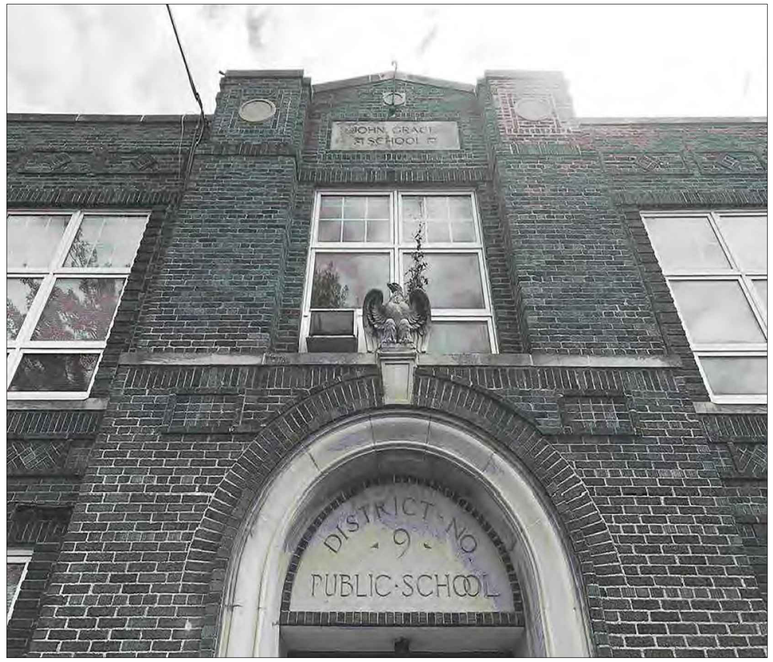
JOHN GRACE ARMS

21030 INDIAN ST.
SOUTHFIELD, MI 48033



DEVELOPED BY

JOHN GRACE ARMS LDHA LLC

LOCATION MAP (NTS)



PROJECT TEAM:

ARCHITECT:

SDG ASSOCIATES, LLC

607 SHELBY STREET
SUITE 704
DETROIT, MI 48226
PH: 313.961.9000
FAX: 313.964.3233

CIVIL ENGINEERS:

SPALDING DEDECKER ENGINEERS

905 SOUTH BOULEVARD EAST
ROCHESTER HILLS, MICHIGAN 48307
PH: 800-598-1600
INFO@SDA-ENG.COM

STRUCTURAL ENGINEERS:

IMEG

33533 W. TWELVE MILE
SUITE 200
FARMINGTON HILLS, MI 48331
PH: 248-344-2800
FAX: 248-344-1650

M.E.P. ENGINEERS:

A&A ENGINEERING & CONSULTING

28862 VISTA WAY
SOUTH LYON, MICHIGAN 48178
PH: 419-303-8503
SHENNARD@AAENGINEERCO.COM

PRESERVATION CONSULTANT:

KIDORF PRESERVATION CONSULTING

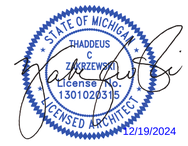
451 E. FERRY STREET
DETROIT, MICHIGAN 48202
PH: 313-300-9376
KRISTINE@KIDORFPRESERVATIONCONSULTING.COM

John Grace Arms
21030 Indian St, Southfield MI 48033
Developed by
John Grace Arms LDHA LLC

SDG
Architects + Planners
607 Shelby Street
Suite 704
Detroit, MI 48226
Tel: 313-961-9000
Fax:313-964-3233

REGISTRATION SEAL

KEY PLANS



SHEET TITLE

TITLE SHEET

SCALE:

ISSUED FOR	DATE
Review	03.28.2024
Permits	04.12.2024
For Permit	10.25.2024
Bulletin No. 1 (1)	02.19.2025
Bulletin No. 2 (2)	03.05.2025
Bulletin No. 3 (3)	05.21.2025
Bulletin No. 4 (4)	07.01.2025

EBH
DRAWN BY

TZ
CHECKED

JA
APPROVED

21026.00
FILE NO.

COVER
SHEET NO.

JOHN GRACE ARMS

21030 INDIAN STREET
SOUTHFIELD, MI

DEVELOPMENT TEAM

CIVIL ENGINEER
SPALDING DeDECKER
905 SOUTH BOULEVARD EAST
ROCHESTER HILLS, MICHIGAN 48307
PHONE (248) 844-5400

ARCHITECT
SDG ASSOCIATES
607 SHELBY, SUITE 704
DETROIT, MI 48226
JOHN ABELA
313-961-9000

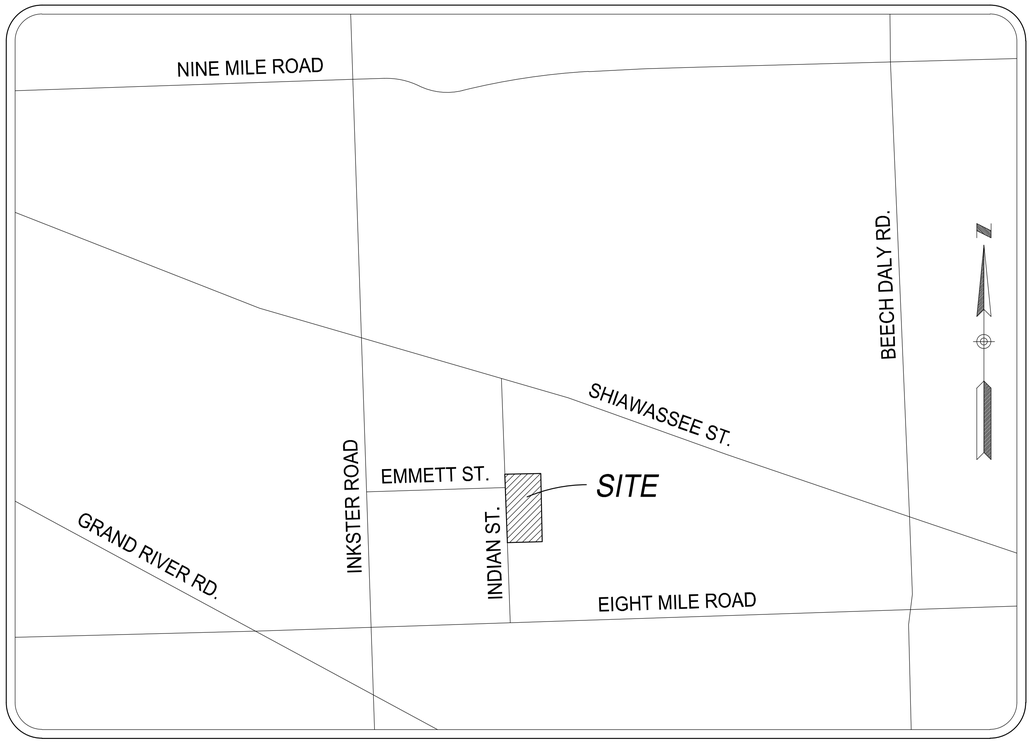
LANDSCAPE ARCHITECT
ECO LANDSCAPE & DESIGN, LLC.
ROBERT O'REILLY, R.L.A.
734-276-8446

OWNER
SOUTHFIELD NEIGHBORHOOD REVITALIZATION INITIATIVE, LLC.
19785 WEST 12 MILE ROAD, SUITE 404
SOUTHFIELD, MI 48076
CONTACT
PHONE 833-373-2313

(60) units total (42 addition)
(7) ADA
(5) 2BR
(55) 1BR

Characteristic	Existing Conditions	Proposed Conditions
Total Development Area (ac)	3.99 Acres	3.99 Acres
Impervious Area (ac)	2.31 Acres	2.35 Acres
Total Pervious Area (ac)	1.68 Acres	1.64 Acres
Pervious Area Breakdown by Cover Type		
Pervious Area Land Use Data		
Meadow/fallow/natural areas (non-cultivated)	0.00 Acres	0.00 Acres
Predominant NRCS Soil Type (A, B, C, or D)	A	A
Improved areas (turf grass, landscape, row crops)	1.68 Acres	1.64 Acres
Predominant NRCS Soil Type (A, B, C, or D)	A	A
Wooded Areas	0.00 Acres	0.00 Acres
Predominant NRCS Soil Type (A, B, C, or D)	A	A
Proposed Pond Area (acres)		
CPVC Volume ***Calculated*** (cubic feet)	12,869 CU FT	
CPVC Volume ***Provided*** (cubic feet)	54,568 CU FT	
CPRC Volume ***Calculated*** (cubic feet)	18,809 CU FT	
CPRC Volume ***Provided*** (cubic feet)	18,809 CU FT	

The Professional Engineer who signs and seals this site plan certifies that the values in this table reflect the WRC stormwater calculations required for this development and that geotechnical investigations were performed that provide conclusive documentation that demonstrates whether infiltration (i.e., CPVC Volume Control) is practicable.



LOCATION MAP
NTS

SITE DATA

CURRENT ZONING ..... R-1, RUDD
SITE AREA ..... ±4.62 ACRES

SURROUNDING PROPERTY ZONING:
SOUTH – R-1
NORTH – R-1
EAST – R-1
WEST – R-1

BUILDING & SETBACKS REQUIREMENTS

	REQUIRED	PROPOSED
FRONT	*20'*	*70.1' (EXISTING)*
REAR	**RUDD*	*42.7'*
SIDE (1)	**RUDD*	*TBD*
SIDE (2)	**RUDD*	*23' (EXISTING)*

LOT COVERAGE CALCULATION
MAXIMUM LOT COVERAGE = 75%
*PROVIDED LOT COVERAGE = 57%**
**LOT COVERAGE CALCULATION DOES NOT INCLUDE PROPOSED PARK AREA.*

PARKING CALCULATION
PARKING REQUIRED = 32 SPACES
*CALCULATION: (.5 SPACES/UNIT * 60 UNITS) + 1 SPACE/2 EMPLOYEES*

PARKING PROVIDED = 45 SPACES
LANDBANKED PARKING = 17 SPACES

STREET PARKING (PARALLEL) PROVIDED = 18 SPACES

ACCESSIBLE PARKING CALCULATION

	PROPOSED	REQUIRED	FORMULA
TOTAL	*8 SPACES*	*3 SPACES*	*51-75 TOTAL SPACES PROVIDED*
VAN	*4 SPACES*	*2 SPACES*	*1/6 ACCESSIBLE SPACES*

BUILDING INFORMATION
REFER TO ARCHITECTURAL FLOOR PLAN AND ELEVATIONS FOR BUILDING DETAILS.

GOVERNING AGENCIES

PLANNING
CITY OF SOUTHFIELD PLANNING DEPARTMENT
26000 EVERGREEN ROAD
SOUTHFIELD, MI 48076
CONTACT JEFFREY SPENCE
PHONE 248-796-4150

LANDSCAPE
CITY OF SOUTHFIELD
26000 EVERGREEN ROAD
SOUTHFIELD, MI 48076
CONTACT NOREEN LUSK
PHONE 248-796-4156

ENGINEERING
CITY OF SOUTHFIELD ENGINEERING DEPARTMENT
26000 EVERGREEN ROAD
SOUTHFIELD, MI 48076
CONTACT LEIGH SCHULTZ
PHONE 248-796-4812

FIRE DEPT.
CITY OF SOUTHFIELD FIRE DEPARTMENT
26000 EVERGREEN ROAD
SOUTHFIELD, MI 48076
CONTACT MIKE ALBO
PHONE 248-796-5706

LEGAL DESCRIPTION

ATA NATIONAL TITLE GROUP, LLC
COMMITMENT DATE: AUGUST 11, 2021
TAX PARCEL ID: 24-31-376-033
ADDRESS: 21030 INDIAN ST.

THE LAND REFERRED TO THIS TITLE COMMITMENT IS SITUATED IN THE CITY OF SOUTHFIELD, OAKLAND COUNTY, STATE OF MICHIGAN, AS FOLLOWS:

LOT 7, 9 AND THE NORTH 140 FEET OF LOT 11, THOMAS HITCHMAN'S SUBDIVISION, AS RECORDED IN LIBER 10, PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS.

WETLANDS

THERE ARE NO EXISTING WETLANDS ON-SITE.

FLOODPLAIN NOTE

PER THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD MAP (MAP NO. 26125C0658F, DATED SEPTEMBER 29, 2006), THE SITE LIES WITHIN ZONE X WHICH ARE AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

PERMIT MATRIX

TYPE	ISSUED BY	STATUS
SITE PLAN	CITY OF SOUTHFIELD	APPROVED
ENGINEERING	CITY OF SOUTHFIELD	APPROVED
SESC	CITY OF SOUTHFIELD	APPROVED
WATER SUPPLY	EGLE	APPROVED

CIVIL SHEET INDEX	
Sheet Number	Sheet Title
C1.0	Cover
C2.1	Demolition Plan
C3.1	Utility Plan
C3.2	Storm Profiles
C3.3	Watermain Profiles
C4.1	Drainage Area Map
C4.2	Detention Calculations
C4.3	Operations & Maintenance Plan
C5.1	Paving Plan
C5.2	Paving Details
C6.1	Grading Plan
C6.2	Detailed Grading
C7.1	Right-of-Way Parking Plan
C8.1	SESC Plan
L1.1	Landscape Plan
L1.2	Landscape Details

ATTACHED PLANS

TOPOGRAPHICAL SURVEY BY SDA (3 SHEETS)
CITY OF SOUTHFIELD WATERMAIN DETAILS (4 SHEETS)
OCWRC SANITARY SEWER DETAILS AND NOTES (2 SHEETS)
OCWRC STORM DRAIN NOTES AND DETAILS (1 SHEET)
OCWRC SESC DETAILS (1 SHEET)

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Fax (313) 305-9121

27333 Meadowbrook Rd., Suite 210
Novi, MI 48377
Phone (248) 844-6274

400 Ann St. NW, Suite 204
Grand Rapids, MI 49504
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SOUTHFIELD, MI 48037-2055

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

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JOHN GRACE ARMS

CONSTRUCTION PLANS
Cover

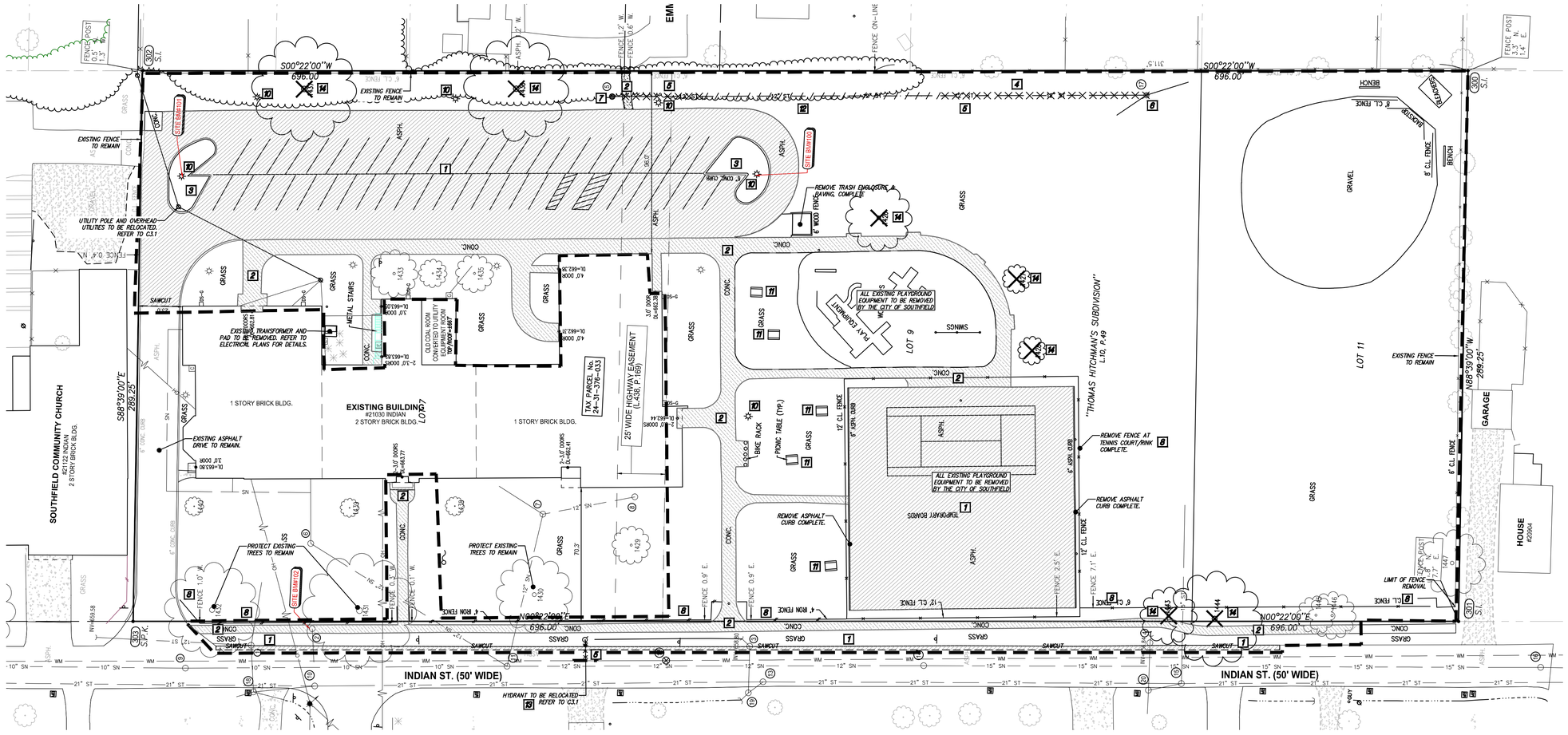
SECTION 31
TOWN 01N **RANGE** 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
1	03-04-2024	OWNER REVIEW
2	03-22-2024	PAGE TURN
3	03-29-2024	REV. OWNER REVIEW
4	10-25-2024	PERMIT
5	12-13-2024	HUD SUBMISSION
6	12-20-2024	PERMIT
7	02-19-2025	⚠1 BULLETIN NO. 1
8	03-07-2025	⚠2 BULLETIN NO. 2
9	11-19-2025	CITY ENG. REV.
10	12-12-2025	CITY ENG. APPROVED
11	03-02-2026	EGLE ENG. REV.
11	04-13-2026	CITY ENG. REV.

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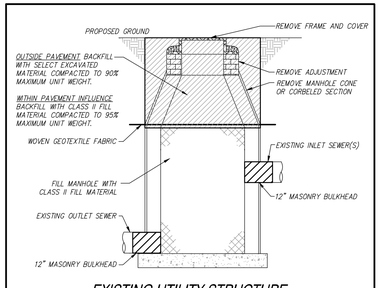
DRAFTER -	DATE -
DESIGNER J. CHRISTOPHER	DATE 24-01-26
CHECKED J. CHRISTOPHER	DATE 24-01-26
PROJECT MANAGER T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL -	DATE
JOB NO. NP22006	DRAWING NO. NP2006PAV
SCALE:	SHEET NO. C1.0

Plotted: Apr 13, 2026, 12:33 PM by user: lll1 - Saved: 12/13/2025 by user: lll1
N:\NPNLD Projects\NP22006 - Grace School - Senior Housing\DWG\NP22006CVR.dwg



SURVEY NOTES

1. TOPOGRAPHIC AND/OR BOUNDARY SURVEY, INCLUDING PROPERTY LINES, LEGAL DESCRIPTION, EXISTING UTILITIES, SITE TOPOGRAPHY WITH SPOT ELEVATIONS, OUTSTANDING PHYSICAL FEATURES AND EXISTING STRUCTURE LOCATIONS MAY BE BASED ON RECORD DATA NOT MEASURED IN THE FIELD.
2. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL INFORMATION SHOWN ON THIS SURVEY AND NOTIFYING THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
3. CONTRACTOR SHALL UTILIZE A PRIVATE UTILITY LOCATOR TO STAKE PUBLIC AND PRIVATE UTILITY LOCATIONS PRIOR TO START OF CONSTRUCTION. IT IS THE CONTRACTORS RESPONSIBILITY, AT NO COST TO THE PROJECT, TO REPAIR OR REPLACE ANY DAMAGE CAUSED TO EXISTING UTILITIES.
4. CONTRACTOR SHALL CONTACT MISS DIG (811) THREE WORKING DAYS PRIOR TO THE START OF CONSTRUCTION FOR STAKING OF UTILITIES.



EXISTING UTILITY STRUCTURE ABANDONMENT DETAIL

NO SCALE

DEMOLITION NOTES

1. REMOVE ASPHALT PAVEMENT TO FULL DEPTH, INCLUDING AGGREGATE BASE. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. REMOVAL LIMITS TO BE FIELD VERIFIED BY ENGINEER.
2. REMOVE CONCRETE PAVEMENT TO FULL DEPTH, INCLUDING AGGREGATE BASE. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. REMOVAL LIMITS TO BE FIELD VERIFIED BY ENGINEER.
3. REMOVE CONCRETE CURB TO FULL DEPTH. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW CONCRETE CURB WILL BE PLACED ADJACENT TO EXISTING CONCRETE CURB. REMOVAL LIMITS TO BE FIELD VERIFIED BY ENGINEER.
4. CLEAR AND GRUB TO THE LIMITS SHOWN. INCLUDE REMOVAL OF ALL SIGNS, POSTS, FOOTINGS, GRAVEL, BRUSH, SHRUBS, GRASS, AND TREES NOT INDICATED FOR PROTECTION, INCLUDING ROOTS. STRIP TOPSOIL AND STOCKPILE ON SITE IN DESIGNATED LOCATION.
5. REMOVE EXISTING UTILITY PIPE. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. INSTALL WATERTIGHT BULKHEADS AT STRUCTURES WHERE EXISTING PIPE IS TO BE REMOVED.
6. REMOVE EXISTING UTILITY STRUCTURE COMPLETE. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY.
7. ABANDON EXISTING UTILITY STRUCTURE. REFER TO DETAIL ON THIS SHEET.
8. REMOVE AND SALVAGE EXISTING FENCE, INCLUDING ANY GATES.
9. REMOVE AND SALVAGE EXISTING FLAG POLE TO BE TURNED OVER TO OWNER. REMOVE AND DISPOSE EXISTING FOOTING.
10. REMOVE AND SALVAGE EXISTING LIGHT POST TO BE TURNED OVER TO OWNER. REMOVE AND DISPOSE OF EXISTING FOOTING.
11. REMOVE AND SALVAGE EXISTING PICNIC TABLE TO BE TURNED OVER TO THE OWNER.
12. ABANDON EXISTING UTILITY PIPE IN PLACE (CONTRACTOR TO CONFIRM NO CONFLICTS). CUT AND INSTALL WATERTIGHT CAP AT EXISTING PIPE AND INSTALL BULKHEAD AT STRUCTURES WHERE PIPE IS TO BE ABANDONED IN PLACE. FILL WITH FLOWABLE GROUT.
13. CUT AND CAP EXISTING HYDRANT LEAD AT THE EXISTING WATER MAIN. REMOVE EXISTING HYDRANT, VALVE, AND ASSOCIATED APPURTENANCES. CAP ABANDONED CONNECTION WATERTIGHT. REFER TO C3.1 FOR NEW HYDRANT LOCATION.
14. REMOVE EXISTING TREE, INCLUDE STUMP AND ROOTS.

UNLESS OTHERWISE SPECIFIED, PROTECT EXISTING UTILITIES AND UTILITY STRUCTURES TO REMAIN.

EXISTING SIGNAGE AND MAILBOXES WITHIN THE CLEARING LIMITS ARE TO BE REMOVED AND SALVAGED. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER.

ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS II FILL MATERIAL, IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BID. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

EXISTING SUPPORTED SLABS AT BUILDING ENTRY/DOORS TO REMAIN, UNLESS OTHERWISE DIRECTED. CONTRACTOR TO VERIFY LIMITS OF EXISTING SUPPORTED SLAB AND REMOVE ADJACENT WALKS AS SHOWN ON PLANS.

CONTRACTOR TO PROTECT EXISTING WALKS, PAVEMENT, CURBS, GUTTERS, WALLS, FENCES, GATES, LANDSCAPING AND TREES TO REMAIN DURING CONSTRUCTION.

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CONSTRUCTION PLANS
Demolition Plan

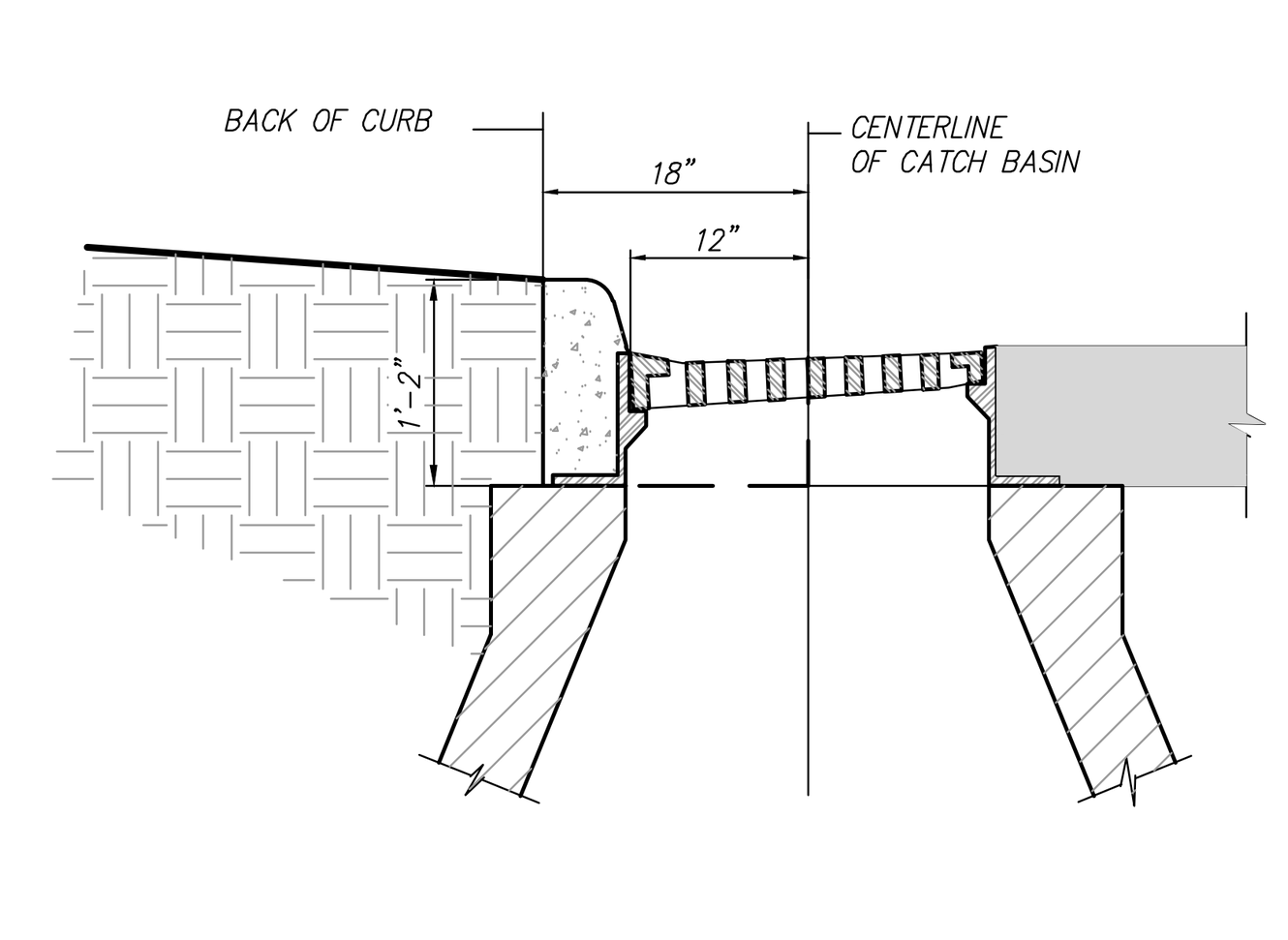
SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
11	04-13-2026	CITY ENG. REV.
12	06-23-2026	RFI 121
13	07-02-2026	RFI 115
14	11-02-2026	RFI 161

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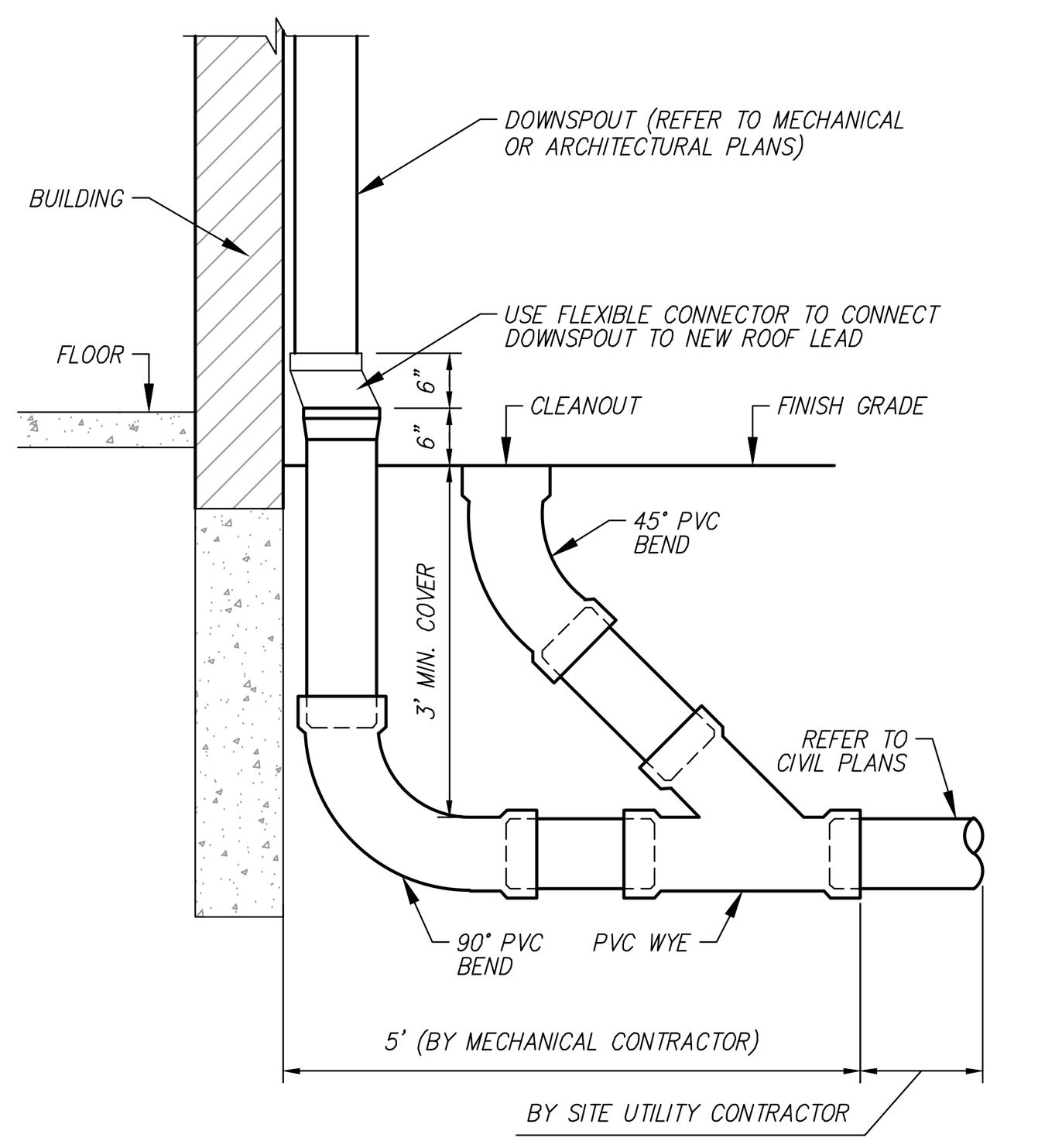
DRAFTER: -	DATE: -
DESIGNER: J. CHRISTOPHER	DATE: 24-01-26
CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL: -	DATE
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: 1" = 30'	SHEET NO.: C2.1

Plotted: Nov 2, 2026, 7:54 AM by user: 1111 - Saved: 11/2/2026 by user: 1111
N:\NP\NLD Projects\NP22006 - Grace School - Senior Housing\DWG\NP22006DEM.dwg



CURB DRAINAGE STRUCTURE LOCATION

NO SCALE

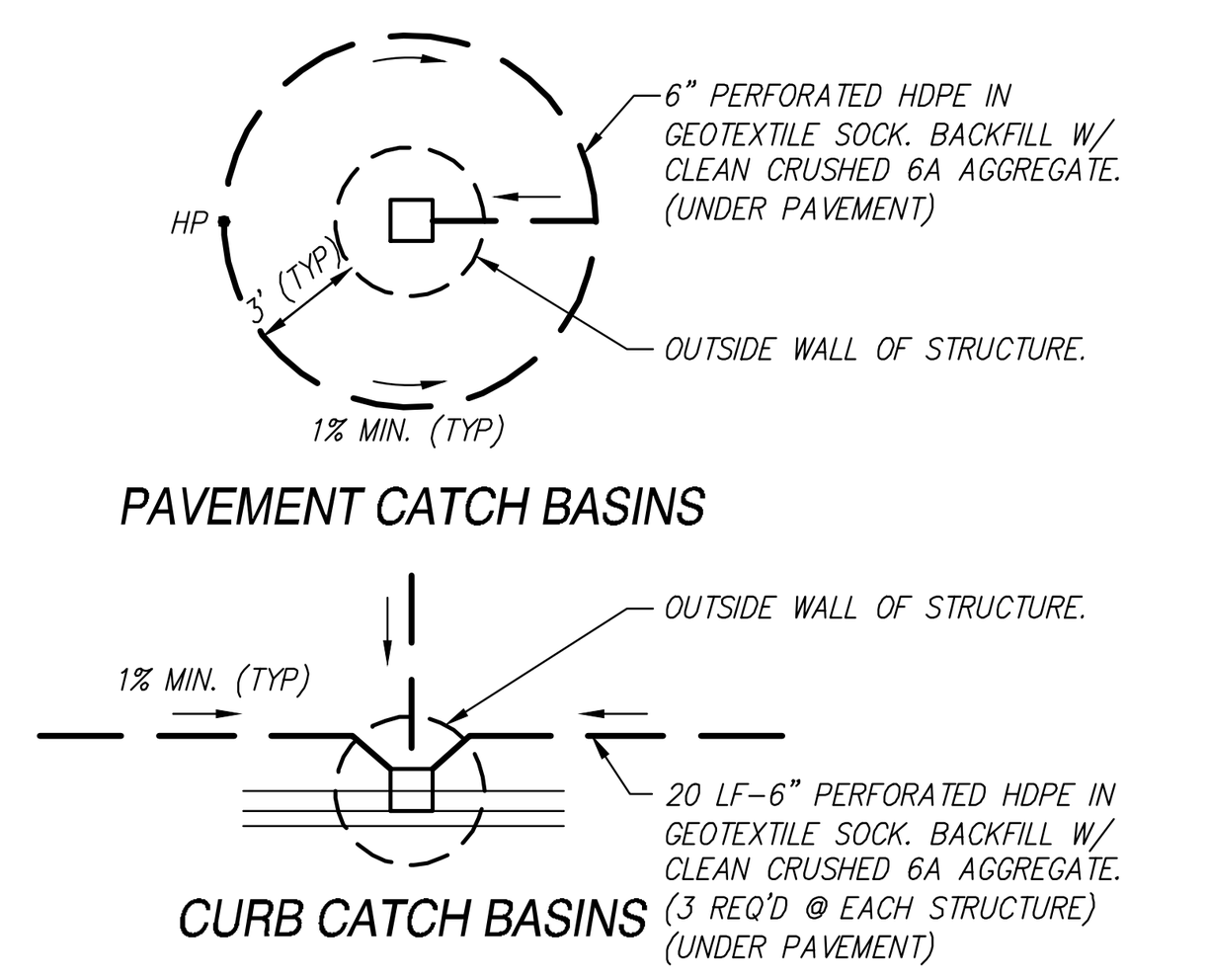


NOTES:

1. ALL DOWNSPOUT LEADS TO BE AT 1.00% (UNLESS NOTED OTHERWISE)
2. EXTEND ALL DOWNSPOUTS LEADS TO 12" ABOVE GRADE & STUB FOR DOWNSPOUT CONNECTION (CONFIRM EXACT LOCATION WITH ARCHITECTURE PLANS)
3. ALL INVERT ELEVATIONS SHOWN FOR BUILDING ROOF LEADS ARE AT 5' FROM THE LOCATION OF THE DOWNSPOUT. THE SITE CONTRACTOR IS REQUIRED TO EXTEND THE LEADS TO THE DOWNSPOUT LOCATION AND STUB THE LEAD AT 12" ABOVE PROPOSED GROUND. THE MECHANICAL CONTRACTOR WILL MAKE THE FINAL CONNECTION WITH THE APPROPRIATE FITTINGS. COORDINATE EXACT DOWNSPOUT LOCATION WITH ARCHITECTURE PLANS.
4. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTING PROPOSED UTILITIES. CONTRACTOR TO NOTIFY ENGINEER IMMEDIATELY OF ANY CONFLICTS.

