LIMA TOWNSHIP PLANNING COMMISSION
P.O. BOX 59, CHELSEA, MI 48118
AGENDA
MONDAY, MARCH 25, 2024 – 7:00 P.M.

ORDER OF BUSINESS

1. CALL REGULAR PLANNING MEETING TO ORDER
2. PLEDGE OF ALLEGIANCE
3. REVIEW AND APPROVAL OF THE MARCH 25, 2024 AGENDA
4. APPROVAL OF THE JANUARY 22, 2024 REGULAR PLANNING COMMISSION MINUTES

5 **CITIZENS' COMMENTS/PARTICIPATION**

6. **ZONING ADMINISTRATOR'S REPORT**

7. **OLD BUSINESS**
   A. MASTER PLAN UPDATE

8. **NEW BUSINESS**
   A. PUBLIC HEARING
      SECTION 5.37 – REGULATION OF ANIMALS
   B. APPLICATION 2024-002 – PRELIMINARY SITE PLAN
      ST. VLADIMIR RUSSIAN ORTHODOX CHURCH
   C. ADDITION TO THE TOWNSHIP HALL

9. **COMMITTEE REPORTS**
   A. TOWNSHIP BOARD ACTIVITIES – NANETTE HAVENS
   B. SEMCOG – DUANE LUICK
   C. CAPT/DART – ED GREENLEAF
   D. CAPITAL IMPROVEMENT – ED GREENLEAF

10. **CORRESPONDENCE**

11. **FINAL PUBLIC COMMENT**

12. **ADJOURNMENT**

LIMA TOWNSHIP PLANNING COMMISSION
REGULAR MEETING
JANUARY 22, 2024

PRESENT: Marlene Consiglio, Nanette Havens, Ron Howdyshell, Ken Prielipp, Howard Sias and Else Heller, Recording Secretary.

ABSENT: Ed GreenLeaf and Elizabeth Sensoli.

OTHERS: Zoning Administrator Mariano Sastre, Township Planner Michelle Mariin, Supervisor Duane Luick. Jim & Darlyn Daratony and Jake & Celina Chase.

Chair Consiglio called the regular meeting to order at 7:00 P.M. with The Pledge of Allegiance to the Flag.

Moved by Ron Howdyshsell, seconded by Ken Prielipp, to approve the January 22, 2024 agenda, as submitted. Motion carried unanimously.

Moved by Ron Howdyshell, seconded by Ken Prielipp, to approve the October 23,, 2023 regular Planning Commission minutes, as submitted. Motion carried unanimously.

CITIZENS' COMMENTS/PARTICIPATION

Jim Daratony, 555 S. Dancer Rd – Gave an update on the new building at Revel Run. He is hoping the building will be done in early March. A schedule of events for Revel Run was received by the Planning Commission.

Celina Chase, 13867 E, Old U.S. 12 – spoke regarding raising chickens. Now she is unable to raise chickens due to the setback restriction on her property zoned R-1A. She owns 1.32 acres. She is seeking permission from the Township to allow chickens on her property. Discussion followed. The Township Board will address this.

ZONING ADMINISTRATOR'S COMMENTS

Zoning Administrator Mariano Sastre, reported for the month of December with four compliance permits issued, for 1 new home, 1 fence, 1 new address and 1 Temp. signs. He also included a 2023 Annual Zoning Action Report Summary. Discussion followed which included Smith's Towing Service, Thornton Farm fence and the Russian Church.

OLD BUSINESS

MASTER PLAN – UPDATE

The Master Plan draft was authorized for release by the Township Board at the December 11, 2023 meeting. Neighboring communities need to be notified. Moved by Ken Prielipp, seconded by Howard Sias, to table the Master Plan until all neighboring communities are notified. Motion carried unanimously.

NEW BUSINESS

APPROVE 2024 PLANNING COMMISSION MEETING DATES

Moved by Ron Howdyshell, seconded by Howard Sias, to approve the corrected 2024 Planning Commission meeting dates with the February meeting to be on the 19 instead of the 26, due to the Primary Election scheduled for February 27.

ELECTION OF PLANNING COMMISSION OFFICERS

Moved by Howard Sias, seconded by Ken Prielipp, to nominate the present officers for 2024. Motion carried unanimously.

COMMITTEE REPORTS

TOWNSHIP BOARD ACTIVITIES – Nanette Havens reported on the activities for the January 8, 2024 Lima Township Board Meeting. She stated that the Township will have only one precinct instead of two, for elections. The Board approved Poverty Exemption forms for disabled veterans. The Board approved to add on to the Lima Township Hall with new bathrooms and offices. The Board had a special meeting on December 27, 2023 to accept the resignation of Teresa Reynhout as of December 31, 2023 and to appoint Ann Kwaske as clerk for Lima Township, effective January 1, 2024. The Board approved Haines Accounting as the new accounting firm for Lima Township.

SEMCOG – Supervisor Duane Luick stated that SEMCOG will have a meeting on February 7, 2024.

CAPT/DART – No report.

CAPITAL IMPROVEMENT – No report
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CORRESPONDENCE

Chair Marlene Consiglio stated a letter was received from Dexter Township regarding updating of their Master Plan.

FINAL PUBLIC COMMENT .

Howard Sias asked what happened to the cloth map that was hanging in the Township Hall? It was stated it was removed to be cleaned because of the mole that was found.

ADJOURNMENT

Motion by Howard Sias, seconded by Ken Prielipp, to adjourn the Planning Commission meeting at 7:50 P.M. Motion carried unanimously.

Note: These minutes are not intended to be a verbatim representation of the speaker's comments, but only highlight various points and ideas presented.

Respectfully submitted,

Else Heller
Recording Secretary

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

TO: Lima Township Planning Commission

FROM: Paul Montagno, AICP, Township Planner
Michelle Marin, AICP Candidate

DATE: March 18, 2024

RE: Regulations of Animals Zoning Ordinance Amendment

The following memo details the current regulations and offers a recommended update to the Regulation of Animals in the Zoning Ordinance. In response to a request to permit the keeping of chickens in more residential zoning districts, we also reviewed and offered recommended updates to the complete section regulating the keeping of animals in the Township. The proposed language greatly simplifies what was previously very complicated zoning language. Generally, the proposed language focuses on the creation of standard regulations for keeping animals, based on best practices, that are designed to prevent nuisance.

Current Regulation

The Zoning Ordinance categorizes animals into three (3) different classes. They include Class I (household pets), Class II (larger farm type animals like horses or cows), and Class III (small farm type animals like chickens or rabbits). The Township currently permits Class II and Class III animals, including chickens, within the AG-1 (5-acre minimum), AG-2 (5-acre minimum), and RC (10-acre minimum) zoning districts. They are further permitted as a special use in the RR (3-acre minimum) zoning district. Section 5.37.7 of the Zoning Ordinance permits keeping up to six (6) chickens without special authorization on a parcel zoned RR, provided that the outlined regulations are followed. These regulations include maintaining enclosures at least fifty (50) feet from any property line, enclosing chickens at night, and storing both chickens and their feed away from predators. The raising or keeping of chickens is prohibited in other zoning districts, including smaller lot single-family residential districts. The Michigan Right to Farm Act does preempt local zoning regulations regarding livestock for farming operations if they are kept in compliance with the Generally Accepted Agricultural Management Practices (GAAMPs) developed by the Michigan Department of Agriculture & Rural Development (MDARD).The Act does not apply to the keeping of chickens or other animals for personal use which is not part of an agricultural

operation. As such, the Township can enact restrictions on the keeping of chickens or other animals for personal use as an accessory to a principal residential use.

The Regulation of Class II and III animals on non-farm properties currently offers suggested stocking densities and maintenance requirements, including enclosure placement.

Recommended Zoning Ordinance Updates

The attached document details our recommended draft ordinance amendment to all of Section 5.37: Regulations of Animals. The proposed changes generally include:

- Expand the keeping of Class II and Class III animals as an accessory to a residential use to the RR zoning district by right, with standards regulations without special land use approval.
- Amend the stocking densities for Class II and Class III animals to scale with the lot size, up to 10 acres. Larger lots must be fully compliant with GAAMPs.
- Include enclosure size requirements in addition to placement requirements.
- Prohibit the slaughtering of all animals on non-farm properties.
- Reorganize and simplify existing maintenance requirements for Class II and Class III, including removing any recommendations.
- Clearly differentiate between non-farm keeping of Class II and Class III animals and commercial farm operations that are compliant with GAAMPs.
- Require a zoning compliance permit for any non-farm keeping of Class II and Class III animals for properties. Such a permit would be easier to either renew or revoke in the case of violations.
- Add a discussion of nuisance procedures to Section 5.37.5 – "Conformance to Law" – applicable to all keeping of animals in the Township.

For specific regulations for the keeping of chickens, we recommend the following updates:

- Permit the Keeping of Chickens in the R-1A, R-1B, R-1C, or R-1D zoning districts with standard regulations in addition to the RR zoning district.
- Reduce the required enclosure setback from fifty (50) feet to the minimum yard setbacks for principal structures in the district to more broadly accommodate households seeking to incorporate backyard chickens.

We look forward to discussing this with you at your next Planning Commission meeting. Please do not hesitate to contact us with any questions or concerns.

Respectfully submitted,

CARLISLE/WORTMAN ASSOC.,INC
Paul Montagno, AICP
Principal

CARLISLE/WORTMAN ASSOC., INC.
Michelle Marin, AICP Candidate
Community Planner

Section 5.37. Regulation of Animals.

Definitions

Class I Animals include domesticated household pets weighing less than one hundred fifty (150) pounds.

Class II Animals include animals that are normally part of the livestock maintained on a farm, including Bovine and like animals, Equine and like animals, Swine and like animals, Ovine and like animals, and other similar animals weighing in excess of 75 pounds and not otherwise specifically classified in this definition.

Class III Animals include rabbits (not maintained or kept as domesticated household pets), poultry, wildfowl, and other similar animals weighing less than 75 pounds and not otherwise specifically classified in this definition.

5.37.1. **Class I Animals** may be maintained in any zoning classification district, subject to the restrictions of this Ordinance and other applicable Township Codes.

5.37.2. **Class II and Class III Animals** may be maintained as part of an agricultural operation in the RC, AG-1, and AG-2 Zoning Districts only. Class II and Class III animals should be maintained in accordance with all applicable Generally Accepted Agricultural Practices (GAAMPS) from the Michigan Department of Agriculture and Rural Development. On any premises upon which animals are situated or maintained in the Township, garbage, refuse, offal, and the like shall not be brought upon the premises and fed to animals; said action is hereby deemed to be a nuisance.

5.37.3. **Exceptions**:

Keeping of Class II and Class III animals as an accessory to a residential use in RC, AG-1, AG-2, and RR Zoning Districts is exempt from the requirements of 5.37.2, subject to the regulations provided in Section 5.37.4.

Keeping of chickens as an accessory to a residential use in R-1A, R-1B, R-1C, or R-1D zoning Districts are exempt from the requirements of 5.37.2, subject to the regulations provided in Section 5.37.5.

5.37.4 **Keeping of Class II and Class III Animals in Residential Districts.** Keeping of Class II and Class III animals as an accessory to a residential use in the RC, AG-1, AG-2, and RR zoning districts are subject to the following requirements:

A. A property owner must submit an application for a zoning compliance permit per Section 3.4. which demonstrates compliance with the regulations of the zoning ordinance.

B. While horses and equine type animals are considered Class II, commercial and private stables are regulated under Section 5.25.2, herein.

C. This activity shall remain an accessory use, incidental to the principal use of the lot for the principal dwelling of the property owner or their tenants.

D. Class II animals may be kept at the following densities:

    1. The keeping of up to two (2) Class II animals shall be permitted as an accessory to the principal use of a property for a residence that has a minimum lot area of three (3) acres and a minimum width of 200 feet.

    2. One (1) additional Class II animals shall be permitted per each additional acre for residential parcels up to ten (10) acres.

    3. The keeping of Class II animals on non-farm parcels of ten (10) acres or more shall be maintained pursuant to GAAMPs established by the Michigan Department of Agriculture.

E. Class III animals may be kept at the following densities:

    1. The keeping of up to thirty (30) Class III animals shall be permitted as an accessory to the principal use of a property for a residence that has a minimum lot area of three (3) acres and a minimum lot width of 200 feet.

    2. One (1) additional Class III animal shall be permitted per each one-tenth (1/10) acre for residential parcels up to ten (10) acres.

    3. The keeping of Class III animals on non-farm parcels of ten (10) acres or more shall be maintained pursuant to GAAMPs established by the Michigan Department of Agriculture.

F. There shall be adequate fencing, or other restraining device, for the purpose of maintaining animals within the restricted areas provided for in this section.

G. The refuse and waste resulting from the maintenance of animals shall be controlled upon the premises and shall be cared for or disposed of within a reasonable time so as to minimize hazards of health and offensive effects upon neighboring people and uses.

H. All feed and other substances and materials on the premises for the maintenance of animals shall be stored in appropriate enclosed receptacles and structures, excepting such storage as may otherwise be accomplished without adversely affecting the neighbors of the premises or the public health, safety, and welfare of the citizens of the Township.

I. Structures shall be provided to house, confine, and shelter animals. Structures housing shall be located no nearer than fifty (50) feet to any adjacent lot line. The size of all accessory buildings and structures situated on a premises shall not exceed a total of one hundred fifty (150) square feet for each complete acre of land area, provided that no single building or structure shall exceed the size of two thousand (2,000) square feet. The following minimum sized structures shall be provided for each animal:

1. For class II animals:

    i. Bovine and like animals, fifty (50) square feet.

    ii. Equine and like animals, fifty (50) square feet.

    iii. Swine and like animals, twenty (20) square feet.

    iv. Ovine and line animals, eight (8) square feet.

    v. Other Class II animals shall be provided with a minimum of fifty (50) square feet of structure per animal.

2. Class III animals shall be provided with a structure having a minimum size of four (4) square feet of floor area per animal. If the structure includes multiple levels, floors, layers, etc., then the square footage shall be computed by counting each level, floor, or layer separately.

J. Slaughtering of any animals is prohibited.

K. The standards of this Section shall not apply to the keeping of animals as part of an active farm operation maintained in conformance with the Right to Farm Act and GAAMP standards.

5.37.5 **Keeping of Chickens in Residential Districts.** The keeping of chickens for non-commercial purposes is permitted in the R-1A, R-1B, R-1C, or R-1D districts when kept in such a manner that the following standards are complied with:

A. A property owner must submit an application for a zoning compliance permit per Section 3.4. which demonstrates compliance with the regulations of the zoning ordinance.

B. This activity shall remain an accessory use, incidental to the principal use of the lot for the principal dwelling of the property owner or their tenants.

C. No more than six (6) female chickens may be kept.

D. Roosters, male chickens, or any other type of class of fowl of poultry are prohibited.

E. Chickens must be kept as family pets or to lay eggs for personal consumption only.

F. The chickens shall be provided with a covered, predator-proof enclosure that is thoroughly ventilated, of sufficient size to admit free movement of the chickens, designed to be easily accessed, cleaned, and maintained by the owners, and be at least two (2) square feet per chicken in size. All enclosures for the keeping of chickens shall be so constructed or repaired as to prevent rats, mice, or other rodents from being harbored underneath, within, or within the walls of the enclosure.

G. The chickens shall be shut into the enclosure at night, from sunset to sunrise.

H. All feed shall be stored in rodent and predator-proof containers.

I. A person must not keep chickens in any location on the property other than in the rear yard.

J. All containers, shelters, pens, and enclosures shall conform to the minimum yard setbacks for the zoning district.

K. Slaughtering of chickens is prohibited.

L. A property owner must submit an application for a zoning compliance permit per Section 3.4.

5.37.5 **Conformance to Law.** In reference to Sections 5.37.1, 5.37.2, 5.37.3, and 5.37.4 above, the following may apply: All federal, state, and local laws and regulations to include, but not limited to the Michigan Right to Farm Act, all adopted Generally Accepted Agricultural Management Practices and all Michigan Department of Agriculture rules and regulations. All violations of Michigan Right to Farm Act are investigated and can be reported to the Michigan Department of Agriculture.

5.37.6 **Exotic/Wild Animals.** Except as authorized in a wildlife preserve or zoological exhibit approved by the Township, exotic and/or wild animals shall not be permitted to be maintained in the Township, temporarily or permanently. For purposes of this section, the term exotic and/or wild animal shall mean an animal not otherwise defined as a Class I, II, or III animal, and which is not customarily domesticated and customarily devoted to the service of mankind. Exotic and/or wild animal also means any animal that a person is prohibited from possessing by law. The characterization of an animal as being exotic and/or wild shall not be altered by virtue of the fact that one (1) or several generations of the animal in question have been maintained in captivity. It shall be unlawful for the owner, possessor,

or any other person in control of a lot, tract, or parcel of land within Lima Township, or any residence or business premises situated thereon to knowingly permit any other person to be in possession of an exotic animal upon the property, residence, or premises.

Carlisle | Wortman
ASSOCIATES, INC.
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Date: March 11, 2024

Site Plan Review
For
Lima Township, Michigan

Applicant: St. Vladimir Russian Orthodox Church

Project Name: New Cathedral St. Vladimir Russian Orthodox Church

Plan Date: February 28, 2024

Location: 9900 Jackson Road

Zoning: AG-1 Agriculture

Action Requested: Site Plan Approval

PROJECT AND SITE DESCRIPTION

The applicant is requesting site plan approval for a new cathedral and other site modifications at the existing St. Vladimir's Russian Orthodox church located at 9900 Jackson Road. The property is within the AG-1 Agriculture Zoning District on parcel ID # G -07-23-100-022.

The existing conditions of the property include a church with a corresponding parking area, a 3,236-square-foot multi-purpose building, a 3,236-square-foot storage building, a cemetery, and a roughly 400-foot-long gravel drive. The multi-purpose building includes, among other uses, a school. Most of the site is open space used for occasional events.

The site plan proposes a new 5,183-square-foot cathedral with a bell tower and three (3) domes north of the existing parking area, a new parking area southwest of the cemetery, a dumpster enclosure, and the reconfiguration of the gravel drive into a hard surface parking area. A new driveway is proposed around the perimeter of the proposed cathedral. All the existing structures are proposed to remain. Figure 1 shows the aerial view of the subject site

and vicinity, and Table 1 shows the zoning and uses of the subject site and surrounding properties.

Figure 1. Aerial Image of Subject Site and Vicinity

Source: Nearmap.com

Table 1. Surrounding Property Details

	North	South	East	West
Zoning District	I-94	AG-1: Agriculture	AG-1: Agriculture	AG-1: Agriculture
Land Use	I-94	Single family residences	Single family residences	Single family residences

PROCEDURE

In an AG-1 zoning district, churches require Special Land Use permits. Churchesare a special land use in the AG-1 zoning district. Special Land Use permits have previously been issued for the church in 2017 and for the cemetery and private school in 2018. The permits were issued with the condition that they comply with the approved final site plans.

Therefore, the Special Land Use permit must be reissued to include the details of the proposed site plan, including the cathedral.

A Special Use Permit is subject to the special use procedures in Section 3.3. The procedure includes holding a public hearing and making findings about the proposed use as required in the Zoning Ordinance.

Items to be Addressed: *The applicant must apply for a new/amended Special Land Use permit to allow for the use of the site for a cathedral/church.*

AREA, WIDTH, HEIGHT, SETBACKS

The AG-1 zoning district dimensional requirements are detailed in Table 2. The applicant provided dimensional requirement details on Sheet 4 of the site plan, but the incorrect setback and lot coverage requirements were referenced. Three (3) domes are proposed for the cathedral, the tallest of which will reach a height of 91 feet and 6 ½ inches. The maximum building height in the AG-1 zoning district is thirty-five (35) feet, but domes and bell towers are exempt from height regulations.

Table 2. Dimensional Requirements

	Required	**Provided**	**Compliance**
Lot Area	5 acres	11.21 Acres	Complies
Lot Width	330 Feet	815.86 Feet	Complies
Front Setback	50 Feet	Not provided	***Cannot be determined***
Side Setback	50 Feet, as set forth in Section 5.14	Not provided	***Cannot be determined***
Rear Setback	30 Feet	Not provided	***Cannot be determined***
Off-street parking Setback	5 Feet, side & rear lot lines	Not provided	***Cannot be determined***
Lot Coverage	10% Max	2.87%	Complies
Floor Area Ratio	10% Max	3.65%	Complies
Building Height	35 feet Max	Roof: 31 Feet 7 Inches Dome: 91 Feet 6 ½ Inches	Complies

Items to be Addressed: *Applicant shall provide distances of all proposed structures and parking areas to the property lines.*

PARKING AND LOADING

The project includes the construction of seventy-six (76) new parking spaces to the east (Lot F) and southeast (Lot E) of the proposed cathedral, bringing the total number of parking spaces on-site to one hundred and thirty-nine (139). The proposed parking spaces range

from eight (8) to ten (10) feet wide and are twenty (20) feet long. Section 11.5.6. requires a minimum parking space width of nine (9) feet, except for barrier free spaces, which may be eight (8) feet wide with a five (5) foot barrier free area. A twenty-four (24') foot wide drive aisle to accommodate two-way traffic, and a fifteen (15') foot wide one-way traffic drive traveling around the west and north side of the cathedral.

The applicant has indicated that the proposed parking areas will be hard surfaced with asphalt and concrete wheel blocks will be at the top of each parking space. Section 11.5.1 requires parking areas for commercial properties to be hard-surfaced and graded to dispose of surface water.

Section 11.2.7. establishes that places of assembly shall count every twenty-four (24) inches of benches, pews, or similar seating as one (1) seat. Sheet 4 indicates that the expected occupancy for the cathedral is three hundred (300) people. The provided floor plans do not include seating details, and it appears that the assembly area will consist of room for congregates to stand. Table 3 indicates the parking requirements for the new cathedral.

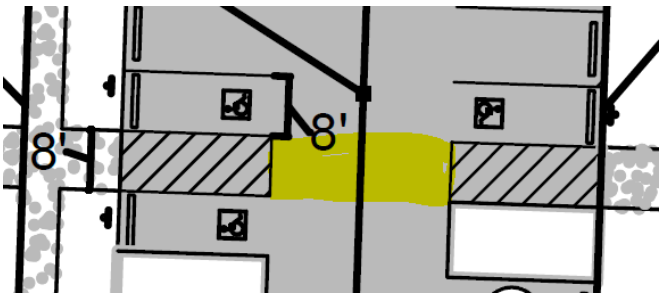
Table 3. Off-Street Parking Requirements

	Requirement	No. of Spaces Required	No. Spaces Provided	Compliance
Places of Assembly	1 per 3 seats OR 1 per 24 inches of bench/pew	300 people (per applicant) = 100 spaces	76 new spaces 139 total spaces on site	Complies
Barrier Free	5 spaces for lots of 101-150 spaces	139 total spaces = 5 barrier free	11 barrier free spaces, including 5 new	Complies

Five (5) total barrier free spaces are provided in the new Lot F parking area, creating eleven (11) total barrier free spaces on the site. There is one barrier free parking space on the east side of Lot F, but no crosswalk striping is provided across the drive aisle (see Figure 2).

Details of Lot D which provided access to the cemetery are not provided. Aerial imagery shown in Figure 1 shows that this parking lot is unstriped.

Figure 2. Barrier free spaces in Lot F.



Items to be Addressed: *(1) The applicant shall adjust the parking lot dimensions to comply with the requirements in Section 11.5.6. (2) Applicant shall provide crosswalk striping across*

the drive aisle to provide clear pedestrian access to barrier free space. (3) Applicant shall provide parking details for Lot D.

SITE ACCESS AND CIRCULATION

Site access is proposed from Jackson Road from an existing site entrance that accommodates two (2) exiting traffic lanes and one (1) entering traffic lane. This interior drive provides direct two-way access to Lot C, Lot B, and Lot E. Lot F is accessed by traveling through Lot E. A one-way access road exits the northwest corner of Lot B and circulates around the proposed cathedral. A twenty-foot-wide separate drop-off lane is proposed west of the cathedral, branching off and then reconnecting to the one-way access drive. Lot G is exclusively accessed by this one-way access drive, which feeds into Lot F's two-way drive aisle. Lot A – exclusively for barrier free parking – is accessed from a one-way drive that branches off near the property entrance. Vehicles leaving Lot A must exit the site by passing through Lot B. Access details through Lot D and the cemetery are not provided.

Items to be Addressed: *Applicant shall include circulation details for Lot D and the cemetery to indicate how new parking lot areas will connect with existing interior traffic flow.*

FLOOR PLAN AND ELEVATIONS

Building elevations and floor plans are provided on Sheets A1 through A6, on a separately sealed plan set. The floor plans indicate a partial basement level, a ground floor level, and an upper level that is largely open to the ground floor assembly area. The ground floor assembly area will be on a slab at grade, but a basement area will sit below the ground floor entry area. The basement, accessed by an interior staircase and elevator, will include a furnace room and an open area for unidentified use. The ground floor level includes one (1) building entrance on each of the west, north, and south building elevations and two (2) building entrances on the east side. In addition to the cathedral assembly area, the ground floor level will include an alter area, two (2) vestries, two (2) concessional areas, a coat closet, restrooms, a nursery/lactation room, storage, janitors' closet, and a roughly one hundred and twenty (120) square foot area designated for retail. The upper level includes a choir loft, offices, a conference room, a library, and a restroom.

The elevations indicate three (3) domes, the largest of which has a twenty-three and a half foot (23'-6") diameter. A bell tower with a dome is depicted on the west end of the building. The height of the bell tower is not offered. The highest dome, centered within the structure, is indicated to be over ninety-one and a half (91'-6 ½") feet in height. The primary building height is stated to be thirty-one feet and seven inches (31'-7") in height. The zoning ordinance qualifies towers as a structure that must comply with the height limitations of other structures in the zoning district.

The roof is proposed to be metal construction and the walls will be either stucco or siding. Renderings of the cathedral were submitted by the applicant indicating a mostly white

structure with dark gold/brown roofs. The applicant should clarify the colors and façade materials on the provided elevations. Narrow, arched windows are depicted on the provided elevations.

Items to be Addressed: *Applicant shall clarify the façade materials and colors.*

LANDSCAPING

A landscape plan was included on Sheet 7, indicating the location and species of the proposed plantings. All the existing trees are proposed to remain. Table 4 details the landscaping requirements set forth in Section 6.2 of the zoning ordinance. Greenbelt landscaping is required along the road frontage; Sheet 7 indicates that the project is exempt from providing greenbelt landscaping, but no such exemption exists. Therefore, as detailed in Table 4, further landscaping along the road frontage is required.

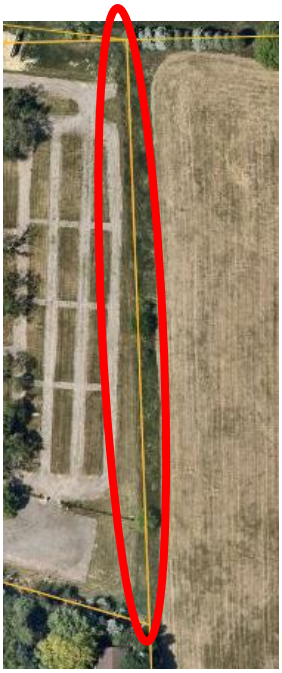
Table 4. Landscaping Requirements

	Requirement	Provided	Compliance
Greenbelt	1 deciduous or evergreen tree + 6 shrubs every 30 feet in front yard setback	100+ feet with no trees	***Does not comply***
Parking Lot	1 tree for every 8 spaces, not including perimeter landscaping unless approved by Planning Commission 76 new spaces = 10 trees within the parking lot	2 Gingko trees provided in parking lot interior 9 additional trees located along parking lot perimeter	***Planning Commission may consider alternative parking lot landscaping***
Screening between land uses	6 ft vertical landscaping or wall between this parcel and adjacent residential parcels. 80% opacity	Partial screening (see Figures 3 and 4)	***Does not comply***
General site landscaping	In addition to any other requirements, 10% of site area must be landscaped	71% of the site is open space. 40 trees on site to be preserved. 8 trees and 49 shrubs provided around building	Complies

The parking lot landscaping requirements indicate that the required parking lot landscaping islands must be within the interior of the parking lot, but Section 6.2.6.(B) permits the Planning Commission to approve alternative landscaping along the parking lot perimeter if appropriate. Furthermore, Sheet 7 indicates that the site is exempt from providing screening between land uses since the project is in the property interior. The Planning Commission and Township Board approved a screening waiver along the western property line in 2018. However, this waiver does not carry over into the new proposed site plan, so the screening requirements must be assessed according to the requirements of Section 6.2.5. unless the

Planning Commission and Township Board approve a new waiver. Figures 3 and 4 show the areas where landscape screening is required.

Figures 3 + 4. Missing screening between land uses



Items to be Addressed: *(1) Applicant to amend site plan to provide sufficient greenbelt landscaping and screening between residential land uses. (2) The Planning Commission to consider perimeter parking lot landscaping instead of interior parking lot landscaping.*

LIGHTING

No lighting plan was provided with the site plan submission.

Items to be addressed: *The applicant must provide a lighting plan with the final site plan that includes a photometric map, indicating lighting levels along the property lines.*

SIGNS

No signs are indicated on the site plan. Any new signs must receive a separate permit from the Township Zoning Administrator prior to construction.

Items to be Addressed: *None.*

DRAINAGE AND STORMWATER

A grading and drainage plan is provided on Sheet 5, and a soil erosion and sedimentation control plan is provided on Sheet 6.

Items to be Addressed: *We defer to the Township Engineer to review and provide comments on the grading, drainage, soil erosion, and sedimentation control plan.*

SPECIAL USE STANDARDS

As a special use in the AG-1 District, the proposed use is subject to the review standards set forth in Section 3.3.4, *Basis of Determinations for Special Uses* of the Zoning Ordinance. The Planning Commission shall review and make a recommendation to the Township Board on the particular circumstances and facts for the proposed special use in terms of the following standards and required findings:

A. *Will be harmonious and in accordance with the general objectives of the Lima Township Master Plan.*

B. *Will be designed, constructed, operated, maintained and managed so as to be harmonious and appropriate in appearance with the existing or intended essential character of the area.*

C. *Will not be hazardous or disturbing to existing nearby uses.*

D. *Will be compatible with existing and adjacent uses of land and will promote the use of land in a socially and economically desirable manner.*

E. *Will be adequately served by essential public and/or private water supply and wastewater treatment services and/or facilities or that the persons responsible for the establishment of the proposed special use will provide adequately any such service or facility.*

F. *Will not create excessive additional public costs and will not significantly decrease property values of surrounding properties.*

G. *Will meet all requirements and standards of this Ordinance and any other applicable laws, standards, ordinances, and/or regulations.*

H. *Will be harmonious with the natural environment and/or unique natural features.*

Items to be Addressed: *The Planning Commission should discuss standards set forth in Section 3.3.4, and make findings as they relate to the proposed site plan for the church.*

Items to be Addressed: *The Planning Commission should go through each of the required findings and determine if the proposed use complies, or if special conditions are necessary to ensure compliance.*

RECOMMENDATIONS

In general, the proposed plan is consistent with the requirements and recommendations of the Zoning Ordinance. However, there are several deviations, and the site plan is not a complete site plan. The plan must include all required information indicated in Section 7.12. of the Zoning Ordinance. If this plan is approved, it will be kept on file as the record set for this site. We recommend that the Planning Commission refrain from taking action on the plan until the applicant addresses the following outstanding items.

1. The applicant must apply for a new Special Land Use permit to allow for the use of the site for a cathedral/church.

2. Applicant shall provide distances of all proposed structures and parking areas to the property lines.

3. The applicant shall adjust the parking lot dimensions to comply with the requirements in Section 11.5.6.

4. Applicant shall provide crosswalk striping across the drive aisle to provide clear pedestrian access to barrier free space.

5. Applicant shall provide parking details for Lot D.

6. Applicant shall include circulation details for Lot D and the cemetery to indicate how new parking lot areas will connect with existing interior traffic flow.

7. Applicant shall clarify the façade materials and colors.

8. Applicant to amend site plan to provide sufficient greenbelt landscaping and screening between residential land uses.

9. The Planning Commission to consider perimeter parking lot landscaping instead of interior parking lot landscaping.

10. The applicant must provide a lighting plan with the final site plan that includes a photometric map, indicating lighting levels along the property lines.

11. We defer to the Township Engineer to review and provide comments on the grading, drainage, soil erosion, and sedimentation.

12. The Planning Commission should discuss standards set forth in Section 3.3.4, and make findings as they relate to the proposed site plan for the church.

Respectfully submitted,

CARLISLE/WORTMAN ASSOC.,INC
Paul Montagno, AICP
Principal

CARLISLE/WORTMAN ASSOC., INC.
Michelle Marin, AICP Candidate
Community Planner

163-2401

CC: Luick, Township Supervisor
Kwaske, Township Clerk
Sastre, Zoning Administrator
Lalik, Township Engineer
McElrath, Applicant

MIDWESTERN CONSULTING

3815 Plaza Drive
Ann Arbor, Michigan 48108
734.995.0200

Land Development • Land Surveying • Municipal • Wireless Communications • Institutional • Transportation • Landfill Services

March 18, 2024

Lima Township
12172 Jackson Rd.
P.O. Box 59
Chelsea, MI. 48118

Attn: Mariano Sastre, Township Zoning Administrator

Re: St. Vladimir Russian Orthodox Church
Preliminary Site Plan Review
Plan Date: February 28, 2024

Dear Mariano:

St. Vladimir Russian Orthodox Church is located at 9900 Jackson Road, in Section 23. The church building exists and is served with a well and drain field. This phase of the project consists of constructing a new cathedral, proposed septic tank west of the proposed cathedral, proposed well north east of the cathedral, proposed parking lots around the building and an access drive with a fire route around the proposed building. Pursuant to the Township's request I have reviewed the final site plan for the proposed school building for the referenced project per Township Ordinance Section 7.7. I have the following comments for the Planning Commission's consideration:

General Comments

1. A proposed well and septic tank are shown. Permits will be required from Washtenaw County. WCEHD to review proposed connection to existing field.

2. A utility plan will need to be provided for Final Site Plan. Pipe sizes, lengths, slopes, inverts and materials should be shown.

3. We recommend the Planning Commission should allow the Chelsea Area Fire Authority (CAFA) to review the layout plan.

Grading Plan

1. Grading is being shown wholly surrounding the existing trees between the cemetery and the proposed parking area. Show these trees as being removed, or show what tree protection will be provided in this area.

2. Show detailed grading for the ADA routing to the proposed cathedral. Show where level landings are to be located on the ADA ramps.

3. More detailed grading needs to be shown on the Final Site Plan. Proposed contours will need to be extended to the grading limits of the proposed improvements. Spot elevations should be provided every 50’ along hard surfaces and at each point of curvature.

Storm water management

1. Calculations for the additional phase account for the increase in impervious area. The revised basin is shown as being sized appropriately for the proposed improvements.

2. Capacity calculations for the storm sewer will need to be provided for Final Site Plan.

Soil Erosion Sediment Control

1. Silt fence should be brought to the top of the drainage swale to prevent from entering the detention basin during construction. See markup in figure below.

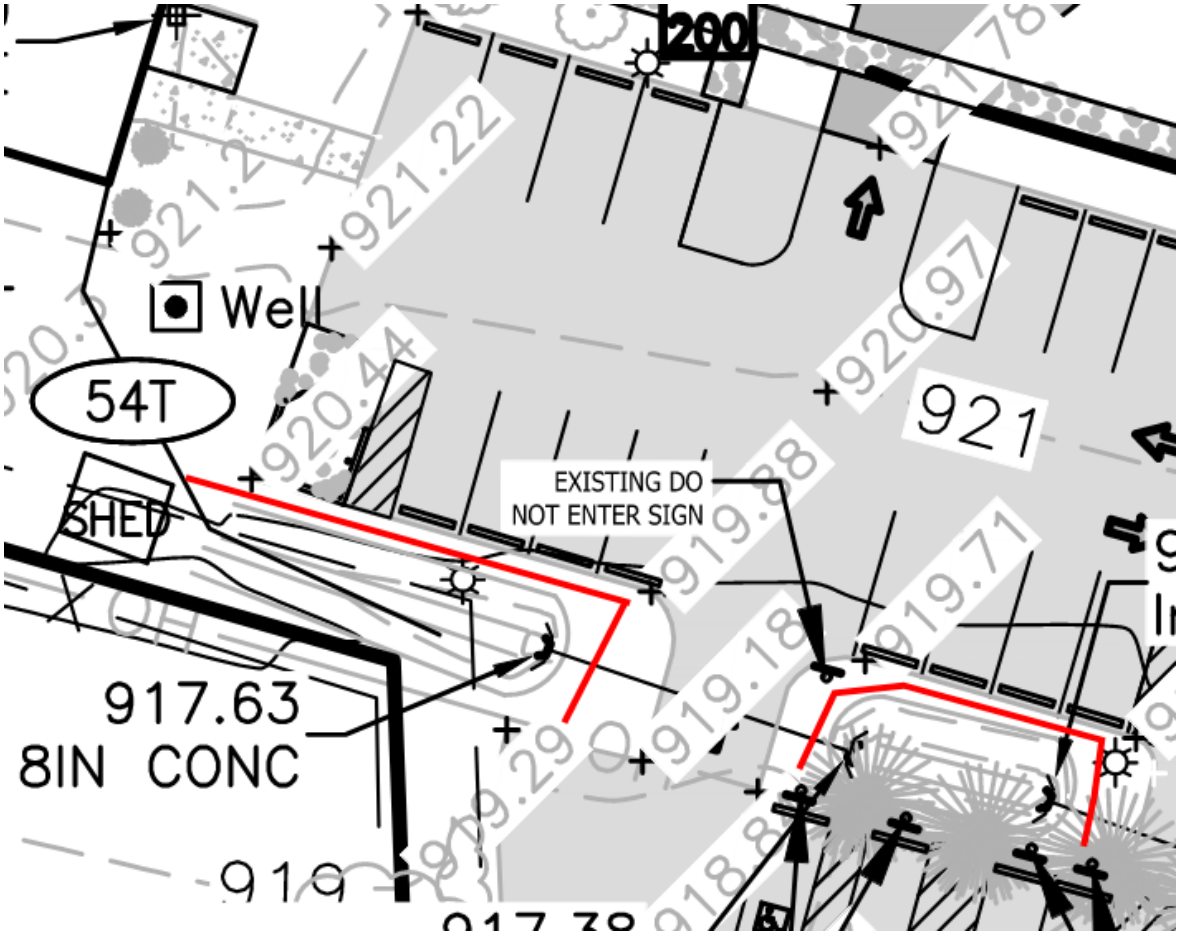


Fig. 1 Silt Fence Revision

The applicant has acknowledged that they are aware that the following permits are required prior to construction:

1. Washtenaw County for proposed sewer and well water connections.

2. Soil Erosion and Sedimentation Control Permit from the Chelsea Area Construction Agency.

3. Planning Commission Review for Special Use Permit.

If you have any questions regarding my review, please call or email. Thank you.

Sincerely,
MIDWESTERN CONSULTING, LLC

Adam J. Lalik, P.E.

PC. 2024-002

LIMA TOWNSHIP

ESTABLISHED 1832 — WASHTENAW COUNTY MICHIGAN

RECEIVED FEB 29 2024 BY:

APPLICATION FOR SITE PLAN APPROVAL

This application is submitted for approval of the following plans.

Preliminary Site Plan ☑ Final Site Plan ☐
Combined Preliminary and Final ☐ Minor Site Plan Amendment ☐

1. Name of Proposed Development NEW CATHEDRAL, ST. VLADIMIR RUSSIAN ORTHODOX CHURCH
2. Present Zoning AG-1
3. General Location or Address Site 9900 JACKSON ROAD
4. Legal Description (Attach separate sheet, if necessary) SEE SHEET 1
5. Tax Parcel Number(s) G-07-23-100-022
6. Applicant – Name DANGEROUS ARCHITECTS P.C.
   Address 104 SOUTH MAIN ST. CHELSEA
   Phone # 734 475 3660
7. Property Owner – Name ST. VLADIMIR, RUSSIAN ORTHODOX CHURCH
   Address 9900 JACKSON. ROAD, DEXTER
   Phone # 475-4590
8. Applicant's Interest in Property ARCHITECT
9. Description of Proposed Use of Property RELIGIOUS STRUCTURE
10. Estimated Cost of Project (i.e. Site Preparation, Construction etc.) $ 3,000,000

Applicant(s) represent that he/she is the owner of the subject property or is acting on behalf of the above listed owner(s), and herewith files 3+13 copies of the above identified Site Plan.

Applicant's Signature — Date 2.28.2024

The Lima Township Clerk hereby certifies receipt of the application, 13 copies of the Site Plan, and review fee in the amount of $_____.

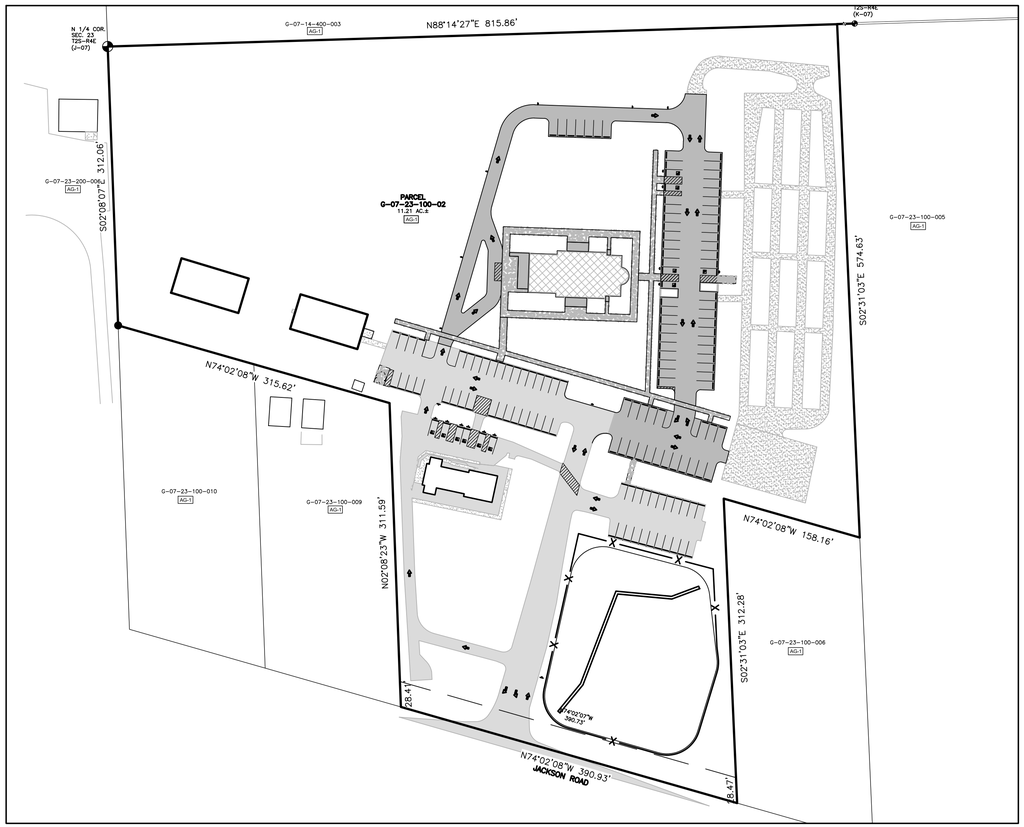
Signature of Clerk — Date

PRELIMINARY SITE PLAN
FOR
ST. VLADIMIR RUSSIAN ORTHODOX CHURCH
PART OF NE QUARTER, SECTION 23 T2S, R4E
LIMA TOWNSHIP, WASHTENAW COUNTY, MICHIGAN 48130

PROPERTY DESCRIPTION:

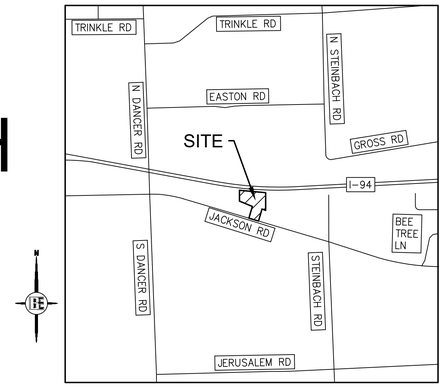
PROPERTY DESCRIPTION PER WASHTENAW ENGINEERING PLANS DATED

COMMENCING AT THE NORTHEAST CORNER OF SECTION 23, T2S, R4E, LIMA TOWNSHIP, WASHTENAW COUNTY, MICHIGAN; THENCE S86°46'50"W 1820.26 FEET ALONG THE NORTH LINE OF SAID SECTION TO THE POINT OF BEGINNING; THENCE S03°58'40"E 574.63 FEET; THENCE N75°29'45"W 158.16 FEET; THENCE S03°58'40"E 340.75 FEET; THENCE N75°29'45"W 390.93FEET; THENCE N03°36'00"W 340.00 FEET; THENCE N75°29'45"W 315.62 FEET; THENCE N03°36'00"W 312.08 FEET ALONG AN EXISTING FENCE LINE TO THE NORTH 1/4 CORNER OF SAID SECTION; THENCE N86°46'50"E 815.86 FEET ALONG THE NORTH LINE OF SAID SECTION TO THE POINT OF BEGINNING. BEING A PART OF THE NORTH 1/2 OF SECTION 23, T2S, R4E, LIMA TOWNSHIP, WASHTENAW COUNTY, MICHIGAN AND CONTAINING 11.21 ACRES OF LAND, MORE OR LESS. BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THAT PORTION OF JACKSON ROAD, AS OCCUPIED. ALSO BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.



