

ANN ARBOR CHINESE CHRISTIAN CHURCH

BUILDING EXPANSION

1750 DHU VARREN ROAD

CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN

SPECIAL EXCEPTION USE SITE PLAN

OWNER/APPLICANT
 ANN ARBOR CHINESE CHRISTIAN CHURCH
 1750 DHU VARREN ROAD
 ANN ARBOR, MI 48105
 CONTACT: DENNIS WONG/HOWARD HUANG
 734-668-9128

ENGINEER/SURVEYOR/LANDSCAPE ARCH.
 MIDWESTERN CONSULTING, LLC
 3815 PLAZA DR.
 ANN ARBOR, MI 48108
 CONTACT: SUE DICKINSON
 734-995-0200, EXT. 221

ARCHITECT
 ZION CHURCH BUILDERS
 PO BOX 218
 MATTAWAN, MI, 49071
 CONTACT: DANIEL G. WHITE, ARCHITECT, LLC
 417-425-9618

LEGAL DESCRIPTION
 LEGAL DESCRIPTION OF 8.51-ACRE PARCEL OF LAND
 LOCATED IN THE NE 1/4 OF SECTION 16, T2S, R6E,
 ANN ARBOR TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

Commencing at the N 1/4 corner of Section 16, T2S, R6E, Ann Arbor Township, Washtenaw County, Michigan; thence N 85°25'58" E 878.14 feet along the North line of said Section 16 and the centerline of Dhu Varren Road (120 feet wide) to the POINT OF BEGINNING.

thence continuing N 85°25'58" E along said North line 448.71 feet measured (449.14 feet recorded);
 thence S 01°36'44" E 825.00 feet measured and recorded along the East line of the W 1/2 of the NE 1/4 of said Section 16;
 thence S 85°25'59" W 451.28 feet measured (450.10 feet recorded);
 thence N 01°26'01" W 825.13 feet measured (825.05 feet recorded) to the POINT OF BEGINNING. Being a part of the NE 1/4 of Section 16, T2S, R6E. Being subject to the following:
 -Easement in favor of Detroit Edison, L.3020, Pg.736
 -40 foot wide utility easement, L.3889, PG.584
 -Warranty Deed, L.3381, PG.148
 -Easement (6' wide) in favor of Detroit Edison, L.1278, PG.284
 -The rights of the public over the north 33 feet as taken for Dhu Varren Rd
 Also being subject to other easements and restrictions of record, if any.

SITE DATA

ITEM	COMPARISON CHART	
	REQUIRED/ PERMITTED	PROPOSED
SITE AREA	21,780 SF	370,696 SF / 8.51 AC TOTAL
PARCEL WIDTH	200'	448.71'
ZONING	R4A	R4A
PROPOSED USE	CHURCH	CHURCH
BUILDING FOOTPRINT	8,219 sf existing	14,592 sf proposed
BUILDING FLOOR AREA	8,219 sf existing	17,380 sf proposed
BUILDING HEIGHT	30'	30'
FRONT SETBACK	40'	206.17'
SIDE SETBACK	20'	115.16' (WEST); 86.54' (EAST)
REAR SETBACK	40'	443.99'
SITE AREA (MINUS DHU VARREN ROW)	-	343,824 SF / 7.89 AC
BUILDING/DRIVEWAY/PARKING AREA	-	38,164 SF / 0.88 AC
MINIMUM USEABLE OPEN SPACE	65%	88.9%
VEHICULAR PARKING	80	63*
1 SPACE REQ'D PER 3 SEATS, 240 SEATS TOTAL		
ELECTRIC VEHICLE CHARGING		
EV - INSTALLED 10%	8	2**
EV - READY 10%	8	0**
EV - CAPABLE 15%	12	8**
BF SPACES	3	4
PARKING AISLE WIDTH	22'	22'
BICYCLE PARKING	6 Class C	20 Class C exist
1 CLASS C SPACE PER 50 SEATS		
TRASH AREA	ENCLOSURE	ENCLOSURE
PHASING	NONE	
PRELIMINARY PROJECT COST	-	\$1,500,000

* AN EXISTING PARKING AGREEMENT IS IN PLACE TO ALLOW PARKING IN THE FOOD GATHERERS FACILITY ACROSS DHU VARREN ROAD.
 A VARIANCE WILL BE APPLIED FOR, TO REQUEST THAT THIS MUTUAL LEASE AGREEMENT MAY BE ACCEPTABLE RATHER THAN A PERMANENT EASEMENT.
-VARIANCE APPROVED ON FEBRUARY 23, 2022-

** A VARIANCE WILL BE APPLIED FOR FOLLOWING SITE PLAN APPROVAL TO REDUCE THE NUMBER OF ELECTRIC VEHICLE CHARGING STATIONS.
-VARIANCE APPROVED ON FEBRUARY 23, 2022-

PROJECT NARRATIVE

I. DEVELOPMENT PROGRAM

- (a) **Description:**
 The development consists of a building expansion to the existing church and enlargement of the storm water detention basin to accommodate the increased area of impervious surface.
 - (i) The existing church is 8,219 square feet, with 64 parking spaces and a detention basin.
 - (ii) The proposed development will consist of a building of 9,161 square feet of floor area in two floors. There is a decrease of 1 parking space in the proposed plan. The detention basin will be expanded to handle the additional storm water.
- (b) **Preliminary Phasing Proposal and Probable Construction Cost:**
 - (i) One phase construction is proposed.
 - (ii) Probable construction cost for site work, utilities and building construction (excluding property) is estimated to be \$1,500,000.

II. COMMUNITY ANALYSIS

- (a) **Impact of Proposed Development on Area Schools:**
 The development will not generate any additional population and therefore will not have an impact on the area schools.
- (b) **Relationship of Intended Use to Neighboring Uses:**
 The proposed development will continue the church use of the site and is consistent with the existing use. New trees, both deciduous and coniferous, are proposed along the east side of the site to buffer the neighboring residences.
- (c) **Impact of Adjacent Uses on the Proposed Development:**
 The adjacent uses will not impact the proposed development. The residential areas will be effectively buffered from the church.
- (d) **Impact of Proposed Development on Air and Water Quality, and on the Existing Natural Features of the Site and Neighboring Sites:**
 - (i) There will be no negative impact to air quality.
 - (ii) There will not be a negative effect on water quality. The existing detention basin will be expanded to accommodate any increase in storm water runoff from the building addition. The detention basin will help remove sediment by allowing it to settle prior to discharge. Soil erosion and sedimentation controls will be implemented to ensure that runoff both during construction and after construction is controlled and managed.
 - (iii) A limited number of existing trees are being removed for the building and detention basin expansion. Tree replacement is proposed and is demonstrated on the landscape plan.
 - (iv) No steep slopes areas are present in the project area of the site.
 - (v) There are no known endangered species, wetlands, watercourses, flood plain, or floodway that will be impacted by the proposed development. There is a native forest fragment on the site consisting primarily of hickory, oak, sassafras, walnut, and cherry. Per City regulations, this forest fragment is of "highest level concern". The forest fragment will not be impacted by the building expansion.
 - (vi) An existing 8" water main serves the existing hydrant and existing building onsite. Water service for the new building will be routed from the existing structure.
 - (vii) A 6-inch sanitary sewer lead serves the existing building. The new building will tie into the existing sewer lead.
- (e) **Impact of the Proposed Use on Historic Sites/Structures:**
 No historic structures exist on-site. The site itself is not historic.
- (f) **Traffic Impact Statement**
 Using the ITE Trip Generation Code 560, Church, and the capacity increase of 160 persons to 240 persons, the net increase in the peak hour of the generator (Sunday) is 44 trips.
- (g) **Photometric - Site Lighting**
 No new parking lot lighting is proposed. The existing parking lot has lighting that was addressed and approved in the previous site plan and no changes are proposed. There are building mounted lights proposed on the building addition which are included on the photometric plan.

III. SPECIAL EXCEPTION USE

- (a) **Reason for Special Exception Use:**
 The property is currently used for church facilities. The proposed development will continue and expand this use of the site. The Special Exception Use application is requesting that the capacity be increased from 160 to 240 people.



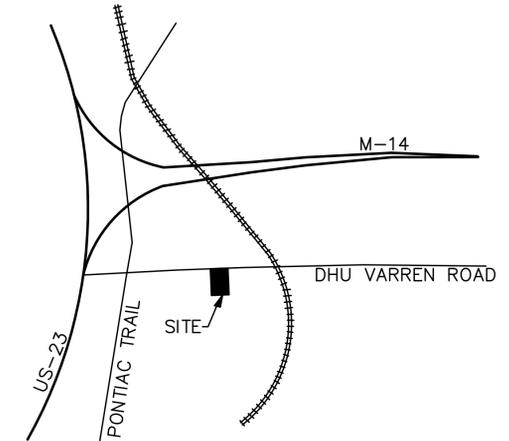
SITE RENDERING
 SCALE : NTS

NOTES:

1. "All work within the City of Ann Arbor covered by these plans shall be performed in complete conformance with the current City of Ann Arbor Public Services Department Standard Specifications and Details."
2. "The omission of any current standard detail does not relieve the contractor from this requirement. The work shall be performed in complete conformance with the current public services standard specifications and details."
3. Sidewalks constructed in the public right-of-way shall meet all requirements and guidelines as set forth in the ADA standards for accessible design. Sidewalk and curb ramp grades will be reviewed during construction plan submittals. All sidewalks are to be kept and maintained in good repair by the owner of the land adjacent to and abutting upon the same. Prior to the issuance of the final Certificate of Occupancy for this site, all existing sidewalks in need of repair must be repaired in accordance with City standards.
4. The owner agrees to use only landscape care products that have no phosphates. The northeast corner of the site outlets to the east to the Traver Creek watershed. The center and west portions of the site outlet to the south to the Huron River.
5. Recycle and trash pickup is to be private. Trash and recycling will be stored in screened enclosures.

BENCH MARKS:

- BM#1: TOP OF STEAMER VALVE OF HYDRANT STANDING AT S. END OF ISLAND IN FRONT OF CHURCH BUILDING
 ELEV. = 924.56 NAVD88
- BM#2: TOP OF SURVEY POINT N.E. SIDE OF 10" TREE (197) +/-40'
 SE OF SE CORNER OF CHURCH BUILDING
 ELEV. = 923.94 NAVD88



VICINITY MAP
 SCALE : NTS

Sheet List Table

SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	ALTA SURVEY PLAN
3	EXISTING CONDITIONS AND REMOVALS- NORTH
4	EXISTING CONDITIONS - SOUTH
5	SITE PLAN
6	UTILITY PLAN
7	GRADING AND SOIL EROSION AND SEDIMENTATION CONTROL PLAN
8	LANDSCAPE AND MITIGATION PLAN
9	TREE LIST
10	LANDSCAPE AND SESC DETAILS
11	STORM WATER MANAGEMENT CALCULATIONS
12	NATURAL FEATURES OVERLAY AND ALT ANALYSIS
13	FIRE PROTECTION AND SOLID WASTE COLLECTION PLAN
PR1	PRELIMINARY FLOOR PLANS
PR2	PRELIMINARY BUILDING ELEVATIONS
PH1	PHOTOMETRIC PLAN

ANN ARBOR CHINESE CHRISTIAN CHURCH

JOB No. 20255	DATE: 5/20/21	1
REVISIONS:	SHEET 1 OF 16	
PER CITY STAFF REVIEWS	REV. DATE: 8/27/21	
PER CITY STAFF REVIEWS	10/8/21	
PER CITY STAFF REVIEWS	11/3/21	
PER PLANNING COMMISSION COMMENTS	12/22/21	
PER ZBA APPROVAL	3/8/22	

