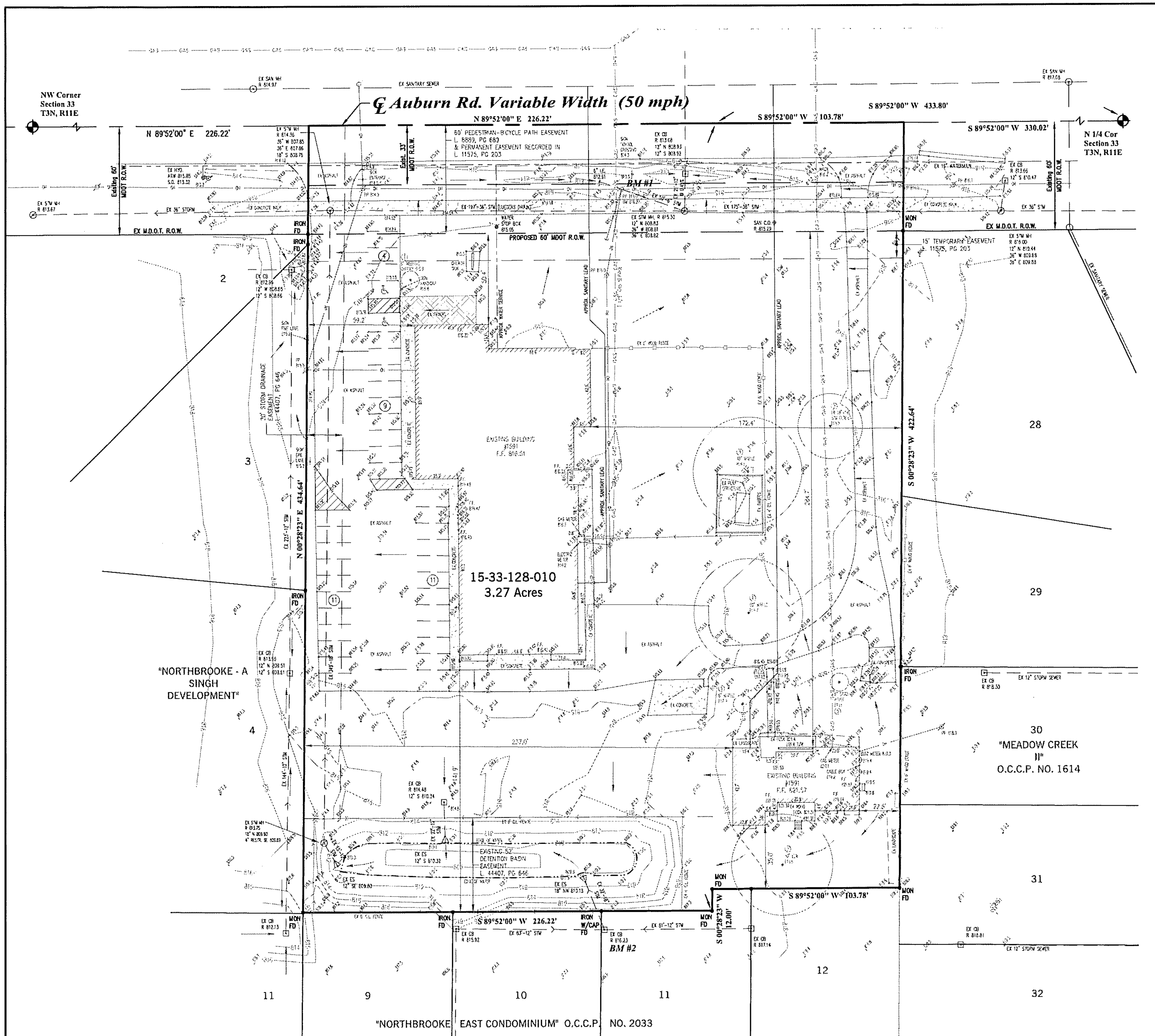
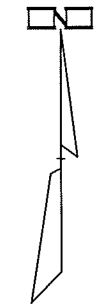
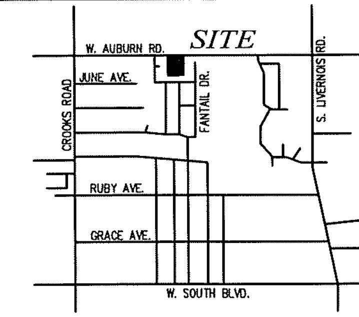




Notes:

1. *ALL EXISTING UTILITIES SHOWN ON THIS TOPOGRAPHIC SURVEY HAVE BEEN TAKEN FROM VISUAL OBSERVATION, AND RECORD MAPPING, WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.*
2. *BUILDER/DEVELOPER IS RESPONSIBLE FOR CONFIRMING BUILDING SETBACKS.*
3. *SURVEY WAS PERFORMED WITHOUT BENEFIT OF TITLE WORK.*
4. *EXISTING PARKING PROVIDED*
   37 SPACES (INCLUDES 2 ADA SPACES



LOCATION MAP
SCALE 1" = 2000'

LEGEND

EXISTING

- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- GAS MAIN
- ELEC. TELE. CABLE
- EXISTING OVERHEAD
- STORM MANHOLE
- CATCH BASIN
- INLET
- REARYARD CATCH BASIN
- END SECTION
- SANITARY MANHOLE
- GATE VALVE AND WELL
- HYDRANT
- CONTOURS
- POWER POLE
- LIGHT POLE
- GRADE
- LEACH BASIN

Parcel is Zoned R-1
One Family Residential

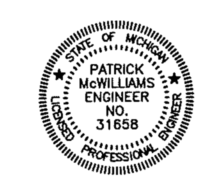
SETBACKS:
FRONT - 45 FEET
SIDES - 55 FEET
REAR - 40 FEET

Benchmarks:

BM #1 - MAG NAIL IN WEST FACE OF POWER POLE LOCATED ON NORTH SIDE OF WALK SOUTH SIDE OF AUBURN.
ELEVATION = 816.27 - NAVD '88

BM #2 - EXISTING CATCH BASIN RIM LOCATED ALONG THE SOUTH PROPERTY LINE.
ELEVATION = 816.23 - NAVD '88

Sheet Index:



Parcel 15-33-128-010

PART OF E 1/2 OF NW 1/4 OF SECTION 33, T3N, R11E, CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN. DESCRIBED AS BEGINNING AT A POINT LOCATED S 89°52'00" W 433.80 FT FROM THE N 1/4 COR OF SAID SECTION 33, T3N, R11E; TH S 00°28'23" W 434.64 FT; TH S 89°52'00" W 226.22 FT; TH N 00°28'23" E 434.64 FT; TH N 89°52'00" E 226.22 FT TO THE POINT OF BEGINNING. ALSO BEGINNING AT A POINT LOCATED S 89°52'00" W 330.02 FT FROM THE N 1/4 COR OF SAID SECTION 33, T3N, R11E; TH S 00°28'23" W 422.64 FT; TH S 89°52'00" W 103.78 FT; TH N 00°28'23" E 422.64 FT; TH N 89°52'00" E 103.78 FT TO THE POINT OF BEGINNING. CONTAINING 3.27 ACRES. SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.

City File # 19-029,
Section 33

Revision Index

REV. #	DESCRIPTION	DATE	Sheet Numbers 1	2	3	4	5	~~6~~	7	8	
1	Added Parsonage Parking & Light Poles (10-9-18)	10-17-18	X	X	X	X	X				
2	Per City & Client (2-14-19)	3-6-19	X	X	X	X	X			X	
3	PER CITY (7-3-19)	7-23-19	X	X	X	X	X	X	X	X	
4	PER CITY (8-16-19)	8-19-19	X		X	X	X				
5	PER CITY (9-4-19)	9-5-19	X		X	X	X				

PROPRIETOR:
DETROIT CHINESE ALLIANCE CHURCH NORTH
1591 W. AUBURN RD.
ROCHESTER HILLS, MI 48309
(517) 410-3517

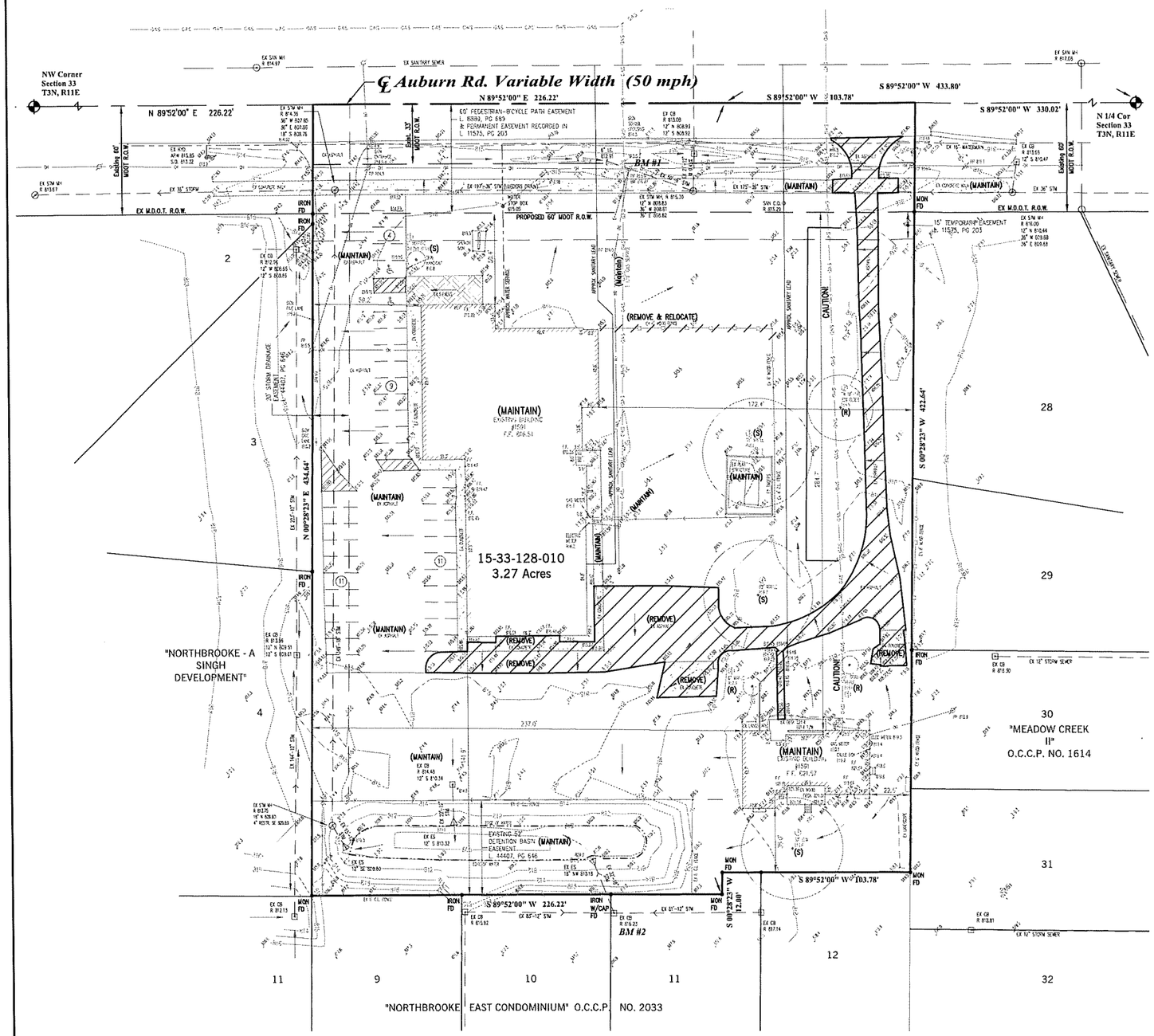
KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE 8-29-18	CKD. BY	DATE
DRAWN JM/GF		
DESIGN PCM		
SECTION 33	T- 3 -N. R- 11 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

Existing Conditions Plan
DETROIT CHINESE ALLIANCE CHURCH NORTH
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 1 OF 8
KE 2018.155



LEGEND

EXISTING

	STORM SEWER
	SANITARY SEWER
	WATERMAIN
	GAS MAIN
	ELEC. TELE. CABLE
OH	EXISTING OVERHEAD
	STORM MANHOLE
	CATCH BASIN
	INLET
	REARYARD CATCH BASIN
	END SECTION
	SANITARY MANHOLE
	GATE VALVE AND WELL
	HYDRANT
870	CONTOURS
	POWER POLE
	LIGHT POLE
870.3	GRADE
LB	LEACH BASIN
(R)	REMOVE
(S)	SAVE
	DEMOLITION LIMITS

Tree Listing

#	Description	Action
1	6" Weeping Cherry	Save
2	Tw 14",18" Box Elder	Remove
3	48" Maple	Save
4	60" Maple	Save
5	6" Crab Apple	Remove
6	6" Maple	Remove
7	30" Elm	Save

Benchmarks:

BM #1 - MAG NAIL IN WEST FACE OF POWER POLE LOCATED ON NORTH SIDE OF WALK SOUTH SIDE OF AUBURN. ELEVATION = 816.27 - NAVD '88

BM #2 - EXISTING CATCH BASIN RIM LOCATED ALONG THE SOUTH PROPERTY LINE. ELEVATION = 816.23 - NAVD '88

STATE OF MICHIGAN
PATRICK McWILLIAMS
ENGINEER
NO. 31658
REGISTERED PROFESSIONAL ENGINEER

City File # 19-029,
Section 33

DATE	ISSUE
10-17-18	ADD PARSONAGE PARKING & LIGHT POLES (10-9-18)
3-6-19	REVISED PER CITY AND CLIENT (2-14-19)
7-23-19	PER CITY (7-3-19)