N

OVERALL SITE MAP
NO SCALE



LOCATION MAP
NO SCALE

SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES & LEGEND
3	EXISTING CONDITIONS & DEMOLITION PLAN
4	SITE PLAN
5	GRADING & DRAINAGE PLAN
6	SOIL EROSION & SEDIMENTATION CONTROL PLAN
7	LANDSCAPE PLAN
8	CONSTRUCTION DETAILS
9	WCWRC STORMWATER CALCULATION DETAILS
	PLANS BY OTHERS DANGEROUS ARCHITECTS
T1	OVERALL ARCHITECTURAL SITE PLAN
A1 – A6	CATHEDRAL ARCHITECTURAL PLANS

PREPARED FOR:

DANGEROUS ARCHITECTS
104 SOUTH MAIN STREET
CHELSEA, MI 48118
SCOTT McELRATH
734-475-3660
smcelrath@dangerousarchitects.com

STATE OF MICHIGAN — BRENT M. La VANWAY — ENGINEER — No. 38211 — PROFESSIONAL ENGINEER

PROPERTY OWNER:

ST. VLADIMIR RUSSIAN ORTHODOX CHURCH
9900 JACKSON ROAD
DEXTER, MI 48130
Brendan Hayden
734-846-9220
bhayden@a2oca.org

PREPARED BY:

BEBOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670
CONTACT: BRENT LaVANWAY

INDEMNIFICATION STATEMENT

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

FOR SITE PLAN APPROVAL ONLY!
NOT FOR CONSTRUCTION

NO	BY	CK	REVISION	DATE

1

ISSUE DATE: 02/28/24
JOB NO: 24-001

GENERAL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
2. A GRADING PERMIT FOR SOIL EROSION–SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
3. IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
4. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS AND SPECIFICATIONS.
5. PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY DESIGNED AND CONSTRUCTED.
6. ALL BARRIER–FREE FEATURES SHALL BE CONSTRUCTED TO MEET ALL LOCAL, STATE AND A.D.A. REQUIREMENTS. WHERE EXISTING CONDITIONS AND/OR THE REQUIREMENTS OF THE PLANS WILL RESULT IN FINISHED CONDITIONS THAT DO NOT MEET ADA REQUIREMENTS, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER PRIOR TO WORK COMMENCING.
7. ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS AND DIMENSIONS SHOWN HEREON PRIOR TO BEGINNING CONSTRUCTION.
8. THE CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND RIGHT–OF–WAY, PUBLIC OR PRIVATE, PRIOR TO THE START OF CONSTRUCTION.
9. THE CONTRACTOR SHALL COORDINATE WITH ALL OWNERS TO DETERMINE THE LOCATION OF EXISTING LANDSCAPING, IRRIGATION LINES & PRIVATE UTILITY LINES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING LANDSCAPING, IRRIGATION LINES, AND PRIVATE UTILITY LINES.
10. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT.
11. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
12. THE CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
13. THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
14. ALL PAVEMENT REPLACEMENT AND OTHER WORKS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWNSHIP, INCLUDING THE LATEST MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
15. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
16. NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR ANY DELAY OR INCONVENIENCE DUE TO THE MATERIAL SHORTAGES OR RESPONSIBLE DELAYS DUE TO THE OPERATIONS OF SUCH OTHER PARTIES DOING WORK INDICATED OR SHOWN ON THE PLANS OR IN THE SPECIFICATION OR FOR ANY REASONABLE DELAYS IN CONSTRUCTION DUE TO THE ENCOUNTERING OR EXISTING UTILITIES THAT MAY OR MAY NOT BE SHOWN ON THE PLANS.
17. DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT.
18. IF WORK EXTENDS BEYOND NOVEMBER 15, NO COMPENSATION WILL BE DUE TO THE CONTRACTOR FOR ANY WINTER PROTECTION MEASURES THAT MAY BE REQUIRED BY THE ENGINEER.
19. NO TREES ARE TO BE REMOVED UNTIL MARKED IN THE FIELD BY THE ENGINEER.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PROPERTY BEYOND THE CONSTRUCTION LIMITS INCLUDING BUT NOT LIMITED TO EXISTING FENCE, LAWN, TREES AND SHRUBBERY.
21. TRAFFIC SHALL BE MAINTAINED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SIGNS AND TRAFFIC CONTROL DEVICES. FLAG PERSONS SHALL BE PROVIDED BY THE CONTRACTOR IF DETERMINED NECESSARY BY THE ENGINEER. ALL SIGNS SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AT NO COST TO THE TOWNSHIP. NO WORK SHALL BE DONE UNLESS THE APPROPRIATE TRAFFIC CONTROL DEVICES ARE IN PLACE.
22. ALL DEMOLISHED MATERIALS AND SOIL SPOILS SHALL BE REMOVED FROM THE SITE AT NO ADDITIONAL COST, AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
23. ANY EXISTING APPURTENANCES SUCH AS MANHOLES, GATE VALVES, ETC. SHALL BE ADJUSTED TO THE PROPOSED GRADE AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
24. ALL PERMANENT SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE MICHIGAN MUTCD MANUAL AND SHALL BE INCIDENTAL TO THE CONTRACT.
25. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL ITEMS REQUIRED FOR CONSTRUCTION OF THE PROJECT ARE INCLUDED IN THE CONTRACT. ANY ITEMS NOT SPECIFICALLY DESIGNATED IN THE PLANS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
26. THE CONTRACTOR IS RESPONSIBLE FOR HAVING A SET OF APPROVED CONSTRUCTION PLANS, WITH THE LATEST REVISION DATE, ON SITE PRIOR TO THE START OF CONSTRUCTION. IN THE EVENT OF ANY QUESTIONS PERTAINING TO THE INTENT OF THE CONSTRUCTION PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER FOR A FINAL DETERMINATION FROM THE DESIGN ENGINEER.
27. THE CONTRACTOR, NOT THE OWNER OR THE ENGINEER, ARE RESPONSIBLE FOR THE MEANS, METHODS, AND SEQUENCE OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR SAFE EXECUTION OF THE PROJECT SCOPE IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PLANS.
28. THE CONTRACTOR IS RESPONSIBLE FOR PRESERVING CONSTRUCTION STAKING AS NECESSARY. CONTRACTOR TO NOTIFY CONSTRUCTION SURVEYOR OF REPLACEMENT STAKES NEEDED WHICH SHALL BE AT THE CONTRACTORS EXPENSE.
29. THE OWNER AND/OR CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING FRANCHISE UTILITY SERVICES (CABLE, ELECTRIC, GAS, ETC.) OWNER AND/OR CONTRACTOR SHALL WORK WITH UTILITY COMPANIES ON FURNISHING SITE UTILITY LAYOUTS AND PROVIDING CONDUIT CROSSINGS AS REQUIRED.
30. DAMAGE TO ANY EXISTING UTILITIES OR INFRASTRUCTURE (INCLUDING PAVEMENT, CURB, SIDEWALK, ETC.) SHALL PROMPTLY BE REPLACED IN KIND AND SHALL BE AT THE CONTRACTORS EXPENSE.
31. COORDINATION OF TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND PER ALL CITY/TOWNSHIP/COUNTY REQUIREMENTS. COPIES OF ALL TEST REPORTS SHALL BE FURNISHED TO THE DESIGN ENGINEER.
32. PRIOR TO THE START OF CONSTRUCTION, PROTECTION FENCING SHALL BE ERECTED AROUND THE TREE DRIPLINE OF ANY TREES INDICATED TO BE SAVED WITHIN THE LIMITS OF DISTURBANCE.
33. THE CONTRACTOR SHALL MAINTAIN DRAINAGE OF THE PROJECT AREA AND ADJACENT AREAS. WHERE EXISTING DRAINAGE FACILITIES ARE IMPACTED/DISTURBED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE ANY NECESSARY TEMPORARY DRAINAGE PROVISIONS.
34. SOIL BORING LOGS ARE REPRESENTATIVE OF SPECIFIC POINTS ON THE PROJECT SITE, AND IF PROVIDED TO THE CONTRACTOR ARE FOR INFORMATIONAL PURPOSES ONLY.
35. WHERE CITY/TOWNSHIP STANDARD CONSTRUCTION DETAILS/SPECIFICATIONS ARE PROVIDED AND ARE IN CONFLICT WITH NOTES AND SPECIFICATIONS HEREIN, THE CITY/TOWNSHIP STANDARD SHALL GOVERN.

INDEMNIFICATION STATEMENT

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

CONTRACTOR TO FOLLOW MANUFACTURER SPECS/RECOMMENDATIONS THAT SUPERCEDE PLANS

GENERAL GRADING & SESC NOTES

1. THE CONTRACTOR SHALL HAVE IN PLACE ALL REQUIRED EROSION CONTROL METHODS AS INDICATED ON THE CONSTRUCTION PLANS AND AS REQUIRED BY GENERAL PRACTICE. SPECIFIC MEANS, METHODS AND SEQUENCES OF CONSTRUCTION MAY DICTATE ADDITIONAL SOIL EROSION CONTROL MEASURES BE NEEDED. THE CONTRACTOR SHALL COORDINATE WITH THE DESIGN ENGINEER ON THESE ANTICIPATED METHODS. ADDITIONAL SOIL EROSION CONTROL METHODS SHALL BE INCIDENTAL TO THE SCOPE OF WORK.
2. ACTUAL FIELD CONDITIONS MAY DICTATE ADDITIONAL OR ALTERNATE SOIL EROSION CONTROL MEASURES BE UTILIZED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DEFICIENCIES OR FIELD CONDITIONS THAT WARRANT ADDITIONAL AND/OR ALTERNATIVE SESC MEASURES BE UTILIZED.
3. AT THE CLOSE OF EACH DAY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALL CONSTRUCTION OPERATIONS, MATERIALS, DEBRIS, ETC ARE CONTAINED ON–SITE.
4. AT THE CLOSE OF EACH WORKING DAY, ALL DRAINAGE STRUCTURES SHALL BE FREE OF DIRT AND DEBRIS AT THE FLOW LINE.
5. ALL SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE PER MDEGLE REGULATIONS AND BEST PRACTICES, ALL SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR.
6. THE SOIL EROSION CONTROL MEASURES SHALL BE KEPT IN PLACE UNTIL SUCH A TIME THAT THE SITE IS DETERMINED TO BE ESTABLISHED WITH ACCEPTABLE AMOUNT OF VEGETATIVE GROUND COVER.
7. ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE NORMAL CONSTRUCTION LIMITS OF THE PROJECT SHALL BE SODDED OR SEEDED AS SPECIFIED OR DIRECTED BY THE ENGINEER.
8. AFTER REMOVAL OF TOPSOIL, THE SUBGRADE SHALL BE COMPACTED TO 95% OF ITS UNIT WEIGHT.
9. ALL GRADING IN THE PLANS SHALL BE DONE AS PART OF THIS CONTRACT. ALL DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SUBGRADE PRIOR TO COMPACTING.
10. ALL ROOTS, STUMPS AND OTHER OBJECTIONABLE MATERIALS SHALL BE REMOVED AND THE HOLE BACKFILLED WITH SUITABLE MATERIAL. WHERE GRADE CORRECTION IS REQUIRED, THE SUBGRADE SHALL BE CUT TO CONFORM TO THE CROSS–SECTION AS SHOWN IN THE PLANS.
11. ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOT CLASS II).

GENERAL LANDSCAPE NOTES

1. ALL PLANT MATERIAL SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF THE GOVERNING MUNICIPALITY. ALL STOCK SHALL BE NURSERY GROWN, CONFORMING TO ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK", AND IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICE. STOCK SHALL EXHIBIT NORMAL GROWTH HABIT AND BE FREE OF DISEASE, INSECTS, EGGS, LARVAE, & DEFECTS SUCH AS KNOTS, SUN–SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT. ALL PLANT MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
2. ALL PLANT MATERIALS SHALL BE BALLED AND BURLAPPED OR CONTAINER STOCK. NO BARE ROOT STOCK IS PERMITTED. ALL PLANT BALLS SHALL BE FIRM, INTACT, AND SECURELY WRAPPED AND BOUND.
3. ALL PLANT BED MATERIALS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS, OTHER EXTRANEOUS OBJECTS, AND POOR SOILS TO A MINIMUM DEPTH OF 12–INCHES AND BACKFILLED TO GRADE WITH SPECIFIED PLANTING MIX (SEE BELOW).
4. PLANTING MIXTURE SHALL CONSIST OF 5 PARTS TOPSOIL FROM ON–SITE (AS APPROVED), 4 PARTS COARSE SAND, 1 PART SPHAGNUM PEAT MOSS (OR APPROVED COMPOST), AND 5 LBS OF SUPERPHOSPHATE FERTILIZER PER CU. YD. OF MIX. INGREDIENTS SHALL BE THOROUGHLY BLENDED FOR UNIFORM CONSISTENCY.
5. ALL PLANT BEDS AND INDIVIDUAL PLANTS, NOT OTHERWISE NOTED SHALL BE MULCHED WITH A 4–INCH LAYER OF SHREDDED BARK MULCH. EDGE OF MULCH BEDS AS SHOWN. DECIDUOUS TREES IN LAWN AREAS SHALL RECEIVE A 5–FT DIAMETER CIRCLE OF MULCH AND CONIFER TREES 8–FT (PLANTED CROWN OF TREE) UNLESS OTHERWISE NOTED.
6. LANDSCAPE STONE SHALL BE INSTALLED WHERE NOTED OR INDICATED (HATCHED). STONE SHALL BE 3/4"–1–1/4" WASHED RIVER GRAVEL OR AS SELECTED AND SHALL BE INSTALLED TO A MINIMUM DEPTH OF 3–INCHES.
7. ALL LANDSCAPE BEDS, UNLESS OTHERWISE NOTED SHALL BE INSTALLED OVER WEED BARRIER FABRIC – WATER PERMEABLE FILTRATION FABRIC OF NON–WOVEN POLYPROPYLENE OR POLYESTER FABRIC. FABRIC SHALL BE OF SUITABLE THICKNESS FOR APPLICATION.
8. ALL PLANTS AND PLANT BEDS SHALL BE THOROUGHLY WATERED UPON COMPLETION OF PLANTING AND STAKING OPERATIONS.
9. THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR A PERIOD OF 1 YEAR FROM THE DATE THE WORK IS ACCEPTED, IN WRITING, BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE, WITHOUT COST TO THE OWNER, WITHIN A SPECIFIED PERIOD OF TIME, ALL DEAD PLANTS, AND ALL PLANTS NOT IN A VIGOROUS, THRIVING CONDITION, AS DETERMINED BY THE LANDSCAPE ARCHITECT, DURING AND AT THE END OF THE GUARANTEE PERIOD. REPLACEMENT STOCK SHALL CONFORM TO THE ORIGINAL SPECIFICATIONS.
10. EDGING SHALL BE PROVIDED FOR ALL LANDSCAPE BEDS NOT ADJACENT TO CONCRETE PAVEMENT. EDGING SHALL BE BLACK ALUMINUM EDGING, 3/16–INCH X 4–INCH. INSTALL PER MANUFACTURER'S INSTRUCTIONS, ALL EDGING SHALL BE INSTALLED IN STRAIGHT LINES OR SMOOTH CURVES WITHOUT IRREGULARITIES.
11. SOD SHALL BE DENSE, WELL ROOTED TURF, FREE OF WEEDS. IT SHALL BE COMPRISED OF A BLEND OF AT LEAST TWO KENTUCKY BLUE GRASSES AND ONE FESCUE. IT SHALL HAVE A UNIFORM THICKNESS OF 3/4–INCH AT TIME OF PLANTING, AND CUT IN UNIFORM STRIPS NOT LESS THAN 10–INCHES BY 18–INCHES. SOD SHALL BE KEPT MOIST AND LAID WITHIN 36–HOURS AFTER CUTTING.

    IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ALL SODDED AREAS THAT BROWN–OUT OR HAVE NOT FIRMLY KNITTED TO THE SOIL BASE WITHIN A PERIOD OF 1 MONTH SHALL BE REPLACED BY THE CONTRACTOR, AT NO COST TO THE OWNER.
12. ALL AREAS OF THE SITE THAT BECOME DISTURBED DURING CONSTRUCTION AND ARE NOT TO BE PAVED, STONED, LANDSCAPED, OR SODDED SHALL BE SEEDED AND MULCHED.

    SEED MIXTURE SHALL BE AS FOLLOWS:

KENTUCKY BLUEGRASS (CHOOSE 3 VARIETIES – ADELPHI, RUGBY, GLADE, OR PARADE)	30%
RUBY RED OR DAWSON RED FINE FESCUE	30%
ATLANTA RED FESCUE	20%
PENNFINE PERENNIAL RYE	20%

    THE ABOVE SEED MIXTURE SHALL BE SOWN AT A RATE OF 250 LBS PER ACRE. PRIOR TO SEEDING, THE TOPSOIL SHALL BE FERTILIZED WITH A COMMERCIAL FERTILIZER WITH A 10–0–10 ANALYSIS:

    10% NITROGEN – MIN 25% FROM A UREA FORMALDEHYDE SOURCE
    0 % PHOSPHATE
    10% POTASH – SOURCE POTASSIUM SULFATE OR POTASSIUM NITRATE

    THE FIRST FERTILIZER APPLICATION SHALL BE AT A RATE OF 10 LBS PER 1000 SQ FT OF BULK FERTILIZER.

    IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ANY PART OF THE AREA THAT FAILS TO SHOW A UNIFORM GERMINATION SHALL BE RE–SEEDED AND SUCH RE–SEEDING SHALL CONTINUE UNTIL A DENSE LAWN IS ESTABLISHED. DAMAGE TO SEEDED AREAS RESULTING FROM EROSION SHALL BE REPAIRED BY THE CONTRACTOR.
13. ALL AREAS OF THE SITE SCHEDULED FOR SEEDING OR SODDING SHALL FIRST RECEIVE A 6–INCH LAYER OF CLEAN, FRIABLE TOPSOIL. THE SOIL SHALL BE DISCED AND SHALL BE GRADED IN CONFORMANCE WITH THE GRADING PLAN.
14. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL UTILITIES AND TO INFORM THE LANDSCAPE ARCHITECT OF ANY CONFLICTS PRIOR TO COMMENCING LANDSCAPING.

GENERAL UTILITY NOTES

1. BEDDING SHALL EXTEND A MINIMUM OF 4" BELOW THE PIPE, UNLESS OTHERWISE NOTED ON THE PLANS. BEDDING SHALL BE OF UNIFORM GRADATION MDOT 6AA STONE OR MDOT CLASS II GRANULAR MATERIAL FOR SANITARY AND STORM PIPE AND MDOT CLASS II GRANULAR MATERIAL ONLY FOR WATERMAIN.
2. WHERE UNSTABLE GROUND CONDITIONS ARE ENCOUNTERED, STONE BEDDING SHALL BE USED AS DIRECTED BY THE ENGINEER.
3. BACKFILL SHALL BE OF A SUITABLE MATERIAL AND SHALL BE FREE OF ANY ORGANIC MATERIALS AND ROCKS.
4. BACKFILL ABOVE THE PIPE SHALL BE OF GRANULAR MATERIAL MDOT CLASS II TO A POINT 12" ABOVE THE TOP OF THE PIPE. WHERE THE TRENCH IS NOT WITHIN THE INFLUENCE OF THE ROAD, SUITABLE SITE MATERIAL MAY BE COMPACTED AND UTILIZED FROM A POINT 12" ABOVE THE PIPE TO GRADE. WHERE THE TRENCH IS WITHIN A 1:1 INFLUENCE OF THE ROAD, GRANULAR MATERIAL, MDOT CLASS II OR III, IS TO BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 12" IN THICKNESS. COMPACTION SHALL BE 95% AS DETERMINED BY AASHTO T99.
5. 18" MINIMUM VERTICAL SEPARATION AND 10' HORIZONTAL SEPARATION IS TO BE MAINTAINED BETWEEN WATERMAIN AND SANITARY/STORM SEWER TO THE MAXIMUM EXTENT POSSIBLE.

GENERAL STORM NOTES

1. ALL STORM PIPE LENGTHS ARE SHOWN FROM C/L TO C/L OF STRUCTURE OR FROM C/L OF STRUCTURE TO DISCHARGE END OF FLARED END SECTION.
2. STORM PIPE MATERIALS SHALL BE AS FOLLOWS:
   - 2.1. RCP(REINFORCED CONCRETE PIPE): SHALL MEET THE REQUIREMENTS OF ASTM C76 WITH MODIFIED GROOVED TONGUE AND RUBBER GASKETS MEETING THE REQUIREMENTS OF ASTM C443. RCP TO BE EITHER CLASS IV OR V AS CALLED OUT ON THE PLANS.
   - 2.2. HDPE(HIGH DENSITY POLYETHYLENE): SHALL MEET THE REQUIREMENTS OF ASTM F2648.
   - 2.3. PP(POLYPROPYLENE): SHALL MEET THE REQUIREMENTS OF ASTM F2881.
   - 2.4. PVC(POLYVINYL CHLORIDE): SHALL MEET THE REQUIREMENTS OF ASTM D3034.
3. STORM PIPE JOINTS SHALL MEET THE REQUIREMENTS OF ASTM D3212. HDPE AND PP PIPE GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477.
4. ALL STORM PIPE TO HAVE WATERTIGHT PREMIUM JOINTS, UNLESS OTHERWISE NOTED ON THE PLANS.
5. STORM DRAINAGE STRUCTURES SHALL BE FURNISHED WITH STEPS WHICH SHALL BE STEEL ENCASED WITH POLYPROPYLENE PLASTIC OR EQUIVALENT. STEPS SHALL BE SET AT 16" CENTER TO CENTER.
6. ALL FLARED END SECTIONS 15" AND LARGER SHALL BE FURNISHED WITH AN ANIMAL GRATE.
7. FLARED END SECTIONS DISCHARGING STORM WATER SHALL RECEIVE A MINIMUM OF 10 SQ YDS OF PLAIN COBBLESTONE RIP RAP WITH A MINIMUM STONE SIZE OF 6" AND SHALL BE PLACED ON A GEOTEXTILE FABRIC WRAP.
8. ALL CATCH BASINS WITHIN THE ROADWAY SHALL INCLUDE INSTALLATION OF 6" DIAMETER PERFORATED PIPE SUBDRAIN.
9. STORM DRAINAGE STRUCTURE COVERS SHALL BE OF THE FOLLOWING (OR APPROVED EQUAL):

COVER	USE	FRAME	GRATE/BACK
'A'	MANHOLE	1040	TYPE 'B'
'D'	PARKING LOTS	1040/5100	TYPE 'M1' GRATE OR 5105 TYPE 'M1' GRATE
'E'	LAWN	1040	TYPE 'O2' GRATE

GENERAL SANITARY NOTES

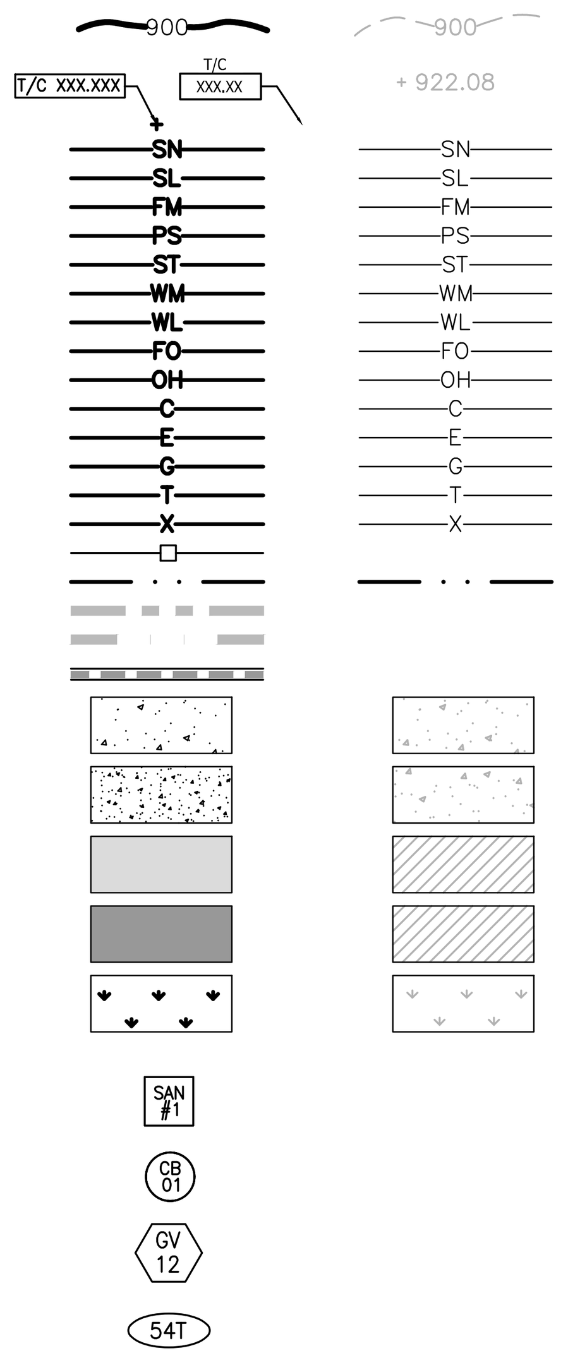
1. ALL SANITARY PIPE LENGTHS ARE SHOWN FROM C/L OF STRUCTURE TO C/L OF STRUCTURE.
2. SANITARY PIPE MATERIALS SHALL BE AS FOLLOWS:
   - 2.1. PVC SDR–26 (SANITARY MAIN)
   - 2.2. PVC SDR–23.5 (SANITARY LEADS)
   - 2.3. HDPE DR–11 (SANITARY FORCEMAIN)
3. ALL PVC SDR SANITARY SEWER PIPE SHALL MEET THE REQUIREMENTS OF ASTM D3034 AND D2241. PVC SCHD 40 PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785. GASKET JOINTS FOR SANITARY PIPE SHALL MEET THE REQUIREMENTS OF ASTM D3139 AND D3212.
4. SANITARY STRUCTURES SHALL BE FURNISHED WITH STEPS WHICH SHALL BE STEEL ENCASED WITH POLYPROPYLENE PLASTIC OR EQUIVALENT. STEPS SHALL BE SET AT 16" CENTER TO CENTER.
5. ALL NEW MANHOLES SHALL BE MINIMUM 4' DIAMETER, PRECAST MANHOLE SECTIONS AND AN ECCENTRIC CONE. PRECAST MANHOLE JOINTS SHALL BE INSTALLED WITH BUTYL ROPE MEETING THE REQUIREMENTS OF ASTM C990.
6. MANHOLES SHALL BE CONSTRUCTED WITH FLOW CHANNEL WALLS THAT ARE FORMER, AT A MINIMUM, TO THE SPRINGLINE OF THE PIPE.
7. ALL NEW MANHOLES SHALL HAVE AN APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH MANHOLE WALLS.
8. WHEREVER AN EXISTING MANHOLE IS TO BE TAPPED, THE STRUCTURE SHALL BE CORED AND A KOR–N–SEAL BOOT UTILIZED FOR THE PIPE CONNECTION.
9. ALL MANHOLES SHALL BE PROVIDED WITH WATERTIGHT COVERS. COVERS TO BE EJCO 1040 TYPE 'A' SOLID COVER.
10. A MAXIMUM OF 12" OF GRADE ADJUSTMENT RINGS SHALL BE USED TO ADJUST THE FRAME ELEVATION. BUTYL ROPE SHALL BE USED BETWEEN EACH ADJUSTMENT RING.
11. SANITARY SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 1.0%.
12. CLEANOUTS SHALL BE INSTALLED EVERY 100', AT ALL BENDS AND STUBS.

GENERAL WATERMAIN NOTES

1. WATERMAIN PIPE MATERIALS SHALL BE AS FOLLOWS:
   - 1.1. D.I.P. CL.52 (WATERMAIN)
   - 1.2. TYPE 'K' COPPER (WATER LATERAL – MAIN TO CURB STOP)
   - 1.3. HDPE DR–9 (WATER LATERAL – CURB STOP TO STUB)
2. WATERMAIN FITTINGS SHALL BE OF DUCTILE IRON WITH CEMENT MORTAR LINING AND MECHANICAL JOINTS CONFORMING TO AWWA C110.
3. WATERMAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. BAC–T SAMPLES SHALL BE TAKEN IN ACCORDANCE WITH R235.11110 OF THE ADMINISTRATIVE RULES PROMULGATED UNDER MICHIGAN SAFE DRINKING WATER ACT, 1976 PA 399, AS AMENDED.
4. ALLOWABLE LEAKAGE OR HYDROSTATIC PRESSURE TESTING SHALL BE IN ACCORDANCE WITH AWWA C600 AND C605.
5. MAXIMUM DEFLECTION AT PIPE JOINTS SHALL BE IN ACCORDANCE WITH PIPE MANUFACTURERS CURRENT RECOMMENDATIONS AND AWWA SPECIFICATIONS.
6. A FULL STICK OF PIPE SHALL BE LAID CENTERED AT A PIPE CROSSING IN ORDER TO MAINTAIN THE MAXIMUM SEPARATION OF WATERMAIN JOINT TO THE CROSSING PIPE.
7. WATERMAIN SHALL BE INSTALLED WITH A MINIMUM OF 5.5' OF COVER FROM FINISHED GRADE TO TOP OF PIPE AND NO MORE THAN 8' OF COVER, UNLESS SPECIAL CONDITIONS WARRANT.
8. WATERMAIN VALVES SHALL BE IRON BODY RESILIENT WEDGE GATE VALVES, NON–RISING STEMS, COUNTERCLOCKWISE OPEN, AWWA C509.
9. FIRE HYDRANTS SHALL BE INSTALLED WITH AN AUXILIARY VALVE WITH CAST IRON VALVE BOX. THE HYDRANT PUMPER HOSE CONNECTION SHALL FACE THE ROADWAY.
10. THE BREAKAWAY FLANGE AND ALL BELOW GRADE FITTINGS SHALL HAVE STAINLESS STEEL NUTS AND BOLTS.

LINES & HATCHES LEGEND

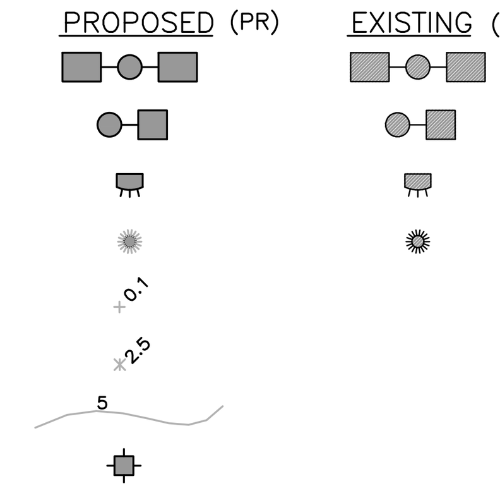
PROPOSED (PR) EXISTING (EX)



CONTOUR
SPOT ELEVATION
SANITARY SEWER
SANITARY LEAD
FORCE MAIN
PRESSURE SEWER
STORM SEWER
WATER MAIN
WATER LEAD
FIBER OPTIC
OVERHEAD WIRE
CABLE
ELECTRIC
GAS
TELEPHONE
FENCE
SILT FENCE
WETLAND BOUNDARY
LIMITS OF GRADING/CLEARING
LIMITS OF DRAINAGE
MODIFIED CURB
CONCRETE
HIGH STRENGTH CONCRETE
ASPHALT
HIGH STRENGTH ASPHALT
WETLAND
SANITARY SEWER LABEL
STORM SEWER LABEL
WATER MAIN LABEL
SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)

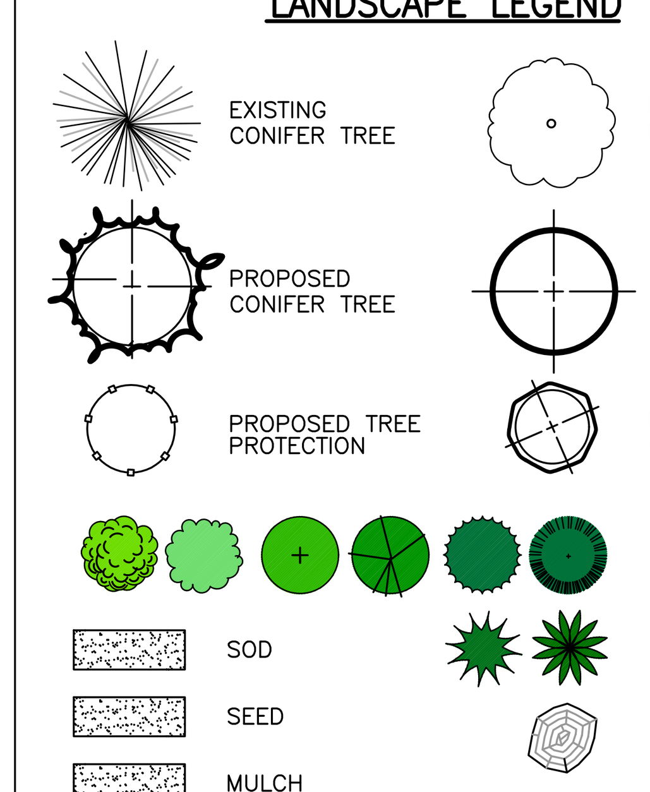
LIGHTING LEGEND

PROPOSED (PR) EXISTING (EX)



DOUBLE FIXTURE LIGHT POLE
SINGLE FIXTURE LIGHT FIXTURE
WALL MOUNTED LIGHT FIXTURE
GROUND LIGHT FIXTURE
FOOT CANDLES ON SITE
FOOT CANDLES OFF SITE
FOOT CANDLES CONTOURS
CANOPY MOUNTED LIGHT FIXTURE

LANDSCAPE LEGEND



SYMBOL LEGEND

STORM DRAINAGE FLOW
GUY WIRE
POWER POLE
TRANSFORMER PAD
ELECTRICAL RISER
U.G. ELECTRIC MARKER
ELECTRICAL METER
AIR CONDITIONING UNIT
TELEPHONE RISER
U.G. TELEPHONE MARKER
GAS RISER
U.G. GAS MARKER
GAS METER
CABLE TV RISER
U.G. CABLE TV MARKER
MAILBOX
WELL
WATER MANHOLE
GATE VALVE (EXISTING)
GATE VALVE (PROPOSED)
HYDRANT (EXISTING)
HYDRANT (PROPOSED)
CATCH BASIN (EXISTING)
YARD CATCH BASIN (EXISTING)
CATCH BASIN (PROPOSED)
STORM MANHOLE (EXISTING)
STORM MANHOLE (PROPOSED)
END SECTION (EXISTING)
END SECTION (PROPOSED)
SANITARY MANHOLE (EXISTING)
SANITARY MANHOLE (PROPOSED)
PUMP CHAMBER
TRAFFIC SIGN
SIGN (EXISTING)
SIGN (PROPOSED)
SOIL BORING
STEEL ROD SET
STEEL ROD OR PIPE FOUND
WOOD LATH SET
HUB SET
MONUMENT FOUND
SECTION CORNER
GAS PUMP
ANTENNA
SATELLITE DISH
NEWSPAPER BOX
PARKING METER
PHONE BOOTH
HANDICAP SYMBOL
BENCHMARK
LIGHT POLE

ABBREVIATIONS

FFE	FINISHED FLOOR ELEVATION
BFE	BASEMENT FLOOR ELEVATION
GFE	GARAGE FLOOR ELEVATION
FG	FINISHED GRADE
T/A	TOP OF ASPHALT
T/C	TOP OF CONCRETE/CURB
T/W	TOP OF WALK
T/P	TOP OF PIPE
B/P	BOTTOM OF PIPE
F/L	FLOW LINE
RIM	RIM ELEVATION (AT FLOW LINE)
INV	INVERT ELEVATION
MH	MANHOLE
CB	CATCH BASIN
RY	REAR YARD
YD	YARD DRAIN
RD	ROOF DRAIN
FES	FLARED END SECTION
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
RCP	REINFORCED CONCRETE PIPE
HDPE	HIGH DENSITY POLYETHYLENE
PVC	POLYVINYL CHLORIDE
DIP	DUCTILE IRON PIPE
GV	GATE VALVE
GVW	GATE VALVE IN WELL
GVB	GATE VALVE IN BOX
HYD	HYDRANT
FDC	FIRE DEPARTMENT CONNECTION
UP	UTILITY POLE
NFV	NOT FIELD VERIFIED
TBR	TO BE REMOVED
L.	LIBER
P.	PAGE
L.C.R.	LIVINGSTON COUNTY RECORDS
(M&R)	MEASURED AND RECORD
L.O.B.	POINT OF BEGINNING

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

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1–800–482–7171 (TOLL FREE) FOR THE LOCATION OF UNDERGROUND FACILITIES

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT: ST. VLADIMIR RUSSIAN ORTHODOX CHURCH

PREPARED FOR: DANGEROUS ARCHITECTS, 104 S MAIN ST, CHELSEA, MI 48118, 734.475.3660

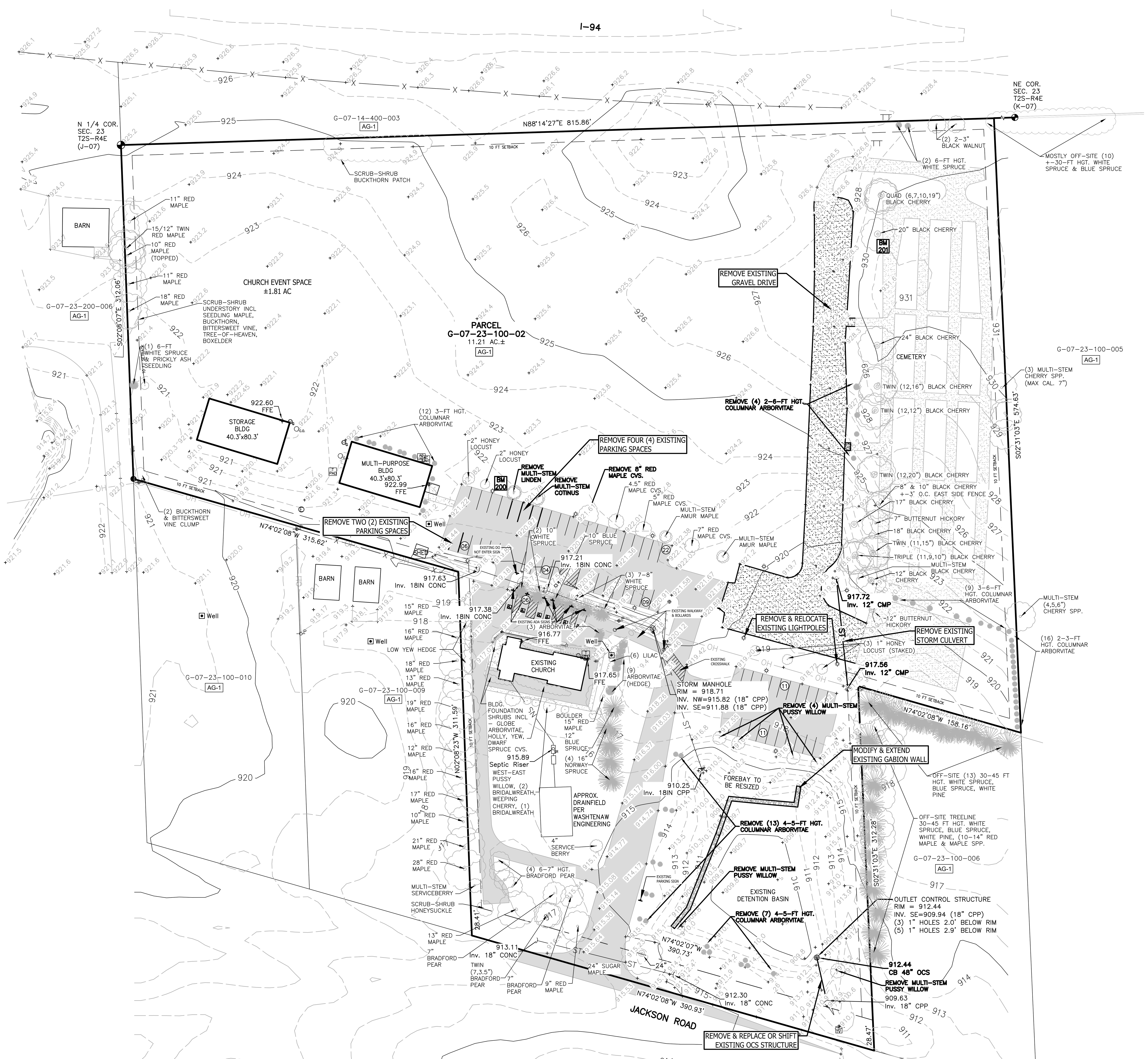
TITLE: GENERAL NOTES & LEGEND

DATE	REVISION PER	BY	NO
–	–	–	–

DESIGNED BY:	BL
DRAWN BY:	JP
CHECKED BY:	
SCALE:	NO SCALE
JOB NO:	24–001
DATE:	02/28/24
SHEET NO.	2

BOSS BE Engineering

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



SCALE: 1 INCH = 50 FEET

PARCEL INFORMATION:

PARCEL ID:	#G-07-23-100-02
LOT ACREAGE:	11.21 AC. ±
ZONING:	AGRICULTURE (AG-1)
ADDRESS:	9900 JACKSON RD, DEXTER, MI 48130
CLIENT:	DANGEROUS ARCHITECTS ST. VLADIMIR RUSSIAN ORTHODOX CHURCH

GENERAL SURVEY NOTES:

1. BEARINGS ARE BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE.
2. SUBSURFACE UTILITIES NOT LOCATED FOR THIS SURVEY MAY EXIST. IT IS THE RESPONSIBILITY OF THE OWNER OF THE RESPECTIVE UTILITY TO ACCURATELY LOCATE SUCH UTILITIES.
3. EASEMENTS OR RESTRICTIONS OF RECORD NOT DEPICTED ON THIS DRAWING MAY EXIST.
4. ELEVATIONS WERE ESTABLISHED WITH GPS. (NAVD88 DATUM)
5. CONTOURS ARE SHOWN AT 1 FOOT INTERVALS.
6. SUBJECT PROPERTY IS DESIGNATED AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN (ZONE X) ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM), FOR THE TOWNSHIP OF LIMA, WASHTENAW COUNTY, MICHIGAN, MAP NUMBER 26161C0220E, WITH AN EFFECTIVE DATE OF APRIL 3, 2012.
7. THE LOCATIONS OF STORM SEWER, SANITARY SEWER & WATERMAIN, AS SHOWN ON THIS DRAWING ARE APPROXIMATE. THE LOCATIONS ARE BASED ON PHYSICAL FIELD LOCATIONS OF STRUCTURES.
8. ALL WORK SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY, THE COUNTY, AND THE STATE OF MICHIGAN.
9. ALLOW THREE WORKING DAYS BEFORE YOU DIG, CALL MISS DIG TOLL FREE 1-800-482-7171.

PROPERTY DESCRIPTION PER WASHTENAW ENGINEERING PLANS DATED

COMMENCING AT THE NORTHEAST CORNER OF SECTION 23, T2S, R4E, LIMA TOWNSHIP, WASHTENAW COUNTY. MICHIGAN; THENCE S86°46'50"W 1820.26 FEET ALONG THE NORTH LINE OF SAID SECTION TO THE POINT OF BEGINNING; THENCE S03°58'40"E 574.63 FEET; THENCE N75°29'45"W 158.16 FEET; THENCE S03°58'40"E 340.75 FEET; THENCE N75°29'45"W 390.93FEET; THENCE N03"36'00'W 340.00 FEET; THENCE N75°29'45"W 315.62 FEET; THENCE N03°36'00'W 312.08 FEET ALONG AN EXISTING FENCE LINE TO THE NORTH 1/4 CORNER OF SAID SECTION; THENCE N86"46'50"E 815.86 FEET ALONG THE NORTH LINE OF SAID SECTION TO THE POINT OF BEGINNING. BEING A PART OF THE NORTH 1/2 OF SECTION 23. T2S, R4E, LIMA TOWNSHIP, WASHTENAW COUNTY. MICHIGAN AND CONTAINING 11.21 ACRES OF LAND, MORE OR LESS. BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THAT PORTION OF JACKSON ROAD, AS OCCUPIED. ALSO BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.

