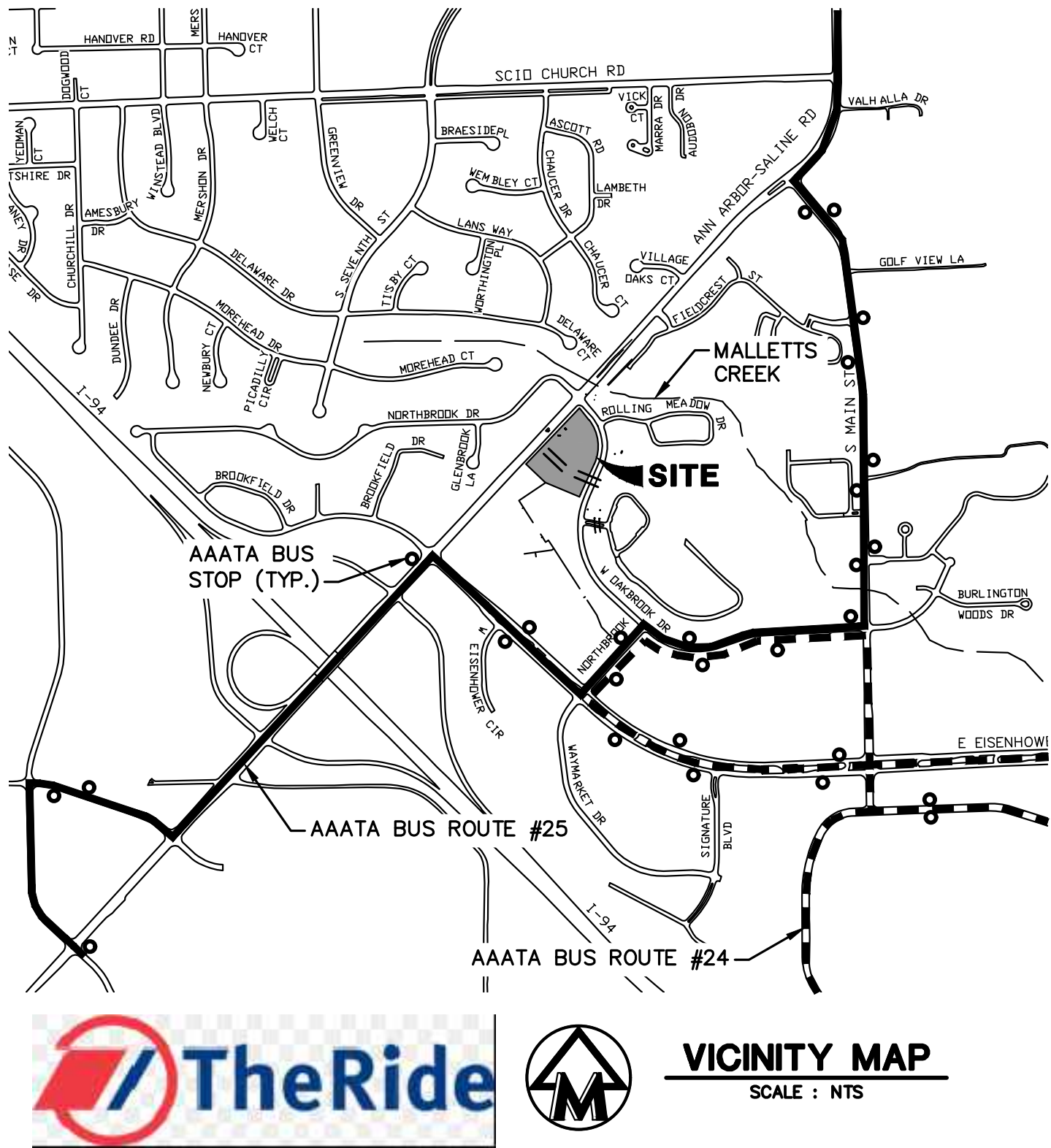
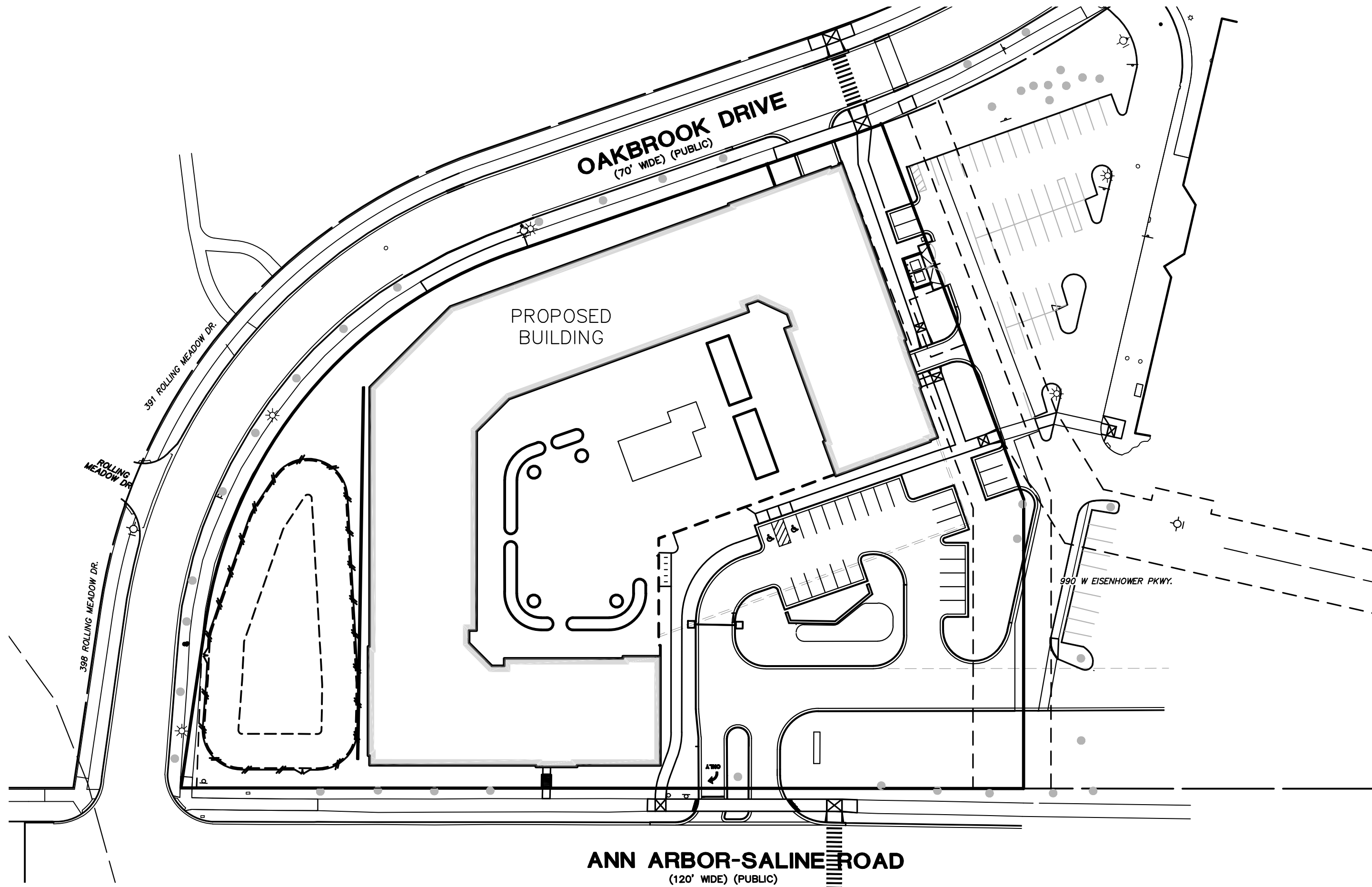


THE CRESCENT
2525 ANN ARBOR-SALINE ROAD
CITY OF ANN ARBOR, WASHTENAW CO. MI
SITE PLAN FOR CITY COUNCIL



Cranbrook Sustainability Initiative Narrative

The Cranbrook Development is aligned with the A²Zero's mission to make a just transition to carbon neutrality by 2030. Cranbrook will achieve significant improvement in the energy efficiency of the building by certifying ENERGY STAR Multifamily New Construction (ESMFNC) and creating an energy efficient building. ENERGY STAR has demonstrated that a ESMFNC certified building in our climate zone (CZ5) can deliver 1.7% energy savings to the tenants. All-electric high efficiency appliances, LED lighting, and split system heat pumps will be installed along with a high-performance building envelope to help reduce energy consumption. The ESMFNC certification will not only provide design requirements but will also require testing and verification by a third-party to ensure the project will perform efficiently and deliver comfort to the tenants as planned. From the very beginning of the project design, an energy model will be created to help inform the project's design and maximize the synergies between the various systems and components. Besides building an energy-efficient building, Cranbrook will help offset fossil fuel use and power the grid with renewable energy generated on-site through the installation of a maximum capacity PV system on the roof of the new building. Another significant factor in helping to reduce carbon use within the project is the project's location. The project is within walking distance of many basic services allowing residents to avoid the use of automobiles. It is also within a quarter mile of two bus lines that enable residents to easily access the downtown or WCC and St. Joseph's Hospital to the east. In addition to operational carbon use, the project will be conscious of embodied carbon and aim to select materials that are lower in embodied carbon, resilient and durable. Other sustainable site strategies include covered, secure bicycle storage spaces and parking beneath the building to reduce heat island and allow more site area for landscaping. Electric Vehicle chargers will be included with additional EV-ready spaces for future charging stations. Underground stormwater retention will be utilized along with the use of native plants on site. These design elements coupled with the fact that all units within the project will accommodate aging-in-place makes Cranbrook a desirable home for all age demographics and aids in increasing housing diversity. Energy efficiency, carbon reduction, and renewable resources are values of the Cranbrook development that support Ann Arbor's commitment to a carbon-free future and align with the A²Zero's mission.



SHEET INDEX

#	SHEET TITLE
1	COVER SHEET
2	GENERAL NOTES
3	ALTA TITLE--TOPOGRAPHIC SURVEY
4	DEMOLITION PLAN
5	DIMENSIONAL LAYOUT PLAN
6	WATER EASEMENT PLAN
7	PEDESTRIAN CIRCULATION PLAN
8	NATURAL FEATURES PLAN
9	LANDSCAPE PLAN
10	LANDSCAPE ENLARGEMENTS
11	LANDSCAPE DETAILS
12	SITE UTILITY PLAN
13	FIRE PROTECTION PLAN
13.1	FIRE TRUCK ANN ARBOR-SALINE ENTRANCE
14	SOLID WASTE MANAGEMENT PLAN
15	GRADING PLAN
16	SOIL EROSION AND SEDIMENTATION CONTROL PLAN
17	SESC DETAILS
18	HISTORIC 1987 BASIN DRAINAGE AREAS
19	1987 BASIN TRIBUTARY AREA
20	1987 BASIN CALCULATIONS

SHEET INDEX

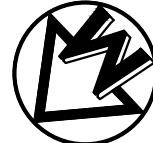
#	SHEET TITLE
21	PROPOSED BASIN TRIBUTARY AREA
22	EXISTING BASIN CALCULATIONS
23	ADJUSTED BASIN CALCULATIONS
24	PROPOSED STORMWATER PLAN
25	PROPOSED DETENTION CALCULATIONS
26	STORMTECH CHAMBER DETAILS
27	CIVIL DETAILS
28	OAKBROOK DRIVE SIGHT DISTANCE
29	ANN ARBOR-SALINE SIGHT DISTANCE
30	CROSS WALK SIGHT DISTANCE
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32	SOIL BORINGS 2
33	SOIL BORINGS 3
34	1989 OAKBROOK CONDO GRADING PLAN
35	1989 OAKBROOK CONDO UTILITY PLAN
36	PHOTOMETRIC LAYOUT
37	PHOTOMETRIC LAYOUT
38	PHOTOMETRIC LAYOUT

Zoning Classification	Existing: O (Office)		
Number of Units	Proposed Rezoning: R4E Multiple Family Dwelling District 262 Units Total: 38 Studio + 164 1-bedroom + 55 2-bedroom + 5 3-bedroom		
SITE INFORMATION	O Zoning Requirement	R4E Zoning Requirement	Proposed
Permitted Use		Dwelling, Multi-Family	Dwelling, Multi-Family
Minimum Lot Area	6,000 sft	14,000 sft	181,236 sft = 4.16 ac
Minimum Lot Area per dwelling unit	N/A	580 sft	181,236 sft / 262 Units = 691 sft/unit
Minimum Lot Width	50 ft	120 ft	553 ft
Maximum Dwelling Unit Density	N/A	75 units/acre	262 units / 4.16 ac = 63 units/ac
Front Setback	15 ft Minimum, 40 ft Maximum	15 ft Minimum, 40 ft Maximum	15 ft - Ann Arbor-Saline Road 15 ft - Oakbrook Drive
Minimum Side Setback	30 ft when abutting R district, Otherwise 0 ft	10' + 3" per each foot of building height over 35' and 1.5' for each foot of building length over 50' = 10' + 0.25' x (60.43'-35') + 0.125' x (331.3' - 50') = 51.5'	A variance of 18 feet for the minimum side setback has been granted by the Zoning Board of Appeals. 51.5' - 18' = 33.5'
Minimum Rear Setback	30 ft when abutting R district, Otherwise 0 ft	30' + 1.5" per each foot of building height over 35' and 1.5" for each foot of building width over 50' = 30' + 0.125' x (60.43'-35') + 0.125' x (426.4'-50') = 80.2'	N/A
Maximum Building Lot Coverage	N/A	N/A	90,218 sft (49.8% of lot)
Maximum Floor Area Ratio	0.75	N/A	2.09
Maximum Impervious Lot Coverage	N/A	N/A	123,218 sft (68.0% of lot)
Maximum Building Height	55 ft when abutting R zone, otherwise none	N/A	60.43 ft to top of flat roof
Maximum Stories	4 stories when abutting R zone, otherwise none	N/A	5 stories above grade, 1 story below
Total Building Floor Area	N/A	N/A	379,459 sft (8.71 acres)
Minimum Apartment Area	N/A	N/A	595 sft
Maximum Number of Units	N/A	75 units/acre (312 Units)	262 units
Minimum Open Space	N/A	40% of Lot Area, 150 sft per dwelling unit	45.0% (273 sft per dwelling unit)
Vehicle Parking	N/A	N/A	297 total (29 surface + 268 garage), 1.1 spaces per unit
ADA Parking Spaces Required	7 for 201-300 total spaces (ADA Chart)	Exterior: 2 for 26-50 total spaces (ADA Chart) Interior: spaces for 2% of type A units (6 spaces)	Exterior: 2 spaces provided Interior: 6 spaces provided
EV-Installed Parking Spaces	10% of total provided vehicle spaces	10% of total vehicle spaces [299 x 0.1 = 30 min]	8 outside spaces and 22 inside spaces for 30 total spaces
EV-Capable Parking Spaces	40% of total provided vehicle spaces	Remainder of vehicle spaces [269 min]	23 outside and 246 inside spaces for 269 total spaces
Total Bicycle Parking	1 per 1,500 sft of building		164
CL A (Enclosed) Bicycle Parking	30% of provided spaces	50% of provided spaces (50% of 53 = 27)	82
CL B (Covered) Bicycle Parking	Remainder	Remainder	72
CL C (Open) Bicycle Parking	Remainder	Remainder	10

*BASED ON AVERAGE FINISH GRADE ELEVATION OF 910.37

SITE MAP

1"=60'



OWNER/APPLICANT

CRANBROOK VILLAGE LIMITED PARTNERSHIP
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
NOAH JACOB

ARCHITECT

KRIEGER KLATT ARCHITECTS
2120 E. 11 MILE ROAD
ROYAL OAK, MI 48067
248-414-9270

ENGINEER/SURVEYOR/LANDSCAPE ARCH.

MIDWESTERN CONSULTING, LLC
3815 PLAZA DR.
ANN ARBOR, MI 48108
CONTACT: ROB WAGNER
734-995-0200

LEGAL DESCRIPTION

SEE SHEET 3

NOTES:

- All sidewalks within the City shall be kept and maintained in good repair by the owner of the land adjacent to and abutting upon the same. Prior to the issuance of the final Certificate of Occupancy for this site, all existing sidewalks in need of repair must be repaired in accordance with City standards.
- All work within the City of Ann Arbor covered by these plans shall be performed in complete conformance with the current City of Ann Arbor Public Services Department Standard Specifications and Details.
- The omission of any current standard detail does not relieve the contractor from this requirement. The work shall be performed in complete conformance with the current public services standard specifications and details.
- Sidewalks constructed in the public right-of-way and/or public paths shall meet all requirements and guidelines as set forth in the accessibility guidelines for pedestrian facilities in the public right-of-way published August 8, 2023. Sidewalk and curb ramp grades will be reviewed during construction plan submittals.
- Pavement markings disturbed due to pavement cuts or construction related activities shall be replaced as directed by Engineering. Replacement during construction of the project may be considered temporary, with final pavement marking restoration to occur at the end of the project.
- The contractor shall take all necessary precautions to protect the existing public road pavement. Damage to the public road pavement during the course of construction may necessitate milling and resurfacing of the damaged areas prior to issuance of the Certificate of Occupancy.

GIS NOTES:

- Parcel and building address will remain 2525 Ann Arbor-Saline Rd.
- Residential sub-units must be addressed by floor, 3rd floor 300's, 4th floor 400's ect. (i.e. 2525AnnArbor-Saline Rd 302 would be on the 3rd floor).
- An address drawing (similar to the Arch drawing submitted) labeling the locations of each sub-unit along with a spreadsheet containing all the individual addresses of the site would need to be provided before construction begins.

FOR CITY COUNCIL 09/11/25
SITE PLAN SUBMITTAL #7 07/21/25
SITE PLAN SUBMITTAL #6 06/25/25

THE CRESCENT

JOB No. 23351	DATE: 04/18/24	1
REVISIONS:	REV. DATE	
PRELIMINARY CITY SUBMITTAL	04/05/24	
SITE PLAN SUBMITTAL	04/18/24	
SITE PLAN SUBMITTAL #2	08/14/24	
SITE PLAN SUBMITTAL #3	12/12/24	
SITE PLAN SUBMITTAL #4	03/28/25	
SITE PLAN SUBMITTAL #5	05/23/25	
MIDWESTERN CONSULTING 3815 Plaza Drive Ann Arbor, Michigan 48108 (734) 995-0200 • www.midwesternconsulting.com Land Development • Land Survey • Institutional • Municipal Wireless Communications • Transportation • Landfill Services		
RELEASED FOR:	DATE	
PRELIMINARY CITY SUBMITTAL	04/05/24	
SITE PLAN SUBMITTAL	04/18/24	
SITE PLAN SUBMITTAL #2	08/14/24	
SITE PLAN SUBMITTAL #3	12/12/24	
SITE PLAN SUBMITTAL #4	03/28/25	
SITE PLAN SUBMITTAL #5	05/23/25	
SITE PLAN SUBMITTAL #6	06/25/25	P.E. # 620106649

H:\dredge\3300\img\3304f_bbs.dwg, 10/18/2024, 11:27:29 AM, 1:1

THE OWNER SHALL NOT USE OR AUTHORIZE ANY OTHER PERSON TO USE THE DRAWINGS, SPECIFICATIONS, ELECTRONIC DATA AND ANY OTHER INFORMATION CONTAINED HEREIN FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY THE ENGINEER. THE ENGINEER'S LIABILITY IS LIMITED TO THE PROFESSIONAL INDEMNITY INSURANCE POLICY. THE ENGINEER'S LIABILITY IS LIMITED TO THE PROFESSIONAL INDEMNITY INSURANCE POLICY. THE ENGINEER'S LIABILITY IS LIMITED TO THE PROFESSIONAL INDEMNITY INSURANCE POLICY.

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THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING RECORDS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA. OTHER UTILITY LOCATIONS INDICATED BY THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. ALTHOUGH THE SURVEYOR HAS MADE EVERY EFFORT TO LOCATE THE UTILITIES AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE, THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.



DESCRIPTION
Land in the City of Ann Arbor, County of Washtenaw, State of Michigan described as:

CERTIFICATION
To Cranbrook Village Limited Partnership, a Michigan limited partnership and Fidelity National Title Insurance Company.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 2, 3, 4, 5, 8, 11a, 13, 14 and 16 of Table A thereof. The field work was completed on September 18, 2023.

Date of Plat or Map: September 25, 2023

Thomas L. Sutherland, P.S.
Michigan No. 24620



Subject to the following Easements, Restrictions and Agreements as listed in Schedule B-II, Exceptions, Fidelity National Title Insurance Company Commitment Number GLT2300544 with a commitment date of September 7, 2023.

- Right(s) of Way and/or Easement(s) and rights incidental thereto as delineated or as offered for dedication on the map of said plat.
Cranbrook Subdivision is recorded in Liber 26 of Plats, Pages 16-20, Washtenaw County Records. Right(s) of Way and Easements from this plat are shown on this survey and noted as "Liber 26 of Plats, Pages 16-20".
- Terms, covenants, conditions, restrictions and easements of Cranbrook Subdivision Escrow Agreement as recorded in Liber 2155, Page 988.
This is an Agreement between the City of Ann Arbor and Cranbrook Venture, Proprietor of Cranbrook Subdivision for the development of Cranbrook Subdivision and is not plottable.
- Terms, covenants, conditions, restrictions and easements of Declaration of Covenants and Assessments - Cranbrook Subdivision as recorded in Liber 2279, Page 589.
This Agreement sets up a Maintenance Association created for the purpose of insuring perpetual maintenance of private storm water facilities on Lots 1, 5 and 6 of Cranbrook Subdivision and is not plottable.
- Rights of others in and to the use of the Easements as described in Declaration of Easement as recorded in Liber 2976, Page 329, and subject to the terms, covenants, conditions and easements contained in said Declaration. This is an Easement over the subject property for the purpose of vehicular and pedestrian access and for ingress and egress to and from Lot 2 Cranbrook Subdivision and is shown on this survey.
- Terms, covenants, conditions, restrictions and easements of Restrictive Covenant as recorded in Liber 4623, Page 32.
This restrictive covenant between Cranbrook Village limited partnership, owner of the subject property and Whole Foods Market Group, Inc. is not plottable.

- NOTES:**
- FIDELITY NATIONAL TITLE INSURANCE COMPANY COMMITMENT NUMBER GLT2300544 WITH A COMMITMENT DATE OF SEPTEMBER 7, 2023 WAS USED IN THE PREPARATION OF THIS SURVEY.
 - THE SUBJECT PROPERTY IS IN FLOOD ZONE X, AREA OF MINIMAL FLOOD HAZARD - FEMA FLOOD MAPS 26161C0382E AND 26161C0244E WITH AN EFFECTIVE DATE OF APRIL 3, 2012.
 - THERE WAS NO OBSERVED EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS ON THE SUBJECT PROPERTY.
 - A 12 INCH WATER MAIN RUNNING IN A NORTHERLY AND SOUTHERLY DIRECTION CROSSES THE NORTHEASTERLY CORNER OF THE SUBJECT PROPERTY WITHOUT THE BENEFIT OF AN EASEMENT AND IS SHOWN ON THIS SURVEY.

WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION
BbB - BLOUNT LOAM, 2 TO 6 PERCENT SLOPES
• • • • • SOILS BOUNDARY
SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

NORTHBROOK DR
(60 FT. WD.)