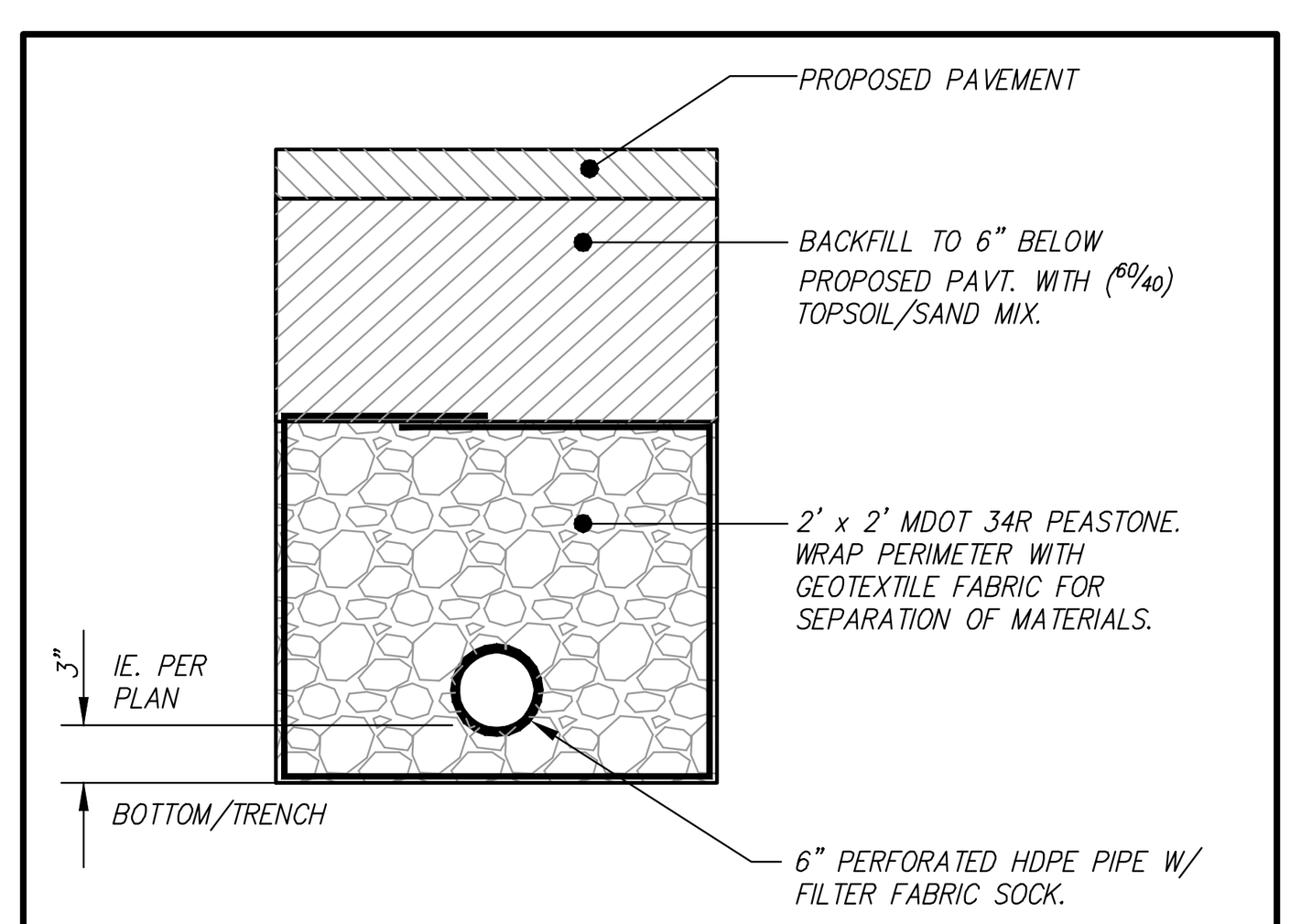
TYPICAL ROOF CONDUCTOR CONNECTION

NOT TO SCALE



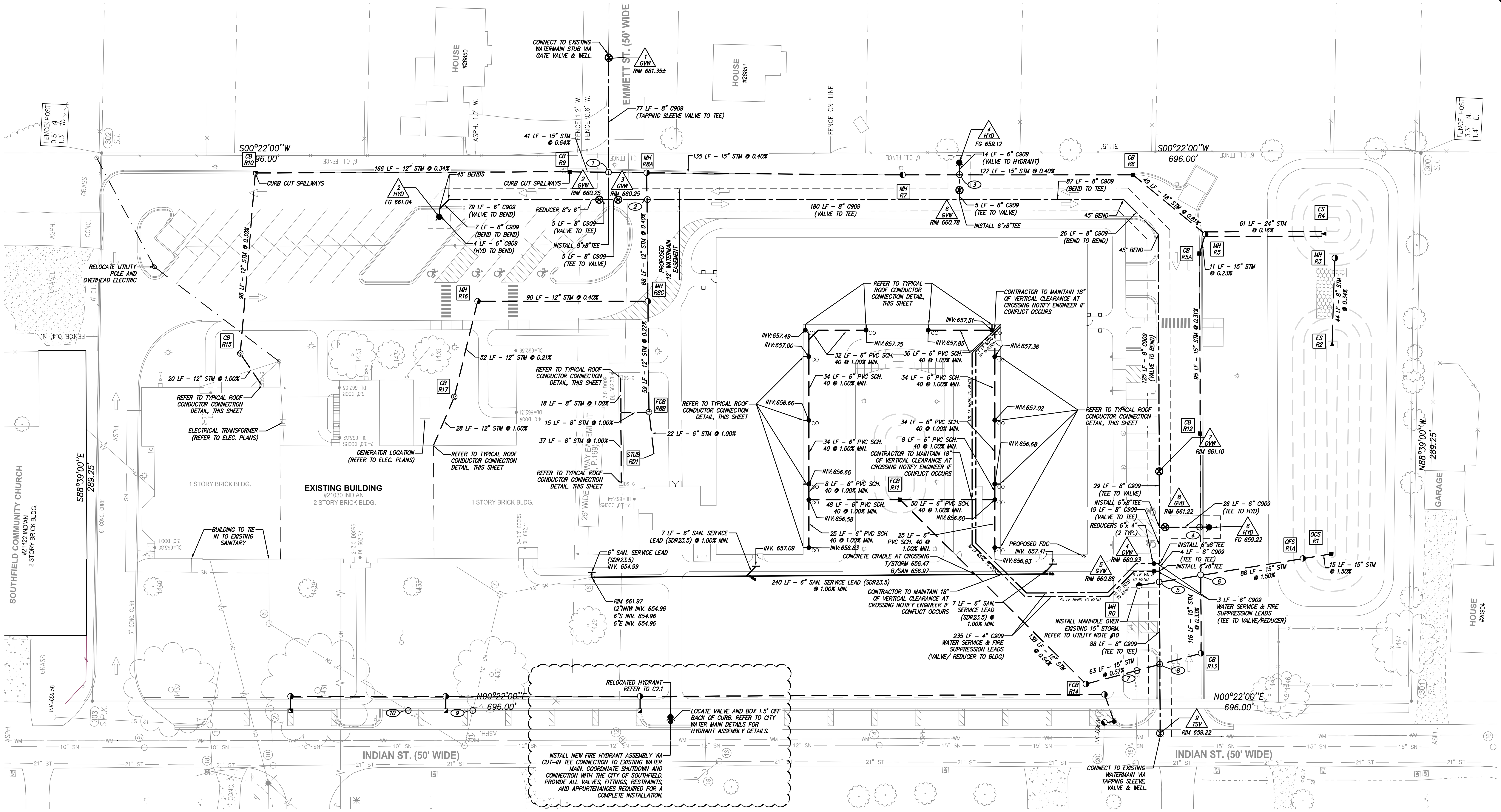
STRUCTURE UNDERDRAIN DETAIL

NO SCALE



EDGE DRAIN DETAIL

NO SCALE



STORM STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
R0	MH	660.86	15"	S	650.00'	In
R1	OCS	655.64	15"	N	651.54'	Out
R1A	OFS	655.64	15" 15"	S N	651.31' 651.31'	In Out
R2	ES	654.52	8"	E	652.85'	In
R3	MH	654.19	8"	W	653.00'	Out
R4	ES	654.52	24"	N	653.00'	In
R5	MH	660.75	18" 15" 24"	NE W S	653.50' 653.78' 653.10'	In In Out
R5A	CB	660.40	15" 15"	W E	653.90' 653.80'	In Out
R6	CB	660.10	15" 18"	N SW	653.90' 653.80'	In Out
R7	MH	660.10	15" 15"	S N	654.39' 654.42'	Out In
R8A	MH	659.23	15" 15" 12"	N S W	654.96' 654.96' 655.16'	In Out In
R8B	CB	661.85	6" 12" 8"	W E N	655.66' 655.56' 655.66'	In Out In
R8C	MH	661.02	12" 12" 12"	W E N	655.43' 655.43' 655.43'	In Out In
R9	CB	660.15	12" 15"	N S	655.32' 655.22'	In Out
R10	CB	659.31	12" 12"	S W	655.88' 655.98'	Out In
R11	FCB	659.50	12" 6" 6"	SW N S	656.00' 656.10' 656.10'	Out In In
R12	CB	660.10	15" 15"	E W	654.20' 654.30'	Out In
R13	CB	659.45	15" 15"	E N	654.69' 654.79'	Out In
R14	FCB	658.96	15" 12"	S NE	655.15' 655.25'	Out In
R15	CB	662.16	12" 12"	SW E	656.36' 656.26'	In Out
R16	MH	661.28	12" 12"	W S	655.79' 655.79'	In Out
R17	CB	662.45	12" 12"	W E	656.00' 655.90'	In Out

CITY OF SOUTHFIELD STANDARD NOTES

1. NOTIFY THE CITY OF SOUTHFIELD ENGINEERING DIVISION (248) 796-4810 A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.
2. ALL CONSTRUCTION MUST CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF SOUTHFIELD.
3. UTILITIES MUST BE LOCATED UNDERGROUND.
4. CALL MISS DIG (1-800-482-7171 / 811) A MINIMUM OF SEVENTY-TWO (72) HOURS PRIOR TO THE START OF CONSTRUCTION.
5. ALL SOIL EROSION AND SILT MUST BE CONTROLLED AND CONTAINED ON-SITE.
6. ALL EXCAVATION UNDER OR WITHIN THREE FEET (3') OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (CLASS II MDOT).
7. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
8. PRIOR TO THE ISSUANCE OF AN OCCUPANCY PERMIT, ENGINEERING SITE INSPECTION IS REQUIRED.

UTILITY NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF SOUTHFIELD.
2. STORM SEWER 12" AND LARGER SHALL BE C76 CL IV (PREM.JT.) UNLESS OTHERWISE NOTED ON THE PLAN.
3. STORM SEWER 6" AND SMALLER SHALL BE PVC SDR 23.5. STORM SEWER GREATER THAN 6" THROUGH 10" SHALL BE PVC SDR 26.
4. ALL UTILITY TRENCHES THAT FALL WITHIN A 1-ON-1 INFLUENCE OF PAVEMENT AREAS SHALL BE BACKFILLED WITH CLASS 2 SAND AND COMPACTED TO 95% OF MAXIMUM DENSITY.
5. ALL UTILITIES SHALL BE INSTALLED ON CLASS "B" BEDDING OR BETTER.
6. ALL UTILITIES SHALL BE PLACED AT LEAST 10' FROM OTHER UTILITIES, SIGNIFICANT TREES, AND FIXED STRUCTURES.
7. UNLESS OTHERWISE NOTED, ALL STORM SEWER STRUCTURES SHALL BE 4' DIAMETER (INLETS SHALL BE 2' DIAMETER). CONTRACTOR IS RESPONSIBLE FOR VERIFYING STRUCTURES SIZES IN RELATION TO PIPE SIZES AND ANGLES AND PRICING THEIR BID ACCORDINGLY. UNLESS OTHERWISE INDICATED ON THE STANDARD DETAIL SHEETS CASTINGS SHALL BE:
   PVMT. CATCH BASINS – EJIW 5105 – "M1" (FRAMES WITH CURB BOXES WILL NOT BE ALLOWED)
   YARD CATCH BASINS – EJIW 1040 – "02"
   MANHOLES – EJIW 1040 – "A"
8. PLACEMENT OF EDGE DRAINS AND FINGER DRAINS AT ALL PAVEMENT CATCH BASINS IS REQUIRED. SEE STRUCTURE UNDERDRAIN DETAIL SHEET C4.3.
9. FOR CURB CATCH BASINS, SEE BASIN LOCATION DETAIL FOR BASIN STAKING RELATIVE TO THE CURB.
10. CONTRACTOR TO VERIFY CONDITION OF EXISTING PIPE AND REPLACE IF NECESSARY. PASSAGE OF EXISTING UPSTREAM FLOW TO BE MAINTAINED.
11. ALL DUCTILE IRON PIPES AND FITTINGS MUST BE WRAPPED IN POLYETHYLENE.
12. NO ROOF DRAINS (EXISTING OR PROPOSED) MAY BE CONNECTED TO THE SANITARY SYSTEM. CONTRACTOR TO CONFIRM CONNECTION POINT OF EXISTING ROOF DRAINS AND RE-ROUTE IF NECESSARY.

LEGEND

Symbol	Description	Symbol	Description
(line)	PROPOSED WATERMAIN	(symbol)	PROPOSED SAN MANHOLE (SAN)
(line)	PROPOSED SANITARY	(symbol)	PROPOSED STORM MANHOLE (MH)
(line)	PROPOSED STORM SEWER	(symbol)	PROPOSED CATCH BASIN (CB)
(line)	PROPOSED GAS MAIN	(symbol)	PROPOSED INLET (INL)
(line)	PROPOSED ELECTRIC	(symbol)	PROPOSED END SECTION (ES)
(symbol)	PROPOSED HYDRANT	(symbol)	PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
(symbol)	PROPOSED GATE VALVE & WELL (GVW)	②	UTILITY CROSSING (SEE DATA TABLE)
(symbol)	PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)	STORM SEWER STRUCTURE: CB 2	STRUCT. TYPE / STRUCT. NO.
(hatch)	STANDARD BITUMINOUS PAVEMENT	SANITARY SEWER STRUCTURE	(20)
(hatch)	HEAVY-DUTY BITUMINOUS PAVEMENT	WATERMAIN STRUCTURE: 10 XXX	STRUCT. NO. / STRUCT. TYPE
(hatch)	DEEP-STRENGTH BITUMINOUS PAVEMENT		
(hatch)	CONCRETE PAVEMENT		
(hatch)	CONCRETE SIDEWALK		
(hatch)	MILL PAVEMENT		

PUBLIC WATERMAIN QUANTITY TABLE

8" C909 PVC	640 LF
6" C909 PVC	246 LF
8" 45 DEG. BENDS	4 EA
8"x8"x6" TEE	4 EA
8"x8"x8" TEE	1 EA
8" GATE VALVE	5 EA
6" GATE VALVE	2 EA
HYDRANT ASSEMBLY	3 EA
REDUCERS 6"x4"	2 EA
REDUCERS 8"X6"	1 EA

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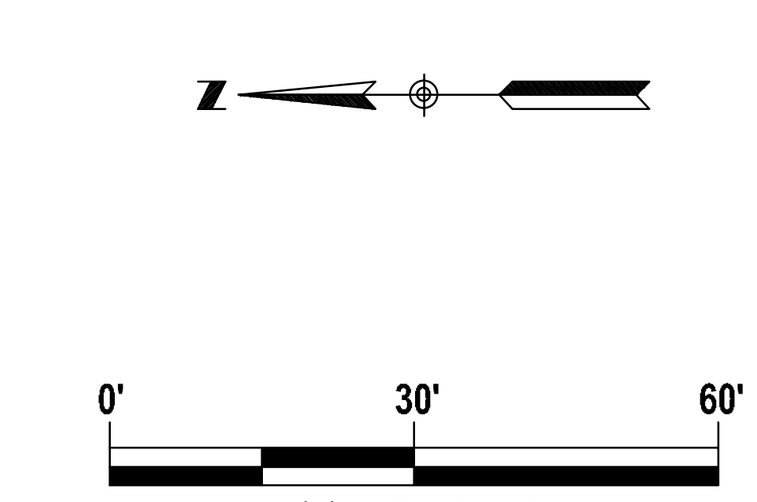
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SCALE: 1" = 30'

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CONSTRUCTION PLANS
Utility Plan

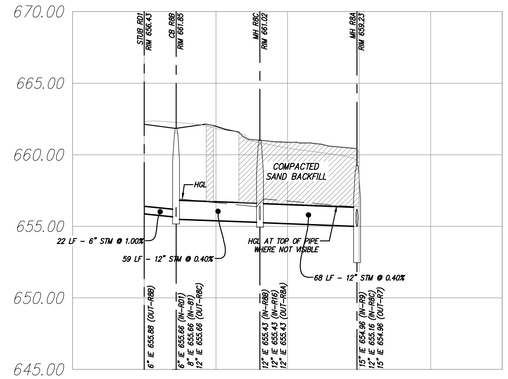
SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
11	04-13-2026	CITY ENG. REV.
12	06-23-2026	RFI 121
13	07-02-2026	RFI 115
14	11-02-2026	RFI 161

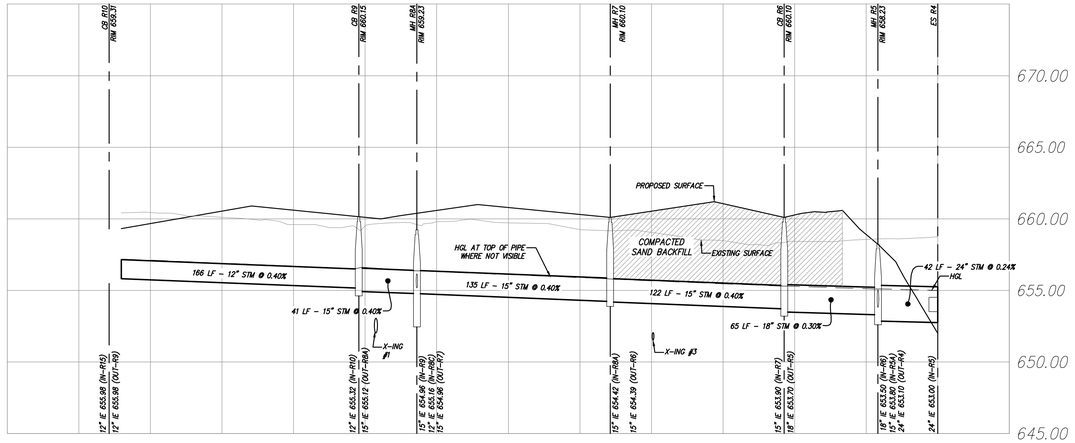
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DRAFTER -	DATE -
DESIGNER J. CHRISTOPHER	DATE 24-01-26
CHECKED J. CHRISTOPHER	DATE 24-01-26
PROJECT MANAGER T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL -	DATE
JOB NO. NP22006	DRAWING NO. NP2006PAV
SCALE: 1" = 30'	SHEET NO. C3.1

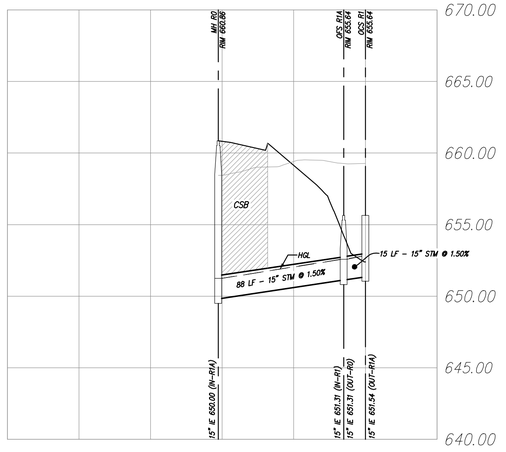
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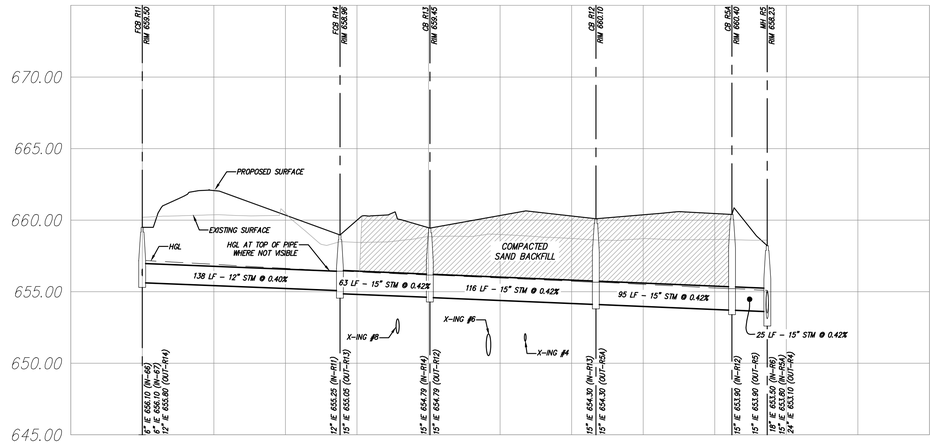
RD1–R8A



R10–R4



R1–R0



R11–R5

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CONSTRUCTION PLANS
Storm Profiles

SECTION 31
TOWN 01N **RANGE** 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
1	03-04-2024	OWNER REVIEW
2	03-22-2024	PAGE TURN
3	03-29-2024	REV. OWNER REVIEW
4	10-25-2024	PERMIT
5	12-13-2024	HUD SUBMISSION
6	12-20-2024	PERMIT
7	02-19-2025	⚠1 BULLETIN NO. 1
8	03-07-2025	⚠2 BULLETIN NO. 2
9	11-19-2025	CITY ENG. REV.
10	12-12-2025	CITY ENG. APPROVED
11	03-02-2026	EGLE ENG. REV.
11	04-13-2026	CITY ENG. REV.

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CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE:
DEPARTMENT MANAGER APPROVAL: -	DATE:
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: H:1" = 50' V:1"=5'	SHEET NO.: C3.2

Plotted: Apr 13, 2026, 12:38 PM by user: 1111 - Saved: 4/13/2026 by user: 1111
N:\NPNLD Projects\NP22006 - Grace School - Senior Housing\DWG\NP22006DPR.dwg

Water Main Basis of Design

REU Calculation

Factor	*Units*	*Equivalent Units (R.E.U.)*
0.6	60	36
REU/Unit		
	Total =	36

Total Population

3.5	people per units X R.E.U. =	126.0	people		

Average Flow

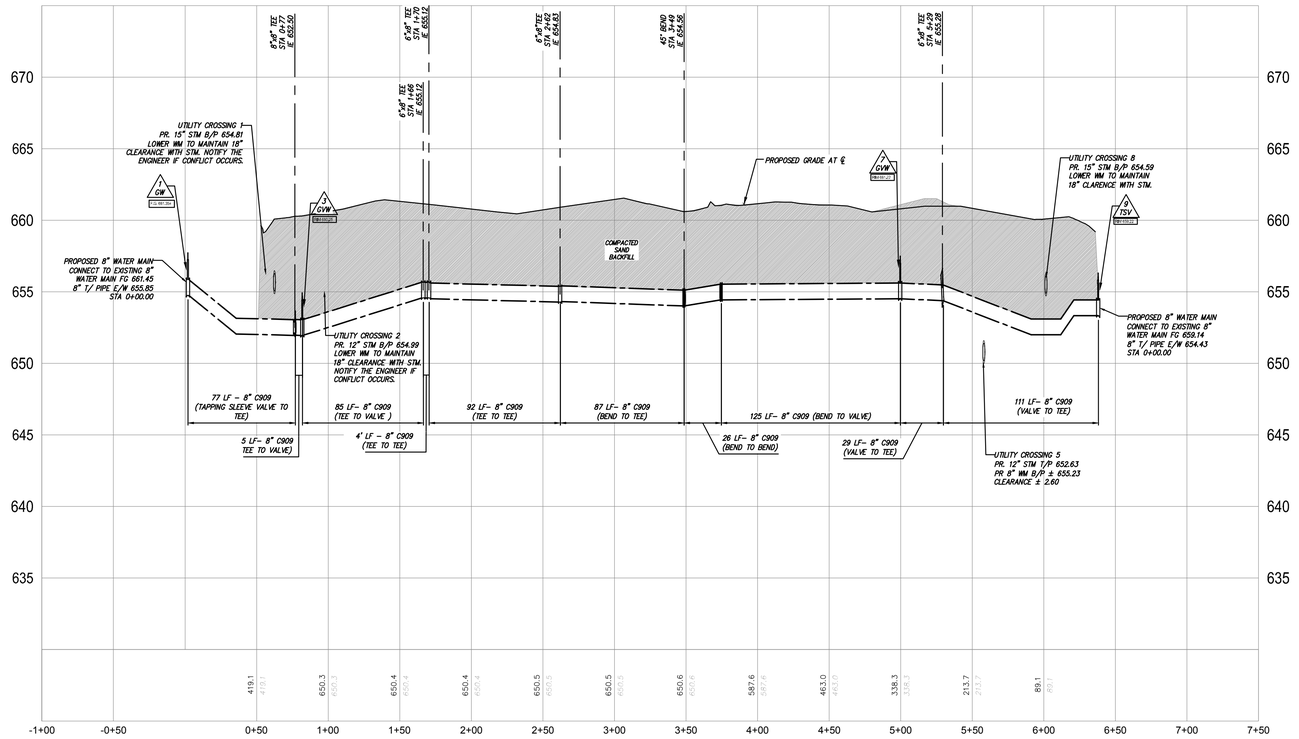
126.0	people X 100 GCPD =	12,600	gal/day	= 0.01260	mgd
12,600	gal/day x 1day/86400 sec x 1cfs/7.48 gal =	0.0195	cfs		

Peak Factor

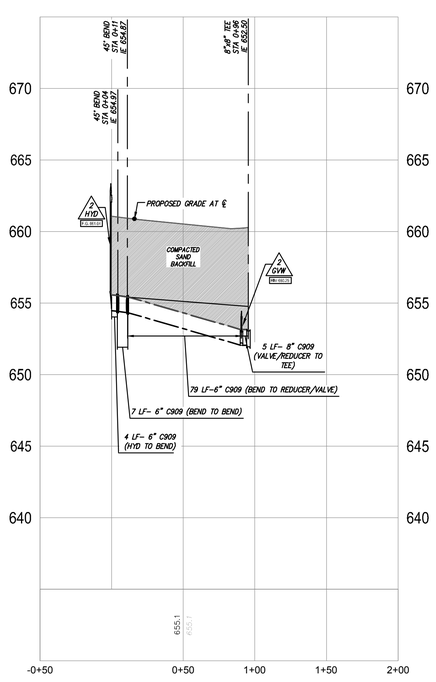
Q = (18+ SQRT(p / 1000)) / (4+ SQRT(p/1000)) = 4.2147 (Ten States Standards)

Peak Flow

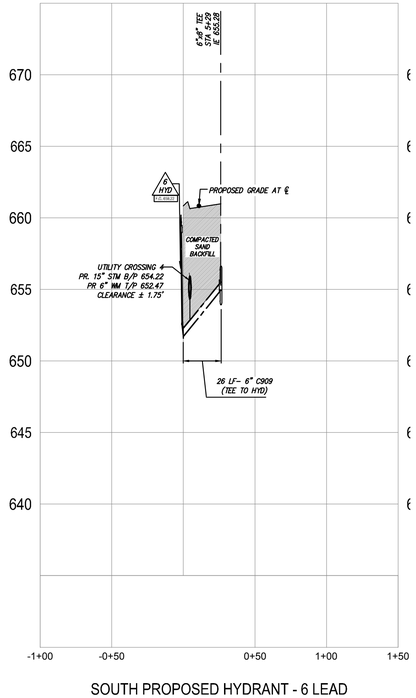
4.2147	x ave gal/day =	53,105	gal/day	= 0.05311	mgd
53,105	gal/day x 1day/86400 sec x 1cfs/7.48 gal =	**0.0822**	**cfs**		



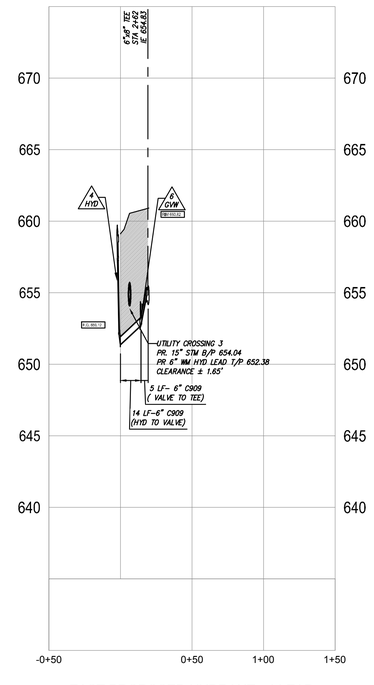
WATER MAIN PROFILES



NORTH PROPOSED HYDRANT- 2 LEAD



SOUTH PROPOSED HYDRANT - 6 LEAD



EAST PROPOSED HYDRANT - 4 LEAD

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CONSTRUCTION PLANS
Watermain Profiles

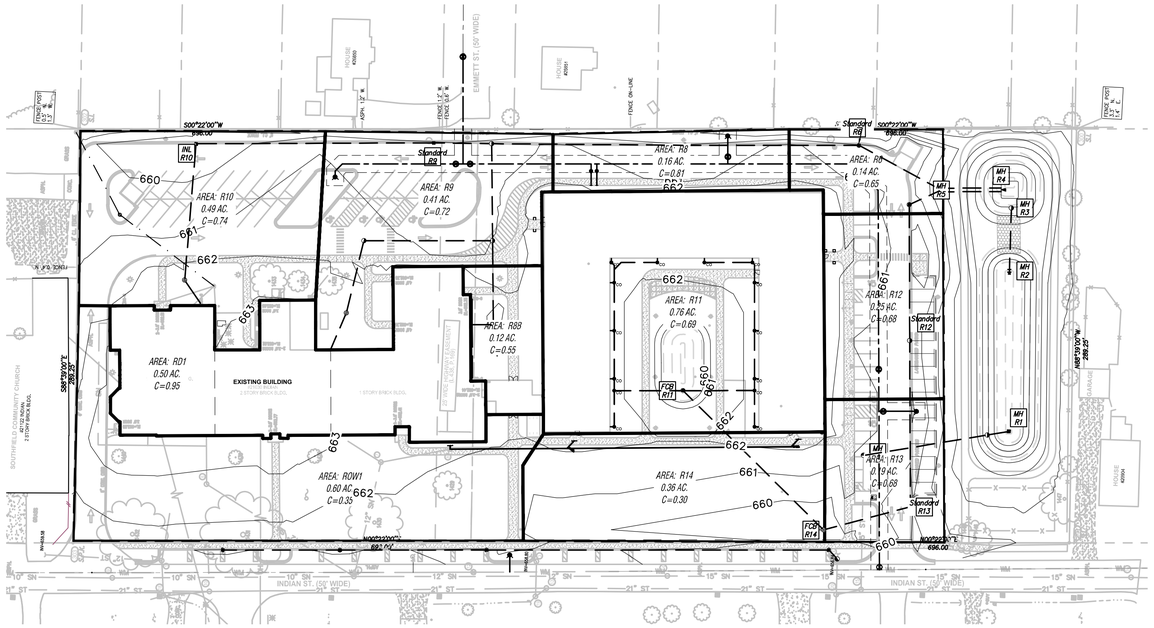
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CHECKED: J. CHRISTOPHER	DATE: 24-01-26
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DEPARTMENT MANAGER APPROVAL: -	DATE: -
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: H:1" = 50' V:1"=5'	SHEET NO.: C3.3

Plotted: Apr 13, 2026, 12:30 PM by user: lll1 - Saved: 3/4/2026 by user: jkeeder
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STRUCTURE UP STREAM	STRUCTURE DOWN STREAM	A DRAINAGE AREA (ACRES)	C RUNOFF COEF.	EQUIV. AREA 100% ACRES (C x A)	TOTAL AREA 100% ACRES (SUM C x A)	T TIME (MIN.)	I INTENSITY (IN / HR)	Q FLOW (C.F.S.) (C x I x A)	CAPACITY OF PIPE (C.F.S.)	DIAM. OF PIPE (IN.)	LENGTH OF PIPE (FT.)	SLOPE OF PIPE (%)	MIN HG BASED ON "Q" (%)	HG (%)	VELOCITY (FT / SEC)	TIME OF FLOW (MIN.)	H.G.L. ELEV. UPPER END	H.G.L. ELEV. LOWER END	GROUND ELEV. UPPER END	GROUND ELEV. LOWER END	INVERT ELEV. UPPER END	INVERT ELEV. LOWER END
ON-SITE DESIGN																						
R10	R9	0.49	0.74	0.36	0.36	10.00	5.00	1.82	2.25	12	166	0.40	0.26	0.40	2.9	1.00	657.19	656.52	659.25	659.01	655.98	655.32
R9	R8A	0.41	0.72	0.30	0.66	11.00	4.86	3.21	4.09	15	41	0.40	0.25	0.40	3.3	0.20	656.52	656.36	659.01	659.40	655.12	654.96
R8A	R8	0.00	0.00	0.00	0.73	11.20	4.83	3.51	4.09	15	135	0.40	0.29	0.40	3.3	0.70	656.36	655.82	659.40	659.08	654.96	654.42
R8	R7	0.16	0.81	0.13	0.85	11.90	4.74	4.05	4.09	15	9	0.40	0.39	0.40	3.3	0.00	655.82	655.78	659.08	660.10	654.42	654.38
R7	R6	0.00	0.00	0.00	0.85	11.90	4.74	4.05	4.09	15	122	0.40	0.39	0.40	3.3	0.60	655.78	655.30	660.10	660.10	654.38	653.90
R6	R5	0.14	0.65	0.09	0.94	12.50	4.67	4.40	5.75	18	65	0.30	0.18	0.30	3.3	0.30	655.30	655.10	660.10	658.23	653.70	653.50
R5	R4	0.00	0.00	0.00	1.88	12.80	4.63	8.71	11.08	24	42	0.24	0.15	0.24	3.5	0.20	655.10	655.00	658.23	654.52	653.10	653.00
R11	R14	0.76	0.69	0.53	0.53	10.00	5.00	2.63	2.31	12	138	0.42	0.55	0.42	2.9	0.80	657.18	656.43	659.53	658.96	655.83	655.25
R14	R13	0.36	0.30	0.11	0.64	10.80	4.89	3.11	4.19	15	63	0.42	0.23	0.42	3.4	0.30	656.43	656.16	658.96	659.45	655.05	654.79
R13	R12	0.19	0.68	0.13	0.77	11.10	4.85	3.72	4.19	15	116	0.42	0.33	0.42	3.4	0.60	656.16	655.67	659.45	660.10	654.79	654.30
R12	R5A	0.25	0.68	0.17	0.94	11.70	4.77	4.47	4.19	15	95	0.42	0.48	0.42	3.4	0.50	655.67	655.22	660.10	660.40	654.30	653.90
R5A	R5	0.00	0.00	0.00	0.94	12.20	4.70	4.47	4.19	15	25	0.42	0.48	0.42	3.4	0.10	655.22	655.10	660.40	658.23	653.90	653.80
R8B	R8A	0.12	0.55	0.06	0.06	10.00	5.00	0.32	2.31	12	133	0.42	0.01	0.42	2.9	0.80	656.92	656.36	662.20	659.40	655.71	655.16
R1	R0	0.00	0.00	0.00	0.00	10.00	5.00	6.88	7.91	15	103	1.50	1.13	1.50	6.5	0.30	652.79	651.25	655.00	660.85	651.54	650.00

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JOHN GRACE ARMS

CONSTRUCTION PLANS
Drainage Area Map

SECTION 31
TOWN 01N **RANGE** 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
1	03-04-2024	OWNER REVIEW
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BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAFTER: -	DATE: -
DESIGNER: J. CHRISTOPHER	DATE: 24-01-26
CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE:
DEPARTMENT MANAGER APPROVAL: -	DATE:
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: 1" = 50'	SHEET NO.: C4.1

Plotted: Apr 13, 2026, 12:30 PM by user: 1111 - Saved: 4/9/2026 by user: 1111
N:\NP\NLD Projects\NP22006 - Grace School - Senior Housing\DWG\NP2006DAM.dwg

Post-Development (Proposed Conditions) Runoff Coefficient Calculator (Area Weighted)			
Location/Land Cover	Area (acres)	Runoff Coefficient ("C")	Area X C
CATCHMENTS			
RD1	**0.50**	**0.95**	0.475
R8	**0.49**	**0.74**	0.3626
R7	**0.41**	**0.72**	0.2952
R9	**0.16**	**0.74**	0.1184
COURTYARD	**0.28**	**0.51**	0.1428
RD2	**0.49**	**0.95**	0.4655
R5	**0.14**	**0.64**	0.0896
R4 & R3	**0.44**	**0.95**	0.418
ROW2	**0.36**	**0.3**	0.108
ROW1	**0.72**	**0.35**	0.252
Subtotals	3.99	N/A	2.7271
Post Development Contributing Area (Acres) = A =			**3.99**
Post-Development Runoff Coefficient (Area Weighted) = C =			**0.68**

POST DEVELOPMENT C-FACTOR CALCULATION

EQ. 9 CHANNEL PROTECTION VOLUME CONTROL REQUIRED = 3630 x 1.30 x C x A			
Term	Variable	Value	Unit
Contributing Area =	A =	3.99	Acres
Post-development Runoff Coefficient =	C =	0.68	Dimensionless
Required Channel Protection Volume =	V_{CP-R} =	**12,869**	CFT

CHANNEL PROTECTION VOLUME CONTROL

EQ. 19 SEDIMENT FOREBAY VOLUME = $V_F = 0.15V_{WQ}$ = 545 x C x A			
Term	Variable	Value	Unit
Contributing Area =	A =	3.99	Acres
Post-development Runoff Coefficient =	C =	0.68	Dimensionless
Required Water Quality Volume =	V_{WQ} =	9,163	CFT
Volume of Sediment Forbay =	V_F =	**1,374**	CFT

SEDIMENT FOREBAY VOLUME

EQ. 21 CHANNEL PROTECTION RATE CONTROL: EXTENDED DETENTION - 6,897 x C x A			
Term	Variable	Value	Unit
Contributing Area =	A =	3.99	Acres
Post-development Runoff Coefficient =	C =	0.68	Dimensionless
Required Extended Detention Volume =	V_{ED} =	**18,809**	CFT

CHANNEL PROTECTION RATE CONTROL: EXTENDED DETENTION

EQ. 24: $Q_{100IN} = C \times I_{100} \times A$			
Term	Variable	Value	Unit
Contributing Area =	A =	3.99	Acres
Post-development Runoff Coefficient =	C =	0.68	Dimensionless
Peak Rainfall Intensity (100 year event) =	$I_{100peak}$ =	6.31	in/hr
100-year post-development peak inflow rate	Q_{100IN} =	17.21	CFS

EQ. 25: RAINFALL INTENSITY (in/hr) = $I_{100Peak} = \frac{83.3}{(T_C + 9.17)^{0.81}}$

Term	Variable	Value	Unit
Time of Concentration =	T_C =	15.00	Minutes
Peak Rainfall Intensity (100 year event) =	$I_{100peak}$ =	6.31	in/hr

EQ. 26: $Q_{VRR} = 1.1055 - 0.206 \ln(A)$			
Term	Variable	Value	Unit
Contributing Area =	A =	3.99	Acres
Allowable release rate =	*Q_{VRR} =	**0.82**	CFS/Acre

*= The Variable release rate (cfs/acre) is capped at 1.0 cfs/acre for developments 2 acres or less. For all developments equal to or greater than 100 acres, the variable release rate is 0.15 cfs/acre.

