# **CRESTWYK ESTATES**

4.44 ACRE DEVELOPMENT CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

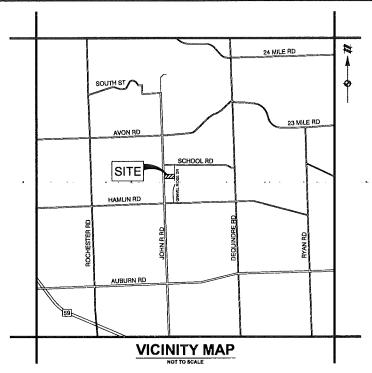
## **ENGINEERING CONSTRUCTION PLANS**

LANDSCAPE ARCHITECT

NÚÑEZ DESIGN, INC.

PHONE: (248) 224-5933

CONTACT: RALPH NÚÑEZ





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### **DEVELOPMENT TEAM**

### **DEVELOPER**

M2J1, LLC 14955 TECHNOLOGY DRIVE SHELBY TOWNSHIP, MI 48315 PHONE: (586) 421-5729 CONTACT: JIM POLYZOIS

### CIVIL ENGINEER/SURVEYOR/ WETLAND CONSULTANT

ATWELL, LLC TWO TOWNE SQUARE, SUITE 700 SOUTHFIELD, MI 48076 PHONE: (248) 447-2000 CONTACT: FRIC LORD, P.F.

### **GOVERNING AGENCIES & UTILITY CONTACTS**

### MUNICIPALITY/PLANNER

CITY OF ROCHESTER HILLS 1000 ROCHESTER HILLS DRIVE ROCHESTER HILLS, MI 48309 PHONE: (248) 656-4660 CONTACT: KRISTEN KAPELANSKI

### CITY ENGINEER

CITY OF ROCHESTER HILLS 1000 ROCHESTER HILLS DRIVE ROCHESTER HILLS, MI 48309 PHONE: (248) 841-2490 CONTACT: JASON BOUGHTON

### SOIL EROSION

OAKLAND COUNTY WATER RESOURCES COMMISION ONE PUBLIC WORKS DRIVE WATERFORD, MI 48328-1907 PHONE: (248) 858-5389

### **LEGAL DESCRIPTION**

LOT 7 OF FERRYVIEW HOMELANDS SUBDIVISION AS RECORDED IN LIBER 27, PAGE 22, OAKLAND COUNTY RECORDS, A SUBDIVISION IN THE SOUTHWEST 1/4 OF SECTION 24, T3N, R11E, CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

### SITE DATA

THE CURRENT ZONING CLASSIFICATION IS R-4 (ONE FAMILY RESIDENTIAL DISTRICT) GROSS AREA: 4.64 AC. NET AREA: 4.44 AC.

### LOT DENSITY

AREA=4.44 AC UNITS=16 SINGLE FAMILY DETACHED CONDOMINIUMS COVERAGE=16/4.44= 3.60 UNITS PER ACRE

### SETBACKS

FRONT: 24' FROM BACK OF SIDEWALK
SIDE: 20' MINIMUM BETWEEN BUILDINGS
REAR: 30'

5' SIDEWALK PROVIDED ON BOTH SIDES OF ROAD 8' WIDE PEDESTRIAN PATHWAY ALONG JOHN R ROAD RIGHT OF WAY ROADS ARE TO BE PRIVATE.

### **BENCHMARKS**

### BENCHMARK A

ARROW ON HYDRANT, WEST SIDE OF JOHN R. ROAD, 23'± SOUTH OF SOUTH PROPERTY LINE

### 748.32

### BENCHMARK B

PK NAIL IN SOUTH FACE OF UTILITY POLE, EAST SIDE OF JOHN R. ROAD 300'± NORTH OF NORTH PROPERTY LINE

### BENCHMARK C:

PK NAIL IN 18" DECIDUOUS TREE 100'± NORTH OF SOIL BORING #3

### BENCHMARK D

PK NAIL IN SW FACE OF DECIDUOUS TREE 100'± EAST OF GRAVEL RIDGE DRIVE 75'± SOUTH OF NORTH PROPERTY LINE

### **QUANTITIES:**

Asphalt Pathway (2" surface, 2" binder, 4" aggregate)	210	SY
PCC Sidcwalk with Subbase, 6"	8470	SF
Sanitary Sewer		
8" PVC Sewer Pipe	714	LF
4'-0" Diameter Manhole	3	EACH
Connect to Existing Sanitary Sewer Manhote	1	EACH
Watermain		
6" Ductile Iron Water Main Pipe	4	LF
8" Ductile Iron Water Main Pipe	888	LF
Tee	2	EACH
Bend	4	EACH
Thrust Block	8	EACH
Fire Hydrant with Auxilliary Valve, Complete	2	EACH
8" Valve and Vault	1	EACH
8" x 8" Tapping Sleeve, Valve, and Gatewell	1	EACH
8" x 12" Tapping Sleeve, Valve, and Gatewell	1	EACH
Auger and Jack, with Casing - 20"	74	LF
Storm Sewer and Detention Basin		
6" PVC Perforated Underdrain	1466	li F
20" x 28" CMP ARCH Storm Pipe	91	LF
15" PVC Storm Sewer Pipe	14	LE
12" RCP Storm Sewer Pipe	971	LF
15" RCP Storm Sewer Pipe	202	LF
18" RCP Storm Sewer Pipe	332	LF
24" RCP Storm Sever Pipe	497	LF
2'-0" Diameter inlet	6	EACH
4'-0" Diameter Manhole	9	EACH
5'-0' Diameter Manhole	3	EACH
AquaSwiri AS-8 Unit	1	EACH
36" CMP Riser	1	EACH
6'-0' Bypass Structure	1	EACH
12" Flared End Section, with Grate	1	EACH
15" Flared End Section, with Grate	1	EACH
24" Flared End Section, with Grate	1	EACH

NOTE: CONTRACTOR SHALL VERIFY ALL QUANTITIES

Paying
John R Road and Gravel Ridge Road Asphalt Pavement

Gravel Shoulder (21AA), 6" Base Granular Material (21AA), 4

Concrete Curb and Gutter Type B-2

Concrete Curb and Gutter (4" mountabl

PCC Pavement, 81

### SHEET INDEX

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LANDSCAPE PLANS PREPARED BY NÚNEZ DESIGN, INC.

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LA - 1.3 TYPICAL TWO FAMILY ATTACHED UNITS PLANTING PLAN

LA - 1.4 ELEVATION & CROSS SECTIONS LA - 2.0 LANDSCAPE PLANTING DETAILS & NOTES

T-1.0 EXISTING TREE SURVEY
T-1.1 TREE ANALYSIS



DATE NOVEMBER 22, 2017 of 1-12-2018 GITY SUBMITHAL SO-200-2018 FRANCE PER ON SUBMITHAL SUBMITH

DRAWN BY: REK
CHECKED BY: JPC
P.M.: E. LORD
JOB #. 17000274
CITY FILE #. 17-013
SHEET NO C-01

### **GENERAL CONSTRUCTION NOTES**

- ALL ON-SITE WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS AND STANDARD DETAILS OF MODT AND CITY OF ROCHESTER HILLS, UNLESS OTHERMSE SPECIFIED.
- 2. SITE CONSTRUCTION SHALL NOT COMMENCE WITHOUT APPROVAL OF THE ENGINEERING PLANS.
- 3. MUNICIPAL UTILITIES (WATER, SANITARY, AND STORM SEWER) MAY NOT BEGIN PRIOR TO ENGINEERING APPROVAL
- 4. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS
- 5. CONTRACTOR SHALL MATCH PROPOSED CURB AND GUTTER, CONCRETE, AND PAYEMENT TO EXISTING IN GRADE AND ALIGNMENT.
- 6. THE FARTHWORK FOR ALL BUILDING FOUNDATIONS AND SLABS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL BUILDING PLANS AND SPECIFICATIONS.
- 7. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR ACTUAL DIMENSIONS, PORCH AND RAMP LOCATIONS. 8. THE SITE CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE BUILDING CONTRACTOR
- 9. THE CONTRACTOR IS RESPONSIBLE FOR PROPER TRAFFIC CONTROL DURING CONSTRUCTION.
- 10. CONSTRUCTION SHALL COMPLY WITH ALL GOVERNING CODES AND BE CONSTRUCTED TO SAME.
- 11. HAZARDOUS MATERIAL OR WASTE SHALL NOT BE STORED ON-SITE.
- 12. CONTRACTOR IS RESPONSIBLE FOR RELOCATING AND/OR PLACING PEDESTRIAN CROSSING SIGNS IN NEW LOCATION AS INDICATED ON PLANS. CONTRACTOR TO VERIFY EXACT NUMBER OF SIGNS REQUIRED.
- 13. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED RELOCATIONS INCLUDING UTILITIES, STRUCTURES, SIGNS, ETC. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES' SPECIFICATIONS AND SHALL BE APPROVED BY SUCH.
- 14. ALL TOPSOIL AND ANY BURED ORGANIC SQL WITHIN THE PLANNED BUILDING FOOTPRINT AND PAYEMENT SURFACE SHOULD BE REMOVED IN THEIR ENTIRETY OR AS DIRECTED PER THE GEOTECHNICAL REPORT.
- 15. ALL ACCESSIBLE PARKING, SIGNAGE AND STRIPING SHALL BE CONSTRUCTED IN ACCORDANCE WITH ADA STANDARDS.
- 16. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE EXISTANT OF ANY DEMOLITION OR CONSTRUCTION CONTINUED, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR CONSTRUCTION OF EXISTING UTILITIES.
- 17. CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE DONE TO ANY EXISTING ITEM DURING CONSTRUCTION, SUCH AS, BUT NOT LIMITED TO, DRAINAGE, UTILITES, PAYEMENT, STRIPPING, CURB, SIGNS ETC. REPAIRS SHALL BE EQUAL TO, OR BETTER THAN, EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE TO DOCUMENT ALL EXISTING DAMAGE AND NOTIFY CONSTRUCTION STARGER PRIOR TO CONSTRUCTION STARTS.

### **PAVING NOTES**

- ALL PAWING SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF CITY OF ROCHESTER HILLS AND OAKLAND COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AS APPLICABLE.
- 2. ANY SIDEWALK DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- 3. PROVIDE 1/2" EXPANSION JOINT WHERE PROPOSED CURB IS TO MATCH EXISTING CURB.
- 4 PROVIDE 1" EXPANSION JOINT WHERE PROPOSED SIDEWALK IS TO MATCH EXISTING SIDEWALK
- 5. CONTRACTOR TO INSTALL JOINTS IN CONCRETE PAVEMENT IN ORDER TO OBTAIN APPROXIMATELY 10'X10' SQUARES, ALL JOINTS TO BE SEALED WITH AN APPROVED SEALANT MATERIAL CONTRACTOR TO INSTALL EXPANSION JOINTS RETWEEN PAVEMENTS AND CURBING
- 6. APPLY SUCCESSIVE LIFTS OF ASPHALTIC CONCRETE IN TRANSVERSE DIRECTIONS WITH SURFACE COURSE PLACED PARALLEL TO FLOW OF TRAFFIC PLACE ASPHALTIC PAYING IN TYPICAL STRIPS NOT LESS THAN 10'-0" WIDE.
- 7. ALL ACCESSIBLE PARKING SPACES SHALL COMPLY WITH CURRENT ADA DESIGN CRITERIA.
- 8. ALL PEDESTRIAN RAMPS SHALL HAVE DETECTABLE WARNING SURFACES.
- 9. CONTRACTOR TO CONSTRUCT ADA ACCESS ROUTES PER STATE AND NATIONAL STANDARDS AND SPECIFICATIONS, IN ADDITION TO THE INFORMATION PROVIDED IN THE CONSTRUCTION DRAWNGS. IF A CONFLICT EXISTS, THE LOCAL, STATE OR NATIONAL STANDARDS AND SPECIFICATIONS WILL GOVERN. CONTRACTOR TO CONTACT THE ENGINEER AND OWNER WITH ANY QUESTIONS AN/OR COMMENTS.
- 10. CONTRACTOR TO ENSURE 1:12 (V:H) MAX CROSS SLOPE IS INSTALLED ACROSS CURB DROP AT ADA RAMPS. DETECTABLE WARNINGS AS SHOWN ON THE CURB RAMP DETAIL SHALL BE PLACED AT ALL CURB RAMPS AND ISLAND CUT-THROUGHS WHERE THE PEDESTRIAN WALKWAY IS DIRECTED INTO A VEHICULAR TRAFFIC AREA UNLESS NOTED OTHERWISE.
- 11. DETECTABLE WARNINGS AS SHOWN ON THE CURB RAWP DETAIL SHALL BE PLACED AT ALL CURB RAWPS, AND ISLAND CUT—THROUGHS, WHERE THE PEDESTRIAN WALKWAY IS DIRECTED INTO A VEHICULAR TRAFFIC AREA, UNLESS NOTED OTHERWISE.
- 12. ALL CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 3000 psf.

### **UTILITY NOTES**

- DRAWINGS DO NOT PURPORT TO SHOW ALL EXISTING UTILITIES. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE HEROPMANTON IS NOT TO BE RELEVE ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL HEAPPROPARTE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN OF THE PLANS. THE CONTRACTOR SHALL WERFY THE LOCATION AND DEPTH OF EXISTING UTILITIES IN THE FEALD PRIOR TO CONSTRUCTION AND INSTALLATION OF UTILITIES. SEE TOPOCRAPHIC SURVEY FOR EXISTING UTILITY AND EASEMENT INFORMATION. NOTIFY THE ENGINEER IMMEDIATELY REGARDING ANY UTILITY CONFLICTS, ADDITIONAL UTILITIES AND/OR ANY OTHER UTILITY INFORMATION.
- CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING UTILITY DURING CONSTRUCTION AT NO COST TO THE OWNER.
- 3. ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
- CONTRACTOP SHALL NOTIFY THE UTILITY AUTHORITIES INSPECTORS 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.
- CONTRACTOR SHALL NOTIFY THE CITY OF ROCHESTER HILLS ENGINEERING DIVISION AT LEAST ONE BUSINESS DAY BEFORE COMMERCEMENT OF WORK
- 6. LIMES UNDERGROUND SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.
- 7. THE CONTRACTOR MUST CALL 811 AT LEAST 3 WORKING DAYS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
- 8. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL CONNECTION OF SERVICE.
- 9. CONTRACTOR SHALL COORDINATE WITH ALL LITLITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS
- 10. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES, IN SUCH A MAINER AS TO AVOID CONFLICTS, AS WELL AS COORDINATING WITH LOCAL UTILITY REQUIREMENTS AS TO ASSURE PROPER LOCATION AND SCHEDULING FOR TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO EXISTING UTILITIES.
- 11. THE CONTRACTOR SHALL CONDUCT ALL REQUIRED TESTS TO THE SATISFACTION OF THE RESPECTIVE UTILITY COL. ANTIES AND THE OWNER'S INSPECTING AUTHORITIES.
- 12. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST STANDARDS OF OSHA DIRECTIVES OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENDHING PROCEDURES. THE CONTRACTOR SHALL USE SUPPORT SYSTEMS, SLOPING, BENCHING, AND OTHER MEANS OF PROTECTION. THIS TO INCLUDE BUT NOT LIMITED FOR ACCESS AND ECRISE EXCAVATION AND TRENDHING.
- 13. MAINTAIN A MINIMUM 18" VERTICAL SEPARATION BETWEEN SANITARY, WATER, STORD, AND ALL FRANCHISE UTILITY LINES. MEASUREMENTS SHALL BE TAKEN FROM THE NEAREST FORE OF THE UTILITY IN QUESTION.
- 14. MAINTAIN A MINIMUM 18" VERTICAL SEPARATION BETWEEN FRANCHISE UTILITY LINES.
- 15. ALL UTILITIES SHALL MAINTAIN TEN (10') OF HORIZONTAL SEPARATION (PARALLEL CENTER TO CENTER) OR WHEN CROSSING, 18" VERTICAL CLEARANCE (OUTS/DE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE).
- 15. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 6'-0" COVER ON ALL WATERUNES.
- 17. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 30" COVER ON ALL UNDERGROUND GAS LINES.
- B. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2'-0" COVER ON ALL UNDERGROUND ELECTRIC AND DATA LINES.
- 19. CONTRACTOR ASSURES FULL RESPONSIBILITY FOR DETERMINING DEFLECTION ANGLES AND LOCATION OF ALL VERTICAL BENDS IN THE WATER WAN IN ACCORDANCE WITH CITY OF ROOHESTER HILLS STANDARDS FOR WATER WAIN CONSTRUCTION. ANY QUESTIONS OR CONFLICTS WITH OTHER UTILITIES IN THE CONSTRUCTION PLANS MUST BE PROVIDED TO THE OFSICN ENOMEDER IN WRITING PRICE TO THE START OF CONSTRUCTION.
- 20. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE GOVERNING AGENCY STANDARD DETAILS, SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS WITH RECARDS TO MATERIALS AND INSTALLATION OF THE WATER AND SEWER LINES.
- 21. WATER MAINS SHALL BE DISERFECTED AND HAVE A BACTERIAL ANALYSIS IN ACCORDANCE WITH AWWA STANDARD C651 PRIOR TO BEING PUT INTO SERVICE.
- 22. WATER MAINS SHALL BE LEAKAGE AND PRESSURE TESTED IN ACCORDANCE WITH AWWA STANDARD C600 FOR DUCTILE IRON AND AWWA C605 FOR PVC PIPE
- 23. REDOING AND BACKFILL INSTALLATION SHALL BE IN ACCORDANCE WITH AWWA CROD FOR DUCTILE IRON AND AWWA CROS FOR PVC PIPE.
- 24. JOINTS SHALL BE IN ACCORDANCE WITH AWWA C111 AND/OR C115 AND FITTINGS MUST BE IN ACCORDANCE WITH AWWA C110 OR C153.

### **GRADING AND DRAINAGE NOTES**

- ALL ON-SITE WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS AND STANDARD DETAILS OF CITY OF ROCHESTER HILLS, UNLESS OTHERMSE SPECIFIED.
- THE CONTRACTOR SHALL CAUSE NOTICE TO BE GIVEN TO MISS DIG, THE BOTTY OF ROCHESTER HILLS ENGINEERING DEPARTMENT, AND TO THE OWNERS OF THE UTILITY FACILITIES SHOWN ON THE PLAN.
- 3. PRIOR TO CONSTRUCTION, ADDITIONAL BENCHMARKS SHALL BE SET AROUND THE SITE TO INSURE AN ACCURATE BENCHMARK WILL REMAIN AT ALL TIMES.
- 4. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
- 5. THE FLOW IN ALL SEWERS, DRAINS, AND WATERCOURSES ENCOUNTERED SHALL BE MAINTAINED.
- 6. ALL DRAIN TILE AND STORM SEWERS TO REMAIN THAT ARE DAMAGED, DISTURBED, OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH THE SAME QUALITY PIPE OR BETTER, MAINTAINING THE SAME GRADIENT AS EXISTING. REPLACED DRAIN TILE SHALL BE LAID ON COMPACTED BEDDING EQUAL IN DENSITY TO SURROUNDING STRATUM. REPLACEMENT SHALL BE DONE AT THE TIME OF THE BACKFILL OPERATION.
- 7. ALL DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE STANDARDS OF THE ENTITY WHICH HOLDS JURISDICTION.
- 8. ALL SOIL EROSION AND SILT MUST BE CONTROLLED AND CONTAINED ON-SITE.
- 9. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
- 10. ALL INTERIOR ISLANDS SHALL BE MOUNCED, MINIMUM GRADE FOR POSITIVE DRAINAGE SHALL BE 3%.
- ALL STORM SEWER MANNOLES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT, AND SHALL HAVE TRAFFIC BEARING LIDS, MANHOLES IN UNPAVEO AREAS SHALL BE FLUSH WITH FINISH GRADE. LIDS SHALL BE LABELED PER COVERNING AGENCY REQUIREMENTS.
- ~12. THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS CUITINED IN THE CENERAL N.P.D.E.S. PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES (IF N.P.O.E.S. PERMIT REQUIRED).
- 13. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
- 14. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL CONTRACTOR SHALL APPLY STABRUZATION FABRIC TO ALL SLOPES SHILV OR STEEPER. CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH COUNTY SPECIFICATIONS UNTIL A HEALTHY STAND OF VECETATION IS OBTAINED.
- 15. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
- 16. ALL STORM STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR INVERT FROM INVERT IN TO INVERT OUT.
- 17. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITIES AND NOTIFYING THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING CONSTRUCTION.
- 18. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING STORM SEWER STRUCTURES, PIPES, AND ALL UTILITIES PRIOR TO
- 19. ALL SPOT GRADES ARE TOP OF PAVENENT OR FINISH GROUND UNIESS OTHERWISE NOTED.
- 20. CONTRACTOR TO ENSURE 1:12 (Y:H) MAX CROSS SLOPE IS INSTALLED ACROSS CURB DROP AT RAMPS. DETECTABLE WARNINGS AS SHOWN ON THE CURB RAMP DETAIL SHALL BE PLACED AT ALL CURB RAMPS AND ISLAND CUT-THROUGHS WHERE THE PEDESTRIAN WALKWAY IS DIRECTED INTO A VEHICULAR TRAFFIC AREA UNLESS NOTED OTHERWISE.

### **DEMOLITION NOTES**

- 1. ALL ON-SITE WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS AND STANDARD DETAILS OF CITY OF ROCHESTER HILLS, UNLESS OTHERWISE SPECIFIED.
- 2. DEPTH AND LOCATION OF CN-SITE AND RICHT-OF-WAY UTILITIES SHALL BE VERIFIED BY GENERAL CONTRACTOR AND/OR THE PROPER UTILITY COMPANY PROVIDING SERMICE, SEE EXISTING CONDITIONS PLAN FOR EXISTING UTILITY INFORMATION. NOTIFY THE ENGINEER IMMEDIATELY REGARDING ANY UTILITY CONFLICTS, ADDITIONAL UTILITIES AND/OR ANY OTHER UTILITY INFORMATION.
- 3. PRIOR TO CONSTRUCTION, ADDITIONAL PERMANENT BENCH WARKS WILL BE SET ON SITE TO INSURE AN ACCURATE BENCH MARK WILL REMAIN AT ALL
- 4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF, OFF-SITE AT APPROVED LANDFILL, EXISTING STRUCTURES, FENCES, CONCRETE, AND PAVEMENT AS
- 5. THE CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS AND NOTIFY ALL AFFECTED UTILITY COMPANIES PRIOR TO THE DEMOLITION OF ANY EXISTING STRUCTURES. ALL EXISTING UTILITIES SHALL BE CAPPED OFF OR REMOVED SO AS NOT TO INTERFERE WITH THE CONSTRUCTION PROJECT. ALL DEBRIS SHALL BE HAULED AWAY FROM THE SITE AND DISPOSED OF AT AN APPROVED LANDFILL.
- 6. THE CONTRACTOR SHALL COORDINATE WITH AFFECTED UTILITY COMPANIES FOR THE REMOVAL OR RELOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES, UTILITY TRANSFORMER(S), AND LIGHT POLES.
- 7. SAWCUT THE EDGE OF PAYEMENT AND CURB TO FULL DEPTH AT LOCATIONS WHERE EXISTING IS TO MEET PROPOSED TO PROVIDE A SMOOTH EDGE.
- 8. THE FLOW IN ALL SEWERS, DRAINS, AND WATERCOURSES ENCOUNTERED SHALL BE MAINTAINED BY THE CONTRACTOR AT HIS OWN EXPENSE. WHENEVER SUCH WATERCOURSES AND DRAINS ARE DISTURBED OR DESTROYED DURING THE PROSECUTION OF THE WORK, THEY SHALL BE RESTORED BY THE CONTRACTOR AT HIS DWN COST AND EXPENSE, UNLESS SPECIFIC PROMISION IS MADE WITHIN THE PLANS.
- 9. CONTINUOUS ACCESS SHALL BE MAINTAINED FOR THE SURROUNDING PROPERTIES AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
- 10. PRIOR TO DEVOLUTION OCCURRING ALL FROSION CONTROL DEVICES ARE TO BE INSTALLED.
- 11. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION. AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE EXORIES ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY, PRICE TO THE START OF ANY DEVOLUTION OR CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR ONSITE LOTRONS OF EXISTING UTILITIES.

### FIRE DEPARTMENT NOTES:

- FIRE LANES SHALL BE DESIGNATED BY THE FIRE CODE OFFICIAL, AND SHALL BE CONSPICUOUSLY POSTED ON BOTH SIDES OF THE FIRE LANE, WITH FIRE
  LANE SIGNS, SPACED NOT MORE THAN 100 FEET APART. FIRE LANE SIGNS SHALL READ "NO STOPPING, STANDING, PARKING, FIRE LANE", AND SHALL
  CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
  FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 503
- 2. CONSTRUCTION SITES SHALL BE SAFEGUARDED IN ACCORDANCE WITH IFC 2006 CHAPTER 14.
- 3. OPEN BURNING IS NOT PERMITTED INCLUDING THE BURNING OF TRASH, DEBRIS, OR LAND CLEARING MATERIALS. OPEN BURNING FOR WARMING OF SAND AND/OR WATER FOR THE PREPARATION OF MORTAR SHALL BE WITHIN THE CITY OF ROCHESTER HILLS BURN PERMIT GUIDELINES. FIRE PREVENTION ORDINANCE CHAPTER 68, SEC. 307.6, 23 & 307.6, 23

### SITE NOTES:

1. THE DEVELOPER IS PROPOSING A 16 UNIT SITE CONDOMINIUM

- 2. ALL SIGNACE WILL BE IN CONFORMANCE WITH THE CITY OF ROCHESTER HILLS REQUIREMENTS. A SEPARATE SIGN PERMIT MUST BE OBTAINED FROM THE
- 3. THE DEVELOPER WILL DEDICATE THE PROPOSED RIGHT-OF-WAY OF BOTH JOHN R RDAD AND GRAVEL RIDGE ROAD.
- 4. DETECTIBLE WARNING SURFACES SHALL BE PROVIDED AT THE SIDEWALK APPROACHES TO THE ROADWAYS
- 5. BUILDING CONSTRUCTION TYPE WILL BE WOOD FRAME.
- 6. CITY SHALL FURNISH AND PLACE ALL PERMANENT ROW STREET SIGNS WITH MONIES PAID BY DEVELOPER

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COMMON AND PROTECTION OF AN EXPLANATION OF AN EXPLANATION OF AN EXPLANATION OF ALL CONTROL WITH A CASCALLY MICHAELY MI

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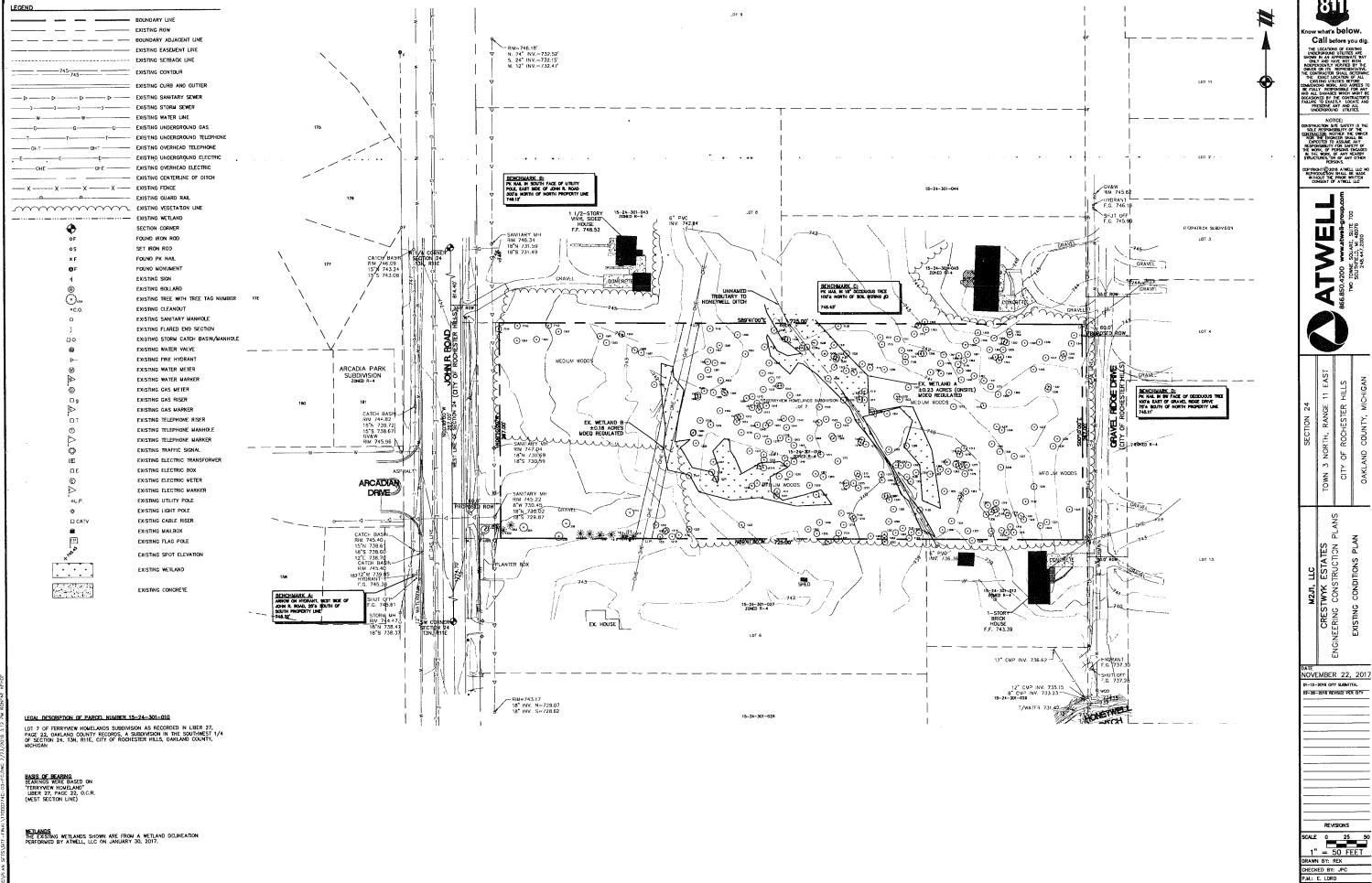
PLANS ESTATES MZJ1, TWYK CONS CONST

> OVEMBER 22, 2017 2-28-2018 REVISED PER CITY

REVISIONS

RAWN BY: REK CHECKED BY: JPC M.: E. LORD CITY FILE # 17-013

LEET NO. C-02



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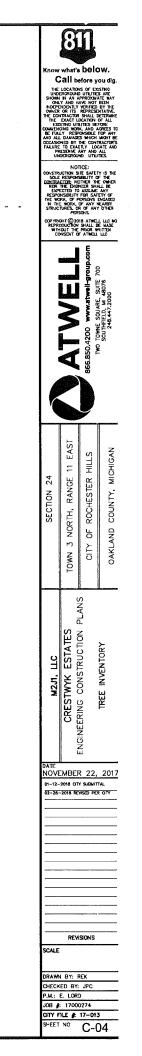
JOB #: 17000274

