The electronic public meeting will be held as a telephonic conference. The public may participate in the electronic public meeting by calling 1-866-866-2244 and entering the conference code number 43959476 when prompted. The public will be able to listen to all discussion by Commission members and will be permitted to speak for up to 5 minutes during the public comment section of the agenda.

AGENDA
JOINT PLANNING COMMISSION
TELEPHONE CONFERENCE
Tuesday – May 12, 2020 - 7:00 p.m.

CALL TO ORDER

ROLL CALL

ESTABLISH RULES FOR REMOTE MEETINGS

JPC Members will consider the recommendation to adopt the resolution to establish Rules for Remote Meetings.

APPROVAL OF AGENDA

APPROVAL OF MINUTES – Minutes from January 14, 2020

AUDIENCE PARTICIPATION

Items on the agenda-- Citizens who wish to speak on a matter *on the agenda* may do so when called upon by the Chairman. Those people addressing the Board are required to give their name and address for the record and shall be limited to speaking for a maximum of five (5) minutes on a given matter. Rebuttals shall be limited to one (1) minute when called upon by the Chairman.

PUBLIC HEARINGS

OLD BUSINESS

None

NEW BUSINESS

1. Site Plan #JPC20.01 for Family Bible Church at 725 Old US 27 N.

PUBLIC COMMENTS FOR ITEMS NOT ON THE AGENDA -- Citizens who wish to address the Board on items *not on the agenda* may do so at this time. When called upon by the Chairman, please state your name and address for the record. Members of the public shall be limited to speaking for a maximum of two (2) minutes.

REPORTS

ADJOURN

JOINT PLANNING COMMISSION

RESOLUTION NO. 2020-_____

A RESOLUTION ESTABLISHING RULES FOR REMOTE MEETINGS FOR ATTENDANCE BY THE CITY OF MARSHALL/MARSHALL TOWNSHIP JOINT PLANNING COMMISSION AND MEMBERS OF THE PUBLIC AT REMOTE MEETINGS DUE TO CORONAVIRUS (COVID-19) PANDEMIC

The Joint Planning Commission ("JPC"), in the City of Marshall, Calhoun County, Michigan, hereby resolves:

At a regular meeting of the Board of the JPC ("Commission") held by remote telephonic methods, in the County of Calhoun, State of Michigan, on the _____ day of _____, 2020, at _____ o'clock in the [AM/PM].

The meeting was called to order at _____ o'clock in the [AM/PM] by _____.

Present: _____

Absent: _____

The following preamble and resolution were offered by _____ and supported by _____:

WHEREAS, on March 10, 2020, Governor Whitmer, acting under the Michigan Constitution of 1963 and Michigan law, declared a state of emergency across the State of Michigan as a result of the COVID-19 outbreak; and

WHEREAS, the Michigan Department of Health and Human Services (MDHHS) has issued Interim Recommendations for COVID-19 Community Mitigation Strategies; and

WHEREAS, such strategies include encouraging staff to tele-work when feasible and implement social distancing measures, including limiting in-person meetings, and to limit large work-related gatherings; and

WHEREAS, on March 18, 2020, Governor Whitmer issued Executive Order 2020-15 to suspend rules and procedures relating to physical presence at meetings and hearings of public bodies to allow for public bodies to continue to conduct public business during the COVID-19 emergency and the general public to continue to participate in government decision making without unduly compromising public health, safety, and welfare; and

WHEREAS, to implement MDHHS's mitigation strategies and allow the JPC Board (hereinafter, the "Board"), and all of its Committees (as applicable) (hereinafter, collectively: "Public Body") to continue public business, and to allow the public to attend meetings of the Public Body remotely if they desire, consistent and in compliance with Executive Order 2020-15, the Board desires to establish rules to authorize and allow the Public Body and general public to attend Public Body meetings by telephone or other electronic means as set forth in this Resolution; and

WHEREAS: The Board desires to authorize and direct its Chairperson, and those so designated, to take all necessary measures to enable the Public Body to facilitate public meetings as permitted under Executive Order 2020-15, and as may be extended, or by superseding Executive Order of similar effect issued by the Governor.

NOW, THEREFORE, BE IT RESOLVED THAT:

The Board authorizes and directs the Chairperson, and those so designated, to take all necessary measures to enable the Public Body to facilitate public meetings as permitted under Executive Order 2020-15, and as may be extended, or by superseding Executive Order of similar effect issued by the Governor.

The Board immediately authorizes its Public Body members and Staff and members of the general public to attend all meetings of the Public Body by telephone or other electronic means and establishes rules that must be followed in order for remote public meetings of the Public Body to be properly conducted:

A. All Public Body meetings may be held electronically consistent with EO 2020-15, and similar Executive Orders issued by the Governor during this unprecedented time of COVID-19.

B. NOTICE OF PUBLIC MEETINGS:

1. For a meeting(s) to be held pursuant to this Resolution, JPC officials or City Staff shall post on the homepage of City's website in a conspicuous location and at City Hall at 323 West Michigan Avenue, Marshall Michigan, 49068, the following:
    a. An explanation of why the meeting is being held remotely.
    b. The Agenda for the meeting at least 18 hours prior to the meeting.
    c. Contact information for all members of the Public Body along with information about how the public may contact the member(s) to provide input on any business that will come before the Public Body.
    d. Procedures for public participation, such as: a link to an electronic link for online meeting participation, or a telephone number for conference calling, or both.
    e. Procedures to allow for participants with disabilities to participate in the remote meeting.

C. CONDUCT OF THE PUBLIC MEETING:

1. The telephone or other electronic technology being utilized to allow the remote meeting shall allow the Public Body members, Staff, and the general public to

communicate.

2. Upon the start of the remote meeting, Board members or Staff shall immediately ensure that that the dial-in number or other means of conducting the meeting remotely is working. If the system is not working properly, the meeting shall either be paused temporarily or adjourned without any decision or deliberation on any matter until such time as the system is working properly.

3. Attendance. Public Body members' remote attendance shall be considered attendance for the purpose of establishing a quorum.

4. Public Body Action. Public Body members may make motions and vote as he or she would during a physical meeting. Any vote by a member participating remotely pursuant to this Resolution shall be counted in the total number of votes for any matter and shall not be held invalid for the reason that it was cast by a member remotely. All votes taken during the remote meeting shall be completed by roll call vote so the general public will know how each member voted; this information will then be properly recorded in the meeting minutes.

5. Closed Session.

   a. The Public Body may conduct a closed session portion of the meeting, if necessary, as regulated by the Open Meetings Act, EO 2020-15 and authorized applicable Executive Orders.

   b. For closed sessions conducted under this Resolution, each Public Body member and authorized attendee of the closed session shall not allow anyone else to hear or view the closed session. Except the person designated to keep minutes of the closed session, individual Public Body members and authorized attendees shall not record or cause to be recorded the closed session other than the official closed session meeting minutes.

   c. All Public Body members and authorized attendees of the closed session shall affirm, before the start of the closed session, that they are in compliance with this Resolution subsection No. 5.

   d. A separate call-in number or other electronic means of remotely participating shall be available for the Public Body to utilize for closed session that is not available to the public, and that shall not be recorded other than closed session meeting minutes. A Public Body member or Staff shall clearly indicate during the agenda when the closed session will occur and that the general public will not be able to hear or participate or provide comment during the closed session. The Public Body shall return to the public meeting following closed session to adjourn the meeting or take other action as necessary.

6. Emails, texting, or other forms of electronic communication by or between Public Body members during the meeting are prohibited.

7. Public Body members receiving electronic communications from a member of the public one-half (1/2) hour prior to the start of the remote meeting related to any item on the agenda for the meeting may be read by the member receiving the communication during the agenda item and it shall be addressed by the Public Body as appropriate during the meeting.

8. Adjournment of a meeting shall require a roll call vote of the Public Body.

D. ATTENDANCE BY MEMBERS OF THE PUBLIC:

1. Except for closed session, the general public may tape-record, videotape, broadcast on live radio, or telecast on live television the proceedings of the public meeting without prior approval in accordance with the OMA. Press and other news media are allowed to participate.

2. General public participation will not require registration in order to participate, and names will only be given as is necessary to participate in public comment.

3. Members of the public participating remotely shall be provided an opportunity to provide public comment during a public comment section of the agenda pursuant to the rules of the Public Body on public comment. Such opportunity shall be given by the designated facilitator asking each participant whether they have any public comment.

4. No person may be excluded, unless a breach of the peace is committed during the public meeting and they are excluded by the Public Body under the rules stated under the OMA for disruption.

E. PUBLIC HEALTH, SAFETY, AND WELFARE:

This Resolution is intended to establish rules for and authorize participation by remote access by the Public Body members, Staff, and attendance of the general public in the interest of the public health, safety, and welfare during the Coronavirus (COVID-19) pandemic while preserving meaningful access to meetings and participant communication.

F. CONFLICT:

In the event of a conflict between this Resolution and the Rules of the Public Body, this Resolution shall control.

G. EFFECTIVE:

This Resolution shall be effective immediately and shall remain in effect so long as Executive Order 2020-15 is in effect, extended, or superseded by a similar Executive Order, which shall be acknowledged by the Public Body and the Resolution affirmed at the subsequent public meeting, including remote meetings.

ROLL CALL VOTE:

AYES:

NAYS:

Resolution declared adopted this _____ day of _____, 2020.

_____
Clerk

The undersigned duly qualified and acting Clerk of the Board hereby certifies that the foregoing is a true and complete copy of a Resolution adopted by the Board at a special meeting held on the _____ of _____, 2020, the original of which is a part of the Board's minutes and further certifies that notice of the meeting was given to the public pursuant to the provisions of the Open Meetings Act, 1976 PA 267, as amended.

_____
Clerk

City of Marshall and Marshall Township

Joint Planning Commission Minutes

January 14, 2020 7PM

In a regular session, Tuesday, January 14, 2020 at 7:00 p.m. at Marshall City Hall, 323 W Michigan Ave, Marshall, Michigan, the City of Marshall and Marshall Township Joint Planning Commission was called to order by Chair Lyng.

ROLL CALL

Members Present: Chair Lyng, Commissioners Burke-Smith, Kiessling, Reed, Walsh and alternate Gresly

Members Absent: Commissioner Davis and Rodgers

Staff Present: Paul Anderson, Marshall Township

Trisha Nelson, City of Marshall Planning and Zoning

Eric Zuzga, City of Marshall, Director of Special Projects

AGENDA

MOTION by Walsh, supported by Burke Smith to accept the agenda for the Tuesday, January 14, 2020 as submitted. On a voice vote; **MOTION CARRIED.**

MINUTES

MOTIONS by Walsh, supported by Kiessling, to accept the minutes from the Tuesday, December 10, 2019 as submitted. On a voice vote; **MOTION CARRIED.**

PUBLIC COMMENTS ON AGENDA ITEMS

Bryan Fish, 15515 A Dr N, Marshall Township, stated that he lives approximately one mile southwest of the property being discussed tonight. He stated that he and his wife are retired from the Department of Natural Resources, and Department of Environmental Quality and have a background in environmental sciences. He stated that when the grow operations started in Colorado they were called upon with numerous citizen complaints. He stated that they share the same watershed as the property and was curious if they planned to stay on well and septic or if with the 425 agreement were they going to be on City water and sewer as they will need a lot of water. Lyng stated that as of this time there have not been any requests to extend the utilities at this time. Fish stated that to use the amount of water they would need it would need to be permitted if it was with a well, and there are no exemptions for this type of property. The discharge would be another issue, as he is concerned the city is nearing capacity in the treatment plant and if they go with a septic system, they would need a permit for that as well. He stated that the largest complaint that was received from the Colorado grow operations was the odor that was released into the community. The toxins from fertilizers and insect treatments could escape and would need to be regulated. He is also concerned that the waste from the building may be used for composting, which would create a tremendous odor that would blow towards his home. Walsh stated that in the previous meeting that the concern with odor was brought up and was assured by Doug Stewart of Delta One that there are carbon filters in each room, and that the city addresses odor in the City Ordinance.

Walsh further stated that as of now, they are just dealing with the zoning of the property as there are no site plans that have come forth. Fish questioned if this meeting was conditional on appropriate permits being obtained. Lyng stated that this meeting is for rezoning only and there is no contract of sale for the property. Lyng further stated the rezoning for tonight is an I-1 specifically for marihuana, and that should that not go in there the zoning would expire and go back to a B-4 zoning. Nelson stated that in order for a site plan to be approved, any water and waste water permits would have to be obtained and approved.

PUBLIC HEARINGS

Chair Lyng opened the public hearing on the conditional rezoning request #JPCRZ20.01 for 15325 W Michigan Ave, parcel #16-270-018-03 owned by Michael-Samuel Corporation to rezone from the township zoning of HS-Highway Services Commercial to the City zoning of I-1 Research and Technical District for the exclusive use of a Marihuana Facility as permitted by City Zoning Ordinance. Hearing no comment, Chair Lyng closed the public hearing.

NEW BUSINESS

MOTION by Walsh, supported by Kiessling to receive JPCRZ#20.01 Conditional Rezoning Request for 15325 W Michigan Ave from the township zoning of HS-Highway Service Commercial to the City Zoning of I-1 Research & Technical District for the exclusive use of a Marihuana Facility as permitted by the City Zoning Ordinance. On a voice vote; **MOTION CARRIED.**

Lyng questioned when the 6 months for vacancy would start. Nelson stated that as soon as City Council approves the rezoning

The commission went over the rezoning criteria.

A. The proposed zoning district is more appropriate than any other zoning district, or more appropriate than adding the desired use as a special land use in the existing zoning district. Lyng stated that there is no zoning for it in the Master Plan. Nelson stated that for what they want to accomplish with the property it is the most appropriate, as a special land use cannot be used for marihuana grow.
B. The property cannot be reasonably used as zoned. Kiessling and Lyng agreed that is could be used as zoned. Burke-Smith stated that the lack of sale shows that the current zoning could be a problem.
C. The proposed zone change is supported by and consistent with the goals, policies and future land use map of the adopted City Master Plan. If conditions have changed since the plan was adopted, as determined by the Planning Commission. The consistency with recent development trends in the area shall be considered. Walsh stated that it is consistent with the goals of the city. Burke Smith stated that it is not part of the Master Plan it is irrelevant. Lyng stated that I-1 is not in this area of the city or township. Burke Smith stated that it could be considered spot zoning, which is typically not well received/
D. The proposed zone change is compatible with the established land use pattern, surrounding uses, and surrounding zoning in terms of land suitability, impacts on the environment, density, nature of use, traffic impacts, aesthetics, infrastructure and potential influence on property values, and is consistent with the needs of the community. Burke Smith stated that the established land use pattern does not include grow facilities. She further stated that when you

look at the surrounding area it may not be compatible. Lyng stated that it would be the only industrial out there.

E. All the potential uses allowed in the proposed zoning district are compatible with the site's physical, geological, hydrological and other environmental features. Lyng stated that until they determine how they are going to hand the water and sewer there is not a real answer as a well and septic would have a different impact than city water and sewer. Burke Smith questioned if any City water currently crosses I69. Zuzga stated that there is no water currently run, but that there are 2 casings currently under I69 that would work as service lines, but no costs have run. Lyng stated that at one point there was concern that one of the casings would not be large enough to service the area, and that direction boring would have to be used. Walsh stated that without a site plan there is not enough information available to answer this question.

Zuzga stated that conditional rezoning is legal spot zoning and that any uses in that area would be spot zoning as it is an island in the city. He further stated that while he believes it would be expensive to run water to the area it would not be in the millions, and other utilities would also come in underground. He believes it would have as big of an impact as some other uses could on the property. Burke-Smith questioned what the Arbor Inn and the Oaklawn Life Improvement Center were zoned. Paul Anderson stated that the Oaklawn campus is community services and the Arbor Inn is Highway services and that most of Michigan Ave in that area if Highway Services. Walsh stated that this would be spot zoning than. Anderson stated that conditional rezoning is not spot zoning as you are specifying exactly what can go in there otherwise the underlying zoning takes effect.

F. The change would not severely impact traffic, public facilities, utilities, and the natural characteristics of the area, or significantly change population density, and would not compromise the health, safety, and welfare of the City. The Commission agreed that it would not have any have any major impacts.

G. The rezoning would constitute and create an isolated and unplanned district contrary to the City Master Plan which may grant a special privilege to one landowner not available to others. Lyng stated that this is what the conditional rezoning allows, and Burke Smith stated that someone else could come in and make the same request, so it is available to others.

H. The change of present district boundaries is consistent in relation to existing uses, and construction on the site will be able to meet the dimensional regulations for the proposed zoning district listed in the schedule of regulations. Burke Smith stated that the building size will not be altered and would be consistent with the existing uses. Walsh stated that any expansions would have to come before the commission.

I. There was a mistake in the original zoning classification, or a change of conditions in the area supporting the proposed rezoning. Lyng stated that there was no mistake and Reed stated that the conditions have changed.

J. Adequate sites are neither properly zoned nor available elsewhere to accommodate the proposed uses permitted in the requested zoning district. Zuzga stated that there is no more eligible properties for this use in the city as there is a half mile buffer between grow facilities.

Lyng stated that it appears to meet the rezoning criteria.

MOTION by Walsh, supported by Reed to recommend JPCRZ#20.01 Conditional Rezoning Request for 15325 W Michigan Ave from the township zoning of HS-Highway Service Commercial to the City Zoning

of I-1 Research & Technical District for the exclusive use of a Marihuana Facility as permitted by the City Zoning Ordinance to City of Marshall City Council. On a roll call vote, Ayes: Burke-Smith, Kiessling, Lyng, Reed, and Walsh, Nays: none; **MOTION CARRIED.**

PUBLIC COMMENT ON NON-AGENDA ITEMS

Barry Wayne Adams, 622 W Green, City of Marshall, questioned at what point do jurisdictions lose their meaning. When the local governments start combing and working together you produce centralization, and the centralization process is against what the founding fathers wanted, and imitates fascism. He feels we are about 60% of the way into centralization and that if people want to maintain their constitutional government they shouldn't descent into corporate fascism.

REPORTS

None

ADJOURN

The Joint Planning Commission adjourned at 7:32 p.m.

Submitted by,

Michelle Eubank

JOINT PLANNING COMMISSION
Staff Report

Report To: Joint Planning Commission Members

From: Trisha Nelson, Planning & Zoning Administrator

Re: Receive and Consider Approval of Site Plan #JPC20.01 for Family Bible Church located at 725 Old US 27 N.

Date: May 6, 2020

The City received a site plan application for 725 Old US 27 N in October of 2019 and several revisions have transpired since that point. City and Township staffs were present for an initial "staff review" of the site plan and suggested changes were made. Some of those changes included: confirmed Water service lead, showed the sanitary sewer extending from the existing building to service the new building, added concrete curb, and made a lot line adjustment and amendment the 425 agreement to accomplish the lot line adjustment.

When staff reviews a site plan, all applicable department representatives are present and the following ordinance requirements are reviewed against the plan:

A. Plans submitted for site plan review shall be stamped by a design professional licensed by the State of Michigan such as a landscape architect, architect, or civil engineer.
B. Site plans shall be drawn to an engineer's scale appropriate for a sheet size of at least 24 inches by 36 inches, not to exceed one-inch equals 50 feet. If a large development must be depicted in sections on multiple sheets, then an overall composite sheet shall be provided.
C. Date, north arrow scale, existing zoning, zoning of adjacent properties, legal description of the property, easements, and the names and addresses of the architect, planner, designer, or civil engineer responsible for the preparation of the site plan.
D. The dimensions of all lot and property lines, showing the relationship of the subject property to abutting properties and a boundary survey of the parcel.
E. The location, height and dimensions of all existing and proposed structures on the subject property and all existing structures within 100 feet of the subject property.
F. A finished floor elevation and exterior building elevation drawing shall be submitted with the site plan.
G. The location of all existing and proposed drives, walks and parking areas.
H. The location and right-of-way widths of all abutting streets and alleys.
I. The location and size of all existing and proposed sanitary sewer lines, water lines, and storm drainage facilities must be shown.
J. The location and size of all existing and proposed electric, natural gas, telephone, cable TV and solid waste disposal facilities must be shown.

K. The location, height area of illumination and fixture details of all existing and proposed lighting shall be provided. All lighting shall be located and oriented to have minimal impact on adjacent properties.
L. The size, height, location and illumination of all existing and proposed signs shall be provided to ensure ordinance compliance.
M. The location of existing natural features such as wooded areas, floodplains, wetlands, drainage courses, and a topographic survey of spot elevations of the site.
N. Other information as requested by the Zoning Administrator or Planning Commission to verify that the site and use are in compliance with this Chapter.
O. The Planning Commission may waive any of the foregoing requirements determined unnecessary for site plan review purposes.

.

The JPC is being asked to consider the Site Plan #JPC20.01 for 725 OLD US 27 N for Family Bible Church.