$Q_{100P} = Q_{VRR} \times A$			
Term	Variable	Value	Unit
Contributing Area =	A =	3.99	Acres
Allowable release rate =	*Q_{VRR} =	**0.82**	CFS/Acre
Allowable 100-year post development peak flow rate =	Q_{100P} =	**3.27**	CFS

*= The Variable release rate (cfs/acre) is capped at 1.0 cfs/acre for developments 2 acres or less. For all developments equal to or greater than 100 acres, the variable release rate is 0.15 cfs/acre.

EQ. 27: $R = [0.206 - 0.15*LN(Q_{100P}/Q_{100IN})]$			
Term	Variable	Value	Unit
Allowable 100-year post development peak flow rate =	Q_{100P} =	3.27	CFS
100-year post-development peak inflow rate =	Q_{100IN} =	17.21	CFS
Storage Curve Factor =	R =	0.45	Dimensionless

EQ. 28: $V_{100P} = 18{,}985 \times C \times A$			
Term	Variable	Value	Unit
Contributing Area =	A =	3.99	Acres
Post-development Runoff Coefficient =	C =	0.68	Dimensionless
Post-development 100-year runoff volume =	V_{100R} =	51,774	CFT

EQ. 29 REQUIRED 100-YEAR DETENTION VOLUME = $V_{100D} = (V_{100R} \times R) - V_{CP-P}$			
Term	Variable	Value	Unit
Post-development 100-year runoff volume =	V_{100R} =	51,774	CFT
Storage Curve Factor =	R =	0.45	Dimensionless
Provided CPVC volume =	V_{CP-P} =	**4500.00**	CFT
Required 100-yr detention volume =	V_{100D} =	**19,056**	CFT
Key Rule Check: Adjusted 100-year detention volume (V_{100D}) is ≥ the Extended Detnetion Volume (V_{ED}) =		**PASS**	

100-YEAR FLOOD CONTROL

EQ. III-29: ORIFICE SIZING - EXTENDED DETENTION = $Q_{P-AVG-ED} = C_O \times A_O \times SQRT(2 \times g \times h)$			
Term	Variable	Value	Unit
Orifice diameter =	O_{ED-DIA} =	**1.00**	IN
Number of orifices at same elevation =	O_{ED-No} =	**3.00**	Dimensionless
Total head at V_{ED} water level=	h =	**2.40**	FT
Area of single orifice =	A_O =	0.0055	FT^2
Orifice coefficient =	C_O =	0.62	Dimensionless
Gravity constant =	g =	32.2	FT/S^2
Avg. outflow rate (Via V_{ED} orifice(s) W/ V_{ED} Event) =	$Q_{P-AVG-ED}$ =	**0.089**	CFS
Extended Detention Volume =	V_{ED} =	18,809	CFT
Drain Time for V_{ED} =	T_{ED-D} =	**58.6**	HR
Key Rule Check: Extended Detention Volume (V_{ED}) must drain in no less than 48 hours		**PASS**	
Total head at V_{100D} water level=	h =	**2.00**	FT
Max outflow rate (Via V_{ED} orifice(s) w/ V_{100D} Event) =	$Q_{P-MAX-ED}$ =	**0.081**	CFS

ORIFICE SIZING - MAX 100-YEAR OUTFLOW RATE = $Q_P = C_O \times A_O \times SQRT(2 \times g \times h)$			
Term	Variable	Value	Unit
Orifice diameter =	O_{ED-DIA} =	**2.00**	IN
Number of orifices at same elevation =	O_{ED-No} =	**15.00**	Dimensionless
Total head at V_{100D} water level =	h =	**2.64**	FT
Area of single orifice =	A_O =	0.0218	FT^2
Orifice coefficient =	C_O =	0.62	Dimensionless
Gravity constant =	g =	32.2	FT/S^2
Max outflow rate [thru 100-year orifice(s)] =	$Q_{P-MAX-100}$	**2.65**	CFS

MAX COMBINED OUTFLOW RATE [VED Orifice(s) & V100D Orifice(s)]			
Max outflow rate (Via V_{ED} orifice(s) w/ V_{100D} Event) =	$Q_{P-MAX-ED}$ =	0.081	CFS
Max outflow rate [thru 100-year orifice(s)] =	$Q_{P-MAX-100}$ =	2.65	CFS
Allowable 100-year post development peak	Q_{100P} =	3.27	CFS
Provided 100-year post-dev peak release rate =	$Q_{100-Design}$	**2.727**	CFS
Key Rule Check: Allowable 100-year peak flow rate must be ≥ the Provided 100-year peak release rate		**PASS**	

ORIFICE SIZING CALCULATIONS

Equation 10: Average Infiltration Area = $A_I = (A_1 + A_2)/2$			
Bottom of Basin Area =		0	sq ft
Storage Elevation Area =		8,503	sq ft
A_I= (8503+0)/2=		4251.5	sq ft

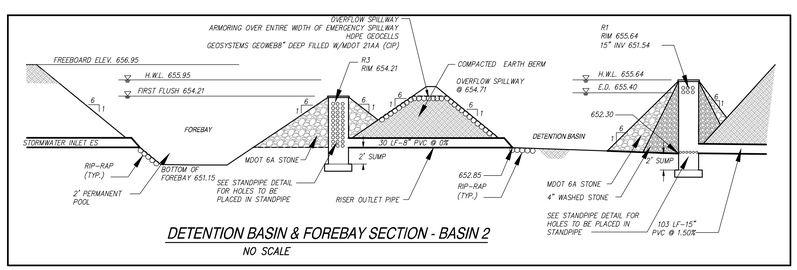
Equation 13: Infiltration Volume During 6 Hour Period			
$V_I = (K_{sat} \times S_I \times 6 \times A_I)/12$			
K_{sat} =		25.67	in/hr
S_I =		1.00	
A_I =		4251.5	sq ft
V_I =		54568	cu ft

INFILTRATION CALCULATIONS

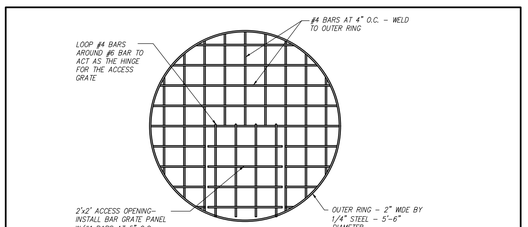
Detention			
Elevation	Area	Increm. Vol	Cum. Vol.
653.00	2,656 sf	00 cf	00 cf
654.00	3,852 sf	3,254 cf	3,254 cf
655.00	5,149 sf	7,805 cf	11,059 cf
656.00	10,390 sf	19,569 cf	30,628 cf
657.00	12,965 sf	25,226 cf	55,854 cf
658.00	15,661 sf	14,313 cf	70,167 cf
		Storage Elev.	655.64
		Extended Detention	655.40

Forebay			
Elevation	Area	Increm. Vol	Cum. Vol.
653.00	534 sf	00 cf	00 cf
654.00	1,150 sf	842 cf	842 cf
655.00	1,994 sf	2,528 cf	3,370 cf
656.00	1,538 sf	2,688 cf	6,058 cf
657.00	2,488 sf	2,013 cf	8,071 cf
		Storage Elevation	654.21

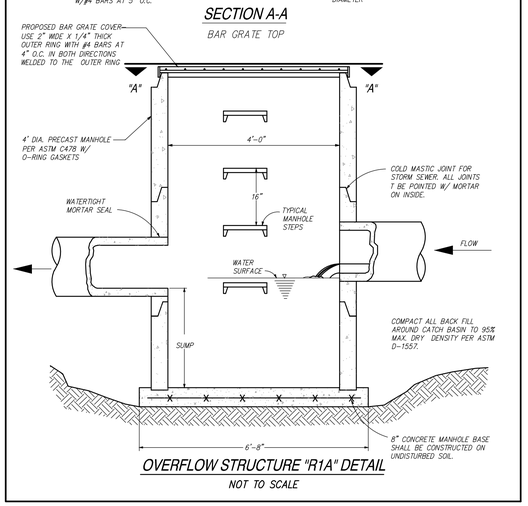
STORAGE ELEVATIONS



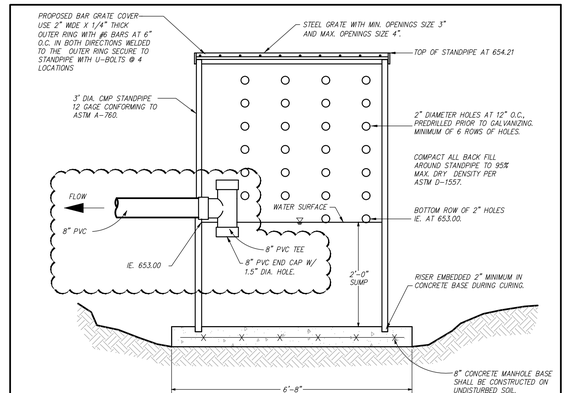
DETENTION BASIN & FOREBAY SECTION - BASIN 2
NO SCALE



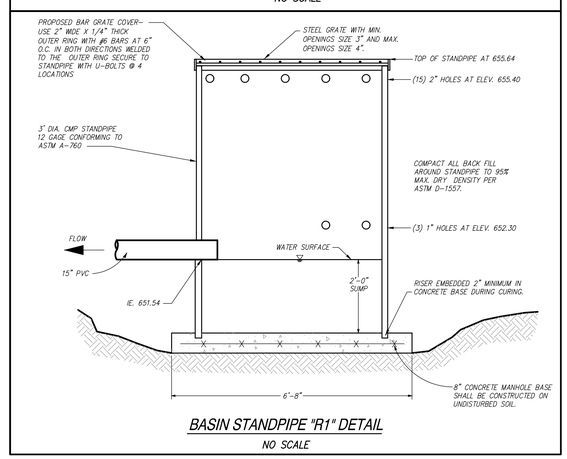
SECTION A-A
BAR GRATE TOP



OVERFLOW STRUCTURE "R1A" DETAIL
NOT TO SCALE



FOREBAY STANDPIPE "R3" DETAIL
NO SCALE



BASIN STANDPIPE "R1" DETAIL
NO SCALE

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CONSTRUCTION PLANS
Detention Calculations

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12	04-13-2026	CITY ENG. REV.
13	06-23-2026	RFI 121
14	07-02-2026	RFI 115

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CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL: -	DATE
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: 1" = 50'	SHEET NO.: C4.2

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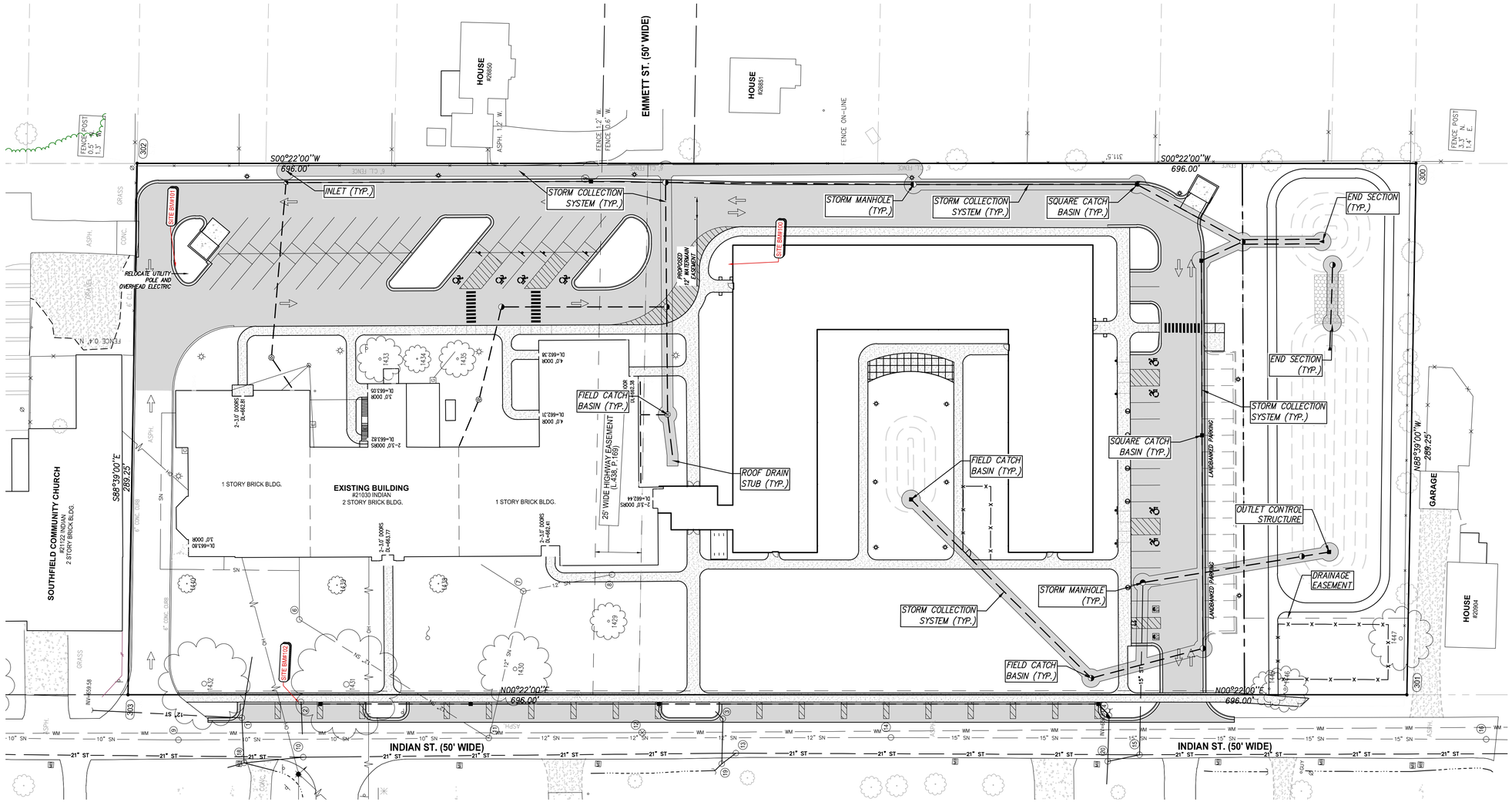


CHART A

MAINTENANCE TASKS AND SCHEDULE DURING CONSTRUCTION

TASKS	COMPONENTS										SCHEDULE
	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Casings	Ditches and Swales	Outflow Control Structure	Rip-Rap	Filtration Basins	Storm Detention Areas	Wetlands	Emergency Overflow	
Inspect for sediment accumulation	X	X		X	X		X	X			Weekly
Removal of sediment accumulation	X	X		X	X		X	X			As needed* & prior to turnover
Inspect for floatables and debris			X	X	X		X	X			Quarterly
Cleaning of floatables and debris			X	X	X		X	X			Quarterly & at turnover
Inspection for erosion				X	X		X	X			Weekly
Re-establish permanent vegetation on eroded slopes				X			X	X			As needed & at turnover
Replacement of Stone					X						As needed* & prior to turnover
Mowing			X	X	X	X	X	X			0 to 2 times per year
Inspect Stormwater system components during wet weather and compare to as-built plans (by professional engineer reporting to XYZ Co.)				X	X		X	X			Annually and at turnover
Make adjustments or replacements as determined by annual wet weather inspection	X	X	X	X	X	X	X	X	X	X	As needed

*as needed means when sediment has accumulated to a maximum of one foot depth

CHART B

PERMANENT MAINTENANCE TASKS AND SCHEDULE

TASKS	COMPONENTS								SCHEDULE
	Catch Basin Inlet Casings	Ditches and Swales	Outflow Control Structure	Rip-Rap	Filtration Basins	Storm Detention Areas	Wetlands	Emergency Overflow	
Inspect for sediment accumulation		X	X		X	X			Annually
Removal of sediment accumulation		X	X		X	X			Every 2 years as needed
Inspect for floatables and debris	X	X	X		X	X			Annually
Cleaning of floatables and debris	X	X	X		X	X			Annually
Inspection for erosion		X	X		X	X			Annually
Re-establish permanent vegetation on eroded slopes		X			X	X			As Needed
Replacement of Stone			X						Every 3-5 years as needed
Clean Streets									Semi-Annually
Mowing		X			X	X			0-2 times per year
Inspect Stormwater system components during wet weather and compare to as-built plans (by professional engineer reporting to XYZ Co.)	X	X	X	X	X	X	X	X	Annually
Make adjustments or replacements as determined by annual wet weather inspection	X	X	X	X	X	X	X	X	As needed
Keep records of all inspections and maintenance activities and report to XYZ Co.									Annually
Keep records of all costs for inspections, maintenance and repairs. Report to XYZ Co.									Annually

LEGEND

- COLLECTION SYSTEM
- MANHOLE
- SQUARE CATCH BASIN
- INLET
- ROUND CATCH BASIN
- END SECTION
- STORM SEWER COLLECTION SYSTEM

MAINTENANCE PLAN NOTES

1. *RESPONSIBILITY FOR MAINTENANCE*
   DURING CONSTRUCTION, IT IS THE DEVELOPER'S RESPONSIBILITY TO PERFORM THE MAINTENANCE. FOLLOWING CONSTRUCTION, IT WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER TO PERFORM THE MAINTENANCE. THE MASTER DEED WILL SPECIFY THAT ROUTINE MAINTENANCE OF THE STORMWATER FACILITIES MUST BE COMPLETED WITHIN 14 DAYS OF RECEIPT OF WRITTEN NOTIFICATION THAT ACTION IS REQUIRED, UNLESS OTHER ACCEPTABLE ARRANGEMENTS ARE MADE WITH SALINE TOWNSHIP, THE OAKLAND COUNTY DRAIN COMMISSIONER OR SUCCESSORS. EMERGENCY MAINTENANCE (I.E. WHEN THERE IS ENDANGERMENT TO PUBLIC HEALTH, SAFETY OR WELFARE) SHALL BE PERFORMED IMMEDIATELY UPON RECEIPT OF WRITTEN NOTICE. SHOULD SALINE AREA SCHOOLS FAIL TO ACT WITHIN THESE TIME FRAMES, SALINE TOWNSHIP, OAKLAND COUNTY OR SUCCESSORS MAY PERFORM THE NEEDED MAINTENANCE AND ASSESS THE COSTS AGAINST THE PROPERTY OWNER.
2. *SOURCE OF FINANCING*
   THE PROPERTY OWNER IS REQUIRED TO PAY FOR ALL MAINTENANCE ACTIVITIES ON A CONTINUING BASIS.
3. *MAINTENANCE TASKS AND SCHEDULE*
   REFER TO CHARTS "A" AND "B" THIS SHEET. THE MAINTENANCE TASKS DURING CONSTRUCTION TO BE PERFORMED BY THE DEVELOPER, AND THE PERMANENT MAINTENANCE TASKS TO BE PERFORMED BY THE PROPERTY OWNER ARE DESCRIBED. IMMEDIATELY FOLLOWING CONSTRUCTION, THE DEVELOPER WILL HAVE THE STORMWATER MANAGEMENT SYSTEM INSPECTED BY AN ENGINEER TO VERIFY GRADES OF THE DETENTION AND FILTRATION AREAS AND MAKE RECOMMENDATIONS FOR ANY NECESSARY SEDIMENT.

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CONSTRUCTION PLANS
Operations & Maintenance Plan

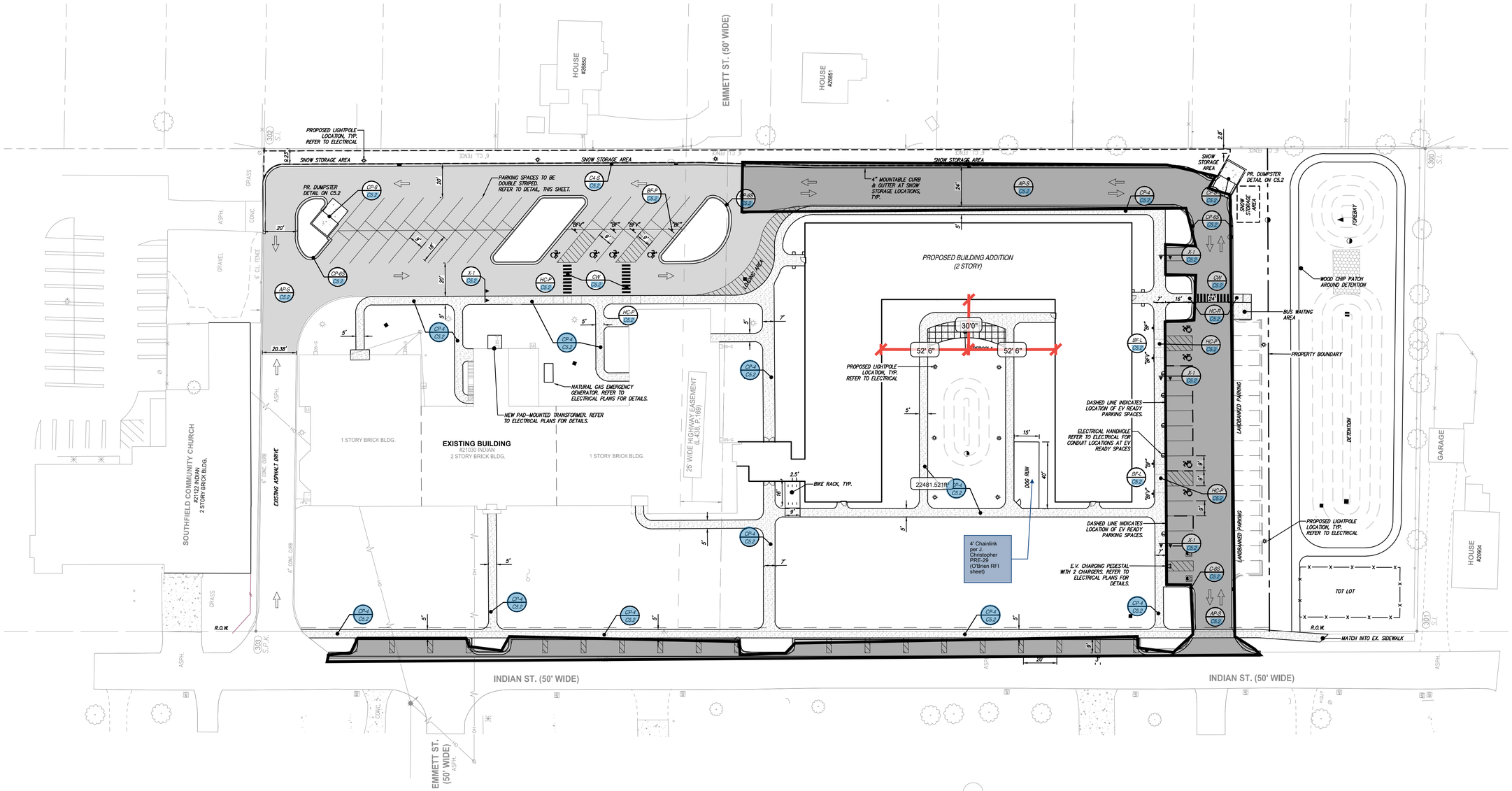
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CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL: -	DATE
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: 1" = 30'	SHEET NO.: C4.3

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PAVING CONSTRUCTION NOTES

1. EARTHWORK AND PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE FOLLOWING ITEMS.
2. REMOVE ANY EXISTING TOPSOIL, VEGETATION, TREES AND OTHER DELETERIOUS MATERIALS TO EXPOSE THE SUBGRADE SOIL. TREE ROOTS SHALL BE COMPLETELY REMOVED.
3. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
4. THE TOP 12 INCHES OF THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91).
5. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOFROLLED UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
6. THE AGGREGATE BASE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE PAVED EDGE.
7. ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY NO LESS THAN 97 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MARSHALL METHOD.
8. A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN THE LEVELING COURSE AND THE WEARING COURSE WHEN EITHER 24 HOURS HAVE ELAPSED BETWEEN PLACEMENT OF THE BITUMINOUS COURSES OR THE SURFACE OF THE PAVEMENT HAS BEEN CONTAMINATED WITH DIRT, DUST, OR FOREIGN MATERIAL. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.1 GALLONS/S.Y. IN THE EVENT A BOND COAT IS NOT REQUIRED, THE LEVELING COURSE MAY REQUIRE LOCALIZED BROOM CLEANING.
9. PERFORMANCE GRADE PG64-22 ASPHALT CEMENT SHALL BE USED IN THE PRODUCTION OF ALL BITUMINOUS MIXTURES. RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE ALLOWED ONLY AS SPECIFIED BY THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, UNLESS NOTED ON THE PROJECT DETAILS.
10. CONSTRUCTION TRAFFIC SHALL BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE PLACEMENT OF THE FINAL LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR TO ANY DAMAGED SECTION RESULTING FROM CONSTRUCTION ACTIVITY.
11. TAPER CURB HEIGHT DOWN TO ZERO HEIGHT IN FIVE FEET AT ALL CURB ENDINGS UNLESS OTHERWISE NOTED ON THE PLAN.
12. WHERE CURB AND GUTTER SECTION IS ADJACENT TO A HANDICAP RAMP, DROP CURB HEIGHT TO MAXIMUM 1/4" ACROSS THE RAMP OPENING.
13. RESTRIPE PARKING LOTS AS SHOWN, USING 4" PAVEMENT MARKING – BLUE FOR RESERVED SPACES, YELLOW FOR STANDARD SPACES. IF NEW PARKING LAYOUT IS NOT INDICATED, MATCH ORIGINAL STRIPING PATTERN.
14. DIRECTIONAL ARROW PAVEMENT MARKINGS AND PAVEMENT MARKING LETTERING WHERE INDICATED SHALL BE WHITE PREFORMED THERMOPLASTIC UNLESS OTHERWISE NOTED. INSTALLATION OF THESE PERMANENT PAVEMENT MARKINGS SHALL BE PERFORMED PER THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTIONS 811 AND 920.
15. CONTRACTOR SHALL PROTECT EXISTING CURB, GUTTER, SIDEWALK, WALLS, FENCES AND ALL OTHER EXISTING SITE FEATURES NOT INDICATED FOR REMOVAL OR REHABILITATION.
16. PLACE EXPANSION JOINTS WHERE NEW CONCRETE PAVEMENT OR WALKS ABUT BUILDING WALLS (PROPOSED OR EXISTING), CURB, OR EXISTING CONCRETE PAVEMENT. PLACE SILICONE JOINT SEALANT ON ALL EXPANSION JOINTS.
17. CONTRACTOR TO CONSTRUCT CONTRACTION AND EXPANSION JOINTS IN ALL NEW CONCRETE PAVEMENT. CONTRACTION JOINTS SHALL BE TOOLED WHERE SIDEWALK WIDTH IS 8' OR LESS, AND SHALL BE SPACED EQUAL TO THE WIDTH OF THE PAVEMENT (I.E. 8' SPACING FOR 8' WIDE WALK), BUT NOT MORE THAN 10' APART. PLACE EXPANSION JOINTS WITH SILICONE JOINT SEALANT AT MAXIMUM 50' SPACING. CONTRACTOR SHALL GENERALLY MATCH THE JOINT PATTERNS FOR CONCRETE PAVEMENT WHEN SHOWN ON THE PLANS.
18. WHERE THESE PLANS DIFFER FROM THE STANDARD DETAILS OR STANDARD SPECIFICATIONS OF THE COMMUNITY, THE COMMUNITY REQUIREMENTS SHALL GOVERN.
19. CONCRETE PAVEMENT SHALL MEET THE REQUIREMENTS FOR MDOT GRADE 4000 CONCRETE PER THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE, STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO., STRUCT. TYPE
- 2 — UTILITY CROSSING (SEE DATA TABLE)

SIGN LEGEND

"RS" – RESERVED PARKING ONLY
"RSV" – RESERVED PARKING ONLY VAN ACCESSIBLE
"ST" – STOP

ALL SIGNAGE SHALL BE IN ACCORDANCE WITH THE CURRENT M.M.U.T.C.D. AND THE MDOT TRAFFIC AND SAFETY SIGN SUPPORT STANDARD PLANS.

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CONSTRUCTION PLANS
Paving Plan

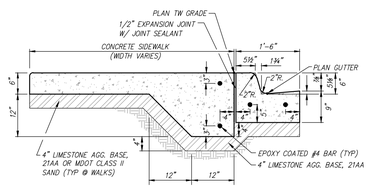
SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

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11	04-13-2026	CITY ENG. REV.

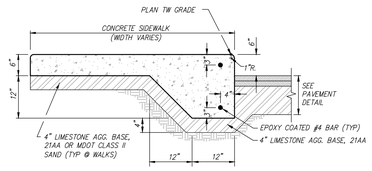
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SCALE: 1" = 30'	SHEET NO.: C5.1

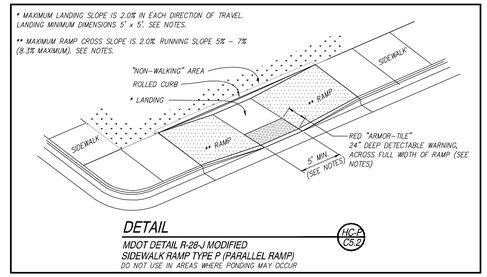
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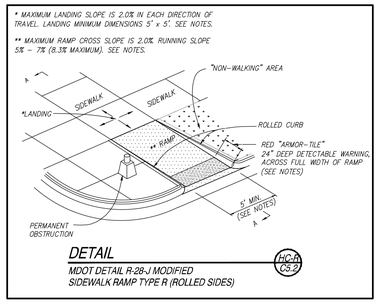
SECTION
WALK/CURB & GUTTER STANDARD PAN — X-2 / C5.2



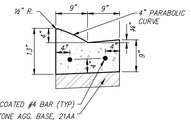
SECTION
INTEGRAL WALK/CURB — X-1 / C5.2



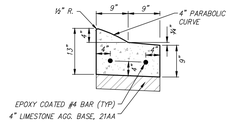
DETAIL
MDOT DETAIL R-28-J MODIFIED
SIDEWALK RAMP TYPE P (PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR — HC-P / C5.2



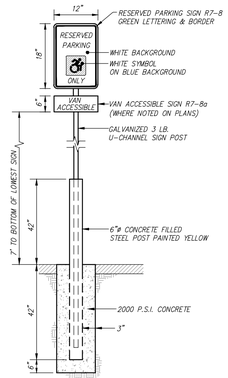
DETAIL
MDOT DETAIL R-28-J MODIFIED
SIDEWALK RAMP TYPE R (ROLLED SIDES) — HC-R / C5.2



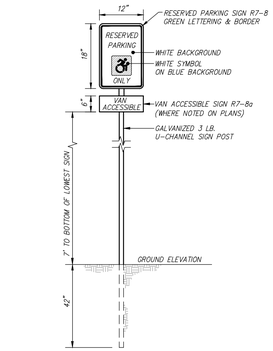
DETAIL
4" MOUNTABLE CURB & GUTTER STANDARD PAN — C4-S / C5.2



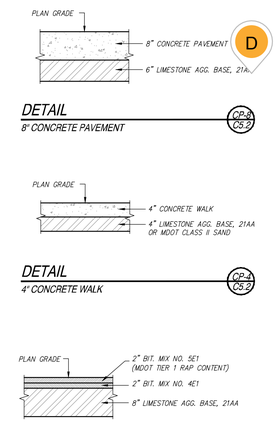
DETAIL
4" MOUNTABLE CURB & GUTTER REVERSE PAN — C4-R / C5.2



DETAIL
BARRIER FREE SIGN IN PAVEMENT DETAIL — BF-P / C5.2



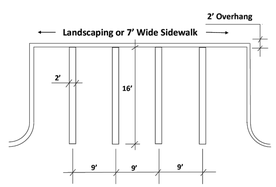
DETAIL
BARRIER FREE SIGN DETAIL — BF-S / C5.2



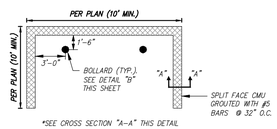
DETAIL
8" CONCRETE PAVEMENT — CP-8 / C5.2

DETAIL
4" CONCRETE WALK — CP-4 / C5.2

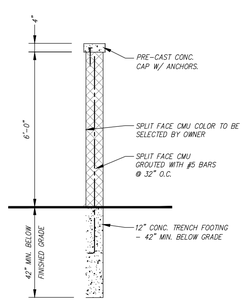
DETAIL
STANDARD BITUMINOUS PAVEMENT — AP-S / C5.2



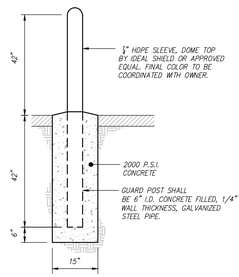
DETAIL
DOUBLE STRIPING



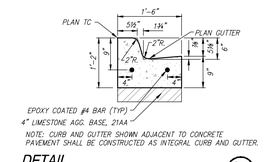
PLAN



CROSS SECTION "A-A"

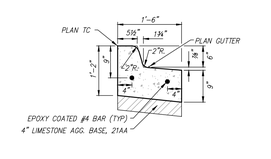


DETAIL
BOLLARD DETAIL — B / C5.2



NOTE: CURB AND GUTTER SHOWN ADJACENT TO CONCRETE PAVEMENT SHALL BE CONSTRUCTED AS INTEGRAL CURB AND GUTTER.