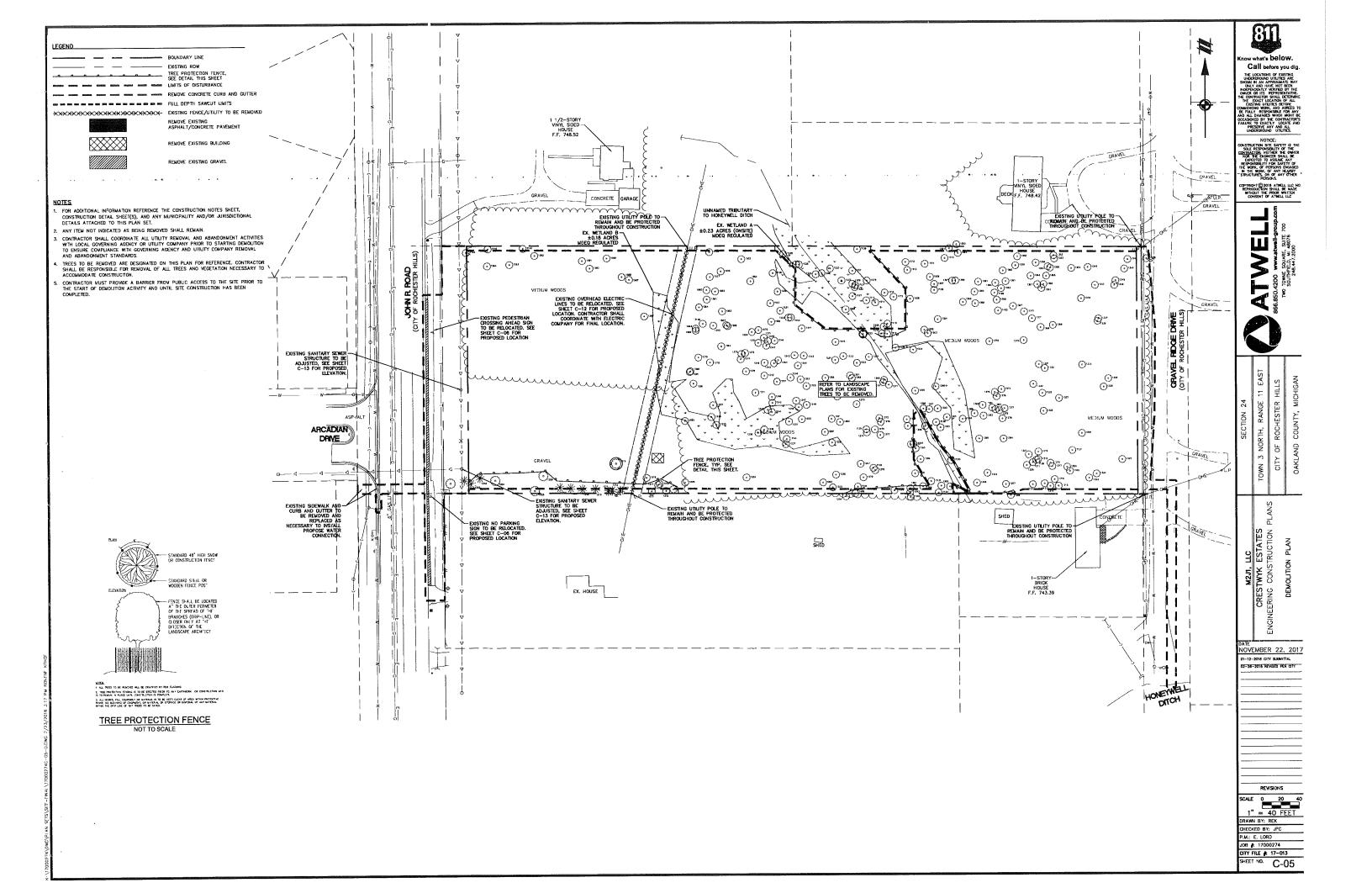
CITY FILE & 17-013 PHEET NO. C-03

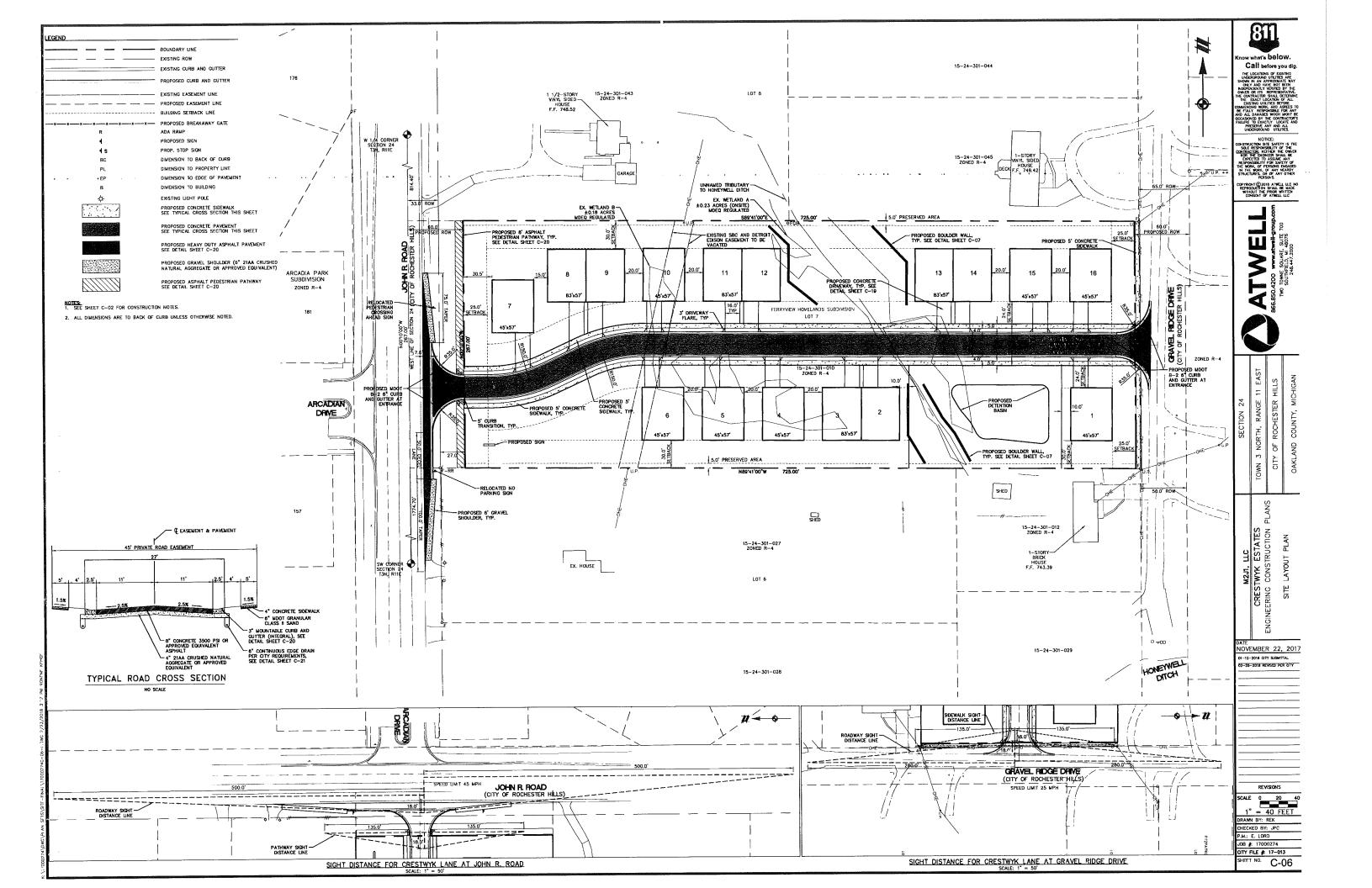
		Survey Results for the C					
ee Tag ID		Botanical Name	Common Name		Landmark Tri	Good Good	Notes/Comments Approximately 30 ft Tall
1202 1203	PIPU	Picea pungens Picea pungens	Blue Spruce Blue Spruce	7.0	No No	Fair	Approximately 30 ft Tall Approximately 30 ft Tall
1204	QUAL	Quercus alba	White Oak	24.0	No	Good	
1205	QUAL	Quercus alba	White Oak	19.5 21.5	No No	Good Fair	71
1206 1207	QURU PIAB	Quercus rubra Picea abies	Red Oak Norway Spruce	21.5 11.0	No No	Fair Fair	/1
1208	PIAB	Picea abies	Norway Spruce	10.0	No	Poor	
1209	PIAB	Picea abies	Norway Spruce	15.5	No	Fair	
1210	PIAB	Picea ables	Norway Spruce	14.0	No	Fair	
1211	PIAB	Picen abies	Norway Spruce	7.0	No No	Fair Fair	
1212 1213	PIAB PIAB	Picea ables Picea ables	Norway Spruce Norway Spruce	8.0 7.5	No	Fair	
1214	QURU	Quercus rubra	Red Oak	41.5	No	Good	
1215	QUAL	Quercus alba	White Oak	26.5	No	Good	
1216	QUVE	Quercus velutina	Black Oak	21.5	No	Γair	
1217	QUVF	Quercus velutina Acer platanoides	Black Oak Norway Maple	29.0 7.0	No Nò	Fair Good	
1218 1219	ACPL ACRU	Acer rubrum	Red Maple	7.0	No	Good	
1220	ACRU	Acer rubrum	Red Maple	8.5	No	Good	
1225	MAIT	Tilia americana	Basswood	17.0	No	Fair	
1226	QUAL	Quercus niba	White Oak	11.5	No	Good	21
122/	HAM	lilia americana	Basswood Swamp White Oak	11.5 9.5	No No	Good Excellent	21
1228 1233	QUBI ACNE	Quercus bicolar Acer negunda	Boxelder -	9.0	No	Good	
1237	CAGL	Carya glabra	Pignut Hickory	15.5	No	Good	
1238	CAOV	Carya avata	Shagbark Hickory	7.5	No	Good	
1239	CAOV	Carya ovatu	Shagbark Hickory	7.0	No	Good	
1240	CAOV	Carya ovata Acer robrum	Shagbark Hickory Red Maple	7.0 10.5	No No	Good Good	
1241 1242	ACRU ACRU	Acer robrum Acer rubrum	Red Maple	9.0	No	Good	
1243	CAOV	Carya avata	Shagbark Hickory	9.0	No	Good	
1244	PRSE	Prunus scratino	Black Cherry	10.5	No	Good	
1245	CVOA	Curya ovata	Shagbark Hickory	15.5	No No	Good	
1246 1247	PRSE ACRU	Prunus serotina Acer rubrum	Black Cherry Red Maple	16.0 8.5	No No	Good Good	
1247	CADV	Acer rubrum Carya avata	Shagbark Hickory	12.0	No	Good	
1249	CAOV	Carya avata	Shagbark Hickory	8.5	No	Good	
1250	ULAM	Ulmus americana	American Elm	12.5	No	Good	
1251	TIAM	Tika americana	Basswood Sharbark Hickory	17.0 11.0	No No	Good Good	
1252 1253	CAOV ACRU	Carya avata Acer ruhrum	Shagbark Hickory Red Maple	11.0	No No	Good	3T
1254	CAGL	Carya glabra	Pignut Hickory	11.5	No	Good	
1255	ACRU	Acer rubrum	Red Maple	8.0	No	Good	
1256	ACRU	Acer rubrum	Red Maple	8.0	No	Good	
1257	ACRU	Acer rubrum	Red Maple	14.5	No No	Good Fair	
1258 1259	CAOV	Ulmus americano Curya ovata	American Elm Shagbark Hickory	12.5 11.0	No No	Good	
1260	CAOV	Carya avata	Shagbark Hickory	10.5	No	Good	
1261	CAOV	Carya avata	Shagbark Hickory	10.0	No	Good	
1267	ULAM	Ulmus americana	American Elm	7.5	No	Good	Tues tenm?
1263	PRSE	Prunus serotina	Black Cherry Shagbark Hickory	11.0 14.0	No No	Poor Good	Tree Leaning 2T
1264 1265	CAOV SAAL	Carya ovuta Sassafras albidum	Shagbark Hickory Sassafras	14.0	No No	Good	£1
1266	ACRU	Acer rubrum	Red Maple	10.0	No	Good	
1267	CAOV	Carya avata	Shagbark Hickory	10.5	No	Good	2T
1268	PRSE	Prunus seratina	Black Cherry	10.0	No	Good	27
1269	ACRU	Acer rubrum	Red Maple	9.5 40.0	No No	Good Good	2Т
1270 1271	PODE PODE	Populus deltoides Papulus deltaides	Cottonwood Cottonwood	40.0	No No	Poor	
1272	CAOV	Carya avata	Shagbark Hickory	10.0	No	Good	
12/3	CAOV	Carya ovata	Shagbark Hickory	10.5	No	Good	
1274	CAOV	Carya avata	Shagbark Hickory	6.5	No	Good	
1275	CAOV	Carya ovata	Shagbark Hickory Shagbark Hickory	11.0 7.0	No No	Fair Good	
1276 1277	CAOV	Carya avata Carya avata	Shagbark Hickory Shagbark Hickory	9.5	No No	Good	
1278	CAOV	Carya avata	Shagbark Hickory	13.0	No	Good	
12/9	ACSAN	Acer saccharinum	Silver Maple	12.5	No	Good	
1280	TIAM	Tilia americana	Basswood	8.5	No	Good	<b>.</b>
1281	ULAM	Ulmus umericana	American Elm	6.5 a.o.	No No	Poor Good	Tree Leaning
1282	CAGL CAOV	Carya glabra Carya avata	Pignut Hickory Shagbark Hickory	8.0 7.0	No No	Good	
1283	MOAL	Morus ulba	White Mulberry	8.0	No	Fair	
1285	CAOV	Carya avata	Shagbark Hickory	7.5	No	Good	
1286	ULAM	Ulmus americana	American Elm	17.0	No	Dead	
1788	ACNE	Acer negunda Conso alabra	Boxelder	7.0 7.5	No No	Fair Good	
1289 1290	CAGL QUAL	Carya glabra Quercus alba	Pignut Hickory White Oak	7.5 9.5	No No	Fair	
1290	CAOV	Curyu ovata	Shagbark Hickory	6.5	No	Fair	
1292	ACSAN	Acer saccharinum	Silver Maple	35.5	No	l'air	
1293	CAGL	Carya glabra	Pignut Hickory	8.0	No	Good	
1294	CAOV	Carya ovata	Shagbark Hickory	8.0 9.0	No No	Good Good	
1295 1296	CAOV	Carya ovata Corya ovata	Shagbark Hickory Shagbark Hickory	9.0 13.5	No No	Excellent	
1296	CAOV	Carya avata	Shagbark Hickory	6.5	No	Good	
1298	CAOV	Carya ovata	Shagbark Hickory	12.5	No	Good	
1299	CAOV	Carya avata	Shagbark Hickory	7.5	No	Fair	
1300	CAOV	Carya avota	Shagbark Hickory Shagbark Hickory		No No	Good Fair	
1301 1302	CAOV	Carya avata Carya curdifurmis	Shagbark Hickory Bitternut Hickory		No No	Fair Fair	
1303	ACRU	Acer rubrum	Red Maple	7.0	No	Fair	Inner Bark Decay
1304	ACRU	Acer rubrum	Red Maple	16.0	No	Good	
1306	PIST	Pinus strabus	White Pine	28.0	No	Poor	
1307	ULAM	Ulmus americana	American Elm	10.0	No No	Poor Fair	Tree Leaning
1308	PRSE PRSE	Prunus serotina Prunus serotina	Black Cherry Black Cherry	15.0 7.5	No No	lair ⊦air	Tree Leaning Inner Bark Decay
1309 1310	PRSE	Prunus serotina Prunus serotina	Black Cherry	6.0	No	Poor	
1311	QURU	Quercus rubra	Red Oak	9.0	No	Good	
1312	CVOA	Carya avata	Shagbark Hickory		No	Good	
1313	PRSE	Prunus serotina	Black Cherry	17.5	No No	Fair	
1314	PRSF	Prunus seratina	Black Cherry Black Cherry	14.5 6.5	Na No	Fair Poor	Inner Bark Decay
1315 1316	PRSE QURU	Prunus serotina Quercus rubra	Black Cherry Red Oak	14.5	No No	Fair	our octay
1010	QUVE	Quercus velutino	Black Oak	23.0		Good	
1317	QU.L						
1317 1318 1319	PRSE CAOV	Prunus serotina Carya avata	Black Cherry Shagbark Hickory	6.0 13.5	No No	Good Good	

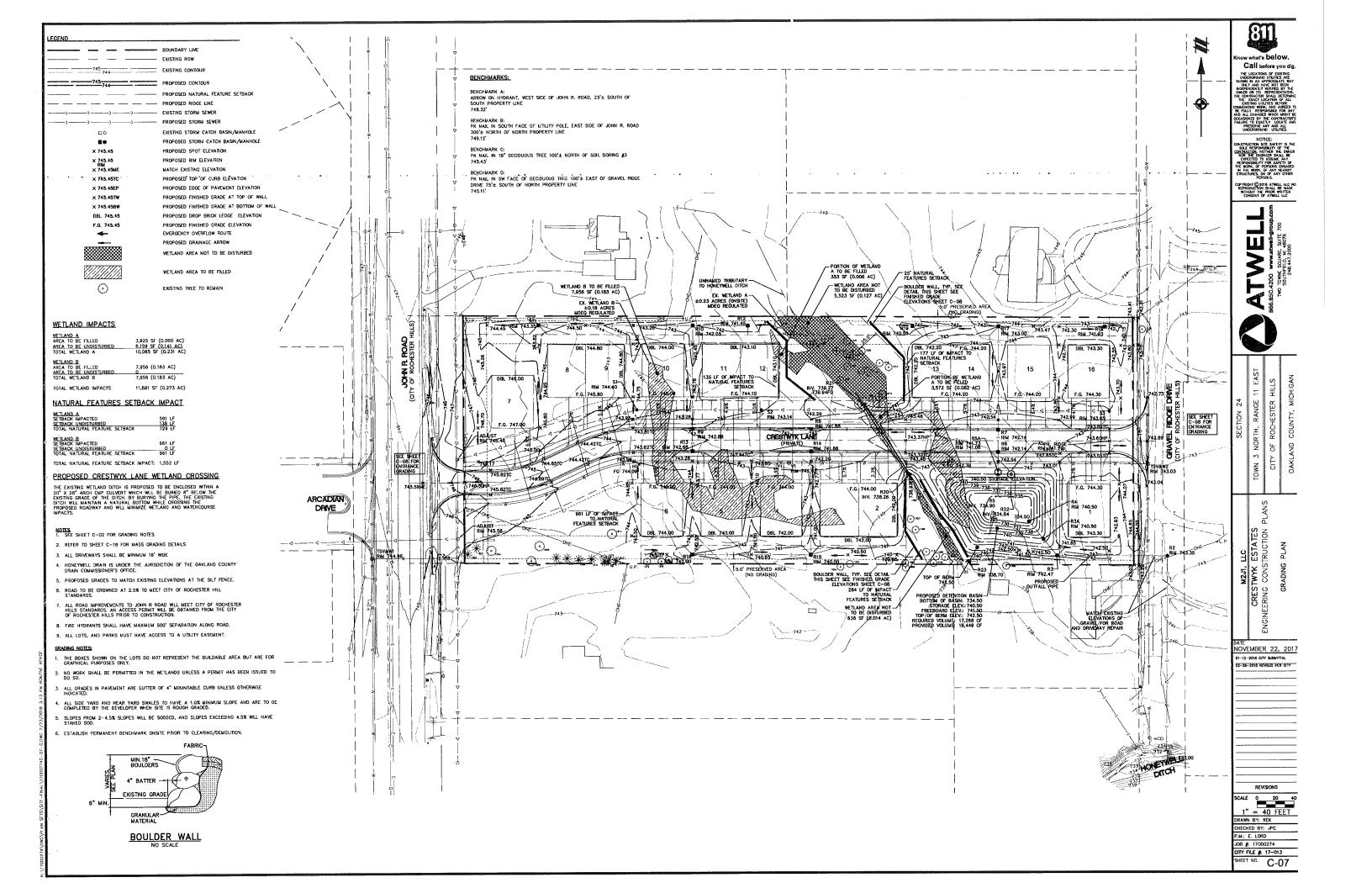
[		Tree	Survey Results for the C			<u>.                              </u>	· · · ·	#17000274 John R. Road
	Tree Tag ID		Botanical Name				e Condition	Notes/Comments
	1321	QUVE	Quercus velutina	Black Oak	31.0 13.0	No No	Good Good	
	1322 1323	PRSE QUAL	Prunus seratina Quercus alba	Black Cherry White Oak	12.5	No	Good	
	1324	QURU	Quercus rubra	Red Oak	13.0	No	Fair	
1	1325	PIST	Pinus strobus	White Pine	19.0	No	Good	
-	1326	PIST	Pinus strobus	White Pine	28.0	No	Poor	2T; Inner Bark Decay
	1327 1328	QURU PRSE	Quercus rubra Prunus seratina	Red Oak Black Cherry	23.5 12.0	No No	Poor Good	Inner Bark Decay
	1329	QURU	Quercus rubro	Red Oak	10.0	No	Good	
	1330	QURU	Quercus rubro	Red Oak	7.0	No	Good	
	1331	ACRU	Acer rubrum	Red Maple	10.0	No	Good	3T
	1332	QURU	Quercus rubro	Red Oak	13.0	No	Good	21
	1333	QURU	Quercus rubra	Red Oak Red Oak	11.0 9.0	No No	Good Good	
	1334 1335	QURU	Quercus rubra Quercus rubra	Red Oak	15.5	No	Fair	
	1336	QURU	Quercus rubra	Red Oak	12.0	No	Good	
	1337	QURU	Quercus rubra	Red Oak	11.0	No	Good	2 Trunks (2T)
	1338	PRSE	Prunus seratina	Black Cherry	7.0	No	Good	
	1340 1344	ULAM PISY	Ulmus americano Pinus sylvestris	American Elm Scotch Pine	7.0 14.5	No No	Good Fair	Inner Bark Decay
	1345	QURU	Quercus rubra	Red Oak	9.5	No	Good	miles bark becay
	1346	QURU	Quercus rubra	Red Oak	11.0	No	Good	
	1347	ACRU	Acer rubrum	Red Maple	11.0	No	Good	3 Trunks (3T)
	1348	QURU	Quercus rubra	Red Oak	15.0	No	Fair	
	1349 1350	QURU PRSE	Quercus rubra Prunus seratina	Red Oak Black Cherry	11.0 9.0	No No	Fair Good	
	1352	PRSE	Prunus serotina	Black Cherry	17.5	No	Good	
	1353	PRSE	Prunus serotina	Black Cherry	8.0	No	Goød	
	1354	QUVE	Quercus velutina	Black Oak	1: 0	No	Fair	Tree Leaning
	1355	PRSE	Prunus serotina	Black Cherry Black Cherry	7.5 10.5	No No	Dead Dead	Inner Bark Decay Evidence of decay
	1356 1358	PRSE PRSE	Prunus seratina Prunus seratina	Black Cherry Black Cherry	8.5	No No	Good	cysaetice of decay
	1359	ACRU	Acer rubrum	Red Maple	9.5	No	Good	
	1360	QURU	Quercus rubra	Red Oak	16.5	No	Fair	
	1361	QURU	Quercus rubru	Red Oak	10.5	Nο	Dead	Evidence of decay
	1362	QUVE PRSE	Quercus velutina Prunus seratina	Black Oak Black Cherry	18.0 10.0	No No	Fair Good	
	1363 1364	QURU	Quercus rubra	Red Oak	34.0	No	Good	
	1365	PRSE	Prunus serotina	Black Cherry	9.5	No	Fair	Inner Bark Decay, Tree Leaning
	1366	ACRU	Acer rubrum	Red Maple	8.0	No	Good	
	1367	PRSF	Prunus scrotina	Black Cherry	6.0	No	Good	
	1368 1369	QURU QUVE	Quercus rubra Quercus velutina	Red Oak Black Oak	39.5 25.0	No No	Good Excellent	
	1370	CAOV	Carya ovata	Shagbark Hickory	10.0	No	Good	
	1371	QURU	Quercus rubra	Red Oak	21.5	Nο	Good	
	1372	POTR	Populus tremuloides	Quaking Aspen	10.5	No	Good	
	1374	ACRU	Acer rubrum	Red Maple	14.5	No	Good Good	
	1375 1376	ACRU ACRU	Acer rubrum Acer rubrum	Red Maple Red Maple	10.5 13.0	No No	Excellent	
	1377	PODE	Pupulus deltoides	Cottonwood	14.0	No	Good	
	1378	ACRU	Acer rubrum	Red Maple	10.0	No	Good	
	1379	ACRU	Acer rubrum	Red Maple	13.5	No	Good	
	1380	PODE PODE	Papulus deltoides Populus deltoides	Cottonwood Cottonwood	19.0 13.5	No No	Fair Fair	
	1381 1382	ACRU	Acer rubrum	Red Maple	11.0	No	Good	
	1383	ACRU	Acer rubrum	Red Maple	9.0	No	Fair	
	1384	ACRU	Acer rubrum	Red Maple	10.5	No	Good	<b>2</b> T
	1385	ULAM	Ulmus americana	American Flm	10.5	No	Fair	
	1386 1387	ACRU PRSE	Acer rubrum Prunus serotino	Red Maple Black Cherry	12.0 18.5	No No	Good Good	
	1388	PRSF	Prunus scratina	Black Cherry	14.0	No	Good	
	1389	QURU	Quercus rubra	Red Oak	22.0	No	Fair	
	1390	CAGL	Carya glabra	Pignut Hickory	7.0	No	Good	
	1391	QURU	Quercus rubra	Red Oak	19.0	No	Fair	
	1392 1393	PRSE PRSE	Prunus serotina Prunus serotina	Black Cherry Black Cherry	18.5 8.0	No No	Fair Good	
	1394	PRSE	Prunus serotina	Black Cherry	7.0	No	Fair	
	1395	QUVE	Quercus velutina	Black Qak	13.5	No	Fair	
	1397	QUVE	Quercus velutiaa	Black Oak	26.0	No	Fair	Inner Bark Decay
	1398	PRSE	Prunus seratina	Black Cherry	15.5 10.5	No No	Good	5 Touch (ET)
	1399 1400	ACRU CAGL	Acer rubrum Carya glabra	Red Maple Pignot Hickory	19.5 7.5	No No	Good Good	5 Trunks (ST)
	1405	SAAL	Sassafras albidum	Sassafras	12.5	No	Good	
	1501	QURU	Quercus rubra	Red Oak	9.0	No	Good	
	1502	CAOV	Carya ovota	Shagbark Hickory	10.0	No No	Good	27
	1503 1504	QUBI ACRU	Quercus bicalar Acer rubrum	Swamp White Oak Red Maple	16.0 32.5	No No	Fair Good	2T Fused Trunk Measurement
	1505	ACRU	Acer rubrum	Red Maple	43.0	No	Good	Fused Trunk Measurement
	1506	ACRU	Acer rubrum	Red Maple	10.0	No	Good	2Т
	1507	PRSE	Prunus serotina	Black Cherry	9.5	No	Fair	Inner Bark Decay
	1508	TIAM	Tilia americana	Basswood Sharback Hickory	8.5 8.0	No No	Good Good	2Τ
	1509 1510	CAOV ACRU	Carya avata Acer rubrum	Shagbark Hickory Red Maple	6.5	No	Good	
	1511	ACRU	Acer rubrum	Red Maple	12.5	No	Good	
	1512	PRSE	Prunus serotina	Black Cherry	7.5	No	Good	
	1513	QURU	Quercus rubra	Red Oak	39.0	No	Good	
	1514 1515	ACSAN ACSAN	Acer saccharinum Acer saccharinum	Silver Maple Silver Maple	29.5 14.0	No No	Good Fair	
	1515	ACRU	Acer rubrum	Red Maple	17.5	No	Good	
	1517	ACRU	Acer rubrum	Red Maple	7.0	No	Good	
	1518	ACRU	Acer rubrum	Red Maple	19.0	No	Good	
	1519	ACRU	Acer rubrum	Red Maple	32.0	No No	Fair	Inner Bark Decay
	1520 1521	ACRU CAOV	Acer rubrum Carya ovata	Red Maple Shagbark Hickory	19.0 11.5	No No	Good Good	Fused Trunk Measurement
	1522	ACRU	Acer rubrum	Red Maple	15.0	No	Poor	
	1523	ACRU	Acer rubrum	Red Maple	11.0	No	Good	
	1524	SAAL	Sassafras albidum	Sassafras	19.5	No	Good	
		CULAT	Quercus alba	white oak	16.5	No	Good	
	1525	QUAL		Suramo Mddin A-1	11.0	Ni.	Cond	
	1525 1526	QUBI	Quercus bicolar	Swamp White Oak Silver Maple	11.0 16.0	No No	Good Good	27
	1525			Swamp White Oak Silver Maple Red Maple	11.0 16.0 21.0			2T Inner Bark Decay
	1525 1526 1527	QUBI ACSAN	Quercus bicolar Acer saccharinum	Silver Maple	16.0	No	Good	

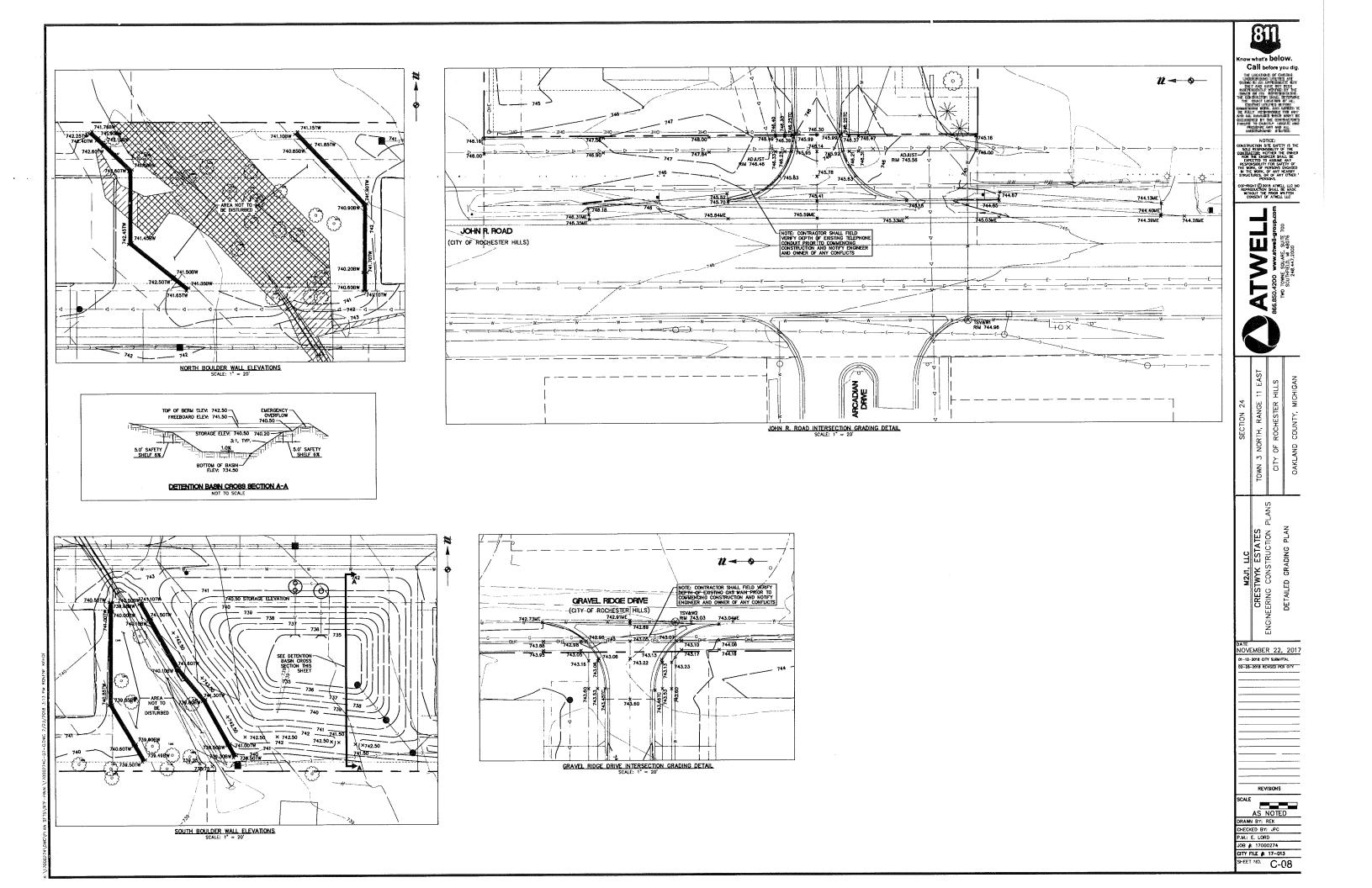
Tree Tag ID		Botanicol Name	Common Name		Landmark Tre		ject #17000274 John R. Road Notes/Comments
1531	ACSAN	Acer saccharinum	Silver Maple	18.0	No No	Good	TOTE A COMMETTE
1532	ACSAN	Acer saccharinum	Silver Maple	8.0	No	Good	
1532	QUBI	Quercus bicolor	Swamp White Oak	9.0	No	Good	
1534	ACRU	Acer rubrum	Red Maple	7.5	No	Good	
1535	ACSAN	Acer saccharinum	Silver Maple	27.5	No	Good	
1536	ACRU	Acer rubrum	Red Maple	7.0	No	Good	
1537	QUBI	Quercus bicolar	Swamp White Oak	9.0	No	Good	
1538	ACRU	Acer rubrum	Red Maple	12.5	No	Good	
1539	QURU	Quercus rubra	Red Oak	19.0	No	Good	
1540	ACRU	Acer rubrum	Red Maple	10.5	No	Good	21
1541	CAOV	Carya ovata	Shagbark Hickory	14.5	No	Good	21
1542	QURU	Quercus rubra	Red Oak	23.0	No	Good	21
1543	QURU	Quercus rubra	Red Oak	19.0	No	Good	
1544	ACRU	Acer rubrum	Red Maple	11.0	No	Good	2T
1545	ACRU	Acer rubrum	Red Maple	14.0	No	Good	
1546	ACRU	Acer rubrum	Red Maple	12.0	No	Good	
1547	QURU	Quercus rubra	Red Oak	14.0	No	Good	
15481	* ACRU		Red Maple	6.0	. No	Good	21
							21
1549	PRSE	Prunus serotina	Black Cherry	21.0	No	Good	
1550	SAAL	Sussafras ulbidum	Sassatras	15.5	No	Good	
1551	ACRU	Acer rubrum	Red Maple	17.0	No	Good	
1552	ACRU	Acer rubrum	Red Maple	8.5	No	Good	
1553	ACRU	Acer rubrum	Red Maple	23.0	No	Good	4 Trunks (41); Fused Trunk Measument
1554	ACRU	Acer rubrum	Red Maple	8.5	No	Good	
			•				
1555	ULAM	Ulmus americana	American Fim	12.5	No	Good	
1556	PRSE	Prunus serotina	Black Cherry	23.0	No	Good	
1557	ACRU	Acer rubrum	Red Maple	19.0	No	Good	2T
1560	QUVE	Quercus velutina	Black Oak	31.0	No	Good	
1561	QUVE	Quercus velutina	Black Oak	20.0	No	Good	Tree Leaning
1562	SAAL	Sassafras albidum	Sassafras	6.5	No	Good	
1563	ACRU	Acer rubrum	Red Maple	7.5	No	Good	
1564	PRSE	Prunus serotina	Black Cherry	10.0	No	Good	
1565	PRSE	Prunus serotino	Black Cherry	7.5	No	Fair	Tree Leaning
1566	PRSE	Prunus serotina	Black Cherry	13.0	No	Fair	
1567	ACRU	Acer rubrum	Red Maple	8.5	No	Good	
1569	ACRU	Acer rubrum	Red Maple	10.0	No	Fair	2T; Inner Bark Decay
1570	ACRU	Acer rubrum	Red Maple	13.0	No No	Good	2⊤
1571	ACRU	Acer rubrum	Red Maple	9.0	No	Good	_
1572	ACRU	Acer rubrum	Red Maple	9.5	No	Good	2t
1573	ACRU	Acer rubrum	Red Maple	9.0	No	Good	
1574	ACRU	Acer rubrum	Red Maple	12.0	No	Good	
1575	ACRU	Acer rubrum	Red Maple	25.5	No	Good	
1576	ACRU	Acer rubrum	Red Maple	9.0	Nο	Good	
							Innas Past Docay
1577	ACRU	Acer rubrum	Red Maple	9.0	No	Fair	Inner Bark Decay
1578	ACRU	Acer rubrum	Red Maple	11.5	No	Good	21
1579	CVOV	Carya ovulu	Shagbark Hickory	12.5	No	Good	
1580	ACRU	Acer rubrum	Red Maple	11.0	No	Excellent	
1581	ULAM	Ulmus americana	American Elm	12.0	No	Good	
1582	HAM	Lilia americana	Basswood	13.5	No	Good	31
1583	PRSE	Prunus serotina	Black Cherry	16.0	No	Good	2Т
1584	ACRU	Acer rubrum	Red Maple	7.5	No	Good	
1585	ACSAN	Acer saccharinum	Silver Maple	28.0	No	Good	
1587	ACRU	Acer rubrum	Red Maple	30.0	No	Good	
1588	ACRU	Acer rubrum	Red Maple	24.0	Na	Fair	Inner Bark Decay
1589	TIAM	Tiha omericana	Basswood	10.5	No	Good	
1590	ACRU	Acer rubrum	Red Maple	19.5	No	Fair	
1591	ACRU	Acer rubrum	Red Maple	12.0	Nο	Poor	Fused Trunk Measurement, Inner Bark Dec
1592	ACRU	Acer rubrum	Red Maple	15.5	No	t-air	Inner Bark Decay
1593	ACRU	Acer rubrum	Red Maple	14.5	No	Good	21
1594	QUAL	Quercus ulba	White Oak	10.0	No	Good	
						Good	
/126	QUAL	Quercus alba	White Oak	6.0	No		harra 1 2
7127	PRSE	Prunus serotina	Black Cherry	20.0	No	Fair	Inner Bark Decay
7128	PRSE	Prunus serotina	Black Cherry	6.0	No	Fair	
7129	ACRU	Acer rubrum	Red Maple	7.0	No	Good	
7130	ACNE	Acer negundo	Boxelder	6.0	No	Fair	
/131	MOAL	Morus alba	White Mulberry	6.5	No	Fair	
7132	CACO	Carya cordiformis	Bitternut Hickory	6.0	No	Good	
7133	ACRU	Acer rubrom	Red Maple	6.5	No	Guod	
/134	ACRU	Acer rubrum	Red Maple	6.5	No	Good	
7135	QUBI	Quercus bicalor	Swamp White Oak	6.5	No	Fair	
7136	CAOV	Carya ovata	Shagbark Hickory	11.0	No	Fair	
	ULAM	Ulmus americana	American Elm	6.0	No	Good	
7137	CAOV	Corya ovata	Shagbark Hickory	6.0	No	Good	
7137							
7138	ULAM	Ulmus americana	American Flm	6.0	No	Good	
7138 7139		Corya ovata	Shagbark Hickory	6.5	No	Fair	•
7138 7139 7141	CAOV		Red Maple	21.0	No	Good	2⊤
7138 7139	CAOV ACRU	Acer rubrum		10.0	No	Good	
7138 7139 7141 7142	ACRU	Acer rubrum Acer rubrum	Red Maple				
7138 7139 7141 7142 7143	ACRU ACRU	Acet rubtum			No	Good	
7138 7139 7141 7142 7143 7144	ACRU ACRU QUAL	Acer rubrum Quercus alba	White Oak	24.5	No No	Good	
7138 7139 7141 7142 7143 7144 7145	ACRU ACRU QUAL ACRU	Acer rubrum Quercus alba Acer rubrum	White Oak Red Maple	24.5 12.0	Nο	Good	
7138 7139 7141 7142 7143 7144 7145 7146	ACRU ACRU QUAL ACRU MOAL	Acer rubrum Quercus alba Acer rubrum Morus ulba	White Oak Red Maple White Mulberry	24.5 12.0 7.0	No No	Good Fair	
7138 7139 7141 7142 7143 7144 7145	ACRU ACRU QUAL ACRU	Acer rubrum Quercus alba Acer rubrum	White Oak Red Maple	24.5 12.0	Nο	Good	Inner Bark Decay

