public in 172nd Avenue over the West 33 feet thereof and also subject to easements, restrictions and rights of way of record.

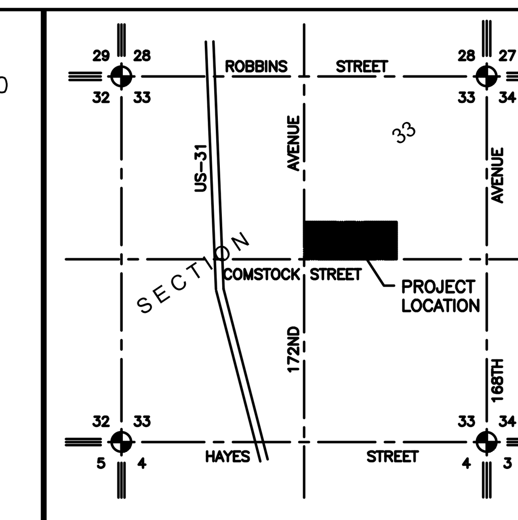
SEQUENCE OF CONSTRUCTION:

START DAY	END DAY	
1	7	INSTALL TEMPORARY STONE ACCESS DRIVE AT SITE ACCESS POINT.
1	7	INSTALL TEMPORARY SOIL EROSION CONTROL MEASURES, SILT FENCES, SILT SACKS, ETC. AS NECESSARY.
2	7	REMOVE ALL VEGETATION, TREES AND BRUSH FROM THE PROPOSED CONSTRUCTION AREA UNLESS MARKED TO REMAIN. STRIP AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE GRADED AND SEEDED.
2	7	REMOVE ALL PAVEMENT, SIDEWALK, UTILITIES, SIGNS, ETC. AS REQUIRED TO INSTALL THE PROPOSED WORK AS SHOWN ON THE DEMOLITION PLAN.
2	7	DISPOSE OF ALL EXCESS/UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO ON-SITE BURN OR BURY PITS ALLOWED.
6	45	ROUGH GRADE SITE. SEED AND MULCH BLANKETS MUST INSTALLED AS SHOWN WITHIN 5 DAYS OF FINAL GRADE. REPAIR AND/OR RE-INSTALL ANY TEMPORARY SOIL EROSION CONTROL MEASURES THAT WERE DAMAGED DURING GRADING OPERATIONS.
45	120	INSTALL SITE UTILITIES (STORM SEWER, SANITARY SEWER, WATER MAIN ETC.). INSTALL SILT SACKS AT CATCH BASINS AND YARD DRAINS AS SHOWN.
90	470	BEGIN CONSTRUCTION OF BUILDING.
180	210	FINE GRADE SITE AND PREPARE FOR SITE PAVING OPERATIONS.
210	440	INSTALL ALL PAVEMENT, SIDEWALKS, CURBING AS PROPOSED. REPAIR SILT SACKS, SILT FENCE AND ANY OTHER DAMAGED SOIL EROSION CONTROL MEASURES AS NECESSARY.
440	470	FINAL GRADE, REDISTRIBUTE STOCKPILED TOPSOIL, ESTABLISH VEGETATION AND INSTALL ALL PERMANENT LANDSCAPING IN ALL DISTURBED AREAS NOT BUILT.
470	490	CLEAN PAVEMENT AND REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES. RE-ESTABLISH VEGETATION AS REQUIRED.
490	500	REMOVE SEDIMENTATION CONTROLS ONCE ENTIRE SITE HAS BEEN PERMANENTLY STABILIZED.

GRAPHIC SCALE
-40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

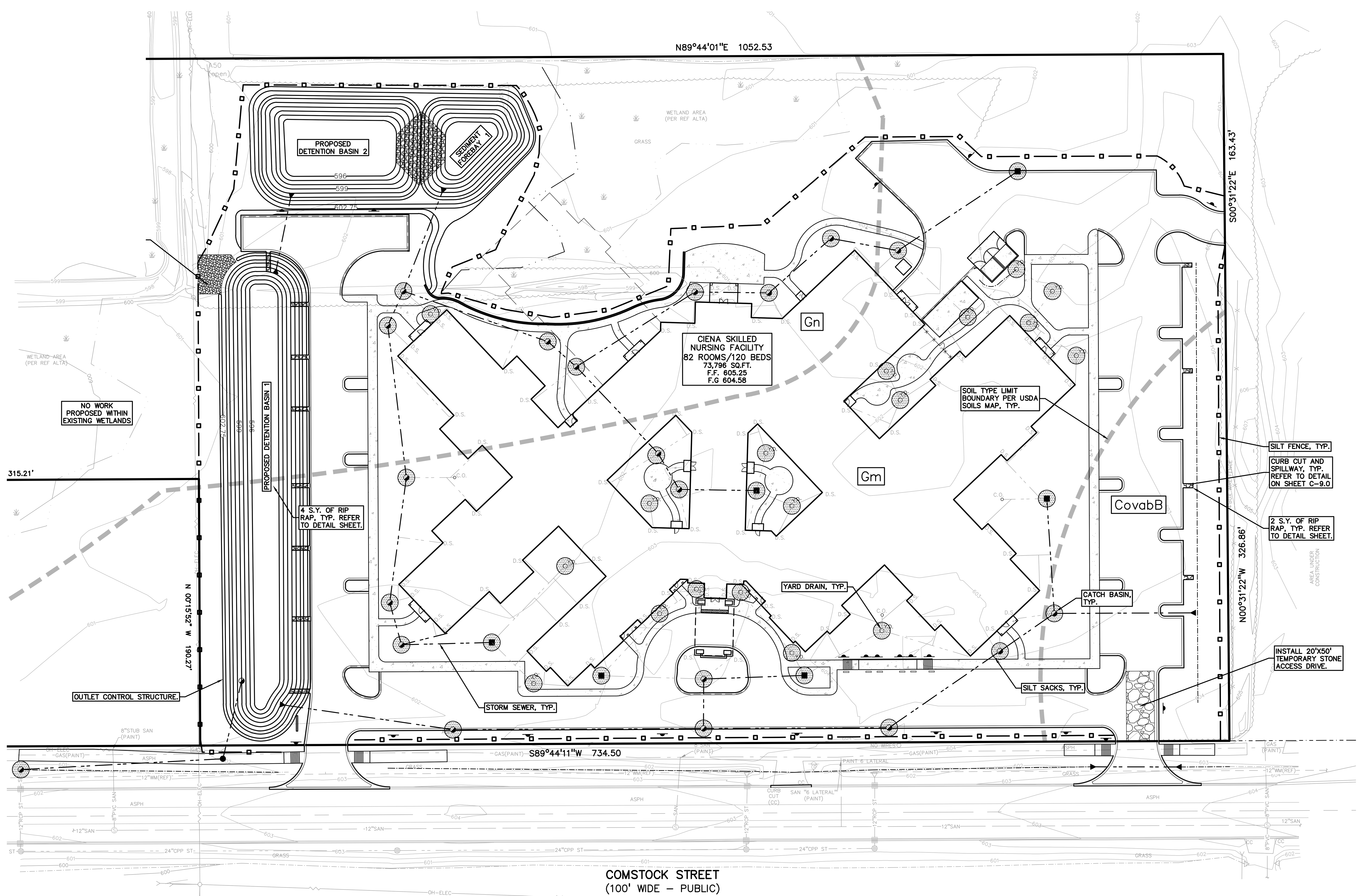
ON-SITE SOILS:
Gm – GRANBY LOAMY SAND
CovabB – COVERT-PIPESTONE SANDS (0%-6% SLOPES)
Gn – GRANBY FINE SANDY LOAM

SYMBOLS: EROSION CONTROL
SILT FENCE
SILT SACK (OR EQUIVALENT)
TEMPORARY STONE ACCESS DRIVE



LOCATION MAP – NOT TO SCALE

LEGEND



EROSION CONTROL STANDARDS:

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO STANDARDS AND SPECIFICATIONS OF THE JURISDICTIONAL AGENCY UNDER PART 91 OF ACT 451 OF 1994, AS AMENDED, AND PER THE OTTAWA COUNTY WATER RESOURCES COMMISSION SOIL EROSION ORDINANCE.
2. ALL SOIL EROSION AND SEDIMENTATION CONTROL PLANS AND SPECIFICATIONS INCLUDING EXTENSIONS OF PREVIOUSLY APPROVED PLANS SHALL INCLUDE PROVISIONS FOR EROSION AND SEDIMENTATION CONTROL IN ACCORDANCE WITH, BUT NOT LIMITED TO, THE STANDARDS CONTAINED IN THE "GUIDEBOOK OF BEST MANAGEMENT PRACTICES FOR MICHIGAN WATERSHEDS" PUBLISHED BY THE MDEQ AND "THE FIELD OFFICE TECHNICAL GUIDE" PUBLISHED BY THE USDA/NRCS AND THE MDOT SESC MANUAL.
3. DAILY INSPECTIONS SHALL BE MADE BY CONTRACTOR WHILE WORKING TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES. ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY. ALL SOIL EROSION CONTROL PROVISIONS SHALL BE PROPERLY MAINTAINED DURING CONSTRUCTION.
4. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, AND PONDS.
5. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGE AREAS HAVE BEEN COMPLETED.
6. STAGING THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLANS AND AS REQUIRED TO ENSURE PROGRESSIVE STABILIZATION OF DISTURBED EARTH.
7. SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
8. DUST SHALL BE CONTROLLED BY WATERING OR BY OTHER APPROVED MEANS THROUGHOUT ALL CONSTRUCTION OPERATIONS.
9. PERMANENT SOIL EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 5 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED.
10. THE CONTRACTOR SHALL PRESERVE NATURAL VEGETATION AS MUCH AS POSSIBLE.
11. ANY WORK OUTSIDE OF THE LIMITS OF DISTURBANCE SHALL REQUIRE A SEPARATE GRADING PERMIT.
12. STRAW MULCH BLANKETS ARE TO BE INSTALLED ON DISTURBED SLOPES 1:3 OR STEEPER INCLUDING DITCH BOTTOMS, AND IT MUST BE PEGGED IN PLACE.
13. ALL MUD/DIRT TRACKED ONTO EXISTING COUNTY/CITY ROADS FROM THIS SITE, DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
14. SILT FENCE SHALL BE INSTALLED AND TRENCHED IN A MINIMUM OF SIX INCHES BELOW THE SOIL SURFACE PRIOR TO COMMENCEMENT OF THE SITE WORK.
15. DEWATERING – WATER DISCHARGED FROM A PUMP, SEDIMENT BASIN, OR DIVERSION CHANNEL SHALL NOT BE DISCHARGED IN A MANNER THAT CAUSES EROSION OFF-SITE OR IN THE RECEIVING CHANNEL OR ALLOWS SEDIMENT TO BE DISCHARGED OFF-SITE OR INTO THE RECEIVING CHANNEL.

REFERENCE DRAWINGS
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SOIL EROSION CONTROL PLAN
REGENCY AT GRAND HAVEN TWP.
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23761 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	DN.	SUR.	P.M.
SP	SP	KTR	RLS

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-5.0

STORM STRUCTURES		
CB	2	(4' DIA./2' SUMP) RIM = 603.00 EJIW 5105 FRAME WITH TYPE "M1" GRATE 21" E 599.21 21" W 599.21
CB	3	(4' DIA./2' SUMP) RIM = 603.00 EJIW 5105 FRAME WITH TYPE "M1" GRATE 18" E 599.49 12" N 599.49 21" W 599.49
CB	4	(4' DIA./2' SUMP) RIM = 603.10 EJIW 5105 FRAME WITH TYPE "M1" GRATE 12" NE 599.76 18" W 599.76
CB	5	(4' DIA./2' SUMP) RIM = 604.25 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" NE 600.28 12" SW 600.28
CB	6	(4' DIA./2' SUMP) RIM = 604.05 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" E 600.54 12" N 600.54 12" SW 600.54

STORM STRUCTURES		
IN	8	(2' DIA./2' SUMP) RIM = 603.75 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" S 600.81
CB	9	(4' DIA./2' SUMP) RIM = 603.65 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" E 599.60 12" W 599.60 12" S 599.60
IN	10	(2' DIA./2' SUMP) RIM = 604.05 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" W 599.84
IN	11	(2' DIA./2' SUMP) RIM = 604.20 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" E 599.84
CB	13	(4' DIA./2' SUMP) RIM = 603.75 EJIW 1040 FRAME WITH TYPE "N" GRATE 21" E 599.32 12" SW 599.32 18" N 599.32

STORM STRUCTURES		
CB	14	(4' DIA./2' SUMP) RIM = 603.95 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" S 599.40 12" NE 599.40
CB	15	(4' DIA./2' SUMP) RIM = 603.50 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" S 599.75 12" N 599.75
CB	16	(4' DIA./2' SUMP) RIM = 604.05 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" S 600.04 12" N 600.04
CB	17	(4' DIA./2' SUMP) RIM = 604.05 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" E 600.14 12" N 600.14
IN	18	(2' DIA./2' SUMP) RIM = 604.05 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" W 600.34

STORM STRUCTURES		
CB	19	(4' DIA./2' SUMP) RIM = 603.95 EJIW 1040 FRAME WITH TYPE "N" GRATE 21" SE 599.49 21" W 599.49
CB	20	(4' DIA./2' SUMP) RIM = 603.95 EJIW 1040 FRAME WITH TYPE "N" GRATE 21" NE 599.53 12" SE 599.53 21" NW 599.53
CB	21	(4' DIA./2' SUMP) RIM = 604.25 EJIW 1040 FRAME WITH TYPE "N" GRATE 15" E 599.69 21" SW 599.69
CB	22	(4' DIA./2' SUMP) RIM = 604.25 EJIW 1040 FRAME WITH TYPE "N" GRATE 15" NE 599.82 15" W 599.82
CB	23	(4' DIA./2' SUMP) RIM = 604.05 EJIW 1040 FRAME WITH TYPE "N" GRATE 15" E 599.96 15" SW 599.96

STORM STRUCTURES		
CB	24	(4' DIA./2' SUMP) RIM = 604.15 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" NE 600.08 15" W 600.08
IN	25	(2' DIA./2' SUMP) RIM = 603.35 EJIW 5105 FRAME WITH TYPE "M1" GRATE 12" SW 600.41
CB	26	(4' DIA./2' SUMP) RIM = 603.50 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" SE 599.81 12" NW 599.81
CB	27	(4' DIA./2' SUMP) RIM = 603.65 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" E 599.90 12" NW 599.90
IN	28	(2' DIA./2' SUMP) RIM = 603.65 EJIW 1040 FRAME WITH TYPE "N" GRATE 12" W 600.08

STORM STRUCTURES		
CB	29	(4' DIA./2' SUMP) RIM = 600.45 EJIW 1040 FRAME WITH TYPE "C" GRATE 12" E 598.45
MH	30	(4' DIA./0' SUMP) RIM = 602.65 EJIW 1040 FRAME WITH TYPE "C" COVER 12" N 598.85 12" W 598.85
OC	31	OUTLET STRUCTURE SEE DETAIL SHEET C–10.0

NOTE:
CONTRACTOR TO VERIFY ALL QUANTITIES. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF PEA, INC. FOR VERIFICATION, PRIOR TO BIDDING.

WATER MAIN QUANTITIES:

4" DIWM CLASS 52	159 LF
6" DIWM CLASS 52	177 LF
8" DIWM CLASS 52	1,365 LF
8" GATE VALVE AND WELL	3 EA
12" GATE VALVE AND WELL	2 EA
6" GATE VALVE AND BOX	1 EA
4" GATE VALVE AND BOX	1 EA
8"x12" T.S.V. AND BOX	2 EA
HYD. ASSEMBLY	4 EA
RELOCATED HYD.	1 EA

SANITARY SEWER QUANTITIES:

6" PVC SDR 23.5 PIPE 152 LF

SAND BACKFILL NOTE:
ALL UTILITIES UNDER PAVEMENT OR WITHIN 3' OF THE EDGE OF PAVEMENT (OR WITHIN THE 45° LINE OF INFLUENCE OF PAVEMENT) SHALL HAVE M.D.O.T. CLASS II GRANULAR BACKFILL COMPACTED TO 95% MAX. DRY DENSITY (ASTM D–1557).

PUBLIC UTILITY EASEMENTS:
ALL WATER MAIN SHALL BE LOCATED IN A 20' WIDE EASEMENT.

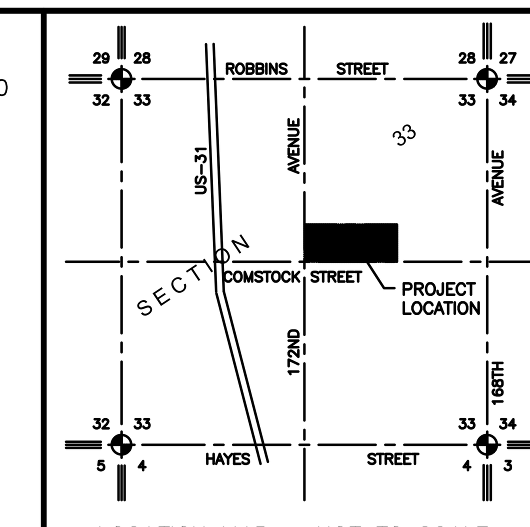
GRAPHIC SCALE
−40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

WATER MAIN STRUCTURE TABLE:

a	HYD. ASSEMBLY F.G. 603.50
b	8" GATE VALVE AND WELL RIM 603.95
c	HYD. ASSEMBLY F.G. 603.80
d	HYD. ASSEMBLY F.G. 603.65
e	8" GATE VALVE AND WELL RIM 601.40
f	HYD. ASSEMBLY F.G. 605.00
g	6" GATE VALVE AND BOX RIM 603.40
h	4" GATE VALVE AND BOX RIM 603.40
i	HYD. ASSEMBLY F.G. 605.00
j	8" GATE VALVE AND WELL RIM 603.30
k	12" GATE VALVE AND WELL RIM 601.70
m	12" GATE VALVE AND WELL RIM 602.30
n	8" GATE VALVE AND WELL RIM 605.00

SANITARY STRUCTURE TABLE:

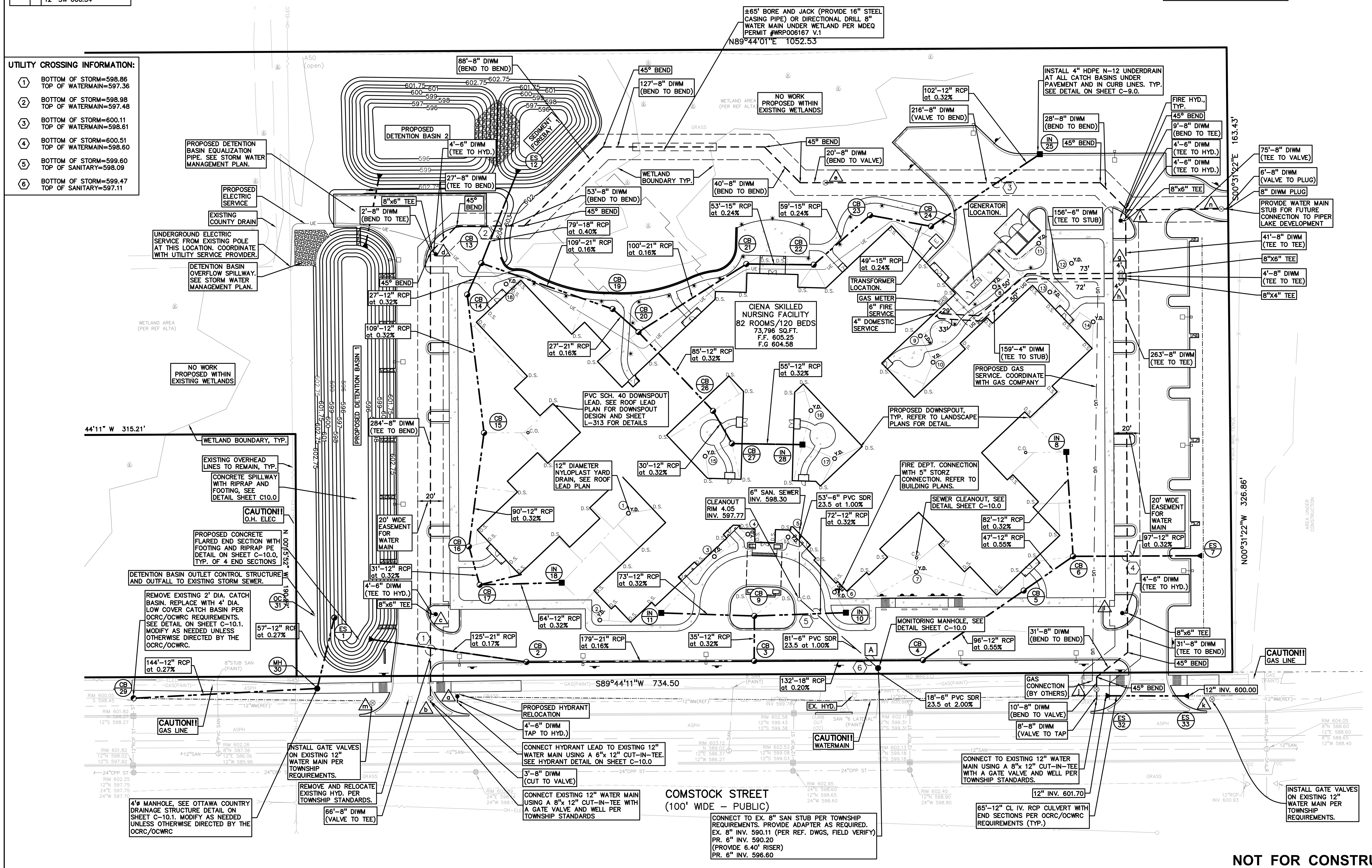
A	MONITORING MANHOLE 4' DIAMETER RIM 603.90 INV. 596.96



LOCATION MAP – NOT TO SCALE

UTILITY CROSSING INFORMATION:

1	BOTTOM OF STORM=598.86 TOP OF WATERMAIN=597.36
2	BOTTOM OF STORM=598.98 TOP OF WATERMAIN=597.48
3	BOTTOM OF STORM=600.11 TOP OF WATERMAIN=598.61
4	BOTTOM OF STORM=600.51 TOP OF WATERMAIN=598.60
5	BOTTOM OF STORM=599.60 TOP OF SANITARY=598.09
6	BOTTOM OF STORM=599.47 TOP OF SANITARY=597.11



LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	
SEC. CORNER FOUND	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING / PROPOSED

- ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UNDERGROUND CABLE TV, CATV PEDESTAL
- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS MAIN, VALVE & GAS LINE MARKER
- WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN
- POST INDICATOR VALVE
- WATER VALVE BOX/HYD. VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- CONCRETE (STD DUTY / HEAVY DUTY)
- ASPHALT (STD DUTY)
- WETLAND

GENERAL UTILITY NOTES:

1. ALL UTILITY LINES, STRUCTURES AND TRENCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS GRAND HAVEN TOWNSHIP.

2. NO PHYSICAL CONNECTION TO THE EXISTING WATER MAIN CAN BE MADE UNTIL ALL NEW WATER MAIN PASSES PRESSURE AND BACTERIOLOGICAL TESTS TO THE SATISFACTION OF GRAND HAVEN TOWNSHIP.

3. REFER TO DETAIL SHEET C–10.0 THROUGH C1–10.2 FOR ADDITIONAL UTILITY DETAILS AND NOTES.

4. ALL WATER MAIN AND FITTINGS SHALL BE DUCTILE IRON, CLASS 52 OR BETTER CEMENT LINED WITH SLIP OR MECHANICAL JOINTS.

5. WATER MAIN SERVICE LEADS SHALL BE TYPE 'K' ANNEALED SEAMLESS COPPER WITH FLARED FITTINGS, UNLESS OTHERWISE NOTED.

6. ALL WATER MAIN SHALL BE PROVIDED WITH 5.5' OF COVER UNLESS OTHERWISE NOTED.

7. ALL FIRE HYDRANTS SHALL BE EJIW #5BR MODEL PER TOWNSHIP STANDARDS.

8. ALL HYDRANTS TO BE A MINIMUM OF 5' FROM BACK OF CURB, TYP.

9. ALL NECESSARY FITTINGS, THRUST BLOCKS, RESTRAINING GLANDS, BLOW OFFS, ETC. FOR WATER MAIN ARE CONSIDERED INCIDENTAL TO THIS PROJECT. THE CONTRACTOR SHALL INSTALL THESE ITEMS AS NECESSARY AND AS REQUIRED BY GRAND HAVEN TOWNSHIP.

10. ALL SANITARY SEWER OR LARGER SHALL BE SDR 23.5 (ASTM D–3034) AND FITTINGS, PIPE JOINTS AT MANHOLE WALLS SHALL BE RES–SEAL, PRESS WEDGE II, OR LOCK JOINT, FLEXIBLE RUBBER MANHOLE JOINTS OR GRAND HAVEN TOWNSHIP APPROVED EQUAL.

11. ALL SANITARY SEWER LEADS SHALL BE 6" DIAMETER UNLESS OTHERWISE APPROVED BY GRAND HAVEN TOWNSHIP.

12. SANITARY LEADS SHALL BE PROVIDED WITH CLEANOUTS EVERY 100 FEET AND AT EVERY BEND AS SHOWN. ALL CLEANOUTS TO BE PROVIDED WITH E.J.I.W. #1565 BOX OR EQUAL.

13. ALL STORM SEWER 12" DIAMETER OR LARGER SHALL BE REINFORCED CONCRETE PIPE (RCP C–76) CLASS IV WITH MODIFIED TONGUE AND GROOVE JOINT WITH RUBBER GASKETS UNLESS SPECIFIED OTHERWISE (ASTM C–443).

14. ALL STORM SEWER LEADS SHALL BE PVC SCHEDULE 40 WITH GLUED JOINTS UNLESS OTHERWISE NOTED.

15. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE AND TO END OF FLARED END SECTION UNLESS NOTED OTHERWISE.

16. THE GRAND HAVEN CHARTER TOWNSHIP WATER MAIN AND WASTEWATER SPECIFICATIONS ARE INCORPORATED INTO AND MADE A PART OF THESE PLANS.

STORM SEWER QUANTITIES:

6" UNDERDRAIN (40 LF EA.)	160 LF
4" PVC SCH 40 PIPE	1,200 LF
6" PVC SCH 40 PIPE	1,070 LF
12" RCP CL–IV PIPE	1,296 LF
15" RCP CL–IV PIPE	161 LF
18" RCP CL–IV PIPE	278 LF
21" RCP CL–IV PIPE	544 LF
6" PVC CLEANOUT	2 EA.
12" NYLOPLAST YARD DRAIN	18 EA.
2' DIA. INLET	6 EA.
4' DIA. CATCH BASIN	19 EA.
4' DIA. MANHOLE (ROW)	1 EA.
4' DIA. CATCH BASIN (ROW)	1 EA.
OUTLET CONTROL STRUCTURE	1 EA.
12" RCP END SECTION	1 EA.
18" RCP END SECTION	2 EA.
21" RCP END SECTION	1 EA.

NOT FOR CONSTRUCTION

REVISIONS

No.	BY	CHK	DESCRIPTION	DATE
1	SP		REVISED SITE PLAN SUBMITTAL	4-12-17
2	RLS		REVISED PER CONSUMERS	5-10-17
3	RLS		HFES PRELIMINARY	6-29-17
4	SAP		REV. PARCELS & OPEN SPACE	

STATE OF MICHIGAN · SCOTT A. PERUSKI · ENGINEER · No. 60666 · LICENSED PROFESSIONAL ENGINEER

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UTILITY PLAN
REGENCY AT GRAND HAVEN TWP.

PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	DN.	SUR.	P.M.
SP	SP	KTR	RLS

S:\PROJECTS\2016\2016–199 CIENA GRAND HAVEN TWP–SAS\Dwg\Construction\(C–6.0) UTILITY–16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-6.0

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #1
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 375 FEET EAST OF 172ND AVENUE.
ELEV. – 603.39

BM #2
NORTHEAST BOLT ON TOP FLANGE OF HYDRANT, NORTH SIDE OF COMSTOCK STREET, APPROX. 300 FEET WEST OF EAST PARCEL LINE.
ELEV. – 604.33

YARD DRAIN STRUCTURE.:

① RIM 604.05 INV. 602.04	⑥ RIM 604.35 INV. 600.42	⑪ RIM 603.70 INV. 601.25	⑯ RIM 6XX.XX INV. 600.76
② RIM 604.05 INV. 601.16	⑦ RIM 603.95 INV. 600.77	⑫ RIM 604.05 INV. 601.55	⑰ RIM 6XX.XX INV. 600.76
③ RIM 604.45 INV. 600.85	⑧ RIM 604.50 INV. 600.77	⑬ RIM 604.25 INV. 601.83	⑱ RIM 604.05 INV. 600.57
④ RIM 604.35 INV. 601.16	⑨ RIM 6XX.XX INV. 601.46	⑭ RIM 604.25 INV. 602.25	
⑤ RIM 604.35 INV. 600.99	⑩ RIM 6XX.XX INV. 601.69	⑮ RIM 6XX.XX INV. 600.43	

SEE ROOF LEAD PLAN FOR PIPE SIZES

GRAPHIC SCALE
–20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

N

CIENA SKILLED NURSING FACILITY
82 ROOMS/120 BEDS
73,796 SQ.FT.
F.F. 605.25
F.G 604.58

NOTE:
ALL ROOF LEAD PIPES SHALL BE PVC SCH. 40 AT 1.00% SLOPE. SEE DETAIL DOWN SPOUT DETAIL ON L–313.

12" DIAMETER NYLOPLAST YARD DRAIN W/ D.I. DOME GRATE, 6" SUMP, AND SCH. 40 ADAPTERS. SEE DETAIL ON SHEET C–10.2, TYP. ALL YARD DRAINS.

REFERENCE DRAWINGS
ALTA/ACSM LAND TITLE SURVEY BY GPS SURVEYING, DATED 12/24/15
XREF: S:\PROJECTS\2016\2016–199\DWG\TOPOBASE–16199.DWG
XREF: S:\PROJECTS\2016\2016–199\DWG\CONSTRUCTION\V–BASE–16199.DWG
XREF: S:\PROJECTS\2016\2016–199\DWG\CONSTRUCTION\X–TBLK–16199.DWG

NOT FOR CONSTRUCTION

No.	BY	CHK	DESCRIPTION	DATE
4	SAP	MS	REVISED PER JURISDICTION	6-29-17
3	RLS	MS	REVISED PER CONSUMERS	5-10-17
2	RLS	MS	REVISED SITE PLAN SUBMITTAL	4-12-17
1	SP	MS	REV. PARCELS & OPEN SPACE	3-6-17

REVISIONS

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60655
LICENSED PROFESSIONAL ENGINEER

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DES.	DN.	SP	SUR.	KTR	P.M.	RLS

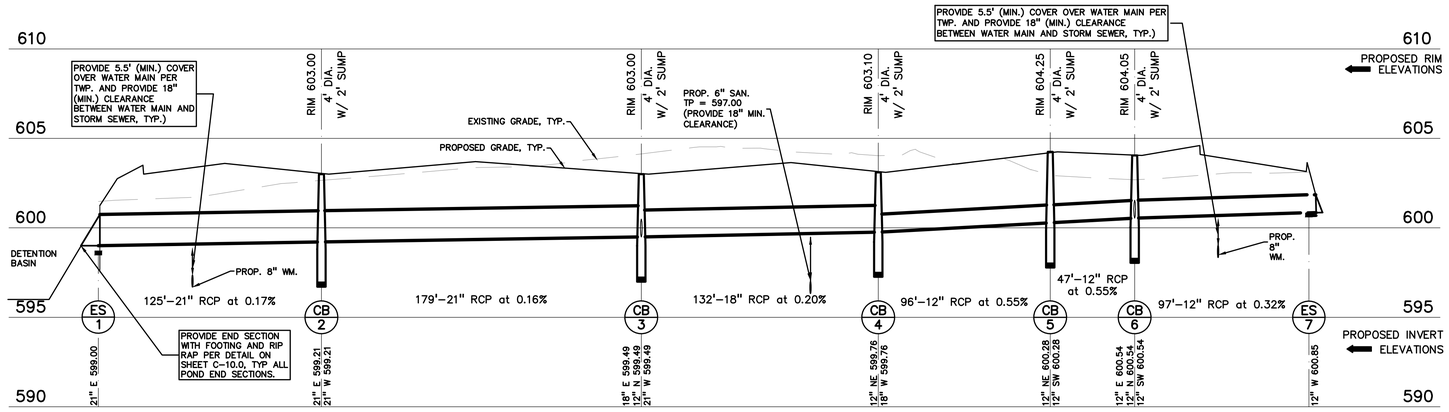
S:\PROJECTS\2016\2016–199 CIENA GRAND HAVEN TWP–2453\Dwg\Construction\(C–6.1) ROOF LEAD–16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

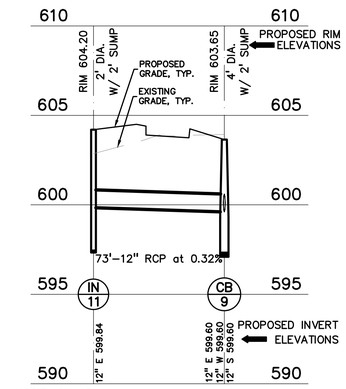
SCALE: 1" = 20'

DRAWING NUMBER:
C-6.1



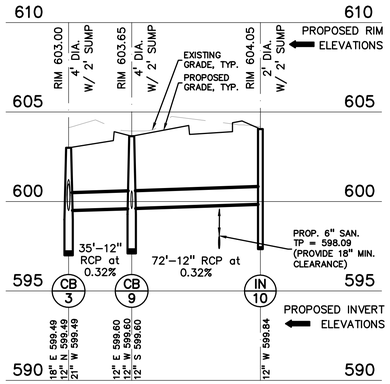
HORIZ: 1"=40'
VERT: 1"=4'

ES1 – ES7 PROFILE



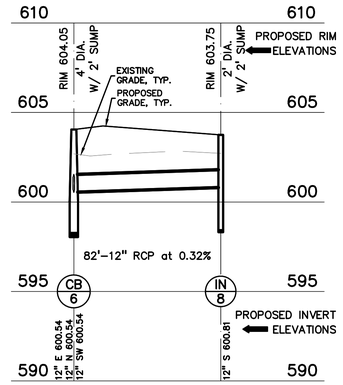
HORIZ: 1"=40'
VERT: 1"=4'

IN11–CB9 PROFILE



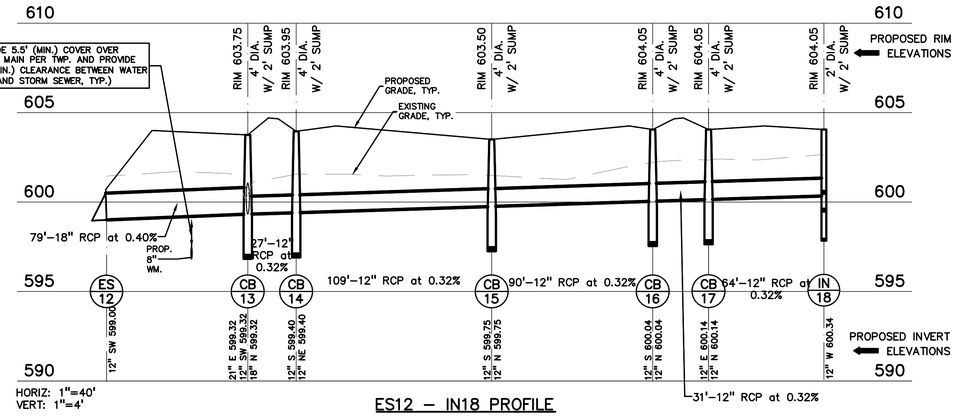
HORIZ: 1"=40'
VERT: 1"=4'

CB3–IN10 PROFILE



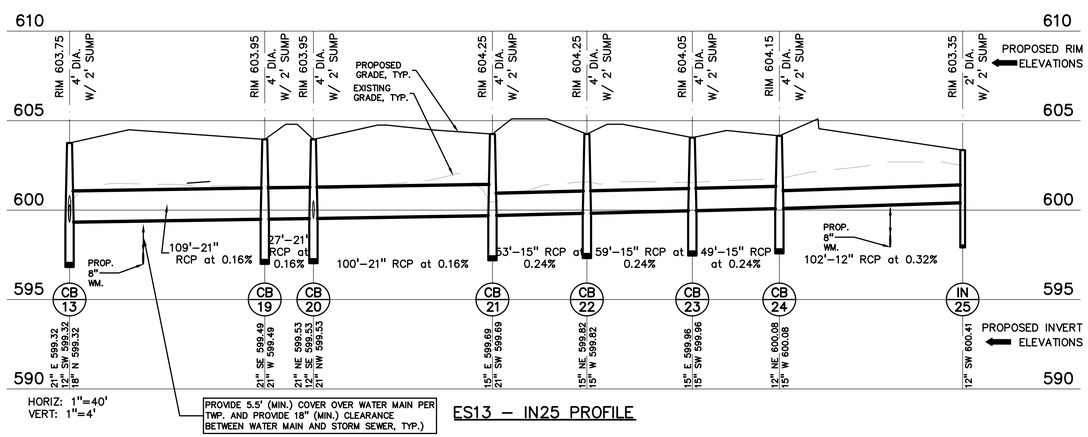
HORIZ: 1"=40'
VERT: 1"=4'

CB6–IN8 PROFILE



HORIZ: 1"=40'
VERT: 1"=4'

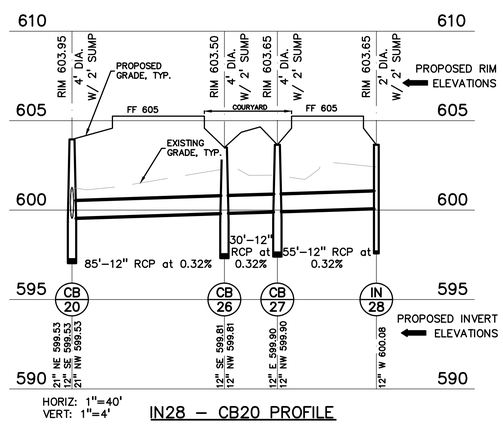
ES12 – IN18 PROFILE



HORIZ: 1"=40'
VERT: 1"=4'

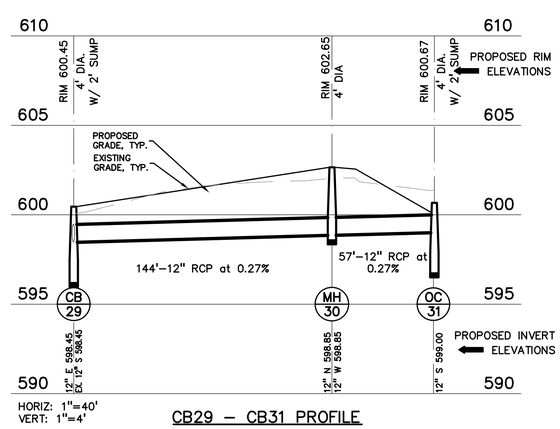
PROVIDE 5.5' (MIN.) COVER OVER WATER MAIN PER TWP. AND PROVIDE 18" (MIN.) CLEARANCE BETWEEN WATER MAIN AND STORM SEWER, TYP.)

ES13 – IN25 PROFILE



HORIZ: 1"=40'
VERT: 1"=4'

IN28 – CB20 PROFILE



HORIZ: 1"=40'
VERT: 1"=4'

CB29 – CB31 PROFILE

NOT FOR CONSTRUCTION

No.	BY	CHK	DESCRIPTION	DATE
4	SAP	MS	REV. PARCELS & OPEN SPACE	6-29-17
3	SAP	MS	MEET PLANNING REVIEW	5-10-17
2	RLS		REVISED PER CONSUMERS	
1	SP		REVISED SITE PLAN SUBMITTAL	4-12-17

REVISIONS

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

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UTILITY PROFILES
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	DN.	SUR.	P.M.
SP	SP	KTR	RLS

S:\PROJECTS\2016-199 (CBA GRAND HAVEN TWP -SAP)\Drwg\Construction\C-7.0 PROFILES-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-7.0

OVERALL STORM WATER DESIGN SUMMARY:

THE EXISTING FIELD MEASURED WATER TABLE IS LOCATED AT ELEVATION 599.00±. THE SHALLOW WATER TABLE AND THE RELATIVELY SHALLOW AVAILABLE STORM SEWER OUTLETS REMOVES THE ABILITY TO PROVIDE AND CORRECTLY DESIGN MANY OF THE ACCEPTABLE BMPS WITHOUT EXCESSIVELY FILLING THE SITE AND ALTERING EXISTING DRAINAGE PATTERNS AROUND THE SITE.

AN INITIAL DRY DETENTION BASIN DESIGN WITH MULTIPLE SMALL BMPS THAT PROVIDED PRETREATMENT AND MET WATER QUALITY VOLUMES WAS INITIALLY LAID OUT. BECAUSE THE OCDC REQUIRES 2' VERTICAL CLEARANCE BETWEEN BOTTOMS OF DRY DETENTION BASINS AND THE WATER TABLE, EXCESSIVE SITE FILLING WOULD BE REQUIRED TO MEET 100-YEAR FLOOD VOLUMES AND WOULD PUT THE TOP OF STORAGE AT SIGNIFICANTLY HIGHER ELEVATIONS THAN THE ADJACENT PROPERTIES.

A SECOND DRY DETENTION BASIN WITH AN INFILTRATION BED WAS LAID OUT. TO MAINTAIN A 3' VERTICAL CLEARANCE BETWEEN THE BED AND THE WATER TABLE, THE INFILTRATION BED WOULD BE LOCATED AT 602.00 AND THE BASINS WOULD AGAIN BE ELEVATED TOO HIGH TO MEET FLOOD STORAGE VOLUMES AND REQUIRE EXCESSIVE FILLING.

IN ORDER TO PROVIDE ON-SITE RETENTION FOR THE 2-YEAR CHANNEL PROJECTION VOLUMES (27,506 CFT), THE SITE WOULD AGAIN HAVE TO BE RAISED UP AND THE BASINS WOULD ALMOST DOUBLE IN REQUIRED CAPACITY.

THE FINAL SOLUTION INCLUDES TWO EXTENDED DETENTION BASINS WITH PERMANENT POOLS BETWEEN 599.00 AND 596.00. THE POOLS PROVIDE THE REQUIRED WATER QUALITY AND PRETREATMENT VOLUMES WITHOUT THE NEED TO RAISE THE SITE.

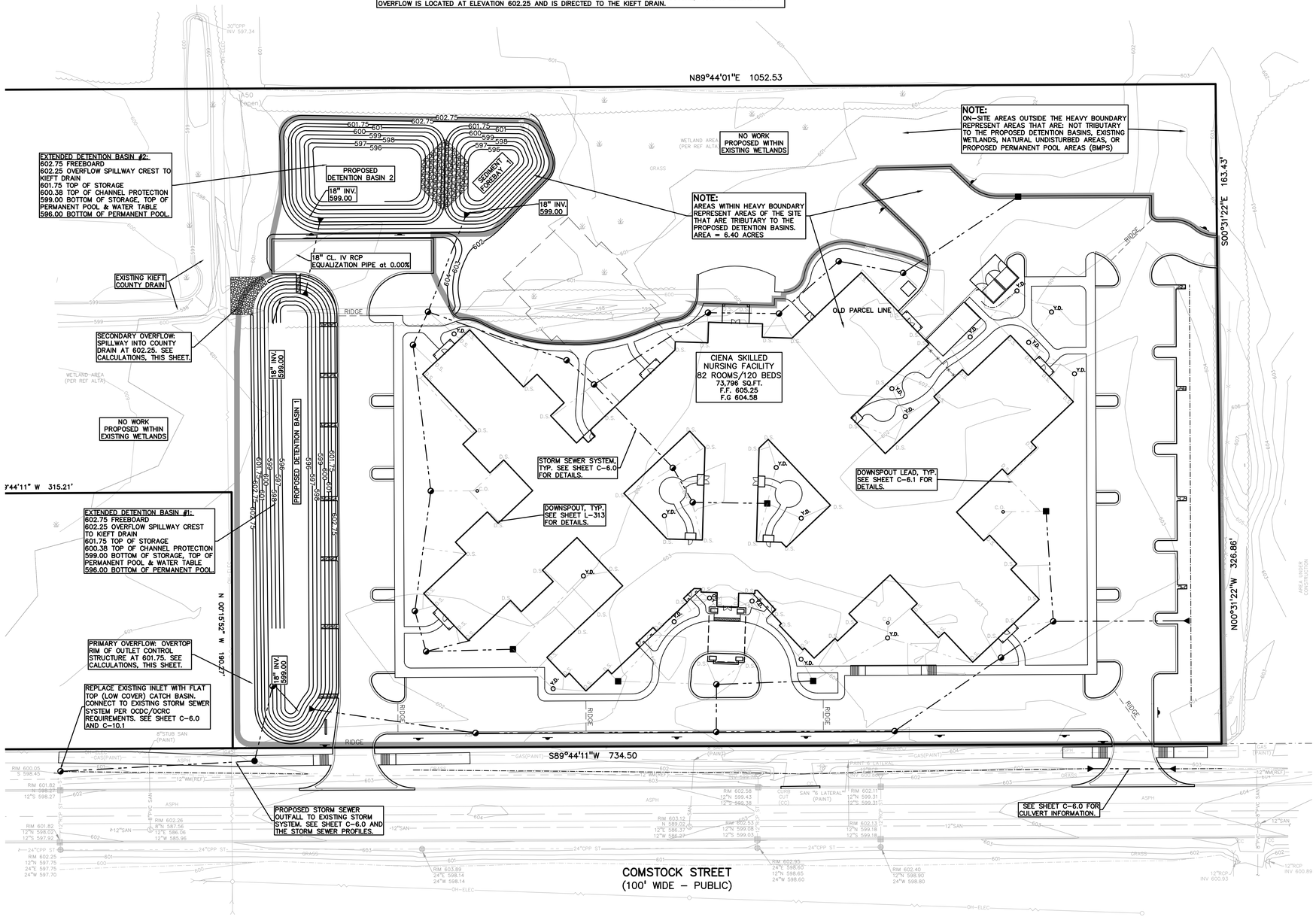
SINCE OUTLET HOLE(S) AT ELEVATION 599.00 WOULD ALREADY BE NEEDED IN THE OUTLET CONTROL STRUCTURE TO REGULATE THE PERMANENT POOL LEVELS, THE HOLES WERE SIZED TO GRADUALLY RELEASE THE 2-YEAR CHANNEL PROJECTION VOLUME OVER THE REQUIRED 24 HOUR DURATION.

A SECOND SET OF HOLES AT ELEVATION 600.38 WILL PROVIDE THE 100-YEAR FLOOD CONTROLLED DISCHARGE PER THE OCDC REQUIREMENTS.

PRIMARY OVERFLOW IS LOCATED AT ELEVATION 601.75 (RIM OF OUTLET CONTROL STRUCTURE), AND A SECONDARY OVERFLOW IS LOCATED AT ELEVATION 602.25 AND IS DIRECTED TO THE KIEFT DRAIN.

GRAPHIC SCALE
−40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

N



DETENTION BASIN CALCULATIONS:

(BASED ON THE NEW RULES OF THE OTTAWA COUNTY DRAIN COMMISSIONER)

Total Disturbed Area, A	=	5.99	acres	100 year Cd:
Developed (Impervious) Areas	=	3.82	acres	C1 = 1.00
Undeveloped (Pervious) Areas	=	2.17	acres	C2 = 0.12 (HSG A)
100-yr Compound Run-off Coefficient, Cd_{100}	=	0.68		
100-yr Allowable Outflow Rate, Qa	=	0.13	cfs/acre	
100-yr Allowable Basin Outflow, Q_{out}	=	0.78	cfs	10-year Cd:
				C1 = 0.95
10-yr Compound Run-off Coefficient, Cd_{10}	=	0.61		C2 = 0.10 (HSG A)

Detention Volume Required: Peak volume requirement calculated with varied Time durations using 100-year intensities from NOAA 2013 Precipitation data and C factors per new OCDC manual:

1	3	5	6		7
Duration (Td) Hr.	100-year intensity (i_{100})	Inflow Volume Q_{in} = CiA	Allowable Basin Outflow (cfs) = Q_{out}	Q_{in}-Q_{out} (cfs)	Storage Volume (cf) =3600 Td(Q_{in} - Q_{out})
1	2.94	12.00	0.78	11.22	40,395
2	1.83	7.47	0.78	6.69	48,170
3	1.39	5.67	0.78	4.89	52,860
4	1.19	4.86	0.78	4.08	58,725
5	1.02	4.16	0.78	3.38	**60,916**
6	0.85	3.45	0.78	2.67	57,671
7	0.68	2.78	0.78	2.00	50,312

Check time between the peak values:

4.5	1.11	4.51	0.78	3.73	60,445

Detention Volume Required for 100-yr Storm Event = 4.081596878 **60,916** CF

Volume Provided in Detention Basins

Elevation	Basin 1 Surface Area (SF)	Basin 2 Surface Area (SF)	Basin 2 Sediment Forebay	Total Surface Area	Volume (CF)	Total Volume (CF)
601.75	17,447	8,358	4315	30,120	21,483	68,284
601.00	15,804	7,583	3781	27,168	25,274	46,801
600.00	13,663	6,599	3118	23,380	21,527	21,527
599.00	11,578	5,612	2484	19,674		

Storage Volume Provided = **68,284** CF

Permanent Pool Provided in Detention Basins

Elevation	Basin 1 Surface Area (SF)	Basin 2 Surface Area (SF)	Basin 2 Sediment Forebay	Total Surface Area	Volume (CF)	Total Volume (CF)
599.00	9,707	5,035	3,052	17,794	16,047	38,169
598.00	7,678	4,196	2,426	14,300	12,658	22,122
597.00	5,706	3,449	1,861	11,016	9,464	9,464
596.00	3,811	2,733	1,368	7,912		

Water Quality Volume Provided = **38,169** CF

Water Quality Volume (Vwq)

Small Storm Hydrology Method Runoff Coefficient:

		Area:
Pitched Roofs	0.965	1.69
Paving	0.980	2.13
Sandy Soils (HSG A	0.035	2.17
Rv, Area-weighted volumetric runoff coefficient =		**0.63**
Vwq = A*Rv*1/3630 =		13,777 CF

Pretreatment Required

Vpt=0.15*Vwq	2,066	CF
Sediment Forebay Volume Provided Between Elev. 601.50 and 599.00 (Above water table)	**9,940**	**CF**

Permanent Pool Size Required

Required Size = 2.5 * Vwq	34,442	CF
Volume Provided in Permanent Pools=	38,169	CF

2-year Channel Protection Calculations

Channel Protection Volume (Vcp) (Runoff Curve Number Method (NRCS)

$V_{cp} = V_{Dpost} - Vf_{pre}$

Assumptions:

Pre Development Condition: Meadow (CN_{prv} =30)

Post Development Condition Pervious: Open Space Good Condition (CN_{perv} =39)

Post Development Condition Impervious: Parking Lot, Roof, Pavement Condition (CN_{imp} =98)

Rainfall For 2 Year, 24 Hour (P) = 2.59 in.

Rainfall For 100 Year, 24 Hour (P) = 6.9 in.

2 year Volume Post Development Calculation:

$Vf_{post} = (Q_{vperv} \times A_{perv} + Q_{vimp} \times A_{imp}) \times 3630$

$Q_{vperv} = (P-2S)^2 / (P+.8S)$

S = (1000/CN) - 10

S_{perv}= 10.4

	CN_{perv}	CN_{imp}	S_{perv}	S_{imp}	Qvperv	Qvimp	Vf_{pre} / Vf_{post}
Post	39	98	15.64	0.20	0.0192	2.3602	32.889
Pre	30		23.33		0.2029		4.413

Area Impervious Post (#s from deten. Calcs) =	3.82	AC.	
Area Pervious Post (#s from deten. Calcs) =	2.17	AC.	
Area Pervious pre (Total Area) =	5.99	AC.	
Required Channel Protecton (cf) =	**28,476**		
Outlet Sizing for Channel Protection :			
Q_{cp} = V(cp)/86,400 sec	0.330	CFS	
Average Head for Orifice Equation:			
Elevation in basin of X(cp) =	600.27		
Elevation Difference from X(cp) to X(Bottom)	1.27	FT	
h_{ave} = 2/3 * (elev diff)	0.85	FT	
Orifice Area Required			
A = Q/(0.62*sqrt(2gh))	0.0718	SF	
Number of Orifice Holes Required			
Hole Diameter **1.25"** Hole Area =	0.0085	SF	
	8.43	HOLES	
therefore, use	**8**	**HOLES**	
Actual Release Rate Provided by X(Bottom) Orifices for Channel Protection			
A(cp) =	0.0682	SF	
h_{peak} = X(cp) - X(bottom)	0.85	FT	
Q(cp) = 0.62*A(cp)*sqrt(2gh))	0.313	CFS	
Actual Holding Time			
T_{act} = V/Q_{act}	25.293	HR	

Extended 100-Year Detention Basin Calculations

100-yr Detention Volume			
V(100) =	60,916	CF	
Elevation of 100-Year Storm, X(100) =	601.49		
Rim Elevation of Outlet Structure =	601.67		
Allowable Outflow Rate, Qo =	0.78	CFS	
Peak Release Rate Provided by Channel Protection Orifices for 100-yr Storm:			
A(cp) =	0.0682	SF	
h_{peak} = X(100) - X(bottom)	2.7	FT	
Q(cp) = 0.62*A(cp)*sqrt(2gh))	0.55	CFS	
Q(available) = Qo - Q(cp) = 77- 53 =	0.22	CFS	
Maximum Head for Orifice Equation:			
Elevation Difference from X(100) to X(cp)	1.40	FT	
Orifice Area Required			
A = Q/(0.62*sqrt(2gh))	0.04	SF	
Number of Orifice Holes Required			
Hole Diameter **1.25"** Hole Area =	0.0085	SF	
Holes = A/0.0668	4.49	HOLES	
therefore, use	**4**	**HOLES**	
Peak Release Rate:			
A(100) = # holes * 0.0085	0.0341	SF	
Q(100) = 0.62*A*sqrt(2gh))	0.20	CFS	
Q(out) = Q(cp) + Q(100) =	0.75	CFS	
Q(out) <= Q(allow) **0.75** **<=** **0.78**	**OK**		

10-yr Primary Overflow:

10-year max. inflow (ES1 & ES12) =	11.18	CFS
Elev. of Crest at Secondary Overflow (Max design High water level) =	602.25	
Rim elev. of OCS 3 (Primary Overflow Structure)	601.75	
Elevation difference =	0.50	FT
Spillway sizing Q = 2.6LH^(1.5)		
L= spillway crest, 4 dia. Rim, circumfrence = 3.14 x Dia. =	12.56	FT
H = head above spillway crest =	0.50	
Qprovided=	**11.55**	CFS

100-yr Secondary Overflow:

100-year max. inflow Q = 6 ac x .68 x 6.28 in/hr	25.6224	CFS
Freeboard elevation =	602.75	
Elev. of Crest at Emergency Overflow (Max design High water level) =	602.25	
Elevation difference =	0.50	FT
Spillway sizing Q = 2.6LH^(1.5)		
L= spillway crest length =	28.00	FT
H = head above spillway crest =	0.50	
Qprovided=	**25.74**	CFS

REVISIONS

No.	BY	CHK	DESCRIPTION	DATE
4	SP	RLS	REVISED SITE PLAN SUBMITTAL	4-12-17
3	SP	RLS	REVISED PER CONSUMERS	5-10-17
2	SP	RLS	REV. PARCELS & OPEN SPACE	6-29-17

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

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STORM WATER MANAGEMENT PLAN REGENCY AT GRAND HAVEN TWP.

PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES. SP | DN. | SP | SUR. KTR | P.M. | RLS

S:\PROJECTS\2016\2016-199 CIENA GRAND HAVEN TWP -SAS\Dwg\Construction\(C-8.0) STM MGT-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-8.0

NOT FOR CONSTRUCTION

REFERENCE DRAWINGS
ALTA/ACSM LAND TITLE SURVEY BY GPS SURVEYING, DATED 12/24/15
XREF: S:\PROJECTS\2016\2016-199\DWG\TOPOBASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-A-BASE-16199.DWG
XREF: S:\PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-TBLK-16199.DWG

10 YEAR STORM SEWER DESIGN - 2016-199

Q = C I A
Q = A x 1.486/n x R^2/3 x S^1/2
I (INITIAL) =3.84 PER OCDC

t = 15 MIN.
n1 = 0.010 HDPE & PVC
n2 = 0.013 CONC.