DETAIL
6" CURB & GUTTER STANDARD PAN (MDOT TYPE F1) — C6-S / C5.2



DETAIL
6" CURB & GUTTER REVERSE PAN (MDOT TYPE F1) — C6-R / C5.2

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Paving Details

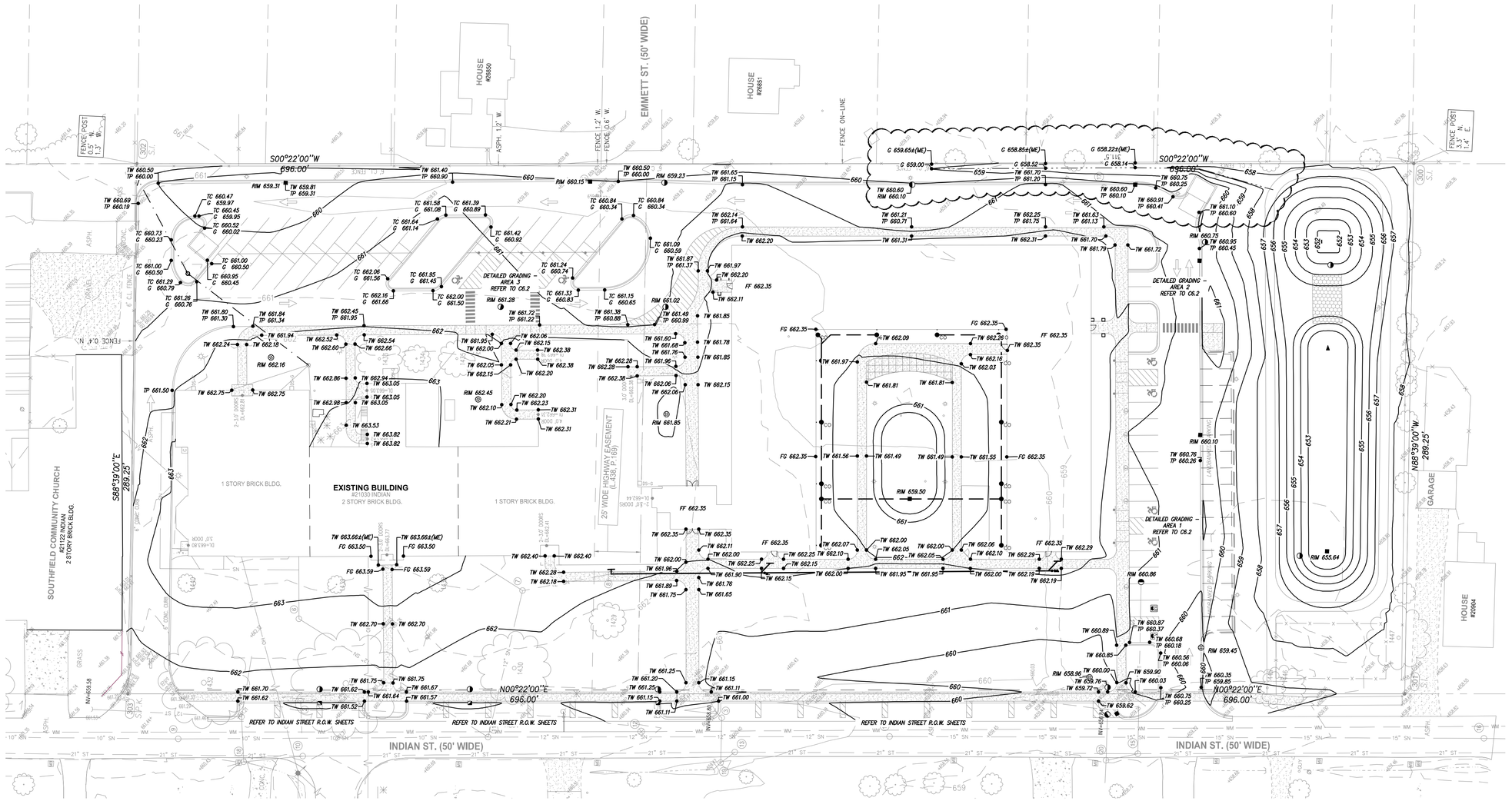
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SCALE: NTS	SHEET NO.: C5.2

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RESTORATION NOTE

RESTORE ALL NON-PAVED AREAS WITH 3" OF CLEAN TOPSOIL AND SEED MIX (30% KENTUCKY BLUEGRASS, 20% PERENNIAL RYEGRASS, 50% CREEPING RED FESCUE). PLACE MULCH IN ALL SEEDED AREAS. ON SLOPES IN EXCESS OF 10 HORIZONTAL TO 1 VERTICAL PLACE NORTH AMERICAN GREEN DS150 MULCH BLANKET IMMEDIATELY AFTER SEEDING. USE METAL STAPLES PER MANUFACTURERS RECOMMENDATIONS TO HOLD MATTING IN PLACE.

GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 — PROPOSED TOP OF CURB ELEVATION
- G 000.00 — PROPOSED GUTTER ELEVATION
- OG 000.00 — OUTSIDE GRADE ELEVATION
- 1130 — EXISTING CONTOURS
- 1130 — PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

GRADING NOTES

1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
3. ALL PAVEMENT PLACED WITHIN BARRIER FREE PARKING AREAS (STALLS AND ACCESS AISLES) SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION, INCLUDING MEASURED DIAGONALLY ACROSS THE AREAS. CONTRACTOR SHALL ADJUST SLOPES AS NECESSARY TO PROVIDE ADA COMPLIANT SLOPES AS WELL AS PROVIDING RE-GRADED TRANSITION SLOPES OUTSIDE OF THE BARRIER FREE PARKING AREAS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF TRANSITION ZONES WILL EXCEED MAXIMUM 5% SLOPES. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE PATTERNS WITH ALL NECESSARY PAVEMENT RE-GRADING.
4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- UTILITY CROSSING (SEE DATA TABLE)
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 XXX — STRUCT. NO. / STRUCT. TYPE

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

PRIOR TO CONSTRUCTION, ALL LOCATIONS AND DEPTHS OF EXISTING UTILITIES (IN CONFLICT WITH PROPOSED IMPROVEMENTS) SHALL BE VERIFIED IN THE FIELD. CALL MISS DIG 3 WORKING DAYS PRIOR TO CONSTRUCTION.

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CONSTRUCTION PLANS
Grading Plan

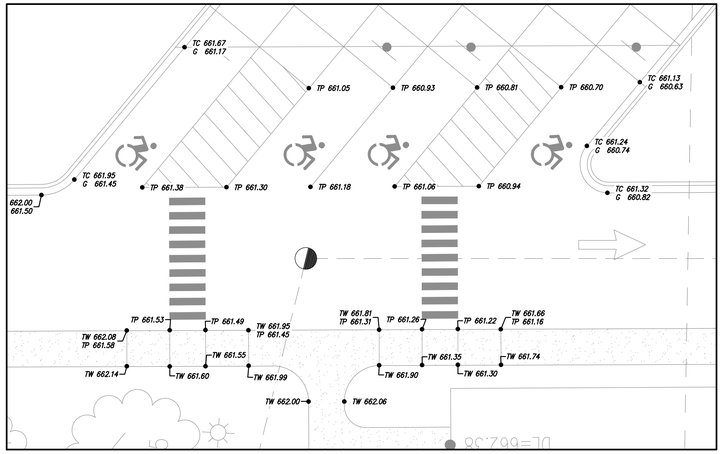
SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
11	04-13-2026	CITY ENG. REV.
12	06-23-2026	RFI 121
13	07-02-2026	RFI 115
	11-11-2026	RFI 165

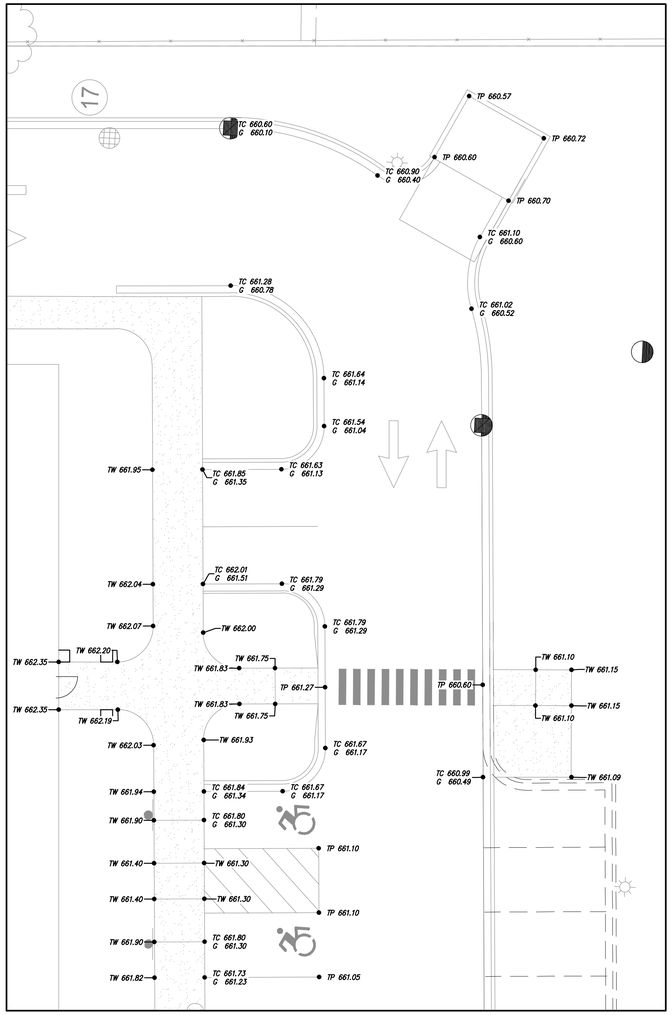
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DRAFTER -	DATE -
DESIGNER J. CHRISTOPHER	DATE 24-01-26
CHECKED J. CHRISTOPHER	DATE 24-01-26
PROJECT MANAGER T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL -	DATE
JOB NO. NP22006	DRAWING NO. NP2006PAV
SCALE: 1" = 30'	SHEET NO. C6.1

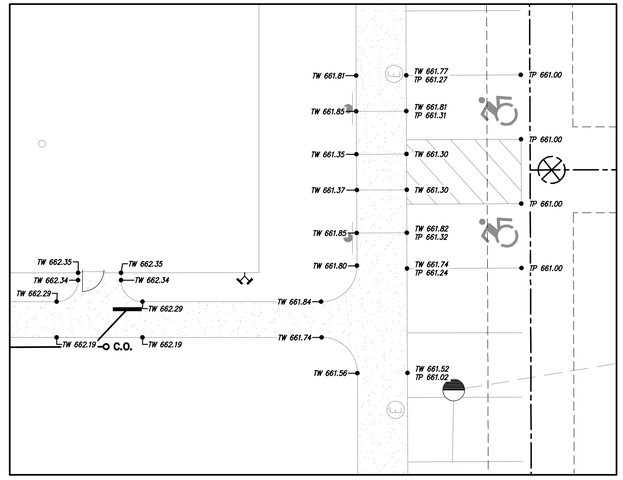
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GRADING DETAIL - AREA 3



GRADING DETAIL - AREA 2



GRADING DETAIL - AREA 1

RESTORATION NOTE

RESTORE ALL NON-PAVED AREAS WITH 3" OF CLEAN TOPSOIL AND SOD PER SPEC SECTION 2920. PEG SOD IN PLACE ON SLOPES IN EXCESS OF 10 HORIZONTAL TO 1 VERTICAL USING WOODEN PEGS A MINIMUM OF 12" LONG. WATER SOD ON A REGULAR BASIS AS INDICATED IN THE SPECIFICATIONS.

RESTORATION NOTE

RESTORE ALL NON-PAVED AREAS WITH 3" OF CLEAN TOPSOIL AND SEED MIX (30% KENTUCKY BLUEGRASS, 20% PERENNIAL RYEGRASS, 50% CREEPING RED FESCUE). PLACE MULCH IN ALL SEEDED AREAS. ON SLOPES IN EXCESS OF 10 HORIZONTAL TO 1 VERTICAL PLACE NORTH AMERICAN GREEN DS150 MULCH BLANKET IMMEDIATELY AFTER SEEDING. USE METAL STAPLES PER MANUFACTURERS RECOMMENDATIONS TO HOLD MATTING IN PLACE.

GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 / G 000.00 — PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION
- OG 000.00 — OUTSIDE GRADE ELEVATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

GRADING NOTES

1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
3. ALL PAVEMENT PLACED WITHIN BARRIER FREE PARKING AREAS (STALLS AND ACCESS AISLES) SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION, INCLUDING MEASURED DIAGONALLY ACROSS THE AREAS. CONTRACTOR SHALL ADJUST SLOPES AS NECESSARY TO PROVIDE ADA COMPLIANT SLOPES AS WELL AS PROVIDING RE-GRADED TRANSITION SLOPES OUTSIDE OF THE BARRIER FREE PARKING AREAS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF TRANSITION ZONES WILL EXCEED MAXIMUM 5% SLOPES. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE PATTERNS WITH ALL NECESSARY PAVEMENT RE-GRADING.
4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
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CONSTRUCTION PLANS
Detailed Grading

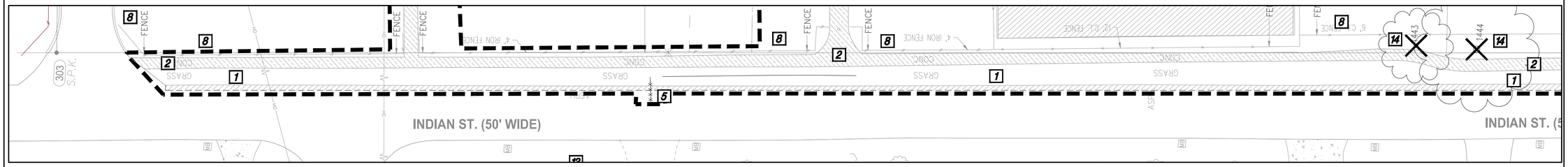
SECTION 31
TOWN 01N **RANGE** 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
1	03-04-2024	OWNER REVIEW
2	03-22-2024	PAGE TURN
3	03-29-2024	REV. OWNER REVIEW
4	10-25-2024	PERMIT
5	12-13-2024	HUD SUBMISSION
6	12-20-2024	PERMIT
7	02-19-2025	1 BULLETIN NO. 1
8	03-07-2025	2 BULLETIN NO. 2
9	11-19-2025	CITY ENG. REV.
10	12-12-2025	CITY ENG. APPROVED
11	03-02-2026	EGLE ENG. REV.
11	04-13-2026	CITY ENG. REV.

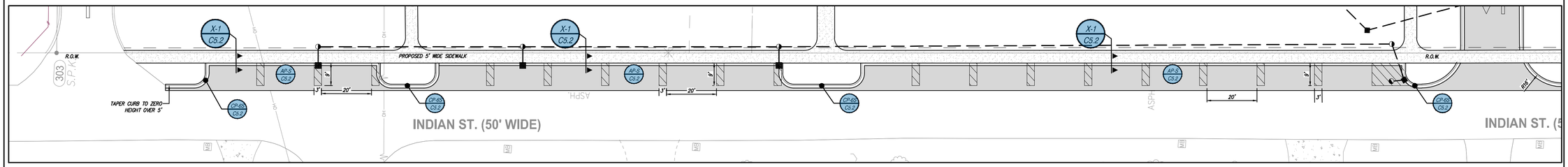
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DRAFTER: -	DATE: -
DESIGNER: J. CHRISTOPHER	DATE: 24-01-26
CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL: -	DATE
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: 1" = 30'	SHEET NO.: C6.2

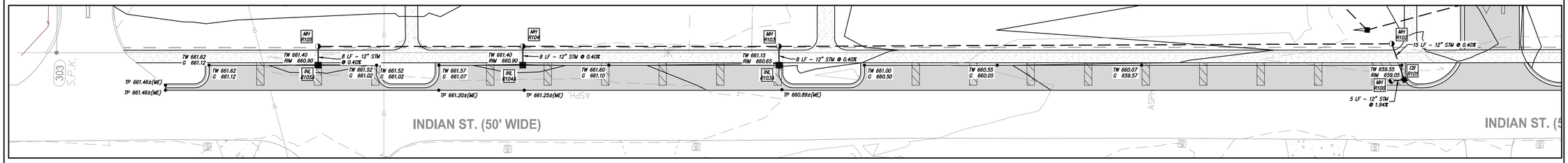
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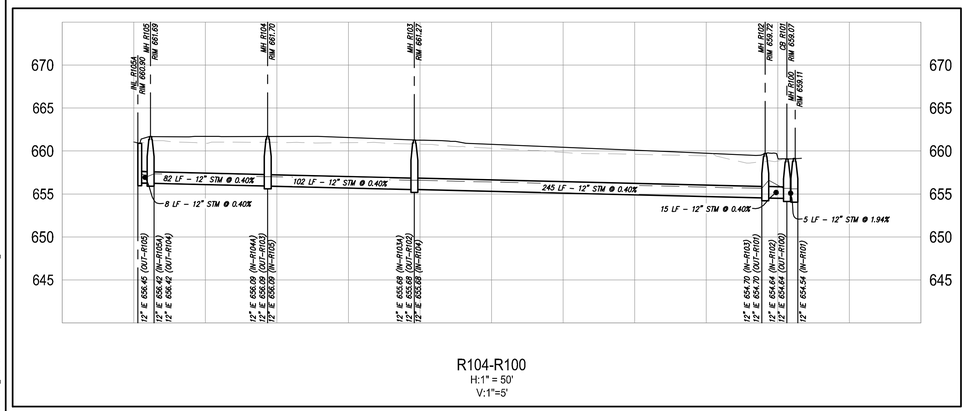
RIGHT-OF-WAY DEMOLITION PLAN



RIGHT-OF-WAY PAVING PLAN



RIGHT-OF-WAY GRADING & STORMWATER PLAN



R104-R100
H:1" = 50'
V:1"=5'

RIGHT-OF-WAY STORM SEWER PROFILE

CITY OF SOUTHFIELD STANDARD NOTES

1. NOTIFY THE CITY OF SOUTHFIELD ENGINEERING DIVISION (248) 796-4810 A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.
2. ALL CONSTRUCTION MUST CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF SOUTHFIELD.
3. UTILITIES MUST BE LOCATED UNDERGROUND.
4. CALL MISS DIG (1-800-482-7171 / 811) A MINIMUM OF SEVENTY-TWO (72) HOURS PRIOR TO THE START OF CONSTRUCTION.
5. ALL SOIL EROSION AND SILT MUST BE CONTROLLED AND CONTAINED ON-SITE.
6. ALL EXCAVATION UNDER OR WITHIN THREE FEET (3') OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (CLASS II MDOT).
7. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
8. PRIOR TO THE ISSUANCE OF AN OCCUPANCY PERMIT, ENGINEERING SITE INSPECTION IS REQUIRED.

UTILITY NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF SOUTHFIELD.
2. STORM SEWER 12" AND LARGER SHALL BE C76 CL IV (RMEM.J.T.) UNLESS OTHERWISE NOTED ON THE PLAN.
3. STORM SEWER 6" AND SMALLER SHALL BE PVC SDR 23.5. STORM SEWER GREATER THAN 6" THROUGH 10" SHALL BE PVC SDR 26.
4. ALL UTILITY TRENCHES THAT FALL WITHIN A 1-ON-1 INFLUENCE OF PAVEMENT AREAS SHALL BE BACKFILLED WITH CLASS 2 SAND AND COMPACTED TO 95% OF MAXIMUM DENSITY.
5. ALL UTILITIES SHALL BE INSTALLED ON CLASS "B" BEDDING OR BETTER.
6. ALL UTILITIES SHALL BE PLACED AT LEAST 10' FROM OTHER UTILITIES, SIGNIFICANT TREES, AND FIXED STRUCTURES.
7. UNLESS OTHERWISE NOTED, ALL STORM SEWER STRUCTURES SHALL BE 4' DIAMETER (INLETS SHALL BE 2' DIAMETER). CONTRACTOR IS RESPONSIBLE FOR VERIFYING STRUCTURES SIZES IN RELATION TO PIPE SIZES AND ANGLES AND PRICING THEIR BID ACCORDINGLY. UNLESS OTHERWISE INDICATED ON THE STANDARD DETAIL SHEETS CASTINGS SHALL BE: PVMT. CATCH BASINS – EJIW 5105 – "M" (FRAMES WITH CURB BOXES WILL NOT BE ALLOWED)
   YARD CATCH BASINS – EJIW 1040 – "02"
   MANHOLES – EJIW 1040 – "A"
8. PLACEMENT OF EDGE DRAINS AND FINGER DRAINS AT ALL PAVEMENT CATCH BASINS IS REQUIRED. SEE STRUCTURE UNDERDRAIN DETAIL SHEET C4.3.
9. FOR CURB CATCH BASINS, SEE BASIN LOCATION DETAIL FOR BASIN STAKING RELATIVE TO THE CURB.
10. CONTRACTOR TO VERIFY CONDITION OF EXISTING PIPE AND REPLACE IF NECESSARY. PASSAGE OF EXISTING UPSTREAM FLOW TO BE MAINTAINED.
11. ALL DUCTILE IRON PIPES AND FITTINGS MUST BE WRAPPED IN POLYETHYLENE.
12. NO ROOF DRAINS (EXISTING OR PROPOSED) MAY BE CONNECTED TO THE SANITARY SYSTEM. CONTRACTOR TO CONFIRM CONNECTION POINT OF EXISTING ROOF DRAINS AND RE-ROUTE IF NECESSARY.

RESTORATION NOTE

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GRADING LEGEND

000.00	EXISTING ELEVATION	• TP 000.00	TOP OF PAVEMENT ELEVATION
• TC 000.00	PROPOSED TOP OF CURB ELEVATION	• TW 000.00	TOP OF WALK ELEVATION
• G 000.00	PROPOSED GUTTER ELEVATION	• FG 000.00	FINISH GRADE ELEVATION
• OG 000.00	OUTSIDE GRADE ELEVATION	• T/WALL 000.00	TOP OF WALL ELEVATION
1130	EXISTING CONTOURS	• ME 000.00	MATCH EXISTING ELEVATION
1130	PROPOSED CONTOURS		FLOW ARROW

GRADING NOTES

1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
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4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

DEMOLITION NOTES

1. REMOVE ASPHALT PAVEMENT TO FULL DEPTH, INCLUDING AGGREGATE BASE. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. REMOVAL LIMITS TO BE FIELD VERIFIED BY ENGINEER.
2. REMOVE CONCRETE PAVEMENT TO FULL DEPTH, INCLUDING AGGREGATE BASE. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. REMOVAL LIMITS TO BE FIELD VERIFIED BY ENGINEER.
3. REMOVE CONCRETE CURB TO FULL DEPTH. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW CONCRETE CURB WILL BE PLACED ADJACENT TO EXISTING CONCRETE CURB. REMOVAL LIMITS TO BE FIELD VERIFIED BY ENGINEER.
4. CLEAR AND GRUB TO THE LIMITS SHOWN. INCLUDE REMOVAL OF ALL SIGNS, POSTS, FOOTINGS, GRAVEL, BRUSH, SHRUBS, GRASS, AND TREES NOT INDICATED FOR PROTECTION, INCLUDING ROOTS. STRIP TOPSOIL AND STOCKPILE ON SITE IN DESIGNATED LOCATION.
5. REMOVE EXISTING UTILITY PIPE. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. INSTALL WATERTIGHT BULKHEADS AT STRUCTURES WHERE EXISTING PIPE IS TO BE REMOVED.
6. REMOVE EXISTING UTILITY STRUCTURE COMPLETE. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY.
7. ABANDON EXISTING UTILITY STRUCTURE. REFER TO DETAIL ON THIS SHEET.
8. REMOVE AND SALVAGE EXISTING FENCE, INCLUDING ANY GATES.
9. REMOVE AND SALVAGE EXISTING FLAG POLE TO BE TURNED OVER TO OWNER. REMOVE AND DISPOSE EXISTING FOOTING.
10. REMOVE AND SALVAGE EXISTING LIGHT POST TO BE TURNED OVER TO OWNER. REMOVE AND DISPOSE OF EXISTING FOOTING.
11. REMOVE AND SALVAGE EXISTING PICNIC TABLE TO BE TURNED OVER TO THE OWNER.
12. ABANDON EXISTING UTILITY PIPE IN PLACE (CONTRACTOR TO CONFIRM NO CONFLICTS). CUT AND INSTALL WATERTIGHT CAP AT EXISTING PIPE AND INSTALL BULKHEAD AT STRUCTURES WHERE PIPE IS TO BE ABANDONED IN PLACE. FILL WITH FLOWABLE GROUT.
13. REMOVE AND SALVAGE EXISTING FIRE HYDRANT TO BE RELOCATED. REFER TO C3.1.
14. REMOVE EXISTING TREE, INCLUDE STUMP AND ROOTS.

   UNLESS OTHERWISE SPECIFIED, PROTECT EXISTING UTILITIES AND UTILITY STRUCTURES TO REMAIN.

   EXISTING SIGNAGE AND MAILBOXES WITHIN THE CLEARING LIMITS ARE TO BE REMOVED AND SALVAGED. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER.

   ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS II FILL MATERIAL, IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

   CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BID. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

   EXISTING SUPPORTED SLABS AT BUILDING ENTRY/DOORS TO REMAIN, UNLESS OTHERWISE DIRECTED. CONTRACTOR TO VERIFY LIMITS OF EXISTING SUPPORTED SLAB AND REMOVE ADJACENT WALKS AS SHOWN ON PLANS.

   CONTRACTOR TO PROTECT EXISTING WALKS, PAVEMENT, CURBS, GUTTERS, WALLS, FENCES, GATES, LANDSCAPING AND TREES TO REMAIN DURING CONSTRUCTION.

STORM STRUCTURE SCHEDULE (Storm (NP22006))

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
R100	MH	659.11	12"	S	654.54'	In
R101	CB	659.07	12" 12"	E N	654.64' 654.64'	In Out
R102	MH	659.72	12" 12"	N W	654.70' 654.70'	In Out
R103	MH	661.27	12" 12" 12"	W S N	655.68' 655.68' 655.68'	In Out In
R103A	2' DIA INLET	660.65	12"	E	655.71'	Out
R104	MH	661.70	12" 12" 12"	W S N	656.09' 656.09' 656.09'	In Out In
R104A	2' DIA INLET	660.90	12"	E	656.12'	Out
R105	MH	661.69	12" 12"	W S	656.42' 656.42'	In Out
R105A	2' DIA INLET	660.90	12"	E	656.45'	Out

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

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0' 20' 20'
SCALE: 1" = 20'

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CONSTRUCTION PLANS
Right-of-Way Parking Plan

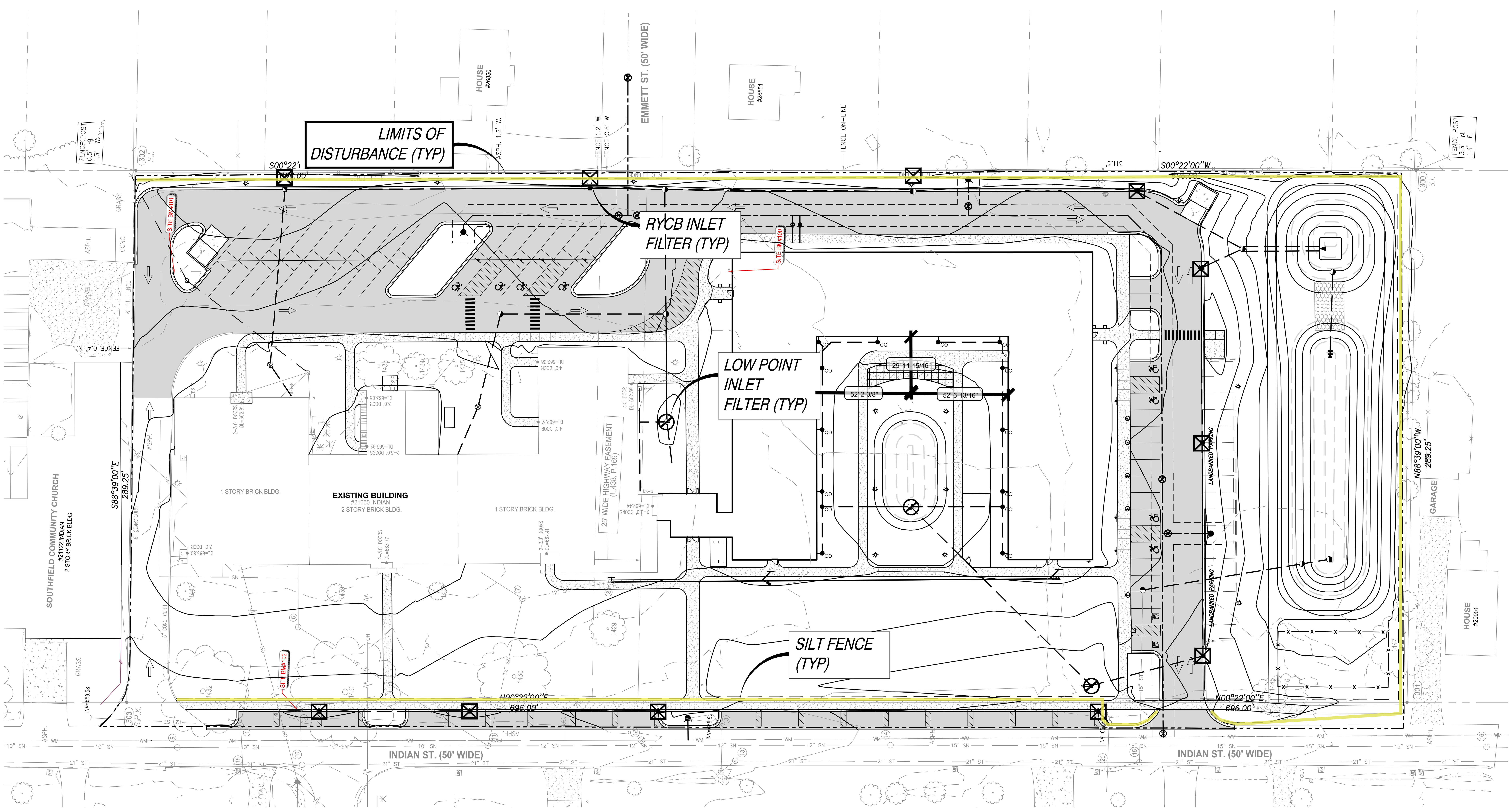
SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

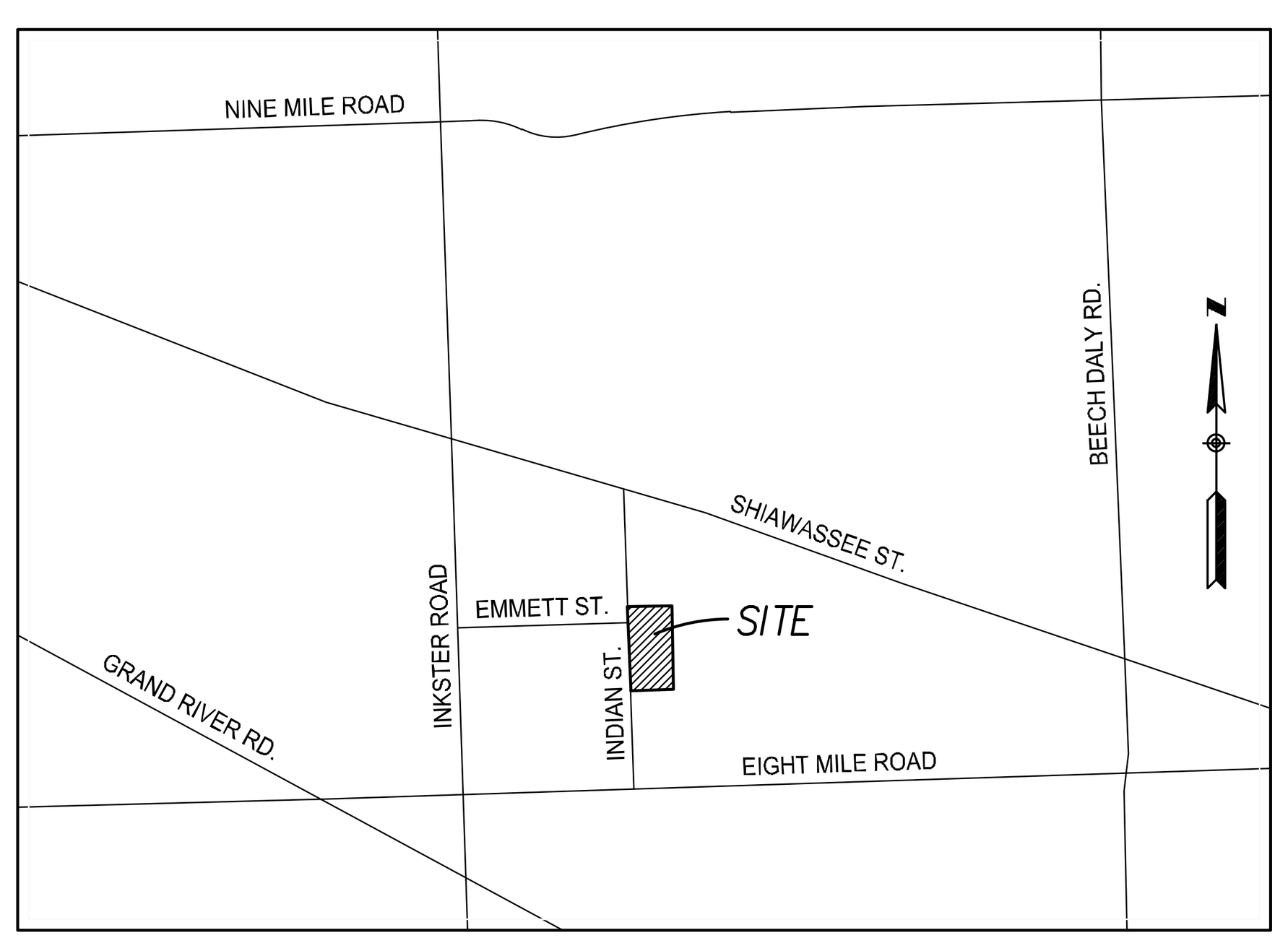
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12	04-13-2026	CITY ENG. REV.
13	07-02-2026	RFI 121 RFI 115

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DRAFTER: -	DATE: -
DESIGNER: J. CHRISTOPHER	DATE: 24-01-26
CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL: -	DATE
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: 1" = 30'	SHEET NO.: C7.1

Plotted: Jul 2, 2026, 2:55 PM by user: 1107 - Saved: 7/2/2026 by user: 1107
N:\NP\NLD Projects\NP22006 - Grace School - Senior Housing\DWG\NP22006RDW.dwg





LOCATION MAP
NOT TO SCALE

LEGAL DESCRIPTION
SOURCE: ATA NATIONAL TITLE GROUP, LLC
COMMITMENT DATE: AUGUST 11, 2021
TAX PARCEL ID: 24-31-376-033
ADDRESS: 21030 INDIAN ST.

THE LAND REFERRED TO THIS TITLE COMMITMENT IS SITUATED IN THE CITY OF SOUTHFIELD, OAKLAND COUNTY, STATE OF MICHIGAN, AS FOLLOWS:

LOT 7, 9 AND THE NORTH 140 FEET OF LOT 11, THOMAS HITCHMAN'S SUBDIVISION, AS RECORDED IN LIBER 10, PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS.

SOIL EROSION/SEDIMENTATION CONTROL CONSTRUCTION SEQUENCE

1. INSTALL INLET FILTERS, AND SILT FENCE AROUND DEFINED PERIMETER AS SHOWN.
2. COMPLETE SITE DEMOLITION ACTIVITIES INCLUDING PAVEMENT REMOVAL AND DISPOSAL. CLEAR, GRUB AND STRIP TOPSOIL IN AREAS OF EARTH DISRUPTION.
3. COMPLETE ROUGH GRADING LAND BALANCING OPERATIONS.
4. INSTALL PROPOSED UNDERGROUND UTILITIES AND PLACE INLET FILTERS IN NEW STORM STRUCTURES WHERE INDICATED. REPLACED INLET FILTERS WITHIN AFFECTED EXISTING STRUCTURES AS NECESSARY.
5. PERFORM FINE GRADING, PAVING OPERATIONS, AND FIELD.
6. COMPLETE LANDSCAPING ACTIVITIES INCLUDING LAWN RESTORATION.
7. EROSION CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL THE CITY AND/OR COUNTY GRANTS ITS APPROVAL. INLET FILTERS SHALL BE PERIODICALLY INSPECTED AND CLEANED/REPLACED AS NECESSARY.

ALL EROSION CONTROL MEASURES SHALL BE INSTALLED APPROXIMATELY ACCORDING TO THE FOLLOWING SEQUENCE OF CONSTRUCTION.

PROJECT COMMENCEMENT ON OR ABOUT MARCH 2024.

SCHEDULE

A.	INSTALL SILT FENCE, AND INLET FILTERS IN EXISTING STRUCTURES.	1–2 DAYS
B.	STRIP AND STOCKPILE TOPSOIL, SITE DEMOLITION, AND ROUGH GRADE SITE.	2–3 WEEKS
C.	INSTALL PROPOSED UTILITIES AND NEW STRUCTURES.	2–3 WEEKS
D.	INSTALL INLET FILTERS IN DRAINAGE STRUCTURES	1–2 DAYS
E.	BUILDING ADDITION CONSTRUCTION.	2 MONTHS
F.	FINE GRADE SITE, PAVE, INSTALL LANDSCAPING AND ESTABLISH VEGETATION.	2–3 WEEKS
G.	CLEAN PAVEMENTS, WALKS, CULVERTS, AND WATERCOURSES OF ALL ACCUMULATED SEDIMENT IN CONJUNCTION WITH REMOVAL ALL TEMPORARY DEVICES.	1–2 WEEKS

PROJECT COMPLETION ON OR ABOUT NOVEMBER 2024.

RESTORATION NOTE
RESTORE ALL NON-PAVED AREAS WITH 3" OF CLEAN TOPSOIL AND SEED MIX (30% KENTUCKY BLUEGRASS, 20% PERENNIAL RYEGRASS, 50% CREEPING RED FESCUE). PLACE MULCH IN ALL SEEDED AREAS. ON SLOPES IN EXCESS OF 10 HORIZONTAL TO 1 VERTICAL PLACE NORTH AMERICAN GREEN DS150 MULCH BLANKET IMMEDIATELY AFTER SEEDING. USE METAL STAPLES PER MANUFACTURERS RECOMMENDATIONS TO HOLD MATTING IN PLACE.

APPROX. GROSS ACREAGE DISTURBED = 4.10± ACRES
DISTANCE TO NEAREST BODY OF WATER = 1,045± LF NORTH
(UNNAMED TRIBUTARY TO ROUGE RIVER)

SOIL TYPES:

14B	-	OAKVILLE FINE SAND, 0 TO 6 PERCENT SLOPES
AtruaB	-	ALTMAR-URBAN LAND COMPLEX, 0 TO 4 PERCENT SLOPES
TeduaB	-	TEDROW-URBAN LAND COMPLEX, 0 TO 4 PERCENT SLOPES

THIS PROJECT SHALL BE CONSTRUCTED IN COMPLIANCE WITH PART 91 OF ACT 451 OF 1994, AS AMENDED. THE SOIL EROSION AND SEDIMENT CONTROL ACT.