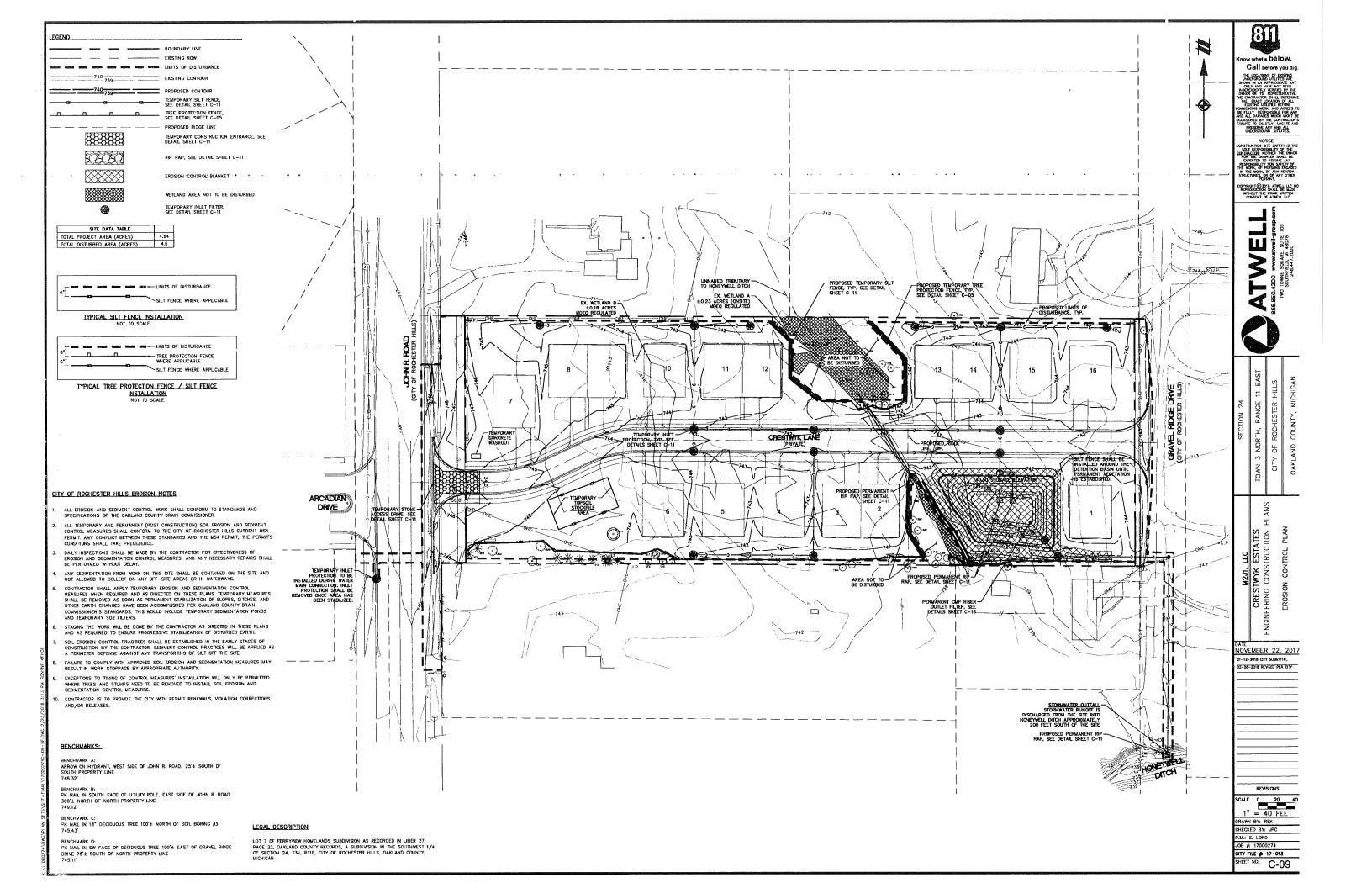


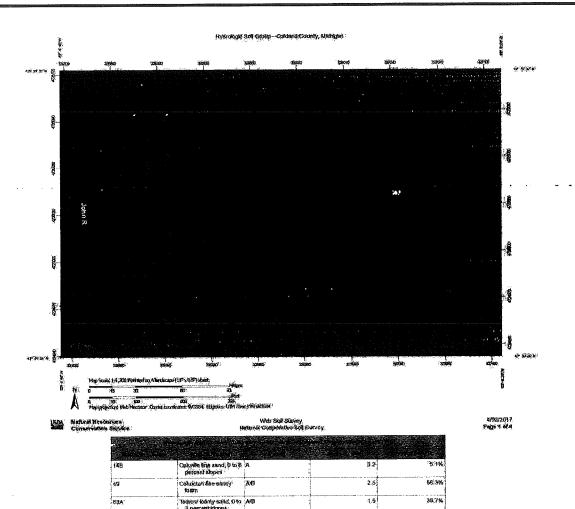


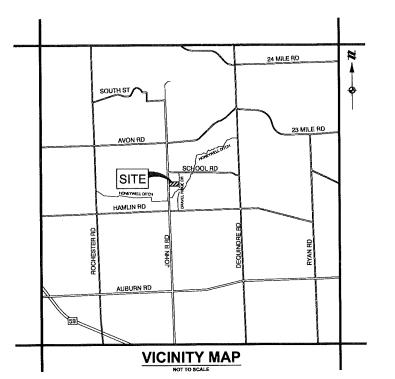








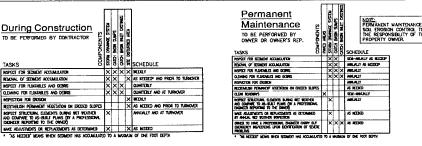




NOTE: GENERAL CONTRACTOR TO	0 R	EVIE	w.	& U	PDA	ATE	TAE	3LE	AC	COR	DIN	GLY			
CONSTRUCTION SEQUENCE (2018-2019)													JAN	FEB	MA
INSTALL SESC BVP'S		Г			x	Г		Г		Г					
ROUGH GRADE / SEDIMENT CONTROL			-			×		Г		Г					
STORM FACILITIES			Γ			X				Г	T	Π			
SITE CONSTRUCTION & UTILITIES					Г	Г	x		Г	П		П			
PAYING			Г					x	П			Γ		Г	
PERMANENT CONTROL STRUCTURES		Г	Γ						×			Γ			Г
FINISHED CRADING	Г		Γ							X			Г	Г	Г
LANDSCAPING/SEED/FINAL STABILIZATION		Т	Γ								X	T	Г		Г

THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY M2J1, LLC.

### SOIL EROSION CONTROL MAINTENANCE TASKS AND SCHEDULE



SEE ATTACHED OCWRC SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

### SOIL EROSION & SEDIMENTATION CONTROL GENERAL NOTES

- SOIL EROSION AND SEDIMENTATION BEST MANAGEMENT PRACTICE (BMP) MEASURES WILL BE INSTALLED PRIOR TO START OF ANY CONSTRUCTION AND WILL BE MANTAINED AT ALL TIMES UNTIL CONSTRUCTION HAS BEEN COUNTED, INCLUDING ALL GRASS BBING WELL ESTABLISHED AND/OR PERMANENT EROSION AND SEDIMENTATION BMP MEASURES AND IN PLACE. OWALAND COUNTY WATER RESOURCES COMMISSIONER MAY REQUIRE WORK TO BE STOPPED AND THE STORM ORAINAGE OUTLET TO BE PLUGGED, IF CONDITIONS BECOME UNSATISFACTORY.
- 2. CONTRACTOR IS TO DESIGNATE A SITE DUMP/WASH AREA PRIOR TO STARTING CONSTRUCTION FOR SUCH PURPOSES AS WASHING OUT CONCRETE TRUCKS AND DUMPING NON-HAZARDOUS WASTE MATERIALS, SUBJECT TO THE SUPERNSON OF THE ONLINEAD COUNTY WATER RESOURCES COMMISSIONED, DUMPING ON DISCHARGE OF ANY WASTE MATERIALS TO ANY TOWNSHIP OR COUNTY SEMERS IS PROPRIED. HAZARDOUS WASTES ARE TO BE REDOVED OFF-SITE AND PROPERTY DISPOSED OF CONSISTENT WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS.
- 3. DEVELOPER SHALL SUBMIT A DETAILED EROSION CONTROL PLAN, COMPLETED APPLICATION AND CHECKLIST FORMS, PAY ALL FEES AND POST AN EROSION CONTROL PERFORMANCE BOND, AS REQUIRED, PRIOR TO ANY EARTH CHANGE.
- 4. SEDIVENT AND EROSION CONTROLS MUST BE INSPECTED WITHIN 24 HOURS OF 0.50° OR GREATER RAINFALL A WRITTEN LOG OF THESE INSPECTIONIS MUST BECOME PART OF THE STORMWATER POLLUTION PROTECTION PLAN AND INDICATE THE DATE OF INSPECTION, NAME OF INSPECTOR, WEATHER CONDITIONS, OBSERVATIONS, AND ACTIONS TAKEN TO CORRECT ANY PROBLEMS AND THE DATE.
- 5. SEDIVENT TRAPS, INLET FILTERS, AND PERIMETER CONTROLS SHALL BE INPLEMENTED AS A FIRST STEP OF GRADING AND WITHIN 7 DAYS FROM THE START OF GRUBBING AND SHALL CONTRIDE TO FUNCTION UNTIL UPLAND AREAS ARE STABILIZED.
- 6. INLET FILTERS SHOULD BE INSPECTED FOR BUILD-UP OF SILT AND OTHER DEBRIS. THIS IS EVIDENT IF GEOTEXTILE/STONE STRUCTURE IS CAUSING FLOCOING, MAINTENANCE WOULD CONSIST OF REVOVING OF SECURENTS WITH A STIFF BRISTLE BROOM OR SOUARE POINT SHOVEL IF INLET FILTER IS BEYOND THIS LEVEL OF REPAIR IT MAY BE NECESSARY TO REPLACE BOTH THE STONE AND GEOTEXTILE FILTER.
- 7. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS ON IN WATERWAYS, WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, AND PONDS.
- 8. EROSION AND SEDIMENT CONTROL MEASURES 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 SLT OFF THE SITE.
- AS A PENNETER DEFENSE AUXINITY AND TEMPORARY EROSON AND SEDIMENTATION CONTROL VEASURES AS REQUIRED AND AS DIRECTED ON THESE PLANS. HE SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABLIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGES HAS BEEN ACCOMPUSHED.
- 10. STOCK PILES WILL BE SEEDED AND MULCHED AND RE-SEEDED IF SEEDING DOES NOT TAKE.
- 10. STOCK PIES WILL BE SECRED AND MOLECULAR OF RESERVED AS SECTION DOES NOT TAKE.

  11. PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY OISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 AND THE FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERVANIENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE HAS, ELIDORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE UPPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES ARE UPPLEMENTED.
- 12. ALL MUD/DIRT TRACKED ONTO EXISTING ROADS FROM THIS SITE, DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR/BUILDER.
- 13, CLEANUP WILL BE DONE IN A MANNER TO ENSURE THAT EROSION CONTROL MEASURES ARE NOT DISTURBED.
- 14. DUST CONTROL WILL BE EXERCISED AT ALL TIMES WITHIN THE PROJECT BY THE CONTRACTOR, SPRINKLING TANK TRUCKS WILL BE AVAILABLE AT ALL TIMES TO BE USED ON HAUL ROUTES OR OTHER PLACES WHERE OUST RECOVES A PROBLEM.
- 15. NO SOLIO OR LIQUID WASTE SHALL BE DISCHARGED INTO STORM WATER RUNOFF.
- 16. EXCESS DIRT/TILL IS NOT TO BE PLACED WITHIN THE PROPOSED BUILDING LIVITS OR ON ANY AREAS ON OR ADJACENT TO THE SITE BEYOND THE LIMITS OF DISTURBANCE SHOWN ON THE SOIL EROSION PLANS UNLESS WRITTEN AUTHORIZATION IS PROVIDED BY THE ACCEPTING LAND OWNER.
- 17. STAGING THE WORK WILL BE DONE BY THE LANDOWNER OR LANDOWNER'S REPRESENTATIVE AS DIRECTED IN THESE PLANS AND AS REQUIRED TO ENSURE PROGRESSIVE STABILIZATION OF DISTURBED EARTH CHANGE.

### PROHIBITED CONSTRUCTION ACTIVITIES:

THE CONTRACTOR SHALL NOT USE CONSTRUCTION ACTIVITIES, PROCEEDINGS, OR OPERATIONS THAT MAY UNNECESSARLY IMPACT THE NATURAL ENVIRONMENT OR THE PUBLIC HEALTH AND SAFETY. PROHIBITED CONSTRUCTION ACTIVITIES, PROCEEDINGS OR OPERATIONS INCLUDE BUT ARE NOT UNITED TO:

- 1. DISPOSING OF EXCESS OR UNSUITABLE EXCAVATED MATERIALS IN WETLANDS OR FLOODPLAINS, EVEN WITH THE PERMISSION OF THE PROPERTY OWNER(S).
- 2. NIDISCRIMINATE, ARBITRARY, OR CAPRICIOUS OPERATION OF EQUIPMENT IN ANY STREAM CORRIDOR, TRIBUTARY, WATERS, WETLANDS, OR ANY AREAS OUTSIDE OF THE PROPOSED WORK AREA.
- 3. PUMPING OF SEDIMENT-LADEN WATER FROM BASINS, TRENCHES OR OTHER EXCAVATIONS INTO ANY SURFACE WATERS, STREAM CORRIDORS, WE'TLANDS, OR STORM DRAINS.
- 4. DISCHARGING OF POLLUTANTS SUCH AS CHEMICALS, FUEL, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE, AND OTHER HARMFUL WASTE INTO OR ALONGSDE STREAM, RIVERS, IMPOUNDMENT, OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERE TO.
- 5. PERMANENT OR UNSPECIFIED ALTERATION OF THE FLOW-LINE OF A STREAM.
- 6. DAMAGING OF VEGETATION OUTSIDE OF THE PROPOSED WORK LIMITS, WITHIN NO-BUILD, TREE PRESERVATION AND GREEN ZONES.
- 7. DISPOSAL OF TREES, BRUSH AND OTHER DEBRIS IN ANY STREAM CORRIDORS, WETLANDS SURFACE WATERS, OR ANY OTHER UNSPECIFIED LOCATION.
- 9. STORING OF CONSTRUCTION EQUIPMENT AND VEHICLES AND/ OR STOCKPILING CONSTRUCTION MATERIALS ON PROPERTY, PUBLIC OR PRIVATE, NOT PREVIDUSLY SPECFIED AND APPROVED FOR THE SAIO PURPOSE.
- 10. DISPOSAL OF CHIP WOOD IN SUCH A MAINNER THAT WOULD ALLOW CHIP WOOD DECOUPOSITION AND LEACHATE WATER TO FLOW TO ANY SURFACE WATER, STREAM CORRIDOR, OR WETLAND.
- 11. TRACKING OF WID AND OTHER CONSTRUCTION RELATED DEBRIS ONTO ROADWAY OR FLUSHING SEDIMENT FROM ROADWAY WITH WATER. CONSTRUCTION TRAFFIC MUST BE LIMITED TO DESIGNATED ENTRANCE AND EXIT LOCATIONS.

### SOIL EROSION/SEDIMENT CONTROL MAINTENANCE SCHEDULE NOTES:

A CONTRACTOR/INSPECTOR SHALL INSPECT THE SOL EROSION/SEDIMENT CONTROL DEVICES DICE EACH WEEK AND/OR WITHIN 24 HOURS OF A PRECIPITATION EVENT WHICH RESULTS IN A STORY DISCHARGE FROM THE SITE. THE FOLLOWING STEPS SHALL BE IMPLEMENTED IF ANY DAMAGE HAS RESULTED FROM CONSTRUCTION OR WEAR.

- 1. THE LANDOWNER OR LANDOWNER'S REPRESENTATIVE SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF SOIL EROSION AND SECIMENTATION CONTROL DEVICES.
- 2. EROSION CONTROL VEASURES WILL BE MAINTAINED AT ALL TIVES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOCS NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE, OR AS DIRECTED BY THE EROSION CONTROL INSPECTOR.
- 3. SEEDING SHALL BE PREPARED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR/INSPECTOR SHALL INSPECT THE AREA AFTER SEEDING IS COMPLETED. AREAS THAT ARE BARE OR NOT MULCHED PROPERLY WILL NEED TO BE SPOT SEEDED AND/OR RE-MULCHED.
- 4. STOCK PILES WILL BE SEEDED/MULCH BLANKET ADDED AND RESEEDED IF SEEDING OOES NOT TAKE.
- ACCESS ROADS MUST BE MAINTAINED AS NECESSARY. TO KEEP THEW EFFECTIVE, NEW LAYERS OF STONE MAY BE ADDED AS OLD LAYERS BECOME COMPACTED. STEPS SHOULD ALSO BE TAKEN TO REPAIR IF RUTS OR POOLING WATER APPEAR.
- 6. INLET FILTERS SHOULD BE INSPECTED FOR BUILD-UP OF SILT AND OTHER DEBRIS. THIS IS EVDENT IF GEOTEXTILE/STONE STRUCTURE IS CAUSING FLOODING. MAINTENANCE WOULD CONSIST OF REMOVING OF SEDIMENTS WITH A STIFF BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FILTER IS BEYOND THIS LEVEL OF REPAIR IT MAY BE NECESSARY TO REPLACE BOTH THE STONE AND GEOTEXTILE FILTER.
- 7. ANY TRACKING OF MUD OR DIRT ONTO PUBLIC OR PRIVATE ROADS SHALL BE REMOVED PROVPTLY.
- 8. IF DUST BECOMES A PROBLEM, SPECIAL WATERING TECHNIQUES MUST BE USED TO CONTROL DUST.
- 9. THE LANDOWNER OR LANDOWNER'S REPRESENTATIVE SHALL IMPLEMENT AND MAINTAIN THE SOIL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS BEFORE AND AT ALL THATS DURING CONSTRUCTION ON THIS PROJECT. ANY MODIFICATIONS OR ADDITIONS TO SOIL EROSION CONTROL MEASURES DUE TO CONSTRUCTION OR CHANGED CONTROL ONLY OF THE COVERNING ACENCIES.
- 10. IF ANY OF THE SESC VEASURES ON THE SITE ARE DEEMED INADEQUATE OR INEFFECTIVE, THE GOVERNING AGENCY HAS THE RIGHT TO REQUIRE ADDITIONAL SESC MEASURES AT THE EXPENSE OF THE LANDOWNER.

### SOIL EROSION & SEDIMENTATION CONTROL SEQUENCE

- 2. ROUGH GRADE SITE, STOCK PILE TOPSOIL IN LOCATION APPROVED BY OWNER AND ENGINEER
- 3. CONSTRUCT DETENTION BASIN.
- 4. MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES, AS REQUIRED.
- 5. BRING PAVEMENT AREAS TO SUB-BASE GRADE AND INSTALL CONCRETE CURB AND GUTTER.
- 6. INSTALL PAVEMENT COMPLETE, REPAIR OR REPLACE INLET FILTERS AS REQUIREO.
- 7. FINISH GRADE, REDISTRIBUTE TOP SOIL, SEED AND MULCH ALL DISTURBED AREAS. 8. REMOVE ALL, TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES.