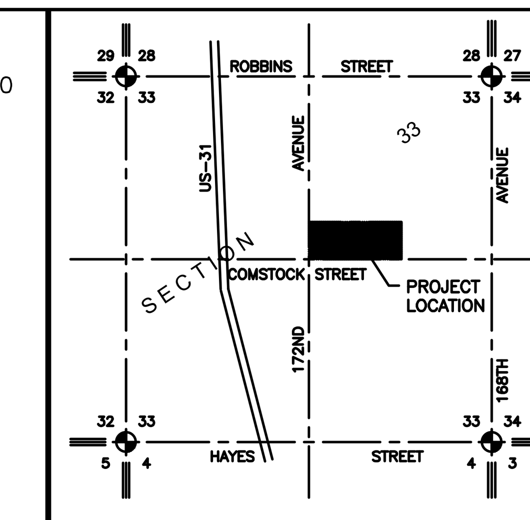
P.E.A., INC.
2430 ROCHESTER COURT
TROY, MI 48083
(248) 689-9090

FROM STR TO STR	DRAINAGE AREA #	AREA A (ac.)	COEFF. C	A x C	AREA TOTAL At (ac.)	TOTAL C x A	TIME t (min.)	lateral 1 name	INT. I (in/hr)	FLOW Q (c.f.s.)	PIPE CAP. (c.f.s.)	CAP. > Q	PIPE AREA (sq. ft.)	PIPE LENGTH (ft.)	PIPE DIA. (in.)	PIPE SLOPE (%)	MIN PIPE SLOPE	H.G. SLOPE (%)	VEL. FULL (ft/sec)	TIME FLOW (min.)	H.G. ELEV. UP STREAM	H.G. ELEV. DOWN STREAM	INVERT ELEV. UP STREAM	INVERT ELEV. DOWN STREAM	RIM ELEV. UP STREAM	RIM ELEV. DOWN STREAM	PIPE COVER AT STR. COVER UP	PIPE COVER AT STR. COVER DOWN
7-6	7	0.819	0.61	0.500	0.819	0.500	15.00		3.84	1.92	2.01	0.09	0.79	97	12	0.32	0.32	0.29	2.56	0.63	602.09	601.81	600.85	600.54	0.00	604.05		2.51
6-5	6	0.069	0.23	0.016	1.253	0.706	15.63	8-6	3.72	2.63	2.64	0.01	0.79	47	12	0.55	0.32	0.55	3.36	0.23	601.81	601.55	600.54	600.28	604.05	604.25	2.51	2.97
5-4	5	0.015	0.35	0.005	1.268	0.712	15.86		3.69	2.62	2.64	0.02	0.79	96	12	0.55	0.32	0.54	3.36	0.48	601.55	601.03	600.28	599.76	604.25	603.10	2.97	2.34
4-3	4	0.296	0.79	0.234	1.564	0.946	16.34		3.62	3.42	4.69	1.27	1.77	132	18	0.20	0.19	0.11	2.66	0.83	601.03	600.89	599.76	599.49	603.10	603.00	1.84	2.01
3-2	3	0.231	0.90	0.207	2.289	1.468	17.17	9-3	3.50	5.14	6.33	1.19	2.40	179	21	0.16	0.15	0.16	2.63	1.13	600.89	600.61	599.49	599.21	603.00	603.00	1.76	2.04
2-1	2	0.143	0.94	0.134	2.432	1.602	18.30		3.36	5.38	6.33	0.95	2.40	129	21	0.16	0.15	0.16	2.63	0.82	600.61	600.40	599.21	599.00	603.00	0.00	2.04	
18-17	18	0.280	0.56	0.158	0.280	0.158	15.00		3.84	0.61	2.01	1.41	0.79	64	12	0.32	0.32	0.32	2.56	0.42	601.14	600.94	600.34	600.14	604.05	604.05	2.71	2.91
17-16	17	0.041	0.34	0.014	0.321	0.172	15.42		3.76	0.64	2.01	1.37	0.79	31	12	0.32	0.32	0.32	2.56	0.20	600.94	600.84	600.14	600.04	604.05	604.05	2.91	3.01
16-15	16	0.056	0.77	0.043	0.377	0.215	15.62		3.72	0.80	2.01	1.21	0.79	90	12	0.32	0.32	0.18	2.56	0.58	600.84	600.68	600.04	599.75	604.05	603.50	3.01	2.75
15-14	15	0.299	0.42	0.124	0.675	0.339	16.20		3.64	1.23	2.01	0.78	0.79	109	12	0.32	0.32	0.12	2.56	0.71	600.68	600.55	599.75	599.40	603.50	603.95	2.75	3.55
14-13	14	0.029	0.47	0.013	0.704	0.352	16.91		3.54	1.25	2.01	0.77	0.79	27	12	0.32	0.32	0.12	2.56	0.18	600.55	600.52	599.40	599.32	603.95	603.75	3.55	3.43
13-12	13	0.070	0.39	0.028	2.555	1.679	17.51	19-13	3.46	5.80	6.64	0.84	1.77	79	18	0.40	0.19	0.40	3.76	0.35	600.52	600.20	599.32	599.00	603.75	0.00	2.93	
8-6	8	0.364	0.52	0.190	0.364	0.190	15.00		3.84	0.73	2.01	1.29	0.79	82	12	0.32	0.32	0.04	2.56	0.53	601.85	601.81	600.81	600.54	603.50	604.05	1.69	2.51
25-24	25	0.315	0.93	0.293	0.315	0.293	15.00		3.84	1.13	2.01	0.89	0.79	102	12	0.32	0.32	0.10	2.56	0.66	601.49	601.39	600.41	600.08	603.35	604.15	1.94	3.07
24-23	24	0.526	0.65	0.343	0.841	0.636	15.66		3.72	2.36	3.16	0.80	1.23	49	15	0.24	0.24	0.13	2.58	0.32	601.39	601.32	600.08	599.96	604.15	604.05	2.82	2.84
23-22	23	0.031	0.10	0.003	0.872	0.639	15.98		4.27	2.73	3.16	0.43	1.23	59	15	0.24	0.24	0.18	2.58	0.38	601.32	601.22	599.96	599.82	604.05	604.25	2.84	3.18
22-21	22	0.118	0.80	0.094	0.989	0.733	16.36		4.23	3.10	3.16	0.06	1.23	53	15	0.24	0.24	0.23	2.58	0.34	601.22	601.09	599.82	599.69	604.25	604.25	3.18	3.31
21-20	21	0.090	0.75	0.068	1.080	0.801	16.70		4.20	3.36	6.33	2.97	2.40	100	21	0.16	0.15	0.16	2.63	0.63	601.09	600.93	599.69	599.53	604.25	603.95	2.81	2.67
20-19	20	0.149	0.69	0.102	1.684	1.248	17.34	26-20	4.13	5.16	6.33	1.17	2.40	27	21	0.16	0.15	0.16	2.63	0.17	600.93	600.89	599.53	599.49	603.95	603.95	2.67	2.71
19-13	19	0.097	0.52	0.050	1.781	1.299	17.51		4.12	5.35	6.33	0.99	2.40	109	21	0.16	0.15	0.16	2.63	0.69	600.89	600.72	599.49	599.32	603.95	603.75	2.71	2.68
28-27	28	0.237	0.78	0.186	0.237	0.186	15.00		3.84	0.71	2.01	1.30	0.79	55	12	0.32	0.32	0.04	2.56	0.36	601.09	601.07	600.08	599.90	603.90	603.90	2.82	3.00
27-26	27	0.102	0.71	0.072	0.339	0.258	15.19		3.79	0.98	2.01	1.04	0.79	30	12	0.32	0.32	0.08	2.56	0.19	601.07	601.04	599.90	599.81	603.90	603.75	3.00	2.94
26-20	26	0.117	0.75	0.088	0.456	0.345	15.75		3.70	1.28	2.01	0.73	0.79	85	12	0.32	0.32	0.13	2.56	0.55	601.04	600.93	599.81	599.53	603.75	603.95	2.94	3.42
10-9	10	0.328	0.66	0.215	0.328	0.215	15.00		3.84	0.83	2.01	1.19	0.79	72	12	0.32	0.32	0.05	2.56	0.47	600.97	600.93	599.84	599.60	604.05	603.65	3.21	3.05
9-3	9	0.047	0.35	0.017	0.493	0.314	15.23	11-9	3.79	1.19	2.01	0.82	0.79	35	12	0.32	0.32	0.11	2.56	0.23	600.93	600.89	599.60	599.49	603.65	603.00	3.05	2.51
11-9	11	0.118	0.70	0.082	0.118	0.082	15.00			0.00	2.01	2.01	0.79	73	12	0.32	0.32	0.00	2.56	0.47	600.93	600.93	599.84	599.60	604.20	603.65	3.36	3.05

GRAPHIC SCALE

-40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

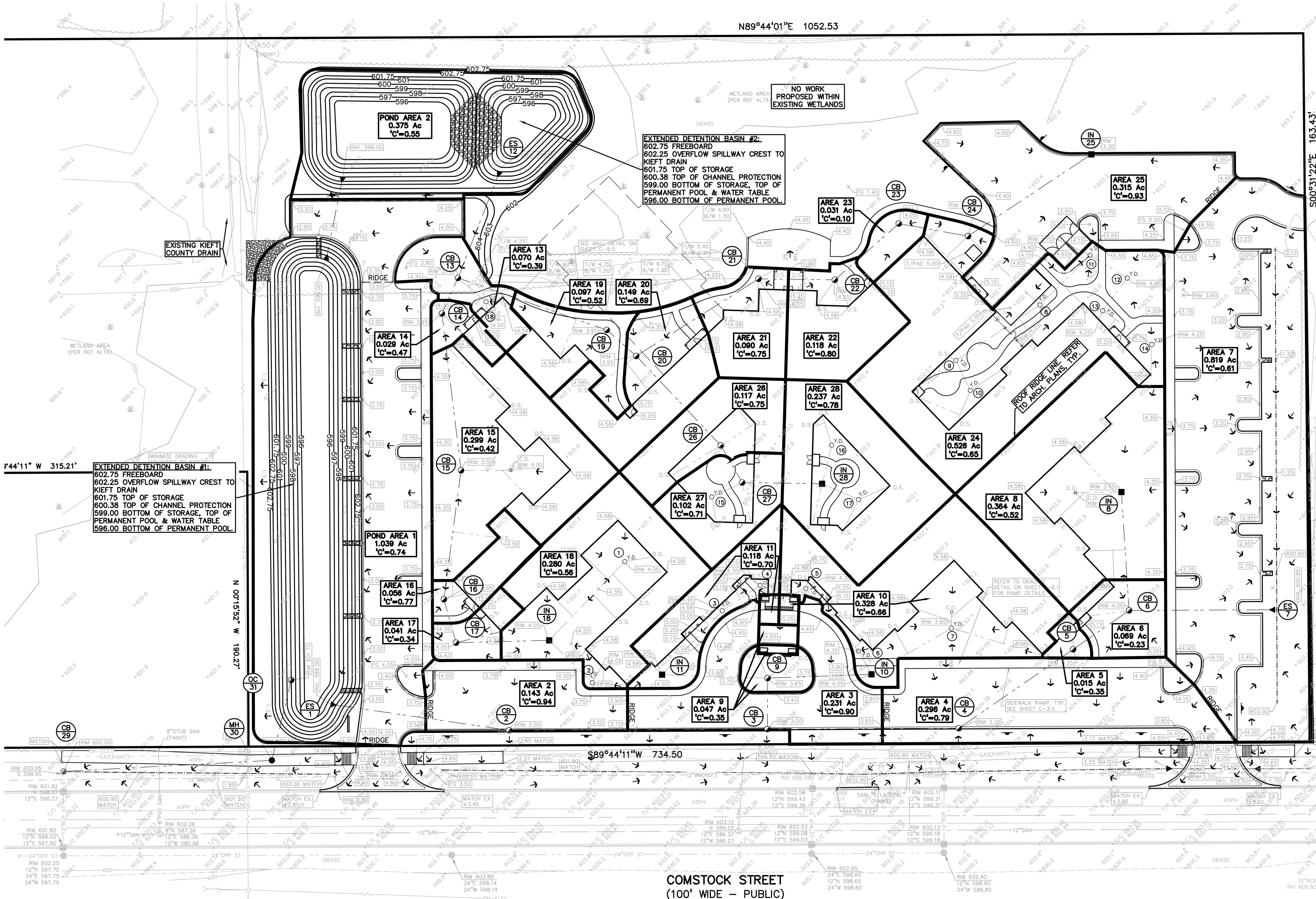


LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING / PROPOSED

ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
UNDERGROUND CABLE TV, CATV PEDESTAL
TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
GAS MAIN, VALVE & GAS LINE MARKER
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
SANITARY SEWER, CLEANOUT & MANHOLE
STORM SEWER, CLEANOUT & MANHOLE
COMBINED SEWER & MANHOLE
SQUARE, ROUND & BEEHIVE CATCH BASIN
POST INDICATOR VALVE
WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
UNIDENTIFIED STRUCTURE
SPOT ELEVATION (816.06 / 671.21)
CONTOUR LINE (670 / 671)
FENCE
GUARD RAIL
STREET LIGHT
SIGN
CONCRETE (CONC.) — STD DUTY, HEAVY DUTY
ASPHALT (ASPH.) — STD DUTY
WETLAND



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ALTA/ACSM LAND TITLE SURVEY BY GPS SURVEYING, DATED 12/24/15
XREF: S:PROJECTS\2016\2016-199\DWG\TOPOBASE-16199.DWG
XREF: S:PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-BASE-16199.DWG
XREF: S:PROJECTS\2016\2016-199\DWG\CONSTRUCTION\X-TBLK-16199.DWG

REVISIONS

No.	BY	CHK	DESCRIPTION	DATE
1	SP		REVISED SITE PLAN SUBMITTAL	4-12-17
2	RLS		REVISED PER CONSUMERS	5-10-17
3	RLS		HFES PRELIMINARY	6-29-17
4	SAP		REV. PARCELS & OPEN SPACE	

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

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FARMINGTON HILLS, MI 48335

DRAINAGE AREA PLAN
REGENCY AT GRAND HAVEN TWP.

PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES. SP | DN. SP | SUR. KTR | P.M. RLS

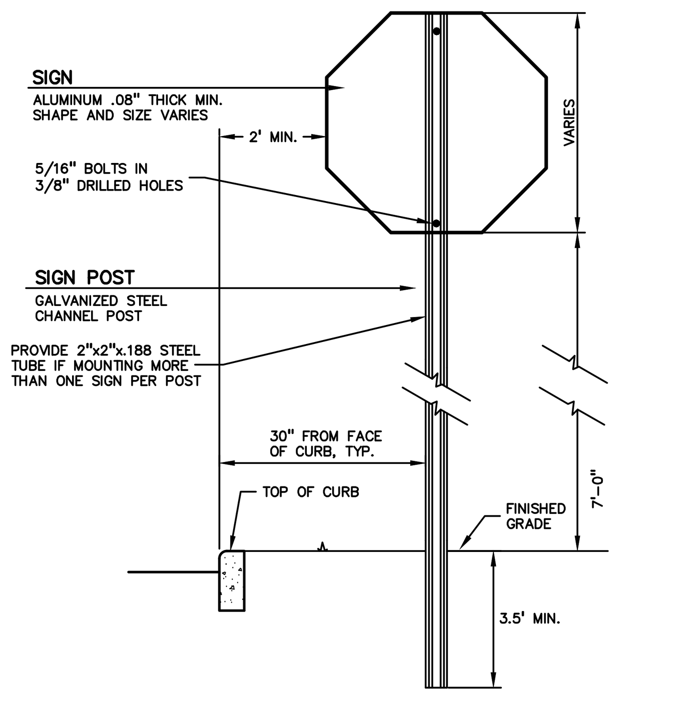
S:\PROJECTS\2016\2016-199 CIENA GRAND HAVEN TWP-SAS\Dwg\Construction\(C-8.1) DRAIN AREA-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

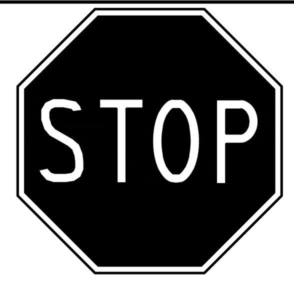
PEA JOB NO. 2016-199

SCALE: 1" = 40'

DRAWING NUMBER:
C-8.1



SIGN AND POST INSTALLATION IN LANDSCAPED AREAS
NOT TO SCALE

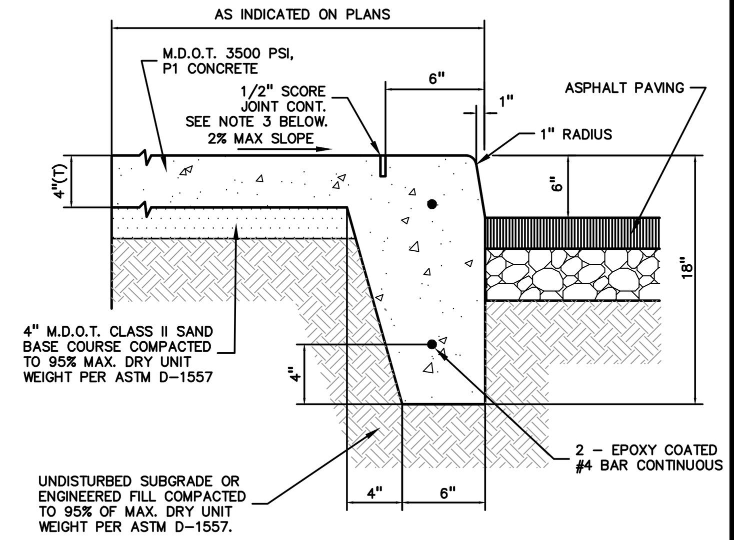


30" x 30"
WHITE ON RED REFLECTORIZED
7'-0" MOUNTING HEIGHT (R1-1)

STOP SIGN DETAIL
NOT TO SCALE

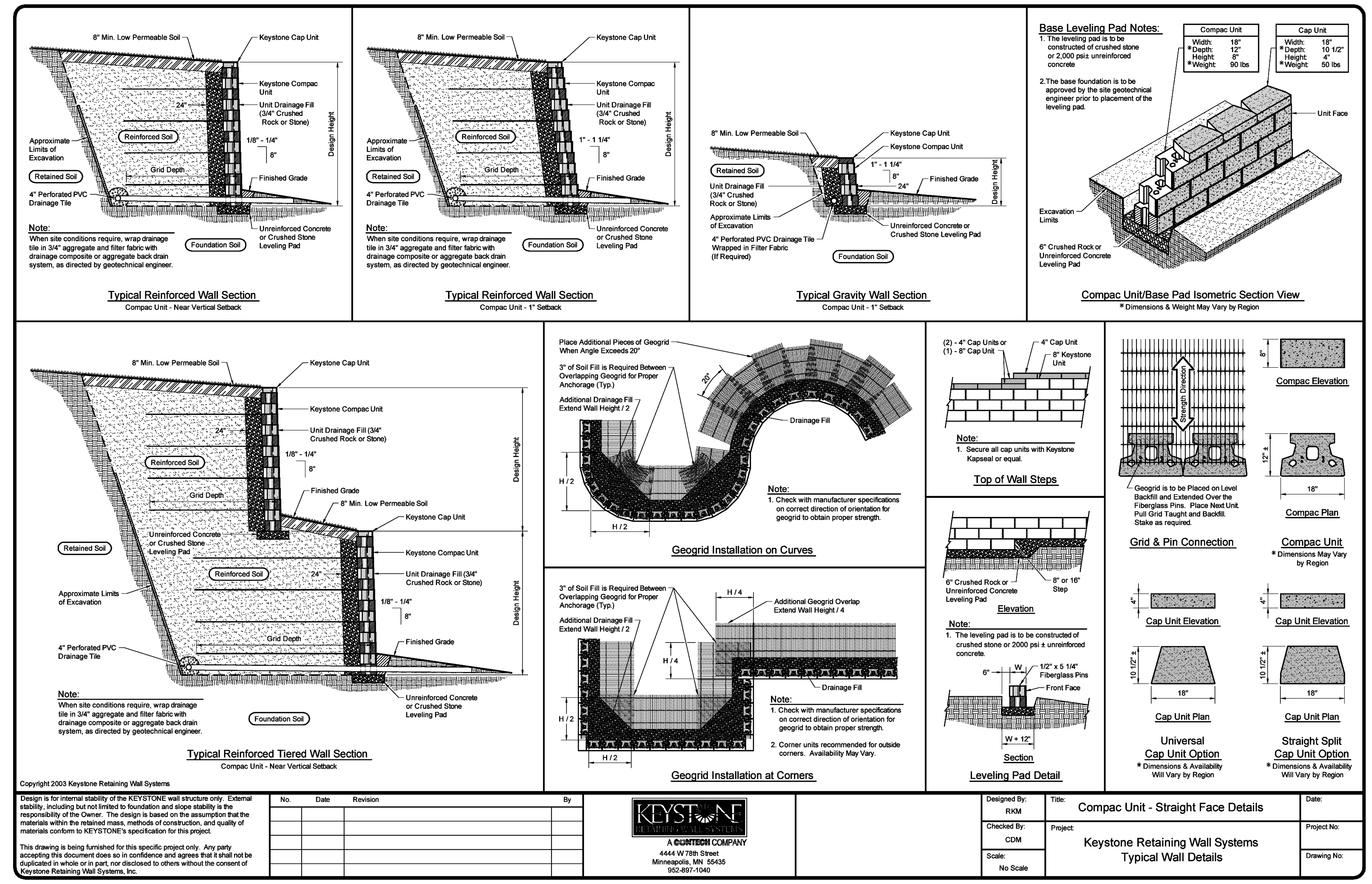
12" x 18"
RED ON WHITE REFLECTORIZED
7'-0" MOUNTING HEIGHT
(LR7-22)

NO PARKING SIGN DETAIL
NOT TO SCALE



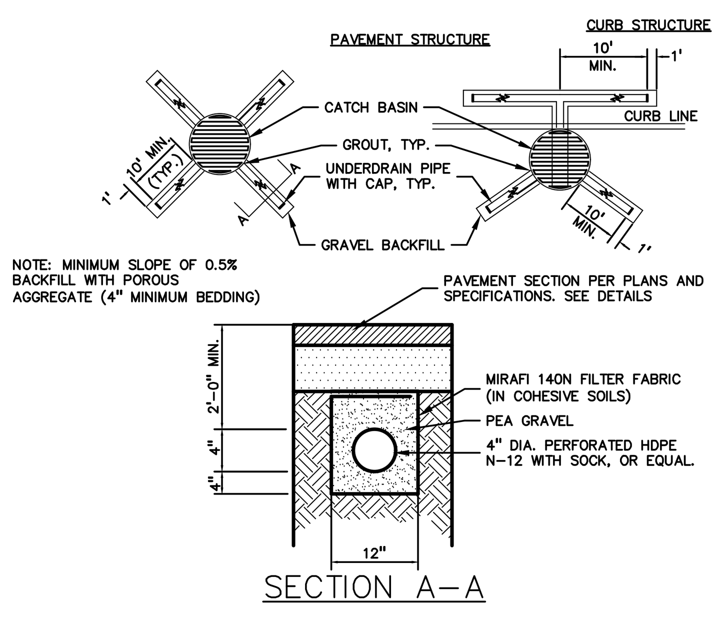
CONTRACTION JOINTS TO BE 1/4 DEEP. SPACED AT INTERVALS TO MATCH SIDEWALK WIDTH (SAWCUT). 1/2-INCH PRE-MOLDED FILLER EXPANSION JOINTS WITH JOINT SEALANT SHALL BE PLACED ONLY WHERE SIDEWALK ABUTS A STRUCTURE.

INTEGRAL CURB AND SIDEWALK
NOT TO SCALE



RETAINING WALL DESIGN BY OTHERS (DESIGN/BUILD – AS PART OF BID). REFER TO RETAINING WALL PLANS FOR ADDITIONAL INFORMATION. PROVIDE SHOP DRAWINGS AND STRUCTURAL PLANS AND CALCULATIONS SEALED BY REGISTERED ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

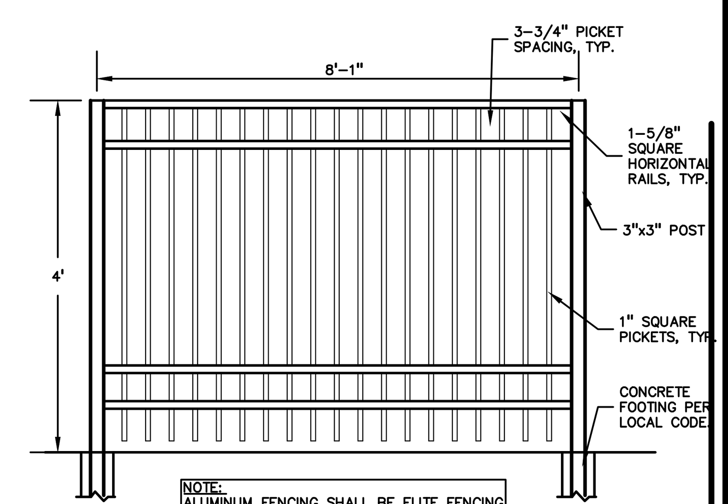
RETAINING WALL SHALL BE COMPAC RETAINING WALL SYSTEMS OR APPROVED EQUAL WITH 4' TALL ALUMINUM FENCE PER DETAIL THIS SHEET.



NOTE: MINIMUM SLOPE OF 0.5% BACKFILL WITH POROUS AGGREGATE (4" MINIMUM BEDDING)

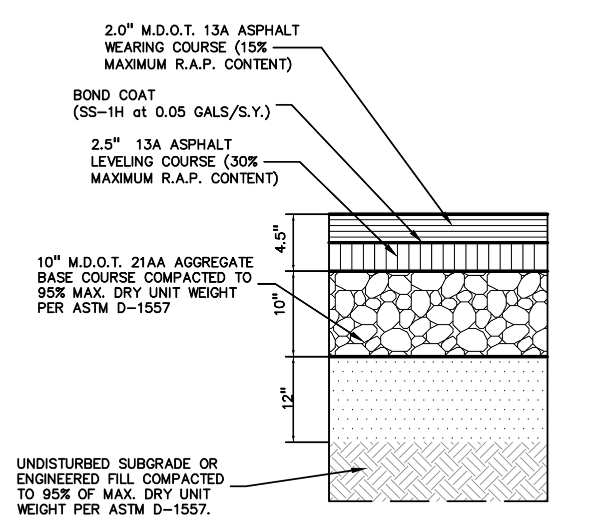
NOTE:
INSTALL 4" DIAMETER PERFORATED HDPE N-12 WITH SOCK, OR EQUAL TO EXTEND 10' FROM STRUCTURE AT ALL CATCH BASINS AS SHOWN ON UTILITY PLAN.

UNDERDRAIN DETAIL
NOT TO SCALE



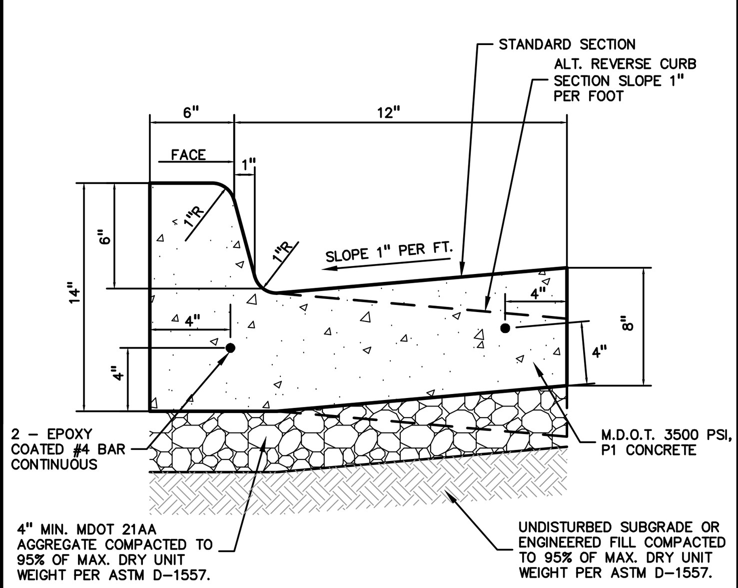
NOTE:
ALUMINUM FENCING SHALL BE ELITE FENCING PRODUCTS, INC. MODEL #EFF-20, HEAVY INDUSTRIAL GRADE ALUMINUM FENCING, OR APPROVED EQUAL.

4' ALUMINUM FENCE DETAIL
NOT TO SCALE



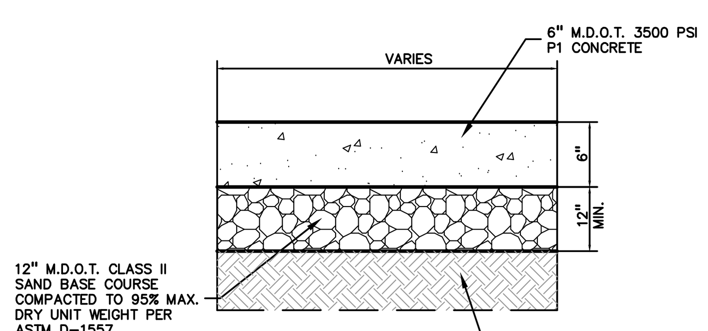
HEAVY DUTY ASPHALT DETAIL
(NOT FOR USE IN THE RIGHT-OF-WAY) NOT TO SCALE

NOTE: ALTERNATE REVERSE CURB SECTION TO BE USED ONLY WHEN DRAINING AWAY FROM CURB. SEE PLAN FOR LOCATION.

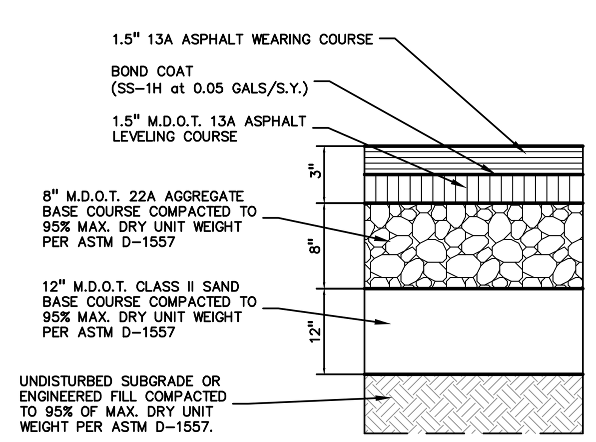


NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. AND AT ALL RADIUS RETURNS. PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

18"x6" STANDARD CONCRETE CURB AND GUTTER
NOT TO SCALE

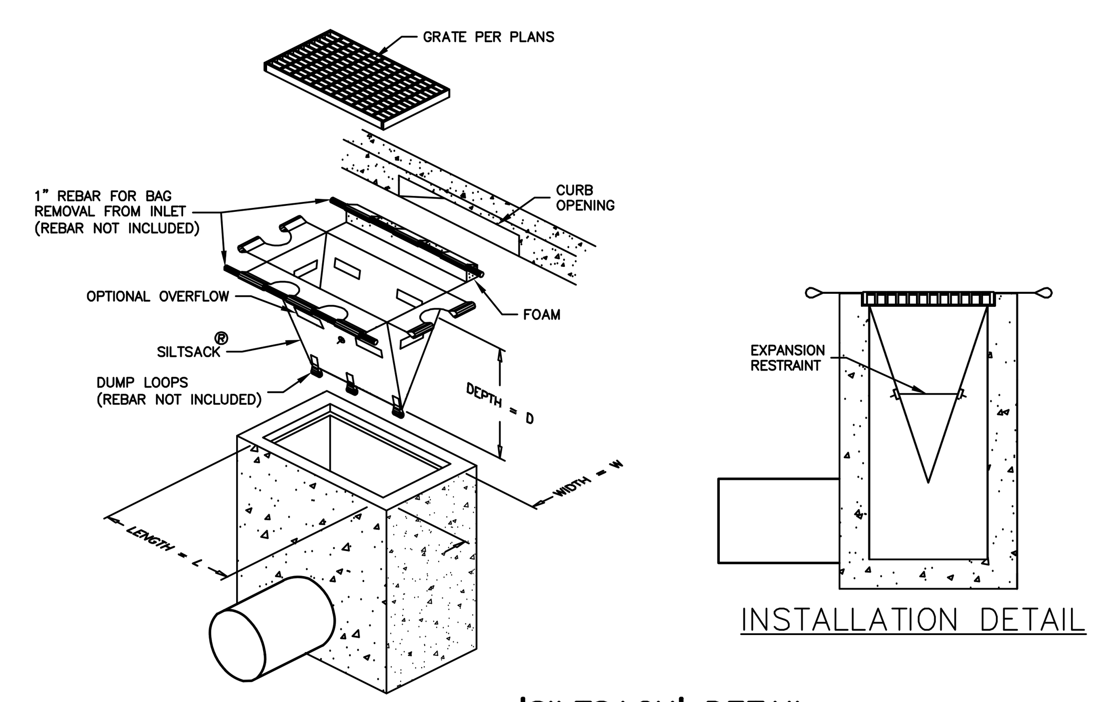


HEAVY DUTY CONCRETE DETAIL
NOT TO SCALE

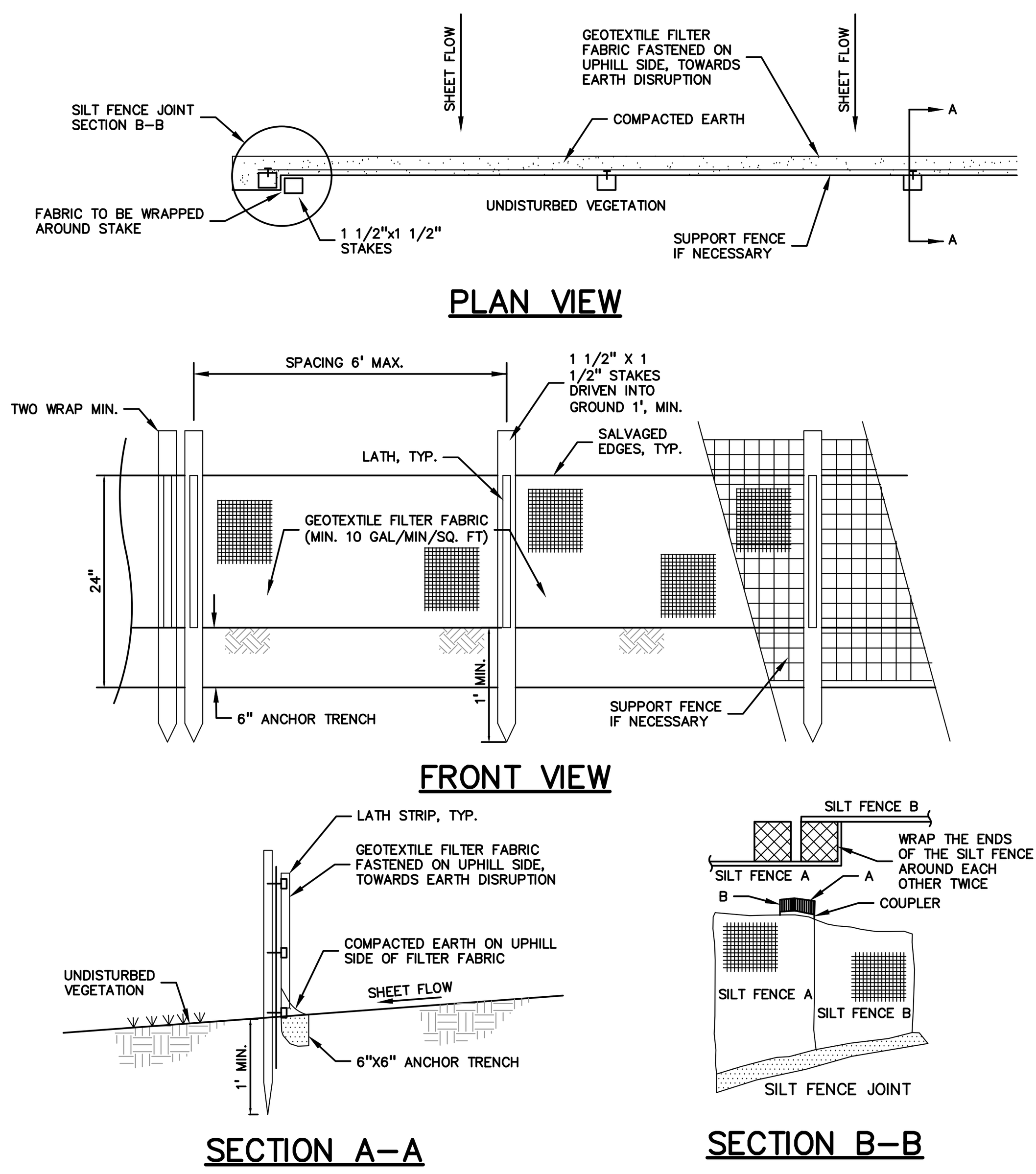


STANDARD DUTY ASPHALT DETAIL
(NOT FOR USE IN THE RIGHT-OF-WAY) NOT TO SCALE

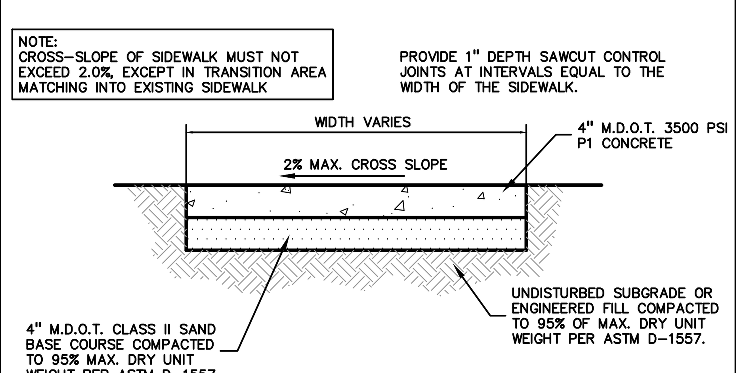
MIX DESIGN NOTE:
REFER TO GEOTECHNICAL REPORT (CALLEN ENGINEERING, INC. JANUARY 11, 2016) REGARDING ASPHALT BINDER RECOMMENDATIONS.



'SILTSACK' DETAIL
NOT TO SCALE



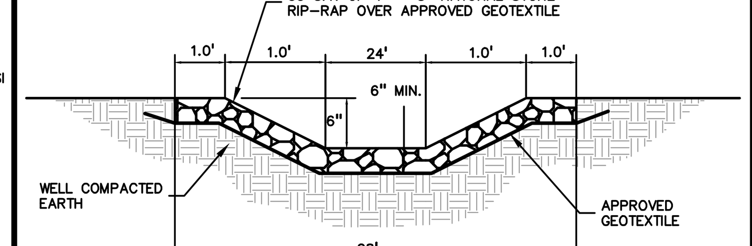
SILT FENCE DETAIL
NOT TO SCALE



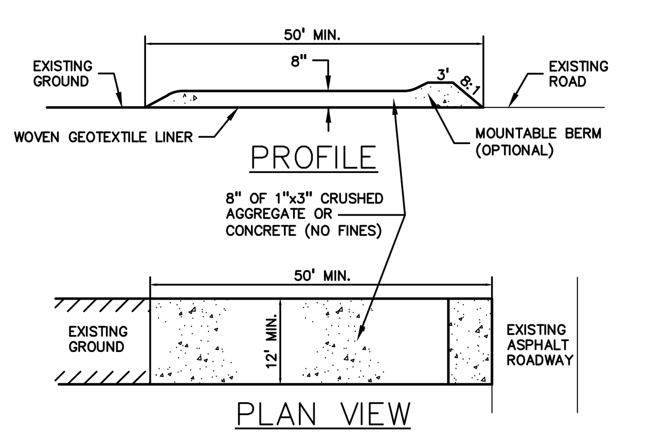
NOTE:
CROSS-SLOPE OF SIDEWALK MUST NOT EXCEED 2.0%, EXCEPT IN TRANSITION AREA MATCHING INTO EXISTING SIDEWALK

PROVIDE 1" DEPTH SAWCUT CONTROL JOINTS AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.

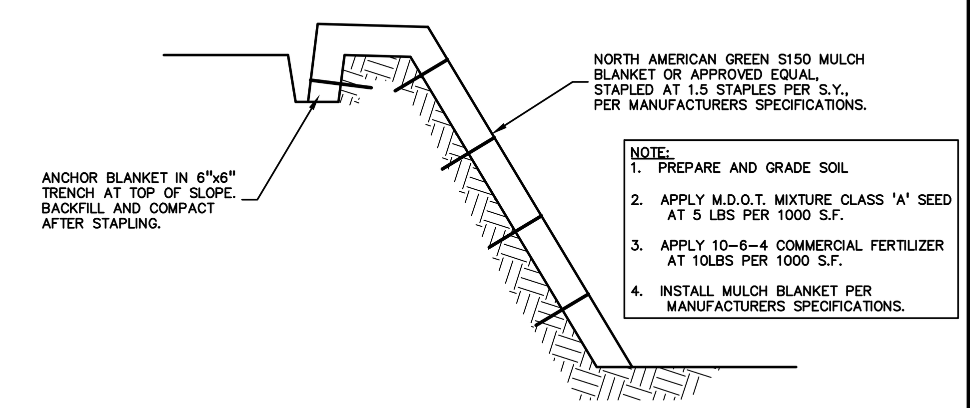
CONCRETE SIDEWALK
NOT TO SCALE



OVERFLOW SPILLWAY DETAIL
NOT TO SCALE



TEMPORARY STONE ACCESS DRIVE
NOT TO SCALE



NOTE:
1. PREPARE AND GRADE SOIL
2. APPLY M.D.O.T. MIXTURE CLASS "A" SEED AT 5 LBS PER 1000 S.F.
3. APPLY 10-6-4 COMMERCIAL FERTILIZER AT 10LBS PER 1000 S.F.
4. INSTALL MULCH BLANKET PER MANUFACTURERS SPECIFICATIONS.

TEMPORARY EROSION BLANKET DETAIL
NOT TO SCALE

No.	BY	CHK	DESCRIPTION	DATE
4	SAP		REV. PARCELS & OPEN SPACE	6-29-17
3	RLS		HFES PRELIMINARY	5-10-17
2	RLS		REVISED PER CONSUMERS	4-12-17
1	SP		REVISED SITE PLAN SUBMITTAL	

REVISIONS

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

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SITE DETAILS
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES. SP | DN. SP | SUR. KTR | P.M. RLS

S:\PROJECTS\2016\2016-199 CIENA GRAND HAVEN TWP-SAS\Dwg\Construction\(C-9.0) SITE DETAILS-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

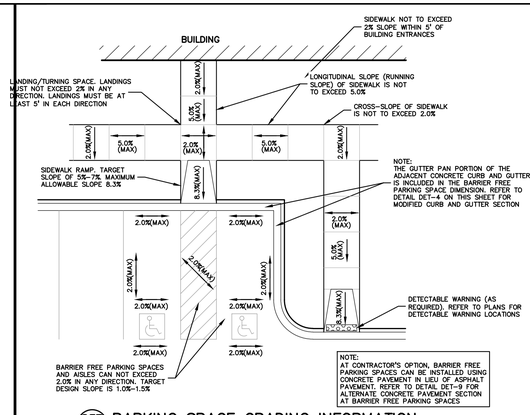
NO SCALE

DRAWING NUMBER:
C-9.0

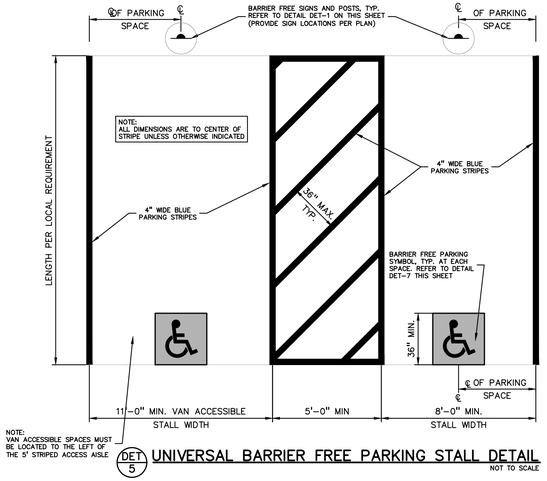
GENERAL BARRIER FREE NOTES:

THE FOLLOWING NOTES PROVIDE AN OUTLINE OF SOME OF THE REQUIREMENTS CONTAINED WITHIN THE "STANDARDS FOR ACCESSIBLE DESIGN – AMERICANS WITH DISABILITIES ACT 2010", AND "ACCESSIBLE AND USEABLE BUILDINGS AND FACILITIES", ICC/ANSI A117.1–2009. THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE REQUIREMENTS PRESENTED WITHIN THESE DOCUMENTS, WHICH ARE AVAILABLE IN FULL UPON REQUEST.

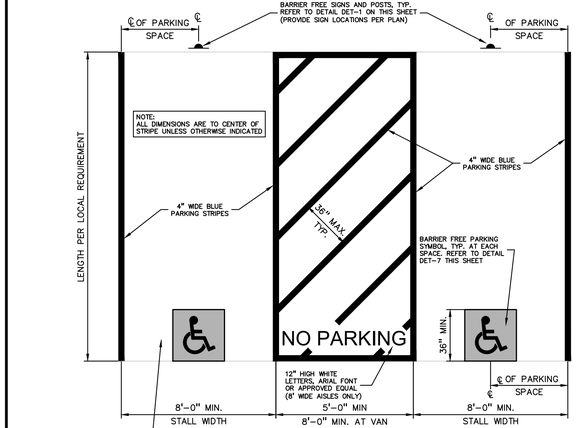
1. AN ACCESSIBLE ROUTE CONSISTS OF WALK SURFACES, CURB RAMPS AND RAMPS. AT LEAST ONE ACCESSIBLE ROUTE SHALL BE PROVIDED WITHIN THE SITE FROM ACCESSIBLE PARKING SPACES, ACCESSIBLE PASSENGER LOADING ZONES, PUBLIC STREETS AND SIDEWALKS, AND PUBLIC TRANSPORTATION STOPS TO THE BUILDING OR FACILITY ENTRANCE THEY SERVE.
2. THE RUNNING SLOPE OF ALL WALKING SURFACES SHALL NOT EXCEED 5% (1:20) AND THE CROSS–SLOPE SHALL NOT EXCEED 2% (1:48).
3. WALKING SURFACES MUST BE LEVEL WITH PERMITTED VERTICAL CHANGES IN LEVEL NOT TO EXCEED 1/4", OR BEVELED CHANGES IN LEVEL NOT TO EXCEED 1/2". REFER TO DETAIL DET–8 THIS SHEET. ANY CHANGE IN LEVEL GREATER THAN 1/2" MUST BE RAMPED.
4. TURNING SPACES ALONG ACCESSIBLE ROUTES MUST BE AT LEAST 5 FEET WIDE IN ALL DIRECTIONS AND NOT EXCEED 2% SLOPE (1:48) IN ANY DIRECTION.
5. ACCESSIBLE ROUTES WILL BE DESIGNED TO BE A MINIMUM OF 5 FEET WIDE. THE MINIMUM CLEAR WIDTH IS 3 FEET.
6. RAMPS ALONG ACCESSIBLE ROUTES WILL HAVE A RUNNING SLOPE GREATER THAN 5% (1:20) AND LESS THAN 8.3% (1:12).
7. THE CROSS–SLOPE OF RAMP RUNS SHALL NOT EXCEED 2% (1:48)
8. THE MINIMUM CLEAR WIDTH OF ANY RAMP IS 36 INCHES.
9. THE MAXIMUM RISE FOR ANY RAMP (NOT INCLUDING CURB RAMPS) SHALL NOT EXCEED 30 INCHES. LANDINGS ARE REQUIRED AT THE TOP AND BOTTOM OF EACH RAMP. LANDINGS SHALL HAVE A CROSS–SLOPE NOT EXCEEDING 2% (1:48), SHALL BE 5 FEET LONG AND AT LEAST AS WIDE AS THE RAMP CLEAR WIDTH. IF THERE IS A CHANGE OF DIRECTION AT A LANDING, THEN THE LANDING MUST BE AT LEAST 5 FEET WIDE AND 5 FEET LONG.
10. HANDRAILS ARE REQUIRED FOR ANY RAMP (NOT INCLUDING CURB RAMPS) WITH A RISE GREATER THAN 6 INCHES. ALL HANDRAILS ARE REQUIRED TO HAVE EDGE PROTECTION UNLESS ADJOINING ANOTHER ACCESS POINT OR IF THE VERTICAL DROP–OFF AT THE EDGE OF THE RAMP DOES NOT EXCEED 1/2" IN 10 FEET. EDGE PROTECTION CAN BE PROVIDED BY MEANS OF A 4" MIN. CURB OR BARRIER.
11. CURB RAMPS ALONG ACCESSIBLE ROUTES SHALL NOT RISE MORE THAN 6 INCHES, NOR BE STEEPER THAN 8.3% (1:12). APPROACHING SLOPES TO THE RAMP CANNOT EXCEED 5%, WHICH INCLUDES SIDEWALKS, PAVEMENT, GUTTERS ETC.
12. IF CURB RAMP SIDES ARE FLARED, THE FLARES SHALL NOT BE STEEPER THAN 10% (1:10).
13. LANDINGS ARE REQUIRED AT THE TOP OF ALL CURB RAMPS. THE CLEAR LENGTH OF THE LANDING SHALL BE A MINIMUM OF 36" AND WILL BE AS WIDE AS THE CURB RAMP.
14. CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED VEHICLES.
15. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS.
16. WHERE DETECTABLE WARNING IS REQUIRED AT CURB RAMPS, THE DETECTABLE WARNING SHALL BE 24" MINIMUM IN DEPTH AND SHALL EXTEND THE FULL WIDTH OF THE RAMP. THE DETECTABLE WARNING SHALL BE LOCATED SO THE EDGE NEAREST THE CURB IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE.
17. ACCESSIBLE PARKING SPACES ON SITE SHALL BE PROVIDED AS REQUIRED IN SECTION 502 OF THE A.D.A. IF THE SITE HAS MORE THAN ONE PARKING *FACILITY*, EACH *FACILITY* IS REQUIRED TO MEET THESE REQUIREMENTS SEPARATELY. THE REQUIRED NUMBER OF SPACES SHALL BE BASED ON THE TOTAL NUMBER OF PARKING SPACES IN EACH PARKING FACILITY ON SITE.
18. FOR EVERY SIX OR FRACTION OF SIX ACCESSIBLE PARKING SPACES, ONE VAN ACCESSIBLE SPACE SHALL BE PROVIDED.
19. ACCESSIBLE PARKING SPACES SHALL BE LOCATED ON THE SHORTEST ACCESSIBLE ROUTE FROM PARKING TO A BUILDING ENTRANCE. IF THERE IS MORE THAN ONE ACCESSIBLE ENTRANCE, PARKING SHALL BE DISPERSED ALONG THE SHORTEST ACCESSIBLE ROUTE TO THE ACCESSIBLE ENTRANCES.
20. BARRIER FREE CAR PARKING SPACES SHALL BE A MINIMUM OF 8 FEET WIDE WITH AN ACCESS AISLE 5 FEET WIDE MINIMUM. VAN ACCESSIBLE PARKING SPACES SHALL BE AT LEAST 11 FEET WIDE WITH A 5' WIDE ACCESS AISLE. VAN ACCESSIBLE SPACES ARE ALSO ACCEPTABLE WITH AN 8 FOOT WIDTH AND 8 FOOT WIDE ACCESS AISLE. THE ACCESS AISLE IN ALL CASES MUST EXTEND THE FULL LENGTH OF THE PARKING SPACE.
21. SURFACE SLOPES WITHIN THE PARKING SPACES AND AISLES SHALL NOT EXCEED 2% (1:48)
22. ACCESSIBLE AREAS INCLUDING PARKING SPACES, AISLES AND PATHWAYS, REQUIRE A MINIMUM VERTICAL CLEARANCE OF 98 INCHES.
23. ACCESSIBLE PARKING SPACES ARE REQUIRED TO BE IDENTIFIED BY SIGNS. THE SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY. VAN PARKING SPACES ARE REQUIRED TO BE DESIGNATED AS "VAN ACCESSIBLE". REFER TO DETAILS ON THIS SHEET.



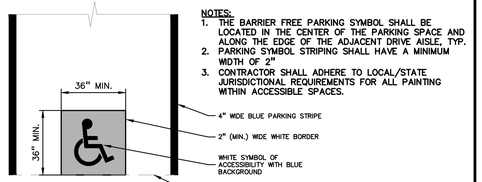
DET 10 PARKING SPACE GRADING INFORMATION
NOT TO SCALE



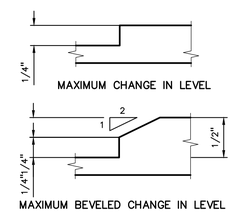
DET 5 UNIVERSAL BARRIER FREE PARKING STALL DETAIL
NOT TO SCALE



DET 6 ALTERNATE BARRIER FREE PARKING STALL DETAIL
NOT TO SCALE



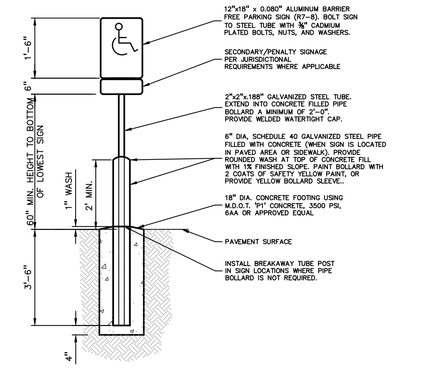
DET 7 BARRIER FREE PARKING SYMBOL DETAIL (INTERNATIONAL SYMBOL OF ACCESSIBILITY)
NOT TO SCALE



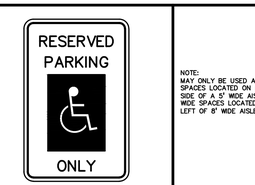
DET 8 BARRIER FREE SURFACE CHANGE IN LEVEL TOLERANCE
NOT TO SCALE

BARRIER FREE SIGN NOTES:

1. ONE SIGN IS REQUIRED AT EACH BARRIER FREE PARKING SPACE.
2. ALL SIGNS SHALL COMPLY WITH THE LATEST STANDARDS OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
3. WHEN TWO BARRIER FREE PARKING SPACES ARE ADJACENT AND FACING EACH OTHER, TWO SIGNS ARE REQUIRED, BUT CAN BE MOUNTED ON THE SAME POST.
4. SIGN POSTS SHALL BE 2" NOM. SQUARE 14–GAUGE GALVANIZED STEEL TUBE WITH 7/16" HOLES AT 1" CENTERS. POSTS SHALL TELESCOPE INSIDE ANCHOR POSTS A MINIMUM OF 12".
5. ANCHOR POSTS SHALL BE 2.25" NOM. SQUARE 12–GAUGE GALVANIZED STEEL POST, A MINIMUM OF 3 FEET LONG.
6. IF THESE NOTES AND DETAILS CONFLICT WITH LOCAL CODES AND ORDINANCES, THE STRICTER REQUIREMENT SHOULD BE USED.
7. ALTERNATE MATERIALS MAY BE USED IF IN COMPLIANCE WITH A.D.A. GUIDELINES AND LOCAL REQUIREMENTS.



DET 1 BARRIER FREE SIGN AND POST DETAIL
NOT TO SCALE



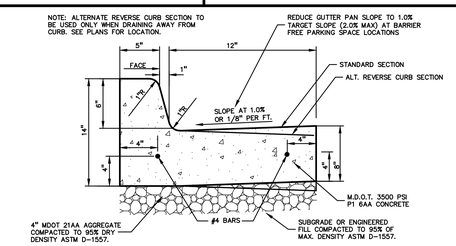
12" x 18" (R7–8) GREEN BORDER AND LEGEND WHITE SYMBOL, BLUE BACKGROUND. REFLECTORIZED

DET 2 BARRIER FREE PARKING SIGN DETAIL
NOT TO SCALE

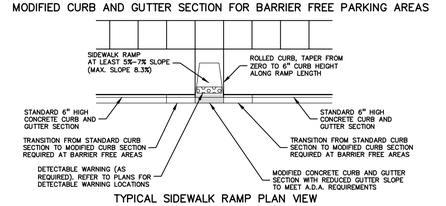
NOTE: MAY ONLY BE USED AT 11' WIDE SPACES LOCATED ON THE LEFT SIDE OF A 5' WIDE AISLE, OR 8' WIDE SPACES LOCATED TO THE LEFT OF 8' WIDE AISLES

12" x 18" (R7–8 MOD) GREEN BORDER AND LEGEND WHITE SYMBOL, BLUE BACKGROUND. REFLECTORIZED

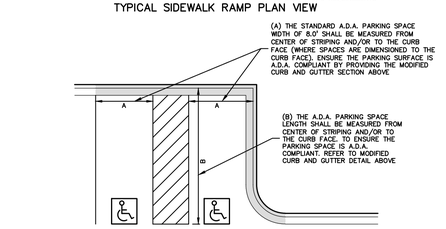
DET 3 VAN ACCESSIBLE PARKING SIGN DETAIL
NOT TO SCALE



MODIFIED CURB AND GUTTER SECTION FOR BARRIER FREE PARKING AREAS



TYPICAL SIDEWALK RAMP PLAN VIEW



TYPICAL BARRIER FREE PARKING SPACES

DET 4 MODIFIED 18"x6" CONCRETE CURB AND GUTTER DETAIL TO BE USED IN BARRIER FREE AREAS
NOT TO SCALE

No.	BY	CHK	DESCRIPTION	DATE
4	SAP	MJ	REV. PARCELS & OPEN SPACE	6-29-17
3	SP	RLS	REVISED PER CLIENT	5-10-17
2	SP	RLS	REVISED PER CONSUMERS	4-12-17
1	SP		REVISED SITE PLAN SUBMITTAL	

REVISIONS

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60668
LICENSED PROFESSIONAL ENGINEER

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BARRIER FREE SITE DETAILS
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES.	DN.	SUR.	P.M.
SP	SP	KTR	RLS

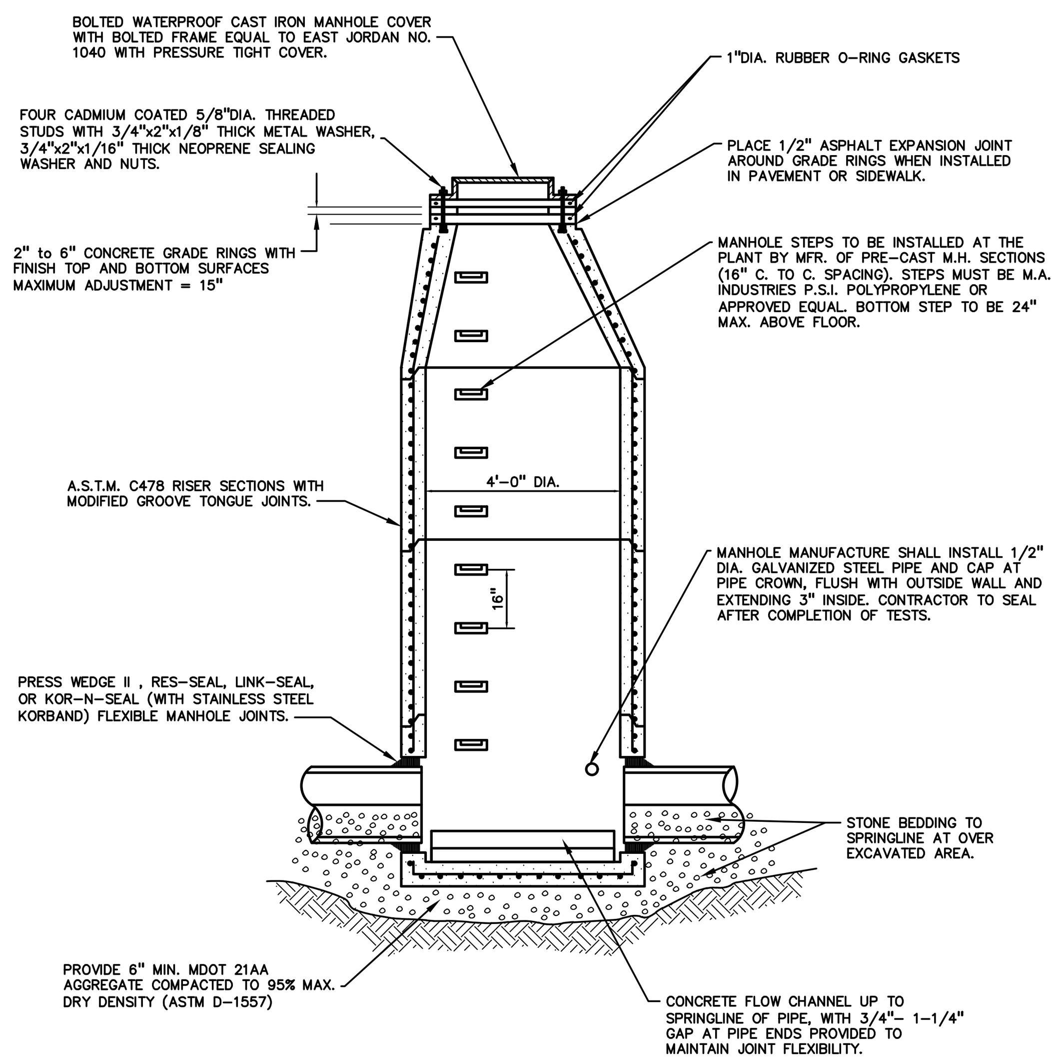
S:\PROJECTS\2016\2016-199 CENA GRAND HAVEN TWP–SASS\Dwg\Construction\C-9.0 SITE DETAILS-16199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

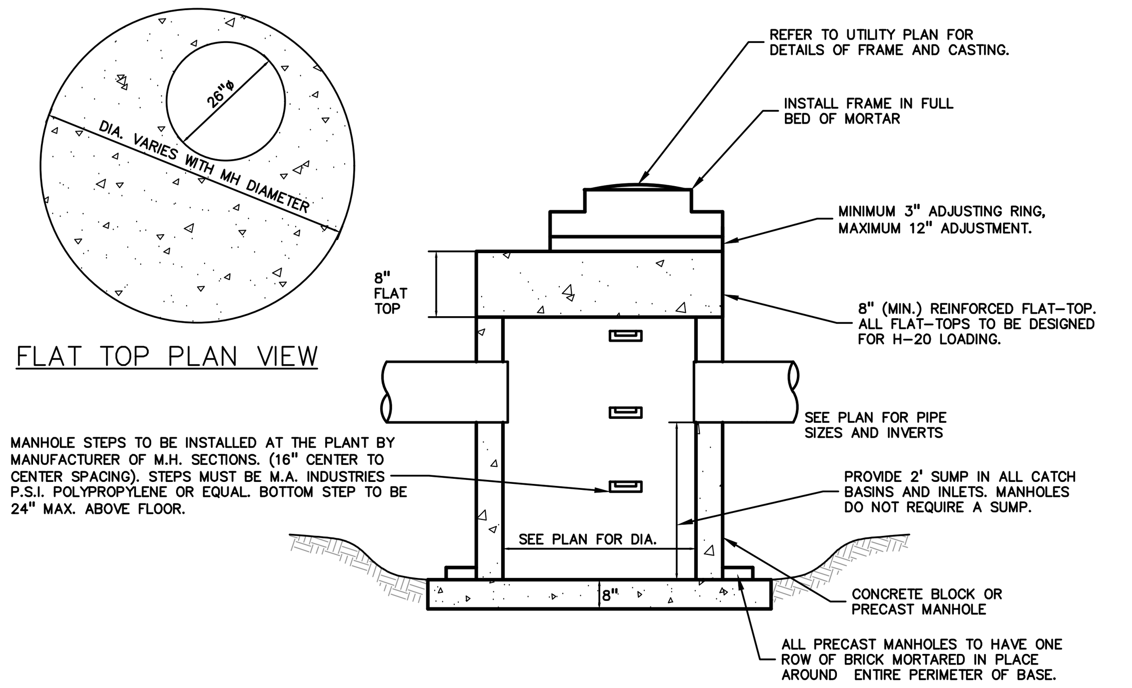
PEA JOB NO. 2016-199

NO SCALE

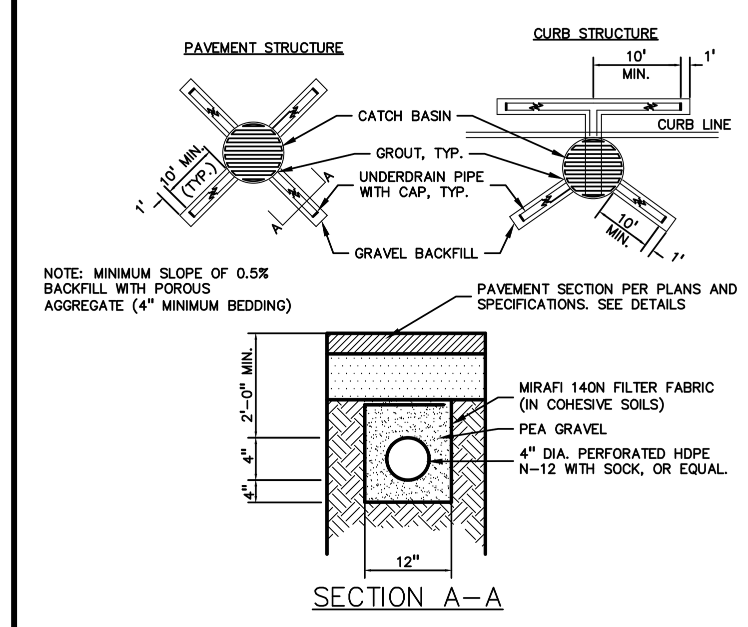
DRAWING NUMBER:
C-9.1



MONITORING MANHOLE DETAIL
NOT TO SCALE

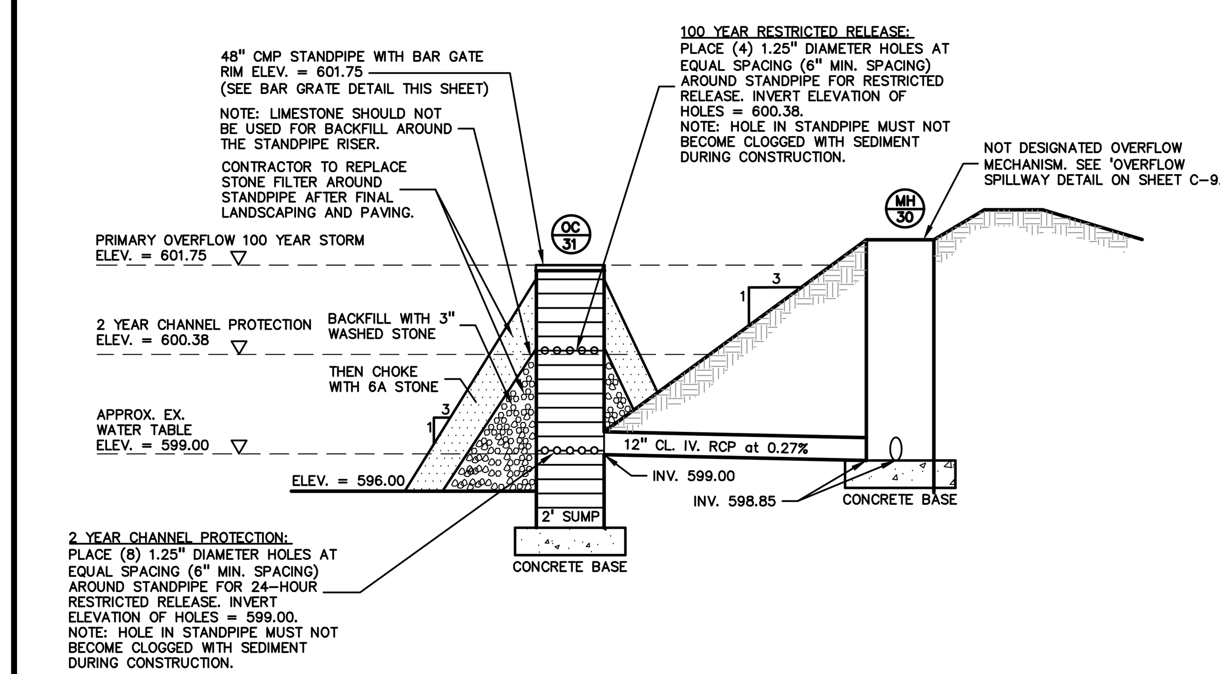


TYPICAL LOW HEAD CATCH BASIN WITH FLAT TOP DETAIL
NOT TO SCALE

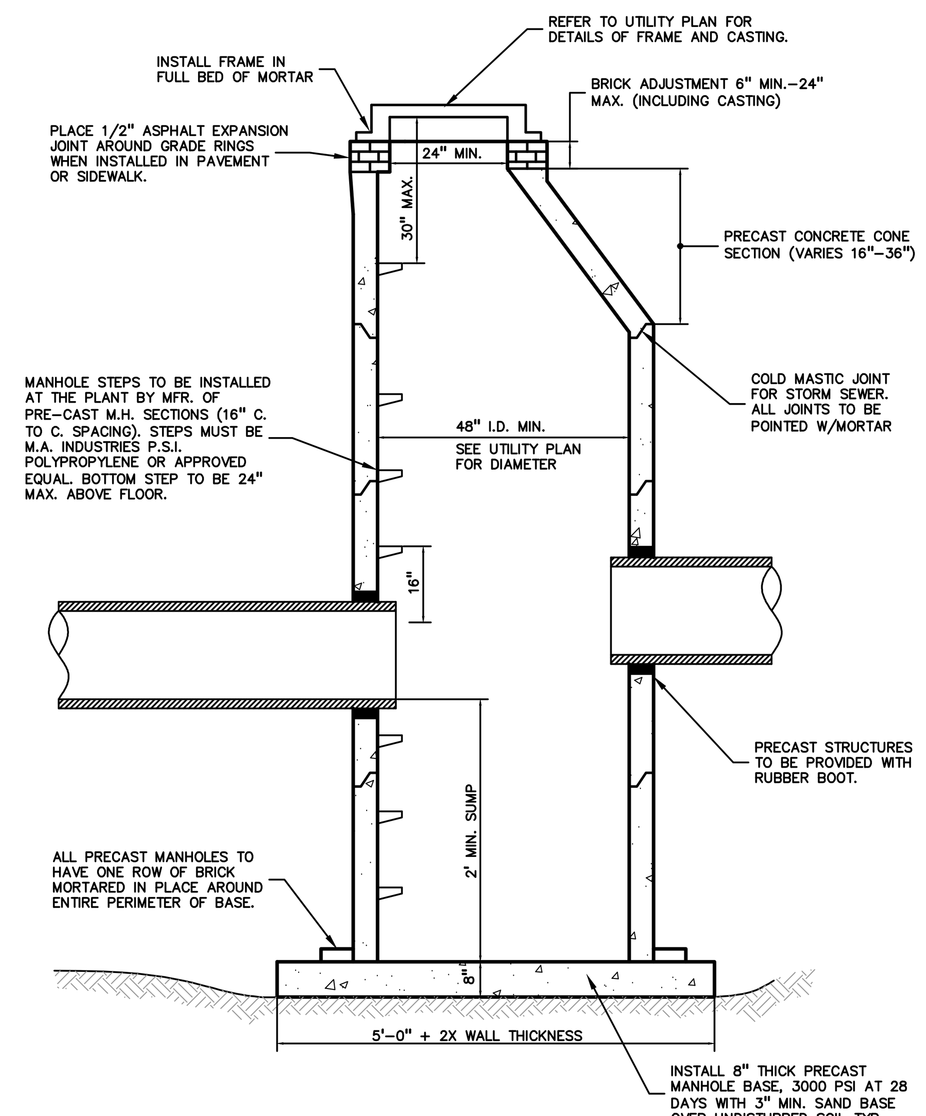


NOTE:
INSTALL 4" DIAMETER PERFORATED HDPE N-12 WITH SOCK, OR EQUAL TO EXTEND 10' FROM STRUCTURE AT ALL CATCH BASINS AS SHOWN ON UTILITY PLAN.