LEGEND	SYMBOLS	NOTES
— = LIGHT POLE	• = SPOT ELEV.	TC = TOP OF CURB
— = UTILITY POLE	o = POST	TC = TOP OF WALL
— = GUY ANCHOR	o = GATE VALVE	— = EXISTING STORM
— = HYDRANT	— = SIGN	— = EXISTING SANITARY
		— = EXISTING WATER
		— = EXISTING GAS
		— = EXISTING ELECTRIC
		— = EXISTING TELEPHONE
		— = GRAVEL
		— = FENCE
		— = CONCRETE
		— = ASPHALT

BENCHMARK BM1=STEAMER VALVE ON HYDRANT 66± NWLY OF WHOLE FOODS BUILDING, ELEV=912.67. (NAVD88)
BM2=TOP NUT ON HYDRANT SOUTH OF FIRST ENTRANCE OFF OF OAKBROOK DR FROM ANN ARBOR-SALINE RD, ELEV=912.88. (NAVD88)

REVISIONS 10-18-24 VALVE NOTE.

SCALE
0 15 30
SCALE: 1"=30'

PREPARED BY _____



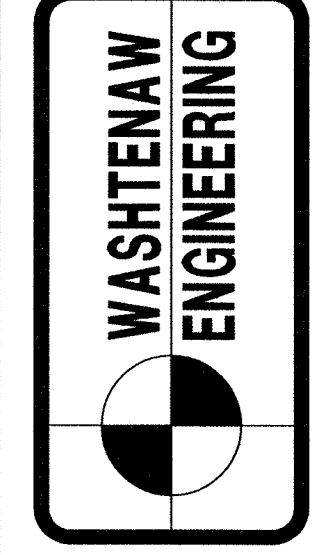
Know what's below.
Call before you dig.

SECTION 5	TOWN 3	SOUTH	RANGE 6	EAST
CITY OF ANN ARBOR				
WASHTENAW COUNTY • MICHIGAN				
DATE 9-25-23	JOB NO. 33047	DWG NO. 33047		
	FIELD BOOK -			
		FILE NO. 10820		
1 SHEET				

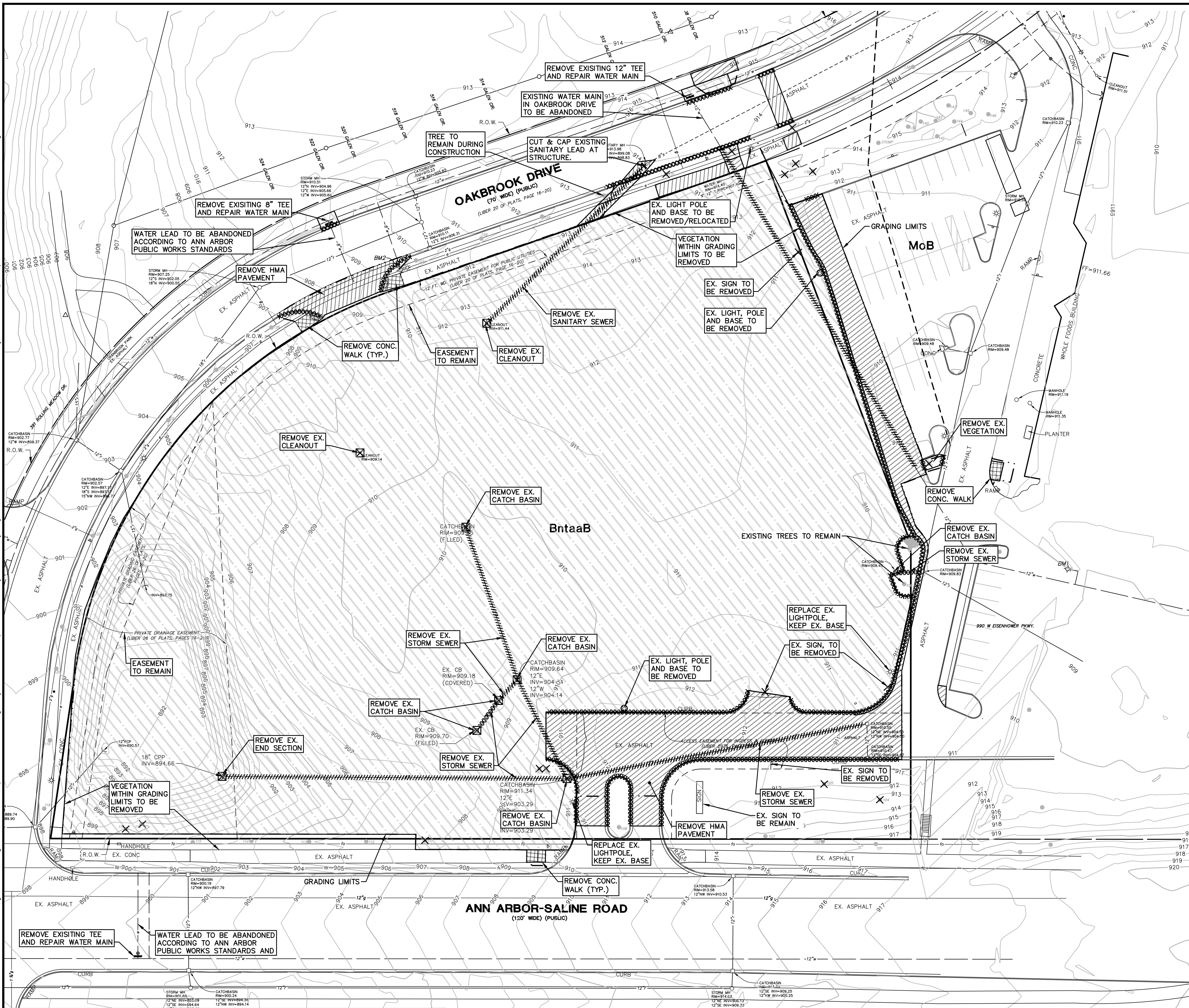
PROJECT
09-12-05-302-002
UNIT 1
CRANBROOK SUBDIVISION

ALTA/NSPS LAND TITLE SURVEY

CLIENT
FTA CRANBROOK
6735 TELEGRAPH RD
STE 110
BLOOMFIELD HILLS, MI 48301



CIVIL ENGINEERS
PLANNERS • SURVEYORS
LANDSCAPE ARCHITECTS
3526 W. LIBERTY RD
SUITE 400
ANN ARBOR, MI 48103
TEL 734-761-8800



EXISTING TREES

#	DBH	COMMON NAME	GENUS/SPECIES	STEMS	LM	SCORE	INV	RM
101	14"	Maple	Acer spp					
102	2"	Elm	Ulmus spp					
103	15"	Maple	Acer spp					
104	12"	Pine	Pinus spp					X
105	11"	Catalpa	Catalpa speciosa				X	X
106	8"	Locust	Gleditsia spp					
107	10"	Locust	Gleditsia spp					
108	5"	Locust	Gleditsia spp					
109	6"	Catalpa	Catalpa spp				X	X
110	7"	Catalpa	Catalpa spp				X	X
111	15"	Maple	Acer spp					X
112	15"	Maple	Acer spp					
113	13"	Maple	Acer spp					
114	15"	Maple	Acer spp					
115	5"	Maple	Acer spp					
116	12"	Catalpa	Catalpa spp				X	X
117	6"	Catalpa	Catalpa spp	Double			X	X
118	7"	Maple	Acer spp					
119	5"	Maple	Acer spp					
120	4"	Birch	Betula spp.					
121	10"	Locust	Gleditsia spp					
122	9"	Maple	Acer spp					
123	11"	Maple	Acer spp					
124	10"	Maple	Acer spp					
125	9"	Maple	Acer spp					
126	10"	Maple	Acer spp					
127	10"	Maple	Acer spp					
128	7"	Linden	Tilia americana					
129	7"	Maple	Acer spp					
130	11"	Maple	Acer spp					
131	6"	Maple	Acer spp					X
132	10"	Maple	Acer spp					X
133	7"	Maple	Acer spp					X
134	11"	Spruce	Picea spp					X
135	11"	Spruce	Picea spp					X
136	10"	Spruce	Picea spp					X
137	7"	Maple	Acer spp					
138	9"	Maple	Acer spp					
139	12"	Pine	Pinus spp					
140	10"	Pine	Pinus spp					
141	7"	Pine	Pinus spp					
142	10"	Pine	Pinus spp					
143	10"	Maple	Acer spp					
144	12"	Pine	Pinus spp					
145	11"	Pine	Pinus spp					
146	13"	Pine	Pinus spp					

DEMOLITION NOTES

- ANY EXISTING UTILITY SERVICE LEADS SERVICING THE PARCEL NOT PROPOSED TO BE USED SHALL BE PERMANENTLY KILLED AT THEIR RESPECTIVE MAIN PER CITY STANDARDS WITH THIS PROJECT.

THE CRESCENT

SITE PLAN
DEMOLITION PLAN

4

JOB No. 23351

REV. DATE
PRELIMINARY CITY SUBMITTAL 04/18/24
SITE PLAN SUBMITTAL #2 04/18/24
SITE PLAN SUBMITTAL #3 04/18/24
SITE PLAN SUBMITTAL #4 04/18/24

DATE: 04/18/24
SHEET 4 OF 35

CLIENT
CRANBROOK VILLAGE LIMITED PARTNERSHIP
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

MIDWESTERN
CONSULTING
3845 Plaza Drive Ann Arbor, Michigan 48108
734.995.0200 • www.midwesternconsulting.com
Land Development • Land Survey • Institutional • Municipal
Wireless Communications • Transportation • Landfill Services

Mc:\civil\324\Proj\2023\3351\Site Plan\3351SP01.dwg, 9/11/2025 2:08 PM, Colton M. Wallace, 5 DIMENSIONAL LAYOUT PLAN, MLLC PDF-p03
Copyright © 2025 Midwestern Consulting L.L.C. All rights reserved. No part of this drawing may be used or reproduced in any form or by any means, or stored in a database or retrieval system, without prior permission of Midwestern Consulting L.L.C.

Open Space Area	
Area Type	Area (acres)
Building Footprint	2.07
Paved Drives and Parking	0.68
Open Space Outside of Building Footprint	0.89
Open Space Within Building Footprint	0.75
Total Site Area	3.65
Total Open Space	1.64
Open Space Percentage	45.0%

CONSTRUCITON NOTES

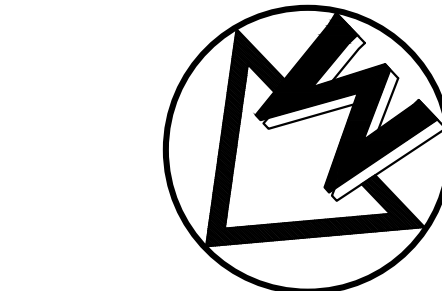
1. ALL PAVEMENT REPLACEMENT TO MEET CITY STANDARD SPECIFICATIONS. SAWCUT ALL REMOVAL LIMITS.
2. ALL CURB DIMENSIONS ARE TO BACK OF CURB.

REPLACE WALK AS NECESSARY TO ACCOMMODATE INSTALLATION OF LEVEL LANDING

PROPOSED STREET LIGHT
LEVEL LANDING SURVEY
PENDING SPOT ELEVATIONS
TO BE PROVIDED ON DETAILED
ENGINEERING PLANS



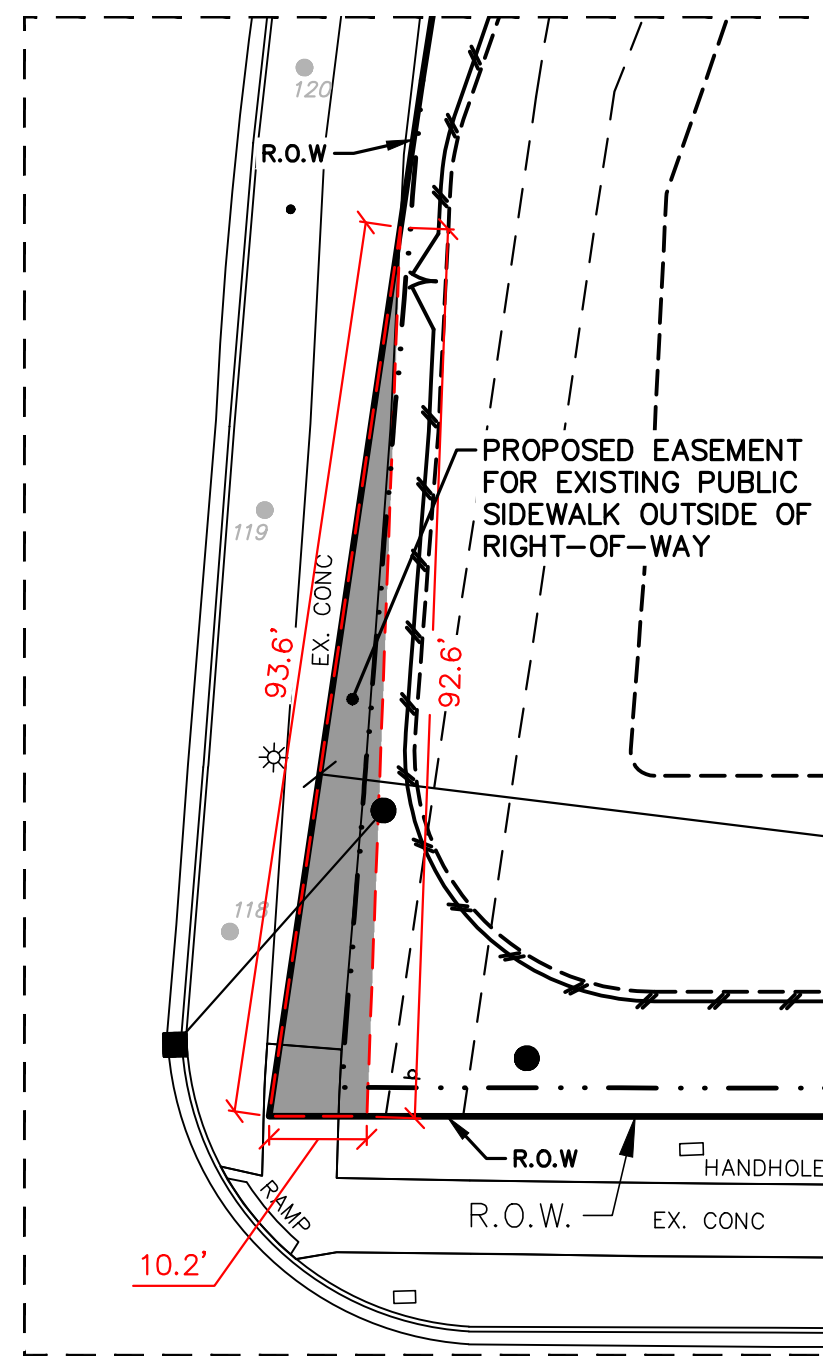
Know what's below.
Call before you dig.



SCALE: 1" = 30'
0 30 60 90

LEGEND

- | | | | |
|---|--|----|---|
| ○ | NUMBER OF STANDARD PARKING SPACES IN ROW | ▨ | PROP. CONCRETE PAVEMENT |
| ⬡ | NUMBER OF BARRIER FREE PARKING SPACES IN ROW | ▩ | PROP. 8" (10" AS NOTED) CONCRETE PAVEMENT |
| ⌢ | BARRIER FREE SIDEWALK RAMP | ⬢ | EX. SIGN |
| ⌢ | SIDEWALK LEVEL LANDING | ⬢ | PROP. SIGN |
| — | PROP. CURB & GUTTER | ⬢ | PROP. SINGLE LIGHT |
| — | PROP. SPILL-OUT CURB & GUTTER | ⬢ | PROP. WALL MOUNTED LIGHT |
| — | PROP. BITUMINOUS PAVEMENT | ⬢ | EX. TREE |
| | | EV | EV PARKING SPACE |



ENLARGED SIDEWALK EASEMENT VIEW

CITY OF ANN ARBOR GENERAL NOTES:

1. ALL SIDEWALKS WITHIN THE CITY SHALL BE KEPT AND MAINTAINED IN GOOD REPAIR BY THE OWNER OF THE LAND ADJACENT TO AND ABUTTING UPON THE SAME. PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY FOR THIS SITE, ALL EXISTING SIDEWALKS IN NEED OF REPAIR MUST BE REPAIRED IN ACCORDANCE WITH CITY STANDARDS.
2. ALL WORK WITHIN THE CITY OF ANN ARBOR COVERED BY THESE PLANS SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH THE CURRENT CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
3. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THIS REQUIREMENT. THE WORK SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH THE CURRENT PUBLIC SERVICES STANDARD SPECIFICATIONS AND DETAILS.
4. SIDEWALKS CONSTRUCTED IN THE PUBLIC RIGHT-OF-WAY AND/OR PUBLIC PATHS SHALL MEET ALL REQUIREMENTS AND GUIDELINES AS SET FORTH IN THE ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY PUBLISHED AUGUST 8, 2023.
5. STANDARDS FOR ACCESSIBLE DESIGN. SIDEWALK AND CURB RAMP GRADES WILL BE REVIEWED DURING CONSTRUCTION PLAN SUBMITTALS.
6. PAVEMENT MARKINGS DISTURBED DUE TO PAVEMENT CUTS OR CONSTRUCTION RELATED ACTIVITIES SHALL BE REPLACED AS DIRECTED BY ENGINEERING. REPLACEMENT DURING CONSTRUCTION OF THE PROJECT MAY BE CONSIDERED TEMPORARY, WITH FINAL PAVEMENT MARKING RESTORATION TO OCCUR AT THE END OF THE PROJECT.
7. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING PUBLIC ROAD PAVEMENT. DAMAGE TO THE PUBLIC ROAD PAVEMENT DURING THE COURSE OF CONSTRUCTION MAY NECESSITATE MILLING AND RESURFACING OF THE DAMAGED AREAS PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.

Driveway Requirements for all two-way drive approaches other than single- or two-family

Requirement	Meets Requirement	Waiver Request
Maximum permitted width of 1-way openings: 20 feet	Yes	No
Maximum permitted curb cut width: 60 feet	No	Yes
		Existing Opening - 115.3 feet
		Proposed Opening - 98.5 feet
Minimum turning radius at pavement edge: 5 feet (Outbound)	Yes	No
Minimum turning radius at pavement edge: 5 feet (Inbound)	Yes	No
Maximum turning radius at pavement edge: 15 feet (Outbound)	Yes	No
Maximum turning radius at pavement edge: 15 feet (Inbound)	No	Yes
		Existing Radius - 30.5 feet
		Proposed Radius - 30.5 feet

6" BLACK WROUGHT IRON FENCE TO BE INSTALLED AT TOP OF BASIN DUE TO 3:1 BASIN SIDE SLOPES.

PROPOSED RETAINING WALL

COURTYARD

10 CLASS C BICYCLE SPACES (5 HOOPS)

4" HMA PAVEMENT

4" CONCRETE SIDEWALK

BARRIER CURB AND GUTTER

NO PART OF THE PRIVATE STAIRS SHALL BE LOCATED IN THE PUBLIC RIGHT-OF-WAY

40' MAX FRONT SETBACK

15' MIN. FRONT SETBACK

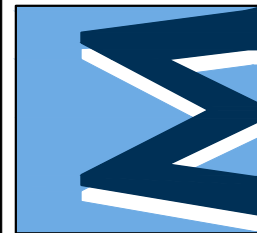
OUTBOUND LANE TO BE RE-BUILT TO CURRENT CITY STANDARDS

ANN ARBOR-SALINE ROAD
(120' WIDE) (PUBLIC)

PROPOSED PEDESTRIAN CROSSING
ACTUAL LOCATION AND DETAILS TO BE
DETERMINED IN CIVIL DESIGN REVIEW

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

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CRANBROOK VILLAGE LIMITED PARTNERSHIP

3845 Plaza Drive Ann Arbor, Michigan 48108
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

THE CRESCENT

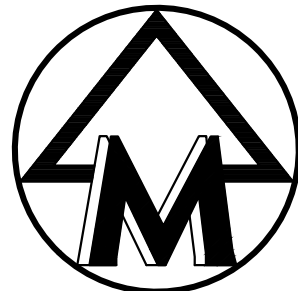
SITE PLAN
DIMENSIONAL LAYOUT PLAN

5

FOR CITY COUNCIL
SITE PLAN SUBMITTAL #6

JOB No. 23351

REVISIONS:	DATE	BY	OF
PRELIMINARY CITY SUBMITTAL	04/18/24	CAD: CWM	5
SITE PLAN SUBMITTAL #1	04/18/24	ENG: CWM	35
SITE PLAN SUBMITTAL #2	08/14/24	PM: RCW	1
SITE PLAN SUBMITTAL #3	12/12/24	TECH: JES	1
SITE PLAN SUBMITTAL #4	05/23/25	TECH: JES	1
SITE PLAN SUBMITTAL #5	05/23/25	TECH: JES	1



SCALE: 1" = 60'

0 60 120 180



LEGEND

- | | | | |
|-----|---|-----|--------------------------|
| --- | W | --- | EXIST. WATER MAIN |
| --- | W | --- | PROP. WATER MAIN |
| ○ | | | EXIST. HYDRANT |
| ◆ | | | PROP. HYDRANT |
| ⊞ | | | EXIST. GATE VALVE IN BOX |
| ⊞ | | | PROP. GATE VALVE IN BOX |
| ○ | | | REDUCER |

NOTES

1. THIS DRAWING IS BASED ON RECORD UTILITY DRAWINGS.
2. WATER MAIN TO BE ELECTROMAGNETICALLY LOCATED DURING DETAILED CONSTRUCTION PLANS PHASE. EASEMENT SHALL BE DRAWN 40 FEET WIDE CENTERED ON LOCATED WATER MAIN.

WATER MAIN EASEMENT REQUIREMENTS

1. SUBMITTED AS AN 8.5" X 11" PDF WITH AT LEAST 1/2" MARGINS
2. LABELED AS "EXHIBIT A"
3. USE A FONT SIZE NOT LESS THAN 12 FOR THE LEGAL DESCRIPTION
4. USE UPPER AND LOWERCASE LETTERS
5. USE THE DEGREE SYMBOL (°) IN PLACE OF THE WORD DEGREE
6. BE EXTRACTABLE TEXT(I.E., THE TEXT MUST BE ABLE TO BE CUT AND PASTED FROM MICROSOFT WORD WITHOUT TEXT ERRORS). THIS WILL REQUIRE THE LEGAL DESCRIPTION TO BE CONVERTED TO A PDF, AS OPPOSED TO SCANNED.