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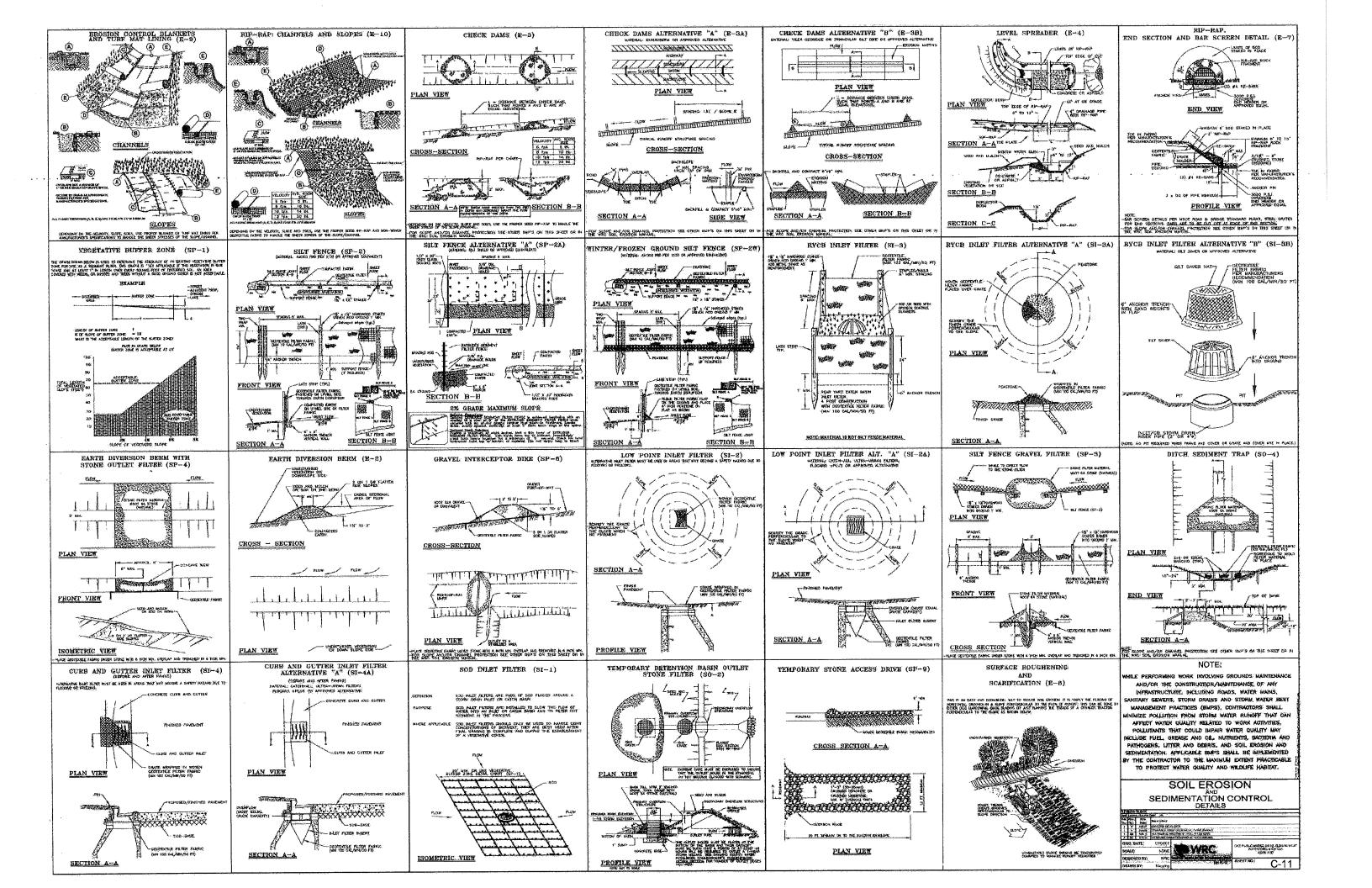
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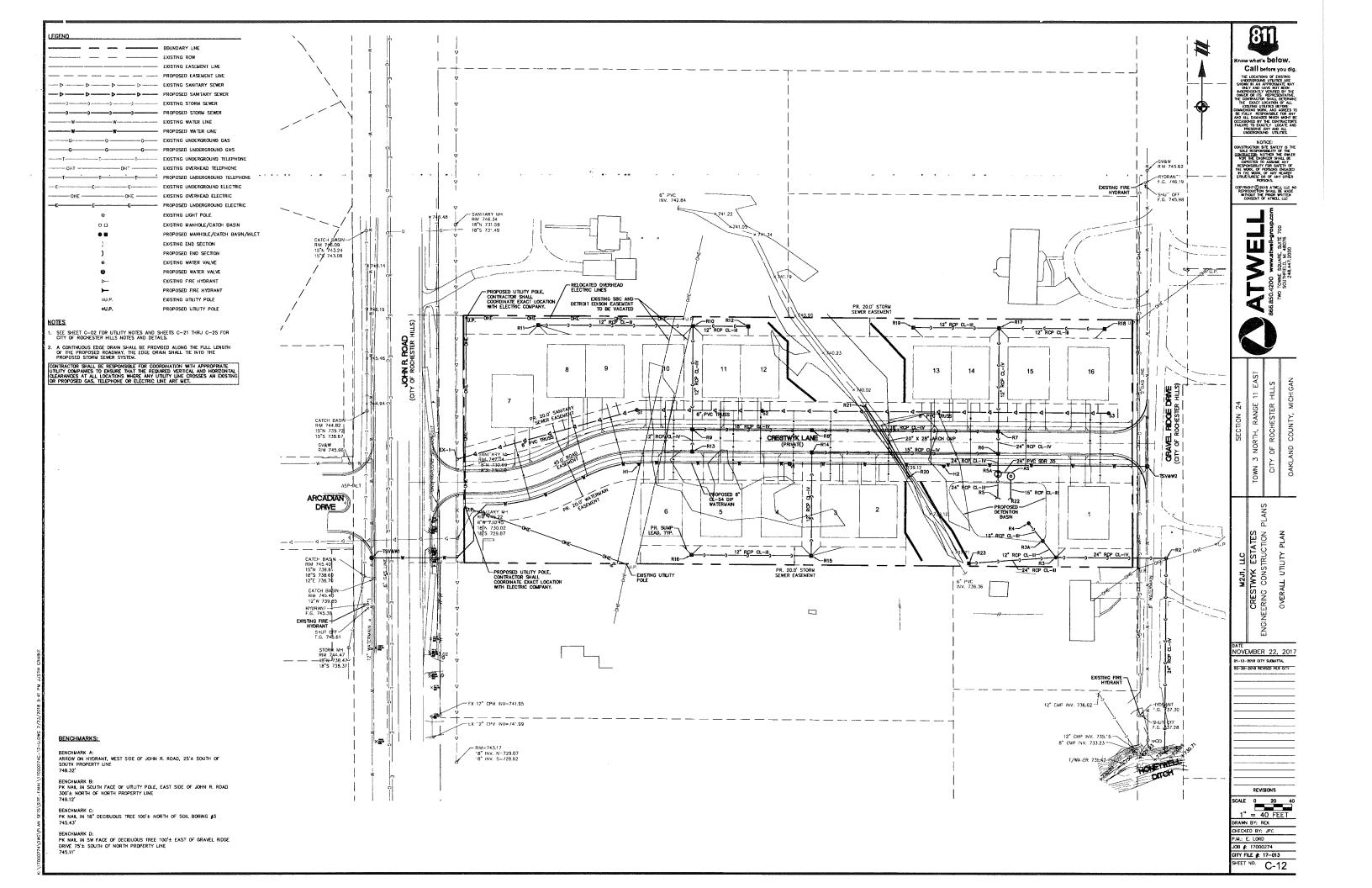
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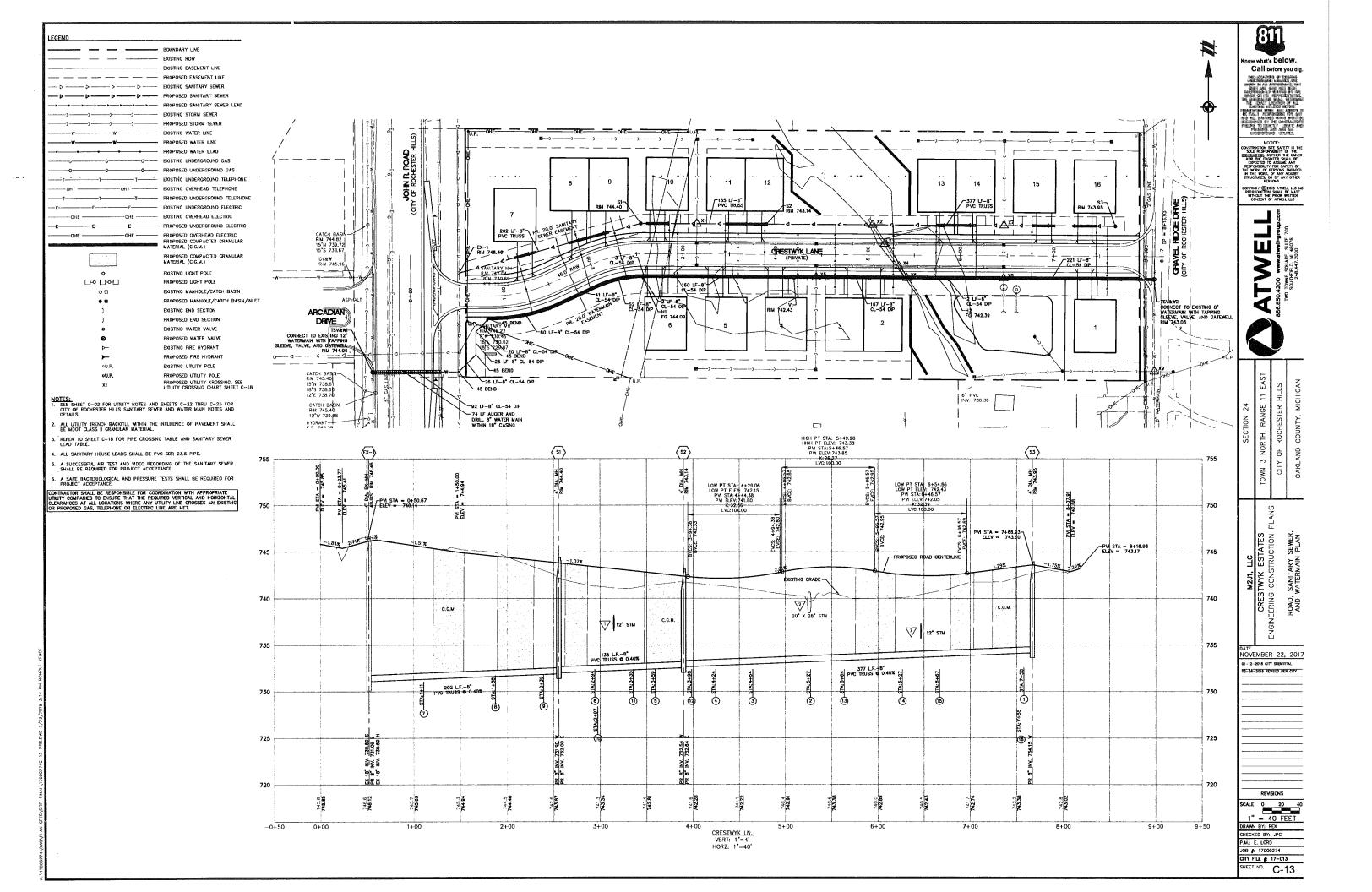
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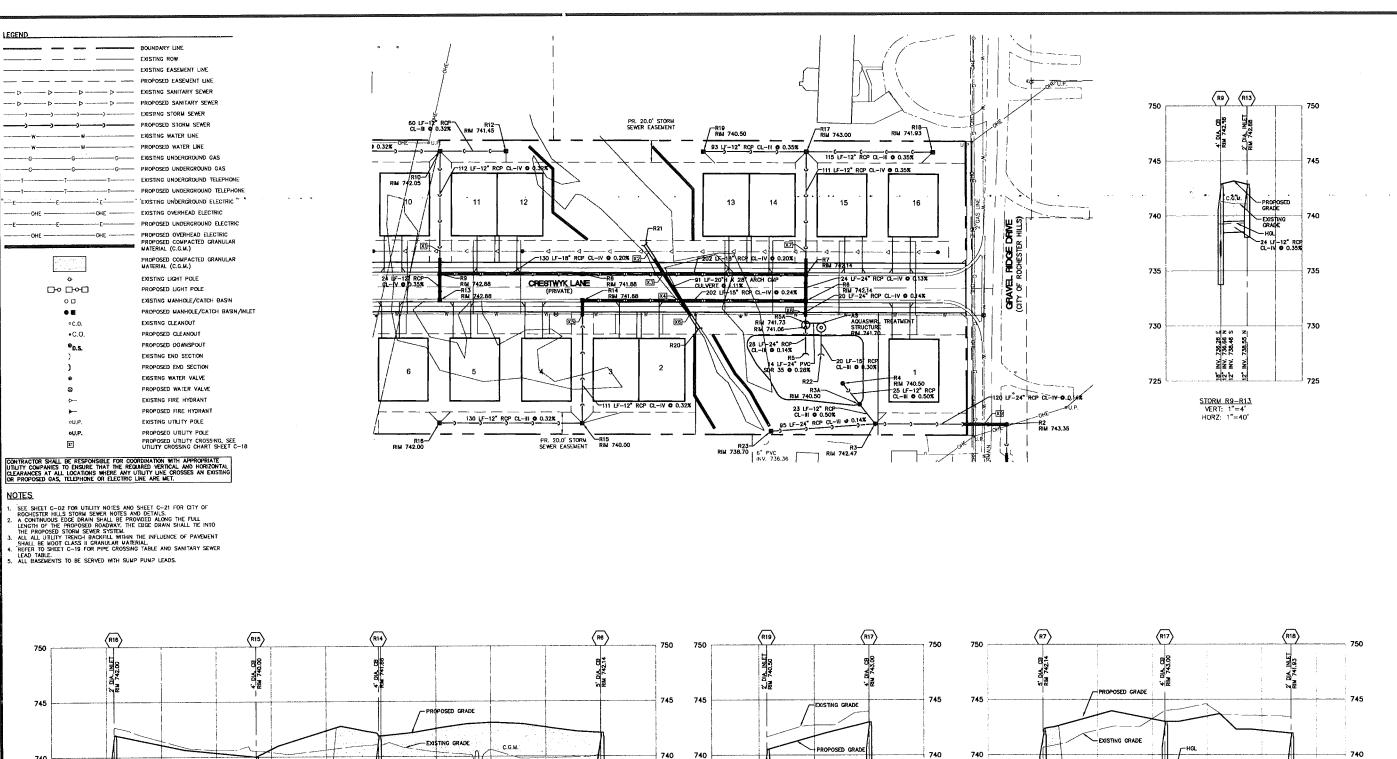
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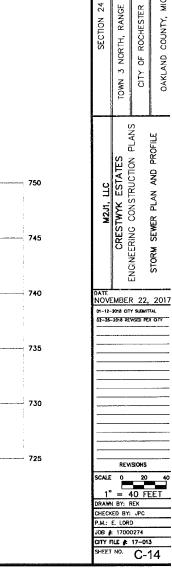
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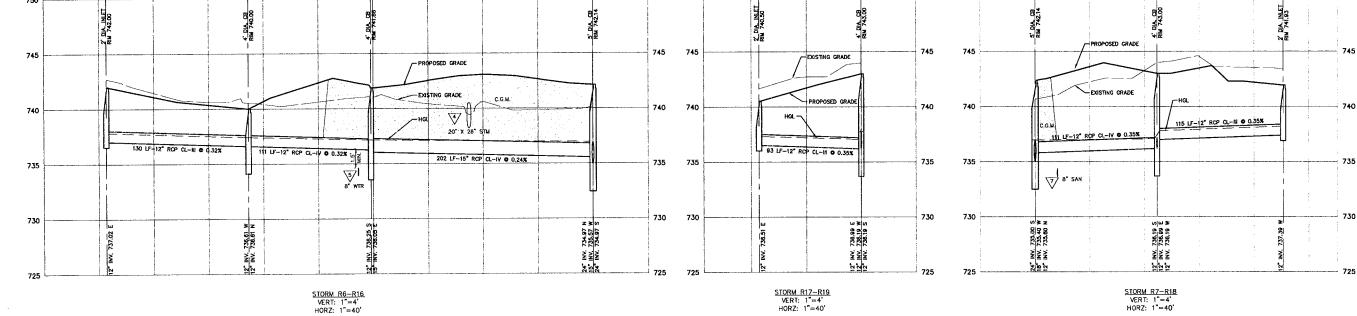
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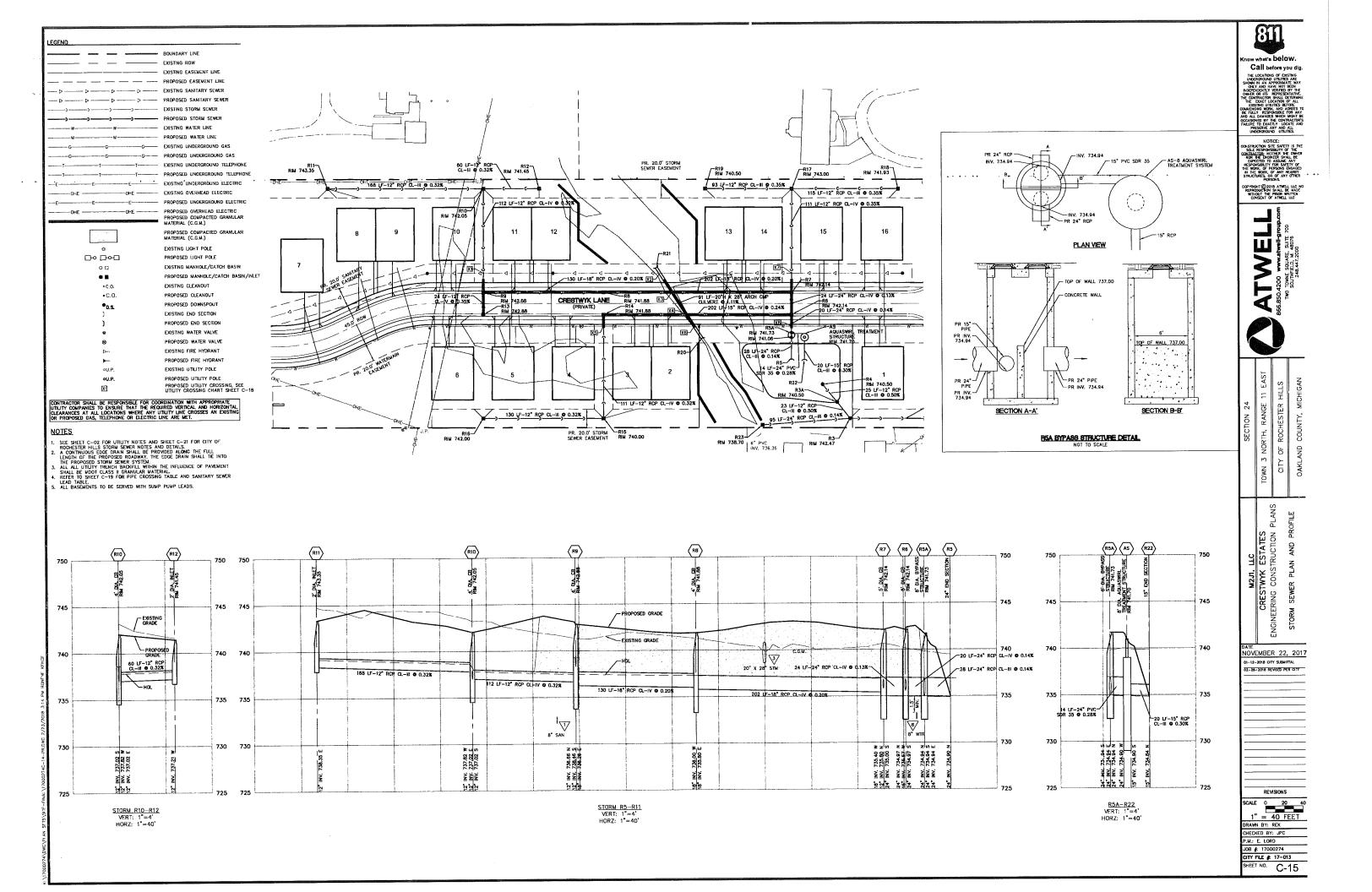
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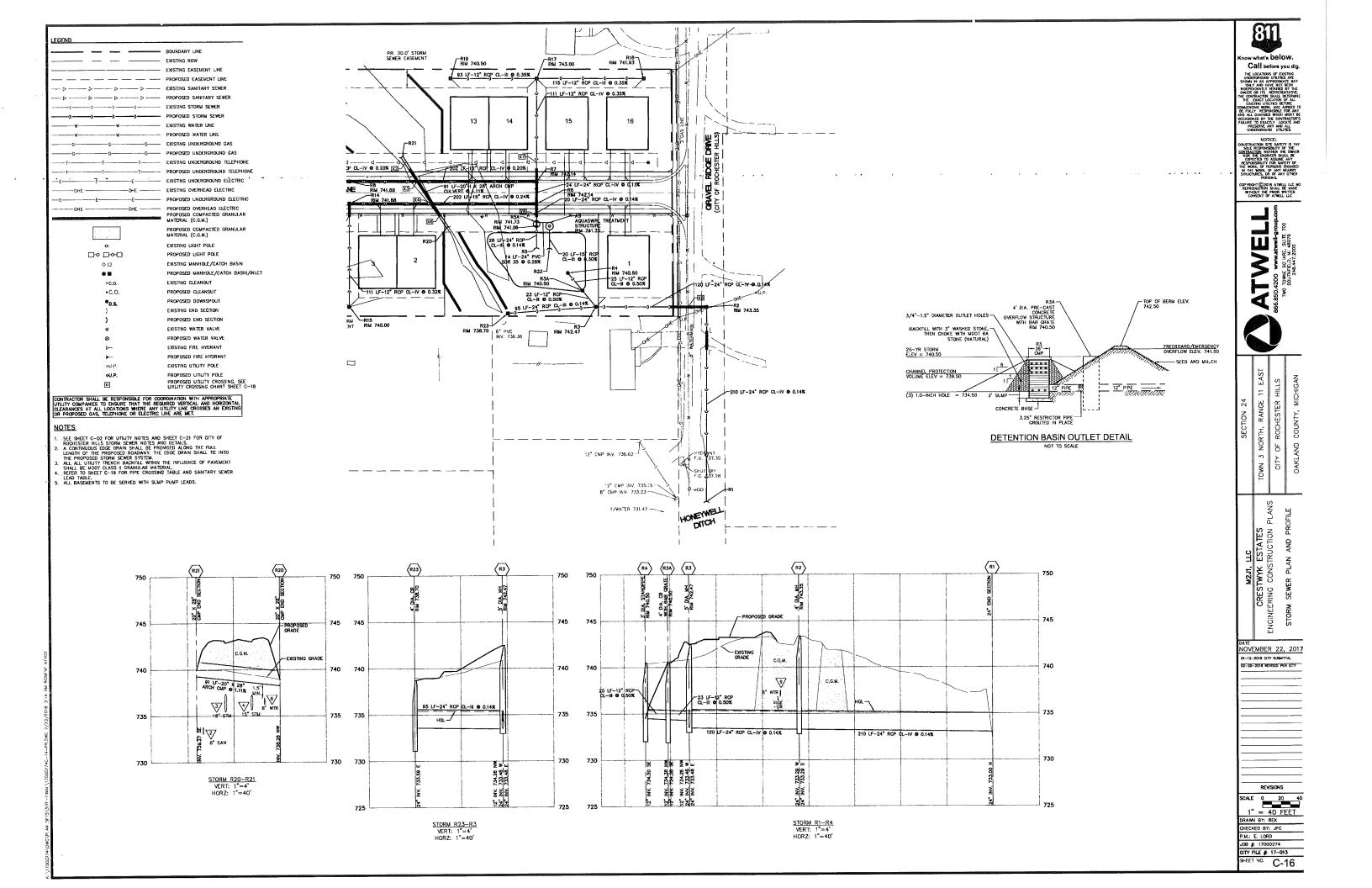
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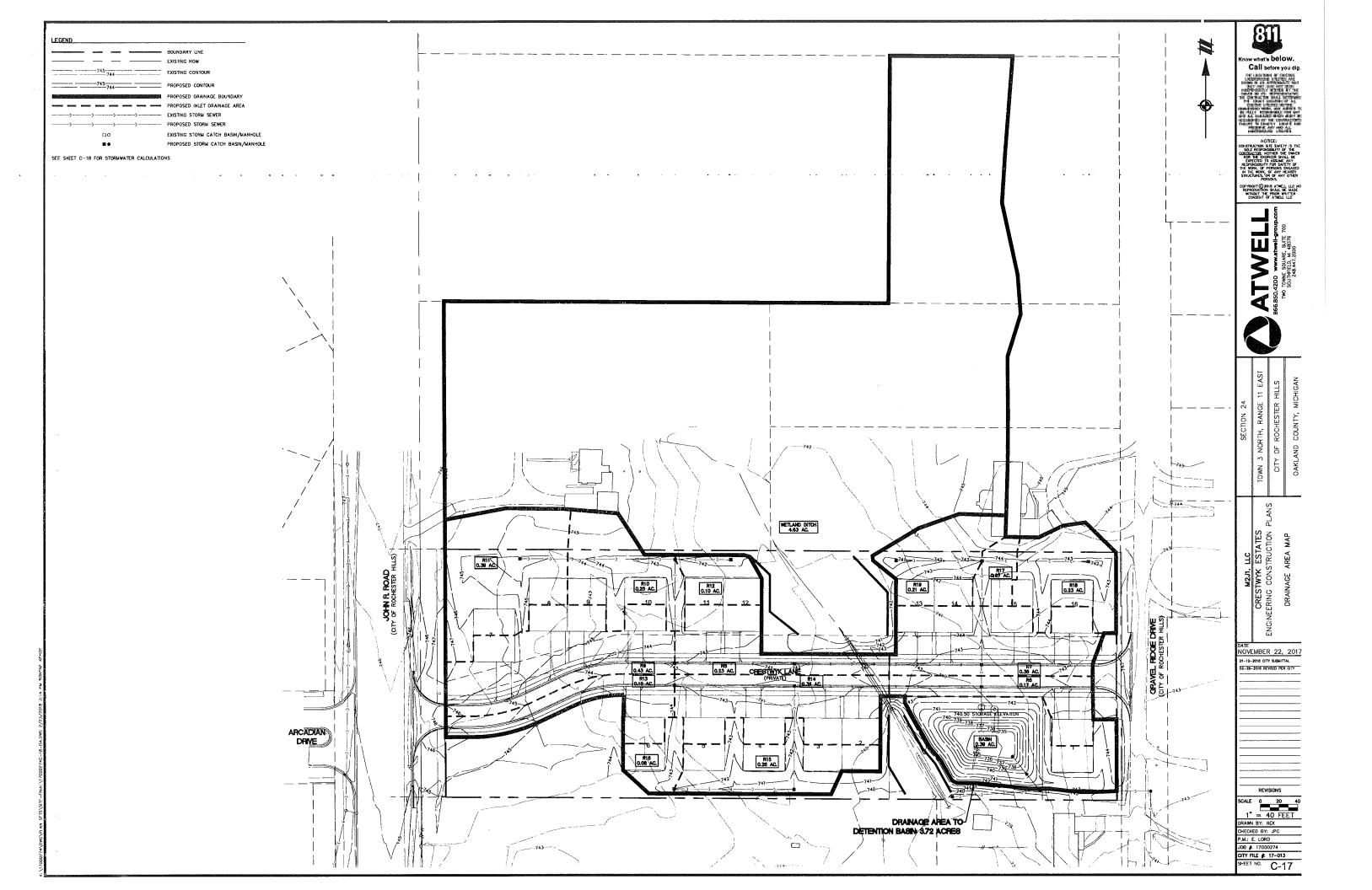
SEWER

STORM









restwyk Estate pril 20, 2017 evised January				
•	2010			
esign Basis: sing Oakland C	ounty requirements (25 year sto	orm event)		
minaas kma	tributary to Basin		Area C	Runoff oefficient
npervious Area	(road, driveway, sidewalk, and	roofs)	1.46	0.95
andscaped Area otal Area	is (Hydrologic Soil Group A)		3.72	0.25
etention Area	sizing			
) Total On-Sit	¿Area . ,		. = .	3.72
	tunoff Coefficient (C) = ischarge Rate ( $C_0$ )		=	0.52 0.20 cfs/ac
			=	0.74 cB
, MANUALEN A	lowable Ruroff Qa. = $C_o x A$	•		40
	o = Qa/(a * c) v per acre impervious)		-	0.38 ctš/acre impervious.
	e Time, 1 -25+sqrt(8062.5/0	<i>(</i> 0)	÷	120.44 minutes
	e Required. Vs = ((12,900*T)		-	8,846 ef/acre impervious.
	e Required, Vt = Vs * a * c	•	_	17,268 cf
				Lighton CI
) Sizing of Ow Q=CLH^3//	<u>.</u>			
Q (CIA) = L=	3.69 cfs ? ft			
()=	0.25 ft 3.367			
	Q/(3.367*H^3/2)=		=	9 ft
Determination	of Storage Provided in Basin			
Elevation	Area	Incr. Vol. (		
(feet)	(81)	(cft)	(cft)	
741	8,158	3,740	22,189	
740.5	6,800	2.970	18,449	
740	5,078	4.637	15,480	
739	4,196	3,794	10,843	
738	3,392	3,029	7,049	
737	2,665	2,350	4,020	
736	2,034	1,671	1,671	
735	1,307	327	327	
734.5	0	Total Volume	18,449 cf	
Storage Summ	ary			
	orm Elevation		=	740,50 feet 741,50 feet
Manman To	p of Berm Flevation		=	742.50 feet
Volume Pro Volume Rec			=	18,449 cf 17,268 cf
Dutlet Restrict	or Pipe Sizing			
Maximum S	torage Head (H) = (25-Year E rea = Qa / 0.62 x (2xgxH)^(1/			6.00 feet 0.061 sf
Required D	ameter Opening of Restrictor P			3.35 mehes 3.25 mehes
	imeter of Restrictor Pipe ikwable Runoff, Qa			3.25 menes 0.74 eß
Actual Run				0.70 cß
	tion (Bankfull) tection Volume = 6,788 x A x	C	=	13,250 ef
	Required Volume		=	739.52 feet
	or Channel Protection	1 hr / 6/1 mm / 6/1 c	=	() 15 cfs
	nw over 24 hours, $Q_{avg} = V / 2$ - torage Head (H) = (CPV Elev		-	5.02 feet
	ad. $h_{ave} = 2/3 \text{ x maximum head}$		=	3.35 feet 0.017 sf
Orifice Area Orifice dian	i Required – Q / (0.62 x (2xgx wter used	(1) (1/2))	=	1.00 inches
Area of oril Number of			=	0.005 sf 3
Total Outle			÷	0.016 sf
Q <sub>(1,t)</sub> max	0.66.b		==	0.18 c6 0.15 c6
Q <sub>(rer)</sub> avg at Total Disch	0,66 ft arge Time (Must be between 2-	4-48 hours)		24.65 hours
Pre-Treatment				

Community: City of Rochester Hills County: Oakland

1 = B/(T+D)^E B = 175.0 C = varies T = 10 (min.)

FROM	TO	INCRE-		EQUIV.	TOTAL	T	T T	Q=CIA	CAPAC-	DIAM.	LENGTH	SLOPE	MIN HG	VEL.	TIME	H.G.L.	ELEV.	GROUN	D ELEV.	INVER	T ELEV.
MH INPUT	МН	MENT ACRES (A)	С	AREA 100% ACRES CA	AREA 100% ACRES SUM CA	TIME (MIN.)	(IN PER HOUR)	C.F.S. FLOW	ITY OF SEWER (C.F.S.)	OF PIPE (IN.)	OF LINE (FT.)	OF PIPE (%)	BASED ON "Q" (%)	FLOW FULL (FT./ SEC.)	OF FLOW (MIN.)	UPPCR END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER £ND
R19	R17	0.21	0.43	0.09	0.09	10.00	5.00	0.46	2.11	12	93	0.35	0.02	2.7	0.6	737.31	737.06	740,50	743.00	736.51	736.19
- 1110																· · · · · ·					
R18	R17	0.23	0.33	0.08	0.08	10.00	5.00	0.38	2.11	12	115	0 35	0.01	2.7	0.7	738.19	737.79	741.93	743.00	737.39	736.99
R17	R7	0.07	0.39	0.03	0.19	10.70	4.90	0.95	2.11	12	111	0.35	0.07	2.7	0.7	737.06	736.98	743.00	742.14	736.19	735.80
													0.00		0.8	737 82	707 11	742.00	740.00	737.02	736 61
R16	R15	0.08	0.48	0.04	0.04	10.00	5.00	0.00	2 02	12	130	0.32	0.00	2.6 2.6		737.41	737.41	742.00	740.00	736.61	736.25
. R15	R14	_0.26	0.54	0,14	0.18	10.80	4.89	2.02	2.02	12 . 15	1,11	0.32	0.06	2.6	0.7	737.41	736.96	741.88	742.14	736.05	735.57
R14	R6	0.36	0.67	0.24	0.42	11.50	4.79	2.02	3.10	10	202	0 24	0.10	2.0	1.3	137.10	730.50	741.00	/42.14	730.03	100.07
R13	R9	0.19	0.75	0.14	0.14	10.00	5.00	0.72	2.11	12	24	0.35	0.04	2.7	0.1	739.35	739.26	742.88	742.88	738.55	738.46
R12	R10	0.10	0.62	0.06	0.06	10.00	5.00	0.32	2 02	12	60	0 32	0 01	2.6	0.4	738.01	737.82	741.45	742.05	737 21	737 02
																			275.00	700.00	
R11	R10	0.39	0.35	0.14	0.14	10.00	5.00	0.68	2.02	12	168	0.32	0.04	2.6	1.1	739.15	738.62 737.46	743.35 742.05	742.05 742.88	738.35 737.02	737.82 736.66
R10	R9	0.25	0.40	0.10	0 30	11.10	4.85	1.46	2 02 4 70	12 18	112	0 32	0 17	2 6 2.7	0.7	737.82 737.46	737.29	742.88	741.88	736.26	736.00
R9	R8	0.43	0.61	0.27	0.71	11.80 12.60	4.76	3.38 4.08	4.70	18	202	0.20	0.15	2.7	1.3	737.29	736,98	741.88	742.14	735.80	735.40
R8 R7	R7 R6	0.23	0.74	0.17	1.31	13.90	4.50	5.88	8.16	24	24	0.20	0.15	2.6	0.2	736 98	736.96	742.14	742.14	735.00	734.97
R6	R5A	0.36	0.66	0.13	1.86	14.10	4.48	8.31	8.46	24	20	0 14	0.13	2.7	0.1	736.96	736.94	742.14	741,73	734.97	734.94
R5A	R5	0.00	0.00	0.00	1.86	14.20	4.46	B.31	8.46	24	28	0.14	0.13	2.7	0.2	736.94	736.90	741.73		734.94	734.90
110/1	11.5	0.00	0.00	0.00	1.00	720	1	0.01			1										
R23	R3	4.63	0.31	1,43	1.43	15.00	4.38	6.27	8.46	24	95	0 14	0.08	2.7	0.6	735.41	735.34	738.70	742.47	733.59	733.46
R4	R3A	0.00	0.00	0.00	0.00	10.00	5.00	1.00	2 52	12	25	0.50	0.08	3.2	0.1	735.38	735.36	740.50	740.50	734 50	734 38
R3A	R3	0.00	0.00	0.00	0.00	10.10	4.99	1.00	2.52	12	23	0.50	0.08	3.2	0.1	735.36	735.34	740.50	742.47	734.38	734.26
R3	R2	0.00	0.00	0.00	1 43	10.20	4.97	7.27	8.46	24	120	0 14	0.10	2.7	0.7	735.34	735.22	742.47	743.35	733.46	733.29
R2	R1	0.00	0.00	0.00	1 43	10.90	4.87	7.27	8.46	24	210	0.14	0.10	2.7	13	735 22	735.00	743 35	735.25	733 29	733.00

			SANITARYSEWE	R SERVICE T	ABLE		
Let #	Lead Invert at Main	Lead Length (LF)	Lead Slope (%)	Lead Dia. (in)	Lot F.G. Elev.	Riser Height (FT)	Stub Inve Elev.
L1	734.94	75	1.041%	6	744.30	0	735.72
L2	734 02	75	1.04%	6	744.00	0	734 80
L3	733 77	75	1 04%	6	744.00	0	734 55
L4	733.61	75	1.04%	6	744.00	0	734.39
L5	733 25	75	1.04%	6	744.00	0	734 03
L6	732 99	75	1.04%	6	745.00	O	733 77
Ł7	732.14	5	1.04%	6	747.00	4	736.19
L8	732 40	12	1 04%	6	745.80	2	734 53
L9	732 65	14	1 04%	6	745.80	2	734.79
L10	733.00	10	1.041%	6	745.00	1	734.10
L11	733 15	10	1 04%	6	744.10	0	733.26
L12	733 50	10	1 04%	6	744.10	0	733 61
L13	734.16	10	1.041/4	6	744.20	0	734.27
L14	734 42	10	1 04%	6	744.20	0	734 52
L15	734 58	10	1 041/4	6	744.20	0	734 68
L16	734.93	10	1.04%	6	744.30	0	735.03

CROSSING		CRO	SSING P	IPE 1		CRC	SSING P	PE 2	Clearance	NOTES
1	в-	SAN	T/P=	732.96	12 "	ST	B/P=	736.56	3,60	
2	8 ~	SAN	T/P=	733 83	20 *	ST	B/P=	739 12	5.30	
3	18 *	ST	T/P=	737.36	20 "	ST	B/P≖	738.85	1.49	
4	15 "	ST	T/P≃	737.28	20 °	ST	B/P=	738.53	1.26	
5	12 "	ST	B/P=	736 12	8 "	WM	T/P=	734 62	1.50	DIP WATER MAIN
6	20 "	ST	B/P=	738.38	8 -	WM	T/P=	736.88	1.50	DIP WATER MAIN
7	8 "	SAN	T/P=	734.39	12 "	ST	8/P=	735 70	1,31	
8	24 "	SŤ.	B/P=	734 70	8 "	WM	T/P=	733 20	1.50	DIP WATER MAIN
9	24 "	ST	B/P=	733 07	8 -	WM				RIFY LOCATION AND DEPTH OF EXISTING AIN 1.5' SEPARATION WITH SEWER



### SANITARY SEWER BASIS OF DESIGN

TOTAL SINCLE FAMILY UNITS = 16 UNITS = 56 PERSONS
AVERAGE ESITIMATED FLOW = 16 PEOPLE X 100 G.P.C.P.D. = 1600 G.P.D. = 0.0025 CFS

PEAK FACTOR =  $\frac{18 + \sqrt{0.056}}{4 + \sqrt{0.056}}$  =  $\frac{18 + \sqrt{0.056}}{4 + \sqrt{0.056}}$  = 4.30

USE PEAKING FACTOR OF 4

≈ 0.01 CFS PEAK FLOW

AN 8° SANITARY SEWER AT A MINIMUM SLOPE OF 0.40% HAS A CAPACITY OF 0.78 C.F.S.

AN 18 SANITARY SEWER AT A SLOPE OF 0.38% HAS A CAPACITY OF 6.47 C.F.S.

### TYPICAL LOT MASS GRADING DETAIL





Know what's below.