SITE BENCHMARKS (NAVD88 DATUM):

-BM #200 = CHISELED "X" N/S CONC. L/POLE BASE, FIRST ONE EAST OF SCHOOL BLDG N/S PARKING LOT. ELEV.=924.42'
-BM #201 = NAIL/TAG W/S 24" ELM, 2ND TREE SOUTH OF BILLBOARD E/S GRAVEL DRIVE. ELEV.=931.33'

USDA Soil Conservation Service in cooperation with MI Agricultural Experiment Station (1977)

MmB	Miami Loam	2-6% Slopes

SOIL INFORMATION:
ONSITE SOILS ARE NOT CONDUCIVE FOR INFILTRATION

EXISTING PARKING

(69) 69 SPACES, INCLUDING 6 ADA SPACES

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

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 (TOLL FREE) FOR THE LOCATION OF UNDERGROUND FACILITIES

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT: ST. VLADIMIR RUSSIAN ORTHODOX CHURCH

PREPARED FOR: DANGEROUS ARCHITECTS
104 S MAIN ST
CHELSEA, MI 48118
734.475.3660

TITLE: EXISTING CONDITIONS & DEMOLITION PLAN

NO	BY	REVISION PER	DATE
-	-	-	-

DESIGNED BY:	BL
DRAWN BY:	JP
CHECKED BY:	
SCALE:	1"=50'
JOB NO:	24-001
DATE:	02/28/24
SHEET NO.	3

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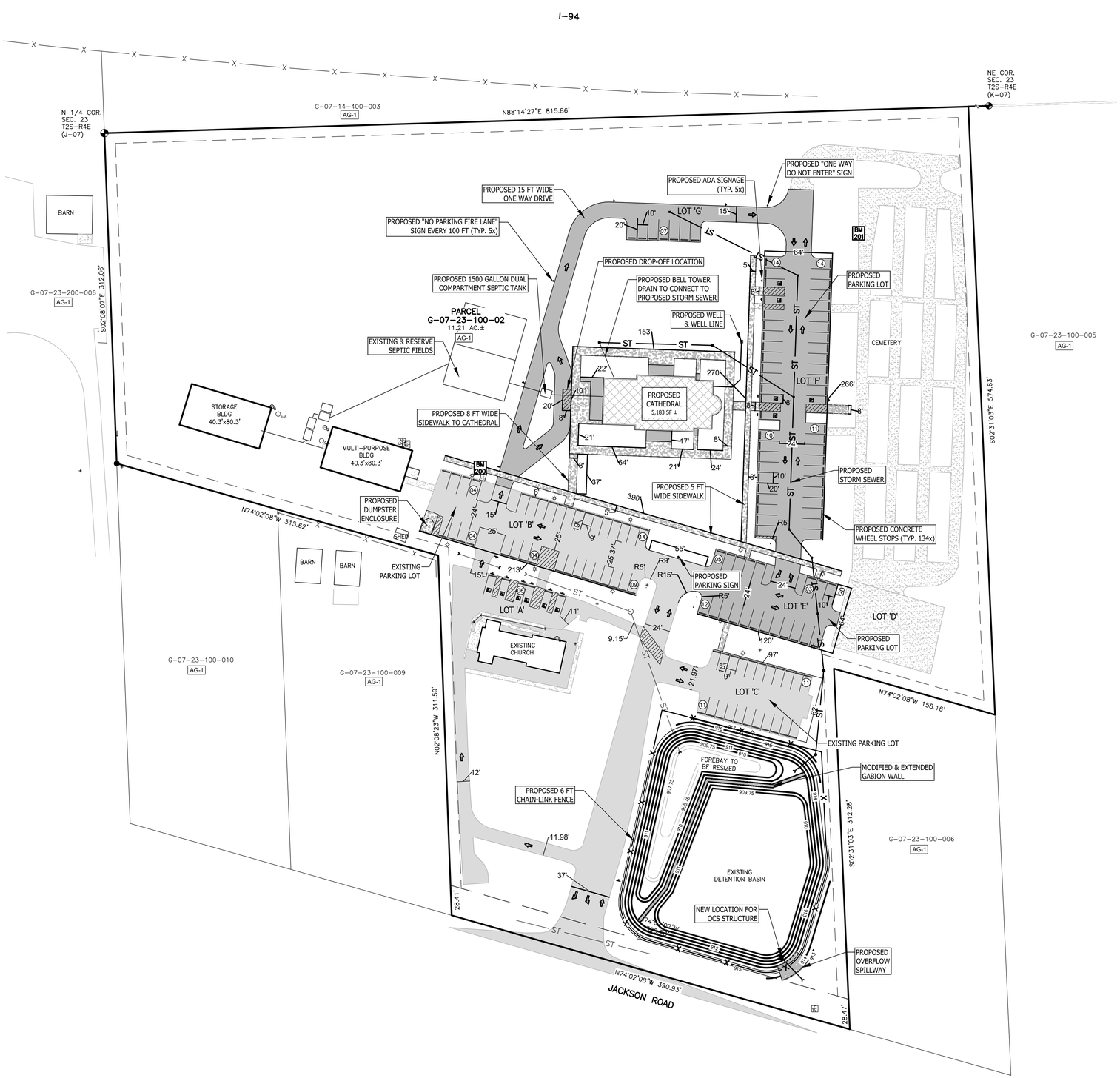
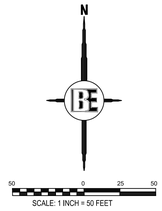
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND





SITE DATA:

LIMA TOWNSHIP
PARCEL #G-07-23-100-02
9900 JACKSON ROAD, DEXTER, MI 48130
11.21 AC ±

ZONING: AGRICULTURE (AG-1)

EXISTING SITE USE: CHURCH BLDG, MULTI-PURPOSE BLDG, STORAGE BLDG, & CEMETERY

EXISTING CHURCH BLDG SF:	2,364 GSF ±
EXISTING MULTI-PURPOSE BLDG SF:	3,164 GSF ±
EXISTING STORAGE BLDG:	3,164 GSF ±
EXISTING CEMETERY SF:	61,846 SF ±

PROPOSED BUILDING USE: NEW CHURCH BLDG & FUTURE FELLOWSHIP HALL BLDG

PROPOSED CATHEDRAL:	5,180 GSF
FUTURE FELLOWSHIP HALL:	4,000 GSF

MAX. LOT COVERAGE:	10.0% BLDG, 75% IMPERVIOUS
EXISTING LOT COVERAGE:	1.81% BLDG, 12.4% IMPERVIOUS
PROPOSED LOT COVERAGE:	2.87% BLDG, 23.1% IMPERVIOUS

MIN. LOT AREA REQUIRED FOR ZONING: 5 ACRE
EX. LOT AREA: 11.21 AC ± (488,308 SQ FT)
TOTAL WORKING AREA: 3.85 AC ± (167,513 SQ FT)

MIN. LOT WIDTH: 330 FT TOTAL EXISTING LOT WIDTH: 815.86 FT

IMPERVIOUS AREAS =

EXISTING ASPHALT PARKING	50,848 SF (1.17 AC)
PROPOSED ASPHALT PARKING	37,169 SF (0.85 AC)
EXISTING CONCRETE WALK	732 SF (0.02 AC)
PROPOSED CONCRETE WALK	10,027 SF (0.23 AC)
EXISTING BUILDING	8,815 SF (0.20 AC)
PROPOSED BUILDING	5,183 SF (0.12 AC)
SUBTOTAL:	112,774 SF (2.59 AC)

GRAVEL SURFACE =

EXISTING GRAVEL DRIVE	47,917 SF (1.10 AC)
PROPOSED GRAVEL DRIVE	28,743 SF (0.66 AC)
SUBTOTAL:	28,743 SF (0.66 AC)

PERVIOUS AREAS =

EXISTING LAWN/VEGETATION	346,791 SF (7.96 AC)
SUBTOTAL:	346,791 SF (7.96 AC)
TOTAL:	488,308 SF (11.21 AC)

MIN. SETBACKS REQUIRED:		EXISTING SETBACKS:
RIGHT-OF-WAY:	33-FT	33-FT
FRONT:	35-FT	35-FT
SIDE:	10-FT	10-FT
REAR:	10-FT	10-FT
MAX BLDG HGT:	35-FT	35-FT (2-STORY)

PARKING CALCULATION:
EXPECTED OCCUPANCY FOR NEW CHURCH CATHEDRAL IS 300 PEOPLE. REQUIRED PARKING FOR THE INSTITUTIONAL USE OF A CHURCH IS 1 SPACE PER 3 SEATS = 100 SPACES REQUIRED INCLUDING 4 BARRIER-FREE SPACES.

EXISTING PARKING IS 69 SPACES, INCLUDING 6 BARRIER-FREE SPACES ADJACENT TO THE EXISTING CHURCH. 6 TYPICAL PARKING SPACES WILL BE REMOVED TO MAKE ROOM FOR THE DUMPSTER AND 15-FT WIDE ONE WAY DRIVE WITH AN ADDITIONAL 76 PROPOSED SPACES ADDED TO THE PROPOSED PARKING LOTS.

TOTAL PROVIDED PARKING: 139 SPACES
(139) INCLUDING 5 ADDITIONAL BARRIER-FREE SPACES (PER TOWNSHIP REQUIREMENTS)

SITE BENCHMARKS (NAVD88 DATUM):
-BM #200 = CHISELED "X" N/S CONC. L/POLE BASE, FIRST ONE EAST OF SCHOOL BLDG N/S PARKING LOT. ELEV.=924.42'
-BM #201 = NAIL/TAG W/S 24" ELM, 2ND TREE SOUTH OF BILLBOARD E/S GRAVEL DRIVE. ELEV.=931.33'

GENERAL NOTES:
1. SEE ARCHITECTURAL PLANS FOR CATHEDRAL BUILDING INFORMATION.
2. WATER SERVICES FOR THE PROPOSED CATHEDRAL WILL COME FROM A PROPOSED ONSITE WELL. THE EXISTING WELL WILL CONTINUE TO SERVICE THE EXISTING CHURCH AND OTHER RELATED BUILDINGS.
3. SANITARY SERVICES FOR THE PROPOSED CATHEDRAL WILL CONNECT TO THE EXISTING SEPTIC FIELD ONSITE. THE EXISTING SEPTIC FIELD WILL CONTINUE TO SERVICE THE EXISTING CHURCH AND OTHER RELATED BUILDINGS.
4. STORM WATER WILL BE COLLECTED USING THE PROPOSED STORM SEWER NETWORK, ULTIMATELY DRAINING INTO THE RESIZED EXISTING ONSITE DETENTION BASIN.

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

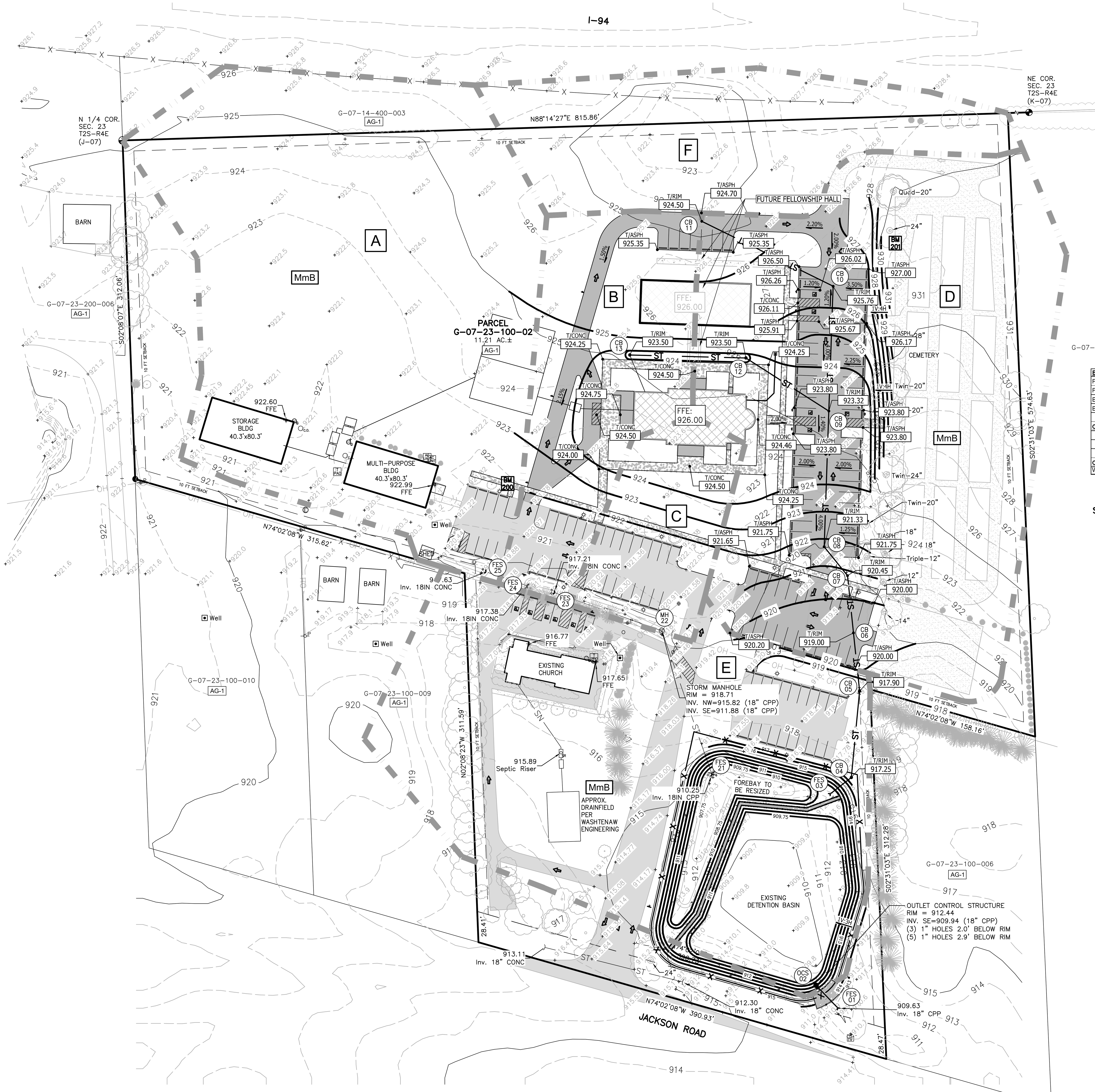
PROJECT: ST. VLADIMIR RUSSIAN ORTHODOX CHURCH
PREPARED FOR: DANGEROUS ARCHITECTS
104 S MAIN ST
CHELSEA, MI 48118
734.475.3660
TITLE: SITE PLAN

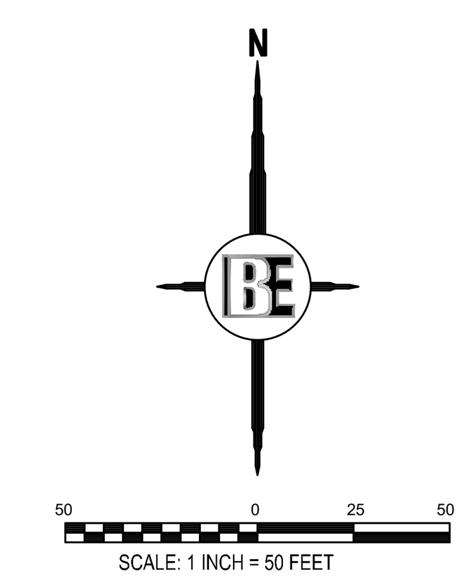
NO	BY	REVISION PER	DATE
			-

DESIGNED BY: BL
DRAWN BY: JP
CHECKED BY:
SCALE: 1"=50'
JOB NO: 24-001
DATE: 02/28/24
SHEET NO. 4

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

NOTE:
FUTURE DEVELOPMENT INCLUDED IN STORMWATER MANAGEMENT CALCULATIONS FOR THE ENLARGEMENT OF THE EXISTING DETENTION BASIN.





DRAINAGE AREA TABLE				
DRAINAGE AREA	TOTAL AREA (AC)	IMP. AREA (AC)	C VALUE	A*C
A	2.99	0.24	0.35	1.05
B	0.96	0.49	0.63	0.61
C	0.47	0.23	0.62	0.29
D	3.13	1.18	0.55	1.71
E	2.75	0.76	0.48	1.32
F*	1.08	0.00	0.30	0.32
TOTALS	10.30	2.90	0.48	4.98
*DRAINAGE AREA **F** DOES NOT DRAIN TO THE EXISTING BASIN				

BASIN DESIGN SUMMARY		
FOREBAY SIZE REQUIRED =	4,133	FT³
FOREBAY SIZE PROVIDED =	14,465	FT³
BASIN SIZE REQUIRED =	99,202	FT³
BASIN SIZE PROVIDED* =	106,597	FT³
*TOTAL BASIN VOLUME INCLUDES EXCESSIVE FOREBAY STORAGE VOLUME		

ORIFICE DESIGN SUMMARY			
ELEVATION	# OF HOLES	DIAMETER OF HOLES	
909.75	3	1	-INCH
Q*(1/12)*A	24	2	-INCH

OVERFLOW SPILLWAY SUMMARY		
WIDTH OF OVERFLOW SPILLWAY =	12	FT

SITE BENCHMARKS (NAVD88 DATUM):
-BM #200 = CHISELED "X" N/S CONC. L/POLE BASE, FIRST ONE EAST OF SCHOOL BLDG N/S PARKING LOT. ELEV.=924.42'
-BM #201 = NAIL/TAG W/S 24" ELM, 2ND TREE SOUTH OF BILLBOARD E/S GRAVEL DRIVE. ELEV.=931.33'

WASHENAW COUNTY DETENTION BASIN CALCULATIONS

W1 DETERMINING POST-DEVELOPMENT

TOTAL SITE AREA:	10.30	ACRES	MmB - MIAMI LOAM
TOTAL SITE AREA EXCLUDING BMPS:	10.30	ACRES	GROUP B
BMP AREA:	0.00	ACRES	0.3

RATIONAL METHOD VARIABLES

COVER TYPE	SOIL TYPE	AREA(FT²)	AREA(AC)	RUNOFF COEF	C(AREA)
GRASS	MmB - MIAMI LOAM	302107.267	6.94	0.30	2.08
BASIN	MmB - MIAMI LOAM	20168.4437	0.46	0.30	0.14
IMPERVIOUS	MmB - MIAMI LOAM	126452.8948	2.90	0.95	2.76

TOTAL CA= 4.98
TOTAL AREA= 10.30
WEIGHT C= 0.48

RATIONAL METHOD VARIABLES PERVIOUS

COVER TYPE	SOIL TYPE	AREA(FT²)	AREA(AC)	CN	C(AREA)
GRASS	MmB - MIAMI LOAM	302107.27	6.94	58	402.25
BASIN	MmB - MIAMI LOAM	20168.44	0.46	58	26.85

TOTAL CA= 429.11
TOTAL AREA= 7.40
WEIGHT CN= 58

RATIONAL METHOD VARIABLES IMPERVIOUS

COVER TYPE	SOIL TYPE	AREA(FT²)	AREA(AC)	CN	C(AREA)
IMPERVIOUS	MmB - MIAMI LOAM	126452.89	2.90	98	284.49

TOTAL CA= 284.49
TOTAL AREA= 2.90
WEIGHT CN= 98

W2 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
FIRST FLUSH RUNOFF CALCULATIONS V_{ff}
V_{ff}= 3,630(C)(A) = 18068 FT³

W3 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
PRE-DEVELOPMENT BANKFULL CALCULATIONS $V_{bf\text{-}pre}$

P=		2.35 IN
CN=		58 UNITLESS
S=	1000/(CN) - 10	7.24 IN
Q=	(P-0.2*S)²/(P+0.8*S)	0.10 IN
A=		448728.6055 SF
$V_{bf\text{-}pre}$=	Q*(1/12)*A	3733.88 FT³

W4 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
PERVIOUS COVER POST-DEVELOPMENT BANKFULL RUNOFF CALCULATIONS $V_{bf\text{-}per\text{-}post}$

P=		2.35 IN
CN=		58 UNITLESS
S=	1000/(CN) - 10	7.24 IN
Q=	(P-0.2*S)²/(P+0.8*S)	0.10 IN
A=		322275.7107 SF
$V_{bf\text{-}per\text{-}post}$=	Q*(1/12)*A	2681.66 FT³

W5 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
IMPERVIOUS COVER POST-DEVELOPMENT BANKFULL RUNOFF CALCULATIONS $V_{bf\text{-}imp\text{-}post}$

P=		2.35 IN
CN=		98 UNITLESS
S=	1000/(CN) - 10	0.20 IN
Q=	(P-0.2*S)²/(P+0.8*S)	2.12 IN
A=		126452.8948 SF
$V_{bf\text{-}imp\text{-}post}$=	Q*(1/12)*A	22357.65 FT³

W6 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
PERVIOUS COVER POST-DEVELOPMENT 100-YEAR STORM RUNOFF CALCULATIONS $V_{100\text{-}per\text{-}post}$

P=		5.11 IN
CN=		58 UNITLESS
S=	1000/(CN) - 10	7.24 IN
Q=	(P-0.2*S)²/(P+0.8*S)	1.23 IN
A=		322275.7107 SF
$V_{100\text{-}per\text{-}post}$=	Q*(1/12)*A	33026.87 FT³

W7 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
IMPERVIOUS COVER POST-DEVELOPMENT 100-YEAR STORM RUNOFF CALCULATIONS $V_{100\text{-}imp\text{-}post}$

P=		5.11 IN
CN=		98 UNITLESS
S=	1000/(CN) - 10	0.20 IN
Q=	(P-0.2*S)²/(P+0.8*S)	4.87 IN
A=		126452.8948 SF
$V_{100\text{-}imp\text{-}post}$=	Q*(1/12)*A	51350.42 FT³

W8 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
DETERMINE TIME OF CONCENTRATION FOR APPLICABLE FLOW TYPES Tc-hrs

FLOW TYPE	K	CHANGE IN ELEV	LENGTH	SLOPE %	$S^{0.5}$	$V=K*S^{0.5}$	T_C=L/(V*3600)
Sheet Flow	0.48	4.50	223	2.02%	1.4205	0.6819	**0.0908**
Water Way	1.20	7.50	569	1.32%	1.1481	1.3777	**0.1147**
Water Way	1.20	1.50	140.5	1.07%	1.0333	1.2399	**0.0315**
Small Tributary	2.10						

$T_{c\text{-}hrs}$= 0.2370 HR

W9 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
RUNOFF SUMMARY & ONSITE INFILTRATION REQUIREMENT
RUNOFF SUMMARY

Vff=	18068 FT³
$V_{bf\text{-}pre}$=	3733.88 FT³
$V_{bf\text{-}per\text{-}post}$=	2681.66 FT³
$V_{bf\text{-}imp\text{-}post}$=	22357.65 FT³
$V_{bf\text{-}post}$=	25039.31 FT³
$V_{100\text{-}per\text{-}post}$=	33026.87 FT³
$V_{100\text{-}imp\text{-}post}$=	51350.42 FT³
V_{100}=	84377.29 FT³

ONSITE INFILTRATION REQUIREMENT

$V_{bf\text{-}diff}$=	21305.43 FT³
V_{inf}=	21305 FT³

W10 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
DETENTION/RETENTION REQUIREMENT
DETENTION

Q_p=	$238.6*T_C^{-0.82}$	776.80 CFS / IN-MI²
A=		10.30 AC
Q_{100}=		6.1 IN
PF=		76 CFS
Δ=		75 CFS
V_{det}=	**NOTE!**	82669 FT³

RETENTION
V_{ret}= 168755 FT³

W11 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
DETERMINE APPLICABLE BMPs AND ASSOCIATED VOLUME CREDITS

PROPOSED BMP	AREA FT²	STORAGE VOLUME (FT3) SURFACE	STORAGE VOLUME (FT3) SOIL	AVE DESIGN INFILTRATION RATE	INFILTRATION VOLUME DURING STORM	TOTAL VOLUME REDUCTION
PERVIOUS PAVEMENT W/INFIL BED	-	-	-	-	-	-
INFILTRATION BASIN	-	-	-	-	-	-
SUBSURFACE INFILTRATION BED	-	-	-	-	-	-
INFILTRATION TRENCH	-	-	-	-	-	-
BIORETENTION SYSTEM	-	-	-	-	-	-
RAIN GARDENS	-	-	-	-	-	-
DRYWELL	-	-	-	-	-	-
BIOSWALE	-	-	-	-	-	-
VEGETATED FILTER STRIP	-	-	-	-	-	-
GREEN ROOF	-	-	-	-	-	-

TOTAL VOLUME REDUCTION CREDIT BY PROPOSED STRUCTUREAL BMPS=
RUNOFF VOLUME INFILTRATION REQUIREMENT V_{INF}= 21305
RUNOFF VOLUME CREDIT=

W12 STANDARD METHOD RUNOFF VOLUME CALCULATIONS
NATURAL FEATURES INVENTORY

EXISTING NATURAL RESOURSES	MAPPED?	TOTAL AREA	PROTECTED/UNDISTURBED AREA
WATERBODIES	0.48	-	-
FLOODPLAINS	1.2	-	-
REPARIAN AREAS	2.1	-	-
WETLANDS	-	-	-
WOODLANDS	-	-	-
NATURAL DRAINAGE AREAS	-	-	-
STEEP SLOPES, 15%-25%	-	-	-
STEEP SLOPES, OVER 25%	-	-	-
SPECIAL HABIT AREAS	-	-	-
OTHER	-	-	-
TOTAL EXISTING ACRES	-	-	-

W13 SUMMARY:SITE SUMMARY OF INFILTRATION & DETENTION
STORMWATER MANAGEMENT SUMMARY

V_{inf}=	21305 FT³
$V_{Dep\text{-}inf}$=	0 FT³
INF_{min}%	0 %
V_{det}=	82669 FT³
$V_{det\text{-}net}$=	82669 FT³

DETENTION VOLUME INCREASE WHERE REQUIRED INFILTRATION VOLUME CANNOT BE ACHIEVED

$INF_{NOT\text{-}prov}$%	100 %
NET_{pen}%	20 %
$V_{det\text{-}total}$	99202 FT³

FOREBAY STORAGE VOLUME PROVIDED:

ELEVATION	AREA	VOLUME	TOTALVOLUME	
913	30699	19,562	34,027	
912	8424	7,478	**14,465**	**DHWL**
911	6531	5,793	6,988	
910	5054	1,195	1,195	
909.75	4508	0	0	**BOTTOM OF STORAGE**
908.75	3159	0	0	SUMP
907.75	1546	0	0	SUMP

BASIN STORAGE PROVIDED

ELEVATION	AREA (FT²)	DEPTH (FT)	VOLUME (FT³)	TOTAL VOLUME (FT³)	
915	34741	1	33,717	129,981	**FREEBOARD**
914	32692	1	31,696	**96,265**	**DHWL**
913	30699	1	25,153	64,569	
912	19606	1	18,600	39,417	
911	17593	1	16,841	20,817	
910	16089	0.25	3,976	3,976	
909.75	15722	0	0	0	**BOTTOM OF STORAGE**

OUTLET CONTROL STRUCTURE
Q_{ED} ACTUAL
H_{ED} = 3 (1" HOLES)
A_{ED} = 0.0549 FT²
$Q_{ED\text{-}ACTUAL}$ = $(A_{ED})(0.62 \times (2 \times 32.2 \times h)^{0.5})$ = 0.563 CFS

Q_{100ALL} OUTLET
$Q_{100\text{-}ACTUAL} = Q_{100P} - Q_{ED\text{-}ACTUAL}$ = 5.539 CFS
$A_{100} = Q_{100\text{-}ACTUAL} / (0.62 * (2 * 32.2 * (ELEV_{DHWL} - ELEV_{ED}))^{0.5})$ = 0.540 FT²
AREA OF 2 INCH DIAMETER ORIFICE = 0.022 FT²
ORIFICES = A100 / 0.005 = 24 ORIFICES

OVERFLOW SPILLWAY DESIGN

Design Flow Rate:	Q_{100IN} =	14.00	CFS
Depth of Spillway:	D_{SPILL} =	6	INCHES
Width of Spillway:	$W_{SPILL} = Q_{100IN}/3.33D_{SPILL}^{3/2}$=	12	FT

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3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 (TOLL FREE) FOR THE LOCATION OF UNDERGROUND FACILITIES

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT
ST. VLADIMIR RUSSIAN ORTHODOX CHURCH

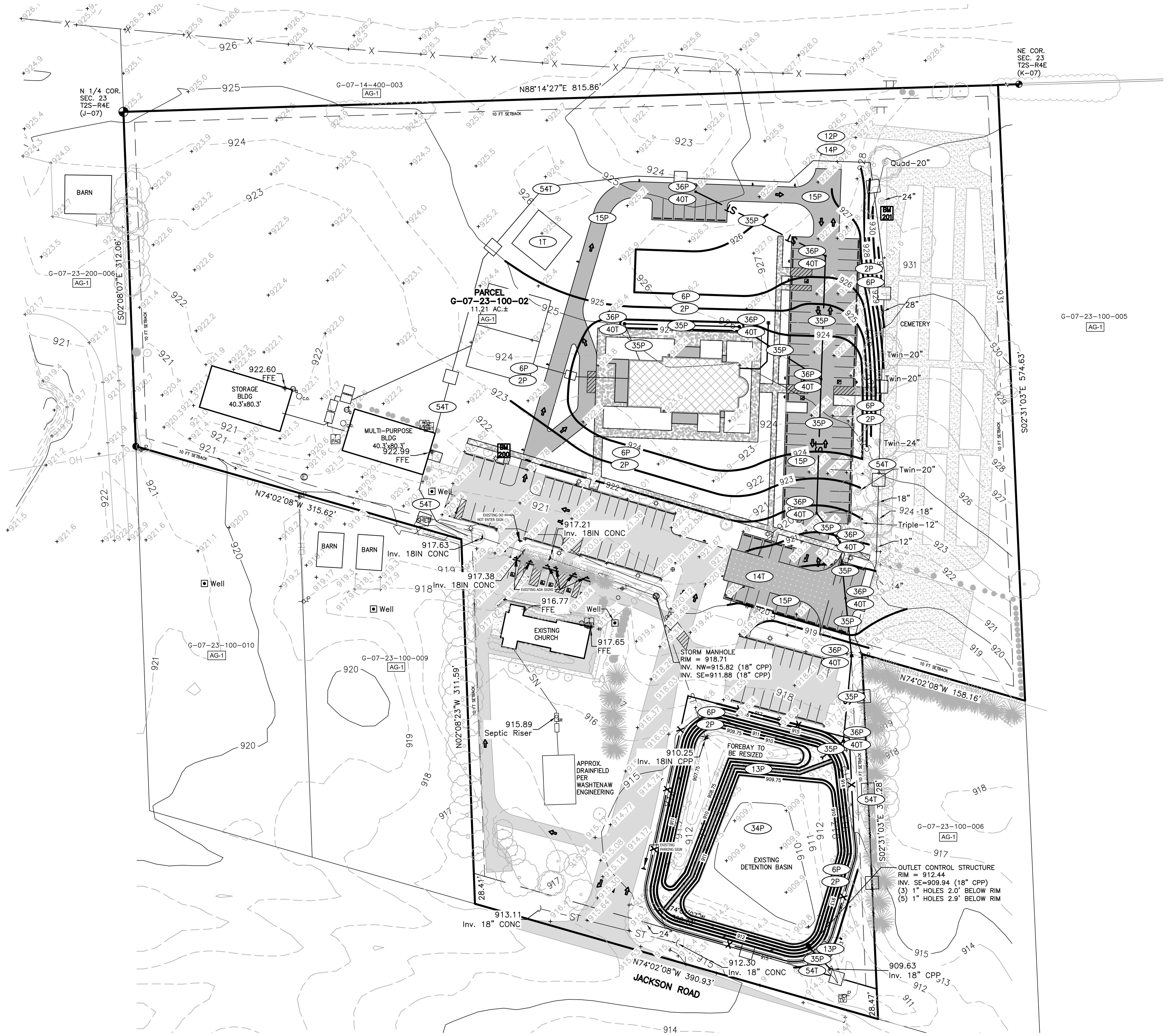
PREPARED FOR
DANGEROUS ARCHITECTS
104 S MAIN ST
CHELSEA, MI 48118
734.475.3660

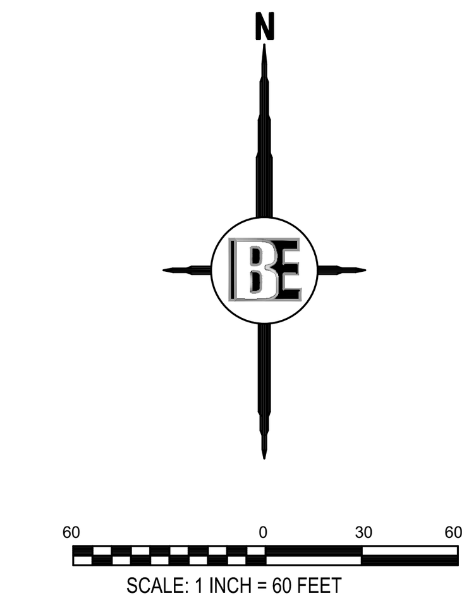
TITLE
GRADING & DRAINAGE PLAN

NO	BY	REVISION PER	DATE
-	-	-	-

DESIGNED BY: BL
DRAWN BY: JP
CHECKED BY:
SCALE: 1"=50'
JOB NO: 24-001
DATE: 02/28/24
SHEET NO. 5

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND





SOIL EROSION CONTROL MEASURES

Key	No.	Measure	Description
1T	1	STRIPPING & STOCKPILING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION STOCKPILE SHOULD BE TEMPORARILY SEEDED
2P	2	SELECTIVE GRADING & SHAPING	WATER CAN BE DIVERTED TO MINIMIZE EROSION FLATTER SLOPES EASE EROSION PROBLEMS
6P	6	SEEDING WITH MULCH AND/OR MATTING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED
12P	12	COMPACTION	HELPS HOLD SOIL IN PLACE, MAKING EXPOSED AREAS LESS VULNERABLE TO EROSION
13P	13	RIP-RAP, RUBBLE, GABIONS	USED WHERE VEGETATION IS NOT EASILY ESTABLISHED EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS PERMITS RUNOFF TO INFILTRATE SOIL DISSIPATES ENERGY FLOW AT SYSTEM OUTLETS
14P 14T	14	AGGREGATE COVER	STABILIZES SOIL SURFACE, THUS MINIMIZING EROSION PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS
15P	15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VELOCITY IRREGULAR SURFACE WILL HELP SLOW VELOCITY
34P	34	SEDIMENT BASIN	TRAPS SEDIMENT RELEASES RUNOFF AT NON-EROSIVE RATES CONTROLS RUNOFF AT SYSTEM OUTLETS CAN BE VISUAL AMENITIES
35P	35	STORM SEWER (C.B. / C.B.)	SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONDUCTS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTFALL LOCATION USE CATCH BASINS TO COLLECT SEDIMENT
36P	36	CATCH BASIN, DRAIN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET
40T	40	INLET SEDIMENT FILTER	EASY TO SHAPE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED
54T	54	SILT FENCE	USES GEOTEXTILE FABRIC AND POST OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE DETAIL THIS SHEET)

T= TEMPORARY, P= PERMANENT
TOTAL DISTURBED AREA= 4.76 AC.

SURFACE WATER & COUNTY DRAINS

BASINS	– ONSITE
WETLAND	– APPROXIMATELY 1,500 FT NE TOWARD THE NORTH OF I-94
POND	– APPROXIMATELY 1,600 FT NE TOWARD THE NORTH OF I-94
STREAM	– APPROXIMATELY 2,250 FT SW TOWARD N. FORK MILL CREEK
DRAIN	– APPROXIMATELY 2,250 FT SW TOWARD LUICK COUNTY DRAIN

APPROXIMATELY 1,627 FT SILT FENCE WILL BE REQUIRED TO SURROUND THE PROPOSED PROJECT SITE AREAS.

CONSTRUCTION SEQUENCE

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

1 DAYS	1.	INSTALL SILT FENCE AS SHOWN ON PLANS.
5 DAYS	2.	ROUGH GRADE AND INSTALL STORM DRAINAGE.
1 DAY	3.	INSTALL INLET PROTECTION ON STORM INLETS.
180 DAY	4.	START BLDG. CONSTRUCTION
4 DAYS	5.	INSTALL PAVEMENT
4 DAYS	6.	FINE GRADE AROUND BUILDING, SPREAD TOPSOIL, SEED OR SOD AS APPLICABLE.
1 DAY	7.	REMOVE ALL EROSION CONTROL STRUCTURES.
1 DAY	8.	REMOVE ACCUMULATED SILT FROM ALL EXISTING DRAINAGE.

PROPOSED CONST. SCHEDULE FOR THE YEAR 2024

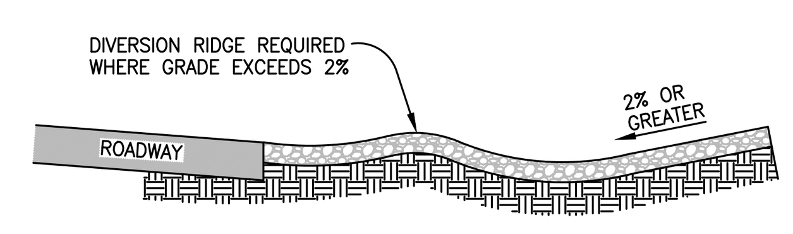
ACTIVITY	MAY	JUNE	JULY	AUG	SEPT	OCT
DEMO & CLEAR		—				
MASS GRADING		—	—			
UNDERGROUND UTILITY			—	—		
FINAL GRADING					—	
SEED & MULCH						—

CONTROLS & MEASURES POST CONSTRUCTION SEQUENCE

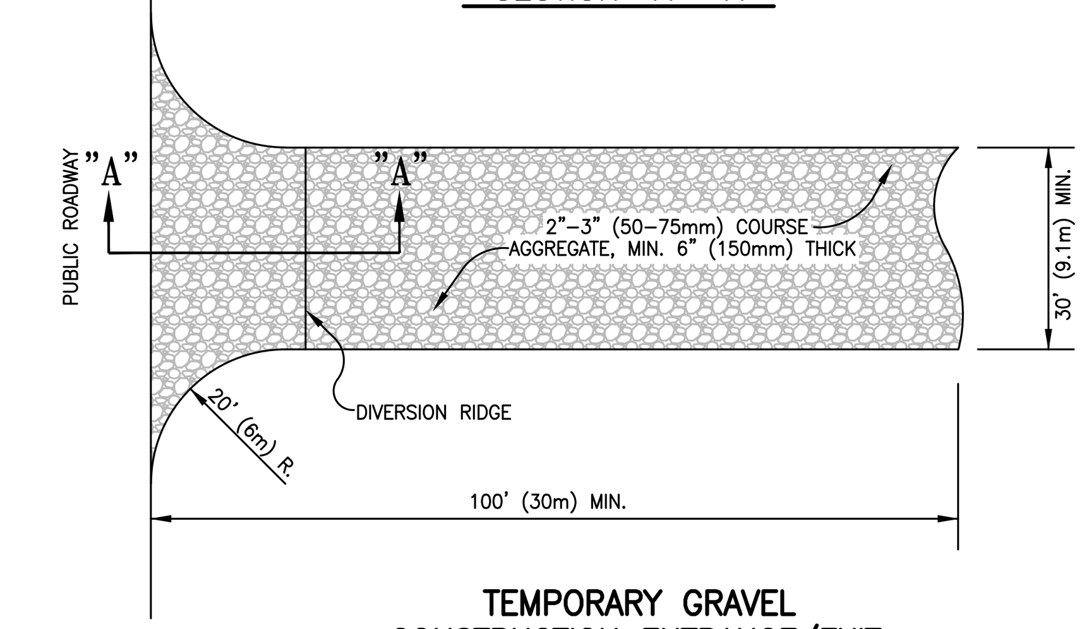
ACTIVITY	WEEKLY	MONTHLY	AS REQUIRED
MAINTAIN LANDSCAPING, REPLACE MULCH	X	X	X
CLEAN INLETS		X	X
COLLECT LITTER	X		X
SWEEP PARKING LOT		X	X

CONTROLS & MEASURES NARRATIVE

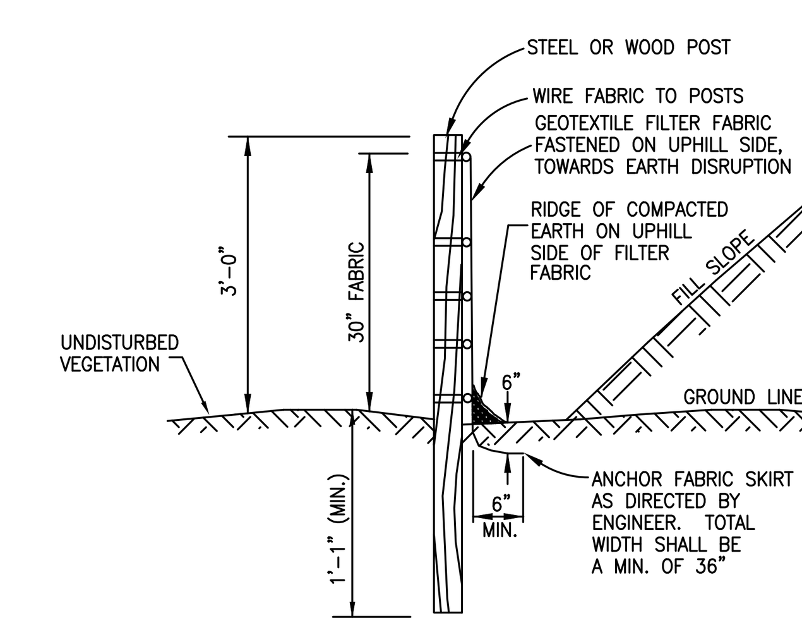
ACTIVITY	DESCRIPTION
MAINTAIN LANDSCAPING, REPLACE MULCH	COLLECT GRASS, TREE, AND SHRUB CLIPPINGS. DISPOSE IN APPROVED CONTAINER. REPLACE DEAD SOD, TREES AND SHRUBS.
CLEAN INLETS	REMOVE LITTER, SEDIMENT, AND DEBRIS. DISPOSE OF IN APPROVED LANDFILL.
COLLECT LITTER	DISPOSE OF WITH INLET DEBRIS.
SWEEP PARKING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



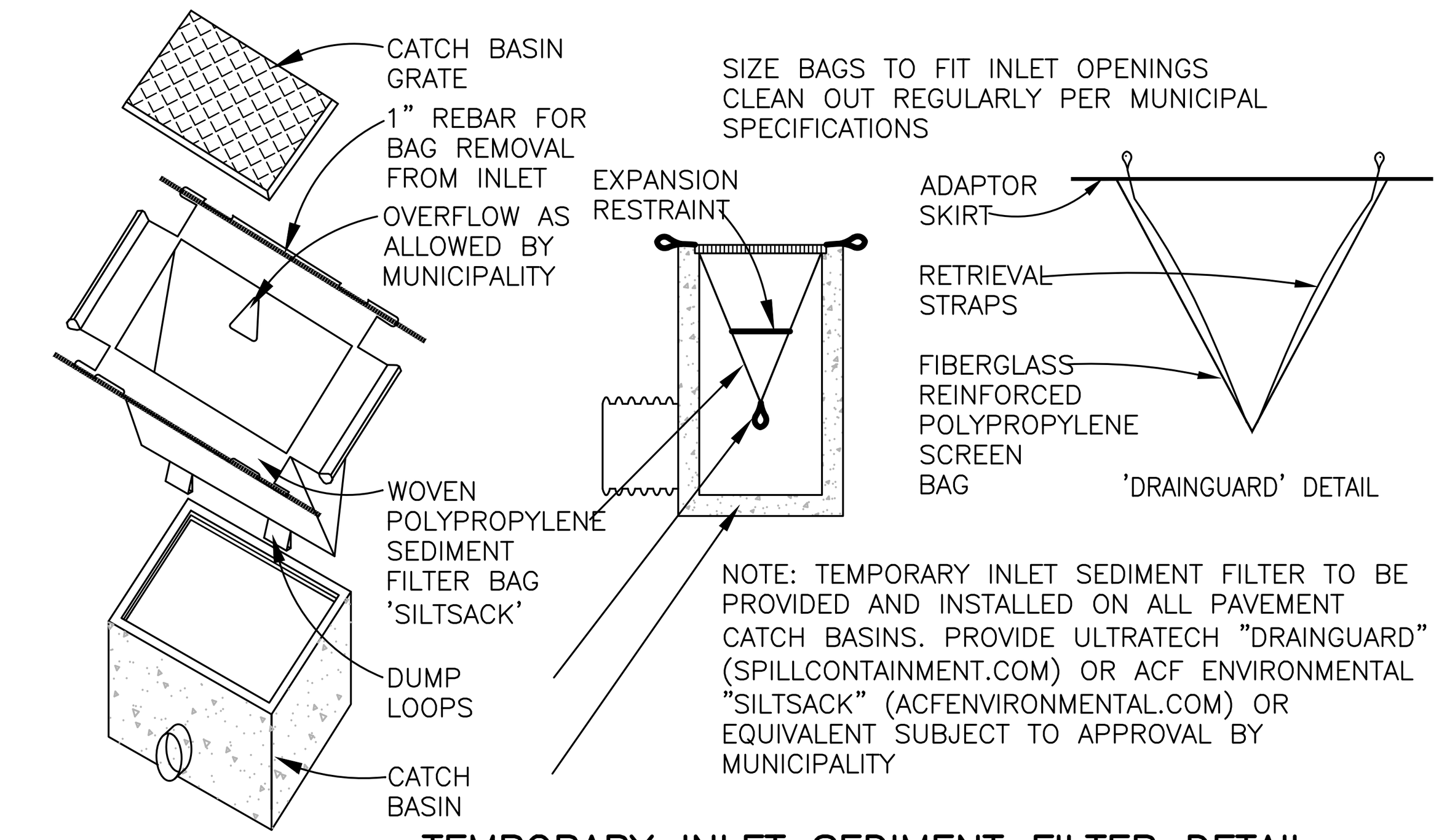
SECTION "A"-"A"



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT
NO SCALE



SILT FENCE DETAIL
NO SCALE



NOTE: TEMPORARY INLET SEDIMENT FILTER TO BE PROVIDED AND INSTALLED ON ALL PAVEMENT CATCH BASINS. PROVIDE ULTRATECH "DRAINGUARD" (SPILLCONTAINMENT.COM) OR ACF ENVIRONMENTAL "SILTSACK" (ACFENVIRONMENTAL.COM) OR EQUIVALENT SUBJECT TO APPROVAL BY MUNICIPALITY

TEMPORARY INLET SEDIMENT FILTER DETAIL
(NO SCALE)

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HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

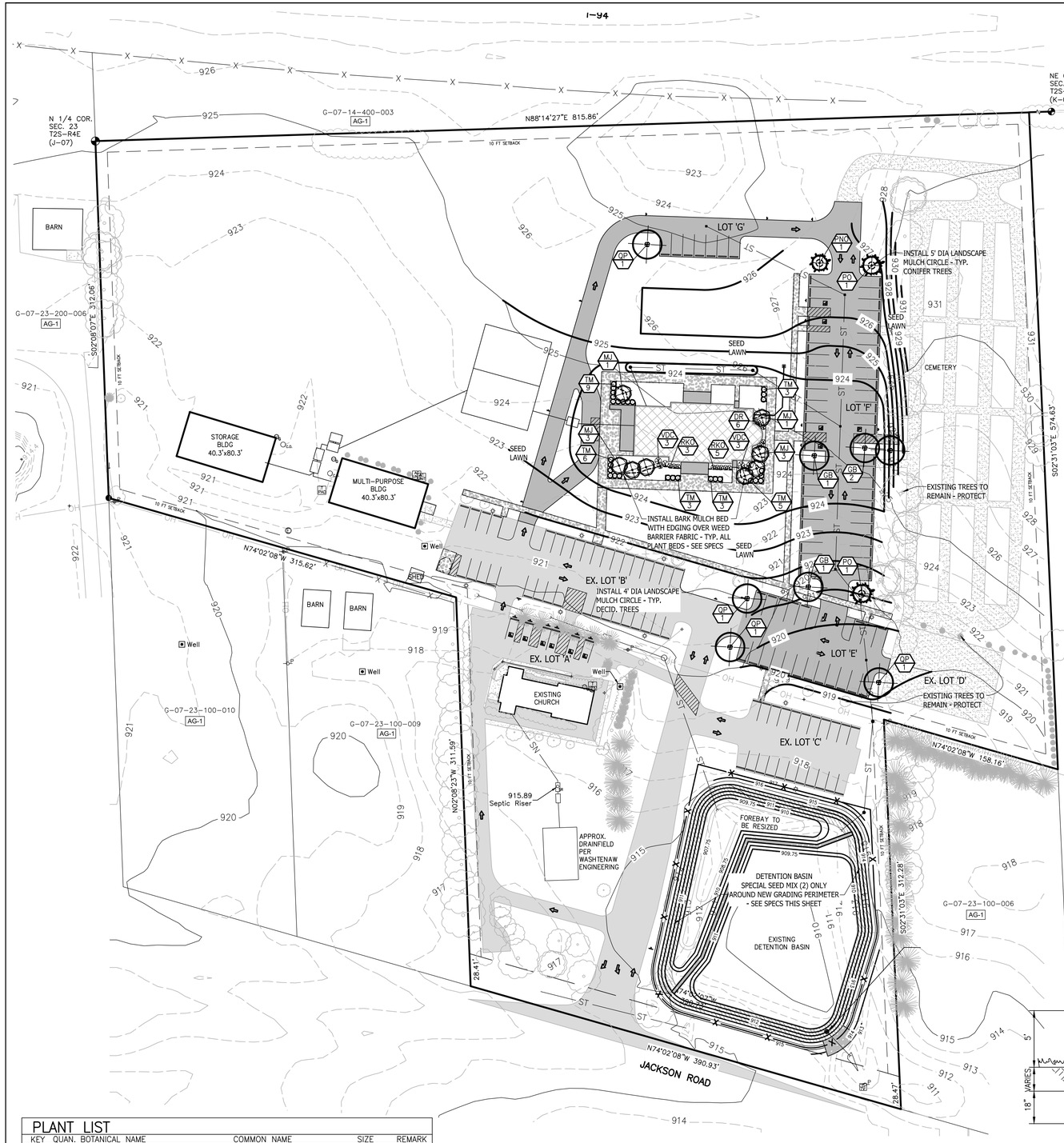
PROJECT: ST. VLADIMIR RUSSIAN ORTHODOX CHURCH

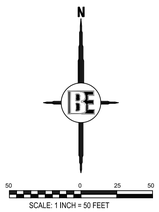
PREPARED FOR: DANGEROUS ARCHITECTS

TITLE: SOIL EROSION & SEDIMENTATION CONTROL PLAN

NO	BY	REVISION PER	DATE
-	-		-

DESIGNED BY:	BL
DRAWN BY:	JP
CHECKED BY:	
SCALE:	1" = 60'
JOB NO:	24-001
DATE:	02/28/24
SHEET NO.	6



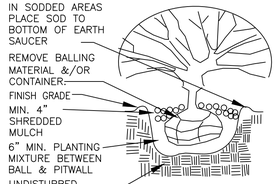


SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

LANDSCAPE CALCULATIONS

PROJECT INFORMATION:	
SITE SIZE / AREA OF WORK:	11.21 AC TOTAL SITE / 3.85 AC (167,513 SQFT) AREA OF NEW WORK
ZONED:	AG-1 (AGRICULTURE) - CHURCH FACILITIES SPECIAL USE
ADJACENT ZONING / USES:	EAST - AG-1 / SINGLE-FAMILY RESIDENTIAL WEST - AG-1 / IRRIGATION CONTRACTOR WEST / SOUTHWEST - AG-1 / SINGLE-FAMILY RESIDENTIAL NORTH - I-94 RIGHT-OF-WAY SOUTH - JACKSON ROAD RIGHT-OF-WAY
PARKING LOT:	76 NEW SPACES PROVIDED IN 2 PARKING LOTS (139 TOTAL SPACES)
REQUIRED:	
SCREENING BETWEEN LAND USES:	NEW PROPOSED WORK INTERNAL TO THE SITE - NO SCREENING REQUIRED
OFF-STREET PARKING LOT:	1 TREE / 8 SPACES FOR LOTS 24 SPACES OR LARGER, LANDSCAPE ISLANDS SHALL BE PROVIDED - MAX 24 SPACES BETWEEN ISLANDS MIN. 3-FT WIDE LANDSCAPE STRIP TO ACCOMMODATE VEHICULAR OVERHANG WHERE LOT ABUTS RESIDENTIAL SCREEN SHALL BE PROVIDED BY WALL, BERM, OR CONTINUOUS CONIFER SCREEN LOTS VISIBLE FROM A STREET SHALL BE SCREENED WITH A BERM WITH 1 TREE AND 6 SHRUBS / 30 LFT
GREENBELTS / ROAD FRONTAGE:	PROPOSED NEW WORK INTERNAL TO THE SITE - NOT APPLICABLE
FOUNDATION LANDSCAPING:	FRONT AND SIDES OF BUILDING THAT FACE STREET OR PARKING LOT 1 ORNAMENTAL TREE AND 6 SHRUBS / 30 LFT OF BUILDING FRONTAGE AND MIN 6-FT WIDTH
GENERAL SITE:	10% OF THE SITE, IN ADDITION TO GREENBELT OR PARKING LOT LANDSCAPING, SHALL BE LANDSCAPED. THIS MAY INCLUDE A COMBINATION OF EXISTING TREE PRESERVATION, NEW TREES, GRASSED AREAS, BUILDING FOUNDATION PLANTINGS & SCREENING OF STORM BASINS, TRANSFORMER PADS, A/C UNITS, AND/OR LOADING AREAS.