PROPRIETOR:
DETROIT CHINESE ALLIANCE CHURCH NORTH
1591 W. AUBURN RD.
ROCHESTER HILLS, MI 48309
(517) 410-3517

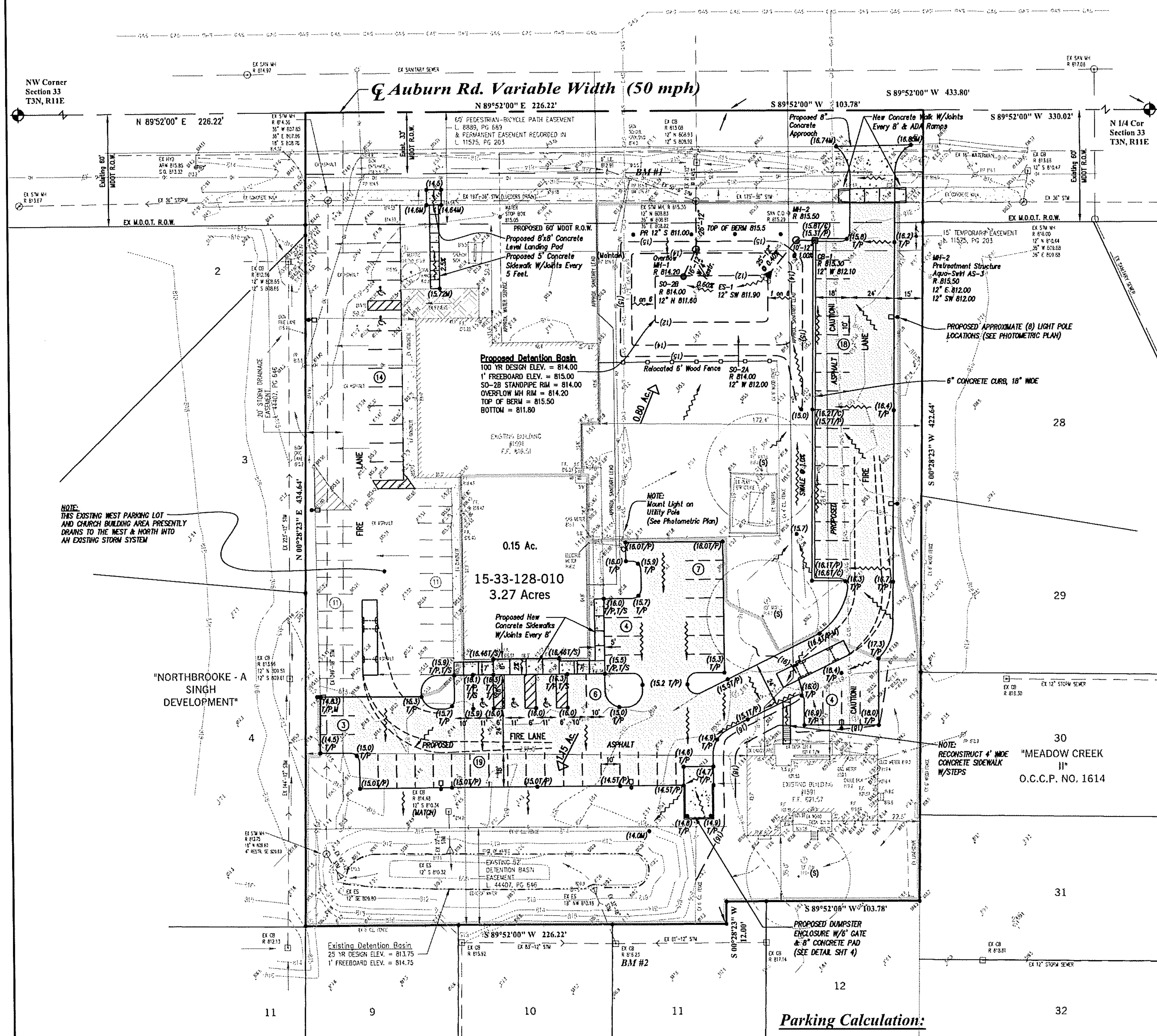
KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

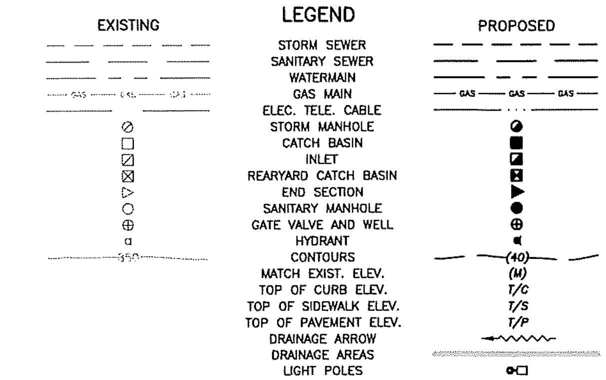
DATE	8-29-18	CKD. BY	DATE
DRAWN	GF		
DESIGN	PCM		
SECTION	33	T- 3 -N. R- 11 -E.	

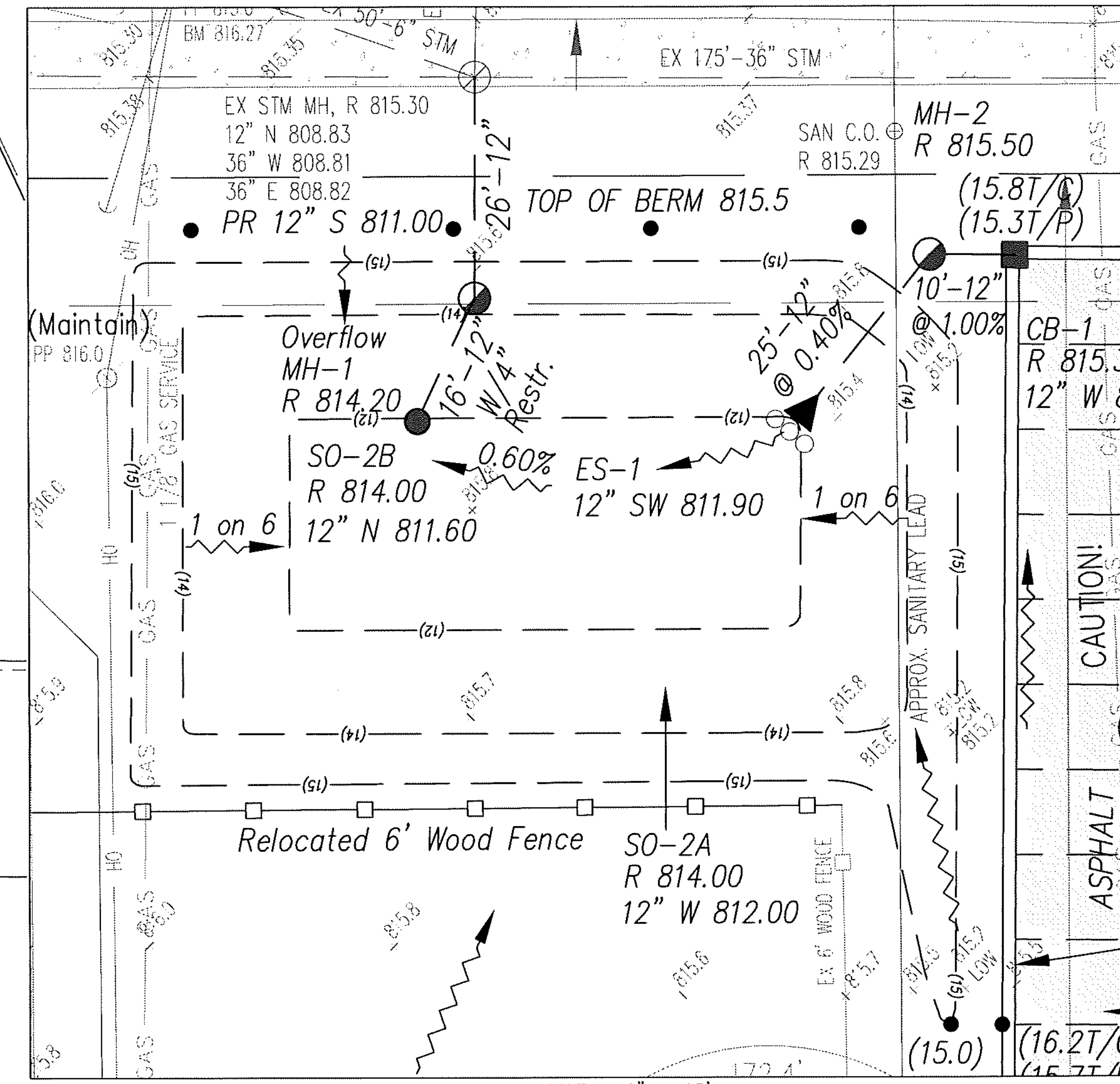
72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

Tree Survey & Demolition Plan
DETROIT CHINESE ALLIANCE CHURCH NORTH
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 2 OF 8
KE 2018.155







DETAIL SCALE = 1" = 10'

Benchmarks:

BM #1 - MAG NAIL IN WEST FACE OF POWER POLE LOCATED ON NORTH SIDE OF WALK SOUTH SIDE OF AUBURN. ELEVATION = 816.27 - NAVD '88

BM #2 - EXISTING CATCH BASIN RIM LOCATED ALONG THE SOUTH PROPERTY LINE. ELEVATION = 816.23 - NAVD '88

Parking Calculation:

WORSHIP HALL MAXIMUM CAPACITY = 250 PEOPLE

PARKING REQUIREMENT = 250 PEOPLE (1/3 PEOPLE) = 84 SPACES

Proposed Parking:

EXISTING SPACES = 37 (INCLUDES 2 ADA)
PROPOSED SPACES = 97 (INCLUDES 5 ADA)

NET INCREASE = 60 SPACES

REQUIRED BARRIER FREE (ADA) PARKING CALCULATION:
SINCE TOTAL SPACES = 97; THEN 1 + [0.04x97 = 3.88] = 4.88 = 5 ADA SPACES REQUIRED

Notes:

1. UPDATED "NO STOPPING STANDING OR PARKING FIRE LANE" SIGNS MUST BE PROVIDED THROUGHTOUT THE SITE.
2. ALL ACCESSIBLE PARKING SPACES SHALL BE IDENTIFIED BY SIGNS PER ICCA117.1-2009, SECTION 502.7.
3. M.D.O.T. R.O.W. USE PERMIT IS REQUIRED.
4. CITY OF ROCHESTER HILLS R.O.W. PERMIT IS REQUIRED.
5. O.C.W.R.C. DRAIN PERMIT REQUIRED FOR CONNECTION TO LUEDERS DRAIN.
6. O.C.W.R.C. SOIL EROSION PERMIT IS REQUIRED.
7. ALL PROPOSED SIGNS MEET SECTION 138-8.603 AND CHAPTER 134 OF THE CITY CODE OF ORDINANCES AND WILL BE APPROVED UNDER A SEPARATE PERMIT ISSUED BY THE BUILDING DEPARTMENT.

STATE OF MICHIGAN — PATRICK McWILLIAMS ENGINEER NO. 31658 — LICENSED PROFESSIONAL ENGINEER

City File # 19-029, Section 33

DATE	ISSUE
10-17-18	ADD PARSONAGE PARKING & LIGHT POLES (10-9-18)
3-6-19	REVISED PER CITY AND CLIENT (2-14-19)
7-23-19	PER CITY (7-3-19)
8-19-19	PER CITY (8-16-19)
9-5-19	PER CITY (9-4-19)

PROPRIETOR:
DETROIT CHINESE ALLIANCE CHURCH NORTH
1591 W. AUBURN RD.
ROCHESTER HILLS, MI 48309
(517) 410-3517

KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE 8-29-18	CKD. BY	DATE
DRAWN GF		
DESIGN PCM		
SECTION 33	T- 3 -N. R- 11 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

Parking Lot Expansion Plan
DETROIT CHINESE ALLIANCE CHURCH NORTH
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 3 OF 8
KE 2018.155

EXISTING SOUTH BASIN "C" CALCULATION

OFF-SITE NORTHBROOK SITE: 3.74 ACRES @ C = 0.40

ON-SITE CHURCH SITE: 1.30 ACRES

ROOF AREAS = 8,050 SF
PAVEMENT AREAS = 24,100 SF } 32,150 SF = 0.74 ACRES @ C = 0.95

EXISTING WATER AREAS = 3,400 SF = 0.08 ACRES @ C = 1.00
GREENBELT AREAS = 0.48 ACRES @ C = 0.25

ON-SITE "C" = $\frac{(0.74\ AC \times 0.95)}{1.30\ AC.} + \frac{(0.08\ AC \times 1.00)}{1.30\ AC.} + \frac{(0.48\ AC \times 0.25)}{1.30\ AC.} = 0.695 = \underline{0.70}$

OVERALL COMBINED "C" = $\frac{(3.74\ AC \times 0.40)}{5.04\ AC.} + \frac{(1.30\ AC \times 0.70)}{5.04\ AC.} = 0.4774 = \underline{0.48}$

EXISTING SOUTH 10 YEAR DETENTION BASIN CALCULATIONS (I.e. WITH OUTLET)

ONSITE CONTRIBUTING AREA = 1.30 ACRES
OFFSITE CONTRIBUTING AREA = 3.74
TOTAL CONTRIBUTING AREA = 5.04 ACRES
RUNOFF COEFFICIENT (C) = 0.48

$Q_A = (0.20)(5.04\ ACRES) = \underline{1.008}$ C.F.S.

$Q_O = \frac{Q_A}{(A)(C)} = \frac{1.008}{(5.04)(0.48)} = \underline{0.4167}$

$T = -25 + \sqrt{\frac{6{,}562.50}{Q_O}} = \underline{100.50}$ MINUTES

$V_S = \frac{10{,}500\ T}{T + 25} - 40\ Q_O\ T = \underline{6{,}734}$ C.F./ACRE

V_T REQ'D = V_S (C)(A) = (6,734)(0.46)(5.04) = 15,613 C.F. REQ'D.

EXISTING SOUTH 25 YEAR DETENTION BASIN CALCULATIONS (I.e. WITH OUTLET)

ONSITE CONTRIBUTING AREA = 1.30 ACRES
OFFSITE CONTRIBUTING AREA = 3.74
TOTAL CONTRIBUTING AREA = 5.04 ACRES
RUNOFF COEFFICIENT (C) = 0.48

$Q_A = (0.20)(5.04\ ACRES) = \underline{1.008}$ C.F.S.

$Q_O = \frac{Q_A}{(A)(C)} = \frac{1.008}{(5.04)(0.48)} = \underline{0.4167}$

$T = -25 + \sqrt{\frac{8{,}062.50}{Q_O}} = \underline{114.10}$ MINUTES

$V_S = \frac{12{,}900\ T}{T + 25} - 40\ Q_O\ T = \underline{8{,}680}$ C.F./ACRE

V_T REQ'D = V_S (C)(A) = (8,680)(0.46)(5.04) = 20,124 C.F. REQ'D.