UNDERDRAIN DETAIL
NOT TO SCALE

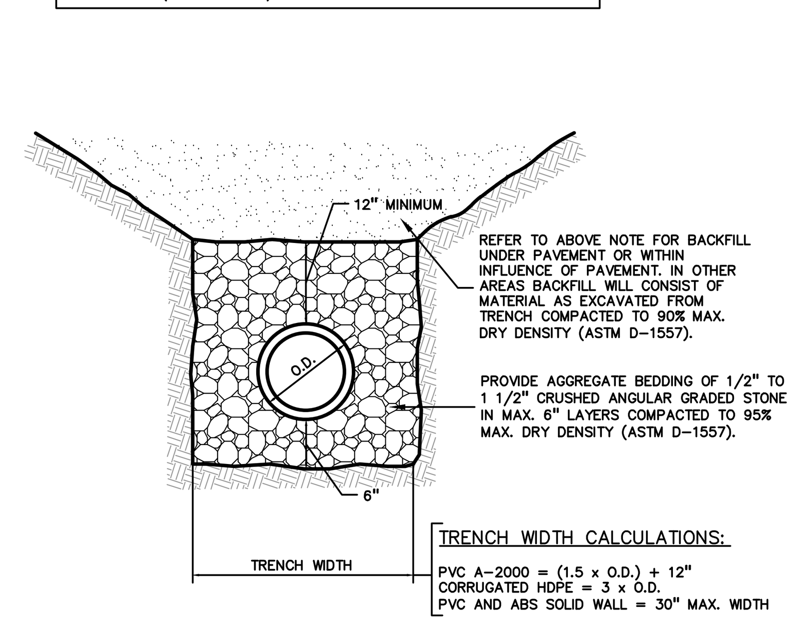


EXTENDED DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE

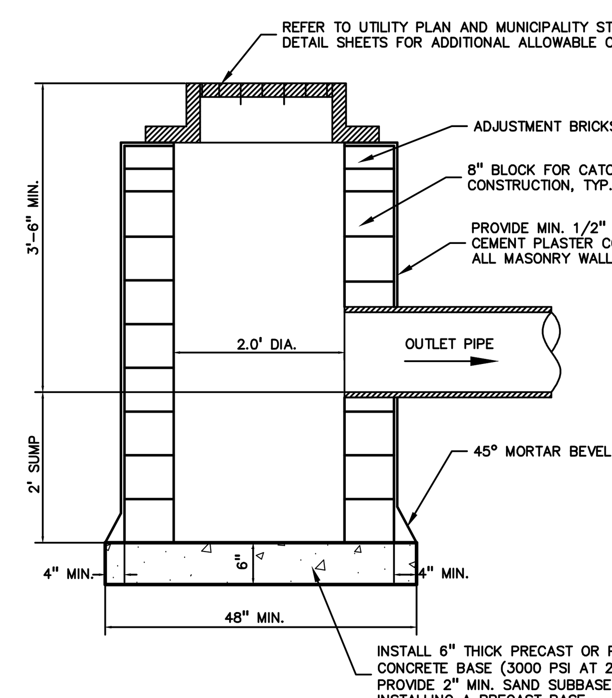


STANDARD CATCH BASIN DETAIL
NOT TO SCALE

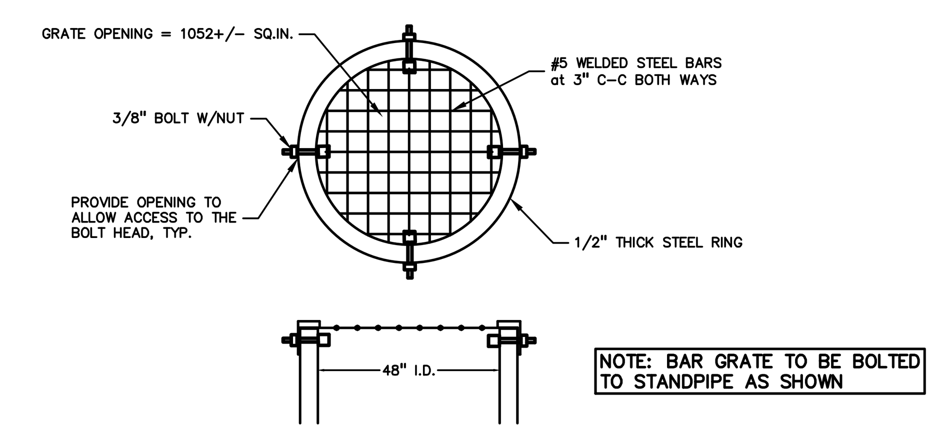
SAND BACKFILL NOTE:
ALL UTILITIES UNDER PAVEMENT OR WITHIN 5' OF THE EDGE OF PAVEMENT (OR WITHIN THE 45° LINE OF INFLUENCE OF PAVEMENT) SHALL HAVE M.D.O.T. CLASS II GRANULAR BACKFILL COMPACTED TO 95% MAX. DRY DENSITY (ASTM D-1557)



STANDARD PIPE BEDDING FOR FLEXIBLE PIPE
NOT TO SCALE



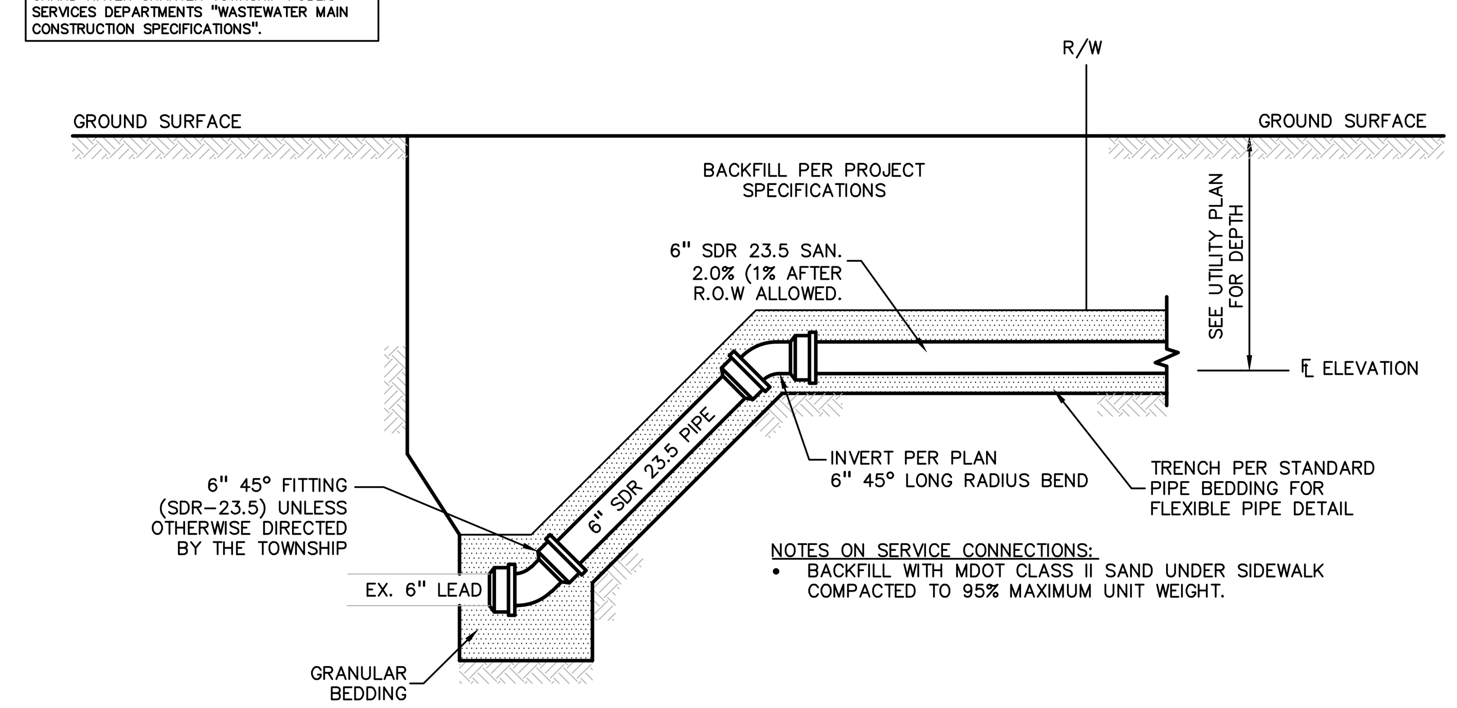
2' DIA. INLET DETAIL
NOT TO SCALE



NOTE: BAR GRATE TO BE BOLTED TO STANDPIPE AS SHOWN

BAR GRATE FOR OUTLET CONTROL STRUCTURE
NOT TO SCALE

SANITARY SEWER RISER NOTE:
THE SANITARY SEWER RISER SHALL MATCH THE REQUIREMENTS AS OUTLINED IN THE GRAND HAVEN CHARTER TOWNSHIP PUBLIC SERVICES DEPARTMENTS "WASTEWATER MAIN CONSTRUCTION SPECIFICATIONS".



SANITARY SEWER RISER DETAIL
NOT TO SCALE

SAND BACKFILL NOTE:
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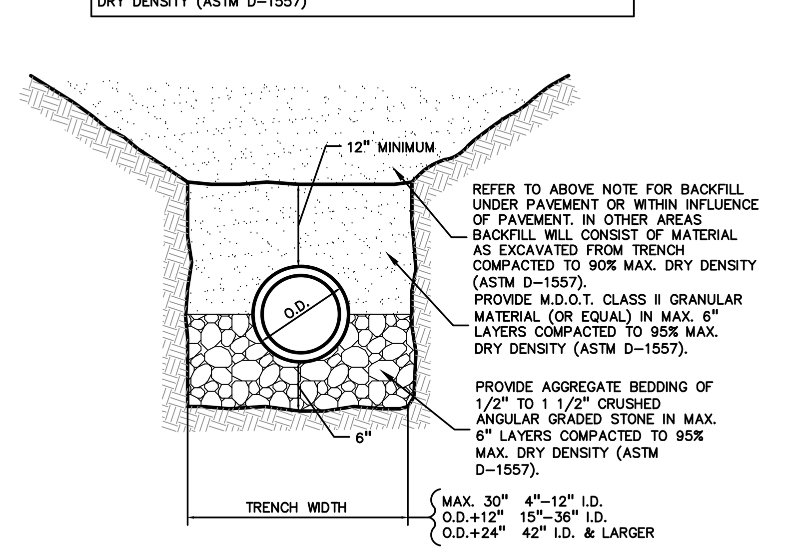
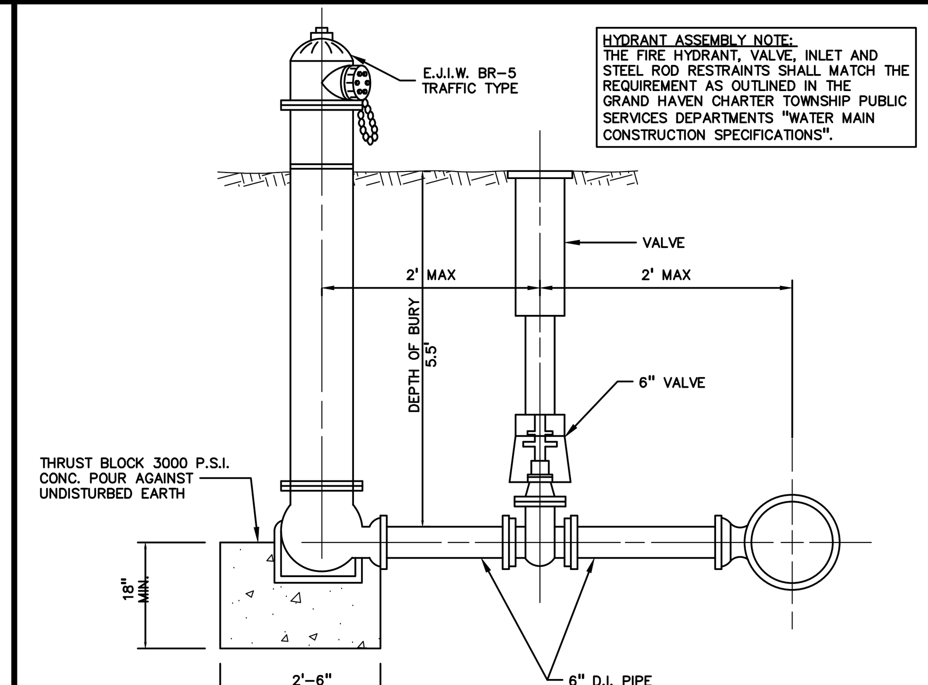


STANDARD PIPE BEDDING FOR RIGID PIPE
NOT TO SCALE

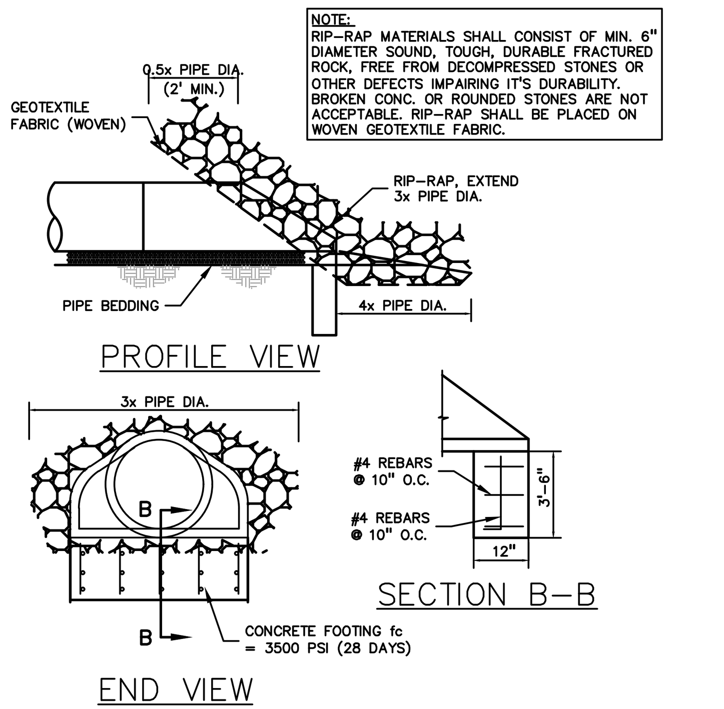
HYDRANT ASSEMBLY NOTE:
THE FIRE HYDRANT, VALVE, INLET AND STEEL ROD RESTRAINTS SHALL MATCH THE REQUIREMENT AS OUTLINED IN THE GRAND HAVEN CHARTER TOWNSHIP PUBLIC SERVICES DEPARTMENTS "WATER MAIN CONSTRUCTION SPECIFICATIONS".



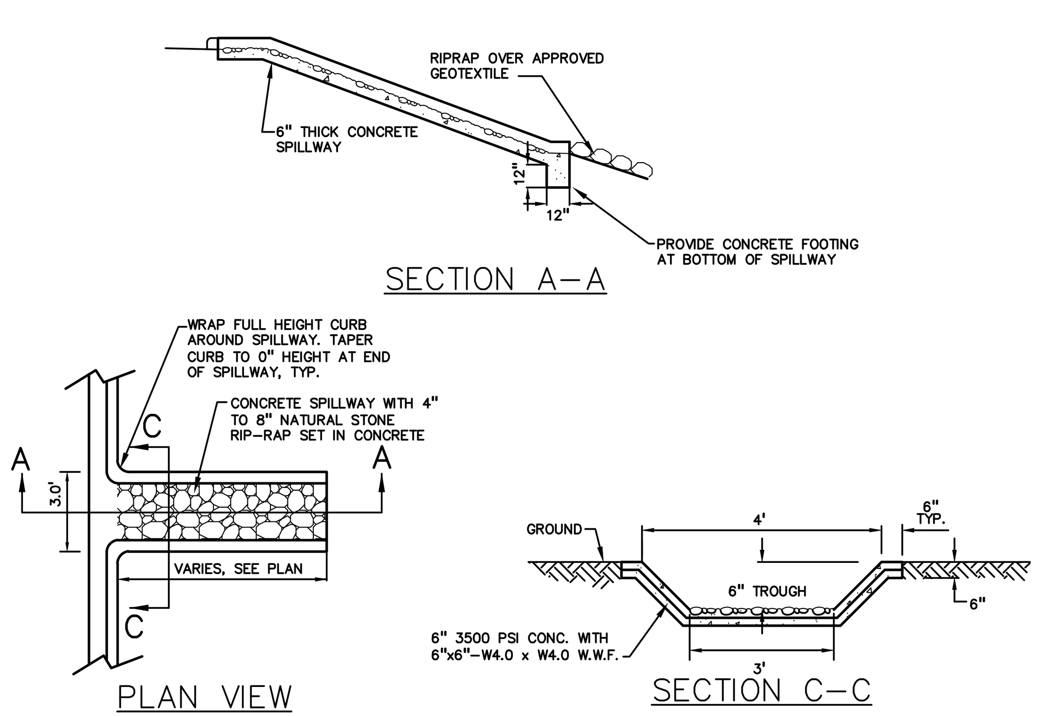
FIRE HYDRANT ASSEMBLY
NOT TO SCALE

NOTE: REFER TO GRAND HAVEN TOWNSHIP PUBLIC SERVICES DEPARTMENT WATER MAIN CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND PIPE RESTRAINTS.

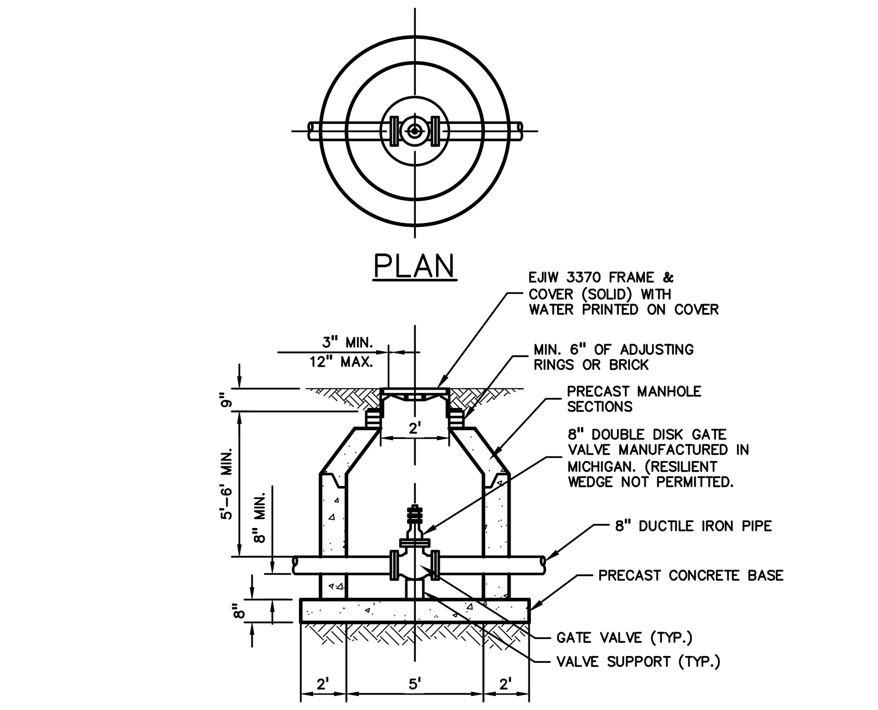
NOTE:
RIP-RAP MATERIALS SHALL CONSIST OF MIN. 6" DIAMETER SOUND, TOUGH, DURABLE FRACTURED ROCK, FREE FROM DECOMPRESSED STONES OR OTHER DEFECTS IMPAIRING IT'S DURABILITY. BROKEN CONC. OR ROUNDED STONES ARE NOT ACCEPTABLE. RIP-RAP SHALL BE PLACED ON WOVEN GEOTEXTILE FABRIC.



END SECTION WITH FOOTING & RIP-RAP
NOT TO SCALE

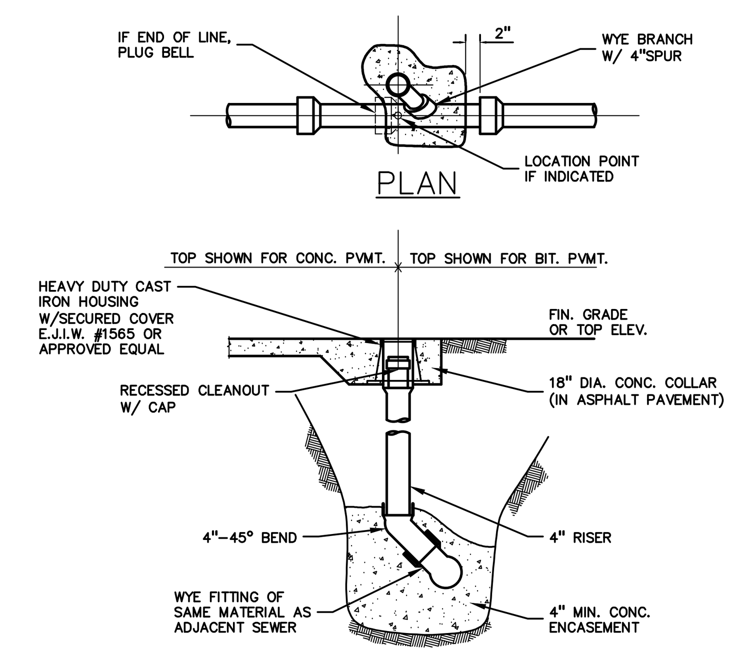


CURB CUT AND SPILLWAY DETAIL



GATE VALVE & WELL MANHOLE DETAIL (PRECAST CONCRETE)
NOT TO SCALE

NOTE: MANHOLES SHALL BE USED IN LIEU OF VALVE BOXES UNLESS OTHERWISE DIRECTED BY GRAND HAVEN TOWNSHIP.



SEWER CLEANOUT
NOT TO SCALE

No.	BY	CHK	DESCRIPTION	DATE
4	SAP		REV. PARCELS & OPEN SPACE	6-29-17
3	RLS		HFES PRELIMINARY	5-10-17
2	RLS		REVISED PER CONSUMERS	4-12-17
1	SP		REVISED SITE PLAN SUBMITTAL	3-15-17

REVISIONS

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CONSTRUCTION DETAILS
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

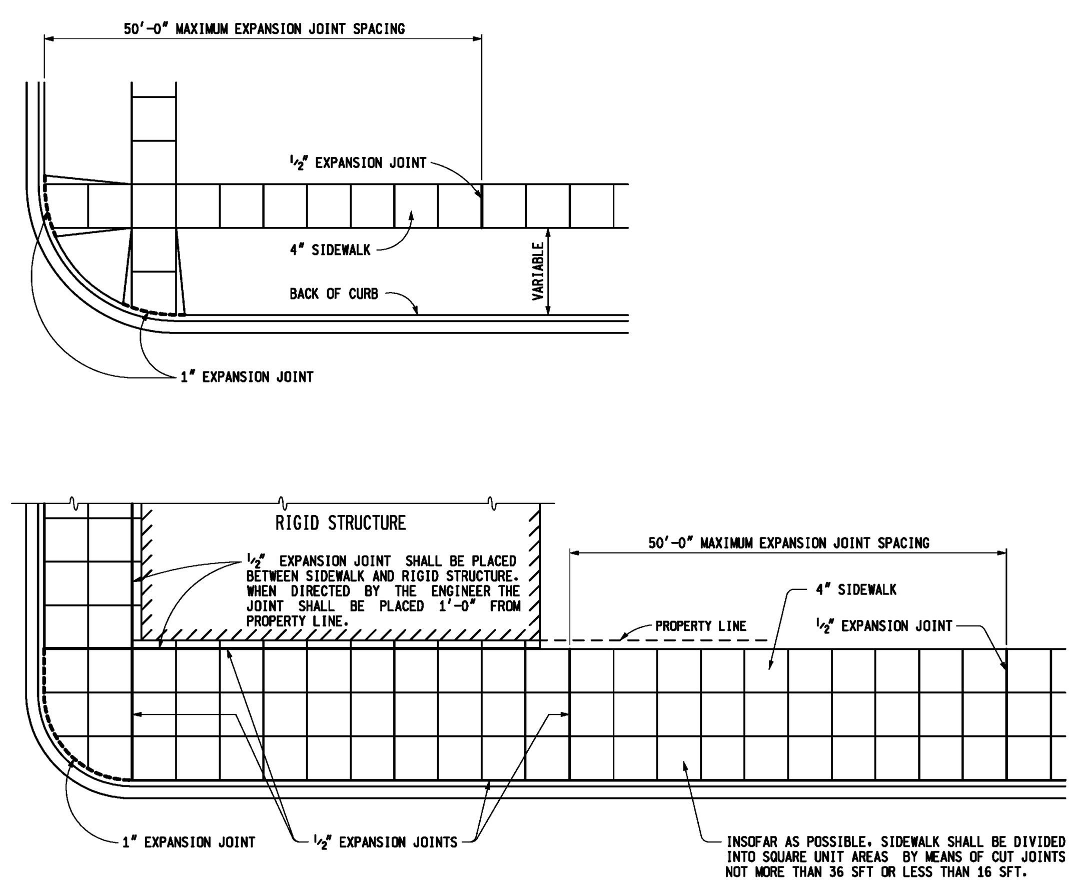
DES.	SP	DN.	SP	SUR.	KTR	P.M.	RLS

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

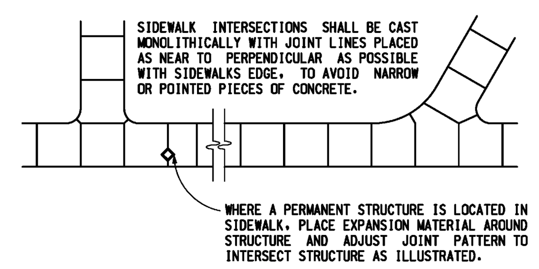
PEA JOB NO. 2016-199

NO SCALE

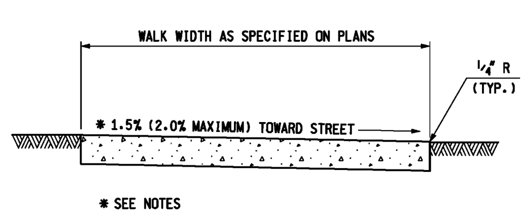
DRAWING NUMBER:
C-10.0



LOCATION OF JOINTS IN CONCRETE SIDEWALK

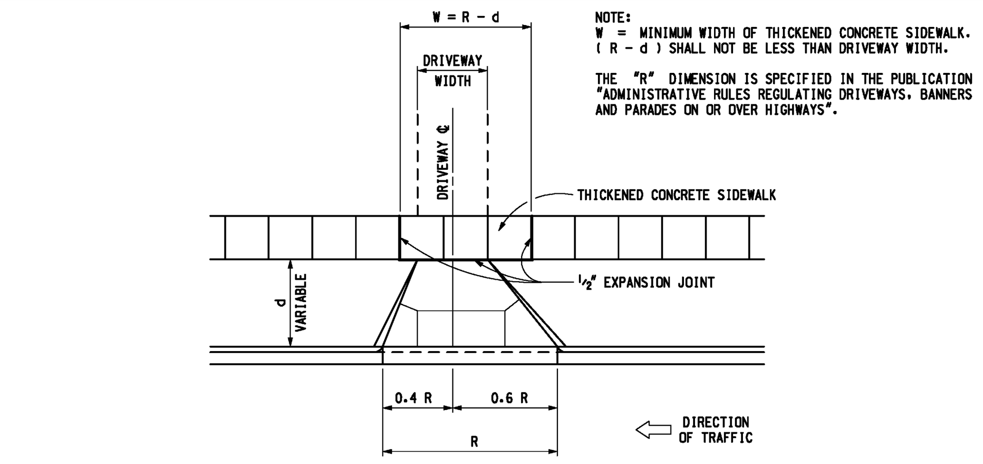


TYPICAL SIDEWALK JOINT LAYOUTS



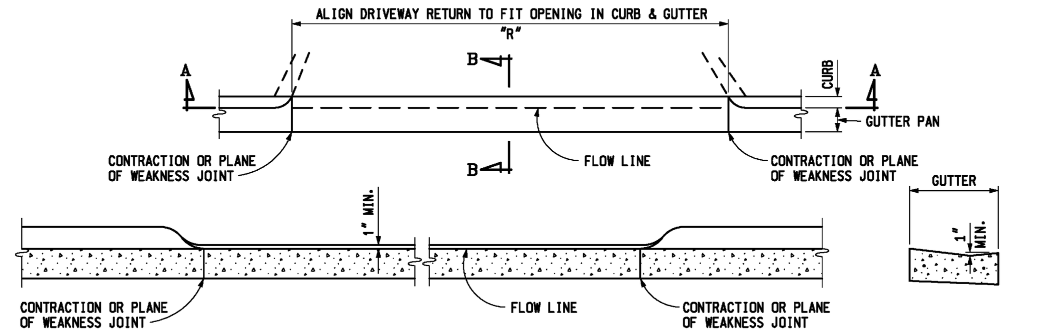
4" CONCRETE SIDEWALK

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

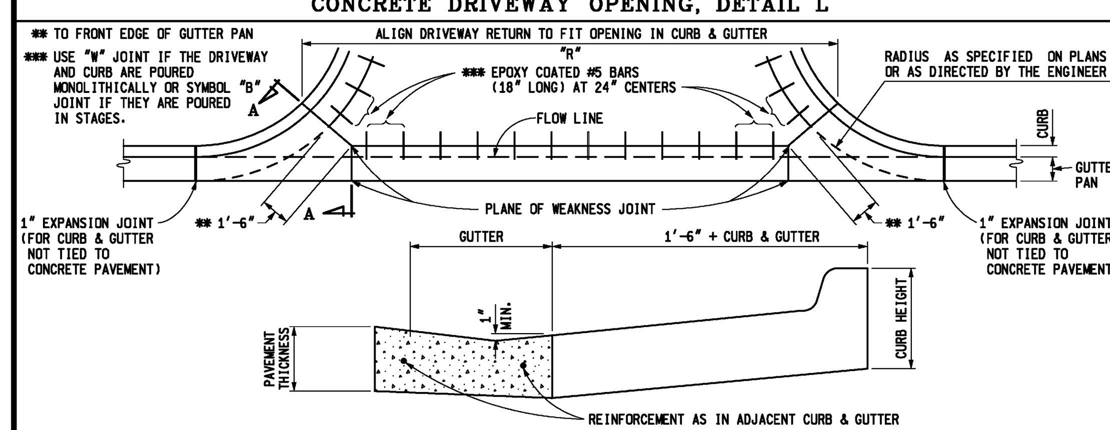


NOTE:
W = MINIMUM WIDTH OF THICKENED CONCRETE SIDEWALK. (R - d) SHALL NOT BE LESS THAN DRIVEWAY WIDTH.
THE "R" DIMENSION IS SPECIFIED IN THE PUBLICATION "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANNERS AND PARADES ON OR OVER HIGHWAYS".

CONCRETE DRIVEWAY OPENING LAYOUT



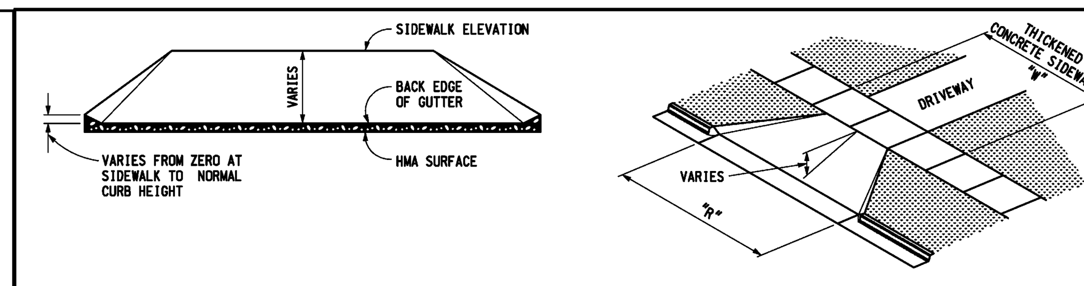
CONCRETE DRIVEWAY OPENING, DETAIL L



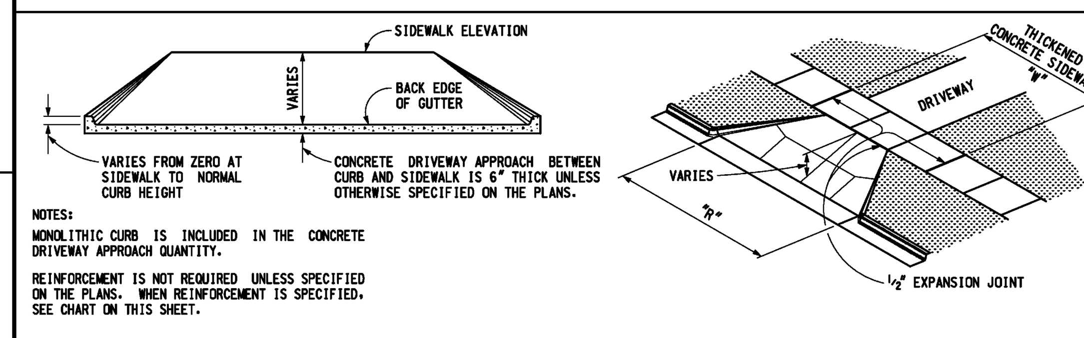
CONCRETE DRIVEWAY OPENING, DETAIL M

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

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

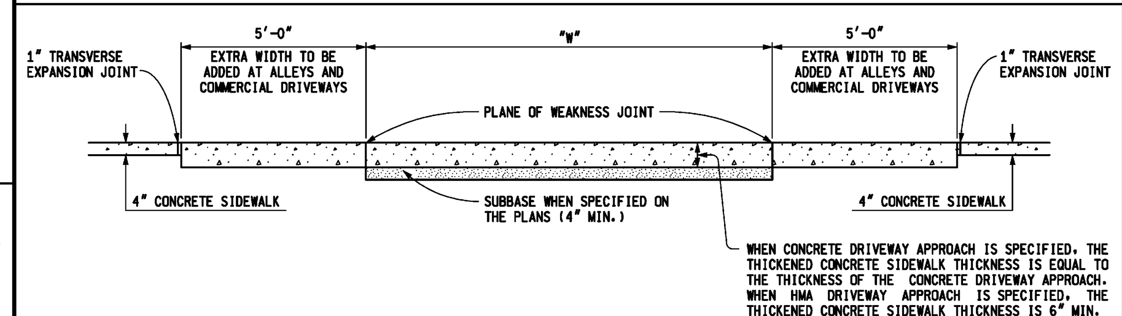


HMA DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L)

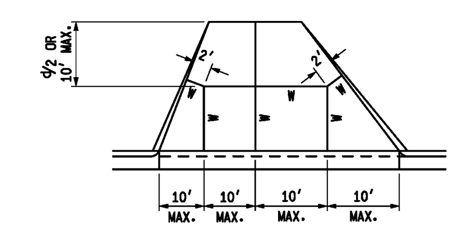


NOTES:
MONOLITHIC CURB IS INCLUDED IN THE CONCRETE DRIVEWAY APPROACH QUANTITY.
REINFORCEMENT IS NOT REQUIRED UNLESS SPECIFIED ON THE PLANS. WHEN REINFORCEMENT IS SPECIFIED, SEE CHART ON THIS SHEET.

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



THICKENED CONCRETE SIDEWALK



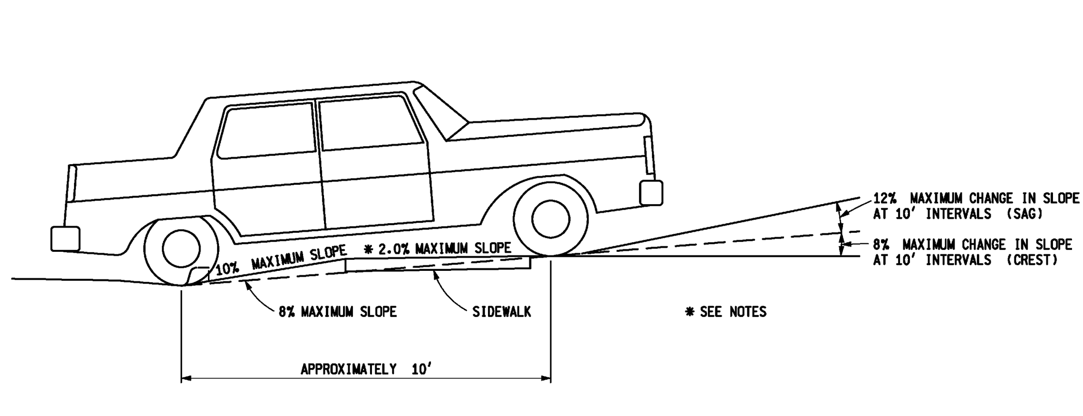
ADJUST DRIVEWAY JOINTS AS NEEDED TO ALIGN WITH ANY COINCIDING TRANSVERSE PAVEMENT JOINTS.

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

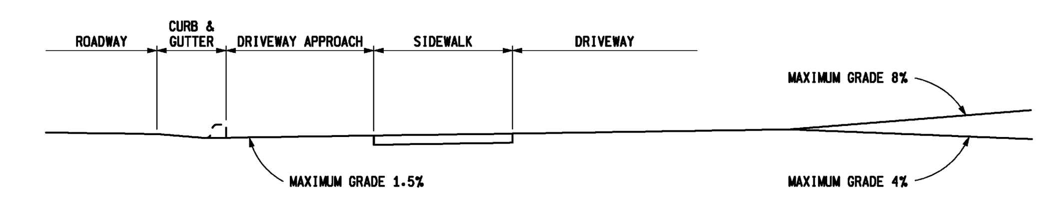
INTERMEDIATE DRIVEWAY JOINT DETAILS

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

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



LOW VOLUME COMMERCIAL OR RESIDENTIAL DRIVEWAY SLOPES



COMMERCIAL DRIVEWAY PROFILE FOR MAJOR TRAFFIC GENERATORS

NOTES:

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

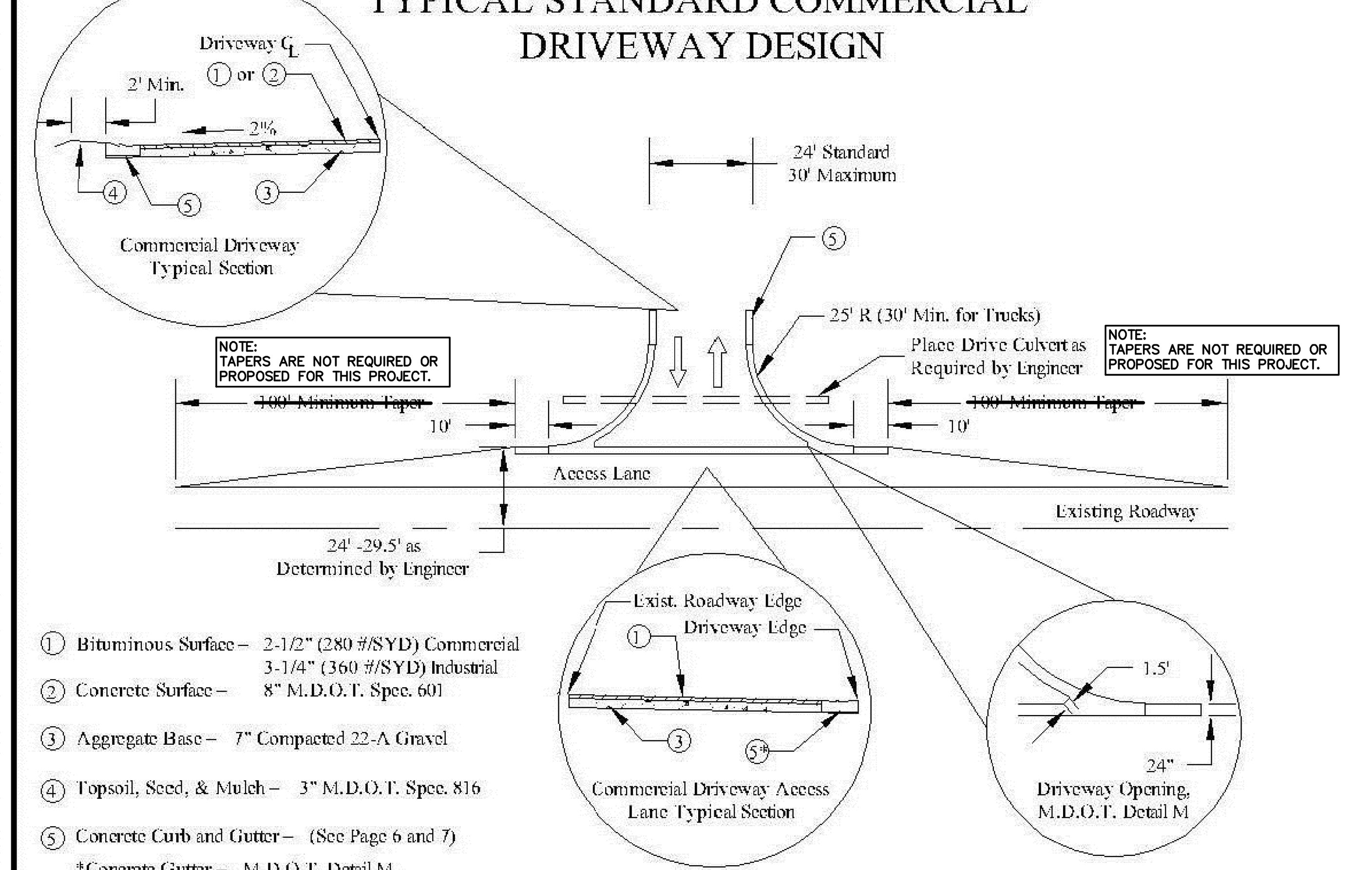
FOR CURB AND GUTTER DETAILS, SEE STANDARD PLAN R-30-SERIES.

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

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

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

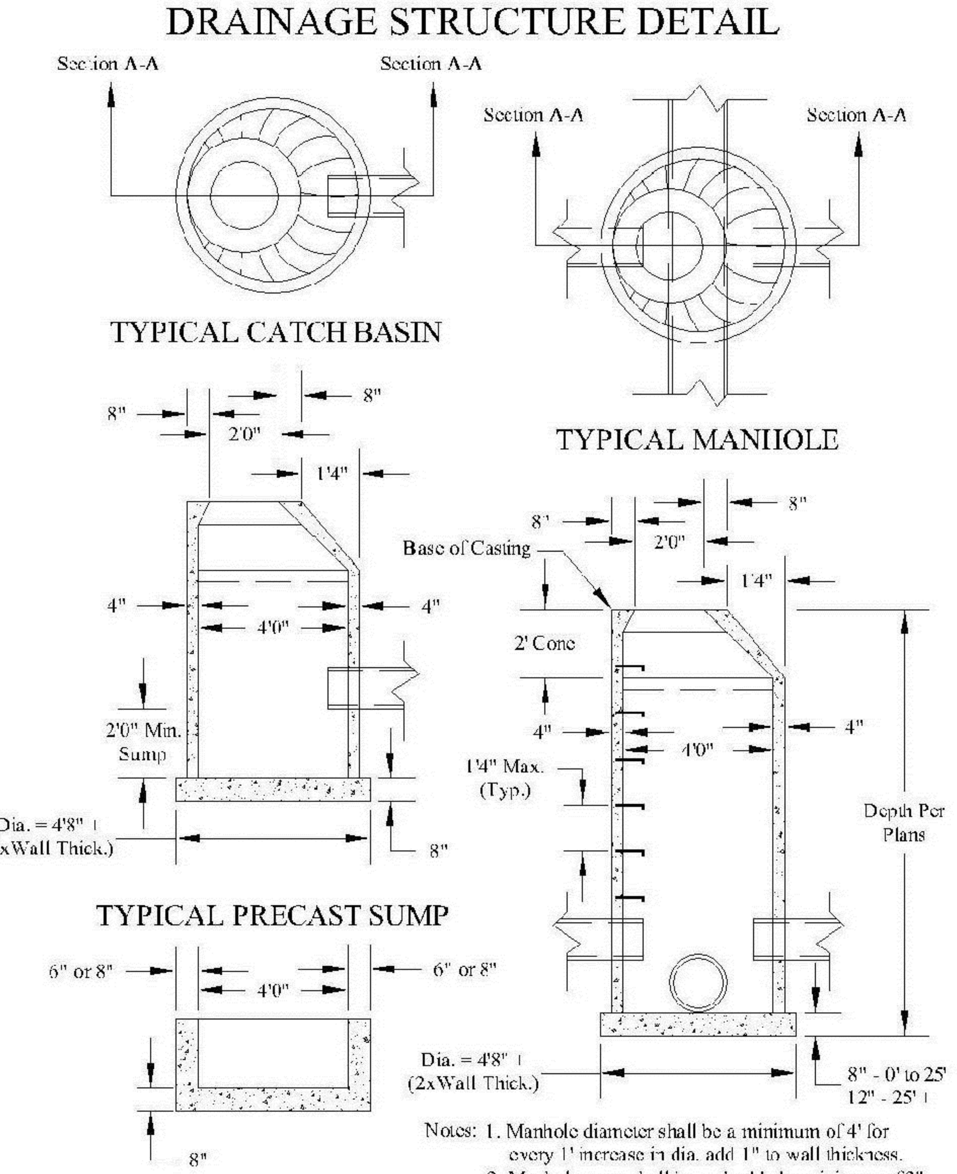
TYPICAL STANDARD COMMERCIAL DRIVEWAY DESIGN



1. Bituminous Surface – 2-1/2" (280 #/SYD) Commercial; 3-1/4" (360 #/SYD) Industrial
2. Concrete Surface – 8" M.D.O.T. Spec. 601
3. Aggregate Base – 7" Compacted 22-A Gravel
4. Topsoil, Seed, & Mulch – 3" M.D.O.T. Spec. 816
5. Concrete Curb and Gutter – (See Page 6 and 7)
*Concrete Gutter – M.D.O.T. Detail M

OTTAWA COUNTY ROAD COMMISSION	DETAIL NO.: 3	REV. NO.: 1	DR. BY: BAL CH. BY: TP	SCALE: NONE DATE: 1-1-04	TYPICAL STANDARD COMMERCIAL DRIVEWAY DESIGN

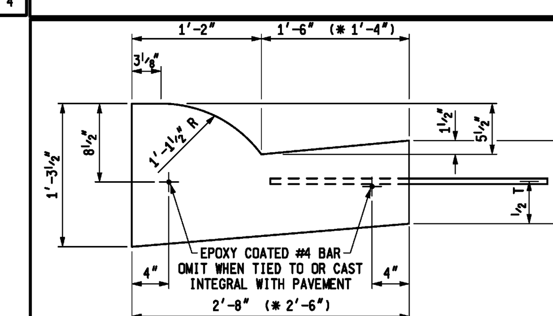
DRAINAGE STRUCTURE DETAIL



Notes:
1. Manhole diameter shall be a minimum of 4' for every 1' increase in dia. add 1" to wall thickness.
2. Manhole steps shall be embedded a minimum of 3" into the wall.
3. Shorter Manhole Cones may be used if approved by engineer.

OTTAWA COUNTY ROAD COMMISSION	DETAIL NO.: 18	REV. NO.:	DR. BY: BAL CH. BY: TP	SCALE: NONE DATE: 11-15-01	DRAINAGE STRUCTURE DETAIL

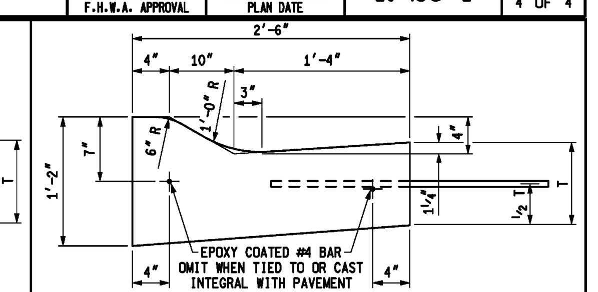
34



(* GUTTER PAN WIDTH MAY BE REDUCED WHEN APPROVED BY THE ENGINEER)

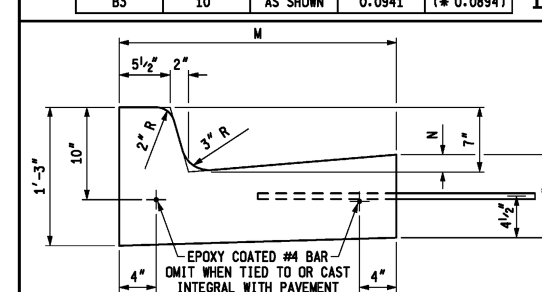
DETAIL	DIMENSION T	LANE TIES	CONCRETE CYD / LFT	CONCRETE CYD / LFT
B1	9"	AS SHOWN	0.0900	(* 0.0855)
B2	9"	OMITTED	0.0900	(* 0.0855)
B3	10"	AS SHOWN	0.0941	(* 0.0894)

B



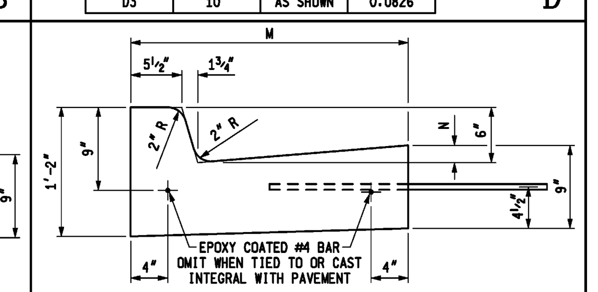
DETAIL	DIMENSION T	LANE TIES	CONCRETE CYD / LFT
D1	9"	AS SHOWN	0.0788
D2	9"	OMITTED	0.0788
D3	10"	AS SHOWN	0.0826

D



DETAIL	DIMENSION M	DIMENSION N	LANE TIES	CONCRETE CYD / LFT
C1	1'-6"	⅞"	AS SHOWN	0.0506
C2	1'-6"	⅞"	OMITTED	0.0506
C3	2'-0"	1⅜"	AS SHOWN	0.0632
C4	2'-0"	1⅜"	OMITTED	0.0632
C5	2'-6"	1⅞"	AS SHOWN	0.0757
C6	2'-6"	1⅞"	OMITTED	0.0757

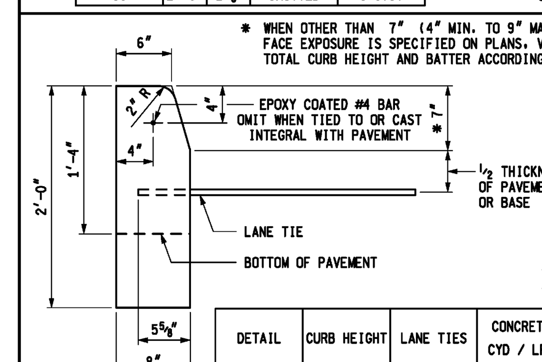
C



DETAIL	DIMENSION M	DIMENSION N	LANE TIES	CONCRETE CYD / LFT
F1	1'-6"	⅞"	AS SHOWN	0.0484
F2	1'-6"	⅞"	OMITTED	0.0484
F3	2'-0"	1⅜"	AS SHOWN	0.0610
F4	2'-0"	1⅜"	OMITTED	0.0610
F5	2'-6"	1⅞"	AS SHOWN	0.0737
F6	2'-6"	1⅞"	OMITTED	0.0737

F

* WHEN OTHER THAN 7" (4" MIN. TO 9" MAX.) FACE EXPOSURE IS SPECIFIED ON PLANS, VARY TOTAL CURB HEIGHT AND BATTER ACCORDINGLY



E

DETAIL	CURB HEIGHT	LANE TIES	CONCRETE CYD / LFT
E1	1'-4"	AS SHOWN	0.0310
E2	1'-4"	OMITTED	0.0310
E4	2'-0"	OMITTED	0.0477

MDOT PREPARED BY DESIGN DIVISION DRAWN BY: B.L.T. CHECKED BY: K.E.P.	DEPARTMENT DIRECTOR Kirk T. Steudle APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES APPROVED BY: DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR CONCRETE CURB AND CONCRETE CURB & GUTTER	
9-30-2014 F.H.W.A. APPROVAL	2-6-2014 PLAN DATE	R-30-G	SHEET 1 OF 2

REVISIONS

No.	BY	CHK	DESCRIPTION	DATE
1	SP		REVISED SITE PLAN SUBMITTAL	4-12-17
2	RLS		REVISED PER CONSUMERS	5-10-17
3	RLS		HFES PRELIMINARY	6-29-17
4	SAP		REV. PARCELS & OPEN SPACE	

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

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CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

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f: 248.689.1044
www.peainc.com

NSA
23761 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335

CONSTRUCTION DETAILS
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES. SP | DN. SP | SUR. KTR | P.M. RLS

S:\PROJECTS\2016\2016-199 CIENA GRAND HAVEN TWP-SAS\Dwg\Construction\(C-10.0) CONST DETAILS-16199.dwg

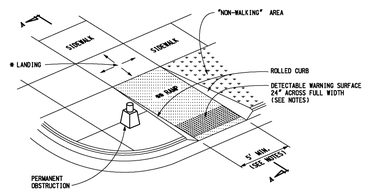
ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

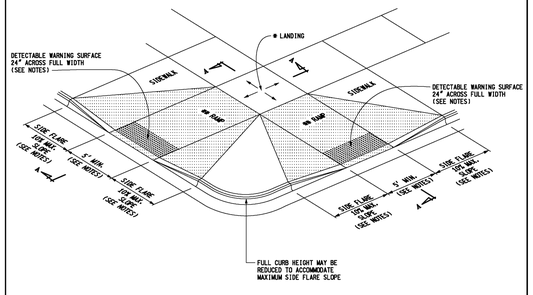
NO SCALE

DRAWING NUMBER:
C-10.1

- ● MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.
- ●● MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% – 7% (8.3% MAXIMUM). SEE NOTES.