PROVIDED:	
OFF-STREET PARKING LOTS:	PARKING LOTS NOT VISIBLE FROM JACKSON ROAD LOTS 'A' THROUGH 'D' EXISTING - NO WORK PROPOSED LOT 'E' - 20 PARKING SPACES = 20 / 8 = 3 DECIDUOUS TREES LOCATED WITHIN 3-FT OF THE PERIMETER LOT 'F' - 51 PARKING SPACES = 51 / 8 = 4 DECIDUOUS + 3 CONIFEROUS TREES WITH MIN. (2) LANDSCAPE ISLANDS LOT 'G' - 7 PARKING SPACES = 7 / 8 = 1 DECIDUOUS TREE LOCATED WITHIN 3-FT OF THE PERIMETER
FOUNDATION LANDSCAPING:	EAST & SOUTH BUILDING SIDES FACE PARKING LOTS, THE 3RD, WEST SIDE IS THE MAIN BUILDING ENTRANCE EAST FRONTAGE = 52-FT / 30 = 2 ORNAMENTAL TREES AND 12 SHRUBS WEST FRONTAGE = 52-FT / 30 = 2 ORNAMENTAL TREES AND 12 SHRUBS SOUTH FRONTAGE = 112.5-FT / 30 = 4 ORNAMENTAL TREES AND 24 SHRUBS (25 PROVIDED)
GENERAL SITE:	7.96 ACRES (71%) OF PERVIOUS SURFACES (GRASS, NEW & EXISTING TREES & LANDSCAPING) WILL REMAIN AFTER THE PROPOSED DEVELOPMENT. LONG TERM A LARGE GRASSED FESTIVAL FIELD OF APPROX. 3 ACRES, A MORE THAN 1.0 ACRE CEMETERY (MORE THAN 35% OF THE SITE) & APPROX. 40 TREES OF 6" CALIPER, OR 6-FT HGT OR GREATER WILL BE PRESERVED



SHRUB PLANTING DETAIL
(NO SCALE)

PLANT LIST

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	REMARK
DECIDUOUS TREES					
GB	3	Ginkgo biloba 'Princeton Sentry'	Princeton Sentry Ginkgo	2-1/2" cal.	B-B
QP	4	Quercus palustris	Pin Oak	2-1/2" cal.	B-B
ORNAMENTAL TREES					
MJ	8	Malus 'Jeflite'	Starlight Crabapple	2" cal.	B-B
CONIFER TREES					
PNO	1	Pinus nigra 'Oregon Green'	Oregon Green Austrian Pine	7' hgt.	B-B
PO	2	Picea amorika	Serbian Spruce	7' hgt.	B-B
CONIFER SHRUBS					
TM	29	Taxus x media 'Densiformis'	Densiform Spreading Yew	30" ht./#3	Cont.
DECIDUOUS SHRUBS					
DR	6	Diervilla Rivularis 'diwibru01' Pp27932	Honeybee Diervilla	24" ht./#3	Cont.
RKO	8	Rosa 'Knock Out White'	Knock Out White Shrub Rosa	24" ht./#3	Cont.
VDC	6	Viburnum dentatum 'Christom' Ppaf	Arrowwood Blue Muffin Viburnum	36" ht./#5	Cont.

SPECIAL SEED MIX LEGEND

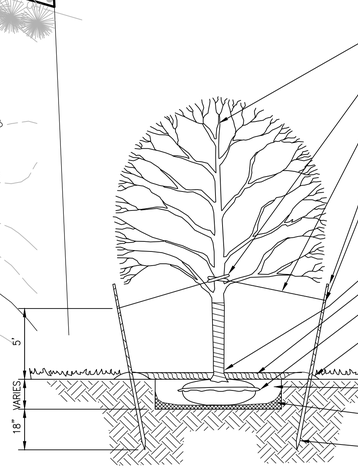
SPECIAL STORMWATER BASIN SEED MIX

INSTALL THE FOLLOWING SEED MIX FROM JFNEW/CARDNO, INC., WWW.CARDNONATIVEPLANTNURSERY.COM, 574-586-2412, WALKERTON, INDIANA OR EQUIVALENT:
SEED 'ECONOMY PRAIRE' SEED MIX BETWEEN TOP OF BANK AND THE BOTTOM OF THE PROPOSED GRADING (+-15-FT TOTAL WIDTH HORIZ.) INCL. ANNUAL RYE COVER CROP & AT RATE OF 38 PLS #/ACRE.

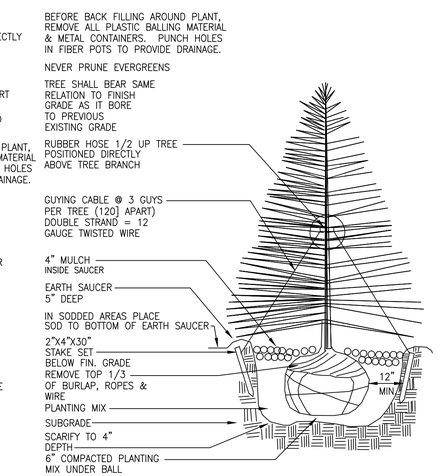
LAWN / SOD AREA LEGEND (AS NOTED)

SUPPLEMENTAL LANDSCAPE NOTES

1. ANY SUBSTITUTIONS OF PLANT MATERIAL FROM THE APPROVED SITE PLAN WILL BE APPROVED BY THE TOWNSHIP PRIOR TO INSTALLATION.
2. ALL DISEASED, DAMAGED, OR DEAD MATERIALS SHALL BE REPLACED IN ACCORDANCE WITH THE STANDARDS OF THE LIMA TOWNSHIP LANDSCAPE ORDINANCE SECTION 6.2
3. SEE LANDSCAPE SPECIFICATIONS ON SHEET 2 FOR INFORMATION TYPICAL LAWN SEED MIX & SOD INSTALLATION AND PROVISION FOR LANDSCAPE IRRIGATION.



DECIDUOUS TREE PLANTING DETAIL
(NO SCALE)



EVERGREEN TREE PLANTING DETAIL
(NO SCALE)

FOR SITE PLAN APPROVAL ONLY!
NOT FOR CONSTRUCTION

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN HEREON IS APPROXIMATE AND NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITIES CROSSINGS PRIOR TO CONSTRUCTION. IN THE EVENT THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND TO EXIST BETWEEN THE PLANS AND THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171
IT'S THE LAW!!! (P.A. 53 OF 1974, as amended)

BE BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT: ST. VLADIMIR RUSSIAN ORTHODOX CHURCH
PREPARED FOR: DANGEROUS ARCHITECTS
645 S. MAIN ST
CANTON, MI 48188
734.475.3660
TITLE: LANDSCAPE PLAN

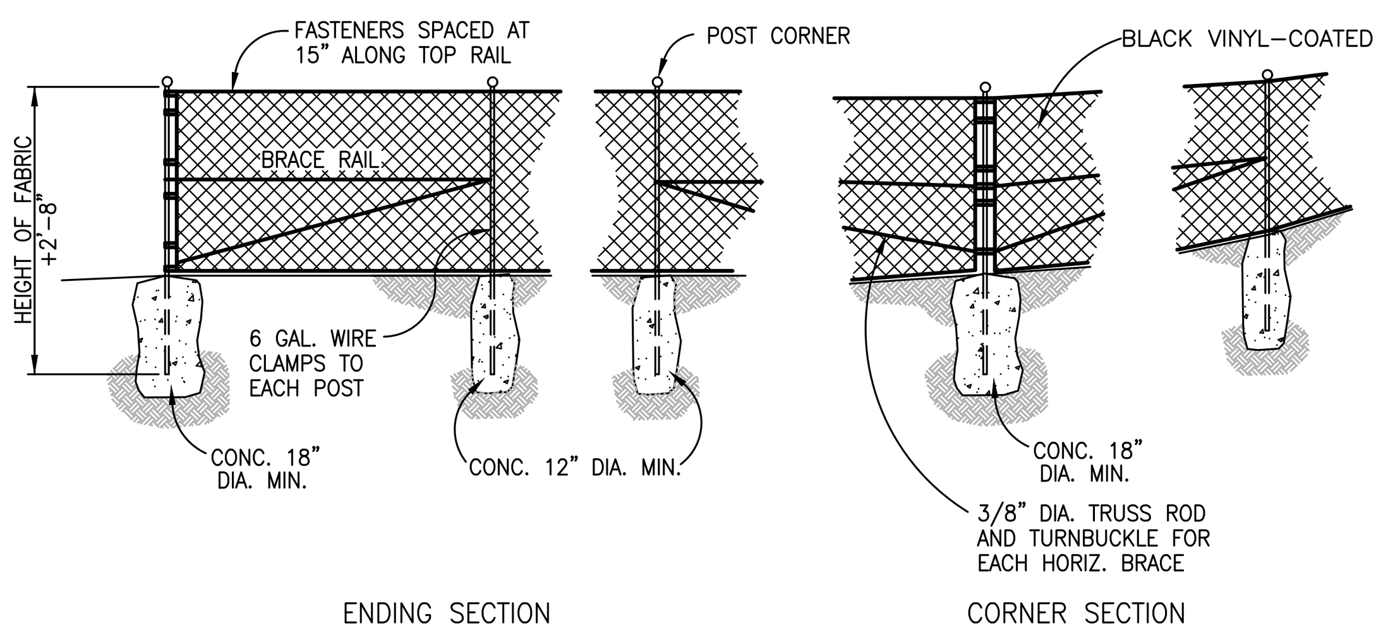
NO	BY	REVISION PER	DATE
		-	-
		-	-
		-	-

DESIGNED BY: BL
DRAWN BY: PC
CHECKED BY:
SCALE: 1" = 50'
JOB NO: 24-001
DATE: 02/28/24
SHEET NO. 7

BOSS Engineering

G:\24-001\DWG\SP\24-001 SP LANDSCAPE.dwg, 2/28/2024 8:20:41 AM, jaredp, DWG To PDF.pc3

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



CHAIN-LINK FENCE
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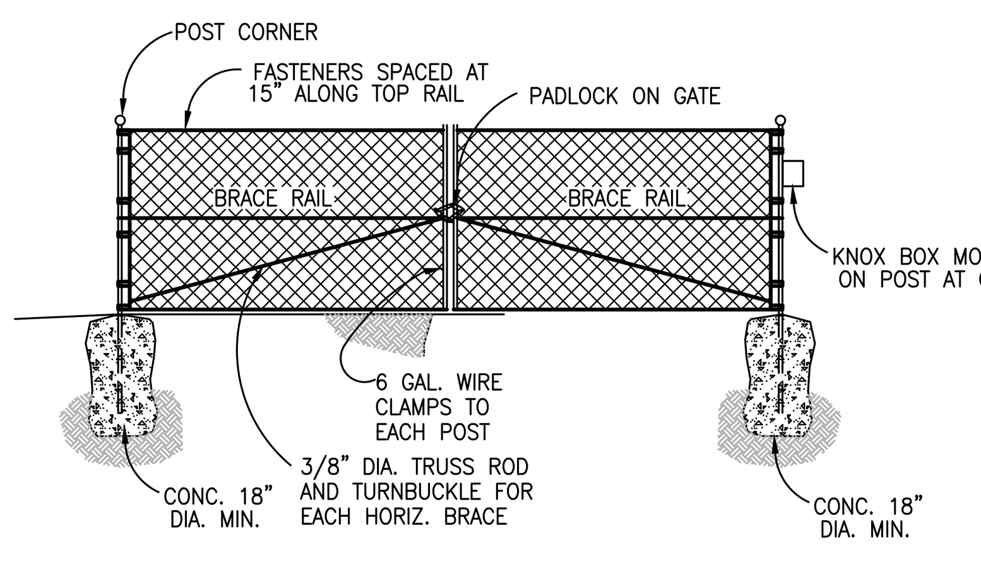

6' CHAIN-LINK FENCE GATE
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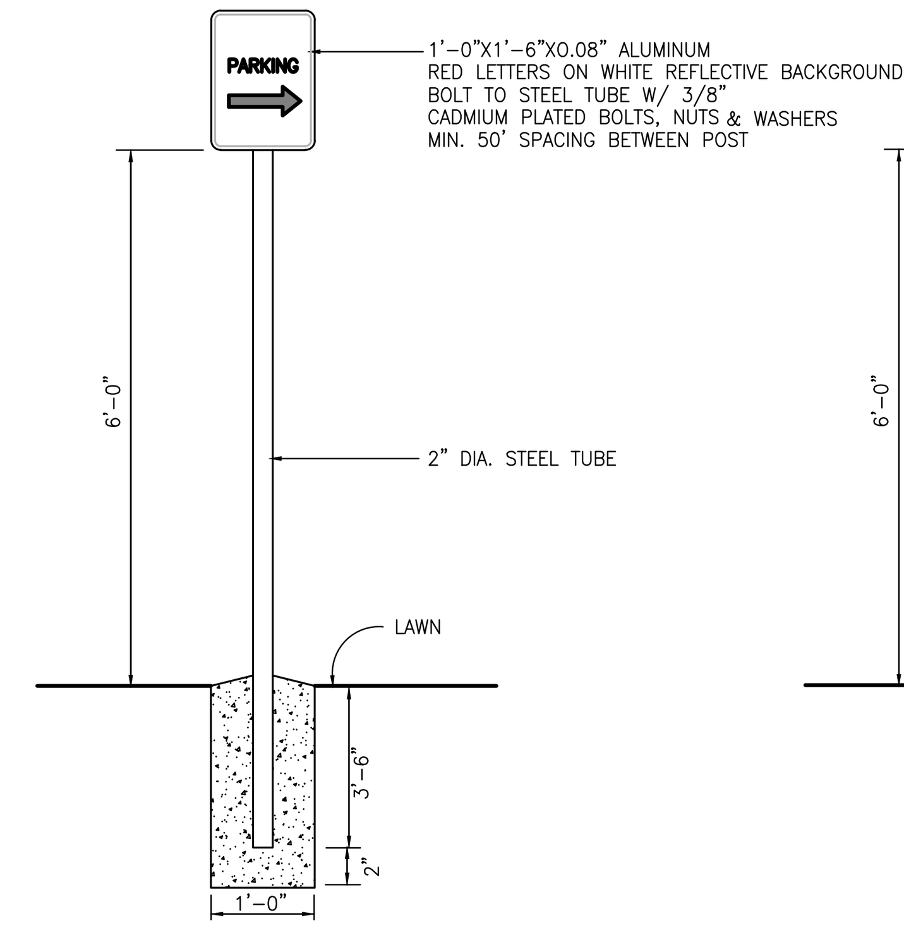

PARKING SIGN DETAIL
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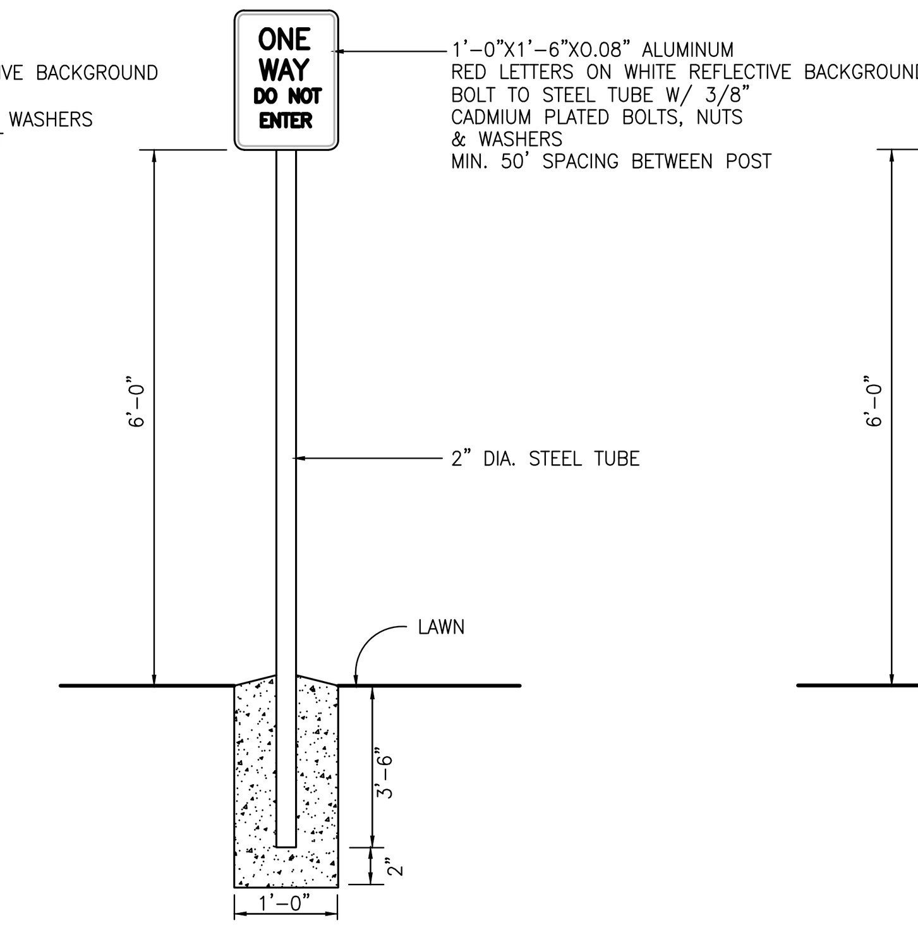
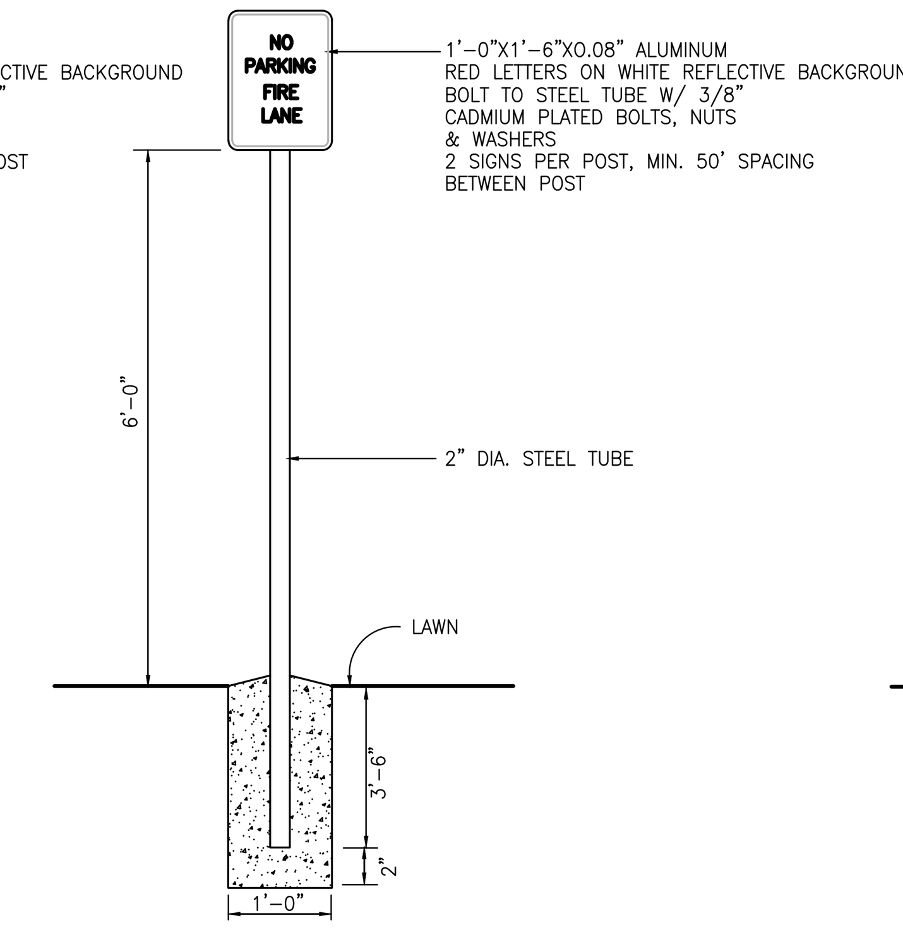
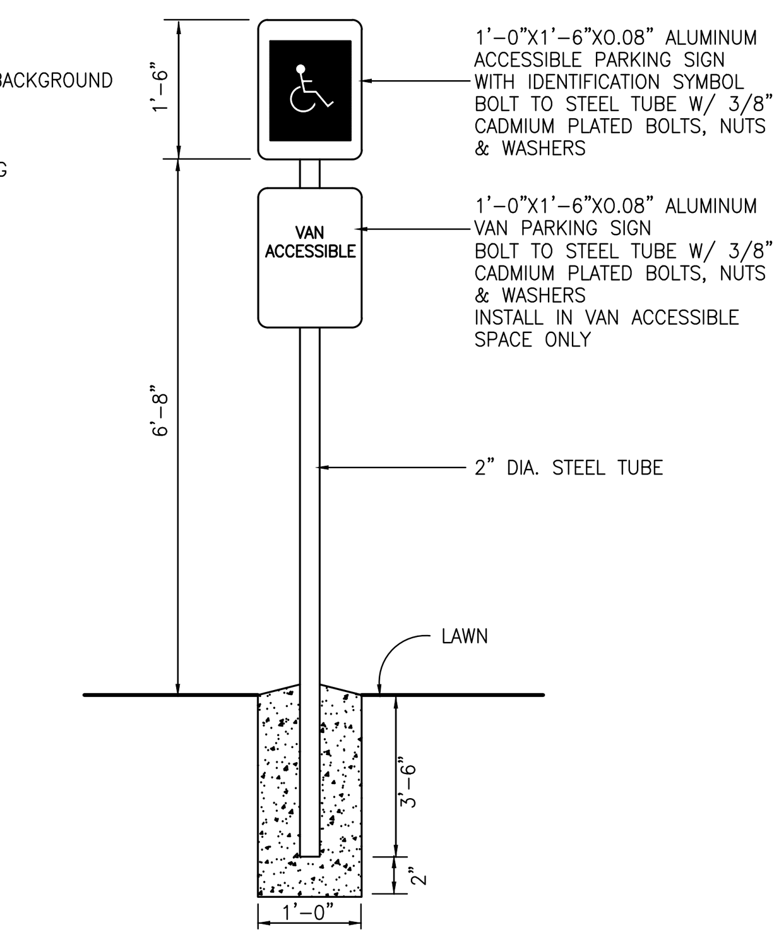


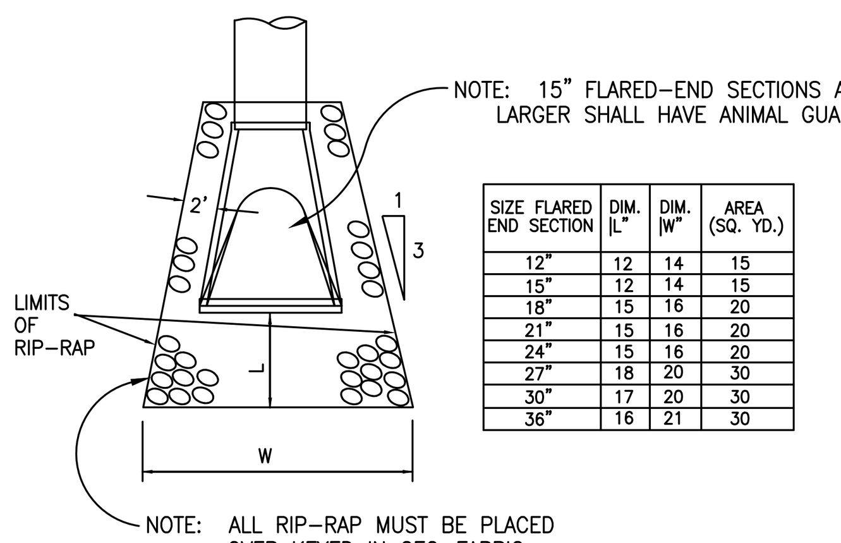
ONE WAY DO NOT ENTER SIGN DETAIL
(NO SCALE)



NO PARKING SIGN DETAIL
(NO SCALE)

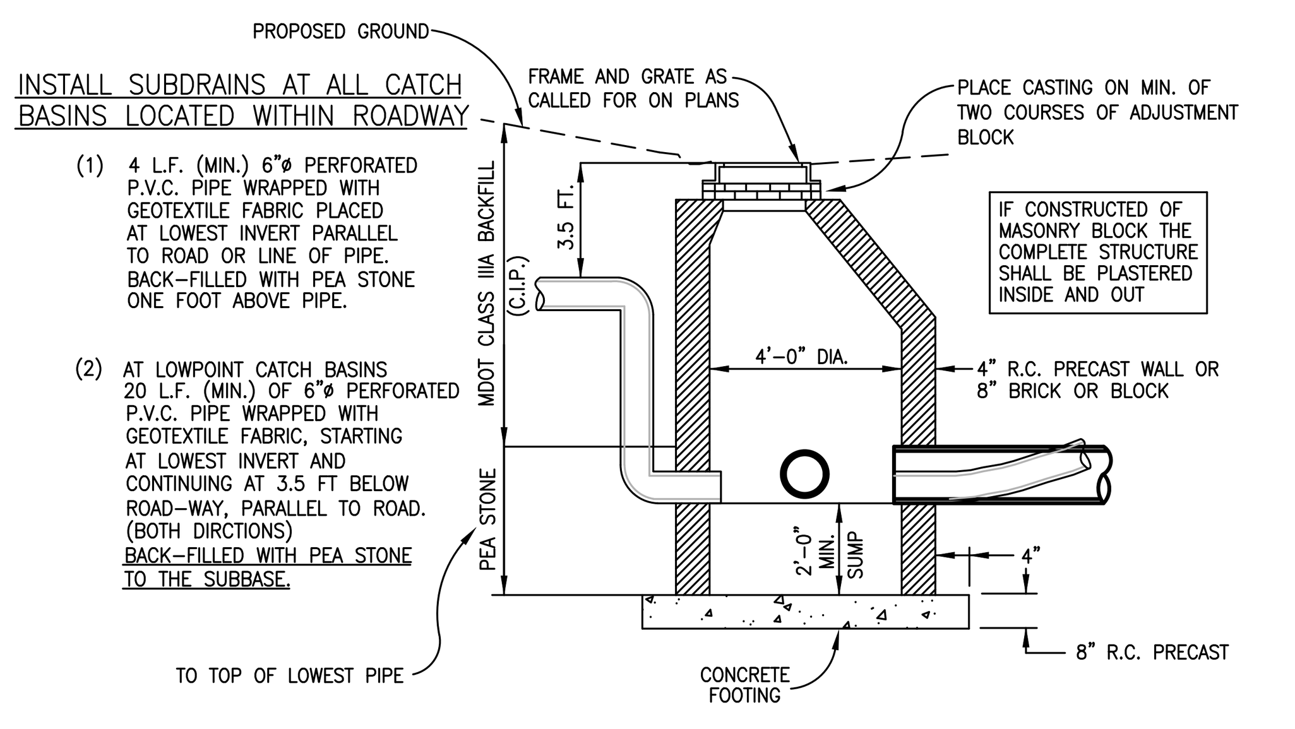


HANDICAP PARKING SIGN DETAIL
(NO SCALE)



SIZE FLARED END SECTION	DIM. "L"	DIM. "W"	AREA (SQ. YD.)
12"	12	14	15
15"	12	14	15
18"	15	16	20
21"	15	16	20
24"	15	16	20
27"	18	20	30
30"	17	20	30
36"	16	21	30

TYPICAL RIP-RAP DETAIL
(SCALE: NONE)

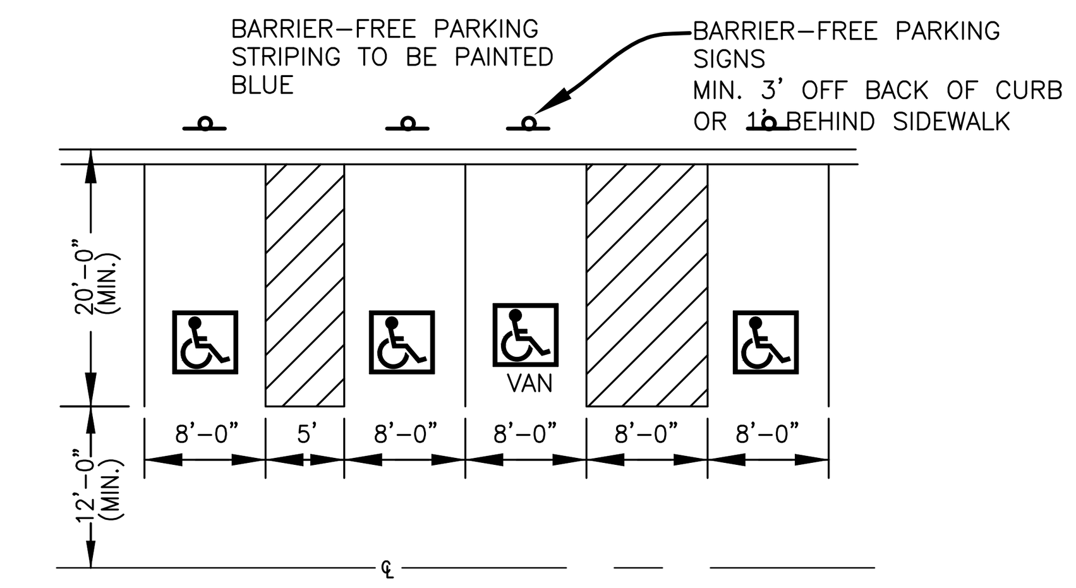


INSTALL SUBDRAINS AT ALL CATCH BASINS LOCATED WITHIN ROADWAY

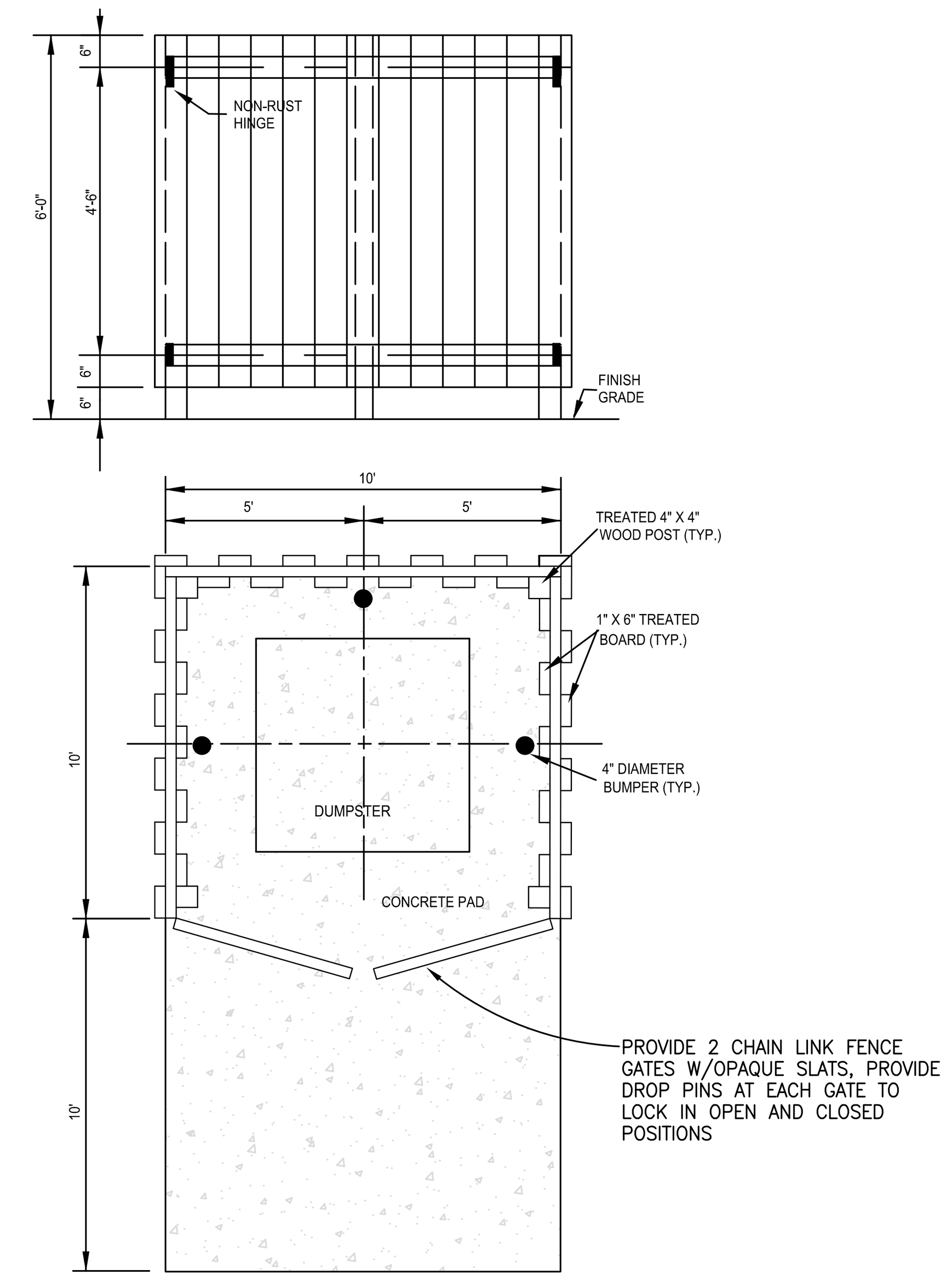
(1) 4 L.F. (MIN.) 6"ø PERFORATED P.V.C. PIPE WRAPPED WITH GEOTEXTILE FABRIC PLACED AT LOWEST INVERT PARALLEL TO ROAD OR LINE OF PIPE. BACK-FILLED WITH PEA STONE ONE FOOT ABOVE PIPE.

(2) AT LOWPOINT CATCH BASINS 20 L.F. (MIN.) OF 6"ø PERFORATED P.V.C. PIPE WRAPPED WITH GEOTEXTILE FABRIC, STARTING AT LOWEST INVERT AND CONTINUING AT 3.5 FT BELOW ROAD-WAY, PARALLEL TO ROAD. (BOTH DIRCTIONS) BACK-FILLED WITH PEA STONE TO THE SUBBASE.