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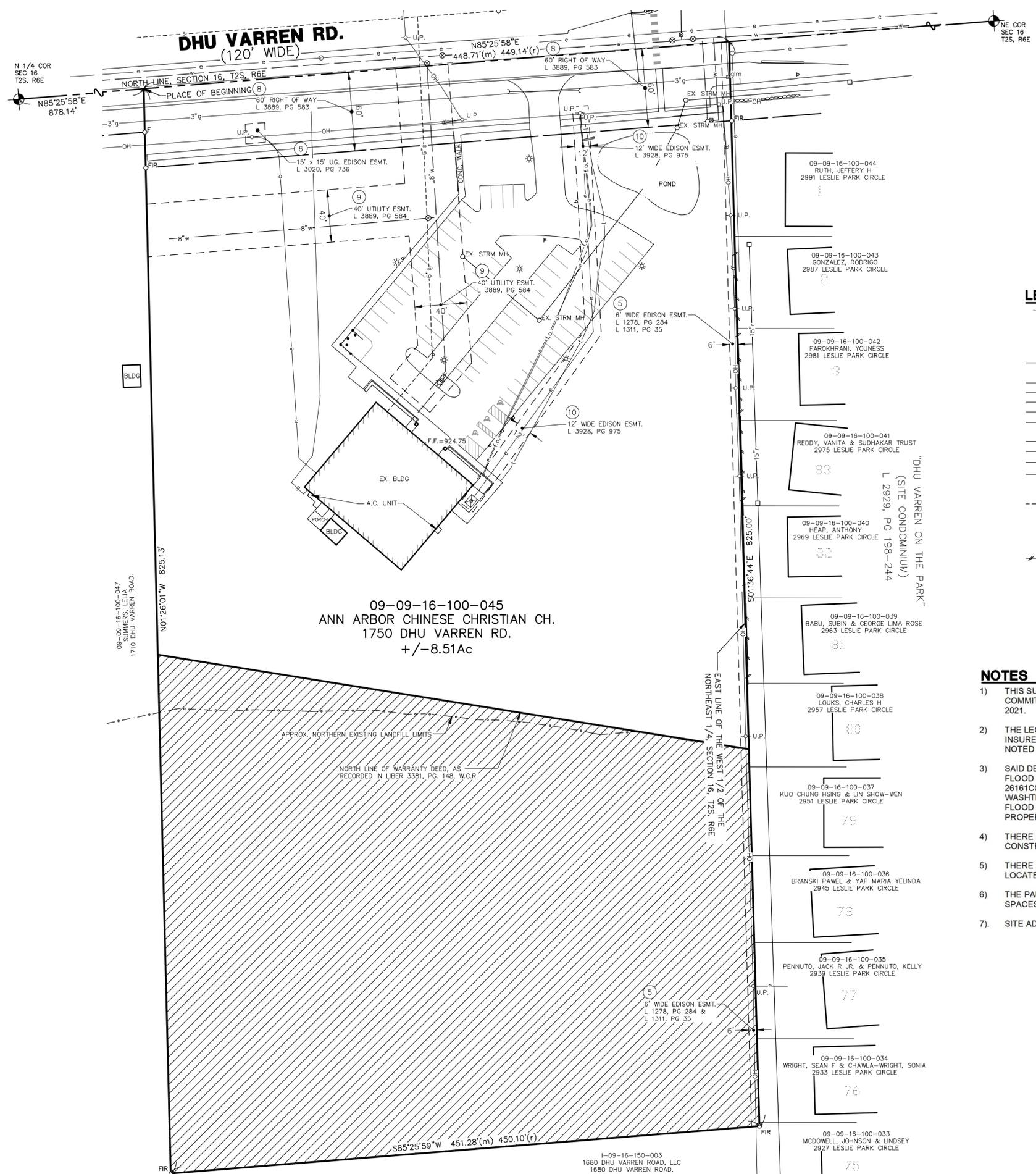
RELEASED FOR	DATE
SITE PLAN	5/20/21

SUSAN C. DICKINSON, P.E.
 PE # 39622

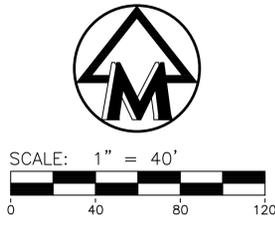
M:\Civil\13a_Proj\20255\Site Plan\2025501.dwg, 3/9/2022 9:53 AM, Jim Albert, 1 COVER SHEET, MLLC PDF, ps3
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The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

M:\Civ\132_P\02055(Survey)\02055\ALTA.dwg, 3/8/2022 9:53 AM, Jim Ahern, 2 ALTA SURVEY PLAN, MLLC PDF.p3
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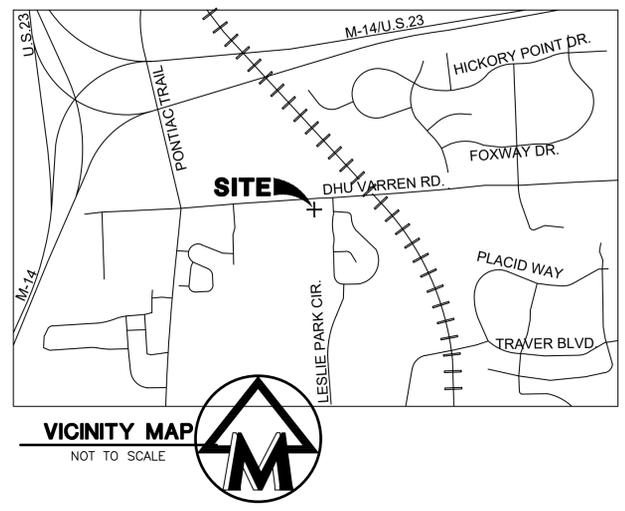
09-09-16-100-045
ANN ARBOR CHINESE CHRISTIAN CH.
1750 DHU VARREN RD.
+/- 8.51Ac



LEGEND

838	EXIST. CONTOUR
x 836.2	EXIST. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
—	GUY WIRE
⊠	ELEC. TRANSFORMER
OH	EXIST. OVERHEAD UTILITY LINE
*	EXIST. LIGHT POLE
T	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
h	EXIST. HYDRANT
g.v.	EXIST. GATE VALVE IN BOX
w.v.	EXIST. GATE VALVE IN WELL
r	EXIST. STORM SEWER
c	EXIST. CATCH BASIN OR INLET
END SECTION	
CULVERT	
—	EXIST. SANITARY SEWER
SIGN	
MAILBOX	
g.l.m.	GAS LINE MARKER
POST	
FENCE	
SECTION CORNER	
O F	FOUND IRON PIPE
OFIR	FOUND IRON ROD
CONTROL PT.	
AREA AFFECTED BY BUILDING AND USE RESTRICTIONS, PER LIBER 3381, PG. 148	

- NOTES**
- THIS SURVEY WAS PREPARED USING ABSOLUTE TITLE, INC. TITLE COMMITMENT No. 90282 WITH AN EFFECTIVE DATE OF FEBRUARY 4, 2021.
 - THE LEGAL DESCRIPTION DESCRIBES THE SAME PROPERTY AS INSURED IN THE TITLE COMMITMENT AND ANY EXCEPTIONS HAVE BEEN NOTED HEREIN.
 - SAID DESCRIBED PROPERTY IS NOT LOCATED WITHIN A 100-YEAR FLOOD PLAIN ZONE PER FLOOD INSURANCE RATE MAP NO. 26161C0253E WITH AN EFFECTIVE DATE OF APRIL 3, 2012, IN WASHTENAW COUNTY, STATE OF MICHIGAN, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED.
 - THERE IS NO EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.
 - THERE IS NO OBSERVED EVIDENCE INDICATING ANY CEMETERIES ARE LOCATED ON THE PARCEL HEREIN DESCRIBED.
 - THE PARCEL HEREIN DESCRIBED HAS 61 REGULAR STRIPPED PARKING SPACES AND 3 HANDICAP SPACES.
 - SITE ADDRESS: 1750 DHU VARREN RD., ANN ARBOR, MI



LEGAL DESCRIPTION
LEGAL DESCRIPTION OF A PARCEL OF LAND LOCATED IN THE NORTHEAST 1/4 OF SECTION 16, TOWN 2 SOUTH, RANGE 6 EAST, CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN

Commencing at the North 1/4 corner of Section 16, Town 2 South, Range 6 East, Ann Arbor Township, Washtenaw County, Michigan; thence Easterly 878.14 feet along the North line of said Section for a **PLACE OF BEGINNING**;

thence continuing Easterly along said North line 449.14 feet; thence Southerly along the East line of the West 1/2 of the Northeast 1/4 deflecting 93°04' to the right 825.0 feet;

thence Westerly deflecting 86°56' to the right 450.10 feet; thence Northerly deflecting 93°08' to the right 825.05 feet to the **PLACE OF BEGINNING**.

The above described parcel being more particularly described as:

Commencing at the North 1/4 corner of Section 16, Town 2 South, Range 6 East, Ann Arbor Township, Washtenaw County, Michigan; thence N 85°25'58" E 878.14 feet along the North line of said Section for a **PLACE OF BEGINNING**;

thence continuing along said North Line, N 85°25'58" E 448.71 feet (recorded as 449.14 feet);

thence along the East line of the West 1/2 of the Northeast 1/4 of said Section 16, S 01°36'44" E 825.00 feet;

thence S 85°25'59" W 451.28 feet (recorded as 450.10 feet)

thence N 01°26'01" W 825.13 feet to the **PLACE OF BEGINNING**. Being a part of the Northeast 1/4 of Section 16, Town 2 South, Range 6 East, City of Ann Arbor, Washtenaw County, Michigan, and containing 8.51 acres of land, more or less. Subject to the rights of the public over the Northerly 60 feet thereof, as occupied by Dhu Varren Road. Subject to easements and restrictions of record, if any.

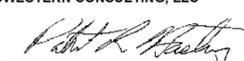
- EXCEPTIONS**
- Right of Way in favor of The Detroit Edison Company, as recorded in Liber 1278, Page 284, and Liber 1311, Page 35, Washtenaw County Records. **PLOTTED**
 - Easement (right of way) in favor of The Detroit Edison Company, as recorded in Liber 3020, Page 736, Washtenaw County Records. **PLOTTED**
 - Resolution Authorizing Water Main Improvement Charge as recorded in Liber 3860, Page 882, Washtenaw County Records. **NOTHING TO PLOT**
 - Right of Way in favor of City of Ann Arbor, as recorded in Liber 3889, Page 583, Washtenaw County Records. **PLOTTED**
 - Easement for public utilities in favor of City of Ann Arbor, as recorded in Liber 3889, Page 584, Washtenaw County Records. **PLOTTED**
 - Right of Way in favor of The Detroit Edison Company, Ameritech Telephone Company, and Media One Associates, Limited Partnership/OBA/Continental Cable of Michigan, as recorded in Liber 3928, Page 975, Washtenaw County Records. **PLOTTED**
- Building and use restrictions as contained in Warranty Deed as recorded Liber 3381, Page 148. Washtenaw County Records. **PLOTTED**

SURVEYORS CERTIFICATE

To: The Ann Arbor Chinese Christian Church, S.B.C., a Michigan ecclesiastical corporation, Absolute Title, Inc., and The City of Ann Arbor.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 8, 9, 11a, 13, 16, & 17 of Table A thereof. The fieldwork was completed on April 30, 2021

MIDWESTERN CONSULTING, LLC

By: 
Patrick L. Hastings, P.S. No. 37277

Date: May 11, 2021



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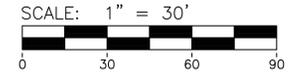
ANN ARBOR CHRISTIAN CHURCH
ANN ARBOR CHRISTIAN CHURCH
ALTA SURVEY PLAN

JOB No. **20255**
REVISIONS:

DATE: 5/20/21
SHEET 2 OF 16
CADD:
ENG: SCD
PM: SCD
TECH: RESALTA
FBI

2

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NOTES

1. THE BASE SURVEY WAS PREPARED BY MIDWESTERN CONSULTING IN 2005 WITH UPDATES MADE IN APRIL, 2021. ALL UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN SHOWN TO A REASONABLE DEGREE OF ACCURACY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.
2. SEE NATURAL FEATURES OVERLAY AND ALTERNATIVE ANALYSIS FOR NATURAL FEATURES SUMMARY. SEE TREE LIST SHEET FOR TREE LIST.