Family Bible Church Expansion

Prepared For

FED Corporation

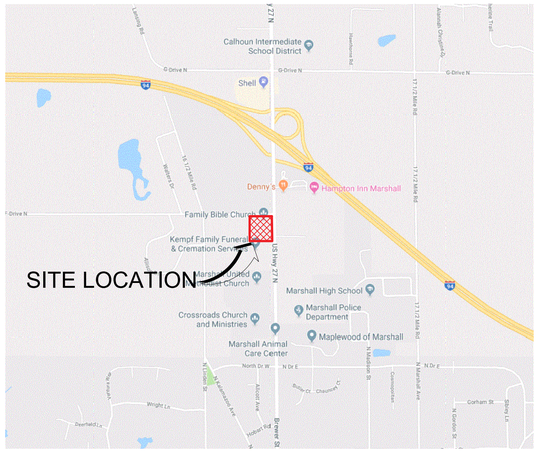
Section 23, Marshall Township, Calhoun County, Michigan

SITE ADDRESS: 725 Old US-27 North, Marshall, Michigan 49068

Property Description:

Part of the Northeast One-quarter of the Northeast One-quarter of Section 23, T2S-R6W, City of Marshall, Calhoun County, State of Michigan, described as: Beginning N 89°42'00" W, along the North Section line 15.29' from the Northwest Corner of said Section 23 to the Center Line of Old US 27; Thence continuing along said North Section line N 89°42' 00" W 660.00'; thence S 00° 33' 25" E, 535.00'; Thence N 89° 42' 00" E, parallel with said North Section line 660.00' to the Center Line of Old US 27; thence N 00° 33' 25" W along said Center line 535.00' ; back to the Point of Beginning. This property is subject to an easement for the installation and maintenance of public utilities within the right-of-way of F Drive North and Old US 27. Containing 8.11 acres, more or less, and being subject to restrictions, reservations, easements, rights-of-way, zoning, governmental regulations, and matters visible, if any, upon or affecting said lands.

Sheet Index:



LOCATION MAP

Not to Scale

Submission Table:

August 12, 2019	Submit initial preliminary site plans for site plan review. **These plans are not to be used for construction.**
October 8, 2019	Revisions to the plans including the comments from the preliminary site plan review and submittal to the joint planning commission. **These plans are not to be used for construction.**
October 26, 2019	Revised to relocated drive to save trees; remove curb on the new westerly drive; and the sidewalk along US 27. **These plans are not to be used for construction.**
January 7, 2020	Revised plans to move entrance drive; keep annex building and increase new parking lot size per owner's request. **These plans are not to be used for construction.**

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

PROJECT NUMBER: P-190052
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595
DRAWN BY: S.E. Bell
DATE: August 12, 2019
REVISED: October 8, 2019; October 26, 2019; January 7, 2020
SCALE: N/A
SHEET C-1

Cover Sheet
Family Bible Church Expansion
For
FED Corporation

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
- ○ PRELIMINARY
- ● PERMIT/BID
- ○ CONSTRUCTION
- ○ FINAL RECORD

C-1

NOTE SHEET

1. **SOIL EROSION:** The DEVELOPER shall submit a detailed Soil Erosion and Sedimentation Control plan and obtain an Act 451 Part 91, Soil Erosion and Sedimentation Control permit. This includes the payment of fees and the providing of necessary bonds**. No earth changes or excavation shall be started prior to the issuance of this permit.** The DEVELOPER shall protect all existing and proposed storm sewer facilities on and adjacent to the site during excavation and construction. All sediment shall be contained on site. Any silt in county drains, storm sewer, culverts, etc. as a result of this project, shall be removed by the DEVELOPER at the cost of the DEVELOPER.

2. **NPDES STORM WATER DISCHARGE PERMIT:** The owner of the property shall obtain a NPDES Storm Water Discharge permit for construction activities from MDEQ as required under Public Act 451. The notice of coverage form shall be submitted through CalhounCounty with the Soil Erosion Control permit application. All MDEQ fees shall accompany the Notice of Coverage.

3. **MUNICIPALITY SANITARY SEWER AND WATER PERMIT**: Prior to the issuance of a building permit by the local municipality, the developer shall be required to obtain a sanitary sewer and/or water tap-in permit from the local municipality.

4. **STATE CONSTRUCTION PERMITS**: The sanitary sewer and water main construction permits from the Michigan Department of Environmental Quality shall be submitted to the MDEQ after approval of local municipality. Construction shall not begin until these state permits are issued.

5. **Utility Warning** - Underground locations as shown on the plans were obtained from utility owners, and were not field located. A minimum of three (3) working days prior to beginning construction, the contractor shall notify "MISS DIG" (800-482-7171) and have all underground utilities staked before any work may begin. The contractor shall be responsible for the protection and/or relocation of all utilities that may interfere with construction. Three (3) Working Days Before You DIG - Call MISS DIG (1-800-482-7171).

OTHER NOTES

1. The contractor shall be responsible to review and be familiar with all portions of these plans. Any discrepancies between different portions of the plans shall be brought to the attention of the Engineer and shall be resolved prior to construction.

NRCS SOILS MAP

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
16B	Oshtemo sandy loam, 0 to 6 percent slopes	3.7	60.7%
16C	Oshtemo sandy loam, 6 to 12 percent slopes	2.4	39.3%
Totals for Area of Interest		**6.1**	**100.0%**

BENCHMARKS

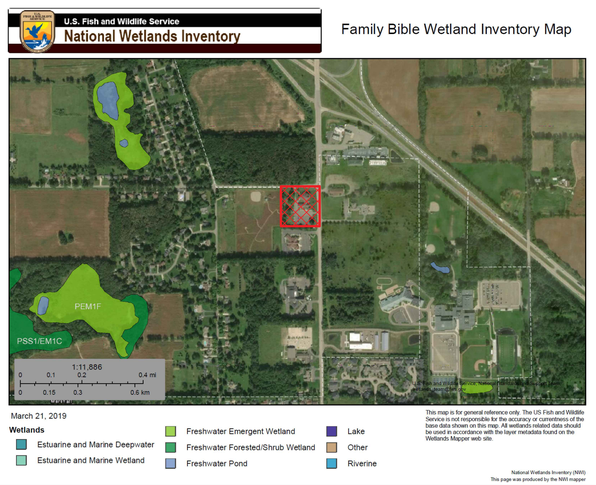
Benchmark #1
Set spike in south side of utility pole on east side of driveway on south side of F Drive North.
Elevation 942.13 (NAVD 88)

Benchmark #2
Set Spike on East side of utility pole on west side of parking lot at north side of garage.
Elevation 944.29 (NAVD 88)

PLAN LEGEND

= OVERHEAD ELECTRIC LINE
= BURIED GAS LINE
= SANITARY SEWER
= WATER MAIN
= UNDERGROUND TELEPHONE
= SANITARY MANHOLE
= STORM MANHOLE
= CATCH BASIN
= CURB INLET
= FIRE HYDRANT
= WATER VALVE
= LIGHT POLE
= STREET SIGN
= FENCE LINE
= UTILITY POLE
= FOUND CAPPED IRON
= SET CAPPED IRON
= BITUMINOUS PAVING
= CONCRETE PAVING OR WALKWAY
= PLS SYSTEM CORNER
R = RECORDED AS IN TITLE DESCRIPTION
P = PREVIOUSLY DESCRIBED
M = MEASURED AS
= PROPOSED LIGHT POLE

WETLAND MAP

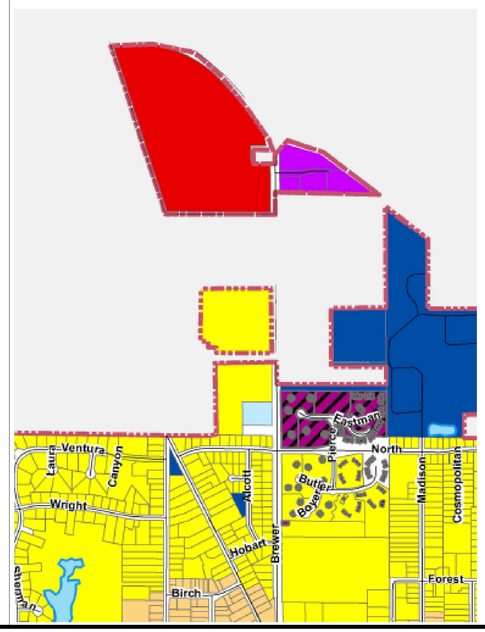


ABBREVIATIONS

LIST OF ABBREVIATIONS	Definitions
A.C.	Alternating Current
A.F.C.	Adult Foster Care
ASPH.	Asphalt Paving
ASTM	American Society of Testing Materials
AWS	American Welding Society
AWWA	American Waterworks Association
BLDG.	Building
CIP	Compacted in place
CL	Class
CONC.	Concrete
C.Yd. or CYD	Cubic Yard
DR	Dimension Ratio
°	Degrees
EA	Each
EJ	East Jordan Iron Works
ELEV.	Elevation
EX	Existing
F.F.	Finish Floor
G.P.M.	Gallons Per Minute
I.Q.	Inside Diameter
Inv.	Invert
Lbs.	Pounds
LFT	Lineal Feet
L.S.	Lump Sum
Max.	Maximum
MDOT	Michigan Department of Transportation
M.H.	Manhole
Mil.	Millimeter
Min.	Minimum
MUW	Maximum Unit Weight at optimum moisture content
No.	Number
NSF	National Sanitation Foundation
OSHA	Occupational Safety Health Administration
PSIGP	Pounds per square inch gauge
PVC	Polyvinyl Chloride
R.O.W. or R/W	Right-of-Way
RAD.	Radius
SDR	Standard Dimension Ratio
SYD	Square Yard
T.D.H.	Total Dynamic Head
V.L.F.	Vertical Lineal Feet
'	Minutes of angles or Feet
"	Seconds of angles or Inches
%	Percent
#	Pounds

ZONING MAP

- R-1 Residential Estate
- R-2 Suburban Residential
- R-3 Traditional Residential
- MFRD Multiple Family Residential
- MHPD Manufactured Housing Park
- POSD Professional Office Services
- HCHSD Health Care and Human Services
- B-2 Local Business
- B-3 Neighborhood Commercial
- B-4 Regional Commercial
- FS Freeway Services
- I-1 Research and Manufacturing
- I-2 General Industrial
- PSP Public/ Semi-Public Services
- PUD Planned Unit Development
- Hospital Campus Overlay District
- River District Overlay
- DDA
- Municipal Boundary



General Notes

Family Bible Church Expansion

For

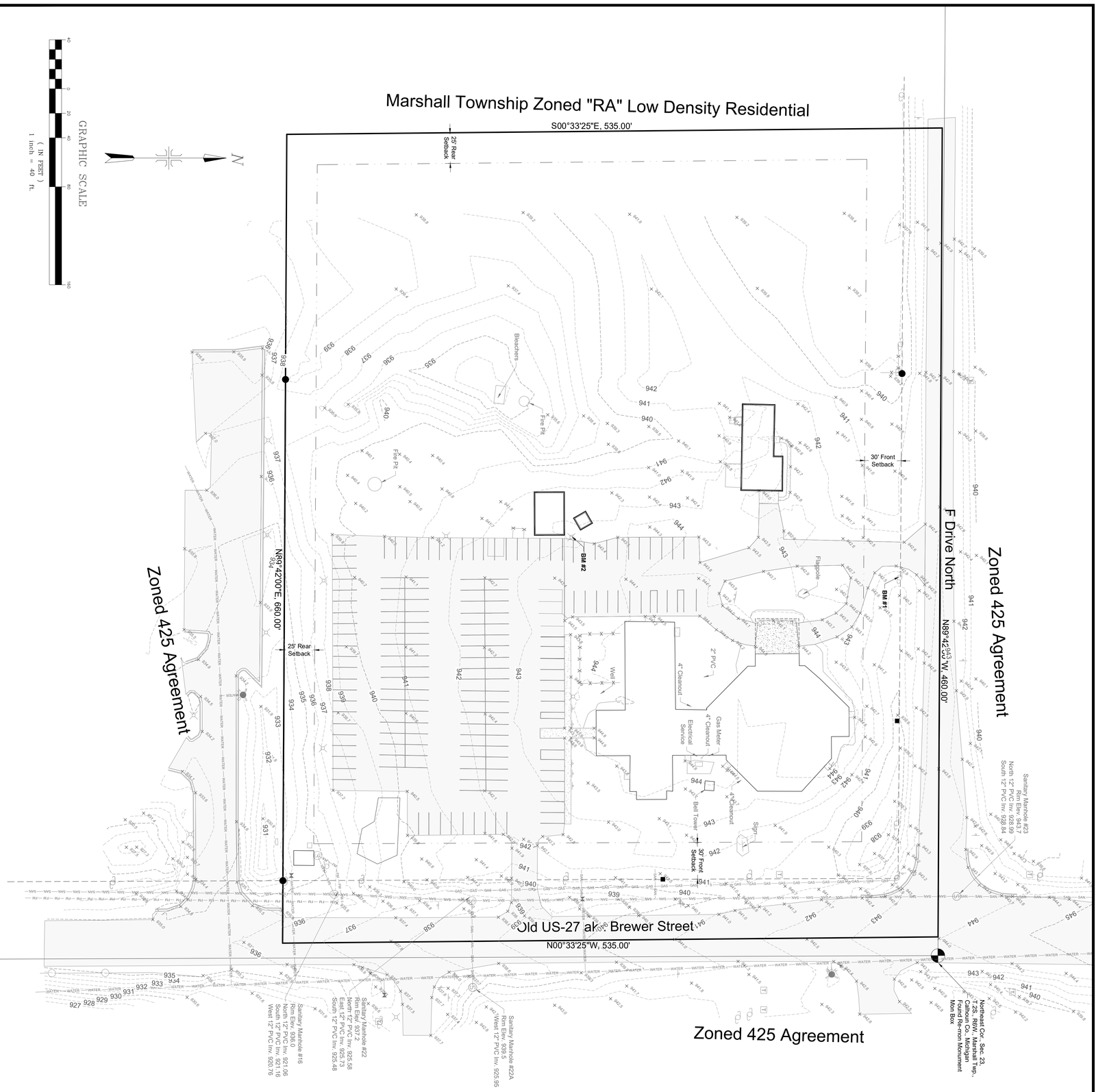
FED Corporation

PROJECT NUMBER: P-190052
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595
DRAWN BY: S.E. Bell
DATE: August 12, 2019
REVISED: October 8, 2019; October 26, 2019; January 7, 2020
SCALE: N/A
SHEET C-2

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
- PRELIMINARY
- PERMIT/BID
- CONSTRUCTION
- FINAL RECORD

C-2



Know what's below. Call before you dig.

APPROVED USE FOR:
- PRELIMINARY
- CONSTRUCTION
- FINAL RECORD

C-3

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

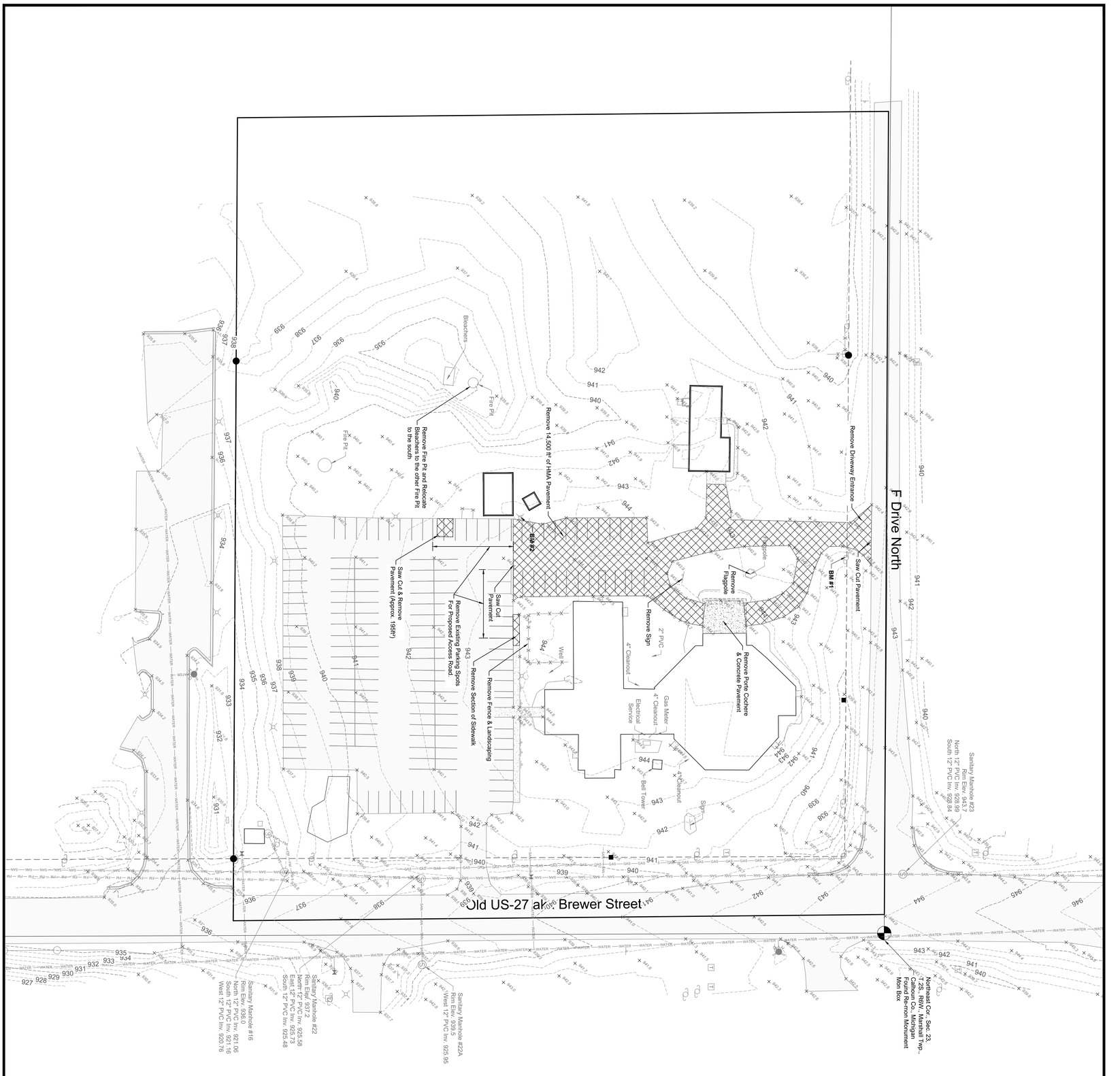
Existing Topographic Survey

Family Bible Church Expansion

For

FED Corporation

PROJECT NUMBER: P-190052	DRAWN BY: S.E. Bell	SCALE: 1" = 40'
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595	DATE: August 12, 2019	SHEET C-3
REVISED: October 8, 2019; October 26, 2019; January 7, 2020		



Know what's below.
Call before you dig.

811

APPROVED USE FOR:
○ ○ ● ○
PRELIMINARY
PERMITTED
CONSTRUCTION
FINAL RECORD

C-4

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING

116 South 3rd Street
West Branch, MI 48661

P (989) 345-5030
F (989) 345-7302

www.laphamassoc.com

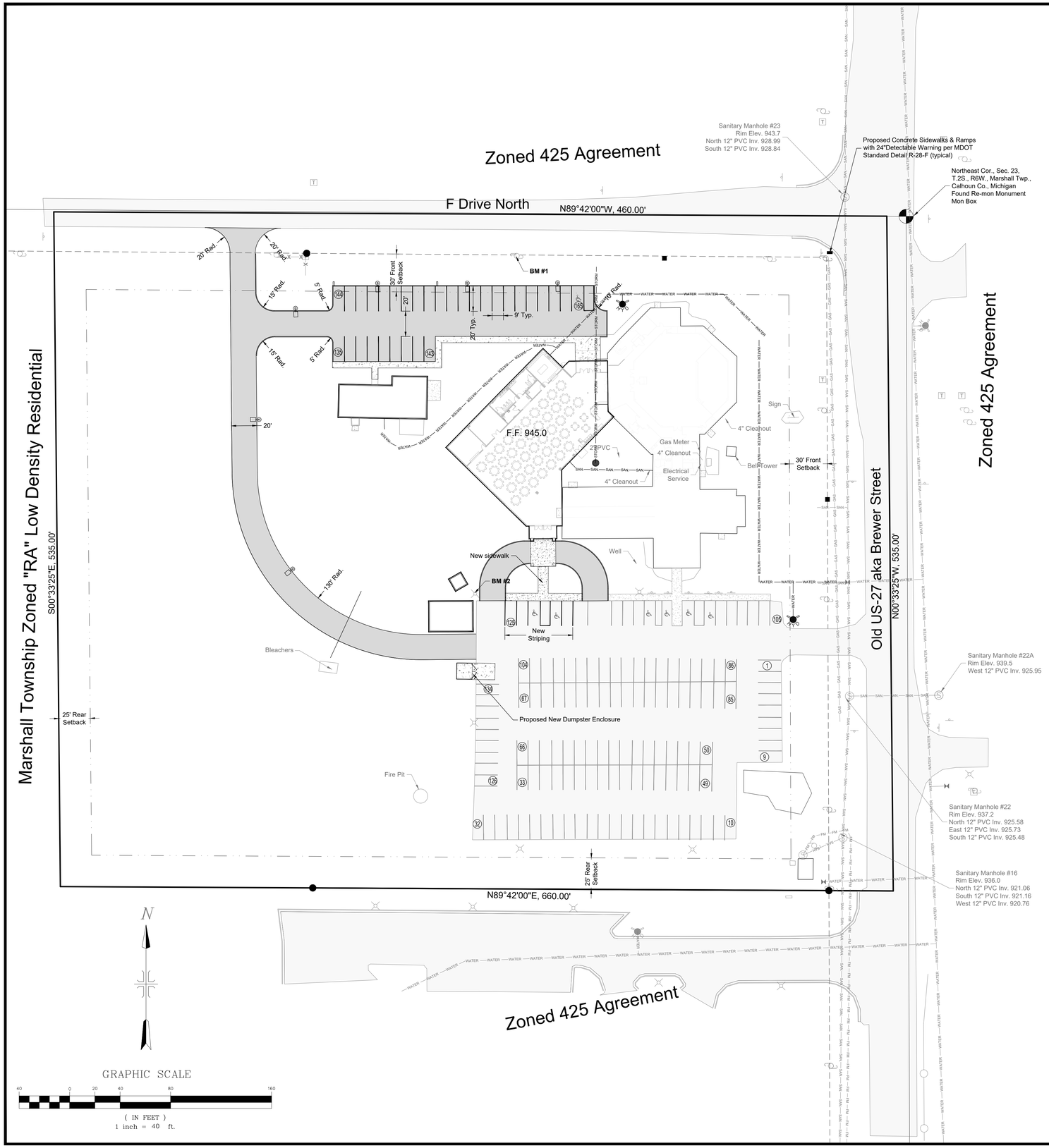
Demolition Plan

Family Bible Church Expansion

For

FED Corporation

PROJECT NUMBER: P-190052	DRAWN BY: S.E. Bell	SCALE: 1" = 40'
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595	DATE: August 12, 2019	SHEET C-4
REVISED: October 8, 2019; October 26, 2019; January 7, 2020		



Site Plan Notes:

1. These plans and specifications are subject to modification during construction when conditions develop that were not apparent during the design and preparation of these plans. All modifications must be approved by local jurisdiction prior to construction and/or implementation.
2. In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct.
3. Should it appear that the work to be done or any matter relative thereto is not sufficiently detailed or explained on these plans, the contractor shall contact the engineer for such further explanations as may be necessary.
4. Before commencement of work, the contractor shall review all plans and specifications and the job site. The contractor shall notify the owner and the engineer of any discrepancies that may require modification to these plans or of any field conflicts.
5. Contractor agrees that in accordance with generally accepted construction practices, the contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property. This requirement shall be made to apply continuously and not be limited to normal working hours.
6. Contractor shall obtain all necessary permits prior to commencing construction involving right-of-ways, and for the construction, modification, or connection to facilities. All workmanship, equipment and materials shall conform to local jurisdiction standards and specifications.
7. Traffic control shall be provided in accordance with local jurisdiction.
8. The contractor shall provide all lights, signs, barricades, flag men, or other devices necessary to provide for public safety.
9. Where soil or geologic conditions encountered in grading operations are different from those generally anticipated, or where conditions warrant changes to the recommendations contained therein, a report of soil or geologic conditions shall be submitted along with proposed changes for approval and shall be accompanied by an engineer's opinion as to the safety of the site from the possibility of land slippage, settlement and seismic activity.
10. A preconstruction meeting shall be scheduled with the developer, services personnel and the developer's contractor. A preconstruction meeting shall take place prior to the starting of any construction on the site.
11. Meet all current applicable ADA requirements for parking, signage, ramps, sidewalks, and warning notification on sidewalks approaching drives as required.