JOB No. 23351

REVISIONS: REV. DATE 03/28/25

SITE PLAN SUBMITTAL #4

SITE PLAN SUBMITTAL #5

DATE: 04/18/24

SHEET 6 OF 35

CADD: CMW

ENG: CMW

PM: RCW

TECH: RCW

23351.WE1

6

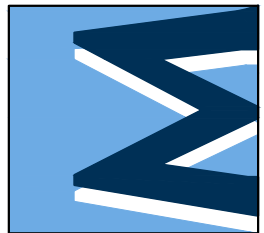
THE CRESCENT
SITE PLAN
WATER EASEMENT PLAN

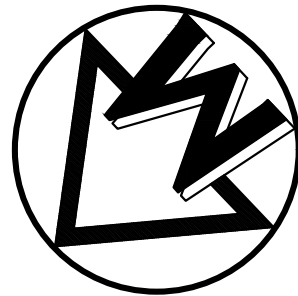
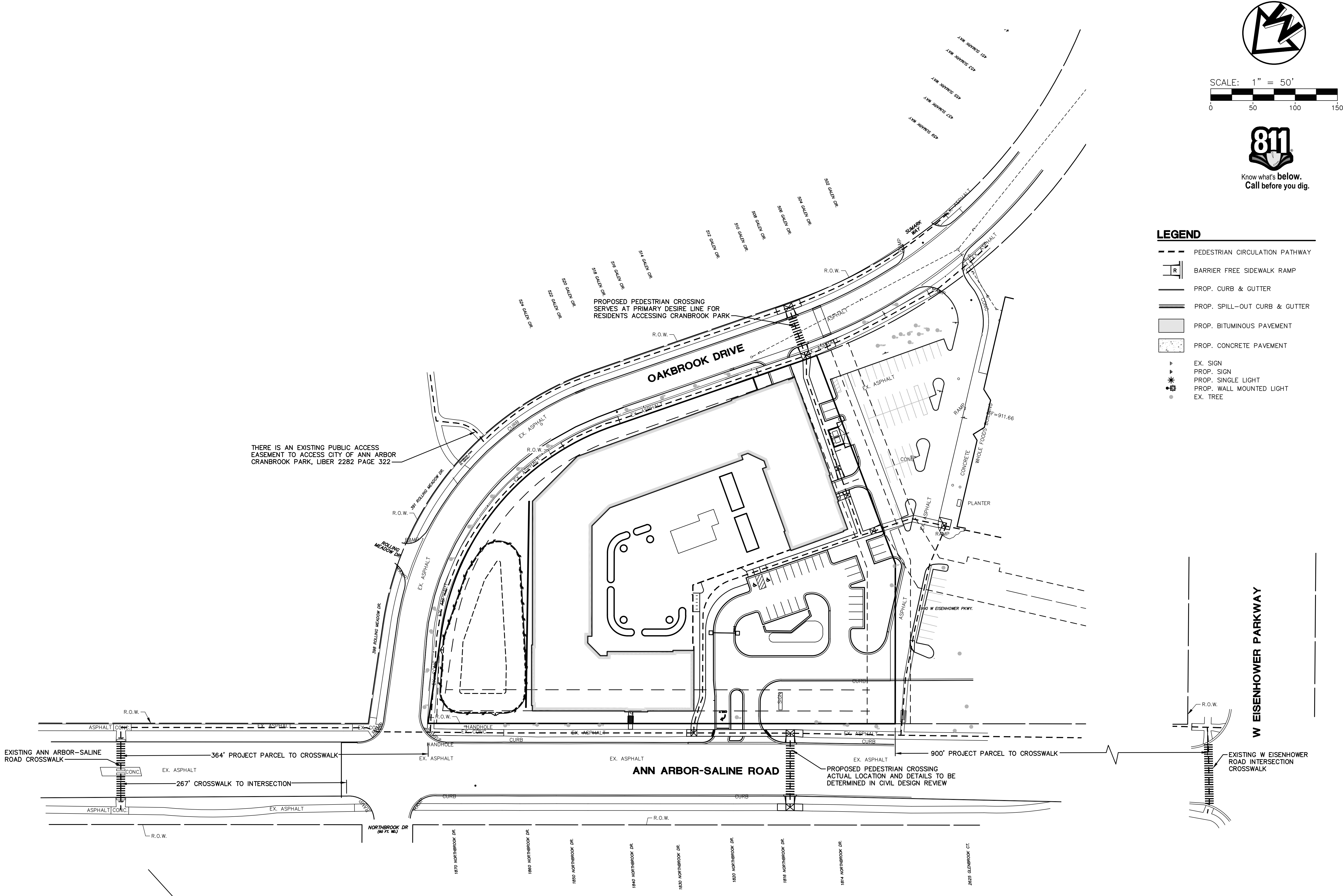
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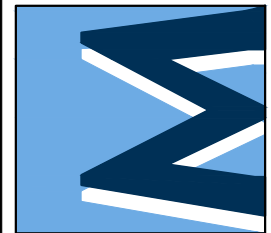


SCALE: 1" = 50'

0 50 100 150



- LEGEND**
- PEDESTRIAN CIRCULATION PATHWAY
 - BARRIER FREE SIDEWALK RAMP
 - PROP. CURB & GUTTER
 - PROP. SPILL-OUT CURB & GUTTER
 - PROP. BITUMINOUS PAVEMENT
 - PROP. CONCRETE PAVEMENT
 - EX. SIGN
 - PROP. SIGN
 - PROP. SINGLE LIGHT
 - PROP. WALL MOUNTED LIGHT
 - EX. TREE



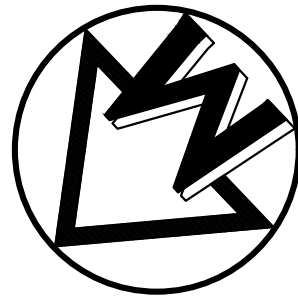
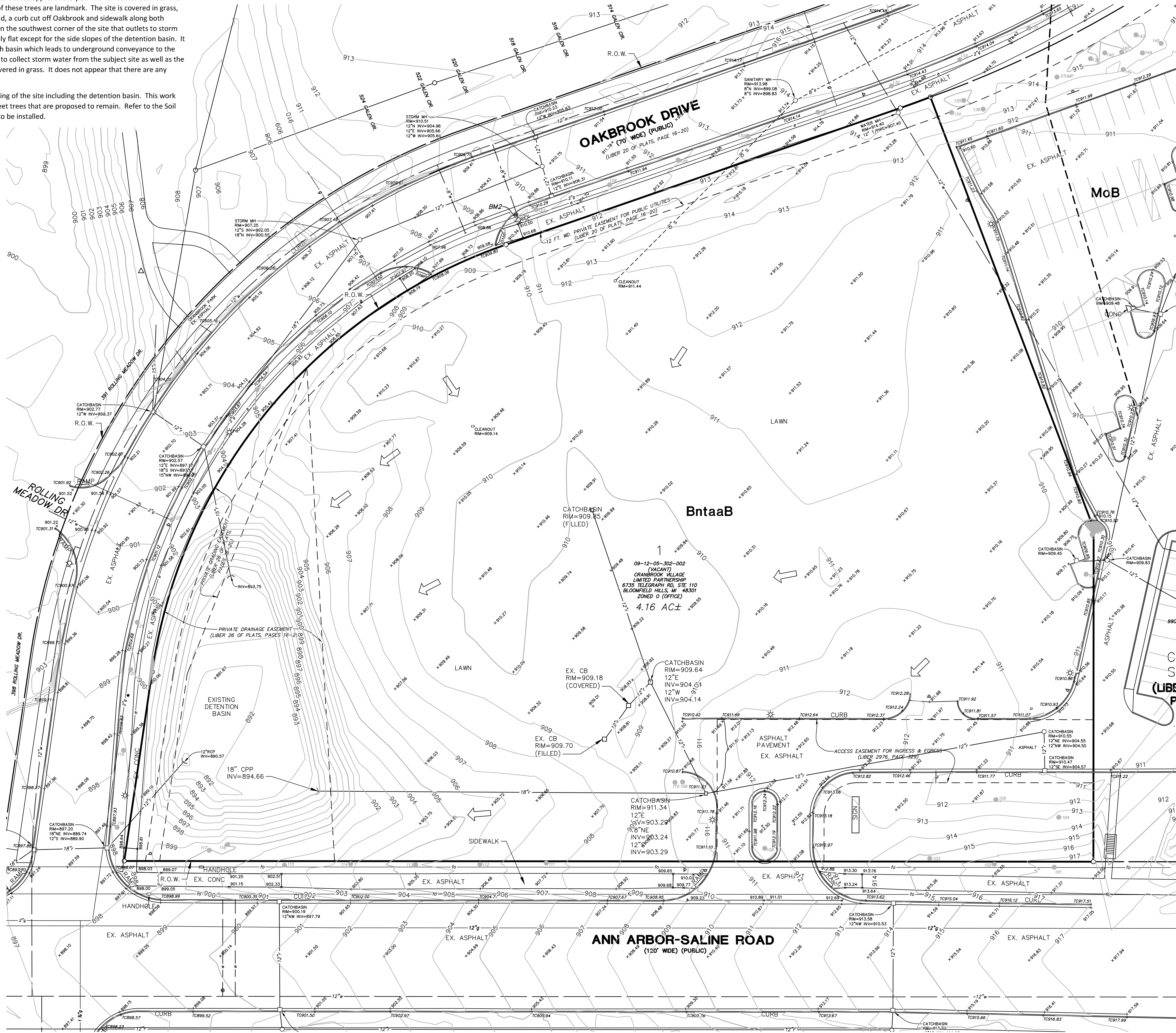
JOB No. 23351	DATE: 04/18/24	SHEET 7 OF 35
REVISIONS:	REV. DATE	CADD: CWM
SITE PLAN SUBMITTAL #2	05/14/24	ENG: CWM
SITE PLAN SUBMITTAL #3	12/12/24	ENG: CWM
SITE PLAN SUBMITTAL #4	03/28/25	ENG: RCW
SITE PLAN SUBMITTAL #5	05/23/25	TECH: RCW
SITE PLAN SUBMITTAL #6	06/25/25	TECH: RCW

M:\Civil\134_P\01\2023\3351\Site Plan\3351NFO1.dwg, 9/11/2025 1:50 PM, Colton M. Wallace, 8 NATURAL FEATURES PLAN, MCLC PDF .p3
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NATURAL FEATURES ANALYSIS

The subject site is a vacant 4.16 acre site surrounded by paved roadway on the north, west and south sides. The perimeter of the site has street trees located approximately 30'- 40' on center between the back of curb and the right-of-way line. None of these trees are landmark. The site is covered in grass, has one driveway off of Ann Arbor - Saline Road, a curb cut off Oakbrook and sidewalk along both roadways. There is a detention basin located in the southwest corner of the site that outlets to storm sewer in Oakbrook Drive. The parcel is relatively flat except for the side slopes of the detention basin. It appears that drainage flows centrally to a catch basin which leads to underground conveyance to the detention basin. The detention basin appears to collect storm water from the subject site as well as the area adjacent to the east. The basin is also covered in grass. It does not appear that there are any invasive species on the site.

The proposed development anticipates regrading of the site including the detention basin. This work will require tree protection fencing for the street trees that are proposed to remain. Refer to the Soil Erosion Control Plan for protection measures to be installed.



SCALE: 1" = 30'



LEGEND

- e EXIST. ELECTRIC LINE
- g EXIST. GAS LINE
- f.o. EXIST. FIBER OPTIC LINE
- w EXIST. WATER MAIN
- W PROP. WATER MAIN
- h EXIST. HYDRANT
- H PROP. HYDRANT
- g EXIST. GATE VALVE IN BOX
- G PROP. GATE VALVE IN BOX
- r EXIST. STORM SEWER
- R REDUCED STORM SEWER
- o EXIST. CATCH BASIN OR INLET
- O PROP. CATCH BASIN OR INLET
- RD PROP. ROOF DRAIN
- END SECTION
- DS PROP. DOWNSPOUT
- s EXIST. SANITARY SEWER
- S PROP. SANITARY SEWER
- o EXIST. CLEANOUT
- O PROP. CLEANOUT

EXISTING TREES

#	DBH	COMMON NAME	GENUS/SPECIES	STEMS	LM	SCORE	INV	RM
101	14"	Maple	Acer spp					
102	2"	Elm	Ulmus spp					
103	15"	Maple	Acer spp					
104	12"	Pine	Pinus spp					X
105	11"	Catalpa	Catalpa speciosa				X	X
106	8"	Locust	Gleditsia spp					
107	10"	Locust	Gleditsia spp					
108	5"	Locust	Gleditsia spp					
109	6"	Catalpa	Catalpa spp				X	X
110	7"	Catalpa	Catalpa spp				X	X
111	15"	Maple	Acer spp					X
112	15"	Maple	Acer spp					
113	13"	Maple	Acer spp					
114	15"	Maple	Acer spp					
115	5"	Maple	Acer spp					
116	12"	Catalpa	Catalpa spp				X	X
117	6"	Catalpa	Catalpa spp	Double			X	X
118	7"	Maple	Acer spp					
119	5"	Maple	Acer spp					
120	4"	Birch	Betula spp.					
121	10"	Locust	Gleditsia spp					
122	9"	Maple	Acer spp					
123	11"	Maple	Acer spp					
124	10"	Maple	Acer spp					
125	9"	Maple	Acer spp					
126	10"	Maple	Acer spp					
127	10"	Maple	Acer spp					
128	7"	Linden	Tilia americana					
129	7"	Maple	Acer spp					
130	11"	Maple	Acer spp					X
131	6"	Maple	Acer spp					X
132	10"	Maple	Acer spp					X
133	7"	Maple	Acer spp					X
134	11"	Spruce	Picea spp					X
135	11"	Spruce	Picea spp					X
136	10"	Spruce	Picea spp					X
137	7"	Maple	Acer spp					
138	9"	Maple	Acer spp					
139	12"	Pine	Pinus spp					
140	10"	Pine	Pinus spp					
141	7"	Pine	Pinus spp					
142	10"	Pine	Pinus spp					
143	10"	Maple	Acer spp					
144	12"	Pine	Pinus spp					
145	11"	Pine	Pinus spp					
146	13"	Pine	Pinus spp					

SOIL DESCRIPTIONS

BntaaB — Blount loam, 2 to 6 percent slopes. (97.2% of site)
MoB — Glywood loam, 2 to 6 percent slopes. (2.8% of site)

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THE CRESCENT
SITE PLAN
NATURAL FEATURES PLAN

8

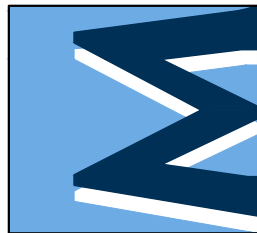
JOB No. 23351

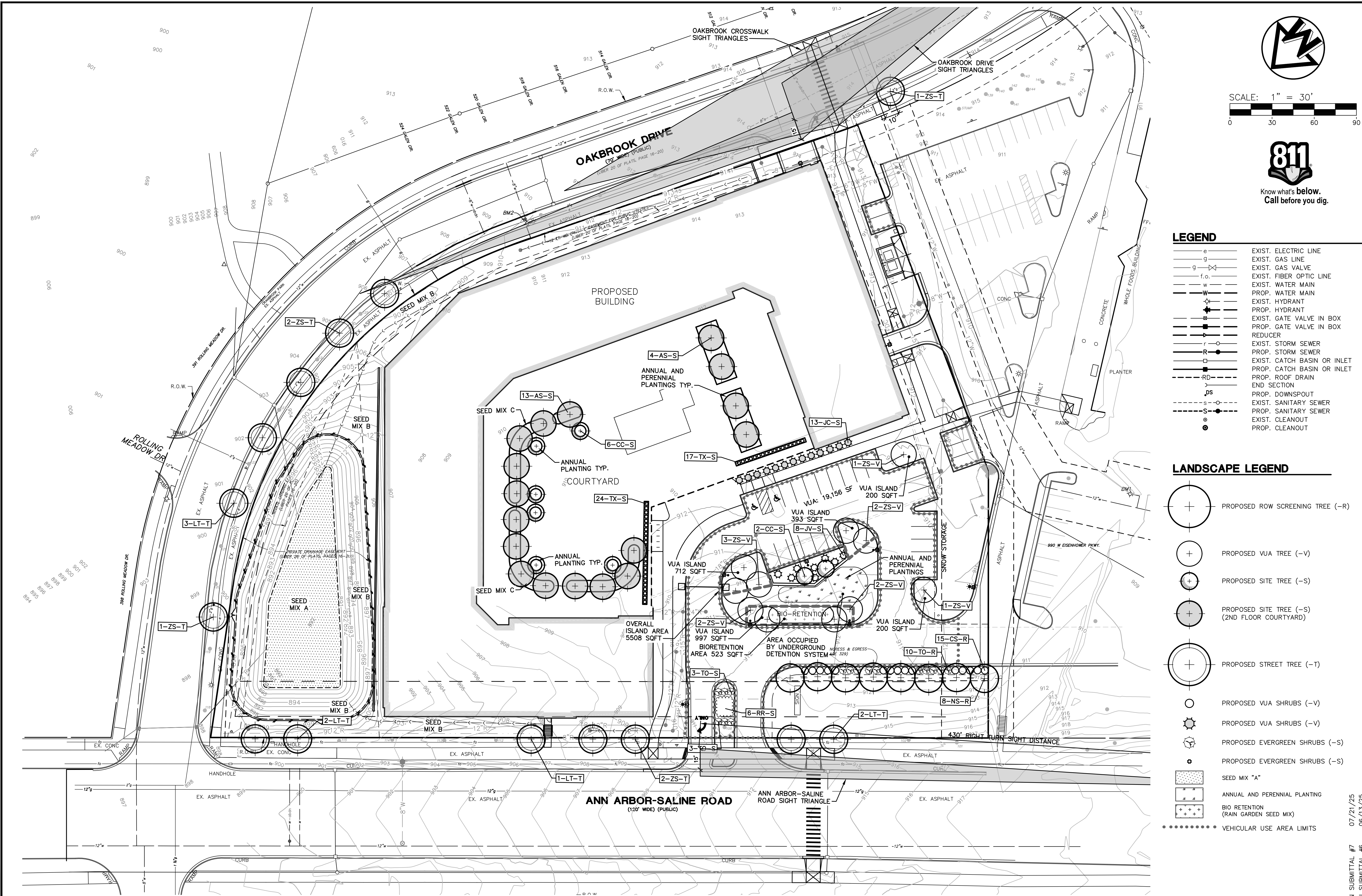
DATE: 04/18/24
SHEET 8 OF 35

REVISIONS:	REV. DATE	BY	APP.
PRELIMINARY CITY SUBMITTAL	04/05/24	CADD: CWM	
SITE PLAN SUBMITTAL #1	04/18/24	ENG: CWM	
SITE PLAN SUBMITTAL #2	08/14/24	PM: RCW	
SITE PLAN SUBMITTAL #3	12/12/24	TECH: JAC	
SITE PLAN SUBMITTAL #4	05/23/25	TECH: JAC	

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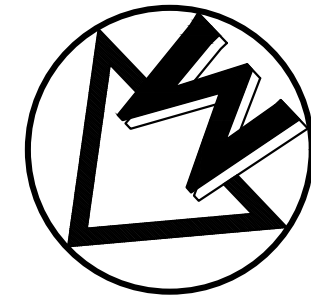
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NOTE: ANY SPECIES DEVIATIONS FROM THE APPROVED SITE PLAN MUST BE APPROVED IN WRITING BY THE CITY OF ANN ARBOR PRIOR TO INSTALLATION.



SCALE: 1" = 30'



LEGEND

- EXIST. ELECTRIC LINE
- EXIST. GAS LINE
- EXIST. GAS VALVE
- EXIST. FIBER OPTIC LINE
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN BOX
- PROP. GATE VALVE IN BOX
- REDUCER
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- PROP. ROOF DRAIN
- END SECTION
- PROP. DOWNSPOUT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEANOUT
- PROP. CLEANOUT

LANDSCAPE LEGEND

- PROPOSED ROW SCREENING TREE (-R)
- PROPOSED VUA TREE (-V)
- PROPOSED SITE TREE (-S)
- PROPOSED SITE TREE (-S) (2ND FLOOR COURTYARD)
- PROPOSED STREET TREE (-T)
- PROPOSED VUA SHRUBS (-V)
- PROPOSED VUA SHRUBS (-V)
- PROPOSED EVERGREEN SHRUBS (-S)
- PROPOSED EVERGREEN SHRUBS (-S)
- SEED MIX "A"
- ANNUAL AND PERENNIAL PLANTING
- BIO RETENTION (RAIN GARDEN SEED MIX)
- VEHICULAR USE AREA LIMITS

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THE CRESCENT

SITE PLAN
LANDSCAPE PLAN

9

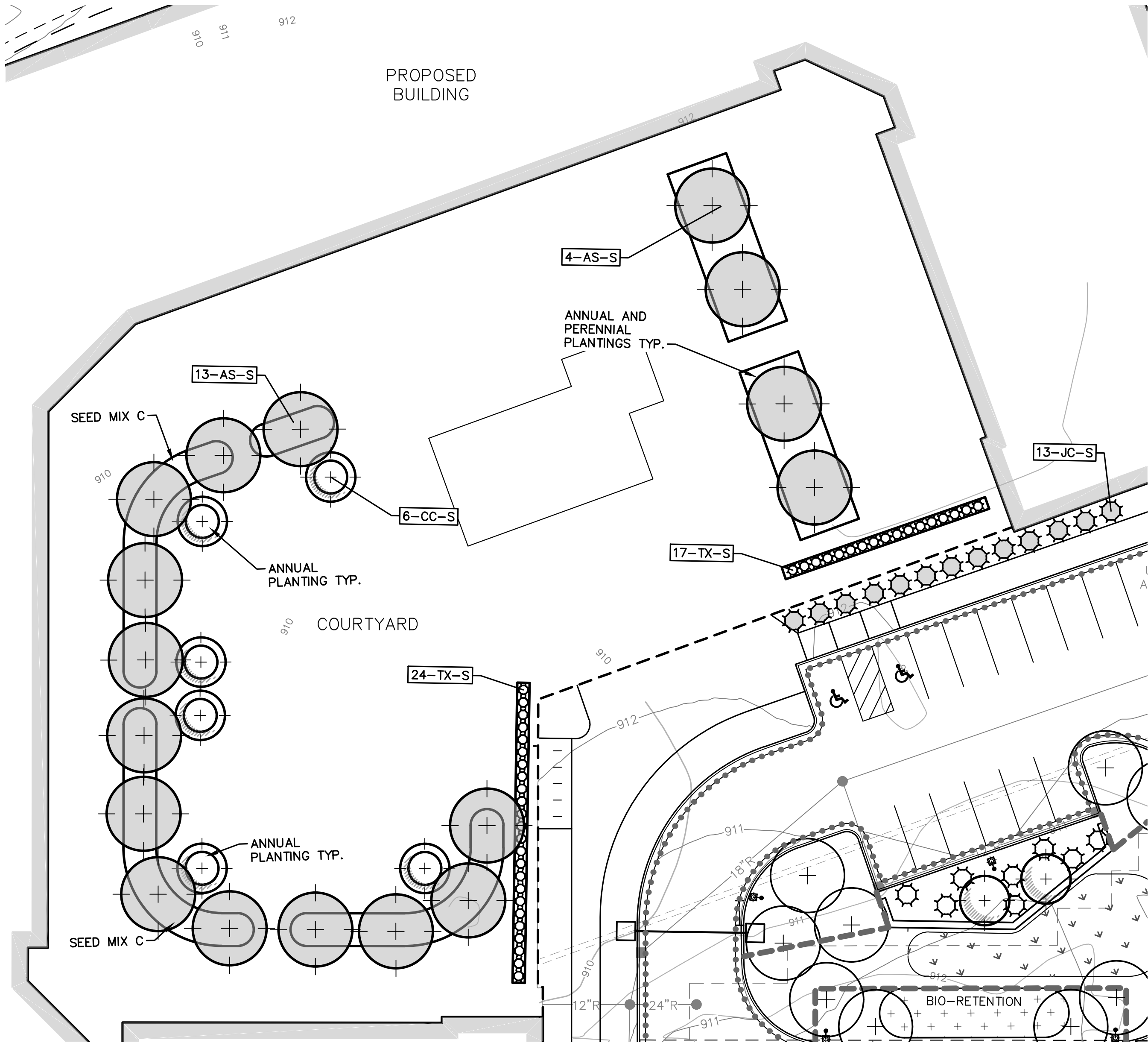
DATE: 04/18/24
SHEET 9 OF 35
REV. DATE: 04/18/24
CADD: ENG: CMW
SITE PLAN SUBMITTAL #2
SITE PLAN SUBMITTAL #3
SITE PLAN SUBMITTAL #4
SITE PLAN SUBMITTAL #5

07/21/25
06/13/25

JOB No. 23351

DATE: 04/18/24
SHEET 9 OF 35
REV. DATE: 04/18/24
CADD: ENG: CMW
SITE PLAN SUBMITTAL #2
SITE PLAN SUBMITTAL #3
SITE PLAN SUBMITTAL #4
SITE PLAN SUBMITTAL #5

07/21/25
06/13/25



NOTE: ANY SPECIES DEVIATIONS FROM THE APPROVED SITE PLAN MUST BE APPROVED IN WRITING BY THE CITY OF ANN ARBOR PRIOR TO INSTALLATION.