BENCHMARKS

- BM#1: TOP OF STEAMER VALVE OF HYDRANT STANDING AT S. END OF ISLAND IN FRONT OF CHURCH BUILDING
ELEV. = 924.56 NAVD88
- BM#2: TOP OF SURVEY POINT N.E. SIDE OF 10" TREE (197) +/- 40' SE OF SE CORNER OF CHURCH BUILDING
ELEV. = 923.94 NAVD88

LEGEND

838	EXIST. CONTOUR
x 836.2	EXIST. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
U.P.	EXIST. UTILITY POLE W/ TRANS.
GP	EXIST. GUY POLE
GW	GUY WIRE
ET	ELEC. TRANSFORMER
OH	EXIST. OVERHEAD UTILITY LINE
LP	EXIST. LIGHT POLE
T	EXIST. TELEPHONE LINE
E	EXIST. ELECTRIC LINE
G	EXIST. GAS LINE
G	EXIST. GAS VALVE
F.O.	EXIST. FIBER OPTIC LINE
W	EXIST. WATER MAIN
H	EXIST. HYDRANT
GVB	EXIST. GATE VALVE IN BOX
GVB	EXIST. GATE VALVE IN WELL
C	EXIST. CURB STOP & BOX
FDC	EXIST. FIRE DEPARTMENT CONNECTION
S	EXIST. STORM SEWER
CBI	EXIST. CATCH BASIN OR INLET
B	EXIST. BEEHIVE INLET
ES	END SECTION
H	HEAD WALL
C	CULVERT
DS	EXIST. DOWNSPOUT
S	EXIST. SANITARY SEWER
C	EXIST. CLEANOUT
T/C	TOP OF CURB
T/P	TOP OF PAVEMENT
G	GUTTER
T/W	TOP OF WALK
C/L	C/L OF DITCH
D	DRAINAGE DIRECTION
ET	ENCLOSED TRASH AREA
S	SIGN
RCS	RAILROAD CROSSING SIGN
M	MAILBOX
TR	TELEPHONE RISER
CTV	CABLE TELEVISION RISER
EM	ELECTRIC METER
WM	WATER METER
GM	GAS METER
GLM	GAS LINE MARKER
FOM	FIBER OPTIC MARKER
P	POST
W	WELL
F	FENCE
CD	QUADRIL
ST	SINGLE TREE
T	TREE OR BRUSH LIMIT
SC	SECTION CORNER
TP-1	TEST PIT LOCATION
IS	SET IRON PIPE
IF	FOUND IRON PIPE
MS	SET MONUMENT
MF	FOUND MONUMENT
IS	SET IRON ROD
IFR	FOUND IRON ROD
CP	CONTROL PT.
C	CENTERLINE
P	PROPERTY LINE

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

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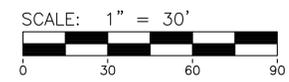
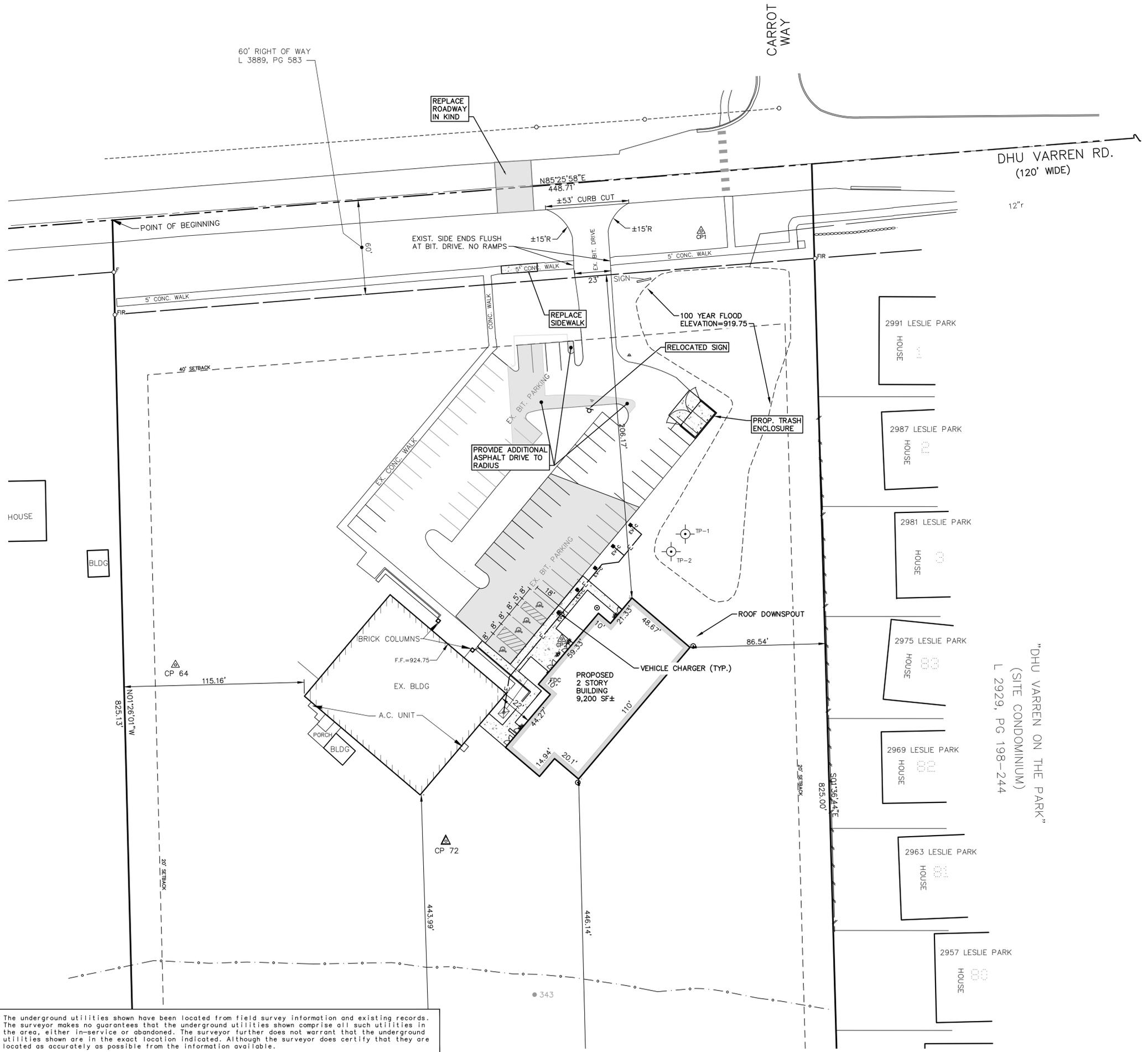
734-668-9128

ANN ARBOR CHRISTIAN CHURCH
ANN ARBOR CHRISTIAN CHURCH
EXISTING CONDITIONS - SOUTH

4

DATE: 08/20/21	REV. DATE: 08-27-21
SHEET 4 OF 16	CAAD: 08-27-21
20255	ENG. SCD
PER CITY STAFF REVIEW	PM: SCD
	TECH: SCD
	DATE: 08/20/21
	BY: JAL

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- NOTES:**
- Recycle and trash pickup is to be private. Trash and recycling will be stored in a screened enclosure. The existing enclosure will be removed and a new enclosure constructed.
 - An existing site light pole is within ten feet of the water main. When this light pole is replaced, it will be relocated to be at least ten feet from the water main. The City is not responsible for the light pole or its relocation.
 - The existing drive approach is non-conforming due to its width and the drive approach surface is bituminous and the sidewalk does not continue through the drive approach. It will be allowed to remain until repair or replacement is required. At that time, the drive approach shall be brought into conformance.

ELECTRIC VEHICLE CHARGING SUMMARY
 2 - EV-INSTALLED SPACES SHOWN NOTED AS EV-I
 0 - EV-READY SPACES SHOWN NOTED AS EV-R
 8 - EV-CAPABLE SPACES SHOWN NOTED AS EV-C

A VARIANCE HAS BEEN APPROVED ON FEBRUARY 23, 2022 FOR THE REDUCTION IN REQUIRED EV SPACES

LEGEND	
8.38	EXIST. CONTOUR
x836.2	EXIST. SPOT ELEVATION
-o-U.P.	EXIST. UTILITY POLE
-o-U.P.	EXIST. UTILITY POLE W/ TRANS.
-o-CP	EXIST. GUY POLE
-o-	GUY WIRE
-o-	ELEC. TRANSFORMER
-OH-	EXIST. OVERHEAD UTILITY LINE
-t-	EXIST. LIGHT POLE
-t-	EXIST. TELEPHONE LINE
-e-	EXIST. ELECTRIC LINE
-g-	EXIST. GAS LINE
-g-	EXIST. GAS VALVE
-f.o.-	EXIST. FIBER OPTIC LINE
-w-	EXIST. WATER MAIN
-w-	EXIST. HYDRANT
-w-	EXIST. GATE VALVE IN BOX
-w-	EXIST. GATE VALVE IN WELL
-x-	EXIST. CURB STOP & BOX
-x-	EXIST. FIRE DEPARTMENT CONNECTION
-r-	EXIST. STORM SEWER
-r-	EXIST. CATCH BASIN OR INLET
-o-	EXIST. BEEHIVE INLET
-o-	END SECTION
-o-	HEAD WALL
-o-	CULVERT
-ds-	EXIST. DOWNSPOUT
-s-	EXIST. SANITARY SEWER
-o-	EXIST. CLEANOUT
-o-	TOP OF CURB
-o-	TOP OF PAVEMENT
-o-	GUTTER
-o-	TOP OF WALK
-o-	C/L OF DITCH
-o-	DRAINAGE DIRECTION
-o-	ENCLOSED TRASH AREA
-o-	SIGN
-o-	RAILROAD CROSSING SIGN
-o-	MAILBOX
-o-	TELEPHONE RISER
-o-	CABLE TELEVISION RISER
-o-	ELECTRIC METER
-o-	WATER METER
-o-	GAS METER
-o-	GAS LINE MARKER
-o-	FIBER OPTIC MARKER
-o-	POST
-o-	WELL
-o-	FENCE
-o-	GUARDRAIL
-o-	SINGLE TREE
-o-	TREE OR BRUSH LIMIT
-o-	SECTION CORNER
-o-	SOIL BORING LOCATION
-o-	TEST PIT LOCATION
-o-	SET IRON PIPE
-o-	FOUND IRON PIPE
-o-	SET MONUMENT
-o-	FOUND MONUMENT
-o-	SET IRON ROD
-o-	FOUND IRON ROD
-o-	CONTROL PT.
-o-	CENTERLINE
-o-	PROPERTY LINE

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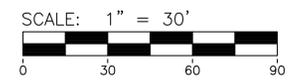
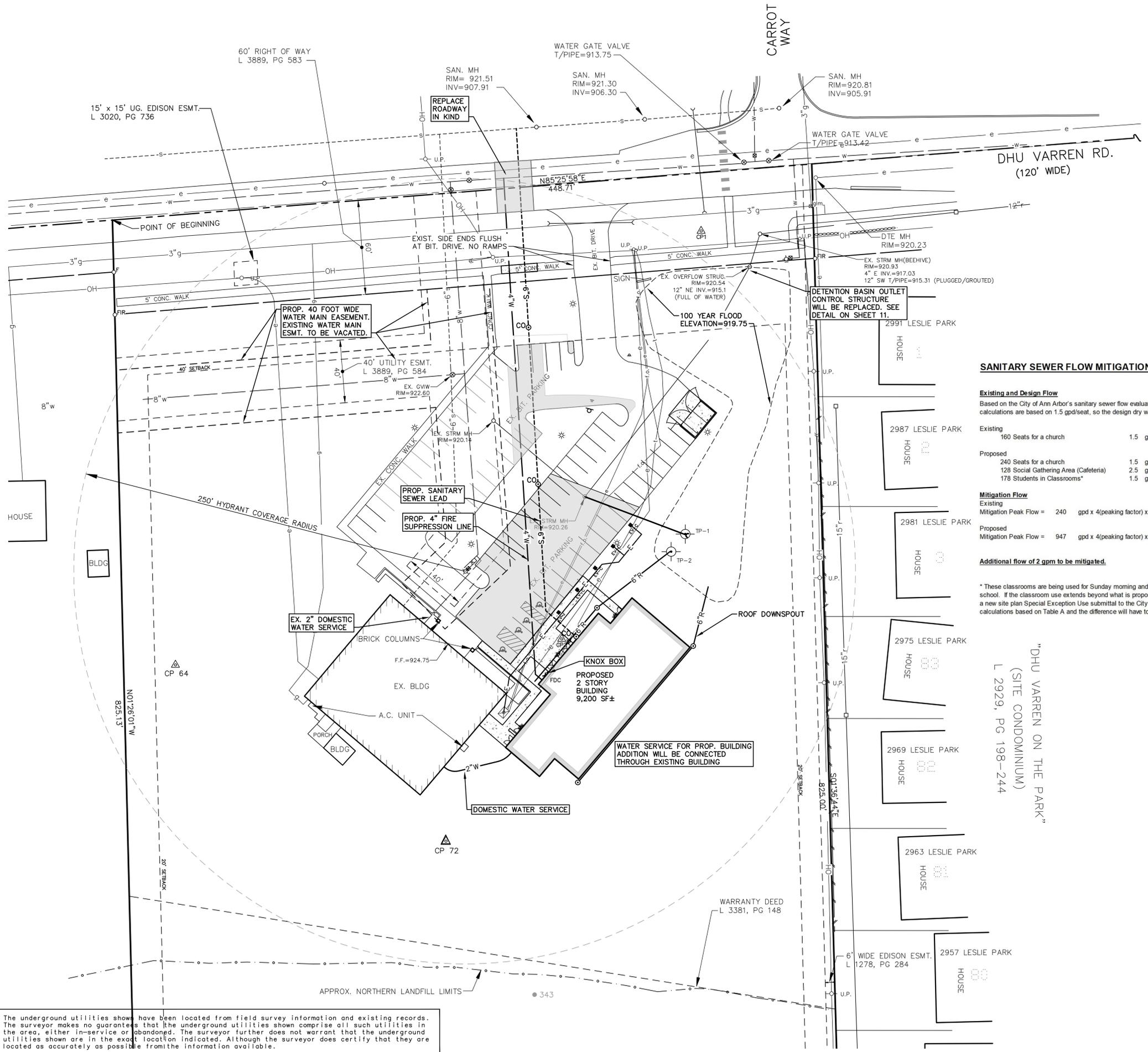
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 ANN ARBOR, MI 48105
 734-668-9128