Zoning Notes:

Owner:	Family Bible Church
Use:	Institutional as allowed by Special Land Use in R-2 district.
Zoning:	R-2 Suburban Residential District
Setbacks:	Front Setback 30' Minimum Sides Setback 8' Minimum Rear Setback 25' Minimum
Building Height:	Proposed Building Addition Maximum height 19'-5"
Lot Coverage:	30% Minimum lot coverage required. Existing lot coverage = 19,855ft² buildings / 249,441ft² lot = 8% Proposed lot coverage = 28,324ft² buildings / 248441ft² lot = 11% (more compliant than existing)

Parking Calculations:

Place of Worship Minimum Requirements 1 space per 4 seats.

Seating for 551 - 551 / 4 seats per space =	138 spaces Required
TOTAL SPACES PROVIDED =	**147 total proposed spaces**

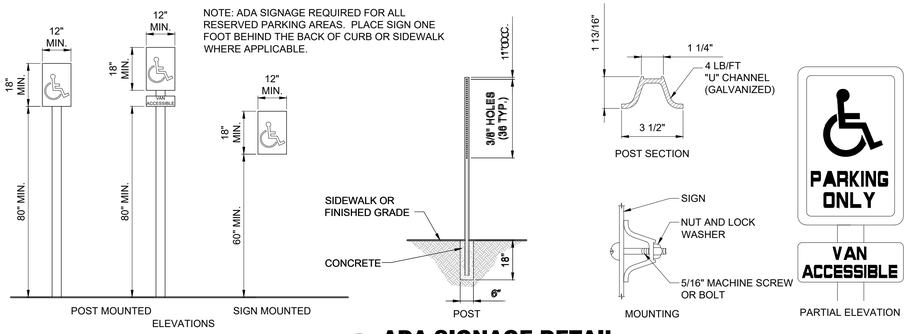
PROJECT NUMBER: P-190052 | DRAWN BY: S.E. Bell | SCALE: 1" = 40'
ENGINEER: Timothy L Lapham, P.E. P.S. 27595 | DATE: August 12, 2019 | SHEET C-5
REVISED: October 8, 2019; October 26, 2019; January 7, 2020

Site Plan
Family Bible Church Expansion
For
FED Corporation

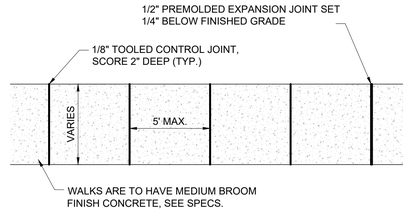
LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
- ○ PRELIMINARY
- ● PERMIT/BID
- ○ CONSTRUCTION
- ○ FINAL RECORD

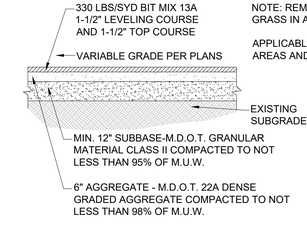
C-5



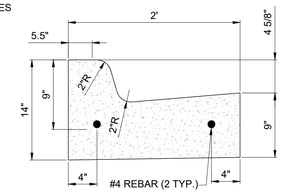
1 C-6 **ADA SIGNAGE DETAIL**
SCALE: NONE



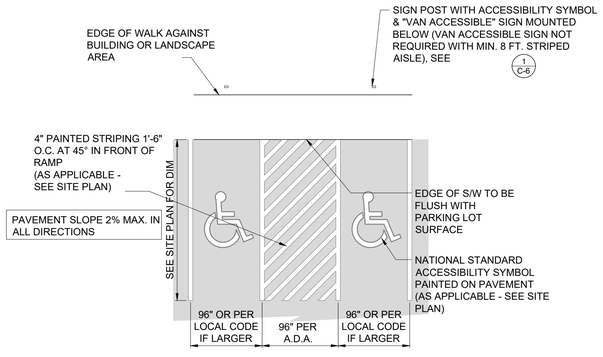
2 C-6 **TYPICAL CONCRETE SIDEWALK LAYOUT**
SCALE: NONE



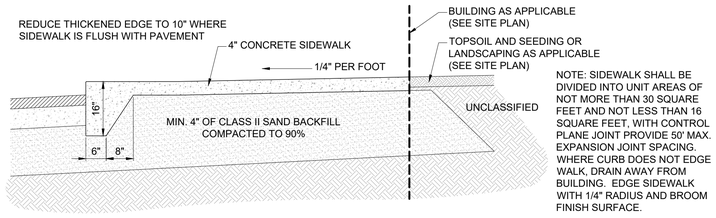
3 C-6 **BITUMINOUS PAVEMENT DETAIL**
SCALE: NONE



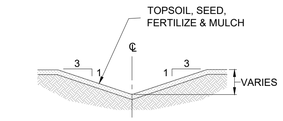
4 C-6 **MDOT F4 CURB**
SCALE: NONE



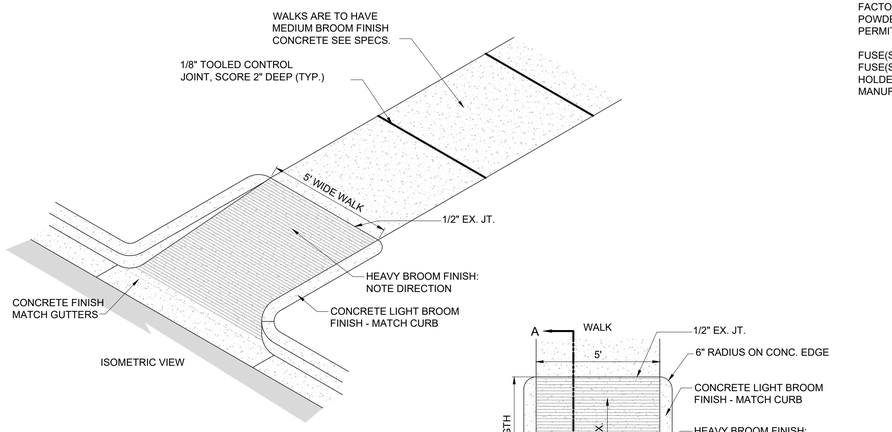
5 C-6 **ACCESSIBLE PARKING STALLS**
SCALE: NONE



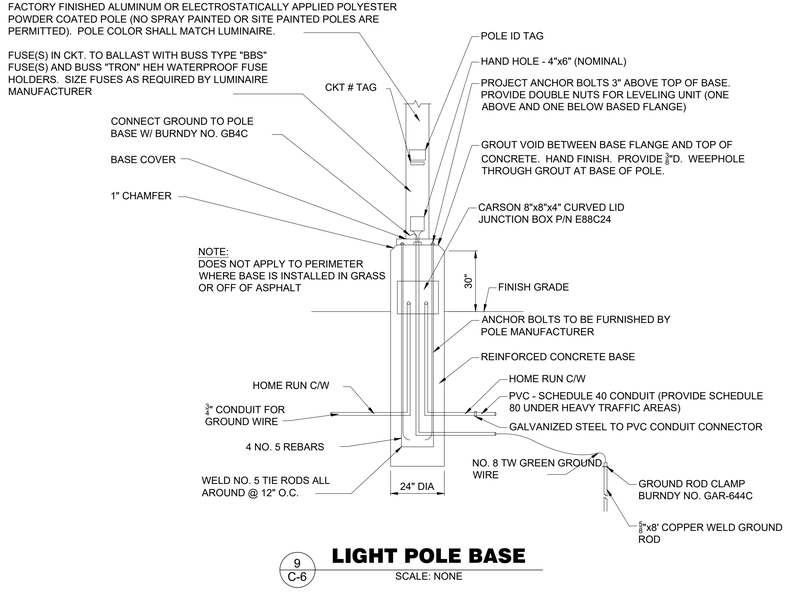
6 C-6 **TYPICAL SIDEWALK DETAIL**
SCALE: NONE



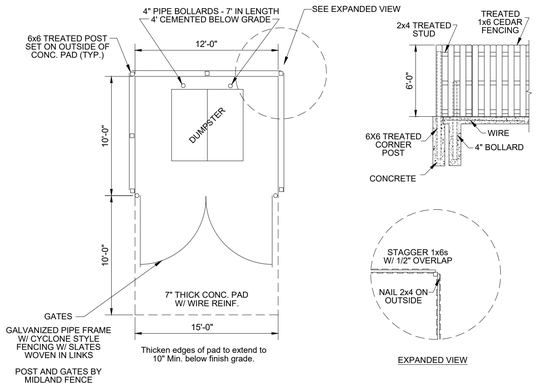
7 C-7 **V DITCH DETAIL**
SCALE: NONE



8 C-6 **BARRIER FREE RAMP - TYPE I**
SCALE: NONE



9 C-6 **LIGHT POLE BASE**
SCALE: NONE



10 C-6 **DUMPSTER ENCLOSURE**
SCALE: NONE

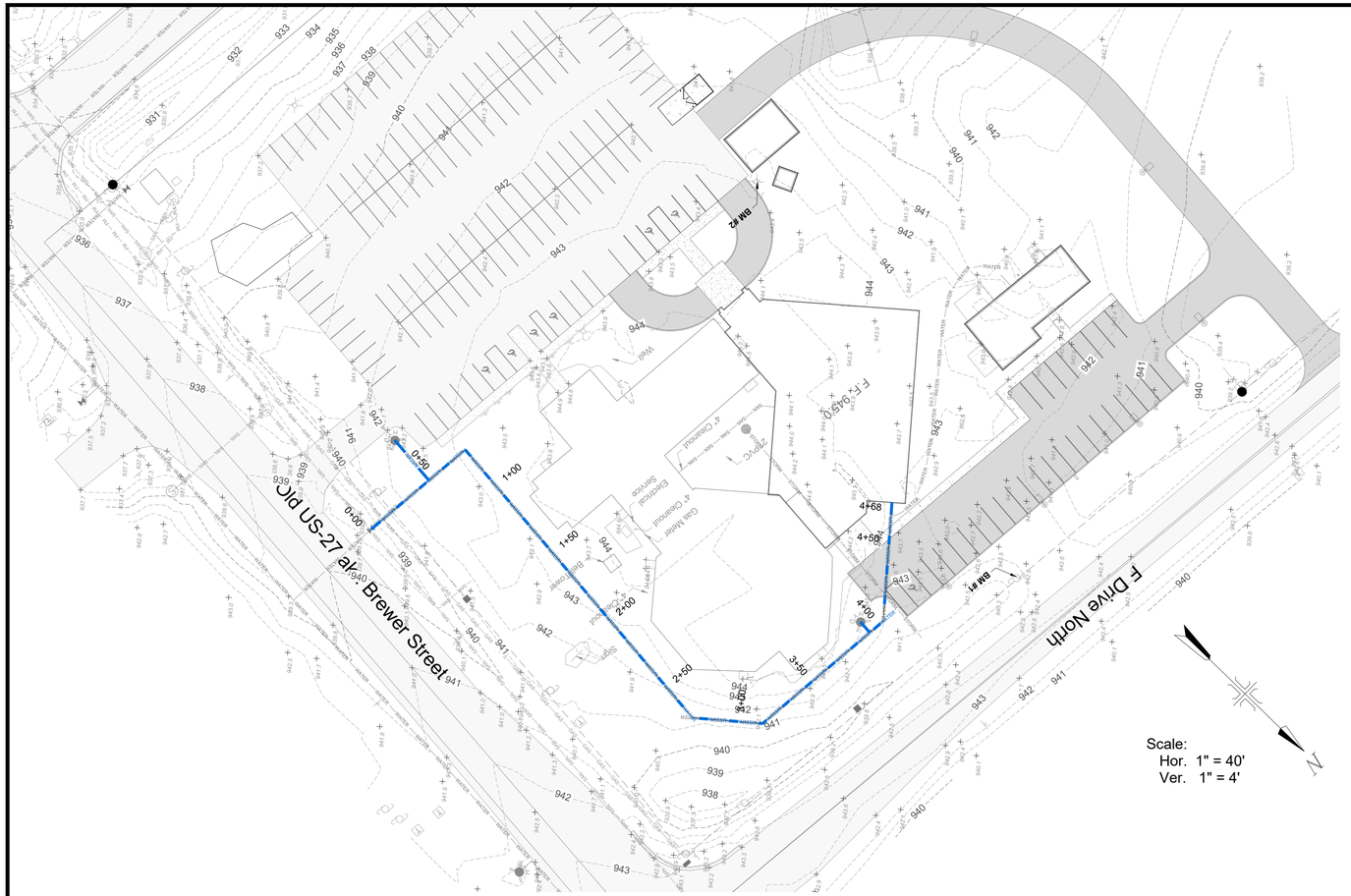
Site Details
Family Bible Church Expansion
For
FED Corporation

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

ENGINEER: Timothy L. Lapham, P.E. P.S. 27595
REVISED: October 8, 2019; October 26, 2019; January 7, 2020
DRAWN BY: S.E. Bell
DATE: August 12, 2019
SCALE: N/A
SHEET C-6

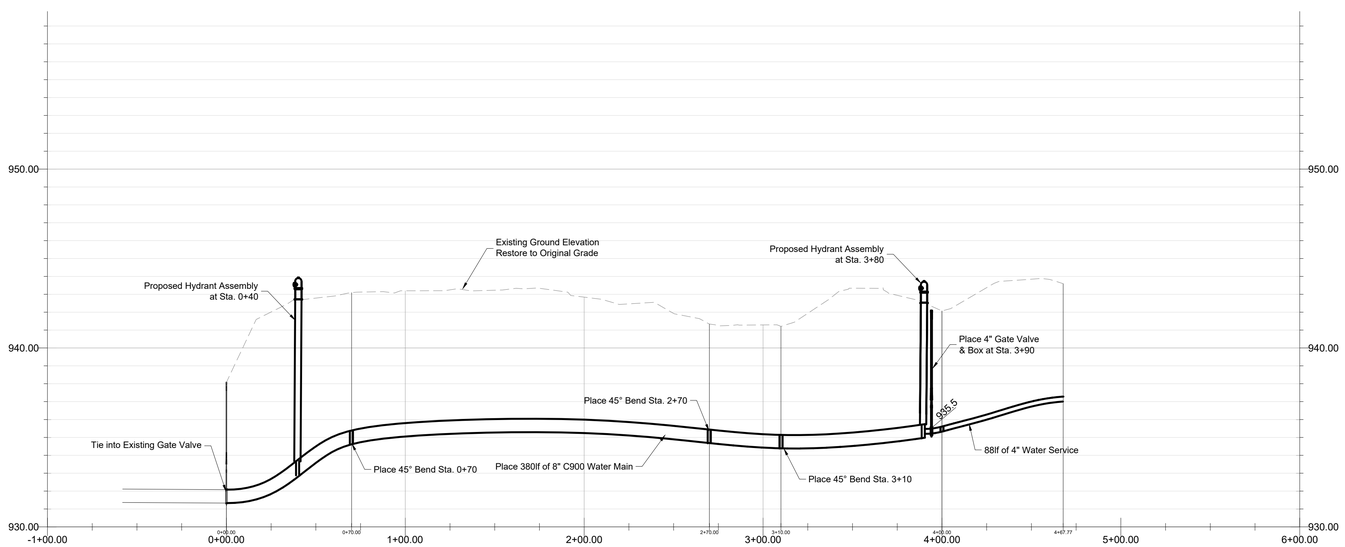
APPROVED USE FOR:
- ○ PRELIMINARY
- ● PERMIT/BID
- ○ CONSTRUCTION
- ○ FINAL RECORD

C-6



WATER MAIN NOTES:

1. Watermain shall be placed at a minimum depth of 5.5' and a maximum depth of 7.5' from finish grade.
2. Watermain shall be in a 20' wide public easement centered on the main dedicated to The City of Marshall.



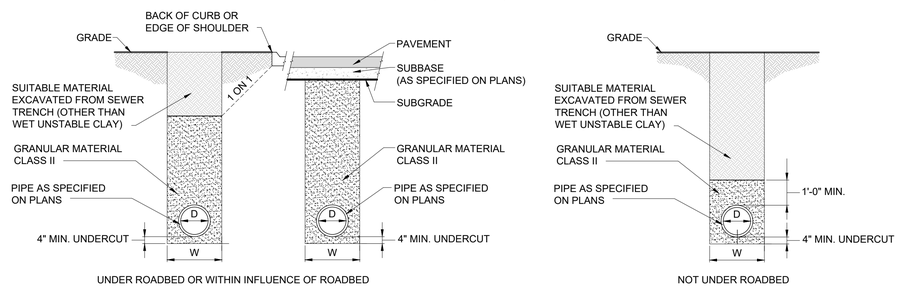
MINIMUM TRENCH WIDTHS

I.D. PIPE SIZE (INCHES)	LESS THAN 18	21	24	30	36
"W" TRENCH WIDTH (FEET)	3.0	3.5	4.0	5.0	6.0

I.D. PIPE SIZE (INCHES)	42	48	54	60	66	72
"W" TRENCH WIDTH (FEET)	7.0	8.0	9.5	10.0	10.5	11.0

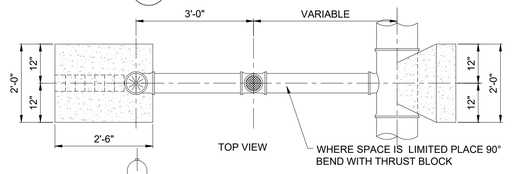
I.D. PIPE SIZE (INCHES)	78	84	90	96	102	108
"W" TRENCH WIDTH (FEET)	11.5	12.0	12.5	13.0	13.5	14.0

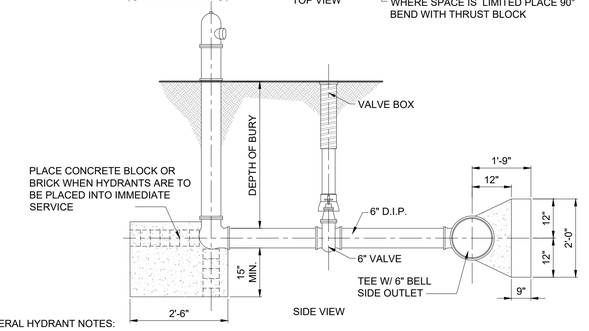
ESTIMATED PAVEMENT REMOVAL WIDTH IS TO BE TRENCH WIDTH "W" PLUS 1'-0" EACH SIDE OF THE TRENCH (6'-0" MINIMUM)



PIPE TRENCHES

1 / C-8 — SCALE: NONE



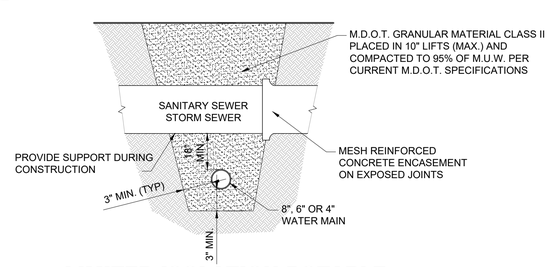


GENERAL HYDRANT NOTES:

1. INSTALL ADDITIONAL FITTINGS & SPIGOT PIPE AS NECESSARY BETWEEN WATER MAIN AND VALVE BOX TO ADJUST FOR PROPER LOCATION AND GRADE OF HYDRANT.
2. VERTICAL ANCHORS WILL BE REQUIRED ON ALL VERTICAL HYDRANT BENDS IN EXCESS OF 11-1/4°.
3. WHERE HYDRANTS ARE INSTALLED ON EXISTING MAINS THAT ARE TO BE PLACED BACK INTO SERVICE IMMEDIATELY, PLACE CONCRETE BLOCK OR BRICK TO UNDISTURBED SOIL AND ENCASE WITH CONCRETE.
4. ALL CONCRETE TO BE 3500 P.S.I. CONCRETE POURED AGAINST UNDISTURBED SOIL.