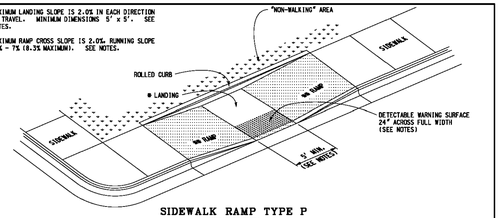
SIDEWALK RAMP TYPE R
(ROLLED SIDES)



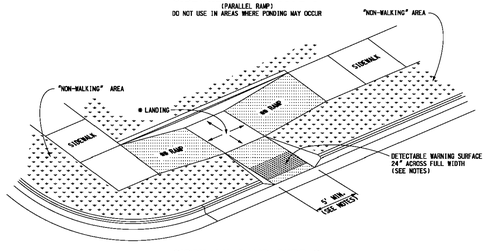
SIDEWALK RAMP TYPE F
(FLARED SIDES. TWO RAMPS SHOWN)

MDOT Michigan Department of Transportation	DEPARTMENT DIRECTOR Kirk T. Steudle	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR	
PREPARED BY DESIGN DIVISION	APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	SIDEWALK RAMP AND DETECTABLE WARNING DETAILS	
DRAWN BY: D.L.T.	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 1 OF 7
CHECKED BY: K.K.F.					

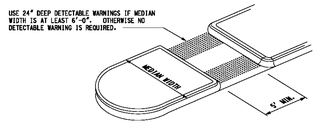
- ● MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.
- ●● MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% – 7% (8.3% MAXIMUM). SEE NOTES.



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

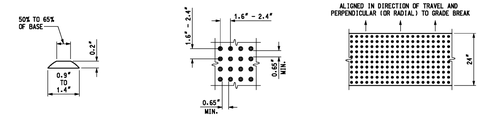


SIDEWALK RAMP TYPE C
(COMBINATION RAMP)



SIDEWALK RAMP TYPE M
(MEDIAN ISLAND)

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR			
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS			
F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 3 OF 7



DOME SECTION | DOME SPACING | DOME ALIGNMENT

DETECTABLE WARNING DETAILS

NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

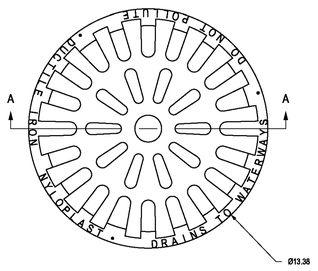
FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY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

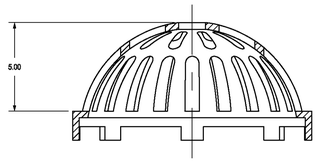
DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR			
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS			
F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 7 OF 7

1299CGD

APPROX. DRAIN AREA = 82.87 SQ IN
APPROX. WEIGHT = 18.50 LBS





SECTION A-A

DIMENSIONS ARE FOR REFERENCE ONLY
ACTUAL DIMENSIONS MAY VARY
DIMENSIONS ARE IN INCHES
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
LOCKING DEVICE AVAILABLE UPON REQUEST

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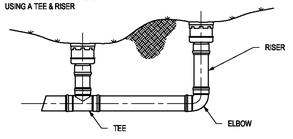
DRAWN BY	EBC	MATERIAL	DUCTILE IRON	Nyloplast 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE	5-5-08			
REVISED BY	EBC	PROJECT NO./NAME		TITLE 12 IN DOME GRATE
DATE	3-10-11			
DWG SIZE	A	SCALE 1:4	SHEET 1 OF 1	DWG NO. 7001-110-296 REV D

WHEN ARE INLINE DRAINS USED?

2708AG __X
2710AG __X
2712AG __X
2715AG __X
2718AG __X
2724AG __X
2730AG __X

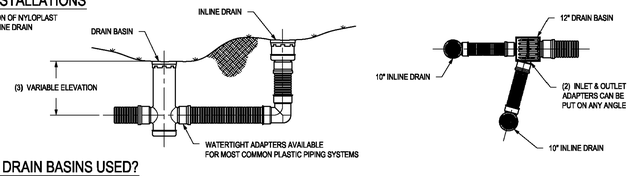
1: TO ENTER AN EXISTING LINE USING A TEE & RISER

2: AT THE BEGINNING OF A DRAIN LINE USING AN ELBOW & RISER



TYPICAL INSTALLATIONS

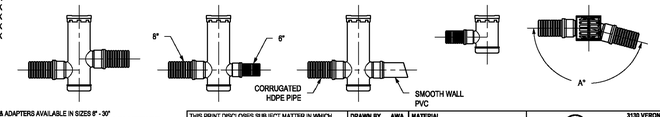
TYPICAL INSTALLATION OF NYLOPLAST DRAIN BASIN AND INLINE DRAIN



WHEN ARE DRAIN BASINS USED?

2808AG __X
2810AG __X
2812AG __X
2815AG __X
2818AG __X
2824AG __X
2830AG __X

1: TO CHANGE ELEVATION
2: TO CHANGE PIPE DIAMETER
3: TO CHANGE PIPE TYPE
4: FOR SHALLOW APPLICATIONS
5: TO CHANGE DIRECTION



1 - STRUCTURES & ADAPTERS AVAILABLE IN SIZES 8" - 30"
2 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°, TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS SEE DRAWING NO. 7001-110-065

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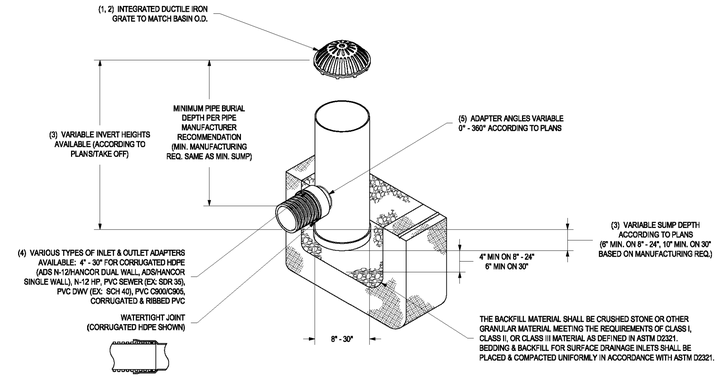
DATE	8-10-09			
REVISED BY	ESC	PROJECT NO./NAME		TITLE 8 IN - 30 IN TYPICAL INSTALLATION OPTIONS
DATE	1-8-10			
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1	DWG NO. 7001-110-042 REV D

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

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DATE	03-25-16			
REVISED BY	NNH	PROJECT NO./NAME		TITLE DRAIN BASIN WITH DOME GRATE QUICK SPEC INSTALLATION DETAIL
DATE	03-11-16			
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1	DWG NO. 7001-110-397 REV D

No.	BY	CHK	DESCRIPTION	DATE
4	SAP	MS	REV. PARCELS & OPEN SPACE	6-29-17
3	RLS	MS	REVISED PER CONSUMERS	5-10-17
2	RLS	SP	REVISED SITE PLAN SUBMITTAL	4-12-17
1	SP			

REVISIONS

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60695
LICENSED PROFESSIONAL ENGINEER

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CONSTRUCTION DETAILS
REGENCY AT GRAND HAVEN TWP.
PART OF THE SW 1/4 OF THE NE 1/4 SECTION 33, T.8N, R.16W
GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN

DES. SP | DN. SP | SUR. KTR | P.M. RLS

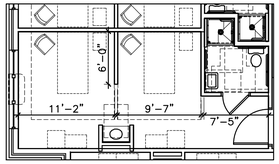
S:\PROJECTS\2016\2016-199 GRAND HAVEN TWP-SAS\Dwg\Construction\(C-10.0) CONST DETAILS-161199.dwg

ORIGINAL ISSUE DATE:
FEBRUARY 7, 2017

PEA JOB NO. 2016-199

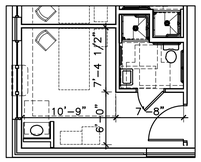
NO SCALE

DRAWING NUMBER:
C-10.2



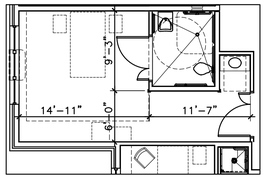
TYPICAL SEMI-PRIVATE ROOM

SCALE: NTS



TYPICAL PRIVATE ROOM

SCALE: NTS



TYPICAL BARIATRIC ROOM

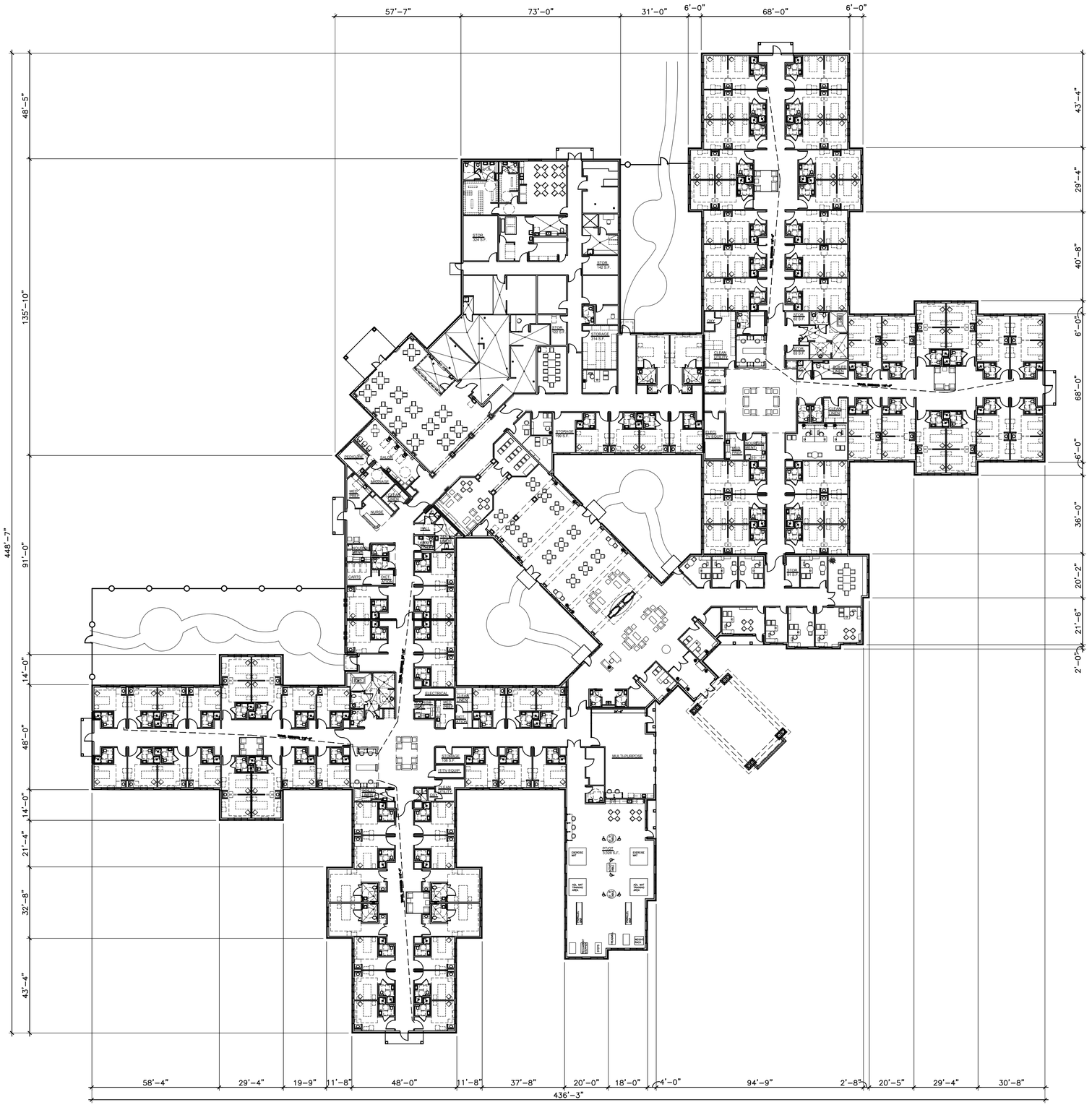
SCALE: NTS

BUILDING SQUARE FOOTAGE

TOTAL BUILDING AREA: 73,796 SF

38 PRIVATE ROOMS:	38 BEDS
6 PRIVATE BARIATRIC ROOMS:	6 BEDS
38 SEMI-PRIVATE ROOMS:	76 BEDS
TOTAL:	120 BEDS

PRIVATE ROOM: GROSS: +/-246 SQ.FT. (+/-238 NET SQ.FT.)
BARIATRIC ROOM: GROSS: +/-382 SQ.FT. (+/-359 NET SQ.FT.)
SEMI-PRIVATE ROOM: GROSS: +/-382 SQ.FT. (+/-370 NET SQ.FT.)



OVERALL FLOOR PLAN

SCALE: NTS

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Client:
GRAND HAVEN
SENIOR LEASING,
L.L.C.
SOUTHFIELD MICHIGAN

Project Title:
REGENCY AT
GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
11-11-16	PRE-APPLICATION SUBMITTAL
02-03-17	FINAL SITE PLAN SUBMITTAL
04-12-17	REVISED SITE PLAN SUBMITTAL
06-16-17	HFES PRELIMINARY
06-29-17	REVISED SITE PLAN SUBMITTAL

Drawn: Designed:
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CAD Drawing File:

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Project Number: 216212.00

Sheet Title:
OVERALL FLOOR PLAN

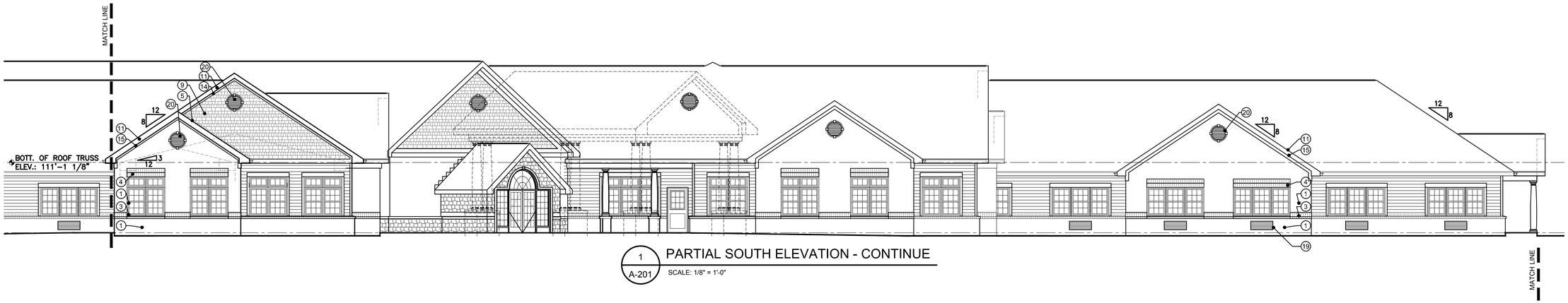
Sheet Number: A-100

EXTERIOR MATERIAL CALCULATION		
ELEVATION	BRICK/STONE	SIDING/CEDAR
SOUTH ELEVATION	60%	40%
EAST ELEVATION	72%	28%

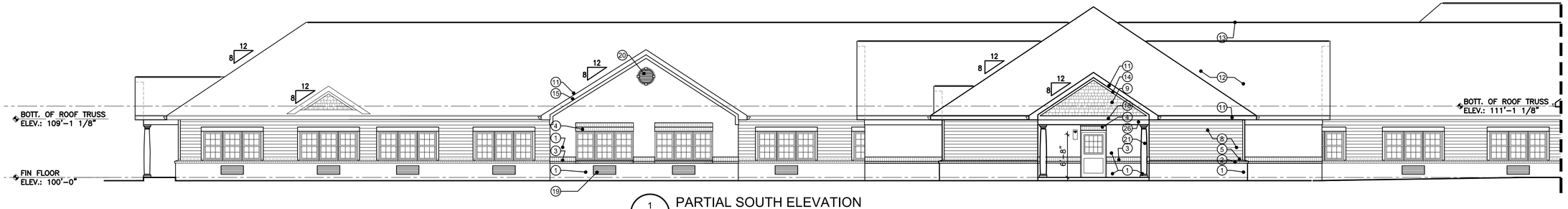
ELEVATION KEYNOTES

1. BRICK VENEER
2. BRICK ROWLOCK SILL (AND/OR BRICK VERTICAL ROWLOCK)
3. SOLDIER COURSE – ACCENT COLOR
4. DOUBLE SOLDIER COURSE – ACCENT COLOR
5. FLASHING
6. FAUX STONE VENEER
7. PRE–CAST CONC. SILL/WATER BAND
8. VINYL SIDING 1 (HORIZ. SIDING)
9. VINYL SIDING 2 (SHAKE SIDING)
10. VINYL CORNER TRIM (INSIDE & OUTSIDE – MATCH SIDING COLOR)
11. ALUMINUM CLAD FASCIA OR RAKE
12. ROOF SHINGLES
13. CONTINUOUS RIDGE VENT
14. 1x4 CELLULAR PVC TRIM BD.
15. 1x6 CELLULAR PVC TRIM BD.
16. 1x8 CELLULAR PVC TRIM BD.
17. 1x10 CELLULAR PVC TRIM BD.
18. 4" FAUX STONE TRIM SURROUND
19. PTAC UNIT
20. PREMANUFACTURED 30" RND. DECORATIVE LOUVER
21. PREMANUFACTURED 10" OR 18" RND. COLUMN COVER
22. RAKED CONTROL JOINT
23. KNOX BOX – LOCATION PER FIRE DEPARTMENT
24. FIRE DEPARTMENT CONNECTION
25. ALUMINUM GUTTERS AND DOWNSPOUTS
26. ALUMINUM CLAD FRIEZE
27. FAUX LIMESTONE SURROUND, KEY STONE AND SILL

NOTE:
CONTROL JOINTS @ 20'–0" O.C. MAX.



1 A-201 PARTIAL SOUTH ELEVATION - CONTINUE
SCALE: 1/8" = 1'-0"



1 A-201 PARTIAL SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

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NO. 38758
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SOUTHFIELD MICHIGAN

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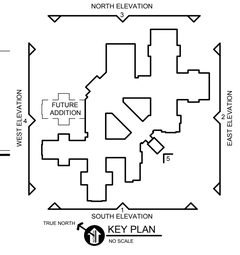

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Sheet Title:
EXTERIOR ELEVATIONS

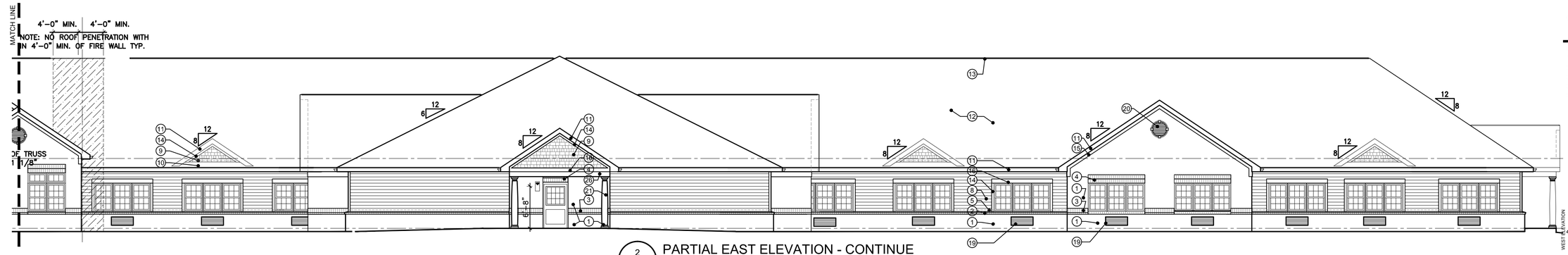
Sheet Number: A-201

EXTERIOR MATERIAL CALCULATION		
ELEVATION	BRICK/STONE	SIDING/CEDAR
SOUTH ELEVATION	60%	40%
EAST ELEVATION	72%	28%

ELEVATION KEYNOTES

1. BRICK VENEER
2. BRICK ROWLOCK SILL (AND/OR BRICK VERTICAL ROWLOCK)
3. SOLDIER COURSE – ACCENT COLOR
4. DOUBLE SOLDIER COURSE – ACCENT COLOR
5. FLASHING
6. FAUX STONE VENEER
7. PRE-CAST CONC. SILL/WATER BAND
8. VINYL SIDING 1 (HORIZ. SIDING)
9. VINYL SIDING 2 (SHAKE SIDING)
10. VINYL CORNER TRIM (INSIDE & OUTSIDE – MATCH SIDING COLOR)
11. ALUMINUM CLAD FASCIA OR RAKE
12. ROOF SHINGLES
13. CONTINUOUS RIDGE VENT
14. 1x4 CELLULAR PVC TRIM BD.
15. 1x6 CELLULAR PVC TRIM BD.
16. 1x8 CELLULAR PVC TRIM BD.
17. 1x10 CELLULAR PVC TRIM BD.
18. 4" FAUX STONE TRIM SURROUND
19. PTAC UNIT
20. PREMANUFACTURED 30" RND. DECORATIVE LOUVER
21. PREMANUFACTURED 10" OR 18" RND. COLUMN COVER
22. RAKED CONTROL JOINT
23. KNOX BOX – LOCATION PER FIRE DEPARTMENT
24. FIRE DEPARTMENT CONNECTION
25. ALUMINUM GUTTERS AND DOWNSPOUTS
26. ALUMINUM CLAD FRIEZE
27. FAUX LIMESTONE SURROUND, KEY STONE AND SILL

NOTE:
CONTROL JOINTS @ 20'-0" O.C. MAX.



2 / A-202 PARTIAL EAST ELEVATION - CONTINUE

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

2 / A-202 PARTIAL EAST ELEVATION

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

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GRAND HAVEN TWP. MICHIGAN

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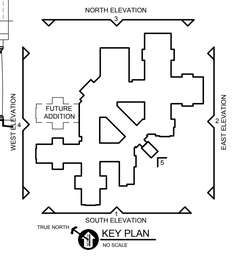
06-29-17	REVISED SITE PLAN SUBMITTAL



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Project Number: 216212.00

Sheet Title:

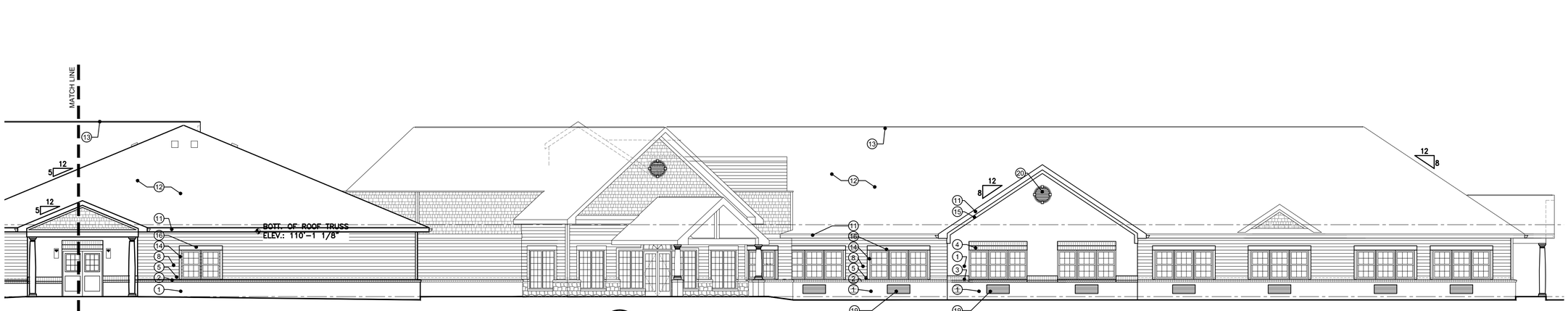
EXTERIOR ELEVATIONS

Sheet Number: A-202

ELEVATION KEYNOTES

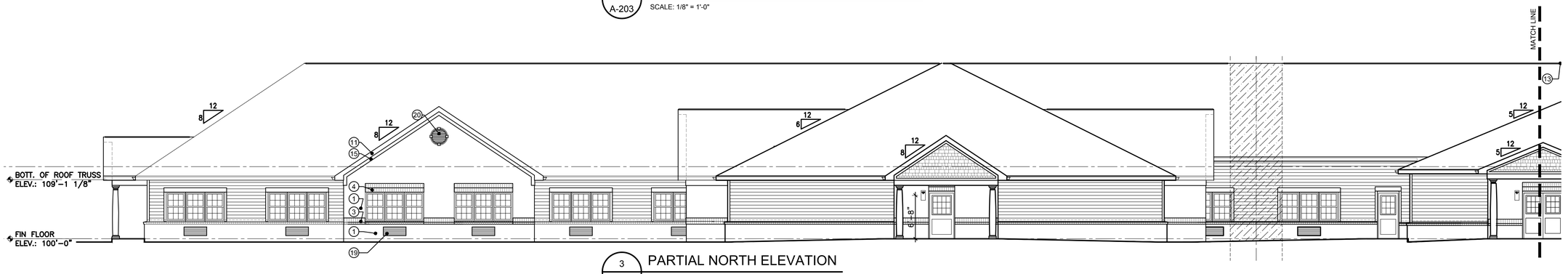
1. BRICK VENEER
2. BRICK ROWLOCK SILL (AND/OR BRICK VERTICAL ROWLOCK)
3. SOLDIER COURSE – ACCENT COLOR
4. DOUBLE SOLDIER COURSE – ACCENT COLOR
5. FLASHING
6. FAUX STONE VENEER
7. PRE-CAST CONC. SILL/WATER BAND
8. VINYL SIDING 1 (HORIZ. SIDING)
9. VINYL SIDING 2 (SHAKE SIDING)
10. VINYL CORNER TRIM (INSIDE & OUTSIDE – MATCH SIDING COLOR)
11. ALUMINUM CLAD FASCIA OR RAKE
12. ROOF SHINGLES
13. CONTINUOUS RIDGE VENT
14. 1x4 CELLULAR PVC TRIM BD.
15. 1x6 CELLULAR PVC TRIM BD.
16. 1x8 CELLULAR PVC TRIM BD.
17. 1x10 CELLULAR PVC TRIM BD.
18. 4" FAUX STONE TRIM SURROUND
19. PTAC UNIT
20. PREMANUFACTURED 30" RND. DECORATIVE LOUVER
21. PREMANUFACTURED 10" OR 18" RND. COLUMN COVER
22. RAKED CONTROL JOINT
23. KNOX BOX – LOCATION PER FIRE DEPARTMENT
24. FIRE DEPARTMENT CONNECTION
25. ALUMINUM GUTTERS AND DOWNSPOUTS
26. ALUMINUM CLAD FRIEZE
27. FAUX LIMESTONE SURROUND, KEY STONE AND SILL

NOTE:
CONTROL JOINTS @ 20'-0" O.C. MAX.



3 / A-203 PARTIAL NORTH ELEVATION - CONTINUE

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



3 / A-203 PARTIAL NORTH ELEVATION

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

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Client:

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SOUTHFIELD MICHIGAN

Project Title:

REGENCY AT GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

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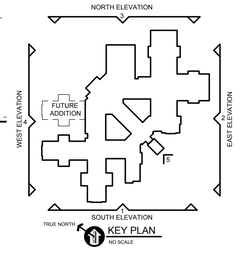

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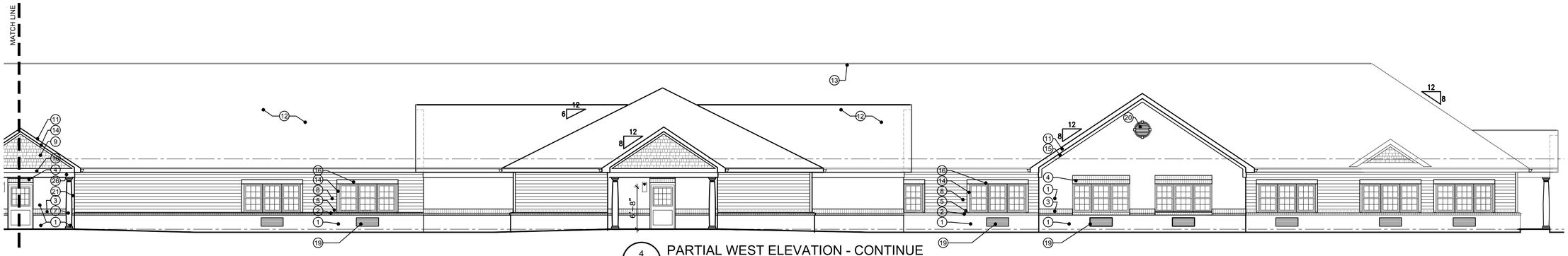
Sheet Title:
EXTERIOR ELEVATIONS

Sheet Number: A-203

ELEVATION KEYNOTES

1. BRICK VENEER
2. BRICK ROWLOCK SILL (AND/OR BRICK VERTICAL ROWLOCK)
3. SOLDIER COURSE – ACCENT COLOR
4. DOUBLE SOLDIER COURSE – ACCENT COLOR
5. FLASHING
6. FAUX STONE VENEER
7. PRE-CAST CONC. SILL/WATER BAND
8. VINYL SIDING 1 (HORIZ. SIDING)
9. VINYL SIDING 2 (SHAKE SIDING)
10. VINYL CORNER TRIM (INSIDE & OUTSIDE – MATCH SIDING COLOR)
11. ALUMINUM CLAD FASCIA OR RAKE
12. ROOF SHINGLES
13. CONTINUOUS RIDGE VENT
14. 1x4 CELLULAR PVC TRIM BD.
15. 1x6 CELLULAR PVC TRIM BD.
16. 1x8 CELLULAR PVC TRIM BD.
17. 1x10 CELLULAR PVC TRIM BD.
18. 4" FAUX STONE TRIM SURROUND
19. PTAC UNIT
20. PREMANUFACTURED 30" RND. DECORATIVE LOUVER
21. PREMANUFACTURED 10" OR 18" RND. COLUMN COVER
22. RAKED CONTROL JOINT
23. KNOX BOX – LOCATION PER FIRE DEPARTMENT
24. FIRE DEPARTMENT CONNECTION
25. ALUMINUM GUTTERS AND DOWNSPOUTS
26. ALUMINUM CLAD FRIEZE
27. FAUX LIMESTONE SURROUND, KEY STONE AND SILL

NOTE:
CONTROL JOINTS @ 20'-0" O.C. MAX.



4 / A-204 PARTIAL WEST ELEVATION - CONTINUE
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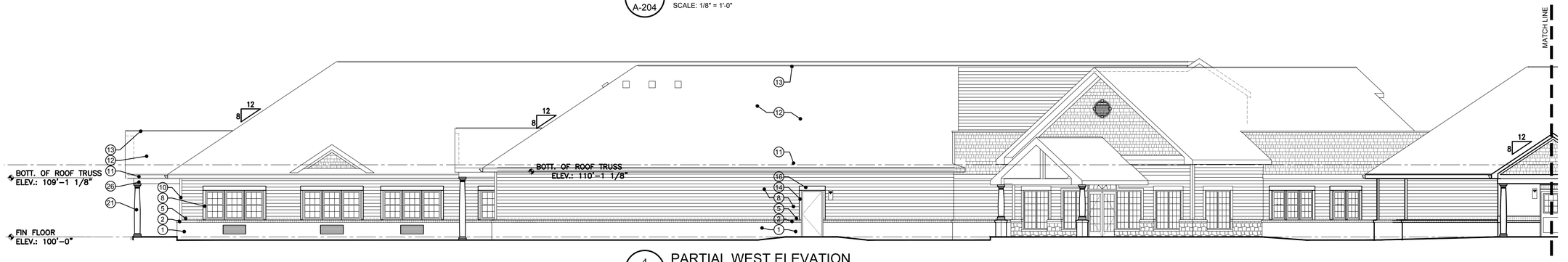

4 / A-204 PARTIAL WEST ELEVATION
SCALE: 1/8" = 1'-0"

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LICENSED ARCHITECT

Client:

GRAND HAVEN SENIOR LEASING, L.L.C.

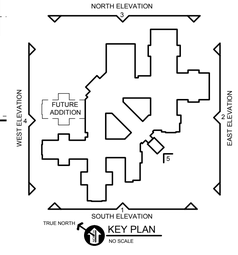
SOUTHFIELD MICHIGAN

Project Title:

REGENCY AT GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
11-11-16	PRE-APPLICATION SUBMITTAL
02-03-17	FINAL SITE PLAN SUBMITTAL
04-12-17	REVISED SITE PLAN SUBMITTAL
06-16-17	HFES PRELIMINARY
06-29-17	REVISED SITE PLAN SUBMITTAL



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CAD Drawing File:

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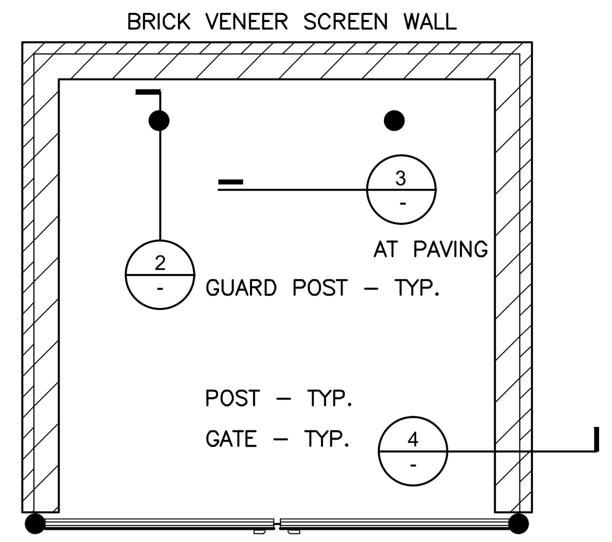
Project Number: 216212.00

Sheet Title: EXTERIOR ELEVATIONS

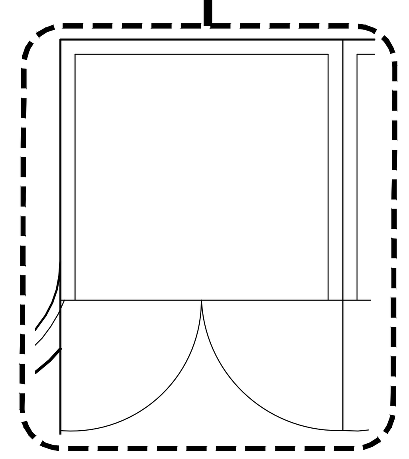
Sheet Number: A-204



1

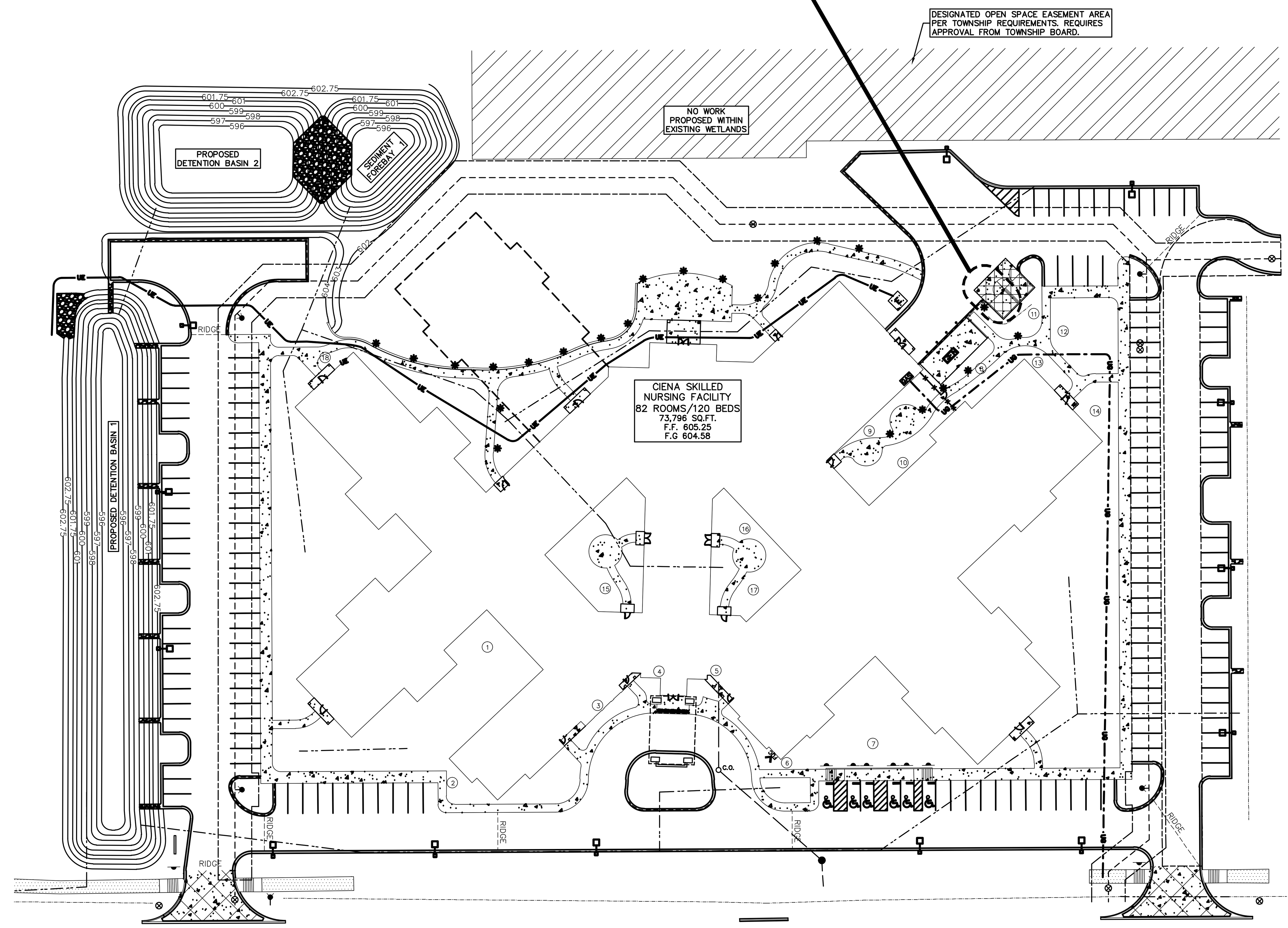
DUMPSTER ENCLOSURE PLAN

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



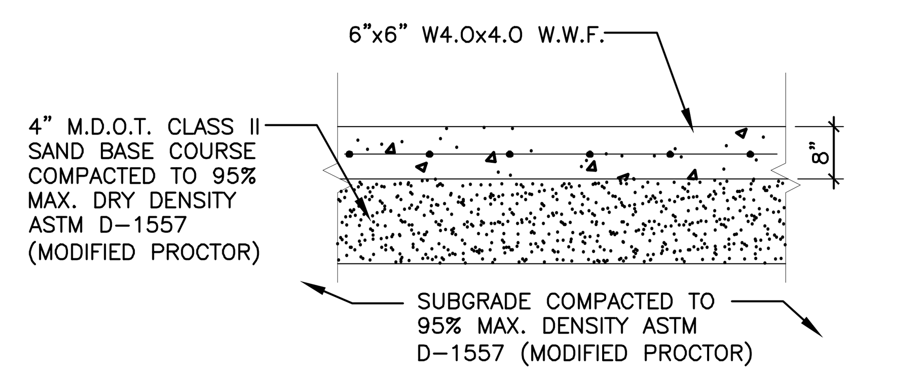
ENLARGED DUMPSTER ENCLOSURE

SCALE: N.T.S.



ARCHITECTURAL SITE PLAN

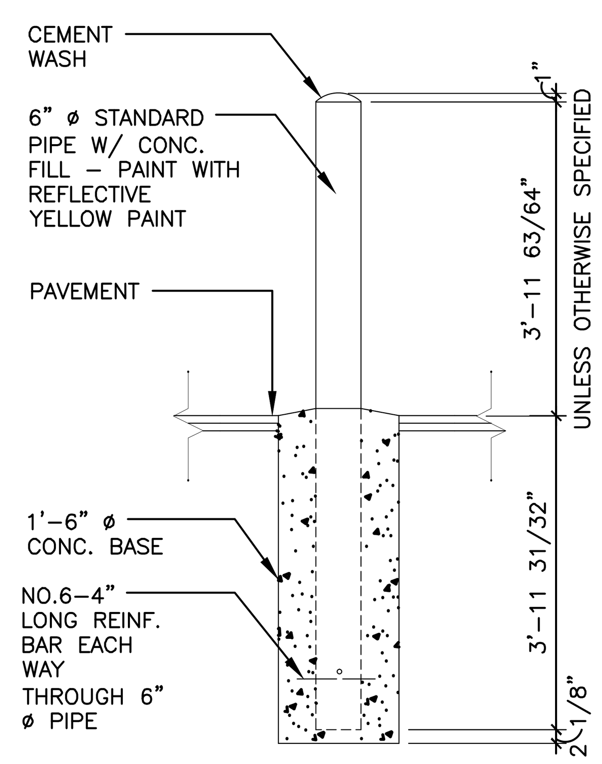
SCALE: N.T.S.



3

HEAVY DUTY CONCRETE PAD DETAIL@ DUMPSTER ENCLOSURE

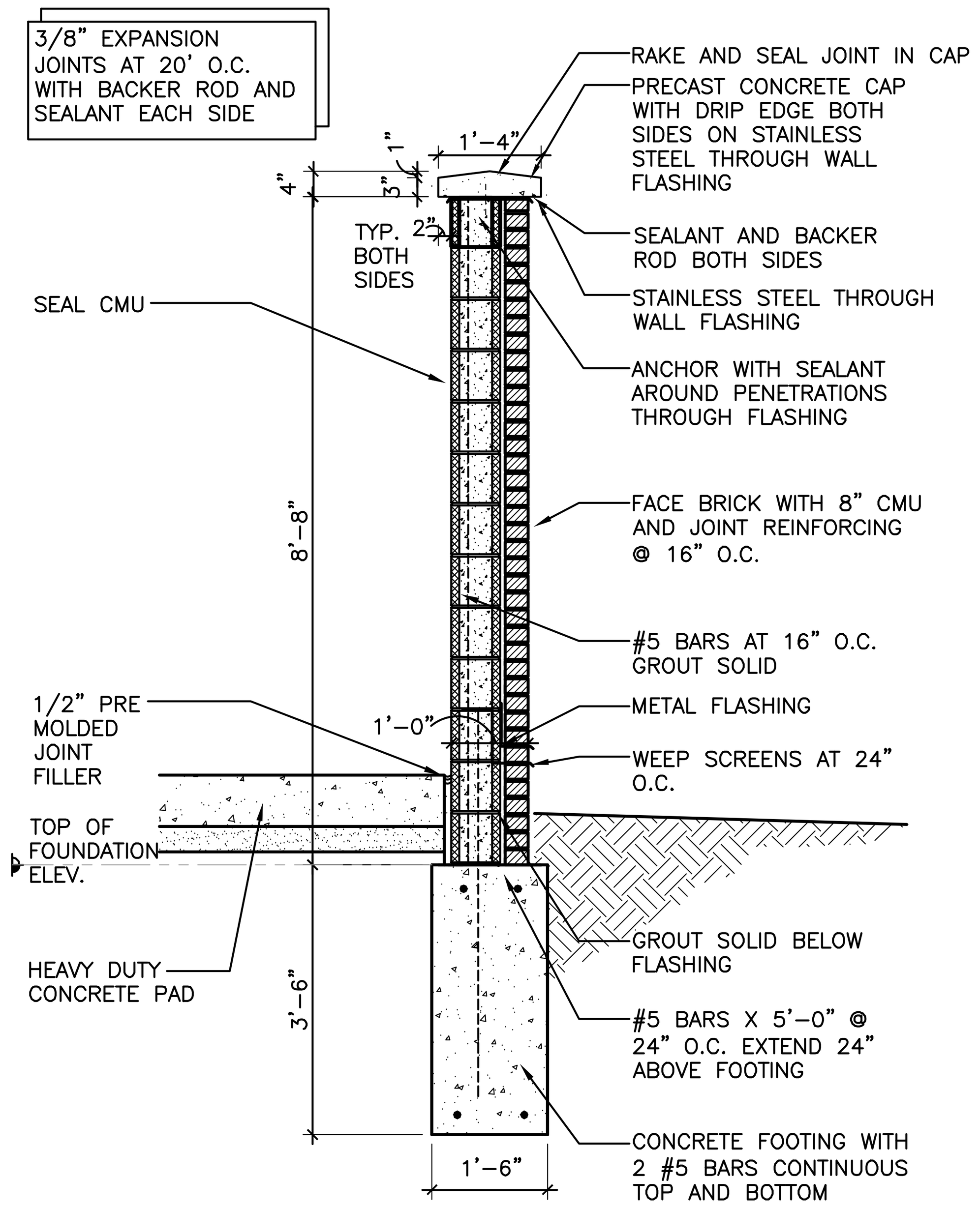
SCALE: 1/2" = 1'-0"



2

6" DIA. GUARDPOST DETAIL

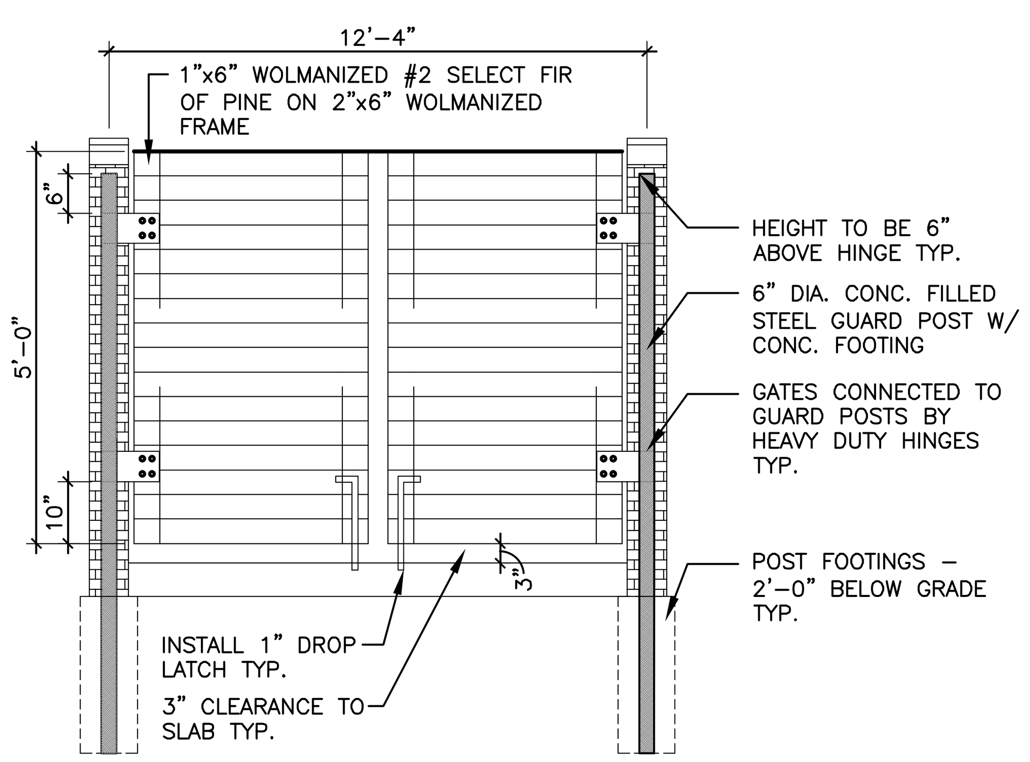
SCALE: 1/2" = 1'-0"



4

DUMPSTER ENCLOSURE GATE DETAIL

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



1

DUMPSTER ENCLOSURE GATE - TYP.

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

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SOUTHFIELD MICHIGAN

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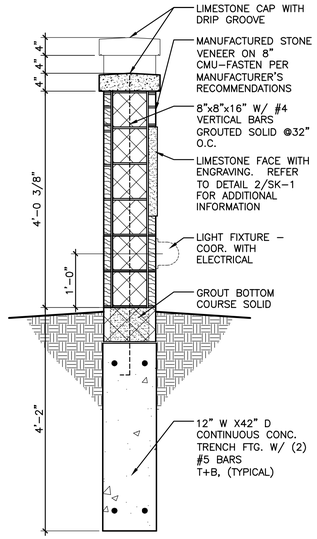
Sheet Title:

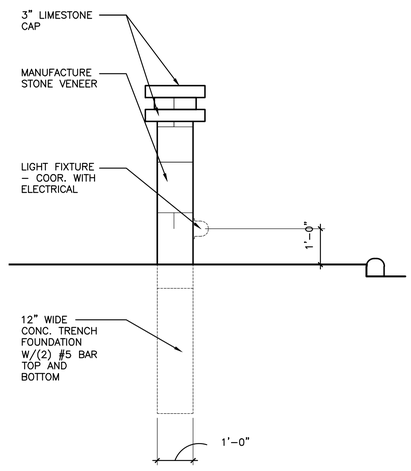
ARCHITECTURAL SITE PLAN AND SITE DETAILS

Sheet Number: A-205



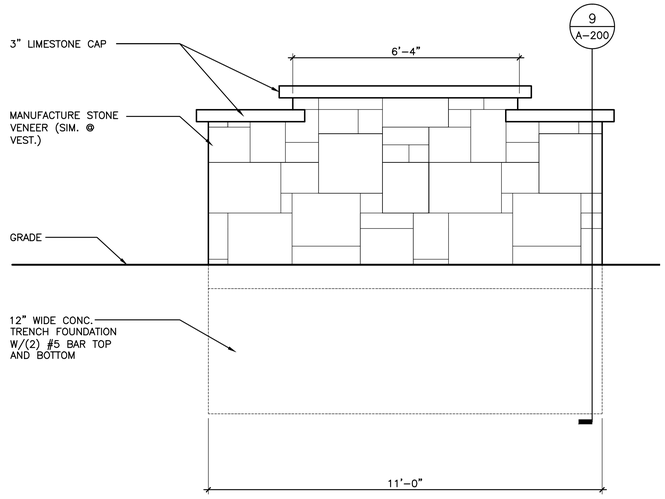
4 A-300 SITE SIGNAGE - SECTION

SCALE: 3/4



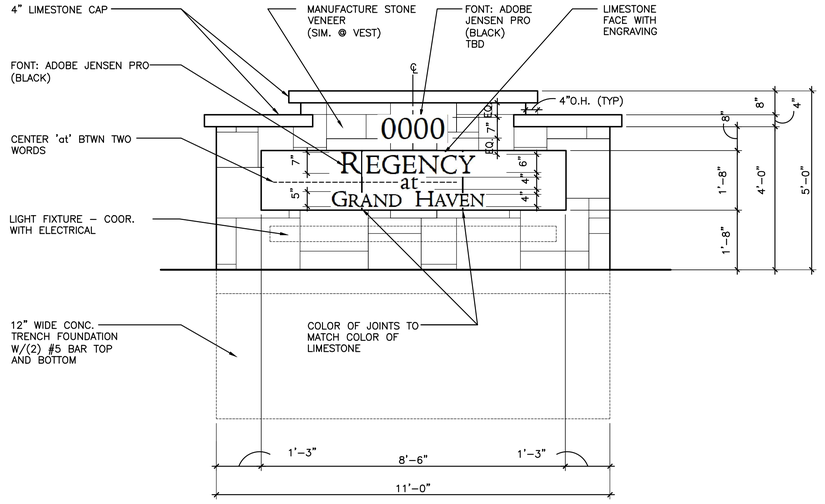
3 A-300 SITE SIGNAGE - SIDE ELEVATION

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



2 A-300 SITE SIGNAGE - BACK ELEVATION

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



1 A-300 SITE SIGNAGE - FRONT ELEVATION

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

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ROY GEORGE BAKER ARCHITECT — STATE OF MICHIGAN — No. 54748 — REGISTERED ARCHITECT

Client:
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SOUTHFIELD MICHIGAN

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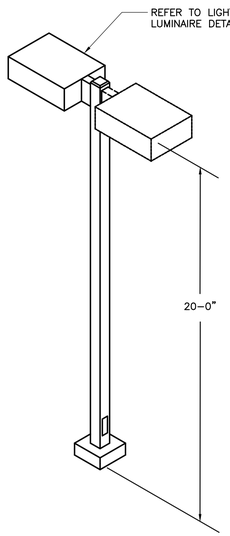
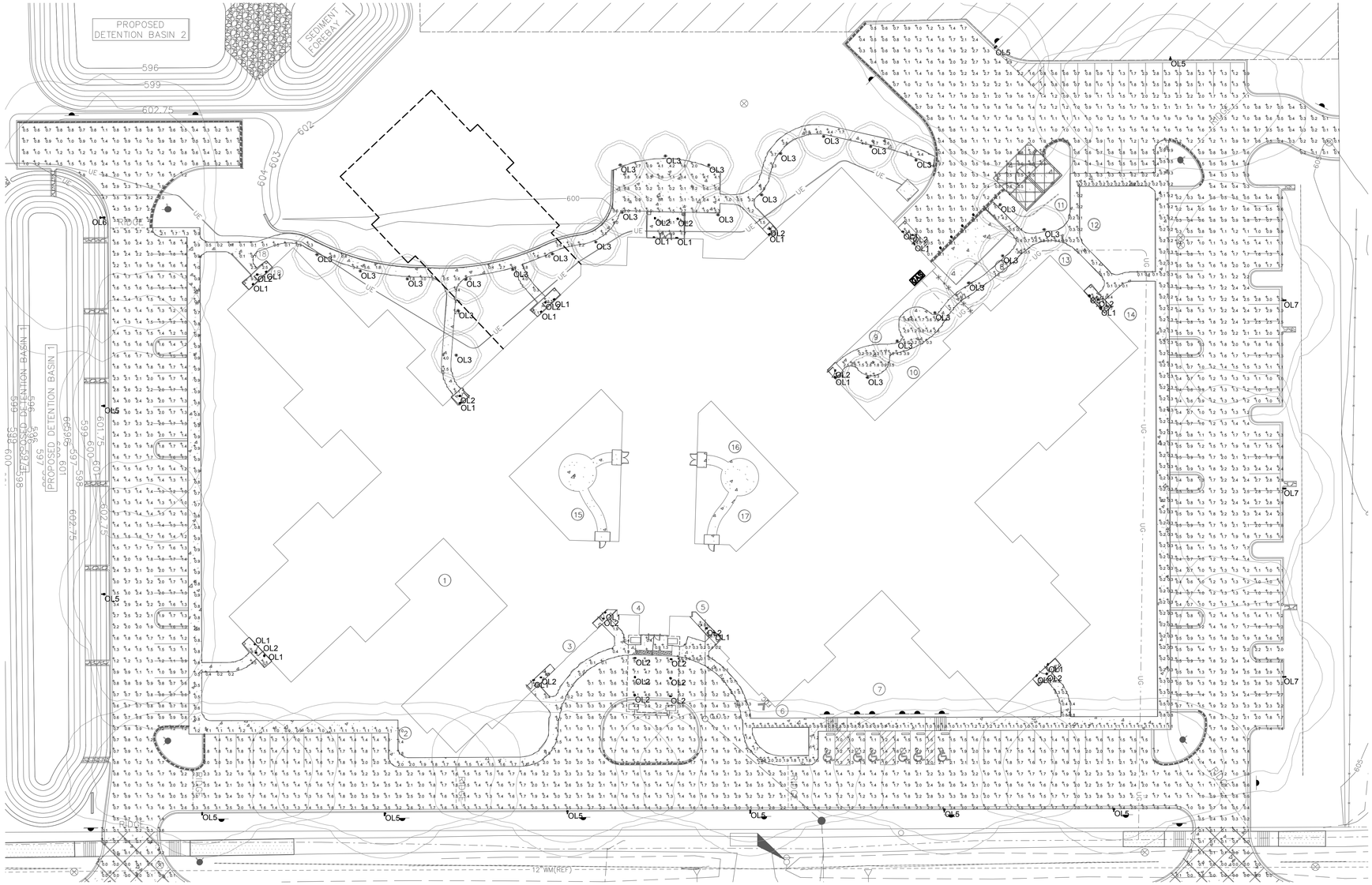
Sheet Title:
SITE SIGNAGE

Sheet Number: A-300



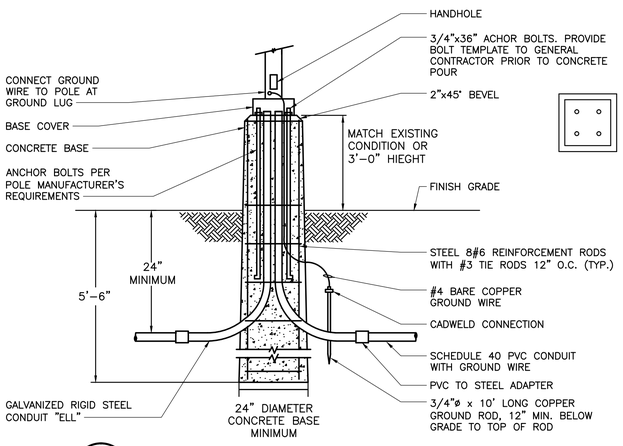
1 / E1 PAR□ING LOT/ROADWAY POLE DETAIL

SCALE: NTS



PHOTOMETRIC SITE PLAN

SCALE: NTS



2 / E1 PAR□ING LOT/ROADWAY POLE BASE DETAIL

SCALE: NTS

Statistics

Description	Symbol	Avg	Ma□	Min	Ma□/Min	Avg/Min
EAST SIDEWAL□	+	1.2 fc	13.0 fc	0.1 fc	130.0:1	12.0:1
PAR□ING LOT	+	1.5 fc	9.0 fc	0.0 fc	N/A	N/A
WEST SIDEWAL□	+	1.9 fc	13.6 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	OL1	20	VISA LIGHTING	OW1200	Wall Mount Up Light	LED 3500□ 80CRI -H	1	OW1200-L35□-H.ies	772	0.9	20.4
	OL2	20	Lithonia Lighting	LDN6 35/10 L06AR LSS	6IN LDN, 3500□, 1000LM, 80CRI, CLEAR, SEMI-SPECULAR REFLECTOR	LED	1	LDN6_35_10_L06AR□ LSS.ies	1028	0.9	12.75
	OL3	26	Hydrel	3100 8COB 40□ SYM 250mA	9"DIA, X 36"H, LED BOLLARD DIFFUSED LENS	NICHIA 30□ LED COB LAMP	1	3100_8COB_40□_SYM_250mA.ies	1318	0.9	72.35
	OL5	10	Lithonia Lighting	DSX0 LED 40C 1000 40□ T4M MVOLT HS	DSX0 LED with 40 LEDs □ 1000 mA , 4000□, Type 4 Medium Optics with HOUSE-SIDE SHIELD	LED	1	DSX0_LED_40C_1000_40□_T4M□MVOLT□HS.ies	11704	0.9	138
	OL6	1	Lithonia Lighting	DSX0 LED 40C 1000 40□ T4M MVOLT HS	DSX0 LED with 40 LEDs □ 1000 mA , 4000□, Type 4 Medium Optics with HOUSE-SIDE SHIELD	LED	1	DSX0_LED_40C_1000_40□_T4M□MVOLT□HS.ies	11704	0.9	276
	OL7	3	Lithonia Lighting	DSX0 LED 40C 1000 40□ TFTM MVOLT HS	DSX0 LED with 40 LEDs □ 1000 mA , 4000□, Type Forward Throw Medium Optics with HOUSE-SIDE SHIELD	LED	1	DSX0_LED_40C_1000_40□_TFTM□MVOLT□HS.ies	12055	0.9	138

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ROY GEORGE RAVEN ARCHITECT NO. 18742 STATE OF MICHIGAN REGISTERED ARCHITECT

Client:

GRAND HAVEN
SENIOR LEASING,
L.L.C.