ANN ARBOR CHRISTIAN CHURCH
 ANN ARBOR CHRISTIAN CHURCH
 SITE PLAN

5

JOB No.	20255
DATE	5/20/21
SHEET	5 OF 16
REV. DATE	8/27/21
REV. DATE	10/8/21
REV. DATE	11/3/21
REV. DATE	12/22/21
REV. DATE	3/9/22
REV. DATE	5/25/21
REV. DATE	5/25/21

M:\Civ\134_P\0255\Site Plan\0255.dwg, 3/9/2022 9:54 AM, Jim Albert, None
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- NOTES:**
- The proposed building will be fire suppressed. A Knox Box has been located between the door and the Fire Department Connection.
 - A new 4" fire service is proposed. It connects to the public water main within Dhu Varren Road right-of-way. There is an existing valve between the new connection and the existing hydrant lead that serves the building.
 - Proposed domestic water service for the building expansion will be connected from the existing structure.
 - A new sanitary sewer service for the building connects to the public sanitary sewer on the north side of Dhu Varren Road.
 - The existing storm water detention basin will be expanded to accommodate the increased impervious area for the new building footprint.
 - The existing water service lead is connected to a dead-end water main serving a fire hydrant. This existing, non-conforming condition will be allowed to remain until the service lead requires replacement or major repair. At that time, the service lead will need to be tapped to a looping main.
 - An existing site light pole is within ten feet of the water main. When this light pole is replaced, it will be relocated to be at least ten feet from the water main. The City is not responsible for the light pole or its relocation.
 - There are no booster pumps needed for the new building.

SANITARY SEWER FLOW MITIGATION CALCULATIONS

Existing and Design Flow
 Based on the City of Ann Arbor's sanitary sewer flow evaluation Table 'A', for a church, the calculations are based on 1.5 gpd/seat, so the design dry weather flow rate will be:

Category	Flow Rate	Total Flow
Existing	160 Seats for a church	240 gpd
Proposed	240 Seats for a church	360 gpd
	128 Social Gathering Area (Cafeteria)	320 gpd
	178 Students in Classrooms*	267 gpd

Mitigation Flow

Existing	Mitigation Peak Flow = 240 gpd x 4(peaking factor) x 1.1(recovery)	= 1056 gpd
		= 0.73 gpm
Proposed	Mitigation Peak Flow = 947 gpd x 4(peaking factor) x 1.1(recovery)	= 4166.8 gpd
		= 2.89 gpm

Additional flow of 2 gpm to be mitigated.

* These classrooms are being used for Sunday morning and two weeknights, not a daily school. If the classroom use extends beyond what is proposed here, such as a daily school, a new site plan Special Exception Use submittal to the City will be required showing revised calculations based on Table A and the difference will have to be mitigated at that time.

LEGEND

- 8.38 EXIST. CONTOUR
- x836.2 EXIST. SPOT ELEVATION
- o- U.P. EXIST. UTILITY POLE
- o- U.P. EXIST. UTILITY POLE W/ TRANS.
- o- GP EXIST. GUY POLE
- o- GW EXIST. GUY WIRE
- ⊠ ELEC. TRANSFORMER
- OH EXIST. OVERHEAD UTILITY LINE
- * EXIST. LIGHT POLE
- t- EXIST. TELEPHONE LINE
- e- EXIST. ELECTRIC LINE
- g- EXIST. GAS LINE
- g- EXIST. GAS VALVE
- f.o.- EXIST. FIBER OPTIC LINE
- w- EXIST. WATER MAIN
- h- EXIST. HYDRANT
- b- EXIST. GATE VALVE IN BOX
- v- EXIST. GATE VALVE IN WELL
- x- EXIST. CURB STOP & BOX
- f.d.c.- EXIST. FIRE DEPARTMENT CONNECTION
- r- EXIST. STORM SEWER
- i- EXIST. CATCH BASIN OR INLET
- >- EXIST. BEEHIVE INLET
- >- END SECTION
- >- HEAD WALL
- >- CULVERT
- ds- EXIST. DOWNSPOUT
- s-o- EXIST. SANITARY SEWER
- o- EXIST. CLEANOUT
- T/C TOP OF CURB
- T/P TOP OF PAVEMENT
- G GUTTER
- T/W TOP OF WALK
- C/L C/L OF DITCH
- >- DRAINAGE DIRECTION
- >- ENCLOSED TRASH AREA
- >- SIGN
- >- RAILROAD CROSSING SIGN
- >- MAILBOX
- >- TELEPHONE RISER
- >- CABLE TELEVISION RISER
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- >- FIBER OPTIC MARKER
- >- POST
- >- WELL
- >- FENCE
- >- GUARDRAIL
- >- SINGLE TREE
- >- TREE OR BRUSH LIMIT
- >- SECTION CORNER
- >- SOIL BORING LOCATION
- >- TEST PIT LOCATION
- o SET IRON PIPE
- o FOUND IRON PIPE
- o SET MONUMENT
- o FOUND MONUMENT
- o SET IRON ROD
- o FOUND IRON ROD
- o CONTROL PT.
- o CENTERLINE
- o PROPERTY LINE

ANN ARBOR CHRISTIAN CHURCH
 ANN ARBOR CHRISTIAN CHURCH
 UTILITY PLAN

SHEET 6 OF 16
 DATE: 6/20/21
 REV. DATE: 11/17/21
 CADD: 12/22/21
 ENG. SCD
 PM: SCD
 TECH: SCD
 FILE: 0255.dwg

20255
 JOB No.

REVISIONS:
 PER CITY STAFF REVIEWS
 PER PLANNING COMMISSION COMMENTS

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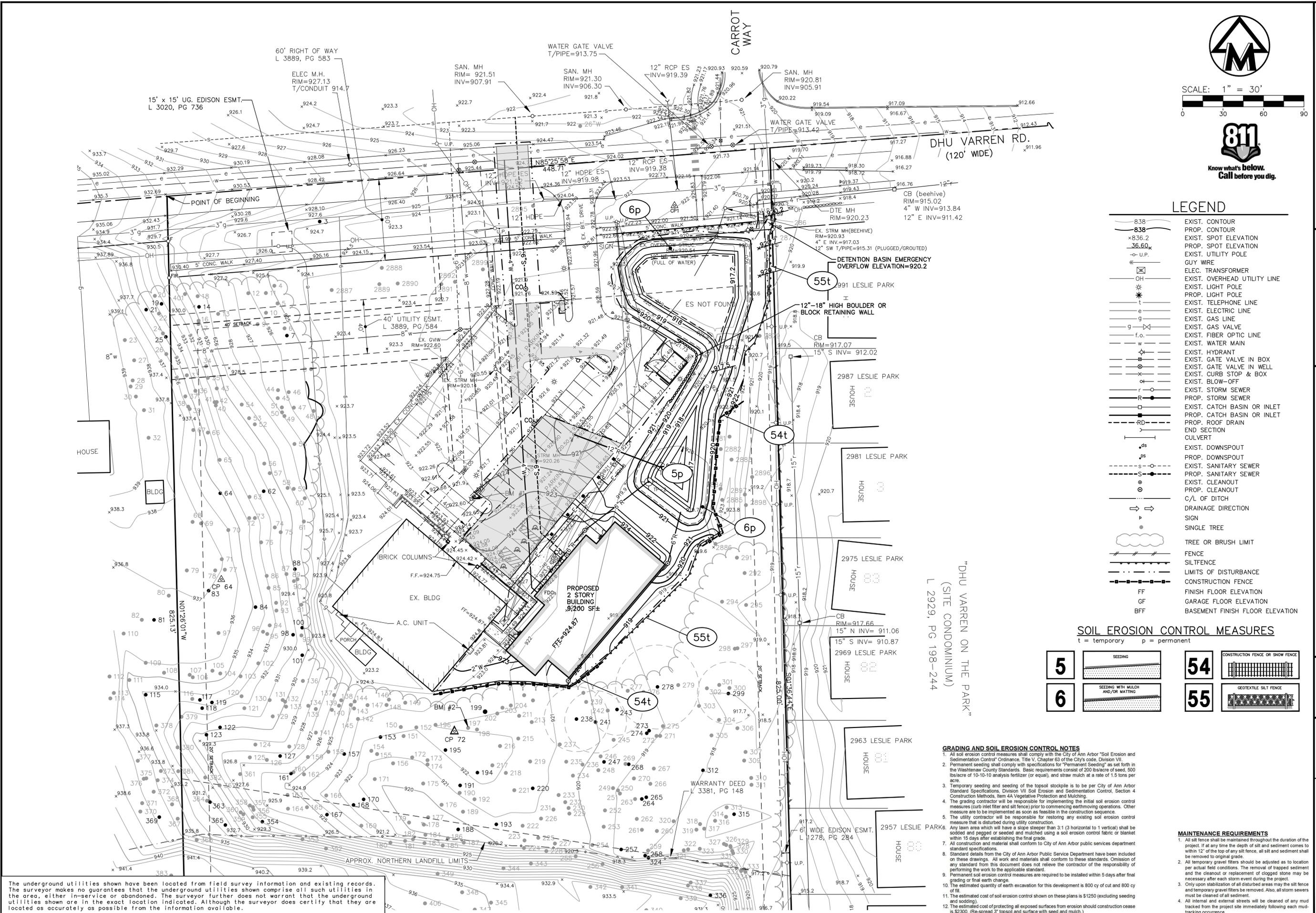


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M:\CIVIL\134_Plan\134\2025\Site Plan\2025\SEDIMENTATION CONTROL PLAN_MCLC_PDF.p3
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SCALE: 1" = 30'
 0 30 60 90



LEGEND

838	EXIST. CONTOUR
—	PROP. CONTOUR
x 836.2	EXIST. SPOT ELEVATION
x 36.60	PROP. SPOT ELEVATION
-o- U.P.	EXIST. UTILITY POLE
—	GUY WIRE
⊠	ELEC. TRANSFORMER
OH	EXIST. OVERHEAD UTILITY LINE
*	EXIST. LIGHT POLE
*	PROP. LIGHT POLE
t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
⊕	EXIST. HYDRANT
⊕	EXIST. GATE VALVE IN BOX
⊕	EXIST. GATE VALVE IN WELL
x	EXIST. CURB STOP & BOX
o	EXIST. BLOW-OFF
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
⊕	EXIST. CATCH BASIN OR INLET
⊕	PROP. CATCH BASIN OR INLET
RD	PROP. ROOF DRAIN
—	END SECTION
—	CULVERT
ds	EXIST. DOWNSPOUT
ds	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
s	PROP. SANITARY SEWER
⊕	EXIST. CLEANOUT
⊕	PROP. CLEANOUT
—	C/L OF DITCH
→	DRAINAGE DIRECTION
p	SIGN
•	SINGLE TREE
—	TREE OR BRUSH LIMIT
—	FENCE
—	SILT FENCE
—	LIMITS OF DISTURBANCE
—	CONSTRUCTION FENCE
FF	FINISH FLOOR ELEVATION
GF	GARAGE FLOOR ELEVATION
BFF	BASEMENT FINISH FLOOR ELEVATION

SOIL EROSION CONTROL MEASURES
 t = temporary p = permanent

5	SEEDING
54	CONSTRUCTION FENCE OR SNOW FENCE
6	SEEDING WITH MULCH AND/OR MATING
55	GEOTEXTILE SILT FENCE

GRADING AND SOIL EROSION CONTROL NOTES

- All soil erosion control measures shall comply with the City of Ann Arbor "Soil Erosion and Sedimentation Control" Ordinance, Title V, Chapter 63 of the City's code, Division VII.
- Permanent seeding shall comply with specifications for "Permanent Seeding" as set forth in the Washtenaw County Standards. Basic requirements consist of 200 lbs/acre of seed, 500 lbs/acre of 10-10-10 analysis fertilizer (or equal), and straw mulch at a rate of 1.5 tons per acre.
- Temporary seeding and seeding of the topsoil stockpile is to be per City of Ann Arbor Standard Specifications, Division VII Soil Erosion and Sedimentation Control, Section 4 Construction Methods, Item 4A Vegetative Protection and Mulching.
- The grading contractor will be responsible for implementing the initial soil erosion control measures (curb inlet filter and silt fence) prior to commencing earthmoving operations. Other measures are to be implemented as soon as feasible in the construction sequence.
- The utility contractor will be responsible for restoring any existing soil erosion control measure that is disturbed during utility construction.
- Any lawn area which will have a slope steeper than 3:1 (3 horizontal to 1 vertical) shall be sodded and pegged or seeded and mulched using a soil erosion control fabric or blanket within 15 days after establishing the final grade.
- All construction and material shall conform to City of Ann Arbor public services department standard specifications.
- All standard details from the City of Ann Arbor Public Service Department have been included on these drawings. All work and materials shall conform to these standards. Omission of any standard from this document does not relieve the contractor of the responsibility of performing the work to the applicable standard.
- Permanent soil erosion control measures are required to be installed within 5 days after final grading or final earth change.
- The estimated quantity of earth excavation for this development is 800 cy of cut and 800 cy of fill.
- The estimated cost of soil erosion control shown on these plans is \$1250 (excluding seeding and sodding).
- The estimated cost of protecting all exposed surfaces from erosion should construction cease is \$2300. (Re-spread 3" topsoil and surface with seed and mulch.)