GRADING LEGEND

000.00	EXISTING ELEVATION	TP 000.00	TOP OF PAVEMENT ELEVATION
TC 000.00 / G 000.00	PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION	TW 000.00	TOP OF WALK ELEVATION
OG 000.00	OUTSIDE GRADE ELEVATION	FG 000.00	FINISH GRADE ELEVATION
1130 / 1131	EXISTING CONTOURS	T/WALL 000.00	TOP OF WALL ELEVATION
1130	PROPOSED CONTOURS	ME 000.00	MATCH EXISTING ELEVATION
			FLOW ARROW

SOIL EROSION CONTROL DEVICES

- LOW POINT INLET FILTER (SI-2)
- RYCB INLET FILTER (SI-3)
- SILT FENCE (SP-3)
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE (SP-9)

SOIL EROSION/SEDIMENTATION CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY OF PONTIAC AND/OR COUNTY OF OAKLAND.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR TO DETERMINE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL DEVICES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. EROSION AND ANY SEDIMENT FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATER WAYS. WATERWAYS INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION; SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
5. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES AS REQUIRED AND AS DIRECTED ON THESE PLANS. HE SHALL REMOVE TEMPORARY DEVICES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGES HAVE BEEN ACCOMPLISHED AND APPROVED BY THE CITY AND/OR COUNTY.
6. DEBRIS FROM PROJECT WILL BE LEFT ON THE SITE BY DELIVERY OR CONSTRUCTION VEHICLES THROUGH THE USE OF CLEAN STONE EXITS. SHOULD THE STONE BECOME LESS EFFECTIVE IT WILL BE REPLACED. ALL CONSTRUCTION TRAFFIC WILL USE THE CLEAN STONE EXIT.
7. DUST CONTROL WILL BE EXERCISED AT ALL TIMES WITHIN THE PROJECT BY THE CONTRACTORS. SPRINKLING TANK TRUCKS WILL BE AVAILABLE AT ALL TIMES TO BE USED ON HAUL ROUTES OR OTHER PLACES WHERE DUST BECOMES A PROBLEM.
8. IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDED AREAS WITH UNWEATHERED SMALL GRAIN STRAW OR HAY. SPREAD UNIFORMLY AT A RATE OF 1 1/2 TO 2 TONS PER ACRE OR 0.10 POUNDS PER SQUARE FEET. ANCHOR MULCH WITH DISC TYPE MULCH ANCHORING TOOL.
9. ALL MUD, DIRT, AND DEBRIS TRACKED ONTO EXISTING ROADS FROM THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR OR BUILDER. ALL MUD, DIRT, AND DEBRIS TRACKED OR SPILLED ONTO PAVED SURFACES WITHIN THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
10. PERMANENT SOIL EROSION CONTROL DEVICES FOR ALL SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 CALENDAR DAYS AFTER FINAL GRADING OR FINAL EARTH CHANGES HAVE BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE IMPLEMENTED WITHIN 30 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION DEVICES ARE IMPLEMENTED AND/OR ESTABLISHED. ALL PERMANENT SOIL EROSION CONTROL DEVICES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED.
11. ALL CONTRACTORS ARE TO KEEP EXCAVATED MATERIAL ON SITE. PARTICULAR CARE SHOULD BE TAKEN WHEN WORKING ALONG THE PERIMETER OF THE SITE. IN NO EVENT SHALL THE WORK AREA EXTEND BEYOND THE LIMITS INDICATED ON THE PLANS.
12. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE CONTRACTOR.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- (2) UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB / 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: (20)
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

OWNER
John Grace Arms Limited Housing
26000 Evergreen Road
P.O. Box 2055
Southfield, MI 48037-2055
PHONE:

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

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CONSTRUCTION PLANS
SESC Plan

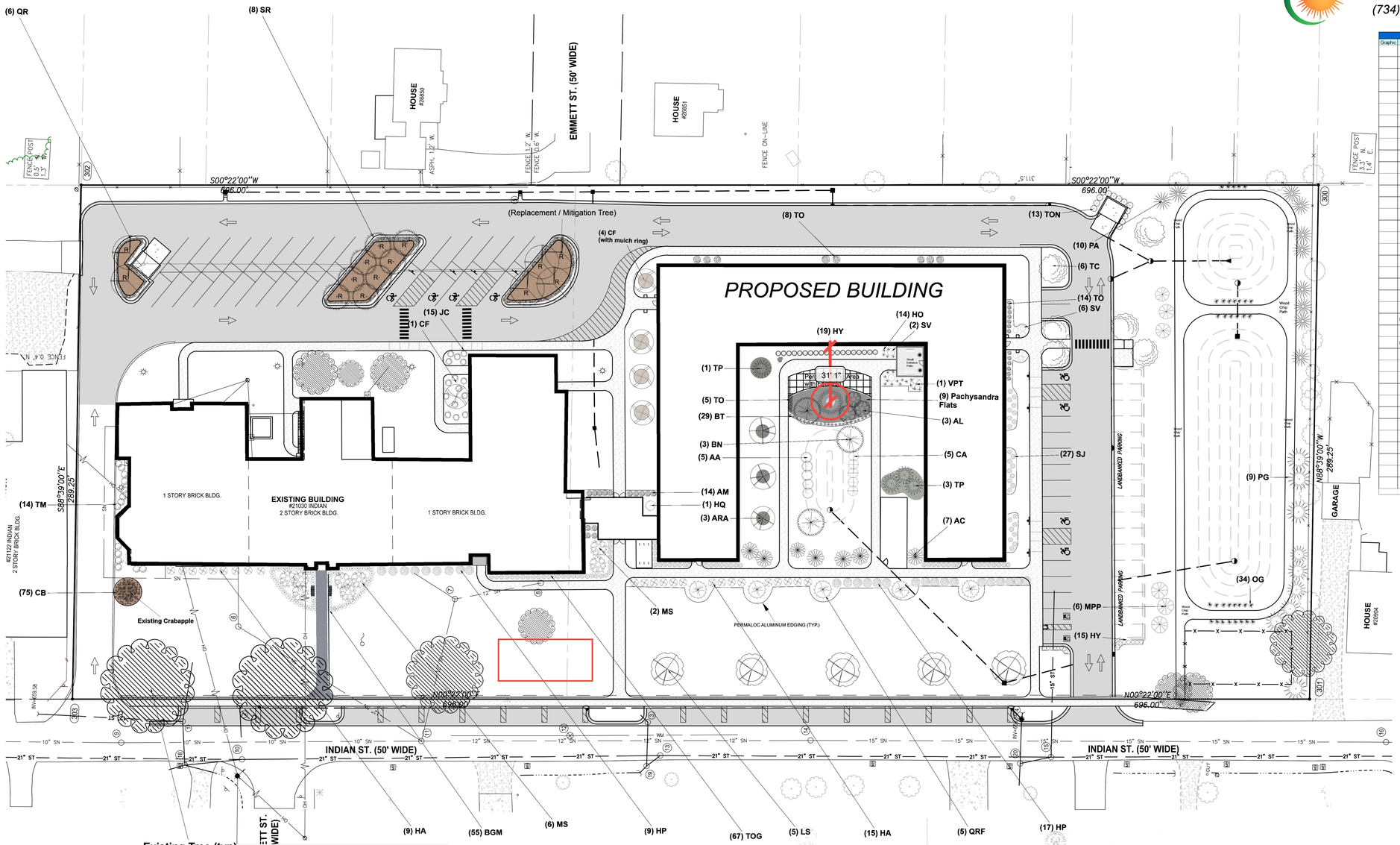
SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

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CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL: -	DATE
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE: 1" = 30'	SHEET NO.: C8.1

Plotted: Apr 13, 2026, 12:31 PM by user: 1111 - Saved: 12/9/2025 by user: 1111
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Graphic Scale

0 10 30 60

(IN FEET)
1 inch = 30 ft.

Plant Legend

Graphic	Symbol	Qty	Common	Botanical	Size	Specs
	TON	13	Dark Green Arborvitae	Thuja occidentalis 'Nigra'	4-6'	B&B
	TOG	67	Golden Globe Cedar	Thuja occidentalis 'Golden Globe'	No.5	Cont
	LS	5	American Sweetgum	Liquidambar styraciflua	2.5"	B&B
	TO	27	Emerald Arborvitae	Thuja occidentalis 'Emerald Green'	4-5'	B&B
	TP	4	Green Giant Arborvitae	Thuja plicata 'Green Giant'	5-6'	B&B
	AM	14	Aronia Low Scape	Aronia melanocarpa 'Low Scape Mound'	No. 3	Cont
	PG	9	Black Hills Spruce	Picea glauca var. densata	6-7'	B&B
	PA	10	Norway Spruce	Picea abies	6-7'	B&B
	CB	75	Coral Bells	Heuchera	No. 1	Cont
	TM	14	Dense Spreading Yew	Taxus x media 'Densiformis'	18-24"	B&B
	OG	34	Feather Reed Grass	Calamagrostis x acutiflora 'Karl Foerster'	No. 1	Cont
	CF	5	Flowering Dogwood	Cornus florida var. 'Rubra'	2"	B&B
	HY	34	Hicks Yew	Taxus x media 'Hicksii'	24-30"	B&B
	HO	14	Hosta	Hosta sp.	No. 1	Cont
	HQ	1	Hydrangea	Hydrangea quercifolia	No. 5	Cont
	BT	29	Japanese Barberry	Berberis thunbergii 'Crimson Pygmy'	No. 3	Cont
	BGM	55	Japanese Boxwood	Buxus 'Green Mountain'	12-15"	Cont
	SJ	27	Japanese Meadowsweet	Spiraea japonica 'Little Princess'	No. 3	Cont
	SR	8	Japanese Tree Lilac	Syringa reticulata	2"	B&B
	JC	15	Juniper Calgary Carpet	Juniperus communis 'Calgary Carpet'	No. 3	Cont
	SV	8	Miss Kim Dwarf Lilac	Syringa patula 'Miss Kim'	No. 5	Cont
	TC	6	Littleleaf Linden	Tila cordata	2.5"	B&B
	PT	9	Pachysandra	Pachysandra terminalis	Flats	Flats
Existing	3		Prairiefire crabapple	Malus 'Prairiefire'	EX	EX
	AA	5	Red Chokeberry	Aronia arbutifolia 'Brilliantissima'	No. 5	Cont
Existing	10		Red Maple	Acer rubrum	EX	EX
	ARA	3	Redpointe Red Maple	Acer rubrum 'Redpointe'	2.5"	B&B
	QR	6	Red Oak	Quercus rubra	2.5"	B&B
	QRF	5	Upright English Oak	Quercus robur 'Fastigiata'	2.5"	B&B
	MPP	6	Prairiefire crabapple	Malus 'Prairiefire'	2"	B&B
	CA	5	Tatarian Dogwood 'Ivory Halo'	Cornus alba 'Ivory Halo'	No. 5	Cont
	BN	3	Heritage River birch	Betula nigra 'Heritage'	8-10'	B&B
	AL	3	Allegheny Serviceberry	Amelanchier laevis	5-6'	B&B
	HP	26	Panicle Hydrangea	Hydrangea paniculata 'Quick Fire'	No. 5	Cont
	HA	24	Annabelle Smooth Hydrangea	Hydrangea arborescens 'Annabelle'	No. 5	Cont
	MS	8	Star Magnolia	Magnolia stellata 'Royal Star'	4-5'	B&B
	VPT	1	Doublefile Viburnum	Viburnum plicatum	24-30"	B&B
	AC	7	Concolor Fir	Abies concolor	6-7'	B&B

LANDSCAPE NOTES:

Exceptions to the following specifications will be considered, if acceptable alternates are discussed with the City of Southfield Planning Department prior to landscape installation. Additional specifications are to be added by the landscape architect as needed.

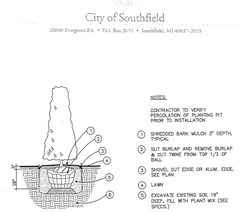
1. Prior to any land clearing or construction, tree protection fencing is to be installed by the contractor and inspected by the City. This fencing shall be installed at the drip line of all trees and shrubs, in accordance with the City's Tree Protection Detail, and must be maintained as approved for the duration of the project. No cutting, filling or trespassing shall occur inside the fenced areas without prior approval from the City of Southfield Planning Department.
2. Trees to be transplanted on the site shall be so marked in the field by the landscape architect, approved by the City of Southfield and transplanted using only the appropriate size tree spade, per the American Association of Nurserymen and City of Southfield Standards. Transplants are to be watered immediately following planting. See detail on landscape plan.
3. Trees shown on the plan to save or transplant that are removed or damaged shall be replaced with one (1) 2 ½ - 3" caliper tree for each tree removed under 6" diameter. Trees over 6" diameter shall be replaced with one (1) 2 ½ - 3" caliper tree for each 6" in diameter removed. Type of replacement and location shall be determined by the project landscape architect or the City of Southfield Planning Department.
4. Plant trees and shrubs no closer than the following minimum distances from sidewalks, curbs and parking stalls:

Shade/Canopy Trees	5 feet
Ornamental/Flowering Trees	10 feet
Evergreen Trees	10 feet
Evergreen/Flowering Shrubs	4 feet

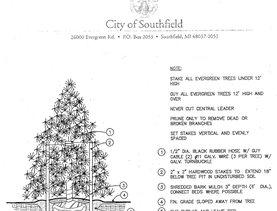
5. Dig shrub pits a minimum of 1' larger than shrub root balls and tree pits 2' larger than root balls. Backfill with one part top soil and one part soil from the excavated planting hole. Plant trees and shrubs at the same grade level at which they were planted at the nursery. If wet, clay soils are evident, plant trees and shrubs higher.
6. Remove all twine, wire and burlap from the top 1/3 of tree and shrub earth balls and from tree trunks. Remove all non-biodegradable material such as plastic or nylon completely.
7. Lawn trees are to be mulched with a minimum of 4' wide by 4" deep shredded bark rings or approved design for trunk protection. Only natural-colored shredded hardwood bark mulch will be accepted.
8. Shrub beds are to be mulched with shredded bark mulch to a minimum depth of 3". Only natural-colored shredded hardwood bark mulch will be accepted.
9. Sod is to be provided for all new lawn areas, especially in right-of-ways and high use areas. Peat sod is not acceptable.
10. Existing lawn that the owner intends to save and areas that are damaged during construction must be inspected by the City to determine viability. If the existing lawn is found to be level, healthy, dense and free from weeds, lawn may not require replacement or renovation. If restoration is required or is part of the approved plan, then the following requirements will apply:

    Existing lawn found to be in poor condition must first be sprayed with Round-Up (or equal) to kill the existing lawn and weed areas. Wait for a minimum period of seven (7) days for the herbicide to take effect, then remove all dead sod and weeds to a minimum depth of two (2) inches. Add a minimum of four (4) to six (6) inches of new topsoil to all lawn areas. Back fill and compact topsoil to the top of all curbs and walks prior to sodding. Regrade to eliminate all bumps and depressions and reseed all areas.

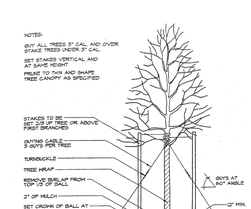
    Existing lawn found to be generally in good condition but with bare, sparse or weedy areas must be renovated by filling in low areas, raking, overseeding and top dressing all sparse and bare spots and by initiating a weed and feed program.
11. Backfill directly behind all curbs and along sidewalks and compact to the top of curb or walk to support vehicle and pedestrian weight without settling.
12. All landscape areas, especially parking lot islands and landscape beds next to buildings shall be excavated of all building materials and poor soils to a depth of 12 – 18" and backfilled with good, medium textured planting soil (loam or light yellow clay). Add 4 – 6" of topsoil over fill material and crown a minimum of 6" above top of curbs and/or walks after earth settling unless otherwise noted on the landscape plan.
13. In natural areas the following procedures shall be followed:
    A. Remove any trees and brush per City of Southfield direction only.
    B. Remove trash and perform surface grading (if any) only to fill in the worst low spots. Do not cut or fill around trees.
    C. Rake, hydroseed and mulch bare ground areas with proper seed mix (shade or sunny mix).
    D. Let area revert to trees and shrubs. Mow very minimally, if necessary.
14. Landscape berms are to be constructed of light yellow clay or loam soils and are to be free of construction materials and debris. Use of heavy clays for berm construction must be approved by the City of Southfield Planning Department prior to installation. Slopes are to be no steeper than 1:3 unless otherwise specified on the landscape plan.
15. Conversion of all asphalt and gravel areas to landscape shall be done in the following manner:
    A. Remove all asphalt, gravel and compacted earth to a depth of 6 – 18" depending on the depth of the sub base and dispose of off site.
    B. Call (248) 796-4156 for an inspection prior to backfilling.
    C. Replace excavated material with good, medium textured planting soil (loam or light yellow clay) to a minimum of 2" above top of curb and sidewalk, add 4 – 6" of topsoil and crown to a minimum of 6" above adjacent curb and walk after earth settling, unless otherwise noted on the landscape plan.
16. All landscape areas including right-of-ways shall be irrigated by an automatic underground irrigation system. Lawns and shrub/landscape areas shall be watered by separate zones to minimize overwatering.
17. All existing trees on site and in the right-of-way shall be pruned as directed by the City of Southfield to remove dead, dying and hazardous limbs or to remove limbs which impede construction, driveways and sidewalks. Pruning and deep-root fertilizing is to be done only by a qualified tree service company licensed with the City of Southfield.
18. The construction of detention basins should be made with the following goals in mind:
    A. Natural, free form appearing grades
    B. Slopes of 1:4 or flatter
    C. No fencing
    D. No water levels to be retained
    E. Mow slopes and let bottom of basin revert to natural vegetation
19. Provide continuous curbing around all landscape areas on site. Alternate landscape area protection such as decorative fences, retaining walls, etc., may be acceptable in lieu of curbing or may be required in addition to curbing to protect the landscape areas and property defect vehicular and pedestrian traffic.



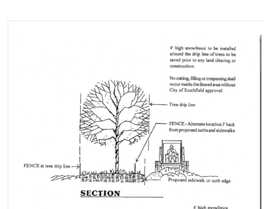
HEDGE PLANTING DETAIL
NOT TO SCALE



EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



DECIDUOUS TREE PLANTING
SECTION NOT TO SCALE



TREE PROTECTION DETAIL
CITY OF SOUTHFIELD STANDARD DETAIL Not Scale

ECO Landscape Design & Consulting
West Bloomfield, Michigan
(734) 276-8446

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Engineering and Surveying
Excellence Since 1954

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Rochester Hills, MI 48307
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(800) 598-1600

CLIENT:

JOHN GRACE ARMS LIMITED HOUSING
26000 EVERGREEN ROAD
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SOUTHFIELD, MI 48037-2055

Know what's below. Call before you dig.

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STATE OF MICHIGAN
ROBERT M. O'REILLY
LANDSCAPE ARCHITECT
NO. 3901001417
REGISTERED LANDSCAPE ARCHITECT

JOHN GRACE ARMS

CONSTRUCTION PLANS
Landscape Plan

SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
1	03-04-2024	OWNER REVIEW
2	03-22-2024	PAGE TURN
3	03-29-2024	REV. OWNER REVIEW
4	10-25-2024	PERMIT
5	12-13-2024	HUD SUBMISSION
6	12-20-2024	PERMIT

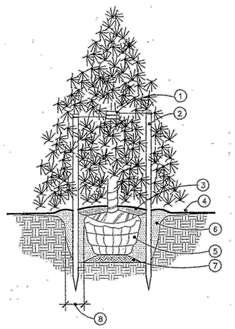
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAFTER -	DATE -
DESIGNER J. CHRISTOPHER	DATE 24-01-26
CHECKED J. CHRISTOPHER	DATE 24-01-26
PROJECT MANAGER T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL -	DATE -
JOB NO. NP22006	DRAWING NO. NP2006PAV
SCALE:	SHEET NO. L1.1

Plotted: Dec 16, 2024, 11:24 AM by user: 1111 - Saved: 3/29/2024 by user: 1111
N:\NP\NLD Projects\NP22006 - Grace School - Senior Housing\DWG\NP22006LSC.dwg

City of Southfield

26000 Evergreen Rd. • P.O. Box 2055 • Southfield, MI 48037-2055



NOTE:

STAKE ALL EVERGREEN TREES UNDER 12' HIGH

GUY ALL EVERGREEN TREES 12' HIGH AND OVER

NEVER CUT CENTRAL LEADER

PRUNE ONLY TO REMOVE DEAD OR BROKEN BRANCHES

SET STAKES VERTICAL AND EVENLY SPACED

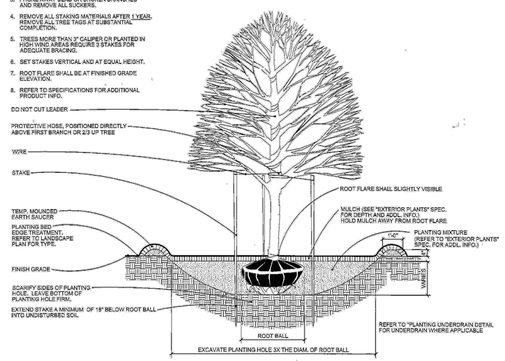
1. 1/2" DIA. BLACK RUBBER HOSE W/ GUY CABLE (2) #11 GALV. WIRE (3 PER TREE) W/ GALV. TURNBUCKLE
2. 2" x 2" HARDWOOD STAKES TO EXTEND 18" BELOW TREE PIT IN UNDISTURBED SOIL
3. SHREDDED BARK MULCH 3" DEPTH (6' DIA.), CONNECT BEDS WHERE POSSIBLE
4. FIN. GRADE SLOPED AWAY FROM TREE
5. SLIT BURLAP AND LEAVE TIED
6. PLANT MIX
7. SCARIFY TO 4" DEPTH & RECOMPACT
8. 12" MIN. BETWEEN ROOTBALL AND EDGE OF PLANT PIT.

EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

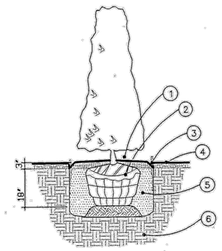
NOTES:

1. SET ALL PLANTS AT THE PROPER DEPTH. PLANT ALL TRUNKS PLUMB.
2. REMOVE ALL BURLAP, WIRE CAGE, TWINE AND ROPE FROM UPPER 50% OF ROOT BALL AFTER STABILIZING LOWER 1/3 OF ROOT BALL IN PLANTING TOPSOIL. DO NOT REMOVE SOIL FROM ROOTBALL.
3. PRUNE AWAY DEAD OR BROKEN BRANCHES AND REMOVE ALL SUCKERS.
4. REMOVE ALL STAKING MATERIALS AFTER 1 YEAR. REMOVE ALL TREE TAGS AT SUBSTANTIAL COMPLETION.
5. TREES MORE THAN 3" CALIPER OR PLANTED IN HIGH WIND AREAS REQUIRE 3 STAKES FOR ADEQUATE BRACING.
6. SET STAKES VERTICAL AND AT EQUAL HEIGHT.
7. ROOT FLARE SHALL BE AT FINISHED GRADE ELEVATION.
8. REFER TO SPECIFICATIONS FOR ADDITIONAL PRODUCT INFO.



DECIDUOUS TREE PLANTING WITH TREE STAKES - B & B

SCALE: N.T.S.



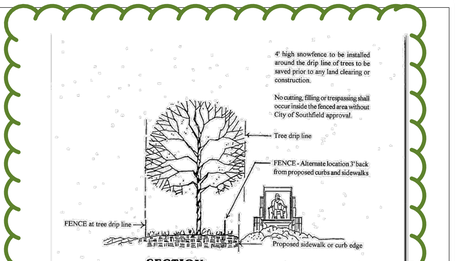
NOTES:

CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION

1. SHREDDED BARK MULCH 3" DEPTH, TYPICAL
2. SLIT BURLAP AND REMOVE BURLAP & CUT TWINE FROM TOP 1/3 OF BALL
3. SHOVEL CUT EDGE OR ALUM. EDGE, SEE PLAN
4. LAWN
5. EXCAVATE EXISTING SOIL 18" DEEP, FILL WITH PLANT MIX (SEE SPECS.)
6. UNDISTURBED SUBGRADE

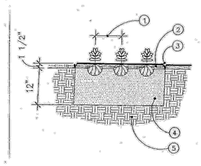
HEDGE PLANTING DETAIL

NOT TO SCALE



TREE PROTECTION DETAIL

CITY OF SOUTHFIELD STANDARD DETAIL - NO SCALE



CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION

1. SEE PLANT LIST FOR SPACING
2. 1-1/2" DEPTH DOUBLE PROCESSED SHREDDED BARK MULCH
3. SHOVEL CUT EDGE OR ALUM. EDGE, SEE PLAN
4. EXCAVATE EXISTING SOIL 12" DEEP, FILL WITH PLANT MIX (SEE SPECS.)
5. UNDISTURBED SUBGRADE

PERENNIAL/GROUNDCOVER PLANTING DETAIL

NOT TO SCALE

LANDSCAPE NOTES:

Exceptions to the following specifications will be considered, if acceptable alternates are discussed with the City of Southfield Planning Department prior to landscape installation. Additional specifications are to be added by the landscape architect as needed.

1. Prior to any land clearing or construction, tree protection fencing is to be installed by the contractor and inspected by the City. This fencing shall be installed at the drip line of all trees and shrubs, in accordance with the City's Tree Protection Detail, and must be maintained as approved for the duration of the project. No cutting, filling or trespassing shall occur inside the fenced areas without prior approval from the City of Southfield Planning Department.

2. Trees to be transplanted on the site shall be so marked in the field by the landscape architect, approved by the City of Southfield and transplanted using only the appropriate size tree spade, per the American Association of Nurserymen and City of Southfield Standards. Transplants are to be watered immediately following planting. See detail on landscape plan.

3. Trees shown on the plan to save or transplant that are removed or damaged shall be replaced with one (1) 2 ½ - 3" caliper tree for each tree removed under 6" diameter. Trees over 6" diameter shall be replaced with one (1) 2 ½ - 3" caliper tree for each 6" in diameter removed. Type of replacement and location shall be determined by the project landscape architect or the City of Southfield Planning Department.

4. Plant trees and shrubs no closer than the following minimum distances from sidewalks, curbs and parking stalls:

Shade/Canopy Trees	5 feet
Ornamental/Flowering Trees	10 feet
Evergreen Trees	10 feet
Evergreen/Flowering Shrubs	4 feet

5. Dig shrub pits a minimum of 1' larger than shrub root balls and tree pits 2' larger than root balls. Backfill with one part top soil and one part soil from the excavated planting hole. Plant trees and shrubs at the same grade level at which they were planted at the nursery. If wet, clay soils are evident, plant trees and shrubs higher.

6. Remove all twine, wire and burlap from the top 1/3 of tree and shrub earth balls and from tree trunks. Remove all non-biodegradable material such as plastic or nylon completely.

7. Lawn trees are to be mulched with a minimum of 4' wide by 4" deep shredded bark rings or approved design for trunk protection. Only natural-colored shredded hardwood bark mulch will be accepted.

8. Shrub beds are to be mulched with shredded bark mulch to a minimum depth of 3". Only natural-colored shredded hardwood bark mulch will be accepted.

9. Sod is to be provided for all new lawn areas, especially in right-of-ways and high use areas. Peat sod is not acceptable.

10. Existing lawn that the owner intends to save and areas that are damaged during construction must be inspected by the City to determine viability. If the existing lawn is found to be level, healthy, dense and free from weeds, lawn may not require replacement or renovation. If renovation is required or is part of the approved plan, then the following requirements will apply:

    Existing lawn found to be in poor condition must first be sprayed with Round-Up (or equal) to kill the existing lawn and weed areas. Wait for a minimum period of seven (7) days for the herbicide to take effect, then remove all dead sod and weeds to a minimum depth of two (2) inches. Add a minimum of four (4) to six (6) inches of new topsoil to all lawn areas. Back fill and compact topsoil to the top of all curbs and walks prior to sodding. Regrade to eliminate all bumps and depressions and resod all areas.

    Existing lawn found to be generally in good condition but with bare, sparse or weedy areas must be renovated by filling in low areas, raking, overseeding and top dressing all sparse and bare spots and by initiating a weed and feed program.

11. Backfill directly behind all curbs and along sidewalks and compact to the top of curb or walk to support vehicle and pedestrian weight without settling.

12. All landscape areas, especially parking lot islands and landscape beds next to buildings shall be excavated of all building materials and poor soils to a depth of 12 – 18" and backfilled with good, medium textured planting soil (loam or light yellow clay). Add 4 – 6" of topsoil over fill material and crown a minimum of 6" above top of curbs and/or walks after earth settling unless otherwise noted on the landscape plan.

13. In natural areas the following procedures shall be followed:

    A. Remove any trees and brush per City of Southfield direction only.
    B. Remove trash and perform surface grading (if any) only to fill in the worst low spots. Do not cut or fill around trees.
    C. Rake, hydroseed and mulch bare ground areas with proper seed mix (shade or sunny mix).
    D. Let area revert to trees and shrubs. Mow very minimally, if necessary.

14. Landscape berms are to be constructed of light yellow clay or loam soils and are to be free of construction materials and debris. Use of heavy clays for berm construction must be approved by the City of Southfield Planning Department prior to installation. Slopes are to be no steeper than 1:3 unless otherwise specified on the landscape plan.

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    A. Natural, free form appearing grades
    B. Slopes of 1:4 or flatter
    C. No fencing
    D. No water levels to be retained
    E. Mow slopes and let bottom of basin revert to natural vegetation

19. Provide continuous curbing around all landscape areas on site. Alternate landscape area protection such as decorative fences, retaining walls, etc., may be acceptable in lieu of curbing or may be required in addition to curbing to protect the landscape areas and properly deflect vehicular and pedestrian traffic.

20. Ryerson steel edging typical around all beds that meet lawn.

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ROBERT M. O'REILLY
LANDSCAPE ARCHITECT
NO. 3901001417
REGISTERED LANDSCAPE ARCHITECT

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JOHN GRACE ARMS

CONSTRUCTION PLANS
Landscape Details

SECTION 31
TOWN 01N RANGE 10E
CITY OF SOUTHFIELD
OAKLAND COUNTY

NO.	DATE	REVISION
1	03-04-2024	OWNER REVIEW
2	03-22-2024	PAGE TURN
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4	10-25-2024	PERMIT

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DRAFTER: -	DATE: -
DESIGNER: J. CHRISTOPHER	DATE: 24-01-26
CHECKED: J. CHRISTOPHER	DATE: 24-01-26
PROJECT MANAGER: T. SOVEL	BID PLAN DATE
DEPARTMENT MANAGER APPROVAL: -	DATE
JOB NO.: NP22006	DRAWING NO.: NP2006PAV
SCALE:	SHEET NO.: L1.2

Plotted: Oct 30, 2024, 2:3 PM by user: lll1 - Saved: 3/29/2024 by user: lll1
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BOUNDARY & TOPOGRAPHICAL SURVEY

SOUTHFIELD GRACE SCHOOL

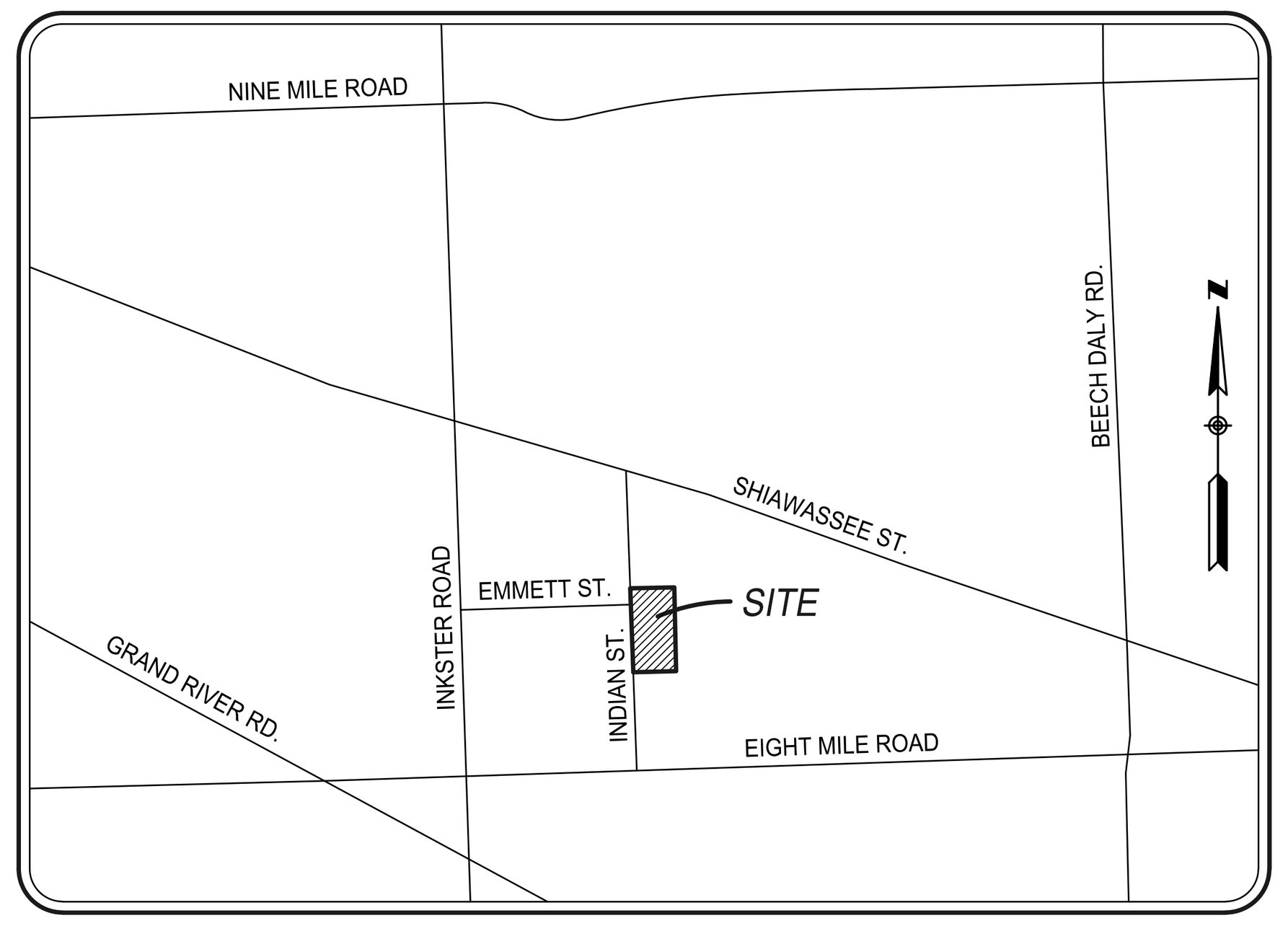
21030 INDIAN, SOUTHFIELD, MICHIGAN 48033

LEGEND

- MANHOLE
- CATCH BASIN
- C.O. SEWER CLEAN OUT
- GAS METER
- GAS SHUT OFF VALVE
- VALVE BOX
- GATE VALVE & WELL
- WATER SHUT OFF VALVE
- FIRE HYDRANT
- SPRINKLER VALVE BOX
- LAWN SPRINKLER HEAD
- HAND HOLE
- ELECTRIC RISER OR METER
- TELEPHONE RISER
- CABLE TV RISER
- AIR CONDITION UNIT
- UTILITY POLE
- UTILITY POLE W/ TRANSFORMER
- UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
- LIGHT POLE
- LIGHT POLE WITH LAMP EXTENSION
- TRAFFIC SIGNAL
- POLE W/ TRAFFIC SIGNAL (OVER ROAD)
- GUY GUY WIRE
- GP GUY POLE
- GROUND LEVEL / DECORATIVE LIGHTING
- FLAG POLE
- PHONE OR PHONE BOOTH
- METAL OR CONC. POST
- MAILBOX
- SIGN
- WATER FOUNTAIN
- PARKING METER
- BILLBOARD OR LARGE SIGN
- BB BASKETBALL HOOP
- BOULDER
- STATUE OR SCULPTURE
- BENCH
- STUMP
- DS-S DOWNSPOUT INTO STORM DRAIN
- DS-G DOWNSPOUT TO GROUND
- CONIFEROUS TREE
- DECIDUOUS TREE
- DECIDUOUS SHRUB
- CONIFEROUS SHRUB
- SECTION CORNER
- SDA#10 TRAVERSE POINT
- (1) STRUCTURE NUMBER
- (10) SDA POINT No.
- 655.00 X SPOT ELEVATION

TC	TOP OF CURB ELEVATION
GU	GUTTER ELEVATION
TP	TOP OF PAVEMENT ELEVATION
EM	EDGE OF METAL ELEVATION
TW	TOP OF WALK ELEVATION
T/WALL	TOP OF WALL ELEVATION
B/WALL	BOTTOM OF WALL ELEVATION
GR	GROUND ELEVATION
UG	UNDERGROUND
FO	FIBER OPTIC
CONC	CONCRETE
ASPH	ASPHALT
FF	FINISH FLOOR ELEVATION
DL	DOOR LEDGE ELEVATION
• F.I.	FOUND IRON
• F.M.	FOUND MONUMENT
• F.P.K.	FOUND P.K. NAIL
• S.I.	SET IRON W/SDA CAP
• S.P.K.	SET P.K. NAIL
• S.P.K./TAG	SET P.K. NAIL W/SDA TAG
• MAG	SET MAGNETIC NAIL
• MAG/TAG	SET MAGNETIC NAIL W/SDA TAG
M	MEASURED
R	RECORD
C	CALCULATED
INV.	INVERT ELEVATION
CMP	CORRUGATED METAL PIPE