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STORY AND A STORY OF THE CONTROL OF THE CONTRO

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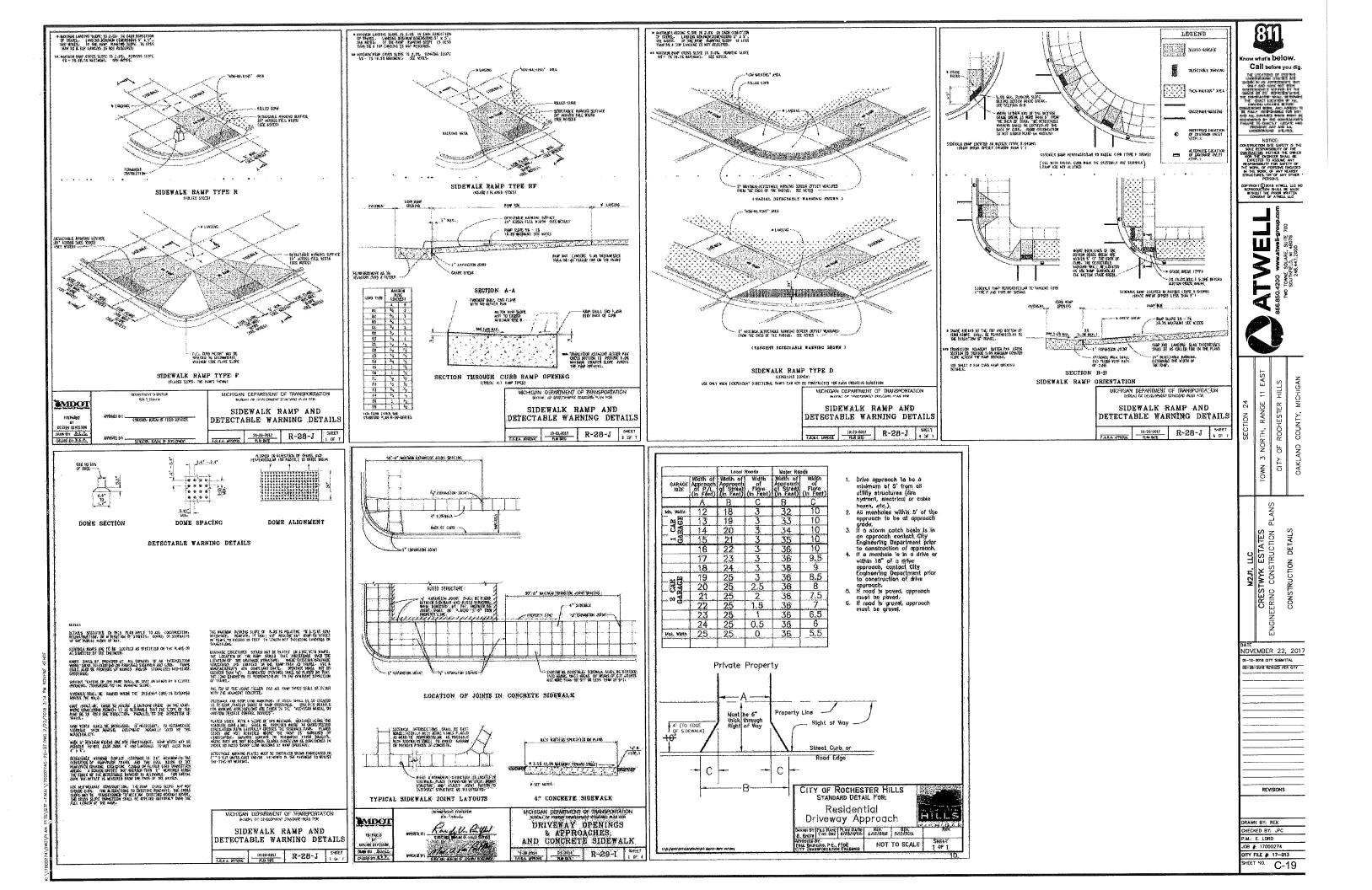


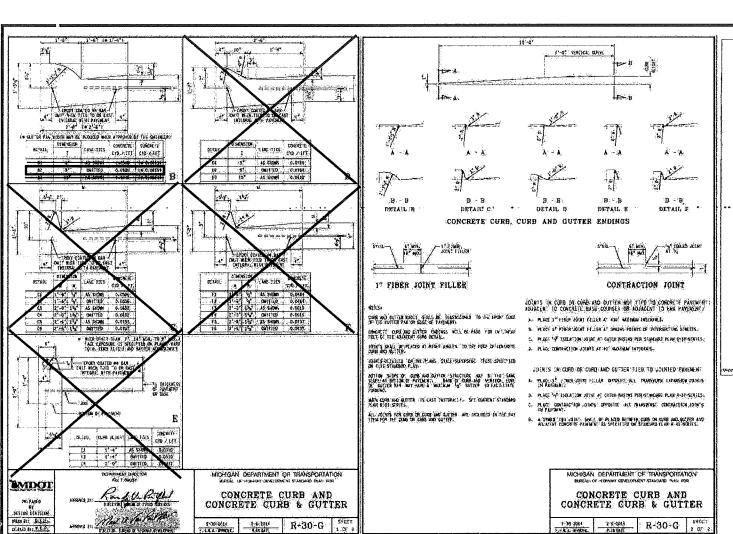
SECTION 24	TOWN 3 NORTH, RANGE 11	CITY OF ROCHESTER HI	OAKLAND COUNTY, MICH
MZJI, LLC	CRESTWYK ESTATES	ENGINEERING CONSTRUCTION PLANS	CALCULATIONS AND TABLES

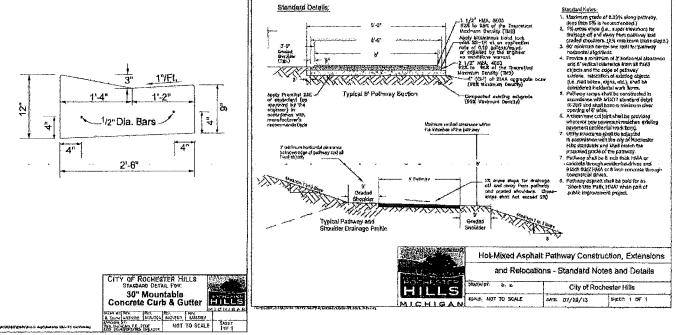
DATE NOVEMBER 22, 2017 01-12-2018 CITY SUBMITTAL

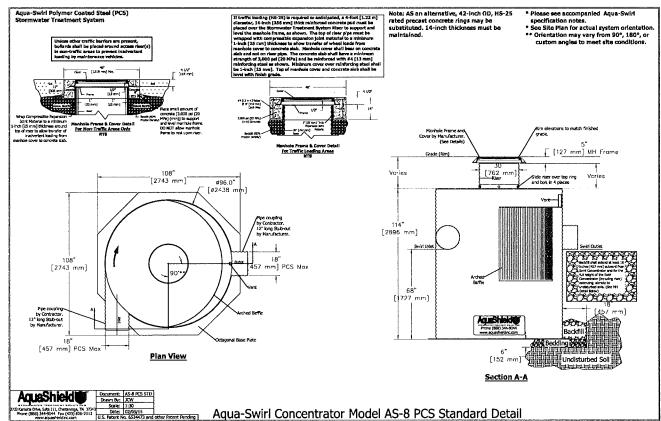
REVISIONS

DRAWN BY: REK DRAWN 57: REX
CHECKED BY: JPC
P.M.: E. LOPD
JOB #: 17000274
CITY FILE #: 17-013
SHEFT NO. C-18









### AQUA-SWRL \*\* PCS SPECIFICATION NOTES

Manufacturer shall be responsible for camplete assembly of Swirt Concentrator.

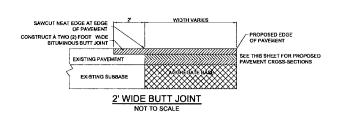
- Polymer Coated Steel (PCS) Swirl Concentrator shall be fabricated from polymer pre—coated steel sheet for corrugated steel pipe, and shall comply with ASTM A 760 and ASTM A 742.
- Stub outs and internal components shall be supplied by manufacturer and MIG welded using accepted welding practices.
- 4. Manufacturer shall supply direct access to Swirl Concentrator via 30—Inch 10 riser(s). Riser should not be field cut by Contractor, Riser should maintoin its finish cut length as supplied by manufacturer to match final grade per approved site elevations (as indicated on approved should order to the standard of contractor should use adjusting rings to bring top of structure to grade.
- 5. Contractor shall supply pipe couplings to and from Swiri Concentrator, which shall be Nar-Woc, Fernce, or Mission style Reskleb boot with stainless steat tension bands and sheer guard. Mar-Mac couplings should be used for connections to corrupated plants, place and are recommended for pipe 24\*\* ID and up. Mar Wocan be reached at 877-962-7622, or: cort.colk@mrmac.com.
- Contractor shall prepare excavation and off-load Swirl Concentrator. Contractor is responsible for bedding and bockfil around Swirl Concentrator as detailed on site plan. (see nates 11 and 12)
- Kanufacturer shall supply standard manhole frame(s) and cover(s). (Traffic rated H20)
- frame(a) and cower(a). (Traffic rated H2O)

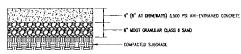
  3. Where traffic looding (H-2O) is required or
  anticipated, a 4-foot diameter, 14-inch thick
  reinforced concrete pad must be placed over
  swirt Concentrator to support and level the
  manhale frame. The top of riser pipe must be
  wropped with comparable separation, place
  transfer of wheel loods from manhale cover to
  concrete slob. Manhale cover shall beer on
  concrete slob and not on riser pipe. The
  concrete slob shall have a minimum strength of
  3,000 pal and be reinforced with 4r reinforcing
  steel (per flowing). Minimum cover over
  reinforcing steel shall be 1-inch. Top of manhale
  cover and concrete slob shall be level with finish
  grade.
- Unless other traffic barriers are present, bailards shall be placed around access risers in non-traffic areas to prevent inadvertent loading by maintenance whicles. Sample of typical bailard installation at leaf and recommended locations of ballards around the Swiri Concentrator can be provided upon request.

- 10. Where high groundwater elevations are present or onticipated, Contractor shall supply concrete anti-flactation pod undermeth and poured over the actigated by the provided of the swift (see Anti-Flactation Base Defail) to prevent buyancy and base plate deflection (detals, if necessory, available upon request).
- available upon requesty.

  1. Excosublic and. Bedding. The trench and trench bottom shall be constructed in accordance with ASTIM A 798 Section 5. Trench Excovertion, Section 6, Foundation, and Section 7, Bedding, The PCS Swift Concentrator shall be installed on a stable base consisting of at least 6-inchas of fine, recally compacted sol or granular different fine meterial, and compacted to 95% proctor density. Bedding shall not contain stones relationed on a program of the stable of th
- per OSHA opproved methods.

  12. <u>Backfill Resultements</u> Backfill materials shall be fine, readily compacted sol or granular fill material, and compacted to 90% proctor density. Processed granular material, and compacted to 90% proctor density. Processed granular materials with secellent structural characteristics are preferred. Course granular granular control of the structural characteristics are compacted to synchroly acceptable materials when compacted to generally acceptable materials when compacted to solve a stone state of the structural backfill religious compacted to solve stones retained on a 3-Inch ring, frazen lumps, highly plastic dol, organic materials. Backfill shall conform to ASTM A 798, Section 10, Structural Bockfill Placement. Backfill shall be placed in 6 to 12 inch loyers or "lits" and compacted before adding the next lift. Bockfill shall be placed in 6 to 12 inch loyers or "lits" and compacted before adding the next lift. Bockfill shall be placed in 6 to 12 inch loyers or "lits" and Concentrator and for the full height of the SWI Concentrator (including riser(s)) extending laterally to undisturbed softs.

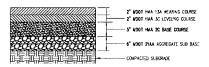




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SEER TO MOD" SDEWLK DETAILS FOR CONSTRUCTION JOINT SPACYC
 MASTIC ENPAISON JOATS STALL BE PROVIDED BREREVER THE SDEWALK ASUTS
 EXSTAG/PROPOSED PAYEMENT.

CONCRETE SIDEWALK DETAIL
NOT TO SCALE



PAVEMENT SHA... BE USED AT JOHN R ROAD AND GRAVEL RIDGE ROAD AS SHOWN ON PLANS.

HEAVY DUTY ASPHALT DETAIL

Know what's below.

Call before you dig.

Ca

NOTICE:

ONSTRUCTION SITE SAFETY IS THE
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HILLS

CRESTWYK ESTATES

CRESTWYK ESTATES

ENGINEERING CONSTRUCTION PLANS

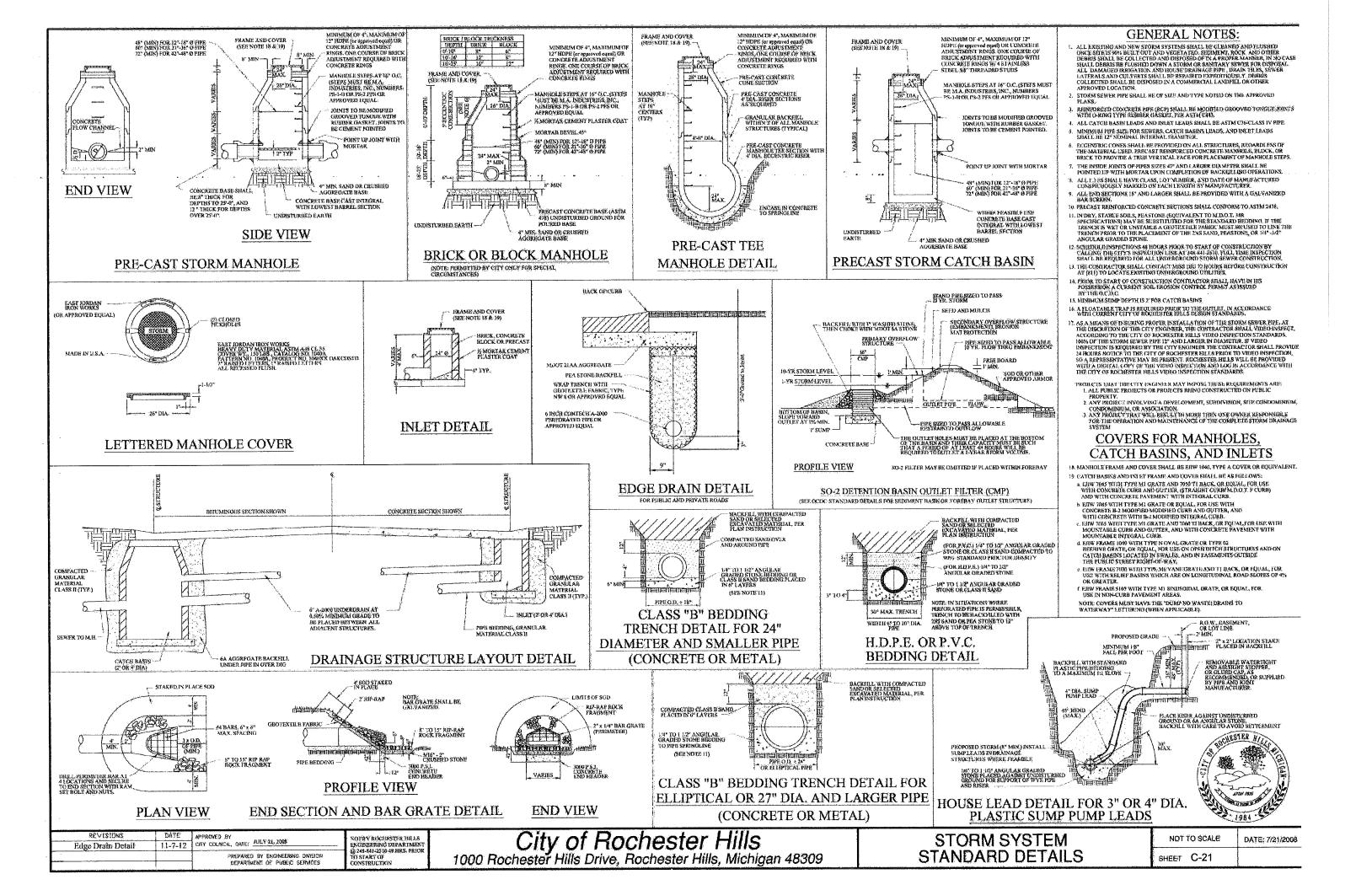
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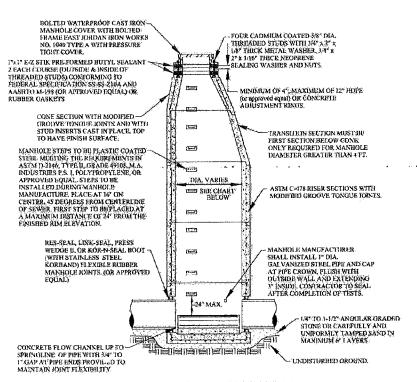
CONSTRUCTION DETAILS

NOVEMBER 22, 2017
or-12-2018 only segunital
oz-28-2018 REVISID PER ON

REVISIONS

DRAWN BY: REX
CHECKED BY: JPC
P.M.: E. LORD
JOB #. 17000274
CITY FILE #. 17-013
SHEET NO. C-20





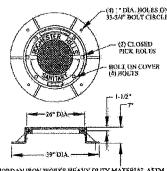
### BOLTED WATERPROOF CAST IRON FOUR CADMIUM COATED SIX\* DIA. THREADED STIDS WITH JOE'X Z\* X E8\* THICK METAL WASHER, JA\* X with pressure tight cover 2" x 1/16" THEK WEOVRENE SEALING WASHER AND RUTS. 1"A1" E-Z STIK PRE-FORMED BUTYL SERLANT 2 RACH COURSE (OUTSIDE & INSIDE OF THREADED STUDS) MINIMUM OF 4", MAXIMUM OF 12" HOPE (or approved equal) OR CONCRETE, ADJUSTMENT RINGS. 21.11.1 CONFORMING TO FEDERAL SPECIFICATION APPROVED EQUAL) OR RUBBER GASKETS CONE SECTION WITH MODISIED GROOVE TONGCE JOIN'S AND WITH-STUD INSERTS CAST IN PLACE TOP TO HAVE FORSH SURFACE. Manhole Steps to be plastic coated Step, meeting the requirements in Astm D2146, Type H, Grade 49108, Ma Industries – DIA, VARIES SEBUHART S.I. POLYPROPYLENIFOR APPROVED FOUAL STEPS TO BE INSTALLED DURING MANHOLE ASTM CAIS RISER SECTIONS WITH MANUFACTURE PLACE AT 16°C, TO C., 45 DEGREES FROM CENTERLINE OF SEWER RES-SEAL, LINK-SPAL, PRESS WEDGET, OR KOR-R-SEAL BOXT (WITH STAINLESS STEED KORBAND) FLEXIBLE RUBBER MANHOLE FOINTS (OR APPROVED EQUAL) SHALL INSTALL L'DIA. GALVANIZED STEEL PIPE AND CAP AT PIPE CROWN, FLOSH WITH PRE-CAST BOTTOM SECTION WITH PIPE OPENINGS ENCASED IN AND SC PROPERTO BY 3560 PSI MONGITHE-POURED CONCRIPE, MINIMUSE ENCASEMENT 12°, outside wall and extending y inside, contractor to seal APTER COMPLETION OF TESTS. CONCRETE CURED, TOP HALF OF PIPE TO BE CUT AND REMOVED. BOTTOM HALF OF PIPE TO REMAIN IN PLACE AS A PLOW CHANNEL 3500 PSI MONOLITHIC POURED - J CONG. MINIMUM ENCASEMENT 12". LIZ MINIMUM TO UNDISTURBED GROUND

### MANHOLE CONSTRUCTED **OVER EXISTING SEWER**

MANDO	E SIZING CHARY
MANHOLE DIAMETER	MAX: PIPE SIZE FOR STRAIGHT THRU INST.
4'	24*
5!	36"
6*	42*
p.	60*

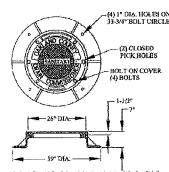
### STANDARD MANHOLE

	MANHOLE SIZING CHAI	
MANHOLE DIAMETER	MAX, FUR SIZE FOR STRAIGHT THRU INST	MAX PIPE SIZE FOR RIGHT ANGLE INST.
4'	24"	18"
5'	3 <i>6</i> °	24"
6'	427	369
7	66	42°



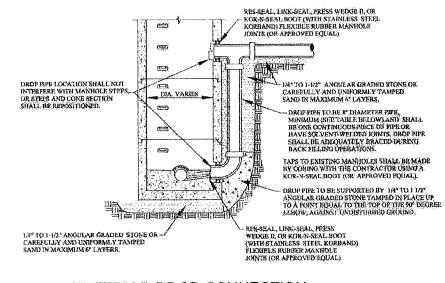
EAST JORDAN ISON WORKS HEAVY DUTY MATERIAL ASTM A48 CL35 COVER WT., 150 LBS., CATALOG NO. 1040 TYPE A

### ROCHESTER HILLS MANHOLE COVER



EAST JORDAN TRON WORKS THAVY DUTY MATERIAL ASTM A48 CL 35 COVER WT., 150 LBS., CATALOG NO. 1040 TYPE A

O.C.D.C. LETTERED MANHOLE COVER



### EXTERIOR DROP CONNECTION

SEWER SIZE	DROP SIZE	M# SIZE
UPTO 10	8"	4"
Unaous.	10*	4:
UP TO 30"	184	5

### SANITARY SEWER CONSTRUCTION NOTES

- I. ALL CONSTRUCTION SHALL CONFORM TO THE CHRIENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS AND THE OAKLAND COLSTTY DRAIN COMMISSIONER (COCK), ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY THE CITY OF ROCHESTER BILLS. INSPECTION SERVICES.
- 2. NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCELDING TWO GALLONS PER INCH DIAMETER POSITION OF THE IN A 24 HOUR PERIOD, AND NO SINGLE RITNO'S SEWER BETWEEN MANIOUSES SHALL.

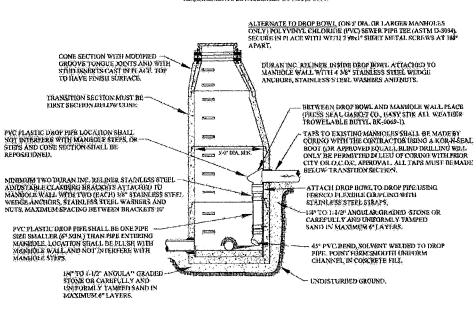
  EXCEED 100 GALLONS PER INCUI DIAMETER PER MILE. AIR TISTS IN LIEU OF INFELTRATION TESTS SHALL

  BE AS SPECIFIED IN THE GAKLAND COUNTY DRAID-COMMISSIONER STANDARDS. PRELIMINARY, AIR TISTS
  ARE WITHESSED BY THE CITY AND SHALL AIR TISTS ARE WITHESSED BY SHE CHARLOW THE CITY AND THE CITY.

  ONLY PIPE AND PIPE JOINTS APPROVED BY THE CITY MAY BE USED FOR SANITARY SEVER CONSTRUCTION.
- 3. LUCATED IN THE FIRST MANHOLE CPSTREAM FROM THE POINT OF ALL CONNECTIONS TO AN EXISTING SEVER, OR EXTENSION, A TEMPORARY UZ-NEW DEEP STAFFSHALL HE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONFECTION WHICH VILL, BEFALEDING AFTER SIGESSEGI, COMPLETION OF ANY ACCEPTANCE TEST OF TO THE STANDARD FILLET PROVIDED FOR THE FLOW CHANNEL A WATERHOLE KHEAD SHALL BE PROVIDED ON THE DOWNSTREAM SIDE OF THE SUMP MANHOLE.
- 4. AT ALL TIMES WHEN LAYING OF NEW PIPE IS NOT ACTUABLY 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 TERRICH WHEN WORK IS RESUMED, THE PLUG SHALL NOT DEFRINGVED UNTIL THE DANGER OF WATER SHOTERING THE PIPE ID, PASSED, ALE MAIN LIMP PIPE SHALL BE LATU WITH A PIPE I ASER PHAM FOR LIMP AND GRADE. A TARGET MUST DE INSTALLED AT THE END OF THE PIPE BEING LAYED.
- 5 ALL-BHILDING 4 PADS AND RISERS SHALL HE SIX INCH SON 23.5 PVC PIPE WITH CHEMICALLY EUSED JOINTS OR CASKETED JOINTS APPROVED BY CITY ENGINEER, BUILDING LEADS TO BE FURNISHED WITH REMOVABLE AIRTIGHT AND WATERTIGHT STOPPERS.
- 6, ALL SEWER PIPE SHALL BE INSTALLED IN CLASS "D" BEDDING OR BETTER.
- 7. ALL NEW MARHOLES SHALL HAVE CITY APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH WALLS, MANHOLES SHALL BE OF PRE CAST SECTIONS WITH MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE KONTS, PRE CAST MANHOLE CONE SECTIONS SHALL BE CITY APPROVED MODIFIED ECCENTRIC CONETYPE, ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTHIFT COVERS.
- 8. AT ALL CONNECTIONS TO MANHOLES IN ALL SEWERS, OR EXTENSIONS, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES,
- 9. GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE OR WEED THE
- 10. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISSING THREE GADAYS IN ADVANCE (811) FOR THE LOCATION OF UNDERGROUND PURILING AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UPILITIES LOCATED IN THE VICINITY OF THE WORK.
- 11. AN 18 INCH MINIMUM YERTICAL SEPARATION AND À 10 FOOT MINIMUM HÖRIZONTAL SEPÁRATION MUST BE MAINTÁINEO BETWEEN SANITARY SEWER AND ALE OTHER UTILITIES.
- 12. AS A MEANS OF INSURING PROPER INSTALLATION OF THE SANITARY SEWER PIPE. THE CONTRACTOR SHALL 2. AS A MEANS OF INSURING PROPER INSTALLATION OF THE SANITARY SEWER PUB. THE CONTRACTION SHALL VIDEO INSPECT, ACCORDING TO THE CITY OF ROCHESTER HILLS VIDEO INSPECTION STANDARDS, 100% OF THE SANITARY SEWER PIPE. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO THE OAXLAND COUNTY DRAIN GOMMISSIONER OR THE CITY OF ROCHESTER HILLS PRIOR TO VIDEO INSPECTION, SO REPRESENTATIVE MAY BE PRESENT, ROCHESTER INLIES WITH BE PROVIDED WITH A DIGITAL COPY OF THE VIDEO INSPECTION AND LIGH IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS INSPECTION

### SANITARY SEWER MATERIALS

- I. THE POLLOWING MATERIALS MAY BE USED FOR PUBLIC SANITARY SEWER CONSTRUCTION, APPROVED PIPE MATERIALS MUST CONFORM TO STANDARDS ADOPTED BY THE OFFICE DIFTHE DAKLAND COUNTY
- A. FOR SUMERS 8" TO 15" TO HE PYC TRUSS PIPE, ASTM D-2890, WITH GASKET JOINTS, OTHER TYPES OF PIPE AS APPROVED BY CITY ENGINEER.
- B. FOR 6" SEWER LEADS SHALL BE SOLID WALLED PVC, SDR-245, D-2751, PIPE SHALL HAVE A MINIMUM PIPE STIETNESS OF 139 P.S.L. AND A MINIMUM DEFLECTION OF 15% AT FAILURD. THE SEWER LED MATERIAL SHALL BE COMPATIBLE WITH SEWER MAIN MATERIAL.
- C. FOR SEWERS GREATER THAN 15° TO BE REINFORCED CONCRETE PIPE (RCP) SHALL CONFORM TO THE CURRENT ASTM DC 76 WALL B. JUNTS SHALL BE SYNTHETIC RUBBER AND MEET OR EXCEED THE REQUIREMENTS ESTABLISHED BY ASTM C361.





INTERIOR DROP CONNECTION

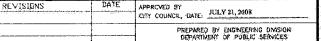
City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

SANITARY SEWER STANDARD DETAILS

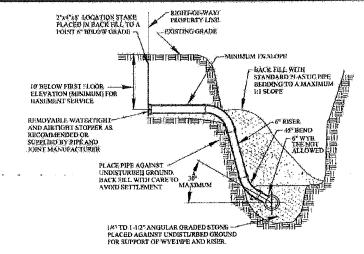
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DATE: 7/21/2008

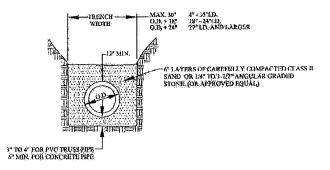
SHEET C-22



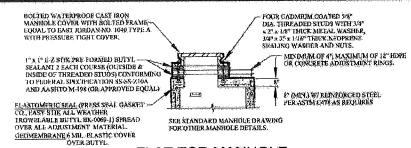
OTIFY ROCHESTER HILLS 248-841-2510 48 HRS. PRIO OSTARTOR



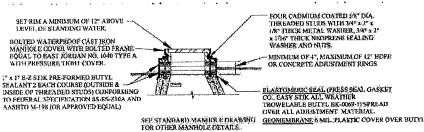
### HOUSE LEAD DETAIL



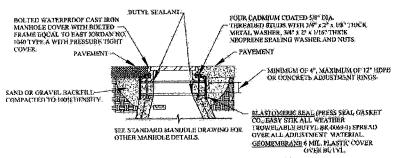
STANDARD BEDDING (CLASS B)



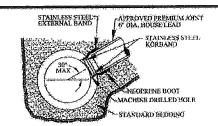
### FLAT TOP MANHOLE



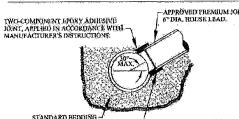
# ADJUSTMENT DETAIL FOR MANHOLE TOPS WITHIN FLOOD PRONE AREAS



## ADJUSTMENT DETAIL MANHOLE TOPS WITHIN PAVEMENT AREAS



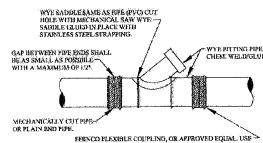
### KOR-N-TEE TAP FOR CONCRETE PIPE



L CAST IRON OR CAST ALUMINUM OR PEASTIC PREMIUM JOINT SADDLE, SEWER TAP OR EQUAL. TO SEE INSERTED IN MACRIME. DOIL LED HOLE DESIGNED FOR THE FARTICULAR SADDLE.

NOTE: SURFACE OF MAIN SEWER SHALL BE CLEANED WITH AN ABEASIVE GRINDER FROR TO EPOXY APPLICATION: DUE TO VARIATION OF SECTOR TIME OF EFOXY ADDESIVE WITH LEMPERATURE, ANCHOR SEEAPS SHALL BE USED TO SECURE SADULE BY OSSITION IN COLD WEATHER OR WHENEVER WORK/STUP/ROCEED PRIOR TO COMPLETE CURE OF EPOXY.

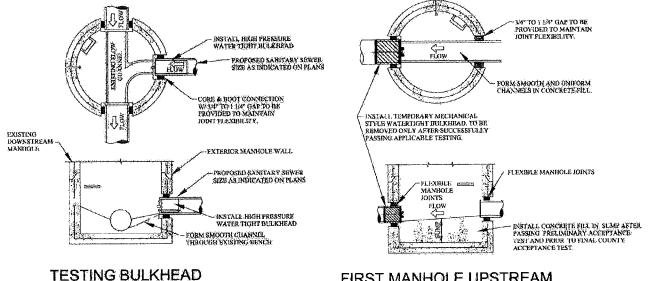
### SEWER TAP-ALL SIZES OF MAIN SEWER PIPES VITRIFIED CLAY



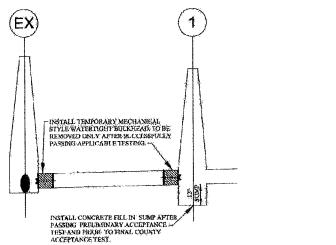
FERNCO ELEXIBLE COUPLING, OR APPROVED EQUAL, USE >
MANUFACTURER'S DUSHINGS BEDISSIMILAR PIPE ARE CONNECTED.
WATER MAIN REPAIR CLAMPS, SANTH BLAIR, BAKER, FORD OR
EQUAL (ALL STAINLESS STEEL) MAY ALSO BE USED.

NOTE: PRESHALCHE BEDDEDAY STANDARD PLANTIC PIPE BEFEIN

# WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS (RIGID PIPE)



FIRST MANHOLE UPSTREAM FROM SANITARY TAP



PROFILE OF BULKHEADS AND ONE FOOT SUMP

### CITY OF ROCHESTER HILLS GRAVITY BUILDING LEAD REQUIREMENTS AND DETAILS

- I. ALL BUILDING LEAD WORK MUST BE PERFORMED UNDER THE CITY OF ROCHESTER HILLS INSPECTION.
- FOR ALL CITY OF ROCHESTER HILLS SYSTEMS CALL 248-841-2510 48-HOURS PRIOR TO SCHEDOLING INSPECTION.

FOR ALL OFFICE OPERATED SYSTEMS, CALL 248-858-1110 48-HOURS IN ADVANCE PIOUR TO

- J. SANITARY SEWER MAY NOT BE USED AS A DEWATERING OUTLET.
- 4. WHERE AN EXISTING BUILDING LEAD IS BEING EXTENDED, DISSIMILAR TYPES AND SIZES OF PIPE SHALL BE JOINED USING A CITY OF ROCHESTER HILLS APPROVED ADAPTER.
- 5, APPROVED BUILDING LEAD PIPE FOR GRAVITY SEWER LEADS:
  A. PVC PLASTIC, ASTM D2751, SDR 23-3.
- A. PVC PLASTIC, AS IM DEST, 508.253.

  B. DISCITLE IRON PIPE, AMERICAN WATER WORKS ASSOCIATION (AWWA) C. 104(A21.), CLASS 54, 100175 SEALE BE SUPER BELLTITE, TYTUN, TY-SEAL, MOLTI-TITE, DUAL-TITE, OR VERY-TITE.

  C. ANY DEVIATIONS FROM ADOVE SPECIFICATIONS REQUIRES APPROVAL BY CITY ENGINEER:
- 6. ALLOWADLE TYPES OF SEWER PIPE ADAPTERS: FERNCO ADAPTER OR FERNCO FLEXIBLE COUPLING.
- 7. POR 6" LEADS A CLEANOUT MUST BE INSTALLED EVERY 100 FT. FOR 4" LEADS A CLEANOUT MUST REINSTRALED EVERY SHIT. 30" SENIN SOT ALLOWED EXCEPT FROM THE HORIZONTAL. TO THE VERNICAL-WILLIM STEET OF THE BUILDING

### CITY OF ROCHESTER HILLS SANITARY SEWER SYSTEM AS-BUILT DRAWING SPECIFICATIONS

IN AREAS WHERE SANITARY SEWER SYSTEMS ARE OPERATED AND MAINTAINED BY THE CITY OF ROCHESTER HILLS DEPARTMENT OF PUBLIC SERVICES, FINAL ACCEPTANCE OF THE SANITARY SEWER SYSTEM WHIST DEPRINDERED BY THE DEPARTMENT OF PUBLIC SERVICES, BEFORE THE SYSTEM CAN BRUSED FOR THE STRVICE INTENDED,

ONE ITEM REQUIRED FOR FUNAL ACCEPTANCE SHALL DETHE SUBMISSION OF AS-BUILT DRAWINGS FOTHE CITY OF ROCHESTER HILLS ENGINEERING DIVISION, BY THE DISSION ENGINEER, AS-BUILT DRAWINGS SHALL BE DEFINED AS AND CONTAIN THE FOLLOWING INFORMATION:

- FENAL AS BUILT DRAWINGS SHALL DE PROVIDED ON MYLAR, XEROX OR ANY HEAT PROCESS REPRODUCTIONS WILL NOT HE ACCEPTED.
- MEONG WITH THE MYLAR PLAN SET, PROVIDE THREE (5) SETS OF BLUEPRINTS. PRODUCED FROM THE MYLARS AND THE PLANS ON ELECTRONIC MEDIA IN AUTOCAD FORMAT (LATEST VERSION).
- 3. THE COVER SHEET SHALL BE SEALED BY THE PROJECT DESIGN ENGINEER, ALONG WITH THE FOLLOWING CERTIFICATION STATEMENT:

IMPROVEM IMPROVEM CONFORMA SANITARY	REFIRE THAT OUR FIRM HAS PREPARED THESE AS-BOLLT DRAWINGS OF THE RMTS AS CONSTRUCTED, AND THAT TO THE BEST OF MY KNOWLEDGE THOS RMTS NOTED AS "AS BULLT" WERE CONSTRUCTED IN SUBSTANTIAL INCH WITH THE APPROVED CONSTRUCTION PLANS, AND ALSO THAT THE REFERENDS STRUCTURES, AS CONSTRUCTED, LIE WITHIN THE EASEMENT WAS REQUIRED BY THE CITY OF RECHESTER HILLS.
٠ <u>٨٠,٠٤ ٢ </u>	(COMPANY NAME)
Storie (**	(engineer's signature)
nt Organiza	NAL ENGINEER NO.