MAINTENANCE REQUIREMENTS

- All silt fence shall be maintained throughout the duration of the project. If at any time the depth of silt and sediment comes to within 12" of the top of any silt fence, all silt and sediment shall be removed to original grade.
- All temporary gravel filters should be adjusted as to location per actual field conditions. The removal of trapped sediment and the cleanout or replacement of clogged stone may be necessary after each storm event during the project.
- Only upon stabilization of all disturbed areas may the silt fence and temporary gravel filters be removed. Also, all storm sewers must be cleaned of all sediment.
- All internal and external streets will be cleaned of any mud tracked from the project site immediately following each mud-tracking occurrence.

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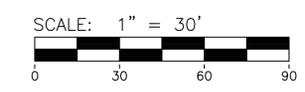
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ANN ARBOR CHRISTIAN CHURCH
 ANN ARBOR CHRISTIAN CHURCH
 GRADING AND SOIL EROSION AND SEDIMENTATION CONTROL PLAN

7

JOB NO.	20255
DATE:	5/20/21
SHEET:	6 OF 16
REV. DATE:	5/27/21
REV. BY:	ADD
PER CITY STAFF REVIEW:	10/08/21
PER PLANNING COMMISSION:	12/22/21
PER ENGINEER:	12/22/21
PER DESIGNER:	12/22/21
PER CHECKER:	12/22/21
PER APPROVER:	12/22/21

M:\Civ\134_P\02055\Site Plan\02055LPI.dwg, 3/9/2022 9:55 AM, Jim Albert, 8 LANDSCAPE AND MITIGATION PLAN, MCLLC PDF, pgs 3
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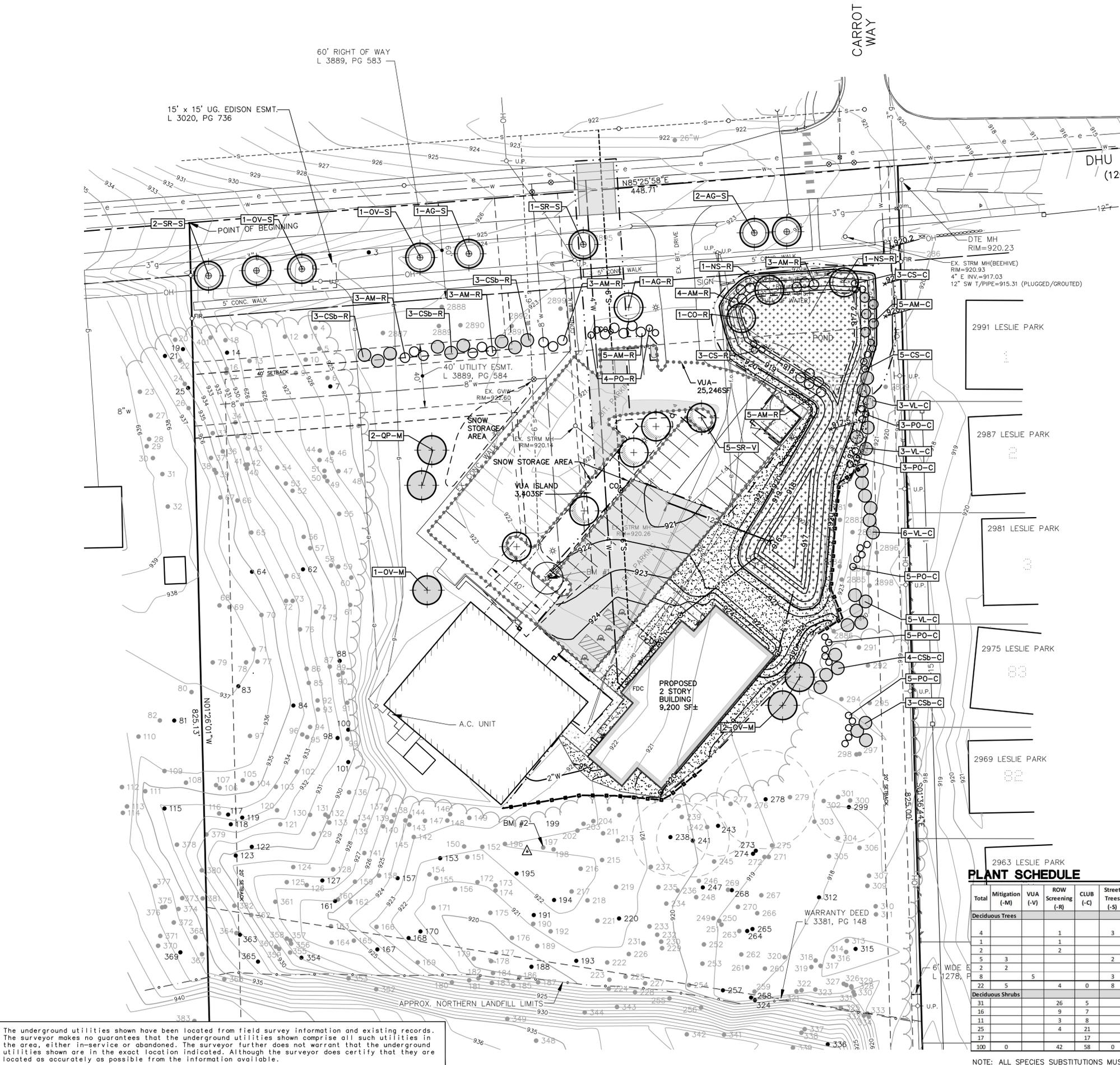
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ANN ARBOR CHRISTIAN CHURCH
 ANN ARBOR CHRISTIAN CHURCH
 LANDSCAPE AND MITIGATION PLAN

08

DATE: 5/20/21
 SHEET 7 OF 16
 REV. DATE: 8/19/21
 CAD: CDD
 ENG. SCD
 10/08/21
 PM: SCD
 TECH: SCD
 FILE: 02055LPI

20255
 JOB No.
 PER CITY STAFF REVIEWS
 PER CITY STAFF REVIEWS



LANDSCAPE LEGEND

- PROPOSED CANOPY TREE (VEHICLE USE AREA)
- PROPOSED CANOPY TREE (RIGHT-OF-WAY SCREEN)
- PROPOSED CANOPY TREE (MITIGATION)
- PROPOSED CANOPY TREE (STREET TREE)
- PROPOSED DECIDUOUS SHRUBS (CONFLICTING LAND USE BUFFER)
- PROPOSED DECIDUOUS SHRUBS (RIGHT-OF-WAY SCREENING)
- EXISTING TREE TO REMAIN
- VEHICULAR USE AREA LIMITS
- PROPOSED LAWN AREA
- PROPOSED STORMWATER SEED MIX

LANDSCAPE REQUIREMENTS

	Required	Proposed
Right-of-way screening	10ft when VUA viewed from ROW 1 tree per 30lf; continuous hedge/screen 30inches in ht = 255ft ROW frontage of VUA area / 30 = 9 trees and continuous shrubs required	7 existing trees + 4 proposed trees = 11 trees provided and 42 shrubs provided
Vehicle Use Area	1:15f ratio for island, 25,246sf / 20 = 1,263f island	3,403f existing island; one row with 19 spaces in a row; Request landscape modification to leave as existing
Bio-retention island	if >750sf island; 50% bio-retention 1,263sf / 2 = 632sf bio-retention island required	Request landscape modification to leave as existing with no bio-retention
Interior island trees	1 tree per island; 1 tree per 250sf island; 1,263sf / 250 = 5 trees required	5 trees provided
Snow pile storage	identify locations on plan	as shown on plans
Street Trees	1 tree per 45 linear feet; 449 / 45 = 10 trees required	2 existing trees to remain; 8 trees proposed
Street tree escrow	\$1.30 per linear foot frontage 449lf - (45x2) x \$1.30 = \$466.70	\$466.70 to City Tree Fund prior to issuing building permits.*
Street tree canopy loss fee	total dbh removed - caliper replacement trees x \$207 per inch	Not applicable
Conflicting Land Use Buffer	when adjacent to public park and R4 adjacent to residential purposes 15ft wide; 1 tree per 15lf, 50% evergreen; continuous screening 4ft high 240lf along development area / 15lf = 16 trees and screening required	16 existing tree to remain; 58 shrubs proposed
Tree Mitigation	24" removed x 0.5 = 12 inches 12 inches / 2.5 = 5 trees required	5 trees provided
Outdoor refuse	screening required	Trash enclosure proposed
Private streets and shared driveways	Not applicable	Not applicable

*Checks for street tree escrow are to be made payable to City of Ann Arbor and mailed to Systems Planning Unit, 301 E. Huron Street, PO Box 8647, Ann Arbor, Michigan 48107-8647. Attn: Tiffany Giacobazzi. Include the project name and number on the check.
 A LANDSCAPE MODIFICATION IS REQUESTED FOR THE VEHICLE USE AREA NUMBER OF PARKING SPACES PER ROW AND LACK OF BIO-RETENTION IN THE EXISTING PARKING LOT.

PLANT SCHEDULE

Total	Mitigation (-M)	VUA (-V)	ROW Screening (-R)	CLUB (-C)	Street Trees (-S)	Code	Scientific Name	Common Name	Root	Size	Spacing	Notes
Deciduous Trees												
4			1		3	AG	Amelanchier x grandiflora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	B&B	2.5" cal.	20' o.c.	Single Stem
1			1			CO	Celtis occidentalis	Northern Hackberry	B&B	2.5" cal.	25' o.c.	
2			2			NS	Nyssa sylvatica 'Wildfire'	Wildfire Tupelo	B&B	2.5" cal.	20' o.c.	Single Stem
5	3				2	OV	Ostrya virginiana	Hop Hornbeam	B&B	2.5" cal.	15' o.c.	
2			2			QP	Quercus palustris	Pin Oak	B&B	2.5" cal.	25' o.c.	
8		5			3	SR	Syringa reticulata	Japanese Tree Lilac	B&B	2.5" cal.	20' o.c.	Single Stem
22	5		4	0	8	Total						
Deciduous Shrubs												
31			26	5		AM	Aronia melanocarpa	Black Chokeberry	#5 Cont.	24-30" ht	6' o.c.	
16			9	7		CSb	Cornus sericea 'Bailey'	Bailey Redtwig Dogwood	#5 Cont.	24-30" ht	8' o.c.	
11			3	8		CS	Cornus stolonifera 'Farrow'	Arctic Fire Red Twig Dogwood	#5 Cont.	24-30" ht	4' o.c.	
25			4	21		PD	Physocarpus opulifolius	Ninebark	#5 Cont.	24-30" ht	4' o.c.	
17				17		VL	Viburnum lentago	Nannyberry Viburnum	#5 Cont.	24-30" ht	8' o.c.	
100	0		42	58	0	Total						

NOTE: ALL SPECIES SUBSTITUTIONS MUST BE APPROVED IN WRITING FROM THE CITY OF ANN ARBOR PRIOR TO INSTALLATION.