SOUTHFIELD MICHIGAN

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Project Number: 216212.00

Sheet Title:

SITE LIGHTING
PHOTOMETRICS
AND DETAILS

Sheet Number: E-1

REGENCY AT GRAND HAVEN

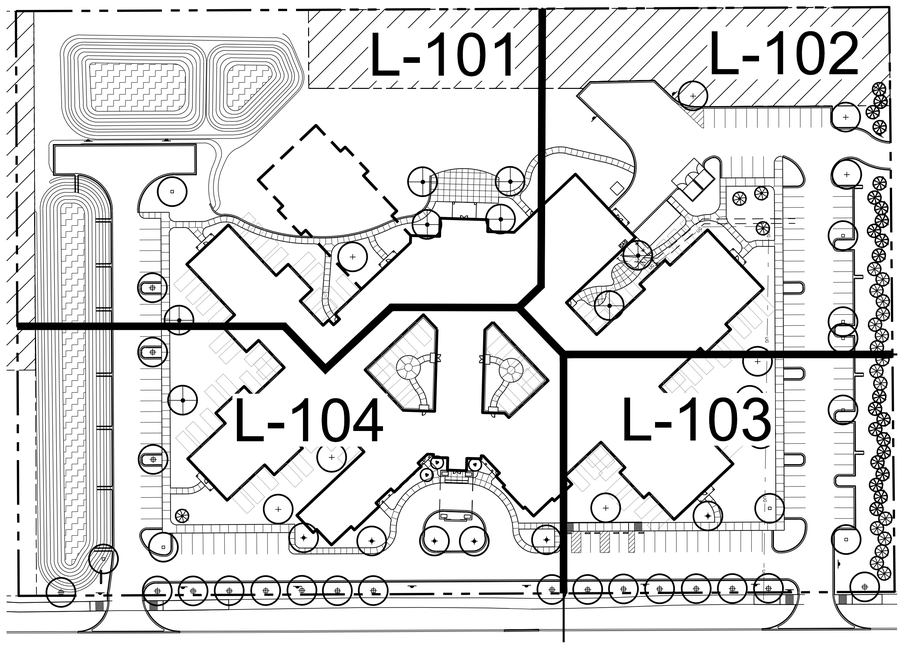
GRAND HAVEN TOWNSHIP
MICHIGAN

FINAL SITE PLAN APPROVAL

OWNER
GRAND HAVEN SENIOR LEASING L.L.C
SOUTHFIELD, MICHIGAN
248.386.0300

LANDSCAPE ARCHITECT:
HAGENBUCH WEIKAL LANDSCAPE ARCHITECTURE
33203 BIDDESTONE LANE
FARMINGTON HILLS, MI 48334
248.477.3600 OFFICE

SITE MASTER PLAN



NORTH
SCALE 1" = 60'

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L-102	HARDSCAPE LAYOUT PLAN
L-103	HARDSCAPE LAYOUT PLAN
L-104	HARDSCAPE LAYOUT PLAN
L.-301	SITE PLANTING PLAN
L-302	CALCULATIONS, PLANT LISTS & DETAILS
L-310	ENTRANCE PLANS
L-311	WEST INTERIOR COURTYARD PLANS
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L-608	STANDARDS

CONSULTANTS

ARCHITECT

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CIVIL ENGINEER:

PROFESSIONAL ENGINEERING ASSOCIATES
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248.386.0300
248.386.0314 (fax)

Project Title:
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STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

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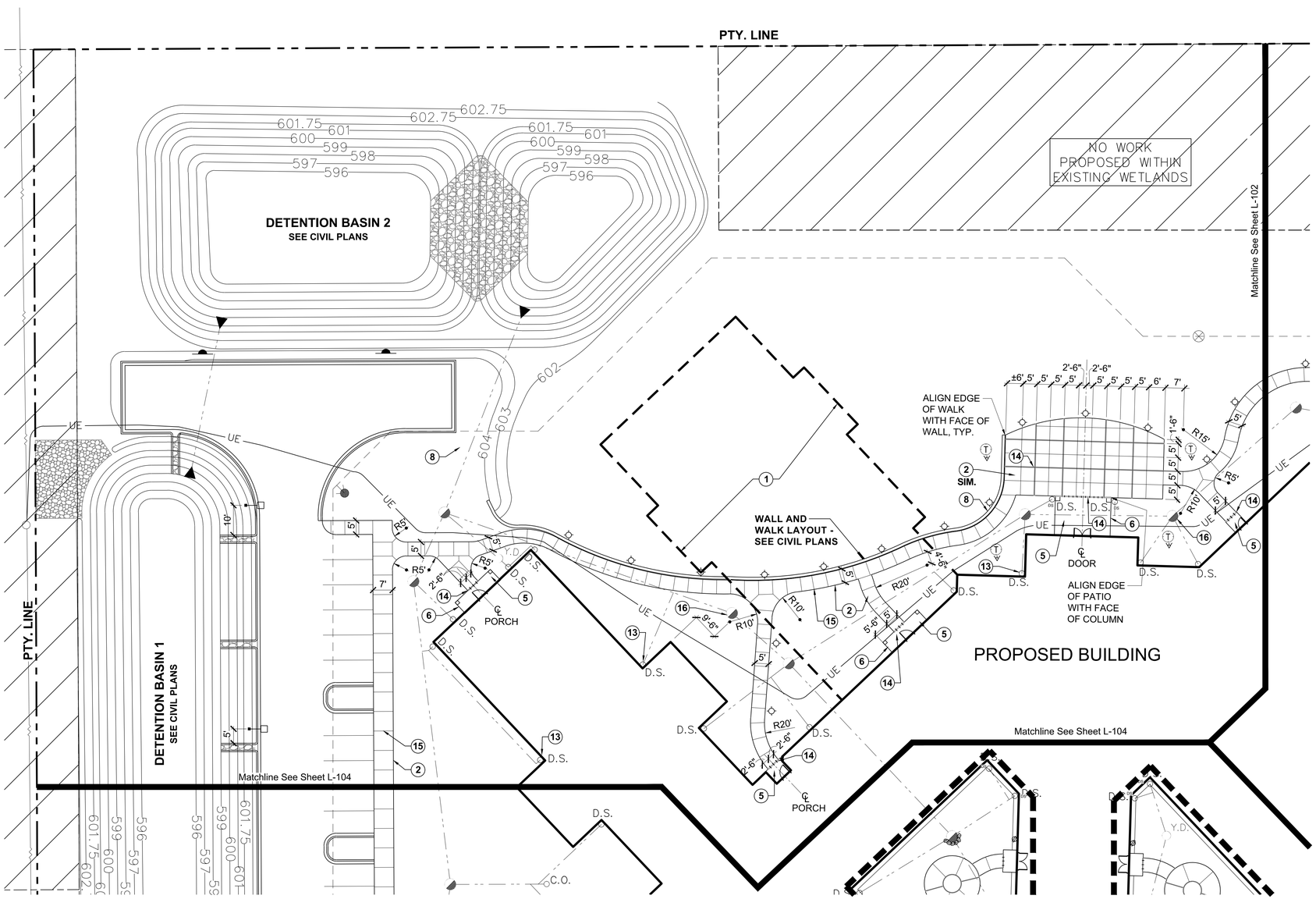
Project Number: 216212.00

Sheet Title:
COVER SHEET

Sheet Number: L-100



1 L-101 **HARDSCAPE LAYOUT PLAN** NORTH

SCALE 1" = 20'

NOTE KEY: (2)

1. FUTURE BUILDING EXPANSION
2. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
3. EXISTING WALKING TRAIL
4. BARRIER FREE SIGN – SEE CIVIL PLANS
5. CONCRETE PORCH – SEE ARCH. PLANS
6. OVERHEAD CANOPY – SEE ARCH. PLANS
7. GENERATOR / TRANSFORMER – SEE ARCH. PLANS
8. WALL – SEE CIVIL PLANS
9. DUMPSTER AREA – SEE ARCH. PLANS
10. "NO MOW" AREA SIGN – SEE DETAIL 6/L-302
11. 3" DEEP CONTINUOUS MULCH BED
12. PROJECT SIGN – SEE ARCH. PLANS
13. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
14. EXP. JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
15. CONTROL JOINT – SEE CIVIL PLANS
16. DRAINAGE STRUCTURE – SEE CIVIL PLANS
17. WINDOW CLEAR ZONE – NO TREES
18. CLEAR SIGHT DISTANCE TRIANGLE

GENERAL LAYOUT NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET BUILDING PORCHES, TYPICAL.
3. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET CURBS, TYP.
4. EXPANSION JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 18' O.C. TYP.
   5' WD. SIDEWALK – 20' O.C. TYP.
   4' WD. SIDEWALK – 20' O.C. TYP.
   3' WD. SIDEWALK – 18' O.C. TYP.
5. CONTROL JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 6' X 6' PANEL
   5' WD. SIDEWALK – 5' X 5' PANEL
   4' WD. SIDEWALK – 4' X 4' PANEL
   3' WD. SIDEWALK – 3' X 3' PANEL
6. DO NOT SCALE PRINTS.
7. ALL ANGLES ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
8. CONCRETE AND ASPHALT WALKS TO MEET PORCHES FLUSH (NO STEP) UNLESS OTHERWISE NOTED.
9. SEE CIVIL ENGINEERING DRAWINGS FOR LAYOUT OF ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.
10. ALL RADII ON CONCRETE AND ASPHALT SIDEWALKS TO BE 5' R. UNLESS OTHERWISE NOTED.
11. TOP AND BOTTOM OF RETAINING WALLS – SEE GRADING PLANS.
12. ALL DIMENSIONS TO BACK OF CURB UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS FOR RETAINING WALLS TO BOTTOM COURSE OF WALL.

LIGHT KEY:

- UPLIGHT – SEE 2/L-102 & 1/L-302 ALSO SEE SITE ELECTRICAL PLANS.
- DUPLEX OUTLET – SEE 3/L-102 & SITE ELEC. PLANS
- BOLLARD LIGHT – SITE ELEC. PLANS FOR DETAILS AND LOCATIONS
- LIGHT POLE – 3' OFF BACK OF CURB, 2' OFF BACK OF SIDEWALK. SEE SITE ELEC. PLANS
- (T) LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

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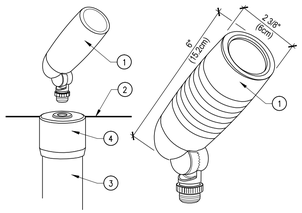
Sheet Title: HARDSCAPE LAYOUT PLAN

Sheet Number: L-101

1. BLACK LED FIXTURE
2. FINISH GRADE
3. RAB "MIGHTY POST" 19" PVC WITH PVC CAP MODEL: MP19B COLOR : BLACK
4. RAB "MIGHTY POST" CAP

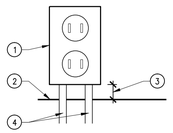
RAB
LFLED5YB
LED FLOODLIGHT
5W
COLOR TEMP:
3000K (WARM)

HTTPS://WWW.RABWEB.COM/PRODUCT.PHP?PRODUCT=LFLED5YB
HTTPS://WWW.RABWEB.COM/PRODUCT.PHP?PRODUCT=MP19B

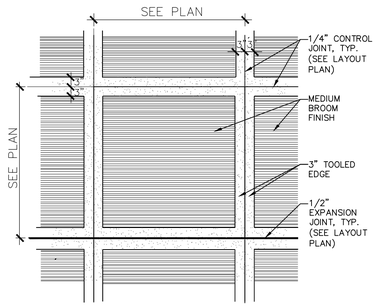


2 / L01.01 UPLIGHT DETAIL - SCHEMATIC
NOT TO SCALE

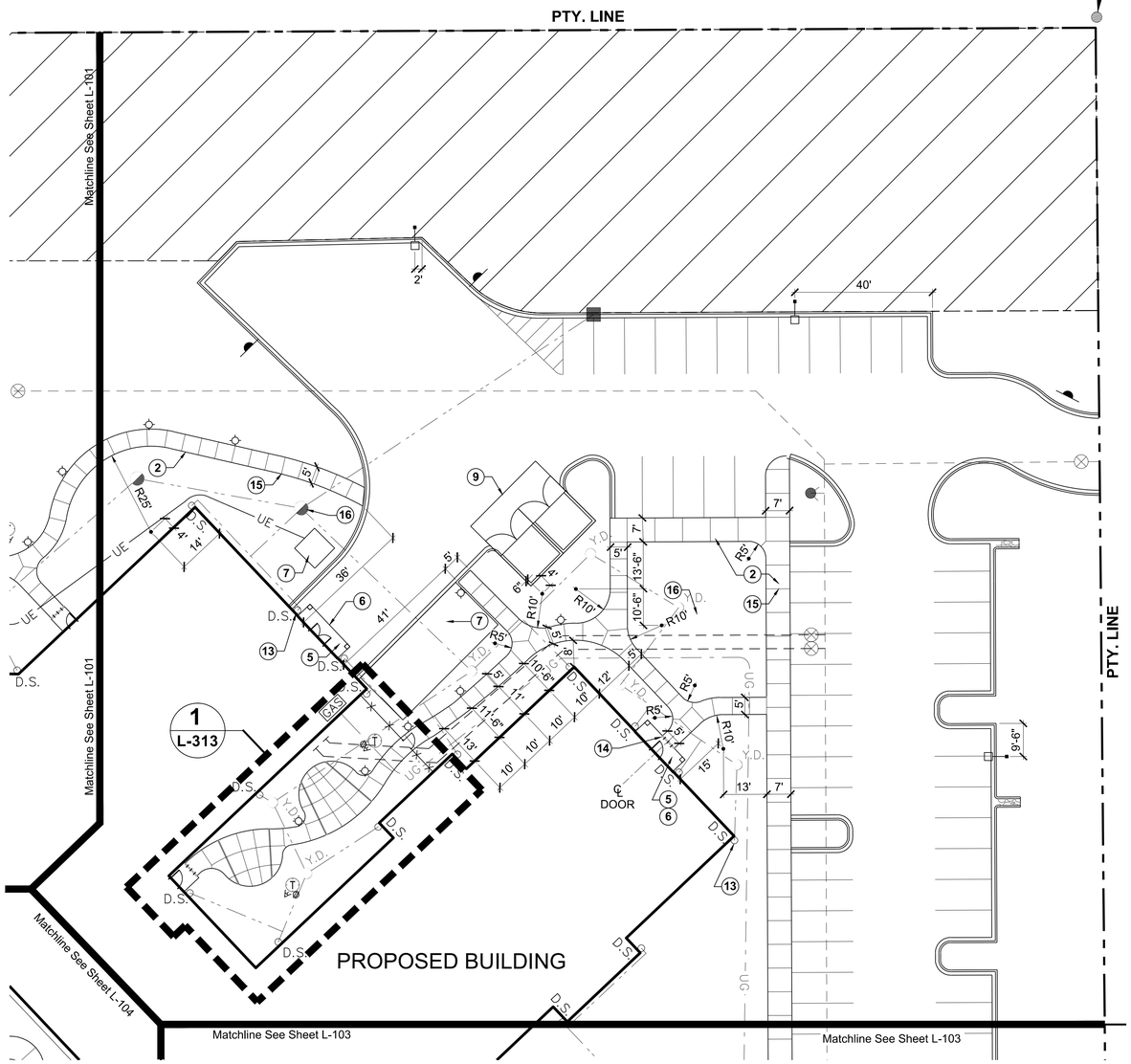
1. WATERPROOF DUPLEX OUTLET PER CODE
2. FINISH GRADE
3. INSTALL AS LOW AS POSSIBLE TO FINISH GRADE, MEETING CODE
4. ELECTRICAL CONDUIT (SEE ELECTRICAL PLANS)



3 / L01.01 DUPLEX OUTLET
NOT TO SCALE



4 / L03.11 'WINDOW PANE' - CONCRETE PANELS
NOT TO SCALE



1 / L-102 HARDSCAPE LAYOUT PLAN
SCALE 1" = 20'
NORTH

NOTE KEY: (2)

1. FUTURE BUILDING EXPANSION
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18. CLEAR SIGHT DISTANCE TRIANGLE

GENERAL LAYOUT NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET BUILDING PORCHES, TYPICAL.
3. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET CURBS, TYP.
4. EXPANSION JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 18' O.C. TYP.
   5' WD. SIDEWALK – 20' O.C. TYP.
   4' WD. SIDEWALK – 20' O.C. TYP.
   3' WD. SIDEWALK – 18' O.C. TYP.
5. CONTROL JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 6' X 6' PANEL
   5' WD. SIDEWALK – 5' X 5' PANEL
   4' WD. SIDEWALK – 4' X 4' PANEL
   3' WD. SIDEWALK – 3' X 3' PANEL
6. DO NOT SCALE PRINTS.
7. ALL ANGLES ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
8. CONCRETE AND ASPHALT WALKS TO MEET PORCHES FLUSH (NO STEP) UNLESS OTHERWISE NOTED.
9. SEE CIVIL ENGINEERING DRAWINGS FOR LAYOUT OF ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.
10. ALL RADII ON CONCRETE AND ASPHALT SIDEWALKS TO BE 5' R. UNLESS OTHERWISE NOTED.
11. TOP AND BOTTOM OF RETAINING WALLS – SEE GRADING PLANS.
12. ALL DIMENSIONS TO BACK OF CURB UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS FOR RETAINING WALLS TO BOTTOM COURSE OF WALL.

LIGHT KEY:

- UPLIGHT – SEE 2/L-102 & 1/L-302 ALSO SEE SITE ELECTRICAL PLANS.
- DUPLEX OUTLET – SEE 3/L-102 & SITE ELEC. PLANS
- BOLLARD LIGHT – SITE ELEC. PLANS FOR DETAILS AND LOCATIONS
- LIGHT POLE – 3' OFF BACK OF CURB, 2' OFF BACK OF SIDEWALK. SEE SITE ELEC. PLANS
- (T) LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

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Project Title:

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GRAND HAVEN TWP. MICHIGAN

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06-29-17	REVISED SITE PLAN SUBMITTAL

Drawn: Designed:

Checked: Approved:

CAD Drawing File:

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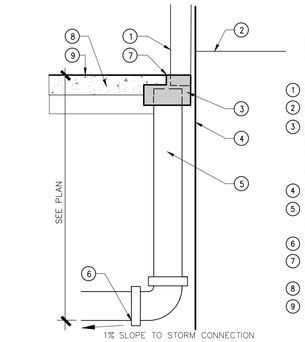
Project Number: 216212.00

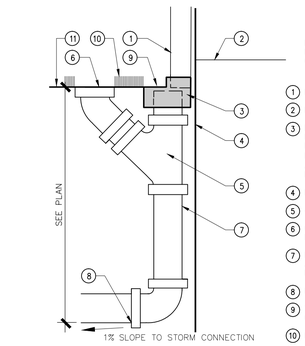
Sheet Title:
HARDSCAPE LAYOUT PLAN

Sheet Number: L-102



1. DOWNSPOUT BOOT: MODEL SKU: PVC-0344 FROM GUTTERWORKS.COM OR APPROVED EQUAL
2. DOWNSPOUT, SEE ARCH. PLANS
3. FINISHED FLOOR
4. DOWNSPOUT BOOT: MODEL: SKU PVC-0344 FROM GUTTERWORKS.COM OR APPROVED EQUAL – (SUBMIT SAMPLE FOR APPROVAL) VERIFY DOWNSPOUT AND FITTING SIZE
5. BUILDING WALL
6. PVC PIPE TO DRAIN SYSTEM BUTT AGAINST FOUNDATION WALL – SEE CIVIL PLANS
7. INVERT – SEE CIVIL PLANS
8. TOP OF BOOT TO BE FLUSH WITH TOP OF CONCRETE
9. CONCRETE PAVEMENT
10. FINISH GRADE

2 L01.01 **DOWNSPOUT CONNECTOR IN CONCRETE**
NOT TO SCALE



1. DOWNSPOUT BOOT: MODEL SKU: PVC-0344 FROM GUTTERWORKS.COM OR APPROVED EQUAL
2. DOWNSPOUT, SEE ARCH. PLANS
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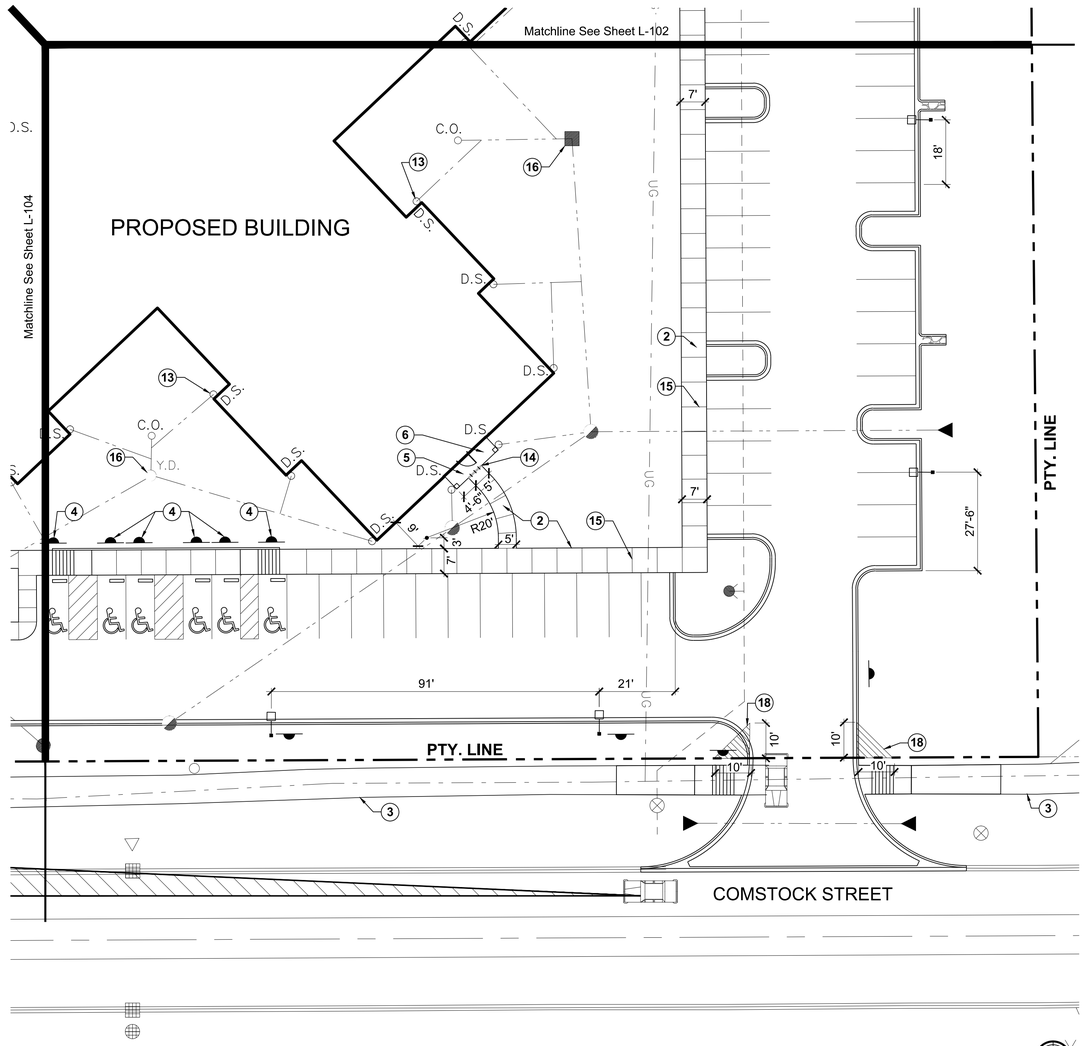
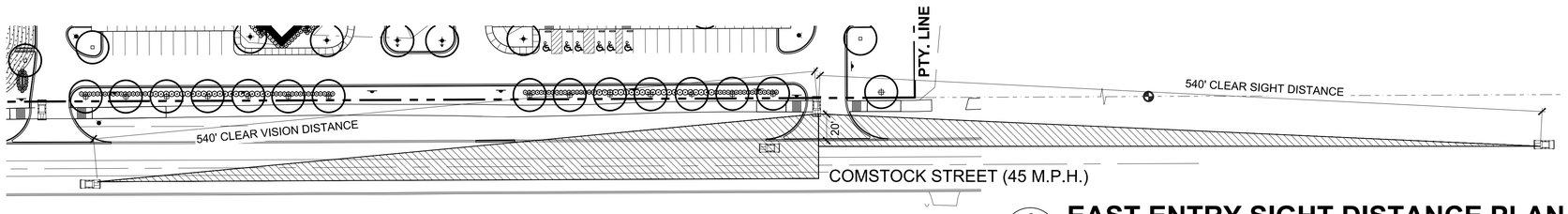
4. DOWNSPOUT BOOT: MODEL: SKU PVC-0344 FROM GUTTERWORKS.COM OR APPROVED EQUAL – (SUBMIT SAMPLE FOR APPROVAL) VERIFY DOWNSPOUT AND FITTING SIZE
5. BUILDING WALL
6. 45 DEGREE FITTING FOR CLEAN-OUT
7. CLEAN-OUT WITH CAP – FLUSH WITH FINISH GRADE
8. PVC PIPE TO DRAIN SYSTEM BUTT AGAINST FOUNDATION WALL – SEE CIVIL PLANS
9. INVERT – SEE CIVIL PLANS
10. TOP OF BOOT TO BE FLUSH WITH FINISH GRADE
11. LANDSCAPE AREA
12. FINISH GRADE

3 L01.01 **DOWNSPOUT CONNECTOR IN LANDSCAPE AREA**
NOT TO SCALE



1 L-103 **HARDSCAPE LAYOUT PLAN**
SCALE 1" = 20'

NORTH



4 L-103 **EAST ENTRY SIGHT DISTANCE PLAN**
SCALE 1" = 50'

NOTE KEY:

1. FUTURE BUILDING EXPANSION
2. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
3. EXISTING WALKING TRAIL
4. BARRIER FREE SIGN – SEE CIVIL PLANS
5. CONCRETE PORCH – SEE ARCH. PLANS
6. OVERHEAD CANOPY – SEE ARCH. PLANS
7. GENERATOR / TRANSFORMER – SEE ARCH. PLANS
8. WALL – SEE CIVIL PLANS
9. DUMPSTER AREA – SEE ARCH. PLANS
10. "NO MOW" AREA SIGN – SEE DETAIL 6/L-302
11. 3" DEEP CONTINUOUS MULCH BED
12. PROJECT SIGN – SEE ARCH. PLANS
13. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
14. EXP. JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
15. CONTROL JOINT – SEE CIVIL PLANS
16. DRAINAGE STRUCTURE – SEE CIVIL PLANS
17. WINDOW CLEAR ZONE – NO TREES
18. CLEAR SIGHT DISTANCE TRIANGLE

GENERAL LAYOUT NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET BUILDING PORCHES, TYPICAL.
3. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET CURBS, TYP.
4. EXPANSION JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 18' O.C. TYP.
   5' WD. SIDEWALK – 20' O.C. TYP.
   4' WD. SIDEWALK – 20' O.C. TYP.
   3' WD. SIDEWALK – 18' O.C. TYP.
5. CONTROL JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 6' X 6' PANEL
   5' WD. SIDEWALK – 5' X 5' PANEL
   4' WD. SIDEWALK – 4' X 4' PANEL
   3' WD. SIDEWALK – 3' X 3' PANEL
6. DO NOT SCALE PRINTS.
7. ALL ANGLES ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
8. CONCRETE AND ASPHALT WALKS TO MEET PORCHES FLUSH (NO STEP) UNLESS OTHERWISE NOTED.
9. SEE CIVIL ENGINEERING DRAWINGS FOR LAYOUT OF ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.
10. ALL RADII ON CONCRETE AND ASPHALT SIDEWALKS TO BE 5' R. UNLESS OTHERWISE NOTED.
11. TOP AND BOTTOM OF RETAINING WALLS – SEE GRADING PLANS.
12. ALL DIMENSIONS TO BACK OF CURB UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS FOR RETAINING WALLS TO BOTTOM COURSE OF WALL.

LIGHT KEY:

- UPLIGHT – SEE 2/L-102 & 1/L-302 ALSO SEE SITE ELECTRICAL PLANS.
- DUPLEX OUTLET – SEE 3/L-102 & SITE ELEC. PLANS
- BOLLARD LIGHT – SITE ELEC. PLANS FOR DETAILS AND LOCATIONS
- LIGHT POLE – 3' OFF BACK OF CURB, 2' OFF BACK OF SIDEWALK. SEE SITE ELEC. PLANS
- LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

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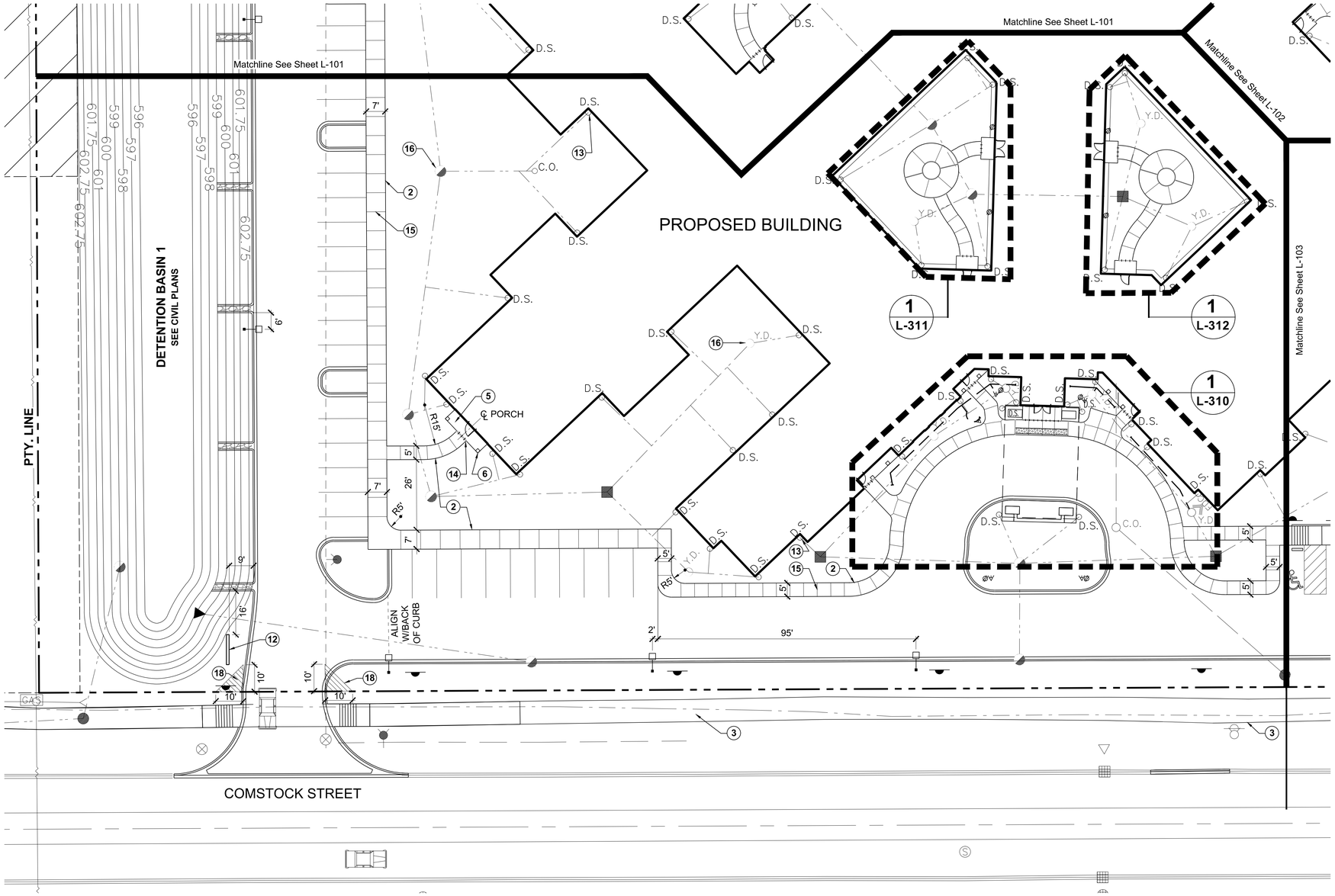
Sheet Title:
HARDSCAPE LAYOUT PLAN

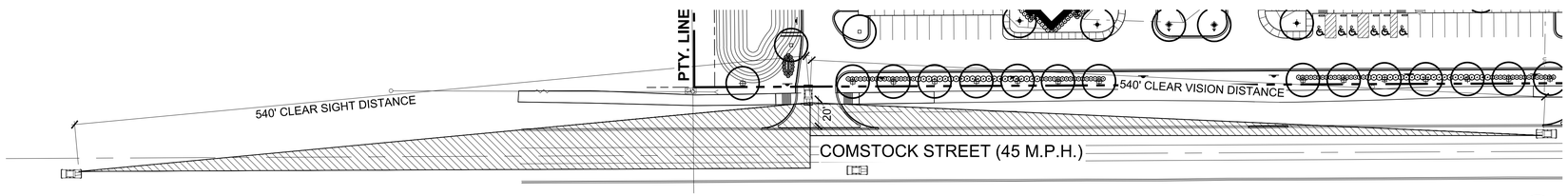
Sheet Number: L-103



1 L-104 HARDSCAPE LAYOUT PLAN

SCALE 1" = 20'

NORTH



2 L-104 WEST ENTRY SIGHT DISTANCE PLAN

SCALE 1" = 50'

NORTH

NOTE KEY: (2)

1. FUTURE BUILDING EXPANSION
2. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
3. EXISTING WALKING TRAIL
4. BARRIER FREE SIGN – SEE CIVIL PLANS
5. CONCRETE PORCH – SEE ARCH. PLANS
6. OVERHEAD CANOPY – SEE ARCH. PLANS
7. GENERATOR / TRANSFORMER – SEE ARCH. PLANS
8. WALL – SEE CIVIL PLANS
9. DUMPSTER AREA – SEE ARCH. PLANS
10. "NO MOW" AREA SIGN – SEE DETAIL 6/L-302
11. 3" DEEP CONTINUOUS MULCH BED
12. PROJECT SIGN – SEE ARCH. PLANS
13. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
14. EXP. JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
15. CONTROL JOINT – SEE CIVIL PLANS
16. DRAINAGE STRUCTURE – SEE CIVIL PLANS
17. WINDOW CLEAR ZONE – NO TREES
18. CLEAR SIGHT DISTANCE TRIANGLE

GENERAL LAYOUT NOTES:

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- (T) LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

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STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:

Checked: Approved:

CAD Drawing File:

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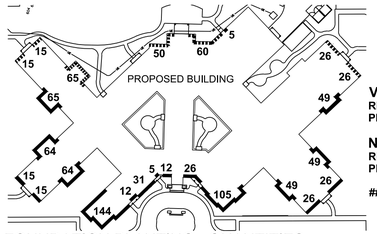
Project Number: 216212.00

Sheet Title:

HARDSCAPE LAYOUT PLAN

Sheet Number: L-104

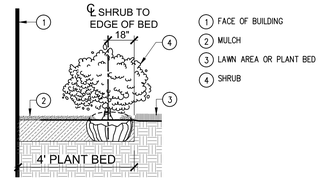


VISIBLE FROM ROAD ——
REQUIRED: 570 LF
PROVIDED: 757 LF

NOT VISIBLE FROM ROAD ·····
REQUIRED: 240 LF
PROVIDED: 262 LF

= LF OF FOUNDATION PLANTED

3 L-301 FOUNDATION PLANTING - QUANTITIES
SCALE 1" = 100'



1 FACE OF BUILDING
2 MULCH
3 LAWN AREA OR PLANT BED
4 SHRUB

2 L-301 SINGLE ROW - FOUNDATION PLANTING
NOT TO SCALE

BASIN SEED KEY:

UZM - UPLAND ZONE SEED MIX - SEE L-302

BSM - BASIN SLOPE MIX - SEE L-302

BBM - BASIN BOTTOM SEED MIX - SEE L-302

INCLUDE S150 EROSION CONTROL BLANKET ENTIRE AREA - SEE L-302

NOTE KEY: (2)

1. FUTURE BUILDING EXPANSION
2. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
3. EXISTING WALKING TRAIL
4. BARRIER FREE SIGN – SEE CIVIL PLANS
5. CONCRETE PORCH – SEE ARCH. PLANS
6. OVERHEAD CANOPY – SEE ARCH. PLANS
7. GENERATOR / TRANSFORMER – SEE ARCH. PLANS
8. WALL – SEE CIVIL PLANS
9. DUMPSTER AREA – SEE ARCH. PLANS
10. "NO MOW" AREA SIGN – SEE DETAIL 6/L-302
11. 3" DEEP CONTINUOUS MULCH BED
12. PROJECT SIGN – SEE ARCH. PLANS
13. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
14. EXP JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
15. CONTROL JOINT – SEE CIVIL PLANS
16. DRAINAGE STRUCTURE – SEE CIVIL PLANS
17. WINDOW CLEAR ZONE – NO TREES
18. CLEAR SIGHT DISTANCE TRIANGLE

GENERAL PLANTING NOTES:

(A) ALL TREES TO HAVE CLAY OR LOAM BALLS, TREES WITH SAND BALLS WILL BE REJECTED.

(B) ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.

(C) ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER, TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.

(D) ALL MULTI-STEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.

(E) ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE LAST FIVE GROWING SEASONS.

(F) NO MACHINERY IS TO BE USED WITHIN THE DRIPLINE OF EXISTING TREES. HAND GRADE ALL LAWN AREAS WITHIN DRIPLINE OF EXISTING TREES.

(G) ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL.

(H) IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS, WALKS AND PAVED AREAS.

(I) ALL PLANTING BEDS SHALL RECEIVE SHREDDED BARK MULCH. SEE PLANTING DETAILS FOR DEPTHS.

(J) SEE SPECIFICATIONS FOR ADDITIONAL COMMENTS, REQUIREMENTS, PLANTING PROCEDURES AND WARRANTY STANDARDS.

LAWNS:

ALL PROPOSED LAWN AREAS TO BE IRRIGATED SOD.

LAWN RESTORATION

RESTORE ALL DISTURBED AREAS WITH 2" TOPSOIL AND SEED LAWN WITH STRAW MULCH, UNLESS OTHERWISE NOTED.

TOPSOIL

CONTRACTOR TO TILL OR DISK SUBGRADE TO 6" DEPTH AND INSTALL 4" COMPACTED DEPTH TOPSOIL IN ALL LAWN AREAS – FROM ONSITE STOCKPILE OR PROVIDED TO COMPLETE THE PROJECT

PLANT MIX

EXCAVATE PLANT BEDS TO DEPTH SHOWN ON DETAILS – DISPOSE OF SPOILS OFF SITE.

PLANTING BEDS TO RECEIVE MIXTURE OF 70% LOAM TOPSOIL, 10% COMPOST, 20% SAND;

ADDITIONALLY – HAND TILL INTO EVERY 150 SQ. FT. BED AREA:

(1) 6 CU. FT. BALE ORGANIC COMPOST

(1) 40 LB BAG COMPOSTED POULTRY MANURE "CHICK MAGIC" 5-3-2 WWW.CHICKMAGIC.NET (262)495-6220

(1) 5 LB BAG SHEMINS 13-13-13 MULTI PURPOSE FERTILIZER

HAND TILL INTO BED TO MINIMUM DEPTH OF 12"

MULCH

MULCH TO BE DOUBLE SHREDDED HARDWOOD BARK MULCH

NO GROUND WOOD PALETTE MULCH PERMITTED

PLANT BEDS

ALL PLANT BEDS TO BE FULLY EXCAVATED TO DEPTH SHOWN ON DETAILS AND AREAS SHOWN ON PLANS, AND TO RECEIVE CONTINUOUS PLANT MIX AS SPECIFIED (NOT INDIVIDUAL PLANT HOLES)

LANDSCAPE EDGING

ALL LANDSCAPE EDGES ARE SHOVEL CUT

PLANT SPACING

FILL BED WITH PLANTS SPECIFIED. KEEP PLANTS AWAY FROM BUILDING 12" MATURE SIZE

WATERING

CONTRACTOR RESPONSIBLE FOR MONITORING THE WATERING OF ALL PLANTINGS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD.

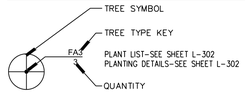
PLANTINGS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE ONE REQUIRED REPLACEMENT PLANT AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

CONTRACTOR IS ALSO RESPONSIBLE FOR MONITORING THE WATERING OF ALL NEWLY PLANTED LAWN AREAS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD. NEWLY PLANTED LAWN AREAS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE REQUIRED REPLACEMENT TO ESTABLISH A HEALTHY FULL DENSE LAWN AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

IRRIGATION SYSTEM

PROVIDE UNDERGROUND AUTOMATIC IRRIGATION SYSTEM. PROVIDE SHOP DRAWING INCLUDING SEPARATE ZONES FOR LAWNS, SHRUBS, PERENNIALS AND ANNUAL FLOWERS. INCLUDE QUICK COUPLERS FOR HAND WATERING AREAS IF NECESSARY. SUBMIT SHOP DRAWING TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL.

PLANTING KEY:



LEGEND

WINDOW CLEAR ZONE – NO TREES PERMITTED

530 SF (PI-R) PARKING LOT LANDSCAPE AREA, WITH QUANTITY

SEE SHEETS L-103 & L-104 FOR EAST & WEST ENTRY, COMSTOCK STREET CLEAR VIEW TRIANGLE

1 L-101 **SITE PLANTING PLAN**
SCALE 1" = 30'

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Project Title:
REGENCY AT GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
11-11-16	PRE-APPLICATION SUBMITTAL
02-03-17	FINAL SITE PLAN APPROVAL
04-13-17	REVISED SITE PLAN SUBMITTAL
06-16-17	HFES PRELIMINARY
06-29-17	REVISED SITE PLAN SUBMITTAL

STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:
Checked: Approved:

CAD Drawing File:

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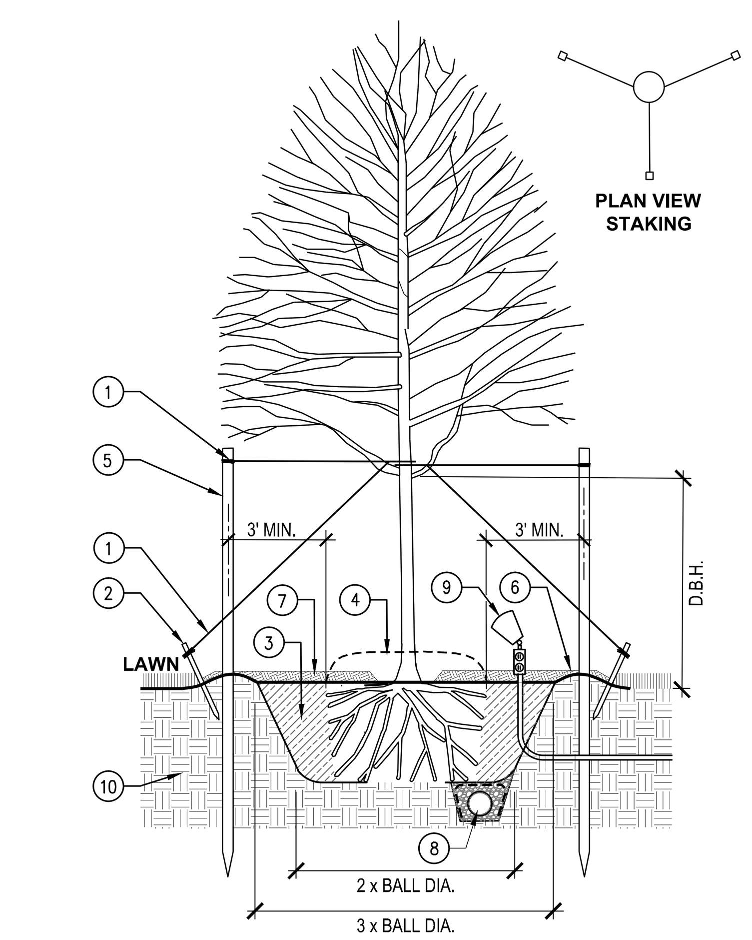
Project Number: 216212.00

Sheet Title:
SITE
PLANTING PLAN

Sheet Number: L-301



STAKE ALL TREES UNDER 4"
GUY ALL TREES 4" AND OVER

PRUNE ONLY TO REMOVE BROKEN OR DAMAGED BRANCHES

PLANT SO THAT TOP OF ROOT FLARE IS EVEN WITH THE FINISHED GRADE

NEVER CUT LEADER

KNIFE SLIT SIDE OF ROOT BALL 6 TIMES, 1" DEEP EACH

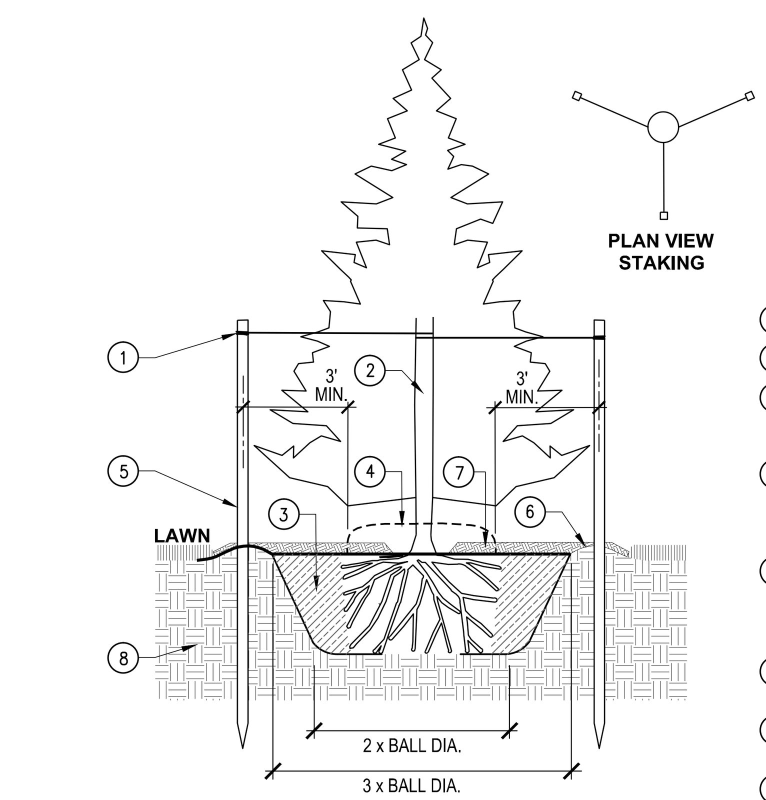
1. 'ARBORTIE' NYLON STRAPS

STAKE ABOVE FIRST BRANCHES OR AS NECESSARY FOR FIRM SUPPORT

2. FOR TREES OVER 4" CAL., (3) 2"X4"X24" PRESS. TREATED STAKES TOP OF STAKE 6" ABOVE GROUND
3. AMEND SOIL PER SPECIFICATION REQUIREMENTS, WATER AND TAMP TO REMOVE AIR POCKETS
4. REMOVE ±4"–8" OF SOIL FROM TOP OF ROOT BALL TO EXPOSE ROOT FLARE. SOIL CAN BE USED IN PLANT MIX. REMOVE ALL OF BASKET AND BURLAP
5. HARDWOOD STAKES (3) STAKES 2"X2" DRIVEN (MIN. 18") FIRMLY INTO SUBGRADE PRIOR TO BACKFILLING. REMOVE AFTER 1 YEAR
6. FORM SAUCER 3" HT. AT EDGE OF PLANT PIT
7. 3" MULCH, LEAVE 3" CIRCLE OF BARE SOIL AT TRUNK
8. WASHED PEASTONE, WRAPPED IN NON–WOVEN FILTER FABRIC, WITH 4" DIA. FLEXIBLE PERFORATED PIPE FABRIC COVERED, SEE PLAN FOR LOCATIONS – CONNECT TO STORM SYSTEM
9. DUPLEX PLUG AND UP LIGHT IN TREE RING 6" FROM EDGE OF BALL – SEE 2 & 3/L–102 AND SITE ELEC. PLANS
10. UNDISTURBED SUBSOIL

1 DECIDUOUS TREE PLANTING WITH UPLIGHT & DRAINTILE

NOT TO SCALE



REMOVE ALL TAGS, STRINGS, PLASTICS AND OTHER MATERIALS WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING

PLANT SO THAT TOP OF ROOT FLARE IS EVEN WITH THE FINISHED GRADE

STAKE ALL EVERGREEN TREES UNDER 12' HT.

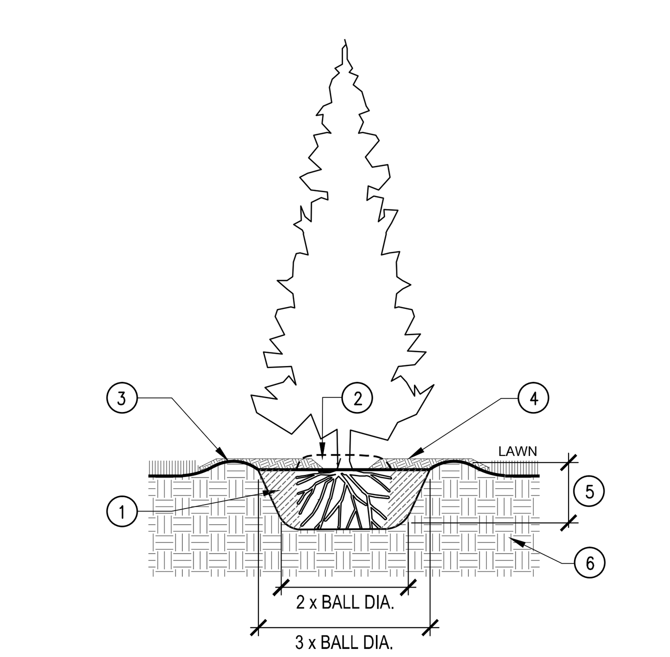
GUY ALL EVERGREEN TREES 12' HT. AND OVER

KNIFE SLIT SIDE OF ROOT BALL 6 TIMES, 1" DEEP EACH

1. 'ARBORTIE' NYLON STRAPS
2. NEVER CUT LEADER
3. AMEND SOIL PER SPECIFICATION REQUIREMENTS, WATER AND TAMP TO REMOVE AIR POCKETS
4. REMOVE ±4"–8" OF SOIL FROM TOP OF ROOT BALL TO EXPOSE ROOT FLARE. SOIL CAN BE USED IN PLANT MIX. REMOVE ALL OF BASKET AND BURLAP
5. HARDWOOD STAKES (3) STAKES 2"X2" DRIVEN (MIN. 18") FIRMLY INTO SUBGRADE PRIOR TO BACKFILLING. REMOVE AFTER 1 YEAR
6. FORM SOIL SAUCER 3" HT., AT EDGE OF PLANT PIT
7. 3" MULCH, LEAVE 3" CIRCLE OF BARE SOIL AT TRUNK
8. UNDISTURBED SUBSOIL

2 EVERGREEN TREE PLANTING

NOT TO SCALE



PRUNE BRANCHES TO THIN OR MATCH, RETAIN NORMAL PLANT SHAPE.

SHRUBS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS THEY BORE TO ORIGINAL GRADE

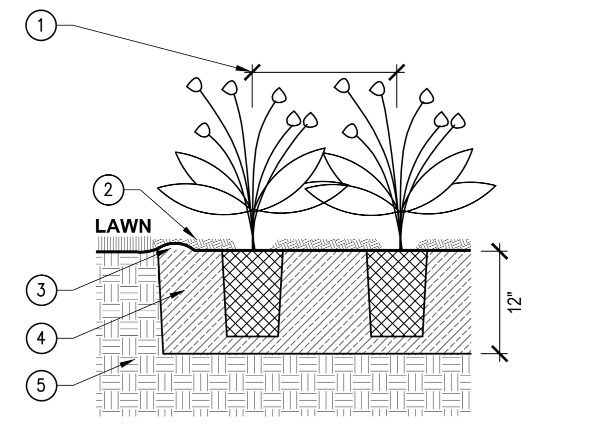
REMOVE ALL FIBER, PLASTIC OR METAL CONTAINERS

KNIFE SLIT SIDE OF ROOT BALL 6 TIMES, 1" DEEP EACH

1. AMEND SOIL PER SPECIFICATION REQUIREMENTS, WATER AND TAMP TO REMOVE AIR POCKETS
2. REMOVE ±4"–8" OF SOIL FROM TOP OF ROOT BALL TO EXPOSE ROOT FLARE. SOIL CAN BE USED IN PLANT MIX. REMOVE TOP 2/3 OF BASKET AND BURLAP
3. FORM SAUCER 3" HT. AT EDGE OF PLANT PIT
4. 3" MULCH, LEAVE 3" CIRCLE OF BARE SOIL AT TRUNK
5. 12" MIN. OR DEPTH OF ROOT BALL
6. UNDISTURBED SUBSOIL

3 TALL SHRUB PLANTING

NOT TO SCALE



CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION

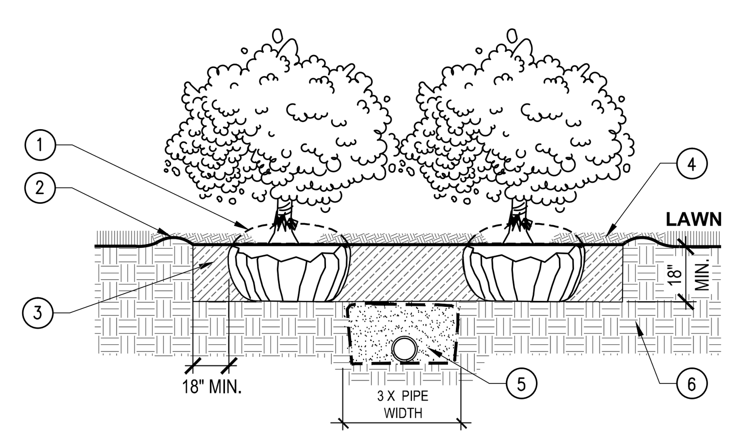
REMOVE ALL FIBER, PLASTIC OR METAL CONTAINERS

KNIFE SLIT SIDE OF ROOT BALL 6 TIMES, 1" DEEP EACH

1. IRREGULAR PLANT SPACING
2. 1–1/2" DEPTH DOUBLE PROCESSED SHREDDED BARK MULCH
3. MOUND TO FORM SAUCER – FORM SOIL SAUCER WITH 3" HT. CONTINUOUS RIM – SEE PLAN
4. EXCAVATE EXISTING SOIL 12" DEEP FILL WITH PLANT MIX (SEE SPECS.)
5. UNDISTURBED SUBGRADE

4 PERENNIAL / GROUNDCOVER PLANTING DETAIL

NOT TO SCALE



PRUNE BRANCHES TO THIN OR MATCH, RETAIN NORMAL PLANT SHAPE. PRUNE DEAD BRANCHES

SHRUBS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS THEY BORE TO ORIGINAL GRADE.

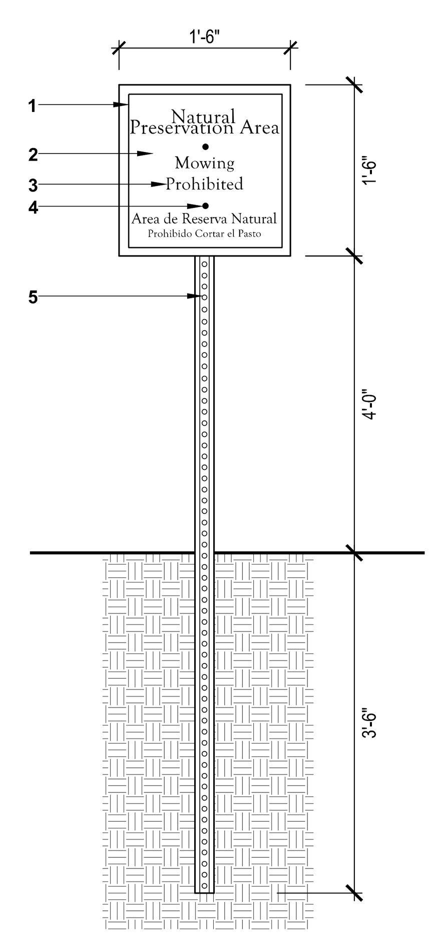
REMOVE ALL FIBER, PLASTIC OR METAL CONTAINERS.

KNIFE SLIT SIDE OF ROOT BALL 6 TIMES, 1" DEEP EACH

1. REMOVE TOP 2/3 OF BURLAP FROM ROOTBALL
2. MOUND TO FORM SAUCER – FORM SOIL SAUCER WITH 3" HT. CONTINUOUS RIM
3. SPECIFIED PLANTING MIX – WATER & TAMP TO REMOVE AIR POCKETS – 12" MIN. DEPTH OR DEPTH OF ROOT BALL.
4. 3" DEPTH MULCH – 6" BARE AT TRUNK – DO NOT BURY CROWN OF PLANT
5. WASHED PEASTONE IN MAX. 12" LIFTS, WRAPPED IN NON–WOVEN FILTER FABRIC, COMPACTED TO 98% MOD. PROCTOR, WITH 4" FLEXIBLE PERFORATED PIPE FABRIC COVERED, SEE PLAN FOR LOCATIONS – CONNECT TO STORM SYSTEM
6. UNDISTURBED SUBSOIL

5 SHRUB BED PLANTING DETAIL

NOT TO SCALE

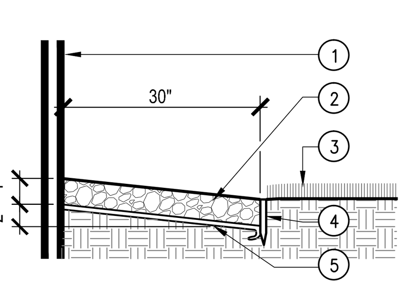


1 MARKER BORDER. COLOR TO BE WHITE
2 ALUMINUM MARKER PANEL. .063 FACE WITH VINYL COPY/DIGITAL PRINT. FROG GREEN – SUBMIT SAMPLE
3 MARKER LETTERING. COLOR – WHITE
4 5/16" STAINLESS BOLTS, WASHERS AND LOCKNUTS
5 GREEN U–CHANNEL POST DRIVEN INTO VIRGIN SOIL

NOTES:
1. INSTALL MARKER PER MANUF. REC. SUBMIT FULL SHOP DRAWINGS INCLUDING MANUF. TECHNIQUES, FASTENERS, COLOR SAMPLES AND FONT SIZES FOR APPROVAL PRIOR TO FABRICATION.
2. LETTER SIZES TO BE DETERMINED BY MARKER MANUF.
3. ALL COLORS TO BE CONFIRMED BY OWNER PRIOR TO FABRICATION.
4. MARKER LOCATION TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
5. BACK OF MARKER TO BE BARE ALUMINUM
6. NO MOW SIGNS TO BE PLACED AROUND THE STORMWATER BASIN, RAIN GARDENS, AND AT THE SOD EDGE ON THE NORTH END OF THE DISTURBANCE LIMITS AT 100' INTERVALS MAX. OR PER LANDSCAPE ARCHITECT. ALL LOCATIONS TO BE STAKED AND FIELD VERIFIED BY LANDSCAPE ARCHITECT

6 / L-301 NATURE AREA - "NO MOW" MARKER

NOT TO SCALE



1. FACE OF BUILDING
2. 4" DEEP, 2" EGGSTONE MULCH
3. LAWN AREA OR PLANT BED
4. 4" RYERSON BLACK STEEL EDGING
5. TYPAR FILTER / WEED BARRIER

7 / L-311 STONE MAINTENANCE STRIP DETAIL COURTYARDS ONLY

NOT TO SCALE

UPLAND ZONE SEED MIX (UZM)

Low-profile Prairie Seed Mix

Botanical Name	Common Name	PLS Ounces/Acre
Permanent Grasses:		
Bouteloua curtipendula	Side Oats Grama	16.00
Carex spp.	Prairie Carex Mix	4.00
Elymus canadensis	Canada Wild Rye	32.00
Koeleria cristata	June Grass	1.00
Panicum virgatum	Switch Grass	1.00
Schizachyrium scoparium	Little Bluestem	36.00
	Total	**90.00**
Temporary Cover:		
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	**460.00**
Forbs:		
Amorpha canescens	Lead Plant	0.50
Anemone cylindrica	ThimbleWeed	0.50
Asclepias syriaca	Common Milkweed	2.00
Asclepias tuberosa	Butterfly MilkWeed	2.00
Aster ericoides	Heath Aster	0.25
Aster laevis	Smooth Blue Aster	1.00
Aster novae-angliae	New England Aster	0.50
Baptisia lactea	White Wild Indigo	2.00
Chamaecrista fasciculata	Partridge Pea	12.00
Coreopsis lanceolata	Sand Coreopsis	5.00
Coreopsis palmata	Prairie Coreopsis	1.00
Dalea candida	White Prairie Clover	1.50
Dalea purpurea	Purple Prairie Clover	1.50
Desmanthus illinoensis	Illinois Sensitive Plant	3.00
Echinacea purpurea	Broad-Leaved Purple Coneflower	7.00
Eryngium yuccifolium	Rattlesnake Master	3.00
Lespedeza capitata	Round-Head Bush Clover	2.00
Liatris aspera	Rough Blazing Star	0.50
Lupinus perennis	Wild Lupine	4.00
Monarda fistulosa	Wild Bergamot	0.75
Parthenium integrifolium	Wild Quinine	1.00
Penstemon digitalis	Foxglove Beard Tongue	0.50
Penstemon hirsutus	Hairy Beard Tongue	0.50
Pycnanthemum virginianum	Common Mountain Mint	1.00
Ratibida pinnata	Yellow Coneflower	4.00
Rudbeckia hirta	Black-Eyed Susan	5.00
Rudbeckia subtomentosa	Sweet Black-Eyed Susan	1.00
Silphium terebinthinaceum	Prairie Dock	0.50
Solidago rigida	Stiff Goldenrod	1.00
Solidago speciosa	Showy Goldenrod	0.50
Tradescantia ohiensis	Common Spiderwort	0.75
Verbena stricta	Hoary Vervain	1.00
Vernonia spp.	Ironweed (Various Mix)	1.75
Veronicastrum virginianum	Culvers Root	0.25
	Total	**68.75**

NATIVE SEEDING MAINTENANCE

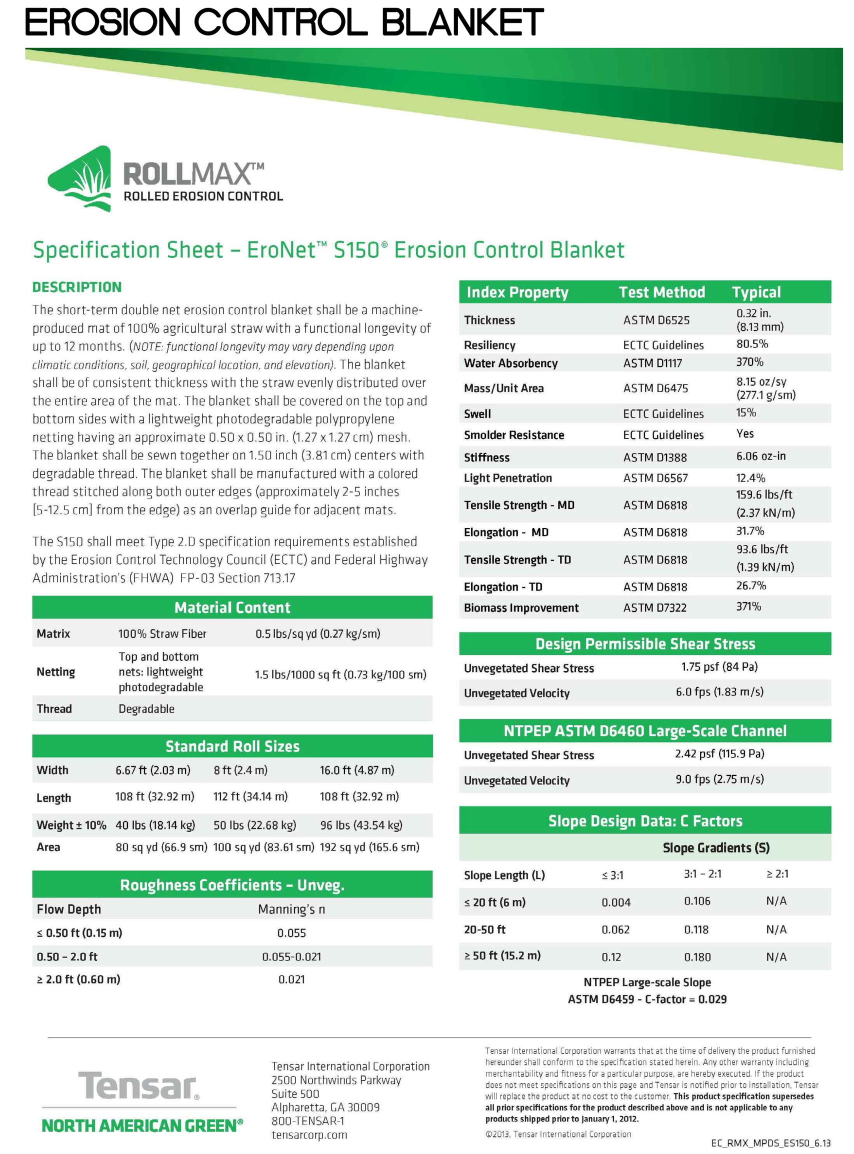
DURING THE FIRST GROWING SEASON, NATIVE AREAS SHOULD BE MOWED A MINIMUM OF FOUR TIMES TO HEIGHT OF ABOUT 4"–6" WHEN THE GROWTH REACHES 10"–12". SELECTIVE HERBICIDE APPLICATIONS OR HAND PULLING MAY BE NEEDED TO CONTROL UNWANTED WEED POPULATIONS. IF A MOWER CANNOT BE SET HIGH ENOUGH, A STRING TRIMMER MAY BE USED.