STANDARD HYDRANT SETTING

2 / C-8 — SCALE: NONE



LIMITED ISOLATION POTABLE WATER CROSSINGS

3 / C-8 — SCALE: NONE

Water Main Plan & Profile

Family Bible Church Expansion

For

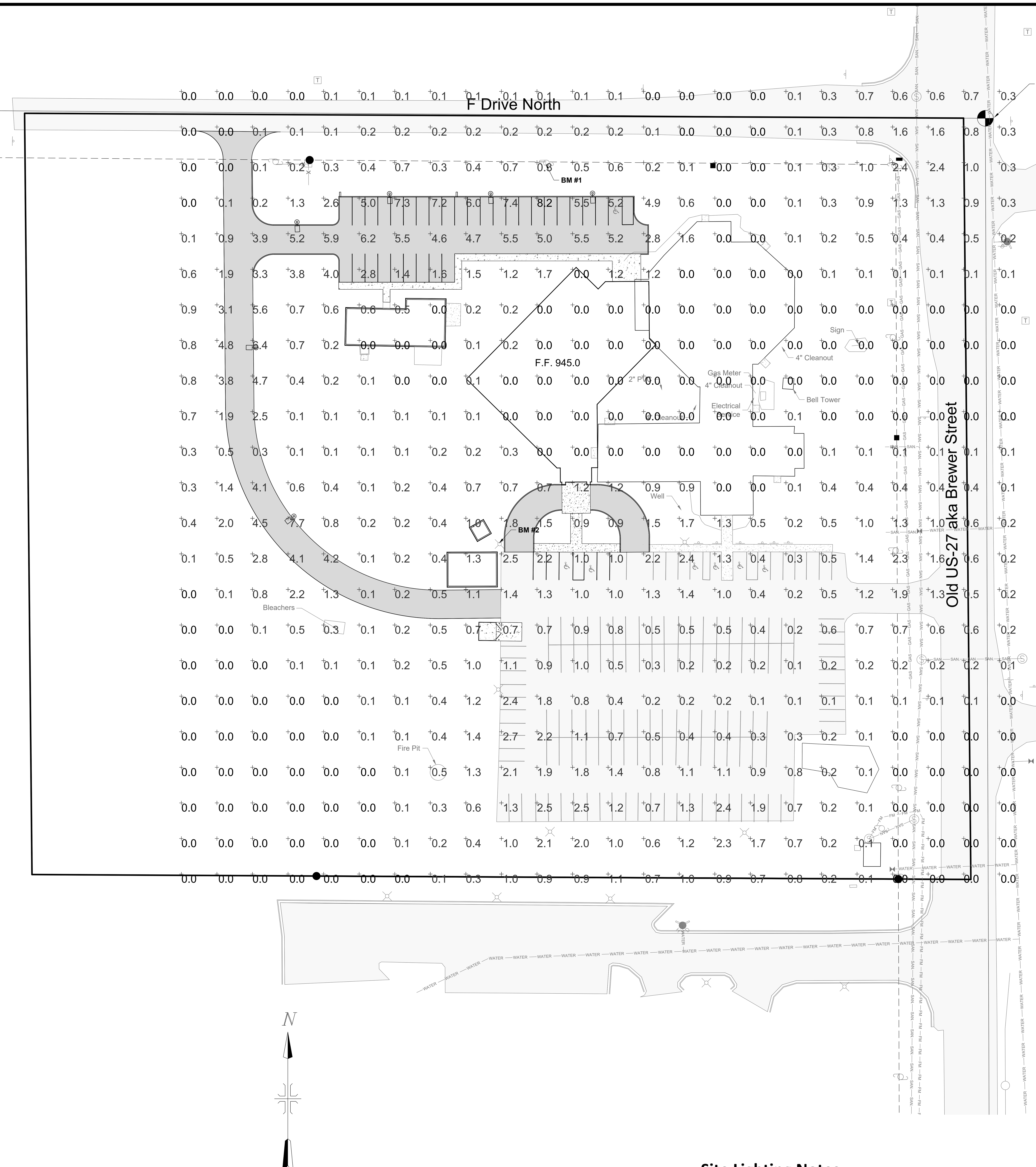
FED Corporation

PROJECT NUMBER: P-190052
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595
DRAWN BY: S.E. Bell
DATE: August 12, 2019
REVISED: October 8, 2019; October 26, 2019; January 7, 2020
SCALE: As Shown
SHEET C-7

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
- ○ PRELIMINARY
- ● PERMIT/BID
- ○ CONSTRUCTION
- ○ FINAL RECORD

C-7



Site Lighting Notes:

1. All parking lot lights shall be directed away from other properties and/or shielded.
2. All wall packs shall be downward directed and shielded from directing light towards neighbors.
3. New Lights shall have a mounting height of 15'-0".

Lumark

DESCRIPTION

The patented Lumark Crosstour™ MAXX LED wall pack series of luminaries provides low-profile architectural style with super bright, energy-efficient LEDs. The rugged die-cast aluminum construction, back box with secure lock hinges, stainless steel hardware along with a sealed and gasketed optical compartment make Crosstour impervious to contaminants. The Crosstour MAXX wall luminaire is ideal for wall/surface, inverted mount for facade/canopy illumination, perimeter and site lighting. Typical applications include pedestrian walkways, building entrances, multi-use facilities, industrial facilities, perimeter parking areas, storage facilities, institutions, schools and loading docks.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Low-profile LED design with rugged one-piece, die-cast aluminum back box and hinged removable door. Matching housing styles incorporate both a full cutoff and refractive lens design. Full cutoff and refractive lens models are available in 58W, 81W and 102W. Patent pending secure lock hinge feature allows for safe and easy tool-less electrical connections with the supplied push-in connectors. Back box includes four 1/2" NPT threaded conduit entry points. The back box is secured by four lag bolts (supplied by others). External fin design extracts heat from the fixture surface. One-piece silicone gasket seals door and back box. Not recommended for car wash applications.

Optical
Silicone sealed optical LED chamber incorporates a custom engineered reflector providing high-efficiency illumination. Full cutoff models integrate an impact-resistant molded refractive prism optical lens assembly meeting requirements for Dark Sky compliance. Refractive lens models incorporate a molded lens assembly designed for maximum forward throw. Solid state LED Crosstour MAXX luminaires are thermally optimized with eight lumen packages in cool 5000K, neutral 4000K, or warm 3000K LED color temperature (CCT).

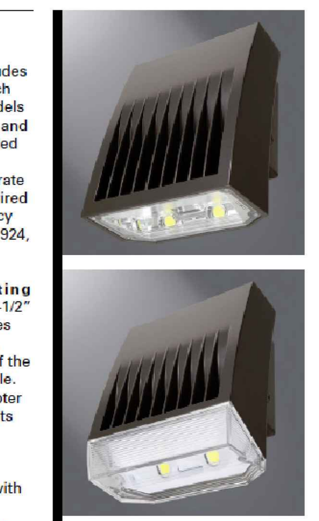
Electrical
LED driver is mounted to the die-cast aluminum housing for optimal heat sinking. LED thermal management system incorporates both conduction and natural convection to transfer heat rapidly away from the LED source. 58W, 81W and 102W models operate in -40°C to 40°C [-40°F to 104°F]. High ambient 50°C [122°F] models available in 58W and 81W models only. Crosstour MAXX luminaires maintain greater than 89% of initial light output after 72,000 hours of operation. Four half-inch NPT threaded conduit entry points allow for thru-branch wiring. Back box is an authorized electrical wiring compartment. Integral LED electronic driver incorporates surge protection. 120-277V 50/60Hz, 480V 60Hz, or 347V 60Hz electrical operation. 480V is compatible for use with 480V Wye systems only.

Emergency Egress
Optional integral cold weather battery emergency egress includes emergency operation test switch (available in 58W and 81W models only), an AC-ON indicator light and a premium extended rated sealed maintenance-free nickel-metal hydride battery pack. The separate emergency lighting LEDs are wired to provide redundant emergency lighting. Listed to UL Standard 924, Emergency Lighting.

Area and Site Pole Mounting
Optional extruded aluminum 6-1/2" arm features internal bolt guides for supplied twin support rods, allowing for easy positioning of the fixture during installation to pole. Supplied with round plate adapter plate. Optional tenon adapter fits 2-3/8" or 3-1/2" O.D. Tenon.

Finish
Crosstour MAXX is protected with a super TGIC carbon bronze or summit white polyester powder coat paint. Super TGIC powder coat paint finishes withstand extreme climate conditions while providing optimal color and gloss retention of the installed life.

Warranty
Five-year warranty.

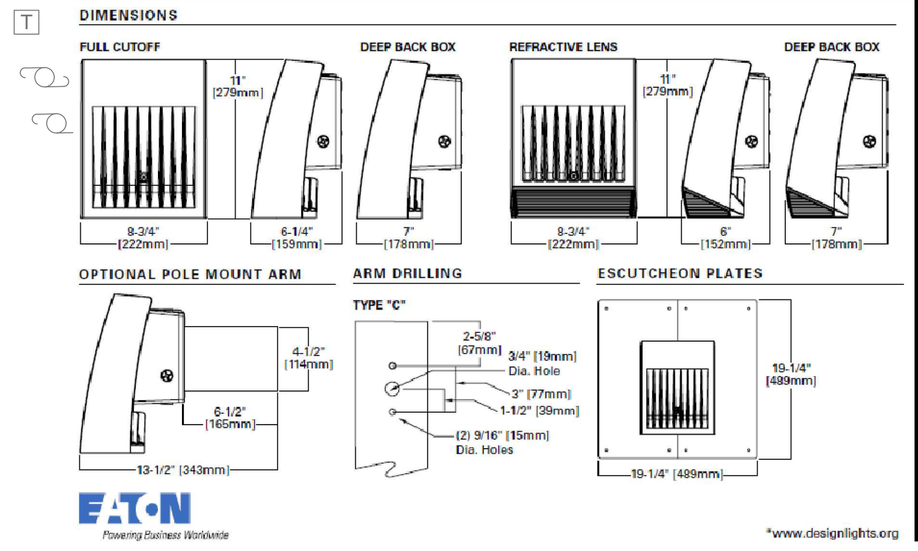


XTOR
CROSSTOUR
MAXX LED

APPLICATIONS:
WALL / SURFACE
INVERTED
SITE LIGHTING

CERTIFICATION DATA
UL/cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
NOM Compliant Models
3G Vibration Tested
UL924 Listed (CBP Models)

DIMENSIONS



EPA
Effective Projected Area (Sq. Ft.):
XTOR6B, XTOR8B, XTOR12B=0.54
With Pole Mount Arm=0.98

SHIPPING DATA:
Approximate Net Weight:
12-15 lbs. [5.4-6.8 kgs.]

*www.designlights.org

TD514005EN
September 17, 2018 3:03 PM

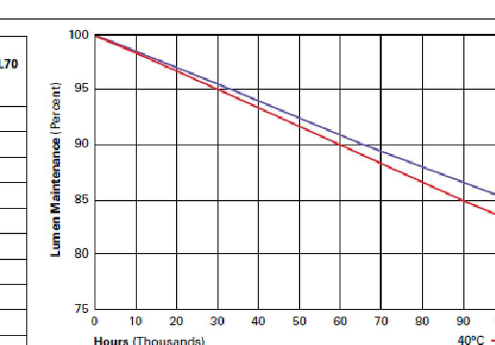
POWER AND LUMENS BY FIXTURE MODEL

58W Series						
LED Information	XTOR6B	XTOR6BRL	XTOR6B-W	XTOR6BRL-W	XTOR6B-Y	XTOR6BRL-Y
Delivered Lumens	6,129	6,225	6,038	6,133	5,611	5,826
B.U.G. Rating	B1-U0-G1	B2-U4-G3	B1-U0-G1	B2-U4-G3	B1-U0-G1	B2-U4-G3
CCT (Kelvin)	5000K	5000K	4000K	4000K	3000K	3000K
CRI (Color Rendering Index)	70	70	70	70	70	70
Power Consumption (Watts)	58W	58W	58W	58W	58W	58W
81W Series						
LED Information	XTOR8B	XTOR8BRL	XTOR8B-W	XTOR8BRL-W	XTOR8B-Y	XTOR8BRL-Y
Delivered Lumens	8,502	8,635	8,373	8,504	7,748	8,079
B.U.G. Rating	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3
CCT (Kelvin)	5000K	5000K	4000K	4000K	3000K	3000K
CRI (Color Rendering Index)	70	70	70	70	70	70
Power Consumption (Watts)	81W	81W	81W	81W	81W	81W
102W Series						
LED Information	XTOR12B	XTOR12BRL	XTOR12B-W	XTOR12BRL-W	XTOR12B-Y	XTOR12BRL-Y
Delivered Lumens	12,728	13,458	12,539	13,258	11,861	12,595
B.U.G. Rating	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3
CCT (Kelvin)	5000K	5000K	4000K	4000K	3000K	3000K
CRI (Color Rendering Index)	70	70	70	70	70	70
Power Consumption (Watts)	102W	102W	102W	102W	102W	102W

EGRESS Information	XTOR6B, XTOR8B and XTOR12B Full Cutoff CBP Egress LED	XTOR6B, XTOR8B and XTOR12B Refractive Lens CBP Egress LED
Delivered Lumens	509	468
B.U.G. Rating	N.A.	N.A.
CCT (Kelvin)	4000K	4000K
CRI (Color Rendering Index)	65	65
Power Consumption (Watts)	1.8W	1.8W

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (72,000 Hours)	Theoretical L70 (Hours)
XTOR6B Model		
25°C	> 90%	246,000
40°C	> 89%	217,000
50°C	> 89%	201,000
XTOR8B Model		
25°C	> 89%	219,000
40°C	> 87%	195,000
50°C	> 86%	181,000
XTOR12B Model		
25°C	> 89%	222,000
40°C	> 87%	198,000



CURRENT DRAW

Voltage	Model Series				
	XTOR6B	XTOR8B	XTOR12B	XTOR6B-CBP (Fixture/Battery)	XTOR8B-CBP (Fixture/Battery)
120V	0.51	0.71	0.94	0.60/0.25	0.92/0.25
208V	0.25	0.39	0.52	- -	- -
240V	0.25	0.35	0.45	- -	- -
277V	0.22	0.31	0.39	0.36/0.21	0.50/0.21
347V	0.19	0.25	0.33		- -
480V	0.14	0.19	0.24		- -

Eaton
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lighting

Specifications and dimensions subject to change without notice.

TD514005EN
September 17, 2018 3:03 PM

Streetworks

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

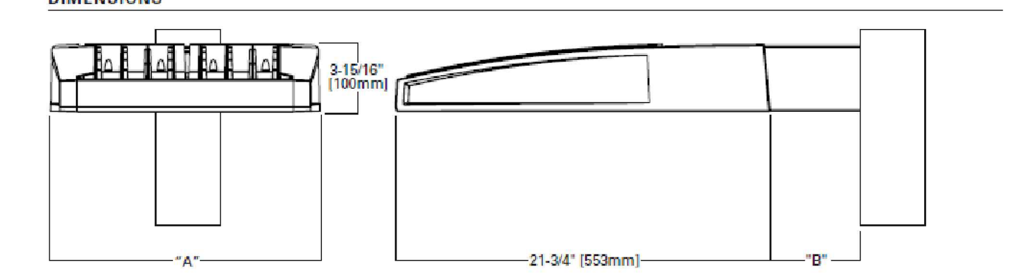
Warranty
Five-year warranty.

GAN
GALLEON LED

1-10 Light Squares
Solid State LED

AREA / ROADWAY LUMINAIRE

DIMENSIONS

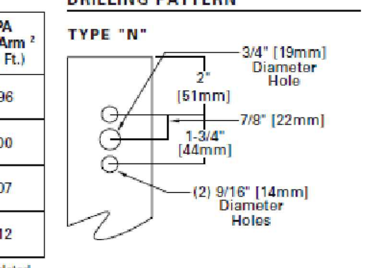


DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN



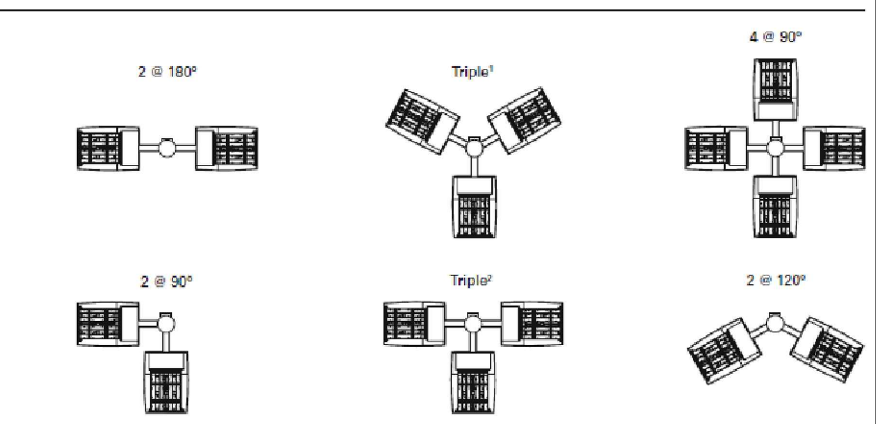
CERTIFICATION DATA
UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
IP66 Rated
DesignLights Consortium® Qualified*

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

*www.designlights.org

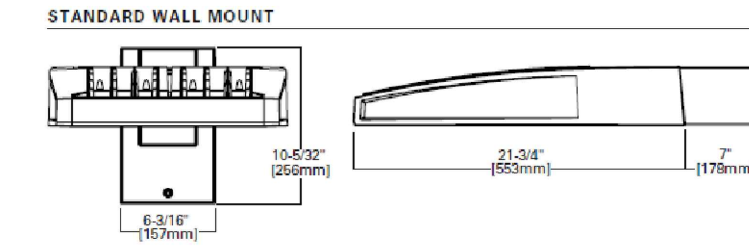
STANDARD ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GAN-AF-01	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-02	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-03	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-04	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-05	10" Extended Arm (Required)	7" Arm (Standard)
GAN-AF-06	10" Extended Arm (Required)	7" Arm (Standard)
GAN-AF-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GAN-AF-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GAN-AF-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GAN-AF-10	16" Extended Arm (Required)	16" Extended Arm (Required)

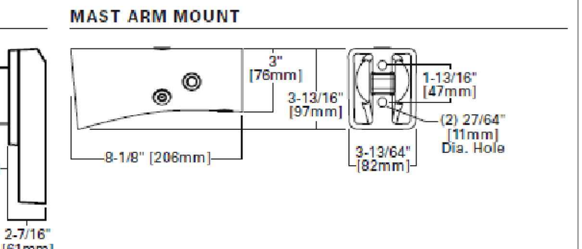


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°.

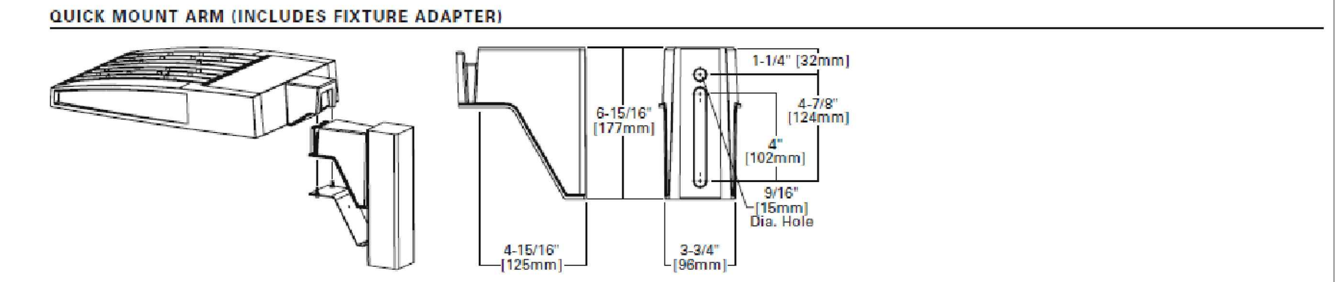
STANDARD WALL MOUNT



MAST ARM MOUNT



QUICK MOUNT ARM (INCLUDES FIXTURE ADAPTER)



QUICK MOUNT ARM DATA

Number of Light Squares [1,2]	"A" Width	Weight with QM Arm (lbs.)	Weight with QMEA Arm (lbs.)	EPA (Sq. Ft.)
1-4	15-1/2" (394mm)	35 (15.91 kgs.)	38 (17.27 kgs.)	1.11
5-6 [3]	21-5/8" (549mm)	46 (20.91 kgs.)	49 (22.27 kgs.)	
7-8	27-5/8" (702mm)	56 (25.45 kgs.)	59 (26.82 kgs.)	

NOTES: 1 QM option available with 1-8 light square configurations. 2 QMEA option available with 1-6 light square configurations. 3 QMEA arm to be used when mounting two fixtures at 90° on a single pole.