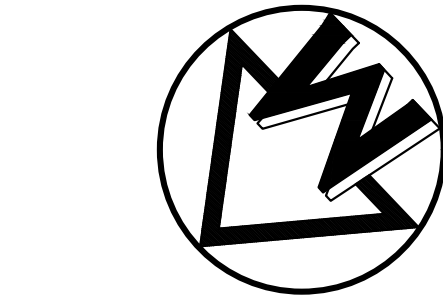
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LEGEND

— e —	EXIST. ELECTRIC LINE
— g —	EXIST. GAS LINE
— g —	EXIST. GAS VALVE
— f.o. —	EXIST. FIBER OPTIC LINE
— w —	EXIST. WATER MAIN
— W —	PROP. WATER MAIN
— H —	EXIST. HYDRANT
— H —	PROP. HYDRANT
— B —	EXIST. GATE VALVE IN BOX
— B —	PROP. GATE VALVE IN BOX
— R —	REDUCER
— R —	EXIST. STORM SEWER
— R —	PROP. STORM SEWER
— R —	EXIST. CATCH BASIN OR INLET
— R —	PROP. CATCH BASIN OR INLET
— RD —	PROP. ROOF DRAIN
— > —	END SECTION
— s —	PROP. DOWNSPOUT
— S —	EXIST. SANITARY SEWER
— S —	PROP. SANITARY SEWER
— S —	EXIST. CLEANOUT
— S —	PROP. CLEANOUT

LANDSCAPE LEGEND

⊕	PROPOSED ROW SCREENING TREE
⊕	PROPOSED VUA TREE
⊕	PROPOSED CANOPY TREE
⊕	PROPOSED CANOPY TREE (2ND FLOOR COURTYARD)
⊕	PROPOSED VUA SHRUBS
⊕	PROPOSED VUA SHRUBS
⊕	PROPOSED EVERGREEN SHRUBS
⊕	PROPOSED EVERGREEN SHRUBS
⊕	SEED MIX "A"
⊕	VEHICULAR USE AREA LIMITS



SCALE: 1" = 20'



LANDSCAPE REQUIREMENTS

	Required	Proposed
Right-of-Way Screening	10ft when VUA viewed from public ROW 1 tree per 30ft; continuous hedge/screen 30inches in ht 242 ft / 30 = 8 trees	8 Trees Proposed; 25 Shrubs Proposed
Vehicle Use Area		
Interior Islands	1:20th VUA ratio for island; minimum 165 SF per island; 50% required island area as bio-retention Total VUA: 19,156 SF 19,156 SF / 20 = 958 SF Required Islands 958 SF x 50% = 479 SF Required Bio-retention	2,502 SF Proposed 523 SF of Bio-retention Provided
Interior Island Trees	1 tree per island; 1 tree for every 250 SF of required interior landscape island 958 SF / 250 = 4 trees 2,502 SF / 250 = 10 trees	11 Trees Proposed
Snow Pile Storage	Identify locations on plan	Identified
Street Trees	1 tree per 45ft abutting public street right-of-way; may be satisfied by existing trees 554ft (excluding curb cuts) / 45ft = 13 trees (Ann Arbor Saline Rd) 598ft / 45ft = 16 trees (Oakbrook Drive)	Ann Arbor Saline: 6 Existing to Remain; 7 Proposed Oakbrook: 13 Existing to Remain; 7 Proposed
Street tree canopy loss fee	total dbh removed - caliber replacement trees x \$244 per inch (38in - 42in) x \$244 = 0	N/A: Proposed street trees provided to replace street trees being removed
Tree Mitigation	50% DBH of LM trees removed	N/A
Public Park and Residential Zoning District Buffers		
Where non-residential parcel abuts public park or R zoning district	Min 15' wide strip, one tree for every 15 ft, at least 50% of trees within the buffer will be evergreen, continuous screening 4ft high	N/A: Proposed use is residential
Outdoor Refuse/Recycling	6ft high opaque wall or fence when viewed from ROW or adjacent residential use	N/A: Roll out cans stored in building

* When applying for a grading permit, a ROW Street Tree Permit will also be required. There is no cost for this permit. Include the project number on the application. If required, the Canopy Loss Fee will be invoiced through that permit.

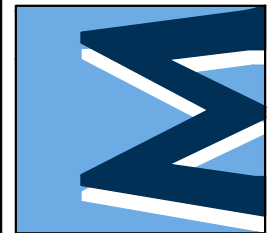
PLANT SCHEDULE

	Total	ROW (-R)	VUA (-V)	STREET TREES (-T)	STE (-S)	Code	Scientific Name	Common Name	Root	Size	Spacing	Notes
Deciduous Trees												
	8			8		LT	<i>Liriodendron tulipifera</i>	Tulip Tree	B&B	3" cal		
	8	8				NS	<i>Nyssa sylvatica</i>	Black Gum	B&B	2.5" cal		Single Stem
	11		11			ZS	<i>Zelkova serrata</i>	Japanese Zelkova	B&B	2.5" cal		
	6			6		ZS	<i>Zelkova serrata</i>	Japanese Zelkova	B&B	3" cal		
Sub Total	33	8	11	14	0							
Shrubs												
	10	10				TO	<i>Thuja occidentalis</i> 'Mr. Bowling Ball'	Mr. Bowling Ball Arborvitae	B&B	30" hgt.		
	15	15				CS	<i>Cornus sericea</i> 'Kelsey'	Kelsey's Dwarf Red Twig Dogwood	B&B	30" hgt.		
Sub Total	25	25	0	0	0							
Perennials												
	6				6	RR	<i>Rosa</i> 'Radslam'	Orange Glow Knockout Rose	Cont.	No. 3		
Sub Total	6	0	0	0	6							
TOTAL	64	33	11	14	6							

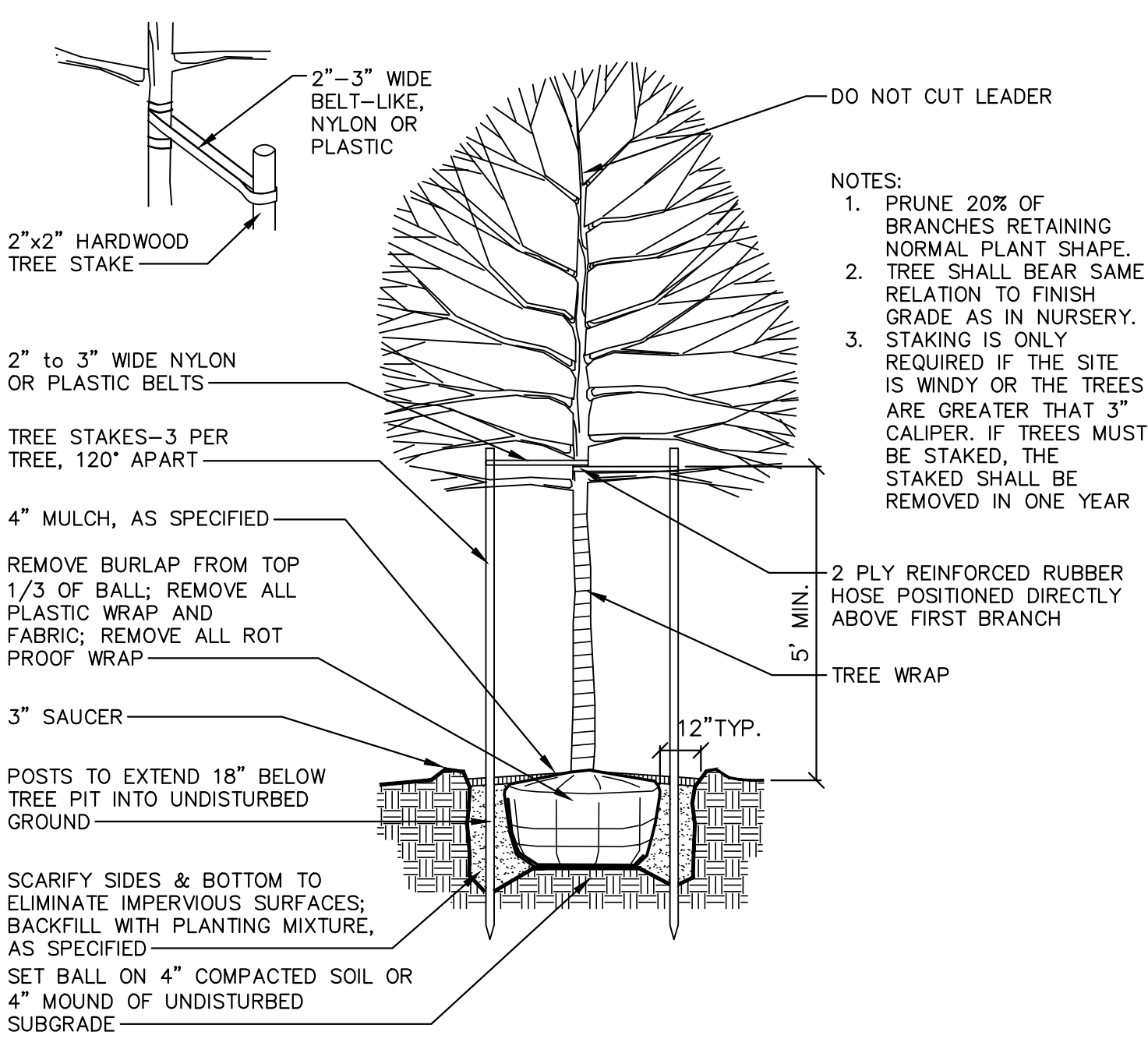
ALL SPECIES DEVIATIONS MUST BE APPROVED IN WRITING BY THE CITY OF ANN ARBOR PRIOR TO INSTALLATION

OPTIONAL PLANT SCHEDULE

	Total	ROW (-R)	VUA (-V)	STREET TREES (-T)	STE (-S)	Code	Scientific Name	Common Name	Root	Size	Spacing	Notes
Deciduous Trees												
	21				21	AS	<i>Acer saccharum</i> 'Goldspire'	Goldspire Sugar Maple	B&B	2.5" cal		
	13				13	JC	<i>Juniperus chinensis</i> 'Blue Point'	Blue Point Juniper	B&B	4' hgt.		
	10				10	CC	<i>Cercis canadensis</i>	Redbud	B&B	2" Cal.		
Sub Total	44	0	0	0	44							
Shrubs												
	8				8	JV	<i>Juniperus virginiana</i> 'Grey Owl'	Grey Owl Juniper	B&B	30" hgt.		
	41				41	TX	<i>Taxus x media</i> 'Hicksii'	Hicks Yew	B&B	30" hgt.		
Sub Total	49	0	0	0	49							
TOTAL	93	0	0	0	93							



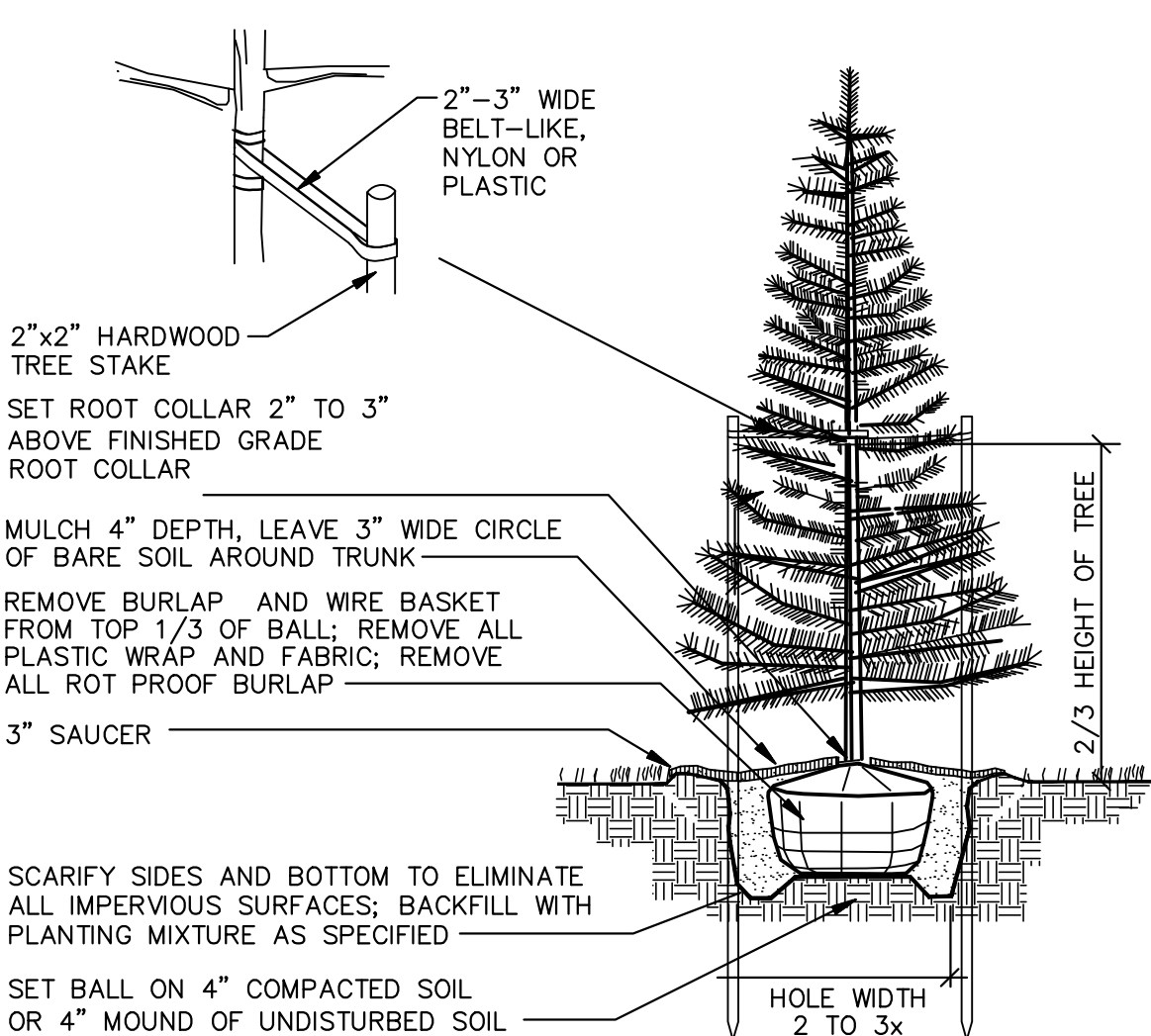
NOTE: REMOVE STAKING/GUYING MATERIAL AFTER ONE YEAR.



DECIDUOUS TREE PLANTING DETAIL

2-1/2" CAL OR SMALLER
SCALE: NTS

NOTE: REMOVE STAKING/GUYING MATERIAL AFTER ONE YEAR.



EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

NOTE: PRUNE 20% OF BRANCHES AND FOLIAGE RETAINING NORMAL PLANT

SHAPE DO NOT TRIM EVERGREENS

SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY

DO NOT PLANT SHRUBS TO WITHIN 42" OF TREE TRUNKS IN SHRUB BEDS

4" MULCH AS SPECIFIED

PLANTING BED TREATMENT

3" SAUCER

REMOVE BURLAP FROM TOP 1/3 OF BALL; REMOVE ALL PLASTIC WRAP AND FABRIC; REMOVE ALL ROT PROOF WRAP

PLANT MIXTURE AS SPECIFIED

SCARIFY SIDES & BOTTOM TO ELIMINATE IMPERVIOUS SURFACES

SET BALL ON 4" COMPACTED SOIL OR 4" MOUND OF UNDISTURBED SUBGRADE

EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

DO NOT TRIM EVERGREENS

SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY

DO NOT PLANT SHRUBS TO WITHIN 42" OF TREE TRUNKS IN SHRUB BEDS

4" MULCH AS SPECIFIED

3" SAUCER

REMOVE BURLAP FROM TOP 1/3 OF BALL; REMOVE ALL PLASTIC WRAP AND FABRIC; REMOVE ALL ROT PROOF WRAP

PLANT MIXTURE AS SPECIFIED

SCARIFY SIDES & BOTTOM TO ELIMINATE IMPERVIOUS SURFACES

SET BALL ON 4" COMPACTED SOIL OR 4" MOUND OF UNDISTURBED SUBGRADE

DECIDUOUS SHRUB PLANTING DETAIL

NOT TO SCALE

STORMWATER SEED MIX A

Stormwater Seed Mix		
Botanical Name	Common Name	PLS Ounces/Acre
Permanent Grasses/Sedges/Rushes:		
<i>Bolboschoenus fluviatilis</i>	River Bulrush	1.00
<i>Carex cristatella</i>	Crested Oval Sedge	0.50
<i>Carex lurida</i>	Bottlebrush Sedge	3.00
<i>Carex vulpinoidea</i>	Brown Fox Sedge	2.00
<i>Elymus virginicus</i>	Virginia Wild Rye	24.00
<i>Glyceria striata</i>	Fowl Manna Grass	1.00
<i>Juncus effusus</i>	Common Rush	1.00
<i>Leersia oryzoides</i>	Rice Cut Grass	1.00
<i>Panicum virgatum</i>	Switch Grass	2.00
<i>Schoenoplectus tabernaemontani</i>	Great Bulrush	3.00
<i>Scirpus atrovirens</i>	Dark Green Rush	2.00
<i>Scirpus cyperinus</i>	Wool Grass	1.00
Total		41.50
Temporary Cover:		
<i>Avena sativa</i>	Common Oat	512.00
Total		512.00
Forbs & Shrubs:		
<i>Alisma subcordatum</i>	Common Water Plantain	2.50
<i>Asclepias incarnata</i>	Swamp Milkweed	2.00
<i>Bidens spp.</i>	Bidens Species	2.00
<i>Eupatorium perfoliatum</i>	Common Boneset	1.00
<i>Helenium autumnale</i>	Sneezeweed	2.00
<i>Iris virginica v. shrevei</i>	Blue Flag	4.00
<i>Lycopus americanus</i>	Common Water Horehound	0.50
<i>Mimulus ringens</i>	Monkey Flower	1.00
<i>Penthorum sedoides</i>	Ditch Stonecrop	0.50
<i>Persicaria spp.</i>	Pinkweed Species	2.00
<i>Rudbeckia subtomentosa</i>	Sweet Black-Eyed Susan	1.00
<i>Rudbeckia triloba</i>	Brown-Eyed Susan	1.50
<i>Sagittaria latifolia</i>	Common Arrowhead	1.00
<i>Senna hebecarpa</i>	Wild Senna	2.00
<i>Symphytichium lanceolatum</i>	Panicked Aster	0.50
<i>Symphytichium novae-angliae</i>	New England Aster	0.50
<i>Thalictrum dasycarpum</i>	Purple Meadow Rue	2.00
Total		26.00

LOW PROFILE PRAIRIE SEED MIX B

Low-Profile Prairie Seed Mix		
Botanical Name	Common Name	PLS Ounces/Acre
Permanent Grasses:		
<i>Bootteloua curtipendula</i>	Side-Oats Grama	16.00
<i>Carex spp.</i>	Prairie Sedge Species	4.00
<i>Elymus canadensis</i>	Canada Wild Rye	32.00
<i>Koeleria macrantha</i>	June Grass	1.00
<i>Panicum virgatum</i>	Switch Grass	1.00
<i>Schizachyrium scoparium</i>	Little Bluestem	36.00
Total		90.00
Temporary Cover:		
<i>Avena sativa</i>	Common Oat	512.00
Total		512.00
Forbs:		
<i>Amorpha canescens</i>	Lead Plant	0.50
<i>Asclepias syriaca</i>	Common Milkweed	2.00
<i>Asclepias tuberosa</i>	Butterfly Weed	2.00
<i>Baptisia alba</i>	White Wild Indigo	2.00
<i>Chamaecrista fasciculata</i>	Partridge Pea	10.00
<i>Coreopsis lanceolata</i>	Sand Coreopsis	5.00
<i>Coreopsis palmata</i>	Prairie Coreopsis	1.00
<i>Dalea candida</i>	White Prairie Clover	1.50
<i>Dalea purpurea</i>	Purple Prairie Clover	1.50
<i>Desmanthus illinoensis</i>	Illinois Sensitive Plant	3.00
<i>Echinacea purpurea</i>	Broad-Leaved Purple Coneflower	8.00
<i>Eryngium yuccifolium</i>	Rattlesnake Master	2.00
<i>Lespedeza capitata</i>	Round-Headed Bush Clover	2.00
<i>Liatris aspera</i>	Rough Blazing Star	0.50
<i>Lupinus perennis v. occidentalis</i>	Wild Lupine	4.00
<i>Manarda fistulosa</i>	Wild Bergamot	0.50
<i>Oligoneuron rigidum</i>	Stiff Goldenrod	1.00
<i>Parthenium integrifolium</i>	Wild Quinine	1.00
<i>Penstemon digitalis</i>	Foxglove Beard Tongue	0.50
<i>Penstemon hirsutus</i>	Hairy Beard Tongue	1.00
<i>Ratibida pinnata</i>	Yellow Coneflower	4.00
<i>Rudbeckia hirta</i>	Black-Eyed Susan	5.00
<i>Rudbeckia subtomentosa</i>	Sweet Black-Eyed Susan	1.00
<i>Silphium terebinthinaceum</i>	Prairie Dock	1.00
<i>Solidago speciosa</i>	Showy Goldenrod	0.50
<i>Symphytichium ericoides</i>	Heath Aster	0.25
<i>Symphytichium laeve</i>	Smooth Blue Aster	1.00
<i>Symphytichium novae-angliae</i>	New England Aster	0.50
<i>Tradescantia ohniensis</i>	Common Spiderwort	1.00
<i>Verbena stricta</i>	Hoary Vervain	1.00
<i>Vernonia gigantea</i>	Smooth Tall Ironweed	1.50
<i>Veronicastrum virginicum</i>	Culver's Root	0.25
Total		66.00

- For any plant quantity discrepancies between the plan view and the plant schedules, the plant schedule shall take precedence.
- Plant materials shall be selected and installed in accordance with standards established by City of Ann Arbor.
- All species deviations from the approved site plan must be approved in writing by the City of Ann Arbor prior to installation.
- In-ground automatic irrigation shall be provided for all landscaped planting beds. Contractor to provide irrigation shop drawings for review and approval. OR In-ground automatic irrigation shall be provided for all landscaped areas except for the detention basin and naturalized wetland buffer. OR Water outlets shall be provided within 150 feet of all required plantings.
- All diseased, damaged or dead material shown on the site plan as proposed plantings shall be replaced by the end of the following growing season.
- Restore disturbed areas with a minimum of four (4) inches of topsoil and then seed/fertilize/mulch.
- All disturbed areas not called for planting specifically identified or to be seeded with seed mixes on the Landscape Plan shall be lawn areas. Lawns shall either be sod or seed and seed mix shall meet species composition requirements of MDOT Class 1 Lawn Mixture. Seed shall be installed and stabilized per MDOT standard specifications most current issue. Mulch within 24 hours with two (2) tons of straw per acre, or 71 bales of excelsior mulch per acre. Anchor straw mulch with spray coating of adhesive material applied at the rate of 150 gals. / acre.
- Seed shall be applied at a rate of five pounds (5 lbs) per 1000 sq. ft. Mulch within 24 hours with two (2) tons of straw per acre, or 71 bales of excelsior mulch per acre. Anchor straw mulch with spray coating of adhesive material applied at the rate of 150 gals. / acre.
- After the first growing season, only fertilizers that contain NO phosphorus shall be used on the site.
- Areas identified on the Landscape Plan with seed mixes shall be seeded with specified seed mixes from Cardno, or equivalent as approved by landscape architect. Temporary cover crop shall be included with all seed mixes. Seeding rates and installation techniques shall be confirmed with supplier.
- All seeded areas with slopes less than 1:3 (one vertical foot for every 3 horizontal feet) shall be mulched with straw mulch at the rate of two (2) bales per 1,000 square feet. All seeded areas with slopes greater than 1:3 shall be seeded and biodegradable erosion control blanket North American Green SC150, or equivalent, shall be applied with biodegradable stakes.
- Deciduous plants shall be planted between March 1 and May 15 and from October 1 until the prepared soil becomes frozen. Evergreen plants shall be planted between March 1 and June 1 and from August 15 to September 15.
- Native seeding areas shall be seeded after May 1, (when soil is free of frost and in workable condition), but before June 15 or after October 1, but before November 30 (or prior to ground freezing) or as approved by Landscape Architect or guaranteed by the supplier. If seeding is performed outside planting window, contractor shall perform regularly scheduled watering for installed seed and as needed based on weather conditions to ensure germination and establishment of seed.
- All planting beds are to receive four (4) inches of shredded hardwood bark mulch.
- All trees to be located a minimum of 10 feet from public utilities.
- All single trunk, deciduous trees shall have a straight and a symmetrical crown with a central leader. One sided trees or those with thin or open crowns shall not be accepted.
- All evergreen trees shall be branched fully to the ground, symmetrical in shape and have not been sheared in the last three (3) growing seasons.
- All compacted subgrade soils in proposed landscape areas shall be tilled to a minimum 12-inch depth prior to placement of topsoil, geotextile fabric, or other planting media as specified.
- Proposed trees will be planted a minimum of 15 feet apart.
- Topsoil and compost shall meet most recent issue of MDOT standard specifications for Topsoil and Compost.
- Planting Soil: Existing, in-place or stockpiled topsoil. Supplement with imported topsoil as needed. Verify suitability of existing surface soil to produce viable planting soil. Final approval of soil composition shall be provided by the landscape contractor. Remove stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix surface soil with the following soil amendments to produce planting soil:
 - Ratio of Loose Compost to Topsoil by Volume: 1:4.
 - Weight of Lime per 1000 Sq. Ft.: Amend with lime only on recommendation of soil test to adjust soil pH.
 - Weight of Sulfur or Aluminum Sulfate per 1,000 Sq. Ft.: Amend with sulfur or aluminum sulfate only on recommendation of soil test to adjust soil pH.
 - Volume of Sand: Amend with sand only on recommendation of Landscape Architect to adjust soil texture.
 - Weight of Slow-Release Fertilizer per 1,000 Sq. Ft.: Amend with fertilizer only on recommendation of soil test to adjust soil fertility.
- Native seeding installation shall be performed by a qualified contractor with documented experience of successful established native seeding. Seed shall be installed per manufacturer's specification via hand broadcast.
- At the time of plant and seed delivery for the detention basins, including native seed and live plantings, a Washtenaw County Water Resource Commissioner landscape reviewer must be present. Contact Katie Wytchak at wytychak@ewashtenaw.org or 734-222-6813 to coordinate.
- Detention basin and bottom of Bio-retention areas shall be seeded with Wet-Mesic Prairie Mix from Native Connections, or equivalent as approved by landscape architect, as noted on Landscape Plan. Seeding rates and installation techniques shall be confirmed with supplier. Detention basin side slopes and perimeter of Bio-retention areas as noted in Landscape Plan shall be seeded with native grass seed mix below.