DURING THE SECOND GROWING SEASON, NATIVE AREAS SHOULD BE MOWED A MINIMUM OF TWO TIMES TO HEIGHT OF ABOUT 8" WHEN THE GROWTH REACHES 10"–18". SELECTIVE HERBICIDE APPLICATIONS OR HAND PULLING MAY BE NEEDED TO CONTROL UNWANTED WEED POPULATIONS.

BY THE SECOND GROWING SEASON IT SHOULD BE APPARENT IF SOME AREAS NEED RESEEDING. RESEED OR OVERSEED AS NEEDED TO PROVIDE FOR FULL COVERAGE.

LONG TERM MANAGEMENT MAY INCLUDE PRESCRIBED BURNING, MOWING, HAND PULLING, AND SELECTIVE HERBICIDE APPLICATIONS. IF BURNING IS NOT ALLOWED OR FEASIBLE, THE PLANTING MAY BE MOWED TO A SHORT HEIGHT AND THE CLIPPINGS REMOVED IN THE EARLY SPRING BEFORE GROUND NESTING BIRDS BEGIN NESTING.

EROSION CONTROL BLANKET



BASIN SLOPE SEED MIX (BSM)

Slope Stabilization Seed Mix

Botanical Name	Common Name	PLS Ounces/Acre
Permanent Grasses:		
Andropogon gerardii	Big Bluestem	48.00
Bouteloua curtipendula	Side-Oats Grama	16.00
Carex spp.	Prairie Sedge Mix	4.00
Elymus canadensis	Canada Wild Rye	32.00
Elymus virginicus	Virginia Wild Rye	24.00
Panicum virgatum	Switch Grass	12.00
Schizachyrium scoparium	Little Bluestem	32.00
Sorghastrum nutans	Indian Grass	32.00
	Total	**200.00**
Temporary Cover:		
Avena sativa	Common Oat	512.00
Lolium multiflorum	Annual Rye	240.00
	Total	**752.00**

BASIN BOTTOM SEED MIX (BBM)

Stormwater Seed Mix

Botanical Name	Common Name	PLS Ounces/Acre
Permanent Grasses/Sedges/Rushes:		
Carex crisatella	Crested Oval Sedge	2.00
Carex lurida	Bottlebrush Sedge	3.00
Carex vulpinoidea	Brown Fox Sedge	6.00
Elymus virginicus	Virginia Wild Rye	13.50
Glyceria striata	Fowl Manna Grass	1.25
Juncus effusus	Common Rush	2.00
Leersia oryzoides	Rice Cut Grass	1.00
Panicum virgatum	Switch Grass	2.00
Scirpus atrovirens	Dark Green Rush	2.00
Scirpus cypernus	Wool Grass	1.00
Scirpus fluviatilis	River Bulrush	0.25
Scirpus validus	Great Bulrush	3.00
	Total	**37.00**
Temporary Cover:		
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	**460.00**
Forbs & Shrubs:		
Alisma spp.	Water Plantain (Various Mix)	4.25
Asclepias incarnata	Swamp Milkweed	1.50
Aster novae-angliae	New England Aster	1.50
Bidens spp.	Bidens (Various Mix)	2.00
Helenium autumnale	Sneezeweed	2.00
Iris virginica	Blue Flag	4.00
Lycopus americanus	Common Water Horehound	0.25
Mimulus ringens	Monkey Flower	1.00
Penthorum sedoides	Ditch Stonecrop	0.50
Polygonum spp.	Pinkweed (Various Mix)	4.00
Rudbeckia subtomentosa	Sweet Black-Eyed Susan	1.00
Rudbeckia triloba	Brown-Eyed Susan	1.50
Sagittaria latifolia	Common Arrowhead	1.00
Senna hebacarpa	Wild Senna	1.00
Solidago riddelli	Riddell's Goldenrod	0.50
Thalictrum dasycarpum	Purple Meadow Rue	2.00
	Total	**28.00**

SEED MIX NOTES

1. THE SEED MIXES SHALL BE APPLIED AT THE SPECIFIED RATE OF FOR EACH MIX.
2. MUST BE INSTALLED TO MANUFACTURER SPECIFICATION AND REQUIREMENTS.

MANUFACTURER: CARDNO NATIVE PLANT NURSERY
128 SUMMIT DRIVE
WALKERTON, INDIANA 46574
PHONE: 574–586–2412
FAX: 574–586–2718
EMAIL: NURSERYSALES@CARDNO.COM
WEBSITE: WWW.CARDNONATIVEPLANTNURSERY.COM

LANDSCAPE CALCULATIONS:

(PP) PARKING LOT - PERIMETER REQUIREMENTS

TOTAL PARKING LOT R.O.W. FRONTAGE:	**321 LF**
TREES REQ. (1 TREE / 30 LF):	11 TREES
TREES PROVIDED:	**11 TREES**

(PI) PARKING LOT - INTERIOR REQUIREMENTS

(PI-W) WEST PARKING LOT

26 SPACES x 270 SF = 7,020 SF / 15 SF =	468 SF REQUIRED
AREA = TO (3) SPACES (18' LONG x 9' WD.) =	**468 SF PROVIDED**
WEST P. LOT TREES REQ. (468 SF / 150 SF):	4 TREES
WEST P. LOT TREES PROVIDED:	**4 TREES**

(PI-E) EAST PARKING LOT

56 SPACES x 270 SF = 15,120 SF / 15 SF =	1,008 SF REQUIRED
AREA = TO (7) SPACES (18' LONG x 9' WD.) =	**1,134 SF PROVIDED**
EAST P. LOT TREES REQ. (1,008 SF / 150 SF):	7 TREES
EAST P. LOT TREES PROVIDED:	**7 TREES**

(PI-R) REMAINDER PARKING LOTS

47 SPACES x 270 SF = 12,690 SF / 15 SF =	846 SF REQUIRED
PARKING LOT ISLAND AREA =	**1,245 SF PROVIDED**
REMAINDER P. LOT TREES REQ. (846 SF / 150 SF):	6 TREES
REMAINDER P. LOT TREES PROVIDED:	**6 TREES**

(TC) TRAIL CANOPY TREES

TREES REQUIRED:	0 TREES
TREES PROVIDED:	**16 TREES**

(B) BUFFER TREES

EVERGREEN TREES REQUIRED:	SOLID SCREEN
EVERGREEN TREES PROVIDED:	**39 TREES**

PLANT LIST - PARKING LOT PERIMETER (PP)

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
2	AS	Sugar Maple *Acer saccharum*	3" Cal.	B&B
2	LT	Tulip Tree *Liriodendron tulipifera*	3" Cal.	B&B
4	QR	Northern Red Oak - Heavy *Quercus rubra*	3" Cal.	B&B
3	UP	Princeton Elm *Ulmus americana 'Princeton'*	3" Cal	B&B

PLANT LIST - PARKING LOT INTERIOR (PI-W)

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
3	CO	Hackberry *Celtis occidentalis*	3" Cal.	B&B
1	LT	Tulip Tree *Liriodendron tulipifera*	3" Cal.	B&B

PLANT LIST - PARKING LOT INTERIOR (PI-E)

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
5	LT	Tulip Tree *Liriodendron tulipifera*	3" Cal.	B&B
2	QR	Northern Red Oak - Heavy *Quercus rubra*	3" Cal.	B&B

PLANT LIST - PARKING LOT INTERIOR (PI-R)

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
1	LT	Tulip Tree *Liriodendron tulipifera*	3" Cal.	B&B
2	QR	Northern Red Oak - Heavy *Quercus rubra*	3" Cal.	B&B
3	UP	Princeton Elm *Ulmus americana 'Princeton'*	3" Cal	B&B

PLANT LIST - TRAIL CANOPY (TC)

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
16	AB	Autumn Blaze Maple *Acer x. fremanii 'Autumn Blaze'*	3" Cal.	B&B

PLANT LIST - BUFFER (B)

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
17	PA	Norway Spruce *Picea Abies*	7' Ht.	B&B
22	PD	Black Hills Spruce *Picea g. 'Densata'*	7' Ht.	B&B

PLANT LIST - INTERIOR (I)

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
6	AS	Sugar Maple *Acer saccharum*	3" Cal.	B&B
2	QR	Northern Red Oak - Heavy *Quercus rubra*	3" Cal.	B&B
4	PS	White pine *Pinus strobus*	8'Ht.	B&B
3	AL8	Serviceberry *Amelanchier laevis*	8' Ht. multi	B&B
53	JK6	Ketler Juniper *J. 'Ketlerii'*	6' Ht.	B&B
187	JNB	New Blue Tams Juniper *Juniperus t. 'New Blue'*	24" Spr.	Cont.
30	RA	Gro-low Fragrant Sumac *Rhus aromatica'Gro-low'*	24" Ht.	Cont.
114	RAL	Alpine Currant *Ribes alpinum*	30" Ht. Full	B&B
79	SAW	Anthony Waterer Spirea *Spirea 'Anthony Waterer'*	24" Ht.	Cont.
119	SP	Little Princess Spirea *Spirea japonica 'Little Princess'*	24" Ht.	Cont.
78	VD	Arrowood Viburnum *Viburnum l. 'Mohican'*	36" Ht.	BB
20	HY4	Stella D'Oro Daylilies *Hemerocallis 'Stella D'Oro'*	3 Fan min.	Cont.
100	VIN	Annual Vinca *Catharansus rosens*	48/Flat	Cont.
16	MS	Slender Maiden Grass *Miscanthus sin. 'Gracillimus'*	1 Gal.	Cont.
219	PA	Dwarf Fountain Grass *Pennisetum a. 'Hameln'*	1 Gal.	Cont.

NOTE:

CONTRACTOR TO VERIFY ALL PLANT QUANTITIES WHEN SUBMITTING PROPOSAL FORM.

BIDS WILL NOT BE CONSIDERED IF NOT ON THE PROVIDED PROPOSAL FORM

NSA
Architects Engineers Planners
23761 Research Drive
Farmington Hills
Michigan 48335
248.477.2444
248.477.2445 fax
www.nsa-ae.com
Founded 1960

HWLA
HAGENBUCH WEIKAL LANDSCAPE ARCHITECTURE
248 477 3600 TEL
WWW.KW-LA.COM
33203 BIDDESTONE LANE, FARMINGTON HILLS, MI 48334

Client:

GRAND HAVEN SENIOR LEASING, L.L.C.
SOUTHFIELD MICHIGAN
248.386.0300
248.386.0314 (fax)

Project Title:

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GRAND HAVEN TWP. MICHIGAN

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STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn:
Designed:
Checked:
Approved:

CAD Drawing File:

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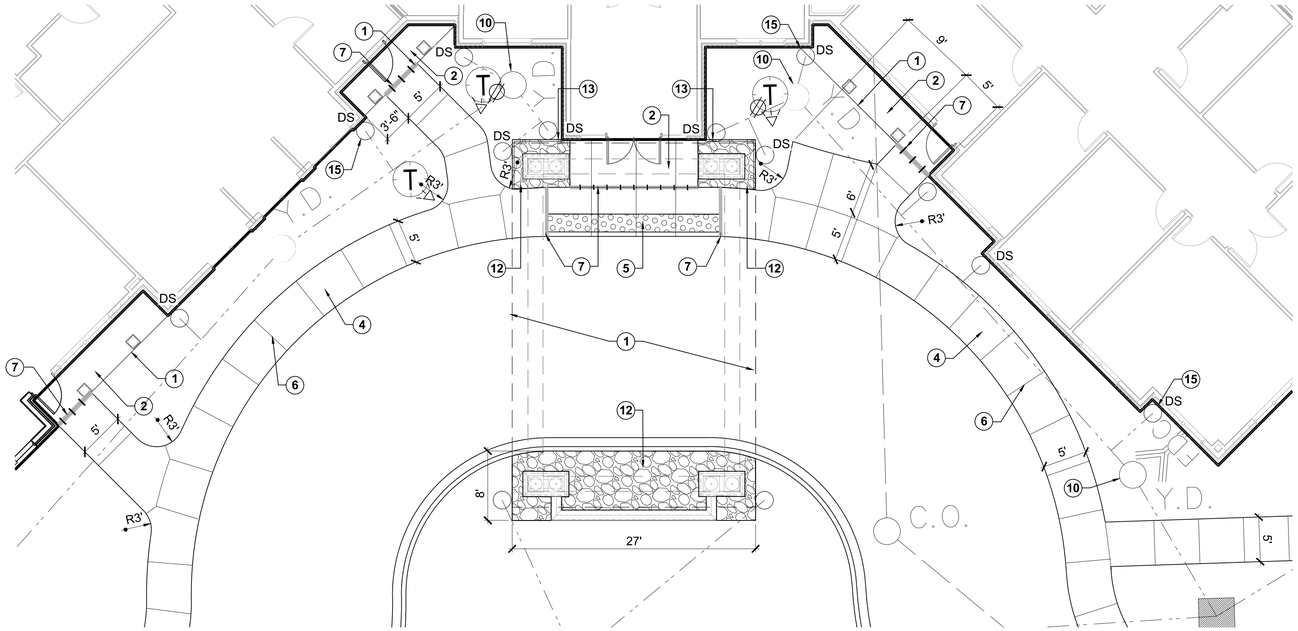
Project Number: 216212.00

Sheet Title:

CALCULATIONS, PLANT LISTS & DETAILS

Sheet Number: L-302

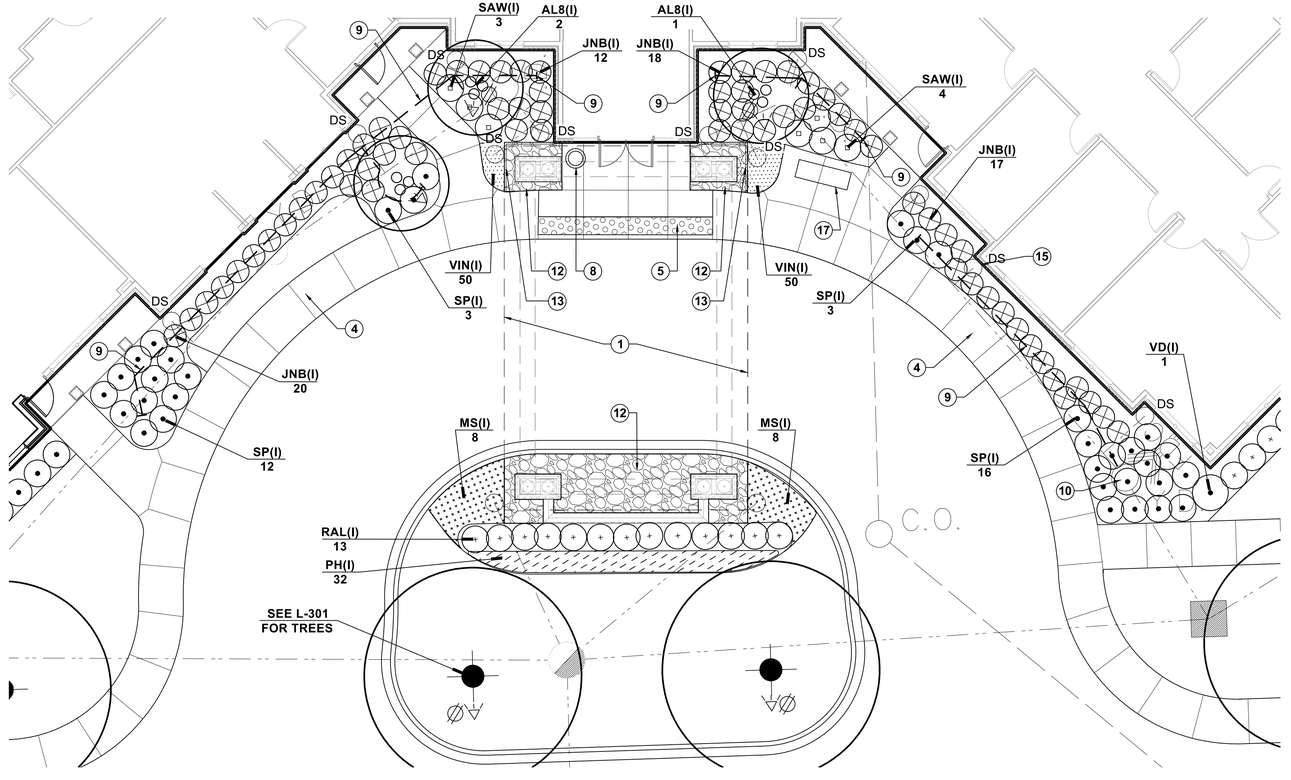


1 L-101

ENTRANCE LAYOUT PLAN

SCALE 1/8" = 1'-0"

NORTH



2 L-301

ENTRANCE PLANTING PLAN

SCALE 1/8" = 1'-0"

NORTH

GENERAL LAYOUT NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET BUILDING PORCHES, TYPICAL.
3. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET CURBS, TYP.
4. EXPANSION JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 18' O.C. TYP.
   5' WD. SIDEWALK – 20' O.C. TYP.
   4' WD. SIDEWALK – 20' O.C. TYP.
   3' WD. SIDEWALK – 18' O.C. TYP.
5. CONTROL JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 6' X 6' PANEL
   5' WD. SIDEWALK – 5' X 5' PANEL
   4' WD. SIDEWALK – 4' X 4' PANEL
   3' WD. SIDEWALK – 3' X 3' PANEL
6. DO NOT SCALE PRINTS.
7. ALL ANGLES ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
8. CONCRETE AND ASPHALT WALKS TO MEET PORCHES FLUSH (NO STEP) UNLESS OTHERWISE NOTED.
9. SEE CIVIL ENGINEERING DRAWINGS FOR LAYOUT OF ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.
10. ALL RADII ON CONCRETE AND ASPHALT SIDEWALKS TO BE 5' R. UNLESS OTHERWISE NOTED.
11. TOP AND BOTTOM OF RETAINING WALLS – SEE GRADING PLANS.
12. ALL DIMENSIONS TO BACK OF CURB UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS FOR RETAINING WALLS TO BOTTOM COURSE OF WALL.

LIGHT KEY:

- UPLIGHT – SEE 2/L-102 & 1/L-302 ALSO SEE SITE ELECTRICAL PLANS.
- DUPLEX OUTLET – SEE 3/L-102 & SITE ELEC. PLANS
- BOLLARD LIGHT – SITE ELEC. PLANS FOR DETAILS AND LOCATIONS
- LIGHT POLE – 3' OFF BACK OF CURB, 2' OFF BACK OF SIDEWALK. SEE SITE ELEC. PLANS
- (T) LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

NOTE KEY: (2)

1. OVERHEAD CANOPY – SEE ARCH. PLANS
2. CONCRETE PORCH – SEE ARCH. PLANS
3. WINDOW CLEAR VIEW ZONE – NO TREES
4. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
5. DETECTABLE WARNING STRIP – SEE CIVIL PLANS
6. CONTROL JOINT – SEE CIVIL PLANS
7. EXP JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
8. 4" CONC. WITH 3" "PICTURE FRAME" TOOLED EDGE, HEAVY BROOM FINISH. NOTE DIRECTION – SEE 4/L-102
9. 4" FLEXIBLE, PERFORATED, FABRIC COVERED PVC DRAINTILE – CONNECT TO STORM SYSTEM – SEE 5/L-302
10. DRAINAGE STRUCTURE – SEE CIVIL PLANS
11. METAL FENCE – SEE 4/L-313
12. 2" DIA. EGGSTONE, 4" DEEP OVER TYPAR FABRIC
13. 4" HT. BLACK STEEL EDGING
14. STONE MAINTENANCE STRIP – SEE 7/L-302
15. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
16. DUPLEX OUTLET ON SIDE OF BUILDING – SEE 3/L-102
17. BENCH – SEE SITE FURNITURE SCHEDULE 5/L-313
18. TRASH RECEPTACLE – SEE SITE FURNITURE SCHEDULE 5/L-313
19. UMBRELLA TABLE & CHAIRS – SEE SITE FURNITURE SCHEDULE 5/L-313

GENERAL PLANTING NOTES:

- (A) ALL TREES TO HAVE CLAY OR LOAM BALLS, TREES WITH SAND BALLS WILL BE REJECTED.
- (B) ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.
- (C) ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER, TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.
- (D) ALL MULTI-STEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.
- (E) ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE LAST FIVE GROWING SEASONS.
- (F) NO MACHINERY IS TO BE USED WITHIN THE DRIPLINE OF EXISTING TREES. HAND GRADE ALL LAWN AREAS WITHIN DRIPLINE OF EXISTING TREES.
- (G) ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL.
- (H) IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS, WALKS AND PAVED AREAS.
- (I) ALL PLANTING BEDS SHALL RECEIVE SHREDDED BARK MULCH. SEE PLANTING DETAILS FOR DEPTHS.
- (J) SEE SPECIFICATIONS FOR ADDITIONAL COMMENTS, REQUIREMENTS, PLANTING PROCEDURES AND WARRANTY STANDARDS.

PLANT MIX

EXCAVATE PLANT BEDS TO DEPTH SHOWN ON DETAILS – DISPOSE OF SPOILS OFF SITE.

PLANTING BEDS TO RECEIVE MIXTURE OF 70% LOAM TOPSOIL, 10% COMPOST, 20% SAND;

ADDITIONALLY – HAND TILL INTO EVERY 150 SQ. FT. BED AREA:

(1) 6 CU. FT. BALE ORGANIC COMPOST

(1) 40 LB BAG COMPOSTED POULTRY MANURE "CHICK MAGIC" 5-3-2 WWW.CHICKMAGIC.NET (262)495-6220

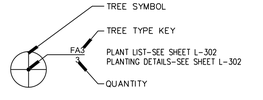
(1) 5 LB BAG SHEMINS 13-13-13 MULTI PURPOSE FERTILIZER

HAND TILL INTO BED TO MINIMUM DEPTH OF 12"

PLANT BEDS

ALL PLANT BEDS TO BE FULLY EXCAVATED TO DEPTH SHOWN ON DETAILS AND AREAS SHOWN ON PLANS, AND TO RECEIVE CONTINUOUS PLANT MIX AS SPECIFIED (NOT INDIVIDUAL PLANT HOLES)

PLANTING KEY:



MULCH

MULCH TO BE DOUBLE SHREDDED HARDWOOD BARK MULCH

NO GROUND WOOD PALETTE MULCH PERMITTED

TOPSOIL

CONTRACTOR TO TILL OR DISK SUBGRADE TO 6" DEPTH AND INSTALL 4" COMPACTED DEPTH TOPSOIL IN ALL LAWN AREAS – FROM ONSITE STOCKPILE OR PROVIDED TO COMPLETE THE PROJECT

LANDSCAPE EDGING

ALL LANDSCAPE EDGES ARE SHOVEL CUT

PLANT SPACING

FILL BED WITH PLANTS SPECIFIED. KEEP PLANTS AWAY FROM BUILDING 12" MATURE SIZE

WATERING

CONTRACTOR RESPONSIBLE FOR MONITORING THE WATERING OF ALL PLANTINGS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD.

PLANTINGS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE ONE REQUIRED REPLACEMENT PLANT AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

CONTRACTOR IS ALSO RESPONSIBLE FOR MONITORING THE WATERING OF ALL NEWLY PLANTED LAWN AREAS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD. NEWLY PLANTED LAWN AREAS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE REQUIRED REPLACEMENT TO ESTABLISH A HEALTHY FULL DENSE LAWN AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

LAWNS:

ALL PROPOSED LAWN AREAS TO BE IRRIGATED SOD.

IRRIGATION SYSTEM

PROVIDE UNDERGROUND AUTOMATIC IRRIGATION SYSTEM. PROVIDE SHOP DRAWING INCLUDING SEPARATE ZONES FOR LAWNS, SHRUBS, PERENNIALS AND ANNUAL FLOWERS. INCLUDE QUICK COUPLERS FOR HAND WATERING AREAS IF NECESSARY. SUBMIT SHOP DRAWING TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL.

NOTE:

CONTRACTOR TO VERIFY ALL PLANT QUANTITIES WHEN SUBMITTING PROPOSAL FORM.

BIDS WILL NOT BE CONSIDERED IF NOT ON THE PROVIDED PROPOSAL FORM

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Project Title:

REGENCY AT GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

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STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:

Checked: Approved:

CAD Drawing File:

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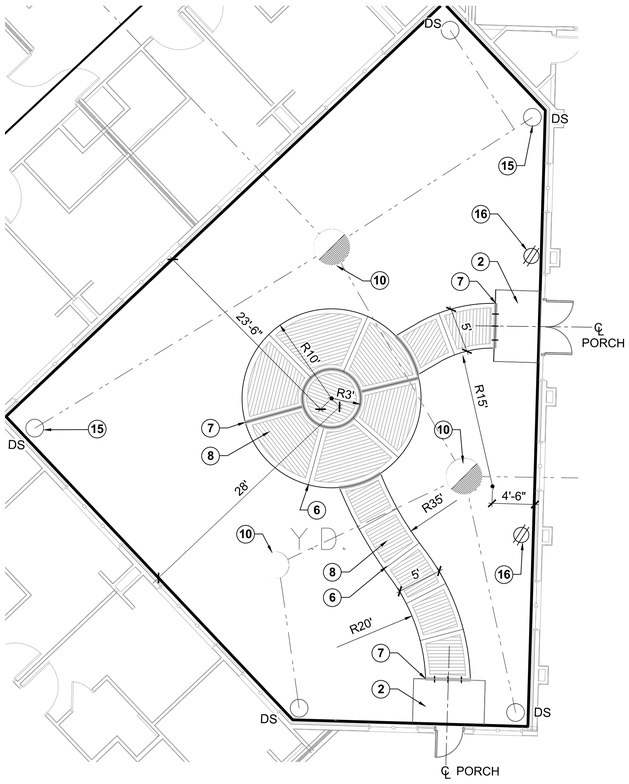
Project Number: 216212.00

Sheet Title:

ENTRANCE PLANS

Sheet Number: L-310

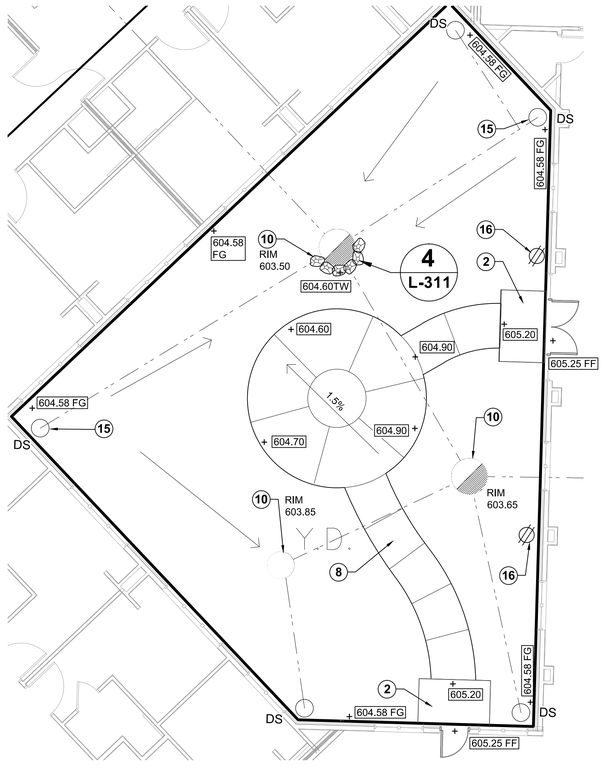


WEST INTERIOR COURTYARD

1 L-101 LAYOUT PLAN

SCALE 1/8" = 1'-0"

NORTH

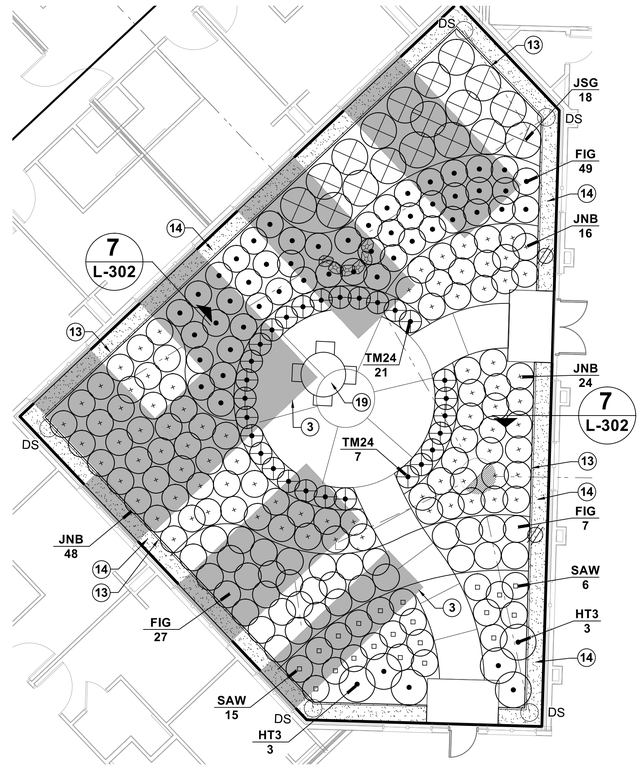


WEST INTERIOR COURTYARD

2 L-101 GRADING PLAN

SCALE 1/8" = 1'-0"

NORTH



WEST INTERIOR COURTYARD

3 L-301 PLANTING PLAN

SCALE 1/8" = 1'-0"

NORTH

NOTE KEY: (2)

1. OVERHEAD CANOPY – SEE ARCH. PLANS
2. CONCRETE PORCH – SEE ARCH. PLANS
3. WINDOW CLEAR VIEW ZONE – NO TREES
4. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
5. DETECTABLE WARNING STRIP – SEE CIVIL PLANS
6. CONTROL JOINT – SEE CIVIL PLANS
7. EXP JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
8. 4" CONC. WITH 3" "PICTURE FRAME" TOOLED EDGE, HEAVY BROOM FINISH. NOTE DIRECTION – SEE 4/L-102
9. 4" FLEXIBLE, PERFORATED, FABRIC COVERED PVC DRAINTILE – CONNECT TO STORM SYSTEM – SEE 5/L-302
10. DRAINAGE STRUCTURE – SEE CIVIL PLANS
11. METAL FENCE – SEE 4/L-313
12. 2" DIA. EGGSTONE, 4" DEEP OVER TYPAR FABRIC
13. 4" HT. BLACK STEEL EDGING
14. STONE MAINTENANCE STRIP – SEE 7/L-302
15. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
16. DUPLEX OUTLET ON SIDE OF BUILDING – SEE 3/L-102
17. BENCH – SEE SITE FURNITURE SCHEDULE 5/L-313
18. TRASH RECEPTACLE – SEE SITE FURNITURE SCHEDULE 5/L-313
19. UMBRELLA TABLE & CHAIRS – SEE SITE FURNITURE SCHEDULE 5/L-313

WINDOW CLEAR ZONE

NO TREES PERMITTED

NOTE:
EXCAVATE ENTIRE INTERIOR COURTYARDS AND INSTALL 18" MIN. PLANT MIX, TYP.

NOTE:
CONTRACTOR TO VERIFY ALL PLANT QUANTITIES WHEN SUBMITTING PROPOSAL FORM.

BIDS WILL NOT BE CONSIDERED IF NOT ON THE PROVIDED PROPOSAL FORM

GENERAL LAYOUT NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET BUILDING PORCHES, TYPICAL.
3. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET CURBS, TYP.
4. EXPANSION JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 18' O.C. TYP.
   5' WD. SIDEWALK – 20' O.C. TYP.
   4' WD. SIDEWALK – 20' O.C. TYP.
   3' WD. SIDEWALK – 18' O.C. TYP.
5. CONTROL JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 6' X 6' PANEL
   5' WD. SIDEWALK – 5' X 5' PANEL
   4' WD. SIDEWALK – 4' X 4' PANEL
   3' WD. SIDEWALK – 3' X 3' PANEL
6. DO NOT SCALE PRINTS.
7. ALL ANGLES ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
8. CONCRETE AND ASPHALT WALKS TO MEET PORCHES FLUSH (NO STEP) UNLESS OTHERWISE NOTED.
9. SEE CIVIL ENGINEERING DRAWINGS FOR LAYOUT OF ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.
10. ALL RADII ON CONCRETE AND ASPHALT SIDEWALKS TO BE 5' R. UNLESS OTHERWISE NOTED.
11. TOP AND BOTTOM OF RETAINING WALLS – SEE GRADING PLANS.
12. ALL DIMENSIONS TO BACK OF CURB UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS FOR RETAINING WALLS TO BOTTOM COURSE OF WALL.

LIGHT KEY:

- UPLIGHT – SEE 2/L-102 & 1/L-302 ALSO SEE SITE ELECTRICAL PLANS.
- DUPLEX OUTLET – SEE 3/L-102 & SITE ELEC. PLANS
- BOLLARD LIGHT – SITE ELEC. PLANS FOR DETAILS AND LOCATIONS
- LIGHT POLE – 3' OFF BACK OF CURB, 2' OFF BACK OF SIDEWALK. SEE SITE ELEC. PLANS
- LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

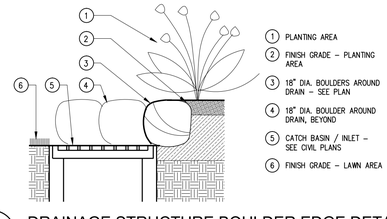
GENERAL GRADING NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. PROVIDE 2% MINIMUM DRAINAGE AWAY FROM BUILDINGS, TYP.
3. PROVIDE 1% MINIMUM DRAINAGE ON ALL WALKS.
4. DO NOT SCALE PRINTS.
5. CONTRACTOR TO CONTACT CIVIL ENGINEER AND LANDSCAPE ARCHITECT WITH ANY DISCREPANCIES BETWEEN GRADES SHOWN AND ACTUAL GRADES ON SITE. DO NOT MAKE ADJUSTMENTS WITHOUT APPROVAL OF THE CIVIL ENGINEER AND/ OR THE LANDSCAPE ARCHITECT.
6. SEE CIVIL ENGINEERING DRAWINGS FOR UTILITY STRUCTURE LOCATIONS.
7. ALL TOP OF CURB ELEVATIONS SHOWN ARE FROM, OR CALCULATED BASED ON THE CIVIL ENGINEERING DRAWINGS.
8. SEE CIVIL ENGINEERING DRAWINGS FOR GRADING AND PAVEMENT ELEVATIONS FOR ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.

CONTRACTOR TO VERIFY ALL CATCH BASIN RIMS AND INVERTS WITH CIVIL PLANS

GRADING KEY:

- + 84.20 PROPOSED GRADES
- FF FINISH FLOOR
- FG FINISH GRADE
- TC TOP OF CURB
- TP TOP OF PAVEMENT
- TW TOP OF WALL
- DS DOWNSPOUT
- SLOPE DIRECTION ARROW
- 4" PERF. FABRIC COVERED DRAIN TILE – SEE 1/L-302



1. PLANTING AREA
2. FINISH GRADE – PLANTING AREA
3. 18" DIA. BOULDERS AROUND DRAIN – SEE PLAN
4. 18" DIA. BOULDER AROUND DRAIN, BEYOND
5. CATCH BASIN / INLET – SEE CIVIL PLANS
6. FINISH GRADE – LAWN AREA

4 L-311 DRAINAGE STRUCTURE BOULDER EDGE DETAIL

NOT TO SCALE

GENERAL PLANTING NOTES:

- (A) ALL TREES TO HAVE CLAY OR LOAM BALLS, TREES WITH SAND BALLS WILL BE REJECTED.
- (B) ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.
- (C) ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER, TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.
- (D) ALL MULTI-STEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.
- (E) ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE LAST FIVE GROWING SEASONS.
- (F) NO MACHINERY IS TO BE USED WITHIN THE DRIPLINE OF EXISTING TREES. HAND GRADE ALL LAWN AREAS WITHIN DRIPLINE OF EXISTING TREES.
- (G) ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL.
- (H) IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS, WALKS AND PAVED AREAS.
- (I) ALL PLANTING BEDS SHALL RECEIVE SHREDDED BARK MULCH. SEE PLANTING DETAILS FOR DEPTHS.
- (J) SEE SPECIFICATIONS FOR ADDITIONAL COMMENTS, REQUIREMENTS, PLANTING PROCEDURES AND WARRANTY STANDARDS.

WATERING

CONTRACTOR RESPONSIBLE FOR MONITORING THE WATERING OF ALL PLANTINGS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD.

PLANTINGS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE ONE REQUIRED REPLACEMENT PLANT AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

CONTRACTOR IS ALSO RESPONSIBLE FOR MONITORING THE WATERING OF ALL NEWLY PLANTED LAWN AREAS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD. NEWLY PLANTED LAWN AREAS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE REQUIRED REPLACEMENT TO ESTABLISH A HEALTHY FULL DENSE LAWN AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

IRRIGATION SYSTEM

PROVIDE UNDERGROUND AUTOMATIC IRRIGATION SYSTEM. PROVIDE SHOP DRAWING INCLUDING SEPARATE ZONES FOR LAWNS, SHRUBS, PERENNIALS AND ANNUAL FLOWERS. INCLUDE QUICK COUPLERS FOR HAND WATERING AREAS IF NECESSARY. SUBMIT SHOP DRAWING TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL.

PLANT MIX

EXCAVATE PLANT BEDS TO DEPTH SHOWN ON DETAILS – DISPOSE OF SPOILS OFF SITE.

PLANTING BEDS TO RECEIVE MIXTURE OF 70% LOAM TOPSOIL, 10% COMPOST, 20% SAND;

ADDITIONALLY – HAND TILL INTO EVERY 150 SQ. FT. BED AREA:

(1) 6 CU. FT. BALE ORGANIC COMPOST

(1) 40 LB BAG COMPOSTED POULTRY MANURE "CHICK MAGIC" 5-3-2 WWW.CHICKMAGIC.NET (262)495-6220

(1) 5 LB BAG SHEMINS 13-13-13 MULTI PURPOSE FERTILIZER

HAND TILL INTO BED TO MINIMUM DEPTH OF 12"

MULCH

MULCH TO BE DOUBLE SHREDDED HARDWOOD BARK MULCH

NO GROUND WOOD PALETTE MULCH PERMITTED

TOPSOIL

CONTRACTOR TO TILL OR DISK SUBGRADE TO 6" DEPTH AND INSTALL 4" COMPACTED DEPTH TOPSOIL IN ALL LAWN AREAS – FROM ONSITE STOCKPILE OR PROVIDED TO COMPLETE THE PROJECT

LAWNS:

ALL PROPOSED LAWN AREAS TO BE IRRIGATED SOD.

LANDSCAPE EDGING

ALL LANDSCAPE EDGES ARE SHOVEL CUT

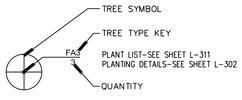
PLANT SPACING

FILL BED WITH PLANTS SPECIFIED. KEEP PLANTS AWAY FROM BUILDING 12" MATURE SIZE

PLANT BEDS

ALL PLANT BEDS TO BE FULLY EXCAVATED TO DEPTH SHOWN ON DETAILS AND AREAS SHOWN ON PLANS, AND TO RECEIVE CONTINUOUS PLANT MIX AS SPECIFIED (NOT INDIVIDUAL PLANT HOLES)

PLANTING KEY:



PLANT LIST - WEST INTERIOR

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
83	FIG	Forsythia 'Gold Tide' *Forsythia x. 'Courtasol'*	30" Spr.	Cont.
6	HT3	Summer Hydrangea *Hydrangea tardiva*	3' Ht.	B&B
88	JNB	New Blue Tams Juniper *Juniperus t. 'New Blue'*	24" Spr.	Cont.
18	JSG	Sea Green Juniper *Juniperus 'Sea Green'*	24" Spr.	Cont.
21	SAW	Anthony Waterer Spirea *Spirea 'Anthony Waterer'*	24" Ht.	Cont.
28	TM24	Dense Yew *Taxus x. m. 'Densiformis'*	24" Ht.	B&B

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248.386.0300

248.386.0314 (fax)

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GRAND HAVEN TWP. MICHIGAN

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STATE OF MICHIGAN
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LANDSCAPE ARCHITECT
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Drawn: Designed:

Checked: Approved:

CAD Drawing File:

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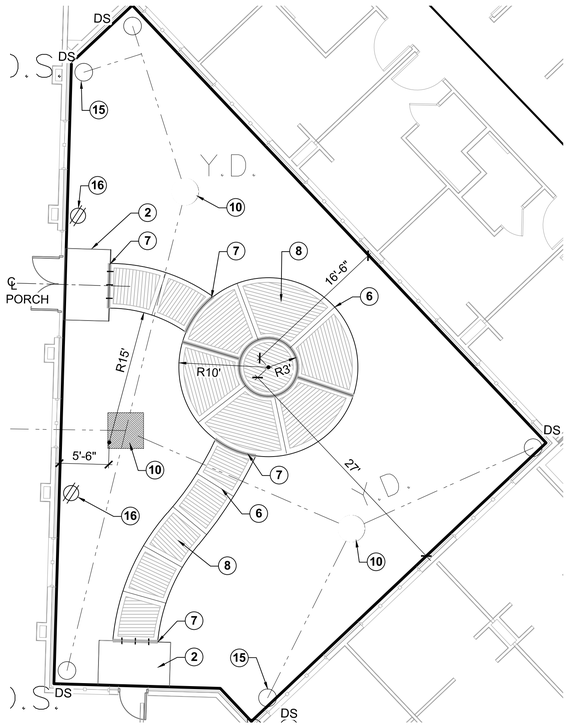
Project Number: 216212.00

Sheet Title:

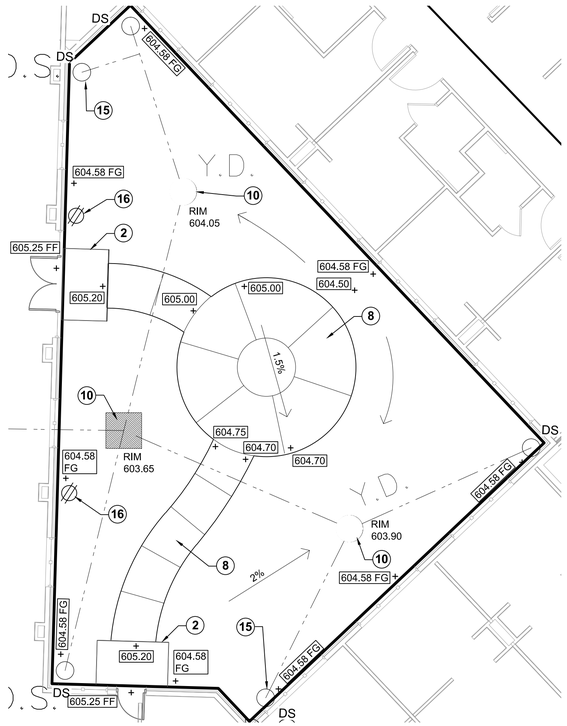
WEST INTERIOR COURTYARD PLANS

Sheet Number: L-311



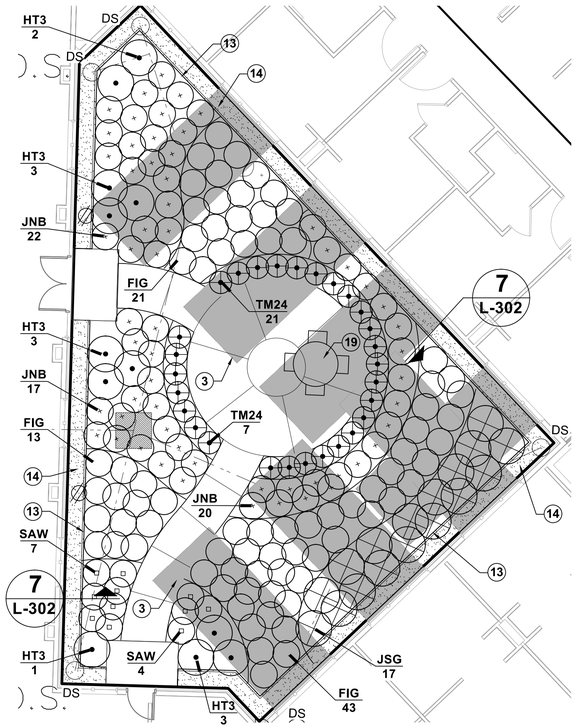
EAST INTERIOR COURTYARD LAYOUT PLAN

1 / L-101 — SCALE 1/8" = 1'-0" — NORTH



EAST INTERIOR COURTYARD GRADING PLAN

2 / L-101 — SCALE 1/8" = 1'-0" — NORTH



EAST INTERIOR COURTYARD PLANTING PLAN

3 / L-301 — SCALE 1/8" = 1'-0" — NORTH

NOTE KEY: (2)

1. OVERHEAD CANOPY – SEE ARCH. PLANS
2. CONCRETE PORCH – SEE ARCH. PLANS
3. WINDOW CLEAR VIEW ZONE – NO TREES
4. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
5. DETECTABLE WARNING STRIP – SEE CIVIL PLANS
6. CONTROL JOINT – SEE CIVIL PLANS
7. EXP JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
8. 4" CONC. WITH 3" "PICTURE FRAME" TOOLED EDGE, HEAVY BROOM FINISH. NOTE DIRECTION – SEE 4/L-102
9. 4" FLEXIBLE, PERFORATED, FABRIC COVERED PVC DRAINTILE – CONNECT TO STORM SYSTEM – SEE 5/L-302
10. DRAINAGE STRUCTURE – SEE CIVIL PLANS
11. METAL FENCE – SEE 4/L-313
12. 2" DIA. EGGSTONE, 4" DEEP OVER TYPAR FABRIC
13. 4" HT. BLACK STEEL EDGING
14. STONE MAINTENANCE STRIP – SEE 7/L-302
15. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
16. DUPLEX OUTLET ON SIDE OF BUILDING – SEE 3/L-102
17. BENCH – SEE SITE FURNITURE SCHEDULE 5/L-313
18. TRASH RECEPTACLE – SEE SITE FURNITURE SCHEDULE 5/L-313
19. UMBRELLA TABLE & CHAIRS – SEE SITE FURNITURE SCHEDULE 5/L-313

WINDOW CLEAR ZONE

NO TREES PERMITTED

NOTE:
EXCAVATE ENTIRE INTERIOR COURTYARDS AND INSTALL 18" MIN. PLANT MIX, TYP.

NOTE:
CONTRACTOR TO VERIFY ALL PLANT QUANTITIES WHEN SUBMITTING PROPOSAL FORM.

BIDS WILL NOT BE CONSIDERED IF NOT ON THE PROVIDED PROPOSAL FORM

GENERAL LAYOUT NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET BUILDING PORCHES, TYPICAL.
3. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET CURBS, TYP.
4. EXPANSION JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 18' O.C. TYP.
   5' WD. SIDEWALK – 20' O.C. TYP.
   4' WD. SIDEWALK – 20' O.C. TYP.
   3' WD. SIDEWALK – 18' O.C. TYP.
5. CONTROL JOINTS IN CONCRETE SIDEWALKS:
   6' WD. SIDEWALK – 6' X 6' PANEL
   5' WD. SIDEWALK – 5' X 5' PANEL
   4' WD. SIDEWALK – 4' X 4' PANEL
   3' WD. SIDEWALK – 3' X 3' PANEL
6. DO NOT SCALE PRINTS.
7. ALL ANGLES ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
8. CONCRETE AND ASPHALT WALKS TO MEET PORCHES FLUSH (NO STEP) UNLESS OTHERWISE NOTED.
9. SEE CIVIL ENGINEERING DRAWINGS FOR LAYOUT OF ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.
10. ALL RADII ON CONCRETE AND ASPHALT SIDEWALKS TO BE 5' R. UNLESS OTHERWISE NOTED.
11. TOP AND BOTTOM OF RETAINING WALLS – SEE GRADING PLANS.
12. ALL DIMENSIONS TO BACK OF CURB UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS FOR RETAINING WALLS TO BOTTOM COURSE OF WALL.

LIGHT KEY:

- UPLIGHT – SEE 2/L-102 & 1/L-302 ALSO SEE SITE ELECTRICAL PLANS.
- DUPLEX OUTLET – SEE 3/L-102 & SITE ELEC. PLANS
- BOLLARD LIGHT – SITE ELEC. PLANS FOR DETAILS AND LOCATIONS
- LIGHT POLE – 3' OFF BACK OF CURB, 2' OFF BACK OF SIDEWALK. SEE SITE ELEC. PLANS
- LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

GENERAL GRADING NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. PROVIDE 2% MINIMUM DRAINAGE AWAY FROM BUILDINGS, TYP.
3. PROVIDE 1% MINIMUM DRAINAGE ON ALL WALKS.
4. DO NOT SCALE PRINTS.
5. CONTRACTOR TO CONTACT CIVIL ENGINEER AND LANDSCAPE ARCHITECT WITH ANY DISCREPANCIES BETWEEN GRADES SHOWN AND ACTUAL GRADES ON SITE. DO NOT MAKE ADJUSTMENTS WITHOUT APPROVAL OF THE CIVIL ENGINEER AND/ OR THE LANDSCAPE ARCHITECT.
6. SEE CIVIL ENGINEERING DRAWINGS FOR UTILITY STRUCTURE LOCATIONS.
7. ALL TOP OF CURB ELEVATIONS SHOWN ARE FROM, OR CALCULATED BASED ON THE CIVIL ENGINEERING DRAWINGS.
8. SEE CIVIL ENGINEERING DRAWINGS FOR GRADING AND PAVEMENT ELEVATIONS FOR ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.

CONTRACTOR TO VERIFY ALL CATCH BASIN RIMS AND INVERTS WITH CIVIL PLANS

GRADING KEY:

- +84.20 PROPOSED GRADES
- FF FINISH FLOOR
- FG FINISH GRADE
- TC TOP OF CURB
- TP TOP OF PAVEMENT
- TW TOP OF WALL
- DS DOWNSPOUT
- SLOPE DIRECTION ARROW
- 4" PERF. FABRIC COVERED DRAIN TILE – SEE 1/L-302

GENERAL PLANTING NOTES:

A. ALL TREES TO HAVE CLAY OR LOAM BALLS, TREES WITH SAND BALLS WILL BE REJECTED.

B. ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.

C. ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER, TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.

D. ALL MULTI-STEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.

E. ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE LAST FIVE GROWING SEASONS.

F. NO MACHINERY IS TO BE USED WITHIN THE DRIPLINE OF EXISTING TREES. HAND GRADE ALL LAWN AREAS WITHIN DRIPLINE OF EXISTING TREES.

G. ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL.

H. IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS, WALKS AND PAVED AREAS.

I. ALL PLANTING BEDS SHALL RECEIVE SHREDDED BARK MULCH. SEE PLANTING DETAILS FOR DEPTHS.

J. SEE SPECIFICATIONS FOR ADDITIONAL COMMENTS, REQUIREMENTS, PLANTING PROCEDURES AND WARRANTY STANDARDS.

WATERING

CONTRACTOR RESPONSIBLE FOR MONITORING THE WATERING OF ALL PLANTINGS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD.

PLANTINGS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE ONE REQUIRED REPLACEMENT PLANT AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

CONTRACTOR IS ALSO RESPONSIBLE FOR MONITORING THE WATERING OF ALL NEWLY PLANTED LAWN AREAS FOR ONE YEAR FROM THE START OF THE WARRANTY PERIOD. NEWLY PLANTED LAWN AREAS THAT PERISH DUE TO LACK OF WATER, OR TOO MUCH WATER, DO NOT QUALIFY AS THE REQUIRED REPLACEMENT TO ESTABLISH A HEALTHY FULL DENSE LAWN AS STATED IN THE SPECIFICATION, AND SHALL BE REPLACED AT NO COST TO THE OWNER.

IRRIGATION SYSTEM

PROVIDE UNDERGROUND AUTOMATIC IRRIGATION SYSTEM. PROVIDE SHOP DRAWING INCLUDING SEPARATE ZONES FOR LAWNS, SHRUBS, PERENNIALS AND ANNUAL FLOWERS. INCLUDE QUICK COUPLERS FOR HAND WATERING AREAS IF NECESSARY. SUBMIT SHOP DRAWING TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL.

PLANT MIX

EXCAVATE PLANT BEDS TO DEPTH SHOWN ON DETAILS – DISPOSE OF SPOILS OFF SITE.

PLANTING BEDS TO RECEIVE MIXTURE OF 70% LOAM TOPSOIL, 10% COMPOST, 20% SAND;

ADDITIONALLY – HAND TILL INTO EVERY 150 SQ. FT. BED AREA:

(1) 6 CU. FT. BALE ORGANIC COMPOST

(1) 40 LB BAG COMPOSTED POULTRY MANURE "CHICK MAGIC" 5-3-2 WWW.CHICKMAGIC.NET (262)495-6220

(1) 5 LB BAG SHEMINS 13-13-13 MULTI PURPOSE FERTILIZER

HAND TILL INTO BED TO MINIMUM DEPTH OF 12"

MULCH

MULCH TO BE DOUBLE SHREDDED HARDWOOD BARK MULCH

NO GROUND WOOD PALETTE MULCH PERMITTED

TOPSOIL

CONTRACTOR TO TILL OR DISK SUBGRADE TO 6" DEPTH AND INSTALL 4" COMPACTED DEPTH TOPSOIL IN ALL LAWN AREAS – FROM ONSITE STOCKPILE OR PROVIDED TO COMPLETE THE PROJECT

LAWNS:

ALL PROPOSED LAWN AREAS TO BE IRRIGATED SOD.

LANDSCAPE EDGING

ALL LANDSCAPE EDGES ARE SHOVEL CUT

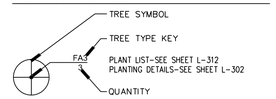
PLANT SPACING

FILL BED WITH PLANTS SPECIFIED. KEEP PLANTS AWAY FROM BUILDING 12" MATURE SIZE

PLANT BEDS

ALL PLANT BEDS TO BE FULLY EXCAVATED TO DEPTH SHOWN ON DETAILS AND AREAS SHOWN ON PLANS, AND TO RECEIVE CONTINUOUS PLANT MIX AS SPECIFIED (NOT INDIVIDUAL PLANT HOLES)

PLANTING KEY:



PLANT LIST - EAST INTERIOR

QUAN.	KEY	COMMON/ BOTANICAL NAME	SIZE	SPEC.
77	FIG	Forsythia 'Gold Tide' *Forsythia x. 'Courtasol'*	30" Spr.	Cont.
12	HT3	Summer Hydrangea *Hydrangea tardiva*	3' Ht.	B&B
59	JNB	New Blue Tams Juniper *Juniperus t. 'New Blue'*	24" Spr.	Cont.
17	JSG	Sea Green Juniper *Juniperus 'Sea Green'*	24" Spr.	Cont.
11	SAW	Anthony Waterer Spirea *Spirea 'Anthony Waterer'*	24" Ht.	Cont.
28	TM24	Dense Yew *Taxus x. m. 'Densiformis'*	24" Ht.	B&B

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HAGENBUCH WEIKAL
LANDSCAPE ARCHITECTURE

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WWW.KW-LA.COM
33203 BIDDESTONE LANE, FARMINGTON HILLS, MI 48334

Client:

GRAND HAVEN SENIOR LEASING, L.L.C.