ENGINEER SEAL

- 4. THE MAXIMUM SCALE SHALL BE ONE (I) INCH EQUALS FIFTY (30) FEET.
- 5. THE SIZE, LENGTH, CLASS AND MANUFACTURER OF PIPE INSTALLED SHALL BE INDICATED.
- THE SIZE, MANUFACTURER AND MODEL NUMBERS OF ALL VALVES AND PUMPS INSTALLED SHALL BE INDICATED.
- 7. A TOTAL AS BUILT DRAWING QUANTITY LIST SHALL BE INCLUDED
- 8. THE LOCATIONS SHALL BE SHOWN ON THE PLANS WITH AN ACCURACY OF ONE (1) FOOT:
- 9. THE OFFSET OF THE SANITARY MAIN FROM PROPERTY LINES SHALL BE INDICATED:
- ALL-MANNOLES, VALVE WELLS, RUMPS AND ALL SANITARY SYSTEM APPURITHNANCES SHALE-BE LOCATED FROM TWO FIXED ORIECTS (MANHOLES, BUILDING CORNERS FUC.).
- ALLUNDERGROUND APPURTBNANCES, SUCH ASTFICIARY WELLS, METER PITS, GRINDER PUNIPS AND PUMP STATIONUTS, ETC. SHALL BE LOCATED FROM THE NUAREST MANHOLE THAT IS CONNECTED TO THE SAME SANITARY MAIN AS THE APPURT HANCE.
- 12. THE ACCURATE LOCATION OF ALL UTILITY CROSSINGS WHERE THE VERTICAL SEPARATION. IS LESS THAN 18" SHALL BE NOTED.
- 13. AS-BUILTS SHALL BE PREPARED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS AS-BUILT GUIDELINES AS PROVIDED AT THE PRE-CONSTRUCTION MEETING



REVISIONS DATE APPROVED BY TULE 21, 2008

CITY COUNCIL DATE: TULE 21, 2008

PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES

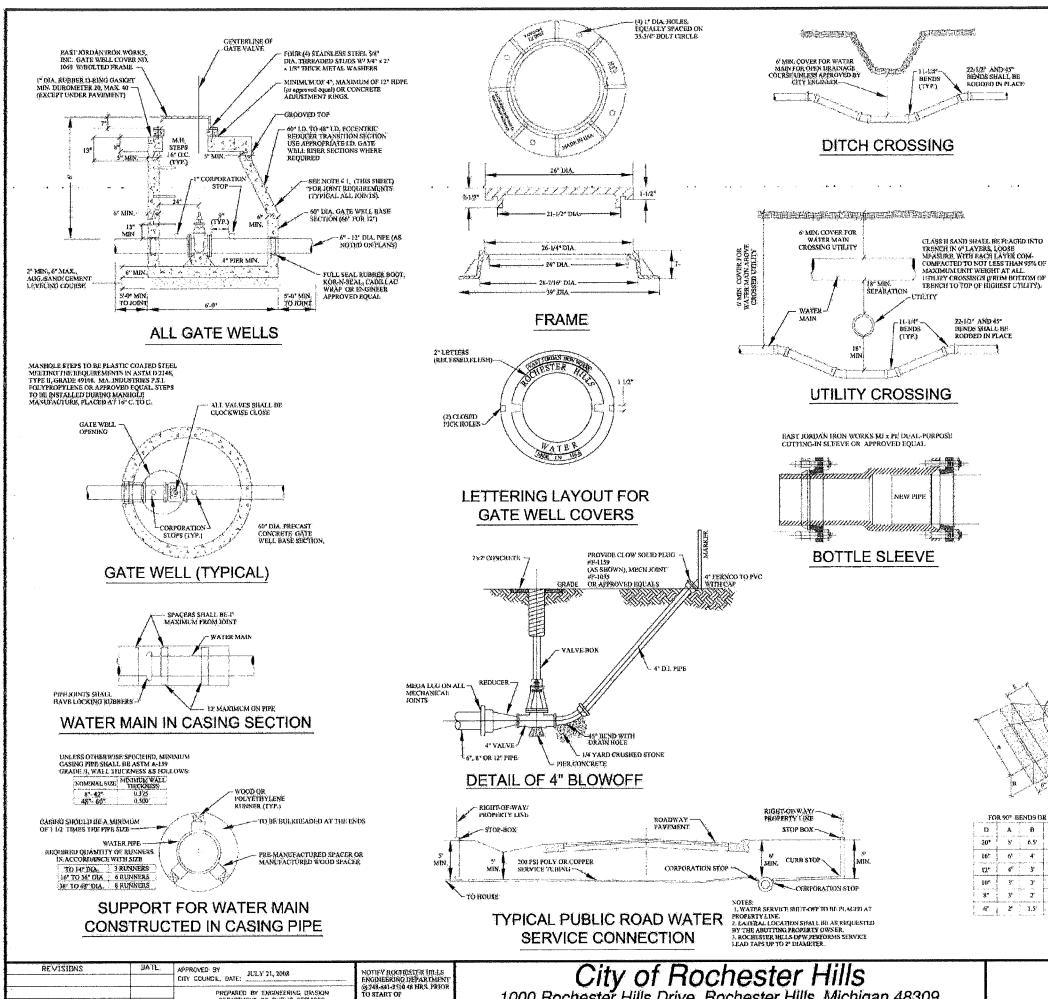
CONSTRUCTION

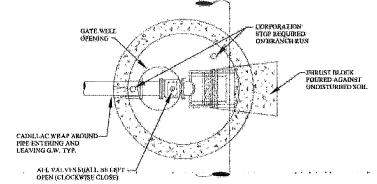
IN EXISTING MANHOLE

City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

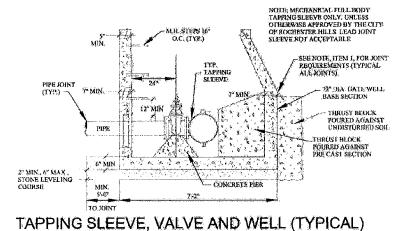
SANITARY SEWER STANDARD DETAILS NOT TO SCALE DATE: 7/21/2008

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### PLAN TAPPING SLEEVE **VALVE & WELL (TYPICAL)**

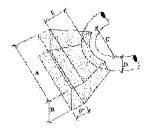


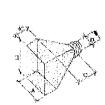
STANDARO SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, EXCEPT WALL THICKNESS SHALL BE AS SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE OATE WELL SECTIONS SHALL BE SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING BUBBER GASKETS.

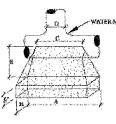
Contractor shall distall valves, lapping sleeves and date well strectures in strict compilance with measurements provided on sheet he z-c distween gate will wall a center negof operating nut) to allow proper operating of valve through gate well opening fall use tid do so well require contradition to therety at his entering.

TAPPING SLEEVES SHALL BE MANUFACTORED BY BOXLACTROLISTINGS, MOSLICER, FAST FOXOAX, SEITCH-BLAIR OR APPRIVED BOUAL, AND APPROVED BY THE CITY OF ROCHESTER HILLS, HILL, HODY SLEEVES MUST BE USED EXCERT FOR BURNDINGER OWNCRETE MISSACER PIPES OF A CE PIPE.

RUBBER O-RINGS SHALL NOT BE USED IN PAVEMENT.







NDFE. 1000 FSI CONCRETE TO BE USED. THRUST ELOCK TO ABUT & REST AGAINST UNDISTURBED SOIL ON EANTH

FO	R 90° B	ENDS D	R SMAI	LER		FOR	LUGS				OR TEE	\$	
D	A	В	C	E MIN.	Ď	A	В	CMIN	D	A	В	C	E MIN.
20*	8'	6.5	3.5'	2.5	20"	7'	5*	2,5'	20"	6.54	4:51	3.5	3,
165	61	4	2:5'	2'	16"	4'-10"	45-100	2'	16%	4'-8"	45-60	2,5	2.75
12"	45	3'	2'	1,75	12"	4'-4"	3'	15-9*	12"	41	3'	2.5	2.5
10°	3r	3'	2'	1.75	10"	3,	2'	1'-6"	107	3'	2'	22	2.25
3"	3'	2	21	1.39	8*	2'-10"	25-67	1'-6;	8,4	2'-6'	2'	2f	2.25
E	, 2	1.5	2!	1.25	6*	P-6*	15-63	3	6"	21	21	.2"	2.25

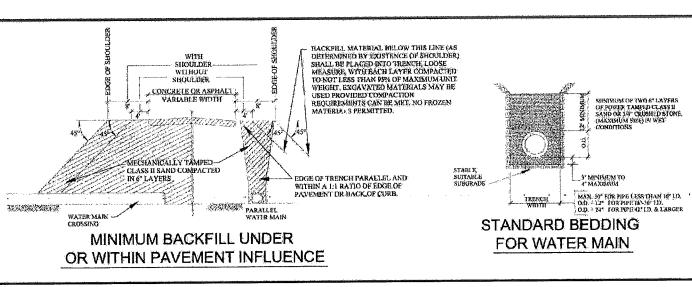


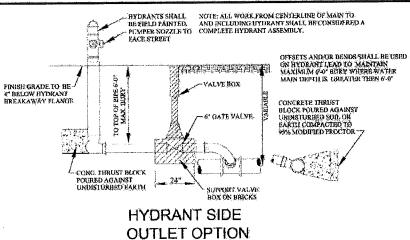
### THRUST BLOCK DETAILS

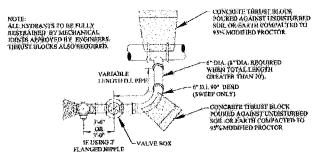
**WATER MAIN** STANDARD DETAILS

NO	FTO SCALE	DATE: 7/21/2008
SHEET	C-24	

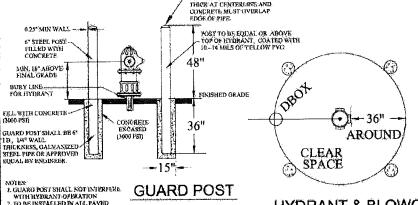
City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

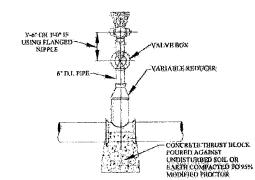




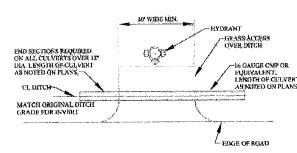




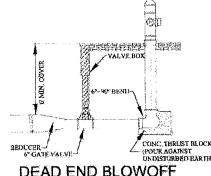




# HYDRANT CONNECTION (TYPICAL)



### DITCH ENCLOSURE AT HYDRANT/ GATE WELL



DEAD END BLOWOFF
CONNECTION

### **HYDRANT & BLOWOFF DETAILS**

### GENERAL NOTES

- 1. ALL CONSTRUCTION PROCEDURES AND MATERIALS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS:
- A PRE-CONSTRUCTION MEGTENG SHALL BE SCHEDULED BY THE CITY OF ROCHESLER HILLS AND BELD PRIOR TO THE START OF CONSTRUCTION.
- CONTRACTOR MEST CONTACT MISS DIG (8) DAT LEAST THREE WORKING DAYS PRIOR TO THE START OF CONTRUCTION FOR UNDERGROUND STILLTY LOCATIONS. ALL UTILITIES SHALL BE STAKED PEPORE CONSTRUCTION BRIDS.
- A. ALL WATER MAIN BASEMENTS SHALL BE PROVIDED PRIOR TO CONSTRUCTION AND ACCIPITANCE OF THE WATER DISTRIBUTION SYSTEM.
- 3. WATER MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 6 PEET BELOW FINISHED GRADES, INCLUDING OPEN DRAINAGE COURSES.
- 6. ALL TRENCHES UNDER OR WITHIN A 113 RATIO OF EXISTING OR PROPOSED PAVEMENT OR DRIVEWAYS, SHALL BE DACKELLED WITH COMPACTED CLASS II SAND TO GRADIE/\$24, MAXIMUM DRIF DENSITY).
- 7. WHERE TWO LITERITIES CROSS, PROVIDE CLASS IT BACKFILL MATERIAL IN SIX (6) INCH COMPACTED LAYERS TO TOP OF HIGHEST LITERIY.
- 8. WHERE WATER MAINS DIP UNDER OTHER CHEFTES, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE CONSTRUCTED WITH HAVE VERTICAL BENDS, 22 1/25 OR 45° RENDS MUST BE RODDED AND PROPERLY (ANCHORED.
- ALL PRECAST CONCRUTE GATE WELL SECTIONS SHALL BE IN ACCORDANCE WITH A S.T.M. C478, STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANIOLE SECTIONS. WALL TRICKNESS SHALL HE AS SHOWN ON THESE BRETAIN. S. ALL JOINTS FOR BRECAST CONCRETE GATS WELL SECTIONS SHALL HE "MODIFIED GROOVE TONGROE" WITH ASKET SAMPLACTURED TO CONFORM WITH ASKET AND AND SPECIFICATION FOR MODIFS FOR CIDECULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
- 10. CONTRACTOR SHALL INSTALL VALVES, TAPRING SLEEVES AND GATE WELL STRUCTURES IN STRUCT COMPLIANCE WITH MILASTREMENTS PROVIDED ON SHEET I (240" RETWIED HOADS WELL WALL & CENTERLINE OF OPERATING MUT) TO ALLOW, PROPER (DERATION OF VALVE THROUGH GATE WELL OPENIA).
- 11. ALL GROSS-CONBECTION CONTROL DEVICES SHALL BE INSTALLED AS REQUIRED BY THE ROCHESTER HILLS.
  PLEMBING BYSPECTOR AND IN ACCORDANCE WITH THE STANDARDS OF THE OAKLAND COUNTY DRAIN
  COMMISSIONER OPERATION AND MAINTENANCE DIVISION AND THEMICHIGAN DEPAREMENT OP
  ENYTRONMENTAL QUALITY, DIVISION OF DELEKTIGO WATER AND RADIOLOGICAL PROTECTION.
- 12. ALL WATER SERVICE CONNECTIONS TWO (2) INCHES AND SMALLER SHALL BE MADE BY THE CITY OF ROCHESTER HILL
  WELL BY MADION BURY OF SERVICES LATTER WATER MADI ACCEPTANCE AND APPLICABLE PERMITS ARE OBTAINED.
- ALL FITTINGS, AND BENDS SHIPELD BE BLOCKED IN ACCORDANCE WITH THRUSE WOCK DETAILS, UNLESS
  ALTERNATE THRUST RESTRAINT SYSTEM, AS INDICATED PLANS AND SPECIFICATIONS, IS APPROVED BY THE
  CITY OF ROCHISTER HELD SEPARATION FOR POPULE STRYICE.

### WATER MAIN MATERIALS NOTES

- 4. TEMPURARY CONNECTIONS, RELECT MAY HE MADE FOR CHEORINATING AND ELUSHING PURPOSES, SHALL MICHINE & TESTABLE DAUBLE CHECK VALUE HACKELOW PROVINCIES WITH CHRRENT CENTIFICATION.
- CORPORATION STOPS USED FOR INSERTION INTO MAISS SHALL BE FORD TYPE B-44, ALL STOPS SHALL HAVE BRONZE CAST BODIES, KEYS, STEM WASHERS AND NUTS, INLET THREADS SHALL CONFORM TO THE LATEST YERSION OF AWWA C860.
- 3. ALL DECTREBROK PIPE (D.I.P.) WATER MAIN SHALL BE DESIGNED FOR 150 PSI MINIMUM WORKING PRESSURE:
- 4. THE DUCTILE BOYN PIPE TO BE FUNNISHED AND DELIVERED UNDER THIS SPECIFICATION SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT AWWA CIST (ANSI/A31.5), EXCEPT AS OTHERWISE SPECIFIED HERBIN, PIPE SHALL DE DOCUME COMBINITATION AND SEAL COATED WITH AN APPROVED BITUMINOUS SEAL COAT IN ACCORDANCE WITH ARWA CIDM (ANSI/A21-4).
- 5. DUCTILE IRON PIPE SHALLI-HE CLASS 54 FOR SIZES THRIB: (3) INCH THROUGH TWENTY (20) INCHES SIZE. TWENTY-FORR (24) INCH AND LARGER SHALL BE CLASS 55 DUCTILE IRON PIPE.
- 6. PIPES TWENTY-POUR (24) INCHES AND LARGER IN NOMINAL DIAMPTER SHALL MEET ALL THE REGISTEMENTS OF THE CURRENT AWWA C100 FOR DUCTILE IRON WATER PIPE.
- 7. MECHANICAL JOINTS FOR DUCTILE TROY WATER MAIN SHALL BE IN ACCORDANCE WITH AWWA CHT (ANSEAZELT)
- 8. FLANGBIOINTS FOR DUCTILE IRON WATER MAIN SHALL BE'IN ACCORDANCE WITH AWWA CITO (ANSLATLED).
- 9. FITTINGS FOR DUCTILE IRON PIPE SHALL BE DUCTILE IRON AND SHALL MEET REQUIREMENTS OF AWWA CI19 (ANSI A21.07) OR AWWA CI51 (ANSI A21.53). OUCTILE IRON FITTINGS SHALL BE RATTED FOR 330 PSI, PIPE SIZES IWERTY-FOUR (24) INCH BIAMETER AND LESS, AND 230 PSI, FOR PIPE, SIZES OVER TWENTY-FOUR (24) INCHE DIAMETER, DUCTILETRON PLANCE FITTINGS SHALL BE RATTED FOR 250 PSI FOR ALL PIPE DIAMETERS.
- 10. ALL DUCTILE IRON PED, FITTINGS AND HYDRANTS SHALL BE ENCASED WITH FOLYETHYLENE ENCASEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF ANNALAW M.A. STANDARD SPECIFICATION DIZZY AND AWWA-CHOS. POLYETHYLENE TORE MATERIAL SHALL HAVE A THICKNESS OF JOK" (6-MLS), ADBESTVE TAPE SHALL BE A GENERAL PURPOSS A DIRECTOR TAPE SHALL BE A GENERAL PURPOSS A DIRECTOR TAPE OF THE SHALL BE A GENERAL OR TAPECOAT CT.

### VALVE AND SLEEVE NOTES

- . GATE VALVES, SIZESTYREE (I) INCH IHKOUCH SIXTEEN (16) INCH AND TAPPING YALVES SHAGL MEET THE CITY, OF ROCHESTER HILLS STANDARD AS DETAILED WITH NON-RISERGSTEM, (BAST DORDAN RON WORKS, AMERICAN FLOW CONTROL, MUBLLER)
- 2. ALLIN LINE GATE VALVES EIGHT (B) INCH AND LARGER SHALL BE IN WELLS. SPECIFICATIONS SPALL INCLUDE THE DIRECTION OF OPERATION OF ALL VALVES (CLOCKWISE CLOSURE), VALVE BON USE TO BE APPROVED BY EXCENTED DIVISIO
- 3. ALL GATE WELL COVERS SHALL BE CITY OF ROCHESTER HILLS STANDARD AS DETAILED.
- I. ALL GATE VALVES WITH OPERATURI NUTS AT A DISTANCE GREATIRE THAN FIVE (5) FIRET BELOW GROUND SURFACE SHALL BE PROVIDED WITH AS EXTENSION STEM, THE LENGTH OF THE EXTENSION STEM SHALL RELEASE WITHIN FIVE (5) FIRET FROM THE ORGINAL SHEALER WHEN AN FIXTHESION STEM IS USED, IT SHALL BE HELD IN FLACH BY AN EXTENSION STEM SHOPE SHITTABLY FASTENED TO THE WALL OF THE GATE WELL. THE EXTENSION STEM SHALL BE ALSO HAVE ATTACHED TO THE OPERATION ONLY DESTALLATION.
- BUTTERFLY, VALVES SHALL BE USED FOR VALVES GREATER THAN 16-INCH DIAMETER AND SHALL BE MODEL 2F11
  AS MANUFACTURED BY IENRY PRATT COMPANY OR APPROVED EQUAL.
- 6. TAPPING VALVES SHALL BUSERIES 'A' AS MANUFACTURED BY EAST JOHDAN TRON WORKS OR RESILIENT SEATED GATE VALVES AS APPROVED BY THE CITY OF ROCHESTER HILLS ENGINEERING SERVICES.
- TAPPING SLEEVES SHALL BE MANUEACTURED BY ROMAC INFLISTRIES; MUELEER, BAST JORDAN, SMITHERIAR OR APPROVED FOULL AND APPROVED BY THE CITY OF ROMENSTER BILLS, FULL BODY SLEEVES MUST BE USED EXCEPT FOR REIPFONCED CONCEPTE PRINSINGE PIPE OR ACT, PIPE.

### HYDRANT REQUIREMENTS

- . ALI, HYDRANTS SHALL BE CONSTRUCTED WITE A SIX (6) INCH COMPANION OATE VALVE IN A THREE (3) VIECE, ADJUSTABLE DUCTILE INCH VALVE BOS, WHICH SHALL INCLODE, A FIVE AND ONCOMPROVE (5-04) INCH SCREW SHAFT. VALVE BOXES SHALL BE SERIES 660 A MANUFACTURED BY TYLER PIPE OR A PROVED 10/040.
- 2. ALL HYDRÁNTS SHALL BE SEKIES 8600 AS SIANOVACIOARE DE TELER THE DA ATLANDA QUAR-LA LL HYDRÁNTS SHALL BE EAST JORDÁN IRON-WORKS NO: 5-BR-250 TRAFFECMÓDEL, OK AMERICAN FLOW BONTROL MODEL WB-67250, SELFORÁNNIKU HYBRANTS SHALL NOT BE USED. HYDRÁNTS SHALL HAVE BREAKAWAY ELÁNGE.
- 3 ALL HYDRANTS SHALL B5 PAINTED RED ABOVE GROUND AND BLACK BELOW GROUND WITH A FINISH COAT OF GLAMORTER SOL ENAMISL, COLOR 314 VERMILLION OR APPROVED EQUAL, HYDRANT CAPS SHALL BE PAINTED SAME COLOR AS THE HYDRANT.
- 4. ALL FIRE HYDRANT JOINTS SHALL HE TOTALLY RESTRAINED BY THE USE OF RESTRAINED JOINT. THRUST BLOCKS ARE ALSO RIQUISED.

### ACCEPTANCE OF NEW WATER MAINS

- I. PRIOR TO WATER MAIN ACCEPTANCE THE POLLOWING CONDITIONS MUST BE MEE: IT PRESSURE TESTING AND BACTORIA TESTING MUST BE COMPLETED IN ACCORDANCE WITH THE CITY OF ROCHESTER MILES 3) ALL RASEMENT AND RIGHT-OF-WAY ACQUISITION MUST BE ACCEPTED BY THE CITY OF ROCHESTER HILLS ENGINEERING SERVICES 3) THE C.Y OF ROCHESTER HILLS ENGINEERING SERVICES DITHE C.Y OF ROCHESTER HILLS ENGINEERING SERVICES DITHE C.Y OF ROCHESTER HILLS ENGINEERING SERVICES THE CATY OF ROCHESTER RILLS, ENGINEERING SERVICES, THE CITY OF ROCHESTER RILLS, ENGINEERING SERVICES, THE CITY OF ROCHESTER HILLS INSPECTION POTHER WAIN TO THE EXISTING WATER MAIN, AFTER WHICH RESIDENTIAL AND COMBINERCIAL TAPS WILL BE ALLOWED.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF ROCKESTER HILLS, INSPECTION DEPARTMENT (248.841.2510) FOR PRESSURE TESTING, BACTERIOLOGICAL SAMPLING, CONNECTIONS TO EXISTING WATER MAIN AND FINAL FIRED REVIEW. A FORTY-EIGHT (48) HOUR ADVANCE NOTICUT'S REQUIRED.
- 3. THE CONTRACTOR STALL DISINFECT AND PRESSURE TEST ALL NEW WATER MAIN PLACCORDANCE WITH ROCHESTER HILLS STANDARDS, THE WATER MAIN SHALL PASS A 150 PSI-PRESSURE TEST FOR A TWO (2) HOUR PERIOD, WATER LOSS SHALL NOT EXCEPD A RATE OF 11.63 U.S. GALLONS PER INCH QUAMETER FER MILE OF WATER MAIN IN TWENTY-FOUR (24) HOURS.
- 4. WHERE CONTRACTOR SUPPLIED GAUGES ARE REQUIRED, MISIMUM SIZE SHALL BED 62° DIAMETER OR LARGER GRADUATED IN GORE (I) OR TWO (2) POUND INCREMENTS FROM I TO 160 P.S.L. OR HIGHER AND HAVE CURRENT CRATIFICATION.
- 5. PRESSURE TESTING AND BACTERIA TESTING MUST BE COMPLETED AND APPROVED PRIOR TO CONNECTING TO THE EXISTING WATER MAIN.

### CITY OF ROCHESTER HILLS WATER SYSTEMS AS-BUILT DRAWING SPECIFICATIONS

IN AREAS WHERE WATER SYSTEMS ARE OPERATED AND MAINTAINED BY THE COTY OF ROCKESTER FULLS DIPLARIMENT OF PUBLIC SERVICES, FINAL ACCEPTANCE OF THE WATER SYSTEM MUST BE RENDURED BY THE DEPARTMENT OF PUBLIC SERVICES, BEFORE THE SYSTEM CAN BE USED FOR THE SERVICE INTENDED.

ONE ITEM REQUIRED FOR FUNAL ACCEPTANCE SHALL BETHE SUBMISSION OF AS-BUILT DRAWINGS, TO THE CITY OF ROCHERTER HILLS, 1925, BY THE DESIGN ENGINEER, AS-BEILT DRAWINGS SHALL BE DEFINED AS AND CONTAIN THE FOLLOWING INFORMATION:

- 1. FINAL AS-BUILT DRAWINGS SHALL BE PROYIDED ON THREE (1) MIL. MYLAR. XEROX OR ANY HEAT PROCESS REPRODUCTIONS WILL NOT BE ACCEPTED.
- ALONG WITH THE MYLAR-PLAN SET, PROVIDE THREE (3) SPORGE BLUEPRINTS, PRODUCED FROM THE MYLARS AND THE PLANS ON BLECTRONIC MEDICAIN AUTOCAD FORMAT ILATEST VERSION;
- EACH AND ENTRY SUBET SHALL BE STALED BY THE DESIGN ENGINEER, ALONG WITH THE FOLLOWING CERTIFICATION STATEMENT ON THE COVER SHEET:

THEREBY CERTIFY THAT OUR FIRM HAS PREPARED DIESE AS BUILT DRAWINGS OF THE INTROVEMENTS AS CONSTRUCTED, AND THAT TO THE BEST OF MY KNOWN ESCENTIONED AND THAT TO THE BEST OF MY KNOWN ESCENTIONED THROUGH MY SOUTH AS "AS BUILT WERE CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED CONSTRUCTION FLANS AND ALSO THAT THE WAYEN MAIN AND STRECTIONES, AS CONSTRUCTED, HE WITHIN THE PASEMENT DESCRIPTIONS REQUIRED BY THE CITY OF ROCHESTER BUILS.

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(ENGINEER'S SIONATURE

PROFESSIONAL ENGINEER NO.

ENGINEER SEAL

- 4. THE MAXIMUM SCALE SHALL BE ONE (1) INCH EQUALS FIFTY (SO PEET.
- 5. THE SIZE, LENGTH, CLASS AND MANUFACTURER OF PIPE INSTALLED SHALL BE INDICATED.
- 6. THE SIZE, DRAND AND MODEL NUMBERS OF ALL VALVES AND HYDRANIA INSTALLED SHALL BUINDICATED
- A TOTAL AS BUILT DRAWING QUANTITY LIST SHALL BE INCLUDED, AS WELL AS AN AS-BUILT DRAWING QUANTITY LIST ORDEXCH INDIVIDUAL STREET.
- 8, THE LOCATIONS SHALL BE SHOWN ON THE PLANS WITH AN ACCURACY OF ONE (1) FOOT.
- .9. THE OFFSEE OF THE WATER MAIN FROM PROPERTY LINES SHALL BE INDICATED.
- 19. ALL GATE VALVE WELLS, HYDRANTS AND ALL WATER SYSTEM APPURTENANCES SHALL BE LOCATED FROM TWO FIXED OBJECTS (MANHOLES, BUILDING CORNERS ECT.).
- JI, ALL DNIDERGROUND APPLIETENANCES, SUCH AS GATE VALVE WELLS, METER PITS, PRESSURE REDUCING VALVE PITS, ETC. SHALL BELOCATED FROM THE NEAREST HYDRANT THAT IS CONNECTED TO THE SAME WATER MAIN AS THE APPLICENANCE.
- 12. THE LOCATION AND SIZE OF EVERY RESTRAINED JOINT SHALL BE NOTED.
- 13. The accurate location of all utility grossings where the vertical separation, is dess than it stall be noted.
- 44, AS-BUILT SHALL BE PREPARED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS AS-BUILT GUIDELINES AS PROVIDED AT THE PRE-CONSTRUCTION MEETING.



REVISIONS DATE APPROVED BY
ONLY COUNCIL, DATE: JULY 21, 2008
PREPARED BY ENGINEERING DIVISON
OF PARTMENT OF PUBLIC SERVICES
CONSTRUCTION
NOTIFY ROCHESTER BILLS
ENGINEERING DIVISON
OF PARTMENT OF PUBLIC SERVICES
CONSTRUCTION

DAMAGE TO HYDRANT IS POSSIBL

City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

WATER MAIN STANDARD DETAILS

NOT TO SOALE

DATE: 7/21/2008

SHEET C-25

MATERIAL LIST:		
SHADE TREES  QTY KEY BOTANICAL / COMMON NAME SIZE ROOT  9 AS Acer Saccharum 'Commemoration' / Commemoration Sugar Maple 3" cal 8&B  6 BN Betula Nigra / River Birch 3" cal 8&B  3 CE Celtis occidentalis / Common hackberry 3" cal 8&B  4 GB Ginkgo billoba 'Lakeview' / Lakeview Maidenhair Tree 3" cal 8&B  5 GT Gleditsia triacanthos Inermis / Thornless Honeylocust 3" cal 8&B  18 LD Liriodendron / Tulip Tree 3" cal 8&B  6 MG Metasequoia Glyptostrobodies / Dawn Redwood 3" cal 8&B  27 TG Tilla cordata 'Greenspire' / Greenspire Linden 3" cal 8&B	SHRUBS i→ Buffers & Detention Areas           Unit Cost         Total / Item         QTY         KEY         BOTANICAL / COMMON NAME         SIZE / Spacing         ROUT         Unit Cost         Total / Item           330.00         2,970.00         21         AA         Aronia arbutlfolia 'Brillantissima' / Brillantissima' / Brillantis	COST FOR 8 - SINGLE FAMILY UNITS. Refer to sheet LA - 1.2 10,000.00 COST FOR 4 - DUPLEX FAMILY UNIT BUILDINGS. Refer to sheet LA - 1.3 7,540.00 RRIGATION COST 28,000.00 TOTAL LANDSCAPE COST \$119,029.00  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
EVERGREEN TREES           8         AB         Ables Concolor / Concolor White Fir         10' Ht.x 5'Sp         8&B           18         PG         Picea Glauca / White Spruce         2 10' Ht.x 5'Sp         8&B           11         PS         Pinus Strobus / White Pine         10' Ht.x 5'Sp         8&B           15         TC         Tsuga Canadensis / Canadian Hemlock         10' Ht.x 5'Sp         8&B	PER   No. 0   136.00   156.0	ALL EVERGREEN AND DECIDUOUS TREES MUST BE FIELD VERIFIED AND PLANTED AT LEAST 15' FEET FROM OVERHEAD UTILITY WIRES.  THE MATURE MAXIMUM HEIGHT FOR ALL GROUNDCOVERS
ORNAMENTAL TREES  8 AC Amelanchier canadensis / Shadblow Serviceberry 2" cal or 6' Ht. B&B 6 AcR Amelanchier canadensis 'Refzam' / Reflection Shadblow Serviceberry 2" cal or 6' Ht. B&B 7 Brit Betula Nigra 'Little King Fox Valley 2" cal or 6' Ht. B&B 6 MP Malus 'Prairifire' / Prairifire Crab 2" cal or 6' Ht. B&B 4 SR Syringa reticulata 'Ivory Silk ' Ivory Silk Lilac 2" cal or 6' Ht. B&B	250.00 2,000.00 LAWN T.B.D. 8,633 SY 1.25 10,791.0 250.00 1,500.00 +/- Seed T.B.D. SY 265.00 1,590.00 1,590.00 H/- Sod (owner's option)  1,600.00 IRRIGATION  Refer to Sheet IR - 1 for plan and material list prepared by SiteOne LS 28,000.0	AN AUTOMATIC IRRIGATION SYSTEM IS INCLUDED FOR ALL LANDSCAPE AREAS AS REQUIRED BY CITY OF ROCHESTER
5.00 G1 De P	Bnk 2 2 2 2 45 45 45 45 45 45 45 45 45 45 45 45 45	15
No. of the second secon	LA Contractor to restore all disturbed area with wetland seed mix.  SEE LA 2.0 FOR SPECS	LANDSCAPE PLANTING PLAN & PROBABLE COST ESTIMATE

**NŰÑEZ** DESIGN



PROJECT:
CRESTWYK ESTATES PUD
SECTION 24 TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
CITY FILE # 17-013

CLIENT: M2J1, LLC

JIM POLYZOIS
14955 TECHNOLOGY DRIVE & SHELBY TOWNSHIP. MI Phone: 585,421,5729

Revised per City Review 12/7/17

CITY SUBMITTAL 10/9/2017

PRELIM DESIGN 04/25/2017

Date 04/21/2017

249 Park Street
Troy, Mchigan 48083
P. 246 224 5933
nunezdesignin@gmail.com
Designed / Drawn RN
Designed / Approved JN/RN

Checked / Approved JN/RN Job # N01-20





### NOTES:

THIS PARCEL IS EXEMPT FROM THE CITY TREE PROTECTION ORDINANCE.