VOLUME PROVIDED:

@ 810.0: 3,400 SF
@ 813.75: 8,600 SF

$V = \frac{3.75'}{3}(3{,}400 + 8{,}600 + \sqrt{3400 \times 8{,}600}) =$ 21,759 CF PROVIDED, OK!

ORIFICE FORMULA

$Q_A = 0.62\ (A_O)(2gH)^{1/2}$

A_O = AREA OF ORIFICE PIPE

$g = 32.2\ FT./SEC.^2$

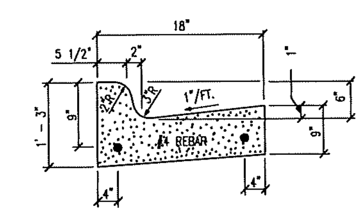
H = DEPTH OF BASIN ABOVE CENTERLINE OUTLET PIPE = [814.00 − (809.69 + $\frac{4"}{2}$ = 809.86) = 4.14']

$A_O = \frac{Q_A}{0.62\ (2GH)^{1/2}} = \frac{1.008}{0.62\ [(2)(32.2)(4.14)]^{1/2}} = \underline{0.0996}$ S.F.

DIAMETER ORIFICE (D_O): $D_O = \sqrt{\frac{4(A_O)}{\pi}}\ \sqrt{\frac{(4)(0.996)}{\pi}} = \underline{0.356}$ FT. = 4.27 INCH

HOWEVER, USE 4" RESTRICTION (MINIMUM SIZE)

DETENTION BASIN
EXISTING WATER ELEVATION = 809.69
DESIGN HIGH WATER ELEVATION = 813.75
1.00' FREEBOARD ELEVATION = 814.75
STORAGE REQUIRED = 20,124 C.F.
STORAGE PROVIDED = 21,759 C.F.
TIME TO DRAIN = 20,124 CF/1.008 CFS = 19,964 SECONDS/3600 SEC/HR = 5.55 HOURS



6" STRAIGHT FACED CURB AND GUTTER (STANDARD)
NO SCALE

PROPOSED NORTH BASIN "C" CALCULATION

TOTAL AREA = 0.80 ACRES = 34,848 SF
GREENBELTS = 24,948 SF @ C = 0.25
PAVEMENT = 9,900 SF @ C = 0.95

"C" = $\frac{(24{,}948\ SF \times 0.25)}{34{,}848\ SF} + \frac{(9{,}900\ SF \times 0.95)}{34{,}848\ SF} = 0.4489 = \underline{0.45}$

PROPOSED (FRONT AREA) NORTH 100 YEAR DETENTION BASIN CALCULATIONS (I.e. WITH OUTLET)

ONSITE CONTRIBUTING AREA = 0.80 ACRES
OFFSITE CONTRIBUTING AREA = 0.00
TOTAL CONTRIBUTING AREA = 0.80 ACRES
RUNOFF COEFFICIENT (C) = 0.45

$Q_A = (0.20)(0.80\ ACRES) = \underline{0.16}$ C.F.S.

$Q_O = \frac{Q_A}{(A)(C)} = \frac{0.16}{(0.80)(0.45)} = \underline{0.4444}$

$T = -25 + \sqrt{\frac{10{,}312.50}{Q_O}} = \underline{127.33}$ MINUTES

$V_S = \frac{16{,}500\ T}{T + 25} - 40\ Q_O\ T = \underline{11{,}529}$ C.F./ACRE

V_T REQ'D = V_S (C)(A) = (11,529)(0.45)(0.80) = 4,151 C.F. REQ'D.

VOLUME PROVIDED:

@ 812.0: 1,440 SF
@ 814.0: 4,030 SF

$V = \frac{2'}{3}(1{,}440 + 4{,}030 + \sqrt{1{,}440 \times 4{,}030}) =$ 5,252 CF PROVIDED, OK!

ORIFICE FORMULA

$Q_A = 0.62\ (A_O)(2gH)^{1/2}$

A_O = AREA OF ORIFICE PIPE

$g = 32.2\ FT./SEC.^2$

H = DEPTH OF BASIN ABOVE CENTERLINE OUTLET PIPE = [814.00 − (811.90 + $\frac{4"}{2}$ = 812.07) = 1.93']

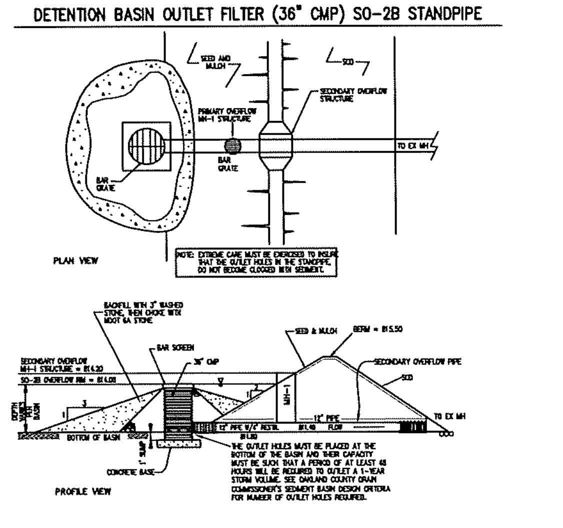
$A_O = \frac{Q_A}{0.62\ (2GH)^{1/2}} = \frac{0.16}{0.62\ [(2)(32.2)(1.93)]^{1/2}} = \underline{0.0231}$ S.F.

DIAMETER ORIFICE (D_O): $D_O = \sqrt{\frac{4(A_O)}{\pi}}\ \sqrt{\frac{(4)(0.0231)}{\pi}} = \underline{0.1717}$ FT. = 2.06 INCH

HOWEVER, USE 4" RESTRICTION (MINIMUM SIZE)

DETENTION BASIN
EXISTING WATER ELEVATION = NONE
DESIGN HIGH WATER ELEVATION = 814.00
1.00' FREEBOARD ELEVATION = 815.00
STORAGE REQUIRED = 4,151 C.F.
STORAGE PROVIDED = 5,252 C.F.
TIME TO DRAIN = 4,151 CF/0.16 CFS = 25,944 SECONDS/3600 SEC/HR = 7.21 HOURS

DETENTION BASIN OUTLET FILTER (36" CMP) SO-2B STANDPIPE



SEED AND MULCH
SOD
SECONDARY OVERFLOW STRUCTURE
PRIMARY OVERFLOW MH-1 STRUCTURE
BAR GRATE
TO EX MH
PLAN VIEW
NOTE: EXTREME CARE MUST BE EXERCISED TO INSURE THAT THE OUTLET HOLES IN THE STANDPIPE DO NOT BECOME CLOGGED WITH SEDIMENT.
BACKFILL WITH 3" WASHED STONE, THEN CHOKE WITH MDOT 6A STONE
SEED & MULCH
BERM = 815.50
BAR SCREEN
36" CMP
SECONDARY OVERFLOW PIPE
CONCRETE BASE
PROFILE VIEW

CATCH BASIN-1 DESIGN CALCULATION

$Q_{REQ'D.}$ = ACI = (0.80)(0.45)(3.89) = 1.40 C.F.S.

$I = \frac{175}{T+25} = \frac{175}{20+25} = \underline{3.89}$

A 12" @ 0.40% HAS $Q_{PROVIDED}$ = 2.25 CFS, OK

QUANTITIES

DISRUPTION AREA - 1.2 ACRES+/-
CLEARING: - REMOVE (4) TREES+/-

DEMOLITION:
REMOVE CONCRETE PAVEMENT - 1,700 SF
REMOVE ASPHALT PAVEMENT - 10,300 SF
SAWCUT - 80 LF
REMOVE 6' WOOD FENCE (TO BE RELOCATED) - 106 LF

GRADING: CUTS/FILLS - 1,400 CY
SWALING - 180 LF

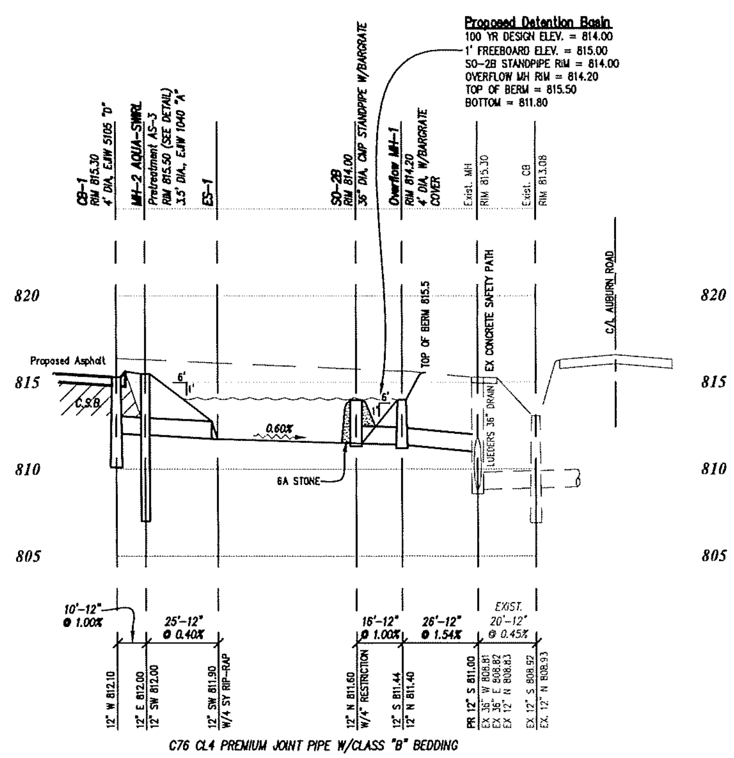
SOIL EROSION CONTROLS:
SEED & MULCH - 0.50 ACRES
SILT FENCING - 500 LF
SILT FENCE GRAVEL FILTER - 1 EA
CONSTRUCTION STONE ACCESS - EXISTING ASPHALT DRIVE TO BE USED

STORM SEWER:
CATCH BASIN/INLETS FILTERS - 2 EA
SO-2 STANDPIPE, 3' DIA., BARGRATE COVER - 1 EA
MANHOLE, 4' DIA., BARGRATE COVER - 1 EA
CONNECTION TO EXISTING MANHOLE - 1 EA
12" C76 CL4, PREMIUM JOINT - 71 LF
12" CONCRETE END SECTION - 1 EA
GROUTED RIP-RAP - 4 SY
AQUA-SWIRL AS-3 STRUCTURE MANHOLE, 3.5' DIA., EJIW 1040 "A" COVER - 1 EA

PAVEMENT & CURBS, ETC.:
4" ASPHALT OVER 6" MDOT 21AA GRAVEL - 3,930 SY
SIDEWALK RAMPS - 3 EA
4" CONCRETE SIDEWALK ON 4" C.S.B. (VARIOUS WIDTH W/INTEGRAL CURB) - 70 SY
4" CONCRETE SIDEWALK ON 4" C.S.B. (5' WIDE) - 50 SY
6" CONCRETE CURB, 18" WIDE - 210 LF

MISCELLANEOUS:
LIGHT POLES - 8 EA
LIGHT MOUNTED ON UTILITY POLE - 1 EA
RELOCATED 6' WOOD FENCE - 96 LF

AUBURN ROAD - M.D.O.T. R.O.W.:
8" OF P-1 CONCRETE APPROACH (MDOT) OVER 6" MDOT 21AA GRAVEL, ETC. - 70 SY
8" CONCRETE SIDEWALK (AUBURN RD. R.O.W.) - 32 SY
ADA RAMPS - 2 EA

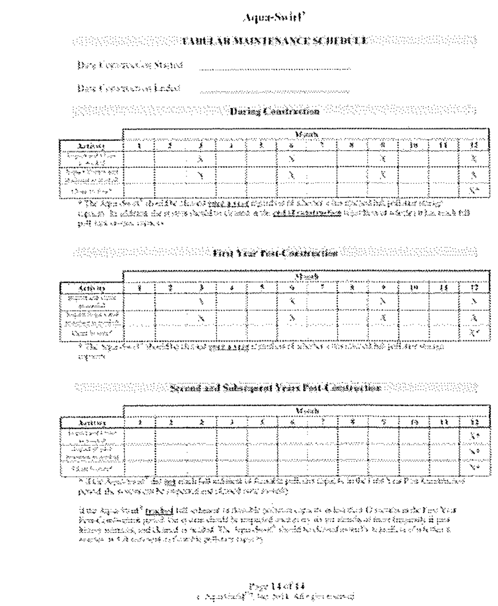


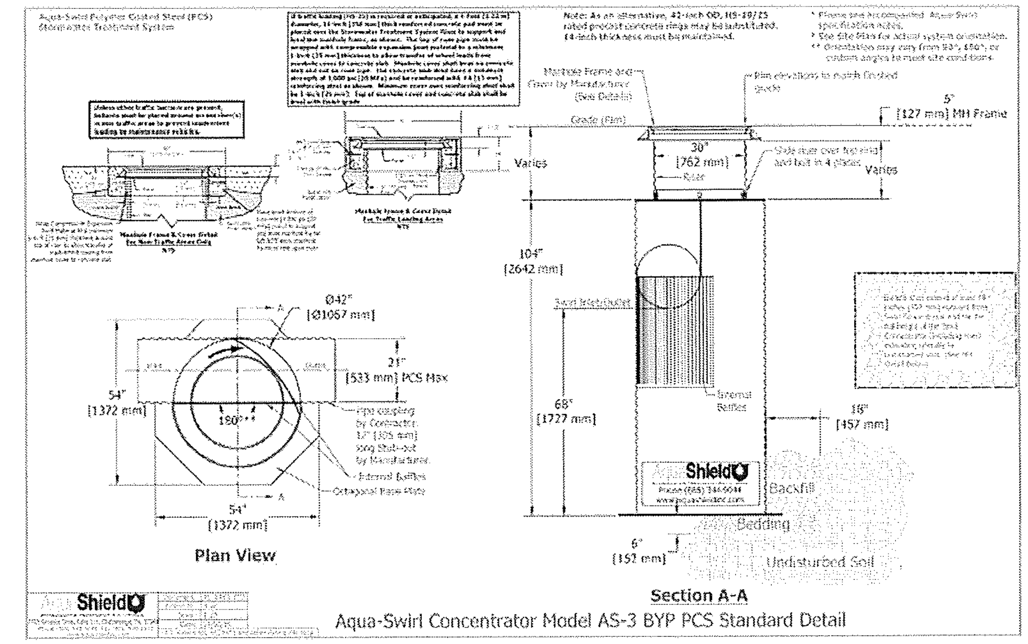
Proposed Detention Basin
100 YR DESIGN ELEV. = 814.00
1' FREEBOARD ELEV. = 815.00
SO-2B STANDPIPE RIM = 814.00
OVERFLOW MH RIM = 814.20
TOP OF BERM = 815.50
BOTTOM = 811.80
820
815
810
805
Proposed Asphalt
6A STONE
0.60%
10'-12" @ 1.00%
25'-12" @ 0.40%
16'-12" @ 1.00%
26'-12" @ 1.54%
EXIST. 20'-12" @ 0.45%
C76 CL4 PREMIUM JOINT PIPE W/CLASS "B" BEDDING