SOUTHFIELD MICHIGAN
248.386.0300

248.386.0314 (fax)

Project Title:

REGENCY AT GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
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06-16-17	HFES PRELIMINARY
06-29-17	REVISED SITE PLAN SUBMITTAL

KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
STATE OF MICHIGAN
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:

Checked: Approved:

CAD Drawing File:

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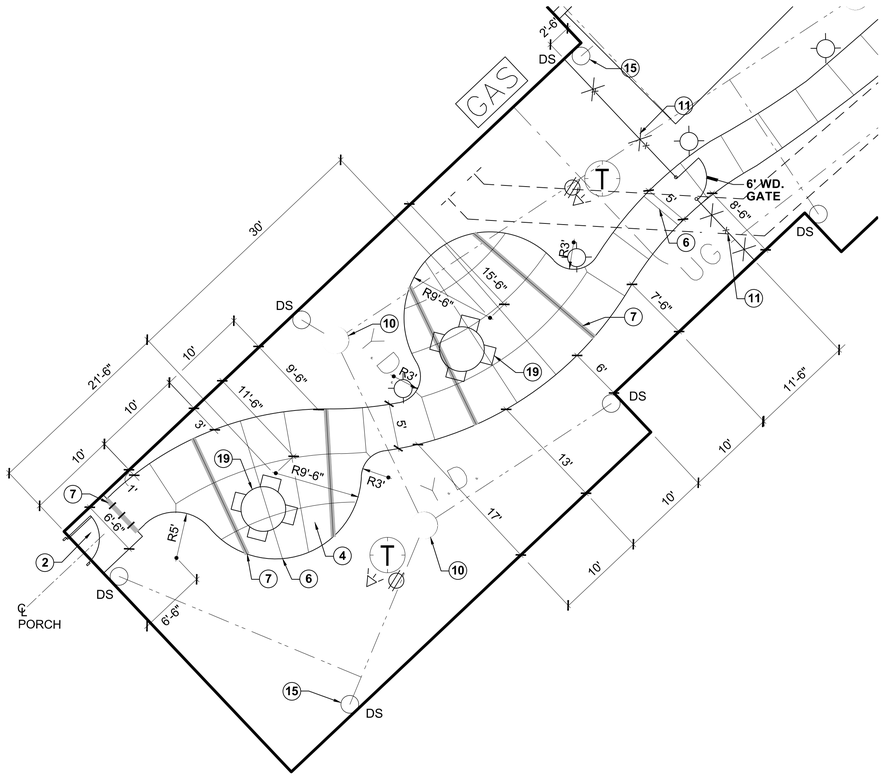
Project Number: 216212.00

Sheet Title:

EAST INTERIOR COURTYARD PLANS

Sheet Number: L-312



1 EXTERIOR COURTYARD LAYOUT PLAN

L-101

SCALE 1/8" = 1'-0"

NORTH

GENERAL LAYOUT NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET BUILDING PORCHES, TYPICAL.
3. INSTALL 1/2" EXPANSION JOINT WHERE CONCRETE WALKS MEET CURBS, TYP.
4. EXPANSION JOINTS IN CONCRETE SIDEWALKS:
   - 6' WD. SIDEWALK – 18' O.C. TYP.
   - 5' WD. SIDEWALK – 20' O.C. TYP.
   - 4' WD. SIDEWALK – 20' O.C. TYP.
   - 3' WD. SIDEWALK – 18' O.C. TYP.
5. CONTROL JOINTS IN CONCRETE SIDEWALKS:
   - 6' WD. SIDEWALK – 6' X 6' PANEL
   - 5' WD. SIDEWALK – 5' X 5' PANEL
   - 4' WD. SIDEWALK – 4' X 4' PANEL
   - 3' WD. SIDEWALK – 3' X 3' PANEL
6. DO NOT SCALE PRINTS.
7. ALL ANGLES ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
8. CONCRETE AND ASPHALT WALKS TO MEET PORCHES FLUSH (NO STEP) UNLESS OTHERWISE NOTED.
9. SEE CIVIL ENGINEERING DRAWINGS FOR LAYOUT OF ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.
10. ALL RADII ON CONCRETE AND ASPHALT SIDEWALKS TO BE 5' R. UNLESS OTHERWISE NOTED.
11. TOP AND BOTTOM OF RETAINING WALLS – SEE GRADING PLANS.
12. ALL DIMENSIONS TO BACK OF CURB UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS FOR RETAINING WALLS TO BOTTOM COURSE OF WALL.

LIGHT KEY:

- UPLIGHT – SEE 2/L-102 & 1/L-302 ALSO SEE SITE ELECTRICAL PLANS.
- DUPLEX OUTLET – SEE 3/L-102 & SITE ELEC. PLANS
- BOLLARD LIGHT – SITE ELEC. PLANS FOR DETAILS AND LOCATIONS
- LIGHT POLE – 3' OFF BACK OF CURB, 2' OFF BACK OF SIDEWALK. SEE SITE ELEC. PLANS
- (T) LOCATION OF TREE / FOCUS OF UPLIGHT

NOTE: LANDSCAPE ARCHITECT TO APPROVE ALL STAKED LOCATIONS FOR LIGHTS, UPLIGHTS AND DUPLEX OUTLETS PRIOR TO WIRING AND INSTALLATION

5 L-313 SITE FURNITURE SCHEDULE

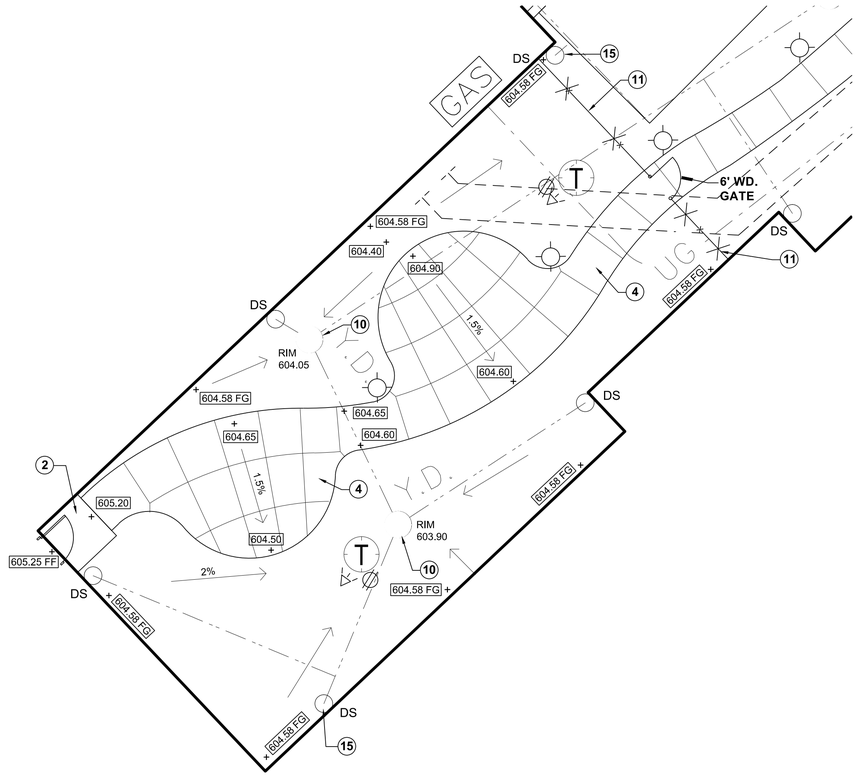
SITE BENCH: -- 1 TOTAL
"WELLSPRING" 72" LENGTH X 19" HEIGHT
COLOR BLACK POWDERCOAT
ANCHOR TO PAVING WITH BRASS SURFACE MOUNT
MANUF.: LANDSCAPE FORMS
CONTACT: TONI GASPERONI – 586.201.8213

TRASH RECEPTACLE: -- 2 TOTAL
"WELLSPRING" 22" SQ. X 31.5" HT.
COLOR BLACK POWDERCOAT
ANCHOR TO PAVING WITH BRASS SURFACE MOUNT
PER MANUFACTURER. LANDSCAPE FORMS –
TONI GASPERONI: (586) 201-8213

DINING CHAIRS: -- 28 TOTAL
"WELLSPRING" DINING CHAIRS
34" HT., 23" X 22.5" X 19" HT. SEAT WITH ARMS
COLOR BLACK POWDERCOAT
ANCHOR TO PAVING WITH BRASS SURFACE MOUNT
PER MANUFACTURER. LANDSCAPE FORMS –
TONI GASPERONI: (586) 201-8213

DINING TABLE: -- 7 TOTAL
"WELLSPRING" DINING TABLE TO ACCEPT UMBRELLA
48" DIA., 30" HT., OPENING TO ACCEPT
1.5" FREE STANDING UMBRELLA
COLOR BLACK POWDERCOAT
ANCHOR TO PAVING WITH BRASS SURFACE MOUNT
PER MANUFACTURER. LANDSCAPE FORMS –
TONI GASPERONI: (586) 201-8213

TABLE UMBRELLA: -- 7 TOTAL
"EQUINOX" UMBRELLA
FOREST GREEN, PLAIN EDGE
PER MANUFACTURER. LANDSCAPE FORMS –
TONI GASPERONI: (586) 201-8213



2 EXTERIOR COURTYARD GRADING PLAN

L-101

SCALE 1/8" = 1'-0"

NORTH

NOTE KEY: (2)

1. OVERHEAD CANOPY – SEE ARCH. PLANS
2. CONCRETE PORCH – SEE ARCH. PLANS
3. WINDOW CLEAR VIEW ZONE – NO TREES
4. NEW CONCRETE SIDEWALK – SEE CIVIL PLANS
5. DETECTABLE WARNING STRIP – SEE CIVIL PLANS
6. CONTROL JOINT – SEE CIVIL PLANS
7. EXP JOINT W/ SEALANT – NOTE: 12" LENGTH, 1/2" DIA. DOWELS AT PORCH SLAB, 18" O.C. – THICKEN CONC WALK TO ACCEPT DOWEL – SEE CIVIL PLANS FOR DETAIL
8. 4" CONC. WITH 3" "PICTURE FRAME" TOOLED EDGE, HEAVY BROOM FINISH. NOTE DIRECTION – SEE 4/L-102
9. 4" FLEXIBLE, PERFORATED, FABRIC COVERED PVC DRAINTILE – CONNECT TO STORM SYSTEM – SEE 5/L-302
10. DRAINAGE STRUCTURE – SEE CIVIL PLANS
11. METAL FENCE – SEE 4/L-313
12. 2" DIA. EGGSTONE, 4" DEEP OVER TYPAR FABRIC
13. 4" HT. BLACK STEEL EDGING
14. STONE MAINTENANCE STRIP – SEE 7/L-302
15. DOWNSPOUT – SEE DETAILS 2 & 3 /L-103
16. DUPLEX OUTLET ON SIDE OF BUILDING – SEE 3/L-102
17. BENCH – SEE SITE FURNITURE SCHEDULE 5/L-313
18. TRASH RECEPTACLE – SEE SITE FURNITURE SCHEDULE 5/L-313
19. UMBRELLA TABLE & CHAIRS – SEE SITE FURNITURE SCHEDULE 5/L-313

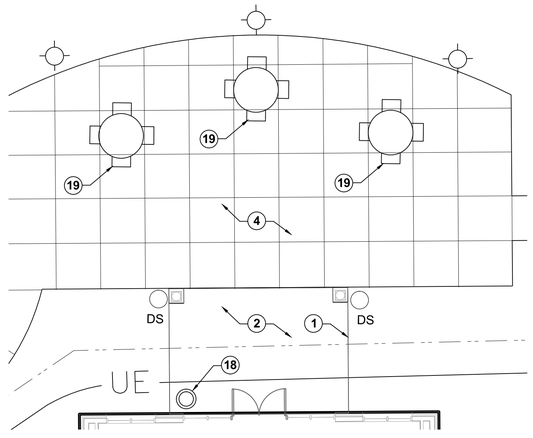
GENERAL GRADING NOTES:

1. IF DISCREPANCIES OCCUR WITHIN PLAN SETS, CONTACT CIVIL ENGINEER, ARCHITECT AND LANDSCAPE ARCHITECT BEFORE PROCEEDING.
2. PROVIDE 2% MINIMUM DRAINAGE AWAY FROM BUILDINGS, TYP.
3. PROVIDE 1% MINIMUM DRAINAGE ON ALL WALKS.
4. DO NOT SCALE PRINTS.
5. CONTRACTOR TO CONTACT CIVIL ENGINEER AND LANDSCAPE ARCHITECT WITH ANY DISCREPANCIES BETWEEN GRADES SHOWN AND ACTUAL GRADES ON SITE. DO NOT MAKE ADJUSTMENTS WITHOUT APPROVAL OF THE CIVIL ENGINEER AND/ OR THE LANDSCAPE ARCHITECT.
6. SEE CIVIL ENGINEERING DRAWINGS FOR UTILITY STRUCTURE LOCATIONS.
7. ALL TOP OF CURB ELEVATIONS SHOWN ARE FROM, OR CALCULATED BASED ON THE CIVIL ENGINEERING DRAWINGS.
8. SEE CIVIL ENGINEERING DRAWINGS FOR GRADING AND PAVEMENT ELEVATIONS FOR ALL ROADS, CURBS, BUILDINGS, UTILITIES, ETC.

CONTRACTOR TO VERIFY ALL CATCH BASIN RIMS AND INVERTS WITH CIVIL PLANS

GRADING KEY:

- + 84.20 PROPOSED GRADES
- FF FINISH FLOOR
- FG FINISH GRADE
- TC TOP OF CURB
- TP TOP OF PAVEMENT
- TW TOP OF WALL
- DS DOWNSPOUT
- SLOPE DIRECTION ARROW
- 4" PERF. FABRIC COVERED DRAIN TILE – SEE 1/L-302

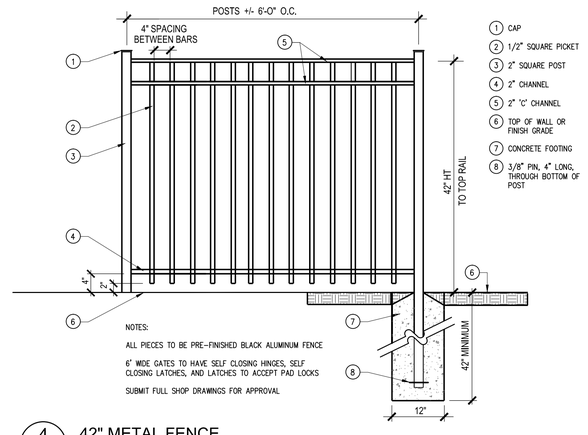


3 TERRACE FURNITURE PLAN

L-101

SCALE 1/8" = 1'-0"

NORTH



4 L-313 42" METAL FENCE

NOT TO SCALE

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Project Title:

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GRAND HAVEN TWP. MICHIGAN

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06-29-17	REVISED SITE PLAN SUBMITTAL

STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:

Checked: Approved:

CAD Drawing File:

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Project Number: 216212.00

Sheet Title:

EXTERIOR COURTYARD PLANS

Sheet Number: L-313

SECTION 329113 - SOIL PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes planting soils specified by composition of the mixes.

B. Related Requirements:
1. Section 311000 "Site Clearing" for topsoil tripping and stockpiling.
2. Section 329200 "Turf and Grasses" for placing planting soil for turf and grasses.
3. Section 329300 "Plants" for placing planting soil for plantings.

1.3 ALLOWANCES

A. Preconstruction and field quality-control testing are part of testing and inspecting allowance.

1.4 DEFINITIONS

A. AAPFCO: Association of American Plant Food Control Officials.

B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or un-amended soil as indicated.

C. CEC: Cation exchange capacity.

D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

E. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.

F. Imported Soil: Soil that is transported to Project site for use.

G. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.

H. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.

I. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.

J. Organic Matter: The total of organic materials in soil exclusive of un-decayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."

K. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

L. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.

M. SSSA: Soil Science Society of America.

N. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

O. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

P. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

Q. USCC: U.S. Composting Council.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include recommendations for application and use.
2. Include test data substantiating that products comply with requirements.
3. Include sieve analyses for aggregate materials.
4. Material Certificates: For each type of imported soil and soil amendment and fertilizer before delivery to the site, according to the following:
   a. Manufacturer's qualified testing agency's certified analysis of standard products.
   b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
   c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

B. Samples: For each bulk-supplied material, 1-quart volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

1.7 INFORMATION SUBMITTALS

A. Qualification Data: For each testing agency.

B. Preconstruction Test Reports: For preconstruction soil analyses specified in "preconstruction Testing" Article.

C. Field quality-control reports.

1.8 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.
1. Laboratories: Subject to compliance with requirements, provide testing by the following and submit test agency name, address and telephone number.
2. Multiple Laboratories: At Contractor's option, work may be divided among qualified testing laboratories specializing in physical testing, chemical testing, and fertility testing.

1.9 PRECONSTRUCTION TESTING

A. Preconstruction Soil Analyses: For each un-amended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.10 SOIL -SAMPLING REQUIREMENTS

A. General: Extract soil samples according to requirements in this article.

B. Sample Collection and Labeling: Have samples taken and labeled by Contractor
1. Number and Location of Samples: Minimum of three representative soil samples from top soil stock pile for each soil to be used or amended for landscaping purposes.
2. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.
3. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.11 TESTING REQUIREMENTS

A. General: Perform tests on soil samples according to requirements in this article.

B. Physical Testing:
1. Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
   a. Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
   b. Hydrometer Method: Report percentages of sand, silt, and clay.
2. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
3. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
4. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D 698 (Standard Proctor).

C. Chemical Testing:
1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."
3. Metals Hazardous to Human Health: Test for presence and quantities of RCRA metals including aluminum, arsenic, barium, copper, cadmium, chromium, cobalt, lead, lithium, and vanadium. If RCRA metals are present, include recommendations for corrective action.
4. Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.

D. Fertility Testing:
1. Percentage of organic matter.
2. CEC, calcium percent of CEC, and magnesium percent of CEC.
3. Soil reaction (acidity/alkalinity pH value).
4. Buffered acidity or alkalinity.
5. Nitrogen ppm.
6. Phosphorous ppm.
7. Potassium ppm.
8. Manganese ppm.
9. Manganese-availability ppm.
10. Zinc ppm.
11. Zinc availability ppm.
12. Copper ppm.
13. Sodium ppm
14. Soluble-salts ppm.
15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
16. Other deleterious materials, including their characteristics and content of each.

E. Organic-Matter Content: Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."

F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil in lawn areas and 12" deep in plant beds.
2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil in lawn areas and 12" deep in plant beds.

1.12 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with State and Federal laws if applicable.

B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Do not move or handle materials when they are wet or frozen.
4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCTS

2.1 MATERIALS

Regional Materials: Imported soil, manufactured planting soil and soil amendments and fertilizers shall be manufactured within 500 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

2.2 PLANTING SOILS SPECIFIED BY COMPOSITION

A. General: Soil amendments, fertilizers, and rates of application specified in this article are guidelines that may need revision based on testing laboratory's recommendations after preconstruction soil analyses are performed.

B. Planting Soil Type for trees and shrubs - sheet L01.09: Existing, on-site surface soil, with the duff layer, if any, retained and stockpiled on-site; modified to produce viable planting soil. Blend existing, on-site surface soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
1. Ratio of Loose Compost to Soil: 1:4 by volume.
2. Ratio of Loose Peat to Soil: 1:4 by volume.
3. Weight of Lime: per soil report
4. Weight of Sulfur: per soil report
5. Weight of "Drimanure" per manufacturers recommendations
6. Weight of Slow-Release Fertilizer: Shemins 13-13-13 per manufacturers recommendations.

C. Planting-Soil Type for trees and shrubs: Onsite or Imported, naturally formed soil from off-site sources and consisting of loam soil according to USDA textures; and modified to produce viable planting soil.
1. Sources: Take imported, un-amended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches deep; not from marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or obnoxious weeds and invasive plants including, but not limited to, quack grass, Johnson grass, poison ivy, nut sedge, nimble will, Canada thistle, bindweed, bent grass, wild garlic, ground ivy, perennial sorrel, and brome grass.
2. Additional Properties of Imported Soil before Amending: Soil reaction of pH 6.0 to 7.5 and minimum of 6 percent organic-matter content, friable, and with sufficient structure to give good tilth and aeration.
3. Unacceptable Properties: Clean soil of the following:
   a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
   b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 2 percent by dry weight of the imported soil.
   c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 2 inches any dimension.
4. Amended Soil Composition: Blend imported, un-amended soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
   a. Ratio of Loose Compost to Soil 1:4 by volume.
   b. Ratio of Loose Sphagnum Peat to Soil: 1:4 by volume
   c. Weight of Lime: per soil report
   d. Weight of Sulfur: per soil report
   e. Weight of "Drimanure" - per manufacturers recommendations
   f. Weight of Slow Release Fertilizer: Shemins 13-13-13 per manufacturer's recommendations.

D. Planting-Soil Type for perennials - sheet L01.09: Manufactured soil consisting of manufacturer's basic sandy loam according to USDA textures, blended in a manufacturing facility with sand, stabilized organic soil amendments, and other materials to produce viable planting soil.
1. Additional Properties of Manufacturer's Basic Soil before Amending: Soil reaction of pH 6 to 7.5 and minimum of 6 percent organic-matter content, friable, and with sufficient structure to give good tilth and aeration.
2. Unacceptable Properties: Manufactured soil shall not contain the following:
   a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
   b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 2 percent by dry weight of the manufactured soil.
   c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand not acceptable.
3. Blend manufacturer's basic soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
   a. Ratio of Loose Compost/sphagnum peat 50%/50% to Soil: 1:2 by volume.
   b. Volume of Sand: 1:4 by volume
   c. Volume of Loam topsoil: 1:4 by volume
   d. Weight of Lime: per soil report
   e. Weight of Sulfur: per soil report
   f. Weight of "Drimanure" - per manufacturers recommendations
   g. Weight of Slow-Release Fertilizer: Shemins 13-13-13 per manufacturers recommendations

2.3 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
1. Class: T, with a minimum of 99 percent passing through a No. 8 sieve and a minimum of 75 percent passing through a No. 60 sieve.
2. Class: O, with a minimum of 95 percent passing through a No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.
3. Form: Provide lime in form of ground dolomitic limestone

B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C 33/C 33M.

2.4 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
1. Feedstock: Limited to vegetative material leaves. May not include sewage sludge. May not include animal waste
2. Reaction: pH of 5.5 to 7.5
3. Soluble-Salt Concentration: Less than 4%
4. Moisture Content: 35 to 55 percent by weight.
5. Organic-Matter Content: 50 to 60 percent of dry weight.
6. Particle Size: Minimum of 98 percent passing through a 1-inch sieve.

2.5 FERTILIZERS

A. Commercial Fertilizers:
1. "Drimanure" composted poultry manure
2. Shemins 13-13-13

PART 3 - EXECUTION

3.1 GENERAL

A. Place planting soil and fertilizers according to requirements in other Specification Sections.

B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.

C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

A. Excavation: Excavate soil from plant beds to a depth of 12" inches or depth of root balls and stockpile until amended.

B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.

C. Unsuitable Materials: Clean soil to contain a maximum of 2 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.

D. Screening: Pass un-amended soil through a 2-inch sieve to remove large materials.

3.3 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

A. General: Apply and mix un-amended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or sub grade is frozen, muddy, or excessively wet.

B. Sub grade Preparation: Plant beds-till sub grade to a minimum depth of 4 inches. Remove stones larger than 1/2 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property. Lawn areas -till sub grade to a minimum depth of 4 inches Remove stones larger than 1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
1. Apply, add soil amendments, and mix approximately half the thickness of un-amended soil over prepared, loosened sub grade according to "Mixing" Paragraph below. Mix thoroughly into top 2 inches of sub grade. Spread remainder of planting soil.

C. Mixing: Plant beds - spread amended soil to total depth 12 inches (or as shown on planting details) or depth of root balls but not less than required to meet finish grades after mixing with amendments and natural settlement. Lawn areas - spread amended soil to total depth 4 inches but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or sub grade is frozen, muddy, or excessively wet.

SECTION 329113 - SOIL PREPARATION continued next page

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Project Title:
REGENCY AT GRAND HAVEN
GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
11-11-16	PRE-APPLICATION SUBMITTAL
02-03-17	FINAL SITE PLAN APPROVAL
04-13-17	REVISED SITE PLAN SUBMITTAL
06-16-17	HFES PRELIMINARY
06-29-17	REVISED SITE PLAN SUBMITTAL

STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:
Checked: Approved:

CAD Drawing File:
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Project Number: 216212.00
Sheet Title: SPECIFICATIONS
Sheet Number: L-601

1. Amendments: Apply soil amendments except compost and fertilizer, if required, evenly on surface, and thoroughly blend them with un-amended soil to produce planting soil.
   a. Mix lime or sulfur with dry soil before mixing fertilizer.
   b. Mix fertilizer with planting soil no more than seven days before planting.
2. Lifts: Apply and mix un-amended soil and amendments in lifts not exceeding 6 inches in loose depth for material compacted by hand-operated tampers.

D. Compaction: Compact each blended lift of planting soil to 75 to 82 of maximum Standard Proctor density according to ASTM D 698 and tested in-place.

E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4 PROTECTION

A. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Vehicle traffic.
4. Foot traffic.
5. Erection of sheds or structures.
6. Impoundment of water.
7. Excavation or other digging unless otherwise indicated.

B. If planting soil or sub grade is over compacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the sub grade as directed by Landscape Architect and replace contaminated planting soil with new planting soil.

3.5 CLEANING

A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
1. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

END OF SECTION
329113 SOIL PREPARATION

SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Seeding.
2. Hydroseeding.
3. Sodding.
4. Plugging.
5. Sprigging.
6. Meadow grasses and wildflowers.
7. Turf renovation.
8. Erosion-control material(s).
9. Grass paving.

B. Related Requirements:

1. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. ONLY Organic solutions may be implemented.

C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" and drawing designations for planting soils.

E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 PRE-INSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
1. Certification of each seed mixture for turfgrass/ sod. Include identification of source and name and telephone number of supplier.

C. Product Certificates: For fertilizers, from manufacturer.

D. Pesticides: Product label and manufacturer's application instructions specific to Project - ONLY Organic permitted.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf and meadows during a calendar year. Submit before expiration of required maintenance periods.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf and meadow establishment.
1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
2. Experience: Five years experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
4. Personnel Certifications: Installer's personnel assigned to the Work shall have certification in one of the following categories from the Professional Landcare Network:
   a. Landscape Industry Certified Technician - Exterior.
   b. Landscape Industry Certified Lawncare Manager.
   c. Landscape Industry Certified Lawncare Technician.
5. Pesticide Applicator: State licensed, commercial.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.9 FIELD CONDITIONS

A. Planting Restrictions: Seed Lawn - Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion -
1. Spring Planting: April - June 1
2. Fall Planting: August 15 - October 15

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Seeded Lawn Species:

Irrigated Lawn Seed Mixture proportioned by volume as indicated below:

Seed Type	Proportion	Purity	Germination
Kentucky Bluegrass	50%	90%	75%
Annual Ryegrass	20%	95%	80%
Penn Lawn Fescue	30%	95%	80%

No noxious weed seeds permitted.
Fertilizer for Irrigated Lawn 12-12-12.

Non-Irrigated Lawn Seed Mixture proportioned by volume as indicated below:

Seed Type	Proportion	Purity	Germination
Pennfine Perennial Rye	20%	90%	90%
Kentucky 28# Common Bluegrass	20%	90%	90%
Penn Lawn Fescue	60%	90%	85%

2.2 TURFGRASS SOD

A. Turfgrass Sod: An "approved" nursery grown blend of improved Kentucky Bluegrass varities.

B. Turfgrass Species: Sod containing Common Bermudagrass, Quackgrass, Johnsongrass, Poison ivy, Nutsedge, Nimblewill, Canada Thistle, Timothy, Bentgrass, Wild Garlic, Ground Ivy, Pennial Sorrel or Bramegrass weeds will not be acceptable.

C. Turfgrass Species: Sod of grass species as follows, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 weed seed:
1. Provide well rooted, healthy sod, free of diseases, nematodes and soil borne insects. Provide sod uniform in color, leaf texture, density and free of weeds, undesirable grasses, stones, roots, thatch and extraneous material; viable and capable of growth and development when planted.

D. Wildflower Seed: Fresh, clean, and dry new seed, of mixed species as follows:
1. See plans for seed mix

E. Native-Grass Seed: Fresh, clean, and dry new seed, of mixed species as follows:
1. See plans for seed mix

F. Seed Carrier: Inert material or clean sharp sand

2.3 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

D. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

A. General: Organic ONLY - submit manufacturer documentation for approval.

2.6 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: North American Green S150 or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
2. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."

B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade
1. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Turf Area Preparation" Article.

B. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.

C. Fill cells of erosion-control mat with planting soil and compact before planting.

D. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

E. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
2. Do not use wet seed or seed that is moldy or otherwise damaged.
3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Sow seed at a total rate of 300 lb/acre

C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

D. Protect seeded areas with slopes exceeding 1:4 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.

E. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.

F. Protect seeded areas with slopes not exceeding 1:10 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.

G. Protect seeded areas from hot, dry weather or drying winds by applying straw within 1 hour after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 1/4 inch.

3.6 HYDROSEEDING

A. Hydroseeding: not acceptable

3.7 SODDING

Time limit and option in first paragraph below are requirements of TPI's "Guideline Specifications to Turfgrass Sodding."

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
1. Lay sod across slopes exceeding 1:3.
2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.8 TURF RENOVATION

A. Renovate existing turf where indicated.

B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
2. Install new planting soil as required.
3. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

C. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

D. Mow, dethatch, core aerate, and rake existing turf.

E. Remove weeds before seeding. Where weeds are extensive, apply organic herbicides as required. Do not use pre-emergence herbicides.

F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 4 inches.

H. Apply initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
1. Initial Fertilizer: Commercial fertilizer and Slow-release fertilizer applied according to manufacturer's recommendations.

J. Apply seed and protect with straw mulch as required for new turf.

K. Water newly planted areas and keep moist until new turf is established.

SECTION 329200 - TURF AND GRASSES continued next page

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Date:	Issued for:
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STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:
Checked: Approved:

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3.9 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
   1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
   2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
   3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches
   1. An irrigation system will be installed prior to sodding. Locate, protect and maintain the irrigation system during sodding operations. Repair irrigation system components damaged during sodding operations at this Sub-contractor's expense.
   2. When lawn reaches 3" in height it shall be cut to 2" in height. Natural areas shall not be cut.
   3. The Owner assumes cutting responsibilities following the Acceptance of Installation of the seeded lawn.

3.10 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Architect:
   1. Satisfactory Seeded Turf: Establish dense lawn of permanent grasses, free from lumps and depressions. Any area failing to show uniform germination to be reseeded; continue until dense lawn established. Damage to seeded area resulting from erosion to be repaired by Sub Contractor. Scattered bare spots over 5% not allowed. In event Sub Contractor does not establish dense lawn during first germination period, return to project to re-fertilize and reseed to establish dense lawn. Should the seeded lawn become largely weeds after germination, Sub Contractor responsible to kill the weeds and reseed the proposed lawn areas to produce a dense turf, as specified.
   2. Satisfactory Sodded Turf: Establish dense lawn, free from lumps and depressions - a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints and bare areas.

B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.11 MEADOW

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
   1. Before sowing, mix seed with seed carrier at a ratio of not less than two parts seed carrier to one part seed.
   2. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
   3. Do not use wet seed or seed that is moldy or otherwise damaged.

B. Sow seed at a total rate - see sheet L01.09 Seed Mixes.

C. Brush seed into top 1/16 inch of soil, roll lightly, and water with fine spray.

D. Protect seeded areas from hot, dry weather or drying winds by applying straw within 1 hour after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 1/4 inch.

E. Water newly planted areas and keep moist until meadow is established.

3.12 MEADOW MAINTENANCE

A. Maintain and establish meadow by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish a healthy, viable meadow. Roll, regrade, and replant bare or eroded areas and remulch. Provide materials and installation the same as those used in the original installation.
   1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and meadow damaged or lost in areas of subsidence.
   2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
   3. 3. Apply treatments as required to keep meadow and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and meadow-watering equipment to convey water from sources and to keep meadow uniformly moist.
   1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
   2. Water meadow with fine spray at a minimum rate of 1/2 inch.

3.13 PESTICIDE APPLICATION

A. Apply ORGANIC pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (ORGANIC Selective and Nonselective): Apply organic solution only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.14 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

D. Remove non-degradable erosion-control measures after grass establishment period.

3.15 MAINTENANCE SERVICE

A. Turf Maintenance Service: The Owner assumes cutting responsibilities following the Acceptance of Installation of the seeded lawn.

B. Meadow Maintenance Service: The Owner assumes maintenance responsibilities following the Acceptance of Installation of the seeded Meadow.

END OF SECTION
329200 TURF AND GRASSES

SECTION 329300 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Plants.
   2. Tree-watering devices.

B. Related Requirements:
   1. Section 329200 "Turf and Grasses" for turf (lawn) and meadow planting, and erosion-control materials.

1.3 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required or as noted on plans; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required or as noted on plans.

D. Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than the minimum root spread according to ANSI Z60.1 for type and size of plant required.

E. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

F. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.

G. Finish Grade: Elevation of finished surface of planting soil.

H. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. ONLY organic permitted - submit manufacturer documentation.

I. Planting Area: Areas to be planted.

J. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" for drawing designations for planting soils.

K. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

L. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

M. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

N. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 COORDINATION

A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
   1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Meeting: Conduct Meeting at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
   2. Plant Photographs is selection at the source is considered not possible by the Landscape Architect: Include color photographs in digital 3- by 5-inch format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

B. Samples for Verification: For each of the following:
   1. Trees and Shrubs: Provide "specimen" plants with a special height, shape or character of growth. Landscape Subcontractor to tag specimen trees or shrubs at the source of supply. The Landscape Subcontractor shall inspect and select all plant material at source prior to Landscape Architect's approval. Landscape Subcontractor shall accompany Landscape Architect on final selection trip. The Landscape Architect will inspect specimen selections for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.
   2. Organic / Compost Mulch: 1-pint volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
   3. Proprietary Root-Ball-Stabilization Device: One unit.
   4. Slow-Release, Tree-Watering Device: One unit of each size required.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
   2. Manufacturer's certified analysis of standard products.
   3. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

C. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project - ONLY organic permitted.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
   1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
   2. Experience - Five years' experience in landscape installation.
   3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
   4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
      a. Landscape Industry Certified Technician - Exterior.
      b. Landscape Industry Certified Horticultural Technician.
   5. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.
   1. Selection of plants purchased under allowances is made by Architect, who tags plants at their place of growth before they are prepared for transplanting.

C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.
   1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches (150 mm) above the root flare for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above the root flare for larger sizes.
   2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

D. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
   1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.

B. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk materials with appropriate certificates.

C. Deliver bare-root stock plants within 24 hours of digging. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Transport in covered, temperature-controlled vehicles, and keep plants cool and protected from sun and wind at all times.

D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

E. Handle planting stock by root ball

F. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F (16 to 18 deg C) until planting.

G. Apply anti-desiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
   1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

H. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

I. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
   1. Heel-in bare-root stock. Soak roots that are in less than moist condition in water for two hours. Reject plants with dry roots.
   2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
   3. Do not remove container-grown stock from containers before time of planting.
   4. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.11 FIELD CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion. Evergreen material: Plant evergreen materials between September 1 and October 15 or in spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-desiccant prior to planting operations. Deciduous material: Plant deciduous materials in a dormant condition. If deciduous trees are planted in leaf, they shall be sprayed with anti-desiccant prior to planting operation.

C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.12 WARRANTY

A. ACCEPTANCE OF INSTALLATION.
   1. At the completion of all landscape installation, or pre-approved portions thereof, the Landscape Subcontractor shall request in writing an inspection for Acceptance of Installation in which the Landscape Subcontractor, Landscape Architect, and General Contractor's Representative shall be present. After this inspection a punch list will be issued by the Landscape Architect. Upon completion of all punch list items, the Landscape Architect and/or General Contractor's Representative shall re-inspect the project and issue a written statement of Acceptance of Installation and establish the beginning of the Project Warranty Period. At the time of acceptance all plant material shall be vigorous health.

   2. It is the responsibility of the Landscape Subcontractor to make the above written request for inspection of installation in a timely fashion. If there is plant material loss prior to the Landscape Subcontractor's written request for inspection of installation, the Landscape Contractor shall make all replacements of this dead material at no additional cost. These replacements are not considered to be the required one (1) replacement of dead plant material by the Landscape Subcontractor during the one (1) year project warranty period, as outlined below.

SECTION 329300 - PLANTS continued next page

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3. Landscape work may be inspected for acceptance in parts agreeable to General Contractor's Representative and Landscape Architect provided work offered for inspection is complete, including maintenance as required
4. For work to be inspected for partial acceptance, the Landscape Subcontractor shall provide a drawing outlining work completed and supply a written statement requesting acceptance of this work completed to date

B. PROJECT WARRANTY
1. The Project Warranty Period begins upon written Acceptance of the Project Installation by Landscape Architect and General Contractor's Representative.
2. The Landscape Subcontractor shall guarantee trees, shrubs, ground cover beds and seeded or sodded areas through construction and for a period of one (1) year after date of Acceptance of Installation against defects including death and unsatisfactory growth, except for defects resulting from neglect, abuse or damage by others or unusual phenomena or incidents which are beyond Landscape Subcontractor's control.

C. MAINTENANCE DURING ONE (1) YEAR PROJECT WARRANTY
1. To insure guarantee standards, the following maintenance procedures for trees, shrubs, and ground covers shall be executed during construction and for the full Project Warranty Period.

a. Landscape Subcontractor shall be responsible for only one (1) replacement of any plant materials during the one (1) year Project Warranty Period. These include those which are dead or in the opinion of the Landscape Architect are in an unhealthy or unsightly condition, or having lost natural shape, resulting from dieback, excessive pruning or inadequate or improper maintenance as part of the guarantee. Prior to any replacements, Landscape Subcontractor shall review individual plants in question with Landscape Architect to determine reason for plant demise.

b. The Landscape Subcontractor shall guarantee trees, shrubs, ground cover beds and seeded or sodded areas through construction and for a period of one (1) year after date of Acceptance of Installation against defects including death and unsatisfactory growth, except for defects resulting from neglect, abuse or damage by others or unusual phenomena or incidents which are beyond Landscape Subcontractor's control.

c. Costs for replacements are assumed part of bid quotations and therefore will not result in an additional cost to General Contractor or Landscape Architect.

d. Areas damaged as a result of replacement operation are to be restored by Landscape Subcontractor at no cost to the General Contractor or Landscape Architect.

e. The Landscape Subcontractor shall be responsible for watering all plantings in non-irrigated areas through the warranty period. Landscape contractor responsible to monitoring the irrigation system. Landscape Subcontractor shall keep guy straps taut, raise tree balls which settle, furnish and apply sprays as necessary to keep the plantings free of disease and insects until the end of the warranty period.

f. Remove and replace trees, shrubs or other plants found to be dead or in unhealthy condition. Remove rejected plants and materials promptly. Make replacements during the following normal planting schedule. Replace trees and shrubs which are in doubt, unless, in opinion of Landscape Architect it is advisable to extend Project Warranty Period for full growing season. Remove all stakes, guy straps, tree wrap paper, dead twigs and branches from tree and plant materials at the end of this warranty period. Repair all lawns or bed areas disturbed by plant replacement operations.

g. Landscape contractor responsible to keep all beds weed free during the one (1) year project warranty.

h. The Landscape contractor shall apply anti-desiccants on evergreen trees and evergreen shrub beds within 150' of major streets and drives no later than December 1, during the one (1) year project warranty.

D. MAINTENANCE OF SEEDED LAWN AREAS
1. The Landscape Subcontractor shall maintain seeded lawn areas including watering, fertilizing, weeding, and chemical applications until establish a dense lawn of permanent grasses, free from lumps and depressions or any bare spots, none of which is larger than one (1) foot of area up to a maximum of 3% of the total seeded lawn area. Any part of the seeded lawn that fails to show a uniform growth and/or germination shall be reseeded until a dense cover is established, regardless of what season the seed was installed.
2. Where shown on drawings, the Landscape Subcontractor shall cut of the lawn until Acceptance of Installation is granted. When lawn reaches 3" in height it shall be cut to 2" in height. Natural areas shall not be cut.
3. The Owner assumes cutting responsibilities following the Acceptance of Installation of the seeded lawn.
4. At conclusion of Project Warranty Period and after receiving Written Final Acceptance by General Contractor's representative and Landscape Architect, the Owner shall assume all seeded lawn maintenance responsibilities.

A. MAINTENANCE OF SODDED LAWN AREAS
1. Maintain sodded lawn areas, including watering, fertilizing, spot weeding, application of organic solutions (herbicides, fungicides, insecticides) and re-sodding until a full, uniform, smooth stand of sod is knitted to topsoil, and accepted by the Landscape Architect or his representative.
2. Water sod thoroughly, as required to establish proper rooting.
3. Repair, rework, and resod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod. Remove stakes on slopes sod areas.
4. Mow lawn areas as soon as sod has rooted sufficiently and knitted to the topsoil. Cut back to 2" height. Not more than 40% of grass leaf shall be removed at any single mowing. Excess clipping to be removed by the Landscape Subcontractor. Subcontractor is responsible for all mowing until Acceptance of Installation is granted.
5. The Owner assumes mowing responsibilities following the Acceptance of Installation of the sodded lawn.
6. At conclusion of Project Warranty Period and after receiving Written Final Acceptance by General Contractor's representative and Landscape Architect, the Owner shall assume all sodded lawn maintenance responsibilities

F. FINAL ACCEPTANCE UPON CONCLUSION OF THE WARRANTY PERIOD
1. At the conclusion of the Project Warranty Period, the contractor shall prune all dead twigs and branches from the plant material, an remove all support straps and stakes, and rake mulch area smooth.
2. At the conclusion of the Project Warranty Period the Landscape Subcontractor shall request a project inspection for final acceptance in which the Landscape Contractor, Landscape Architect and Owner's Representative shall be present. After this inspection, a punch list will be issued by the Landscape Architect. Upon completion of all punch list items, the Landscape Architect and the Owner's Representative shall re-inspect the project and issue a Written Statement of Final Acceptance.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch (19 mm) in diameter; or with stem girdling roots are unacceptable.
2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label each plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant.

E. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

F. Annuals, Biennials and Perennials: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.

2.2 FERTILIZERS

A. See soil preparation.

2.3 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
1. Type: Double Shredded hardwood
2. Color: Natural.

B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through a 1-inch (25-mm) sieve; soluble-salt content of 2 to 5 dS/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 50 to 60 < percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

2.4 PESTICIDES

A. General: Organic only - submit manufacturer documentation.

2.5 TREE-STABILIZATION MATERIALS

A. Trunk-Stabilization Materials:
1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal (38-by-38-mm actual) by length indicated, pointed at one end.
2. Guying/Staking strap - 3/4" Arbortie nylon strap (NO WIRE AND HOSE PERMITTED)

2.6 TREE-WATERING DEVICES

A. Watering Pipe: PVC pipe 4 inches (100 mm) in diameter, site-cut to length as required, and with snug-fitting removable cap.

B. Slow-Release Watering Device - non irrigated areas: Standard product manufactured for drip irrigation of plants and emptying its water contents over an extended time period two hours, two weeks manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.
1. Products: Subject to compliance with requirements, provide the following:
a. Gator Bags
2. Color: green

2.7 MISCELLANEOUS PRODUCTS

A. Anti-desiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

B. Burlap: Non-synthetic, biodegradable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
4. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

D. Lay out plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

3.3 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."

B. Placing Planting Soil: Place and mix planting soil in-place over exposed sub-grade

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits.
1. Excavate planting pits with sides sloping inward at a 60-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
2. Excavate approximately three times as wide as ball diameter for and potted stock.
3. Excavate - see planting details.
4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
5. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate sub-grades of adjacent paving, structures, hardscapes, or other new or existing improvements.
6. Maintain supervision of excavations during working hours.
7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
8. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.

B. Backfill Soil: topsoil removed from excavations may be used as backfill soil unless otherwise indicated.

C. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

D. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE, SHRUB, AND VINE PLANTING

A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare 2 inches (50 mm) above adjacent finish grades.
1. Backfill: Place planting soil mix according to Section 329113 "Soil Preparation."
2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Balled and Potted and Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
1. Backfill: Place planting soil mix according to Section 329113 "Soil Preparation."
2. Carefully remove root ball from container without damaging root ball or plant.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Continue backfilling process. Water again after placing and tamping final layer of soil.

3.6 MECHANIZED TREE-SPADE PLANTING

A. Not to be used.

3.7 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

C. Do not apply pruning paint to wounds.

3.8 TREE STABILIZATION

A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as follows unless otherwise indicated:
1. See planting details.

B. Trunk Stabilization by Staking and Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings
1. See planting details.

3.9 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines per drawings in irregular mass patterns

B. Place planting soil mix according to Section 329113 "Soil Preparation."

C. Dig holes large enough to allow spreading of roots.

D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.

E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.10 PLANTING AREA MULCHING

A. Completely cover area to be mulched, with double shredded bark mulch - see typical planting details for depths.

3.11 INSTALLING SLOW-RELEASE WATERING DEVICE - NON IRRIGATED AREAS

A. Provide one device for each tree.

B. Place device on top of the mulch at base of tree stem and fill with water according to manufacturer's written instructions.

SECTION 329300 - PLANTS continued next page

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Project Title:
REGENCY AT GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
11-11-16	PRE-APPLICATION SUBMITTAL
02-03-17	FINAL SITE PLAN APPROVAL
04-13-17	REVISED SITE PLAN SUBMITTAL
06-16-17	HFES PRELIMINARY
06-29-17	REVISED SITE PLAN SUBMITTAL

STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:
Checked: Approved:

CAD Drawing File:
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Project Number: 216212.00

Sheet Title:
SPECIFICATIONS

Sheet Number: L-604

3.12 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.

B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.13 PESTICIDE APPLICATION

A. Apply organic pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations only with approval from the Landscape Architect

B. Pre-Emergent Herbicides (Selective and Nonselective): Not to be used.

C. Post-Emergent Herbicides (Selective and Nonselective): Organic only, to be used.

3.14 REPAIR AND REPLACEMENT

A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.
1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
1. Provide new trees of same size as those being replaced for each tree

3.15 CLEANING AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

D. During installation remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

3.16 MAINTENANCE SERVICE

A. See Warranty section above.
1. Warranty Period: 12 months from date of Acceptance of Installation

END OF SECTION
329300 PLANTS

SECTION 328400 - PLANTING IRRIGATION

PART 1 - GENERAL

USE THIS SPECIFICATION AS GUIDELINE FOR IRRIGATION SYSTEM - SUBMIT IRRIGATION SHOP DRAWINGS FOR REVIEW

1.1 RELATED DOCUMENTS

A. Attention is directed to the Bidding and Contract Requirements and General and Supplemental Requirements, which are hereby made a part of this Section.

1.2 DESCRIPTION OF WORK

A. Furnish all labor, materials, supplies, equipment, tools, and transportation, and perform all operations in connection with and reasonably incidental to the complete installation of the irrigation system, and guarantee/warranty as shown on the drawings, the installation details, and as specified herein. The system shall be constructed to grades and conform to areas and locations as shown on the drawings. Removal and or restoration of existing improvements, excavation and back-fill, and all other work in accordance with plans and specifications are required.

B. Extent of irrigation system work is shown on drawings and by provisions of this section.

C. Sprinkler lines shown on the drawing are essentially diagrammatic. Spacing of the sprinkler heads or quick coupling valves are shown on the drawing and shall be exceeded only with the permission of the Owner's authorized representative.

D. Items of work specifically included are:
1. Procurement of all applicable licenses, permits and fees.
2. Coordination of all utilities.
3. Connection of electrical power supply to the irrigation control system.
4. Connection of water source/supply to the irrigation system.
5. Maintenance period.
6. Sleeving for irrigation pipe and wire.
7. Providing project record (as-built plans) to ownership

1.3 RELATED WORK

A. Division 32- Exterior Improvements
1. Section 329113 Soil Preparation
2. Section 329200 Turf and Grasses
3. Section 329300 Plants

1.4 QUALITY ASSURANCE

A. The “Contractor” shall maintain continuously a competent superintendent, satisfactory to the Owner, with authority to act for him in all matters pertaining to the work.

B. The “Contractor” shall coordinate his work with the other trades.

C. The “Contractor” shall confine his operations to the area to be improved and to the areas allotted him by the Owner's representative for material and equipment storage.

D. The 'Contractor” shall have a minimum of 5 years experience installing irrigation systems of comparable size and complexity.

1.5 SUBMITTALS

A. Submit samples under provisions of Section 01300-Submittals.

B. Materials List: Include backflow device, valves, valve boxes, sprinklers, controller, rain sensors, wire, wire connectors, pipe, fittings and clamps to be used on the project prior to purchasing materials. Quantities of material need not be included.

C. Manufacturer's Data: Submit manufacturer's catalog cuts, specifications, and operating instructions for equipment shown on the materials list.

D. Shop Drawings: Upon irrigation system acceptance, submit written operating and maintenance instructions. Provide format and contents as directed by the Landscape Architect. Include instruction sheets and parts lists for all operating equipment.

E. Project Record (As-Built) Drawings
1. Submit record drawings under provisions of Section 017000 - “Contractor” Closeout, Record Documents.
2. Record pipe and wiring network alterations. Record work that is installed differently than shown on the construction drawings. Record which valve operates which area by “clouding” or encircling the area and placing the correct valve number and controller identification nearby. Record accurate reference dimensions, measured from at least two permanent reference points, of each irrigation system valve, each controller or control unit, each sleeve end, each stub-out for future pipe or wiring connections, and other irrigation components enclosed within a valve box. Place all dimensions and notes on the same page as the drawing. Use arrows and legends when needed.
3. Before construction completion, obtain from the engineer/landscape architect/owner's representative an AutoCAD file copy of the drawings. Using AutoCAD, duplicate information contained on the project drawings maintained on site. Label each sheet “Record Drawings”. Completion of the record drawings will be a prerequisite for the review at the completion of the irrigation system installation.

1.6 RULES AND REGULATIONS

A. Work and materials shall be in accordance with the latest edition of the National Electric Code, the Uniform Plumbing Code as published by the Western Plumbing Officials Association, and applicable laws and regulations of the governing authorities.

B. When the When the contract documents call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, provide the quality and size required by the contract documents.

C. If quantities are provided either in these specifications or on the drawings, these quantities are provided for information only. It is the “Contractor's” responsibility to determine the actual quantities of all material, equipment, and supplies required by the project and to complete an independent estimate of quantities and wastage

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.

B. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends either threaded or plain.

C. Store and handle materials to prevent damage and deterioration.

D. Provide secure, locked storage for valves, sprinkler heads and similar components that cannot be immediately replaced, to prevent installation delays.

1.8 CODES AND STANDARDS

A. The entire installation shall fully comply with all local and state laws and ordinances and with all established codes applicable thereto.

B. Any permits for the installation or construction of the work included under this contract which are required by any of the legally constituted authorities having jurisdiction, shall be obtained and paid for by the “Contractor”, each at the proper time. He shall also arrange for and pay all costs concerning any inspections and examinations required by these authorities.

C. In all cases where inspection of the sprinkler system work is required and/or where portions of the work are specified to be performed under the direction and/or inspection of the Owner's authorized representative, the “Contractor” shall notify the Owner's authorized representative at least 24 hours in advance of the time and such inspection and/or direction is required.

D. Any necessary re-excavation or alterations to the system needed because of failure of the “Contractor” to have the required inspections shall be performed at the “Contractor's” own expense.

1.9 TESTING

A. Notify he engineer/landscape architect / owner's representative three days in advance of testing.

B. Pipelines jointed with rubber gaskets or threaded connections may be subjected to a pressure test at any time after partial completion of backfill. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure at least 24 hours before testing.

C. Subsections of mainline pipe may be tested independently, subject to the review of the engineer/landscape architect/owner's representative.

D. Furnish clean, clear water, pumps, labor, fittings, and equipment necessary to conduct tests or retests.

E. Volumetric Leakage Test:
1. Cap riser of mainline components for volumetric pressure tests. Backfill to prevent pipe from moving under pressure. Expose coupling and fitting.
2. Purge all air from the pipeline before test.
3. Subject mainline pipe to the anticipated operating pressure of 100 PSI for two hours. Maintain constant pressure. The amount of additional water pumped in during the test shall not exceed 1.24 gallon per 100 joints of 3-inch diameter pipe and 1.6 gallons per 100 joint of 4-inch diameter pipe. Replace defective pipe, fitting, joint, valve, or appurtenance. Repeat the test until the pipe passes test.
4. Cement or caulking to seal leaks is prohibited.

F. Operational Test:
1. Activate each remote control valve in sequence from controller. The engineer/landscape architect/owner's representative will visually observe operation, water application patterns, and leakage.
2. Replace defective remote control valve, solenoid, wiring, or appurtenance to correct operational deficiencies.
3. Replace, adjust, or move water emission devices to correct operational or coverage deficiencies.
4. Replace defective pipe, fitting, joint, valve, sprinkler, or appurtenance to correct leakage problems. Cement or caulking to seal leaks is prohibited.
5. Repeat test(s) until each zone passes all tests.
6. Repeat tests, replace components, and correct deficiencies at no additional cost to the owner.

1.10 CONSTRUCTION REVIEW

A. The purpose of on-site reviews by the engineer/landscape architect/owner's representative is to periodically observe the work in progress, the “Contractor's” interpretation of the construction documents, and to address questions with regard to the installation.

B. Scheduled reviews such as those for irrigation system layout or testing must be scheduled with the engineer/landscape architect's/owner's representative as required by these specifications.

C. Impromptu reviews may occur at any time during the project.

D. A review will occur at the completion of the irrigation system installation and project record (as-built) drawing submittal.

1.11 GUARANTEE/WARRANTY AND REPLACEMENT

A. It shall be the “Contractor's” responsibility to ensure and guarantee satisfactory operation of the entire system and the workmanship and restoration of the area. The entire system shall be guaranteed to be complete and perfect in every detail for a period of one year from the date of its final acceptance and he hereby agrees to repair or replace any such defects occurring within that year, free of expense to the Owner. If final acceptance is not given the “contractor” will continue to be responsible for and maintain the irrigation system until acceptance is granted.

B. Minor maintenance and adjustment shall be by the Owner.

C. For a period of one year from commencement of the formal maintenance period, fill and repair depressions or settling more than one-quarter (¼”). Restore landscape or structural features damaged by the settlement of irrigation trenches or excavation. Repair damage to the premises caused by a defective item.

D. Make repairs within seven (7) days of notification from the engineer/landscape architect/owner's representative.

E. Contract documents govern replacements identically as with new work. Make replacements at no additional cost to the contract price.

F. Guarantee/ warranty applies to originally installed materials, equipment, and replacements made during the guarantee/warranty period.

1.12 WINTERIZATION AND SPRING START-UP

A. Coordinate the winterization and start-up with the landscape maintenance personal.

B. “Contractor” shall winterize the system each year as part of this contract throughout the warranty period and until final acceptance is granted. “Contractor” will provide written instructions to the Owner for future service and maintenance.

C. Return to the site during the subsequent spring season and demonstrate to the Owner the proper procedures for the system start-up, operation and maintenance. Repair any damage caused in improper winterization at no additional cost to the owner.

D. After completion, testing and acceptance of the system, the “Contractor” will instruct the Owner's personnel in the operation and maintenance of the system.

PART 2 - MATERIALS

2.1 GENERAL

A. Use materials that are new and without flaws or defects of any type, and which are the best of their class and kind. All material overages at the completion of the installation are the property of the “Contractor” and are to be removed from the site.

2.2 SUBSTITUTIONS

A. The Contractor shall use materials as specified. Material other than specified will be permitted only after written application by the “Contractor” and written approval by the Landscape Architect. Substitutions will only be allowed when in the best interest of the Owner.

2.3 SLEEVING

A. Install separate sleeve beneath paved areas to route each run of irrigation pipe or wiring bundle.
1. Sleeving material beneath pedestrian pavements shall be PVC Class 160 pipe with solvent welded joints.
2. Sleeving beneath drives and streets shall be PVC Class 160 pipe with solvent welded joints.
3. Sleeving diameter: equal to twice that of the pipe or wiring bundle.

2.4 PIPE AND FITTINGS

A. Mainline Pipe and Fittings:
1. Use rigid, unplasticized polyvinyl chloride (PVC) 1120, 1220 National Sanitation Foundation (NSF) approved pipe, extruded from material meeting the requirements of Cell Classification 12454-A or 12454-B, ASTM Standard D1784, with an integral belled end.
2. Use Class 160, SDR-26, rated at 160 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 160 in the case of small nominal diameters that are not manufactured in Class 160.
3. Use rubber-gasketed pipe equipped with Reiber Gasket System for mainline pipe with a nominal diameter greater than 3-inches. Use rubber-gasketed deep bell ductile iron fitting conforming to ASTM A-536 and ASTM F-477. Use lubricant approved by the pipe manufacturer. Size slip fitting socket taper to permit a dry unsoftened pipe end to be inserted no more than halfway into the socket. Saddle and cross fittings are not permitted. Use male adapters for plastic to metal connections. Hand Tighten male adapters plus one turn with a strap wrench.
4. Use solvent weld pipe for mainline pipe with a nominal diameter less than or equal to 3-inches or where a pipe connection occurs in a sleeve. Use Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM Standard D2466 and D1784. Use primer approved by the pipe manufacturer. Solvent cement to conform to ASTM Standard D2564.
5. Provide pipe homogeneous throughout and free from visible cracks, holes, foreign materials, blisters wrinkles and dents.
6. Provide pipe continuously and permanently marked with manufacturer's name or trademark, size schedule and type of pipe working pressure at 73 degrees F. and (NSF) approval.
7. Pipe sizes referenced in the construction documents are minimum sizes, and may be increased at the option of the “Contractor”.
8. All pipes damaged or rejected because of defects shall be removed from the site at the time of said rejection.

B. Lateral Pipe and Fittings
1. All sprinkler laterals pipe downstream from the zone valves, sized 2” and smaller shall be flexible non-toxic polyethylene (PE) pipe. Use SDR-11.5, PE23, rated at PSI that is National Sanitation Foundation (NSF) approved, conforming to ASTM Standard D2239. Use Type 1, PVC insert fitting conforming to ASTM Standard D2609 designed for use with flexible polyethylene (PE) pipe. Use stainless steel worm gear clamps (including stainless steel screw) to join pipe and fittings. Pipe larger than 2” shall be rigid, unplasticized polyvinyl chloride (PVC) 1120, 1220 National Sanitation Foundation (NSF) approved pipe, extruded from material meeting the requirements of Cell Classification 12454-A or 12454-B, ASTM Standard D1784, with an integral belled end suitable for solvent welding.
2. Use Class 160, SDR-26, rated at 160 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use solvent weld pipe for lateral pipe. Use Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM Standards D2466 and D1784 for PVC pipe. Use primer approved by the pipe manufacturer and purple in color. Solvent cement to conform to ASTM Standard D2564, of a type approved by the pipe manufacturer appropriate to weather conditions.
3. For drip irrigation laterals downstream of zone control valves, use UV radiation resistant polyethylene pipe manufactured from prime Union Carbide or a Union Carbide licensee with a minimum of 2% carbon black. Use PVC/compression line fittings compatible with the drip lateral pipe. Use tubing stakes or landscape fabric staples to hold aboveground pipe in place.

C. Specialized Pipe and Fittings:
1. All above grade pipe shall be copper pipe: Use Type “M” rigid conforming to ASTM Standard B88. Use wrought copper or cast bronze fitting, soldered or threaded per the installation details. Use 95% tin and 5% antimony solder.
2. Galvanized steel pipe: Use Schedule 40 conforming to ASTM Standard A120. Use galvanized, threaded, standard weight malleable iron fittings.
3. Ductile iron pipe: Use Class 50 conforming to ANSI A21.51. Use a minimum of Class 53 thickness pipe for flanged piping. Use mechanical joints conforming to ANSI A21.10 and ANSI A21.11 (AWWA C111) or flanged fittings conforming to ANSI/AWWA C110 and ANSI B16.1 (125#).
4. Use a dielectric union wherever a copper-based metal (copper, brass, and bronze) is joined to an iron-based metal (iron, galvanized steel, and stainless steel).
5. Low- Density Polyethylene Hose:
   a. Use pipe specifically intended for use as a flexible swing joint.
      Inside diameter: 0.490 ± 0.010 inch.
      Wall thickness: 0.100 ± 0.010 inch.
      Color: Black
   b. Use spiral barb fittings supplied by the same manufacturer as the hose.
6. Assemblies calling for threaded pipe connections shall use PVC Schedule 80 nipples and PVC Schedule 40 threaded fittings.
7. Joint sealant: Use only Teflon-type tape or Teflon-based paste pipe joint sealant on plastic threads. Use non-hardening, nontoxic pipe joint sealant formulated for use on water-carrying pipes on metal threaded connections.

D. Thrust Blocks:
1. Use thrust blocks for fitting on pipe greater than or equal to 3-inch diameter or any diameter rubber gasket pipe.
2. Use 3,000 PSI concrete.
3. Use 2-mil plastic.
4. Use No. 4 re-bars wrapped or painted with asphalt tar based mastic coating.