SCALE: as shown
SHEET C-8

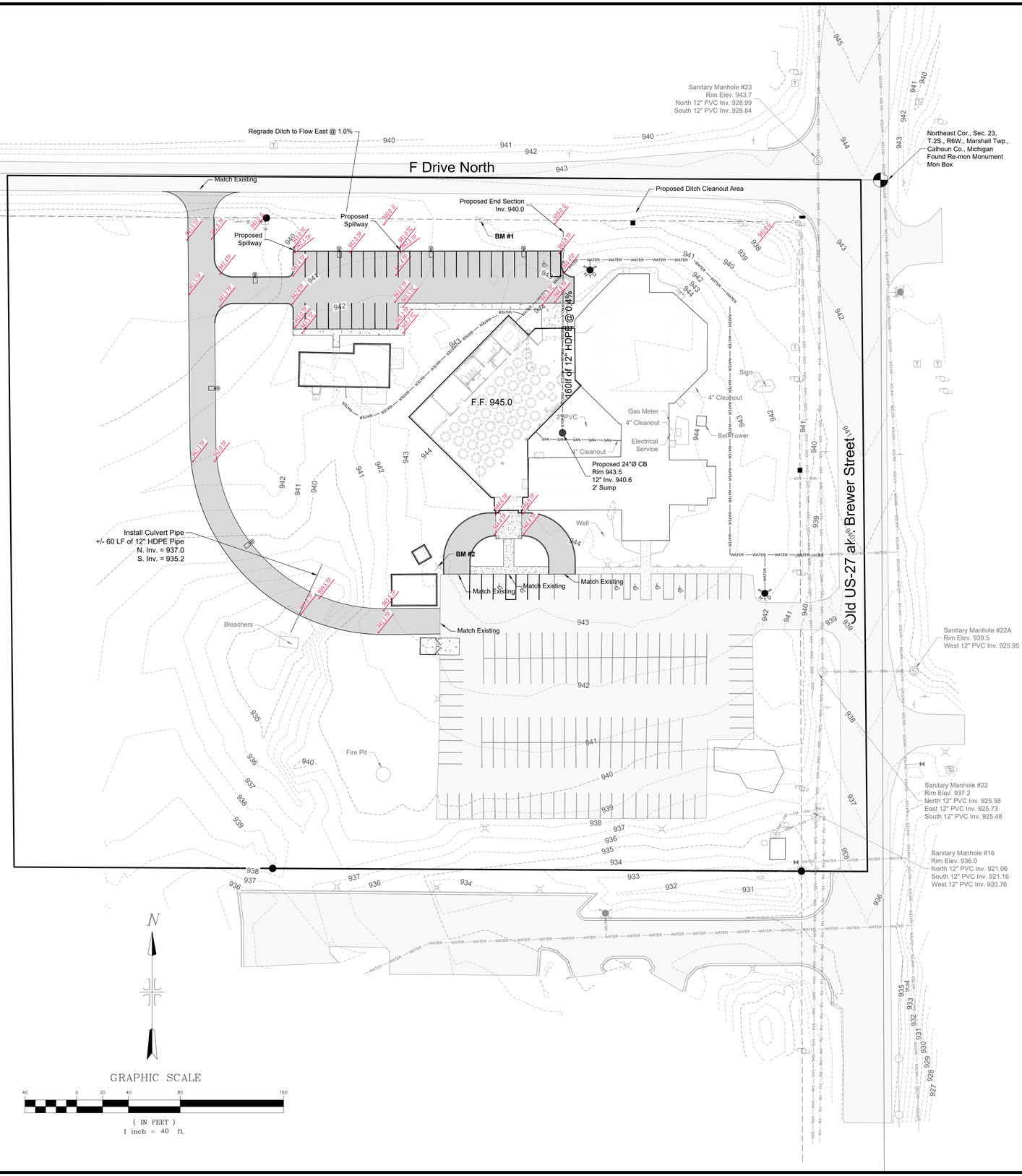
DRAWN BY: S.E. Bell
PROJECT NUMBER: P-190052
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595
DATE: August 12, 2019
REVISED: October 8, 2019; October 26, 2019; January 7, 2020

Site Lighting/ Photometric Plan
Family Bible Church Expansion
For
FED Corporation

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
○ PRELIMINARY
● PERMIT/BID
○ CONSTRUCTION
○ FINAL RECORD

C-8



Grading Notes:

1. The forms for concrete sidewalks, curbs, gutters, and driveways that are to be constructed to conform to existing roads shall be installed to the grades shown on these plans. Prior to placing concrete, the forms shall be inspected and approved by local jurisdiction for conformance to existing road improvements. Grades of new improvements are subject to field adjustment to fit conditions.
2. The contractor shall be responsible for matching existing facilities to avoid any abrupt or apparent changes in grades or cross slopes, low spots, or hazardous conditions.
3. All grading, back filling, excavation, etc., shall be in accordance with the specification or normal practice if not specified.
4. Where unstable or unsuitable materials are encountered during subgrade preparation, the area in question shall be over excavated and replaced with engineered backfill material.
5. If requested, a representative of the engineer shall be on the site during grading operations and shall observe the construction and identify any conditions that should be corrected and recommend corrective measures to the contractor.
6. All grading, erosion, and sediment control and related work undertaken on this site shall be in accordance with local jurisdiction.
7. The contractor shall not disturb any permanent survey points without the consent of local jurisdiction. Any points destroyed shall be replaced by a licensed surveyor at the contractor's expense.
8. Grading at the boundaries shall be done so as not to obstruct the runoff of storm waters from adjacent properties.
9. All disturbed areas shall be topsoiled, seeded, fertilized and mulched.
10. Contractor to maintain all soil erosion control measures. Surrounding paved areas shall be power broomed as necessary to remove mud tracking from the site.
11. Contractor shall obtain soil erosion permit prior to any construction.
12. All structures, sidewalks, curbs and asphalt shall have a minimum of 12" of clean granular material (MDOT Class II) as a sub-base and compacted to 95% maximum unit density. If pumping or yielding is caused by the compactive efforts, the sand layer shall be increased until density can be obtained without pumping water through the subgrade.

Grading & Storm Water Notes:

- Roof Drains shall be connected to drain tiles and either discharge to swales or catch basins.
- All Grades subject to field adjustment.
- Stormwater quality requirements = the greater volume of 1" of rain over the newly developed site, or the increased runoff from a 2-year 24-hour rainfall.
- 2-year 24=hour rainfall event = 2.54" per USDA County Rainfall maps
- Disturbed Area: 1.660 Acres

Storm Water Calculations:

Disturbed Area: 2.492 Acres

Existing Impervious Area = 0.443 Acre,
Existing 'C' Value = [(0.443*(0.9)) + (2.049*(0.4))] / 2.492 = 0.49

Proposed Impervious Area = 0.906 Acre,
Proposed 'C' Value = [(0.906 x (0.9)) + (1.586 x (0.4))] / 2.492 = 0.58

1" Over Proposed Site Volume = 0.58 x 1 in / 12 in/ft x 108552 sq. ft. = 5247 cu. ft.
Increased Volume from 2-Year = 0.09 x 2.54 in / 12 in/ft x 108552 sq. ft. = 2068 cu. ft.

Required Storage Volume Expansion to North = 5247 cu. ft.
(Existing Storage Volume = 10102 cu ft.; Proposed Storage Volume = 17009 cu. ft.
Total Increase = 6907 cu. ft. > 5247cu. ft.)
Freeboard Elevation = 942.0 (Overflow to the Southeast)

Pre-Development Runoff Rate = 0.49 x 2.54 x 2.492 = 3.10 cfs

Area Designated by the hatch discharges off site:

Runoff Area = 57339 sq. ft.
Impervious Area = 25119 sq. ft. => 'C' Value = 0.62
Post-Development Runoff Rate = 0.62 x 2.54 in x 1.32 ac = 2.08 cfs

Post Development Runoff < Pre-Development Runoff
2.08 cfs < 3.10 cfs

Existing Volume:

ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
938	322	N/A	N/A	0
939	1597	1	960	960
940	3705	1	2651	3611
941	9277	1	6491	10102

Proposed Volume:

ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
938	1277	N/A	N/A	0
939	3303	1	2290	2290
940	6127	1	4715	7005
941	13880	1	10004	17009

LEGEND:

TP - TOP OF PAVEMENT
TC - TOP OF CONCRETE
GP - GUTTER PAN
FF - FINISH FLOOR
G - GROUND
RIM - RIM ELEVATION
INV - INVERT ELEVATION

- ELEVATION AT LOCATION
- DIRECTION OF SURFACE FLOW

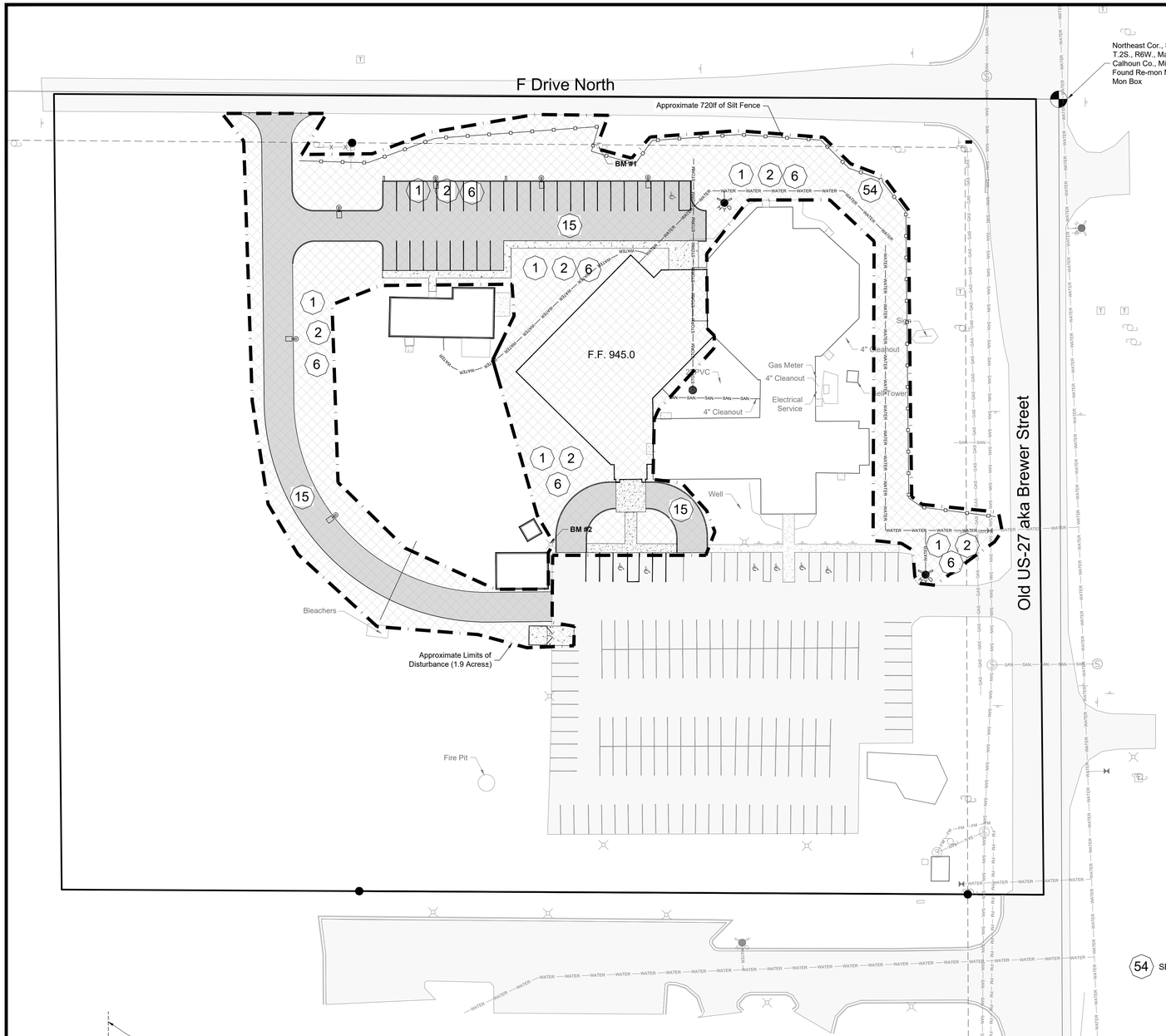
PROJECT NUMBER: P-190052
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595
REVISED: October 8, 2019; October 26, 2019; January 7, 2020
DRAWN BY: S.E. Bell
DATE: August 12, 2019
SCALE: 1" = 40'
SHEET C-9

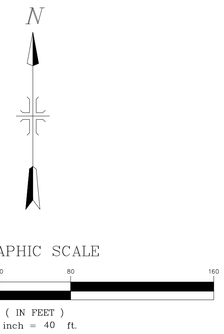
Grading & Storm Water Plan
Family Bible Church Expansion
For
FED Corporation

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
- ○ PRELIMINARY
- ● PERMIT/BID
- ○ CONSTRUCTION
- ○ FINAL RECORD

C-9



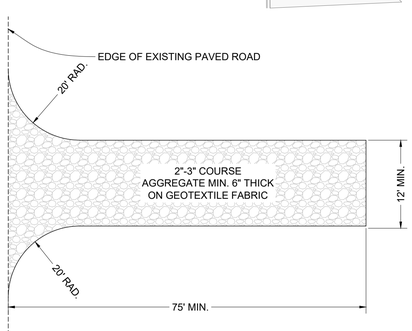


SESC Plan Notes:

1. This project shall be constructed in compliance with the Calhoun County Soil Erosion and Sedimental Control ordinance, authorized under Part 91 of Act 451 of 1994, as amended, the Soil Erosion and Sedimentation Control Act.
2. All erosion and sedimentation control work shall conform to the standards and specifications of the local controlling jurisdiction.
3. Erosion and any sedimentation from work on this site shall be contained on the site and not allowed to collect on any off site areas or in waterways. Waterways include both natural and man made open ditches, streams, storm drains, lakes and ponds.
4. Staging the work will be done by the landowner or landowner's representative as directed in these plans and as required to ensure progressive stabilization of disturbed earth change.
5. The landowner or landowner's representative shall be responsible for installation and maintenance of soil erosion and sedimentation control devices.
6. The landowner or landowner's representative shall implement and maintain the soil erosion control measures as shown on the plans before and at all times during construction on this project. Any modifications or additions to soil erosion control measures due to construction or changed conditions shall be complied with as required or directed by the local jurisdiction.
7. If any of the SESC measures on the site are deemed inadequate or ineffective, the Calhoun County Road Department's office has the right to require additional SESC measures at the expense of the landowner.
8. Contractor is clean the portions of roads adjacent to the project if dirt, debris or other material is being deposited on the roadway as needed. Adjacent roadway should be inspected at minimum once a day to determine if street sweeping is needed, and may be required multiple times a day, depending on vehicular traffic and debris.
9. During dry periods, all disturbed areas shall be watered for dust control.
10. Permanent soil erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed within 5 calendar days after final grading or the final earth change has been completed. When it is not possible to permanently stablize a disturbed area after earth change activity ceases, temporary soil erosion control measures shall be implemented immediately. All temporary soil erosion control shall be maintained until permanent soil erosion control measures are implemented. All permanent soil erosion control measures will be implemented and established before a certificate of compliance is issued.
11. Final grade, establish vegetation and or landscape all disturbed areas not built or paved upon.
12. Dewatering is not anticipated during the life of this project. If dewatering should become necessary, the site will be dewatered into a well established vegetative buffer and in accordance with all other rules and regulations of the local jurisdiction. The contractor shall be responsible for obtaining any necessary permits for dewatering prior to discharge.
13. Remove all temporary soil erosion devices after permanent stabilization is established.
14. Area of disturbance approximately 6.5 acres.

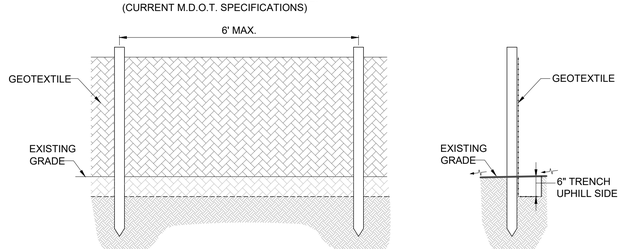
LEGEND:

54 SESC Key Number (See Sheet C-12)

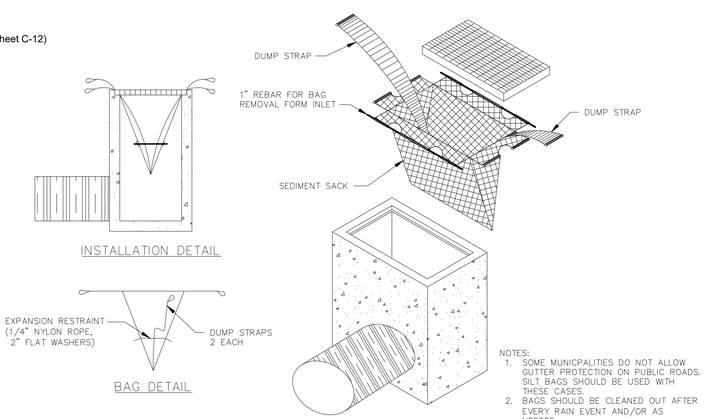


1 C-10 **GRAVEL CONSTRUCTION ENTRANCE**
SCALE: NONE

NOTE: SILT FENCE SHALL CONSIST OF FURNISHING, ERECTING, MAINTAINING, REMOVING, AND DISPOSING OF A SILT FENCE, CONSISTING OF A POST SUPPORTED GEOTEXTILE. INSTALLATION, INCLUDING PROPER ENTRENCHING, SHALL BE ACCOMPLISHED AS SPECIFIED OR APPROVED ACCORDING TO THE MANUFACTURER'S PUBLISHED RECOMMENDED PRACTICE. (CURRENT M.D.O.T. SPECIFICATIONS)



2 C-10 **GEOTEXTILE SILT FENCE**
SCALE: NONE



3 C-10 **SILT SACK DETAIL**
SCALE: NONE

PROJECT NUMBER: P-190052 | DRAWN BY: S.E. Bell | SCALE: As Shown
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595 | DATE: August 12, 2019 | SHEET C-10
REVISED: October 8, 2019; October 26, 2019; January 7, 2020

SESC Plan
Family Bible Church Expansion
For
FED Corporation

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
- ○ PRELIMINARY
- ● PERMIT/BID
- ○ CONSTRUCTION
- ○ FINAL RECORD

C-10

MICHIGAN
SOIL EROSION & SEDIMENTATION CONTROL
GUIDEBOOK
FEBRUARY 1975 FIGURE 2

SEEDING ZONES

RATE OF APPLICATION (ALL ZONES)

TYPE OF SEED	PER/1000 SF	PER ACRE
SPRING OATS/BARLEY OR DOMESTIC RYEGRASS	2 LBS 1/2 LB	3 BU 20-25 LBS
SUDANGRASS	1 LB	30-40 LBS
RYE OR PERENNIAL RYE	3 LBS 1/2 LB	2-3 BU 20-25 LBS
WHEAT	3 LBS	2-3 BU

PERMANENT SEEDING GUIDE

	APR	MAY	JUN	JUL	AUG	SEP	OCT	
IRRIGATED AND/OR MULCH WITHOUT IRRIGATION OR MULCH								ZONE 1
IRRIGATED AND/OR MULCHED WITHOUT IRRIGATION OR MULCH								ZONE 2
IRRIGATED AND/OR MULCHED WITHOUT IRRIGATION OR MULCH								ZONE 3

TEMPORARY SEEDING GUIDE

ZONE 1

TYPE OF SEED	APR	MAY	JUN	JUL	AUG	SEP	OCT
SPRING OATS/BARLEY OR DOMESTIC RYEGRASS					15TH		
SUDANGRASS							
RYE OR PERENNIAL RYE						15TH	15TH
WHEAT							

ZONE 2

TYPE OF SEED	APR	MAY	JUN	JUL	AUG	SEP	OCT
SPRING OATS/BARLEY OR DOMESTIC RYEGRASS							
SUDANGRASS							
RYE OR PERENNIAL RYE						10TH	10TH
WHEAT					10TH		

ZONE 3

TYPE OF SEED	APR	MAY	JUN	JUL	AUG	SEP	OCT
SPRING OATS/BARLEY OR DOMESTIC RYEGRASS							
SUDANGRASS							
RYE OR PERENNIAL RYE							
WHEAT							

SOIL EROSION & SEDIMENTATION CONTROL PLAN

SESC GENERAL NOTES:

MICHIGAN UNIFIED KEYING SYSTEM

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TEMPORARY AND PERMANENT CONTROL MEASURES UNTIL VEGETATION HAS BEEN ESTABLISHED ON ALL DISTURBED AREAS. MAINTENANCE SHALL INCLUDE: PERIODIC INSPECTIONS, REMOVING ACCUMULATED SEDIMENT AND REPAIRING OR REPLACING DAMAGED CONTROL MEASURES. INSPECTIONS SHALL BE PERFORMED DAILY DURING THE CONSTRUCTION PROCESS. FOLLOWING CONSTRUCTION INSPECTIONS SHALL BE PERFORMED AT LEAST ON A WEEKLY BASIS AND AFTER EVERY SIGNIFICANT RAIN EVENT UNTIL VEGETATION HAS BEEN ESTABLISHED.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF TEMPORARY CONTROL MEASURES AFTER ALL DISTURBED AREAS HAVE BEEN RESTORED AND VEGETATION HAS BEEN ESTABLISHED. INSTALL FILTER FABRIC UNDER ALL CATCH BASIN GRATES UNTIL PERMANENT SOIL EROSION MEASURES HAVE TAKEN EFFECT. INSTALL SILT FENCES PRIOR TO ANY SITE WORK.

3. THE OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE OF PERMANENT CONTROL MEASURES AFTER THE ESTABLISHMENT OF VEGETATION ON DISTURBED AREAS. THE OWNER SHALL MAKE PERIODIC INSPECTIONS, AND REPLACE OR REPAIR DAMAGED PERMANENT CONTROL MEASURES AS REQUIRED.