Stom Profile

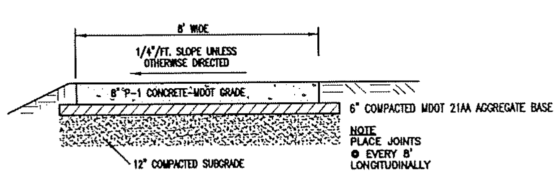
Aqua-Swirl™ Sizing Chart

Aqua-Swirl™ Model	Swirl Chamber Diameter (ft.)	Maximum Stub-Out Pipe Outer Diameter (in.)		Water Quality Treatment Flow (cfs)	Oil/Debris Storage Capacity (gal)	Sediment Storage Capacity (ft³)
AS-2	2.50	8	15	1.1	37	10
* AS-3	3.25	10	21	1.8	110	20 *
AS-4	4.25	12	27	3.2	190	32
AS-5	5.00	12	30	4.4	270	45
AS-6	6.00	14	36	6.3	390	65
AS-7	7.00	16	42	8.6	540	90
AS-8	8.00	18	48	11.2	710	115
AS-9	9.00	20	>48 *	14.2	910	145
AS-10	10.0	22	>48 *	17.5	1130	180
AS-11	11.0	24	>48 *	21.2	1422	222
AS-12	12.0	26	>48 *	25.2	1698	270
AS-13	13.0	28	>48 *	29.6	1986	310
AS-XX	Custom	--	--	>26 **	--	--

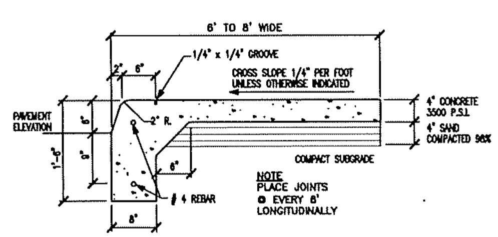




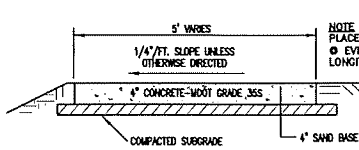
Pretreatment MH-2



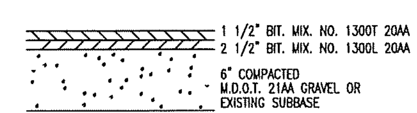
CONCRETE SAFETY PATH (Auburn Rd.)
NO SCALE



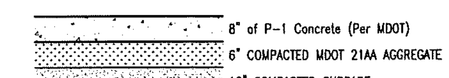
INTEGRAL CURB & WALK
NO SCALE



CONCRETE SIDEWALK (ON-SITE)
NO SCALE



PAVEMENT SECTION-ONSITE
NO SCALE



Concrete Approach Pavement Section (Auburn Road)
NO SCALE

STATE OF MICHIGAN PATRICK McWILLIAMS ENGINEER NO. 31658 LICENSED PROFESSIONAL ENGINEER

City File # 19-029, Section 33

DATE	ISSUE
10-17-18	ADD PARSONAGE PARKING & LIGHT POLES (10-9-18)
3-6-19	REVISED PER CITY AND CLIENT (2-14-19)
7-23-19	PER CITY (7-3-19)
8-19-19	PER CITY (8-16-19)
9-5-19	PER CITY (9-4-19)

PROPRIETOR:
DETROIT CHINESE ALLIANCE CHURCH NORTH
1591 W. AUBURN RD.
ROCHESTER HILLS, MI 48309
(517) 410-3517

KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

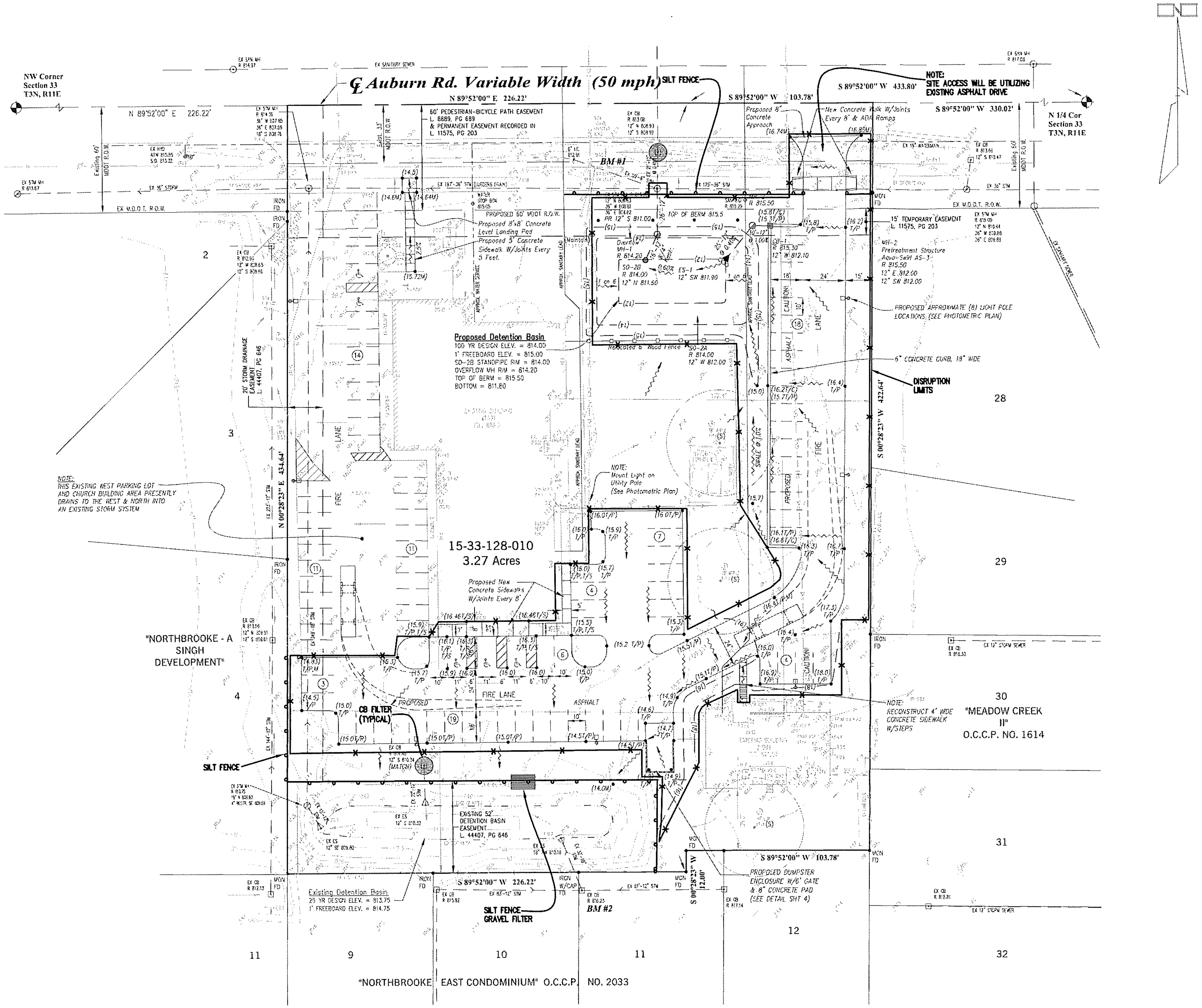
DATE 8-29-18 | DRAWN GF | DESIGN PCM | SECTION 33 | CKD. BY | DATE | T- 3 -N. R- 11 -E.

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

Calculation, Profiles, Details & Quantities
DETROIT CHINESE ALLIANCE CHURCH NORTH
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'

KE 2018.155



Benchmarks:

BM #1 - MAG NAIL IN WEST FACE OF POWER POLE LOCATED ON NORTH SIDE OF WALK SOUTH SIDE OF AUBURN. ELEVATION = 816.27 - NAVD '88

BM #2 - EXISTING CATCH BASIN RIM LOCATED ALONG THE SOUTH PROPERTY LINE. ELEVATION = 816.23 - NAVD '88

LEGEND

EXISTING / PROPOSED

- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- GAS MAIN
- ELEC. TELE. CABLE
- STORM MANHOLE
- CATCH BASIN
- INLET
- REARYARD CATCH BASIN
- END SECTION
- SANITARY MANHOLE
- GATE VALVE AND WELL
- HYDRANT
- CONTOURS — (40)
- PROPOSED FINISH FLOOR — 1019 F.F
- MATCH EXIST. ELEV. — (M)
- TOP OF CURB ELEV. — T/C
- TOP OF SIDEWALK — T/S
- TOP OF PAVEMENT — T/P
- WETLANDS BOUNDARY
- 25' WETLANDS BUFFER
- DRAINAGE ARROW
- CATCHBASIN FILTER
- SILT FENCING
- LIMITS OF EARTH DISRUPTION AND/OR LIMITS OF CLEARING
- SILT FENCE GRAVEL FILTER
- SAVE TREE — (S)
- REMOVE TREE — (R)

CONSTRUCTION/SOIL EROSION SEQUENCE

A) INSTALL SILT FENCING AS PER PLAN.
B) PERFORM DEMOLITION ACTIVITIES AS PER DEMOLITION PLAN.
C) STRIP AND STOCKPILE TOPSOIL; MASS GRADE SITE AS PER PLANS FOR PAVEMENT & BASINS, SEED & MULCH BASIN SLOPES.
D) BEGIN PARKING LOT CONSTRUCTION, CONSTRUCT STORM SEWER. IMMEDIATELY INSTALL CATCH BASIN FILTERS.
E) INSTALL GRAVEL BASE AND PARKING AREAS COMPLETE. REPAIR AND/OR REPLACE CATCH BASIN FILTERS.
F) COMPLETE BUILDING CONSTRUCTION, CLEAN PAVEMENTS AND STORM SEWER SYSTEM OF ALL ACCUMULATED SEDIMENT. REMOVE ALL TEMPORARY SOIL EROSION CONTROLS ONLY AFTER ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED.

NOTES:
SOIL EROSION PERMIT IS REQUIRED FROM W.R.C.

"THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM SEWER EVENT.

GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SOIL EROSION CONTROLS.

STATE OF MICHIGAN — PATRICK McWILLIAMS — ENGINEER — NO. 31658 — LICENSED PROFESSIONAL ENGINEER

City File # 19-029, Section 33

DATE	ISSUE
10-17-18	ADD PARSONAGE PARKING & LIGHT POLES (10-9-18)
3-6-19	REVISED PER CITY AND CLIENT (2-14-19)
7-23-19	PER CITY (7-3-19)
8-19-19	PER CITY (8-16-19)
9-5-19	PER CITY (9-4-19)

PROPRIETOR:
DETROIT CHINESE ALLIANCE CHURCH NORTH
1591 W. AUBURN RD.
ROCHESTER HILLS, MI 48309
(517) 410-3517

KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

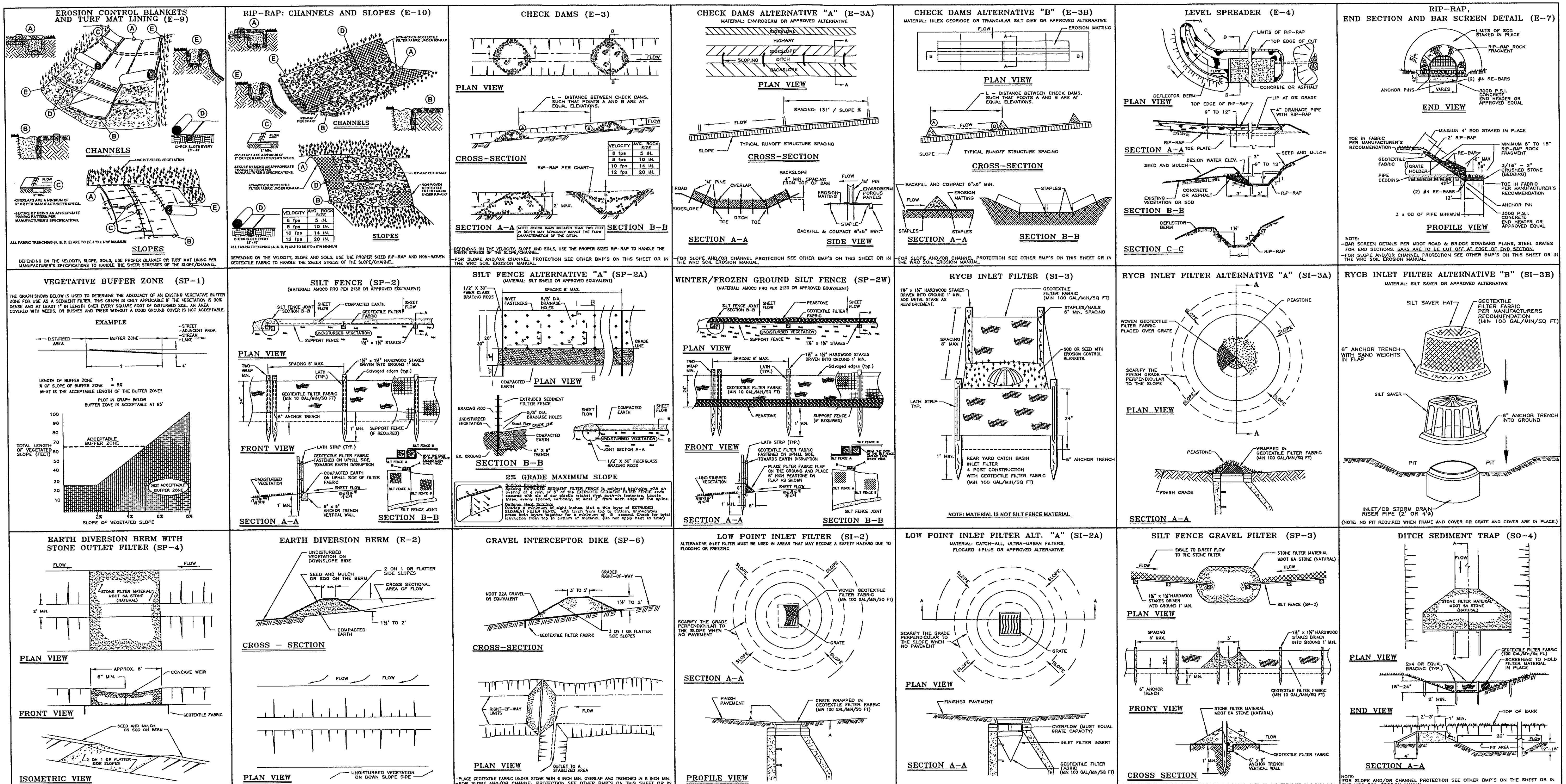
DATE 8-29-18 | DRAWN GF | DESIGN PCM | SECTION 33 | CKD. BY | DATE | T- 3 -N. R- 11 -E.