- G — GAS
- SN — SANITARY SEWER (SAN)
- ST — STORM SEWER (STM)
- WM — WATERMAIN (WM)
- OH — OVERHEAD WIRE
- COMBINED SEWER
- STE — STEAM LINE
- O — OIL LINE
- F — UG FIBER (COMM.)
- E — UG ELECTRIC (ELEC.)
- T — UG PHONE (PH)
- C — UG CABLE (CBL)
- CHAIN LINK FENCE (CL)
- WOOD FENCE
- WOVEN WIRE FENCE (WW)
- GUARD RAIL
- EDGE OF BRUSH/WOODS
- CENTERLINE OF DITCH
- CULVERT
- BANK/TOP OF SLOPE
- 650 MAJOR CONTOUR
- 651 MINOR CONTOUR
- BOUNDARY LINES
- ROW LINES
- SECTION LINES
- PROPERTY LINES
- ASPHALT
- CONCRETE
- GRAVEL
- BRICK / PAVERS
- WATER



LOCATION MAP

NOT TO SCALE

BENCHMARK DESCRIPTIONS

DATUM: GPS-DERIVED NAVD'88

SITE BM#100 CHISELED "+" ON NORTHWEST PLATE OF LIGHT POLE, LOCATED ±70' SOUTHEAST OF THE SOUTHEAST BUILDING CORNER OF #21030.
ELEV.=661.24

SITE BM#101 CHISELED "+" ON SOUTHWEST PLATE OF LIGHT POLE, LOCATED ±70' EAST OF OF THE NORTHEAST BUILDING CORNER OF #21030.
ELEV.=661.68

SITE BM#102 CHISELED "+" ON THE NORTH RIM OF STORM MANHOLE (STRUCTURE No. 2), LOCATED ON THE EAST SIDE OF INDIAN STREET ±100' SOUTHWEST OF THE NORTHWEST BUILDING CORNER OF #21030.
ELEV.=661.05

SURVEYOR'S COMMENTS

1. THIS BOUNDARY AND TOPOGRAPHICAL SURVEY IS BASED UPON A FIELD SURVEY PERFORMED BY SPALDING DEDECKER INC. DURING JANUARY OF 2022.
2. THE PROPERTY LINES/RIGHT-OF-WAY LINES SHOWN ON THIS TOPOGRAPHICAL SURVEY ARE INTENDED TO BE AN ACCURATE GRAPHICAL REPRESENTATION BASED UPON A COMBINATION OF A PROVIDED LEGAL DESCRIPTION, FOUND FIELD MONUMENTATION AND OCCUPATION. A COMPLETE PROPERTY LINE ANALYSIS HAS BEEN PERFORMED AND PROPERTY CORNERS HAVE BEEN SET IN THE FIELD PER THE AGREED TO SCOPE OF SERVICES.
3. THIS SURVEY HAS BEEN PREPARED WITH THE BENEFIT OF A CURRENT TITLE SEARCH. AN INFORMATIONAL TITLE SEARCH BY ATA NATIONAL TITLE GROUP HAVING AN ORDER NUMBER OF 63-21796421-SCM AND AN EFFECTIVE DATE OF AUGUST 11, 2021 HAS BEEN PROVIDED TO SPALDING DEDECKER. ALL PLOTTABLE ENCUMBRANCES LISTED ON SCHEDULE B-II EXCEPTIONS OF THIS TITLE SEARCH HAVE BEEN SHOWN ON THIS SURVEY IF THEY FALL WITHIN THE LIMITS OF DETAILED MAPPING. FURTHERMORE, EACH PLOTTABLE EXCEPTION IS DETAILED ON THE "INFORMATIONAL TITLE EXCEPTION COMMENTS" TABLE ON THIS SURVEY.
4. THE BASIS OF BEARINGS FOR THIS SURVEY IS THE STATE PLANE GRID AND THE UNITS ARE INTERNATIONAL FEET AS ESTABLISHED WITH RTK GPS MEASUREMENTS USING A DATA LINK TO THE MDOT CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS). THE COORDINATE SYSTEM FOR THIS SURVEY IS THE STATE PLANE COORDINATE SYSTEM, MICHIGAN SOUTH ZONE (2113) BASED ON NAD83 (2011).
5. PROPERTY LINES HAVE BEEN ROTATED TO STATE PLANE GRID BEARINGS; THEREFORE, THE BEARINGS OF THE PROPERTY LINES ON THE DRAWING WILL NOT MATCH THOSE SHOWN IN THE LEGAL DESCRIPTION.
6. THE VERTICAL DATUM OF THIS SURVEY IS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AS ESTABLISHED WITH RTK GPS MEASUREMENTS USING A DATA LINK TO THE MDOT CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
7. THE PARKING LOT STRIPING SHOWN ON THIS SURVEY IS APPROXIMATE. DIMENSIONAL AND/OR ORIENTATION VARIATIONS MAY EXIST. THIS DRAWING SHOULD NOT BE USED FOR A PARKING SPACE COUNT.
8. THE UTILITY INFORMATION SHOWN ON THIS SURVEY IS BASED UPON A COMBINATION OF RECORD INFORMATION AND FIELD MEASUREMENTS. A MISS DIG DESIGN TICKET NUMBER OF 2022011300117 HAS BEEN REFERENCED TO THIS PROJECT AND A UTILITY PROVIDER CHART IS SHOWN ON THIS DRAWING. THERE ARE NO ASSURANCES THAT ALL PROVIDERS HAVE RESPONDED AND THE SURVEYOR DOES NOT GUARANTEE THAT ALL UNDERGROUND UTILITIES ARE SHOWN AND/OR POSITIONED PROPERLY ON THIS DRAWING DUE TO AMBIGUOUS PLANS AND RECORDS PROVIDED TO US. THE INFORMATION SHOWN ON THIS DRAWING IS INTENDED TO BE USED AS A GUIDE FOR POSSIBLE UNDERGROUND UTILITY CONFLICTS. IT IS THE RESPONSIBILITY OF OTHERS TO RESOLVE THE ACTUAL LOCATION OF ANY UNDERGROUND UTILITY THROUGH THE MISS DIG FIELD VERIFICATION SYSTEM PRIOR TO ANY SITE EXCAVATION. CALL 811 OR 800-482-7171.

LEGAL DESCRIPTION

SOURCE: ATA NATIONAL TITLE GROUP, LLC
COMMITMENT DATE: AUGUST 11, 2021
TAX PARCEL ID: 24-31-376-033
ADDRESS: 21030 INDIAN ST.

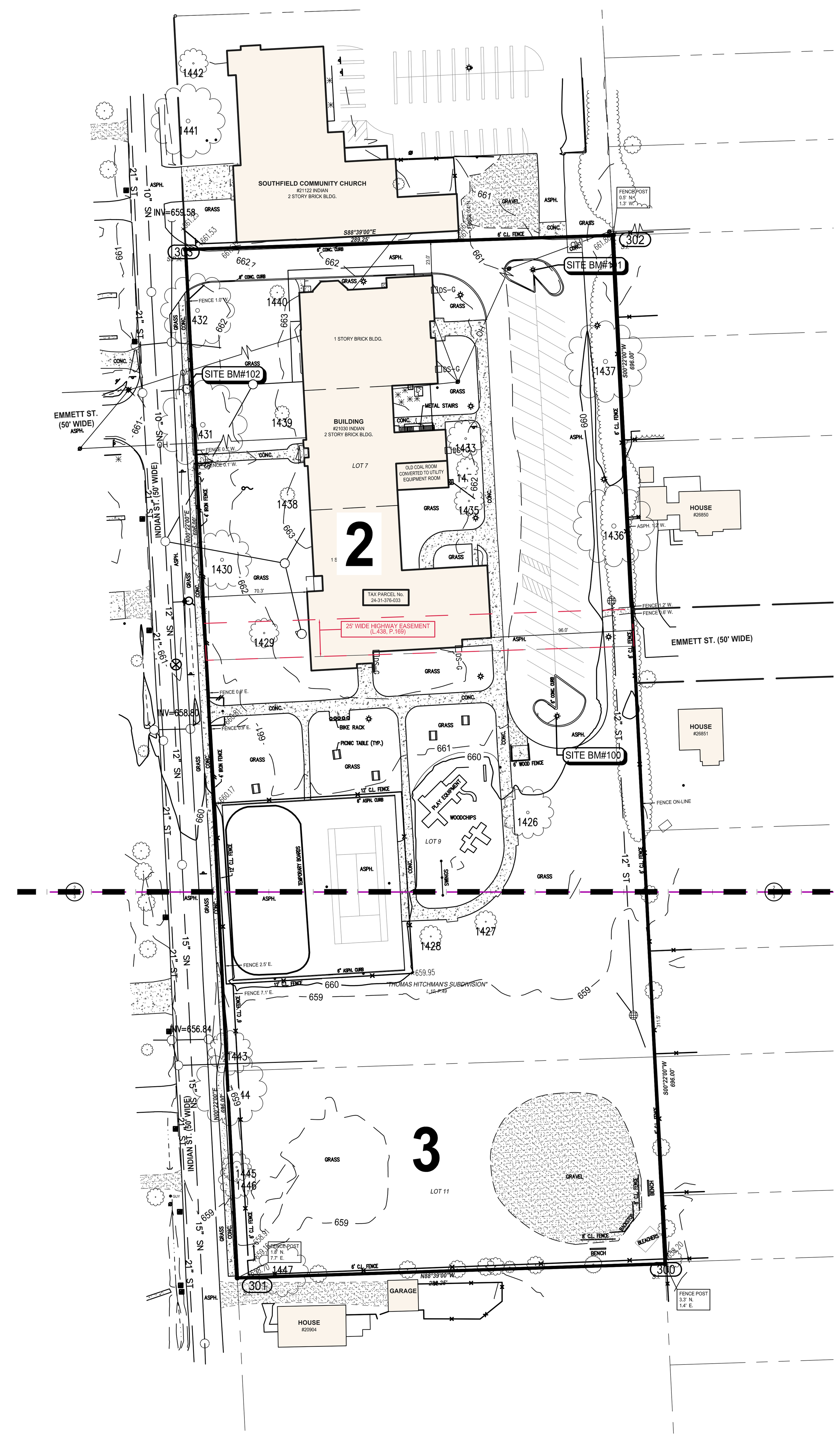
THE LAND REFERRED TO THIS TITLE COMMITMENT IS SITUATED IN THE CITY OF SOUTHFIELD, OAKLAND COUNTY, STATE OF MICHIGAN, AS FOLLOWS:

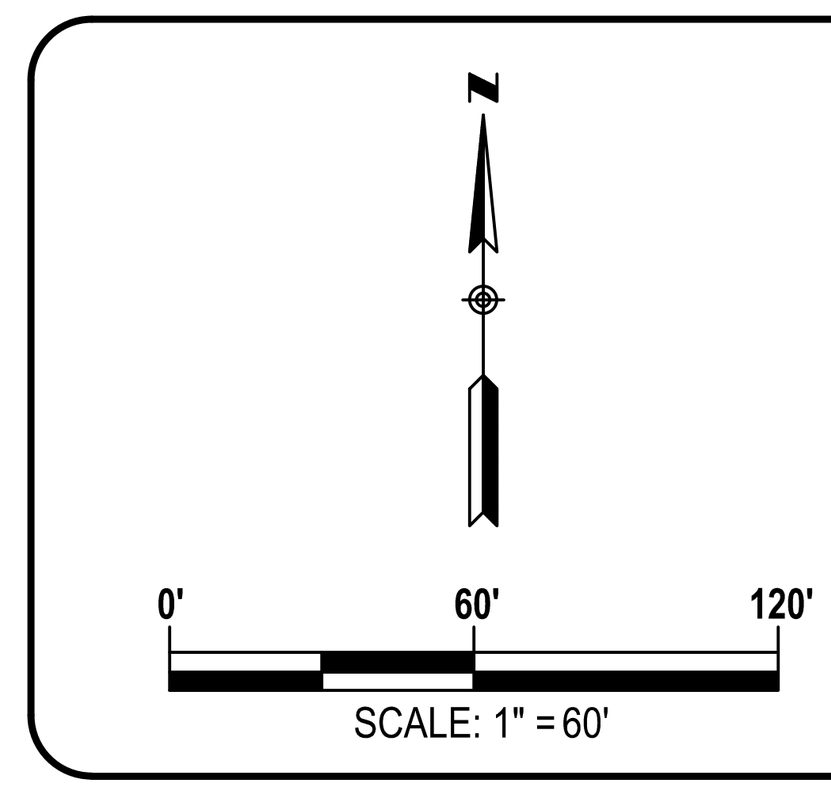
LOT 7, 9 AND THE NORTH 140 FEET OF LOT 11, THOMAS HITCHMAN'S SUBDIVISION, AS RECORDED IN LIBER 10, PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS.

INFORMATIONAL TITLE EXCEPTION COMMENTS

COMMITMENT ISSUED BY: ATA NATIONAL TITLE GROUP, LLC
COMMITMENT NUMBER: 63-21796421-SCM
EFFECTIVE DATE: 08/11/2021

HIGHWAY EASEMENT
RECORDED DATE: 12-18-1984
LIBER/PAGE: 438 / 169
REMARKS: 25' HIGHWAY EASEMENT
SDA COMMENTS: SHOWN ON SURVEY





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SOUTHFIELD GRACE SCHOOL

SOUTHFIELD, MI
BOUNDARY AND TOPOGRAPHICAL SURVEY

SECTION 31
TOWN 01 NORTH RANGE 10 EAST
CITY OF SOUTHFIELD
OAKLAND COUNTY, MICHIGAN

NO.	DATE	REVISION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAFTER S.BROWN	DATE 01-27-22
CHECKED D.JACKSON	DATE 01-27-22
FIELD LEADER J.LONERO	PROJECT SURVEYOR D.JACKSON
PROJECT MANAGER D.JACKSON	DEPARTMENT MANAGER G.PLATZ
JOB NO. NP22006	DRAWING NO. NP22006TPG
SCALE: 1" = 60'	SHEET NO. 1 OF 3

Plotted: Jan 28, 2022, 9:12 AM by user: 510 – Saved: 1/28/2022 by user: 510
N:\NP\NLD Projects\NP22006 – Grace School – Senior Housing\Survey\DWG\NP22006TPG.dwg

LEGEND

- MANHOLE
- CATCH BASIN
- SEWER CLEAN OUT
- GAS METER
- GAS SHUT OFF VALVE
- VALVE BOX
- GATE VALVE & WELL
- WATER SHUT OFF VALVE
- FIRE HYDRANT
- SPRINKLER VALVE BOX
- LAWN SPRINKLER HEAD
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- TELEPHONE RISER
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- DECIDUOUS TREE
- DECIDUOUS SHRUB
- CONIFEROUS SHRUB
- SECTION CORNER
- SDA#10 TRAVERSE POINT
- 1 STRUCTURE NUMBER
- 10 SDA POINT No.
- 655.00 SPOT ELEVATION

TC	TOP OF CURB ELEVATION
GU	GUTTER ELEVATION
TP	TOP OF PAVEMENT ELEVATION
EM	EDGE OF METAL ELEVATION
TW	TOP OF WALK ELEVATION
T/WALL	TOP OF WALL ELEVATION
B/WALL	BOTTOM OF WALL ELEVATION
GR	GROUND ELEVATION
UG	UNDERGROUND
FO	FIBER OPTIC
CONC	CONCRETE
ASPH	ASPHALT
FF	FINISH FLOOR ELEVATION
DL	DOOR LEDGE ELEVATION
F.I.	FOUND IRON
F.M.	FOUND MONUMENT
F.P.K.	FOUND P.K. NAIL
S.I.	SET IRON W/SDA CAP
S.P.K.	SET P.K. NAIL
S.P.K./TAG	SET P.K. NAIL W/SDA TAG
MAG	SET MAGNETIC NAIL
MAG/TAG	SET MAGNETIC NAIL W/SDA TAG
M	MEASURED
R	RECORD
C	CALCULATED
INV.	INVERT ELEVATION
CMP	CORRUGATED METAL PIPE

- G GAS
- SN SANITARY SEWER (SAN)
- ST STORM SEWER (STM)
- WM WATERMAIN (WM)
- OH OVERHEAD WIRE
- COMBINED SEWER
- STE STEAM LINE
- O OIL LINE
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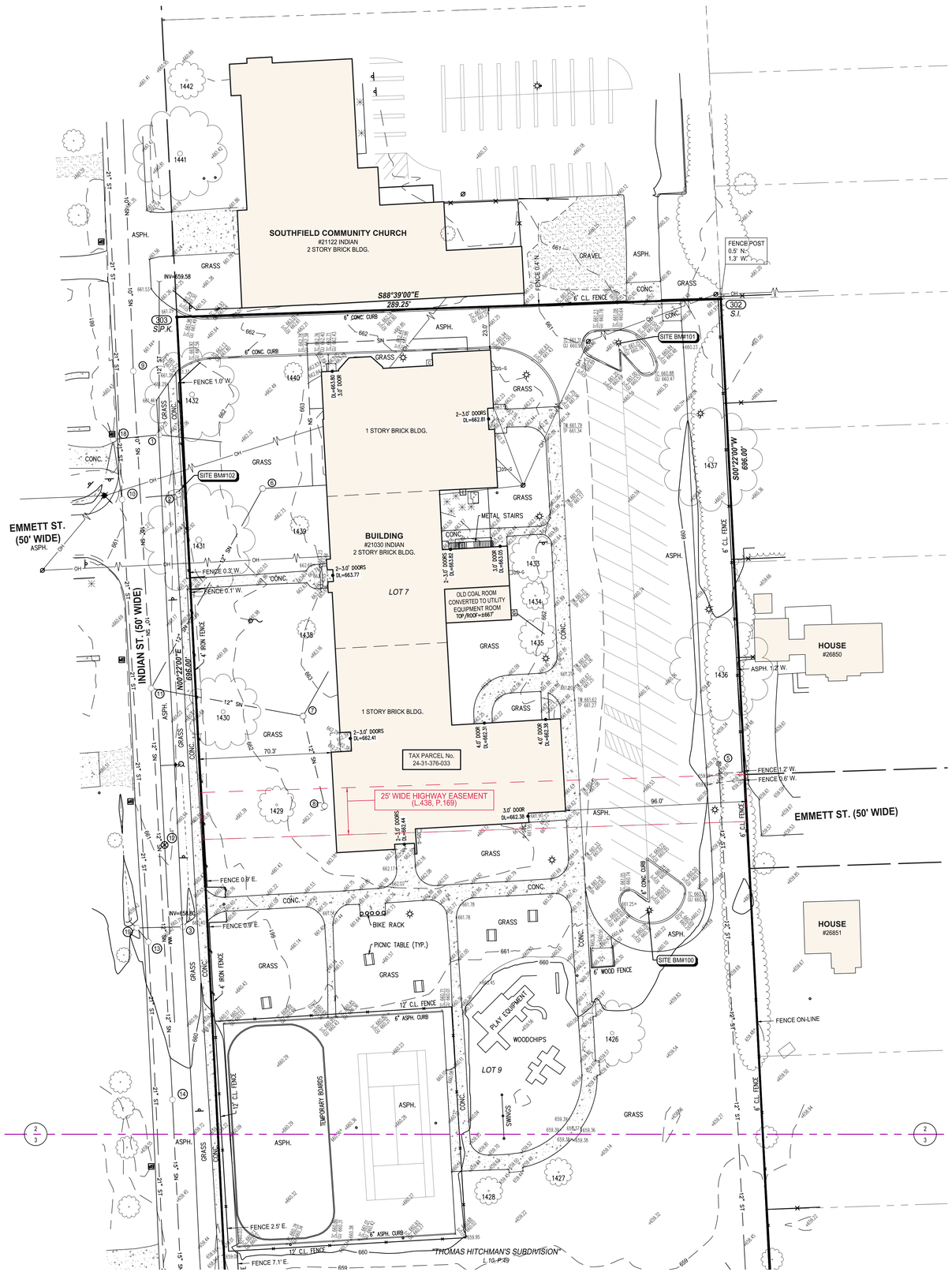
STRUCTURE TABLE

THE STRUCTURE TABLE ON THIS DRAWING IDENTIFIES THE AS-SURVEYED UNDERGROUND UTILITY MANHOLES THAT WERE FIELD MEASURED USING REASONABLE AND TRADITIONAL SURVEYING PRACTICES. PIPE SIZES, DIRECTIONS AND ELEVATIONS ARE INDICATED BY A COMBINATION OF FIELD EVIDENCE AND AVAILABLE RECORD INFORMATION. UNDERGROUND UTILITY PIPE SIZES AND CONNECTIONS ARE MANY TIMES AMBIGUOUS. SOME STRUCTURES MAY HAVE PIPES WITH UNKNOWN CONNECTIONS, SUMPS AND / OR PIPES THAT ARE FILLED WITH DEBRIS. IT WILL BE UP TO THE DESIGN ENGINEER TO LOOK AT THE PRESENTED SURVEY RESULTS AND DECIDE IF FURTHER INVESTIGATION BY OTHER METHODS SUCH AS VACUUM CLEAN OUT, UNDERGROUND RADAR, SMOKE TESTING AND PHYSICAL EXCAVATION IS REQUIRED AS AN ADDITIONAL SERVICE.

#	TYPE	RIM	SIZE	MTRL	INVERT	DIRECTION	CONNECT
1	**STORM MANHOLE**	661.17	12"	CMP	659.12	EAST	
			12"	CMP	658.62	NORTH	ES
			12"	RCP	656.67	WEST	18
	BOTTOM	656.42					
2	**STORM MANHOLE**	661.05	12"	RCP	656.12	WEST	
	TOP / WATER	656.12					
	BOTTOM	652.85					
3	**STORM MANHOLE**	660.60	12"	CMP	658.70	NNE	ES
			12"	RCP	655.40	WEST	19
4	**STORM MANHOLE**	659.14	12"	CMP	656.74	EAST	ES
			12"	RCP	654.48	WEST	20
5	**ROUND CATCH BASIN**	659.06	12"	RCP	654.88	SOUTH	17
	TOP / WATER	654.86					
	BOTTOM	652.86					
6	**SANITARY MANHOLE**	662.39	4"	PVC	656.61	EAST	
			6"	PVC	656.61	EAST	
			12"	RCP	652.65	SW	11
7	**SANITARY MANHOLE**	662.42	12"	RCP	653.92	SSE	8
			12"	RCP	654.12	NE	
			12"	RCP	653.02	WNW	
8	**SANITARY MANHOLE**	661.97	12"	RCP	654.96	NNW	7
9	**SANITARY MANHOLE**	661.55	10"	RCP	652.00	NORTH	
			10"	RCP	651.99	SOUTH	11
10	**STORM MANHOLE**	661.23	12"	RCP	656.03	NORTH	18
			21"	RCP	646.15	NORTH	
			21"	RCP	646.09	SOUTH	13
	BOTTOM	646.13					
11	**SANITARY MANHOLE**	661.49	10"	RCP	649.87	NORTH	9
			12"	RCP	649.77	SOUTH	14
			12"	RCP	650.79	NE	6
			12"	RCP	651.99	ESE	7
	BOTTOM	649.82					
	FLOW DIRECTION:	SOUTH					
12	**GATE VALVE & WELL**	661.11					
	TOP / PIPE	655.11				N / S	
	TOP / WATER	655.21					
	BOTTOM	654.01					
13	**STORM MANHOLE**	660.46	12"	RCP	654.46	NNW	19
			21"	RCP	645.51	NORTH	10
			21"	RCP	645.43	SOUTH	15
14	**SANITARY MANHOLE**	659.86	12"	RCP	649.16	NORTH	11
			15"	RCP	648.56	SOUTH	16
15	**STORM MANHOLE**	659.43	12"	RCP	653.78	NORTH	20
			15"	RCP	645.43	EAST	
			21"	RCP	644.73	NORTH	13
			21"	RCP	644.63	SOUTH	
16	**SANITARY MANHOLE**	658.85	15"	RCP	647.63	NORTH	14
			15"	RCP	647.05	SOUTH	
17	**ROUND CATCH BASIN**	657.94	12"	RCP	653.49	NORTH	5
			12"	RCP	653.46	SSE	
			4"	PVC	653.74	NNW	
	TOP / WATER	653.45					
	BOTTOM	652.54					
18	**STORM MANHOLE**	661.05	12"	RCP	656.37	EAST	1
			12"	RCP	656.27	SOUTH	10
			12"	CMP	658.85	NNW	
			12"	CMP	658.85	SSW	
	TOP / WATER	656.25					
	BOTTOM	653.55					
19	**STORM MANHOLE**	659.93	12"	RCP	654.78	EAST	3
			12"	RCP	654.73	SE	13
			12"	CMP	658.73	NW	ES
	TOP / WATER	654.73					
	BOTTOM	652.23					
20	**STORM MANHOLE**	659.20	12"	RCP	654.10	EAST	4
			12"	RCP	654.02	SOUTH	15
			12"	CMP	656.35	WEST	

UTILITY CHART

UTILITY PROVIDER	MISS-DIG RESULTS	DATE	CONTACT #
AT&T TELEPHONE	RECEIVED	1/13/2022	231-409-7939
CONSUMERS ENERGY GAS	NOT YET RECEIVED	N / A	517-788-1806
DTE ENERGY (ELECTRIC)	NOT YET RECEIVED	N / A	313-235-5824
DTE ENERGY (GAS)	RECEIVED	1/16/2022	248-318-7839
OAKLAND COUNTY DRAIN COMMISSIONER	NOT YET RECEIVED	N / A	248-858-1116
CITY OF SOUTHFIELD	NOT YET RECEIVED	N / A	248-796-4850
SUNOCO PIPELINE	RECEIVED	1/13/2022	713-989-7079



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CHECKED: D.JACKSON	DATE: 01-27-22
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PROJECT MANAGER: D.JACKSON	DEPARTMENT MANAGER: G.PLATZ
JOB NO.: NP22006	DRAWING NO.: NP22006TPG
SCALE: 1" = 30'	SHEET NO.: 2 OF 3

Plotted: Jan 28, 2022, 9:12 AM by user: 510 – Saved: 1/28/2022 by user: 510
N:\NP\NLD Projects\NP22006 – Grace School – Senior Housing\Survey\DWG\NP22006TPG.dwg

LEGEND

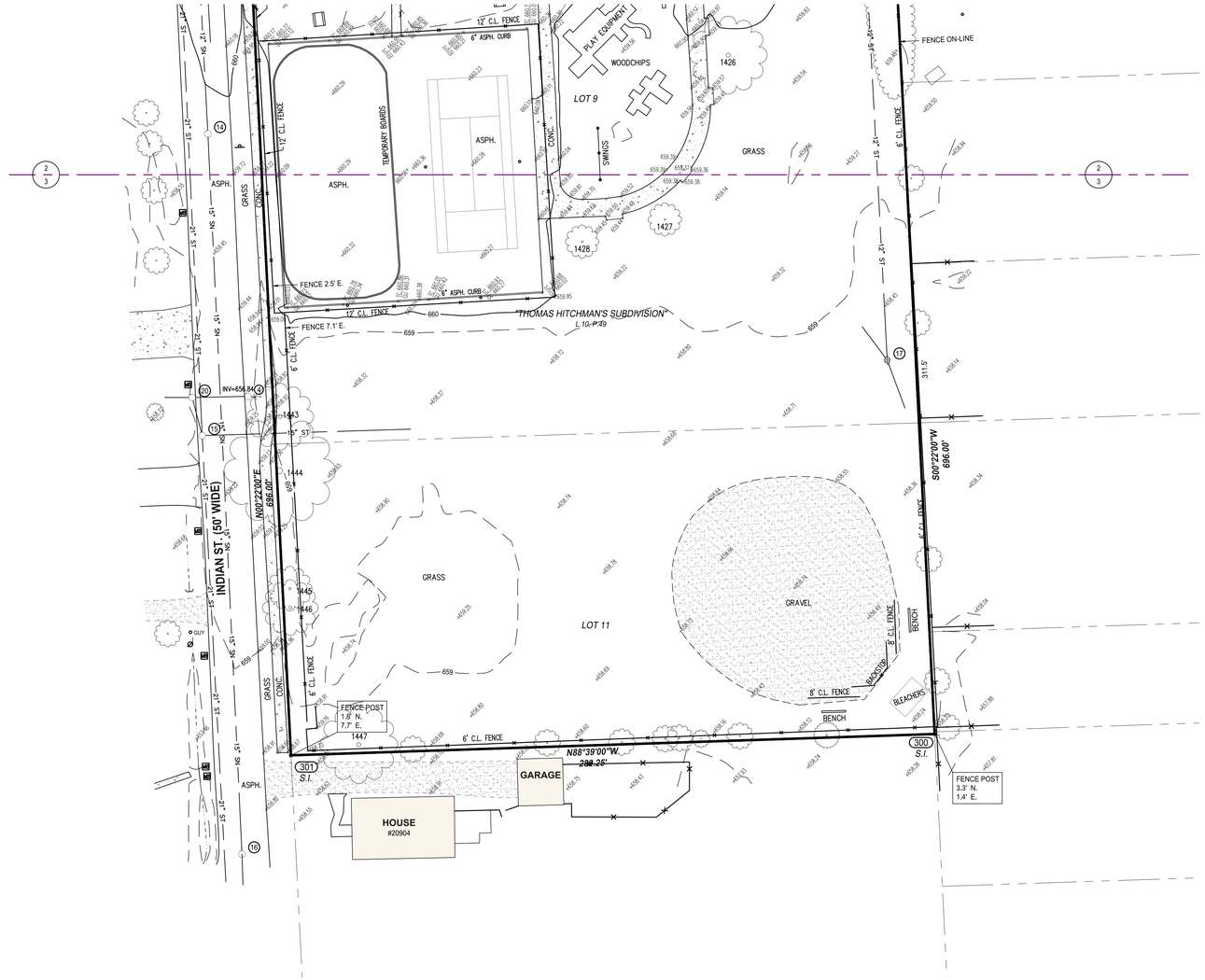
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- C.O SEWER CLEAN OUT
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- PROPERTY LINES
- ASPHALT
- CONCRETE
- GRAVEL
- BRICK / PAVERS
- WATER

TREE INVENTORY

PREFORMED BY: JOHN P. MOSES
REGISTERED FORESTER - MICHIGAN
ID# 45988

Tree Tag #	D.B.H. in Inches	Species Name (Common - Botanical)	Health Score^	Health Condition	Crown Spread"	Notes	Save / Remove
1426	23	Norway Maple - Acer platanoides	24	Good	35	Landmark	
1427	11	Red Maple - Acer rubrum	25	Good	15		
1428	8	Red Maple - Acer rubrum	26	Good	15		
1429	11	American Elm - Ulmus americana	26	Good	20		
1430	19	Norway Maple - Acer platanoides	23	Good	35	Landmark	
1431	49	Silver Maple - Acer saccharinum	22	Fair	65	Landmark	
1432	19	Black Walnut - Juglans nigra	24	Good	40		
1433	12	Red Maple - Acer rubrum	25	Good	20		
1434	8	Red Maple - Acer rubrum	24	Good	10		
1435	11	Red Maple - Acer rubrum	26	Good	15		
1436	36	Silver Maple - Acer saccharinum	14	Poor	45	EX	
1437	34	Siberian Elm - Ulmus pumila	18	Fair	50	Landmark	
1438	8	Crabapple - Malus spp.	26	Good	15		
1439	7	Crabapple - Malus spp.	26	Good	15		
1440	6	Redbud - Cercis canadensis	24	Good	15		
1441	26	Pin Oak - Quercus palustris	25	Good	45	Landmark	
1442	14	Norway Maple - Acer platanoides	23	Good	25		
1443	20	Siberian Elm - Ulmus pumila	23	Good	40		
1444	34	Silver Maple - Acer saccharinum	8	Very Poor	30	EX	
1445	15	Siberian Elm - Ulmus pumila	23	Good	35		
1446	18	Siberian Elm - Ulmus pumila	20	Fair	40		
1447	18,18	Black Walnut - Juglans nigra	23	Good	30		

Landmark = LANDMARK TREE AS DESCRIBED PER ORDINANCE SEC 5.56 (13) WITH A HEALTH SCORE OF >16 (FAIR AND GOOD TREES)
EX = REPLACEMENT EXEMPTION RECOMMENDED DUE TO EVALUATED HEALTH SCORE OF <16 (POOR AND VERY POOR TREES)
^ = HEALTH SCORE DETERMINED UTILIZING GUIDANCE PER ORDINANCE SEC. 5.56 (13) (B) EVALUATION CHART
" = CROWN SPREAD PROVIDED AS REQUIRED PER ORDINANCE SEC 5.56 (7) (B) 5. (IN FEET)



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0' 30' 60'
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PRIOR TO CONSTRUCTION, ALL LOCATIONS AND DEPTHS OF EXISTING UTILITIES (IN CONFLICT WITH PROPOSED IMPROVEMENTS) SHALL BE VERIFIED IN THE FIELD. CALL MISS DIG 3 WORKING DAYS PRIOR TO CONSTRUCTION.

UTILITY NOTE

UTILITY INFORMATION ON THIS DRAWING MAY BE FROM INFORMATION DISCLOSED TO THIS FIRM BY THE VARIOUS UTILITY COMPANIES, CITY/COUNTY AGENCIES AND OTHER VARIOUS SOURCES. UNDERGROUND UTILITIES WHICH ARE ON PRIVATE PROPERTY ARE USUALLY NOT DELINEATED UPON A UTILITY COMPANY'S PUBLISHED PLANS. THEIR LOCATION, IF SHOWN UPON THIS SURVEY, ARE APPROXIMATED FROM FOUND PAINT MARKS/STAKES, ETC. AS LOCATED BY THIS FIRM FROM SOURCES WHICH ARE UNKNOWN. NO GUARANTEE IS GIVEN AS TO THE COMPLETENESS OR ACCURACY THEREOF.