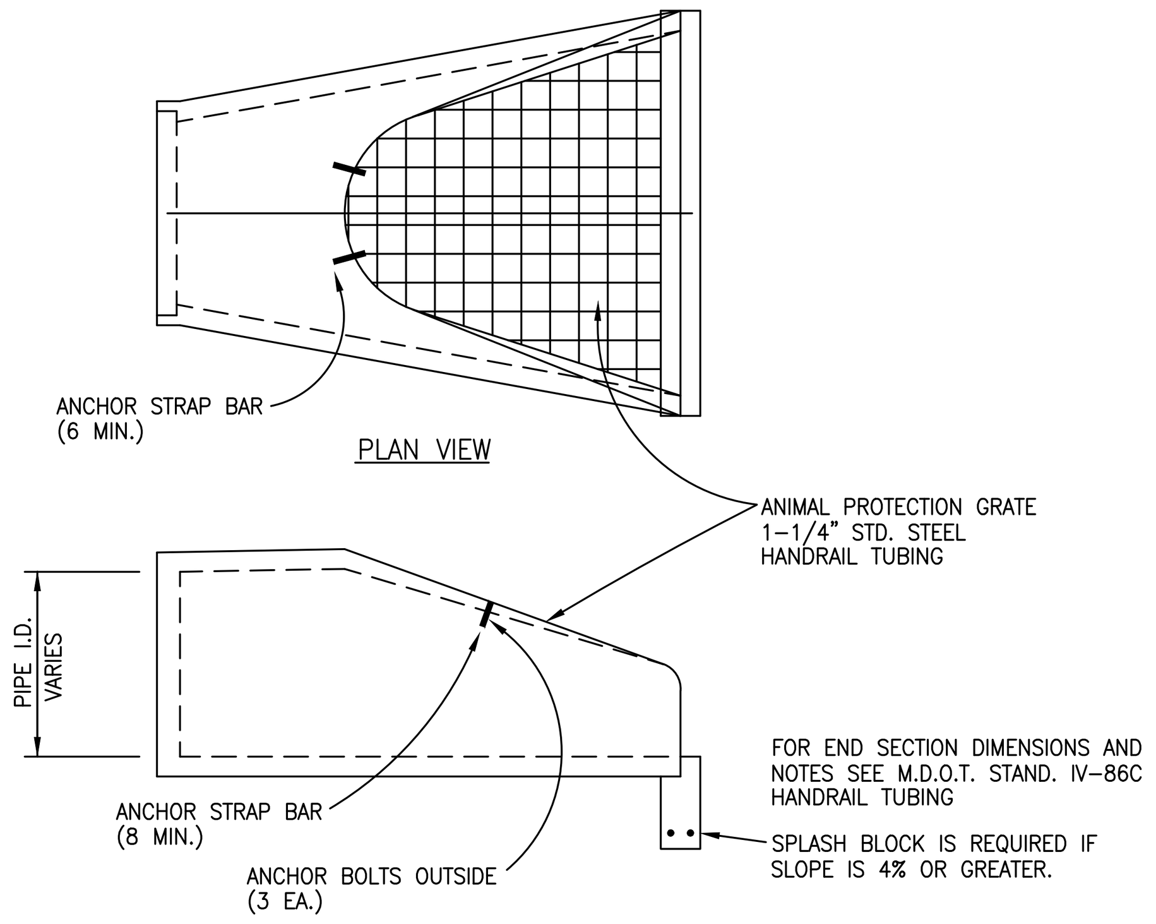
4 FT. DIA. CATCH BASIN W/SUMP
NO SCALE



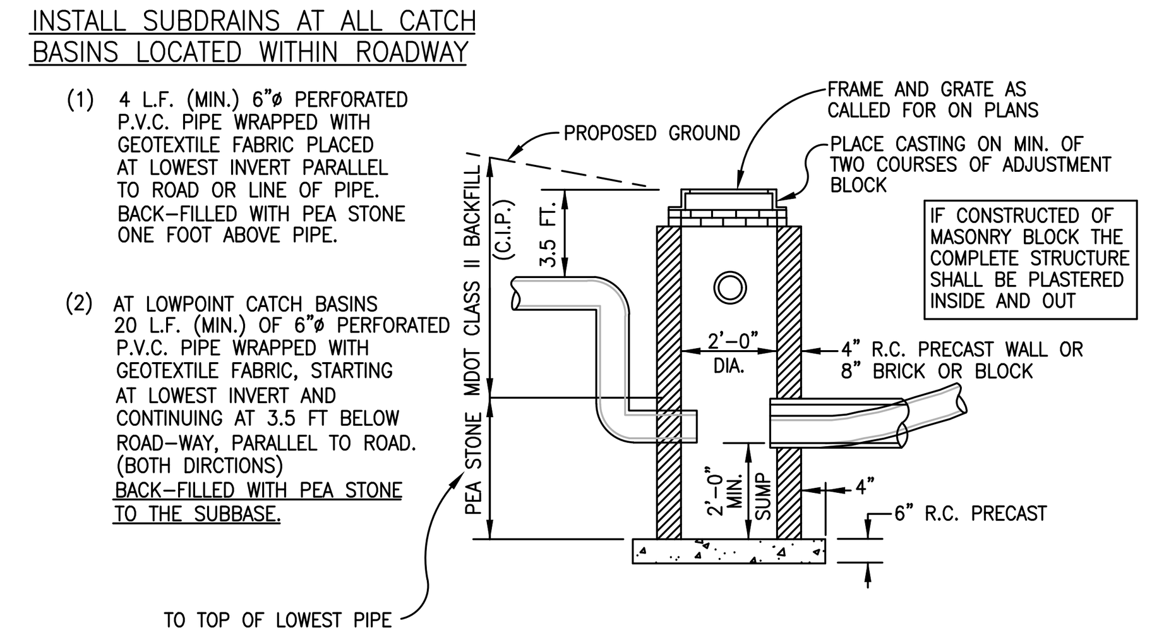
TYPICAL BARRIER FREE PARKING SPACE
(NO SCALE)



DUMPSTER ENCLOSURE DETAIL
(NO SCALE)



PRECAST CONCRETE END SECTION FOR PIPE CULVERT W/ ANIMAL GRATE
(NO SCALE)

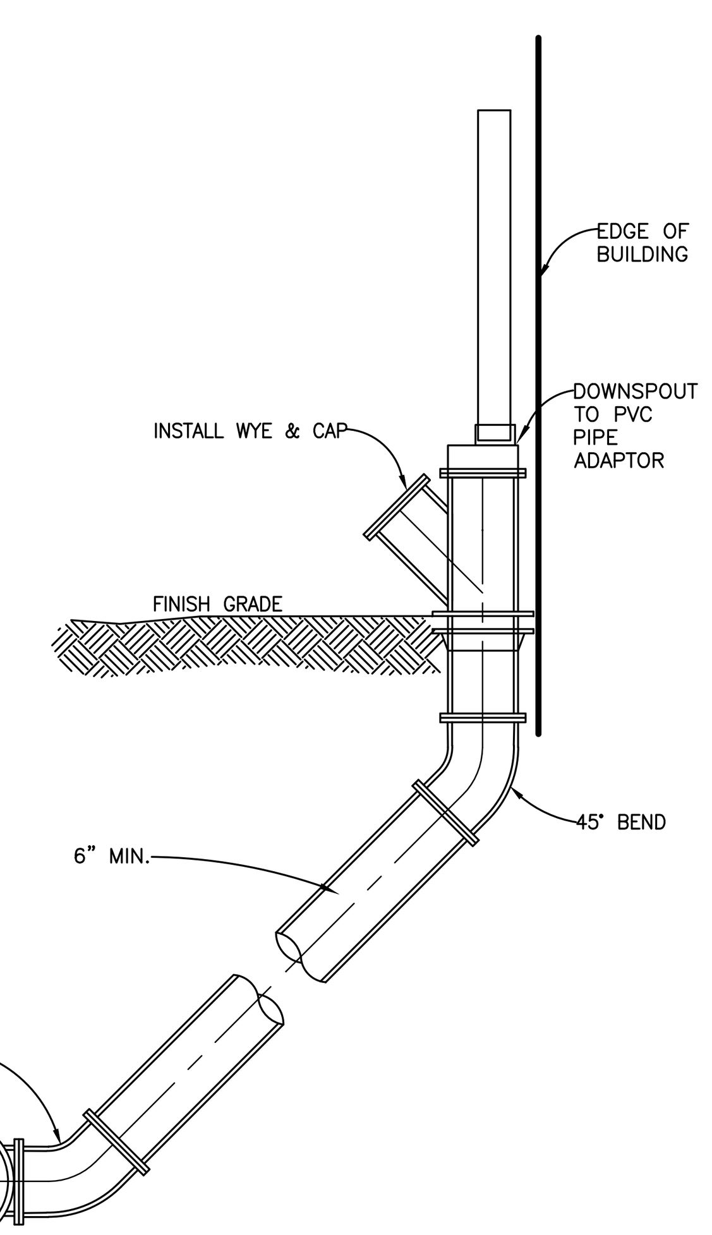


INSTALL SUBDRAINS AT ALL CATCH BASINS LOCATED WITHIN ROADWAY

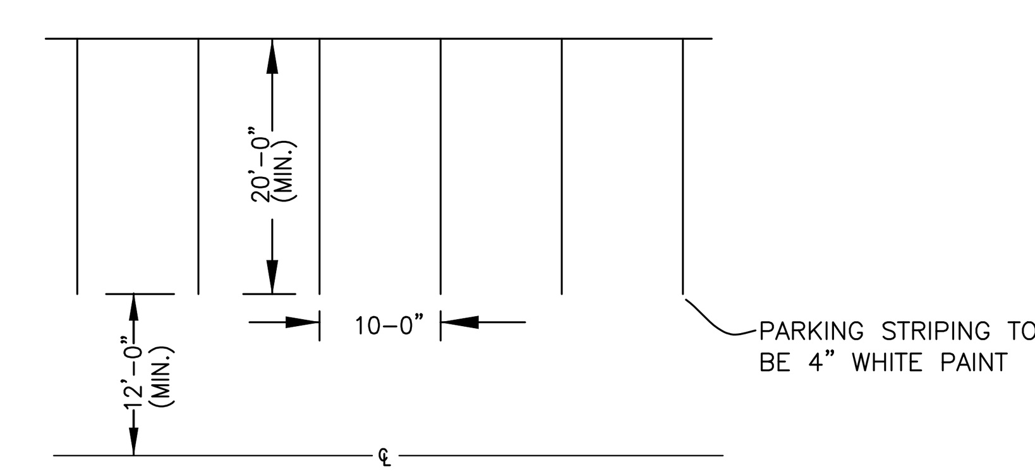
(1) 4 L.F. (MIN.) 6"ø PERFORATED P.V.C. PIPE WRAPPED WITH GEOTEXTILE FABRIC PLACED AT LOWEST INVERT PARALLEL TO ROAD OR LINE OF PIPE. BACK-FILLED WITH PEA STONE ONE FOOT ABOVE PIPE.

(2) AT LOWPOINT CATCH BASINS 20 L.F. (MIN.) OF 6"ø PERFORATED P.V.C. PIPE WRAPPED WITH GEOTEXTILE FABRIC, STARTING AT LOWEST INVERT AND CONTINUING AT 3.5 FT BELOW ROAD-WAY, PARALLEL TO ROAD. (BOTH DIRCTIONS) BACK-FILLED WITH PEA STONE TO THE SUBBASE.

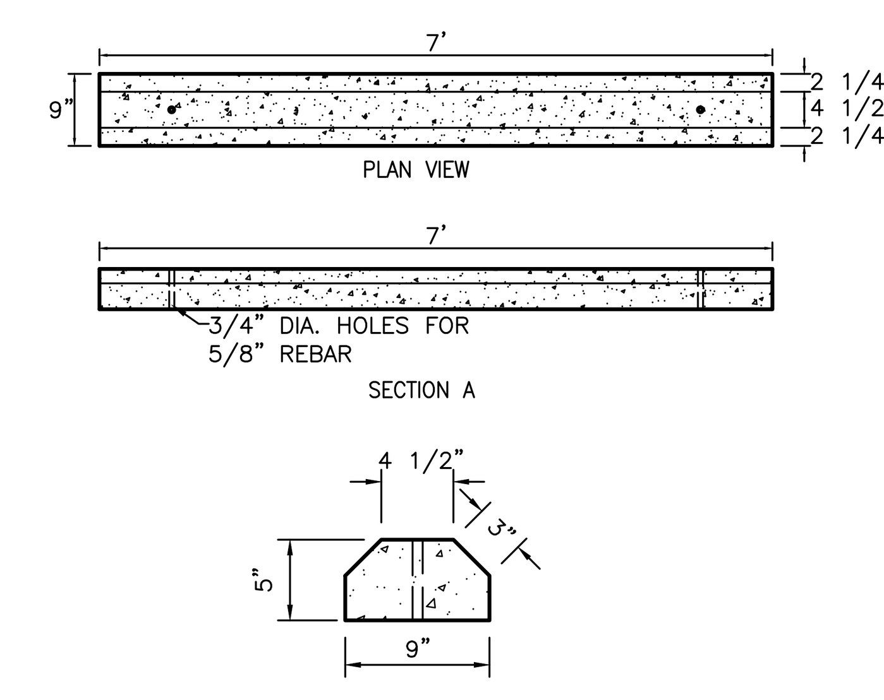
2 FT. DIA. CATCH BASIN W/SUMP
NO SCALE



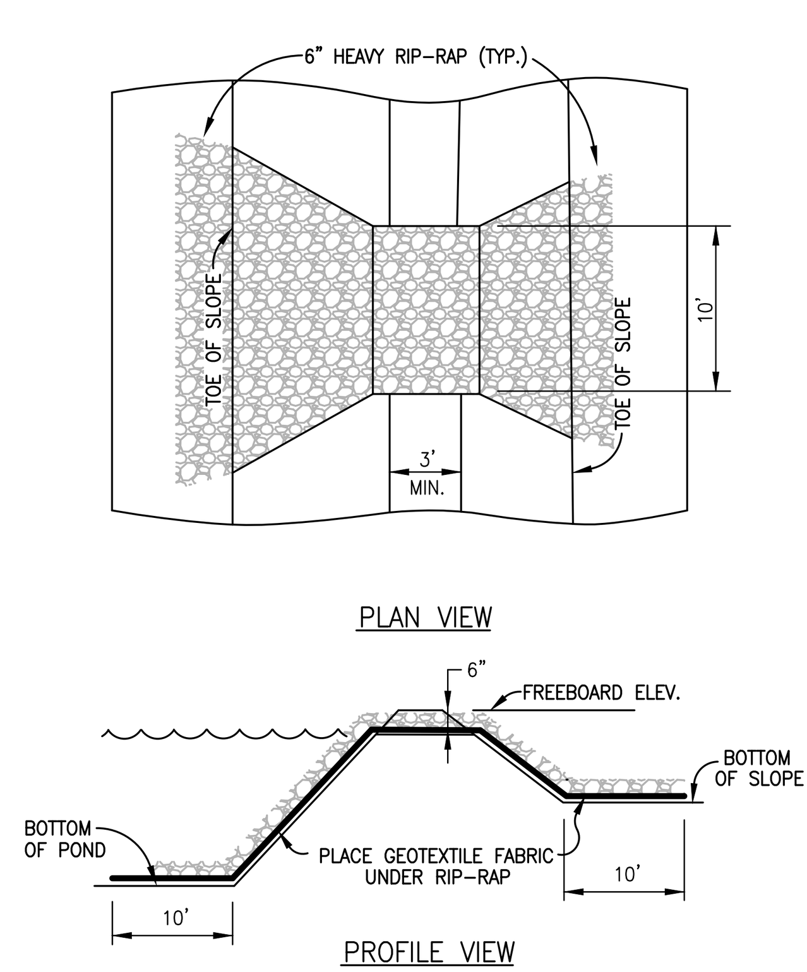
ROOF DRAIN CLEANOUT DETAIL
NO SCALE



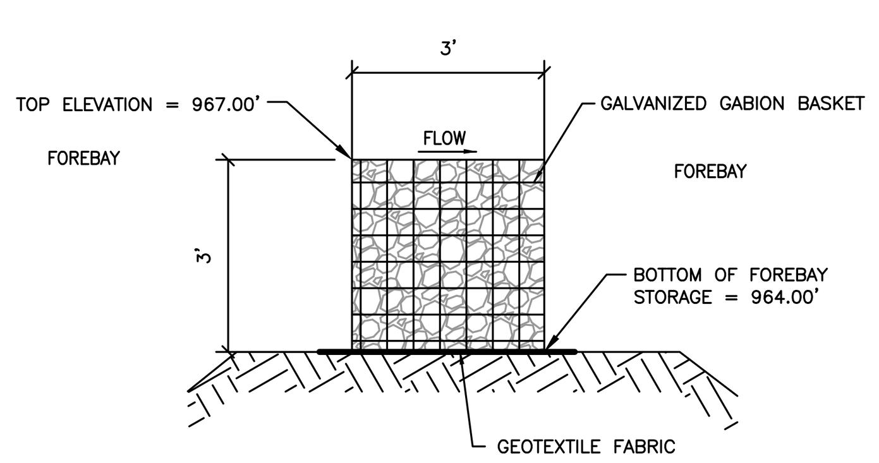
TYPICAL PARKING SPACE
(NO SCALE)



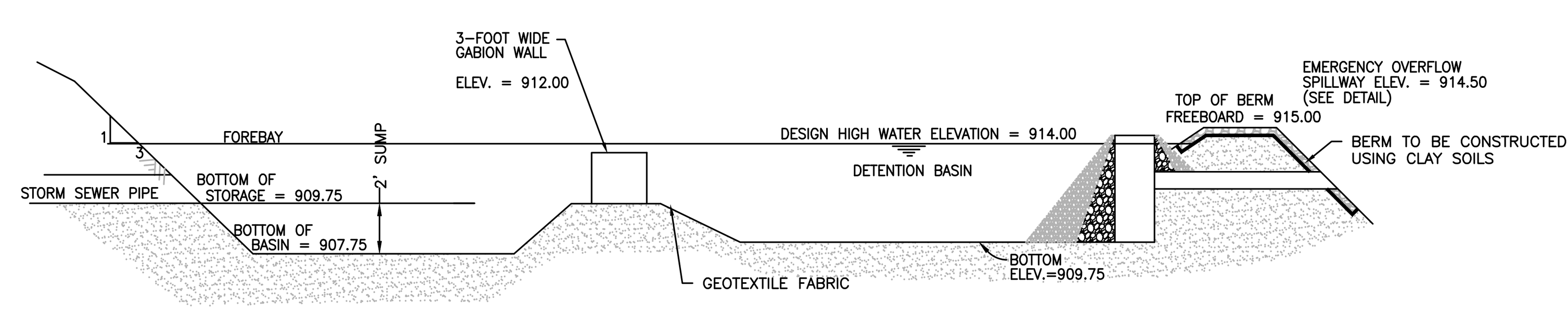
CONCRETE WHEEL STOP DETAIL
(NO SCALE)



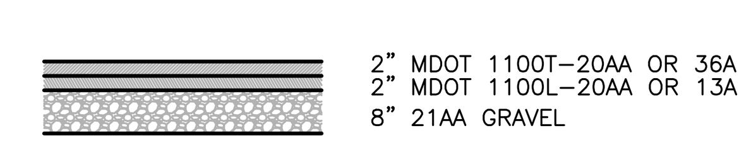
EMERGENCY SPILLWAY DETAIL
NO SCALE



FOREBAY GABION WALL DETAIL
NOT TO SCALE



DETENTION BASIN CROSS SECTION
NOT TO SCALE



ASPHALT SECTION
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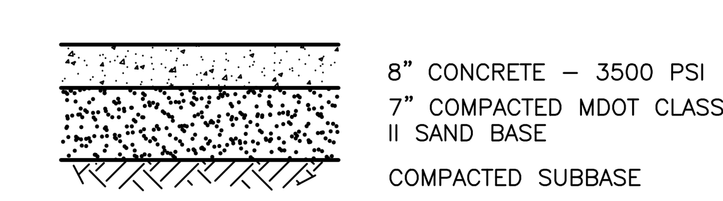

CONCRETE PAVEMENT CROSS SECTION
(NO SCALE)

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1-800-482-7171 (TOLL FREE)
FOR THE LOCATION OF UNDERGROUND FACILITIES

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT: ST. VLADIMIR RUSSIAN ORTHODOX CHURCH

PREPARED FOR: DANGEROUS ARCHITECTS
104 S MAIN ST
CHELSEA, MI 48118
734.475.3660

TITLE: CONSTRUCTION DETAILS

NO	BY	REVISION PER	DATE
-	-	-	-

DESIGNED BY: BL
DRAWN BY: JP
CHECKED BY:
SCALE: NO SCALE
JOB NO: 24-001
DATE: 02/28/24
SHEET NO. 8

WCWRC BASIN CALCULATIONS

Part E. STANDARD METHOD RUNOFF VOLUME WORK SHEETS

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

Total Site Area = 10.30 ac
Total Site Area Excluding "Self- Crediting" BMPs = 10.30 ac[A]

Rational Method Variables[B]

Cover Type	Soil Type	Area (ft²)	Area(ac)	Runoff Coefficient (c)	(C) (Area)
GRASS	B- MmB Miami Loam	302,107	6.94	0.30	2.41
BASIN	B- MmB Miami Loam	20,168	0.46	0.30	0.14
IMPERVIOUS	B- MmB Miami Loam	126,453	2.90	0.95	2.76

Total - ∑(C)(Area) = 4.98
Area Total - ∑ac or ∑sf = 10.30
Weighted C - ∑(C)(Area)/∑ac or ∑sf = 0.48

NRCS Variables[C]

Pervious Cover Type	Soil Type	Area (ft²)	Area(ac)	Curve Number	(CN) (Area)
GRASS	B- MmB Miami Loam	302,107	6.94	58	402.25
BASIN	B- MmB Miami Loam	20,168	0.46	58	26.85

Total - ∑(CN)(Area) = 429.11
Area Total - ∑ac or ∑sf = 7.40
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 58

NRCS Variables[C]

Impervious Cover Type	Soil Type	Area (ft²)	Area(ac)	Curve Number	(CN) (Area)
IMPERVIOUS	B- MmB Miami Loam	126,453	2.90	98	284.49

Total - ∑(CN)(Area) = 284.49
Area Total - ∑ac or ∑sf = 2.90
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 98

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

W2 Standard Method Runoff Volume Calculations

First Flush Runoff Calculations (V_{ff})

A.

$$V_{ff}=(1")\left(\frac{1'}{12"}\right)\left(\frac{43560ft^2}{1ac}\right)AC \qquad V_{ff}=(1")\left(\frac{1'}{12"}\right)\left(\frac{43560ft^2}{1ac}\right)(10.30)(0.48)$$

V_{ff} = 18,068 ft^3

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

W3 Standard Method Runoff Volume Calculations

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

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

B. The pre-development land cover will be **Good Cover Woods or Meadow.** Determine the associated soil hydrologic group for the entire site and choose the curve number. — CN = 58

C. $S = \frac{1000}{CN} - 10$ $\qquad S = \frac{1000}{58} - 10$ $\qquad S$ = 7.24 in

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\qquad Q = \frac{(2.35-(0.2)(7.24))^2}{(2.35+(0.8)(7.24))}$ $\qquad Q$ = 0.10 in

E. Total Site Area (sf) excluding "Self- Crediting" BMPs — Area = 448,729 sf

F. $V_{bf\text{-}pre} = Q(1/12)Area$ $\qquad V_{bf\text{-}pre} = (0.10)(1/12)$ (448,729) $\qquad V_{bf\text{-}pre}$ = 3,734 ft^3

W4 Standard Method Runoff Volume Calculations

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

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

B. Pervious Cover CN From Worksheet 1 — CN = 58

C. $S = \frac{1000}{CN} - 10$ $\qquad S = \frac{1000}{58} - 10$ $\qquad S$ = 7.24 in

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\qquad Q = \frac{(2.35-(0.2)(7.24))^2}{(2.35+(0.8)(7.24))}$ $\qquad Q$ = 0.10 in

E. Pervious Cover Area from Worksheet 1 — Area = 322,276 sf

F. $V_{bf\text{-}per\text{-}post} = Q(1/12)Area$ $\qquad V_{bf\text{-}per\text{-}post} = (0.10)(1/12)$ (322,276) $\qquad V_{bf\text{-}per\text{-}post}$ = 2,682 ft^3

W5 Standard Method Runoff Volume Calculations

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

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

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

C. $S = \frac{1000}{CN} - 10$ $\qquad S = \frac{1000}{98} - 10$ $\qquad S$ = 0.20 in

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\qquad Q = \frac{(2.35-(0.2)(0.20))^2}{(2.35+(0.8)(0.20))}$ $\qquad Q$ = 2.12 in

E. Impervious Cover Area from Worksheet 1 — Area = 126,453 sf

F. $V_{bf\text{-}imp\text{-}post} = Q(1/12)Area$ $\qquad V_{bf\text{-}imp\text{-}post} = (2.12)(1/12)$ (126,453) $\qquad V_{bf\text{-}imp\text{-}post}$ = 22,358 ft^3

W6 Standard Method Runoff Volume Calculations

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

A. 100-year Storm Event — P = 5.11in

B. Pervious Cover CN From Worksheet 1 — CN = 58

C. $S = \frac{1000}{CN} - 10$ $\qquad S = \frac{1000}{58} - 10$ $\qquad S$ = 7.24 in

D. $Q_{100\text{-}per} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\qquad Q_{100\text{-}per} = \frac{(5.11-(0.2)(7.24))^2}{(5.11+0.8(7.24))}$ $\qquad Q_{100\text{-}per}$ = 1.23 in

E. Pervious Cover Area from Worksheet 1 — Area = 322,276 sf

F. $V_{100\text{-}per\text{-}post} = Q(1/12)Area$ $\qquad V_{100\text{-}per\text{-}post} = (1.23)(1/12)$ (322,276) $\qquad V_{100\text{-}per\text{-}post}$ = 33,027 ft^3

W7 Standard Method Runoff Volume Calculations

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

A. 100-year Storm Event — P = 5.11in

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

C. $S = \frac{1000}{CN} - 10$ $\qquad S = \frac{1000}{98} - 10$ $\qquad S$ = 0.20 in

D. $Q_{100\text{-}imp} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\qquad Q_{100\text{-}imp} = \frac{(5.11-(0.2)(0.20))^2}{(5.11+0.8(0.20))}$ $\qquad Q_{100\text{-}imp}$ = 4.87 in

E. Impervious Cover CN From Worksheet 1 — Area = 126,453 sf

F. $V_{100\text{-}imp\text{-}post} = Q(1/12)Area$ $\qquad V_{100\text{-}imp\text{-}post} = (4.87)(1/12)$ (126,453) $\qquad V_{100\text{-}imp\text{-}post}$ = 51,350 ft^3

W8 Standard Method Runoff Volume Calculations

Determine Time of Concentration for Applicable Flow Types ($T_{c\text{-}hrs}$)

Flow Type	K	Change in Elevation	Length (L)	Slope % (S)	$S^{0.5}$	$V=K*S^{0.5}$	Tc=L/(V*3600)
Sheet Flow*	0.48	4.50	223	2.02%	1.4205	0.6819	0.0908
Waterway	1.2	7.50	569	1.32%	1.1481	1.3777	0.1147
Waterway	1.2	1.50	140.5	1.07%	1.0333	1.2399	0.0315
Waterway	1.2						
Waterway	1.2						
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Small Tributary	2.1						
Small Tributary	2.1						

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

Total Time of Concentration ($T_{c\text{-}hrs}$) = 0.2370

W9 Standard Method Runoff Volume Calculations

Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

First Flush Volume (V_{ff}) 18,068 ft³
Pre-Development Bankfull Runoff Volume ($V_{bf\text{-}pre}$) 3,734 ft³
Pervious Cover Post-Development Bankfull Volume ($V_{bf\text{-}per\text{-}post}$) 2,682 ft³
Impervious Cover Post-Development Bankfull Volume ($V_{bf\text{-}imp\text{-}post}$) 22,358 ft³
Total BF Volume ($V_{bf-post}$) 25,039 ft³
Pervious Cover Post-Development 100-year Volume ($V_{100\text{-}per\text{-}post}$) 33,027 ft³
Impervious Cover Post-Development 100-year Volume ($V_{100\text{-}imp\text{-}post}$) 51,350 ft³
Total 100-year Volume (V_{100}) 84,377 ft³

B. Determine Onsite Infiltration Requirement

Subtract the Pre-Development Bankfull from the Post-Development Bankfull volume
Total Post-Development Bankfull Volume ($V_{bf\text{-}post}$) 25,039 ft³
Pre-Development Bankfull Runoff Volume ($V_{bf\text{-}pre}$) 3,734 ft³
Bankfull Volume Difference 21,305 ft³

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

Onsite Infiltration Requirement (V_{inf}) 21,305 ft³

W10 Standard Method Runoff Volume Calculations

Detention/Retention Requirement

Detention

A. $Q_p = 238.6\,T_c^{-0.82}$ $\qquad Q_p = 238.6(0.2370)^{-0.82}$
Peak of the Unit Hydrograph $\qquad Q_p$ = 776.80 $cfs/in-mi^2$

B. *Total Site Area (ac) excluding "Self-Crediting" BMPs* — Area = 10.30 ac

C. $Q_{100} = Q_{100\text{-}per} + Q_{100\text{-}imp}$ $\qquad Q_{100}$ = 1.23 + 4.87
Note: $Q_{100\text{-}per}$ and $Q_{100\text{-}imp}$ from W6 and W7, respectively $\qquad Q_{100}$ = 6.10 in

D. Peak Flow (PF) = $\frac{Q_p\left(\frac{cfs}{in-mi^2}\right)Q_{100}(in)Area(ac)}{640}$ $\qquad PF = \frac{(776.80)(6.10)(10.30)}{640}$ $\qquad PF$ = 76 cfs

E. Δ = PF (cfs) – 0.15 Area(ac) $\qquad$ Δ = (76) -0.15 (10.30) $\qquad$ Δ = 75 cfs

F. $V_{det} = \frac{\Delta(cfs)}{PF(cfs)} V_{100}$ (ft³) $\qquad V_{det} = \frac{(75)}{(76)}$ (84,377) $\qquad V_{det}$ = 82,669 ft³

V_{det} = Calculated Detention (ft³), not including volume reduction credit for infiltration or penalty

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

Retention

A. $V_{ret} = 2(V_{100})$ $\qquad V_{ret}$ = 2(______) $\qquad V_{ret}$ = ______ ft³

W11 Standard Method Runoff Volume Calculations

Determine Applicable BMPs and Associated Volume Credits

Proposed BMP[A]	Area (ft²)	Storage Volume[B] (ft³) Surface Soil	Ave. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[C] (ft³)	Total Volume Reduction[D] (ft³)
Pervious Pavement w/Infiltration Bed	-	-	-	-	-
Infiltration Basin	-	-	-	-	-
Subsurface Infiltration Bed	-	-	-	-	-
Infiltration Trench	-	-	-	-	-
Bioretention Systems	-	-	-	-	-
Rain Gardens	-	-	-	-	-
Dry Well	-	-	-	-	-
Bioswale	-	-	-	-	-
Vegetated Filter Strip	-	-	-	-	-
Green Roof	-	-	-	-	-

Total Volume Reduction Credit by Proposed Structural BMPs (ft³) -
Runoff Volume Infiltration Requirement (V_{inf}) from Worksheet 9 - -
Runoff Volume Credit (ft³) = -

[A] Complete checklist from Section VI for each Structural BMP type
[B] Storage volume as defined in individual BMP write-ups
[C] Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area:
Infiltration Rate x 6 hours x BMP Area x Unit Conversions = Infiltration Volume (ft³)
[D] Total Volume Reduction Credit is the sum of the Storage Volume and the Infiltration Volume During Storm

W12 Natural Features Inventory

1. Provide Natural Resources Map. This map should identify waterbodies, floodplains, riparian areas, wetlands, woodlands, natural drainage ways, steep slopes and other natural features.
2. Summarize the existing extent of each natural resource in the Existing Natural Resources Table.
3. Summarize total proposed Protected/Undisturbed Area.
4. Do not count any area twice. For example, an area that is both a floodplain and a wetland may only be considered once (include as either floodplain or wetland, not both).

Existing Natural Resources	Mapped (yes, no, n/a)	Total Area (ac)	Protected/Undisturbed Area (ac)
Waterbodies	N/A	-	-
Floodplains	N/A	-	-
Riparian Areas	N/A	-	-
Wetlands	N/A	-	-
Woodlands	N/A	-	-
Natural Drainage Area	N/A	-	-
Steep Slopes, 15%-25%	N/A	-	-
Steep Slopes, over 25%	N/A	-	-
Special Habitat Areas	N/A	-	-
Other	N/A	-	-
TOTAL EXISTING (ac)	N/A	-	-

W13 Summary

Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Minimum Onsite Infiltration Requirement, V_{inf} 21,305 ft³
Designed/Provided Infiltration Volume 0 ft³
% Minimum Required Infiltration Provided 0 %
Total Calculated Detention Volume, V_{det} 82,669 ft³
Net Required Detention Volume (V_{det} *- Designed/Provided Infiltration Volume)* 82,669 ft³

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

% Required Infiltration NOT provided (*100% - % Minimum Required Infiltration Provided)* 100 %
Net % Penalty (*20% x % Required Infiltration NOT Provided)* 20 %
Total Required Detention Volume, including penalty *[(100% + Net % Penalty) x Net Required Detention Volume)]* 99,202 ft³

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

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 (TOLL FREE) FOR THE LOCATION OF UNDERGROUND FACILITIES

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT: ST. VLADIMIR RUSSIAN ORTHODOX CHURCH

PREPARED FOR: DANGEROUS ARCHITECTS, 104 S MAIN ST, CHELSEA, MI 48118, 734.475.3660

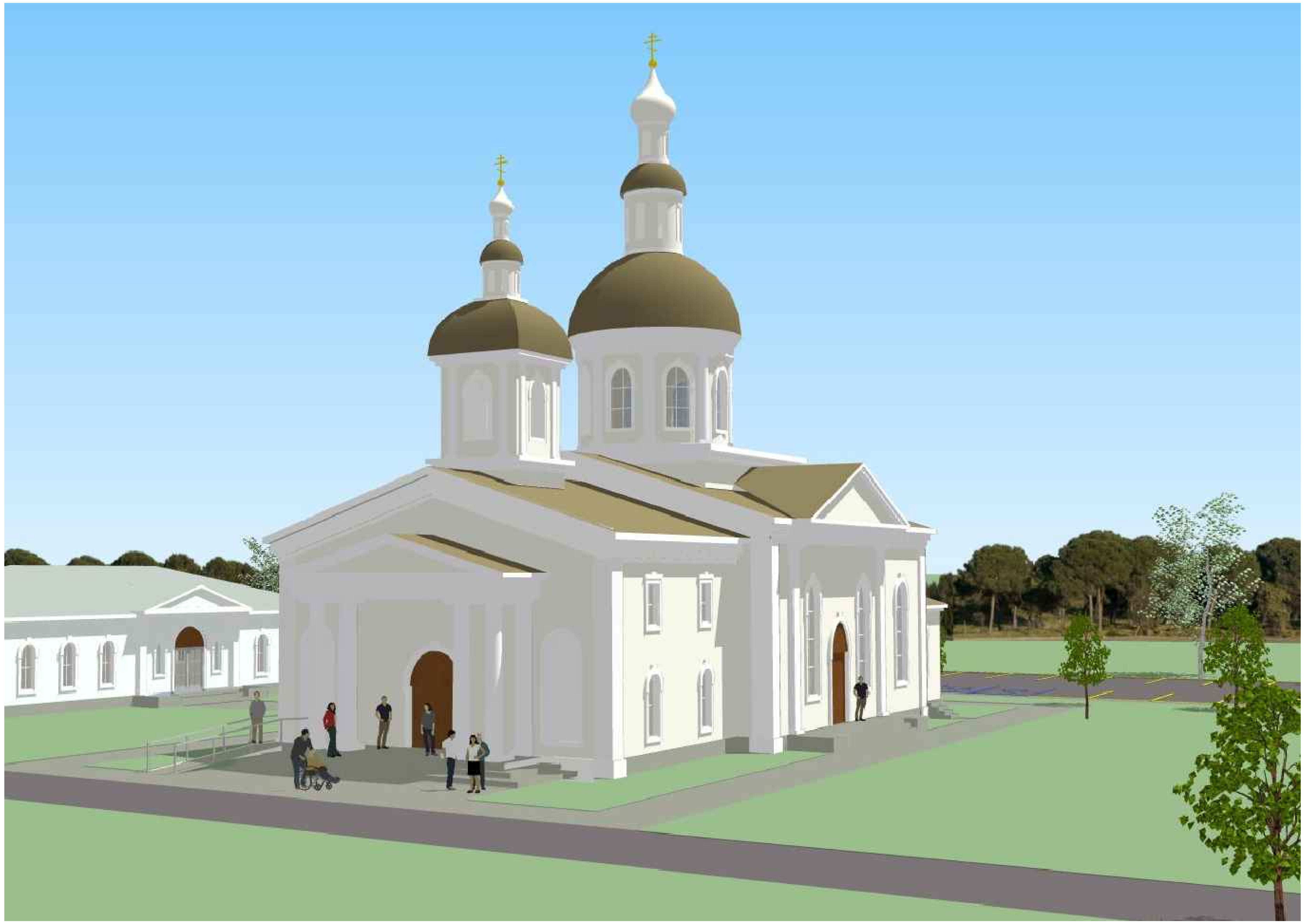
TITLE: WCWRC STORMWATER CALCULATION DETAILS

NO	BY	REVISION PER	DATE
-	-	-	-

DESIGNED BY: BL
DRAWN BY: JP
CHECKED BY:
SCALE: NO SCALE
JOB NO: 24-001
DATE: 02/28/24
SHEET NO. 9

NEW CATHEDRAL

ST. VLADIMIR RUSSIAN ORTHODOX CHURCH



GENERAL NOTES:

A. THE CONTRACTOR SHALL ADHERE TO THE DRAWINGS AND SPECIFICATIONS HEREIN. ANY DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS MUST BE APPROVED IN WRITING. THE ARCHITECT WILL NOT BE HELD LIABLE FOR DAMAGES RESULTING FROM UNAUTHORIZED DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS.

B. VERIFY PROPERTY AND SETBACK LINES PRIOR TO STAKING OUT NEW WORK.

C. DO NOT SCALE OFF FROM THE DRAWINGS. IF DIMENSIONAL QUESTIONS ARISE, CONTACT THE ARCHITECT.

D. ALL CONSTRUCTION WORK SHALL BE IN CONFORMANCE WITH THE LIFE SAFETY CODE, MICHIGAN 2015 BUILDING CODE, THE MICHIGAN BARRIER FREE CODE, AND THE ADA LAW.

E. ALL MECHANICAL WORK SHALL BE IN COMPLIANCE WITH THE MICHIGAN MECHANICAL CODE.

F. ALL ELECTRICAL WORK SHALL BE IN COMPLIANCE WITH THE MICHIGAN ELECTRICAL CODE.

G. VERIFY ALL EXISTING CONDITIONS PRIOR TO PROVIDING QUOTATIONS, OR ORDERING MATERIALS.

H. CALL MISS DIG TO LOCATE UTILITIES PRIOR TO EXCAVATION.

I. ALL DIMENSIONS ARE TO EDGE OF DRIVES, WALKS, FACE OF C.M.U., FACE OF STUDS, AND CENTERLINE OF DOORS / WINDOWS, AND POSTS, UNLESS NOTED OTHERWISE.

SYMBOLS

ELEVATION MARKER — DETAIL NUMBER / SHEET NUMBER

DETAIL MARKER — DETAIL NUMBER / SHEET NUMBER

DRAWING TITLE — DETAIL NUMBER / Drawing / SCALE: / ST. VLADIMIR / SHEET NUMBER

WALL SECTION MARKER — DETAIL NUMBER / SHEET NUMBER

SECTION MARKER — DETAIL NUMBER / SHEET NUMBER

DOOR TAG — DOOR NUMBER

ROOM TAG — ROOM NUMBER

WINDOW TAG — WINDOW NUMBER

ABBREVIATIONS:

@	AT	HR.	HOUR
?	ANGLE	I.D.	INSIDE DIAMETER
?	CENTER LINE	INT.	INTERIOR
ø	DIAMETER, ROUND	INV.	INVERT
#	NUMBER, POUNDS	INS.	INSULATION
ACT.	ACOUSTICAL CEILING TILE	JT.	JOINT
ADJ.	ADJACENT	LBS.	POUNDS
A.F.F.	ABOVE FINISHED FLOOR	LAV.	LAVATORY
ALT	ALTERNATE	LLV.	LONG LEG VERTICAL
ALUM	ALUMINUM	LLH.	LONG LEG HORIZONTAL
BD.	BOARD	MDF.	MEDIUM DENSITY FIBERBOARD
BM.	BENCHMARK, BEAM	MH.	MANHOLE
BRG.	BEARING	MFR.	MANUFACTUR(ER)
BSMT.	BASEMENT	M.O.	MASONRY OPENING
BIT.	BITUMINOUS	MAX.	MAXIMUM
BLK.	BLOCK	MECH.	MECHANICAL
BLKG.	BLOCKING	MIN.	MINIMUM
B.O.T.	BOTTOM OF TRUSS	MISC.	MISCELLANEOUS
BOT.	BOTTOM	NO.	NUMBER
BLDG.	BUILDING	N.	NORTH
C.J.	CONTROL JOINT, CONSTRUCTION JOINT	N.I.C.	NOT IN CONTRACT
CLR.	CLEAR	N.T.S.	NOT TO SCALE
CAB.	CABINET	O.S.B.	ORIENTED STRAN BOARD
CPT.	CARPET(ED)	O.C.	ON CENTER
C.B.	CATCH BASIN	OPP.	OPPOSITE
CLG.	CEILING	O.D.	OUTSIDE DIAMETER
C.T.	CERAMIC TILE	OPNG.	OPENING
COL.	COLUMN	O.H.	OVERHEAD
CONC.	CONCRETE	PNT.	PAINT
C.M.U.	CONCRETE MASONRY UNIT	PLAM.	PLASTIC LAMINATE
CONST.	CONSTRUCTION	PLWD.	PLYWOOD
CONT.	CONTINUE, (ED), (OUS)	PTD.	PAINTED
CONTR.	CONTRACT(OR)	PVC.	POLYVINYL CHLORIDE
DIA.	DIAMETER	Q.T.	QUARRY TILE
DWG.	DRAWING	R, RAD.	RADIUS
D.S.	DOWNSPOUT	R.A.	RETURN AIR
DET.	DETAIL	REF.	REFERENCE
DBL.	DOUBLE	RQD.	REQUIRED
DR.	DOOR	R.O.W.	RIGHT OF WAY
E	EGRESS	R.D.	ROOF DRAIN
EF.	EXHAUST FAN	RM	ROOM
E.O.	EVERY OTHER	R.O.	ROUGH OPENING
EPDM.	ETHYLENE PROPYLENE DIENE MONOMER	S.	SOUTH
ELEC.	ELECTRIC(AL)	SCH.	SCHEDULE
ELEV.	ELEVATOR	SSK	SERVICE SINK
EQ.	EQUAL	SK	SINK
EXH.	EXHAUST	SHT	SHEET
E.J.	EXPANSION JOINT	SIM.	SIMILAR
EXT.	EXTERIOR	SPEC.	SPECIFICATION(S)
EIFS.	EXTERIOR INSULATION FINISHING SYSTEM	SQ.	SQUARE
EXTG.	EXISTING	SHTG.	SHEATHING
FIN.	FINISH(ED)	S.S.	STAINLESS STEEL
FT.	FOOT, FEET	STD.	STANDARD
FG.	FIBERGLASS	STL.	STEEL
F.A.	FIRE ALARM	STR.	STRUCTURAL
F.B.O.	FURNISHED BY OWNER	T.	TOILET
F.E.	FIRE EXTINGUISHER	T&G	TONGUE & GROOVE
FURN.	FURNISH(ED)	TR.	TREAD
FLR.	FLOOR(ING)	TERR.	TERRAZO
F.D.	FLOOR DRAIN	T.M.E.	TO MATCH EXISTING
FTG.	FOOTING	T.O.S.	TOP OF STEEL
FND.	FOUNDATION	T.O.C.	TOP OF CONCRETE
G.C.	GENERAL CONTRACTOR	TYP.	TYPICAL
GL.	GLASS, GLAZING	UL	UNDERWRITERS LABORATORIES INC.
GPBD.	GYPSUM BOARD	V.	VOLT
HDR.	HEADER	VB	VINYL BASE
HDWD.	HARDWOOD	V.C.T.	VINYL COMPOSITION TILE
HDWE.	HARDWARE	VERT.	VERTICAL
HTG.	HEATING	V.I.F.	VERIFY IN FIELD
HVAC.	HEATING/ VENTILATION, AIR CONDITIONING	W.C.	WATER CLOSET
HT.	HEIGHT	W.W.M.	WELDED WIRE MESH
HTR.	HEATER	WTR.	WATER
H.M.	HOLLOW METAL	WD.	WOOD

SHEET INDEX:

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STATE OF MICHIGAN SCOTT McELRATH ARCHITECT No. 34189 LICENSED ARCHITECT

N

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ST. VLADIMIR

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SHEET NUMBER
T1

REINF. CONC. FTG. AT STAIRS ABOVE

02 A7

56'-0"

01 A8

16'-10½"

01 A7

31'-0"

4'-6"

3'-0"

REINF. CONC. FTG. AT STAIRS AND RAMP ABOVE

SLEEVE THRU WALL FOR WATER

(4) 6" DIA STL. POST ON 5' X 5' X 12" REINF. CONC. FTG.

14'-10½"

SLEEVE THRU WALL FOR SEPTIC

UP

4" DIA STL. POST of (4)

BASEMENT

SLAB ON GRADE ABOVE

SLAB ON GRADE

14'-0"

25'-6"

01 A9

CENTER OF PERGOLA ABOVE

12'-3"

42'-0"

52'-0"

50'-0"

44'-0"

18'-0"

46'-0"

44'-0"

7'-10½"

14'-3"

7'-10½"

ELEV.

FURNACE ROOM

ELEV. MAINT.

14'-10½"

ELECT. PANELS

SLEEVE THRU WALL FOR GAS

SLEEVE THRU WALL FOR ELECT.

4'-0"

01 A7

31'-0"

02 A7

01 A8

REINF. CONC. FTG. AT STAIRS ABOVE

01 A1 LOWER LEVEL PLAN

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

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GROSS SQUARE FOOTAGE

1364 SQ. FT.

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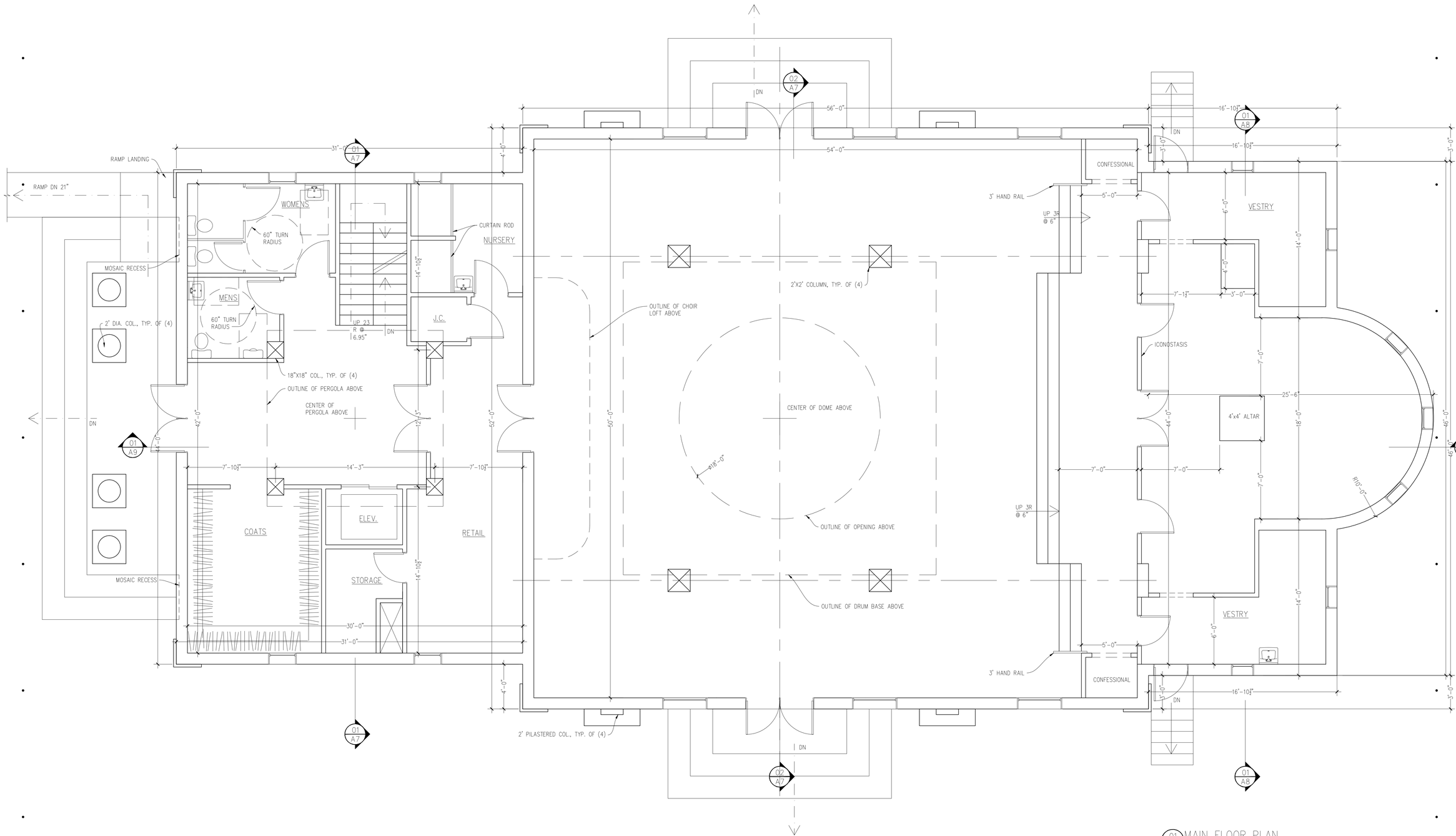

01 A2 MAIN FLOOR PLAN
SCALE: 1/4"=1'-0"
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GROSS SQUARE FOOTAGE
5179 SQ. FT.