Native Grass Seed Mix		
Botanical Name	Common Name	Application
<i>Andropogon gerardii</i>	Big Blue Stem	8 oz/acre
<i>Carex vulpinoidea</i>	Fox Sedge	4 oz/acre
<i>Elymus canadensis</i>	Canada Wild Rice	8 oz/acre
<i>Koeleria cristata</i>	Prairie June Grass	1 lbs/acre
<i>Panicum virgatum</i>	Switch Grass	2 lbs/acre
<i>Schizachyrium scoparium</i>	Little Blue Stem	1.5 lbs/acre
<i>Lolium multiflorum</i>	Annual Rye	200 lbs/acre

A bi-annual, mowable, semi-natural, cool-season seed mix suited for basin bottom and side slopes.

- Snow cannot be pushed onto interior islands unless they are designated on the plan for snow storage. Bio-retention islands can be used for snow storage.
- Snow storage areas are located along the edges and corners of parking areas as shown on the plan.
- During the establishment period for the installed deciduous mitigation trees (1-2 years as to be determined by certified arborist):
 - The trunk of young trees shall be wrapped in late autumn and wrap shall be removed in early spring

Maintenance:

- Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.
- Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
- Contractor shall warranty all plant material and trees to remain alive and be in healthy, vigorous and like new condition for the specified period from installation to Substantial Completion. The entire Landscaping Project, including but not limited to: plants (perennials), trees, shrubs, mulches, shrubs, etc. are to be under Warranty for One Year after Substantial Completion date of the Project. At the end of the specified One Year Warranty period the Owner's Representative will inspect plant material for compliance. Contractor shall replace, in accordance with the drawings and specifications, all plants, trees, shrubs, etc. or as determined by the Owner's Representative, are in an unhealthy or unsightly condition. Warranty shall not include damage or loss of plants, trees, and shrubs caused by fires, floods, freezing rains, lightning storms, or winds over 75 miles per hour, acts of vandalism or negligence on the part of the owner, or any other incident beyond landscape contractor's control.
- Watering: The contractor shall keep seed moist for optimum plant growth (1" of total water per week, including rainfall) until the grass and/or flowers are four (4) inches high typical.
- Protection from traffic and erosion in newly seeded areas is the responsibility of the contractor. Safety fences and/or silt fence with appropriate signage may be used at the contractor's expense until the grasses and flowers are fully established.
- Erosion shall be repaired by the contractor.
- Native seeding installation areas shall meet the following criteria as determined by Owner:
 - The contractor shall review native seed sources with owner prior to ordering and shall submit an invoice following purchase and delivery of the seed.
 - Establishment of a dense stand of perennial grasses and/or flowers as specified is the responsibility of the contractor. Any part of the area that fails to show a uniform germination (80% for Native Planting Areas) shall be re-seeded, and such re-seeding shall continue until a dense planting in these areas is established.
 - Bare spots over three (3) percent of the area or greater than one (1) square foot in size will not be allowed, unless otherwise approved by the owner.
 - Initial mowing of the native planting areas (using flail mower) shall occur after one season of growth when the weeds are ten (10) inches high or prior to invasive weeds setting seed. Mowed height shall be 5". Weeds on slopes 3:1 or greater shall be mowed with a hand-held flail mower or common weed whacker.
 - Provisional Acceptance: By the end of the first full growing season, 20% of the native species seeded and 80% total cover shall be established as determined by the Owner.
 - Second Year Acceptance: By the end of the second growing season, 40% of the native species seeded and 90% total cover shall be established as determined by the Owner.
- Long-term maintenance of the Bio-retention island and rain garden shall be performed by the Owner. Maintenance shall include seasonal trimming and removal of dead foliage, removal of weeds, and removal or mulching of leaves and stems. Spot treatment/removal of invasive weeds may be necessary if localized areas become dominated by invasive weeds. Bio-retention island shall be inspected by owner following any storm event exceeding 1". Trash and debris shall be removed as needed. Shredded hardwood mulch must be re-spread when erosion is evident and be replenished annually. Once every 2 to 3 years, the entire bio-retention/rain garden area may require mulch replacement.
- Turf installations shall meet the following criteria as determined by Owner:
 - Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
 - Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
 - Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

Native Landscape Maintenance

- Native seeding areas shall be maintained by contractor for three years after installation to promote establishment of native vegetation and reduce weeds and invasive species. Contractor is responsible for obtaining any necessary permits for herbicide applications. All herbicide applied to native areas shall be suitable for aquatic environments.
- During the first growing season, the seeded areas shall be mowed monthly to a height of 4 to 6 inches when vegetation reaches 10 to 12 inches in height through September. Annual invasive weeds such as crabgrass, purple knapweed, purple loosestrife, yellow or white sweet clover, black medic or other invasive plants shall be spot controlled with herbicide. Do not hand pull invasive weeds during first growing season.
- During the second growing season, the seeded areas shall be mowed approximately every month to a height of 8 inches when vegetation reaches 12 to 18 inches. Annual invasive weeds noted above shall be spot controlled with or hand pulled as appropriate.
- During the third growing season, the seeded area shall be mowed to 4 inches in height during early spring (between February and April) and raked to remove clippings. Annual invasive weeds noted above shall be spot controlled with herbicide appropriate or hand pulled as appropriate.
- Long-term maintenance of the native seeded areas and detention basin shall be performed by the Owner. Maintenance shall include mowing to 4 inches in height during early spring (between February and April) and raking to remove clippings. Spot treatment/removal of invasive weeds may be necessary if localized areas become dominated by invasive weeds.

JOB No. 23351

DATE: SHEET 11 OF 35

THE CRESCENT SITE PLAN

LANDSCAPE DETAILS

11

REVISIONS:

PRELIMINARY CITY SUBMITTAL

REV. DATE: 04/05/24

ENG. CWM

04/18/24

08/14/24

12/12/24

12/12/24

05/23/25

05/23/25

CLIENT CRANBROOK VILLAGE LIMITED PARTNERSHIP

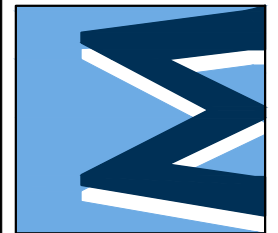
6735 TELEGRAPH ROAD, SUITE 110

BLOOMFIELD HILLS, MICHIGAN 48301

ATTN: NOAH JACOB

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Sanitary Sewer Mitigation Calculation

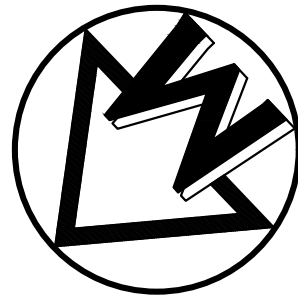
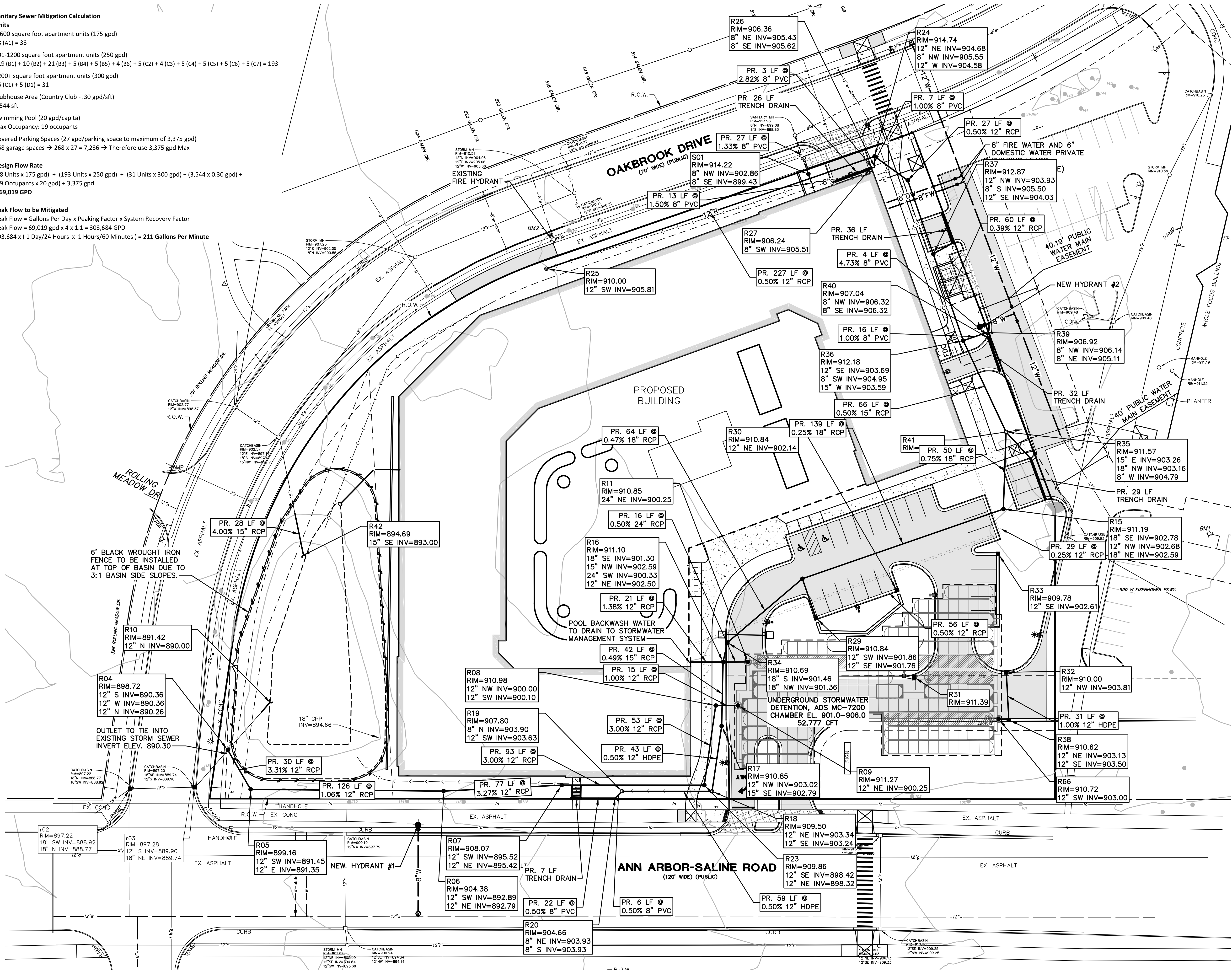
Units
0-600 square foot apartment units (175 gpd)
38 (A1) = 38
601-1200 square foot apartment units (250 gpd)
119 (B1) + 10 (B2) + 21 (B3) + 5 (B4) + 5 (B5) + 4 (B6) + 5 (C2) + 4 (C3) + 5 (C4) + 5 (C5) + 5 (C6) + 5 (C7) = 193
1200+ square foot apartment units (300 gpd)
26 (C1) + 5 (D1) = 31
Clubhouse Area (Country Club - .30 gpd/sft)
3,544 sft
Swimming Pool (20 gpd/capita)
Max Occupancy: 19 occupants
Covered Parking Spaces (27 gpd/parking space to maximum of 3,375 gpd)
268 garage spaces → 268 x 27 = 7,236 → Therefore use 3,375 gpd Max

Design Flow Rate

(38 Units x 175 gpd) + (193 Units x 250 gpd) + (31 Units x 300 gpd) + (3,544 x 0.30 gpd) +
(19 Occupants x 20 gpd) + 3,375 gpd
= **69,019 GPD**

Peak Flow to be Mitigated

Peak Flow = Gallons Per Day x Peaking Factor x System Recovery Factor
Peak Flow = 69,019 gpd x 4 x 1.1 = 303,684 GPD
303,684 x (1 Day/24 Hours x 1 Hours/60 Minutes) = **211 Gallons Per Minute**



SCALE: 1" = 30'
0 30 60 90



LEGEND

- EXIST. LIGHT POLE
- EXIST. ELECTRIC LINE
- EXIST. GAS LINE
- EXIST. GAS VALVE
- EXIST. FIBER OPTIC LINE
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN WELL
- PROP. GATE VALVE IN WELL
- EXIST. GATE VALVE IN BOX
- PROP. GATE VALVE IN BOX
- REDUCER
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- PROP. TRENCH DRAIN
- PROP. ROOF DRAIN
- END SECTION
- PROP. DOWNSPOUT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEANOUT
- PROP. CLEANOUT
- SIGN
- PROPOSED LIGHT
- SIDEWALK LEVEL LANDING

NOTES

- DOMESTIC WATER AND FIRE SUPPRESSION WATER SERVICES ARE TO TAP INTO THE PROPOSED 12" WATER MAIN IN THE LOT SOUTH OF THE PROPOSED BUILDING.
- THE SANITARY LEAD WILL TAP INTO THE EXISTING STRUCTURE LOCATED IN OAKBROOK DRIVE EAST OF THE PROPOSED BUILDING.
- NO PART OF ANY PRIVATE TRENCH DRAIN OR STORM SYSTEM SHALL BE LOCATED IN THE PUBLIC RIGHT OF WAY.
- THERE WILL BE NO FIRE WALLS WITHIN THE BUILDING.
- POOL BACKWASH WILL BE DECHLORINATED PRIOR TO BEING DISCHARGED TO THE STORMWATER DETENTION SYSTEM.

THE CRESCENT

SITE PLAN
SITE UTILITY PLAN

12

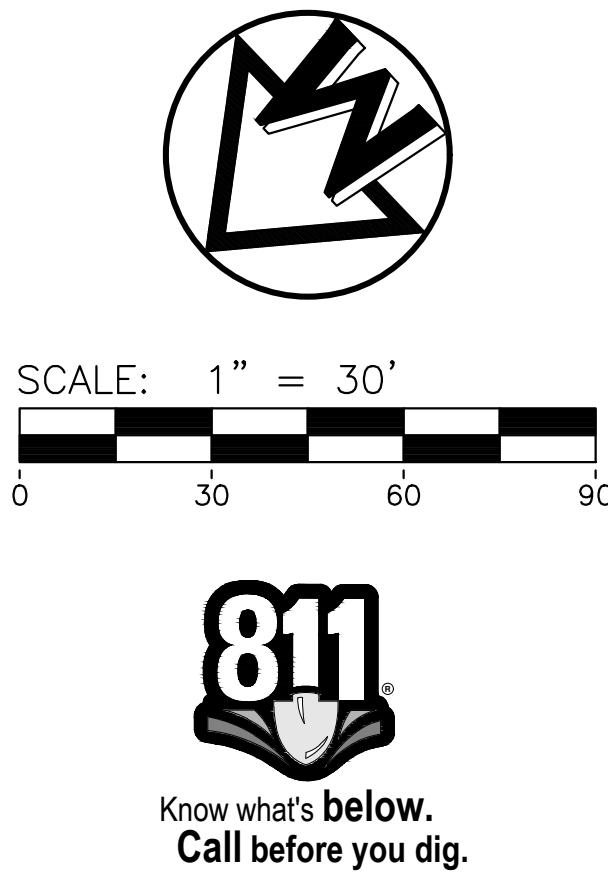
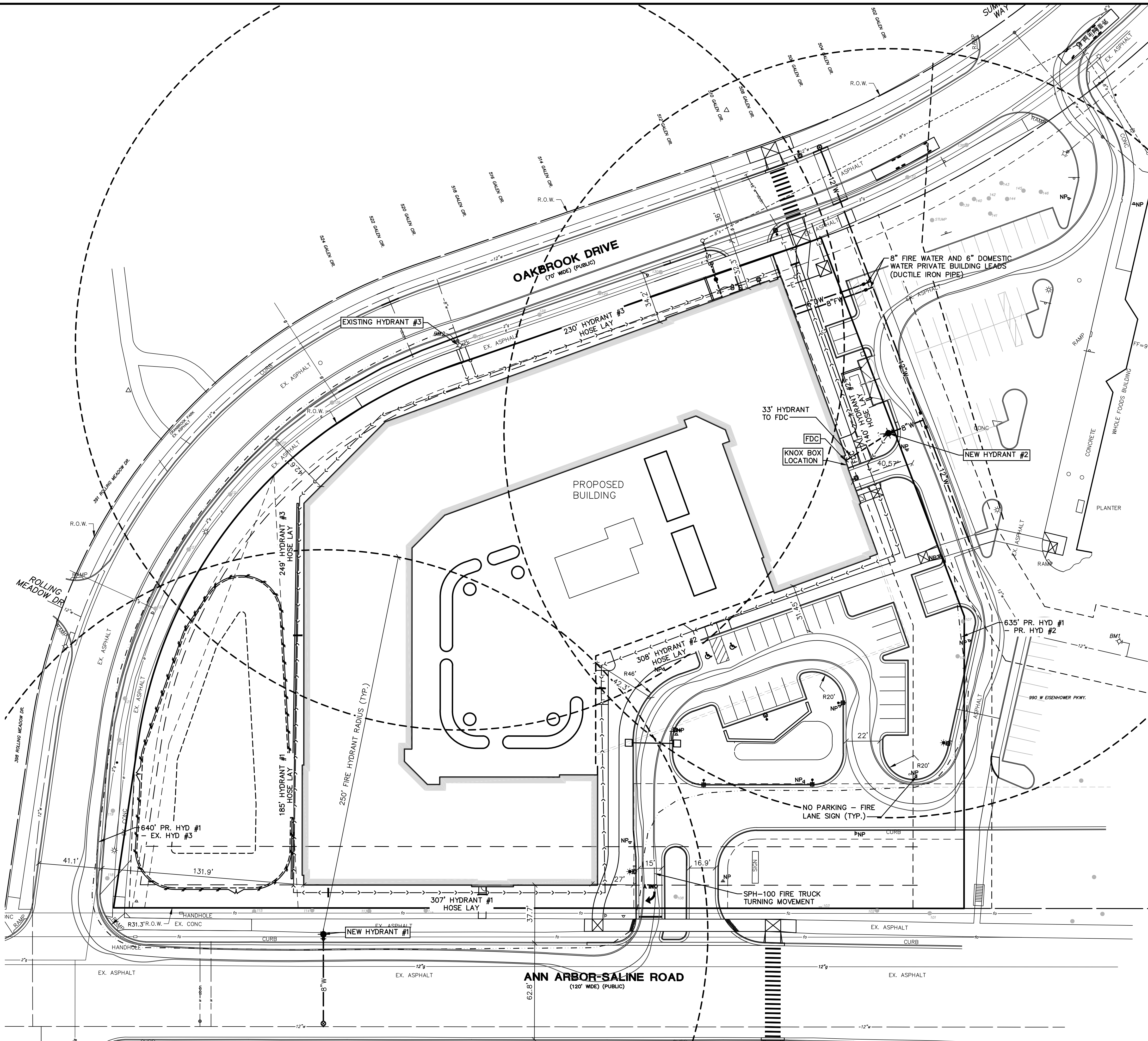
JOB No. 23351

DATE: 04/18/24
SHEET 12 OF 35

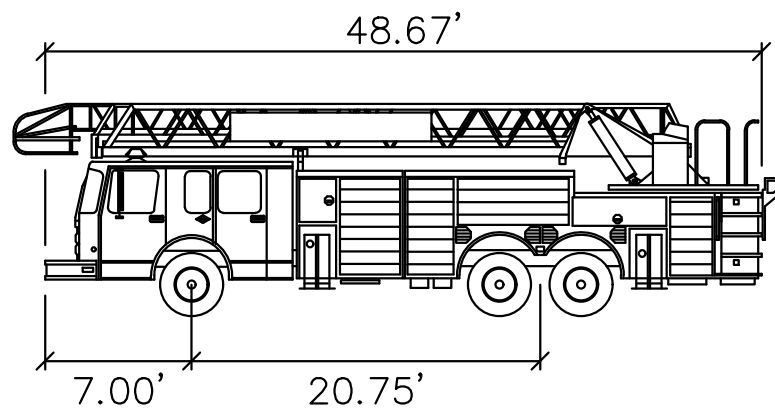
REVISIONS:	REV. DATE	BY	CHKD.
PRELIMINARY CITY SUBMITTAL	04/18/24	CAD: CWM	
SITE PLAN SUBMITTAL	04/18/24	ENG: CWM	
SITE PLAN SUBMITTAL #2	08/14/24	PM: RCW	
SITE PLAN SUBMITTAL #3	12/12/24	TECH: CWM	
SITE PLAN SUBMITTAL #4	05/23/25	UP01	
SITE PLAN SUBMITTAL #5	05/23/25	UP01	

CLIENT
CRANBROOK VILLAGE LIMITED PARTNERSHIP
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

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- LEGEND**
- | | |
|----------|-----------------------------------|
| —○— U.P. | EXIST. UTILITY POLE |
| —OH— | EXIST. OVERHEAD UTILITY LINE |
| —*— | EXIST. LIGHT POLE |
| —W— | EXIST. WATER MAIN |
| —W— | PROP. WATER MAIN |
| —○— | EXIST. HYDRANT |
| —○— | PROP. HYDRANT |
| —○— | EXIST. GATE VALVE IN BOX |
| —○— | PROP. GATE VALVE IN BOX |
| —○— | EXIST. GATE VALVE IN WELL |
| —○— | PROP. GATE VALVE IN WELL |
| —○— | EXIST. CURB STOP & BOX |
| —○— | PROP. CURB STOP & BOX |
| —○— | EXIST. BLOW-OFF |
| —○— | PROP. BLOW-OFF |
| —50'— | FIRE HOSE LAY LENGTHS |
| —○— | FIRE HYDRANT 250' COVERAGE RADIUS |
| —○— | FIRE HYDRANT |
| —○— | FIRE DEPARTMENT CONNECTION |
| —○— | FIRE COMMAND CENTER |
| —○— | KNOX BOX |
| —○— | NO PARKING — FIRE LANE SIGN |



AA FIRE TRUCK

Width	: 10.00'
Track	: 8.00'
Lock to Lock Time	: 6.0
Steering Angle	: 29.1°

- NOTES**
- PROJECT SHALL COMPLY WITH 2015 INTERNATIONAL FIRE CODE (IFC)
 - PROJECT SHALL COMPLY WITH CITY OF ANN ARBOR FIRE PROTECTION REQUIREMENTS.
 - ALL EXTERIOR WALLS OF BUILDING ARE WITHIN 150' OF PAVED PARKING LOT DRIVES DESIGNED TO HANDLE THE WEIGHT OF A FIRE TRUCK.
 - ALL EXTERIOR WALLS OF THE BUILDING FALL WITHIN A 400' HOSE LAY OF A FIRE HYDRANT.
 - RADIAL CURB DIMENSIONS ARE TO BACK OF CURB. DRIVE WIDTH DIMENSIONS ARE TO THE FACE OF CURB OR EDGE OF PAVEMENT WHERE NO CURB IS PRESENT.
 - FDC LOCATION NOT YET DETERMINED, TO BE LOCATED WITHIN 100 FEET OF A HYDRANT LOCATION.
 - STORAGE AREA FOR CONSTRUCTION MATERIALS SHALL NOT INTERFERE WITH FIRE/EMERGENCY SITE ACCESS.
 - HYDRANTS PROVIDING PROTECTION COVERAGE FOR THE BUILDING SHALL BE IN SERVICE AND APPROVED BY BOTH ENGINEERING AND FIRE DEPARTMENT BEFORE FIRE DEPARTMENT WILL SUPPORT PERMIT ISSUANCE FOR NEW CONSTRUCTION PHASE AND BEFORE COMBUSTIBLE MATERIAL ARE PLACED ON THE JOB SITE.
 - "NO PARKING — FIRE LANE" SIGNAGE SHALL BE PLACED IN AREAS WHERE A PARKED OR STOPPED VEHICLE WOULD NARROW THE FIRE LANE ACCESS TO LESS THAN A 20' WIDTH. IFC 2015 503.3
 - EMERGENCY RESPONDER RADIO COVERAGE MUST MEET REQUIREMENTS AS SPECIFIED IN THE IFC SECTION 510.