4. TIMING SEQUENCE AND CONSTRUCTION SCHEDULE:

PHASE ONE - EARTH GRADE CHANGE. CONSTRUCT DITCHES, UTILITIES, PARKING LOT SUBGRADE.
PLACE AND MAINTAIN TEMPORARY CONTROL MEASURES DURING THIS CONSTRUCTION PHASE.
- COVER CATCH BASINS
- GEOTEXTILE SILT FENCE AND/OR STRAW BALES.

PHASE TWO - FINAL RESTORATION AND BITUMINOUS PAVING
MAINTAIN TEMPORARY AND PERMANENT CONTROL MEASURES
PLACE PERMANENT CONTROL MEASURE
- TOPSOIL, SEED, MULCH AND FERTILIZER IN ACCORDANCE WITH CURRENT MDOT STANDARDS AND SPECIFICATIONS. PERMANENT SEEDING REQUIRED BETWEEN MAY 1 THROUGH OCTOBER. DORMANT SEEDING REQUIRED AFTER NOVEMBER 15, BUT NOT ON FROZEN GROUND.

5. ANTICIPATED START CONSTRUCTION DATES: To Be Determined - 2019 Construction Planned.
- Construct driveway entrance
- Start excavation
- Start foundation
- Start underground utilities
- Start parking lot and retention pond
- Pave parking lot
- Start landscaping
- Contractor to supply dates after selection and prior to commencing construction.

6. PERMANENT CONTROL MEASURES SHALL BE COMPLETED WITHIN 15 CALENDAR DAYS AFTER FINAL EARTH CHANGE IS COMPLETED.

7. TEMPORARY SEEDING, OR DORMANT SEEDING SHALL BE UTILIZED FOR "WINTER STABILIZATION".

INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS

KEY	DETAIL	CHARACTERISTICS	A SLOPES	B STREAMS AND WATERWAYS	C SURFACE DRAINAGE WAYS	D ENCLOSED DRAINAGE (Inlet & Outfall Control)	E LARGE FLAT SURFACE AREAS	F BORROW AND STOCKPILE AREAS	G ADJACENT PROPERTIES
1	STRIPPING & STOCKPILING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION. STOCKPILE SHOULD BE TEMPORARILY SEEDED.	✳				✳	✳	
2	SELECTIVE GRADING & SHAPING	WATER CAN BE DIVERTED TO MINIMIZE EROSION. FLATTER SLOPES EASE EROSION PROBLEMS.	✳				✳	✳	✳
3	GRUBBING OMITTED	SAVES COST OF GRUBBING, PROVIDES NEW SPROUTS, RETAINS EXISTING ROOT MAT SYSTEM, REDUCES WIND FALL AT NEW FOREST EDGE, DISCOURAGES EQUIPMENT ENTRANCE	✳				✳		✳
4	VEGETATIVE STABILIZATION	MAY UTILIZE A VARIETY OF PLANT MATERIAL STABILIZES SOIL SLOWS RUNOFF VELOCITY FILTERS SEDIMENT FROM RUNOFF	✳	✳	✳		✳	✳	✳
5	SEEDING	INEXPENSIVE AND VERY EFFECTIVE STABILIZES SOIL, THUS MINIMIZING EROSION PERMITS RUNOFF TO INFILTRATE SOIL, REDUCING RUNOFF VOLUME SHOULD INCLUDE PREPARED TOPSOIL BED	✳		✳		✳	✳	✳
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	✳		✳		✳	✳	✳
7	HYDRO-SEEDING	EFFECTIVE ON LARGE AREAS MULCH TACKING AGENT USED TO PROVIDE IMMEDIATE PROTECTION UNTIL GRASS IS ROOTED SHOULD INCLUDE PREPARED TOPSOIL BED	✳				✳	✳	✳
8	SODDING	PROVIDES IMMEDIATE PROTECTION CAN BE USED ON STEEP SLOPES WHERE SEED MAY BE DIFFICULT TO ESTABLISH EASY TO PLACE; MAY BE REPAIRED IF DAMAGED SHOULD INCLUDE PREPARED TOPSOIL BED	✳		✳		✳	✳	✳
9	VEGETATIVE BUFFER STRIP	SLOWS RUNOFF VELOCITY FILTERS SEDIMENT FROM RUNOFF REDUCES VOLUME OF RUNOFF ON SLOPES	✳	✳					✳
10	MULCHING	USED ALONE TO PROTECT EXPOSED AREAS FOR SHORT PERIODS PROTECTS SOIL FROM IMPACT OF FALLING RAIN PRESERVES SOIL MOISTURE AND PROTECTS GERMINATING SEED FROM TEMPERATURE EXTREMES	✳				✳	✳	
11	ROUGHENED SURFACE	REDUCES VELOCITY AND INCREASES INFILTRATION RATES COLLECTS SEDIMENT HOLDS WATER, SEED, AND MULCH BETTER THAN SMOOTH SURFACES	✳				✳		
12	COMPACTION	HELPS HOLD SOIL IN PLACE, MAKING EXPOSED AREAS LESS VULNERABLE TO EROSION	✳				✳		
13	RIPRAP, 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	✳	✳	✳				
14	AGGREGATE COVER	STABILIZES SOIL SURFACE, THUS MINIMIZING EROSION PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS					✳		
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VOLUME AND VELOCITY IRREGULAR SURFACE WILL HELP SLOW VELOCITY	✳				✳		
16	CURB & GUTTER	KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY					✳		✳
17	BENCHES	REDUCES RUNOFF VELOCITY BY REDUCING EFFECTIVE SLOPE LENGTH COLLECTS SEDIMENT PROVIDES ACCESS TO SLOPES FOR SEEDING, MULCHING AND MAINTENANCE	✳					✳	
18	DIVERSION BERM	DIVERTS WATER FROM VULNERABLE AREAS COLLECTS AND DIRECTS WATER TO PREPARED DRAINAGEWAYS MAY BE PLACED AS PART OF NORMAL CONSTRUCTION OPERATION	✳					✳	✳

INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS

KEY	DETAIL	CHARACTERISTICS	A SLOPES	B STREAMS AND WATERWAYS	C SURFACE DRAINAGEWAYS	D ENCLOSED DRAINAGE (Inlet & Outfall Control)	E LARGE FLAT SURFACE AREAS	F BORROW AND STOCKPILE AREAS	G ADJACENT PROPERTIES
19	DIVERSION DITCH	COLLECTS AND DIVERTS WATER TO REDUCE EROSION POTENTIAL MAY BE INCORPORATED IN PERMANENT PROJECT DRAINAGE SYSTEMS	✳					✳	✳
20	BERM & DITCH	DIVERTS WATER TO A PREPARED DRAINAGEWAY MAY BE USED AT INTERVALS ACROSS SLOPE FACE TO REDUCE EFFECTIVE SLOPE LENGTH	✳					✳	✳
21	FILTER BERM	CONSTRUCTED OF GRAVEL OR STONE INTERCEPTS AND DIVERTS RUNOFF TO STABILIZED AREAS OR PREPARED DRAINAGE SYSTEMS SLOWS RUNOFF AND COLLECTS SEDIMENT	✳	✳					✳
22	BRUSH FILTER	USES SLASH AND LOGS FROM CLEARING OPERATIONS CAN BE COVERED AND SEEDED RATHER THAN REMOVED ELIMINATES NEED FOR BURNING OR REMOVAL OF MATERIAL FROM SITE							✳
23	BARE CHANNEL	LEAST EXPENSIVE FORM OF DRAINAGEWAY MAY BE USED ONLY WHERE GRADIENT IS VERY LOW AND WITH SOILS OF MINIMUM EROSION POTENTIAL			✳				
24	GRASSED WATERWAY	MUCH MORE STABLE FORM OF DRAINAGEWAY THAN BARE CHANNEL GRASS TENDS TO SLOW RUNOFF AND FILTER OUT SEDIMENT USED WHERE BARE CHANNEL WOULD BE ERODED			✳				
25	SLOPE DRAIN (SURFACE PIPE)	PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA USUALLY PERMANENT CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES	✳						
26	SLOPE DRAIN (PIPE CHUTE)	PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA USUALLY PERMANENT CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES	✳						
27	SLOPE DRAIN (SUBSURFACE PIPE)	PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA USUALLY PERMANENT CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES	✳						
28	DROP SPILLWAY	SLOWS VELOCITY OF FLOW, REDUCING EROSIVE CAPACITY		✳	✳				
29	PIPE DROP	REDUCES RUNOFF VELOCITY REMOVES SEDIMENT AND TURBIDITY CAN BE DESIGNED TO HANDLE LARGE VOLUMES OF FLOW			✳				
30	PIPE SPILLWAY	REMOVES SEDIMENT AND TURBIDITY FROM RUNOFF MAY BE PART OF PERMANENT EROSION CONTROL PLAN			✳				
31	ENERGY DISSIPATER	SLOWS RUNOFF VELOCITY TO NON-EROSIVE LEVEL PERMITS SEDIMENT COLLECTION FROM RUNOFF	✳		✳	✳			
32	LEVEL SPREADER	CONVERTS COLLECTED CHANNEL OR PIPE FLOW BACK TO SHEET FLOW AVOIDS CHANNEL EASEMENTS AND CONSTRUCTION OFF PROJECT SITE SIMPLE TO CONSTRUCT			✳				
33	SEDIMENTATION TRAP	MAY BE CONSTRUCTED OF A VARIETY OF MATERIALS TRAPS SEDIMENT AND REDUCES VELOCITY OF FLOW CAN BE CLEANED AND EXPANDED AS NEEDED		✳	✳				
34	SEDIMENT BASIN	TRAPS SEDIMENT RELEASES RUNOFF AT NON-EROSIVE RATES CONTROLS RUNOFF AT SYSTEM OUTLETS CAN BE VISUAL AMENITIES		✳	✳	✳			
35	STORM SEWER	SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS, CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONDUCTS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTFALL LOCATION, USE CATCH BASINS TO COLLECT SEDIMENT				✳	✳	✳	
36	CATCH BASIN, DRAIN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET				✳	✳	✳	

INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS

KEY	DETAIL	CHARACTERISTICS	A SLOPES	B STREAMS AND WATERWAYS	C SURFACE DRAINAGEWAYS	D ENCLOSED DRAINAGE (Inlet & Outfall Control)	E LARGE FLAT SURFACE AREAS	F BORROW AND STOCKPILE AREAS	G ADJACENT PROPERTIES
37	SOD FILTER	INEXPENSIVE AND EASY TO CONSTRUCT PROVIDES IMMEDIATE PROTECTION PROTECTS AREAS AROUND INLETS FROM EROSION				✳			
38	STRAW BALE FILTER	INEXPENSIVE AND EASY TO CONSTRUCT CAN BE LOCATED AS NECESSARY TO COLLECT SEDIMENT MAY BE USED IN CONJUNCTION WITH SNOW FENCE FOR ADDED STABILITY				✳			✳
39	ROCK FILTER	CAN UTILIZE MATERIAL FOUND ON SITE EASY TO CONSTRUCT FILTERS SEDIMENT FROM RUNOFF				✳			✳
40	INLET SEDIMENT TRAP	EASY TO SHAPE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED				✳			✳
41	STONE AND ROCK CROSSING	MAY BE ROCK OR CLEAN RUBBLE MINIMIZES STREAM TURBIDITY INEXPENSIVE MAY ALSO SERVE AS DITCH CHECK OR SEDIMENT TRAP		✳					
42	TEMPORARY CULVERT	ELIMINATES STREAM TURBULENCE AND TURBIDITY PROVIDES UNOBSTRUCTED PASSAGE FOR FISH AND OTHER WATER LIFE CAPACITY FOR NORMAL FLOW CAN BE PROVIDED WITH STORM WATER FLOWING OVER ROADWAY		✳					
43	CULVERT SEDIMENT TRAP	EASY TO INSTALL AT INLET KEEPS CULVERT CLEAN AND FREE FLOWING MAY BE CONSTRUCTED OF LUMBER OR LOGS		✳					✳
44	CULVERT SEDIMENT TRAP	DEFLECTS CURRENTS AWAY FROM STREAMBANK AREAS		✳					
45	TEMP. STREAM CHANNEL CHANGE	NEW CHANNEL KEEPS NORMAL FLOWS AWAY FROM CONSTRUCTION REQUIRES STATE PERMIT		✳					
46	SHEET PILINGS	PROTECTS ERODIBLE BANK AREAS FROM STREAM CURRENTS DURING CONSTRUCTION MINIMAL DISRUPTION WHEN REMOVED		✳					
47	COFFERDAM	WORK CAN BE CONTINUED DURING MOST ANTICIPATED STREAM CONDITIONS CLEAR WATER CAN BE PUMPED DIRECTLY BACK INTO STREAM		✳					
48	CONSTRUCTION DAM	PERMITS WORK TO CONTINUE DURING NORMAL STREAM STAGES CONTROLLED FLOODING CAN BE ACCOMPLISHED DURING PERIODS OF INACTIVITY		✳					
49	CHECK DAMS	REDUCES FLOW VELOCITY CATCHES SEDIMENT CAN BE CONSTRUCTED OF LOGS, STRAW, HAY, ROCK, LUMBER, MASONRY, OR SAND BAGS		✳	✳	✳			
50	WEIR	CONTROLS SEDIMENTATION IN LARGE STREAMS CAUSES MINIMAL TURBIDITY		✳	✳	✳			
51	RETAINING WALL	REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP PERMITS RETENTION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS MINIMIZES MAINTENANCE	✳						✳
52	SEEPAGE CONTROL	PREVENTS PIPING AND SOIL SLIPPAGE ON CUT SLOPES	✳						✳
53	WINDBREAK	MINIMIZES WIND EROSION MAY BE SNOW FENCE					✳		✳
54	SILT FENCE	USES GEOTEXTILE FABRIC AND POSTS OR POLES EASY TO CONSTRUCT AND LOCATE AS NECESSARY.				✳			✳

SCALE: N/A
DRAWN BY: S.E. Bell
DATE: August 12, 2019
SHEET C-11
PROJECT NUMBER: P-190052
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595
REVISED: October 8, 2019; October 26, 2019; January 7, 2020

SESC Key

Family Bible Church Expansion

For

FED Corporation

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
- ○ PRELIMINARY
- ● PERMIT/BID
- ○ CONSTRUCTION
- ○ FINAL RECORD

C-11

CONCRETE FORMING
DIVISION 03 10 00

PART 1 GENERAL

1.01 Scope:

A. Provide, install and remove all concrete formwork and accessories necessary for concrete construction as indicated on the drawings and specified herein.

1.02 Related Work Specified Elsewhere:

A. Concrete Reinforcement -DIVISION 03 20 00
B. Cast-in-place Concrete -DIVISION 03 30 00

1.03 Referenced Standards:

A. ACI, "ACI Manual of Concrete Practice"
B. American Plywood Association, "Plywood for Concrete Forming"
C. American Institute of Timber Construction, "Timber Construction Manual"
D. National Forest Products Association, "Design of Wood Formwork for Concrete Structures"

1.04 Design:

A. The Design and Engineering of Concrete Formwork shall be the responsibility of the Contractor.

PART 2 PRODUCTS

2.01 Form Materials:

A. Forms shall be either metal free of irregularities, dents, and/or sags; or plywood made specifically for concrete form use complying with APA "Plywood for Concrete Forming."

2.02 Coatings and Release Agents:

A. Steel Forms: Colorless mineral oil which will not stain concrete.

2.03 Accessories:

A. Form ties and spreaders shall be removable or snap-off commercially manufactured metal with cone ends leaving no metal exposed within 1" of finished face of concrete and causing no surface disfiguration greater that 3/4" in diameter.

PART 3 EXECUTION

3.01 General Requirements:

A. Design, install, and remove Concrete Formwork specified herein in strict accordance with the Referenced Standards.

3.03 Supplemental Requirements:

A. Attach, as required elsewhere in the Construction Documents or as required to properly interface Concrete Work with the Work of other trades, all required accessories, anchor bolts, hangers, sleeves, slots and/or inserts.
B. Unless indicated otherwise on the Drawings, provide 3/4" chamfer strips at all outside corners of exposed Cast-in-Place Concrete.
C. Earth cuts may be used as forms where concrete is not to be exposed or to receive waterproofing.
D. Formwork shall be constructed to the shape, line, and dimension as required by the plans. Do not scale off plans. Construction is to be according to written dimensions.
E. Forms shall be sufficiently tight to prevent leakage of concrete and shall be properly braced and tied together to maintain position and shape during concrete placement.

END OF SECTION

CONCRETE REINFORCEMENT
DIVISION 03 20 00

PART 1 GENERAL

1.01 Scope:

A. Provide and install all concrete reinforcement and accessories, complete, as indicated on the drawings and specified herein.

1.02 Related Work Specified Elsewhere:

A. Concrete Forming -DIVISION 03 10 00
B. Cast-in-Place Concrete -DIVISION 03 30 00

1.03 Referenced Standards:

A. ACE "ACI Manual of Concrete Practice"
B. ASTM A185, "Welded Steel Wire Fabric for Concrete Reinforcement"
C. ASTM A615, "Specifications for Pre formed and Plain Built-Steel Bars for Concrete Reinforcement"

1.04 Storage of Materials:

A. Materials shall be stored so as not to deteriorate due to excessive rusting or become contaminated by foreign substances.

PART 2 PRODUCTS

2.10 Bar Reinforcement:

A. Shall comply with ASTM A615, grade 60 billet steel deformed bars, uncoated finish.

2.02 Welded Wire Fabric:

A. Shall conform to ASTM A185, plain type.

2.03 Accessories:

A. Tie Wire: Annealed steel, 16-gauge minimum.
B. Reinforcement Supports: Galvanized steel bolster, chairs and supports with plastic coating where in contact with formwork.

PART 3 EXECUTION

3.01 General Requirements:

A. Design, fabricate and place Concrete Reinforcement specified herein in strict accordance with Referenced Standards.

3.02 Supplemental Requirements:

A. Unless indicated otherwise on the Drawings, maintain a minimum 3" clearance between all reinforcement specified and the outside face of the concrete enclosing the reinforcement through the use of concrete bricks and galvanized reinforcement bars anchored into adjacent earth where earth cut forms are utilized and through the use of prefabricated chairs and spreaders with vinyl coated feet where concrete formwork utilized.

END OF SECTION

CAST-IN-PLACE CONCRETE
DIVISION 03 30 00

PART 1 GENERAL

1.01 Scope:

A. Provide, place, patch, cure and finish all concrete as indicated on the Drawings and specified herein.

1.02 Related Work Specified Elsewhere:

A. Concrete Forming -DIVISION 03 10 00
B. Concrete Reinforcement -DIVISION 03 20 00

1.03 Submittals:

A. Concrete test results.
B. Concrete design mix proposed to comply with Specifications.
C. Provide Specification indicating materials to actually be utilized under this Section if choice permitted.
D. Concrete Truck batch ticket indicating presence of specified admixture and amount added.

1.04 Referenced Standards:

A. ACI, "Manual of Concrete Practice"
B. ASTM C31, "Practice for Making and Curing Concrete Test Specimens in the field"
C. ASTM C33, "Specification for Concrete Aggregates"
D. ASTM C39, "Test Method of Compressive Strength of Cylindrical Concrete Specimens"
E. ASTM C94, "Specification for Ready-Mixed Concrete
F. ASTM C143, "Test Method for Slump of Hydraulic Cement Concrete"
G. ASTM C150, "Specification for Portland Cement"
H. ASTM C172, "Method of Sampling Freshly Mixed Concrete:
I. ASTM C231, "Test Method of Air Content of Freshly Mixed Concrete By the Pressure Method"
J. ASTM C260, "Specification for Air-Entraining Admixtures for Concrete"

1.05 Testing:

A. Testing of concrete as specified in this section shall be arranged by the Contractor.
B. Concrete shall be sampled, handled and tested in strict accordance with the following Referenced Standards for the procedure indicated.
   1) Sampling fresh Concrete: ASTM C172
   2) Slump Determination: ASTM C143
   3) Making, curing, protecting and transporting concrete test specimens: ASTM C31
   4) Testing Compressive Strength: ASTM C39
   5) Testing Air Content: ASTM C231
C. The following information shall be recorded concerning each sampling by the Testing Technician:
   1) Name of Technician taking sample.
   2) Date and time of sampling.
   3) Air temperature and weather condition at time of sampling.
   4) Design compressive strength of Concrete being sampled.
   5) Source of Concrete, Truck Number and Ticket Number if batched offsite.
   6) List of Admixtures indicated to be present in Concrete on batch ticket.
   7) List of Admixtures and/or water added to the Concrete mix on site, whether added before or after sampling taken by Testing Technician and quantity of item added.
   8) Specific location in structure in which the concrete is placed after sampling.
D. Tests shall be performed for each Concrete Sampling to determine the following:
   1) Concrete temperature at time of sampling.
   2) Concrete Slump.
   3) Concrete Air Content, if air entrainment specified, at the time of sampling.
   4) Compressive Strength of Test Cylinders in the following quantities at the following increments from the date of sampling:
      a) One test at 7 days
      b) Two tests at 28 days
      c) One specimen shall be retained in reserve for later testing if required.
E. The Testing Laboratory shall prepare a report recording the information required in items C. and D. above and mail the report directly to the Owner, Engineer and Contractor the day of the compressive tests.
F. Four cylinders shall be made for each test. Perform a minimum of one test for each 100 cubic yards per class of concrete placed, but in no case shall there be less than one test for each day's concreting per class of concrete.
G. Concrete to be tested shall be randomly selected by the Testing Technician without direction from the Contractor or material supplier.

PART 2 PRODUCTS

2.01 Concrete:

A. Concrete shall be composed of Portland Cement in conformance with ASTM C150, aggregates in conformance with ASTM C33 and water in conformance with ASTM C94, proportioned to achieve a compressive strength of 3,500 psi at 28 days unless noted otherwise in the specifications or on the drawings. Unless noted otherwise the maximum allowable slump shall be 4".
B. Unless noted otherwise the water-cement ration shall not exceed .5 by weight.
C. Air-entraining Admixture, where specified, shall conform with Referenced Standard ASTM C260. Provide air entraining admixture for all concrete exposed to freeze-thaw cycling. Air content shall be 7% +- 1%.