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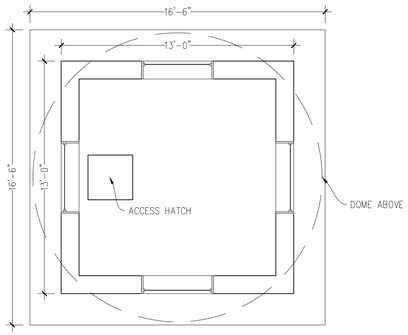
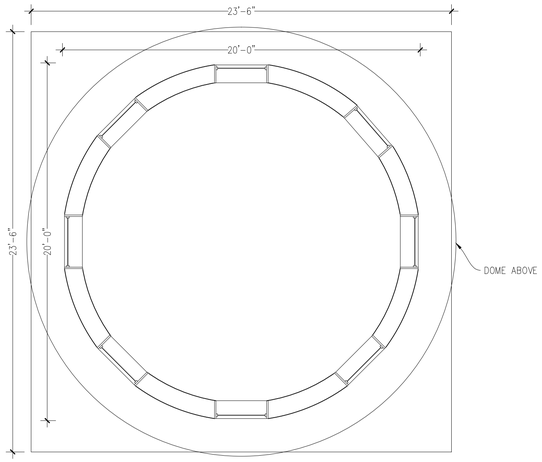


02 A3 BELL TOWER PLAN
SCALE: 1/4"=1'-0"
ST. VLADIMIR



03 A3 CENTER TOWER PLAN
SCALE: 1/4"=1'-0"
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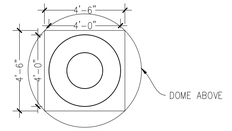
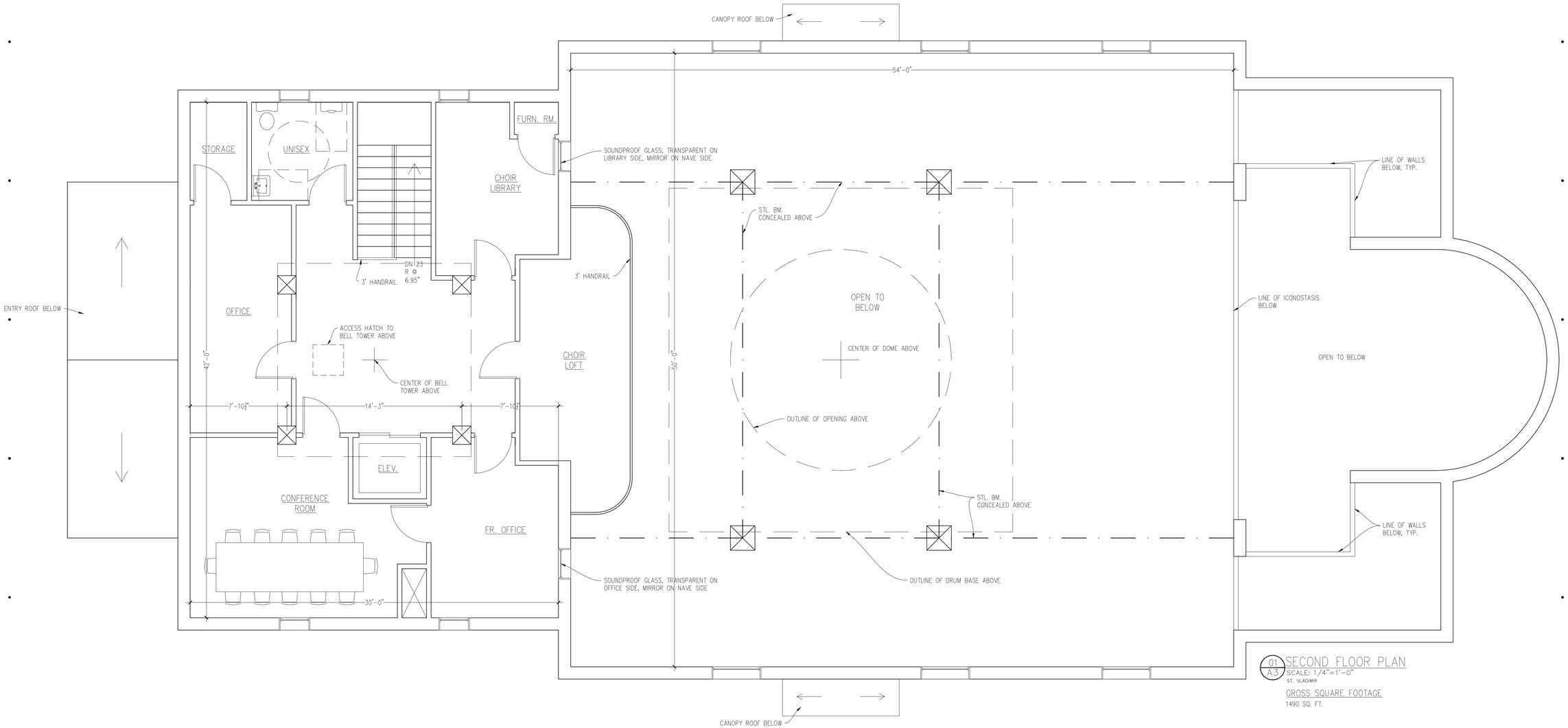


04 A3 APSE PLAN
SCALE: 1/4"=1'-0"
ST. VLADIMIR



01 A3 SECOND FLOOR PLAN
SCALE: 1/4"=1'-0"
ST. VLADIMIR

GROSS SQUARE FOOTAGE
1490 SQ. FT.

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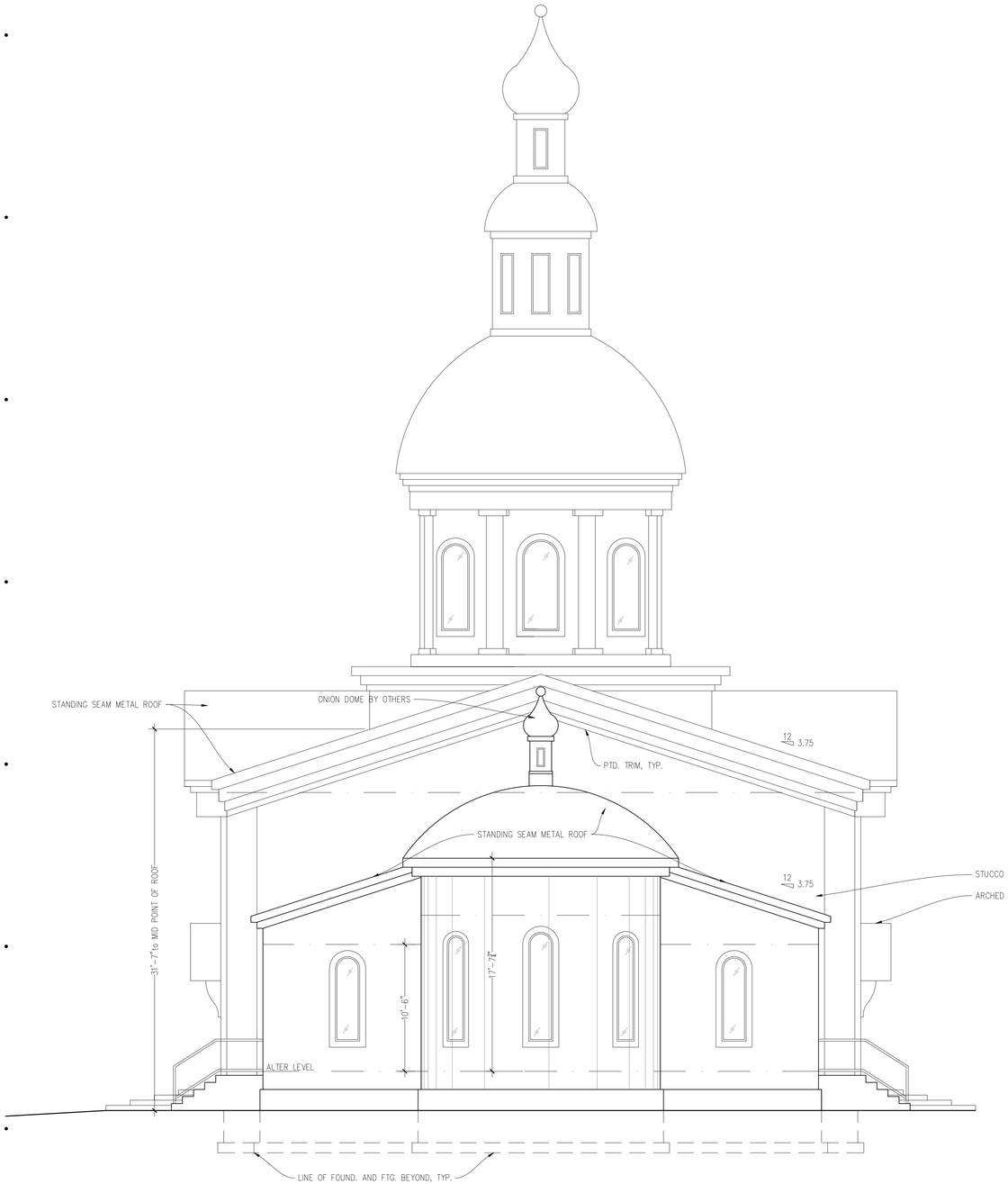
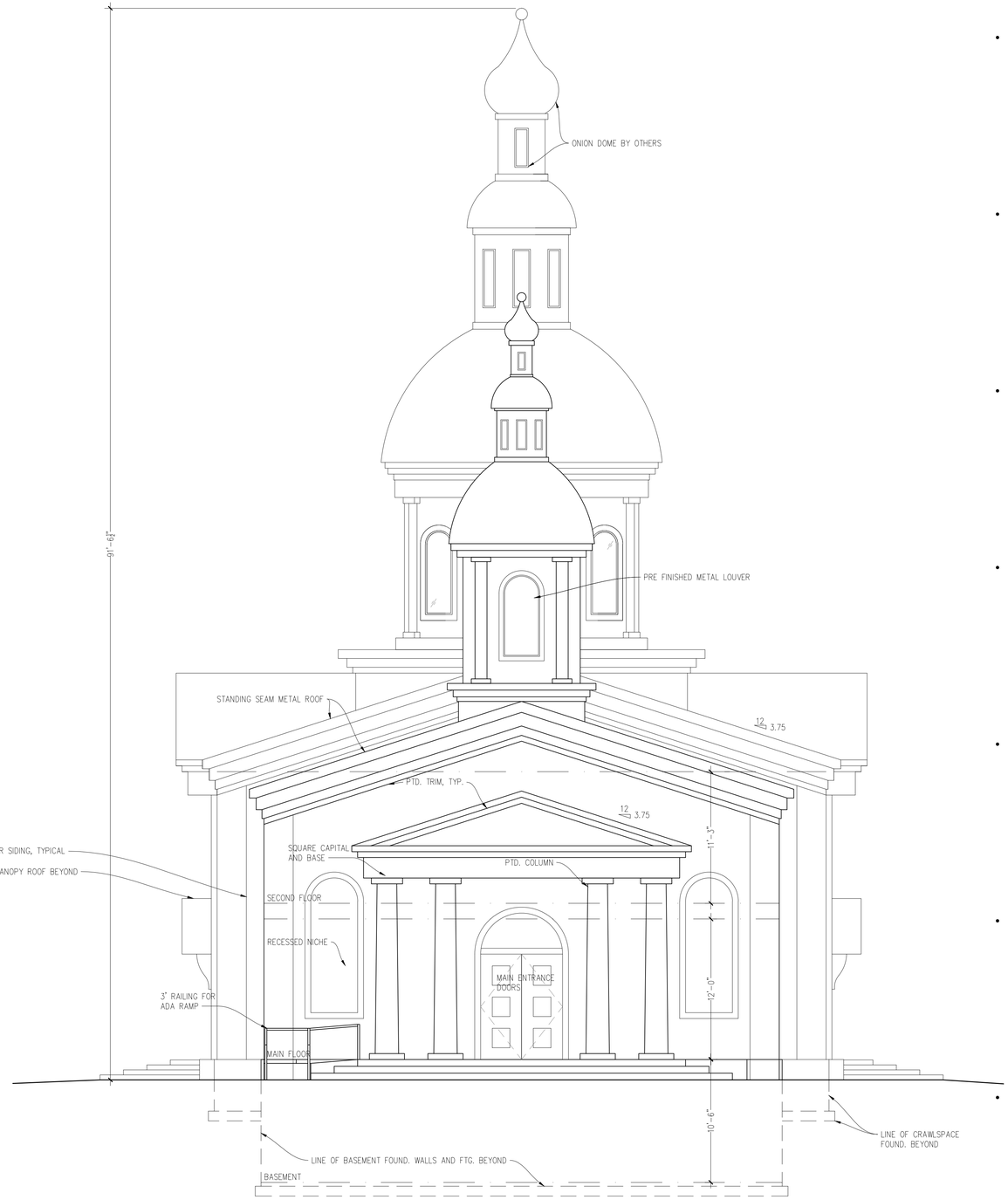


02 / A4 PROPOSED EAST ELEVATION
SCALE: 3/16" = 1'-0"
ST. VLADIMIR



01 / A4 PROPOSED WEST ELEVATION
SCALE: 3/16" = 1'-0"
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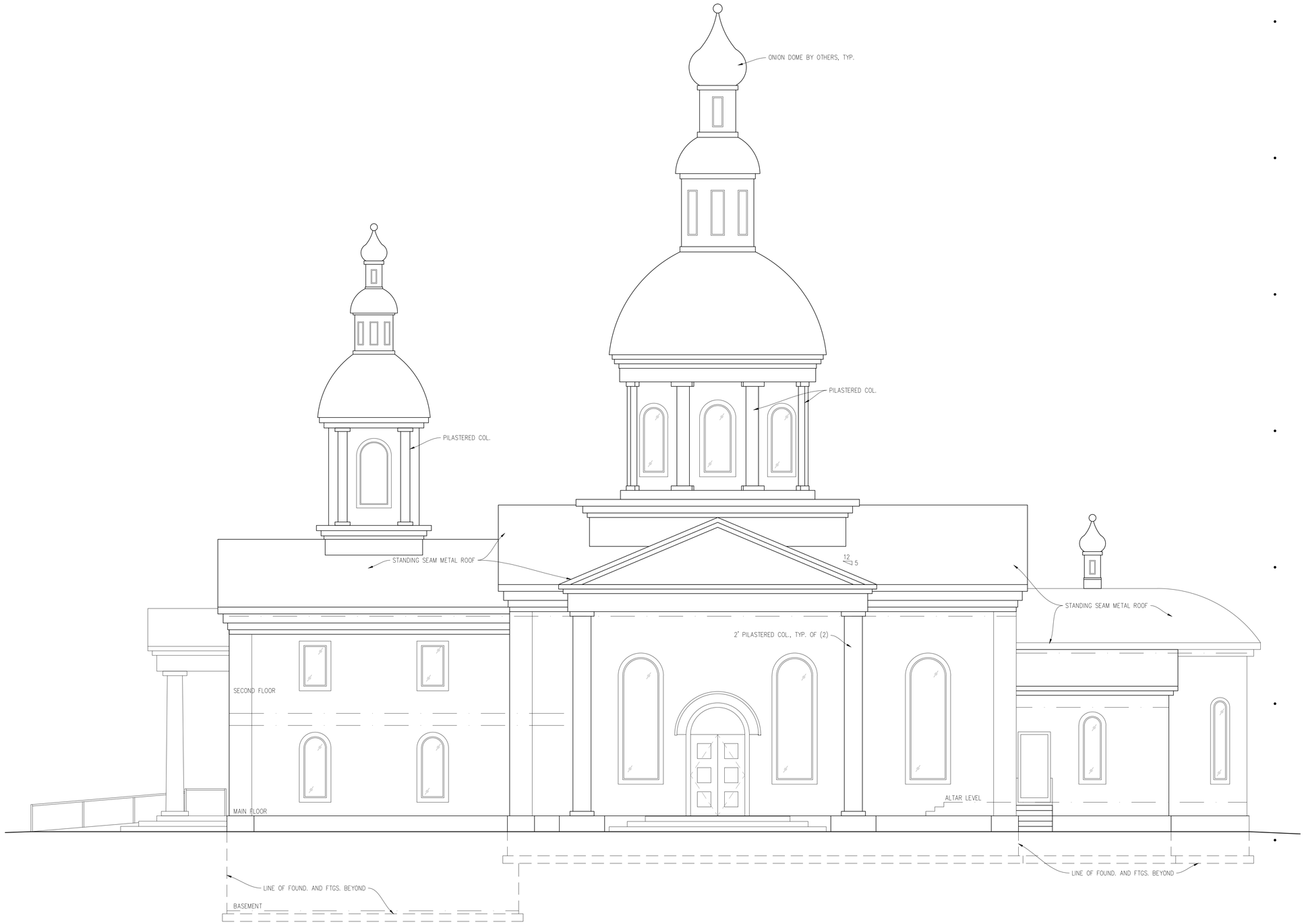

01 / A5 PROPOSED SOUTH ELEVATION

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

ST. VLADIMIR

NOTES: 1. WINDOWS ARE TO BE MARVIN SIGNATURE COASTLINE, UNLESS NOTED OTHERWISE.

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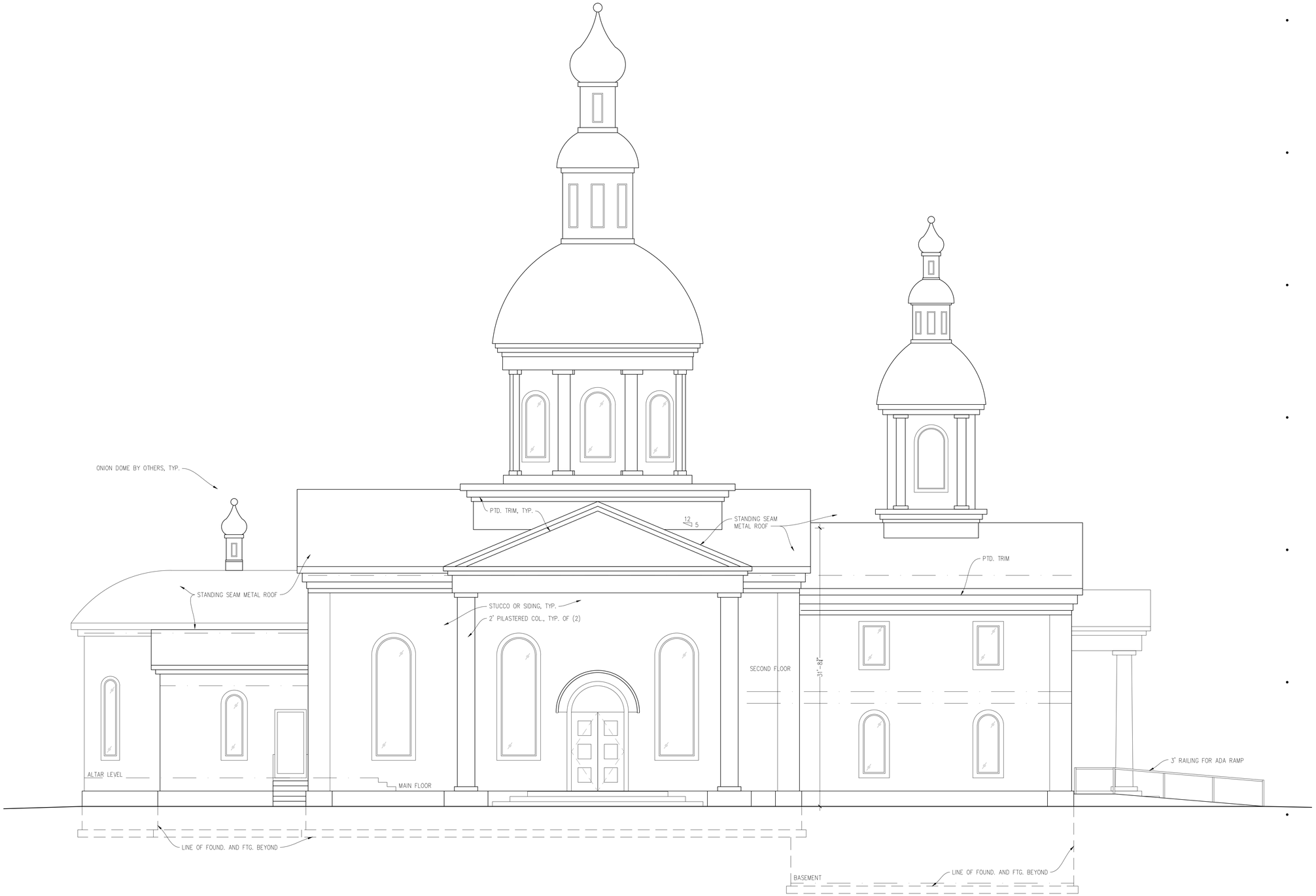

01 / A6 PROPOSED NORTH ELEVATION
SCALE: 1/4" = 1'-0"
ST. VLADIMIR

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SHEET NUMBER
A6

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

Date: March 13, 2024

Site Plan Review
For
Lima Township, Michigan

Applicant: Lima Township

Project Name: Lima Township Hall, New Addition and Renovation

Plan Date: March 1, 2024 (Architectural)
March 3, 2024 (Engineering)

Location: 11452 Jackson Road

Zoning: R-1A Single Family Residential

Action Requested: Site Plan Approval

PROJECT AND SITE DESCRIPTION

The applicant is requesting site plan approval for a new building addition and interior renovation to the Lima Township Hall located at 11452 Jackson Road. The property is within the R-1A Single Family Residential Zoning District. The project spans three (3) individual Township-owned properties with ID numbers G-07-15-360-002, G-07-15-360-001, and G-07-15-360-005, totaling 1.57 acres. The project involves extending the building to the rear/north, reconfiguring the building entrance, renovating the interior of the existing structure, replacing all of the exterior siding, removing an existing chimney, and constructing a new tower. A new paved parking lot will also be constructed with twenty (20) parking spaces. The project will increase the floor area by 1,793 square feet to allow the construction of office spaces including two individual restrooms, a conference room, and a reception area. The subject site is located on the north side of Jackson Road, east of N Lima Center Drive. Figure 1 shows the aerial view of the subject site and vicinity, and Table 1 shows the zoning and uses of the subject site and surrounding properties.

Figure 1. Aerial Image of Subject Site and Vicinity

Source: Nearmap.com

Table 1. Surrounding Property Details

	North	South	East	West
Zoning District	AG-1: Agriculture	GC: General Commercial	AG-1: Agriculture	R-1A: Single Family Residential
Land Use	Crop land	Towing Services Business	Single family residence	Single family residences

The property is bordered on the north and east sides by 66 foot wide right-of-way that has never been developed as a road.

Items to be Addressed: *None.*

AREA, WIDTH, HEIGHT, SETBACKS

The R-1A zoning district dimensional requirements are detailed in Table 2. Section 4.3.9. of the zoning ordinance exempts belfries from height regulations.

Two sets of plans were submitted for this project which included an engineering plan and an architectural plan. The site data was provided in the architectural plan set. The current

Township Hall projects into the front yard setback by over thirty-one and a half (31'6-3/4") feet, according to the table on Sheet T1. The front setback line should be depicted on the site plan. The building was in place prior to the current zoning regulations, making the building legally nonconforming. It is unclear if this front setback distance is measured from the building or the porch/ramp structure. It appears that the dimensions of the proposed porch project into the setback less than the existing porch, but this should be clarified by on the plan, as Sheet T1 indicates that the projection into the front yard setback is proposed to stay the same. Dimensions of both the existing and new porch/ramp area are required to determine how the setback projection is changing and if a variance is required.

Table 2. Dimensional Requirements

	Required	**Provided**	**Compliance**
Lot Area	1 acre	1.57 Acres	Complies
Lot Width	150 Feet	330 Feet	Complies
Front Setback	50 Feet	18 Feet 5 ¼ Inches	***Dimensions of existing and proposed porch required***
Side Setback	10 Feet	10 Feet 1 Inch	Complies
Rear Setback	10 Feet	105 Feet 8 ¾ Inches	Complies
Lot Coverage	30% Max	4.7%	Complies
Floor Area Ratio	60% Max	9%	Complies
Building Height	35 feet Max	Roof: 26 Feet 8 Inches Tower: 42 Feet	Complies

Items to be Addressed: *(1) Combine the two plan sets for the final site plan submittal. (2) Depict the front setback on the site plan. (3) Applicant shall provide dimensions of existing and proposed porch/ramp area. (4) Applicant shall indicate where on the structure the setback distance is measured from.*

PARKING AND LOADING

The project includes the construction of a new twenty (20) space parking area with a twenty-four (24') foot wide drive aisle to accommodate two-way traffic. The engineering drawings indicate the proposed surface of the parking area will be bituminous.

Section 11.4 of the Zoning Ordinance establishes requirements for off-street parking spaces. It appears that the requirements for professional offices were applied to the Township Hall. Places of Assembly is not a defined use group to determine parking requirements in Section 11.4. However, we would recommend that the Planning Commission discuss how overflow parking will be handled in the event that there is an activity at the hall that would require additional spaces.

Table 3. Off-Street Parking Requirements

	Requirement	No. of Spaces Required	No. Spaces Provided
Professional Office	1 per 200 square feet of floor area	3,237 square feet / 200 = 16.185 = 17 spaces	20 spaces
Barrier Free	1 spaces per 1-25 spaces	20 spaces = 1 barrier free	2 barrier free spaces

Items to be Addressed: *The Planning Commission should discuss how overflow parking will be handled.*

SITE ACCESS AND CIRCULATION

Site access is proposed from Jackson Road from an existing site entrance that will be widened to twenty-four (24') feet. The proposed driveway will curve to the east and lead to the parking area, providing one interior drive aisle for the new parking area. A five (5) foot-wide concrete sidewalk is proposed around the south, north, and east sides of the building, providing pedestrian access to the three (3) building entrances/exits.

Items to be Addressed: *None.*

FLOOR PLAN AND ELEVATIONS

Building elevations and floor plans are provided on Sheets F1, A2, A5, and A6. The floor plans show that the new building addition will include office spaces, a conference room, , a wheelchair lift, and a reception area. The existing rear building extension on the north side of the building will be removed to accommodate the new building addition. Three pedestrian access points are provided on the new plan, on the south, north, and east building elevations. All entrances will be accessed from stairs/a ramp.

The plan also proposes the replacement of the existing siding. The colors are not provided. New window treatments are indicated on the south elevation, modeled after historic window character and shape. The window treatments on the north building addition appear to be more modern. The existing chimney on the west elevation will be removed. On the south elevation, above the primary building entrance, a tall tower is proposed, with historic-looking arches and roof shingles to match the existing roof shingles.

Items to be Addressed: *None.*

LANDSCAPING

No landscape plan was provided with the site plan submission. There is an existing tree near the entrance from Jackson Road, and the applicant has not indicated if this tree is to be preserved or removed with the driveway expansion.

Items to be Addressed: *The applicant shall provide a landscape plan and inventory of existing landscaping proposed for removal or preservation on the final site plan*.

LIGHTING

No lighting plan was provided with the site plan submission.

Items to be addressed: *The applicant must provide a lighting plan with a photometric map, indicating lighting levels along the property lines on the final site plan*.

SIGNS

There is an existing "Lima Township Hall" sign above the building entrance on the south elevation, but no proposed sign is depicted in this location on the site plan. Any new signs must receive a separate permit from the Township Zoning Administrator prior to construction.

Items to be Addressed: *None*.

DRAINAGE AND STORMWATER AND UTILITIES

Grading, stormwater, and drainage details have been provided in the engineering plan produced by the Township Engineer. An existing well is shown on the engineering plans. No Sanitary details have been provided.

Items to be Addressed: *(1) We defer to the Township Engineer on grading and drainage. (2) Sanitary detail must be provided on the final site plan*.

RECOMMENDATIONS

In general, the proposed plan is consistent with the requirements and recommendations of the Zoning Ordinance. However, there are a number of outstanding issues that need to be addressed or discussed by the Planning Commission. Additionally, there are several items that can be reviewed on the final site plan. The following is a list of outstanding items:

1. Combine the two plan sets for the final site plan submittal.
2. Depict the front setback on the site plan.
3. Applicant shall provide dimensions of existing and proposed porch/ramp area.
4. Applicant shall indicate where on the structure the setback distance is measured from.
5. The applicant shall provide a landscape plan and inventory of existing landscaping proposed for removal or preservation on the final site plan.
6. The applicant must provide a lighting plan with a photometric map, indicating lighting levels along the property lines on the final site plan.
7. We defer to the Township Engineer on grading and drainage.
8. Sanitary details must be provided on the final site plan.

Respectfully submitted,

CARLISLE/WORTMAN ASSOC.,INC
Paul Montagno, AICP
Principal

CARLISLE/WORTMAN ASSOC., INC.
Michelle Marin
Community Planner

163-2400

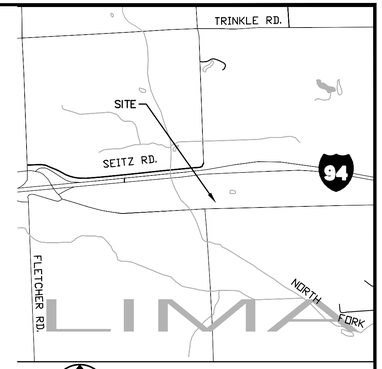
CC: Luick, Township Supervisor
Kwaske, Township Clerk
Sastre, Zoning Administrator
Lalik, Township Engineer
McElrath, Architect

LIMA TOWNSHIP HALL EXPANSION

LIMA TOWNSHIP, WASHTENAW CO., MI

PRELIMINARY SITE PLAN

SITE MAP
SCALE : NTS



VICINITY MAP
SCALE : NTS

SHEET INDEX

#	SHEET TITLE
01	COVER SHEET
02	EXISTING CONDITIONS & REMOVALS
03	SITE PLAN
04	UTILITY PLAN
05	GRADING PLAN
06	DETAILED GRADING PLAN
07	SITE DETAILS

OWNER/APPLICANT

TOWNSHIP OF LIMA
11452 JACKSON ROAD
DEXTER, MI, 48130
CONTACT: DUANE LUICK
734-475-2246

ENGINEER/SURVEYOR/LANDSCAPE ARCH.

MIDWESTERN CONSULTING, LLC
3815 PLAZA DR.
ANN ARBOR, MI 48108
CONTACT: ADAM LALIK
734-995-0200

ARCHITECT

DANGEROUS ARCHITECTS
104 S MAIN STREET
CHELSEA, MI, 48118
CONTACT: SCOTT MCELRATH
734-475-3660

PROJECT NARRATIVE

LIMA TOWNSHIP HAS REQUESTED PREPARATION OF A PRELIMINARY SITE PLAN FOR THE EXPANSION OF THE TOWNSHIP BUILDING LOCATED AT 11452 JACKSON ROAD. THE EXPANSION CONSISTS OF A SINGLE FLOOR BUILDING EXPANSION AND A WALKOUT BASEMENT.

SITE IMPROVEMENTS INCLUDE 20 PAVED PARKING SPACES, ADA ACCESS AND RAMPS TO THE EXPANDED PORTION OF THE BUILDING. PROJECT INCLUDES A PAVED 2-WAY DRIVEWAY ENTRY WHICH WILL BE CONSTRUCTED AT THE EXISTING APPROVED DRIVEWAY LOCATION.

THE USE OF THE BUILDING EXPANSION WILL BE PRIMARILY FOR TOWNSHIP OFFICIAL OFFICES WITH APPROXIMATELY 6 FULL TIME EMPLOYEES, AND WILL NOT CAUSE A SIGNIFICANT INCREASE IN TRAFFIC GENERATION.

LEGAL DESCRIPTION

OLD SID - G 07-040-002-00 LI 37-2 LOT 11 EXC THE S 25 FT IN WIDTH THEREOF, ALSO ENTIRE LOT 4 BLK 1 VILLAGE OF HARFORD.

AND,

OLD SID - G 07-040-012-00 LI 37-12 LOT 10 EXCEPT S 25 FT BLK 1 VILLAGE OF HARFORD.

AND,

OLD SID - G 07-040-003-00 LI 37-3 LOTS 5,6 & 7 AND 12, 13 & 14EXC THE S 25 FT IN WIDTH OF LOTS 12, 13 & 14 BLK 1 VILLAGE OF HARFORD.

SITE DATA

SEE ARCHITECTURAL PLANS FOR APPLICABLE SITE DATA AND ZONING INFORMATION TABLE

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

LIMA TOWNSHIP HALL EXPANSION

JOB No. **17192**

DATE: 03-04-24

SHEET 01 OF 07

01

REVISIONS:	REV. DATE	
1	1D	CADD: CAD_INITIALS
2	2D	ENG: AJL
3	3D	PM: AJL
4	4D	TECH: TECH_INITIALS
5	5D	/17192CV1
6	6D	

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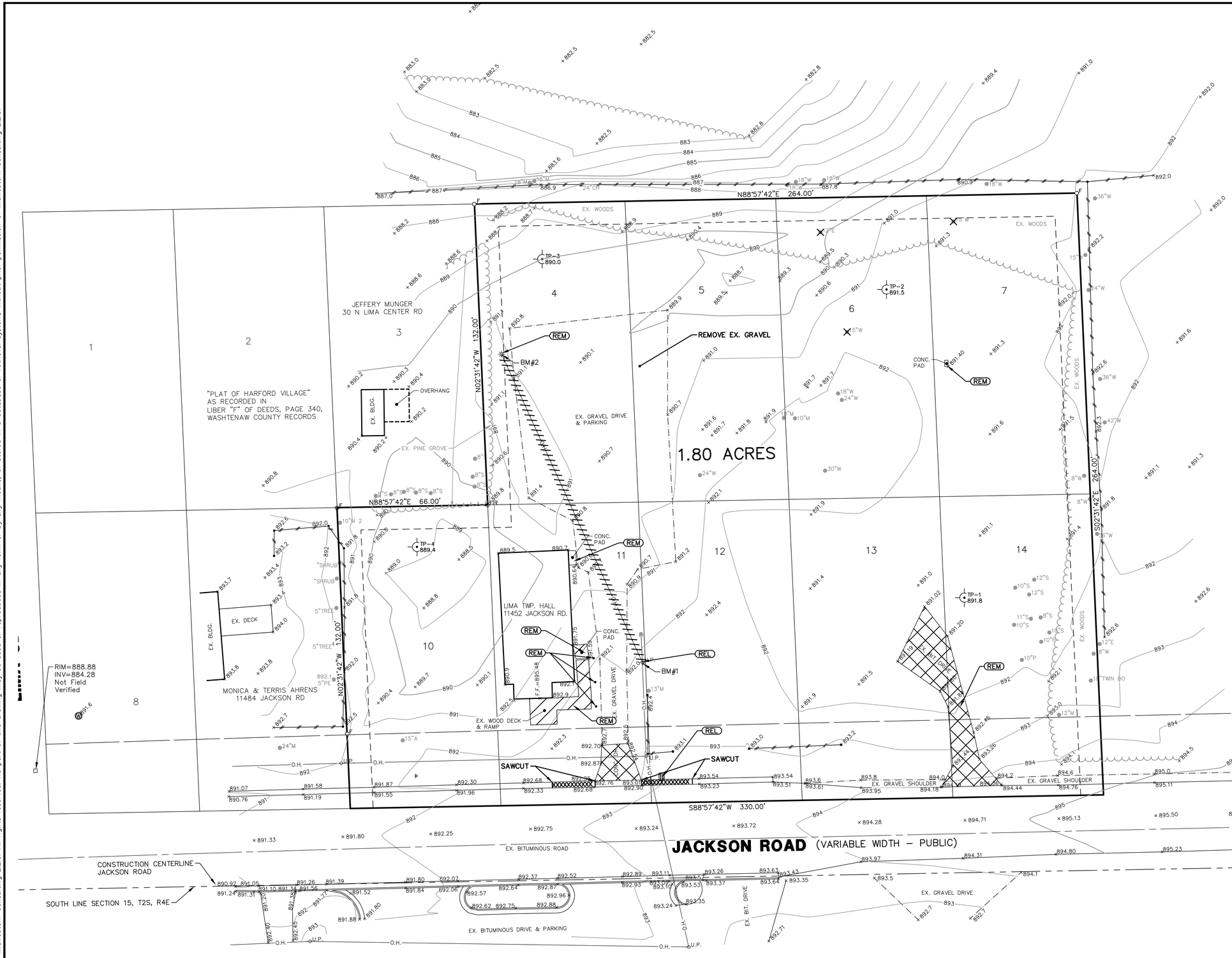
RELEASED FOR:	DATE

STATE OF MICHIGAN
ADAM J LALIK
ENGINEER
No. 6201309288
LICENSED PROFESSIONAL ENGINEER

P.E. #



SCALE: 1" = 20'

0 20 40 60

LEGEND

838	EXIST. CONTOUR
×836.2	EXIST. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
	GUY WIRE
	ELEC. TRANSFORMER
O.H.	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
	SIGN
MAIL	MAILBOX
	POST
W	WELL
	FENCE
	SINGLE TREE
	TREE OR BRUSH LIMIT
	SECTION CORNER
TP–1	TEST PIT LOCATION
F	FOUND IRON PIPE
S	SET IRON ROD
FIR	FOUND IRON ROD
	CONTROL PT.
	CONCRETE TO BE REMOVED
	BITUMINOUS TO BE REMOVED
	UTILITY TO BE ABANDONED/REMOVED
	CURB TO BE REMOVED
×	TREE TO BE REMOVED
REL	ITEM TO BE RELOCATED
REM	ITEM TO BE REMOVED

TREE LEGEND

A	APPLE
BO	BOX ELDER
CH	CHERRY
E	ELM
M	MAPLE
P	PINE
S	SPRUCE
W	WALNUT

BENCHMARKS:

#1.) SET SPIKE IN EAST SIDE OF UTILITY POLE, 40'± EAST OF SE CORNER OF TOWNSHIP HALL. ELEVATION=893.49 NAVD 88.

#2.) SET SPIKE IN EAST FACE OF LIGHTPOLE LOCATED AT NW CORNER OF GRAVEL PARKING LOT. ELEVATION=892.28 NAVD 88.

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

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LIMA TOWNSHIP HALL EXPANSION

PRELIMINARY SITE PLAN
EXISTING CONDITIONS & REMOVALS
NA

02

DATE: 03-04-24
SHEET 02 OF 07
CADD: CAD_INITIALS
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JOB No. 17192

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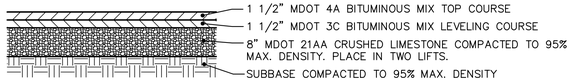


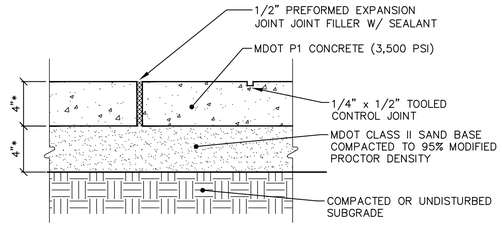
BITUMINOUS PAVEMENT DETAIL
NOT TO SCALE

NOTES

1. ALL DIMENSIONS ARE MEASURED TO THE PAINT LINE OR FACE OF CURB UNLESS OTHERWISE NOTED. ALL RADII DIMENSIONS SHOWN ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
2. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH CURRENT STANDARDS, SPECIFICATIONS, AND GENERAL CONDITIONS OF THE AUTHORITY HAVING JURISDICTION.
3. REFER TO THE ARCHITECTURAL PLANS FOR DETAILS REGARDING THE SCOPE OF WORK FOR THE BUILDING ELEVATIONS, INTERIORS, AND APPURTENANCES.
4. THE CONTRACTOR SHALL CONTACT THE OWNER AND/OR ENGINEER PRIOR TO COMMENCING WORK SHOULD THERE BE ANY FIELD CONFLICTS WITH THE DESIGN INTENT.
5. NO ONSITE TRASH PICKUP. TRASH WILL BE TAKEN TO CURB FOR PICKUP

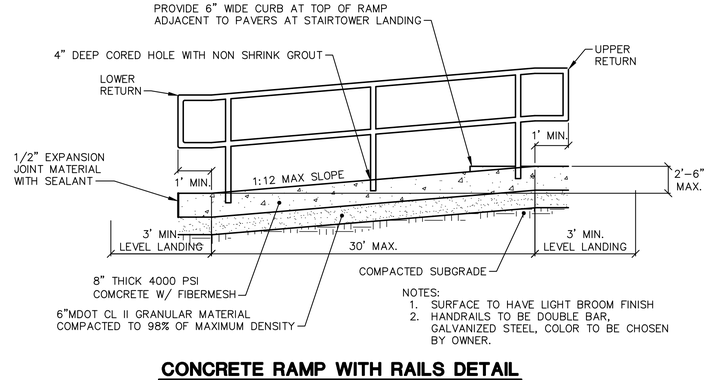
LEGEND

- (0) NUMBER OF STANDARD PARKING SPACES IN ROW
- [0] NUMBER OF SMALL CAR PARKING SPACES IN ROW
- ⟨0⟩ NUMBER OF BARRIER FREE PARKING SPACES IN ROW
- BF BARRIER FREE PARKING SIGN
- BFV VAN ACCESSIBLE BARRIER FREE PARKING SIGN
- R BARRIER FREE SIDEWALK RAMP
- PROP. CURB & GUTTER
- PROP. BITUMINOUS PAVEMENT
- PROP. CONCRETE PAVEMENT
- SIGN
- PROP. SINGLE LIGHT
- PROP. DOUBLE LIGHT



NOTE:
* INCREASE CONCRETE WALK TO 6" WHEN CROSSING A SINGLE–FAMILY OR DOUBLE–FAMILY DRIVEWAY, AND TO 8" FOR COMMERCIAL DRIVE CROSSINGS. USE 6" CLASS II SAND BASE AT RESIDENTIAL DRIVE CROSSINGS, AND 8" 21AA AGGREGATE BASE (98% MODIFIED PROCTOR) AT COMMERCIAL DRIVE CROSSINGS.

CONCRETE WALK DETAIL
NOT TO SCALE



NOTES:
1. SURFACE TO HAVE LIGHT BROOM FINISH
2. HANDRAILS TO BE DOUBLE BAR, GALVANIZED STEEL, COLOR TO BE CHOSEN BY OWNER.