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SOUTHFIELD GRACE SCHOOL

SOUTHFIELD, MI
BOUNDARY AND TOPOGRAPHICAL SURVEY

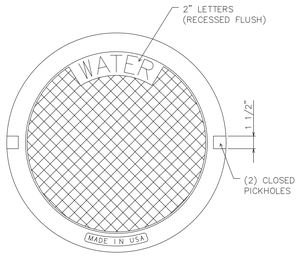
SECTION 31
TOWN 01 NORTH RANGE 10 EAST
CITY OF SOUTHFIELD
OAKLAND COUNTY, MICHIGAN

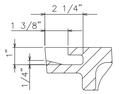
NO.	DATE	REVISION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

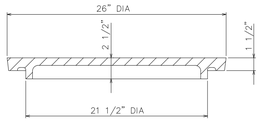
DRAFTER: S.BROWN	DATE: 01-27-22
CHECKED: D.JACKSON	DATE: 01-27-22
FIELD LEADER: J.LONERO	PROJECT SURVEYOR: D.JACKSON
PROJECT MANAGER: D.JACKSON	DEPARTMENT MANAGER: G.PLATZ
JOB NO.: NP22006	DRAWING NO.: NP22006TPG
SCALE: 1" = 30'	SHEET NO.: 3 OF 3

Plotted: Jan 28, 2022, 9:12 AM by user: 510 – Saved: 1/28/2022 by user: 510
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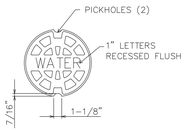


PICKHOLE DETAIL

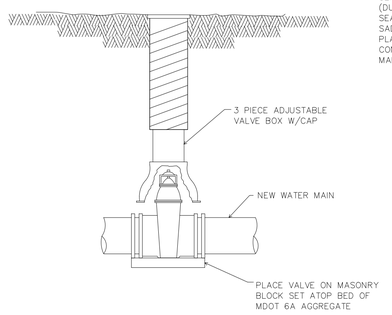


COVER SECTION

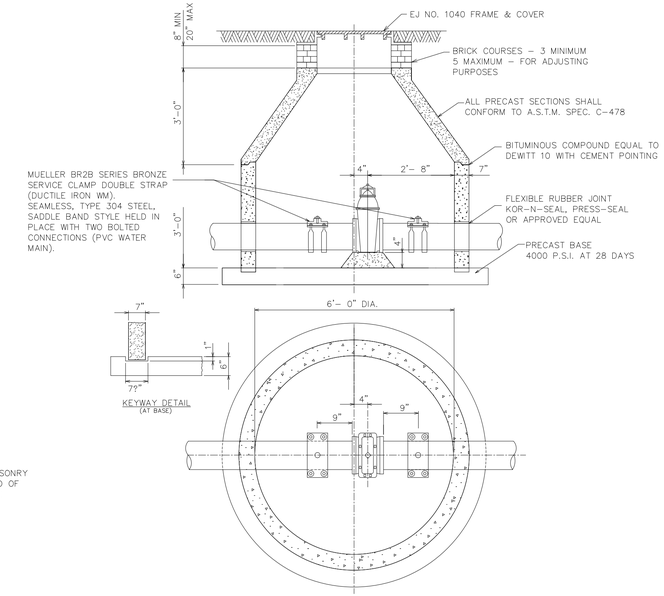
GATE WELL COVER



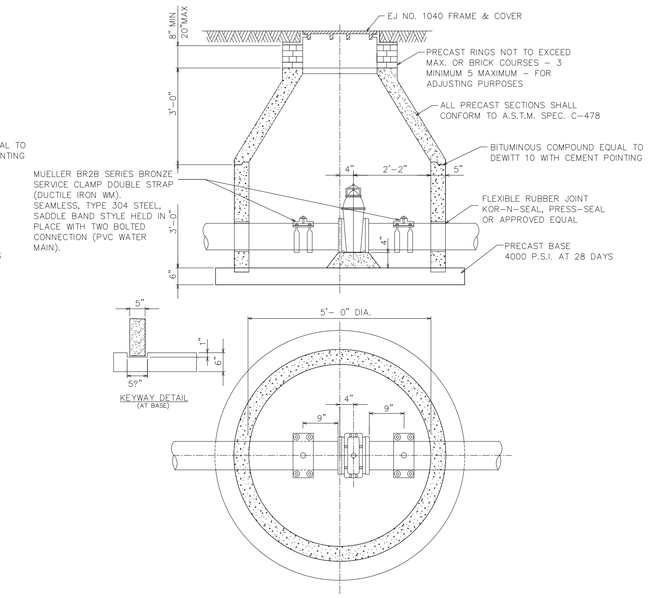
VALVE BOX COVER



GATE VALVE AND BOX
NO SCALE



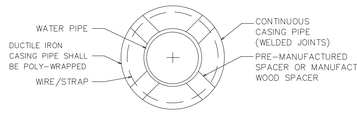
12" & 16" PRECAST
GATE & WELL DETAIL



8" PRECAST
GATE & WELL DETAIL

UNLESS OTHERWISE SPECIFIED, MINIMUM CASING PIPE SHALL BE ASTM A-139 GRADE B, WALL THICKNESS AS FOLLOWS:

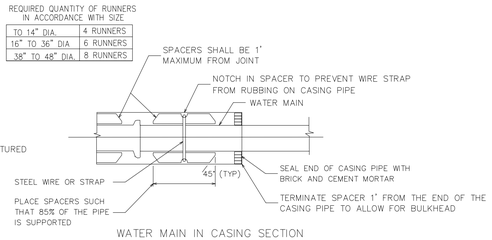
NOMINAL SIZE	MINIMUM WALL THICKNESS
8"– 42"	0.375
48"– 60"	0.500



SUPPORT FOR WATER MAIN
CONSTRUCTED IN CASING PIPE
SCALE 1"= 4'

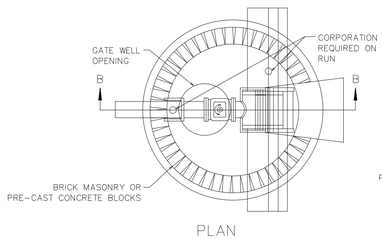
REQUIRED QUANTITY OF RUNNERS IN ACCORDANCE WITH SIZE

TO 14" DIA.	4 RUNNERS
16" TO 36" DIA.	6 RUNNERS
38" TO 48" DIA.	8 RUNNERS

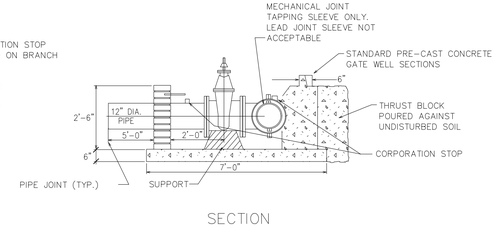


WATER MAIN IN CASING SECTION
SCALE 1"= 2'

WATER MAIN IN CASING DETAILS

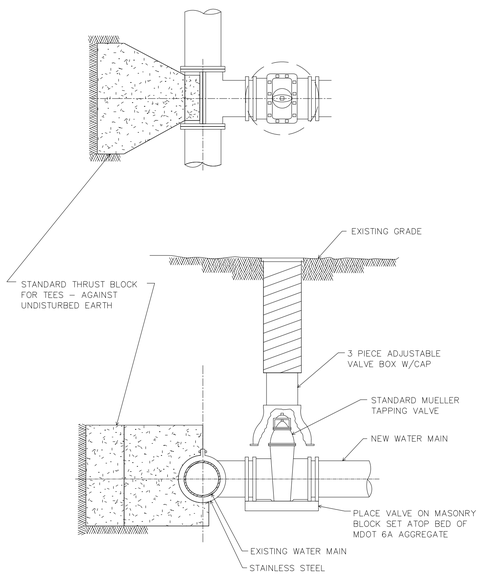


PLAN

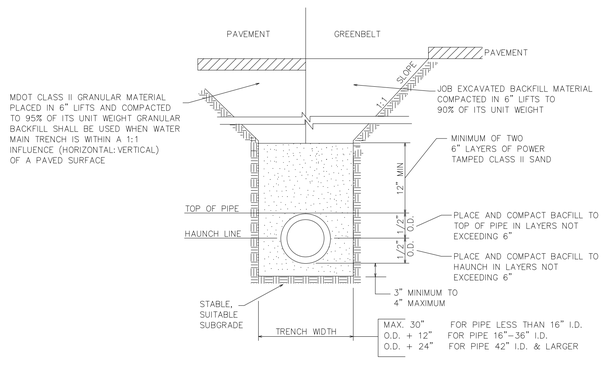


SECTION

TAPPING SLEEVE GATE VALVE & WELL DETAILS
NO SCALE



TAPPING SLEEVE & VALVE
W/VALVE BOX

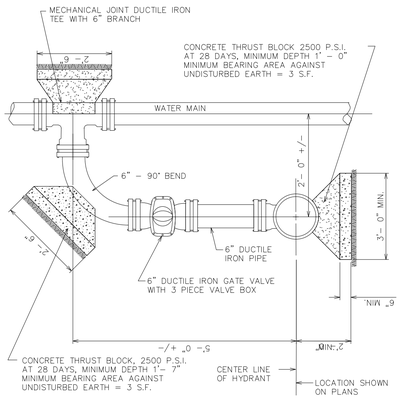


STANDARD BEDDING FOR WATER MAIN
NO SCALE

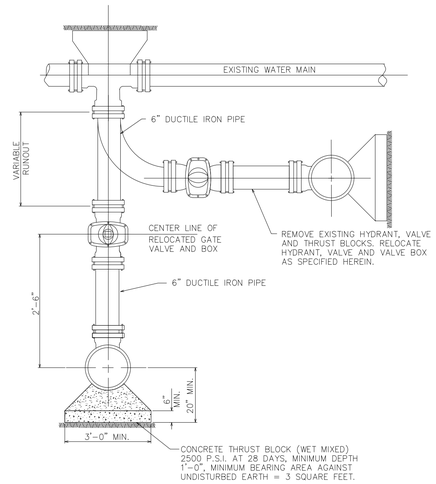
CITY OF SOUTHFIELD
PUBLIC SERVICES GROUP ENGINEERING DEPARTMENT

WATERMAIN DETAILS

DRAWN BY	SP	REVISIONS			
DESIGNED BY		No.	DESCRIPTION	DATE	BY
APPROVED BY	LS	1	SOUTHFIELD SPEC. UPDATES	05/22	ZJH
DATE	2014				
SC: HORZ. VERT.	NTS				
SHEET 1 OF 4					
JOB No.					

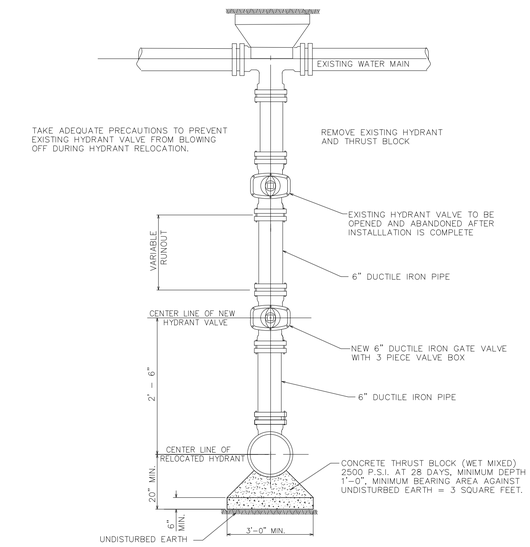


"L" HYDRANT CONNECTION



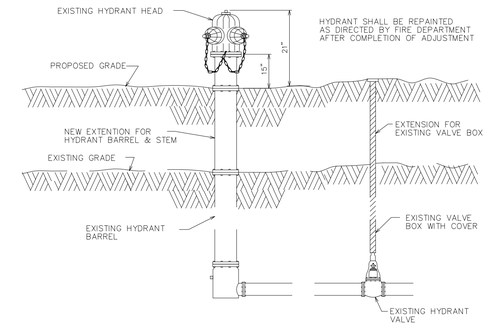
HYDRANT RELOCATION

NOTE: TRAVERSE CITY OF CITY OF DETROIT FIRE DEPARTMENT HYDRANTS SHALL BE REPLACED

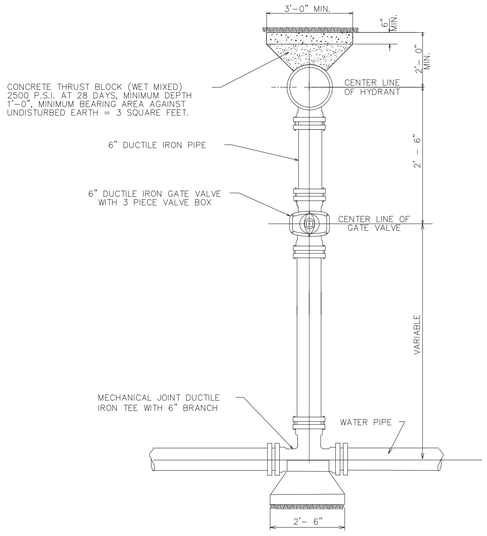


HYDRANT RELOCATION

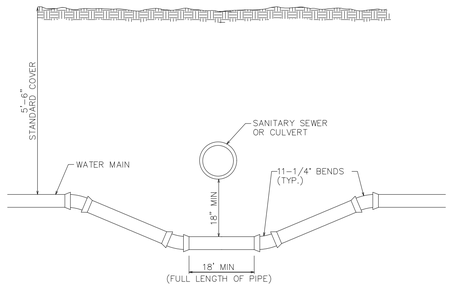
NOTE: TRAVERSE CITY OF CITY OF DETROIT FIRE DEPARTMENT HYDRANTS SHALL BE REPLACED



HYDRANT ADJUSTMENT

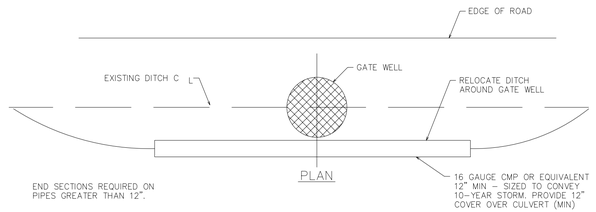


STRAIGHT HYDRANT CONNECTION



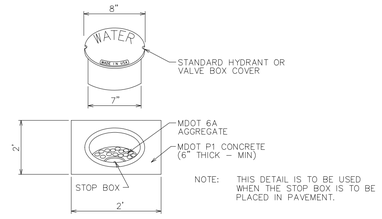
SEWER OR CULVERT CROSSING

NO SCALE

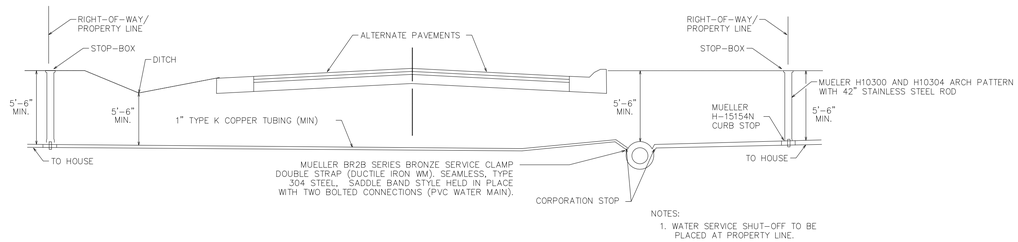


DITCH ENCLOSURE AT GATE WELL

NO SCALE

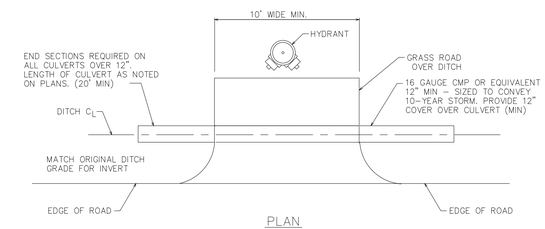


STOP BOX PROTECTION (PAVED AREAS)



TYPICAL PUBLIC ROAD WATER SERVICE CONNECTION

NO SCALE



DITCH ENCLOSURE AT HYDRANT

NO SCALE

CITY OF SOUTHFIELD

PUBLIC SERVICES GROUP ENGINEERING DEPARTMENT

WATERMAIN DETAILS

DRAWN BY	SP	REVISIONS			
DESIGNED BY		No.	DESCRIPTION	DATE	BY
APPROVED BY	LS	1	SOUTHFIELD SPEC. UPDATES	05/22	ZJH
DATE 2014					
SC: HORZ. NTS VERT.					
SHEET 2 OF 4					
JOB No.					

WATER MAIN NOTES

1. All water main construction shall have full–time inspection provided by or caused to be provided by the City of Southfield Engineering Department. Contractor shall contact the Engineering Department for inspection at least 48 hours prior to start of construction.
2. When it is necessary to shut down existing water mains, the contractor shall contact the City of Southfield Water and Sewer Department and shall cooperate with the City forces in closing the necessary gate valves and in notifying the affected residents and places of business.
3. All water mains shall be constructed with a minimum cover of five and a half (5.5) feet and a maximum of seven (7) feet below finished grade. Where water mains must dip to pass under other utilities, the sections which are deeper than normal shall be kept to a minimum length by the use of 11–1/4 degree bends,properly anchored or restrained.
4. Contractor shall use lengths of pipe and/or additional bends to accomplish horizontal and/or vertical deflections as indicated on the plan.
5. All water main under or within three (3) feet of existing or proposed pavement shall be back filled with MDOT granular material, Class II, mechanically tamped in 12–inch lifts to 95% compaction.
   If construction is within the Road Commission for Oakland County and/or Michigan Department of Transportation rights–of–way, permits shall be required from the respective agencies.
6. All new water main and services shall include tracer wire and test points at ground appurtenances, valves and hydrants. Tracer wire layout and installation shall be in accordance with the special detail sheet.
7. Please refer to the City of Southfield Water Main Specifications for additional requirements for construction, materials, etc..

GENERAL CONSTRUCTION NOTES

1. All construction shall conform to the current standards and specifications of the City of Southfield. A pre–construction meeting shall be held prior to start of construction and shall be scheduled by the City of Southfield Engineering Department at 248–796–4810.
2. The Standard Details and Specifications of the City of Southfield are incorporated as part of these plans.
3. Prior to any excavation, the Contractor shall contact " MISS DIG " (by dialing 811) forlocation of underground utilities and shall also notify representatives of other utilities located in the vicinity of the work. TheContractor shall make any necessary arrangements with utility companies for relocation of existing utilities, if required. Utility poles shall be properly supported, tunneled and/or temporarily relocated as required.
4. No City street shall be closed without prior permission from the City of Southfield. Forty–eight (48) hours prior to closing any City street, the Contractor shall notify the City Police, Fire and Streets and Highway Department. Traffic control, routing and signing shall be in accordance with the requirements of the City of Southfield and the Michigan Manual of Uniform Traffic Control Devices.
5. All property irons and monuments disturbed or destroyed by the Contractor's operation shall be replaced by a Registered Land Surveyor provided by or caused to be provided by the Contractor at the Contractor's expense.
6. Existing fences shall be removed and restored to their original condition or better.
7. Cost of protection of any removal and/or replacement of public and private utilities shall be borne by the Contractor
8. All necessary easements for public water mains shall be provided in the name of the City of Southfield of the water main prior to acceptance of the water distribution system for operation.

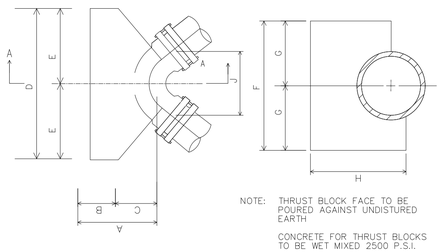
SIZE	TEE	END CAP	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	REDUCERS	VERT OFFSET
6"		36'	14'	6'	3'	2'	19'	
8"	*	47'	18'	8'	4'	2'	20'	*
12"		67'	25'	11'	5'	3'	36'	

*ENGINEER SHALL PROVIDE CALCULATIONS FOR SPECIFIC RESTRAINT SCENARIOS

PIPE RESTRAINT NOTES

1. THE ABOVE TABLE IS FOR INFORMATION ONLY. THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING RESTRAINT SCHEDULES AND PROVIDING IT TO THE CITY OF SOUTHFIELD OR ITS REPRESENTATIVE FOR REVIEW.
2. THE VALUES PROVIDED REPRESENT RESTRAINT LENGTH IN EACH DIRECTION FROM THE POINT OF DEFLECTION OR TERMINATION EXCEPT FROM TEES, AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE STEM IS INCLUDED.
3. REDUCER RESTRAINT LENGTH ASSUMES ONE STEP–DOWN IN SIZE.
4. THE ABOVE PIPE RESTRAINT WAS CALCULATED USING THE EBAA IRON RESTRAINT CALCULATOR ASSUMING THE FOLLOWING PARAMETERS:
   - 4.1. SOIL TYPE: CL GRAN. FILL
   - 4.2. SAFETY FACTOR: 1.5 TO 1
   - 4.3. TRENCH TYPE 4
   - 4.4. DEPTH OF BURY: 5 FEET
   - 4.5. TEST PRESSURE: 150 PSI

MECHANICAL RESTRAINT FOR PVC

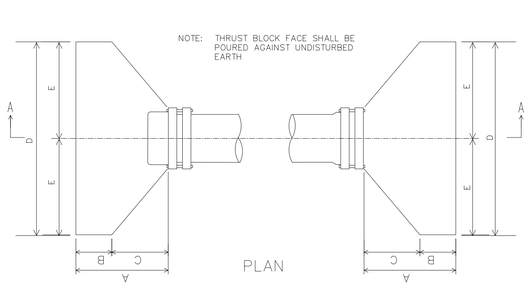


NOTE: THRUST BLOCK FACE TO BE POURED AGAINST UNDISTURED EARTH

CONCRETE FOR THRUST BLOCKS TO BE WET MIXED 2500 P.S.I.

SIZE	ANGLE	A MIN.	B MIN.	C	D	E	F	G	H MIN.	J
6"	45°	1'–6"	0'–9"	0'–9"	1'–6"	0'–9"	1'–6"	0'–9"	1'–8"	0'–10"
6"	90°	1'–6"	0'–9"	0'–9"	2'–0"	1'–0"	2'–0"	1'–0"	1'–8"	0'–10"
8"	45°	1'–9"	0'–9"	1'–0"	2'–4"	1'–2"	2'–0"	1'–0"	1'–11"	1'–4"
8"	90°	1'–9"	0'–9"	1'–0"	3'–4"	1'–8"	2'–6"	1'–3"	1'–11"	1'–2"
12"	22–1/2°	1'–9"	0'–9"	1'–0"	2'–6"	1'–3"	2'–0"	1'–0"	2'–0"	1'–4"
12"	45°	2'–1"	0'–9"	1'–4"	3'–6"	1'–9"	2'–6"	1'–3"	2'–4"	1'–4"
12"	90°	2'–1"	0'–9"	1'–4"	5'–6"	2'–9"	3'–0"	1'–6"	2'–4"	1'–8"
16"	22–1/2°	2'–5"	1'–0"	1'–8"	3'–4"	1'–8"	2'–6"	1'–3"	3'–0"	1'–2"
16"	45°	2'–8"	1'–0"	1'–8"	5'–4"	2'–8"	3'–0"	1'–6"	3'–0"	1'–6"
16"	90°	2'–8"	1'–0"	1'–8"	6'–0"	3'–0"	5'–0"	2'–6"	3'–0"	1'–8"
24"	90°	4'–7"	1'–0"	3'–7"	10'–0"	5'–0"	7'–0"	3'–6"	5'–4"	2'–4"

CONCRETE THRUST BLOCK FOR BENDS



SIZE	A MIN.	B MIN.	C	D	E	F	G
8"	1'– 11"	0'– 9"	1'– 2"	3'– 0"	1'– 6"	2'– 0"	1'– 0"
12"	2'– 1"	0'– 9"	1'– 4"	4'– 0"	2'– 0"	3'– 0"	1'– 6"
16"	2'– 8"	1'– 0"	1'– 8"	5'– 0"	2'– 6"	4'– 0"	2'– 0"

CONCRETE THRUST BLOCK FOR ENDS

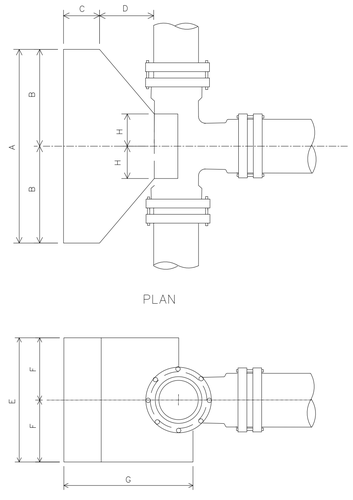
SIZE	TEE	END CAP	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	REDUCERS	VERT OFFSET
6"		56'	16'	7'	3'	2'	29'	
8"	*	73'	20'	9'	4'	2'	31'	*
12"		104'	28'	12'	6'	3'	55'	

*ENGINEER SHALL PROVIDE CALCULATIONS FOR SPECIFIC RESTRAINT SCENARIOS

PIPE RESTRAINT NOTES

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   - 4.3. TRENCH TYPE 4
   - 4.4. DEPTH OF BURY: 5 FEET
   - 4.5. TEST PRESSURE: 150 PSI

MECHANICAL RESTRAINT FOR POLY–WRAPPED DUCTILE IRON



THRUST BLOCK FACE SHALL BE POURED AGAINST UNDISTURBED EARTH.

CONCRETE FOR THRUST BLOCKS TO BE WET MIXED 2500 P.S.I.

SCHEDULE OF THRUST BLOCK DIMENSIONS				
CODE		TEE SIZE 8"x8" 12"x8" 16"x8" 24"x8"	TEE SIZE 12"x12" 16"x12" 24"x12"	TEE SIZE 16"x16" 24"x16"
A		3'–0"	4'–0"	5'–0"
B		1'–6"	2'–0"	2'–6"
C		0'–9"	0'–9"	1'–0"
D		1'–0"	1'–4"	1'–8"
E		2'–0"	3'–0"	4'–0"
F		1'–0"	1'–6"	2'–0"
G	8"	2'–2"		
	12"	2'–6"	2'–10"	
	16"	2'–10"	3'–1"	3'–8"
	24"	3'–5"	3'–7"	4'–2"
H	8"	0'–6"		
	12"	0'–6"	0'–10"	
	16"	0'–6"	0'–10"	1'–0"
	24"	0'–6"	0'–10"	1'–0"

CONCRETE THRUST BLOCK FOR TEES

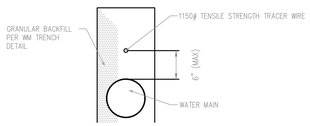
CITY OF SOUTHFIELD

PUBLIC SERVICES GROUP ENGINEERING DEPARTMENT

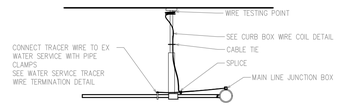
WATERMAIN DETAILS

DRAWN BY	SP
DESIGNED BY	
APPROVED BY	LS
DATE	2014
SC: HORZ.	NTS
SC: VERT.	
SHEET	3 OF 4
JOB No.	

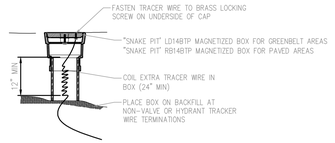
REVISIONS			
No.	DESCRIPTION	DATE	BY
1	SOUTHFIELD SPEC. UPDATES	05/22	ZJH



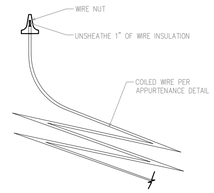
OPEN CUT MAIN LINE TRENCH
NO SCALE



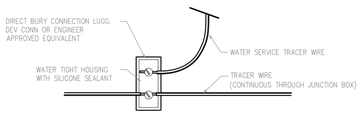
CURB STOP CONNECTION
NO SCALE



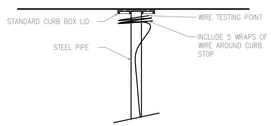
TRACER WIRE TEST POINT
NO SCALE



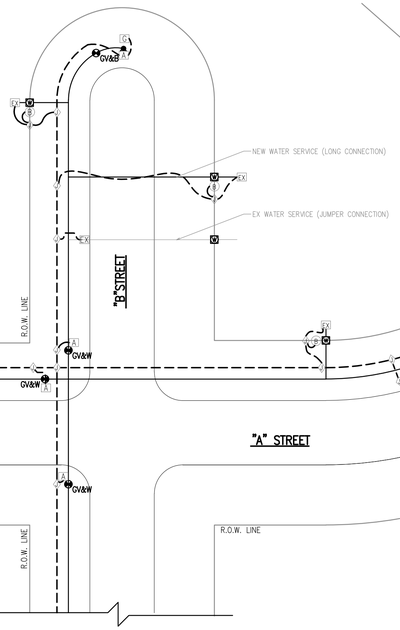
WIRE TESTING POINT
NO SCALE



MAIN LINE JUNCTION BOX
NO SCALE



CURB BOX WIRE COIL
NO SCALE



TRACER WIRE SYSTEM SCHEMATIC

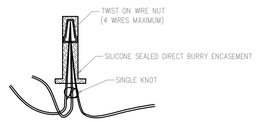
KEY

WATER SYSTEM

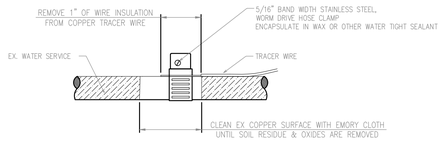
- GATE VALVE
- HYDRANT
- CURB BOX
- PROP WATER MAIN
- EX WATER SERVICE

TRACING WIRE SYSTEM

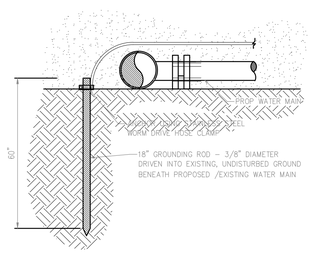
- JUNCTION
- CURB BOX WIRE COIL
- WATER SERVICE TERMINATION
- TEST POINT
- GROUNDING ROD TERMINATION
- ACCESS POINT
- TRACING WIRE



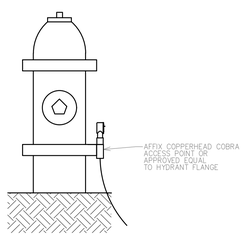
SPLICE CONNECTOR
NO SCALE



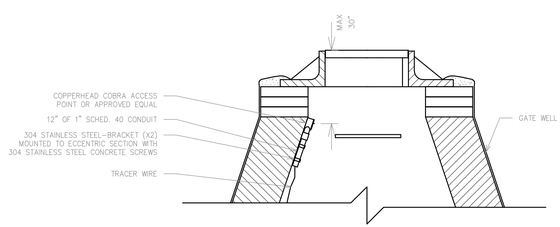
WATER SERVICE TERMINATION
NO SCALE



GROUNDING ROD TERMINATION
NO SCALE



HYDRANT TRACER WIRE ACCESS POINT
NO SCALE

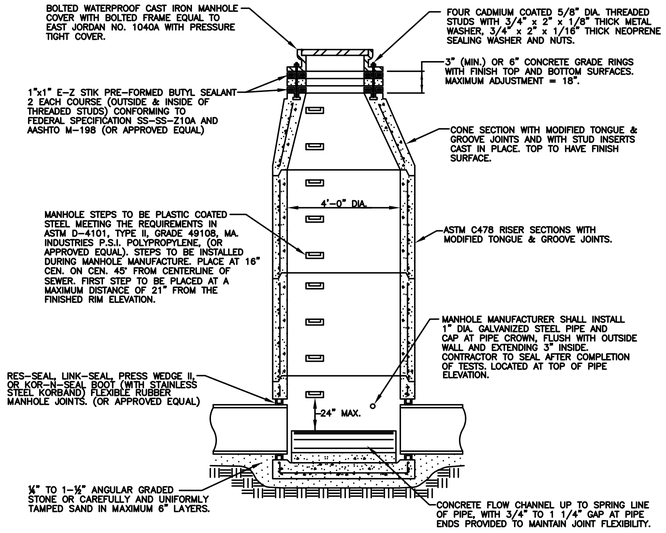


GATE WELL TRACER WIRE ACCESS POINT
NO SCALE

CITY OF SOUTHFIELD
PUBLIC SERVICES GROUP ENGINEERING DEPARTMENT

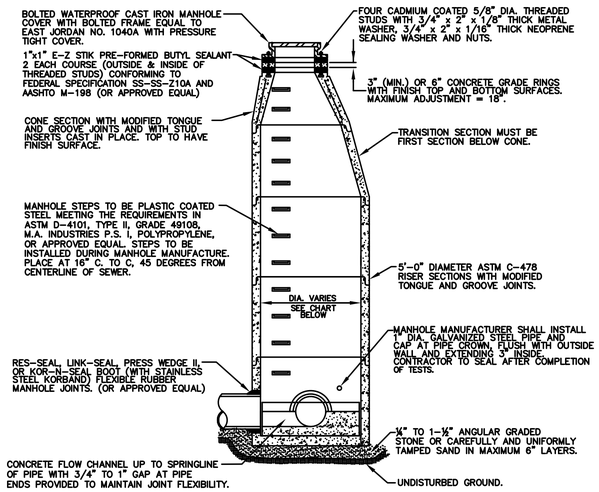
WATERMAIN TRACER SYSTEM DETAILS

DRAWN BY	PD	REVISIONS		
DESIGNED BY		No.	DESCRIPTION	DATE BY
APPROVED BY	LS	1	ADD HYDRANT TEST POINT	01/17 LS
DATE 2014		2	SOUTHFIELD SPEC. UPDATES	05/22 ZJH
SC: HORZ. VERT. NTS				
SHEET 4 OF 4				
JOB No.				



STANDARD MANHOLE

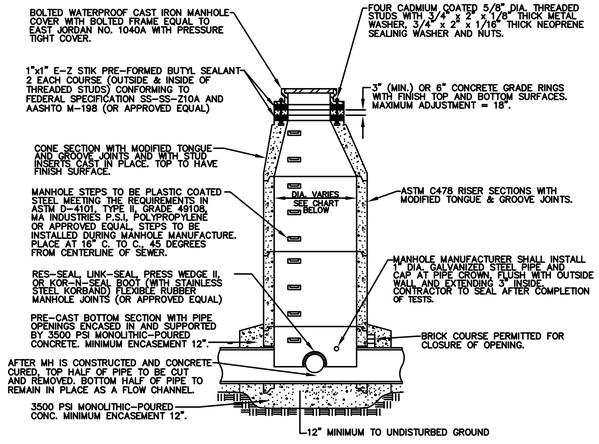
MAX. PIPE SIZE FOR STRAIGHT THRU INSTALLATION	MAX. PIPE SIZE FOR RIGHT ANGLE INSTALLATION
24"	18"



STANDARD OVERSIZED MANHOLE

MANHOLE SIZING CHART

MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT THRU INST.	MAX. PIPE SIZE FOR RIGHT ANGLE INST.
5'	36"	24"
6'	42"	36"
7'	60"	42"



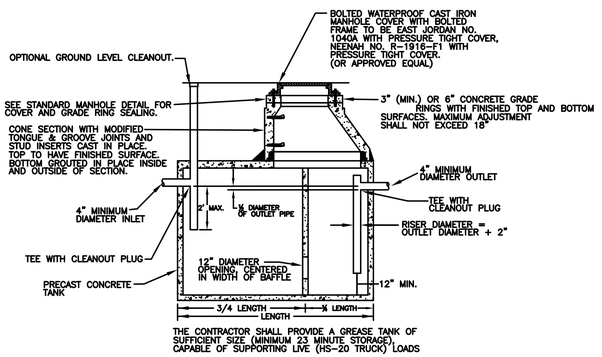
MANHOLE CONSTRUCTED OVER EXISTING SEWER

MANHOLE SIZING CHART

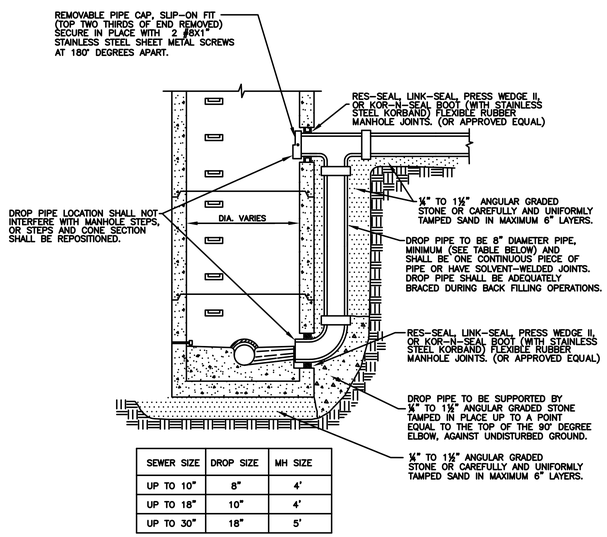
MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT THRU INST.
4'	24"
5'	36"
6'	42"
7'	60"

SANITARY SEWER CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE LOCAL UNIT OF GOVERNMENT AND THE WATER RESOURCES COMMISSIONER (WRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY A STATE OF MICHIGAN LICENSED PROFESSIONAL ENGINEER PROVIDED BY, OR CAUSED TO BE PROVIDED BY, THE LOCAL UNIT OF GOVERNMENT.
2. AT ALL CONNECTIONS TO WRC SEWERS OF EXTENSIONS, AND BEFORE START OF CONSTRUCTION, THE CONTRACTOR MUST OBTAIN A SEWER INSPECTION PERMIT ISSUED BY WRC. GRAVITY SEWER PERMIT CHANGES ARE $250 FOR EACH CONNECTION PLUS $25 FOR EACH MANHOLE CONSTRUCTED. PRESSURE SEWER PERMIT CHARGES ARE $250 PER 2,460 L.F. OF FORCE MAIN WITH A MINIMUM PERMIT FEE OF $250. FAILURE TO PASS ANY TEST SEGMENT WILL RESULT IN AN ADDITIONAL CHARGE TO THE CONTRACTOR FOR EACH RETEST, IN ACCORDANCE WITH THE ABOVE PRICE SCHEDULE. THE CONTRACTOR SHALL ALSO HAVE POSTED WITH WRC A $5,000 SURETY BOND AND $500 CASH DEPOSIT. THE CONTRACTOR SHALL NOTIFY THE LOCAL UNIT OF GOVERNMENT AND WRC (248-858-1105) 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. FINAL ACCEPTANCE TESTS MUST BE WITNESSED BY COUNTY PERSONNEL AND MUST BE SCHEDULED BY MUNICIPALITY OR IT'S CONSULTANT IN ADVANCE WITH 24 HOUR NOTICE AT 248-858-1105.
3. NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH DIAMETER PER MILE OF PIPE IN A 24 HOUR PERIOD, AND NO SINGLE RUN OF SEWER BETWEEN MANHOLES SHALL EXCEED 100 GALLONS PER INCH DIAMETER PER MILE. AIR TESTS IN LIEU OF INFILTRATION TESTS SHALL BE AS SPECIFIED IN THE WATER RESOURCES COMMISSIONER STANDARDS. ONLY PIPE AND PIPE JOINTS APPROVED BY WRC MAY BE USED FOR SANITARY SEWER CONSTRUCTION.
4. LOCATED IN THE FIRST MANHOLE UPSTREAM FROM THE POINT OF ALL CONNECTIONS TO AN EXISTING WRC SEWER, OR EXTENSION THERETO, A TEMPORARY 12-INCH DEEP SUMP SHALL BE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONNECTION WHICH WILL BE FILLED IN AFTER SUCCESSFUL COMPLETION OF ANY ACCEPTANCE TEST UP TO THE STANDARD FILLET PROVIDED FOR THE FLOW CHANNEL. A WATERTIGHT BULKHEAD SHALL BE PROVIDED ON THE DOWNSTREAM SIDE OF THE SUMP MANHOLE.
5. AT ALL TIMES WHEN LAYING OF NEW PIPE IS NOT ACTUALLY IN PROGRESS, THE UPSTREAM OPEN END OF THE PIPE SHALL BE CLOSED BY TEMPORARY WATERTIGHT PLUGS OR BY OTHER APPROVED MEANS. IF WATER IS IN THE TRENCH WHEN WORK IS RESUMED, THE PLUG SHALL NOT BE REMOVED UNTIL THE DANGER OF WATER ENTERING THE PIPE HAS PASSED.
6. ALL BUILDING LEADS AND RISERS SHALL BE SIX INCH SDR 23.5 ABS PIPE WITH CHEMICALLY FUSED JOINTS OR AN APPROVED EQUAL PIPE AND JOINT. BUILDING LEADS TO BE FURNISHED WITH REMOVABLE AIRTIGHT AND WATERTIGHT STOPPERS.
7. ALL RIGID SEWER PIPE SHALL BE INSTALLED IN CLASS "B" BEDDING OR BETTER. ALL FLEXIBLE, SEMI-FLEXIBLE, OR COMPOSITE SEWER PIPE SHALL BE INSTALLED IN CONFORMANCE TO WRC SPECIFICATIONS.
8. ALL NEW MANHOLES SHALL HAVE WRC APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE OF PRE CAST SECTIONS WITH MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS. PRE CAST MANHOLE CONE SECTIONS SHALL BE WRC APPROVED MODIFIED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS.
9. AT ALL CONNECTIONS TO MANHOLES ON WRC SEWERS, OR EXTENSIONS THERETO, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES.
10. TAPS TO EXISTING MANHOLES SHALL BE MADE BY CORING. THE CONTRACTOR SHALL PLACE A KOR-N-SEAL BOOT (OR WRC APPROVED EQUAL) AFTER CORING IS COMPLETED. BLIND DRILLING WILL ONLY BE PERMITTED IN LIEU OF CORING WITH PRIOR WRC APPROVAL.
11. MANHOLES CONSTRUCTED DIRECTLY ON WRC SEWERS SHALL BE PROVIDED WITH COVERS READING "WATER RESOURCES COMMISSIONER-SANITARY" IN RAISED LETTERS.
12. NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
13. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (800-482-7171) FOR THE LOCATION OF UNDERGROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
14. AN 18 INCH MINIMUM VERTICAL SEPARATION AND A 10 FOOT MINIMUM HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN SANITARY SEWER AND WATER MAIN.
15. NEW MANHOLES BUILT OVER AN EXISTING SANITARY SEWER SHALL HAVE MONOLITHIC POURED BOTTOMS.
16. IF THE STRUCTURE FALLS WITHIN THE ROADBED OF A GRAVEL ROAD OR WITHIN THE UNPAVED SHOULDER OF A PAVED ROAD, THE COVER SHALL BE SIX (6") INCHES BELOW THE FINISHED GRAVEL SURFACE.