2.02 Additives:

A. Admixtures containing thyocyanates or calcium chloride are not permitted.
B. Water reducing chemical admixtures shall conform to ASTM C494 - Type A.
C. Unless specified herein, additives or admixtures shall not be used without written approval from the Engineer.

2.03 Curing Compound:

A. "Ellis Clear Acrylic cure 309" as manufactured by Ellis Construction Accessories, or equal meeting ASTM C309. Curing compound shall be an acrylic formula designed and certified to be compatible with resilient flooring adhesives.

2.04 Non-Shrink Grout:

A. "Masterflow 713" by Master Building Co.; "Sonogrout" by Sonnebrone Building Products; "Crystex", as manufactured by L&M Construction Chemicals, Inc., or approved equal; with a minimum compressive strength of 5 psi at 28 days.

2.05 Vapor Barrier:
A. 6 mil. polyethylene film.

PART 3 EXECUTION

3.01 General Requirements:

A. Mix, transport, test, place, finish and cure all Cast-In-Place Concrete and other products specified herein in strict accordance with Referenced Standards and manufacturer's written specifications.
B. Notify Testing Laboratory 24 hours prior to placement of all concrete.

3.02 Supplemental Requirements:

A. Grind smooth surface projections, remove loose concrete and patch with Non-shrink grout, in strict accordance with manufacturer's written specifications, all surface honeycombs, wall tie holes and other vertical wall surface deformations on concrete walls to be exposed or to receive waterproofing assembly.
B. Provide light broom finish on sidewalks unless noted otherwise.
C. Apply curing Compound to all slab concrete in strict accordance with manufacturer's written specifications. Apply in sufficient quantity and reapply if necessary depending on weather conditions to protect concrete from premature drying. Apply additional coat of Curing Compound to slab concrete immediately after final cleaning of floor.
D. Perform Cold Weather Concreting operations in strict accordance with the requirements of ACI 306R.
E. Perform Hot Weather Concreting operations in strict accordance with the requirements of ACI 305R.
F. Secure and install items to be embedded in Cast-In-Place Concrete in strict accordance with the manufacturer's written specifications, Referenced Standards and/or as indicated in the Drawings and Specifications.

3.03 Defective Concrete:

A. Modify or replace concrete not conforming to required strength, levels, lines, details, and elevations.
B. Repair or replace concrete not properly placed or not of the specified type or finish.

END OF SECTION

SITE CLEARING
SECTION 31 10 00

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK
The extent of site preparation work expected to be minimal. This work includes, but is not limited to furnishing all labor, material, equipment, tools, incidentals, and services necessary for:

Temporary silt fencing
Protection of existing trees and vegetation
Related work as required

1.02 SOIL EROSION AND SEDIMENTATION CONTROL
A. Purpose - The purpose of this section is to minimize soil erosion and control sedimentation as required by the Soil Erosion and Sedimentation Control Act, Part 91, PA 451 of 1994 of the State of Michigan as amended.
B. Permit - It is anticipated that a Soil Erosion and Sedimentation Control Permit will be required for this project. If a permit is required it shall be obtained prior to construction and shall be the responsibility of the contractor.
C. Implementation - It shall be the responsibility of the Contractor to implement the Soil Erosion and Sedimentation Control Plan for this project in strict accordance with the permit, if required to be obtained. Unless specified within other sections of the specifications, all work under this section shall be in strict accordance with the construction methods as prescribed by the State of Michigan Department of Natural Resources for the implementation of this legislation. Refer to Michigan Guidebook for Soil Erosion and Sedimentation Control, prepared for and distributed by the Water Resources Commission of the Department of Natural Resources, State of Michigan.

1.03 JOB CONDITIONS
A. Protection of Existing Improvements - Provide barricades, coverings or other types of protection necessary to prevent damage to existing improvements indicated to remain in place. Protect improvements on adjoining properties and on the Owner's property. Restore any improvements damaged by this work to the original condition as acceptable to the Owner and other parties or authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 PREASSEMBLED SILT FENCE
A. Geotextile fabric - Polypropylene woven fabric, 2.3 oz./sq.yd., UV resistance 80% Propex® 2127, as mfd by Amoco Fabrics and Fibers Company, Austell, GA (770-944-4569), or approved equal.
B. Silt Fence posts - As mfd by Amoco Fabrics and Fibers Company, Austell, GA (770-944-4569), or approved equal.

PART 3 - EXECUTION

3.01 GENERAL
Call Miss Dig (1-800-482-7171) 72 hours prior to start of clearing and excavation work. Work shall not begin on site until after the project site has been marked by all utility companies.

3.02 PREASSEMBLED SILT FENCE
Install silt fencing where shown on drawings and prior to beginning site clearing and grubbing work. Unroll, stretch, and drive fence posts plumb. Posts shall be installed on the downward side of the fencing. The bottom of the fabric shall be placed under 6" of compacted soil to prevent sediment from flowing underneath the fence.

3.03 SITE CLEARING AND GRUBBING
Remove vegetation, improvements or obstruction interfering with the installation of new construction. Clear the project site of trees, shrubs and other vegetation - except for those indicated to be left standing. Removal includes new and old stumps of trees and their roots. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction. Completely remove stumps, roots and other debris protruding through the ground surface. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 0.5' loose depth, and thoroughly compact to a density equal to adjacent original ground.

3.04 DISPOSAL OF WASTE MATERIALS
Burning of combustible cleared and grubbed materials is not permitted on the Owner's property. Remove from the Owner's property and legally dispose of all waste materials and unsuitable or excess soils.

3.05 TOPSOIL REMOVAL
Topsoil is defined as friable clay loam surface soil found in a depth of not less than 0.4' or greater depth as indicated on the drawings. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones and other objects over 2.0" in diameter, and without weeds, roots and foreign materials. Strip topsoil from within the areas to be occupied by the construction and from other areas within the grading limits to be cut, filled or re-graded. Strip topsoil to whatever depth encountered in a manner to prevent intermingling with the underlying subsoil or objectionable material. Remove heavy growth of grass from areas before stripping. Where trees are indicated to be left standing, stop topsoil stripping at a sufficient distance to prevent damage to the main root system. Stockpile topsoil as indicated and where it will not interfere with construction operations or site work. Locate topsoil storage piles in areas shown or where otherwise directed. Construct storage piles to freely drain surface water and cover if required to prevent windblown dust. If soil or weather conditions are unsuitable, the Contractor shall cease topsoil removal operations and resume only when directed to do so by the owner or engineer. Dispose of excess topsoil the same as waste material, herein specified.

3.06 SILT FENCE REMOVAL
Upon completion of all work, remove the silt control fence and legally dispose off project site. Rake and smooth soil along location of silt fence, and seed as required.

END OF SECTION

EARTH MOVING
SECTION 31 20 00

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

The extent of Earthwork required is shown on the drawings. This work includes, but is not limited to furnishing all labor, material, equipment, tools, incidentals, and services necessary for:

Site grading
Placement of fill materials
Related work as required

1.02 QUALITY ASSURANCE

A. Codes and Standards - Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
B. Lines and Grades - The Contractor shall provide all instrumental surveying required to lay out and construct this work in conformance with the drawings.

1.03 JOB CONDITIONS

A. Site Information - The Contractor shall make his or her own investigation, as he or she deems necessary prior to the bid opening. Data on surface or subsurface conditions is not intended as representations or warranties of accuracy or continuity of actual site conditions. It is expressly understood that the Owner and project consultants employed as representatives of the work will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data made available is for the convenience of the Contractor.
B. Existing Utilities - Call MISS DIG prior to beginning work on the site. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with the Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by the owner or engineer, and then only after acceptable temporary utility services have been provided.
C. Explosives - The use of explosives is not permitted.
D. Protection of Persons and Property - Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washouts and other hazards created by earthwork operations.

PART 2 - PRODUCTS

2.01 DEFINITIONS

A. Standards - Satisfactory soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M145, soil classification Groups A-1, A-2-4, A-2-5 and A-3. Unsatisfactory soil materials are those defined in AASHTO M145 Soil Classification Groups A-2-6, A-2-7, A-4, A-6 and A-7. Also listed as unsatisfactory are peat and other highly organic soils. Cohesion-less soil materials include gravel, sand gravel mixture and gravely sands. Cohesive soil materials include clay and silty gravel, sand clay mixtures, gravel silt mixtures, clay and silty sands, sand silt mixtures, clays, silts and very fine sands.

B. Subbase Material - Subbase material shall be properly graded mixtures of natural or crushed gravel, crushed stone, crushed slag, or natural or processed sand that will readily compact to the required density complying with AASHTO M147, Grade A, unless otherwise indicated or acceptable to the owner or engineer.

C. Topsoil - Topsoil shall be fertile, friable organic soil, characteristic of the soils in the project area that will produce heavy growths of vegetation. Topsoil shall be capable of supporting a healthy and vigorous stand of turf (lawn) grass.

PART 3 - EXECUTION

3.01 EXCAVATION

A. Excavation consists of removal and disposal of material encountered when establishing required grade elevations. Earth excavation includes removal and disposal of pavements and other obstructions visible on the ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and other materials encountered that are not classified as rock excavation or unauthorized excavation. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the owner or engineer. Unauthorized excavation, as well as remedial work directed by the owner or engineer, shall be at the expense of the Contractor.

B. Dewatering - Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area. Convey water removed from excavations and rainwater to collecting or runoff areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

C. Materials Storage - Stockpile satisfactory excavated materials where directed, until required for fill. Place grade and shape stockpiles for proper drainage. Locate and retain soil materials away from the edge of excavations. Cover stockpile, or provide temporary vegetative cover as may be required to comply with the Soil Erosion and Sedimentation Act. Dispose of excess soil material and waste materials as directed.

3.03 COMPACTION
Control soil compaction during construction providing minimum percentages of density specified for each area classification. Compact soil to not less than the following percentages of maximum dry density for soils that exhibit a well-defined moisture density relationship determined in accordance with ASTM D 1557.

3.04 BACKFILL AND FILL
Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below:
A. Placement and Compaction - Place fill materials in layers not more than 1.0 foot in loose depth for material compaction by heavy construction equipment and not more than 0.5 foot in loose depth for material compacted by hand operated tampers.
B. At Existing Trees to Remain - Remove vegetation within dripline and fill with a single layer of uncomplicated topsoil. Hand grade to attain required finish grade.

3.05 DISTRIBUTION OF TOPSOIL
Prior to topsoil placement, the subgrade shall be prepared to uniform levels and slope between points where elevations are shown. Abrupt changes in slope are to be rounded off. Loosen subgrade to a minimum depth of 0.4 foot. Remove stones over 1.0" in any dimension and sticks roots, rubbish and other extraneous matter. Fine rake by York Rake\, Viking Roller Blade\, or approved equal or by hand to produce a smooth even surface that conforms to the grades established on the drawings. Any irregularities shall be corrected in order to prevent the formation of depressions or water pockets. Topsoil shall be uniformly distributed to a minimum depth of 0.4 foot after firming, unless otherwise indicated. Topsoil in planting bed areas, if applicable, shall be placed to a minimum depth of 1.0 foot. Topsoil shall be spread in such a manner that finish grading, seeding or sodding, and landscape planting operations can proceed with a minimum of additional soil preparation. Place approximately 50% of the total amount of the topsoil required, work into top of loosened subgrade to create a transition layer, and then place remainder of topsoil. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet or in a condition that may otherwise be detrimental to proper grading. Irregularities in the surface resulting from topsoil spreading or other operations shall be corrected in order to prevent the formation of depressions or water pockets. Provide additional clean topsoil - subject to approval of the owner or engineer - as may be required to complete work. Remove any excess topsoil from the site, or distribute it and grade it as directed by engineer on site if approved by Owner.

3.06 MAINTENANCE
A. Protection of Graded Areas - Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded and rutted areas to specified tolerances.
B. Reconditioning of Compacted Areas - Where completed compacted areas are disturbed by subsequent construction operation or adverse weather, scarify surface, reshape and compact to required density prior to further construction.

3.07 DISPOSAL OF EXCESS AND WASTE MATERIALS
Remove excess excavated material, soil, trash, debris and waste materials and legally dispose of such off the property, except as otherwise specifically noted.

END OF SECTION

BASES, BALLASTS AND PAVING
DIVISION 32 10 00

PART 1 GENERAL

1.01 Scope:

A. Provide sub-base, base and bituminous paving for driveways walkway, sidewalk, and concrete pads, as indicated on the drawings, as specified herein, and as needed for a complete and proper installation.

1.02 Referenced Standards:

A. MDOT Standard Specifications

PART 2 PRODUCTS

2.01 Materials

A. MDOT 22A Agregate (Base)
B. MDOT Class II Granular Material (Subbase)
C. MDOT 13A HMA (Pavement)
D. Seed, Mulch and Fertilizer (See Seeding Section 32 92 00)

PROJECT NUMBER: P-190052 | SCALE: N/A
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595 | DRAWN BY: S.E. Bell
REVISED: October 8, 2019; October 26, 2019; January 7, 2020 | DATE: August 12, 2019 | SHEET C-12

Site Specifications
Family Bible Church Expansion
For
FED Corporation

LAPHAM ASSOCIATES
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
116 South 3rd Street
West Branch, MI 48661
P (989) 345-5030
F (989) 345-7302
www.laphamassoc.com

APPROVED USE FOR:
○ PRELIMINARY
● PERMIT/BID
○ CONSTRUCTION
○ FINAL RECORD

C-12

PART 3 EXECUTION

3.01 General Requirements:

A. Base
   1. Subgrade Preparation for Subbase - The subgrade shall be smoothed and trimmed to the required line, graded and cross sectioned to receive the sub base course with no topsoil, organic material, sticks, roots or other deleterious materials and shall be compacted to not less then 90 percent (90%) M.U.W.
   2. Subbase Preparation for Base - the subbase shall be smoothed and trimmed to the required line, grade, and cross section to receive the base course and shall be compacted to not less than 95 percent (95%) of M.U.W.
   3. The subbase thus formed shall be maintained in a smooth and compacted condition until the base course has been placed.
   4. No base course shall be placed on the subbase until it has been approved in writing by the Engineer or owner.
      a. Placing Base - aggregate base shall not be placed when there are indications that the mixture may become frozen before the M.U.W. is attained and in no case shall the base be placed on a frozen subbase or subgrade.
   5. The subbase shall be shaped to the specified crown and grade and maintained in a smooth condition. If hauling equipment should cause ruts in the subbase, such equipment will not be permitted on the subbase but shall be operated on the aggregate base.
   6. The aggregate shall be placed in uniform layers to such a depth that when compacted the course will have the thickness shown on the plans. The aggregate shall be compacted to not less than 98% of M.U.W.
   7. The finished surface shall be shaped to the crown and grade within a tolerance of ¾ inch, more or less. The surface shall be continuously maintained in a smooth condition.
   8. Should the subbase or aggregate base become damaged due to the Contractor's operation, the subgrade, subbase or base shall be restored to the conditions required by these specifications at the Contractor's expense.
   9. If the subbase or subgrade at any time prior to acceptance of the work becomes soft or unstable to the extent that it is forced up through or prevents compaction of the aggregate, such subbase or subgrade material and aggregate shall be immediately removed and disposed of and new material shall be placed and compacted as required by these documents.
   10. A certification that the base material is in compliance with MDOT Specifications for Aggregate Base under Bituminous 22A shall be furnished to the Owner prior to payment or test slips shall be provided.

B. Bituminous Paving
   1. All materials and placement shall meet the requirements specified he MDOT Specifications, current Edition .
   2. A certification that the bituminous material is in compliance with MDOT Specifications shall be furnished to the Owner prior to payment for the material.

C. Foundation Preparation
   1. Before placing the bituminous mixture, the surface of the foundation shall be swept clean and all foreign material removed.
   2. The finished aggregate base surface shall be shaped to the crown and grade within a tolerance of plus or minus ¾ inch, and compacted to at least 98% of M.U.W. before placing bituminous material.
   3. Catch basins, manhole covers, and water valve covers shall be adjusted to the proper elevation by removing the castings and setting them to the required elevation by supporting them on a concrete collar or on masonry so constructed as to hold them firmly in place and not allow settlement around them.

D. Rollers
   1. Self-propelled steel tandem rollers weighing not less than eight tons each will be required unless rollers of other types are specifically permitted. Rollers shall be equipped with wheel sprinklers and scrapers.

E. Placing Bituminous Paving
   1. Bituminous mixture shall be placed with an approved mechanical paver. Bituminous material thickness shall not exceed 2-½ inches per application. Placing, rolling and other requirements or restrictions shall be governed by the MDOT Specifications, current Edition.
   2. No bituminous material shall be placed without written permission from the Engineer.

END OF SECTION

TURF & GRASSES
SECTION 32 92 00

PART 1 - GENERAL

1.01 SCOPE
The extent of seeding work required for this project is shown on the drawings. The work of this section includes, but is not limited to furnishing all labor, materials, tools, incidentals, equipment and service for:

Seeding of all turf.
Related work as required

1.03 DELIVERY, STORAGE AND HANDLING
Seed and fertilizer materials shall be in original unopened containers and shall indicate weight, analysis, germination rate, name, and date code of the manufacturer. Materials shall be stored in an orderly manner, at a location acceptable to the Engineer, in a manner to prevent wetting and/or deterioration.

1.04 PROJECT CONDITIONS
A. Seed Blend - Submit proposed seed blend to the owner or Engineer for approval.
B. Seeding - Perform seeding work only after other work affecting ground surface has been completed.
C. Watering - Provide adequate hose and watering equipment as required.
D. Germination - Within thirty (30) days after seeding, it is expected that 60-80% of the seed will have germinated and grown.

1.05 SITE CONDITIONS
All unsatisfactory topsoil quantities or qualities or other unsatisfactory conditions detrimental to seeding shall be reported in writing to the Engineer or Owner. Seeding shall not continue prior to correction of, or written acceptance of the encountered conditions by the Owner.

1.06 WARRANTY
The Contractor shall provide a uniform stand of grass and shall provide watering, mowing and maintenance of all seeded areas prior to final acceptance by the Owner. The Contractor shall reseed all areas, with specified materials, which fail to provide a uniform stand of grass until the Owner accepts all affected areas.

PART 2 - PRODUCTS

2.01 TURF SEED
A. Turf Supplier: All turf seed shall be as supplied from Michigan State Seed Company, 717 Clinton St., Grand Ledge, MI (Ph. 800-647-8873) or approved alternate source.
B. Permanent cover (& Dormant Cover): shall be a consistent mixture of the following varieties for the Area Designated:

Grade A Mixture
Seed %/Wt. Germination
Kentucky Bluegrass (Mix.) 40% 85%
Fine Fescue 40% 85%

Note: On highly erodable slopes, contractor may have to add other varieties to the seed mix such as cereal grass.

2.02 FERTILIZER
Fertilizer for turf areas shall have a chemical analysis of at least 12% available nitrogen, 12% readily available phosphoric acid and 12% total available potash (12-12-12).

2.03 HYDRO-SEED MULCH
Nu-Wool® HydroGreen Plus™ 50/50 Hydroseeding Mulch, prepared for use in a tank of a hydro-mulching machine, as mfd by Nu-Wool, Inc., Jenison, MI, (Ph. 800-748-0128), or approved equal. Mulch shall be made from recycled paper material and be green in color. Mulch may be made from 50% virgin wood fiber and 50% recycled paper where approved by the Engineer.

2.04 STRAW MULCH
Mulch shall be straw or other approved organic material commonly used by the industry for the purpose of the mulching of seeded areas, and approved by the Engineer. Mulch shall be held in place with an approved seal/binder agent and Nu-Wool® HydroGreen Plus™ 50/50 Hydroseeding Mulch.

2.05 STRAW BINDER/ SEALER
Terra-Mulch Tacking Agent III, a water emulsified acrylic resin, Seal, as manufactured by Profile Products, Buffalo Grove, IL, (Ph. 800-508-8681), or approved equal.

2.06 WATER
Water shall be potable water, free of substance harmful to seed growth or other foreign mater. The Contractor shall furnish hoses and other methods of water transportation and application.

PART 3 - EXECUTION

3.01 TURF AREA SURFACE PREPARATION
Topsoil shall be fine raked to produce a smooth even surface that conforms to established grades. All stones, roots, clods 1.0" and larger in diameter, and all foreign matter shall be removed from the surface of areas to be seeded. The area shall be made smooth and uniform and parallel to the finished grade. The tops and bottoms of all slopes shall be rounded to blend into the natural ground or adjacent slopes by vertical curves. Seeded areas will be allowed a tolerance of 0.1 foot. Slope for drainage over turf areas shall have a minimum grade of 0.5%.

3.02 TURF - HYDRO-SEEDING METHOD
A. This method shall be used for permanent seeding unless otherwise authorized in writing by the Engineer. The mixture of the seed, fertilizer, mulch and a tackifier used shall be as follows (2 parts water to one part mulch):
   Grade A Seed Mixture: 4-5# /1,000 sq. ft. (175-220#/acre)
   Fertilizer: 3.5# /1,000 sq. ft.
   Hydro-Seed Mulch:
   On slopes up to 3/1: (38) 40# bags / acre
   On slopes from 3:1 to 2:1: (50) 40# bags / acre
   Greater than 2:1 slopes: (62.5) 40# bags / acre. Tackifier: 20# /acre (or more based on slope and mfr's recommendations)
B. Slopes 2:1 and greater shall also be straw mulched after being hydroseeded. Apply straw, and then apply Terra-Mulch Seal and Nu-Wool® HydroGreen Plus™ 50/50 with a hydroseeder at the rate as recommended by mfr.
C. Protect surfaces and areas from overspray which are not indicated to be hydroseeded, including shrub bed, walks, light poles, etc. Immediately remove and clean hydroseed material from all such areas, which may accidentally have been sprayed.
D. Provide barriers as required to keep traffic off the seeded areas after they are completed. Contractor shall remove all barriers he installed when turf is established, and before acceptance by Owner.
E. For dormant cover areas, mulching must also be used on the hydro-seeded areas. The rate of application shall be 3 tons per acre of prepared seed bed.