AN AUTOMATIC IRRIGATION SYSTEM IS INCLUDED FOR THE LANDSCAPE AREAS AS REQUIRED BY CITY OF ROCHESTER HILLS REQUIREMENTS AT FINAL APPROVAL.

PROBABLE COST OF THE LANDSCAPE MATERIAL IN INCLUDED ON THE PLANS FOR FINAL APPROVAL. Refer to Sheet LA - 1.1

### CITY OF ROCHESTER HILLS MAINTENANCE NOTES 138-12.109 1 LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE

FROM DEBRIS AND REFUSE

FROM DEBRIS AND REFUSE
2 FRUNNG SHALL BEMINIMAL AT TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED
BRANCHES SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE
THEIR APPROVED PURPOSE.
3 ALL DEAD, DIAMOGED OR DISEASED PLANT MATERIAL SHALL BE REMOVED IMMEDIATELY AND
REPLACED WITHIN (6) SIX MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICH EVER
COMES FIRST THE PLANTING SEASON FOR DECIDIOUS PLANTS SHALL BE BETWEEN MARCH I AND
JUNE I AND FROM COT I UNTIL THE PREPARED SOL FREEZES THE PLANTING SEASON FOR
EVERGREEN PLANTS SHALL BE STEVEEN MARCH I AND JUNE I PLANTI MATERIAL INSTALLED TO
REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE
ANTERIOR TO WITE MEDIATION OF BERLIES.

MATERIAL IT IS INTENDED TO REPLACE. THE CITY MAY NOTIFY PROPERTY OWNERS OF THE NEED TO REPLACE DEAD, DAMAGED, OR DISEASED MATERIAL.

TO REPLACE DEAD, DAMAGED, OR DISEASED MATERIAL.

THEAPPROVIDE LARIDSCAPE PLAN SHALL BE CONSIDERED A PERMANENT RECORD AND INTEGRAL
PART OF THE SITE PLAN APPROVAL. UNLESS OTHERWISE APPROVED, ANY REVISIONS OR REMOVAL
OF PLANT MATERIALS, OR NON-COMPLIANCE WITH THE MAINTENANCE REQUIREMENTS OF SECTION
138-12 109 WALL PLACE THE PARCEL IN NON-CONFORMITY WITH THE APPROVED LANDSCAPE PLAN
AND BE A VIOLATION OF THE ORDINANCE
SI FPROTECTED TREES ARE DAMAGED, A FINE SHALL BE ISSUED ON AN INCH BY INCH BASIS AT A
MONETARY RATE AS DEFINED BY THE FORESTRY DEPARTMENT

### LANDSCAPE BUFFER STANDARDS

JOHN R - FRONTAGE EAST PROPERTY BOUNDARY: TYPE 'C' BUFFER - 267 LF

		REQUIRED	EXISTING	PROPOS
Deciduous Shade Trees	267 x 2 = 5.34	6	2	4
Evergreen Trees	$267 \times 4 = 106$	11	-	11
Ornamental Trees	267 x 15 = 4	4	-	4
Shrubs	267 x 6 ≈ 16	16		17

NORTH PROPERTY BOUNDARY: TYPE 'B' BUFFER - 725 LF								
		REQUIRED	EXISTING	PROPOSED				
Deciduous Shade Trees	7.25 x 2 = 14 5	15	6	9				
Evergreen Trees	$7.25 \times 2 = 14.5$	15	-	16				
Ornamental Trees	7.25 x 1.5 = 11.8	12	-	12				
Shrubs	7 25 x 4 = 29	29	-	29				

### GRAVEL RIDGE DRIVE - FRONTAGE WEST PROPERTY BOUNDARY: TYPE 'C' BUFFER - 267 LF

			REQUIRED	EXISTING	PROVIDE
Deciduous Shade Trees	267 x 2	= 5.34	6		8
Evergreen Trees	2.67 x 4	= 10.6	11	-	10
Ornamental Trees	267 x 15	= 4	4		2
Shrubs	267x6	= 16	16		24

SOUTH PROPERTY BOUNDARY: TYPE 'B' BUFFER - 725 LF					
		REQUIRED	EXISTING	PROP	
Deciduous Shade Trees	7 25 x 2 = 14.5	15	10	8	
Evergreen Trees	$725 \times 2 = 14.5$	15	-	15	
Ornamental Trees	7 25 x 15 = 11.8	12	-	12	
Shrubs	7 25 x 4 = 29	29		41	

### STORMWATER DETENTION BUFFER: 400 LF

			REQUIRED	EXISTING	PROPOSED
eciduous Shade Trees	4.0 x 1 5	=	6	2	8
vergreen Trees	40 x 1	=	4		
rnamental Trees	NA			-	-
hrubs	40 x 4	=	16		16

### STREET R.O.W. TREES:

	REQUIRED	PROPOSE
DAD LENGHT (732 65LF. / 35' = 21 X 2) =	42	42 TREES
CALIPER INCHES STREET TREES		

### PLANT MATERIAL REQUIREMENTS:

	REQUIRED
Deciduous Shade Trees	3 CALIPER INCHES* • • • •
Evergreen Trees	10 FEET HEIGHT AND 5 FEET SPREAD
Ornamental Trees	2 CALIPER INCHES* OR 6 FEET OVERALL HEIGHT
Shrubs	30 INCHES IN HEIGHT, 24 INCHES IN SPREAD WHEN

	OSED FOR SCIELLING ON BOTT ENING FOR C
	3 GALLON CONTAINED SIZE WHEN USED FOR
	OTHER PURPOSES
-	

TREE PRES	SERVATION LIST:			TREE PRES	ERVATION LIST:		
Saved Trees	Species	DBH (in.)	Condition	Wetland Trees	Species	DBH (in.)	Condition
1203	Blue Spruce	7	Far	7132	Bitternut Hickory	6	Good
1204°	White Oak	24	Good	1285	Shagbark Hickory	7.5	Good
1205*	White Oak	19.5	Good	1286	American Elm	17	Dead
1206	Red Oak	21.5	Fair	1289	Pignut Hickory	7.5	Good
1207*	Norway Spruce	11	Fair	1290	White Oak	9.5	Fair
1208*	Norway Spruce	10	Poor	1299	Shagbark Hickory	7.5	Fair
1214	Red Oak	41.5	Good Landmark	7130	Boxelder	6	Fair
1215	White Oak	26.5	Good	1538	Red Maple	12.5	Good
1216	Black Oak	21.5	Far	1537	Swamp White Oak	9	Good
1217	Black Oak	29	Far	1536	Red Maple	7	Good
1218	Norway Maple	7	Good	1535	Silver Maple	27.5	Good
7146	White Mulberry	7	Fair	1534	Red Maple	7.5	Good
1280	Basswood	8.5	Good	1533	Swamp White Oak	9	Good
1283	Shaqbark Hickory	7	Good	1532	Silver Maple	8	Good
	,			1531	Silver Maple	18	Good
Offsite Trees	Species	DBH (In )	Condition	1530	Silver Maple	18	Good
1202	Blue Spruce	8	Good	1529	Silver Maple	95	Good
1209	Norway Spruce	15.5	Fair	1528	Red Maple	21	Poor
1210*	Norway Spruce	14	Fair	1527	Silver Maple	16	Good
1211*	Norway Spruce	7	Fair	1526	Swamp White Oak	11	Good
1212	Norway Spruce	8	Fair	7137	American Elm	6	Good
1213	Norway Spruce	7.5	Fair	1516	Red Maple	17.5	Good
1254	Pignut Hickory	11.5	Good	1515	Silver Maple	14	Fair
1405 (Not on:	survey)			1514	Red Maple	28.5	Good
1282	Pignut Hickory	8	Good	1514	Silver Maple	29.5	Good
1308	Black Cherry	15	Far	1520	Red Maple	19	Good
1338 R O W	Black Cherry	7	Good	1519	Red Maple	32	Fair

Black Oak

7144 R O.W. White Oak

Typical Landscape Wall,

LA Contractor to restore all disturbet area with wetland seed mix

Refer to Engineering

13.5 24.5

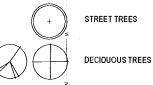
Red Maple

Red Maple

1518 1517

Good Good Good





STREET TREES



**EVERGREEN TREES** 



ORNAMENTAL TREES



Plantings Setbacks

Refer to Sheet SP-1.2 for Sections

SHRUBS & GROUND COVERS

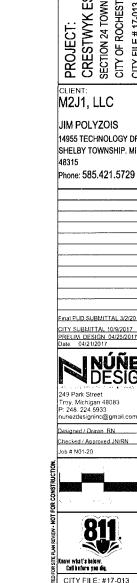


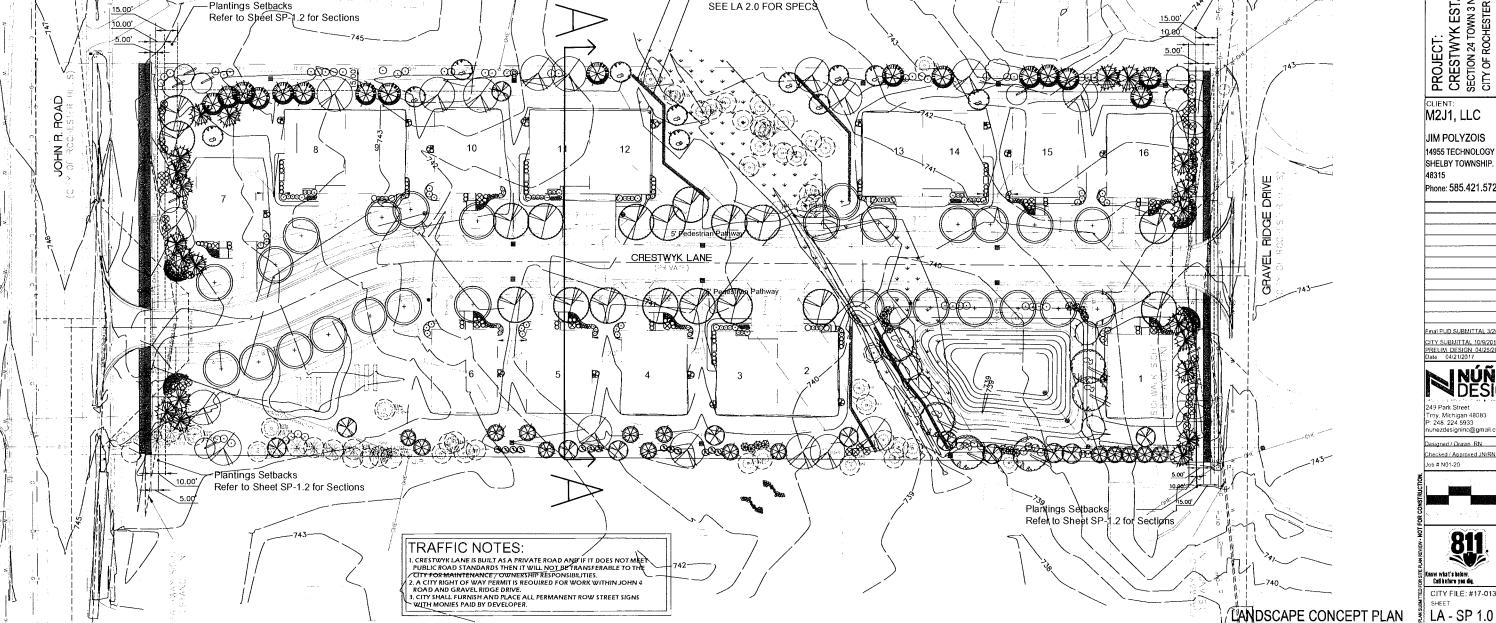
PUD PROJECT:
CRESTWYK ESTATES P
SECTION 24 TOWN 3 NORTH, RA
CITY OF ROCHESTER HILLS
CITY FILE # 17-013

CLIENT M2J1, LLC

JIM POLYZOIS 14955 TECHNOLOGY DRIVE SHELBY TOWNSHIP, MI 48315

Phone: 585.421.5729

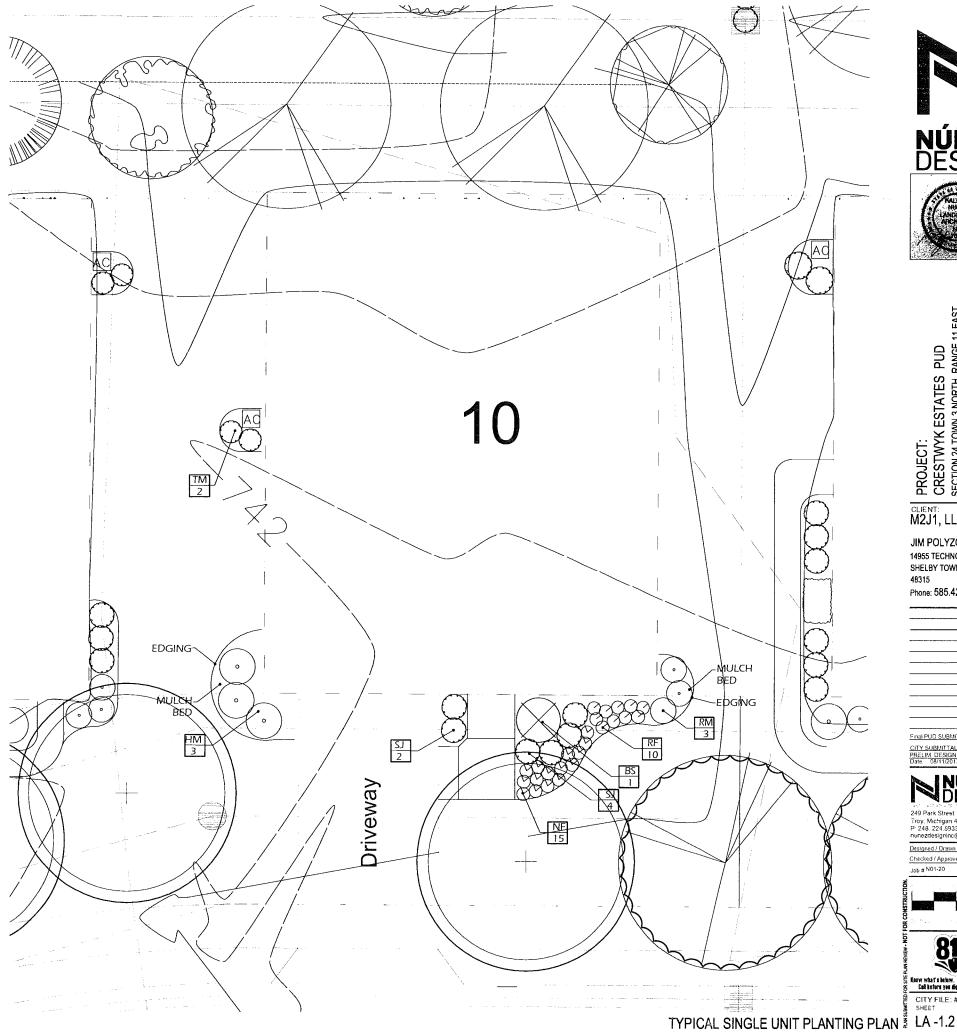




### MATERIAL LIST: Single Family Unit SHRUBS QTY KEY BOTANICAL / COMMON NAME Unit Cost SIZE ROOT Total / Item Buxus sempervirens ' Highlander' / Highlander Common Boxwood 36"ht, 24"sp No. 3 60.00 60.00 24"ht, 24"sp нм Hydrangea m. 'Glowing Embers' / Glowing Embers Hydrangea No 3 50.00 150 00 ŘM Rosa 'Melvahyn' / Knockout Rose 18"ht, 18"sp No. 3 50.00 150.00 Spiraea japonica 'Little Princess' / Little Princess Spiraea 18"ht, 18"sp No. 3 45.00 270.00 2 TM Taxus x media 'Densiformis' / Densiformis Yew 30"ht, 24"sp 55.00 110.00 PERENNIALS Nepeta x faassenii 'Walker's Low' / 'Walker's Low Nepeta' 18"ht, 12"sp No. 3 12.00 180.00 10 RF Rudbeckia Fulgida 'Goldsturm' / Black Eyed Susan 12.00 120.00 PLANTING MATERIALS Plant Mix 25.00 CY 75.00 Shredded Hardwood Mulch Installed . . . 45:00 CY 135.00 Terra Sorb or Approved Equal Edging T.B.D. PER UNIT COST \$ 1,250.00 UNIT COST FOR 8 - SINGLE FAMILY UNITS \$10,000.00

THE MATURE MAXIMUM HEIGHT FOR ALL GROUNDCOVERS AND PLANTINGS WITHIN THE 25' CLEARZONE IS 30" IN HEIGHT UNMAINTAINED.

AN AUTOMATIC IRRIGATION SYSTEM HAS BEEN PROVIDED FOR THE LANDSCAPE AREAS AS REQUIRED BY CITY OF ROCHESTER HILLS REQUIREMENTS FOR FINAL REVIEW. REFER TO SHEET IR-1





PROJECT:
CRESTWYK ESTATES PUD
SECTION 24 TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
CITY FILE # 17-013

CLIENT: M2J1, LLC

JIM POLYZOIS 14955 TECHNOLOGY DRIVE SHELBY TOWNSHIP. MI 48315 Phone: 585.421.5729

Final PUD SUBMITTAL 3/2/2018 CITY SUBMITTAL 10/9/2017 PRELIM DESIGN 04/25/2017 Date: 08/11/2017

249 Park Street Troy, Michigan 48083 P: 248, 224,5933 nunezdesigninc@gmail.com

Designed / Drawn RN Checked / Approved JN/RN



CITY FILE: #17-013 SHEET

### MATERIAL LIST: Duplex Unit

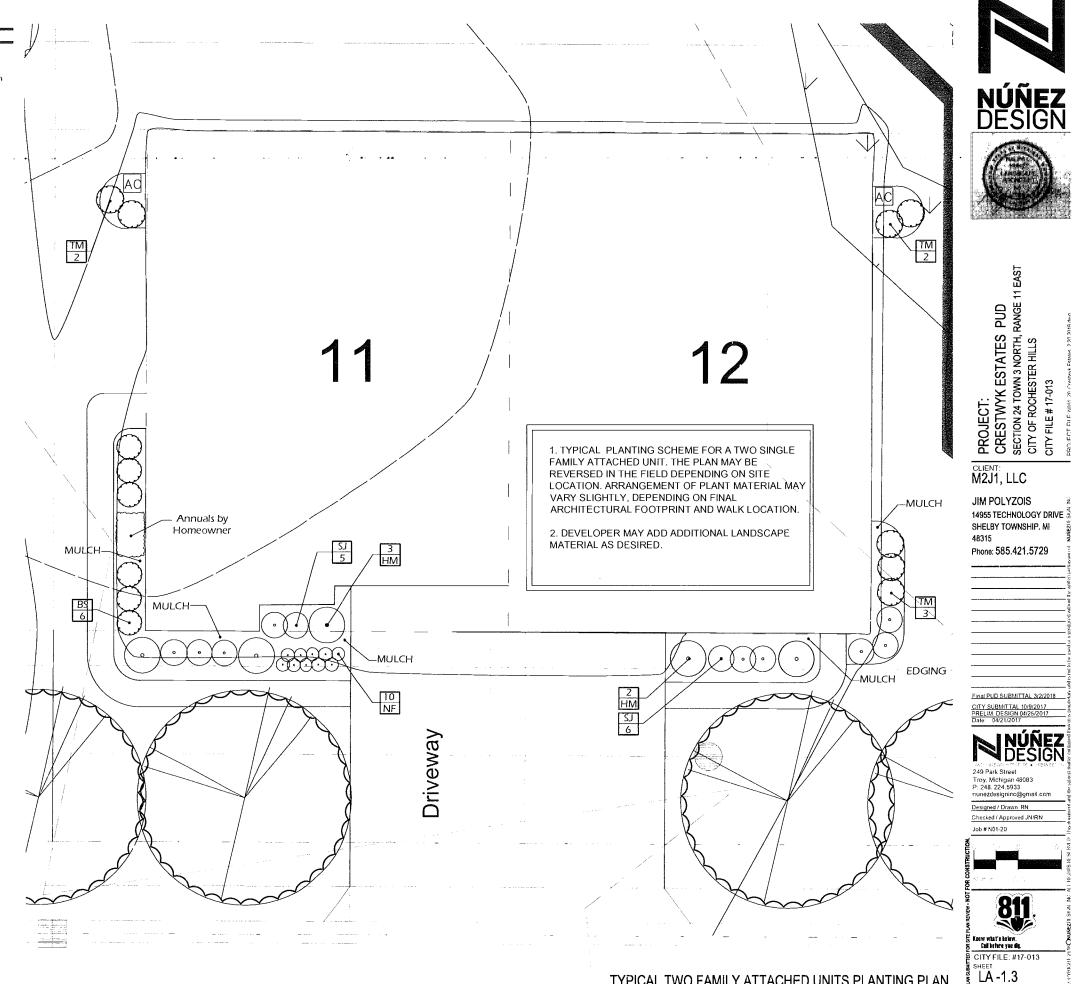
SHR	เบเร					
QTY	. KE	/ SCIENTIFIC / COMMON NAME	SPECIFICA	ATION	Unit Cost	Total / Item
4	НМ	Hydrangea m. 'Glowing Embers' / Glowing Embers Hydrangea	24"ht, 24"sp	No. 3	50.00	200.00
11	SJ	Spiraea japonica 'Little Princess' / Little Princess Spiraea	18"ht, 18"sp	No. 3	45.00	495.00
7	TM	Taxus x media 'Densiformis' / Densiformis Yew	30"ht, 24"sp	No. 5	60.00	420.00
6	BS	Buxus Sinica insularis 'Wintergreen' / Wintergreen Korean Boxwood	18"ht, 18"sp	No. 3	50.00	300.00
10	NF	Nepeta x Faassenii 'Walker's Low' / 'Walker's Low' Nepeta	18"ht, 18"sp	No. 3	12.00	120.00
ANN	IUAL	S - by home owners				
PLA	NTIN	G MATERIALS				
+/- 5		Plant Mix			25.00	125.00
+/- 5		Shredded Hardwood Mulch Installed			45.00	225.00
+/-		Terra Sorb or Approved Equal				
+/-		Edging T.B.D.				
		COST PER DUPLEX UNIT				\$1,885.00

\$7,540.00

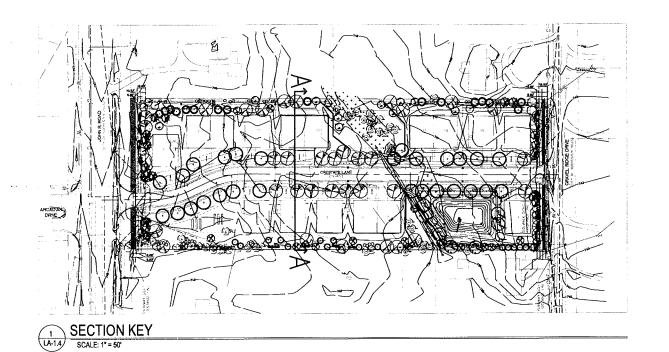
THE MATURE MAXIMUM HEIGHT FOR ALL GROUNDCOVERS AND PLANTINGS WITHIN THE 25' CLEARZONE IS 30" IN HEIGHT UNMAINTAINED.

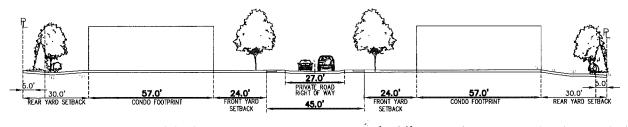
**COST FOR 4 - DUPLEX UNIT BUILDINGS** 

AN AUTOMATIC IRRIGATION SYSTEM HAS BEEN PROVIDE FOR THE LANDSCAPE AREAS AS REQUIRED BY CITY OF ROCHESTER HILLS REQUIREMENTS AT FINAL, REFER TO SHEET IR-1



TYPICAL TWO FAMILY ATTACHED UNITS PLANTING PLAN





SECTION A-A: GRAVEL RIDGE DRIVE

SCALE: 1' = 20'



PROJECT:
CRESTWYK ESTATES PUD
SECTION 24 TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
CITY FILE # 17-013

CLIENT: M2J1, LLC

JIM POLYZOIS 14955 TECHNOLOGY DRIVE SHELBY TOWNSHIP. MI

Phone: 585,421,5729

Final PUD SUBMITTAL 3/2/2018 CITY SUBMITTAL 10/9/2017 PRELIM DESIGN 04/25/2017 Date 04/21/2017

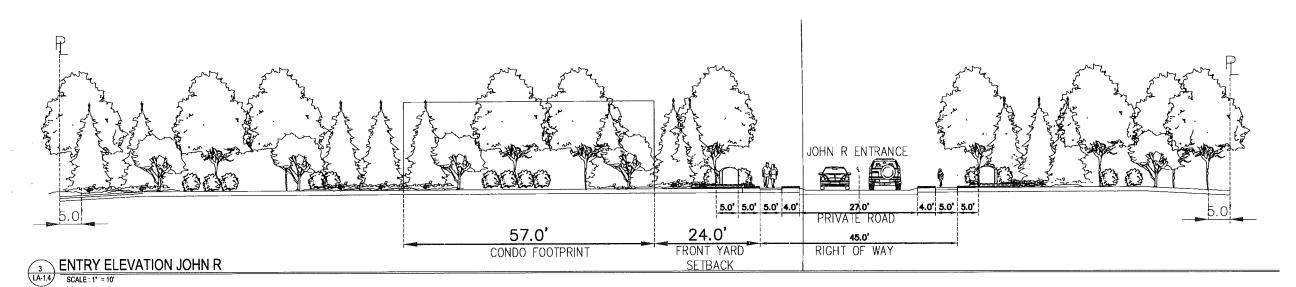
249 Park Street Troy, Michigan 48083 P: 248, 224,5933 nunezdesigninc@gmail.c

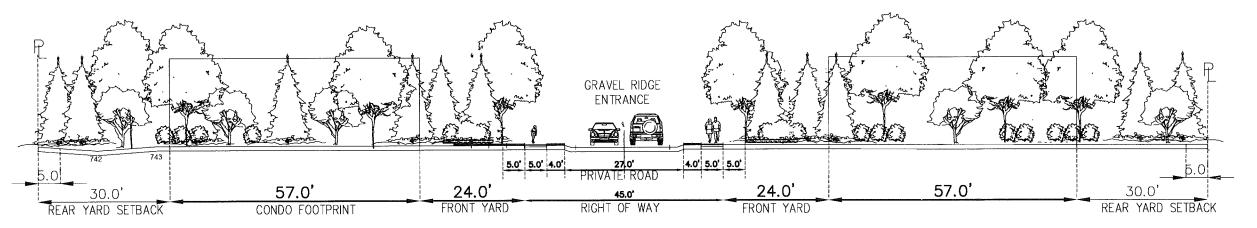
Designed / Drawn RN

Checked / Approved JN/RN



LA -1.4





- ALL PLANT MATERIAL SHALL MEET CURRENT STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN AND APPROVED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE, INC.
- 2. ALL PLANT MATERIAL SHALL BE TRUE TO NAME IN COMFORMANCE TO THE CURRENT EDITION OF STANDARDIZED PLANT NAMES ESTABLISHED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE, OR OTHER SOURCE ACCEPTED BY THE CITY.
- 3. ALL PLANT MATERIAL SHALL BE NURSERY GROWN IN A NORTHERN CLIMATE; HARDY TO THE CLIMATE OF MICHIGAN; APPROPRIATE FOR THE SCIL; CLIMATIC AND ENVIRONMENTAL CONDITIONS; AND RESISTANT TO DISEASE AND INSECT ATTACK.
- 4. A MINIMUM FOUR (4) INCHES OF TOPSOIL SHALL BE PROVIDED FOR ALL LAWN AREAS, GROUND COVERS, AND PLANTING BEDS.
- 5. ARTIFICIAL PLANT MATERIAL IS PROHIBITED AND SHALL NOT BE USED TO MEET THE REQUIREMENTS OF THIS ARTICLE.
- 6. LAWN AREAS SHALL BE PLANTED IN SPECIES OF GRASS NORMALLY GROWN IN MICHIGAN. GRASS MAY BE SODDED OR HYDRO-SEEDED, PROVIDED THAT ADEQUATE MEASURES ARE TAKEN TO MINIMIZE SOIL EROSION. SOD OR SEED SHALL BE CLEAN AND FREE OF WEEDS AND NOXIOUS PESTS OR DISEASE.
- 7. A MINIMUM 4-INCH LAYER OF SHREDDED HARDWOOD BARK SHALL BE PLACED IN ALL PLANTER BEDS CONTAINING TREES OR SHRUBS AND AROUND THE BASE OF ALL TREES PLANTED WITHIN LAWN AREAS. ALL SHRUBS PLANTED WITHIN LAWN AREAS ARE TO BE PLANTED IN GROUPS AND MULCHED AS A GROUP, AND HEDGEROWS ARE TO BE MULCHED AS ONE CONTINUOUS STRIP.
- 8. LIVE GROUNDCOVERS SUCH AS MYRTLE, BLUE RUG JUNIPERS, BALTIC IVY AND OTHER SIMILAR VINES AND PLANT MATERIAL SHALL BE MULCHED WITH A 2-INCH LAYER OF SHREDDED HARDWOOD BARK. ANY DEVIATIONS MUST BE APPROVED BY THE CITY'S LANDSCAPE ARCHITECT.
- 9,PLANT MATERIALS SHALL NOT BE PLACED CLOSER THAN FOUR FEET FROM THE FENCE LINE OR
- 10. DECIDUOUS AND ALL SHRUBS MAY NOT BE PLANTED WITHIN 5 FEET, AND EVERGREEN TREES MAY NOT BE PLANTED WITHIN TEN (10) FEET OF ANY CURB OR PUBLIC WALKWAY.
- 11. TREES AND SHRUBS MAY NOT BE PLANTED WITHIN 10 FEET OF A FIRE HYDRANT
- 12. WHERE PLANT MATERIALS ARE PLANTED IN TWO OR MORE ROWS, PLANTING SHALL BE STAGGERED IN
- 13. WHERE SHRUB PLANTINGS ARE REQUIRED TO FORM A CONTINUOUS HEDGE. THE PLANTS SHALL NOT BE 13. WHERE SHADE JEANN THESE AND REPORTED TO FORM A CONTINUOUS CHARLES AND SHALL HAVE A MINIMUM HEIGHT AND SPREAD OF 30 INCHES AT PLANTING. SHRUBS THAT WILL NOT ATTAIN SUFFICIENT WIDTH TO FORM A COMPLETE HEIGE SPACED 36 INCHES ON CENTER SHALL BE PLANTED AT A SPACING THAT WILL ALLOW THEM TO FORM A COMPLETE HEIGE WITHIN TWO YEARS OF PLANTING.

### RESPONSIBILITY NOTES

- 1. LANDSCAPE CONTRACTOR SHALL VISIT SITE. INSPECT EXISTING CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, THE PLAN SHALL GOVERN QUANTITIES. CONTACT LANDSCAPE ARCHITECT WITH ANY CONCERNS
- 2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON-SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION MAY BE LOCATED BY CALLING MISS DIG 1-800-482-71/1. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES ON THE JOB AND SHALL REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNERS REPRESENTATIVE PRIOR TO COMMENCING.
- 3. CONTRACTOR WILL SUPPLY FINISHED GRADE AND EXCAVATE AS NECESSARY TO SUPPLY 4" TOPSOIL DEPTH IN ALL PLANTING BEDS AND 4" TOPSOIL DEPTH IN ALL LAWN AREAS USING MATERIAL FROM SPOIL PILE.
- 4 ACCEPTANCE OF GRADING AND SOD SHALL BE BY THE LANDSCAPE ARCHITECT AND/OR PROJECT 4. ACCEPTANCE OF GRADING AND SOID SHALL BE BY THE LIANDSCAPE ARCHITECT AND AN ANTENANCE RESPONSIBILITY FOR A MINIMUM OF TWO (2) YEARS, MAINTENANCE SHALL INCLUDE WATERING, WEEDING, REPLACEMENTS OF WASHOUTS AND OTHER OPERATIONS NECESSARY TO KEEP SOD IN A THRIVING CONDITION, UPON FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT AND/OR PROJECT REPRESENTATIVE AND AS DETERMINED BY THE CITY. THE OWNER SHALL ASSUME ALL MAINTENANCE RESPONSIBILITIES.
- 5. THE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPING FOR A PERIOD OF TWO (2) YEARS BEGINNING AFTER APPROVAL BY THE CITY OF ROCHESTER HILL'S LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE DURING AND AT THE END OF THE GUARANTEE PERIOD. ANY DEAD OR UNACCEPTABLE PLANTS. AS DETERMINED BY THE CITY OF ROCHESTER HILL'S LANDSCAPE ARCHITECT. WITHOUT COST TO THE
- 6. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON LANDSCAPE PLAN PRIOR TO PRICING THE WORK.