JOB No. 23351	DATE: 04/18/24	SHEET 13 OF 35
	REV. DATE	CADD: CWM
	PRELIMINARY CITY SUBMITTAL	04/18/24
	SITE PLAN SUBMITTAL #1	08/14/24
	SITE PLAN SUBMITTAL #2	12/12/24
REV. DATE	ENG: CWM	TECH: RCW
PRELIMINARY CITY SUBMITTAL	04/18/24	08/14/24
SITE PLAN SUBMITTAL #1	08/14/24	12/12/24
SITE PLAN SUBMITTAL #2	12/12/24	08/14/24
SITE PLAN SUBMITTAL #3	08/14/24	12/12/24
SITE PLAN SUBMITTAL #4	12/12/24	08/14/24
SITE PLAN SUBMITTAL #5	08/14/24	12/12/24

THE CRESCENT

SITE PLAN

FIRE PROTECTION PLAN

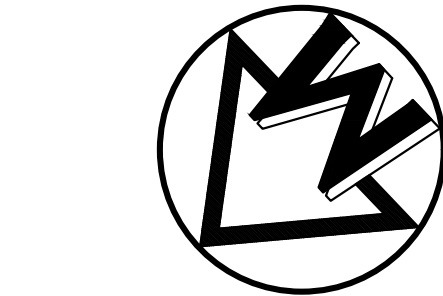
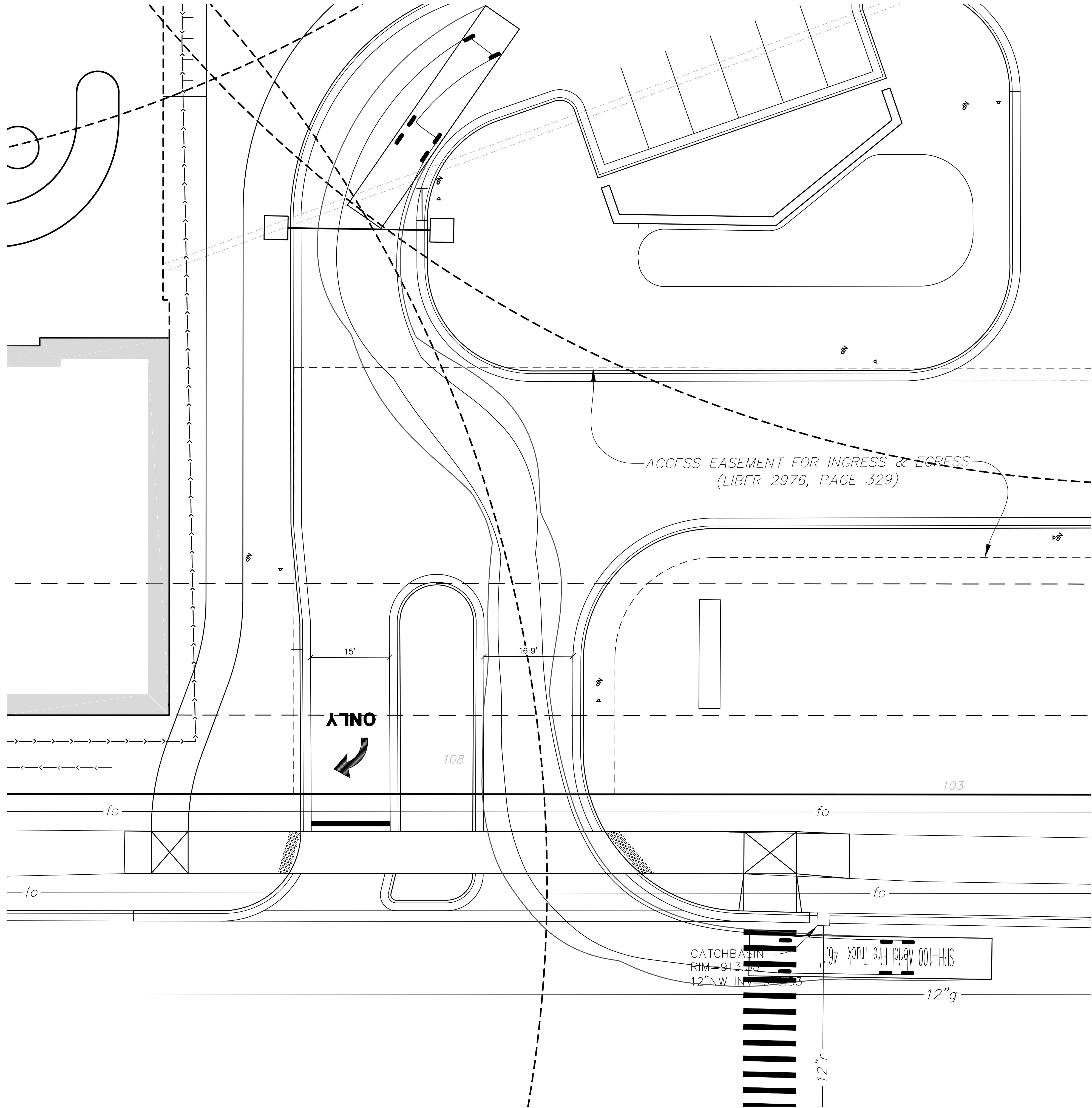
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BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

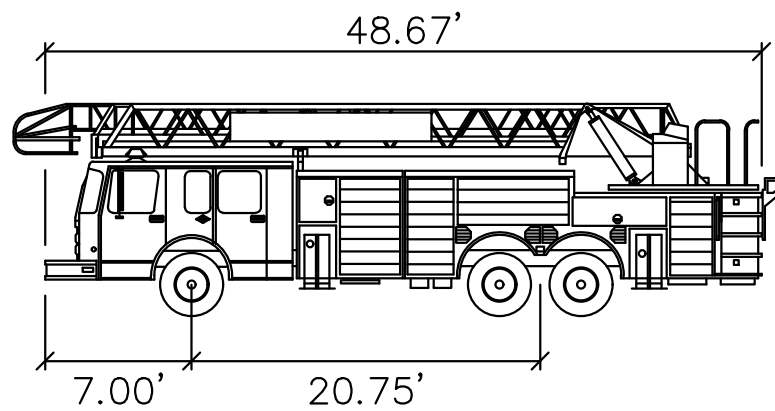


SCALE: 1" = 10'

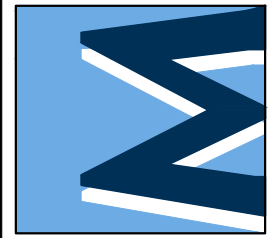


LEGEND

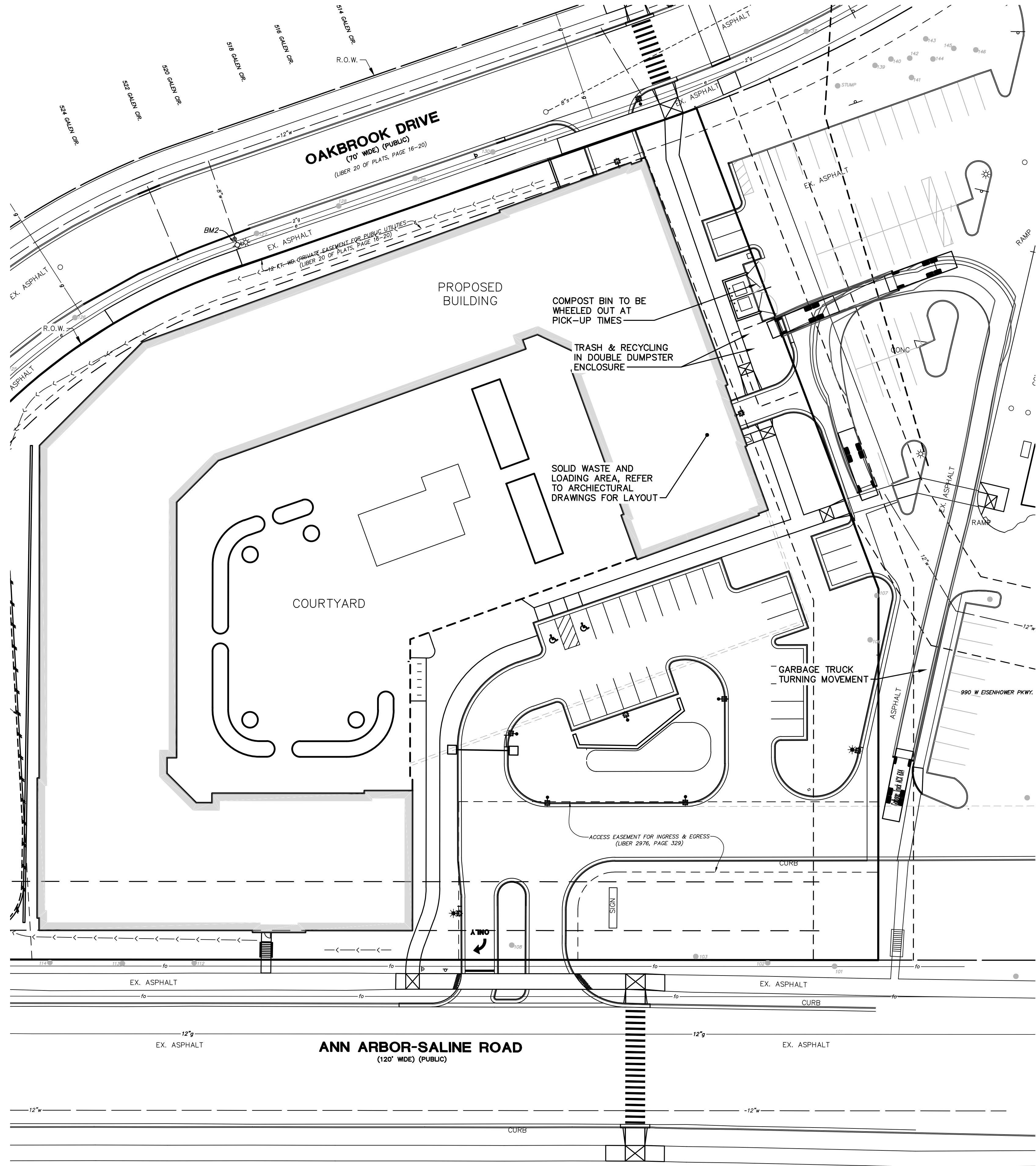
- U.P. EXIST. UTILITY POLE
- OH EXIST. OVERHEAD UTILITY LINE
- W EXIST. WATER MAIN
- W PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN BOX
- PROP. GATE VALVE IN BOX
- EXIST. GATE VALVE IN WELL
- PROP. GATE VALVE IN WELL
- EXIST. CURB STOP & BOX
- PROP. CURB STOP & BOX
- EXIST. BLOW-OFF
- PROP. BLOW-OFF
- 50' FIRE HOSE LAY LENGTHS
- 250' FIRE HYDRANT 250' COVERAGE RADIUS
- FIRE HYDRANT
- FIRE DEPARTMENT CONNECTION
- FIRE COMMAND CENTER
- KNOX BOX
- NO PARKING - FIRE LANE SIGN



AA FIRE TRUCK
Width : 10.00'
Track : 8.00'
Lock to Lock Time : 6.0
Steering Angle : 29.1°



M:\Civ\134_P\01\2023\3351\Site Plan\3351(SW01).dwg, 9/11/2025 1:51 PM, Colton M. Wallace, 14 SOLID WASTE MANAGEMENT PLAN, MCLC PDF ps-3
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The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

1. MAINTAIN A CLEAR SPACE DIRECTLY IN FRONT OF THE SOLID WASTE ENCLOSURE. THE CLEAR SPACE SHALL BE A MINIMUM OF FIFTY (50) FEET LONG BY THE WIDTH OF THE INSIDE DIMENSION (I.D.) OF THE ENCLOSURE WALLS PLUS FOUR (4) FEET ON EACH SIDE. A MINIMUM VERTICAL CLEARANCE OF AT LEAST TWENTY-FIVE (25) FEET MUST BE PROVIDED ABOVE THIS AREA.

2. INGRESS AND EGRESS ROUTES MUST BE DEVELOPED BASED ON SOLID WASTE SWEEP PATH REQUIREMENTS PER SD-SW-4. A MINIMUM HORIZONTAL CLEARANCE OF FOUR (4) FEET FROM THE EDGE OF THE SWEEP PATH AND A MINIMUM VERTICAL CLEARANCE OF AT LEAST FIFTEEN (15) FEET MUST BE PROVIDED ALONG THE ENTIRE SOLID WASTE COLLECTION ROUTE.

3. PROVIDE TEN (10) FEET MINIMUM HORIZONTAL CLEARANCE FROM SOLID WASTE ENCLOSURE TO MAJOR ELECTRICAL EQUIPMENT, ABOVE GROUND UTILITY SERVICES, AND EDGE OF OVERHEAD OBSTRUCTIONS SUCH AS TREE BRANCHES, BALCONIES, AND OVERHANGS.

4. IF FORWARD ACCESS TO THE PUBLIC STREET IS NOT AVAILABLE FOR THE SOLID WASTE VEHICLE, THE SITE DEVELOPMENT LAYOUT MUST ACCOMMODATE A TURN-AROUND LOCATION MEETING REQUIREMENTS WITHIN SOLID WASTE REFERENCE SPECIFIC TURN-AROUND DETAIL (SD-SW-5) AND ACCEPTABLE TO THE PSA.

5. FOR SITES THAT CANNOT ACCOMMODATE A TURN-AROUND, THE FOLLOWING ADDITIONAL REQUIREMENTS MUST BE MET:

5.1. SOLID WASTE VEHICLES MUST BE ABLE TO SERVICE DUMPSTERS WITHOUT IMPEDING THE PUBLIC STREET OR SIDEWALK.

5.2. THE COLLECTION LOCATION SHALL BE CLEARLY DELINEATED AND NOT HAVE A SLOPE GREATER THAN 2% IN ANY DIRECTION.

5.3. BOLLARDS OR ADEQUATE CLEAR SPACE MUST BE PROVIDED BEHIND THE LIFT POINT SO THE DUMPSTERS ARE NOT PUSHED INTO ANY BUILDING OR ACCESS ROUTE.

5.4. ALL SWEEP-PATH CLEARANCE AND VERTICAL CLEARANCE REQUIREMENTS PREVIOUSLY IDENTIFIED SHALL BE PROVIDED.

5.5. SOLID WASTE VEHICLE BACK-UP DISTANCES MUST BE LESS THAN 30' ALONG SERVICING ROUTE.

6. GATES ON BIN ENCLOSURES SHALL OPEN A MINIMUM OF 120 DEGREES FROM THE CLOSED POSITION. THE GATES SHALL NOT IMPEDE ON THE REQUIRED BIN ENCLOSURE OPENING WIDTH, SHALL NOT BLOCK ADJACENT PARKING SPOTS, AND NOT BE IMPEDED BY ADJACENT CURBS OR LANDSCAPING.

7. GATES SHALL BE DESIGNED TO BE FREE STANDING WITHOUT CENTER POLE DESIGN. IF CENTER POLE DESIGN IS NECESSARY, 12 INCHES SHALL BE ADDED TO THE MINIMUM INTERIOR WIDTH OF THE ENCLOSURE.

8. GATE DESIGN SHALL INCLUDE A RELIABLE MEANS TO SECURE THE DOOR IN BOTH THE OPEN AND CLOSED POSITIONS.

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REV. NO.	DATE	DRAWN BY	CHECKED BY
DR. ENG	CH. ENG	DRAWING NO.	SCALE N.T.S.
SCALE N.T.S.	DATE 12/8/2023	SD-SW-6A	

9. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF NO PARKING SIGNS ALONG THE SOLID WASTE INGRESS/EGRESS ROUTE TO ENSURE THE ROUTE REMAINS FREE OF VEHICLES.

10. REFER TO ASSOCIATED STANDARD DETAILS SD-SW-1 AND SD-SW-2 FOR REQUIREMENTS ON SINGLE AND DOUBLE WIDE SOLID WASTE BIN ENCLOSURE LAYOUT AND DESIGN CRITERIA. THE CITY SHALL HAVE THE ABILITY TO MODIFY OR INTERPRET THESE DETAILS AS NECESSARY TO ACCOMMODATE THE CITY OR CITY CONTRACTOR'S NEEDS FOR SOLID WASTE PICK-UP.

11. SOLID WASTE EQUIPMENT ACCESS ROADS AND SERVICE AREA SURFACES SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF COLLECTION VEHICLES WEIGHING UP TO 66,000 LBS GROSS VEHICLE WEIGHT (GVW) AND SHALL BE PROVIDED WITH AN APPROVED SURFACE SO AS TO PROVIDE ALL WEATHER DRIVING CAPABILITIES. PROPERTY OWNER SHALL BE RESPONSIBLE FOR ALL SNOW AND ICE REMOVAL REQUIRED FOR SAFE ACCESS.

12. FOR SITES THAT CANNOT ACCOMMODATE A STANDARD DUMPSTER ENCLOSURE, THE DUMPSTERS MAY BE ROLLED OUT OF A BUILDING OR ALTERNATE ENCLOSURE BY THE PROPERTY OWNER TO AN APPROVED COLLECTION LOCATION.

13. SOLID WASTE COLLECTION LOCATIONS MUST BE LOCATED WITHIN THE BOUNDARIES OF THE PROPERTY UNLESS AN APPROPRIATE EASEMENT IS OBTAINED.