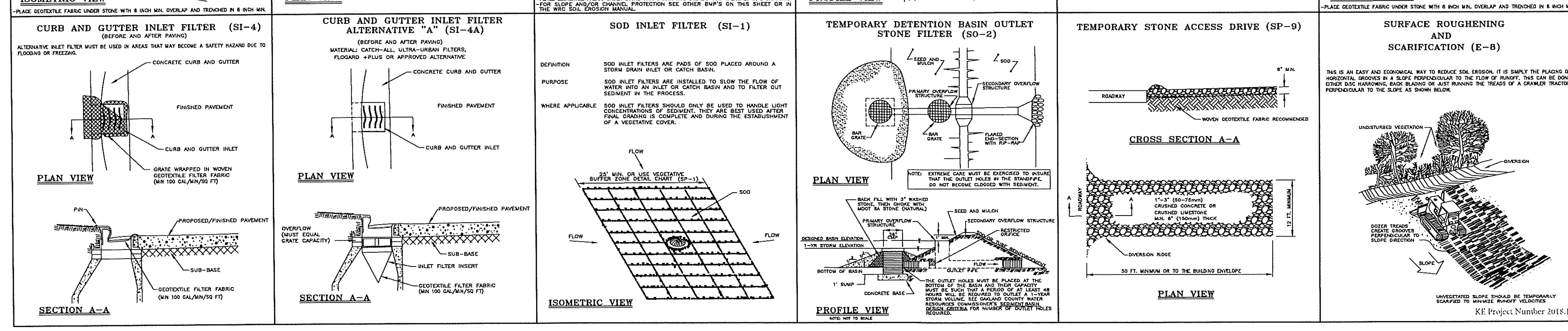
72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

Soil Erosion Control Plan

DETROIT CHINESE ALLIANCE CHURCH NORTH
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 5 OF 8
KE 2018.155





NOTE:

WHILE PERFORMING WORK INVOLVING GROUNDS MAINTENANCE AND/OR THE CONSTRUCTION/MAINTENANCE OF ANY INFRASTRUCTURE, INCLUDING ROADS, WATER MAINS, SANITARY SEWERS, STORM DRAINS AND STORM WATER BEST MANAGEMENT PRACTICES (BMPS), CONTRACTORS SHALL MINIMIZE POLLUTION FROM STORM WATER RUNOFF THAT CAN AFFECT WATER QUALITY RELATED TO WORK ACTIVITIES. POLLUTANTS THAT COULD IMPAIR WATER QUALITY MAY INCLUDE FUEL, GREASE AND OIL, NUTRIENTS, BACTERIA AND PATHOGENS, LITTER AND DEBRIS, AND SOIL EROSION AND SEDIMENTATION. APPLICABLE BMPS SHALL BE IMPLEMENTED BY THE CONTRACTOR TO THE MAXIMUM EXTENT PRACTICABLE TO PROTECT WATER QUALITY AND WILDLIFE HABITAT.

SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

City File #19-029, Section 33

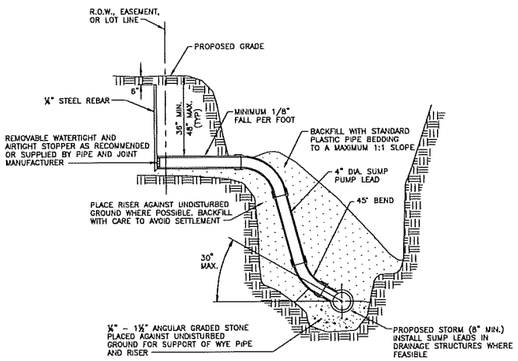
ORIG. DATE: 01/01/01
SCALE: NONE
DESIGNED BY: WRC
DRAWN BY: Mapping

WRC WATER RESOURCES COMMISSIONER

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST, WATERFORD, MICHIGAN 48328-1907

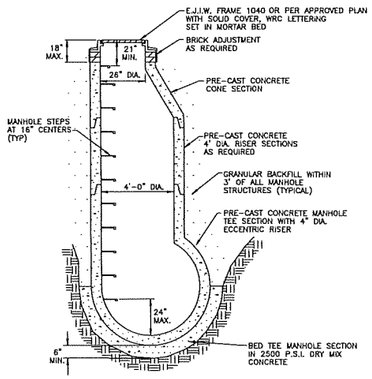
SHEET NO.: 6 of 8

KE Project Number 2018.155



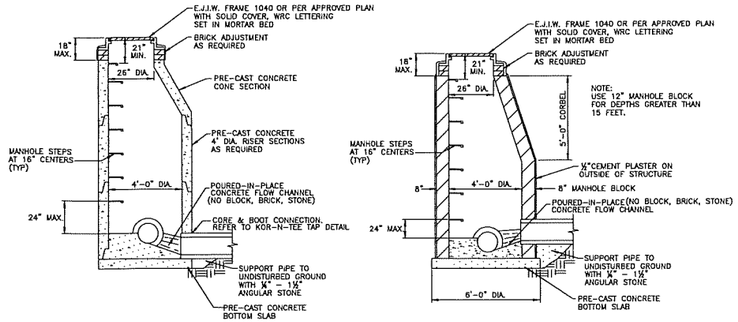
HOUSE LEAD DETAIL FOR 4" DIA. PLASTIC SUMP PUMP LEADS

NO SCALE



PRE-CAST TEE MANHOLE DETAIL

NO SCALE



PRE-CAST MANHOLE

BLOCK MANHOLE (PRIOR APPROVAL ONLY)

STANDARD MANHOLE DETAILS

NO SCALE

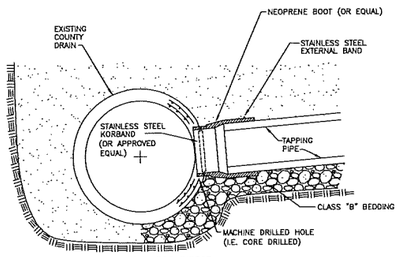
GENERAL NOTES

1. Type and class of pipe shall be as specified on plans.
2. Class "B" bedding shall be used throughout, unless otherwise specified on the plan.
3. All end sections 18" and larger shall be provided with a bar screen unless otherwise approved.
4. Standard rip-rap shall be 8"–15" fragmented rock, heavy rip-rap shall be 16"–24" fragmented rock. (No Broken Concrete)
5. MANHOLE REQUIREMENTS:
   - All new catch basins, inlets, and manholes are to be manufactured to ASTM C-478 specifications.
   - All new catch basins, inlets, and manholes shall have WRC approved flexible, watertight seals where pipes pass through walls. Manholes shall be of precast sections with modified groove tongue and rubber gasket type joints. Pre cast manhole cone sections shall be WRC approved modified eccentric cone type.
   - Taps through manhole joints or cone sections are prohibited unless otherwise approved.
   - Manhole steps to be plastic coated steel meeting the requirements in ASTM D 2146, Type II, Grade 49108, MA. Industries P.S.I. Polypropylene, (or approved equal). Steps to be installed during manhole manufacture. Place at 16" centers 45° from centerline of sewer.
   - Cone section with modified groove tongue joints and with stud inserts cast in place. Top to have flush surface.
   - ASTM C-478 riser section with modified groove tongue joints.
   - Res-seal, link-seal, press wedge II, or kor-n-seal boot (with stainless steel korband) flexible rubber manhole joints. (or approved equal).
   - The inside joints of manholes, catch basins, and pipe sizes over 42" and larger in diameter shall be pointed up with mortar upon completion of backfilling.
6. CONCRETE PIPE REQUIREMENTS:
   - Concrete pips to be per ASTM C76 standards.
   - It will be required to TV all pipe 30 days after installation
   - The contractor shall provide reinforced concrete pipe as specified on the plans.
   - All reinforced concrete pipe shall have modified grooved tongue joints with o-ring type rubber gasket, per A.S.T.M. specifications C443.
   - The inside joints of manholes, catch basins, and pipe sizes over 42" and larger in diameter shall be pointed up with mortar upon completion of backfilling.
7. SUMP PUMP LEAD REQUIREMENTS:
   - All sump pump leads connected to a County Drain pipe shall be pre-manufactured.
   - Sump pump leads connected to a manhole shall be cored and booted. Refer to Kor-N-Tee Tap Detail.
   - Sump pump mains and leads shall be ABS (truss and solid wall), PVC (truss, solid wall , A2000), ADS N-12 WT with premium joints.
   - Ends of all 4" sump pump leads shall be temporarily capped and their location staked, witnessed and recorded.
   - All sump pump leads to be taken to the property line, easement line or as indicated on the plan.
   - Sump pump mains must have a cleanout with a minimum inside diameter of 24" and be constructed at changes of alignment, ends of sump pump mains or as indicated on the plan.
8. RESTORATION REQUIREMENTS:

   All disturbed area within the County Drain right-of-way shall be restored as follows:
   - Under roads, sidewalks, driveways and parking areas, backfill material shall be placed loosely into trenches in six (6) inch layers with each layer compacted to not less than 95% of maximum dry density as determined by the ASTM D 1557 Compaction Standard (modified proctor compaction test). All other areas shall have each layer compacted to not less than 90% of maximum dry density.
   - Finish subgrade
   - Place 3" thickness clean topsoil acceptable to the engineer to attain finished grade. Topsoil must not be contaminated and may not be a mixture of natural underlying soils, subbase materials, or other materials. It must consist of natural loam, sandy loam, silty loam or clay loam humus-bearing soil adopted to the sustenance of plant life. Topsoil must be neither excessively acidic nor excessively alkaline. It must be of mineral origin, exclusive of any peat or muck.
   - Apply seed and fertilizer as follows:*

Location	Seeding Requirements	Fertilizer Requirement
Slopes and Ditch, Banks, Etc.	M.D.O.T. "Roadside Mix" Turf Seed Mixture TGM (10% Kentucky Blue, 20% Perennial Rye, 30% Hard Fescue, 40% Creeping Red Fescue) applied at 220 lb/acre	M.D.O.T. Seeding and Sodding Fertilizers, Class A
Other Areas	M.D.O.T. "Roadside Mix" Turf Seed Mixture THM (30% Kentucky Blue, 20% Perennial Rye, 50% Creeping Red Fescue) applied at 220 lb/acre	M.D.O.T. Seeding and Sodding Fertilizers, Class A

   * Sod is required in maintained lawn areas. Refer to WRC General Specifications for additional requirements and information.
   - apply straw or marsh hay mulch in an air-dry condition to all seeded areas over the surface to a uniform thickness at 2 tons/acre.
   - mulch shall be anchored in place with biodegradable netting, not larger than 1½" by 2" nor smaller than ½" by ½".
   - The contractor shall be responsible to insure the growth of all seeded areas, and shall re-seed as necessary to accomplish this.
9. The Storm Drain Notes and Details Sheet shall be a supplement to WRC Standards and Specifications, which are available on the WRC website (www.oakgov.com/water).

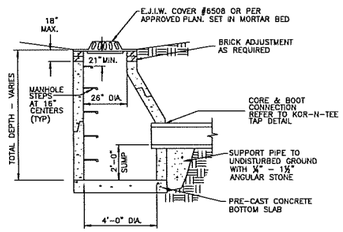


CONNECTION DETAIL FOR DIRECT TAPS TO PIPE WALL OF EXISTING COUNTY DRAINS.

KOR-N-TEE TAP (OR APPROVED EQUAL)

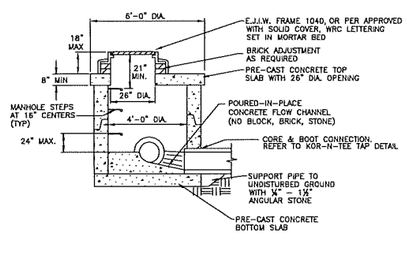
NO SCALE

- For non-concrete to concrete taps.
- Use link-seal, A-lock or approved equal for concrete to concrete taps.