3.09 TURF - MULCHING
Spread straw at the rate of one bale per 1000 square feet (43.5 bales /acre). Straw shall be mechanically crimped, and a sealer/binder shall be applied by hydro-seeder at the rate of 30# to 1,000 gallons of water along with 150# cellulose fiber per acre.

3.12 WATERING
To the point of acceptance, the Contractor shall be responsible for providing adequate water and application to assure the establishment of a dense, permanent turf. Provide adequate water during germination and after to continually keep the seed bed moist (without puddling).

END OF SECTION

PROJECT NUMBER: P-190052
ENGINEER: Timothy L. Lapham, P.E., P.S. 27595
REVISED: October 8, 2019; October 26, 2019; January 7, 2020
DRAWN BY: S.E. Bell
DATE: August 12, 2019
SCALE: N/A
SHEET C-13

Site Specifications

Family Bible Church Expansion

For

FED Corporation

ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING

LAPHAM ASSOCIATES

116 South 3rd Street
West Branch, MI 48661

P (989) 345-5030
F (989) 345-7302

www.laphamassoc.com

APPROVED USE FOR:
○ PRELIMINARY
● PERMIT/BID
○ CONSTRUCTION
○ FINAL RECORD

C-13

F Drive North

Old US-27 aka Brewer Street

REMOVE (2) SPRUCE (15" DIAMETER)
BM #1
REMOVE (2) PEAR (4" DIAMETER)
REMOVE LOCUST (9" DIAMETER)
REMOVE COTTONWOOD (9" DIAMETER)
REMOVE SPRUCE (16" DIAMETER)
REMOVE MAPLE (42" DIAMETER)
REMOVE (2) PINE (15"-20" DIAMETER)
REMOVE (2) BIRCH (3-4" DIAMETER)
REMOVE HICKORY (10" DIAMETER)
REMOVE (2) PINE (4-5" DIAMETER)
REMOVE MAPLE (36" DIAMETER)
F.F. 945.0
REMOVE WEEPING CHERRY (5" DIAMETER)
REMOVE (2) OAK (12" DIAMETER)
REMOVE CRABAPPLE (4" DIAMETER)
REMOVE PINE (13" DIAMETER)
REMOVE HICKORY (4" DIAMETER)
REMOVE MAPLE (42" DIAMETER)
REMOVE PINE (24" DIAMETER)
REMOVE MAPLE (24" DIAMETER)
REMOVE (2) BIRCH (6-8" DIAMETER)
REMOVE PINE (13" DIAMETER)
REMOVE HICKORY (36" DIAMETER)
REMOVE EXISTING HICKORY (8")
REMOVE MULBERRY (5" DIAMETER)
REMOVE EXISTING PINE (24")
REMOVE EXISTING HICKORY (10")
REMOVE BOX ELDER (15" DIAMETER)
BM #2
REMOVE (3) HICKORY (9-14" DIAMETER)
REMOVE HICKORY (13" DIAMETER)
REMOVE BLACK GUM (6" DIAMETER)
REMOVE COTTONWOOD (9" DIAMETER)
REMOVE BLACK GUM (6" DIAMETER)
FIRE PIT
BLEACHERS
REMOVE BOX ELDER (15" DIAMETER)
FIRE PIT

RELEVANT CITY OF MARSHALL ORDINANCES:

5 - SITE STANDARDS

5-15 LANDSCAPING AND SCREENING

1. SPECIAL PROVISIONS FOR EXISTING SITES: WHERE PARKING LOT LANDSCAPING CANNOT BE PROVIDED, ADDITIONAL LANDSCAPING ALONG THE STREET OR IN THE BUFFER AREAS SHALL BE CONSIDERED.
   - (PARKING LOT ISLAND REQUIREMENT IS BEING WAIVED)

3. PARKING LOT SCREENING
   - SIZE AND PLANT SPACING TO ALLOW FOR CONTINUOUS SCREENING WITHIN 3 YEARS.
   - (1) TREE AND (5) SHRUBS PER EACH 30 LINEAR FEET (ONLY APPLIED TO NEW PARKING AREA)

4. GREENBELTS
   - AT LEAST ONE DECIDUOUS TREE AND FOUR SHRUBS PER 40 LINEAL FEET OF STREET FRONTAGE.
   - THE GREENBELT AREA SHALL CONTAIN GRASS OR OTHER SUITABLE LIVING GROUNDCOVER.

5.15.13.E CREDIT FOR PRESERVED TREES

OVER 12"	- (3) TREES CREDITED
8-12"	- (2) TREES CREDITED
2.5-8"	- (1) TREE CREDITED

SITE PLAN LEGEND

⊗ TREES TO BE REMOVED

NORTH

0 25 50 75

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

Landscape Architects & Planners, Inc.
OAKLAND CENTER
809 CENTER STREET
SUITE ONE
LANSING, MI 48906
P: (517) 485-5500
F: (517) 485-5576
info@laplnc.net

REVISIONS

INITIALS	DATE	COMMENTS

LANDSCAPE PLAN

735 OLD US-27 NORTH
MARSHALL, MI 49068

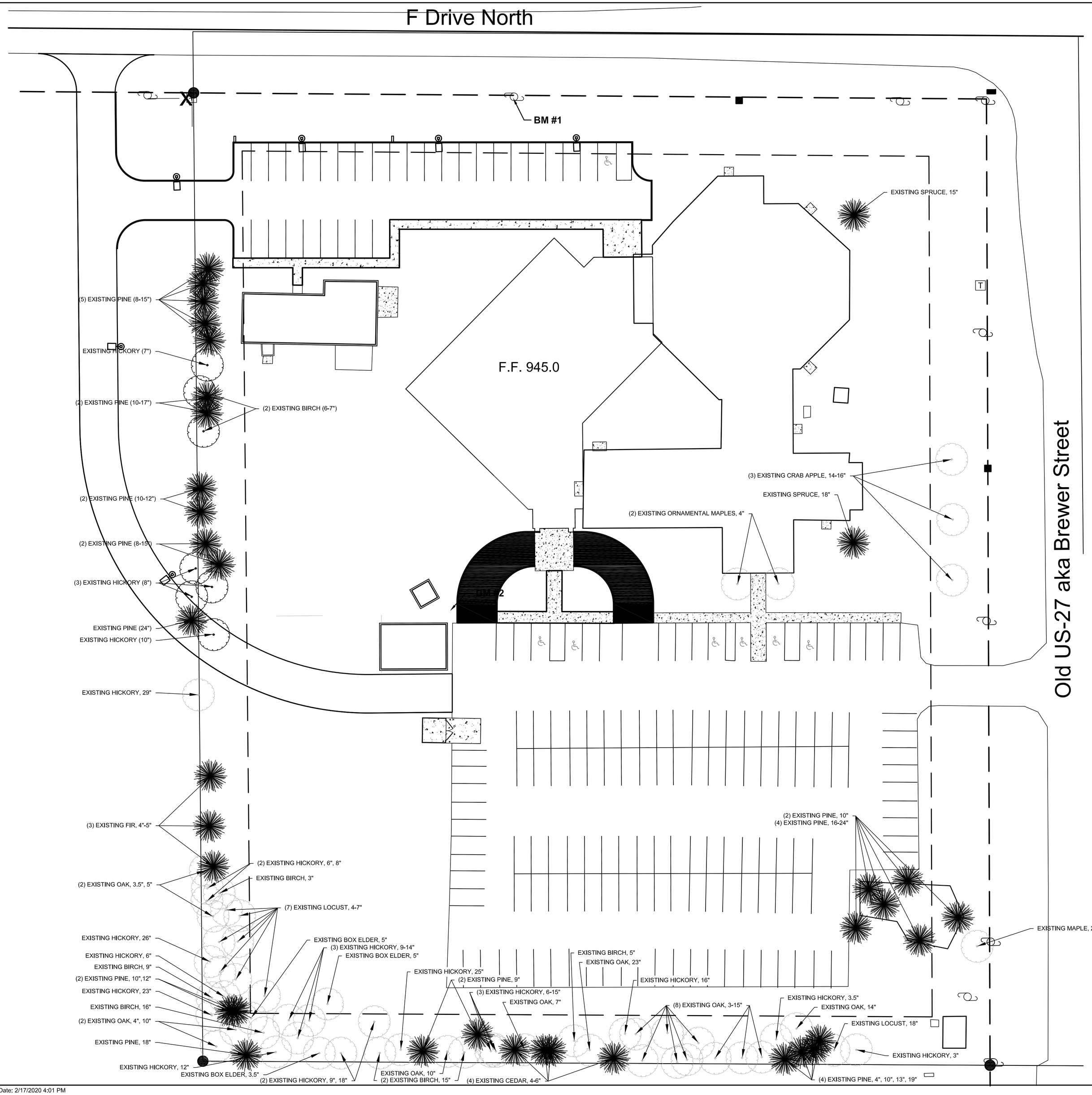
LAPHAM ASSOCIATES
MARSHALL FAMILY BIBLE CHURCH EXPANSION
LANDSCAPE DEMOLITION PLAN

DATE: 10/30/2019
DESIGNED BY: JEJ
CHECKED BY: REF
DRAWN BY: JEJ
PROJECT NO: 19041
SCALE: 1"=25'
HORIZ: N/A
VERT: N/A

SHEET
1 OF 3

F:\PROJECTS\PROJECTS 2019\19041 LAPHAM MARSHALL FAMILY BIBLE CHURCH LANDSCAPE PLAN\07 GRAPHICS\AUTOCAD\RESOURCES\MODELS\CONSTRUCTION MODEL 10302019.DWG

Plot Date: 2/17/2020 4:01 PM



EXISTING TREE CREDITS:

CREDIT FOR TREE INSTALLATION, PER CITY OF MARSHALL CODE OF ORDINANCES

2.5"-8"	= CREDIT FOR (1) TREE
8"-12"	= CREDIT FOR (2) TREES
12"+	= CREDIT FOR (3) TREES

1. FRONT YARD BUFFER

EXISTING TREE CREDIT:

(2) TREES BETWEEN 2.5-8" DIAMETER	= (2) TREE CREDIT
(2) TREES BETWEEN 8"-12" DIAMETER	= (4) TREE CREDIT
(10) TREES GREATER THAN 12" DIAMETER	= (30) TREE CREDIT

(36) TREES TOTAL CREDIT FOR FRONT YARD BUFFER

SOME EXISTING LANDSCAPING WILL REMAIN, REDUCING THE NEED FOR THE COMPLETE AMOUNT OF BUFFER PLANTINGS IN THE FRONT YARD AND BETWEEN THE BUILDING AND RIGHT OF WAY. THESE EXISTING BEDS WILL BE MAINTAINED.

2. SIDE/REAR YARD BUFFER

EXISTING TREE CREDIT:

(43) TREES BETWEEN 2.5-8" DIAMETER	= (43) TREE CREDIT
(24) TREES BETWEEN 8"-12" DIAMETER	= (46) TREE CREDIT
(20) TREES GREATER THAN 12" DIAMETER	= (59) TREE CREDIT

(149) TREES TOTAL CREDIT FOR SIDE/REAR YARD BUFFER

THE WOODED AREA IN THE SOUTH AND SOUTHEAST AREAS OF THE PROPERTY PROVIDE A SIGNIFICANT AMOUNT OF UNDERGROWTH AND SCREENING. WHERE APPLICABLE, THESE NATURAL AREAS ARE TO BE PROTECTED AND LEFT UNDISTURBED. ADDITIONAL SHRUBS WILL BE PLANTED ADJACENT TO THE NEW ACCESS DRIVE ON THE WEST SIDE OF THE PROPERTY.

NORTH
0 25 50 75

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

Landscape Architects & Planners, Inc.
OAKLAND CENTER
809 CENTER STREET
SUITE ONE
LANSING, MI 48906
P: (517) 485-5500
F: (517) 485-5576
info@laplnc.net

REVISIONS

INITIALS	DATE	COMMENTS

LANDSCAPE PLAN

726 OLD US-27 NORTH
MARSHALL, MI 49068

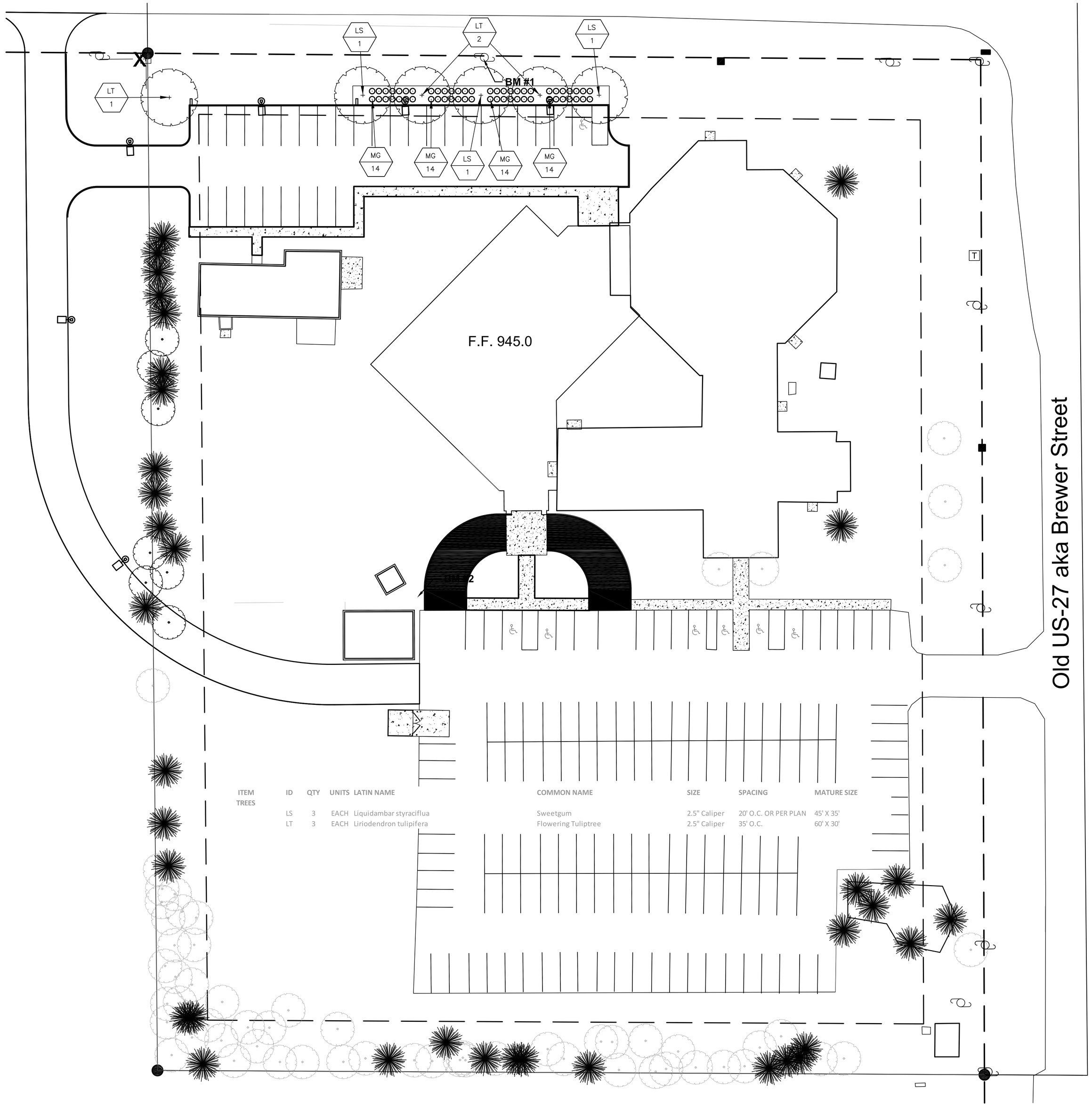
LAPHAM ASSOCIATES
MARSHALL FAMILY BIBLE CHURCH EXPANSION
TREES TO REMAIN

DATE: 10/30/2019
DESIGNED BY: JEJ
CHECKED BY: REF
DRAWN BY: JEJ
SCALE: 1" = 40'
PROJECT NO: 19041
HORIZ: N/A
VERT: N/A

SHEET
2 OF 3

F:\PROJECTS\PROJECTS 2019\19041 LAPHAM MARSHALL FAMILY BIBLE CHURCH LANDSCAPE PLAN\07 GRAPHICS\AUTOCAD\RESOURCES\MODELS\CONSTRUCTION MODEL 10302019.DWG

Plot Date: 2/17/2020 4:01 PM



ITEM	ID	QTY	UNITS	LATIN NAME	COMMON NAME	SIZE	SPACING	MATURE SIZE
TREES								
	LS	3	EACH	Liquidambar styraciflua	Sweetgum	2.5" Caliper	20' O.C. OR PER PLAN	45' X 35'
	LT	3	EACH	Liriodendron tulipifera	Flowering Tuliptree	2.5" Caliper	35' O.C.	60' X 30'

TREE REQUIREMENTS:

1. FRONT YARD RIGHT OF WAY PLANTING REQUIREMENTS:
   413' + 502' = 915 LINEAR FEET; 915 / 40 = 23;
   23 X 1 = 23 TREES REQUIRED; 23 X 4 = 92 SHRUBS REQUIRED
   (36) TREES CREDITED FROM EXISTING - 5 OF THESE ARE EVERGREEN.
   (6) TREES PROVIDED BETWEEN PARKING LOT AND STREET.
   (56) SHRUBS PROVIDED WITHIN THE FRONT YARD, PLACED TO SCREEN VEHICLE HEADLIGHTS.

2. SIDE/REAR YARD BUFFER PLANTING REQUIREMENTS:
   503 + 409 = 912 LINEAR FEET; 912 / 40 = 23 TREES REQUIRED; 23 X 4 = 92 SHRUBS REQUIRED
   (151) TREES CREDITED IN NATURALIZED AREA; 28 OF THESE ARE EVERGREEN

2. PARKING LOT TREE REQUIREMENT: (ONLY APPLIES TO NEW PARKING AREAS)
   (13) TOTAL SPACES. 13 / 12 = 1 TREE REQUIRED
   (126) LINEAR FEET; 126/30 = 4 TREES; 4 X 4 = 16 SHRUBS REQUIRED
   (5) TREES PROVIDED ADJACENT TO PARKING AREA.
   (5) CANOPY TREES AND (56) SHRUBS.
   PROVIDED TREES AND SHRUBS OVERLAP WITH FRONT YARD BUFFER REQUIREMENTS.

3. (6) TOTAL TREES PROVIDED
   1 OF EVERY 5 (2) TO BE EVERGREEN; 33 EXISTING TREES ARE EVERGREEN
   1 OF EVERY 5 (2) TO BE CANOPY TREES.

NORTH

0 25 50 75

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

Landscape Architects & Planners, Inc.
OAKLAND CENTER
809 CENTER STREET
SUITE ONE
LANSING, MI 48906
P: (517) 485-5500
F: (517) 485-5576
info@laplnc.net

REVISIONS

INITIALS	DATE	COMMENTS

LANDSCAPE PLAN

726 OLD US-27 NORTH
MARSHALL, MI 49068

LAPHAM ASSOCIATES
MARSHALL FAMILY BIBLE CHURCH EXPANSION
TREE AND LANDSCAPING BUFFER PLAN

DATE: 10/16/2019
DESIGNED BY: JEJ
CHECKED BY: REF
DRAWN BY: JEJ
PROJECT NO: 19041
SCALE: HORIZ: 1"=25'
VERT: N/A

SHEET
3 OF 3

CITY OF MARSHALL

SITE PLAN APPLICATION

City of Marshall
Application for Site Plan Review

Attn: Planning and Zoning Administrator
323 W Michigan Ave.
Marshall, Michigan, 49068

The following application is made to the City of Marshall Planning Commission in accordance with the provisions of the Planning and Zoning Department.

1. **Applicant Information**

Address of property being developed:

725 US Hwy 27 N.

Owner of property being developed:

Family Bible Church

Owner's Address:

725 US Hwy 27 N., Marshall, MI 49068

City State Zip

Owner's Phone Number:

(269) 781-8400

2. **Owner's Agent if working for property owner.**

Name and Title:

Address:

City State Zip

Phone Number:

City of Marshall
Application for Site Plan Review

3. Brief description of proposed project

Construction of new church lobby and fellowship hall

4. Property Information

Is this property located in a floodplain? No

Is this property located in a wetland? No

Land area in square feet? 5.65 acres

Proposed building area in square feet? 10,545

Proposed paved area in square feet? 15,215

Existing paved area in square feet? 45,500 to remain

Lake or stream within 500 feet? No

Any other agencies contacted for approvals? No

If so, please list:

CITY OF MARSHALL

Site Plan Review Checklist for General Development

Date: August 2, 2019

Zoning District R-2 Suburban Residential District

Proposed Use: Church & fellowship hall

Is this a Permitted Use? ☒ Yes ☐ No
If yes list section number: 3.1.2 (c)

Is the property in the Well Head Protection Area? ☒ Yes ☐ No ☐ NA

Property Address: 725 US Hwy 27 N.

Information of Responsible Party that prepared plans

Name: Timothy L. Lapham

Company Name: Lapham Associates

Company Address: 116 S. Third Street

West Branch, MI 48661