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DR. ENG	CH. ENG	DRAWING NO.	SCALE N.T.S.
SCALE N.T.S.	DATE 12/8/2023	SD-SW-6B	

MAX KICKOUT 1.774 FT

31.895 FT MIN RADIUS (OUTER WHEEL)

36.667 FT

6.084

18.333

4.187

18.25

A2 AUTOCAR ACK 6X4

OVERALL LENGTH 36.667 FT

OVERALL WIDTH 8.750 FT

OVERALL BODY HEIGHT 12.500 FT

MIN BODY GROUND CLEARANCE 0.830 FT

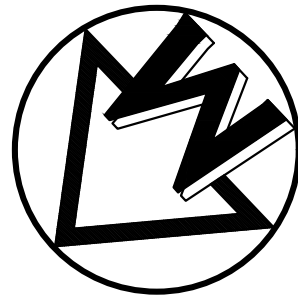
MAX TRACK WIDTH 8.417 FT

LOCK-TO-LOCK TIME 6.00 S

CURB TO CURB TURNING RADIUS 33.895 FT

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REV. NO.	DATE	DRAWN BY	CHECKED BY
DR. ENG	CH. ENG	DRAWING NO.	SCALE N.T.S.
SCALE N.T.S.	DATE 12/8/2023	SD-SW-4	



SCALE: 1" = 30'

0 30 60 90



Solid Waste and Recycling Generation Proposed Residential Building

Building	Units	Generation per	
		Day	Units
2525 Ann Arbor-Saline Rd.	262	7.5 lb/hhd/day*	1965 total lb/day
13755 lb/wk			
Recycling	35%	4814 lb/wk	6.88 cyd/wk
Trash	65%	8941 lb/wk	12.77 cyd/wk
Recycling	40%	6740 lb/wk	9.63 cyd/wk
Trash	Peak Factor	12517 lb/wk	17.88 cyd/wk

* CalRecycle lists a range of 4.0-8.6 lbs/hhd/day from various sources
<https://www2.calrecycle.ca.gov/wastecharacterization/general/rates>

Container Requirements	Lb	Container Requirements	
		Trash	Recycling
4 cyd Container	2,800	4.47	2.41
6 cyd Container	4,200	2.98	1.60
8 cyd Container	5,600	2.24	1.20

Option 1: 6 cyd trash (3 times/week) + 6 cyd recycling (2 times/week)
Option 2: 4 cyd trash (5 times/week) + 4 cyd recycling (3 times/week)
Option 3: 2x6 cyd trash + 1x6 cyd recycling, twice a week

Container Sizes	Dimensions
4 cyd Container	70" X 50" X 61"
6 cyd Container	72" X 68" X 70"
8 cyd Container	82" X 82" X 74"

THE CRESCENT

SITE PLAN SOLID WASTE MANAGEMENT PLAN

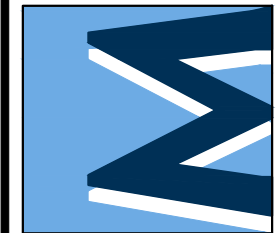
JOB NO. 23351

DATE: 04/18/24

SHEET 14 OF 35

REV. DATE	REV. DATE	REV. DATE	REV. DATE	REV. DATE	REV. DATE
04/05/24	04/18/24	08/14/24	12/12/24	05/23/25	
CADD: CWM	ENG: CWM	PM: RCW	TECH: RCW		
PRELIMINARY SUBMITTAL	SITE PLAN SUBMITTAL #1	SITE PLAN SUBMITTAL #2	SITE PLAN SUBMITTAL #3	SITE PLAN SUBMITTAL #4	SITE PLAN SUBMITTAL #5

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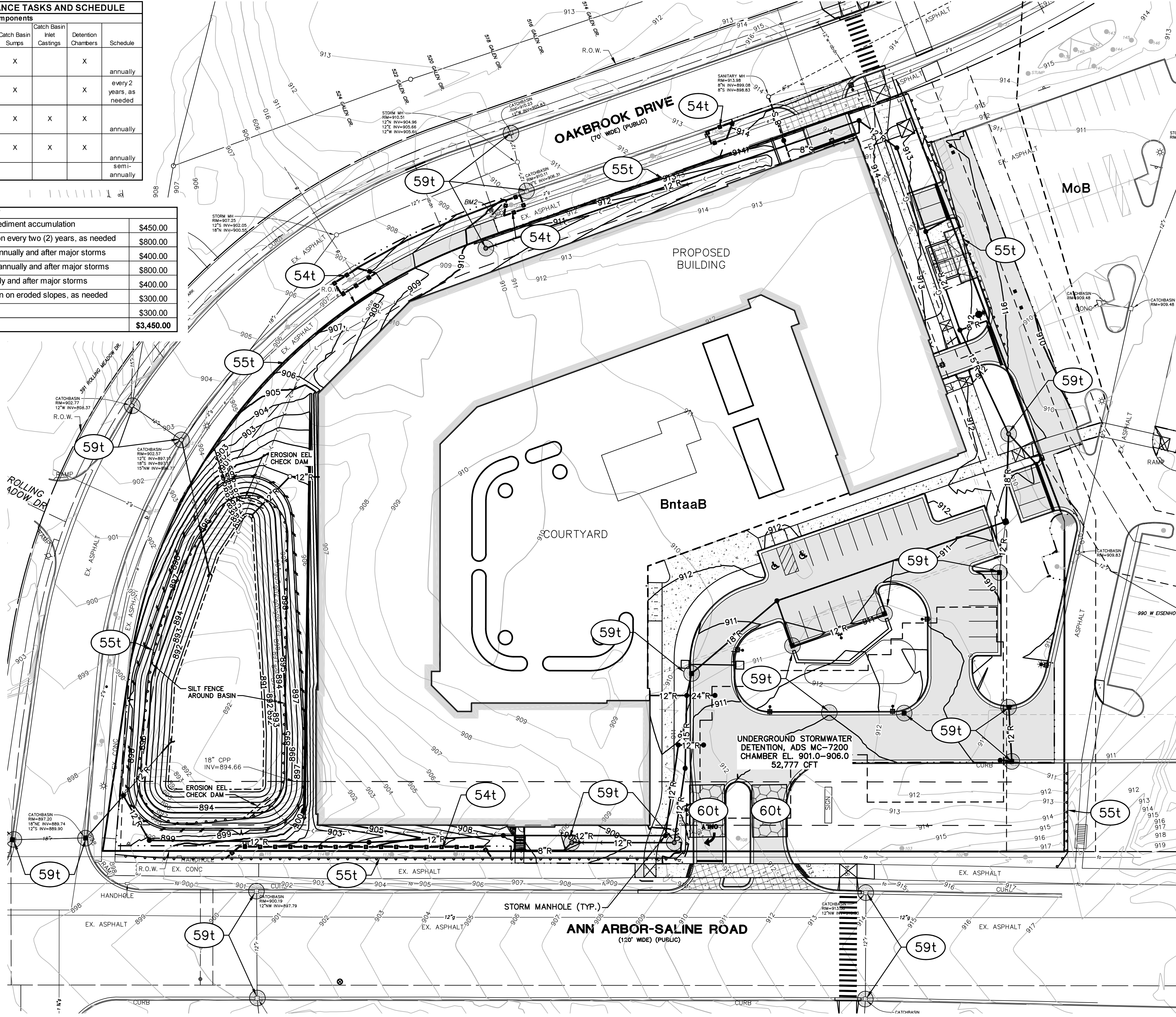
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14

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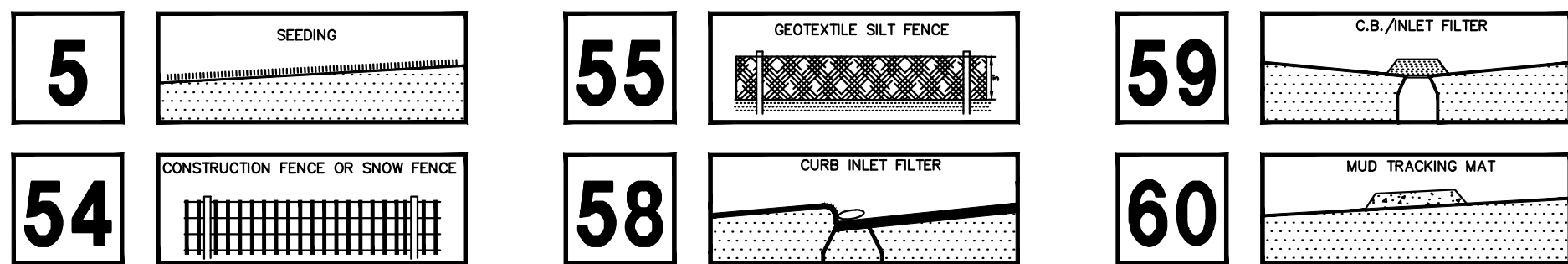
PERMANENT MAINTENANCE TASKS AND SCHEDULE					
Components					
	Drives and Walks	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Castings	Detention Chambers
Inspect for sediment accumulation	X	X	X		X
Removal of sediment accumulation		X	X		X
Inspect for floatables and debris		X	X	X	X
Cleaning of floatables and debris		X	X	X	X
Clean streets	X				

MAINTENANCE PLAN BUDGET	
Annual inspection of system for sediment accumulation	\$450.00
Removal of sediment accumulation every two (2) years, as needed	\$800.00
Inspect for floatables and debris annually and after major storms	\$400.00
Removal of floatables and debris annually and after major storms	\$800.00
Inspect system for erosion annually and after major storms	\$400.00
Re-establish permanent vegetation on eroded slopes, as needed	\$300.00
Clean drives semiannually	\$300.00
Total Annual Budget	\$3,450.00

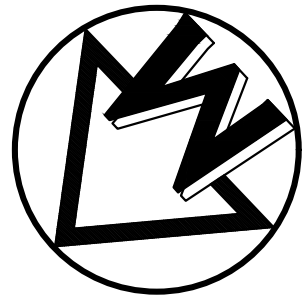


SOIL EROSION CONTROL MEASURES

t = temporary p = permanent



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



SCALE: 1" = 30'



LEGEND

e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
w	PROP. WATER MAIN
h	EXIST. HYDRANT
h	PROP. HYDRANT
s	EXIST. GATE VALVE IN BOX
s	PROP. GATE VALVE IN BOX
r	REDUCER
r	EXIST. STORM SEWER
r	PROP. STORM SEWER
c	EXIST. CATCH BASIN OR INLET
c	PROP. CATCH BASIN OR INLET
rd	PROP. ROOF DRAIN
rd	END SECTION
ps	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
s	PROP. SANITARY SEWER
c	EXIST. CLEANOUT
c	PROP. CLEANOUT
f	SILT FENCE
f	CONSTRUCTION FENCE

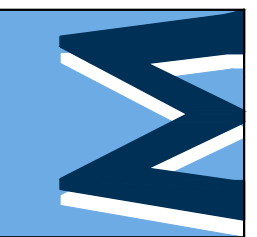
SOIL EROSION CONTROL NOTES

- ALL SOIL EROSION CONTROL MEASURES SHALL COMPLY WITH THE CURRENT CITY OF ANN ARBOR ORDINANCES, WASHTENAW COUNTY STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENTATION CONTROL, AND STATE OF MICHIGAN "SOIL EROSION AND SEDIMENTATION CONTROL ACT - P.A. 347".
- PRIOR TO COMMENCING EARTHMOVING OPERATIONS, THE GRADING CONTRACTOR SHALL INSTALL THE TEMPORARY CATCH BASIN FILTER(S) SHOWN ON THE PLANS.
- THE REMOVAL OF TRAPPED SEDIMENT AND THE CLEANOUT OR REPLACEMENT OF CLOGGED STORM MAY BE NECESSARY AFTER EACH STORM EVENT DURING THE PROJECT.
- ALL SILT FENCE SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. IF AT ANY TIME THE DEPTH OF SILT AND SEDIMENT COMES TO WITHIN 12" OF THE TOP OF ANY SILT FENCE, ALL SILT AND SEDIMENT SHALL BE REMOVED TO ORIGINAL GRADE.
- ONLY UPON STABILIZATION OF ALL DISTURBED AREAS MAY THE TEMPORARY GRAVEL FILTERS BE REMOVED. ALL STORM SEWERS MUST BE ALSO CLEANED OF ALL SEDIMENT.
- ALL INLETS AND CATCH BASINS WILL HAVE SEDIMENT FILTERS INSTALLED AFTER THEIR CONSTRUCTION. THESE FILTERS WILL BE MAINTAINED UNTIL ALL AREAS AROUND THE STRUCTURE HAVE BEEN STABILIZED.
- THE CONTRACTOR WILL MAINTAIN ALL NECESSARY SOIL EROSION CONTROL DEVICES UNTIL SOIL STABILIZATION HAS OCCURRED.
- APPROPRIATE EMERGENCY ACCESS WILL BE PROVIDED DURING CONSTRUCTION.
- THE ESTIMATED COST OF SOIL EROSION CONTROL MEASURES IS \$12,000.
- THE ESTIMATED COST TO PROTECT ALL SOIL SURFACES FROM EROSION SHOULD CONSTRUCTION DISCONTINUE IS \$8,000.
- DEWATERING OPERATIONS DURING CONSTRUCTION, IF NECESSARY, MUST BE DONE PER CITY REQUIREMENTS INCLUDING SEDIMENT CONTROL AND DISPOSAL.
- FINAL LOCATIONS AND DIMENSIONS OF THE MUD TRACKING MAT AND CONCRETE WASHOUT AREA ARE TO BE DETERMINED BY THE CONTRACTOR SUBJECT TO A CITY APPROVAL.
- ESTIMATED PROJECT EARTHWORK IS 2,235 CYD EXCAVATION AND 11,893 CYD FILL. THIS NUMBER IS AN ESTIMATE ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION ESTIMATING PURPOSES.
- THE PROJECT WORK AREA IS LOCATED, AT IT'S CLOSEST POINT, 265' FROM THE NEAREST WATER OF THE STATE, MALLETT'S CREEK, LOCATED NORTHEAST OF THE PROJECT.

MAINTENANCE PROGRAM FOR SOIL EROSION CONTROLS

- DURING CONSTRUCTION IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE SOIL EROSION CONTROL MEASURES. FOLLOWING CONSTRUCTION THE OWNER SHALL BE RESPONSIBLE FOR MAINTAINING THE PERMANENT SOIL EROSION CONTROL MEASURES. MAINTENANCE RESPONSIBILITIES SHALL BECOME PART OF ANY SALES OR EXCHANGE AGREEMENT FOR THE LAND ON WHICH THE PERMANENT SESC MEASURES ARE LOCATED.

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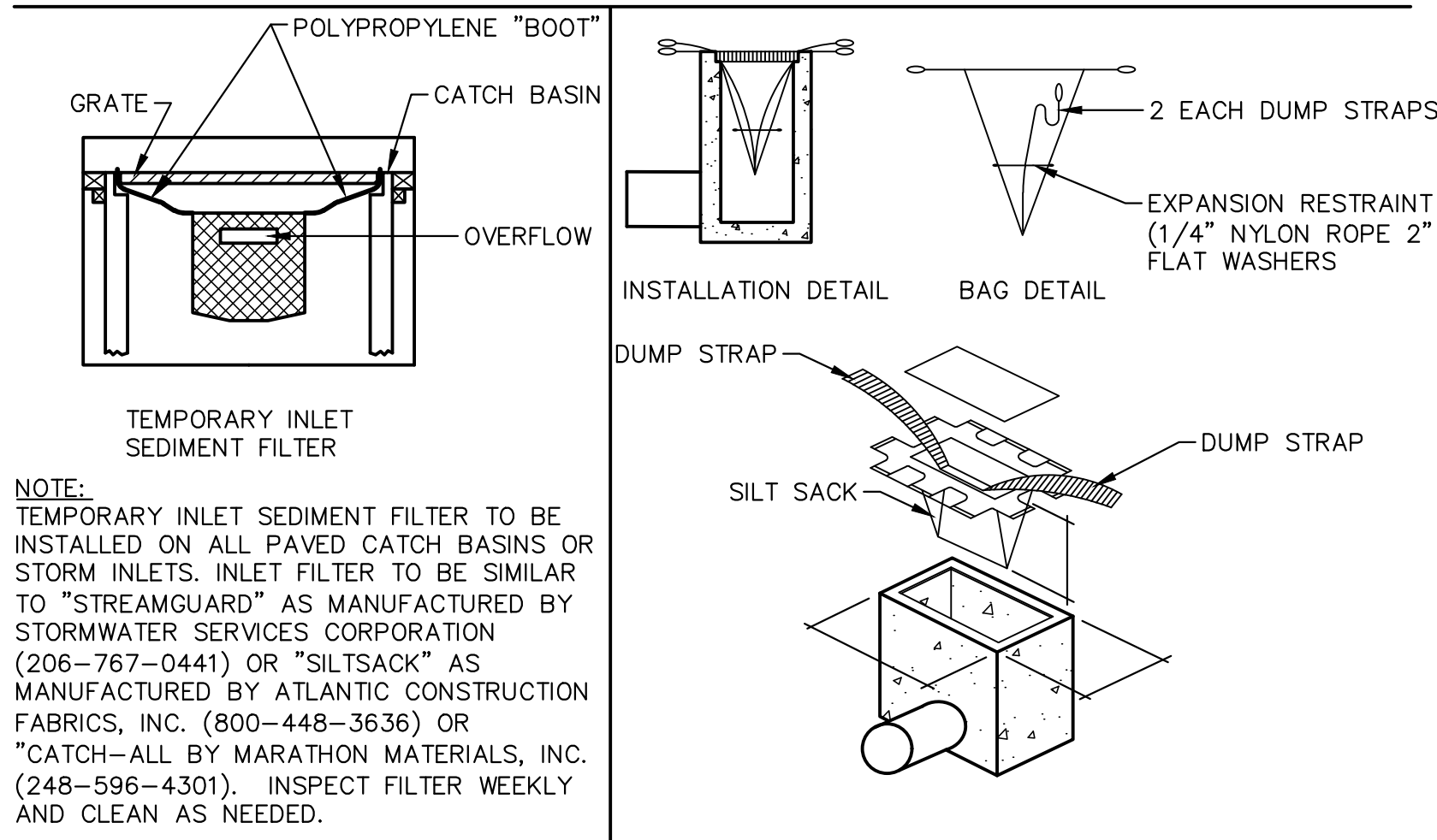
CLIENT
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6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

THE CRESCENT
SITE PLAN
SOIL EROSION AND SEDIMENTATION CONTROL PLAN

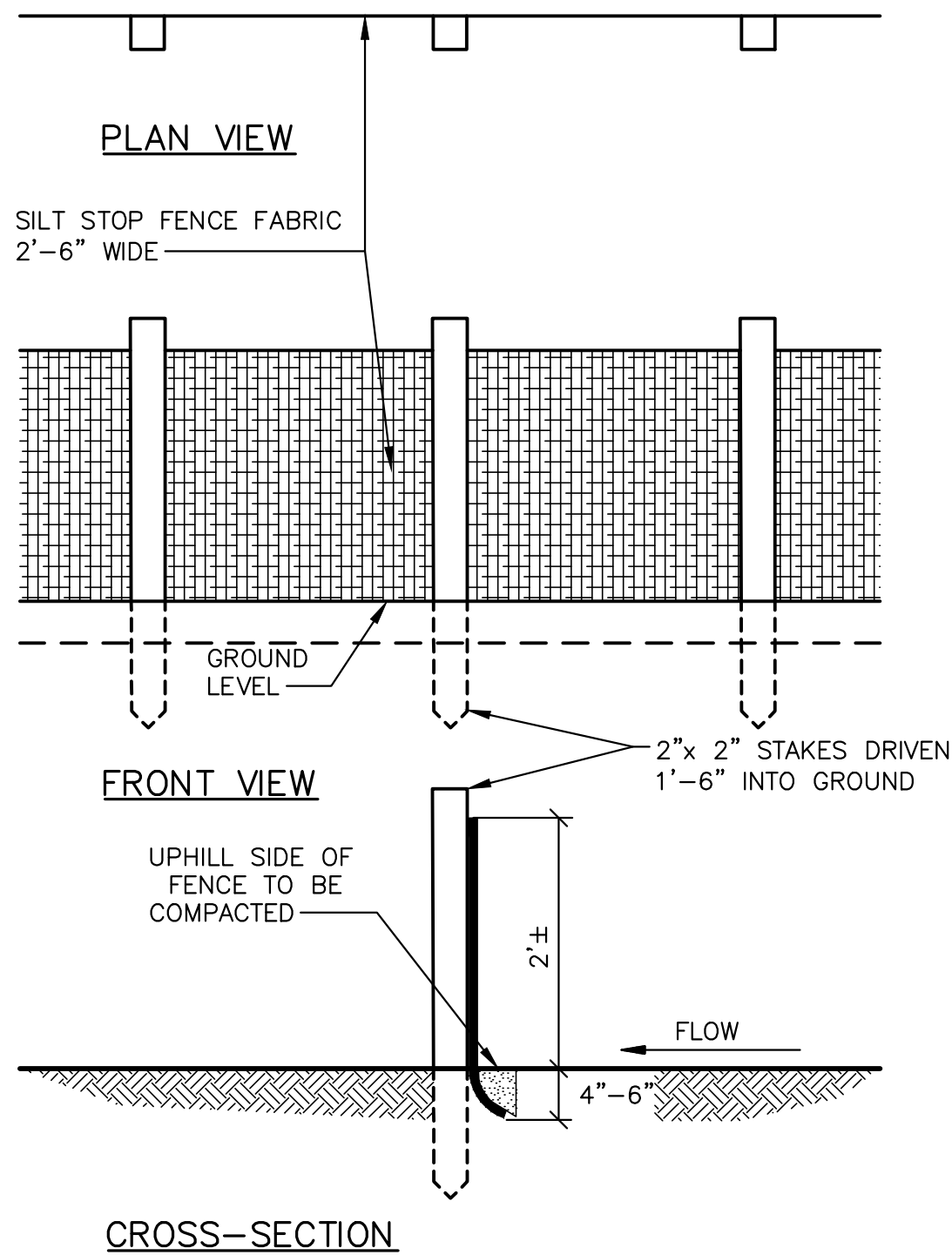
16

JOB No.	23351		
DATE	04/18/24		
SHEET	16 OF 35		
REV.	DATE	REV.	DATE
1	04/18/24	1	04/07/24
2	04/18/24	2	04/18/24
3	04/18/24	3	04/18/24
4	04/18/24	4	04/18/24
5	04/18/24	5	04/18/24

M:\Civ\134_P\01\2023\3351\Site Plan\3351D101.dwg, 9/11/2025 1:51 PM, Colton M. Wallace, 17 SESC DETAILS, MCLC PDF.pct
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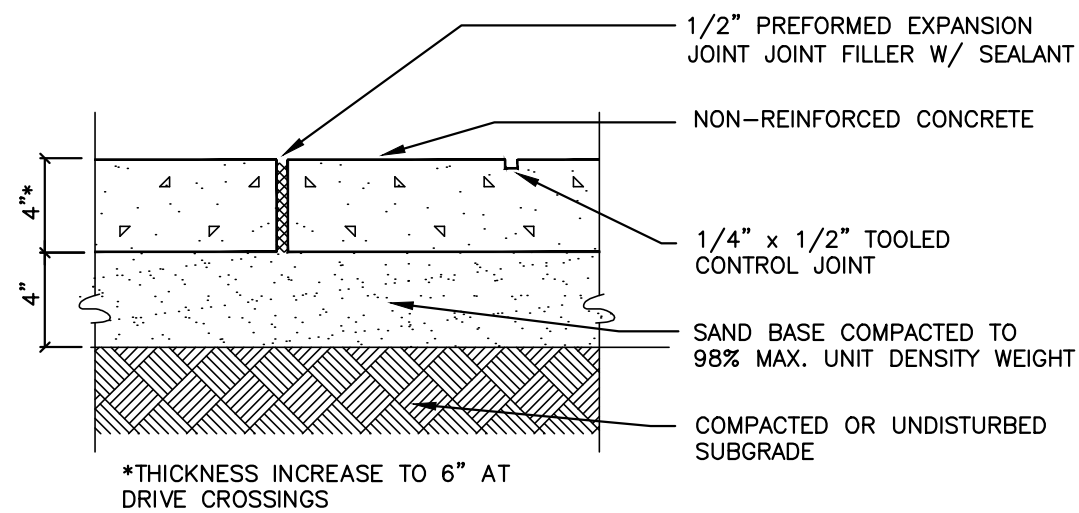