PRE-CAST CATCH BASIN DETAIL

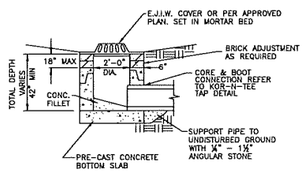
NO SCALE



PRE-CAST LOW HEAD MANHOLE DETAIL

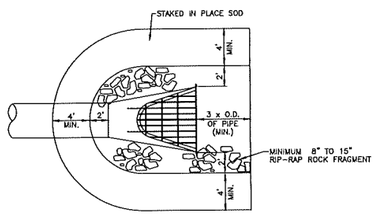
NO SCALE

(PRIOR APPROVAL ONLY)

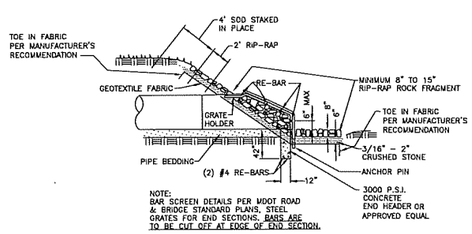


PRE-CAST INLET DETAIL

NO SCALE



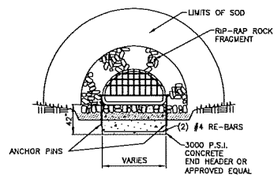
PLAN VIEW



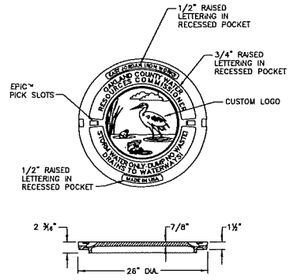
PROFILE VIEW

END SECTION AND BAR SCREEN DETAIL

NO SCALE



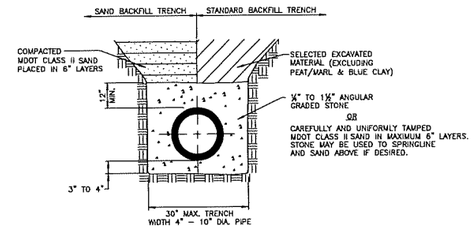
END VIEW



EAST JORDAN IRON WORKS OR APPROVED EQUAL
HEAVY DUTY MATERIAL ASTM A48 CL.35B
CATALOG NO. 1040A
PATTERN NO. 1040A, PRODUCT NO. 104718 OAKCOSTD.
2" HIGH RAISED LETTERS, 1" WIDE RAISED LETTERS
ALL IN RECESSED POCKET.

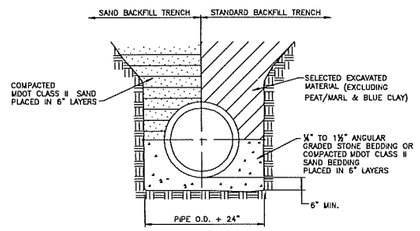
LETTERED MANHOLE COVER FOR WRC

NO SCALE



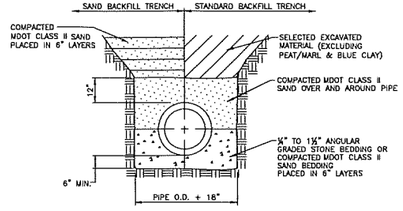
ABS (TRUSS AND SOLID WALL), PVC (TRUSS, SOLID WALL, A2000), ADS N-12 WT PIPE BEDDING DETAIL

NO SCALE



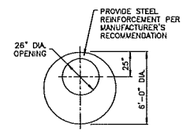
CLASS "B" BEDDING TRENCH DETAIL FOR 27" DIAMETER AND LARGER CONCRETE PIPE

NO SCALE



CLASS "B" BEDDING TRENCH DETAIL FOR 24" DIAMETER AND SMALLER CONCRETE PIPE

NO SCALE



PRECAST CONCRETE TOP SLAB DETAIL

STORM DRAIN NOTES AND DETAILS

REVISION BLOCK				
Data Source / Source Date: N/A				
Rev. No.:	Rev. By:	Rev. Date:	Description:	City File #19-029, Section 33
1	lb	3/17/09	PROPOSED DETAIL CHANGES / NEW LOGO	
2	lb	06/12/09	APPROVAL PER STANDARDS COMMITTEE	
3	lb	02/22/10	REVISED MH COVER DETAIL	
4	DS	04/27/10	REVISED GENERAL NOTES	

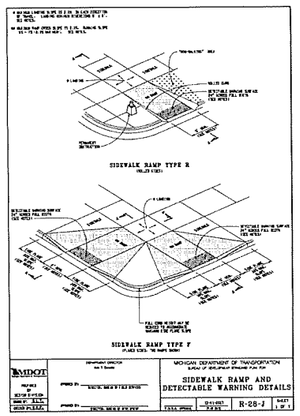
ORIG. DATE:	05/05/97
SCALE:	NONE
DESIGNED BY:	WRC
DRAWN BY:	Mapping

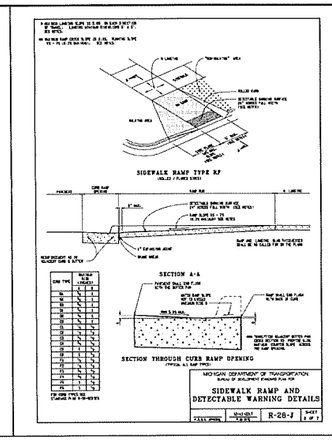
WRC WATER RESOURCES COMMISSIONER

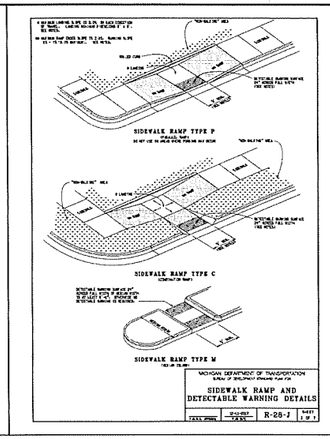
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

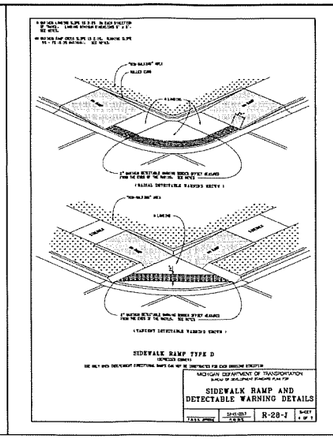
SHEET NO.: 7 of 8

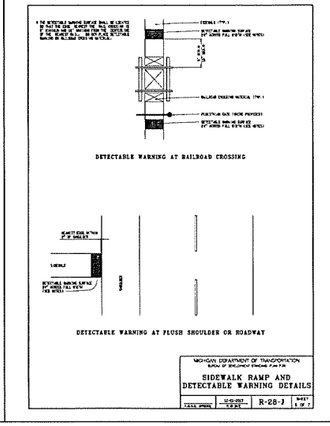
KE Project Number 2018.153

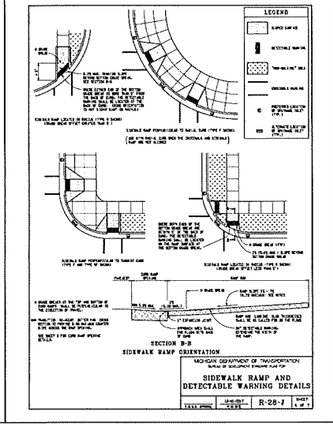


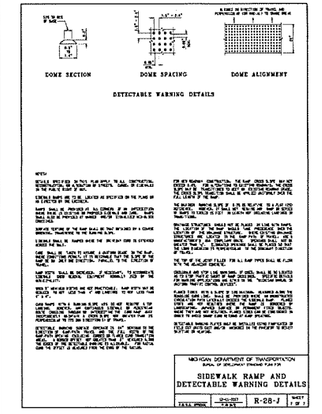






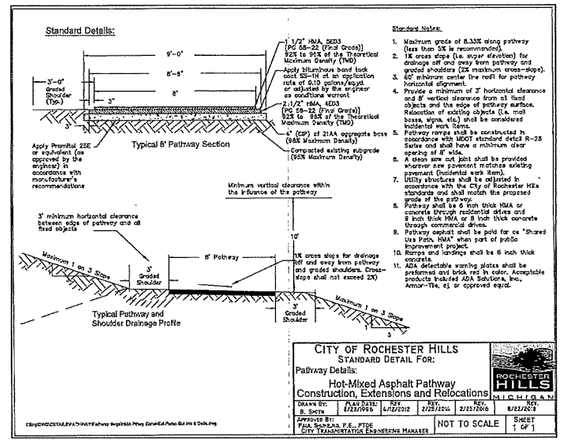


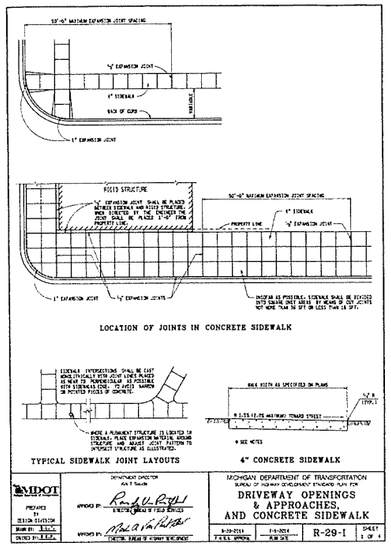


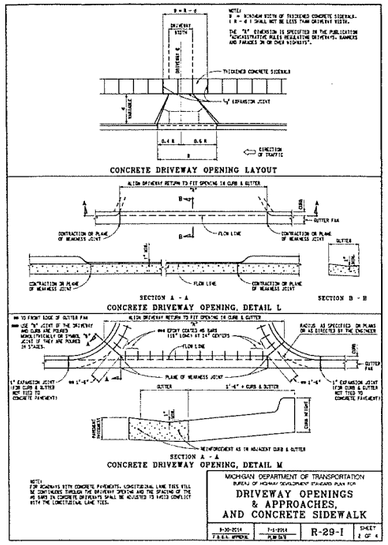


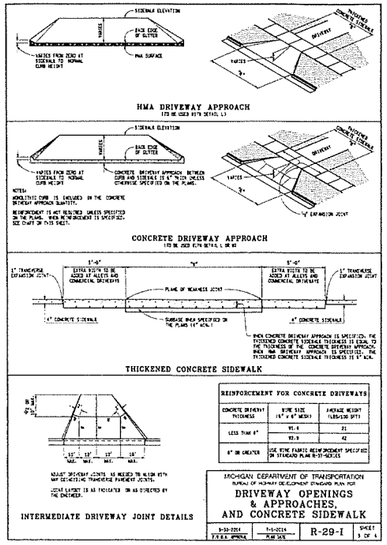
MDOT NOTES

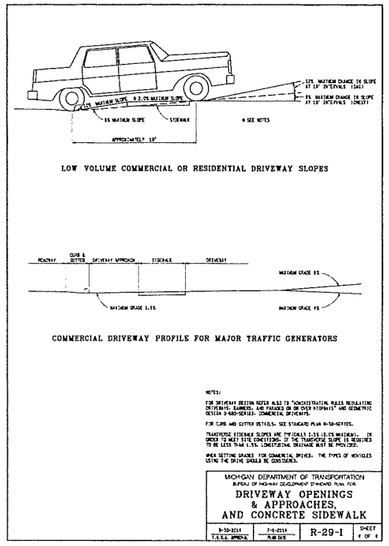
- ANY REGULATORY SIGNS SHALL BE MAINTAINED.
- THE CONTRACTOR SHALL HAVE AN APPROVED PLAN AND PERMIT ON SITE AT ALL TIMES.
- THE CONTRACTOR SHALL ELECTRONICALLY SUBMIT AN ADVANCE NOTICE TO MDOT A MINIMUM OF 5 DAYS PRIOR TO THE START OF CONSTRUCTION.
- ALL UTILITIES INCLUDING DRAINAGE FACILITIES SHALL BE LOCATED PRIOR TO EXCAVATION IN THE MDOT RIGHT-OF-WAY.
- THE CONTRACTOR SHALL EMPLOY THE MDOT VISIBILITY POLICY.
- THE PROPOSED SIDEWALK NEEDS TO BE CARRIED THROUGH THE DRIVE APPROACH AND NOT RAMPED DOWN.
- LABEL THE MDOT ROW LINE ON ALL PLAN SHEETS.
- THE DRIVE APPROACH SHALL BE CONSTRUCTED PER R-28 & R-29 SERIES AND SHALL BE CONSTRUCTED OF THE FOLLOWING:
  8 INCHES OF P1 CONCRETE ON 6 INCHES AGGREGATE BASE (21A OR 21AA) ON 12 INCHES OF SUBBASE -OR-
  6 INCHES OF HMA (PLACED IN 3 LIFTS) ON 10 INCHES AGGREGATE BASE (21A OR 21AA) ON 12 INCHES OF SUBBASE
- NO ADVERTISING ALLOWED IN MDOT ROW.
- ALL UTILITY WORK (GAS, ELECTRIC, PHONE, ETC.) WORK PROPOSED IN MDOT ROW WILL REQUIRE SEPARATE PERMITS FROM THE UTILITY COMPANY. PLEASE ADVISE ANY UTILITY COMPANIES YOU ARE WORKING WITH THAT THEY ARE REQUIRED TO PULL THEIR OWN PERMIT.
- PROVIDE CONTRACTOR INFORMATION (NAME, ADDRESS, PHONE #, EMAIL).
- INSURANCE - THE PERMIT APPLICANT OR THE APPLICANT'S CONTRACTOR MUST SUBMIT AN ELECTRONIC CERTIFICATE OF INSURANCE IN THE MDOT E-BOND SYSTEM BEFORE THE PERMIT CAN BE ISSUED. PLEASE ELECTRONICALLY SUBMIT MDOT CERTIFICATE OF INSURANCE FOR PERMITTED ACTIVITIES FORM 2020, WHICH REFLECTS THE INSURANCE REQUIREMENTS AND CONDITIONS. THE APPLICANT/CONTRACTORS INSURANCE AGENT SHALL CONTACT LAURI OLSEN (MDOT LANSING PERMIT OFFICE) AT 517-241-3028 TO REGISTER FOR THE ELECTRONIC SUBMITTAL SYSTEM.
- BOND - AN INDIVIDUAL PERFORMANCE BOND IS REQUIRED. IF THE BOND PRINCIPAL IS NOT THE PERMIT APPLICANT, A CERTIFICATE OF AGENCY (MDOT FORM 2209) MUST BE SUBMITTED WHICH APPOINTS THE DESIRED PARTY AS AGENT TO ACT AS PRINCIPAL. THE BOND SHALL BE ELECTRONICALLY SUBMITTED IN THE MDOT E-BOND SYSTEM. YOUR INSURANCE AGENT SHALL CONTACT LAURI OLSEN (MDOT LANSING PERMIT OFFICE) AT 517-241-3028 TO REGISTER FOR THE ELECTRONIC SUBMITTAL SYSTEM. ONCE THE BOND IS ELECTRONICALLY FILED, I WILL NEED A SIGNED AND SEALED PAPER COPY FOR THE FILE ALONG WITH THE POWER OF ATTORNEY.