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Basin Stormwater Calculations

5/5/2021

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

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building/Pavement		6,252	0.14	0.95	0.14
Pavement		2,391	0.05	0.95	0.05
Grass	A		0.00	0.15	0.00
Grass	B	0	0.00	0.25	0.00
Grass	C		0.00	0.30	0.00
Grass	D		0.00	0.45	0.00
Water Surface		1,200	0.03	1.00	0.03
Total		9,843	0.23		0.22

Weighted C = (Sum(C)x(Area))/(Area Total) = 0.96

NRCS Variables (Pervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Grass	A	0	0.00	49	0.00
Grass	B	0	0.00	69	0.00
Grass	C	0	0.00	79	0.00
Grass	D	0	0.00	84	0.00
Total		0	0.00		0.00

Weighted CN = (Sum(CN)x(Area))/(Area Total) = 69

NRCS Variables (Impervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Building/Pavement		6,252	0.14	98	0.14
Pavement		2,391	0.05	98	0.05
Water Surface		1,200	0.03	98	0.03
Total		9,843	0.23		0.22

Weighted CN = (Sum(CN)x(Area))/(Area Total) = 98

W2 - W2 - First Flush Runoff Calculations (Vff)
 A. $Vff = 1" \times 1/12" \times 43560 \text{ sf/ac} \times A \times C$ where A= 0.23 and where C= 0.96
 $Vff = 1" \times 1/12" \times 43560 \text{ sf/ac} \times 0.23 \times 0.96 = 787 \text{ cf}$

W3 - W3 - Pre-Development Bankfull Runoff Calculations (Vbf-pre)
 A. 2 year / 24 hour storm event: P= 2.35 in
 B. Pre-Development CN (Good Cover Woods, Type B Soils) CN= 55
 C. $S = (1000 / CN) - 10$ S= 8.182 in
 D. $Q = [(P-0.2S)^2] / [P+0.8S]$ Q= 0.057 in
 E. Total Site Area excluding "Self-Crediting" BMPs 9,843 sf
 F. $Vbf\text{-pre} = Q \times (1/12) \times \text{Area}$ Vbf-pre = 47 cf

W4 - W4 - Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)
 A. 2 year / 24 hour storm event: P= 2.35 in
 B. Pervious Cover CN From Worksheet 1 CN= 69
 C. $S = (1000 / CN) - 10$ S= 4.493 in
 D. $Q = [(P-0.2S)^2] / [P+0.8S]$ Q= 0.354 in
 E. Pervious Cover Area from Worksheet 1 0 sf
 F. $Vbf\text{-per-post} = Q \times (1/12) \times \text{Area}$ Vbf-per-post = 0 cf

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)
 A. 2 year / 24 hour storm event: P= 2.35 in
 B. Impervious Cover CN From Worksheet 1 CN= 98
 C. $S = (1000 / CN) - 10$ S= 0.204 in
 D. $Q = [(P-0.2S)^2] / [P+0.8S]$ Q= 2.122 in
 E. Impervious Cover Area from Worksheet 1 9,843 sf
 F. $Vbf\text{-imp-post} = Q \times (1/12) \times \text{Area}$ Vbf-imp-post = 1,740 cf

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations (V100-per-post)
 A. 100 year / 24 hour storm event: P= 5.11 in
 B. Pervious Cover CN From Worksheet 1 CN= 69
 C. $S = (1000 / CN) - 10$ S= 4.493 in
 D. $Q = [(P-0.2S)^2] / [P+0.8S]$ Q= 2.038 in
 E. Pervious Cover Area from Worksheet 1 0 sf
 F. $V100\text{-per-post} = Q \times (1/12) \times \text{Area}$ V100-per-post = 0 cf

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations (V100-imp-post)
 A. 2 year / 24 hour storm event: P= 5.11 in
 B. Impervious Cover CN From Worksheet 1 CN= 98
 C. $S = (1000 / CN) - 10$ S= 0.204 in
 D. $Q = [(P-0.2S)^2] / [P+0.8S]$ Q= 4.873 in
 E. Impervious Cover Area from Worksheet 1 9,843 sf
 F. $Vbf\text{-imp-post} = Q \times (1/12) \times \text{Area}$ Vbf-imp-post = 3,997 cf

W8 - W8 - Time of Concentration (Tc-hrs)
 A. Assume 15-minute minimum time of concentration Tc= 0.25 hr

W9 - W9 - Runoff Summary & On-Site Infiltration Requirement
 A. Summary from Previous Worksheets
First Flush Volume (Vff) 787 cf
Pre-Development Bankfull Runoff Volume (Vbf-pre) 47 cf
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post) 0 cf
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post) 1,740 cf
Total BF Volume (Vbf-post) 1,740 cf
Pervious Cover Post-Development 100-Year Volume (V100-per-post) 0 cf
Impervious Cover Post-Development 100-Year Volume (V100-imp-post) 3,997 cf
Total 100-Year Volume (V100) 3,997 cf
 B. Determine Onsite Infiltration Requirement
 Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume
Total Post-Development Bankfull Volume (Vbf-post) 1,740 cf
Pre-Development Bankfull Runoff Volume (Vbf-pre) 47 cf
Bankfull Volume Difference 1,693 cf
Infiltration Requirement (Vinf) 1,693 cf

W10 - W10 - Detention/Retention Requirement
 A. $Qp = 238.6 Tc^{-0.82}$
 B. Total Site Area excluding "Self-Crediting" BMPs 0.23 ac
 C. $Q100 = Q100\text{-per} + Q100\text{-imp}$ (from W6 and W7, respectively)
 D. Peak Flow (PF) = $Qp \times Q100 \times \text{Area} / 640$ 1.81 cfs
 E. Delta = $PF - 0.15 \times \text{Area (ac)}$ 1.78 cfs
 F. $Vdet = \text{Delta} / PF \times V100$ 0.03 cfs
 Required Detention not including infiltration credit or penalty. 3,922 cf
 Sediment Forebay Volume Required (5% of V100) 200 cf

W11 - Determine Applicable BMPs and Associated Volume Credits

Proposed BMP	Area (sf)	Storage Volume (cf)		Design Infil. Rate (in/hr)	Infil. Volume in 6-hr Drawdown (cf)	Total Volume Reduction (cf)
		Surface	In Soil			
Bioretention Systems	300	1,197		10.00	1,500	2,697
Total Volume Reduction Credit by Proposed Structural BMPs (cf)						2,697
Runoff Volume Infiltration Requirement (Vinf) from W9 (cf)						1,693
Runoff Volume Credit (cf)						1,004

W13 - Site Summary of Infiltration & Detention

A. Stormwater Management Summary
 Min Infiltration Requirement (Vinf) 1,693 cf
 Designed/Provided Infiltration Volume 2,697 cf
 % Minimum Required Infiltration Provided 159 %
 Total Calculated Detention Volume, Vdet 3,922 cf
 Net Required Detention Volume (Vdet - Designed/Provided Infiltration Volume) 1,225 cf

B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved.
 % Required Infiltration NOT Provided 0.0 %
 (100% - % Minimum Required Infiltration Provided)
 Net % Penalty (20% x % Required Infiltration NOT Provided) 0.0 %
Total Required Detention Volume, including penalty 3,922 cf
 [(100% + Net % Penalty) x Net Required Detention Volume]

C. Existing Site Required Detention Volume from 2001 asbuilt calculations
 First Flush 2026 cf
 Bankfull - Estimated, not included in previous calculations 4200 cf
 100-year 14011 cf

D. Total Required Detention Volume including existing plus building addition
 First Flush 2,813 cf
 Bankfull 5,940 cf
 100-year 15,236 cf
 Overall Site Developed Area 2.03 ac

Detention Outlet Calculations

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

Storm Event	Req'd Volume	less	Infil. Credit	=	Final Volume
First Flush	2,813 cf	-	1,500 cf	=	1,313 cf
Bankfull	5,940 cf	-	1,500 cf	=	4,440 cf
100-year	15,236 cf	-	1,500 cf	=	13,736 cf
Forebay Volume Required (5% of 100-yr)				=	687 cf

B. Detention Volumes Provided

Elevation	Area (sf)	Depth (ft)	Volume (cf)	Cum. Volume (cf)
916.0	300	0.0	0	
917.0	931	1.0	586	586
917.2	4,084	0.2	464	1,051
917.5	4,726	0.3	1,320	2,371
918.0	8,041	0.5	2,685	5,056
919.0	8,728	1.0	7,343	12,400
920.0	11,580	1.0	10,120	22,520
Total Volume =				22,520

Storage Elevation Calculation

Bankfull Elevation (Xbf) = $\frac{918.0 - 917.5}{5.056 - 2.371} = \frac{Xbf - 917.5}{4.440 - 2.371}$ Xbf = 917.89 ft
 100-Year Elevation (X100) = $\frac{920.0 - 919.0}{22.520 - 12.400} = \frac{X100 - 919.0}{13.736 - 12.400}$ X100 = 919.13 ft

Nearly the entire First Flush and Bankfull storm events will infiltrate. The outlet control structure will be designed to discharge the difference between the 100-year storm event and the bankfull storm event in a time period not to exceed 72 hours, or a target time of 60 hours.

C. Single-Stage Outlet Design

100-Year Volume over and above the Bankfull storm event
 Average Head (Have) = $2/3 (X100 - Xoc) = 2/3 (919.13 - 917.2) = 1.29 \text{ ft}$
 100-year Max. Flowrate (Q100-max) = $V100 / 60 \text{ hrs} = 9296 \text{ cfs} / (60 \text{ hrs} \times 3600) = 0.0430 \text{ cfs}$
 Req Area (A100) = $Q100\text{-max} / 0.62 / \sqrt{2g \times \text{Have}} = 0.04 / 0.62 / \sqrt{2 \times 32.2 \times 1.29} \times 0.5 = 0.008 \text{ sf}$
 Orifice Diameter, Proposed 0.81 in
 Orifice Area = 0.0036 sf
 Number Required for 66 hr drainage = $A100 / \text{Orifice Area} = 0.008 \text{ sf} / 0.0036 \text{ sf} = 2.13 \text{ holes}$
 Number of Holes to Use 2 holes
 Area of (2) - 0.81 inch Orifices A100 0.0072 sf
 Act. Flow (Q100) = $0.62 \times A100 \times \sqrt{2g \times \text{Have}} \times 0.62 \times \sqrt{2 \times 32.2 \times 1.29} = 0.041 \text{ cfs}$
 Actual Time (T100) = $V100 / Q100 = 9296 \text{ cf} / 0.041 \text{ cfs} / 3600 = 63.46 \text{ hr}$

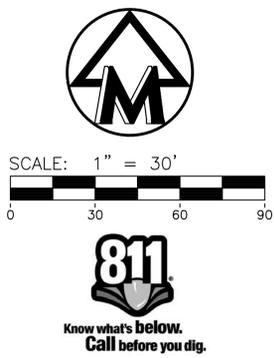
Discharge Must be Less than 72 Hours

Storm Water Detention Basin Narrative

The existing detention basin located in the northeast corner of the site was constructed when the building was constructed under previous basin sizing guidelines. Although the area of the proposed building addition was accounted for in the previous detention basin design, the existing basin will be expanded to accommodate the increase in impervious area. Asbuilt calculations for the basin have been obtained. The existing basin was designed to provide 14,000 cf of storage for the 100-year storm event.

The basin discharges to the Dhu Varren ROW public storm sewer. Due to conflicts with existing DTE duct banks the outlet pipe installed was limited to 4" in size. The existing basin retains a permanent pool below the outlet invert elevation.

The existing basin will be enlarged to accommodate the increased impervious surface area. The basin is expanded southward toward the new building construction. A new outlet control structure will be placed at the location of the existing outlet pipe and discharge to the same storm sewer. The new basin area will provide an area for infiltration as soil testing encountered a pocket of favorable soils. The existing basin bottom will be filled and is no longer proposed to hold a permanent pool. An emergency overflow location is provided into the Dhu Varren ROW adjacent to the existing hydrant in the northeast corner of the site.