CONCRETE RAMP WITH RAILS DETAIL
NOT TO SCALE

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PRELIMINARY SITE PLAN
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17192SP1

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1	1D
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3	3D
4	4D
5	5D
6	6D

JOB No. 17192

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

Rational Method Variables

Cover Type	Soil Type	Area (sft)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building/Pavement		13,550	0.31	0.95	0.30
Grass	B	15,120	0.35	0.25	0.09
Total		28,670	0.66		0.38
			Weighted C = (Sum(C)x(Area))/(Area Total)=		0.58

NRCS Variables (Pervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Grass	B	15,120	0.35	69	0.24
Total		15,120	0.35		0.24
			Weighted CN = (Sum(CN)x(Area))/(Area Total)=		69

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Building/Pavement		13,550	0.31	98	0.30
Total		13,550	0.31		0.30
			Weighted CN = (Sum(CN)x(Area))/(Area Total)=		98

W2 - W2 - First Flush Runoff Calculations (Vff)

A. Vff = 1" x 1'/12" x 43560 sft/ac x A x C — where A= 0.66 — and where C= 0.58

Vff = 1" x 1'/12" x 43560 sft/ac x 0.66 x 0.58 = 1,386 cf

W3 - W3 - Pre-Development Bankfull Runoff Calculations (Vbf-pre)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Pre-Development CN (Developed Area, Good Condition - Type B Soils) CN= 61
C. S = (1000 / CN) - 10 S= 6.393 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.154 in
E. Total Site Area excluding "Self-Crediting" BMPs 28,670 sft
F. Vbf-pre = Q x (1/12) x Area Vbf-pre = 367 cft

W4 - Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Pervious Cover CN From Worksheet 1 CN= 69
C. S = (1000 / CN) - 10 S= 4.493 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.354 in
E. Pervious Cover Area from Worksheet 1 15,120 sft
F. Vbf-per-post = Q x (1/12) x Area Vbf-per-post = 447 cft

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)

A. 2 year / 24 hour storm event: P= 2.35 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.122 in
E. Impervious Cover Area from Worksheet 1 13,550 sft
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 2,396 cft

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations (V100-per-post)

A. 100 year / 24 hour storm event: P= 5.11 in
B. Pervious Cover CN From Worksheet 1 CN= 69
C. S = (1000 / CN) - 10 S= 4.493 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.038 in
E. Pervious Cover Area from Worksheet 1 15,120 sft
F. V100-per-post = Q x (1/12) x Area V100-per-post = 2,567 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations (V100-imp-post)

A. 2 year / 24 hour storm event: P= 5.11 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 4.873 in
E. Impervious Cover Area from Worksheet 1 13,550 sft
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 5,502 cft

W8 - Time of Concentration (Tc-hrs)

A. Assume 15-minute minimum time of concentration Tc= 0.25 hr

W9 - Runoff Summary & On-Site Infiltration Requirement

A. Summary from Previous Worksheets

First Flush Volume (Vff)	**1,386 cft**
Pre-Development Bankfull Runoff Volume (Vbf-pre)	**367 cft**
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post)	*447 cft*
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post)	*2,396 cft*
Total BF Volume (Vbf-post)	**2,842 cft**
Pervious Cover Post-Development 100-Year Volume (V100-per-post)	*2,567 cft*
Impervious Cover Post-Development 100-Year Volume (V100-imp-post)	*5,502 cft*
Total 100-Year Volume (V100)	**8,070 cft**

B. Determine Onsite Infiltration Requirement

Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume	
Total Post-Development Bankfull Volume (Vbf-post)	2,842 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre)	367 cft
Bankfull Volume Difference	**2,475 cft**
Infiltration Requirement (Vinf)	**2,475 cft**

W10 - Detention/Retention Requirement

A. $Q_P = 238.6\ Tc^{-0.82}$	743.63 cfs/((in x sq. mi)
B. Total Site Area excluding "Self-Crediting" BMPs	0.66 ac
C. Q100 = Q100-per + Q100-imp (from W6 and W7, respectively)	6.911 in
D. Peak Flow (PF) = Qp x Q100 x Area / 640	5.28 cfs
E. Delta = PF - 0.15 x Area (ac)	5.19 cfs
[0.15 x Area (ac)]	*0.10 cfs*
F. Vdet = Delta / PF x V100	7,919 cft
Required Detention not including infiltration credit or penalty.	
Sediment Forebay Volume Required (5% of V100)	403 cft
Retention	
A. Vret = 2 x V100	16,140 cft

W11 - Determine Applicable BMPs and Associated Volume Credits

		Storage Volume (cft)		Design Infilt. Rate	Infilt. Volume in 6-hr	Total Volume
Proposed BMP	Area (sft)	Surface	In Soil	(in/hr)	Drawdown (cft)	Reduction (cft)
Infiltration Bed	2678			1.50	2,009	2,009
				Total Volume Reduction Credit by Proposed Structural BMPs (cft)		2,009
				Runoff Volume Infiltration Requirement (Vinf) from W9 (cft)		2,475
				Runoff Volume Credit (cft)		0

W13 - Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Min Infiltration Requirement (Vinf)	2,475 cft
Designed/Provided Infiltration Volume	2,009 cft
% Minimum Required Infiltration Provided	81 %
Total Calculated Detention Volume, Vdet	7,919 cft
Net Required Detention Volume	5,911 cft
(Vdet - Designed/Provided Infiltration Volume)	

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

% Required Infiltration NOT Provided	18.8 %
(100% - % Minimum Required Infiltration Provided)	
Net % Penalty (20% x % Required Infiltration NOT Provided)	3.8 %
Total Required Detention Volume, including penalty	**8,218 cft**
[(100% + Net % Penalty) x Net Required Detention Volume)]	

Detention Outlet Calculcations

A. Required Detention Volumes (Reduced by 6-hour infiltration)

Storm Event	Req'd Volume	less	Infil. Credit	=	Final Volume
First Flush	1,386 cft	-	2,009 cft	=	**(623)** cft
Bankfull	2,842 cft	-	2,009 cft	=	**834** cft
100 -year	7,919 cft	-	2,009 cft	=	**5,911** cft
100-year + Req'd Penalty	8,218 cft	-	2,009 cft	=	**6,209** cft
Forebay Volume Required (5% of 100-yr)				=	**296** cft

B. Detention Volumes Provided

Elevation	Area (sft)	Depth (ft)	Volume (cft)	Cum. Volume (cft)
887.0	2,678	0	0	0
888.0	3,401	1	3,032	3,032
889.0	4,180	1	3,784	6,816
			Total Volume =	6,816

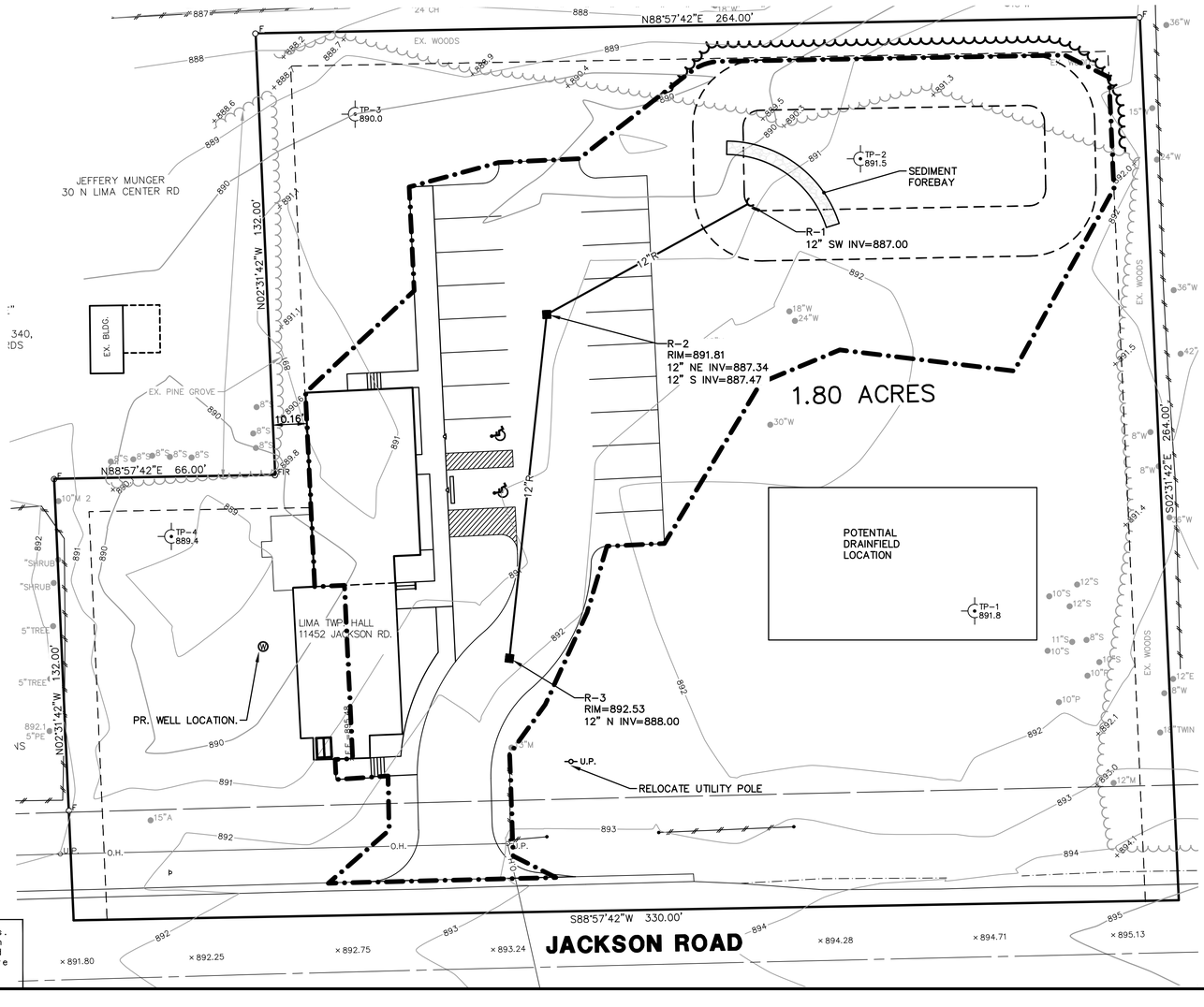
C. Full Infiltration Design

Total Storage Volume	8,218 cft
Infiltration Area	2678 sft
Infiltration Rate, Average	1.50 in/hr
Infiltration Flow Rate	334.75 cft/hr
Time to Fully Drain	**24.5 hr**

This is less than 48 hours max, so the basin complies with the drawdown requirement.

NARRATIVE AND NOTES

1. THE STORMWATER ON SITE WILL BE COLLECTED WITHIN TWO CATCH BASINS ON SITE. THE STORM WATER CONVEYANCE SYSTEM WILL DISCHARGE STORM RUNOFF TO THE PROPOSED INFILTRATION BASIN ON THE NORTH EAST PORTION OF THE SITE. RUNOFF COLLECTED WILL BE INFILTRATED INTO THE SOIL AND DRAW DOWN WITHIN 24.5 HOURS.
2. STORMWATER PIPE TO BE REINFORCED CONCRETE PIPE (RCP)
3. CATCH BASIN STRUCTURES ARE TO BE 4' DIA. PRECAST CONCRETE
4. CB CASTINGS SHALL BE EJIW 1040 W M1 FLAT COVER
5. SEPTIC/DRAINFIELD DESIGN TO BE SUBMITTED UNDER A SEPARATE SUBMITTAL TO THE WASHTENAW COUNTY ENVIRONMENTAL HEALTH DEPARTMENT.
6. ALL NECESSARY PERMITS SHALL BE ACQUIRED THROUGH STATE AND LOCAL AGENCIES FOR THE PROPOSED REPLACEMENT WELL.



LEGEND

838	EXIST. CONTOUR
838	PROP. CONTOUR
×836.2	EXIST. SPOT ELEVATION
36.60x	PROP. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
U.P.	EXIST. UTILITY POLE W/ TRANS.
GP	EXIST. GUY POLE
	GUY WIRE
	ELEC. TRANSFORMER
	EXIST. AC UNIT
	EXIST. GENERATOR
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
	PROP. LIGHT POLE
	PROP. BUILDING LIGHT
t	EXIST. TELEPHONE LINE
T	PROP. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
E	PROP. ELECTRIC LINE
g	EXIST. GAS LINE
G	PROP. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
F.O.	PROP. FIBER OPTIC LINE
w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
	PROP. GATE VALVE IN WELL
	EXIST. CURB STOP & BOX
	PROP. CURB STOP & BOX
	REDUCER
	EXIST. BLOW-OFF
	PROP. BLOW-OFF
P.I.V.	POST INDICATOR VALVE
P.I.V.	POST INDICATOR VALVE
	THRUST BLOCK
(dc	EXIST. FIRE DEPARTMENT CONNECTION
FDC	PROP. FIRE DEPARTMENT CONNECTION
KB	PROP. KNOXBOX
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	PROP. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	PROP. BEEHIVE INLET
RD	PROP. ROOF DRAIN
	END SECTION
	HEAD WALL
	CULVERT
ds	EXIST. DOWNSPOUT
DS	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
	C/L OF DITCH
	SIDEWALK RAMP
	DRAINAGE DIRECTION
	CONCRETE SURFACE
T	ENCLOSED TRASH AREA
	SIGN
RR	RAILROAD CROSSING SIGN
pm	EXIST. PARKING METER
PM	PROP. PARKING METER
MBL	MAILBOX
W	WELL
	FENCE
	GUARDRAIL
	SINGLE TREE
	TREE OR BRUSH LIMIT
	SECTION CORNER
SB-1	EXIST. SOIL BORING LOCATION
TP-1	EXIST. TEST PIT LOCATION

SCALE: 1" = 20'

0 20 40 60

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

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LIMA TOWNSHIP HALL EXPANSION

PRELIMINARY SITE PLAN
UTILITY PLAN
NA

04

DATE: 03-04-24
SHEET 04 OF 07
CADD: CAD_INITIALS
DES: 2D
ENG: AJL 3D
PM: AJL 4D
TECH: TECH_INITIALS 5D
17192SW1 6D

JOB No. 17192

REVISIONS:	REV.	DATE
1		
2		
3		
4		
5		
6		

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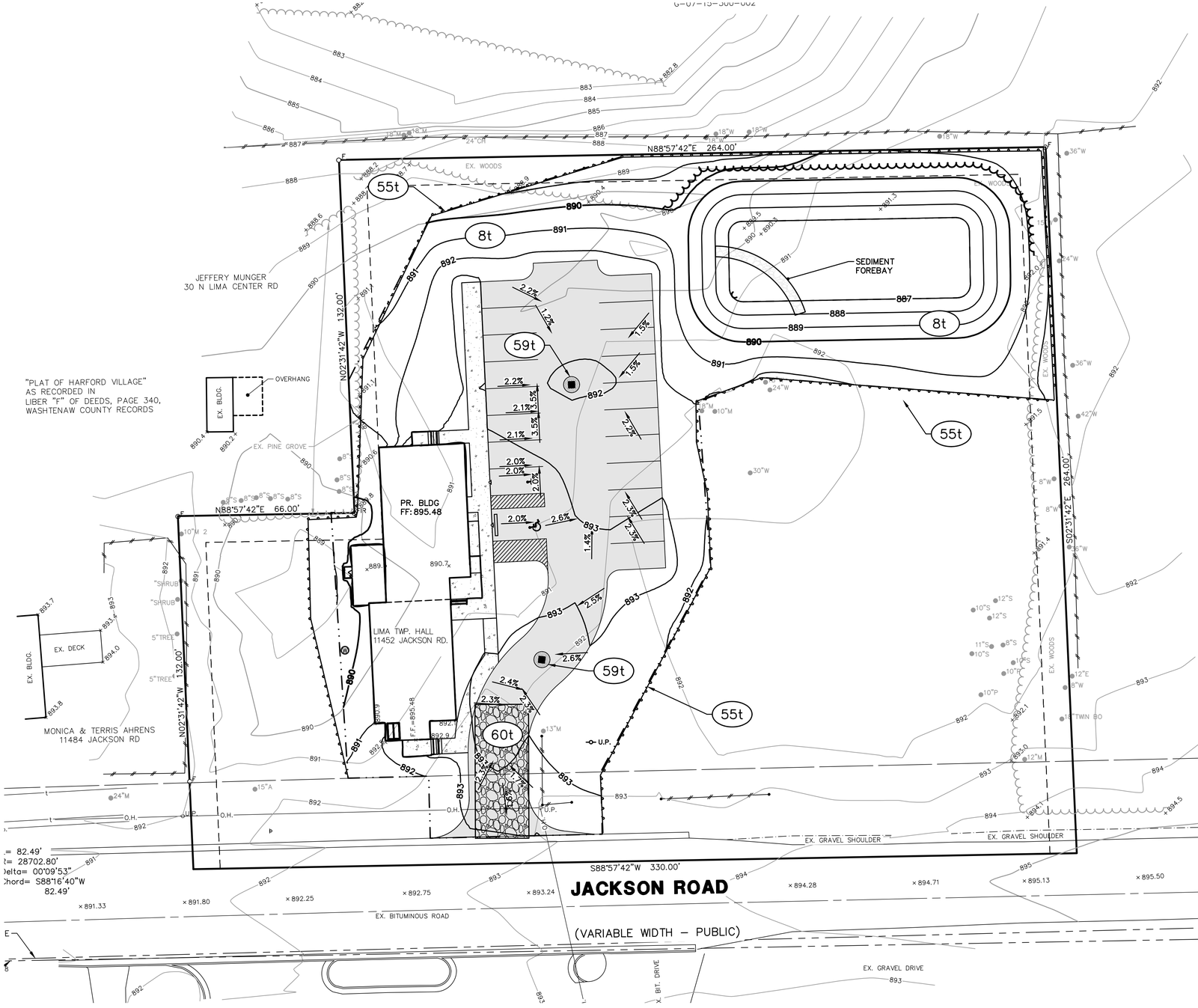

811 Know what's **below.** **Call** before you dig.

SCALE: 1" = 20'

0 20 40 60

LEGEND

838	EXIST. CONTOUR
838	PROP. CONTOUR
×836.2	EXIST. SPOT ELEVATION
36.60	PROP. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
U.P.	EXIST. UTILITY POLE W/ TRANS.
	GUY WIRE
	ELEC. TRANSFORMER
	EXIST. AC UNIT
	EXIST. GENERATOR
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
	PROP. LIGHT POLE
t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
	PROP. GATE VALVE IN WELL
	EXIST. CURB STOP & BOX
	PROP. CURB STOP & BOX
	REDUCER
	EXIST. BLOW-OFF
	PROP. BLOW-OFF
P.I.V.	POST INDICATOR VALVE
P.I.V.	POST INDICATOR VALVE
	THRUST BLOCK
KB	PROP. KNOXBOX
fdc	EXIST. FIRE DEPARTMENT CONNECTION
FDC	PROP. FIRE DEPARTMENT CONNECTION
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	PROP. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	PROP. BEEHIVE INLET
RD	PROP. ROOF DRAIN
	END SECTION
	HEAD WALL
	CULVERT
ds	EXIST. DOWNSPOUT
DS	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
CO	EXIST. CLEANOUT
CO	PROP. CLEANOUT
	C/L OF DITCH
	DRAINAGE DIRECTION
	SIGN
	SINGLE TREE
	TREE OR BRUSH LIMIT
	FENCE
	SILTFENCE
	LIMITS OF DISTURBANCE
	CONSTRUCTION FENCE
FF	FINISH FLOOR ELEVATION
GF	GARAGE FLOOR ELEVATION
BFF	BASEMENT FINISH FLOOR ELEVATION

SOIL EROSION CONTROL MEASURES

t = temporary p = permanent

8	SODDING
55	GEOTEXTILE SILT FENCE
59	C.B./INLET FILTER
60	MUD TRACKING MAT

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LIMA TOWNSHIP HALL EXPANSION

PRELIMINARY SITE PLAN
GRADING PLAN
NA

05

JOB No. 17192

REVISIONS:	REV. DATE:
1	
2	
3	
4	
5	
6	

DATE: 03-04-24
SHEET 05 OF 07
CADD: CAD_INITIALS
ENG: AJL
PM: AJL
TECH: TECH_INITIALS
17192GP1
PDF

Know what's below. Call before you dig.

SCALE: 1" = 10'

0 10 20 30

LEGEND

- EXIST. CONTOUR
- PROP. CONTOUR
- EXIST. SPOT ELEVATION
- PROP. SPOT ELEVATION
- EXIST. UTILITY POLE
- EXIST. UTILITY POLE W/ TRANS.
- GUY WIRE
- ELEC. TRANSFORMER
- EXIST. AC UNIT
- EXIST. GENERATOR
- EXIST. OVERHEAD UTILITY LINE
- EXIST. LIGHT POLE
- PROP. LIGHT POLE
- EXIST. TELEPHONE LINE
- EXIST. ELECTRIC LINE
- EXIST. GAS LINE
- EXIST. GAS VALVE
- EXIST. FIBER OPTIC LINE
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN BOX
- PROP. GATE VALVE IN BOX
- EXIST. GATE VALVE IN WELL
- PROP. GATE VALVE IN WELL
- EXIST. CURB STOP & BOX
- PROP. CURB STOP & BOX
- REDUCER
- EXIST. BLOW-OFF
- PROP. BLOW-OFF
- POST INDICATOR VALVE
- POST INDICATOR VALVE
- THRUST BLOCK
- PROP. KNOXBOX
- EXIST. FIRE DEPARTMENT CONNECTION
- PROP. FIRE DEPARTMENT CONNECTION
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- EXIST. BEEHIVE INLET
- PROP. BEEHIVE INLET
- PROP. ROOF DRAIN
- END SECTION
- HEAD WALL
- CULVERT
- EXIST. DOWNSPOUT
- PROP. DOWNSPOUT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEANOUT
- PROP. CLEANOUT
- C/L OF DITCH
- DRAINAGE DIRECTION
- SIGN
- SINGLE TREE
- TREE OR BRUSH LIMIT
- FENCE
- SILTFENCE
- LIMITS OF DISTURBANCE
- CONSTRUCTION FENCE
- FF FINISH FLOOR ELEVATION
- GF GARAGE FLOOR ELEVATION
- BFF BASEMENT FINISH FLOOR ELEVATION

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M:\Civil3d_Proj\17192\Construction\17192GP1.dwg, 3/4/2024 3:00 PM, Adam J. Lalik, 06 DETAILED GRADING PLAN, MCLLC PDF.pc3

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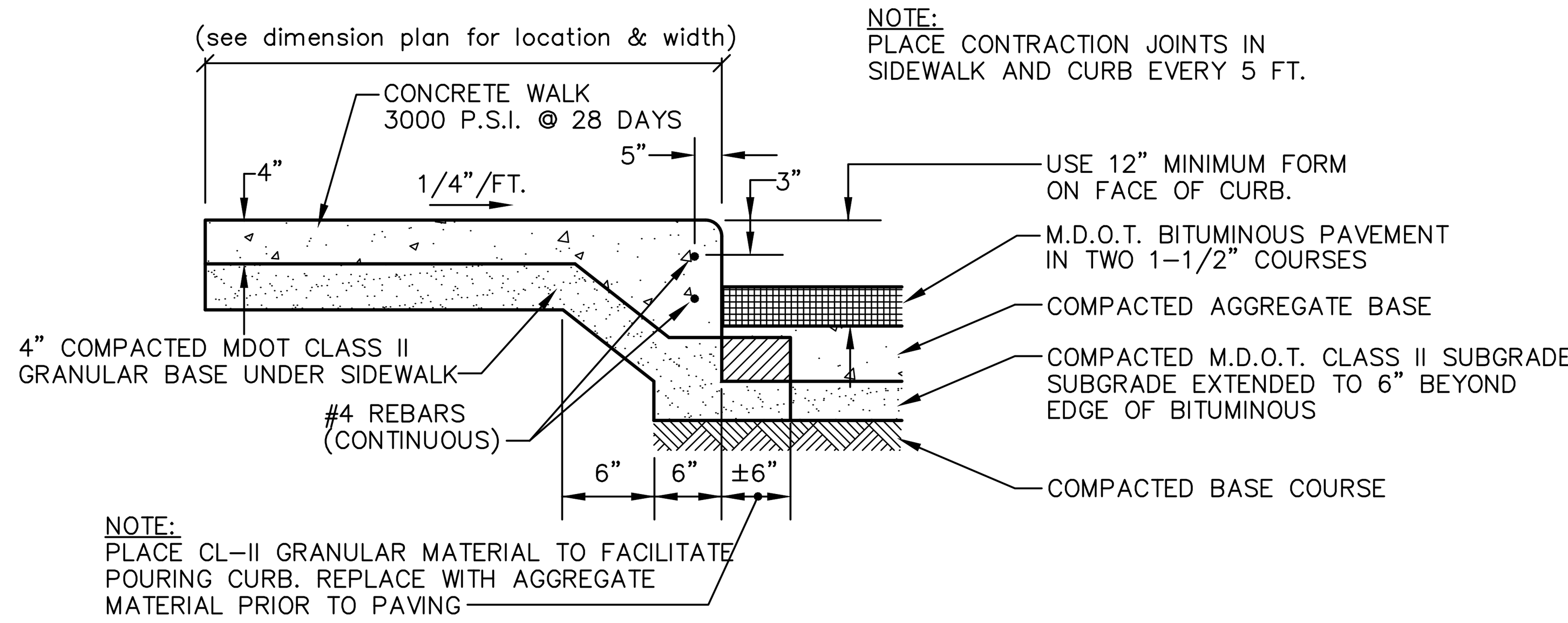
LIMA TOWNSHIP HALL EXPANSION

PRELIMINARY SITE PLAN
DETAILED GRADING PLAN
NA

06

JOB No. 17192

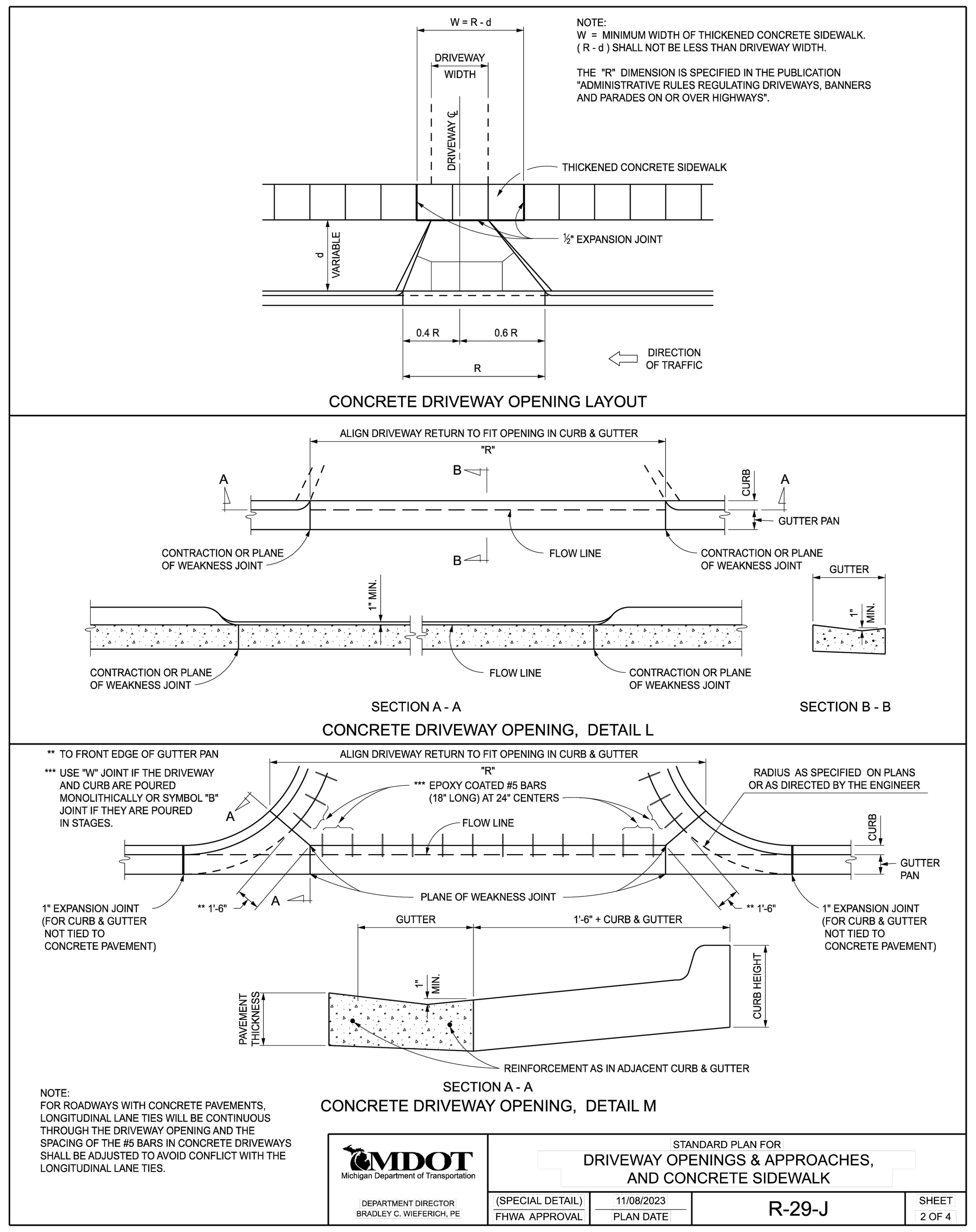
REVISIONS:	REV. DATE	
1	1D	DATE: 03-04-24
2	2D	SHEET 06 OF 07
3	3D	CADD: CAD_INITIALS
4	4D	ENG: AJL
5	5D	PM: AJL
6	6D	TECH: TECH_INITIALS
		/17192GP1
		FB#

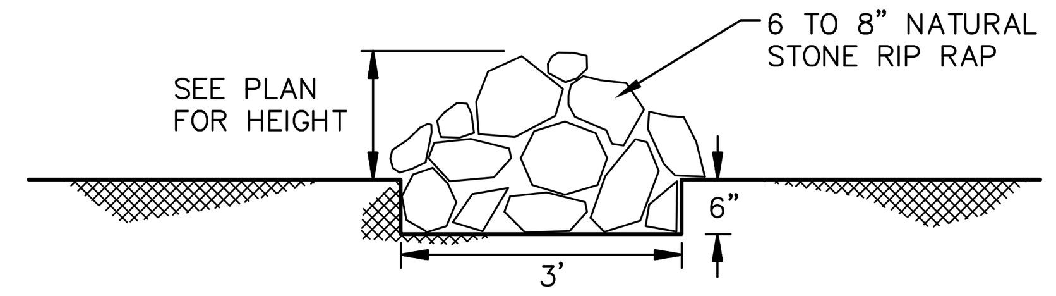


NOTE:
PLACE CONTRACTION JOINTS IN SIDEWALK AND CURB EVERY 5 FT.

TYPICAL INTEGRAL WALK & CURB

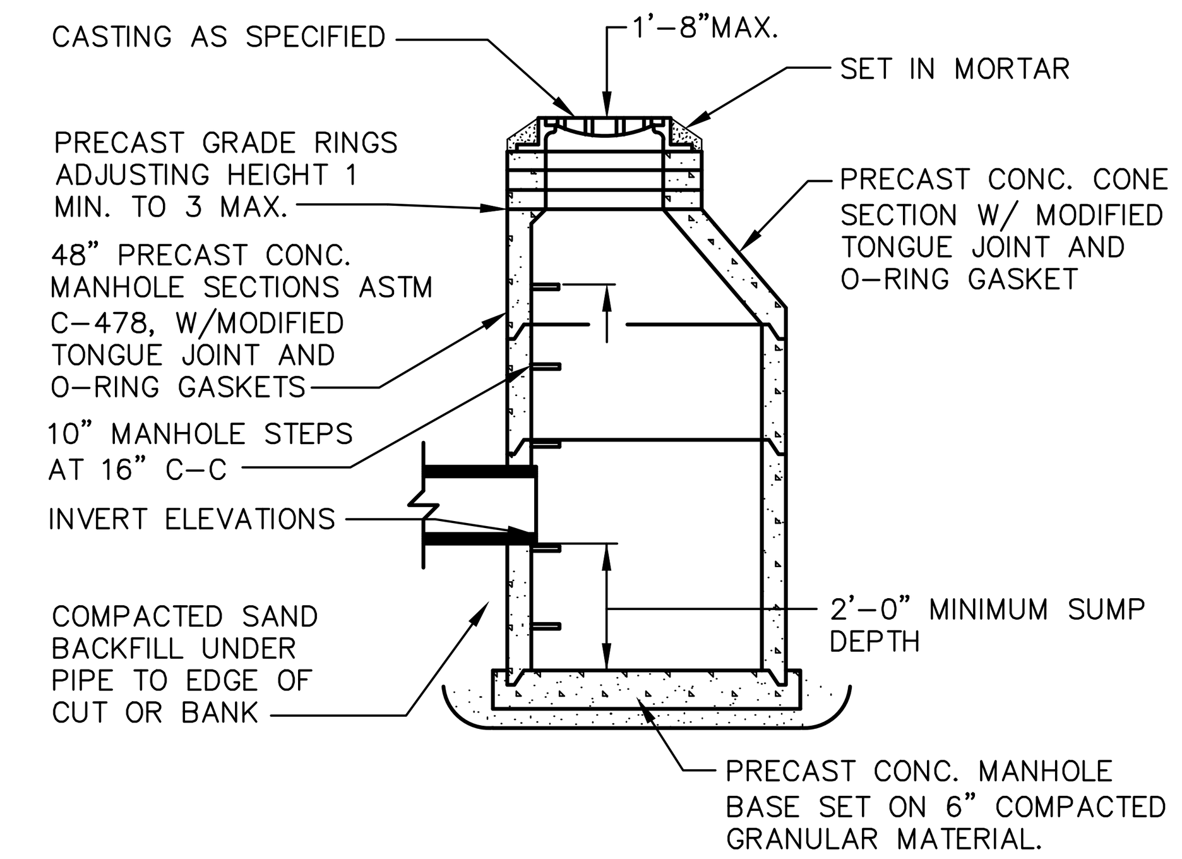
NOT TO SCALE





SEDIMENT FOREBAY RIP-RAP BARRIER DETAIL

NOT TO SCALE



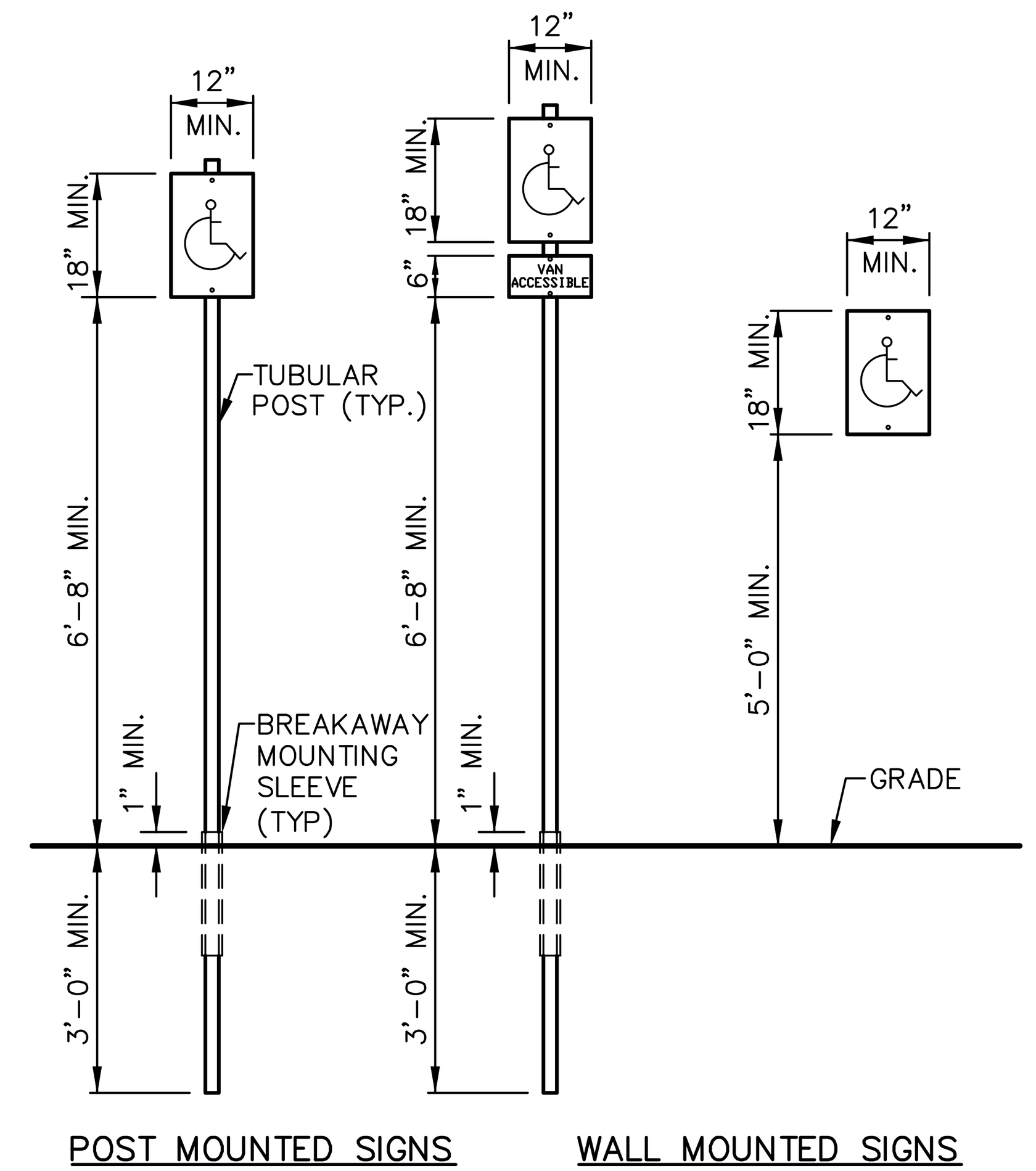
4' DIA. CATCH BASIN

NOT TO SCALE

SCALE: 1" = 20'

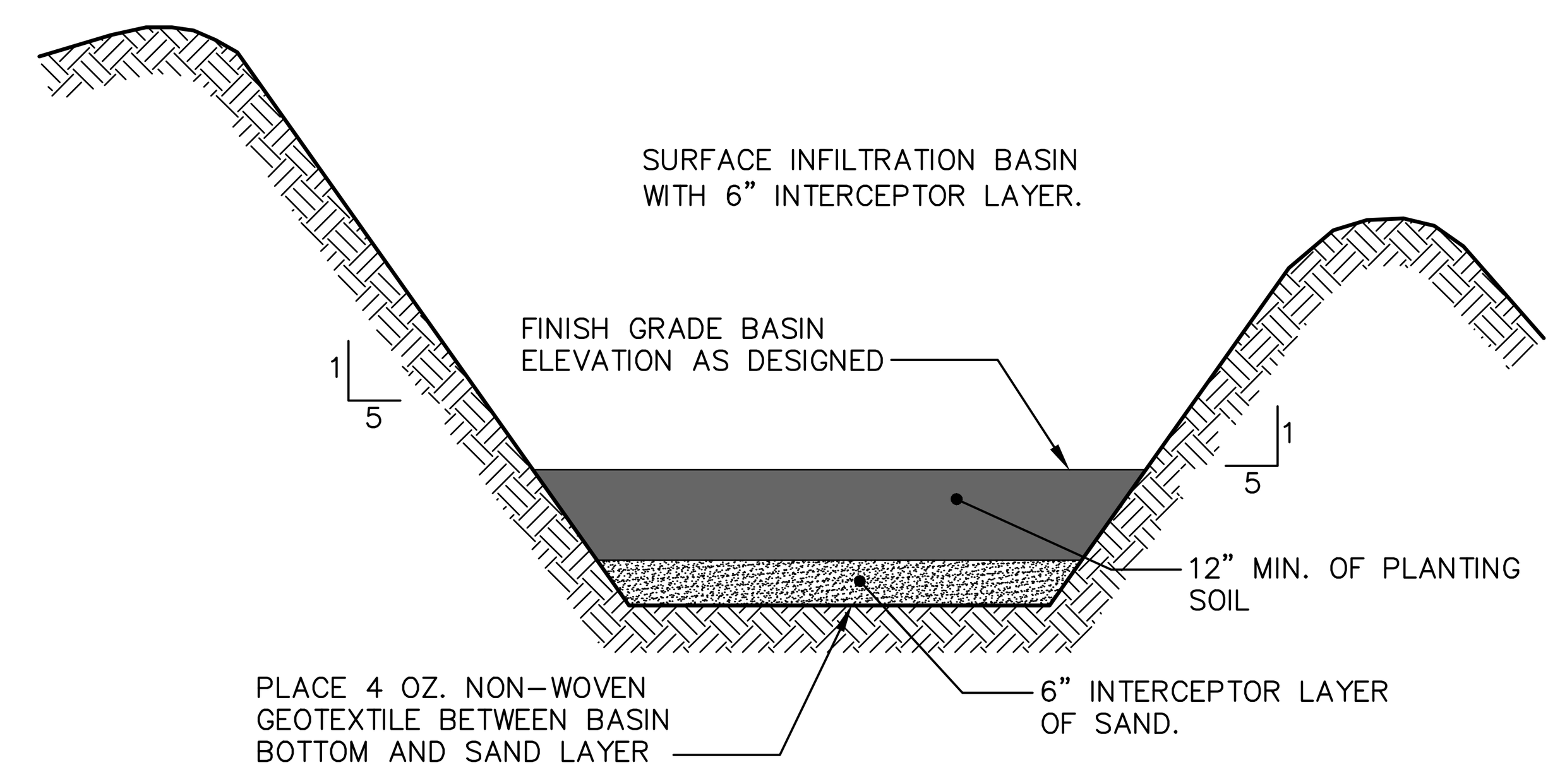
0 20 40 60

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



TYPICAL HANDICAP PARKING SIGNS

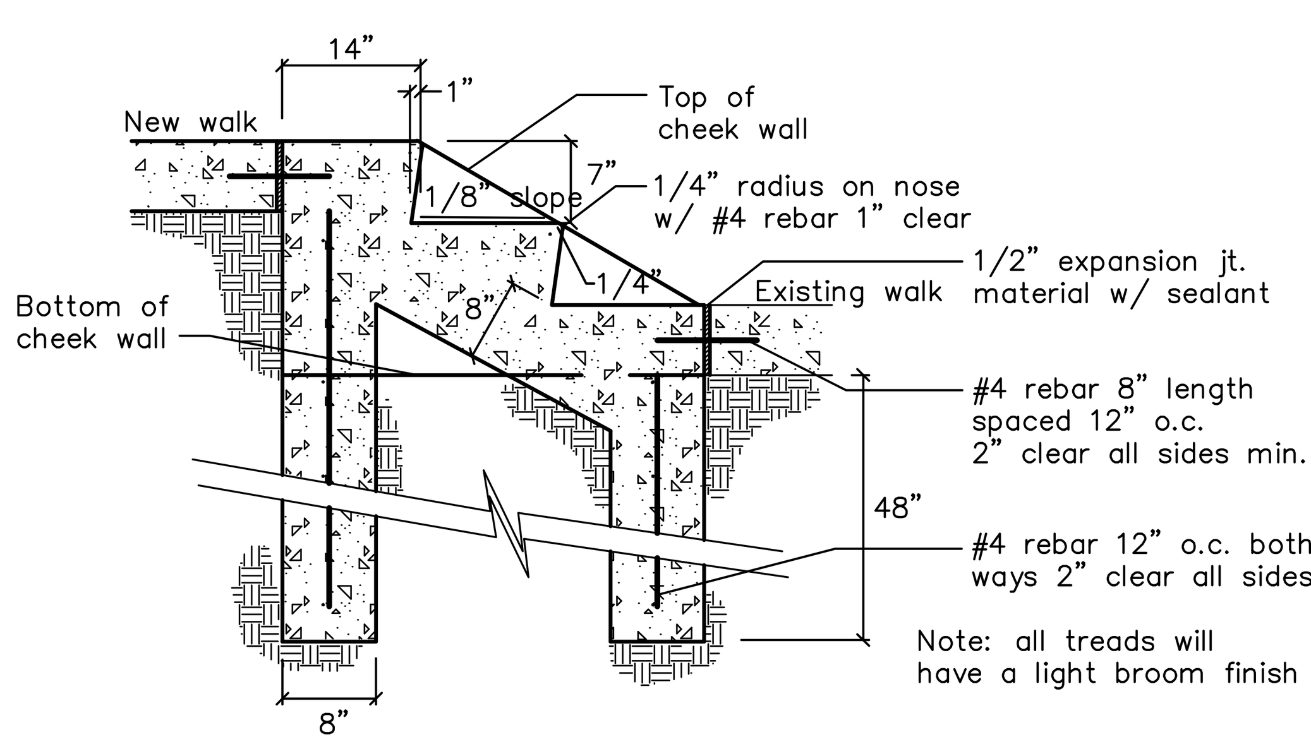
SCALE: 1/2" = 1'-0"



NOTES:
1. THE SAND LAYER AND GEOTEXTILE SHALL NOT BE PLACED IN THE BOTTOM OF THE INFILTRATION BASIN UNTIL ONSITE SOIL STABILIZATION IS IMMINENT TO PREVENT THE SILTING OF THE SAND LAYER DURING THE CONSTRUCTION PERIOD.
2. THE BOTTOM OF THE POND SHALL BE EXCAVATED TO A POINT 6 INCHES HIGHER THAN THE SUB BASE GRADE AND SHALL REMAIN AT THAT ELEVATION UNTIL ONSITE SOIL STABILIZATION IS IMMINENT AND THE SAND LAYER IS PLANNED TO BE INSTALLED. AT THAT TIME THE FINAL 6 INCHES OF MATERIAL SHALL BE REMOVED, ALONG WITH ANY SILTS THAT HAVE ACCUMULATED, LEAVING A CLEAN, SANDY BOTTOM. THE ENGINEER SHALL BE CONTACTED FOR INSPECTION PRIOR TO GEOTEXTILE AND SAND LAYER PLACEMENT.