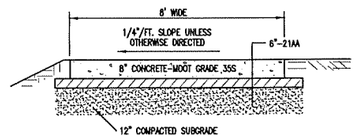












Concrete Safety Path (Auburn Rd.)

NO SCALE

PATRICK McWILLIAMS ENGINEER NO. 31658 PROFESSIONAL ENGINEER STATE OF MICHIGAN

City File # 19-029, Section 33

DATE	ISSUE
3-6-19	REVISED PER CITY AND CLIENT (2-14-19)
7-23-19	PER CITY (7-3-19)

PROPRIETOR:
DETROIT CHINESE ALLIANCE CHURCH NORTH
1591 W. AUBURN RD.
ROCHESTER HILLS, MI 48309
(517) 410-3517

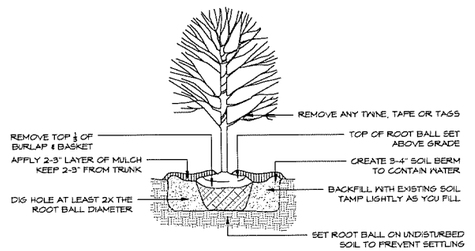
KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	3-6-19	CKD. BY	DATE
DRAWN	GF		
DESIGN	PCM		
SECTION	33	T- 3 -N. R- 11 -E.	

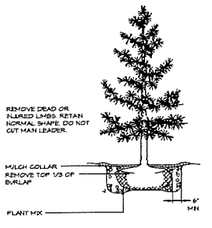
72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

M.D.O.T. Notes, Details, Etc.
DETROIT CHINESE ALLIANCE CHURCH NORTH
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

SCALE N/A
SHEET 8 OF 8
KE 2018.155

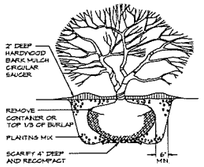


1 DECIDUOUS TREE PLANTING
N.T.S.



2 EVERGREEN TREE PLANTING
N.T.S.

LIMIT AMOUNT OF PRUNING TO 1/3 OF TOTAL BRANCH AREA TO COMPENSATE FOR LOSS OF ROOTS FROM TRANSPLANTING OR TO REMOVE DEAD OR NURSED LIMBS. RETAIN NATURAL SHAPE.



3 SHRUB PLANTING
N.T.S.

NOTES:

1. ALL PLANTS SHALL MEET OR EXCEED THE GUIDELINES ESTABLISHED FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
2. ALL PLANTING OPERATIONS SHALL ADHERE TO AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.
3. CONFIRM LOCATION OF ALL UTILITIES AND SUBSURFACE DRAIN LINES PRIOR TO PLANT INSTALLATION.
4. PLANT LOCATIONS AND BEDS SHALL BE LOCATED BY CONTRACTOR AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
5. LANDSCAPE CONTRACTOR SHALL RESTORE ALL LAWN AREAS DISTURBED DURING CONSTRUCTION.
6. INSTALL ALL PLANTS IN ACCORDANCE WITH PLANTING DETAILS.
7. PLANTING BEDS SHALL HAVE MINIMUM 3" DEEP SHREDDED HARDWOOD BARK MULCH. MULCH HEDGES IN A CONTINUOUS BED.
8. ALL NEW PLANTING BEDS TO BE TILLED AND BACKFILLED WITH TOPSOIL TO A MINIMUM DEPTH OF 12".
9. ALL PLANTING BEDS TO BE FERTILIZED WITH 10-10-10 OR APPROVED EQUAL.
10. CONTRACTOR TO DETERMINE PLANT LIST QUANTITIES FROM THE PLAN.
11. TURF AREAS ARE TO BE IRRIGATED. WATERING SHALL ONLY OCCUR BETWEEN THE HOURS OF 12AM AND 5 AM.
12. PRIOR TO RELEASE OF PERFORMANCE BOND, THE CITY OF ROCHESTER HILLS MUST INSPECT ALL LANDSCAPE PLANTING.
13. IF PROTECTED TREES ARE DAMAGED, A FINE SHALL BE ISSUED ON AN INCH-BY-INCH BASIS AT A MONETARY RATE AS DEFINED BY THE FORESTRY DEPARTMENT.
14. PRIOR APPROVAL IS REQUIRED TO PLANT ANY TREE OR SHRUB ON THE PUBLIC RIGHT-OF-WAY. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10' FROM THE EDGE OF THE PUBLIC ROAD. (TREES MUST BE PLANTED AT LEAST 15' AWAY FROM CURB OR ROAD EDGE WHERE THE SPEED LIMIT IS MORE THAN 35 MPH.) SHADE TREES AND SHRUBS MUST BE PLANTED AT LEAST 5' FROM THE EDGE OF THE PUBLIC WALKWAY. EVERGREEN AND ORNAMENTAL TREES MUST BE PLANTED AT LEAST 10' FROM THE EDGE OF THE PUBLIC WALKWAY. NO TREES OR SHRUBS MAY BE PLANTED WITHIN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY STREET RIGHT-OF-WAY LINES AT A DISTANCE ALONG EACH LINE OF 25' FROM THEIR POINT OF INTERSECTION. NO TREES OR SHRUBS MAY BE PLANTED IN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY DRIVEWAY WITH A PUBLIC WALKWAY AT A DISTANCE ALONG EACH LINE OF 15' FROM THEIR POINT OF INTERSECTION. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10' FROM ANY FIRE HYDRANT. SHADE AND EVERGREEN TREES MUST BE AT LEAST 15' AWAY FROM THE NEAREST OVERHEAD WIRE. TREES MUST BE PLANTED A MINIMUM OF 5' FROM AN UNDERGROUND UTILITY, UNLESS THE CITY'S LANDSCAPE ARCHITECT REQUIRES A GREATER DISTANCE, PRIOR TO THE RELEASE OF THE PERFORMANCE BOND, THE CITY OF ROCHESTER HILLS FORESTRY UNIT NEEDS TO INSPECT ALL TREES, EXISTING OR PLANTED, TO IDENTIFY ANY THAT POSE A HAZARD TO THE SAFE USE OF THE PUBLIC RIGHT-OF-WAY. FORESTRY MAY REQUIRE THE DEVELOPER TO REMOVE, AND POSSIBLY REPLACE, ANY SUCH TREES.

THE ABOVE REQUIREMENTS ARE INCORPORATED INTO THE PLAN

THE OWNER OF THE PROPERTY SHALL BE RESPONSIBLE FOR ALL MAINTENANCE OF SITE LANDSCAPING. AS FOLLOWS

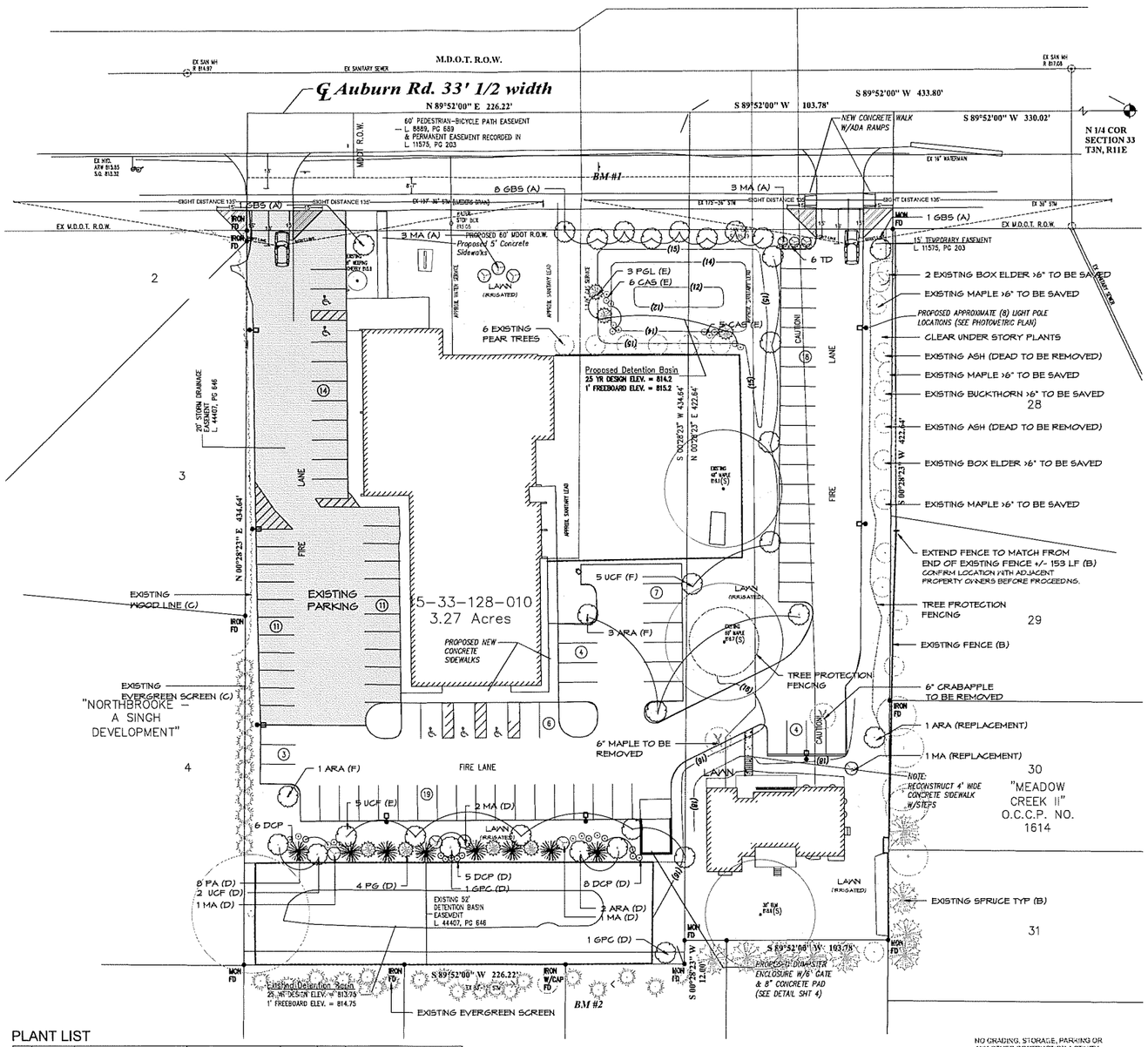
A. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.

B. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.

C. ALL DEAD, DAMAGED, OR DISEASED PLANT MATERIAL SHALL BE REMOVED IMMEDIATELY AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. FOR PURPOSES OF THIS SECTION, THE PLANTING SEASON FOR DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1 AND FROM OCTOBER 1 UNTIL THE PREPARED SOIL BECOMES FROZEN. THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1. PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE. THE CITY MAY NOTIFY PROPERTY OWNERS OF THE NEED TO REPLACE DEAD, DAMAGED, OR DISEASED MATERIAL.

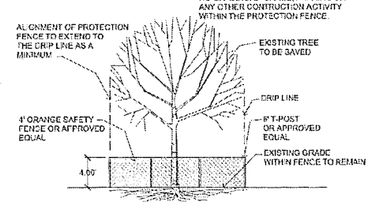
D. THE APPROVED LANDSCAPE PLAN SHALL BE CONSIDERED A PERMANENT RECORD AND INTEGRAL PART OF THE SITE PLAN APPROVAL UNLESS OTHERWISE APPROVED IN ACCORDANCE WITH THE AFOREMENTIONED PROCEDURES. ANY REVISIONS TO OR REMOVAL OF PLANT MATERIALS, OR NON-COMPLIANCE WITH THE MAINTENANCE REQUIREMENTS OF THIS SECTION 138-10.109 WILL PLACE THE PARCEL IN NON-CONFORMITY WITH THE APPROVED LANDSCAPE PLAN AND BE A VIOLATION OF THIS ORDINANCE.

	Requirement	Proposed	Staff Comments
(A)	Right of Way (Auburn) 330 LF 1 deciduous per 35 ft. + 1 ornamental per 60 ft.	10 Deciduous Trees 8 Ornamental Trees	
(B)	Buffer D (east) 423 LF 25 ft. or 8 ft. with wall + 2.5 deciduous per 100 ft. + 1.5 ornamental per 100 ft. + 5 evergreen per 100 ft. + 8 shrubs per 100 ft.	Extend privacy fence from existing. + 153 LF Existing Privacy fence & landscaping to remain	
(C)	Buffer D (west) 423 LF 25 ft. or 8 ft. with wall + 2.5 deciduous per 100 ft. + 1.5 ornamental per 100 ft. + 5 evergreen per 100 ft. + 8 shrubs per 100 ft.	Exting property line vegetation & screening to remain	
(D)	Buffer D (south) 226 LF 25 ft. or 8 ft. with wall + 2.5 deciduous per 100 ft. + 1.5 ornamental per 100 ft. + 5 evergreen per 100 ft. + 8 shrubs per 100 ft.	6 Deciduous Trees 4 Ornamental Trees 12 Evergreen Trees 19 Shrubs Southeast PL has screening on neighboring property	
(E)	Stormwater 265 ft 6 ft. width + 1.5 deciduous + 1 evergreen + 4 shrubs per 100 ft.	NORTH 265 lf: 4 Deciduous Trees, 4 Evergreen Trees, 11 Shrubs; SOUTH Existing Supplement south buffer w/5 Deciduous Trees	
(F)	Parking Lot: Interior New parking area (+/-27000sf.) 5% of parking lot + 1 deciduous per 150 sq. ft. landscape area	1350 sf landscape area required 1450 sf provided 9 Deciduous Trees	



PLANT LIST

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	COND.	REMARKS
		SHADE TREES				
8	ARA	Acer r. "Armstrong"	Armstrong Maple	2"	B&B	
12	GBS	Ginkgo b. "Princeton Sentry"	Princeton Sentry Ginkgo	2"	B&B	
11	UCF	Ulmus c 'Frontier'	Frontier Elm	2"	B&B	
		ORNAMENTAL TREES				
11	MA	Malus "Adirondack"	Adirondack Crabapple	2"	B&B	
		EVERGREEN TREES				
8	PA	Picea abbies	Norway Spruce	6-8'	B&B	
7	PGL	Picea glauca	White Spruce	6-8'	B&B	
		SHRUBS				
11	CAS	Cornus a sibirica	Red Twig Dogwood	30"	Cont.	
19	DCP	Deutzia g. "Chardonnay Pearls"	Chardonnay Pearls Deutzia	30"	Cont.	
6	TD	Taxus densiformis	Dense Yew	30"	B&B	