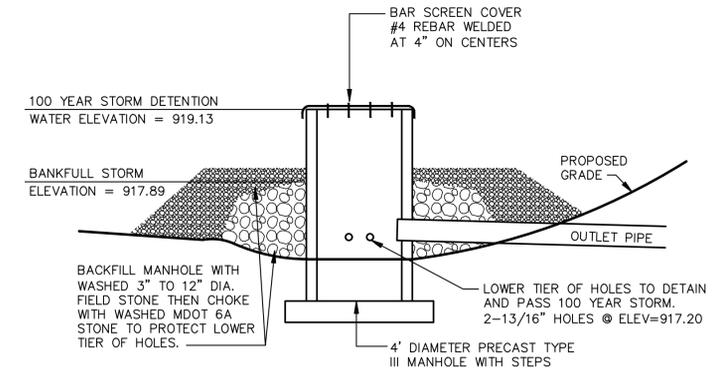


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ANN ARBOR CHRISTIAN CHURCH
 ANN ARBOR CHRISTIAN CHURCH
 STORM WATER MANAGEMENT CALCULATIONS

20255
 DATE: 5/20/21
 SHEET 10 OF 16
 REV. DATE: 5/19/21
 ENG: SCD
 PM: SCD
 TECH: RES/SMI
 FBT



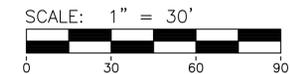
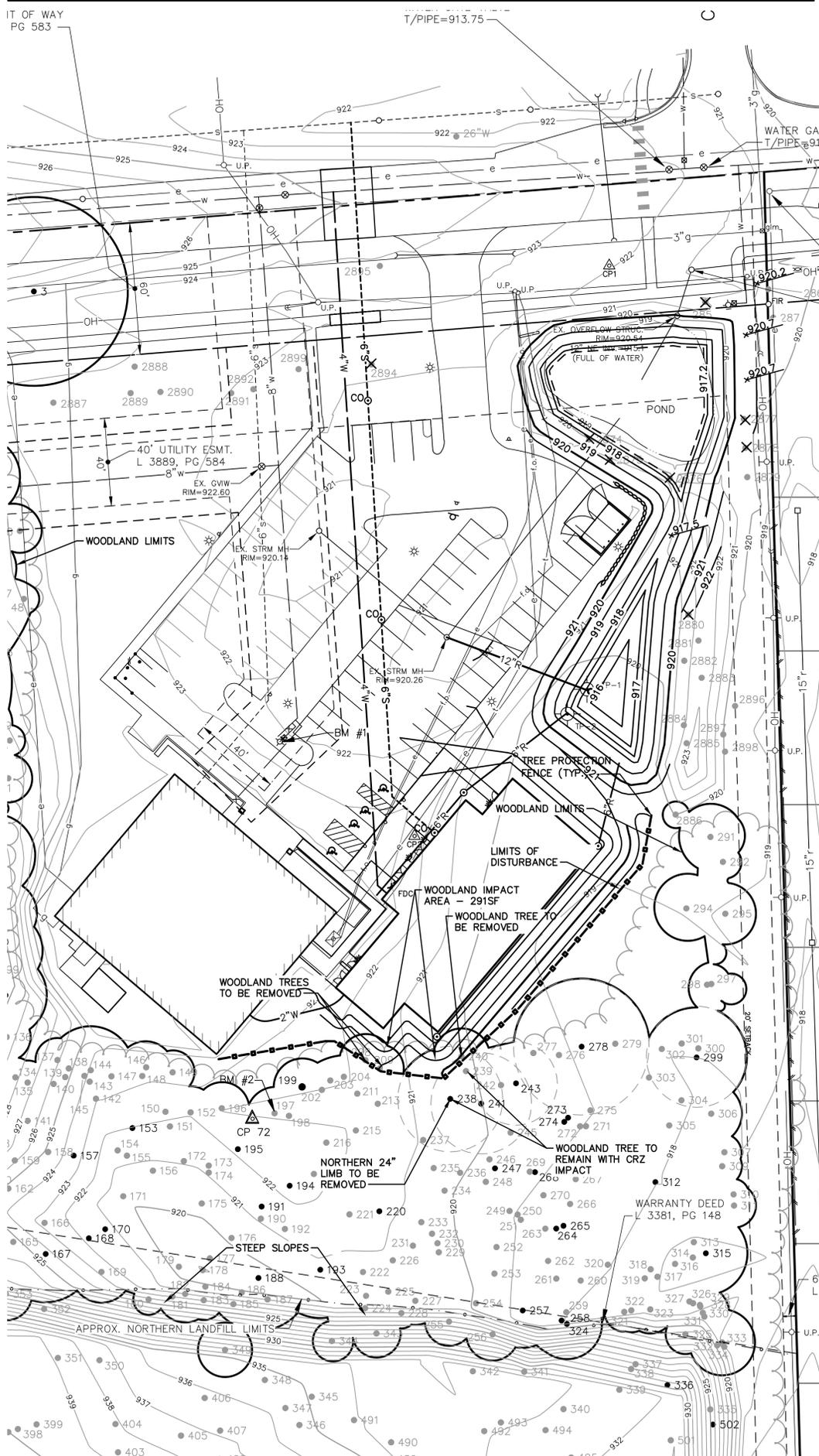
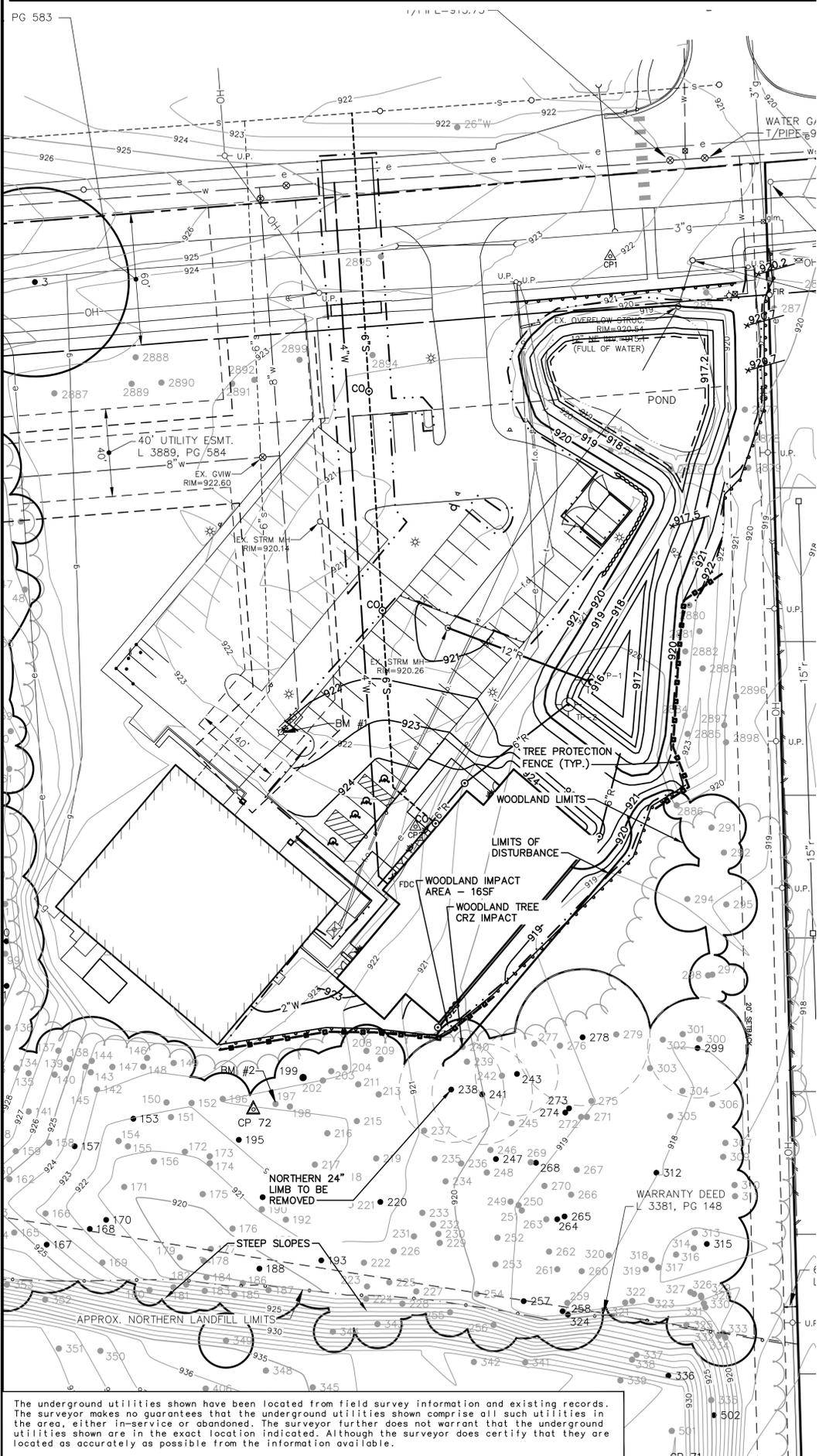
TYPICAL DETENTION POND OUTLET
 NO SCALE

M:\Civil\134_Proj\20255\Site Plan\20255SMI.dwg, 3/9/2022 9:55 AM, Jim Ahnert, 11 STORM WATER MANAGEMENT CALCULATIONS, MCLC PDF, p.3
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The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

PROPOSED SITE PLAN WITH NATURAL FEATURES OVERLAY

PROPOSED ALTERNATIVE SITE PLAN WITH NATURAL FEATURES OVERLAY



NATURAL FEATURES SUMMARY

THE SITE CONSISTS OF DEVELOPED AREAS WITH MANICURED LAWN, NATURALIZED STORMWATER BASIN, EXISTING BUFFER SHRUBS AND TREES TO THE RESIDENTIAL AREA TO THE EAST AND WOODLAND ALONG THE SOUTHERN AND WESTERN BOUNDARIES.

LANDMARK TREES - THERE ARE LANDMARK TREES LOCATED ON THE SITE AND IDENTIFIED IN THE TREE LIST. IMPACTS TO CRITICAL ROOT ZONE OF ONE LANDMARK TREE ARE PROPOSED. THIS TREE IS A TWIN TREE WITH ONE LIMB LEANING TOWARD THE PROPOSED BUILDING LOCATION. IN ORDER TO PROTECT THE PROPOSED BUILDING FROM FUTURE DAMAGE BY THE TREE, TRIMMING OF THE NORTHERN LIMB IS PROPOSED AND THE OTHER LIMB WILL REMAIN.

WOODLAND - WOODLAND IS IDENTIFIED ALONG THE WESTERN/SOUTHERN LIMITS OF THE DEVELOPMENT AREA AND IS DOMINATED BY WALNUTS, HICKORY, AND CHERRY. A SMALL IMPACT IS PROPOSED TO THE EXISTING WOODLAND. MITIGATION IS PROPOSED FOR WOODLAND TREES TO BE REMOVED.

STEEP SLOPES - NO STEEP SLOPES EXISTING WITHIN THE DEVELOPMENT AREA. STEEP SLOPES EXIST IN THE WOODLAND TO THE SOUTH ASSOCIATED WITH THE EXISTING LANDFILL.

WATERCOURSES - NO WATERCOURSES EXIST ON THE SITE

WETLAND - NO WETLAND EXISTS ON THE SITE

THREATENED AND ENDANGERED SPECIES HABITAT - NO IMPACTS TO THREATENED AND ENDANGERED SPECIES HABITAT IS ANTICIPATED WITH THIS PROJECT.

ALTERNATIVE ANALYSIS

ALTERNATIVE LOCATIONS FOR THE BUILDING EXPANSION WERE LIMITED TO AREAS NORTHWEST OF THE EXISTING BUILDING AND SOUTHEAST OF THE BUILDING AS PROPOSED.

THE LOCATION NORTHWEST OF THE EXISTING BUILDING IS NOT LARGE ENOUGH TO ACCOMMODATE THE PROPOSED BUILDING EXPANSION AND IS LIMITED DUE TO AN EXISTING UTILITIES, A UTILITY EASEMENT THAT RUNS EAST/WEST THROUGH THE SITE AND WOODLAND.

THE LOCATION IN THE SOUTHEAST CORNER CANNOT BE SHIFTED TO THE EAST TO AVOID THE MINOR WOODLAND GRADING DUE TO REQUIRED STORMWATER MANAGEMENT EXPANSION IN THE EXISTING STORMWATER BASIN. THE ALTERNATIVE ANALYSIS GRAPHIC ON THIS PAGE ILLUSTRATES THE ALTERNATIVE OF GRADING WITH ONE ON THREE SLOPES FROM THE BUILDING TO LIMIT THE IMPACTS TO WOODLAND TREES. THE PROPOSED GRADING INCORPORATES AN EXPOSED BUILDING FOUNDATION TO FURTHER LIMIT THE IMPACTS TO TREES AND WOODLAND. BELOW IS A COMPARISON OF THE ALTERNATIVE TO THE PROPOSED GRADING LIMITS.

	ALTERNATIVE LAYOUT	PROPOSED LAYOUT
WOODLAND IMPACT:	2915F	165F
WOODLAND TREE REMOVAL:	3 TREES / 36" DBH	NONE
WOODLAND TREE CRZ IMPACT:	1 TREE / 15" DBH	1 TREE / 13" DBH
LANDMARK TREE REMOVAL:	1 TREE / 24" LIMB	1 TREE / 24" LIMB
LANDMARK TREE CRZ IMPACT:	1 TREE / 24" DBH	NONE

NATURAL FEATURES MITIGATION

A TOTAL OF ONE LIMB OF ONE LANDMARK TREE IS PROPOSED TO BE REMOVED FOR 24" DBH OF TREE REMOVALS. ONE ADDITIONAL TREE HAS IMPACTS TO THE CRITICAL ROOT ZONE BUT WILL REMAIN ON THE SITE. THIS REQUIRES 12" DBH OF TREE MITIGATION. PROPOSED MITIGATION PLANTINGS ARE IDENTIFIED ON THE LANDSCAPE AND MITIGATION PLAN.