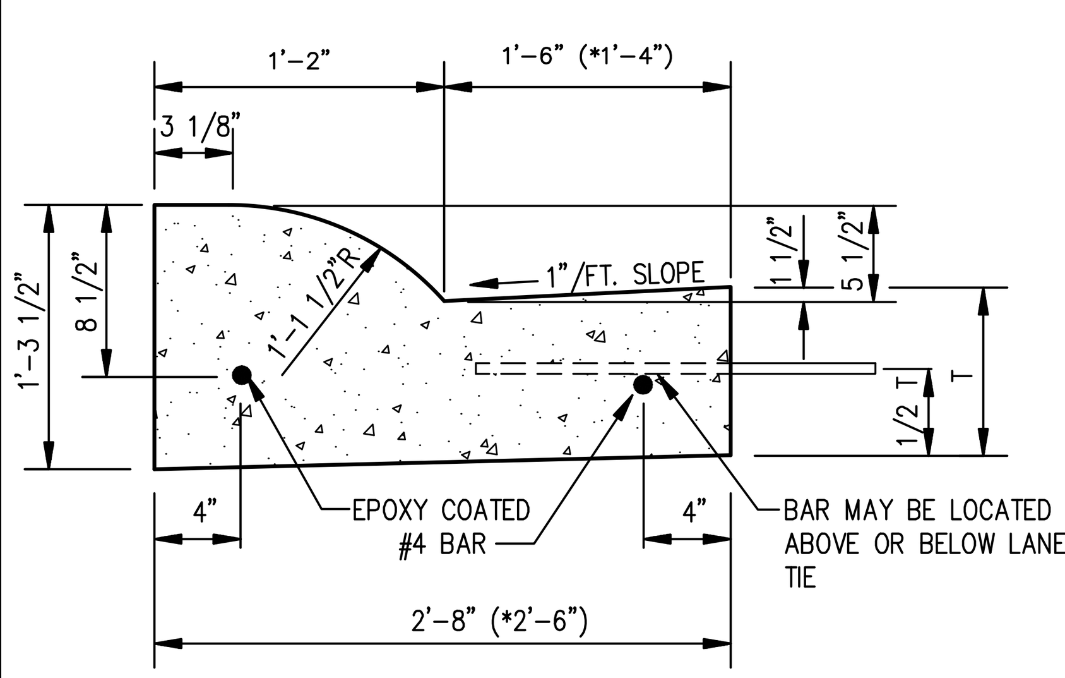
INFILTRATION BASIN WITH INTERCEPTOR LAYER CROSS SECTION

SCALE : NTS



CONCRETE STEP DETAIL

NOT TO SCALE

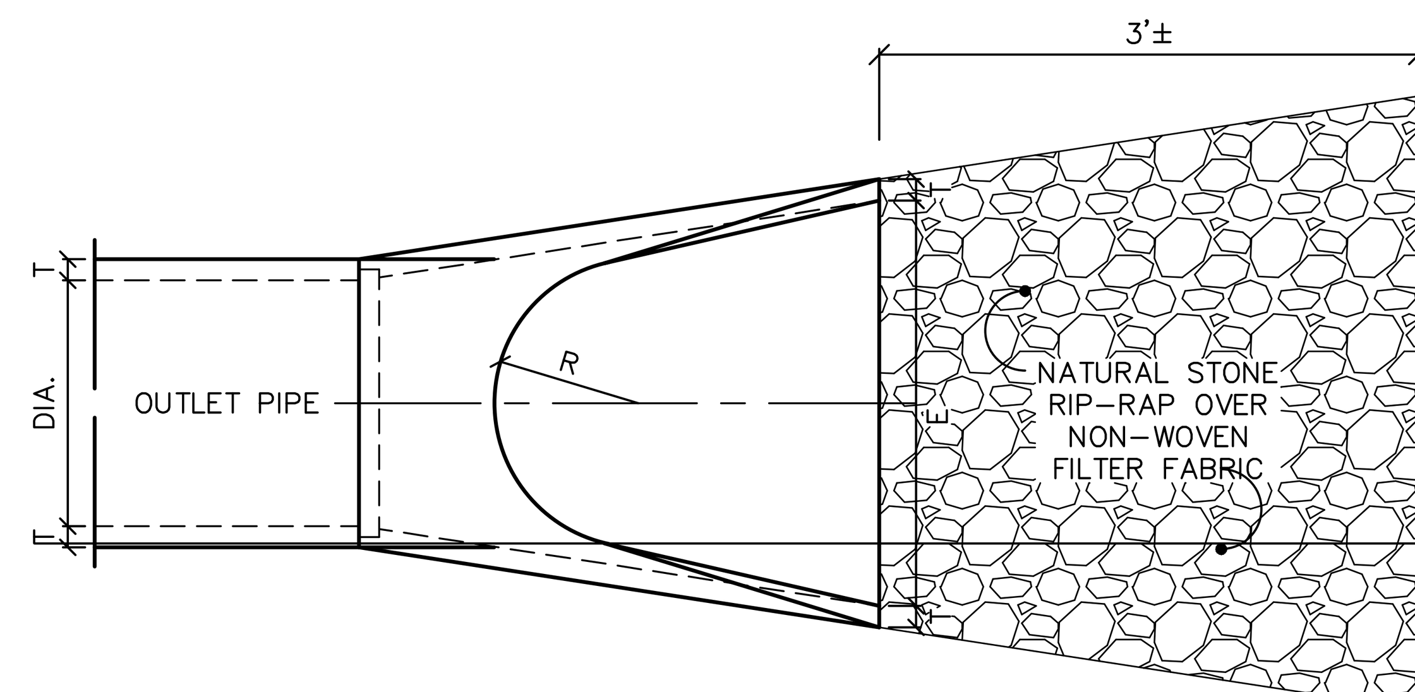


(* GUTTER PAN WIDTH MAY BE REDUCED WHEN APPROVED BY THE ENGINEER)

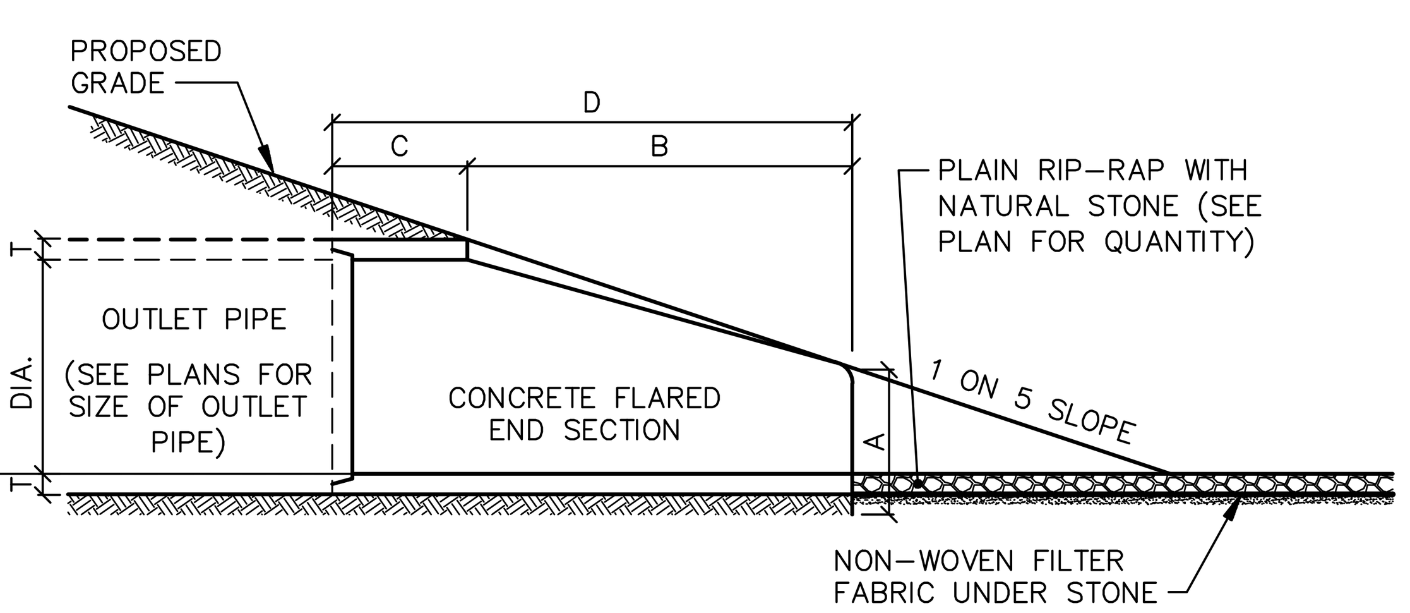
DETAIL	DIMENSION T	LANE TIES	CONCRETE CU. YD./LIN. FT.	CONCRETE CU. YD./LIN. FT.
B1	9"	AS SHOWN	0.0900	(*0.0855)
B2	9"	OMITTED	0.0900	(*0.0855)
B3	10"	AS SHOWN	0.0941	(*0.0894)

MDOT TYPE B
CONCRETE CURB & GUTTER

NOT TO SCALE



PLAN VIEW



DIA.	T	A	B	C	D	E	K	R
12"	7"	7"	2'	4'-0 1/8"	6'-0 3/8"	2'-0"	13"	9"
15"	2 1/4"	9 1/2"	2'-3"	3'-10"	6'-1"	2'-6"	15"	11"
18"	2 1/2"	1'-0 1/2"	2'-3"	3'-10"	6'-1"	3'-0"	18"	12"

CONCRETE FLARED END SECTION (13p)

NOT TO SCALE

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M:\Civil3d_Proj\17192\Construction\17192DT1.dwg, 3/4/2024 3:00 PM, Adam J. Lalik, 07 SITE DETAILS, MCLLC PDF.pc3

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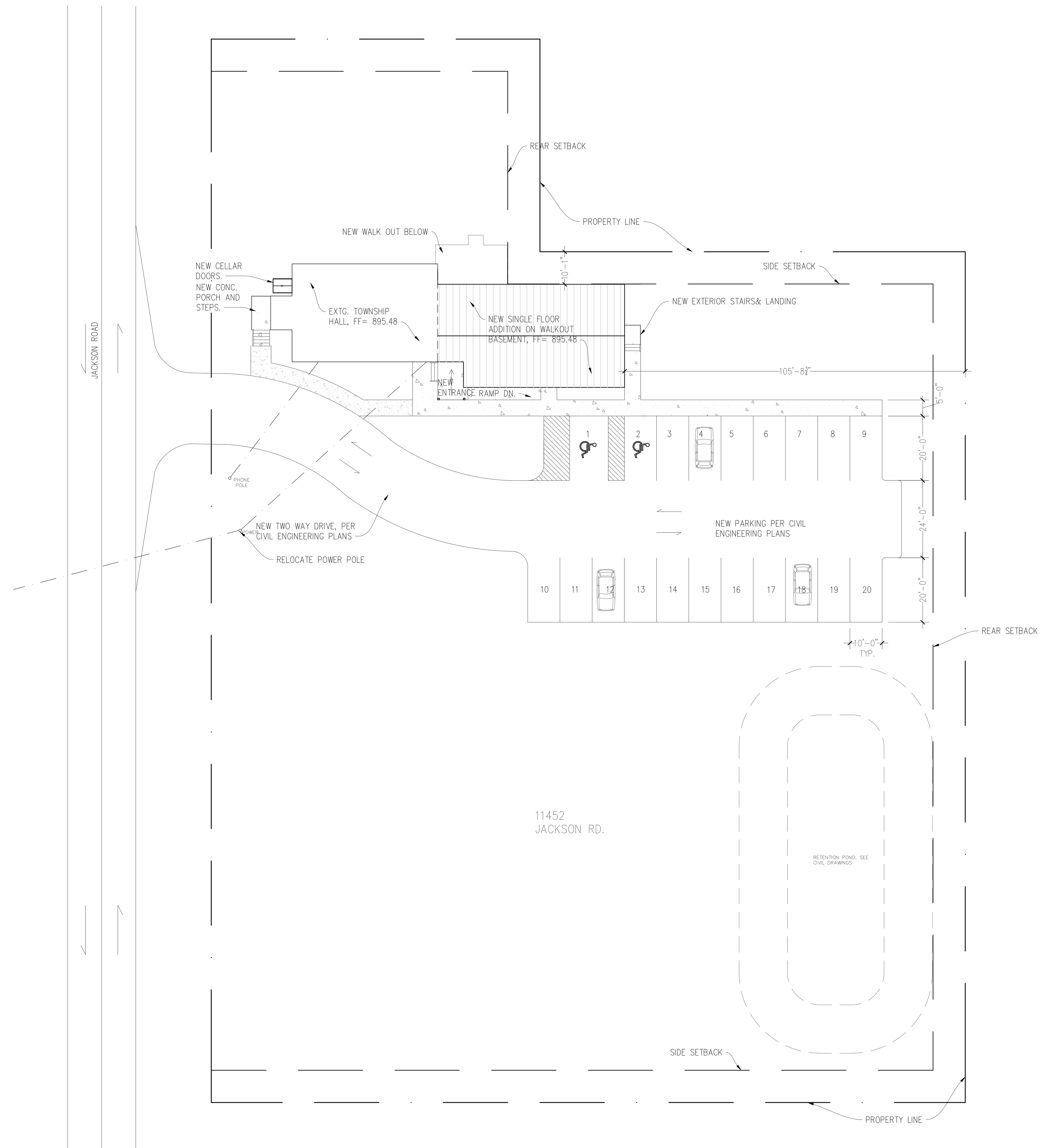
LIMA TOWNSHIP HALL EXPANSION
PRELIMINARY SITE PLAN
SITE DETAILS
NA

07

DATE: 03-04-24
SHEET 07 OF 07
CADD: CAD_INITIALS
ENG: AJL
PM: AJL
TECH: TECH_INITIALS
/17192DT1
FB#

REVISIONS: REV. DATE 1D 2D 3D 4D 5D 6D

JOB No. **17192**



01 / T1 **PROPOSED SITE PLAN**
SCALE: 1" = 20'-0"

NOTES:
1. CALL MISS DIG TO LOCATE UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
2. VERIFY WITH COUNTY IF SOIL EROSION CONTROL MEASURES ARE REQUIRED. IF REQUIRED, SEE 02/T1.

ABBREVIATIONS:

@	AT	HR.	HOUR
?	ANGLE	I.D.	INSIDE DIAMETER
CL	CENTER LINE	INT.	INTERIOR
Ø	DIAMETER, ROUND	INV.	INVERT
#	NUMBER, POUNDS	INS.	INSULATION
ACT.	ACOUSTICAL CEILING TILE	JT.	JOINT
ADJ.	ADJACENT	LBS.	POUNDS
A.F.F.	ABOVE FINISHED FLOOR	LAV.	LAVATORY
ALT	ALTERNATE	LLV.	LONG LEG VERTICAL
ALUM	ALUMINUM	LLH.	LONG LEG HORIZONTAL
BD.	BOARD	MDF.	MEDIUM DENSITY FIBERBOARD
BM.	BENCHMARK, BEAM	MH.	MANHOLE
BRG.	BEARING	MFR.	MANUFACTUR(ER)
BSMT.	BASEMENT	M.O.	MASONRY OPENING
BIT.	BITUMINOUS	MAX.	MAXIMUM
BLK.	BLOCK	MECH.	MECHANICAL
BLKG.	BLOCKING	MIN.	MINIMUM
B.O.T.	BOTTOM OF TRUSS	MISC.	MISCELLANEOUS
BOT.	BOTTOM	NO.	NUMBER
BLDG.	BUILDING	N.	NORTH
C.J.	CONTROL JOINT, CONSTRUCTION JOINT	N.I.C.	NOT IN CONTRACT
CLR.	CLEAR	N.T.S.	NOT TO SCALE
CAB.	CABINET	O.S.B.	ORIENTED STRAN BOARD
CPT.	CARPET(ED)	O.C.	ON CENTER
C.B.	CATCH BASIN	OPP.	OPPOSITE
CLG.	CEILING	O.D.	OUTSIDE DIAMETER
C.T.	CERAMIC TILE	OPNG.	OPENING
COL.	COLUMN	O.H.	OVERHEAD
CONC.	CONCRETE	PNT.	PAINT
C.M.U.	CONCRETE MASONRY UNIT	PLAM.	PLASTIC LAMINATE
CONST.	CONSTRUCTION	PLWD.	PLYWOOD
CONT.	CONTINUE, (ED), (OUS)	PTD.	PAINTED
CONTR.	CONTRACT(OR)	PVC.	POLYVINYL CHLORIDE
DIA.	DIAMETER	Q.T.	QUARRY TILE
DWG.	DRAWING	R, RAD.	RADIUS
D.S.	DOWNSPOUT	R.A.	RETURN AIR
DET.	DETAIL	REF.	REFERENCE
DBL.	DOUBLE	RQD.	REQUIRED
DR.	DOOR	R.O.W.	RIGHT OF WAY
E	EGRESS	R.D.	ROOF DRAIN
EF.	EXHAUST FAN	RM	ROOM
E.O.	EVERY OTHER	R.O.	ROUGH OPENING
EPDM.	ETHYLENE PROPYLENE DIENE MONOMER	S.	SOUTH
ELEC.	ELECTRIC(AL)	SCH.	SCHEDULE
ELEV.	ELEVATOR	SSK	SERVICE SINK
EQ.	EQUAL	SK	SINK
EXH.	EXHAUST	SHT	SHEET
E.J.	EXPANSION JOINT	SIM.	SIMILAR
EXT.	EXTERIOR	SPEC.	SPECIFICATION(S)
EIFS.	EXTERIOR INSULATION FINISHING SYSTEM	SQ.	SQUARE
EXTG.	EXISTING	SHTG.	SHEATHING
FIN.	FINISH(ED)	S.S.	STAINLESS STEEL
FT.	FOOT, FEET	STD.	STANDARD
FG.	FIBERGLASS	STL.	STEEL
F.A.	FIRE ALARM	STR.	STRUCTURAL
F.B.O.	FURNISHED BY OWNER	T.	TOILET
F.E.	FIRE EXTINGUISHER	T&G	TONGUE & GROOVE
FURN.	FURNISH(ED)	TR.	TREAD
FLR.	FLOOR(ING)	TERR.	TERRAZO
F.D.	FLOOR DRAIN	T.M.E.	TO MATCH EXISTING
FTG.	FOOTING	T.O.S.	TOP OF STEEL
FND.	FOUNDATION	T.O.C.	TOP OF CONCRETE
G.C.	GENERAL CONTRACTOR	TYP.	TYPICAL
GL.	GLASS, GLAZING	U/G	UNDERGROUND
GPBD.	GYPSUM BOARD	UL	UNDERWRITERS LABORATORIES INC.
HDR.	HEADER	V.	VOLT
HDWD.	HARDWOOD	VB	VINYL BASE
HDWE.	HARDWARE	V.C.T.	VINYL COMPOSITION TILE
HTG.	HEATING	VERT.	VERTICAL
HVAC.	HEATING/ VENTILATION, AIR CONDITIONING	V.I.F.	VERIFY IN FIELD
HT.	HEIGHT	W.C.	WATER CLOSET
HTR.	HEATER	W.W.M.	WELDED WIRE MESH
H.M.	HOLLOW METAL	WTR.	WATER
		WD.	WOOD

ZONING REVIEW:

ZONING
LIMA TOWNSHIP
R1-A – SUBURBAN RESIDENTIAL

FRONT SETBACK REQD:	50 FT
FRONT SETBACK EXTG:	18'-5¼"
FRONT SETBACK NEW:	18'-5¼"
SIDE SETBACKS REQD:	10 FT
EAST SIDE YARD EXTG:	228'-4"
EAST SIDE YARD NEW:	222'-0"
WEST SIDE YARD EXTG:	71'-3"
WEST SIDE YARD NEW:	10'-1"
REAR SETBACK REQD:	10 FT
REAR SETBACK EXTG:	151'-4¼"
REAR SETBACK NEW:	105'-8¾"
LOT AREA REQD:	3 ACRES
LOT WIDTH REQD:	150 FT
LOT COVERAGE REQD:	10% MAX
FLOOR AREA RATIO REQD:	0.10 MAX
BUILDING HEIGHT REQD:	35 FT MAX 2.5 STORIES
BUILDING HEIGHT EXTG:	24'-3½"
BUILDING HEIGHT NEW:	40'-8 11/16"

SITE

LOT AREA:	1.57 ACRES
LOT FRONTAGE:	330'-0"
EXTG BUILDING AREA:	1866.9 SF
EXTG. BUILDING TO REMAIN	1444 SF
NEW BUILDING AREA =EXTG. PLUS NEW	3,237 SF
EXTG LOT COVERAGE:	2.7%
NEW LOT COVERAGE:	4.7%

ADDITION

NEW FLOOR AREA:	1793 SF
NEW LOWER LEVEL AREA:	1793 SF
NEW ADDITION HEIGHT:	18'-9"

GENERAL NOTES:

A. THE CONTRACTOR SHALL ADHERE TO THE DRAWINGS AND SPECIFICATIONS HEREIN. DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS MUST BE APPROVED IN WRITING. THE ARCHITECT WILL NOT BE HELD LIABLE FOR DAMAGES RESULTING FROM UNAUTHORIZED DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS.

B. VERIFY PROPERTY AND SETBACK LINES PRIOR TO STAKING OUT NEW WORK.

C. DO NOT SCALE OFF FROM THE DRAWINGS. IF DIMENSIONAL QUESTIONS ARISE, CONTACT THE ARCHITECT.

D. ALL CONSTRUCTION WORK SHALL BE IN COMPLIANCE WITH THE 2018 MICHIGAN RESIDENTIAL CODE.

E. ALL ELECTRICAL WORK SHALL BE IN COMPLIANCE WITH THE 2015 MICHIGAN BUILDING CODE.

F. ALL PLUMBING WORK SHALL BE IN COMPLIANCE WITH THE 2015 MICHIGAN BUILDING CODE.

G. A FULL LIST OF BUILDING, ELECTRICAL, MECHANICAL, AND PLUMBING CODES CAN BE REFERENCED IN THE 2015 MICHIGAN BUILDING CODE.

H. VERIFY ALL EXISTING CONDITIONS PRIOR TO PROVIDING QUOTATIONS, OR ORDERING MATERIALS.

I. CALL MISS DIG TO LOCATE UTILITIES PRIOR TO EXCAVATION.

J. ALL DIMENSIONS ARE TO FACE OF STUDS, FACE OF C.M.U., AND CENTERLINE OF DOORS / WINDOWS, AND POSTS, UNLESS NOTED OTHERWISE.

SYMBOLS

ELEVATION MARKER
DETAIL NUMBER
SHEET NUMBER

DETAIL MARKER
DETAIL NUMBER
SHEET NUMBER

DRAWING TITLE
DETAIL NUMBER
Drawing
SCALE:

SHEET NUMBER

WALL SECTION MARKER
DETAIL NUMBER
SHEET NUMBER

SECTION MARKER
DETAIL NUMBER
SHEET NUMBER

DOOR TAG
DOOR NUMBER

ROOM TAG
ROOM NUMBER

WINDOW TAG
WINDOW NUMBER

SHEET INDEX:

FOR PLANNING COMMISSION REVIEW

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CIVIL ENGINEER
MCI
ANN ARBOR

PROJECT
NEW ADDITION & RENOVATION
LIMA TOWNSHIP HALL

11452 JACKSON RD.
Dexter, MI 48130

STATE OF MICHIGAN
SCOTT McELRATH
ARCHITECT
No.
LICENSED ARCHITECT

N

PROJECT ID

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EXTG	5.22.23
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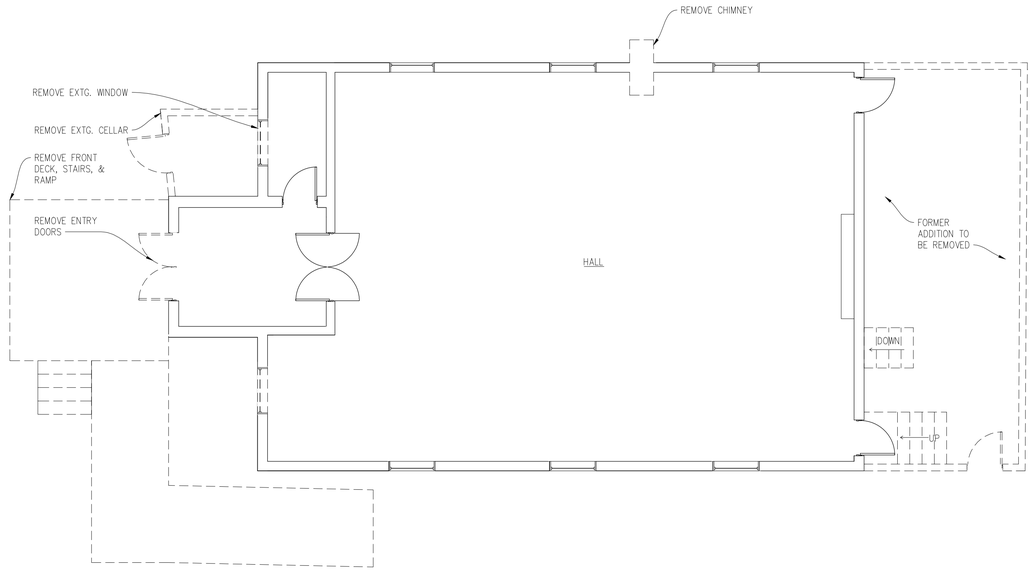
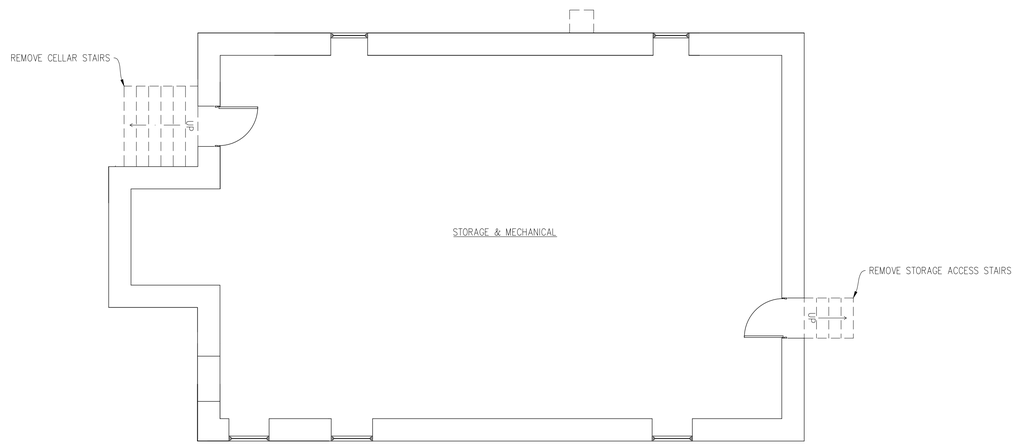
SHEET NUMBER
T1



02 EX1 EXISTING CONDITIONS/DEMOLITION MAIN FLOOR PLAN
SCALE: 3/16" = 1'-0"

NOTES: 1. CALL MISS DIG PRIOR TO EXCAVATION WORK. PROVIDE DUMPSTERS AND HAUL AWAY DEBRIS ON REGULAR BASIS.
2. ADEQUATELY SHORE UP EXISTING CONSTRUCTION PRIOR TO DEMOLITION WORK.
3. TAKE CARE NOT TO DAMAGE ANY EXISTING CONSTRUCTION TO REMAIN.



01 EX1 EXISTING CONDITIONS/DEMOLITION LOWER LEVEL PLAN
SCALE: 3/16" = 1'-0"

BUILDING CODE CHECKLIST:

ZONING:
LIMA TOWNSHIP

BUILDING CODES: 2015 MICHIGAN REHABILITATION CODE
2015 MICHIGAN BUILDING CODE
2015 MICHIGAN PLUMBING CODE
2010 ADA STANDARDS

ISSUE	REF	DATA/COMMENTS	
USE AND OCCUPANCY CLASSIFICATION			**CHAPTER 3**
CLASSIFICATION	303.4	GROUP A3 – ASSEMBLY	
GENERAL BUILDING HEIGHT & AREAS			**CHAPTER 5**
CONSTRUCTION TYPE VB EXISTING AND PROPOSED FIRE SUPPRESSION = NONE EXISTING AREA: MAIN FLOOR – 1,867 SF EXISTING, 423 SF DEMOLISHED, 1805 SF NEW, =3,249 SF TOTAL LOWER LEVEL – 1,444 SF EXISTING, 1805 SF NEW, =3,249 SF TOTAL			
GENERAL LIMITS	503.1	TYPE VB	
ALLOWABLE LIMITS	T504.3 T504.4 T506.2	HEIGHT: 65 FT STORIES: 3 AREA: 6,000 SF	
INCIDENTAL USE	T509	FURNACE ROOM	1 HR OR SPRINKLER
TYPES OF CONSTRUCTION			**CHAPTER 6**
FIRE RATING OF BUILDING	T601	PRIMARY STRUCTURAL FRAME BEARING WALLS: EXTERIOR INTERIOR NON-BEARING WALLS: EXTERIOR INTERIOR FLOOR/CEILING CONSTRUCTION ROOF CONSTRUCTION	0HR. 0HR. 0HR. 0HR. 0HR. 1HR. 0HR.
FIRE PROTECTION SYSTEMS			**CHAPTER 9**
AUTOMATIC SPRINKLER SYSTEMS	902.2.1.3	AN AUTOMATIC SPRINKLER SYSTEM SHALL BE PROVIDED FOR FIRE AREAS CONTAINING GROUP A3 OCCUPANCIES AND INTERVENING FLOORS OF THE BUILDING WHERE ONE OF THE FOLLOWING CONDITIONS EXIST: –OVER 12,000 SF –OCCUPANT LOAD OF 300 OR MORE –THE FIRE AREA IS LOCATED ON A FLOOR OTHER THAN A LEVEL OF EXIT DISCHARGE SERVING SUCH OCCUPANCIES.	
FIRE EXTINGUISHERS	906.3	IN GROUP A OCCUPANCIES: TYPE 2–A (1 PER 1,500 S.F.) MOUNT TOP AT MAX. 60" ABOVE FINISHED FLOOR MAXIMUM DISTANCE OF TRAVEL TO EXTINGUISHER IS 75 FEET	
FIRE ALARMS	907.2.1	A MANUAL FIRE ALARM SYSTEM THAT ACTIVATES THE OCCUPANT NOTIFICATION SYSTEM SHALL BE INSTALLED IN GROUP E OCCUPANCIES WHERE THE OCCUPANT LOAD IS 300 OR MORE.	
MEANS OF EGRESS			**CHAPTER 10**
FLOOR AREA/OCCUPANT LOAD	T1004.1.2	15 NET SF PER OCCUPANT 1,637 SF/15 SF NET/PERSON A3 USE =109 PEOPLE MAXIMUM OCCUPANT LOAD BASED ON FLOOR AREA AND EXITS IS 109.	
WATER CLOSET REQUIRED	T403.1	MEN: 1 PER 125 WOMEN: 1 PER 65	= 1 REQUIRED, 1 PROVIDED = 1 REQUIRED, 1 PROVIDED
LAVATORY OCCUPANT LOAD	T403.1	MEN :1 PER 200 WOMEN: 1 PER 200	= 1 REQUIRED, 1 PROVIDED = 1 REQUIRED, 1 PROVIDED
ADA TOILET REQUIREMENTS:		1 PER GENDER TOILET ROOM	= 1 REQUIRED, 1 PROVIDED
DIAPERING REQUIREMENTS:		1 REQUIRED FOR INFANTS	= 1 REQUIRED, 1 PROVIDED
NUMBER OF EXITS	1006.2	TWO EXITS OR EXIT ACCESS DOORWAYS FROM ANY SPACE SHALL BE PROVIDED WHERE THE DESIGN OCCUPANT LOAD OR THE COMMON PATH OF EGRESS TRAVEL DISTANCE EXCEEDS THE VALUES LISTED IN TABLE 1006.2.1. – <49 OCCUPANTS OR <75' MAX TRAVEL DISTANCE TO EXIT MORE THAN TWO EXITS PROVIDED AT MAIN FLOOR ONE EXIT AT LOWER LEVEL AS LESS THAN 49 OCCUPANTS AND LESS THAN 75' TRAVEL DISTANCE	
ACCESSIBLE MEANS OF EGRESS	1009	MIN. 2 ACCESSIBLE MEANS OF EGRESS REQUIRED	
DOORS	1010.1.1	MIN. 34" WIDE EXIT (36" WIDE FOR ADA)	
RAMPS	1012	MAX. SLOPE = 1:12, MAX. RISE 30" BETWEEN LANDINGS	
TRAVEL DISTANCE	T1017.2	200 FT. MAX WITH NO SPRINKLER SYSTEM	
CORRIDORS	T1020.1	AT GROUP A OCCUPANCIES GREATER THAN 30 PEOPLE – 1 HOUR FIRE RATING REQUIRED. AT BUSINESS SIDE LESS THAN 30 PEOPLE = 0 FIRE RATING REQUIRED	
REQUIRED EGRESS ILLUMINATION	1008.2.1	NOT LESS THAN 1 FOOTCANDLE AT WALKING SURFACE	
EMERGENCY POWER FOR ILLUMINATION	1008.3.2	IN CASE OF POWER FAILURE, AN EMERGENCY ELECTRICAL SYSTEM SHALL AUTOMATICALLY ILLUMINATE INTERIOR EXIT ACCESS STAIRWAYS AND RAMPS, INTERIOR AND EXTERIOR EXIT STAIRWAYS AND RAMPS, VESTIBULES USED FOR EXIT AND EXIT PASSAGEWAYS.	

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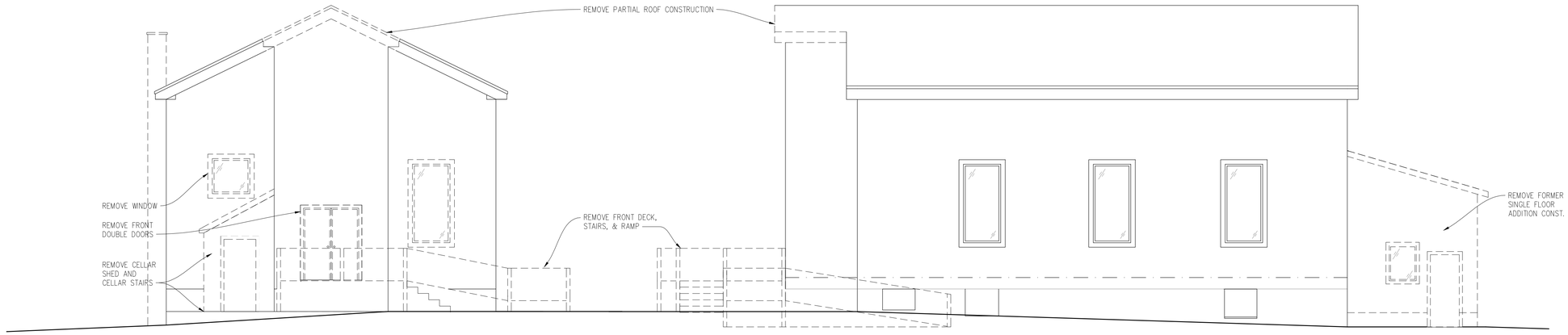
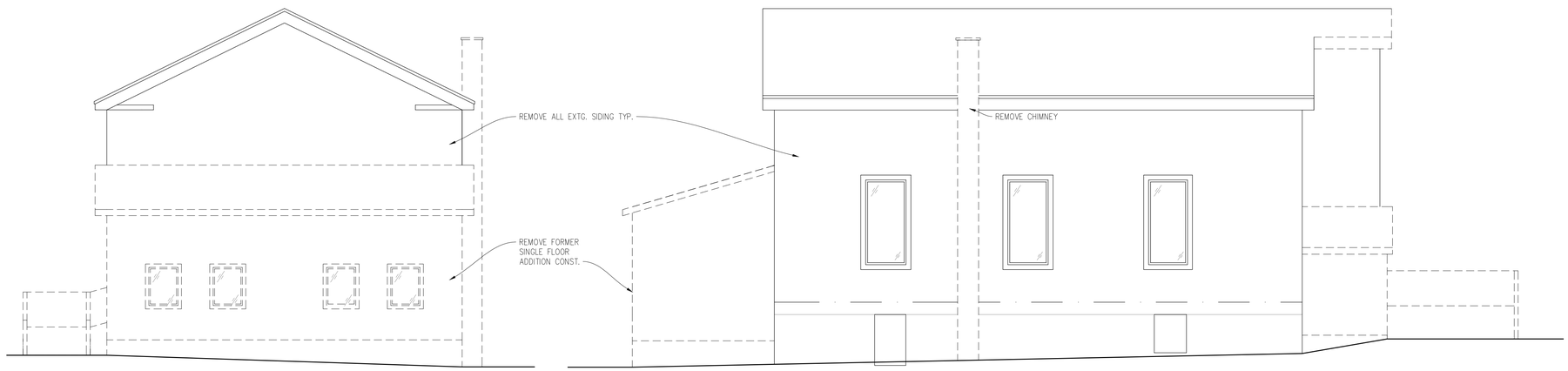
EX1



01 EX2 EXISTING CONDITIONS/DEMOLITION SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

02 EX2 EXISTING CONDITIONS/DEMOLITION EAST ELEVATION
SCALE: 3/16" = 1'-0"



03 EX2 EXISTING CONDITIONS/DEMOLITION NORTH ELEVATION
SCALE: 3/16" = 1'-0"

04 EX2 EXISTING CONDITIONS/DEMOLITION WEST ELEVATION
SCALE: 3/16" = 1'-0"

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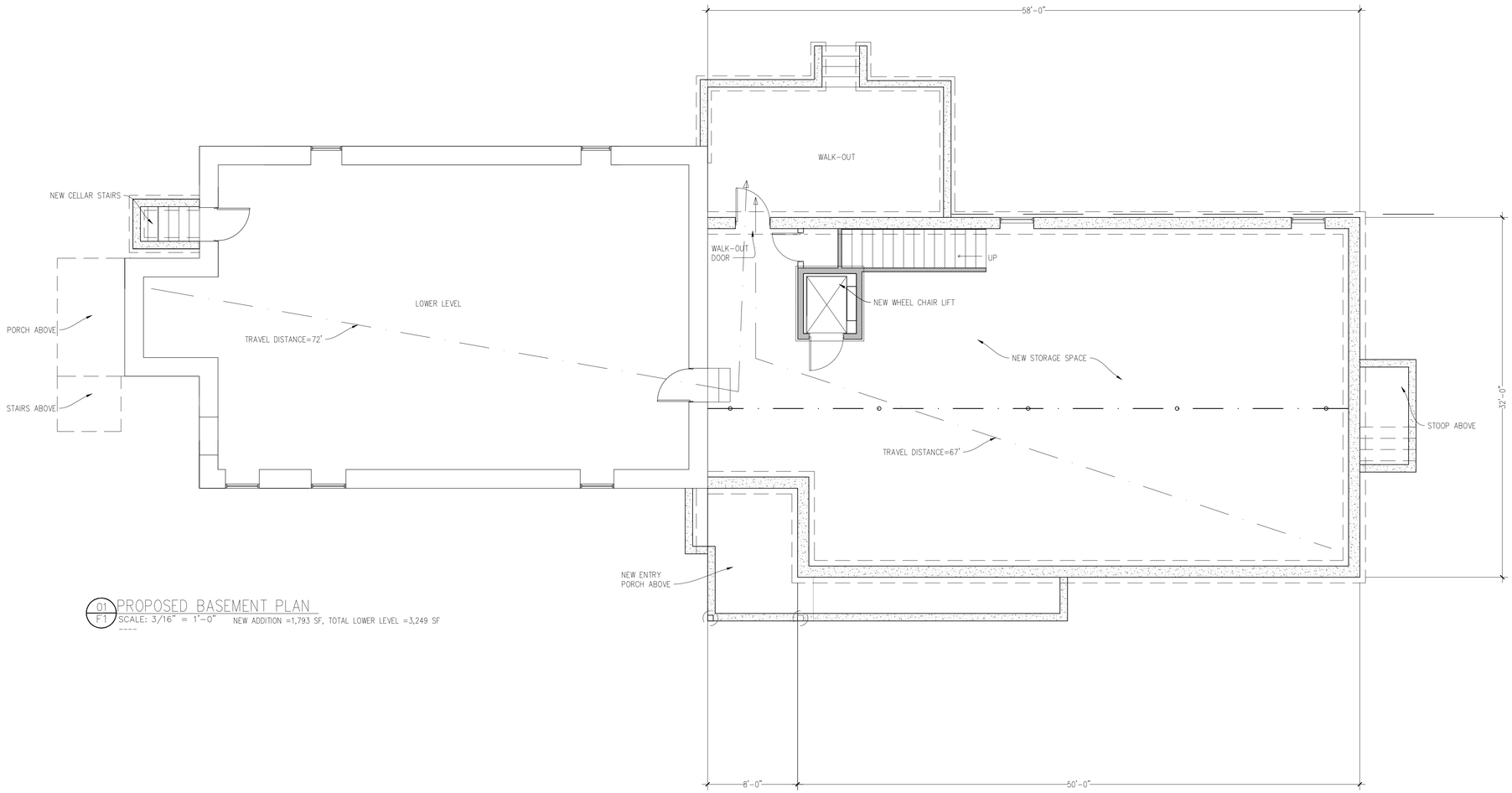
EX2



01 F1 PROPOSED BASEMENT PLAN
SCALE: 3/16" = 1'-0"

NEW ADDITION =1,793 SF, TOTAL LOWER LEVEL =3,249 SF

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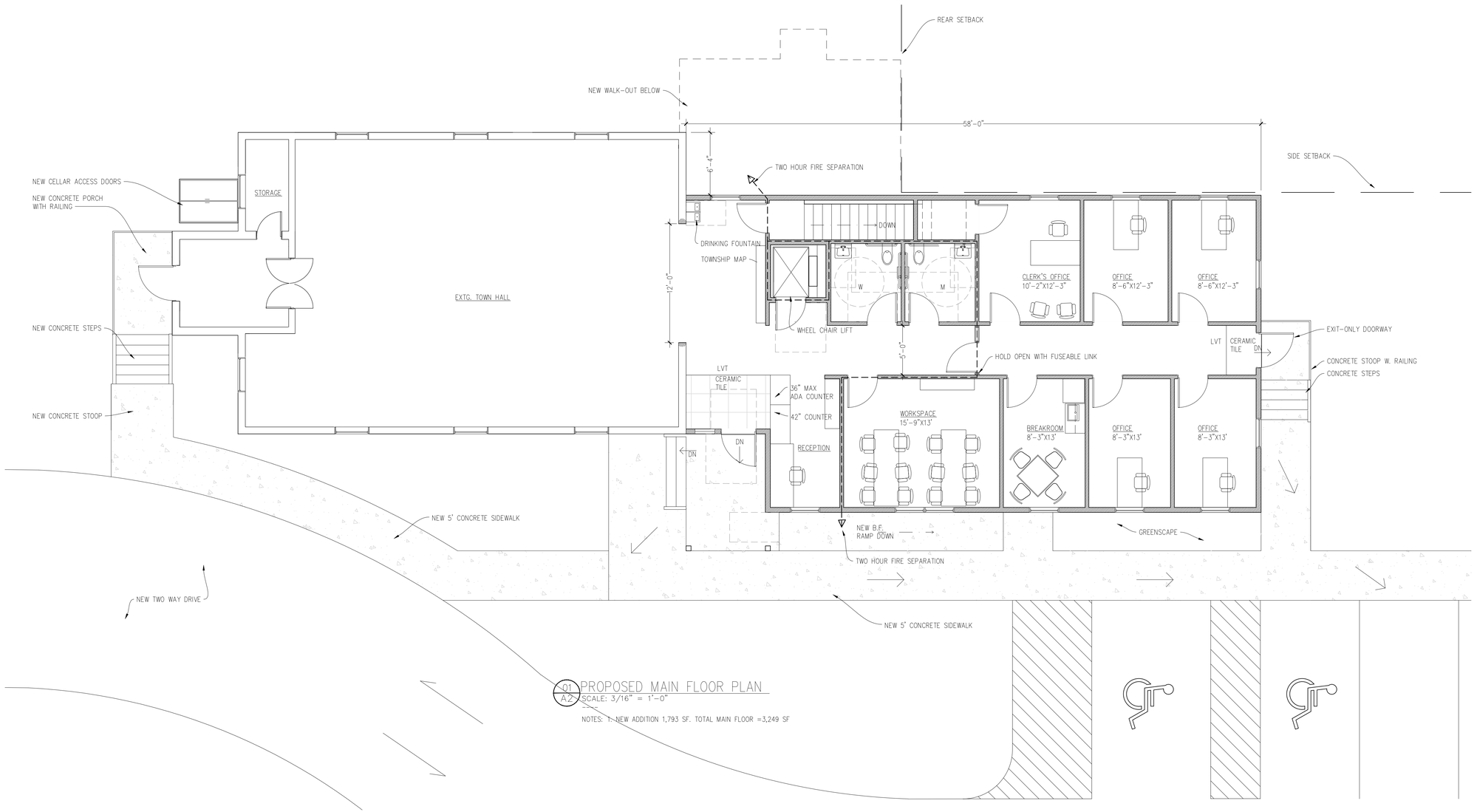

Q1 / A2 PROPOSED MAIN FLOOR PLAN

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

NOTES: 1. NEW ADDITION 1,793 SF. TOTAL MAIN FLOOR =3,249 SF

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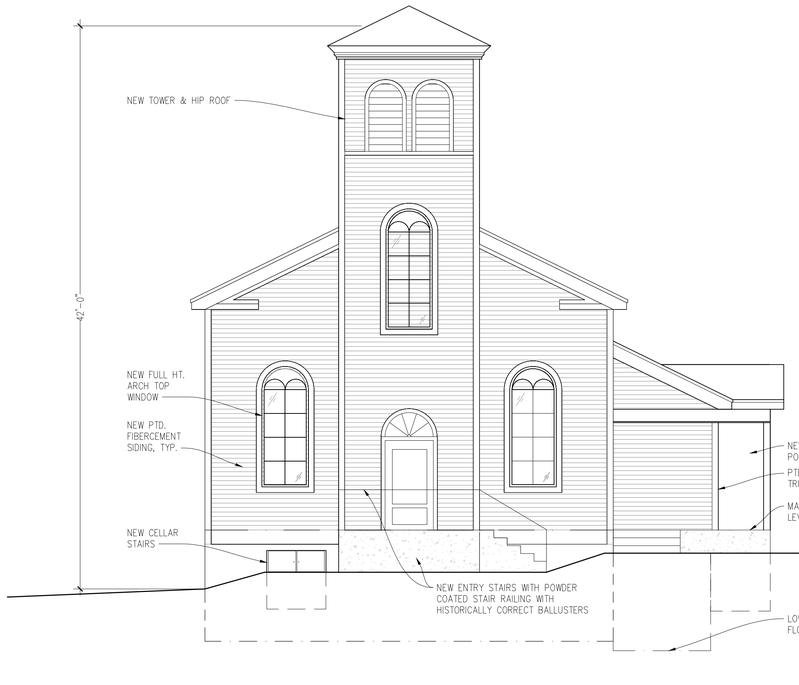
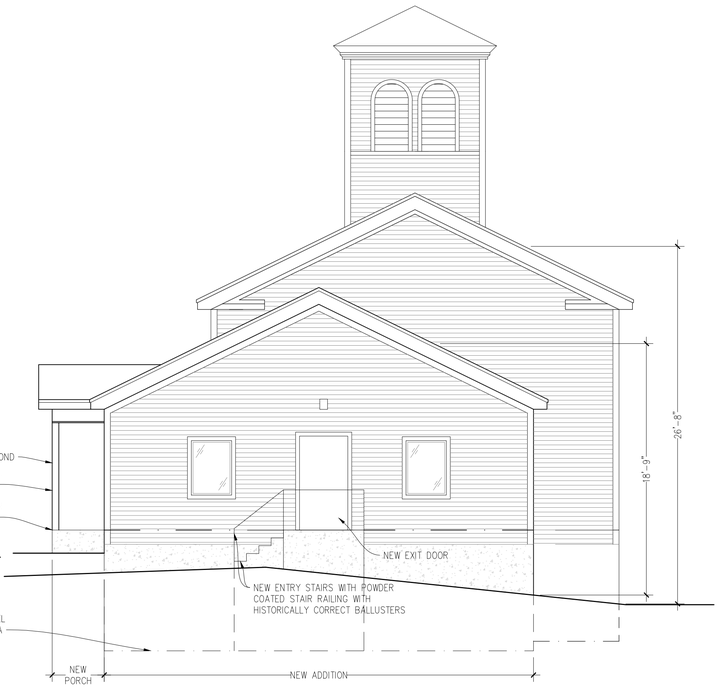
A2



01 A5 PROPOSED SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



02 A5 PROPOSED NORTH ELEVATION
SCALE: 3/16" = 1'-0"

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A5

01 A6 PROPOSED EAST ELEVATION
SCALE: 3/16" = 1'-0"

02 A6 PROPOSED WEST ELEVATION
SCALE: 3/16" = 1'-0"

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A6