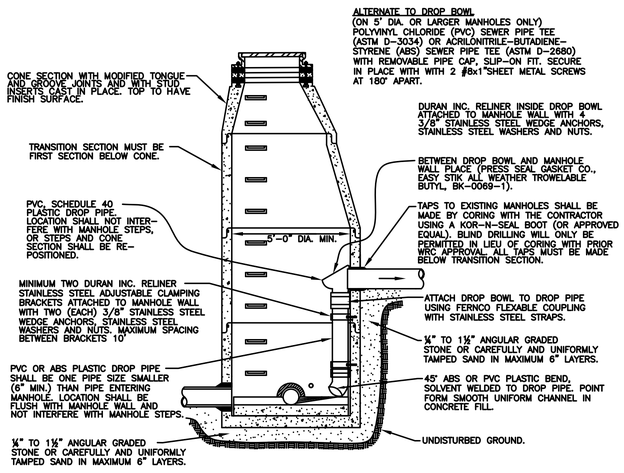
DOUBLE-COMPARTMENT GREASE INTERCEPTOR TANK FOR OUTLET PIPE BURIAL 42" AND DEEPER



SEWER SIZE	DROP SIZE	MH SIZE
UP TO 10"	8"	4'
UP TO 18"	10"	4'
UP TO 30"	18"	5'

EXTERIOR DROP CONNECTION

(REQUIRES ADVANCED APPROVAL BY WRC)



INTERIOR DROP CONNECTION

REVISION BLOCK			
Parcel Base / Source Date: N/A			
Rev. No.:	Rev. By:	Rev. Date:	Description:
1	RRH	8-31-10	FIXED NOTES THAT HAD "GROOVE TONGUE" TO READ "TONGUE AND GROOVE"
2	DS	3-23-11	REMOVED STANDARD MONITORING MANHOLE
3	KB	6-21-16	ADDED NOTE "REQUIRES ADVANCED APPROVAL BY WRC" AND UPDATE PHONE # IN NOTE #2
4	KB	7-22-20	UPDATED MH STEPS TO ASTM# D-4101

SANITARY SEWER DETAILS AND NOTES

ORIG. DATE:	08/21/02
SCALE:	NO SCALE
DESIGNED BY:	WRC
DRAWN BY:	WRC Mapping

WRC WATER RESOURCES COMMISSIONER
Jim Nash

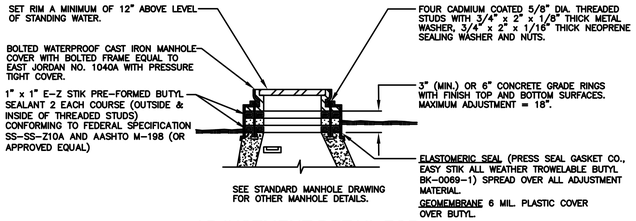
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.: 1 of 2

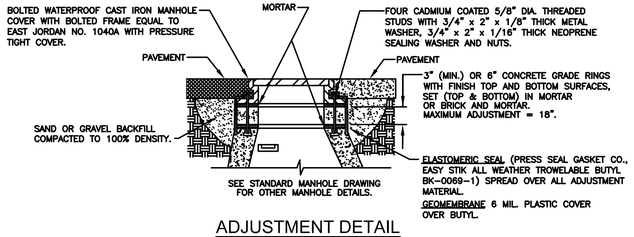
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File Location: J:\Drafti\Mapping\cad\STANDARDS\ETANDARDS\Products\Standard Sheets\dwg\d3SDtn.dwg

MANHOLE RIM ADJUSTMENT CHART

MANHOLE LOCATION	SET RIM ELEVATION
DITCH	12" ABOVE FINISH GRADE
FLOOD PLAIN	12" ABOVE STANDING WATER
GRAVEL ROAD / SHOULDER	6" BELOW FINISH GRADE
PAVEMENT / GREENBELT	FLUSH WITH FINISH GRADE



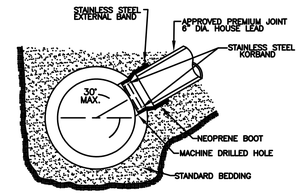
ADJUSTMENT DETAIL FOR
MANHOLE TOPS WITHIN FLOOD PRONE AREAS



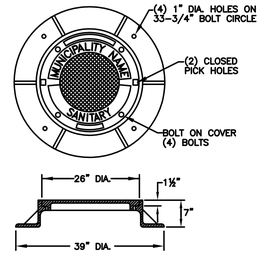
ADJUSTMENT DETAIL
MANHOLE TOPS WITHIN PAVEMENT AREAS

WATER RESOURCES COMMISSIONER
GRAVITY BUILDING LEAD REQUIREMENTS AND DETAILS

1. ALL BUILDING LEAD WORK MUST BE PERFORMED UNDER WATER RESOURCES COMMISSIONER (WRC) AND/OR LOCAL UNIT OF GOVERNMENT INSPECTION.
2. FOR ALL WRC-OPERATED SYSTEMS, CALL 248-858-1110 24-HOURS IN ADVANCE OR WORK TO SCHEDULE INSPECTION.
3. NO SANITARY SEWER MAY BE USED AS A CLEANOUT OF DEWATERING OUTLET.
4. WHERE AN EXISTING BUILDING LEAD IS BEING EXTENDED, DISSIMILAR TYPES AND SIZES OF PIPE SHALL BE JOINED USING AN WRC APPROVED ADAPTER.
5. APPROVED BUILDING LEAD PIPE FOR GRAVITY SEWER LEADS:
   A. ABS PLASTIC, ASTM D2751, SDR 23.5.
   B. PVC PLASTIC, ASTM D3034, SDR 23.5 OR ASTM D2665, SCHEDULE 40.
   C. DUCTILE IRON PIPE, AMERICAN WATER WORKS ASSOCIATION (AWWA) C-104/A21.4, CLASS 54. JOINTS SHALL BE SUPER BEL TITE, TYTON, TY-SEAL, MULTI-TITE, DUAL-TITE, OR VERI-TITE.
   D. ANY DEVIATIONS FROM SPECIFIED ABOVE REQUIRE APPROVAL BY WRC.
6. ALLOWABLE TYPES OF SEWER PIPE ADAPTERS:
   A. FERNCO ADAPTER/REDUCER DONUTS.
   B. FERNCO FLEXIBLE COUPLING.
   C. MISSION CLAY BAND-SEAL COUPLING.
   D. SMITH-BLAIR STAINLESS STEEL REPAIR CLAMP.
   E. HURON-CLINTON O-RING ADAPTER.
   F. HAMILTON-KENT GEAR GRIP ADAPTER.
   G. PLANT FABRICATED JOINT CONVERSION PIPE.

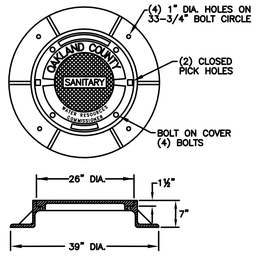


KOR-N-TEE TAP FOR CONCRETE PIPE



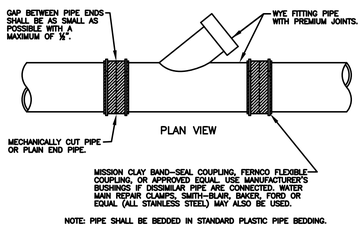
EAST JORDAN IRON WORKS
HEAVY DUTY MATERIAL ASTM A48 CL.35
COVER WT., 150 LBS., CATALOG NO. 1040A
PATTERN NO. 1040A, PRODUCT NO. 1040XX OAKCOSTD.
2" RAISED LETTERS, 1" RAISED LETTERS
ALL RECESSED FLUSH.

LOCAL MUNICIPALITIES MANHOLE COVER

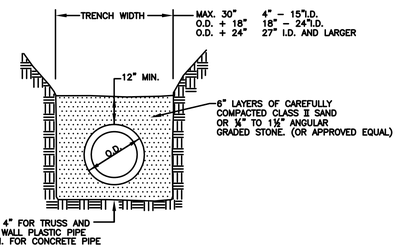


EAST JORDAN IRON WORKS
HEAVY DUTY MATERIAL ASTM A48 CL.35
COVER WT., 150 LBS., CATALOG NO. 1040APT
PATTERN NO. 1040A, PRODUCT NO. NCR09-1280 C
2" RAISED LETTERS, 1" RAISED LETTERS, 3/4" RAISED LETTERS
ALL RECESSED FLUSH.

W.R.C. LETTERED MANHOLE COVER

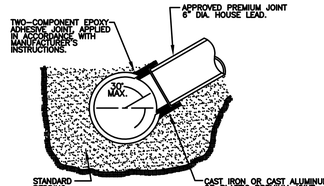


WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS
(RIGID PIPE)



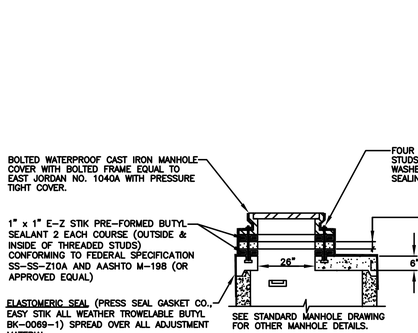
NOTE:
APPROVAL MAY BE GIVEN TO ALTERNATE MATERIALS AND METHODS TO ACHIEVE CLASS B BEDDING.

STANDARD BEDDING
(CLASS B)

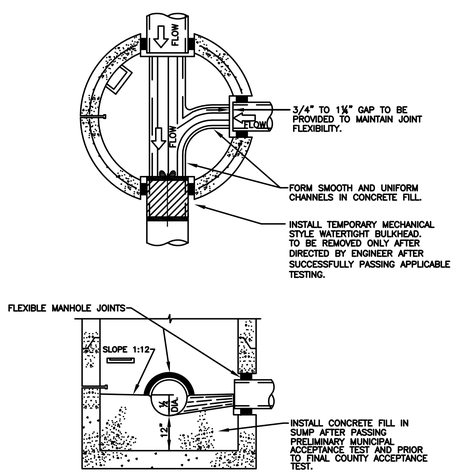


NOTE: SURFACE OF MAIN SEWER SHALL BE CLEANED WITH AN ABRASIVE GRINDER PRIOR TO EPOXY APPLICATION. DUE TO VARIATION OF SET-UP TIME OF EPOXY ADHESIVE WITH TEMPERATURE, ANCHOR STRAPS SHALL BE USED TO SECURE SADDLE IN POSITION IN COLD WEATHER OR WHENEVER WORK IS TO PROCEED PRIOR TO COMPLETE CURE OF EPOXY.

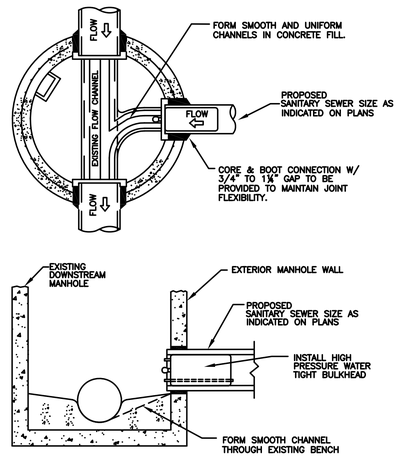
SEWER TAP-ALL SIZES OF MAIN SEWER PIPES
VITRIFIED CLAY



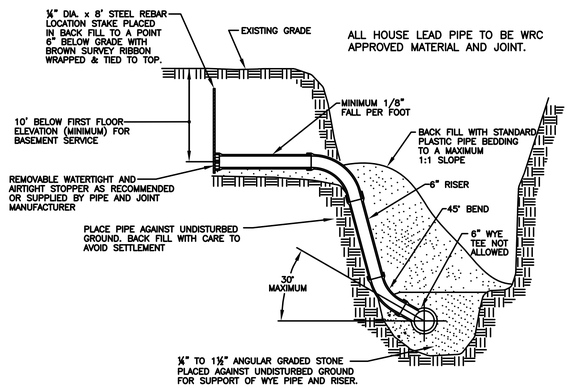
FLAT TOP MANHOLE



SUMP MANHOLE FOR TESTING,
CLEANING AND DEWATERING



TESTING BULKHEAD WITH PIPE TAP



HOUSE LEAD DETAIL

REVISION BLOCK			
Parcel Base / Source Date: N/A			
Rev. No.:	Rev. By:	Rev. Date:	Description:
1	DS	06/28/06	ADDED TESTING BULKHEAD WITH PIPE TAP DETAIL
2	tz	05/28/09	MOVED DETAILS FROM SHEET 1 ONTO SHEET 2
3	tz	07/14/09	STANDARDS COMMITTEE APPROVAL FOR DETAIL CHANGES
4	DS	02/03/14	REPLACE/UPDATE OCDC WITH WRC FOR THE MANHOLE COVER DETAIL

SANITARY SEWER DETAILS AND NOTES

ORIG. DATE:	05-09-03
SCALE:	NO SCALE
DESIGNED BY:	MWD
DRAWN BY:	Mapping Staff

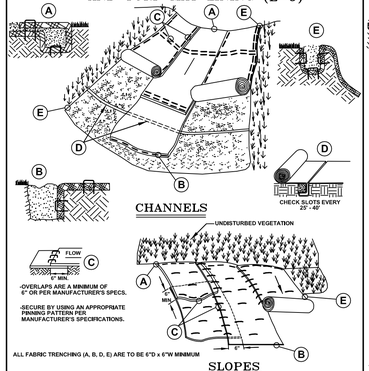
WRC WATER RESOURCES COMMISSIONER
Jim Nash

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

SHEET NO.: 2 of 2

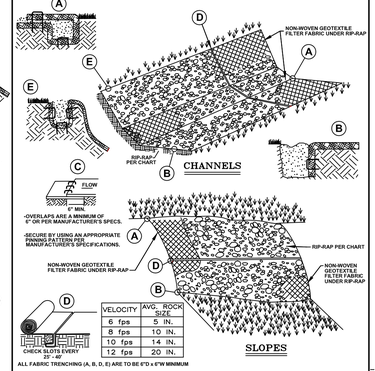
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File Location: J:\Data\Mapping\CAD\STANDARDS\DETAILS\Apr\Public\Sanitary\Sheet\SanDet2.dwg

EROSION CONTROL BLANKETS AND TURF MAT LINING (E-9)



DEPENDING ON THE VELOCITY, SLOPE, SOILS, USE PROPER BLANKET OR TURF MAT LINING PER MANUFACTURER'S SPECIFICATIONS TO HANDLE THE SHEER STRESSES OF THE SLOPE/CHANNEL.

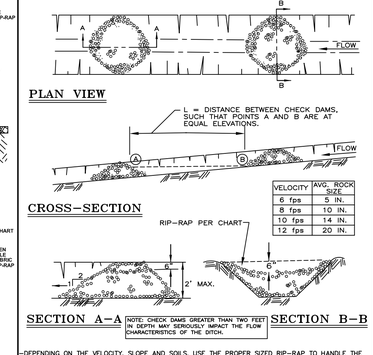
RIP-RAP: CHANNELS AND SLOPES (E-10)



VELOCITY	AVG. ROCK SIZE
5 fps	5 IN.
8 fps	10 IN.
10 fps	14 IN.
12 fps	20 IN.

DEPENDING ON THE VELOCITY, SLOPE AND SOILS, USE THE PROPER SIZED RIP-RAP AND NON-WOVEN GEOTEXTILE FABRIC TO HANDLE THE SHEER STRESS OF THE SLOPE/CHANNEL.

CHECK DAMS (E-3)



VELOCITY	AVG. ROCK SIZE
6 fps	5 IN.
8 fps	10 IN.
10 fps	14 IN.
12 fps	20 IN.

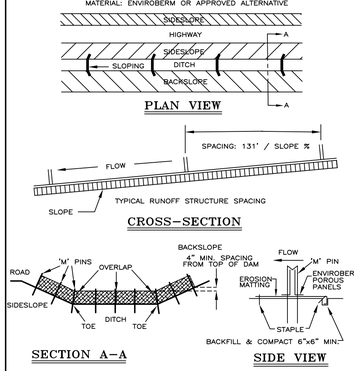
NOTE: CHECK DAMS GREATER THAN TWO FEET IN DEPTH MAY SERIOUSLY IMPACT THE FLOW CHARACTERISTICS OF THE DITCH.

-DEPENDING ON THE VELOCITY, SLOPE AND SOILS, USE THE PROPER SIZED RIP-RAP TO HANDLE THE SHEER STRESS OF THE SLOPE/CHANNEL.

-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

CHECK DAMS ALTERNATIVE "A" (E-3A)

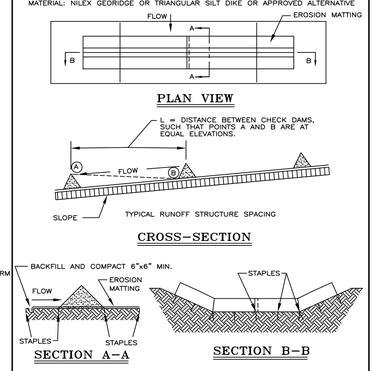
MATERIAL: ENVIROBERM OR APPROVED ALTERNATIVE



-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

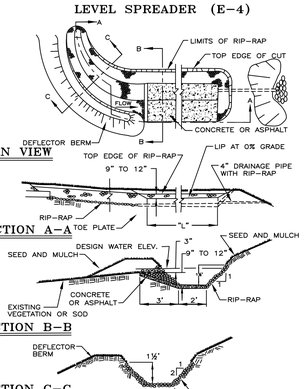
CHECK DAMS ALTERNATIVE "B" (E-3B)

MATERIAL: NILEX GEORIDGE OR TRIANGULAR SILT DIKE OR APPROVED ALTERNATIVE

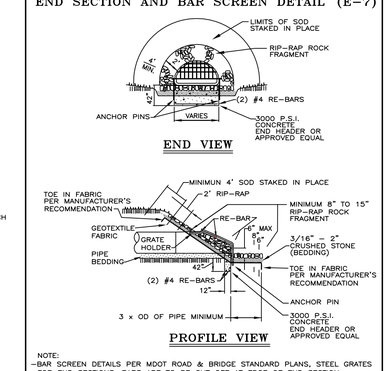


-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

LEVEL SPREADER (E-4)



RIP-RAP, END SECTION AND BAR SCREEN DETAIL (E-7)

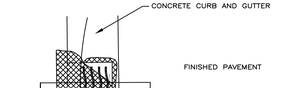


NOTE:
-BAR SCREEN DETAILS PER MDOT ROAD & BRIDGE STANDARD PLANS, STEEL GRATES FOR END SECTIONS. BARS ARE TO BE CUT OFF AT EDGE OF END SECTION.
-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

VEGETATIVE BUFFER ZONE (SP-1)

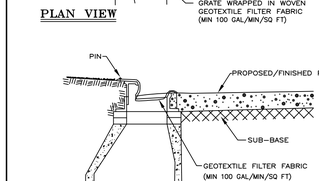
THE GRAPH SHOWN BELOW IS USED TO DETERMINE THE ADEQUACY OF AN EXISTING VEGETATIVE BUFFER ZONE FOR USE AS A SEDIMENT FILTER. THIS GRAPH IS ONLY APPLICABLE IF THE VEGETATION IS 90% DENSE AND AT LEAST 1" IN LENGTH OVER EVERY SQUARE FOOT OF DISTURBED SOIL. AN AREA COVERED WITH WEEDS, OR BUSHES AND TREES WITHOUT A GOOD GROUND COVER IS NOT ACCEPTABLE.

EXAMPLE



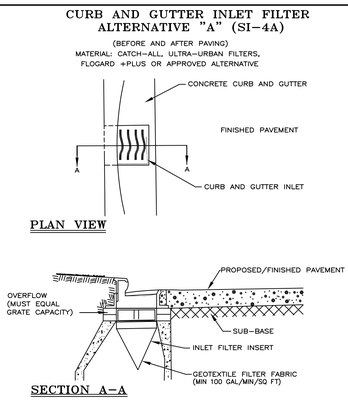
LENGTH OF BUFFER ZONE = ?
% OF SLOPE OF BUFFER ZONE = 5%
WHAT IS THE ACCEPTABLE LENGTH OF THE BUFFER ZONE?

PLOT IN GRAPH BELOW
BUFFER ZONE IS ACCEPTABLE AT 65'



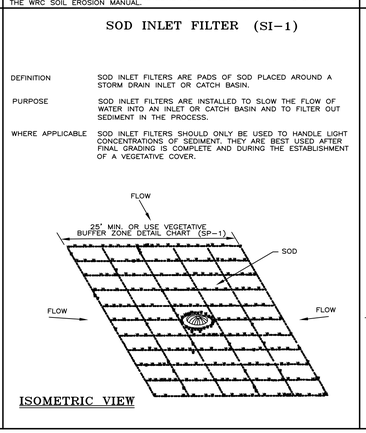
SILT FENCE (SP-2)

(MATERIAL: AMOCO PRO PEX 2130 OR APPROVED EQUIVALENT)



SILT FENCE ALTERNATIVE "A" (SP-2A)

(MATERIAL: SILT SHIELD OR APPROVED EQUIVALENT)



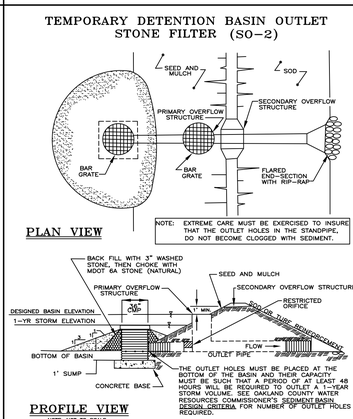
2% GRADE MAXIMUM SLOPE

Splicing Procedure:
Splicing EXTRUDED SEDIMENT FILTER FENCE is achieved beginning with an overlap of a min. of 8" of the EXTRUDED SEDIMENT FILTER FENCE ends being spliced. Place one plastic retainer post push-in fastener to locate those ends with one directly vertically, at least 1" from each edge of the splice.

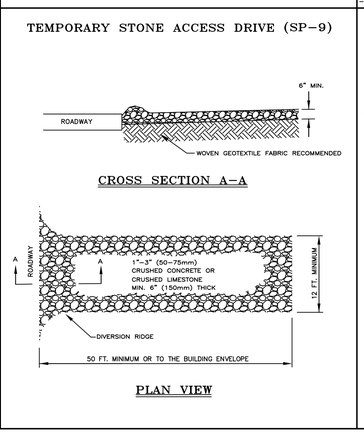
Optional Heat Splicing:
Overlap a minimum of eight inches. Melt a thin layer of EXTRUDED SEDIMENT FILTER FENCE with torch from top to bottom, immediately press both layers together for a minimum of 5 second. Check for total lamination from top to bottom of material. (Do not apply heat to filter)

WINTER/FROZEN GROUND SILT FENCE (SP-2W)

(MATERIAL: AMOCO PRO PEX 2130 OR APPROVED EQUIVALENT)

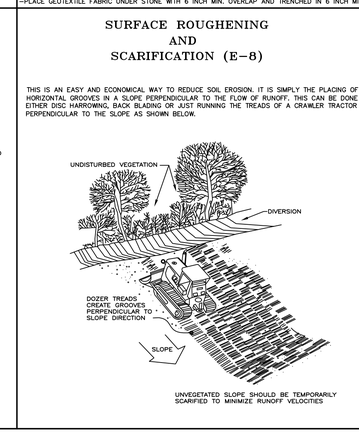


RYCB INLET FILTER (SI-3)



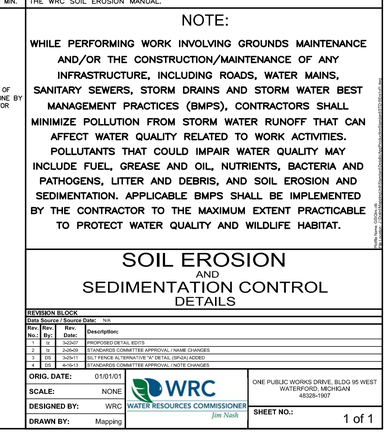
NOTE: MATERIAL IS NOT SILT FENCE MATERIAL

RYCB INLET FILTER ALTERNATIVE "A" (SI-3A)



RYCB INLET FILTER ALTERNATIVE "B" (SI-3B)

MATERIAL: SILT SAVER OR APPROVED ALTERNATIVE



(NOTE: NO PIT REQUIRED WHEN FRAME AND COVER OR GRATE AND COVER ARE IN PLACE.)

EARTH DIVERSION BERM WITH STONE OUTLET FILTER (SP-4)

EARTH DIVERSION BERM (E-2)

GRAVEL INTERCEPTOR DIKE (SP-6)

-PLACE GEOTEXTILE FABRIC UNDER STONE WITH 6 INCH MIN. OVERLAP AND TRENCHED IN 6 INCH MIN. -FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

LOW POINT INLET FILTER (SI-2)

ALTERNATIVE INLET FILTER MUST BE USED IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING.

LOW POINT INLET FILTER ALT. "A" (SI-2A)

MATERIAL: CATCH-ALL, ULTRA-URBAN FILTERS, FLOGARD +PLUS OR APPROVED ALTERNATIVE

SILT FENCE GRAVEL FILTER (SP-3)

-PLACE GEOTEXTILE FABRIC UNDER STONE WITH 6 INCH MIN. OVERLAP AND TRENCHED IN 6 INCH MIN.

DITCH SEDIMENT TRAP (SO-4)

NOTE:
FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THE SHEET OR IN THE WRC SOIL EROSION MANUAL.

CURB AND GUTTER INLET FILTER (SI-4)

(BEFORE AND AFTER PAVING)

ALTERNATIVE INLET FILTER MUST BE USED IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING.

CURB AND GUTTER INLET FILTER ALTERNATIVE "A" (SI-4A)

(BEFORE AND AFTER PAVING)

MATERIAL: CATCH-ALL, ULTRA-URBAN FILTERS, FLOGARD +PLUS OR APPROVED ALTERNATIVE

SOD INLET FILTER (SI-1)

DEFINITION	SOD INLET FILTERS ARE PADS OF SOD PLACED AROUND A STORM DRAIN INLET OR CATCH BASIN.
PURPOSE	SOD INLET FILTERS ARE INSTALLED TO SLOW THE FLOW OF WATER INTO AN INLET OR CATCH BASIN AND TO FILTER OUT SEDIMENT IN THE PROCESS.
WHERE APPLICABLE	SOD INLET FILTERS SHOULD ONLY BE USED TO HANDLE LIGHT CONCENTRATIONS OF SEDIMENT. THEY ARE BEST USED AFTER FINAL GRADING IS COMPLETE AND DURING THE ESTABLISHMENT OF A VEGETATIVE COVER.

TEMPORARY DETENTION BASIN OUTLET STONE FILTER (SO-2)

TEMPORARY STONE ACCESS DRIVE (SP-9)

SURFACE ROUGHENING AND SCARIFICATION (E-8)

THIS IS AN EASY AND ECONOMICAL WAY TO REDUCE SOIL EROSION. IT IS SIMPLY THE PLACING OF HORIZONTAL GROOVES IN A SLOPE PERPENDICULAR TO THE FLOW OF RUNOFF. THIS CAN BE DONE BY EITHER DISC HARROWING, BACK BLADING OR JUST RUNNING THE TREADS OF A CRAWLER TRACTOR PERPENDICULAR TO THE SLOPE AS SHOWN BELOW.

UNVEGETATED SLOPE SHOULD BE TEMPORARILY SCARIFIED TO MINIMIZE RUNOFF VELOCITIES

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

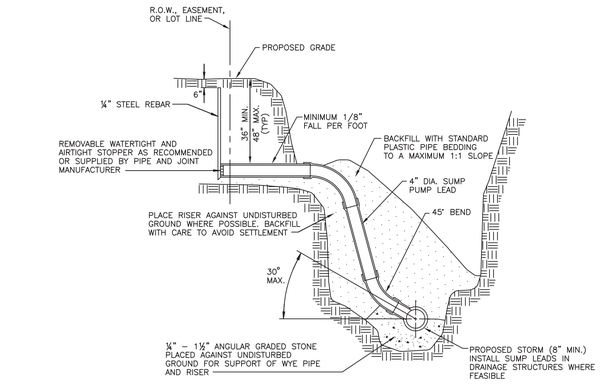
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Date Source / Source Date:		N/A	
Rev. No.:	Rev. By:	Rev. Date:	Description:
1	W	3-23-07	PROPOSED DETAIL EDITS
2	W	3-29-07	STANDARDS COMMITTEE APPROVAL / NAME CHANGES
3	SS	3-29-11	SILT FENCE ALTERNATIVE "A" DETAIL (SP-2A) ADDED
4	DS	4-16-13	STANDARDS COMMITTEE APPROVAL / NOTE CHANGES

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

WRC WATER RESOURCES COMMISSIONER
Jim Nash

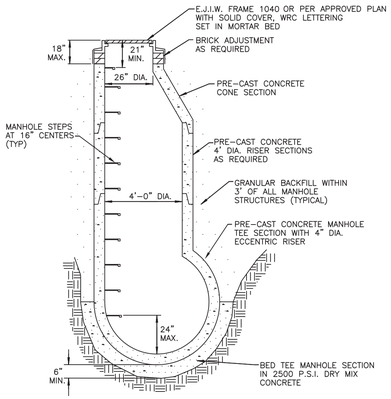
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.: 1 of 1



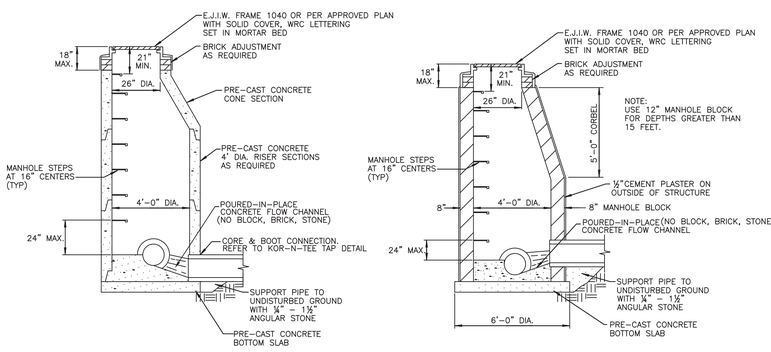
HOUSE LEAD DETAIL FOR 4" DIA. PLASTIC SUMP PUMP LEADS

NO SCALE



PRE-CAST TEE MANHOLE DETAIL

NO SCALE



STANDARD MANHOLE DETAILS

NO SCALE

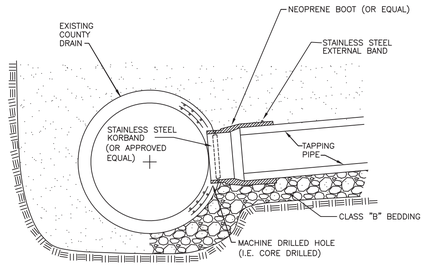
GENERAL NOTES

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 pipe 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 adapted 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).

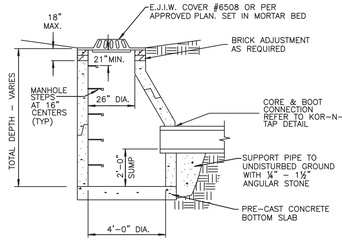


CONNECTION DETAIL FOR DIRECT TAPS TO PIPE WALL OF EXISTING COUNTY DRAINS.

KOR–N–TEE TAP (OR APPROVED EQUAL)

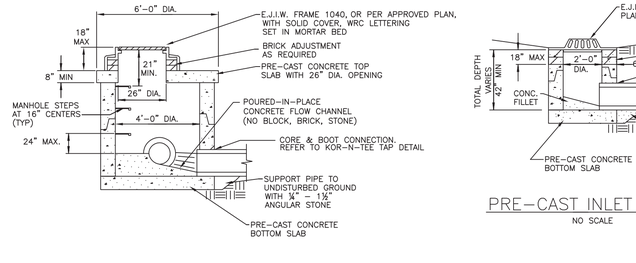
NO SCALE

* 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



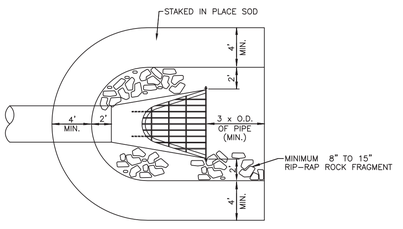
PRE–CAST LOW HEAD MANHOLE DETAIL

NO SCALE

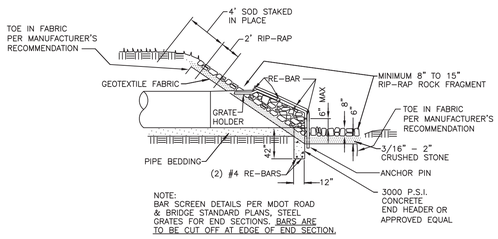
(PRIOR APPROVAL ONLY)

PRE–CAST INLET DETAIL

NO SCALE



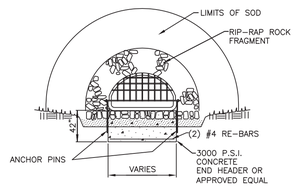
PLAN VIEW



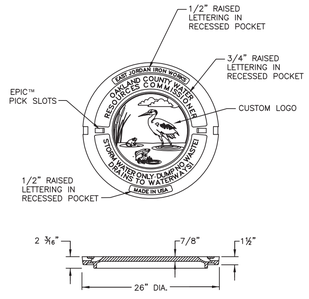
PROFILE VIEW

END SECTION AND BAR SCREEN DETAIL

NO SCALE



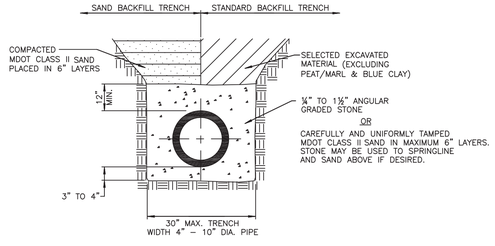
END VIEW



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.

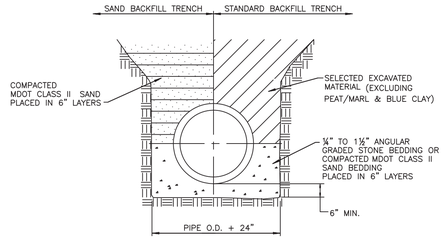
LETTERED MANHOLE COVER FOR WRC

NO SCALE



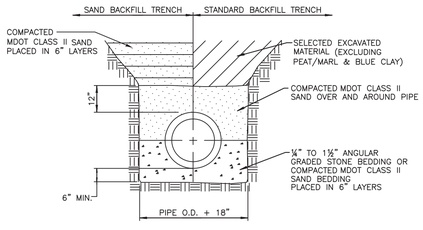
ABS (TRUSS AND SOLID WALL), PVC (TRUSS, SOLID WALL, A2000), ADS N–12 WT PIPE BEDDING DETAIL

NO SCALE



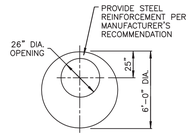
CLASS "B" BEDDING TRENCH DETAIL FOR 27" DIAMETER AND LARGER CONCRETE PIPE

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:
1	tb	3/17/09	PROPOSED DETAIL CHANGES / NEW LOGO
2	tb	06/12/09	APPROVAL PER STANDARDS COMMITTEE
3	tb	03/29/10	REVISED MH COVER DETAIL
4	SS	04/27/10	REVISED GENERAL NOTES

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

WRC WATER RESOURCES COMMISSIONER
Jim Nash

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

SHEET NO.: 1 of 1

File Name: STORM.dft
Plot By: WRC - STORM.dft