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M:\CIVIL\2025\Site Plan\202505041.dwg, 3/9/2022 9:56 AM, Jim Ahern, 12 NATURAL FEATURES OVERLAY AND ALT ANALYSIS, MCLLC PDF, p.3 Copyright © 2021, Midwestern Consulting L.L.C. All rights reserved. No part of this drawing may be used or reproduced in any form or by any means, or stored in a database or retrieval system, without prior permission of Midwestern Consulting L.L.C.

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NATURAL FEATURES OVERLAY AND ALT ANALYSIS

20255

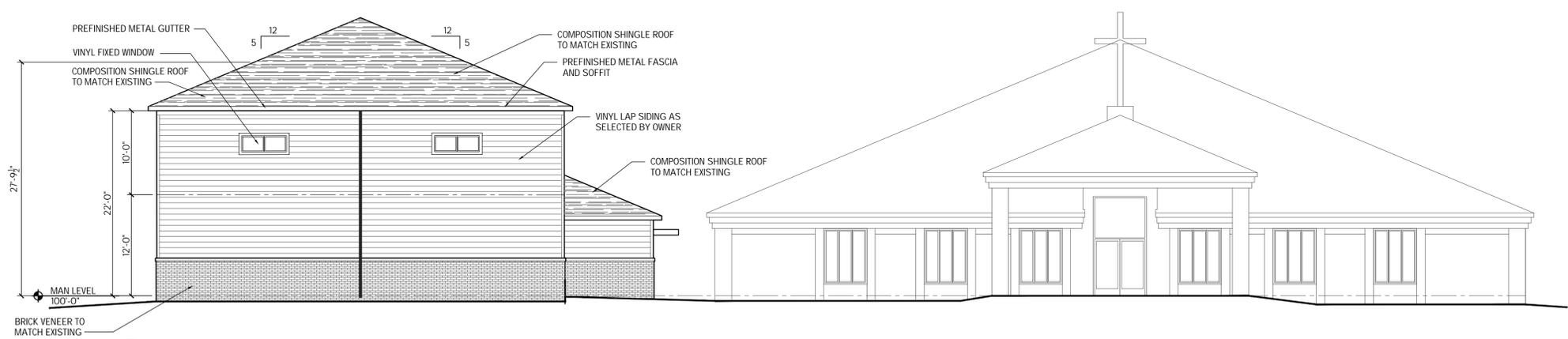
DATE: 6/20/21
SHEET 11 OF 16
REV. DATE: 8/27/21
REV. DATE: 10/08/21
REV. DATE: PER CITY STAFF REVIEWS

CADD: ENG. SCD
PLOT: PLOT
TECH: SCD
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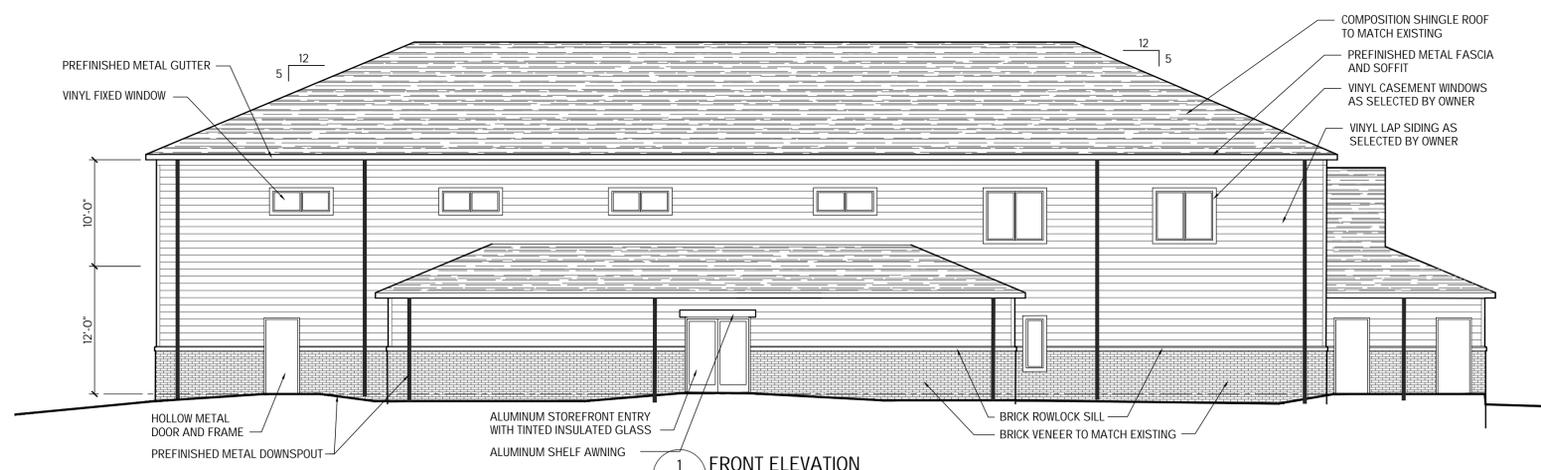
12



3 BACK ELEVATION
PR2 1/8" = 1'-0"



2 END ELEVATION
PR2 1/8" = 1'-0"



1 FRONT ELEVATION
PR2 1/8" = 1'-0"



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 DGVCREATIONS@GMAIL.COM
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 1001 S. W. 14th St. W. (263) 544-7211 (6 FAX)
 (263) 544-7211 (6 FAX)
 EMAIL: ZIONCHURCHBUILDERS@GMAIL.COM

PRELIMINARY - NOT FOR CONSTRUCTION

A NEW ADDITION FOR
ANN ARBOR CHINESE CHRISTIAN CHURCH

Ann Arbor, Michigan

PRELIMINARY ELEVATIONS

30	11AUG21
29	17JUL21
28	15JUL21
No.	Date

PROJECT NUMBER
20-01

ORIGINAL ISSUE DATE
29JAN20

PR2

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Lumens/Lamp	LLF	Total Watts	Description
	5	WP	SINGLE	3400	1.000	110	C-WP-A-FCA-03-40K-DB
	4	T3-11L	SINGLE	11475	0.910	300	NTA-A-NM-T3-11L-40K-UL-BZ
	2	T5-11L-2	D180°	N.A.	0.910	300	NTA-A-NM-T5-11L-40K-UL-BZ

Noctura fixtures are using a LLF of 0.91 for 50K hours at 10 C Ambient temperature

Calculation Summary

Label	Avg	Max	Min	Avg/Min	Max/Min
CalcPts_1	0.32	11.5	0.0	N.A.	N.A.
Parking Lot and Drive	2.14	5.7	0.4	5.35	14.25

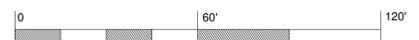
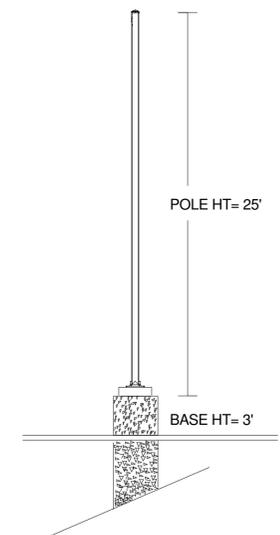
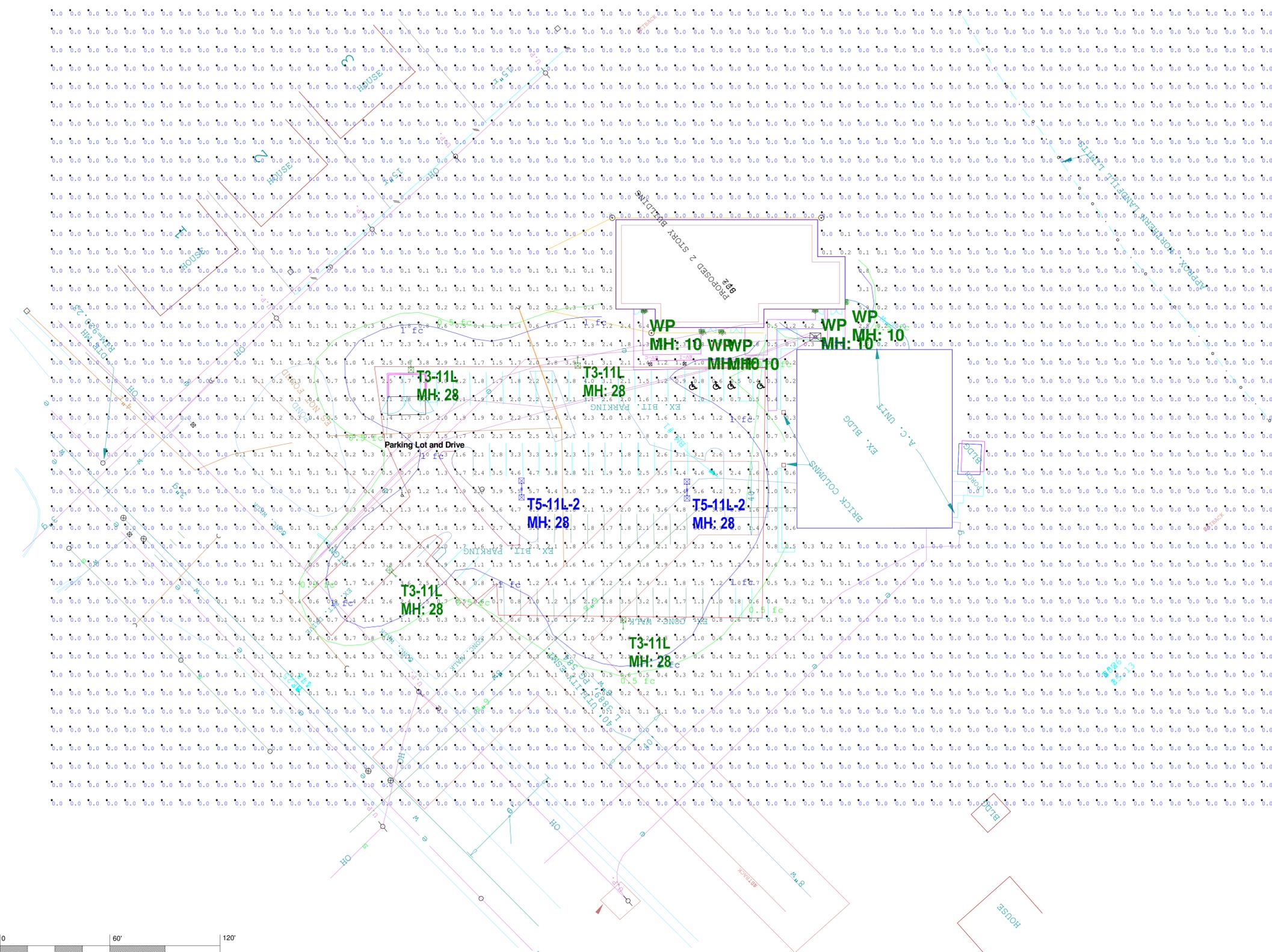
Customer to verify Color, Mounting, Fixture Location and Voltage prior to ordering.

Pole Schedule

- (4) E-PS4E25S1DB (25' X 4" STEEL SQUARE POLE)
Proposed poles meet 100 MPH sustained winds.
- (2) E-PS4E25S2DB (25' X 4" STEEL SQUARE POLE)
Proposed poles meet 100 MPH sustained winds.

Additional Equipment

- (8) NTA-DA-BZ (Direct Arm Mount)
- (8) NTX-7R-BZ-U (Extension for NEMA 7-pin photocell)



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Sturtevant, Wisconsin 53177
PH: (888) 243-9445
FX: (262) 504-5409
www.e-conolight.com

Customer responsible to verify ordering information/catalogue number prior to placing order.

Date: 10/5/2021 Scale: 1"=30' Layout by: Ben Foster

Project Name: 129369 - Chinese Christian Church, Ann Arbor, MI Salesforce: 35475

Filename: 210427AR1BAFR2.AGI

Footcandles calculated at 3' AFG using initial lumen values

Illumination results shown on this lighting design are based on project parameters provided to E-conolight used in conjunction with luminaire test procedures conducted under laboratory conditions. Actual project conditions differing from these design parameters may affect field results. The customer is responsible for verifying dimensional accuracy along with compliance with any applicable electrical, lighting, or energy code.