2.5 MAINLINE COMPONENTS

A. Main System Shutoff Valve: per local practice and in compliance with local code.

B. Winterization Assembly: per local practice and in compliance with the local code.

SECTION 328400 - PLANTING IRRIGATION continued next page

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Project Title:
REGENCY AT GRAND HAVEN
GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
11-11-16	PRE-APPLICATION SUBMITTAL
02-03-17	FINAL SITE PLAN APPROVAL
04-13-17	REVISED SITE PLAN SUBMITTAL
06-16-17	HFES PRELIMINARY
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STATE OF MICHIGAN
KENNETH S. WEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:
Checked: Approved:

CAD Drawing File:
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Project Number: 216212.00

Sheet Title:
SPECIFICATIONS

Sheet Number: L-605

C. Backflow Prevention Assembly: as presented in the installation details.

D. Isolation Gate Valve Assembly: as presented in the installation details. Install a separate valve box over a 3-inch depth of ¾-inch gravel for each assembly.

E. Quick Coupling Valve Assembly: double swing joint arrangements as presented in the installation details.

2.6 SPRINKLER AND BUBBLER IRRIGATION COMPONENTS

A. Remote Control Valve (RCV) Assembly for Sprinkler and Bubbler Laterals: as presented in the installation details. Use 3M DBY wire connectors to join control wires to solenoid valves. Install a separate valve box over a 3" depth of ¾" gravel for each assembly.

B. Sprinkler Assembly: as presented in the drawings and installation details. When required use the sprinkler manufacturer's pressure compensating screens (ex. Rain Bird PCS) to achieve 30 PSI operating conditions on each sprinkler and to control excessive operating pressures.

C. Bubbler Assembly: as presented in the drawings and installation details.

2.7 CONTROL SYSTEM COMPONENTS

A. Irrigation Controller Unit:
1. As presented in the drawing and installation details.
2. Lighting protection: Provide 8-foot copper-clad grounding rod at controller location (when specified).
3. Wire markers: Pre-numbered or labeled with indelible non-fading ink, made of permanent, non-fading material.

B. Control Wire:
1. Use American Wire Gage (AWG) No. 14 solid copper, Type UF or PE cable, UL approved for direct underground burial from the controller unit to each remote valve.
2. Color: Use white for common ground wire. Use red colors for control wires. Spare control wires shall be marked or labeled different from that of the active control wire. Wire color shall be continuous over its entire length.
3. Splices: Use 3M DBY-R wire connector with waterproof sealant. Wire connector to be of plastic construction.

C. Instrumentation:
1. As presented in the drawing and installation details.
2. When required provide, install and test an anemometer for irrigation shutdowns at user-present wind velocity thresholds, soil moisture monitoring to override irrigation in the event of high soil moisture levels, and a temperature sensor to prevent irrigation when temperatures drop below a user-preset threshold.
3. Provide a rain sensor to prevent irrigation during or immediately after rainfall events.

D. Power Wire:
1. Electric wire from the power source to satellite control unit shall be solid or stranded copper, Type UF single-conductor cable, UL approved for direct underground burial. Power wires shall be black, white, and green in color. Size as presented in the drawings. The "Contractor" is responsible for verifying that the power wire sizes shown on the drawings are compatible and adequate for the control system being used.
2. Splices: Use 3M DBY-R connectors'
3. Conduit: PVC Schedule 40.

2.8 OTHER COMPONENTS

A. Tools and Spare Parts: Provide operating keys, servicing tools, test equipment, spare parts, and other items indicated in the general notes of the drawings.

B. Other Materials: Provide imported fill material as required to complete this work. Provide other materials or equipment shown on the drawings or installation details, which are part of the irrigation system, although such items may not have been referenced in these specifications.

PART 3 - EXECUTION

3.1 INSPECTION AND REVIEWS

A. Site Inspections:
1. The bidder acknowledges that he has examined the site, plans and specifications, and the submission of a proposal shall be considered evidence that examination has been made.
2. Verify construction site conditions and note irregularities affecting work of this section. It shall be the contracting installer's responsibility to report to the Owner's authorized representative any deviations between drawings, specifications and the site.
Failure to do so before the installing of equipment and resulting in replacing and/or relocation of equipment shall be done at the "Contractor's" expense.
3. Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.
4. Beginning work of this section implies acceptance of existing conditions.

B. Utility Locations:
1. The exact location of all existing utilities and structures and underground utilities are not indicated on the drawings; their locations shall be determined by the "Contractor", and he shall conduct his work so as to prevent interruption of service or damage to them.
2. Arrange for and coordinate with local authorities the location of all underground utilities.
3. Repair any underground utilities damaged during construction. Make repairs at no additional cost above the contract price.
4. The "Contractor" shall protect existing structures and utility services and be responsible for their replacement if damaged by him.
5. The "Contractor" shall be responsible to verify onsite water pressure when applicable prior to construction. The "Contactor" is responsible to remedy any water pressure discrepancy discovered at their expense if the discrepancy is not reported prior to construction.

C. Irrigation System Layout Review:
1. Irrigation system layout review will occur after the staking has been completed unless specifically waived by the Landscape Architect. Notify the engineer/landscape architect/ owner's representative one-week in advance of review.
2. The engineer/landscape architect/owner's representative at this review will identify modifications.

3.2 LAYOUT OF WORK

A. Stake out the irrigation system. Items staked include: sprinklers, pipe, control valves, manual drains, quick coupling valves, backflow preventer, controller, and isolation valves.

B. Install all mainline pipe and mainline components inside of project property lines.

C. Minor adjustments in system layout will be permitted to clear existing fixed obstructions. Final system layout shall be acceptable to the Landscape Architect.

3.3 EXCAVATION, TRENCHING, AND BACKFILLING

A. Excavating shall be considered unclassified and shall include all materials encountered, except materials that cannot be excavated by normal mechanical means.

B. Excavate to permit the pipes to be laid at the intended elevations and to permit work space for installing connections and fittings.

C. Minimum cover (distance from top of pipe or control wire to finish grade):
1. 14-inch over mainline pipe and over electrical conduit.
2. 6-inch over control wire.
3. 10-inch over lateral pipe to sprinklers and bubblers and over manifold pipe to drip system zone control valves.
4. 8-inch over drip in turf or paved areas downstream of drip system zone control valves.
5. 3-inch minimum mulch cover over drip lateral pipe in planting beds downstream of drip system zone control valves.
6. PVC UV radiation-resistant lateral pipe shall be installed directly on the soils surface.

D. PVC or PE lateral pipes may be pulled into the soil using a vibratory plow device specifically manufactured for pipe pulling. Minimum burial depths equals minimum cover listed above provided soil moisture content and other conditions are suitable to allow for full depth of bury with a minimum of stretching and scraping of the pipe. Landscape Architect reserves the right to determine suitability or conditions.

E. Backfill only after lines have been reviewed and tested.

F. Excavated material is generally satisfactory for backfill. Backfill shall be free from rubbish, vegetable matter, and stones larger than 2 inches in maximum dimension. Remove material not suitable for backfill. Backfill placed next to pipe shall be free of sharp objects, which may damage the pipe.

G. Backfill unsleeved pipe by depositing the backfill material equally on both sides of the pipe in 6-inch layers and compacting each layer to 90% Standard Proctor Density, ASTM D698-78. Use of water for compaction, "puddling," will not be permitted.

H. Enclose pipe and wiring beneath roadways, walks, curbs, etc., in sleeves. Minimum compaction of backfill for sleeves shall be 95% Standard Proctor Density, ASTM D698-78. Use of water for compaction, "puddling", will not be permitted.

I. Dress backfilled areas to original grade. Incorporate excess backfill into existing site grades.

J. Where utilities conflict with irrigation trenching and pipe work, contact the engineer / landscape architect / owner's representative for trench depth adjustments.

K. Provide approved fine grained earth fill or sand to point 4" above the top of pipe, where soil conditions are rocky or otherwise objectionable.

L. Excavate trenches and install piping and backfill during the same working day. Do not leave open trenches or partially filled trenches open overnight.

3.4 SLEEVING AND BORING

A. Install sleeving at a depth that permits the encased pipe or wiring to remain at the specified burial depth.

B. Extend sleeve ends six inches beyond the edge of the paved surface. Cover pipe ends and mark with stakes. Mark concrete with a chiseled "X" at sleeve end and locations.

C. Bore for sleeves under obstructions that cannot be removed. Employ equipment and methods designed for horizontal boring.

3.5 ASSEMBLING PIPE AND FITTING

A. General:
1. Keep pipe free from dirt and pipe scale. Cut pipe ends square and debur. Clean pipe ends.
2. Keep ends of assembled pipe capped. Remove caps only when necessary to continue assembly.
3. All mainline and continuously pressurized pipe is to be installed using open trenches. Lateral pipe may be installed "Plowing" if soil conditions permit, and soils do not contain gravel, rock, construction debris, or other potential damaging material.
4. Trenches may be curved to change direction or avoid obstructions within the limits of the curvature of the pipe. Minimum radii of curvature are 25 feet for 2-inches diameter pipe and 100 feet for 2 ½, 3, and 4-inch diameter pipe. All curvature results from the bending of the pipe lengths. No deflection will be allowed at a pipe joint.

B. Mainline and Fittings:
1. Use only strap-type friction wrenches for threaded plastic pipe.
2. PVC Rubber-Gasketed Pipe:
   a. Use pipe lubricant. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.
   b. Epoxy-coated steel fittings shall not be struck with a metallic tool. Cushion blows with a wood block or similar shock absorber.
3. PVC Solvent Weld Pipe:
   a. Use a primer and solvent cement. Join pipe in a manner recommended by the manufacturer and in accordance with accepted industry practices.
   b. Cure for 30 minutes before handling and 24 hours before allowing water in pipe.
   c. Snake pipe from side to side within the trench.
   d. Fittings: the uses of cross type fittings or saddle-tees are not permitted.
   e. Install thrust blocks on the mainline pipe work in accordance with pipe manufacturer's written instructions.

C. Lateral Pipe and Fittings:
1. Use only strap-type friction wrenches for threaded plastic pipe.
2. PVC Solvent Weld Pipe:
   a. Use primer and solvent cement. Join pipe in the manner recommended by the manufacturer and in accordance with accepted industry practices.
   b. Cure for 30 minutes before handling and 24 hours before allowing water in the pipe.
   c. Snake pipe from side to side within the trench.
3. Polyethylene (PE) Pipe:
   a. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.
   b. Snake pipe from side to side within the trench.
   c. Double clamp pipe 1-1/2" diameter and larger.
4. UV Radiation-Resistant Polyethylene Pipe:
   a. Join pipe in the manner recommended by the manufacturer and in accordance with accepted industry practices.
   b. Snake pipe side to side within the trench, on the soil surface, and hold in place with the tubing stakes or landscape fabric staples spaced every five feet. Pipe is not to compressed or crimped by the stake or staple or other construction activity.
5. The use of cross type fittings and/or saddle tees are not permitted.

D. Specialized Pipe and Fitting:
1. Copper Pipe:
   a. Buff surface to be joined to a bright finish. Coat with solder flux.
   b. Solder so that a continuous bead shows around the joint circumference.
2. Galvanized Steel Pipe:
   a. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.
   b. Use factory-made threads whenever possible. Field-cut threads will be permitted only where necessary. Cut threads on axis using clean, sharp dies.
   c. Apply Teflon-type tape or pipe joint compound to the male threads only.
3. Ductile Iron Pipe:
   a. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.
   b. Insert dielectric union wherever a copper-based metal (copper, brass, bronze) and an iron-based metal (iron, galvanized steel, and stainless steel) are joined.
4. Low-Density Polyethylene Hose: Install per manufacturer's recommendations.
5. PVC Threaded Connections:
   a. Use only factory-formed threads. Field-cut threads are not permitted.
   b. Use only Teflon-type tape or Teflon-based paste.
6. Threaded Connections:
   a. When connection is plastic to metal, the plastic component shall have male threads and the metal component shall have female threads.
   b. Make metal-to-metal, threaded connections with Teflon-type tape or pipe joint compound applied to the male threads only.

E. Thrust Blocks:
1. Use cast-in-place concrete bearing against undisturbed soil.
2. Size, orientation, and placement shall be as shown on the installation details.
3. Wrap fitting with plastic to protect bolts, joint, and fitting from concrete.
4. Install re-bar with mastic coating as shown on the installation details.

3.6 INSTALLATION OF MAINLINE COMPONENTS

A. Main System Shut Off Valve: Install where indicated on the drawing.

B. Winterization Assembly: Install where indicated on the drawing.

C. Backflow Prevention Assembly: Install where indicated on the drawing. Install assembly so that its elevation, orientation, access, and drainage conform to the manufacturer's recommendations and all applicable health codes.

D. Quick Coupling Valve Assembly: Install where indicated on the drawings.

E. Manual Drain Valve Assembly: Install where indicated on the drawings and at other low points in the mainline piping.

3.7 INSTALLATION OF SPRINKLER AND IRRIGATION COMPONENTS:

A. Remote Control Valve (RCV) Assembly for Sprinkler and Bubbler Laterals:
1. Flush mainline before installation of RCV assembly.
2. Install where indicated on the drawing. Wire connectors and waterproof sealant shall be used to connect control wires to remote control valve wire. Install connectors and sealant per the manufacturer's recommendations.
3. Install only one RCV to a valve box. Locate valve box at least 12 inches from and align with nearby walls and edges of paved areas. Group RCV assemblies together where practical. Arrange grouped valve boxes in rectangular patterns. Allow at least 12 inches between valve boxes.
4. Adjust RCV to regulate the downstream operating pressure.
5. Attach ID tag with controller station number to control wiring.

B. Sprinkler Assembly:
1. Flush lateral pipe before installing sprinkler assembly.
2. Install per the installation details at locations shown on the drawings
3. Locate rotor sprinklers 6 inches from adjacent walls, fences, or edges of paved areas.
4. Locate spray sprinklers 3 inches from adjacent walls, fences, or edges of paved areas.
5. Install sprinklers perpendicular to the finish grade.
6. Supply appropriate nozzle or adjust arc of coverage of each sprinkler for best performance.
7. Adjust the radius of throw of each sprinkler for best performance.

C. Bubbler Assembly:
1. Flush lateral pipe before installing bubbler assembly.
2. Install bubbler assembly per the installation details at locations shown on the drawings.
3. Adjust the output flow of each bubbler for performance.

3.8 INSTALLATION OF CONTROL SYSTEM COMPONENTS:

A. Irrigation Controller Unit:
1. The location of the controller unit as depicted on the drawings is approximate; the engineer/landscape architect/owner's representative will determine the exact site location during sprinkler layout review.
2. Lighting protection: Drive 8-foot copper-clad grounding rod into the soil. If rock prevents driving, bury at least four feet deep. Use one rod for each controller. Connect controller to ground rod with AWG No. 10 solid conductor copper wire. Secure wire to grounding rod with brass or bronze clamp. Locate the connection in a separate valve box (when specified).
3. Attach wire markers to the ends of control wires inside the controller unit housing. Label wires with the identification numbers (see drawings) of the remote control valve to which the control wire is connected.
4. Install a 120-volt, 15-amp switched and grounded 3-prong receptacle with GFIC inside the controller unit housing.
5. Connect control wires to the corresponding controller terminal.

B. Control Wire:
1. Bundle control wires where two or more are in the same trench. Bundle with pipe wrapping tape at 10-foot intervals.
2. Control wiring may be chiseled into the soil using a vibratory plow device specifically manufactured for pie pulling and wire installation. Appropriate chisel must be used so that wire is fed into a chute on the chisel, and wire is not subject to pulling tension. Minimum burial depth must equal minimum cover previously listed.
3. Provide a 24-inch excess length of wire in an 8-inch diameter loop at each 90-degree change of direction, at both ends of sleeves and at 100-foot intervals along continuous runs of wiring. Do not tie wiring loop. Coil 24-inch length of wire within each remote control valve box.
4. Install common ground wire and one control wire for each remote control valve. Multiple valves on a single control wire are not permitted.
5. If a control wire must be spliced, make splice with wire connectors and waterproof sealant, installed per the manufacturer's instructions. Locate splice in a valve box that contains an irrigation valve assembly, or in a separate 6-inch round valve box.
6. Use same procedure for connection to valves as for in-line splices.
7. Unless noted on plans, install wire parallel with and below PVC mainline pipe.
8. Protect wire not installed with PVC mainline pipe with a continuous run of warning tape placed in the backfill six inches above the wiring.

C. Instrumentation:
1. Install sensor per the installation details and manufacturer's recommendations. Install at locations shown on the drawings.
2. Install electrical connections between central control unit components and sensors per manufacturer's recommendations.

D. Power Wire:
1. Route power wire as directed on plans. Install with a minimum number of field splices. If a power wire must be spliced, make splice with recommended connector, installed per manufacturer's recommendations. Locate all splices in a separate 10-inch round valve box. Coil 2 feet of wire in valve box.
2. All power wire shall be laid in trenches. The use of a vibratory plow is not permitted.
3. Green wire shall be used as the common ground wire from power source to all satellites.
4. Carefully backfill around power wire to avoid damage to wire insulation or wire connectors.
5. Unless noted on plans, install wire parallel with and below mainline pipe. Install wire 2 inches below top of PVC mainline pipe.
6. Encase wire not installed with PVC mainline pipe in electrical conduit with a continuous run of warning tape placed in the backfill, 6 inches above wiring.

3.9 INSTALLATION OF OTHER COMPONENTS:

A. Tools and Spare Parts: Prior to the review at completion of construction, supply to the owner operating keys, servicing tools, spare parts, test equipment, and any other items indicated in general notes on the drawings. Provide at least (2) quick coupling keys and hose adapters.
1. Other Materials: Install other materials or equipment shown on the drawings or installation details which are part of the irrigation system, even though such items may not have been referenced in these specifications.

3.10 MAINTENANCE:

A. Upon completion of construction and review by the engineer/landscape architect/owner's representative, maintain irrigation system for duration of 30 calendar days. Make periodic examinations and adjustments to irrigation system components to achieve the most desirable application of water.

B. Following completion of the "Contractor's" maintenance period, the owner will be responsible for maintaining the system in working order during the remainder of the guarantee /warranty period, for performing necessary minor maintenance, for trimming around sprinklers, for protecting against vandalism, and for preventing damage after the landscape maintenance operation.

3.11 ACCEPTANCE

A. Instruct the Owner's designated personnel in the operation of the system, including adjustment of sprinklers, controller(s), valves, pump controls, and moisture sensing controls.

3.12 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soils, debris and equipment. Repair damage resulting from sprinkler system installation.

END OF SECTION
328400 PLANTING IRRIGATION

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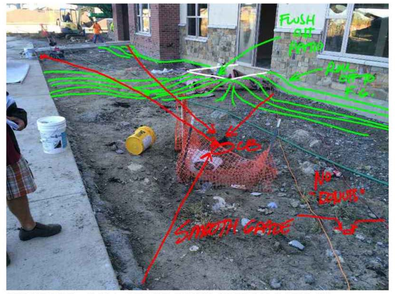
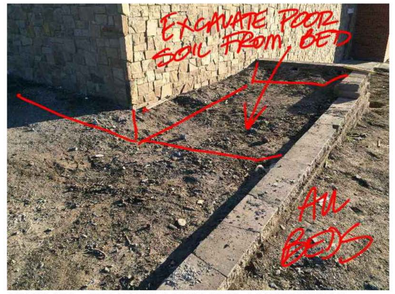
Sheet Number: L-606

PRIOR TO TOPSOIL BEING INSTALLED IN LAWN AREAS



STANDARD - ROLL GRADE DOWN 8" FROM PATIO TO FINISH GRADE ALONG BUILDING. INSTALL SOIL FOR SMOOTH SHEET DRAINAGE ACROSS LAWN TO RIM OF CATCH BASIN

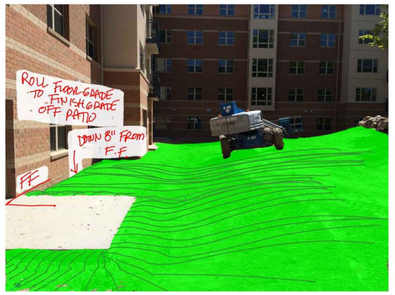


STANDARD - EXCAVATE COMPACTED CONSTRUCTION SOIL FROM PLANTING BED AREAS, TO DEPTH STATED ON PLANTING DETAILS, IN PREPARATION FOR PLANT M IX INSTALLATION.

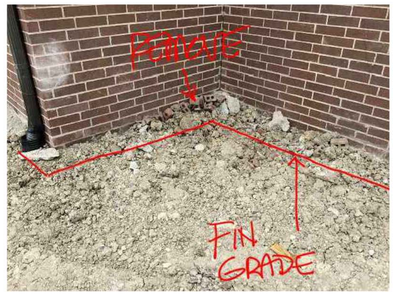
STANDARD - EXCAVATE COMPACTED CONSTRUCTION SOIL FROM PLANTING BED AREAS, TO DEPTH STATED ON PLANTING DETAILS, IN PREPARATION FOR PLANT MIX INSTALLATION.

NOT STANDARD - IRRIGATION VALVE LIDS TO BE FLUSH WITH ADJACENT LAWN AREAS

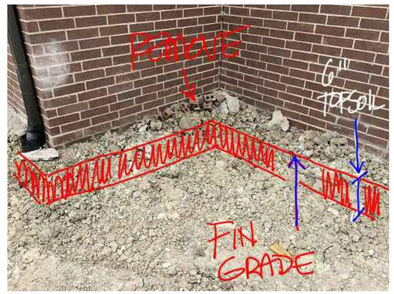
PRIOR TO TOPSOIL BEING INSTALLED IN LAWN AREAS



STANDARD - ROLL GRADE DOWN 8" FROM PATIO TO FINISH GRADE ALONG BUILDING. INSTALL SOIL FOR SMOOTH SHEET DRAINAGE ACROSS LAWN TO SWALES. FINISH GRADE ALONG BUILDING TO BE 8" BELOW FINISH FLOOR OR AS SHOWN ON CIVIL PLANS.



NOT STANDARD - SOIL TOO HIGH ALONG BUILDING - EXCAVATE COMPACTED CONSTRUCTION SOIL FROM PLANTING BED AREAS AND LAWNS,TO CORRECT SUB-GRADE IN PREPARATION FOR 4" DEEP TOPSOIL IN LAWN AREAS AND 12" DEEP PLANT MIX IN PLANTING BEDS. FINISH GRADES NOTED ON CIVIL PLANS.



STANDARD - FINISH GRADE TO BE 8" BELOW FINISH FLOOR OR AS SHOWN ON CIVIL PLANS. EXCAVATE COMPACTED CONSTRUCTION SOIL FROM PLANTING BED AREAS AND LAWNS TO SUB-GRADE, IN PREPARATION FOR 4" DEEP TOPSOIL IN LAWN AREAS AND 12" DEEP PLANT MIX IN PLANTING BEDS.

NOT STANDARD - METAL EDGING TO BE FLUSH WITH ADJACENT LAWN AREAS

NOT STANDARD / NOT ACCEPTABLE - FLAT GRADE IN LAWN AREA, THEN DROPPING ABRUPTLY AT CATCH BASIN

STANDARD - FROM BUILDING OR WALK, PROVIDE A SMOOTH EVEN 2% MINIMUM GRADE TO THE RIM OF THE DRAIN INLET OR CATCH BASIN

NOT STANDARD - TOO MUCH COMPACTED CONSTRUCTION SOIL IN BEDS.

STANDARD - EXCAVATE COMPACTED CONSTRUCTION SOIL FROM PLANTING BED AREAS IN PREPARATION FOR 12" DEEP PLANT MIX IN PLANTING BEDS. FINISH GRADE TO BE 8" BELOW FINISH FLOOR OR AS SHOWN ON CIVIL PLANS

NOT STANDARD - FINISH GRADE TO BE FLUSH WITH EDGE OF WALKS AT LAWN AND PLANTING BED AREAS, TO AVOID TRIP HAZARD FOR RESIDENTS AND VISITORS

NOT STANDARD - FINISH GRADE TO BE 8" BELOW FINISH FLOOR OR AS SHOWN ON CIVIL PLANS

NOT STANDARD - TOO MUCH COMPACTED CONSTRUCTION SOIL IN BEDS.

STANDARD - EXCAVATE COMPACTED CONSTRUCTION SOIL FROM PLANTING BED AREAS IN PREPARATION FOR 12" DEEP PLANT MIX IN PLANTING BEDS. FINISH GRADE TO BE 8" BELOW FINISH FLOOR OR AS SHOWN ON CIVIL PLANS

1 L-301 STANDARDS FOR LANDSCAPE GRADING
NOT TO SCALE

LANDSCAPE STANDARDS

THESE IMAGES ARE A VISUAL REPRESENTATION OF THE DESIGN INTENT AND REQUIREMENTS GIVEN IN THE PLANS AND SPECIFICATIONS

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Sheet Title: STANDARDS

Sheet Number: L-607

NOT STANDARD - NO MULCH VOLCANOES!!! - THIS CREATES ROT ON THE TRUNK AND KILLS THE TREE. INSTALL TREE PER DETAILS.

STANDARD - SOIL REMOVED FROM ROOT FLARE - TREE AT PROPER GRADE, MULCH DEPTH PER PLANTING DETAILS, LOW SAUCER 3" MAXIMUM HEIGHT.

STANDARD - SOIL REMOVED FROM ROOT FLARE - TREE AT PROPER GRADE, MULCH DEPTH PER PLANTING DETAILS, LOW SAUCER 3" MAXIMUM HEIGHT.

NOT STANDARD - DOWNSPOUT BOOT TOO HIGH, SHOWING ABOVE GRADE

NOT STANDARD - INCORRECT JOINTING ON CONCRETE WALKS

NOT STANDARD - NO MULCH VOLCANOES!!! - THIS CREATES ROT ON THE TRUNK AND KILLS THE TREE. INSTALL TREE PER DETAILS.

STANDARD - SOIL REMOVED FROM ROOT FLARE - TREE AT PROPER GRADE, MULCH DEPTH PER PLANTING DETAILS, LOW SAUCER 3" MAXIMUM HEIGHT.

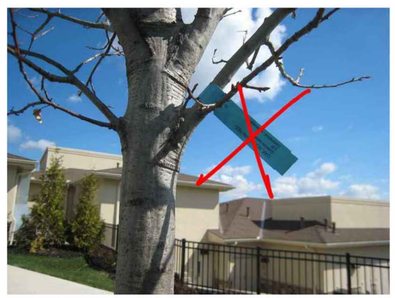
STANDARD - SOIL REMOVED FROM ROOT FLARE - TREE AT PROPER GRADE, MULCH DEPTH PER PLANTING DETAILS, LOW SAUCER 3" MAXIMUM HEIGHT.

STANDARD - TOP OF DOWNSPOUT BOOT FLUSH WITH FINISH GRADE

NOT STANDARD - CONCRETE WALKS WITH INCORRECT JOINTING THAT WILL CRACK, AND CAUSE A TRIP HAZARD FOR RESIDENTS AND VISITORS

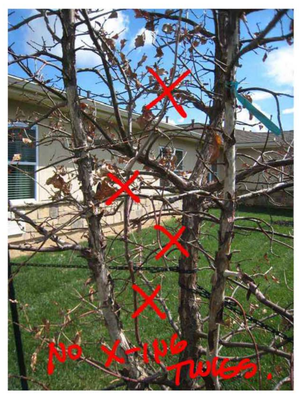
NOT STANDARD - DO NOT BURY TOPS OF SHRUBS IN MULCH!! THIS CREATES ROT ON THE TRUNK AND KILLS THE SHRUB. INSTALL PLANT PER DETAILS.

NOT STANDARD - NO MULCH VOLCANOES!!! - THIS CREATES ROT ON THE TRUNK AND KILLS THE TREE. INSTALL TREE PER DETAILS.



NOT STANDARD - REMOVE TAGS AND LABELS, TRIM OFF DEAD TWIGS AND BRANCHES

NOT STANDARD - TRIM OFF DEAD TWIGS AND BRANCHES



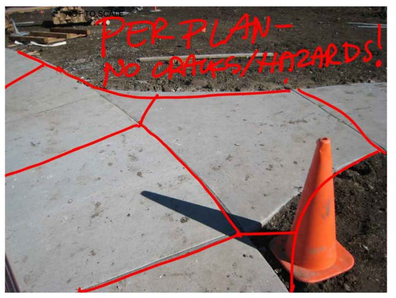
NOT STANDARD - TRIM OFF CROSSING TWIGS AND BRANCHES

NOT STANDARD - TRIM OFF CROSSING TWIGS AND BRANCHES

NOT STANDARD - CROOKED PLANTS. INSTALL TREES AND SHRUBS PLUMB, AND DO NOT BURY TRUNKS WITH EXCESSIVE MULCH

1 L-301 STANDARDS FOR PLANTING
NOT TO SCALE

2 L-101 STANDARDS FOR DOWNSPOUTS
NOT TO SCALE



STANDARD - INSTALL CONCRETE WALKS WITH CORRECT JOINTING PER LAYOUT PLANS

3 L-101 STANDARDS FOR WALKS
NOT TO SCALE

LANDSCAPE STANDARDS

THESE IMAGES ARE A VISUAL REPRESENTATION OF THE DESIGN INTENT AND REQUIREMENTS GIVEN IN THE PLANS AND SPECIFICATIONS

NSA
Architects
Engineers
Planners

23761 Research Drive
Farmington Hills
Michigan 48335

248.477.2444
248.477.2445 fax
www.nsa-ae.com
Founded 1960

Client:

GRAND HAVEN SENIOR LEASING, L.L.C.

SOUTHFIELD MICHIGAN
248.386.0300

248.386.0314 (fax)

Project Title:

REGENCY AT GRAND HAVEN

GRAND HAVEN TWP. MICHIGAN

Date:	Issued for:
11-11-16	PRE-APPLICATION SUBMITTAL
02-03-17	FINAL SITE PLAN APPROVAL
04-13-17	REVISED SITE PLAN SUBMITTAL
06-16-17	HFES PRELIMINARY
06-29-17	REVISED SITE PLAN SUBMITTAL

STATE OF MICHIGAN
KENNETH S. LWEIKAL
LANDSCAPE ARCHITECT
No. 1022
REGISTERED LANDSCAPE ARCHITECT

Drawn: Designed:

Checked: Approved:

CAD Drawing File:

Copyright © 2017
NSA Architects, Engineers, Planners

Project Number: 216212.00

Sheet Title: STANDARDS

Sheet Number: L-608

STATE OF MICHIGAN
DEPARTMENT OF COMMUNITY HEALTH
LANSING

< SNYDER
OVERNOR

NICK LYON
DIRECTOR

September 17, 2014

Mr. Anis Khan, Chief Financial Officer
Ciena Healthcare Management, Inc.
4000 Town Center, Suite 700
Southfield, MI 48075

Re: Certificate of Need for
Regency at Grand Haven, LLC
CON Application No. 14-0026
Facility No. 70-4003
Grand Haven (Ottawa County)

Dear Mr. Khan:

This is to inform you that the proposed project to begin operation of a new 133-bed nursing home in leased space to be constructed on vacant land has been reviewed and is approved with the following summary comments.

BACKGROUND

In accordance with MCL 333.22229, applications for new beds in a nursing home are subject to comparative review if there are multiple applications to meet the same need. Certificate of Need (CON) Application No. 14-0026 is not subject to comparative review because no other application was received on the same comparative window date. This application will be reviewed on a substantive basis in accordance with Administrative Rule 325.9207

PROPOSED PROJECT DESCRIPTION

CON Application No. 14-0026 is proposed by Regency at Grand Haven, LLC, a Michigan domestic limited liability company (CID No. E2231H), located at 4000 Town Center, Suite 700, Southfield, MI 48075. The authorized agent for this application is Anis Khan, Chief Financial Officer, Ciena Healthcare Management, Inc., located at the same address.

The applicant, Regency at Grand Haven, LLC, proposes to begin operation of a health facility at a site that is not currently licensed for that type of health facility; make a change in bed capacity of a health facility; and make a covered capital expenditure.

PROPOSED PROJECT DESCRIPTION - continued

Specifically, the applicant proposes to begin operation of a new 133-bed nursing home in leased space to be constructed on vacant land at Regency at Grand Haven, LLC, located at the intersection of Comstock Street and 172nd Avenue (postal address not yet assigned), Grand Haven, MI 49417 (Ottawa County). The applicant provided legal description of the parcel of land for the proposed site.

The applicant, Regency at Grand Haven, LLC (licensee), will lease for a 15-year period 79,705 square feet (sf) of new space to be constructed in a single-story building by the landlord, GH Senior Leasing, LLC.

The 133 new beds will be housed in 41 private rooms that include four (4) private bariatric rooms with beds and 46 semi-private rooms (92 beds) that will be used for short-term rehabilitation and skilled nursing. All rooms will have an adjoining sink, toilet and shower. The facility also will house physical and occupational therapy areas, meditation room, salon and spa, library, multipurpose room, dining room, and other support space.

Upon completion of the proposed project, the applicant will operate a 133-bed nursing home with no beds from the Pool of Beds for Special Population Groups. At no time will the applicant operate more than 133 beds at this nursing home without prior CON approval. According to the applicant, the project will need 135 new FTEs.

PROPOSED PROJECT COSTS

Space Lease Cost – Term: 15 Years	$ 11,970,000
Total Project Costs	$ 11,970,000

PROPOSED SOURCE OF FUNDS

Capital/Operating Lease	$ 11,970,000
Total Sources of Funds	$ 11,970,000

LOCAL CON REVIEW AGENCY ACTION

Alliance for Health, the local CON review agency, supplies evaluations and recommendations to Michigan Department of Community Health regarding the proposed project under CON Application No. 14-0026 as follows:

In compliance with Michigan Public Health Code Section 333.22226(9), before developing a recommendation on a certificate of need application, a regional certificate of need review agency shall hold a public hearing on the proposed project. To date, no public hearing has been held regarding CON 14-0026, due to lack of mandatory information provided from the applicant to the Alliance for Health.

LOCAL CON REVIEW AGENCY ACTION - continued

Additionally, the law [333.22209(1)] specifies that ..."a person shall not do any of the following without first obtaining a certificate of need: (a)...begin operation of a health facility at a site that is currently not licensed for that type of health facility." If the applicant doesn't specify the location of the proposed nursing home project, it's impossible to know if that site is already licensed for a nursing home.

Without additional financial information from the applicant, as well as proof of ownership or control of the proposed site, Alliance for Health, as the local review agency for CON 14-0026, is not able to review this application and cannot make a determination for approval or non-approval. Alliance for Health makes every effort to endorse 100% of its projects, realizing that further consultation may be needed during the process. Numerous attempts have been made by Alliance for Health to obtain the requisite information needed to evaluate CON 14-0026, but these efforts have gone unanswered by the applicant.

Alliance for Health can recommend neither endorsement nor non-endorsement of CON 14-0026.

COMMENTS

The Michigan Department of Community Health has reviewed and determined that the project is in conformance with Public Act 368 of 1978, as amended, and applicable review standards. The basis for this decision is detailed under justification of approval.

JUSTIFICATION OF APPROVAL

The facts submitted by the applicant in the CON application are assumed to be true. Based upon these facts, the Department makes the following findings with respect to Part 222:

Part 222	Findings
22225(1)	Section Met
(2)(a)	Section Met
(b) (i)	Section Met
(ii)	Section Met
(iii)	Section Met
(iv)	Not Applicable
(c)	Section Met
(d)	Not Applicable
(e)	Not Applicable
22227	Not Applicable
22230	Not Applicable

The reasons and authority for these findings are set forth in the program and financial reports.

NOTIFICATION TO APPLICANT

In accordance with Rule 325.9403(1), the CON issued will be valid for a period of one (1) year from the effective date of this letter. If the project is not complete within the year, an enforceable contract or force account must be in place. An extension to execute the enforceable contract or force account may be granted by the Department for just cause in accordance with Rule 325.9403(2).

As applicable, Rule 325.9103(b) requires that an enforceable contract for any covered clinical equipment specify that the installation date will be within 24 months after the effective date of the CON. Rule 325.9417 requires that the period of time allowed to begin any construction (i.e., pouring of footings) be within 24 months from the effective date of approval. The CON is valid only as long as there is compliance with the provisions of Rule 325.9401, and is not transferable.

A CON is valid for the term of the lease as stated in this approval letter, if applicable, for a health facility or covered clinical equipment. An applicant is required to file another CON to renew a lease for a health facility if the total renewal lease cost exceeds the covered capital expenditure threshold or as otherwise stated in the applicable CON review standards. For covered clinical equipment, an applicant is required to file another CON to renew a lease as required in the applicable CON review standards. In the case of an equipment lease in which the applicant purchases the equipment at the end of the lease, the CON is valid until the equipment is replaced.

If the total project costs exceed the approved amount in this CON by 15 percent of the first $1 million and 10 percent of the excess over $1 million, the applicant is required to seek an amendment to the approved CON in accordance with Rule 325.9415. Additionally, if the scope of the project or method and terms of financing of the project changes, an amendment or new review will be required in accordance with Rule 325.9413.

As part of this CON approval, and in accordance with applicable CON review standards, the applicant is required to obtain and maintain statistical data in order to complete and submit a MDCH Annual Survey. The annual survey is available online at www.michigan.gov/con.

In addition to the rules stated in this letter, the applicant must conform and comply with all CON Administrative Rules. This CON is not to be construed as approval for any other state or federal regulatory review, licensing, or certification. The rules and contact information for other state regulatory agencies are available online at www.michigan.gov/con.

A Project Implementation Progress Report (PIPR) form must be completed and returned no later than 12 months from the date of the final decision letter signed by the Director.

Failure to submit this report may result in the imposition of sanctions in accordance with MCL 333.22247. The form is available online at www.michigan.gov/con.

If this decision is marked proposed decision, it will be followed by the Director's final decision in accordance with Section 22231 of Public Act 368 of 1978, as amended.

If this is a final decision, the decision will be signed and dated by the Director or the Director's designee. The final signed decision date is the official effective date of this CON.

Thank you for your cooperation in the planning process.

Cordially,

Nick Lyon
Director

NL: jld

Final Decision Date: 9/17/14

cc: Abigail Mitchell, CON, MDCH
Joette Laseur, CON, MDCH
James Scott, BHCS, MDLARA
Gail Maurer, Nursing Home Monitoring, BHCS, MDLARA
Brian Barrie, LTC Services Section, MDCH
John Donaldson, Cost Data Reporting & Reimbursement Section, MDCH
Jocelyn Burkett, Alliance for Health

STATE OF MICHIGAN
DEPARTMENT OF HEALTH AND HUMAN SERVICES
LANSING

RICK SNYDER
GOVERNOR

NICK LYON
DIRECTOR

February 29, 2016

Mr. Anis Khan
Ciena Healthcare Management, Inc.
4000 Town Center, Suite 700
Southfield, MI 48075

Re: Certificate of Need for
Regency at Grand Haven
CON Application No. 15-0289
Facility No. 70-4003
Grand Haven (Ottawa County)

Dear Mr. Khan:

This is to inform you that the proposed project to add 20 new nursing home beds into newly-constructed leased space has been reviewed and is approved with the following summary comments.

INTRODUCTION

In accordance with MCL 333.22229, applications for new beds in a nursing home are subject to comparative review if there are multiple applications to meet the same need. Certificate of Need (CON) Application No. 15-0289 is not subject to comparative review because no other application was received on the same comparative window date. This application will be reviewed on a substantive basis in accordance with Administrative Rule 325.9207.

PROPOSED PROJECT DESCRIPTION

CON Application No. 15-0289 is proposed by Regency at Grand Haven, LLC, a Michigan domestic limited liability company (CID No. E2231H), located at 4000 Town Center, Suite 700, Southfield, MI 48075. The authorized agent for this application is Anis Khan, Chief Financial Officer, Ciena Healthcare Management, Inc., located at the same address.

The applicant, Regency at Grand Haven, LLC, proposes to make a change in bed capacity. Specifically, the applicant proposes to add 20 new nursing home beds into leased space in a newly-constructed additional wing to the proposed 133-bed nursing home, approved under CON No. 14-0026, at Regency at Grand Haven, LLC, located at 14894 172nd Avenue, Grand Haven, MI 49417 (Ottawa County).

PROPOSED PROJECT DESCRIPTION - continued

The applicant, Regency at Grand Haven, LLC (licensee), will lease 7,842 square feet (sf) of new space in the new wing of the nursing home for a period of 15 years from the landlord, Grand Haven Senior Leasing, LLC, who will construct the new nursing home facility (total construction of 87,547 sf).

The 20 new nursing home beds will be housed in 20 private rooms. All rooms will have an adjoining sink, toilet and shower.

Upon completion of the proposed project, the applicant will operate a 153-bed licensed nursing home (133 beds approved under CON No. 14-0026 and 20 new beds in this application) with no beds from the Pool of Beds for Special Population Groups. At no time will the applicant operate more than 153 beds at this nursing home without prior CON approval. According to the applicant, the project will need 28 new FTEs.

PROPOSED PROJECT COSTS

Space Lease Cost – Term: 15 Years	$ 2,000,000
Total Project Costs	$ 2,000,000

PROPOSED SOURCES OF FUNDS

Capital/Operating Lease	$ 2,000,000
Total Sources of Funds	$ 2,000,000

COMMENTS

The Michigan Department of Health and Human Services has reviewed and determined that the project is in conformance with Public Act 368 of 1978, as amended, and applicable review standards. The basis for this decision is detailed under justification of approval.

JUSTIFICATION OF APPROVAL

The facts submitted by the applicant in the CON application are assumed to be true. Based upon these facts, the Department makes the following findings with respect to Part 222:

Part 222	Findings
22225(1)	Section Met
(2)(a)	Section Met

JUSTIFICATION OF APPROVAL - continued

	(b) (i)	Section Met
	(ii)	Section Met
	(iii)	Section Met
	(iv)	Not Applicable
	(c)	Section Met
	(d)	Not Applicable
	(e)	Not Applicable
22227		Not Applicable
22230		Not Applicable

The reasons and authority for these findings are set forth in the program and financial reports.

NOTIFICATION TO APPLICANT

In accordance with Rule 325.9403(1), the CON issued will be valid for a period of one (1) year from the effective date of this letter. If the project is not complete within the year, an enforceable contract or force account must be in place. An extension to execute the enforceable contract or force account may be granted by the Department for just cause in accordance with Rule 325.9403(2).

As applicable, Rule 325.9103(b) requires that an enforceable contract for any covered clinical equipment specify that the installation date will be within 24 months after the effective date of the CON. Rule 325.9417 requires that the period of time allowed to begin any construction (i.e., pouring of footings) be within 24 months from the effective date of approval. The CON is valid only as long as there is compliance with the provisions of Rule 325.9401, and is not transferable.

A CON is valid for the term of the lease as stated in this approval letter, if applicable, for a health facility or covered clinical equipment. An applicant is required to file another CON to renew a lease for a health facility if the total renewal lease cost exceeds the covered capital expenditure threshold or as otherwise stated in the applicable CON review standards. For covered clinical equipment, an applicant is required to file another CON to renew a lease as required in the applicable CON review standards. In the case of an equipment lease in which the applicant purchases the equipment at the end of the lease, the CON is valid until the equipment is replaced.

If the total project costs exceed the approved amount in this CON by 15 percent of the first $1 million and 10 percent of the excess over $1 million, the applicant is required to seek an amendment to the approved CON in accordance with Rule 325.9415. Additionally, if the scope of the project or method and terms of financing of the project changes, an amendment or new review will be required in accordance with Rule 325.9413.

As part of this CON approval, and in accordance with applicable CON review standards, the applicant is required to obtain and maintain statistical data in order to complete and submit a MDHHS Annual Survey. The annual survey is available online at www.michigan.gov/con.

In addition to the rules stated in this letter, the applicant must conform and comply with all CON Administrative Rules. This CON is not to be construed as approval for any other state or federal regulatory review, licensing, or certification. The rules and contact information for other state regulatory agencies are available online at www.michigan.gov/con.

A Project Implementation Progress Report (PIPR) form must be completed and returned no later than 12 months from the date of the final decision letter signed by the Director. Failure to submit this report may result in the imposition of sanctions in accordance with MCL 333.22247. The form is available online at www.michigan.gov/con.

If this decision is marked proposed decision, it will be followed by the Director's final decision in accordance with Section 22231 of Public Act 368 of 1978, as amended.

If this is a final decision, the decision will be signed and dated by the Director or the Director's designee. The final signed decision date is the official effective date of this CON.

Thank you for your cooperation in the planning process.

Sincerely,

Timothy L Baker for Nick Lyon

Nick Lyon
Director

NL: jld

Final Decision Date: 3-1-16

cc: Abigail Mitchell, CON, MDHHS
James Scott, BCHS, MDLARA
Joette Laseur, CON, MDHHS
Gail Maurer, Nursing Home Monitoring, BCHS, MDLARA
Brian Barrie, LTC Services Section, MDHHS
John Donaldson, Cost Data Reporting & Reimbursement Section, MDHHS

STATE OF MICHIGAN
DEPARTMENT OF HEALTH AND HUMAN SERVICES
LANSING

RICK SNYDER
GOVERNOR

NICK LYON
DIRECTOR

September 7, 2016

Mr. Anis Khan
Ciena Healthcare Management
4000 Town Center, Suite 700
Southfield, MI 48075

Re: **Amendment** to Certificate of Need for
Regency at Grand Haven, LLC
CON No. 14-0026
Facility No. 70-4003
Grand Haven (Ottawa County)

Dear Mr. Khan:

This is to inform you that the request to ***amend*** the above-approved Certificate of Need (CON) to begin operation of a nursing home with 133 beds in newly constructed leased building within Planning Area 70-Ottawa and make a covered capital expenditure has been reviewed and is approved with *stipulations*.

AMENDMENT BACKGROUND

Per Administrative Rule 325.9417(2), the applicant is requesting to amend the period of time allowed to begin construction of the proposed project. The applicant has requested an additional six (6) months to start construction beyond the 24-month requirement.

The Department is granting the request for an additional six (6) months to allow the applicant time to secure financing, submit architectural plans to be reviewed and approved by state to obtain a construction permit to start construction. The applicant must start construction by **March 16, 2017**. If conditions require that the construction start date be extended beyond March 16, 2017, please notify Gaye Tuttle, Department Analyst, by February 16, 2017, if an amendment with supporting justification will be submitted to extend the construction start date.

This amendment does not change the Proposed Project Description, Project Costs or Sources of Funds at this time.

AMENDMENT PROJECT DESCRIPTION

CON No. 14-0026 is proposed by Regency at Grand Haven, LLC, a Michigan domestic limited liability company (CID No. E2231H), located at 4000 Town Center, Suite 700, Southfield, MI 48075. The authorized agent for this application is Anis Khan, Chief Financial Officer, Ciena Healthcare Management, Inc., located at the same address.

The applicant, Regency at Grand Haven, LLC, proposes to begin operation of a health facility at a site that is not currently licensed for that type of health facility; make a change in bed capacity of a health facility; and make a covered capital expenditure.

Specifically, the applicant proposes to begin operation of a new 133-bed nursing home in leased space to be constructed on vacant land at Regency at Grand Haven, LLC, located at the intersection of Comstock Street and 172nd Avenue (postal address not yet assigned), Grand Haven, MI 49417 (Ottawa County). The applicant provided legal description of the parcel of land for the proposed site.

The applicant, Regency at Grand Haven, LLC (licensee), will lease for a 15-year period 79,705 square feet (sf) of new space to be constructed in a single-story building by the landlord, GH Senior Leasing, LLC.

The 133 new beds will be housed in 41 private rooms that include four (4) private bariatric rooms with beds and 46 semi-private rooms (92 beds) that will be used for short-term rehabilitation and skilled nursing. All rooms will have an adjoining sink, toilet and shower. The facility also will house physical and occupational therapy areas, meditation room, salon and spa, library, multipurpose room, dining room, and other support space.

Upon completion of the proposed project, the applicant will operate a 133-bed nursing home with no beds from the Pool of Beds for Special Population Groups. At no time will the applicant operate more than 133 beds at this nursing home without prior CON approval. According to the applicant, the project will need 135 new FTEs.

AMENDMENT STIPULATIONS

1. The applicant must submit to the Department proof of approval of financing for the project from the accredited lender by December 16, 2016.

2. The applicant must submit architectural plans along with applicable plan review fee to the Health Facilities Engineering Section (HFES) within the Michigan Department of Licensing and Regulatory Affairs (MDLARA) by January 17, 2017, and notify the Department of this submission.

AMENDMENT STIPULATIONS – continued

3. Start of construction prior to the issuance of a construction permit will be considered a violation of the terms and conditions of this CON approval and subject to enforcement action in accordance with MCL 333.22247. Construction cannot start until a construction permit is issued by the HFES within MDLARA.

4. If the applicant is unable to meet any of the above stipulations within the indicated dates, the applicant must contact the Department 30 days prior to the stipulation due dates.

5. The applicant or its authorized agent must sign and return the agreement to accept the stipulations within 10 working days from receipt of the Amendment decision signed by the Manager of the Certificate of Need (CON) Evaluation Section.

6. The Certificate of Need amendment will become effective the date the applicant and/or its authorized agent accepts these stipulations.

COMMENTS

Please be advised that the issuance of this amendment does not extend the effective date of the CON, which is September 17, 2014, nor does it change any other terms and conditions of the original approval not explicitly stated in this amendment.

If we can be of further assistance, please contact our office at 517-241-3344.

Sincerely,

Bhattacharya

Tulika Bhattacharya, Manager
CON Evaluation Section, MDHHS
CM-26

cc: Abby Mitchell, CON, MDHHS
Gaye Tuttle, CON, MDHHS
Jim Scott, HFES, BCHS, MDLARA

Stipulations Accepted By:

Anis Khan, Authorized Agent

9/15/2016
Date

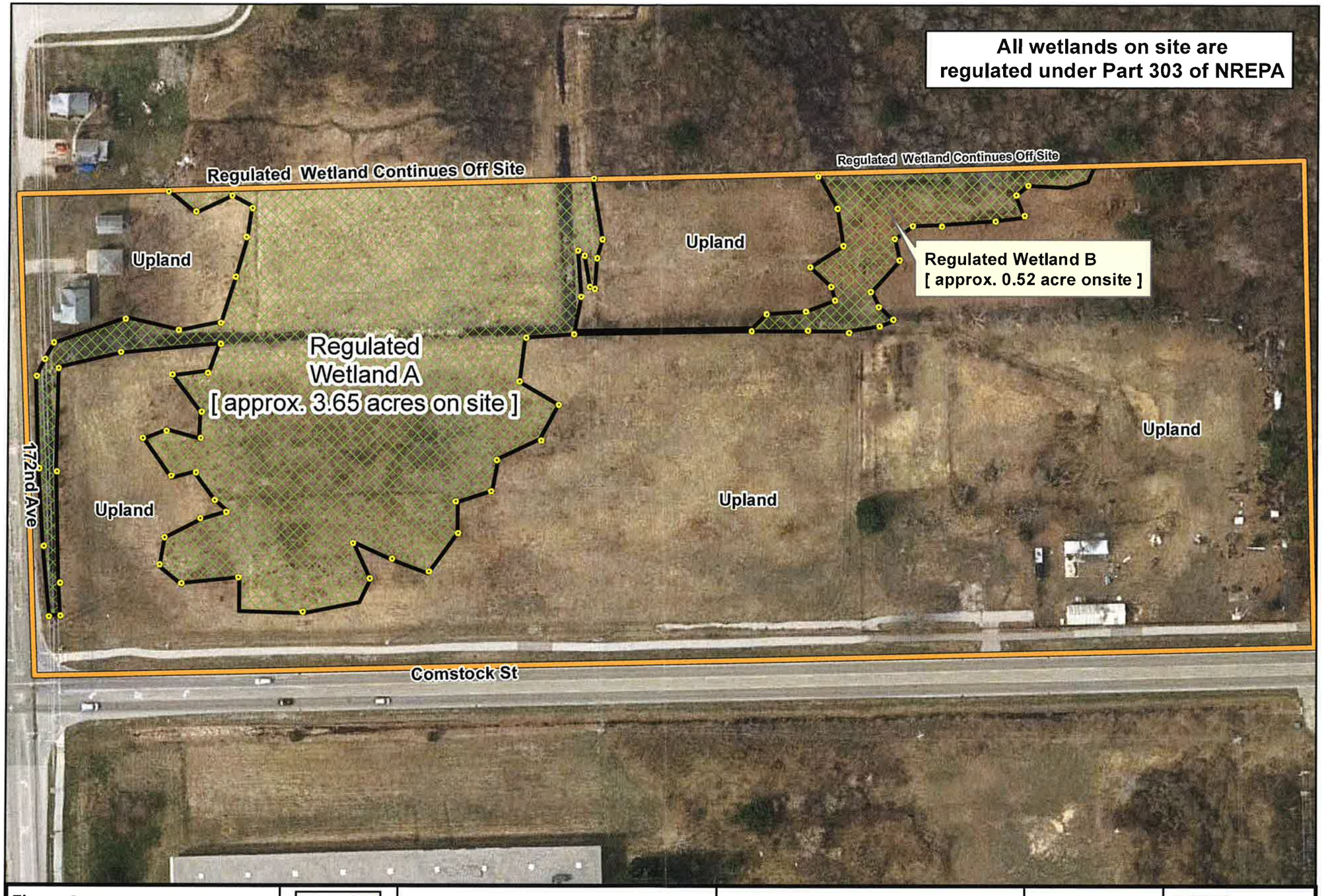


Figure 2.
Wetland Assessment Detail
DEQ WIP File 28Z-4SPE-BGNF

Ottawa County

N
W E
S

0 35 70 140 210 280 Feet

Regulated Wetland

Wetland Boundary Flag

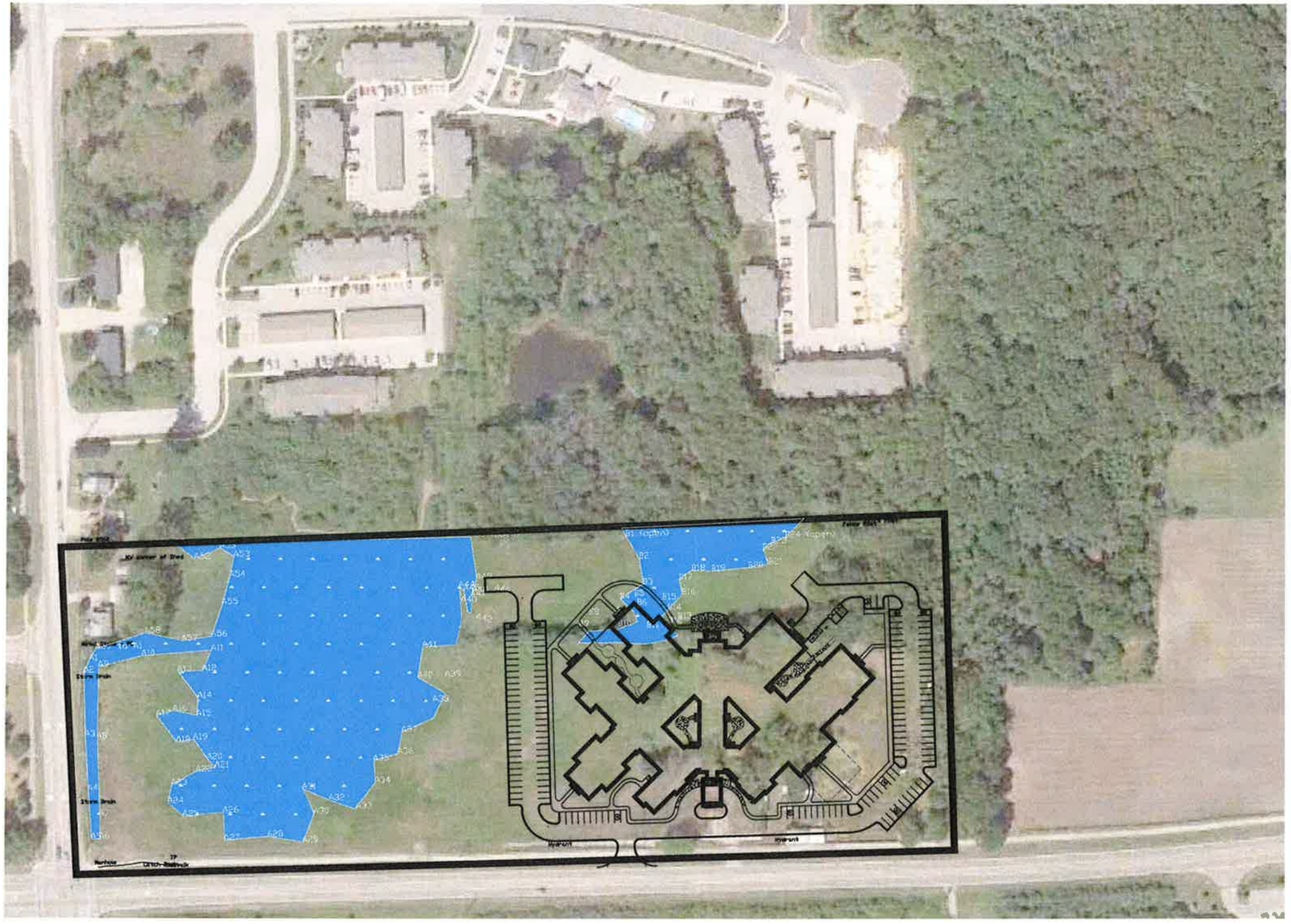
Review Area

This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.

This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

STATE OF MICHIGAN
DEQ
DEPARTMENT OF ENVIRONMENTAL QUALITY

Map created: October 2015
K. Gyekis,
Wetlands, Lakes,
and Streams Unit, DEQ WRD



Regency at Grand Haven - Comstock and 172nd

Ottawa County, Michigan

Overall Site Plan

NSA Project No. 216212.00, August 11, 2016

0 50' 100' 200'

N

CIENA HEALTHCARE

NSA Architects Engineers Planners

Attachment "D" -

Similar Ciena Facilities Parking and Bed counts

NSA Architects Engineers Planners

Project # 215210.00

Site Plan Approval – St. Mary's Replacement 6/25/15

1. **Regency of Shelby**: 127 cars and 116 beds = 1.09 cars/bed

2. **Regency of Grand Blanc** : 132 cars, 120 beds = 1.1 cars/bed

3. **Notting Hill West Bloomfield**: 111 cars, 120 beds = 0.92 cars/ bed

4. **Regency of West Lansing**: 124 cars, 120 beds = 1.03 cars/bed

5. **Regency of Waterford**: 157 cars, 148 beds = 1.06 cars/bed

6. **St Mary's Replacement**: 144 cars, 146 beds = 0.99 cars/bed

Attachment "E"

Notting Hill, West Bloomfield 6/23/15 Site Photographs

NSA Architects Engineers Planners

Project # 215210.00

Site Plan Approval – St. Mary's Replacement 6/25/15

From: NottingHill Maintenance <nottinghill_maintenance@cienafacilities.com>
Date: June 23, 2015 at 1:07:53 PM EDT
To: Tami Hunt3 <thunt3@cienahmi.com>
Cc: Brenda LaVigne <grandblanc_admin@cienafacilities.com>, Carrie Beaulieu <nottinghill_admin@cienafacilities.com>, Grandblanc Maintenance <grandblanc_maintenance@cienafacilities.com>
Subject: Re: Pics of Parking Lots

See attached photos of our full parking lot.

--
Calvin Bowen
Maintenance Director
Notting Hill of West Bloomfield
6535 Drake Rd.
West Bloomfield, MI 48322
248-592-2000 ext.1711

Jeep

Attachment "F"

Regency of Grand Blanc 6/23/15 Site Photographs

NSA Architects Engineers Planners

Project # 215210.00

Site Plan Approval – St. Mary's Replacement 6/25/15

---------- Forwarded message ----------
From: **Grandblanc Maintenance** <grandblanc_maintenance@cienafacilities.com>
Date: Tue, Jun 23, 2015 at 1:04 PM
Subject: Re: Pics of Parking Lots
To: Tami Hunt3 <thunt3@cienahmi.com>
Cc: Brenda LaVigne <grandblanc_admin@cienafacilities.com>, Carrie Beaulieu <nottinghill_admin@cienafacilities.com>, NottingHill Maintenance <nottinghill_maintenance@cienafacilities.com>

Tami,

Here are the pictures of our parking lot.

Attachment "G"

Regency of Waterford 6/18/15 Site Photographs

NSA Architects Engineers Planners, Project # 215210.00

Site Plan Approval – St. Mary's Replacement 6/25/15

(Please note that the facility is undergoing an addition along with additional parking spaces, refer to attachment D for final parking/bed ratios)

---------- Forwarded message ----------
From: **Waterford Admin** <waterford_admin@cienafacilities.com>
Date: Thu, Jun 18, 2015 at 1:57 PM
Subject: Fwd:
To: Tami Hunt3 <thunt3@cienahmi.com>

Tami we are full all day long with cars parked illegally, and in non-designated areas. I can't wait for the construction to be done hopefully then we will have enough spots. Thanks Brad
---------- Forwarded message ----------
From: **Brad Peruski** <waterford_admin@cienafacilities.com>
Date: Thu, Jun 18, 2015 at 1:54 PM