### LANDSCAPING NOTES

- 1. PRIOR TO THE RELEASE OF THE PERFORMANCE BOND. THE CITY OF ROCHESTER HILLS MUST INSPECT ALL LANDSCAPE PLANTING INCLUDING BUT NOT LIMITED TO EXISTING TREES. REPLACEMENT TREES. BUFFER PLANTINGS, AND PARKING LOT ISLANDS. THE RIGHT-OF-WAY WILL BE INSPECTED BY THE FORESTRY DIVISION TO IDENTIFY ANY PLANTINGS NEW OR EXISTING THAT POSE A HAZARD TO THE SAFE E OF THE RIGHT-OF-WAY. FORESTRY MAY REQUIRE THE DEVELOPER TO REMOVE AND POSSIBLY
- 2. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10 FROM THE EDGE OF THE PUBLIC R.O.W. SHADE TREES AND SHRUBS MUST BE PLANTED AT LEAST 5 FROM THE EDGE OF THE PUBLIC WALKWAY EVERGREEN AND GRAM-BENTAL TREES MUST BE PLANTED AT LEAST 10 FROM ANY FIRE HYDRANT. SHAD WALKWAY. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10 FROM ANY FIRE HYDRANT. SHAD AND EVERGREEN TREES MUST BE PLANTED AT LEAST 15' FROM THE NEAREST OVERHEAD WIRE AND AT LEAST 10' FROM THE NEAREST UNDERGROUND UTILITY.
- 3. NO TREES OR SHRUBS MAY BE PLANTED WITHIN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY STREET RIGHT-OF-WAY AT A DISTANCE OF 25' FROM THEIR POINT OF INTERSECTION. NO TREES OR SHRUBS MAY BE PLANTED IN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY DRIVEWAY WITH A PUBLIC WALKWAY AT A DISTANCE ALONG EACH LINE OF 15' FROM THEIR POINT OF
- 4. PRIOR APPROVAL IS REQUIRED TO PLANT ANY TREE OR SHRUB IN THE PUBLIC RIGHT-OF-WAY
- 5. NO SUBSTITUTIONS OR CHANGES OF LOCATION OR PLANT TYPES SHALL BE MADE WITHOUT THE APPROVAL OF THE DEVELOPER AND THE CITY OF ROCHESTER HILLS.
- 6. THE DEVELOPER AND/OR THE CITY OF ROCHESTER HILL SHALL HAVE THE RIGHT. AT ANY STAGE OF THE INSTALLATION. TO REJECT HAVY WORK OR MATERIAL THAT DOES NOT MEET THE REQUIREMENTS OF THE PLANS OR SPECIFICATIONS.
- 7 REPLACEMENT TREES MAY NOT BE PLANTED WITHIN THE DRIP LINE OF EXISTING TREES
- 8. NO PLANT SUBSTITUTIONS OR CHANGES OF LOCATION OR PLANT TYPE SHALL BE MADE WITHOUT THI APPROVAL OF THE LANDSCAPE ARCHITECT AND THE CITY'S PLANNING DEPARTMENT. ALL REQUESTS WILL BE SUBMITTED TO THE LANDSCAPE ARCHITECT IN WRITING. THE REQUEST WILL INCLUDE THE REASON FOR THE REQUESTED CHANGE ALONG WITH THE PROPOSED SUBSTITUTION AND HOW IT MEETS THE ORIGINAL THE REQUESTED CHANGE ACOUNTY THE LANDSCAPE ARCHITECT WILL EITHER MAKE RECOMMENDATIONS. APPROVE OR REJECT REQUESTS. IF THE SUBSTITUTION IS NEEDED AND APPROVED. THE LANDSCAPE ARCHITECT WILL FORWARD THE REQUEST AND HIS APPROVAL. THE CITY FOR THEIR APPROVAL. FAILURE TO DO SO WILL RESULT IN PLANTS BEING REJECTED AND REPLACED AT CONTRACTOR'S EXPENSE.
- 9. TREES MUST BE AT LEAST 10' FROM UNDERGROUND UTILITIES AND 15' FROM OVERHEAD UTILITIES
- 10. THESE REQUIREMENTS ARE INCORPORATED INTO THE PLAN.

CITY OF PROCHESTER HILLS NOTES.
1. ALL LANDSCAPE AREAS MUST BE IRRIGATED. WATERING WILL ONLY OCCUR BETWEEN THE HOURS OF 12 AM AND 5 AM IRRIGATION PLAN TO BE PROVIDED AT FINAL SUBMITTAL.

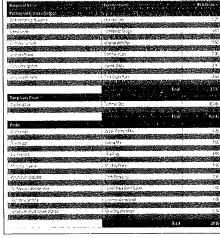
2 SIGNS SHALL MEET THE REQUIREMENTS OF CHAPTER 134 OF THE CITY'S CODE OF ORDINANCES

### TREE PROTECTION NOTES

- 1. THE TREE PROTECTION FENCING (TPF) SHALL BE ERECTED PER THE PLANS APPROVED BY THE CITY OF ROCHESTER HILLS PLANNING DEPARTMENT. THE TPF MUST BE IN PLACE AND BE INSPECTED BY THE CITY OF ROCHESTER HILLS PRIOR TO THE START OF ANY EARTHWORK OR CONSTRUCTION OPERATIONS. IT IS THE DEVELOPER'S RESPONSIBILITY TO CONTACT THE CITY PLANNING DEPARTMENT AT 1-248-656-4660 TO SCHEDULE A TPF INSPECTION. THE TPF SHALL REMAIN IN PLACE THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS OR UNTIL THE CITY AUTHORIZES THE REMOVAL OR ISSUES A FINAL CERTIFICATE OF OCCUPANCY, WHICHEVER OCCURS FIRST.
- 2. UPON COMPLETION OF GRADING AND THE INSTALLATION OF THE INFRASTRUCTURE A SECOND INSPECTION OF THE TPF AND THE TREES DESIGNATED FOR PRESERVATION IS REQUIRED BY THE CITY OF ROCHESTER HILLS PRIOR TO THE START OF ANY ADDITIONAL CONSTRUCTION. IT IS THE DEVELOPER'S RESPONSIBILITY TO CONT
- 3. UPON COMPLETION OF ALL CONSTRUCTION AND PRIOR TO THE REMOVAL OF THE CITY OF ROCHESTER HILLS MUST INSPECT ALL TREES DESIGNATED TO BE PRESERVED. THE LANDSCAPE PERFORMANCE BOND WILL NOT BE RELEASED UNITL THIS INSPECTION IS COMPLETE AND ALL RELATED ISSUES ARE RESOLVED. IT IS THE DEVELOPER'S RESPONSIBILITY TO CONTACT THE CITY PLANNING DEPARTMENT AT 1-248-656-4660 TO SCHEDULE THIS INSPECTION.
- 4. A FINAL INSPECTION BY THE CITY OF ROCHESTER HILLS IS REQUIRED AT THE END OF THE WARRANTY AND MAINTENANCE PERIOD. THE LANDSCAPE MAINTENANCE BOND WILL NOT BE RELEASED UNTIL THIS INSPECTION IS COMPLETE AND ALL RELATED ISSUES ARE RESOLVED. IT IS THE DEVELOPER'S RESPONSIBILITY TO CONTACT THE CITY PLANNING DEPARTMENT AT 1-248-656-4660 TO SCHEDULE THIS
- 5. THE TREE CONSERVATION ORDINANCE PROHIBITS ANY CONSTRUCTION OR DEVELOPMENT ACTIVITIES WITHIN THE DRIP LINE OF AND REGULATED TREES NOT APPROVED FOR REMOVAL. INCLUDING BUT NOT LIMITED TO LAND CLEARING, GRUBBING, TRENCHING, GRADING OR FILLING, NO PERSON SHALL PLACE ANY SOLVENTS, BUILDING MATERIALS, CONSTRUCTION COUPMENT. SOIL DEPOSITS, OR HARMFUL MATERIALS WITHIN THE DRIP LINE LIMIT OF TREES DESIGNATED FOR DEPS SEDIATION.
- 6. PROPOSED GRADES ARE TO MATCH THE EXISTING ELEVATIONS OUTSIDE THE LIMITS OF THE TPF. NO GRADING EITHER OUT OR FILL IS PERMITTED WITHIN THE DRIP LINE OF ANY TREE DESIGNATED FOR PRESERVATION.
- 7. DURING THE CONSTRUCTION PROCESS NO PERSON SHALL ATTACH ANY DEVICE OR WIRE/CABLE/CORD/ROPE TO AN EXISTING TREE DESIGNATED TO BE PRESERVED.
- 8. ALL UTILITY SERVICE REQUEST MUST INCLUDED NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE THE TPF.
- SWALES SHALL BE ROUTED TO AVOID THE AREA WITHIN THE DRIP LINE OF THE ANY DESIGNATED FOR PRESERVATION, SWALES SHALL BE CONSTRUCTED SO AS NOT TO DIRECT ANY ADDITIONAL FLOW INTO THE DRIP LINE A TREE DESIGNATED FOR PRESERVATION.
- 10. IF TREE PROTECTION CANNOT BE MAINTAINED FOR A TREE THROUGHOUT ENTIRE PERIOD REQUIRED. THE REPLACEMENT OF THAT TREE WILL BE REQUIRED ON AND INCH FOR INCH BASIS PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.
- 11. REGULATED TREES LOCATED OFF-SITE ON ADJACENT PROPERTIES THAT MAY BE AFFECTED BY CONSTRUCTION OPERATIONS MUST BE PROTECTED AS DEFINED HERE IN.
- 12 THE TPF SHALL CONSIST OF 4 FOOT HIGH ORANGE SNOW FENCING TO BE INSTALLED AROUND THE DRIP LINE OF ALL TREE DESIGNATED TO BE SAVED. THIS FENCING SHALL BE SUPPORTED BY 6 FOOT METAL T-8A POSTS 5 FEET ON CENTER AND DRIVEN A MINIMUM OF 24 "INTO GROUND. THE TPF FENCING SHALL REMAIN UPRIGHT AND SECURELY IN PLACE FOR THE REQUIRED TIME AS SPECIFIED

- CITY OF ROCHESTER HILLS MAINTENANCE KOTES 138-12.109

  1 LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE
  2 PRUNING SHALL BE MINIMAL AT TAME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.
- 3 ALL DEAD, DAMAGED, OR DISEASED PLANTIMITERIAL SHALL BE RENOVED IMMEDIATELY AND REPLACED WITHIN (6) SIX MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICH EVER COMES FIRST. THE PLANTING SEASON FOR THE DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1 PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE. THE CITY MAY NOTIFY PROPERTY OWNERS OF THE NEED TO REPLACE DEAD,
- TO THE SIZE OF THE MAILEMENT IS INCLIDED TO REPURCE. THE CITY ON TROTTET PROPERTY OWNERS OF THE VECEN OF REPURCE UPON. DAMAGED, OR DISEASED MATERIAL HALL BE CONSIDERED A PERMANENT RECORD AND INTEGRAL PART OF THE SITE PLAN APPROVAL. UNLESS OTHERWISE APPROVED, ANY REVISIONS OR REMOVAL OF PLANT MATERIALS, OR NOW COMPLIANCE WITH THE MAINTENANCE REQUIREMENTS OF SECTION 138-12 109 WILL PLACE THE PARCEL IN NON-CONFORMITY WITH THE APPROVED LAND SCAPE PLAN AND BE A VIOLATION OF THE ORDINANCE
- 5 IF PROTECTED TREES ARE DAMAGED, A FINE SHALL BE ISSUED ON AN INCH BY INCH BASIS AT A MONETARY RATE AS DEFINED BY THI FORESTRY DEPARTMENT.
- water every and room water quality accordated with tables stemmakter, wetler as and constailer, for aniether editing languages for use this Exercity Pleanic scenarios methelogous modific field of gar us and 12 of 16 cotton forth species. Apply at 32.91 FLS pounds out to the



WETLAND SEED MIX DETAIL

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CITY OF ROCHESTER HILLS FORESTRY NOTES

1. PRIOR APPROVAL IS REQUIRED TO PLAINT ANY TREE OR SHRUB ON THE PUBLIC RIGHT-OF-WAY ALL TREES AND SHRUBS MUST BE PLAINTED.

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1. PRIOR APPROVAL IS REQUIRED TO PLAINT ANY TREE OR SHRUB ON THE PUBLIC RIGHT-OF-WAY ALL TREES AND SHRUBS MUST BE PLAINTED. AT LEAST 10' FROM THE EDGE OF THE PUBLIC ROAD, SHADE TREES AND SHRUBS MUST BE PLANTED AT LEAST 5' FROM THE EDGE OF THE PUBLIC WALKWAY, EVERGREEN AND ORNAMENTAL TREES MUST BE PLANTED AT LEAST 10' FROM THE EDGE OF THE PUBLIC WALKWAY 2 NO TREES OR SHRUBS MAY BE PLANTED WITHIN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY STREET RIGHT-OF-WAY 2 NO TREES OR SHAUBS MAY BE PLANTED WITHIN THE TRAINGULAR AREA FORMED AT THE INTERSECTION OF ANY STREET KINGH-IO-WAY LINES AT A DISTANCE ALONG AGACH LINE OF 25 FROM THEIR POINT OF INTERSECTION ALL TREES AND SHRUBS MUST BE AT LEAST 10'FROM ANY HYDRAIT. SHADE AND EVERGREEN TREES MUST BE AT LEAST 10'FROM THE INEAREST OVERHEAD WIRE TREES LIUST BE PLANTED AMINIMOM OF 5' FROM AN UNDERGROUND UTLITY, MULESS THE CITY ALL ANDSCAPE ARCHITECT REQUIRES A GREATER DISTANCE AMINIMOM OF 1'FROM AN UNDERGROUND UTLITY, MULESS THE CITY OF ROCHESTER HILLS FORESTEY DISTON REDS TO INSPECT ALL TREES, EXISTING OR PLANTED. TO IDENTIFY ANY THAT POSE A HAZARO TO THE SAFE USE OF PUBLIC RIGHT-OF-WAY, FORESTRY MAY REQUIRE THE DEVELOPER TO REMOVE, AND POSSIBLY REPLACE, ANY SUCH TREES.

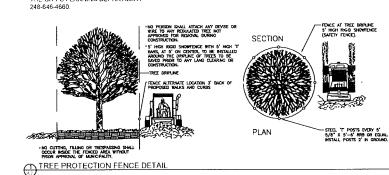
### PLANTING NOTES:

- 1. INSTALL AND MAINTAIN ALL LANDSCAPING ACCORDING TO ROCHESTER HILLS STANDARDS. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, THE PLAN SHALL GOVERN QUANTITIES. CONTACT LANDSCAPE ARCHITECT WITH ANY CONCERNS.
- ALL PLANT MATERIAL TO BE PREMIUM GRADE NURSERY STOCK. PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK. CONTRACTOR TO SUPPLY NURSERY SOURCES FOR ALL PURCHASED MATERIAL. NO BARE ROOT OR PARK GRADE
- 3. SOD: IF OWNER SELECTS THIS OPTION, CONTRACTOR WILL INSTALL SOD IN ALL AREAS INDICATED AS LAWN ON PLAN SOD TO BE WELL ESTABLISHED, MINERAL GROWTH, SOD BLEND SHALL CONSIST OF A MINIMUM OF THREE (3 IMPROVED VARIETIES OF BLUEGRASS, ACCEPTANCE AND GUARANTEE NOTES SHALL APPLY TO ALL SOD. 4. EDGING SHALL BE A SHOVEL EDGE. 4. EDGING SHALL BE A SHOVEL EDGE.
- 5. ALL TREE PITS MUST BE TESTED FOR PROPER DRAINAGE PRIOR TO PLANTING TREES. A DRAINAGE SYSTEM MUST BE INSTALLED IF PLANTING PIT DOES NOT DRAIN SUFFICIENTLY (REQUIRED IN HEAVY CLAY SOILS).
- 6. ALL LANDSCAPE AREAS SHALL HAVE PROPER DRAINAGE THAT PREVENTS EXCESS WATER FROM STANDING ON AWN AREAS OR AROUND TREES AND SHRUBS.
- 7. STAKES USED FOR TREE SUPPORTS SHALL POINT AWAY FROM ANY CIRCULATION ROUTES
- 8. MULCHING AND WATERING OF ALL PLANTS AND TREES SHALL BE IMMEDIATELY OR WITHIN 16 HOURS AFTER
- 9. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL NOT MEETING SPECIFICATIONS.
- 10. REMOVE ALL TREE STAKES AND GUY WIRES AFTER ONE WINTER.
- 12. DIG SHRUB PITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALLS. BACK FILL WITH ONE PART TOPSOIL 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.
- 13, REMOVE ALL TWINE, WIRE, AND BURLAP FROM THE TOP 1/3 OF TREE AND SHRUB EARTH BALLS AND FROM TREE
- 14. LAWN TREES ARE TO BE MULCHED WITH A MINIMUM OF 4' WIDE BY 4" DEEP SHREDDED BARK FOR TRUNK PROTECTION. ONLY NATURAL-COLORED SHREDDED HARDWOOD BARK MULCH WILL BE ACCEPTED.
- 15. SHRUB BEDS ARE TO BE MULCHED WITH SHREDDED BARK MULCH TO A MINIMUM DEPTH OF 4". ONLY NATURAL-COLORED SHREDDED HARDWOOD BARK MULCH WILL BE ACCEPTED.
- 16. 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.
- 17. ALL LANDSCAPE AREAS, SPECIAL 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 BACK-FILLED WITH GOOD. MEDIUM TEXTURED PLANTING SOIL, LOAM OR LIGHT YELLOW CLAY). ADD 4"-6" OF TOPSOIL, OVERFILL MATERIAL AND CROWN A MINIMUM OF 6" ABOVE TOP OF CURBS AND/OR WALKS AFTER EARTH SETTLING UNLESS OTHERWISE
- 18. 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 OFE SITE.
- R. REPLACE EXCAVATED MATERIAL WITH GOOD, MEDIUM TEXTURES PLANTING SOIL (LOAM OR LIGHT YELLOW CLAY) TO A MINIMUM OF 2" ABOVE TOP F CURB AND SIDEWALK, ADD 4"-6" OF TOPSOIL AND CROWN TO A MINIMUM OF ABOVE ADJACENT CURB AND WALK AFTER EARTH SETTLING UNLESS OTHERWISE NOTED ON THE LANDSCAPE
- PLAN.
  IF CONVERSION TO LANDSCAPE OCCURS IN AN EXISTING (OR BETWEEN) LANDSCAPE AREA(S), REPLACE EXCAVATED MATERIAL TO 4"-6" BELOW ADJACENT EXISTING GRADES WITH GOOD MEDIUM TEXTURED PLANTING SOIL (LOAM OR LIGHT YELLOW CLAY) AND ADD 4"-6" OF TOPSOIL TO MEET EXISTING GRADES AFTER EARTH SETTLING.
- 19. ALL PLANT MATERIAL TO RECEIVE TERRA-SORB SUPER ABSORBENT POLYMER OR APPROVED EQUAL BY LANDSCAPE ARCHITECT, FOLLOW MANUFACTURER'S SPECIFICATIONS.

### MAINTENANCE NOTES

- 1. THE CLEAR ZONE SHALL BE MAINTAINED AT ALL INTERSECTIONS THAT INGRESS AND EGRESS TO THE SITE. IT IS THE OWNERS RESPONSIBILITY TO MAINTAIN THE PLANT MATERIAL AT A HEIGHT OF NOT OVER THIRTY (30) INCHES ABOVE PAVEMENT AND PROVIDE UNDBSTRUCTED SIGHT DISTANCE FOR BRIVERS IN VEHICLES APPROACHING THE
- 2. VERTICAL CLEARANCE OF AT LEAST EIGHTY (80) INCHES MUST BE PROVIDED ABOVE WALKS AT ALL TIMES. IT IS THE OWNERS RESPONSIBILITY TO MAINTAIN TREES AND OTHER OVERHANGING OBJECTS TO PROVIDE ADEQUATE

ALL TREES ON ADJACENT PROPERTIES MUST BE PROTECTED. THE TREE PROTECTIVE FENCING MAY BE PLACED ALL TREES ON AUGUST PROPERTIES MUST BE PROTECTED. THE TREE PROTECTIVE PROTING MAY BE PLACED ALONG THE ACTUAL PROPERTY LINE IF THE BRANCHES OF THE TREES ON THE ADJACENT PROPERTY LISE ON NOT OVERHANG ONTO THE SITE BEING DEVELOPED. IF THE BRANCHES OVERHANG ONTO THE AREA OF THE SITE BEING DEVELOPED THE TREE PROTECTIVE FENCING MUST BE PLACED AT THE ACTUAL DRIFT LINE OF THESE SITE SHOULD ALSO BE NOTED THAT THE SILT FENCING MUST BE PLACED AT THE DEVELOPMENT SIDE OF THE TREES. IT SHOULD ALSO BE NOTED THAT THE SILT FENCING MAY NOT BE PLACED BETWEEN THE TREE BEING PRESERVED AND THE PROTECTIVE FENCING. THE SILT FENCING MAY NOT BE PLACED BETWEEN THE TREE BEING PRESERVED AND THE TREE PROTECTIVE FENCING, IF ANY REGULATED TREES ARE DAMAGED ON THE ADJACENT PROPERTIES TH DAMAGED TREES WILL BE EITHER REPLACED ON THE OWNERS PROPERTY ON AN INCH FOR INCH BASIS OR A FINE IN THE SUM \$122.00 PER CALIPER NOT WILL BE ISSUED AGAINST THE DEVELOPMENT. THIS FINE WILL BE DUE PRIOR THE BUILDING PERMITS BEING ISSUED. IF YOU HAVE ANY QUESTIONS OR NEED ADDITIONAL INFORMATION CALL THE CITY'S PLANNING DEPARTMENT



EACH TREE TO RECEIVE TERRA-SORI SUPERABSORBANT POLYMER, MIX IN BACKFILL PER MANUFACTURER'S SPECIFICATIONS.

CONTRACTOR TO VERFY PERCULATION OF PLANT PIT PRIOR TO INSTALLATION TREE BALL SHALL BEAR SAME RELATIONSHIP TO FAISH CRADE AS IT BORE ORICONALLY

BORE CROMMET

PRUME TO THIN AND SIMPE CANOPY

USE ONLY ONE STAKE FOR TREES UNDER

4" HT.

SET STAKES VERTICALLY AND EVENLY SET STAKES VERICALLY AND EVENLY

STAKE TREES JUST BELOW FIRST BRUNCH
WITH 2"-3" WIDE BELT LIKE WITHON OR
PLASTIC STRAPS (CONNECT FROM TIREE
TO STAKE OPPOSITE FROM LECH OTHER,
AND ALLOW FOR SOME "FLEXISC"). DO
NOT USE WINE OR ROPE THROUGH A
HOSE. REMOVE AFTER DIRST WINTER.

EACH TREE TO RECENE TERRA-SORBI SUPERASSORBANT POLYMUR, MIX IN BACKFILL PER MANUFACTURER'S SPECIFICATIONS.

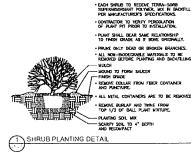
· CONTRACTOR TO VERFY PERCOLATION OF PLAYT RT PRIOR TO INSTALLATION

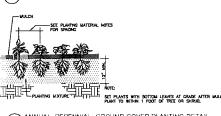
DECIDUOUS TREE PLANTING DETAIL

TREE SHALL BEAR SAME RELATIONSHIP TO FINISH CRADE AS IT BORE ORIGINAL PRIME ONLY TO REMOVE DAMAGED OR BROKEN BRANCHES AN INCHEMIAN SERVICINES TO BE REDUCEDATIONAL MATERIALS TO BE REDUCED FROM ROOT BALL BETWEE FLANTING AND DESCRIPTION OF BEACH LINE AND SERVICINES AND SERVICI EVERGREEN TREE PLANTING DETAIL

CONTRACTOR TO VERFY PERCOLATION
OF PLANT PIT PRIOR TO INSTALLATION TREE BALL SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORGANALLY TREE WRAP FROM TOP DOWN.
REMOVE AFTER FIRST WATER. - MULCH - REMOVE BURLAP AND THINK FROM TOP 1/3 OF BALL

ORNAMENTAL TREE PLANTING DETAIL





ANNUAL PERENNIAL, GROUND COVER PLANTING DETAIL

B PROJECT:
CRESTWYK ESTATES F
SECTION 24 TOWN 3 NORTH, R
CITY OF ROCHESTER HILLS
CITY FILE # 17-013

CLIENT M2J1, LLC

JIM POLYZOIS 14955 TECHNOLOGY DRIVE SHELBY TOWNSHIP. MI 48315

Phone: 585.421.5729

Final PUD SUBMITTAL 3/2/2018 CITY SUBMITTAL 10/9/2017

Troy, Michigan 48083 P: 248, 224,5933 nunezdesigninc@gmail.com Designed / Drawn RN

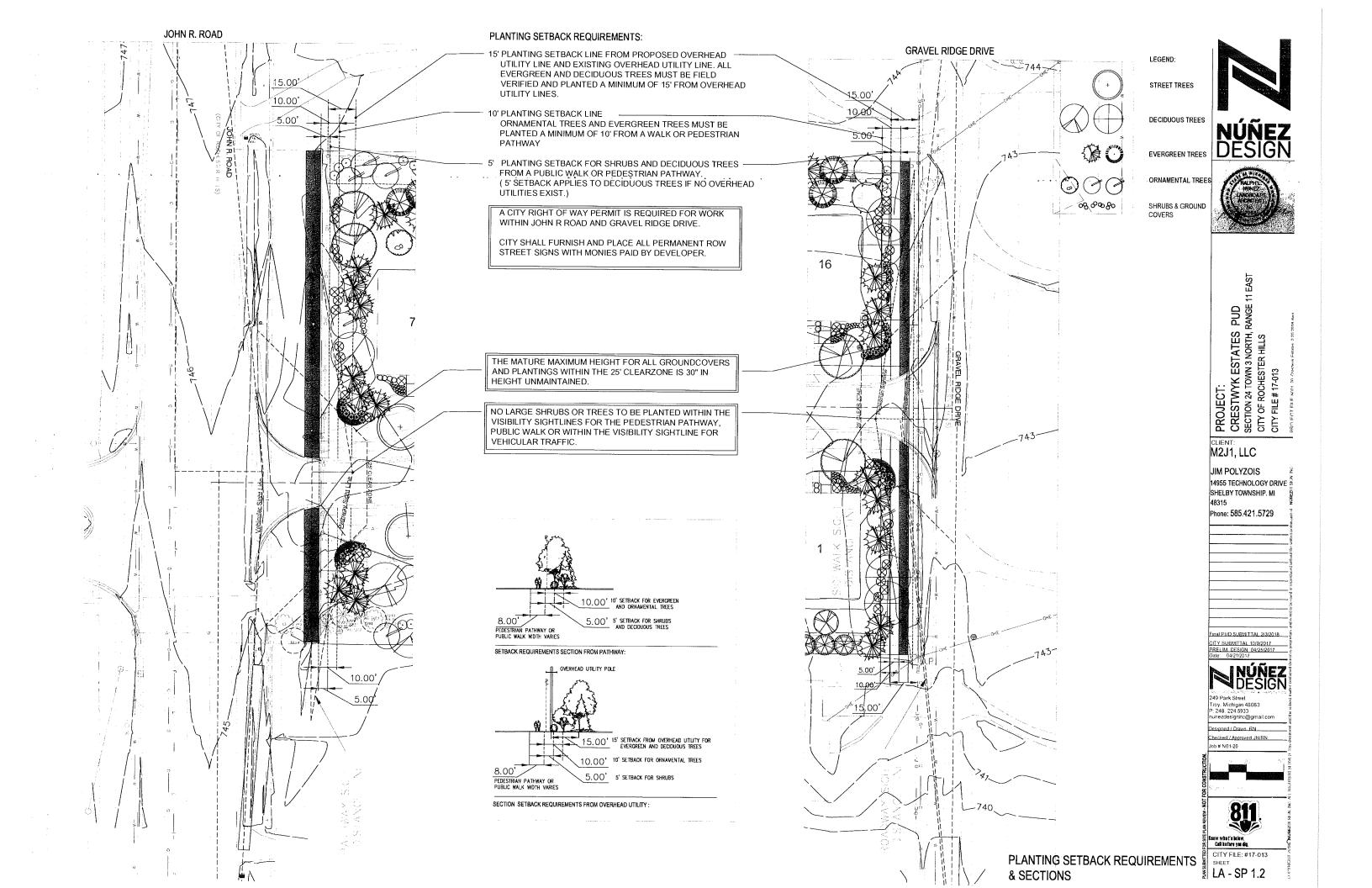
Checked / Approved JN/RN Job # N01-20

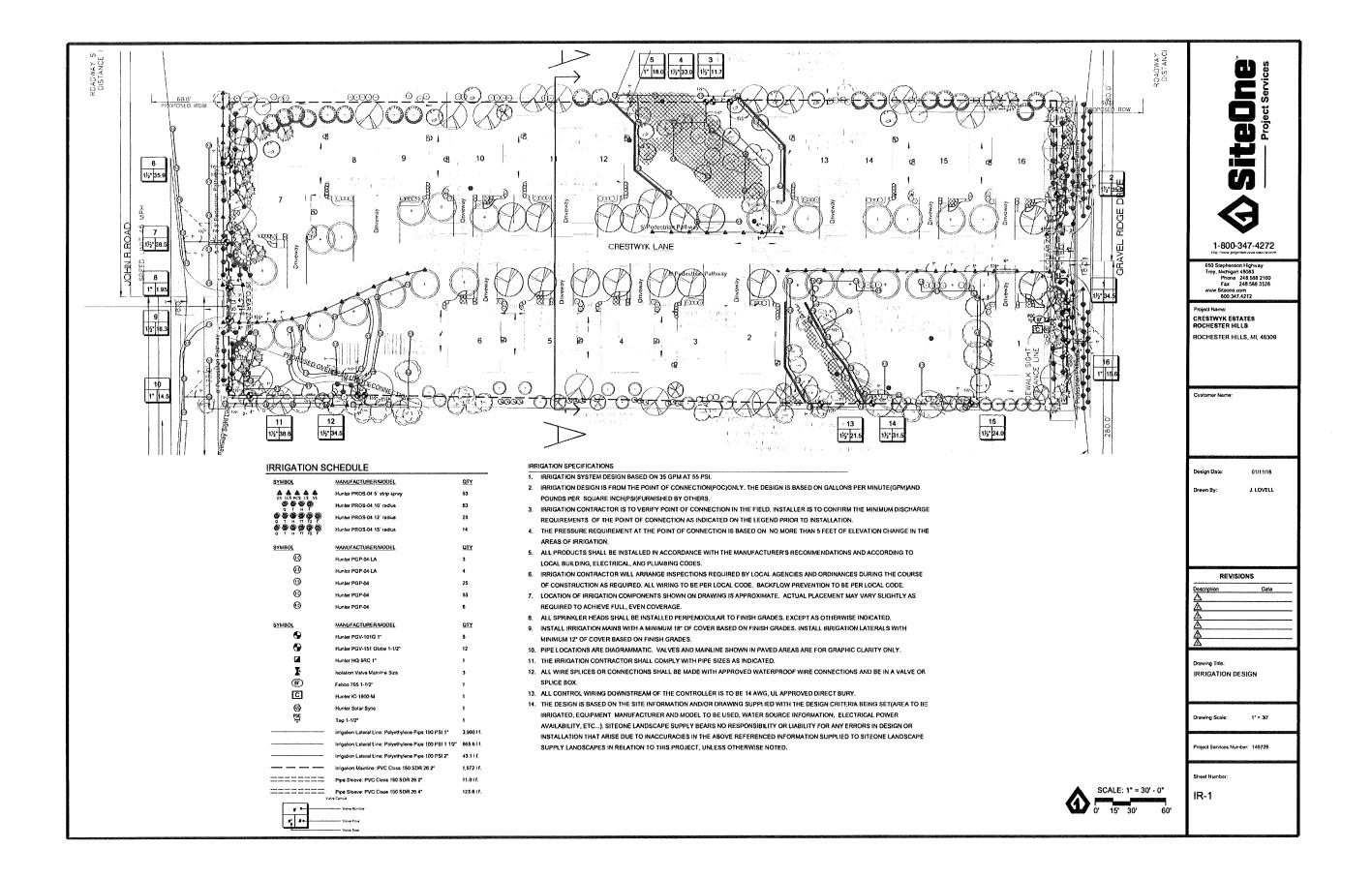


Keow what's below.
Cell before yearing. CITY FILE: #17-013

LA -2.0

LANDSCAPE PLANTING DETAILS & NOTES





# Crestwyk Estates Duplex MJ LLC



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