TREE PROTECTION DETAIL

BrightView
www.brightview.com

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

Detroit Chinese Alliance Church North

1591 W Auburn Rd,
Rochester Hills, Michigan

DATE
April 3, 2019

REVISIONS
May 3, 2019
May 30, 2019
July 26, 2019
August 26, 2019
September 16, 2019

NORTH

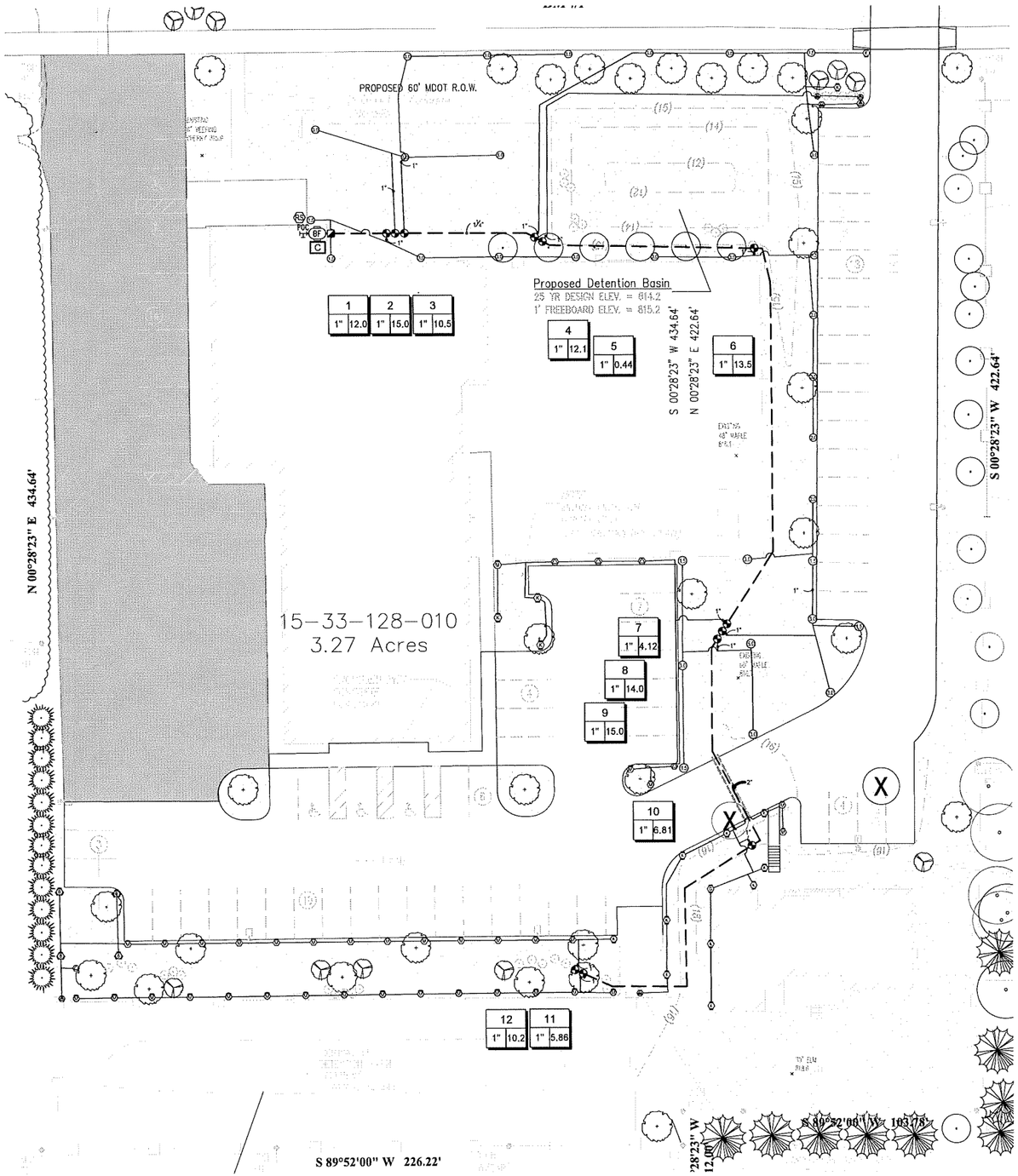
SCALE IN FEET
0 30 60

SHEET TITLE
Landscape Plan

STATE OF OHIO
RONALD L LINTAU
REGISTERED LANDSCAPE ARCHITECT

DESIGN
Ron Dickerson
ACCOUNT MANAGER
Dave Grosscup

SHEET NUMBER
L-1



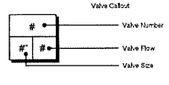
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL	QTY
LST RST SST	Hunter MP Strip PROS-04-PRS40-CV	9
	Hunter MP1000 PROS-04-PRS40-CV	18
	Hunter MP2000 PROS-04-PRS40-CV	16
	Hunter MP3000 PROS-04-PRS40-CV	4
LST RST SST	Hunter MP Strip PROS-12-PRS40-CV	2
	Hunter MP1000 PROS-12-PRS40-CV	15

SYMBOL	MANUFACTURER/MODEL	QTY
1.0	Hunter PGP-04	8
2.0	Hunter PGP-04	4
3.0	Hunter PGP-04	17
6.0	Hunter PGP-04	3

SYMBOL	MANUFACTURER/MODEL	QTY
	Hunter PGV-101G 1"	12
	Hunter HQ-5RC 1"	1
BF	Febco 765 1"	1
C	Hunter I2C-1600-PL	1
SYNC	Hunter Solar-Sync	1
POC 1"	POC 1"	1
	Irrigation Lateral Line: Polyethylene Pipe 100 PSI 1"	2,046 l.f.
	Irrigation Mainline: PVC Class 160 SDR 26 1 1/4"	487.9 l.f.
	Pipe Sleeve: PVC Class 160 SDR 26 2"	25.2 l.f.

Valve Callout



IRRIGATION SPECIFICATIONS

1. IRRIGATION SYSTEM DESIGN BASED ON 15 GPM AT 56 PSI.
2. IRRIGATION DESIGN IS FROM THE POINT OF CONNECTION(POC)ONLY. THE DESIGN IS BASED ON GALLONS PER MINUTE(GPM)AND POUNDS PER SQUARE INCH(PSI)FURNISHED BY OTHERS.
3. IRRIGATION CONTRACTOR IS TO VERIFY POINT OF CONNECTION IN THE FIELD. INSTALLER IS TO CONFIRM THE MINIMUM DISCHARGE REQUIREMENTS OF THE POINT OF CONNECTION AS INDICATED ON THE LEGEND PRIOR TO INSTALLATION.
4. THE PRESSURE REQUIREMENT AT THE POINT OF CONNECTION IS BASED ON NO MORE THAN 5 FEET OF ELEVATION CHANGE IN THE AREAS OF IRRIGATION.
5. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ACCORDING TO LOCAL BUILDING, ELECTRICAL, AND PLUMBING CODES.
6. IRRIGATION CONTRACTOR WILL ARRANGE INSPECTIONS REQUIRED BY LOCAL AGENCIES AND ORDINANCES DURING THE COURSE OF CONSTRUCTION AS REQUIRED. ALL WIRING TO BE PER LOCAL CODE. BACKFLOW PREVENTION TO BE PER LOCAL CODE.
7. LOCATION OF IRRIGATION COMPONENTS SHOWN ON DRAWING IS APPROXIMATE. ACTUAL PLACEMENT MAY VARY SLIGHTLY AS REQUIRED TO ACHIEVE FULL, EVEN COVERAGE.
8. ALL SPRINKLER HEADS SHALL BE INSTALLED PERPENDICULAR TO FINISH GRADES. EXCEPT AS OTHERWISE INDICATED.
9. INSTALL IRRIGATION MAINS WITH A MINIMUM 18" OF COVER BASED ON FINISH GRADES. INSTALL IRRIGATION LATERALS WITH MINIMUM 12" OF COVER BASED ON FINISH GRADES.
10. PIPE LOCATIONS ARE DIAGRAMMATIC. VALVES AND MAINLINE SHOWN IN PAVED AREAS ARE FOR GRAPHIC CLARITY ONLY.
11. THE IRRIGATION CONTRACTOR SHALL COMPLY WITH PIPE SIZES AS INDICATED.
12. ALL WIRE SPLICES OR CONNECTIONS SHALL BE MADE WITH APPROVED WATERPROOF WIRE CONNECTIONS AND BE IN A VALVE OR SPLICE BOX.
13. ALL CONTROL WIRING DOWNSTREAM OF THE CONTROLLER IS TO BE 14 AWG, UL APPROVED DIRECT BURY.
14. THE DESIGN IS BASED ON THE SITE INFORMATION AND/OR DRAWING SUPPLIED WITH THE DESIGN CRITERIA BEING SET(AREA TO BE IRRIGATED, EQUIPMENT MANUFACTURER AND MODEL TO BE USED, WATER SOURCE INFORMATION, ELECTRICAL POWER AVAILABILITY, ETC...). SITEONE LANDSCAPE SUPPLY BEARS NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS IN DESIGN OR INSTALLATION THAT ARISE DUE TO INACCURACIES IN THE ABOVE REFERENCED INFORMATION SUPPLIED TO SITEONE LANDSCAPE SUPPLY LANDSCAPES IN RELATION TO THIS PROJECT, UNLESS OTHERWISE NOTED.

BrightView
www.brightview.com

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

SiteOne
Project Services
1-800-347-4272
http://www.projectservices.siteone.com

650 Stephenson Highway
Troy, Michigan 48083
Phone 248.588.2100
Fax 248.588.3528
www.Siteone.com
800.347.4272
Project Services Number: 183678

DETROIT CHINESE ALLIANCE CHURCH NORTH
ROCHESTER HILLS, MI, 48308

Design Date: 04/08/19
Revision Date: 05/31/19
Drawn By: SW
Checked By: C. GRAHAM

Detroit Chinese Alliance Church North

1591 W. Auburn Rd,

Rochester Hills, MI

DATE
April 3, 2019

REVISIONS
May 21, 2019

NORTH

SCALE: 1" = 20' - 0"
0' 10' 20' 40'

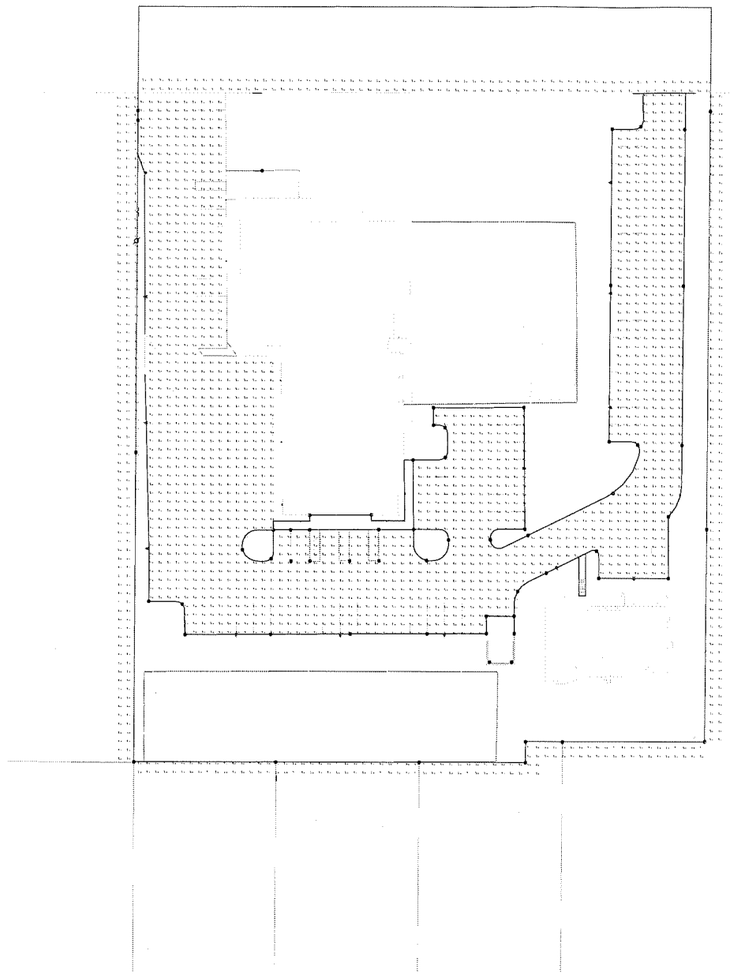
Irrigation Plan

Designer
Ron Dickerson
Account Manager
Josh Hambrick

IR-1

Luminaire Schedule						
Symbol	Qty	Model Number	Arrangement	Lumens	LLF	Description
	13	ALED3T50 - Cool - ITL80298	SINGLE	4846	1.000	50 Watt LED Area Light w/ 5000K Color Temp. (15' Mounting Height)
	9	SLIM18 - Cool - RAB04258MOD50	SINGLE	2566	1.000	18 Watt LED Wall Pack w/ 5000K Color Temp. (10' Mounting Height)

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
East Boundary	Illuminance	Fc	0.05	0.3	0.0	N.A.	N.A.
North Boundary	Illuminance	Fc	0.03	0.2	0.0	N.A.	N.A.
Parking Lot	Illuminance	Fc	1.55	9.7	0.1	15.50	97.00
South Boundary	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
West Boundary	Illuminance	Fc	0.11	0.5	0.0	N.A.	N.A.



LED

PROJECT: Detroit Chinese Alliance Church North
LOCATION: 1591 W Auburn Rd., Rochester Hills, MI 48309
CONTACT: Evan Estes
DATE: 3/19/19

FOR PURCHASING INFORMATION OF APPROVED EQUIPMENT SPECIFIED ON THIS PLAN CONTACT:

Evan Estes
LED Spot
4912 BLOSSOM ST
Houston, TX 77007
Voice Number : 713-867-6817
Fax Number : 713-979-1429
Email Address : evan@ledspot.com