EROSION CONTROL INLET FILTER, SPECIAL
NOT TO SCALE

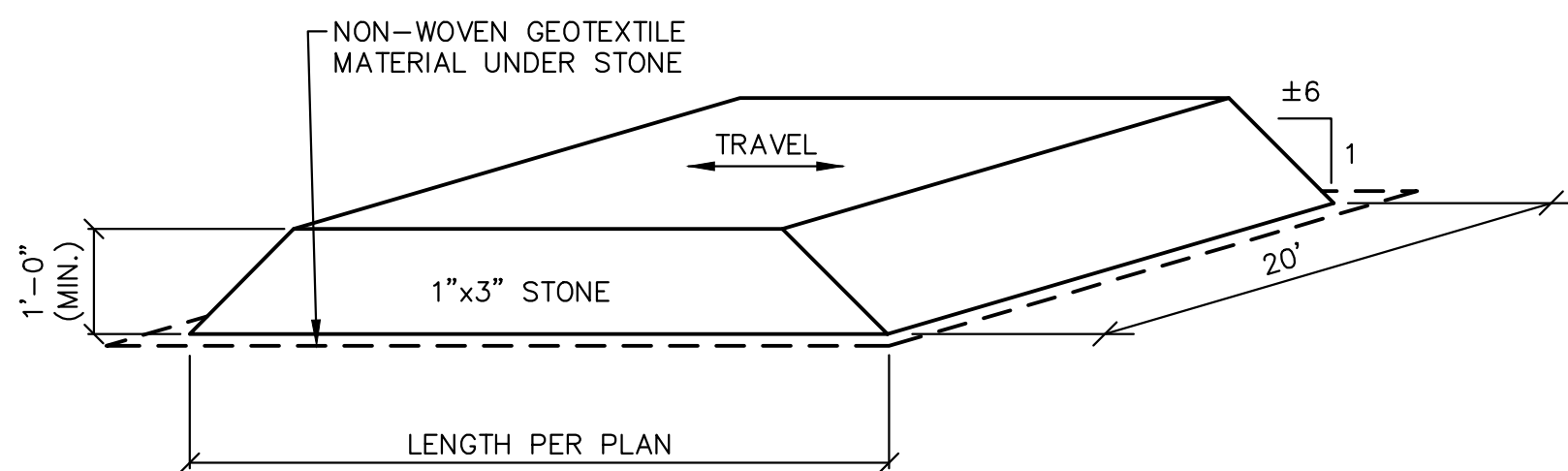


SILT FENCE DETAIL
NOT TO SCALE
BLOCK NAME: SILT FENCE DETAIL-1-55

55t

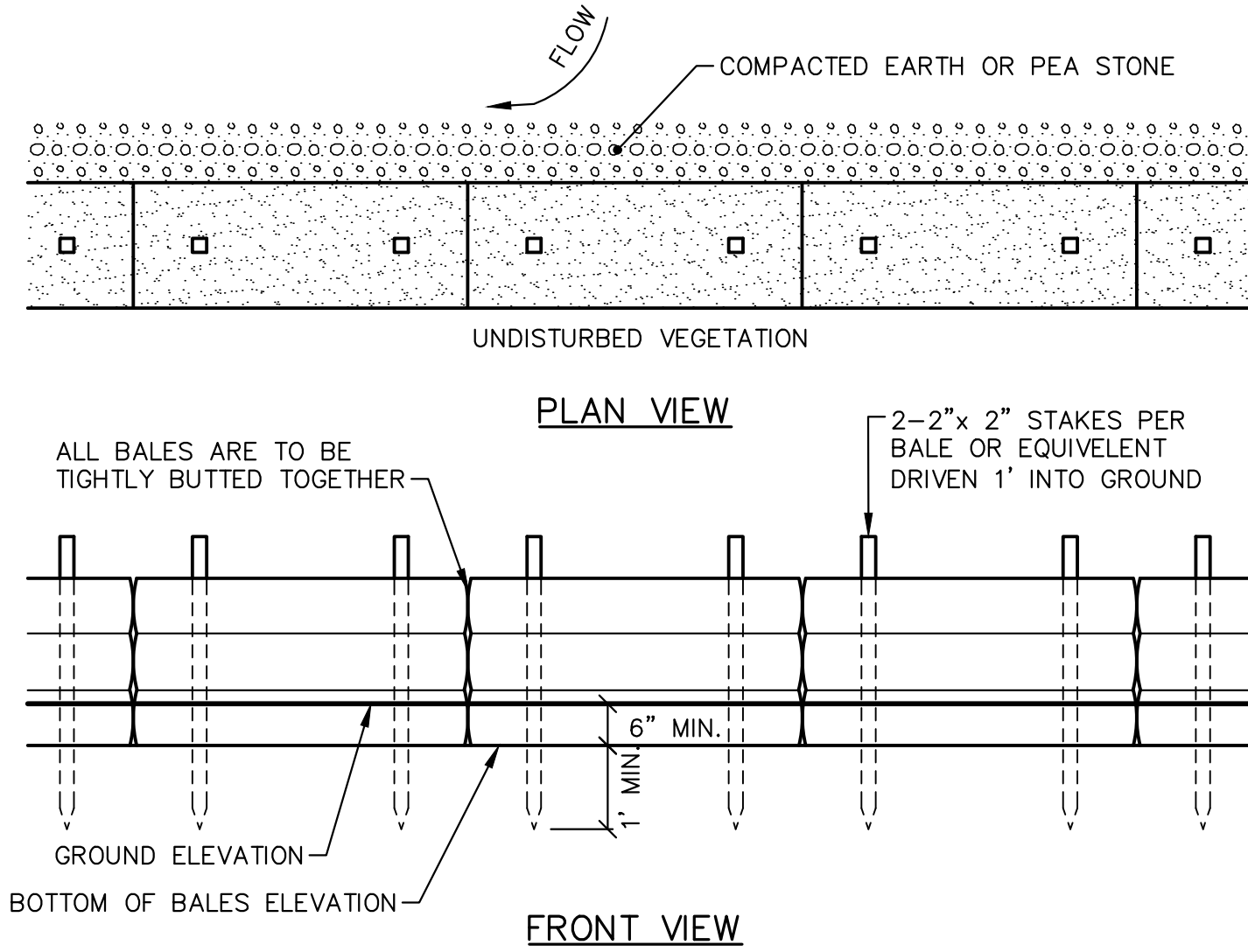


CONCRETE WALK DETAIL
NO SCALE



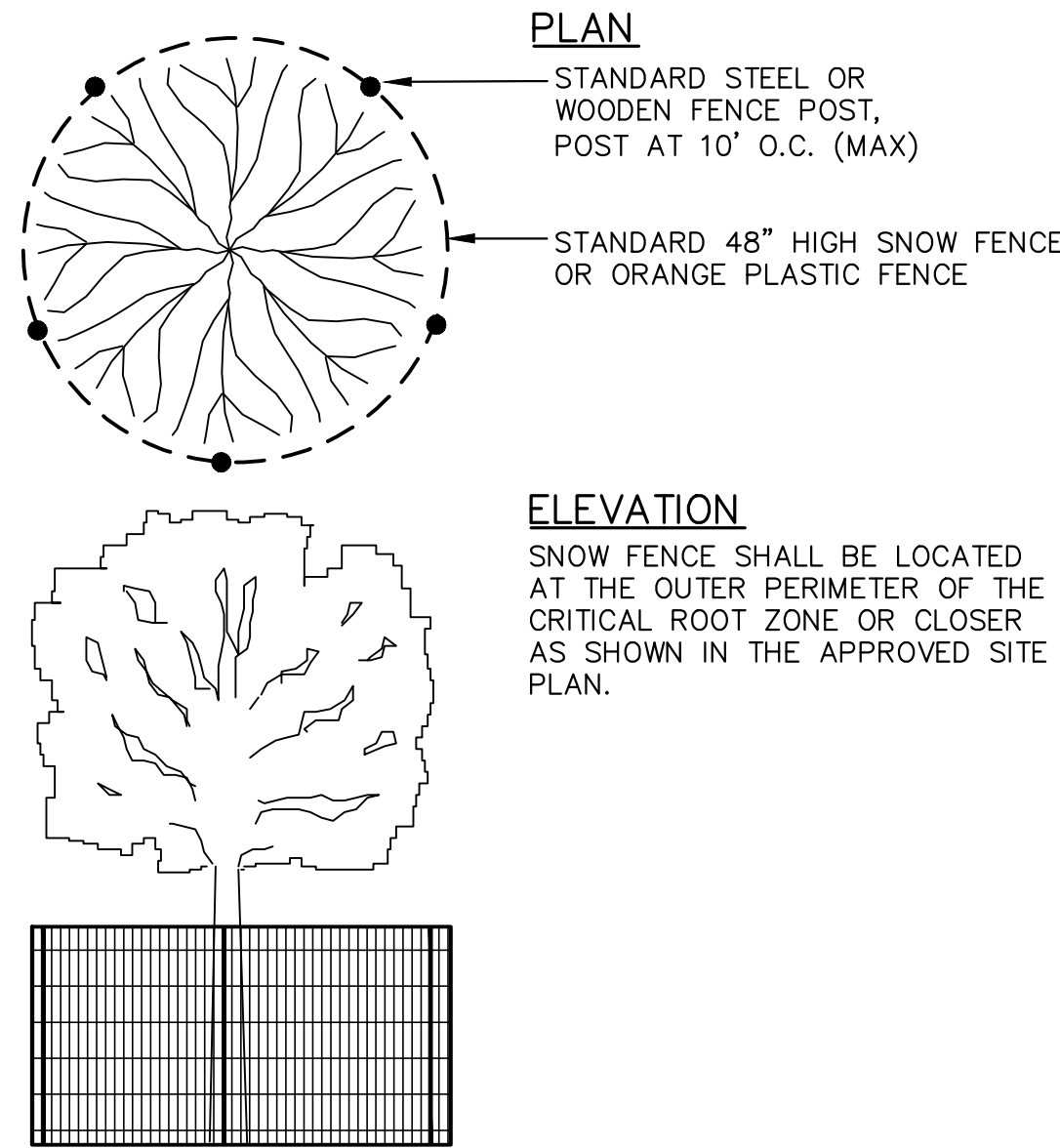
GRAVEL MUD TRACKING MAT
NOT TO SCALE

60t



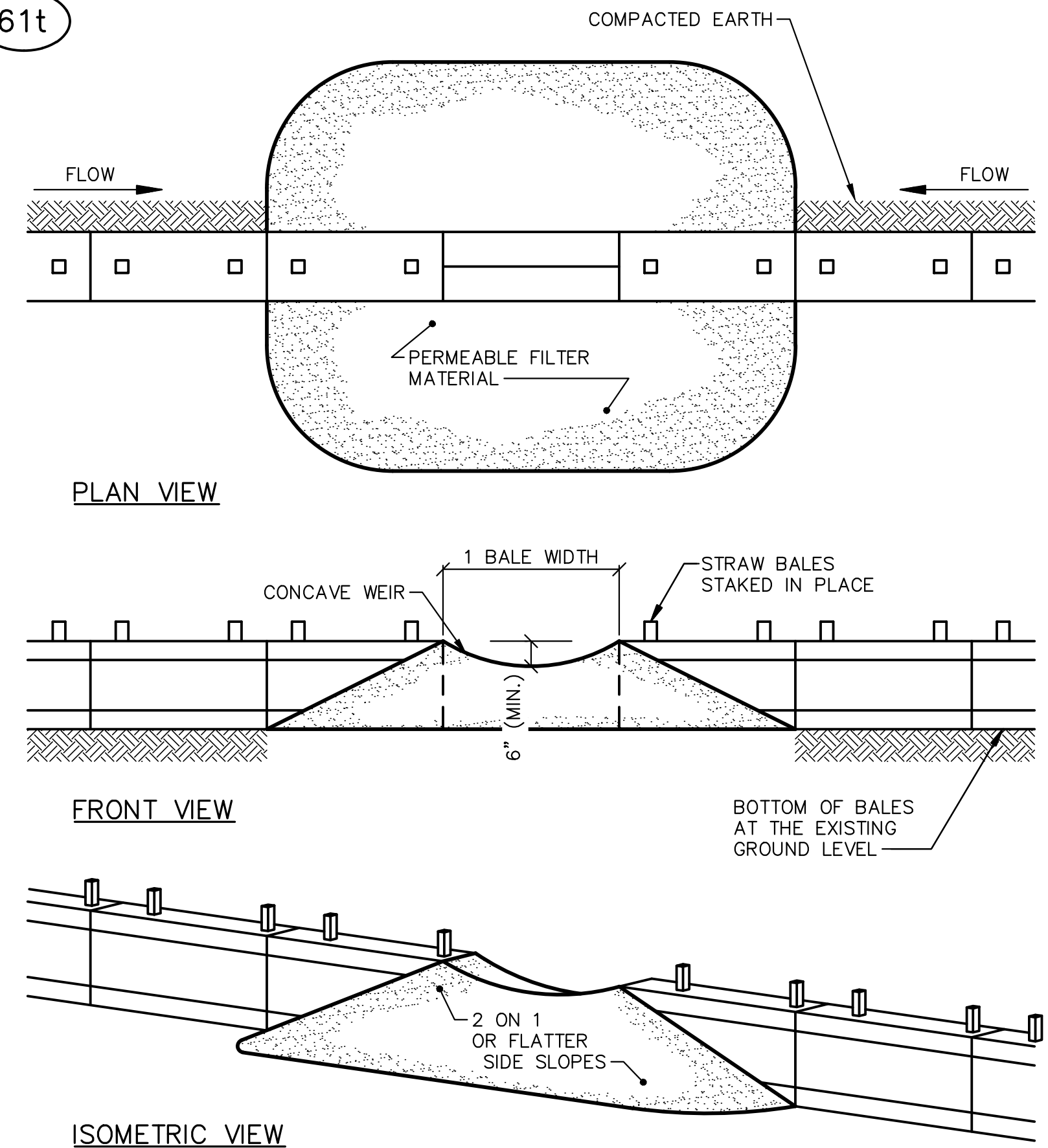
STRAW BALE FILTER BERM
NOT TO SCALE

61t



TREE PROTECTION DETAIL
NOT TO SCALE

54t



STONE OUTLET FILTER WITHIN A STRAW BALE BERM
NOT TO SCALE

62t

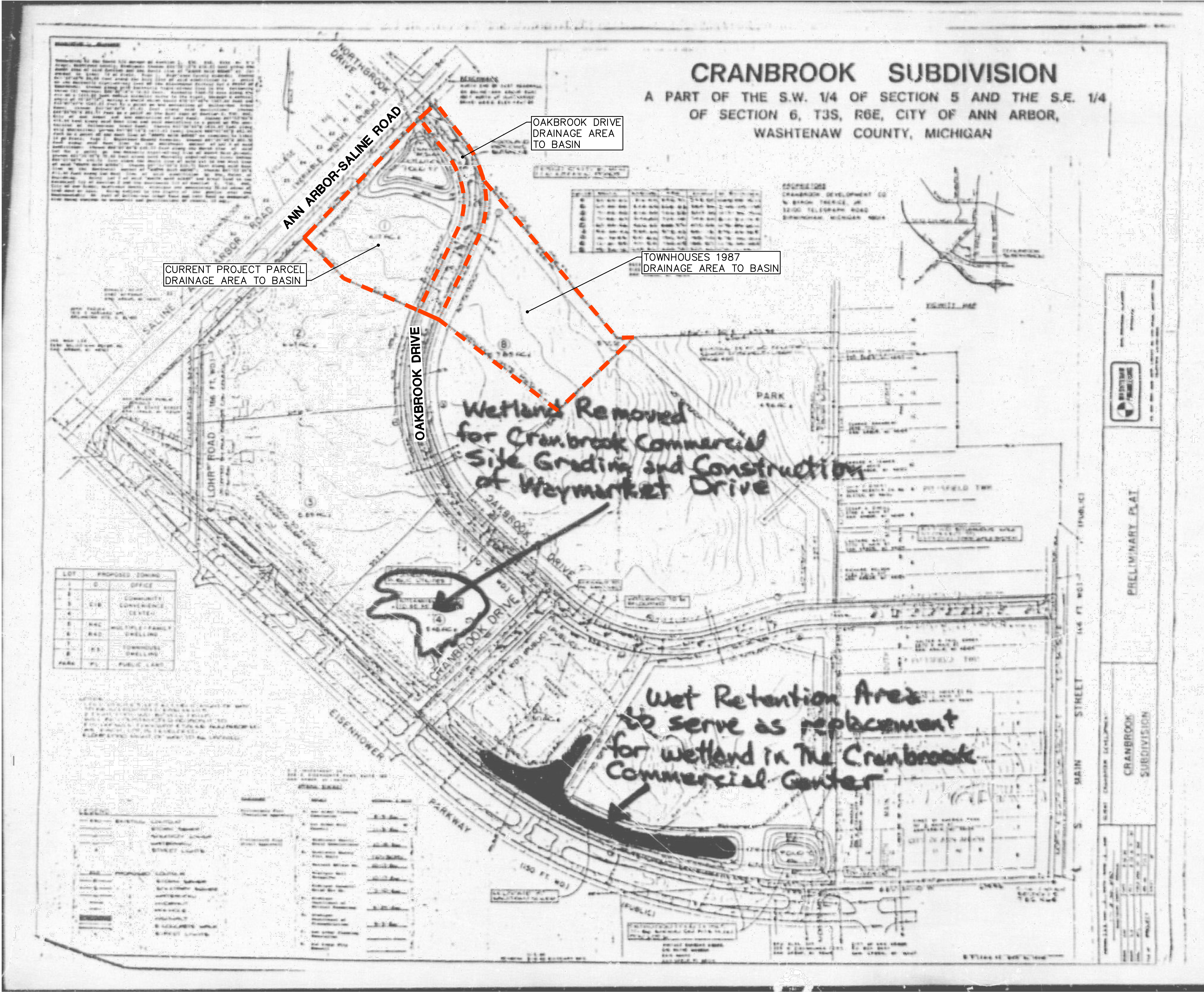
CONSTRUCTION SEQUENCE	OPERATION TIME SCHEDULE BEGINNING JUNE 2025											
	2025						2026					
	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	MAY	JUNE	JULY	AUG.	SEP.	
SESC PRE-GRADING MEETING												
INSTALL AND MAINTAIN SOIL EROSION CONTROL MEASURES AS REQUIRED												
UTILITY INSTALLATION AND SITE DEMOLITION												
MASS EXCAVATION												
FOUNDATION CONSTRUCTION												
STORMWATER MANAGEMENT INSTALLATION												
CURBING AND FIRST COURSE ASPHALT												
BUILDING CONSTRUCTION												
SECOND COURSE ASPHALT												
FINAL GRADE SITE												
PLACE MULCH AND SEEDING												
FINAL CLEAN-UP & REMOVAL OF SOIL EROSION CONTROLS												

JOB No.	23351	DATE: 04/18/24	SHEET 17 OF 35
REVISIONS:	REV. DATE	REV. DATE	REV. DATE
SITE PLAN SUBMITTAL	04/18/24	CADD: CWM	
SITE PLAN SUBMITTAL #2	08/14/24	ENG: CWM	
SITE PLAN SUBMITTAL #3	12/12/24	PM: RCW	
SITE PLAN SUBMITTAL #4	05/23/25	TECH: JSD	
SITE PLAN SUBMITTAL #5	05/23/25	FB	

M:\Civ\134_P\01\2023\3351\Site Plan\3351S002.dwg, 9/11/2025 1:51 PM, Colton M. Wallace, 18 HISTORIC 1987 BASIN DRAINAGE AREAS, MCLLC PDF, p.3
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EXISTING BASIN VOLUME

THE EXCERPT ON THIS SHEET IS FROM HISTORICAL PLANS OF THE CRANBROOK COMMERCIAL PHASE 1 PLANS DATED 1987. THE DRAINAGE AREAS DIRECTED TO THE EXISTING BASIN LOCATED ON THIS PROJECT'S PARCEL ARE OUTLINED. SEE SHEET 22 FOR EXISTING BASIN VOLUME CALCULATIONS.



JOB No. 23351

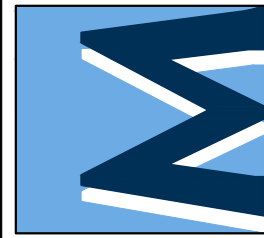
REVISIONS:	DATE: 04/18/24	SHEET 18 OF 35
SITE PLAN SUBMITTAL #2	REV. DATE: 05/14/24	CADD: CMW
SITE PLAN SUBMITTAL #3	12/12/24	ENG: CMW
SITE PLAN SUBMITTAL #4	03/28/25	PM: RCW
SITE PLAN SUBMITTAL #5	05/23/25	TECH: JRS
		23351S002

THE CRESCENT

SITE PLAN
HISTORIC 1987 BASIN DRAINAGE AREAS

CLIENT

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1987 BASIN VOLUME CALCULATIONS

Based on values used in original calculations for basin (03/02/1987).

Undeveloped Site Runoff Coefficient = 0.2

Drainage Sub-area	Runoff Coefficient	Area (acres)
Oakbrook Drive	0.67	1.47
Townhouses	0.50	4.44
Office Area	0.70	4.17

Required storage for Oakbrook Drive area, Townhouses area, Office (Pond Easement Area), and Office (Current Project) area using data from the original calculations.

$$\text{Average Runoff Coefficient (C)} = \frac{(1.47 \times 0.67) + (4.44 \times 0.50) + (4.17 \times 0.70)}{1.47 + 4.47 + 4.17} = 0.61$$

$$\text{Developed Volume (V}_d\text{)} = 10.08\text{ac} \times \frac{43,560\text{ sft}}{1\text{ ac}} \times 0.61 \times 4.3\text{ in} \times \frac{1\text{ ft}}{12\text{ in}} = 95,976.6\text{ cft}$$

$$\text{Undeveloped Volume (V}_u\text{)} = 10.08\text{ac} \times \frac{43,560\text{ sft}}{1\text{ ac}} \times 0.20 \times 3.1\text{ in} \times \frac{1\text{ ft}}{12\text{ in}} = 22,686.0\text{ cft}$$

$$\text{Required Storage (V}_r\text{)} = 95,976\text{ cft} - 22,686\text{ cft} = 73,290.6\text{ cft}$$

PORTION OF BASIN VOLUME FOR RE-DEVELOPMENT AREA

Based on values used in original calculations for basin (02/20/1989).

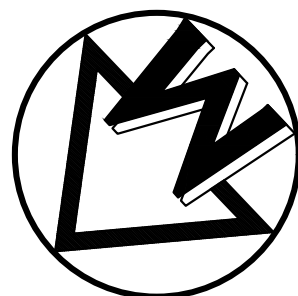
$$\text{Runoff Coefficient (C)} = 0.61$$

$$\text{Developed Volume (V}_d\text{)} = 4.17\text{ac} \times \frac{43,560\text{ sft}}{1\text{ ac}} \times 0.61 \times 4.3\text{ in} \times \frac{1\text{ ft}}{12\text{ in}} = 39,705\text{ cft}$$

$$\text{Undeveloped Volume (V}_u\text{)} = 4.17\text{ac} \times \frac{43,560\text{ sft}}{1\text{ ac}} \times 0.20 \times 3.1\text{ in} \times \frac{1\text{ ft}}{12\text{ in}} = 9,385\text{ cft}$$

$$\text{Designed Portion of basin volume for redevelopment area (V)} = 39,705\text{ cft} - 9,385\text{ cft} = 30,320\text{ cft}$$

$$\text{Percentage of basin volume for redevelopment area (V}_\text{re}\text{)} = \frac{30,320\text{ cft}}{66,020\text{ cft}} = \text{cft} = 45.9\%$$



SCALE: 1" = 60'



LEGEND

- 838 PROP. CONTOUR
- * EXIST. LIGHT POLE
- * EXIST. LIGHT POLE
- e EXIST. ELECTRIC LINE
- g EXIST. GAS LINE
- g EXIST. GAS VALVE
- f.o. EXIST. FIBER OPTIC LINE
- w EXIST. WATER MAIN
- W PROP. WATER MAIN
- h EXIST. HYDRANT
- h PROP. HYDRANT
- h EXIST. GATE VALVE IN BOX
- h PROP. GATE VALVE IN BOX
- h REDUCER
- r EXIST. STORM SEWER
- R PROP. STORM SEWER
- h EXIST. CATCH BASIN OR INLET
- h PROP. CATCH BASIN OR INLET
- RD PROP. ROOF DRAIN
- RD END SECTION
- ps PROP. DOWNSPOUT
- s-o EXIST. SANITARY SEWER
- S-o PROP. SANITARY SEWER
- o EXIST. CLEANOUT
- o PROP. CLEANOUT
- b SIGN
- FF SILTFENCE
- FF FINISH FLOOR ELEVATION

STORM WATER NARRATIVE

THE EXISTING SITE DRAINS TO THE EXISTING BASIN TO THE NORTHEAST. THE EXISTING BASIN ALSO SERVES OAKBROOK DRIVE AND THE TOWNHOMES TO THE EAST.

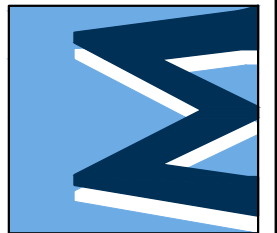
THE NEW DEVELOPMENT PROJECT AREA WILL CONSIST OF A PROPOSED APARTMENT BUILDING AND PARKING LOT THAT WILL DRAIN TO THE EXISTING BASIN AND UNDERGROUND STORM WATER DETENTION CHAMBERS. THE PROPOSED BUILDING WILL COVER THE MAJORITY OF THE SITE AND STORM DRAINAGE WILL BE PICKED UP BY ROOF CONDUCTORS AND DRAIN INLETS. THIS DRAINAGE WILL BE ROUTED TO THE PROPOSED DETENTION CHAMBERS AND THE EXISTING BASIN. THE OUTLET FROM THE DETENTION CHAMBERS THE STORM WATER WILL BYPASS THE EXISTING DETENTION BASIN AND TIE DIRECTLY INTO THE STORM WATER SYSTEM. THE BUILDING DOES NOT CONTAIN A BASEMENT AND AS SUCH SHOULD NOT POSE A PROBLEM WITH PLACING INFILTRATION FACILITIES WITHIN 10' OF THE BUILDING STRUCTURE.

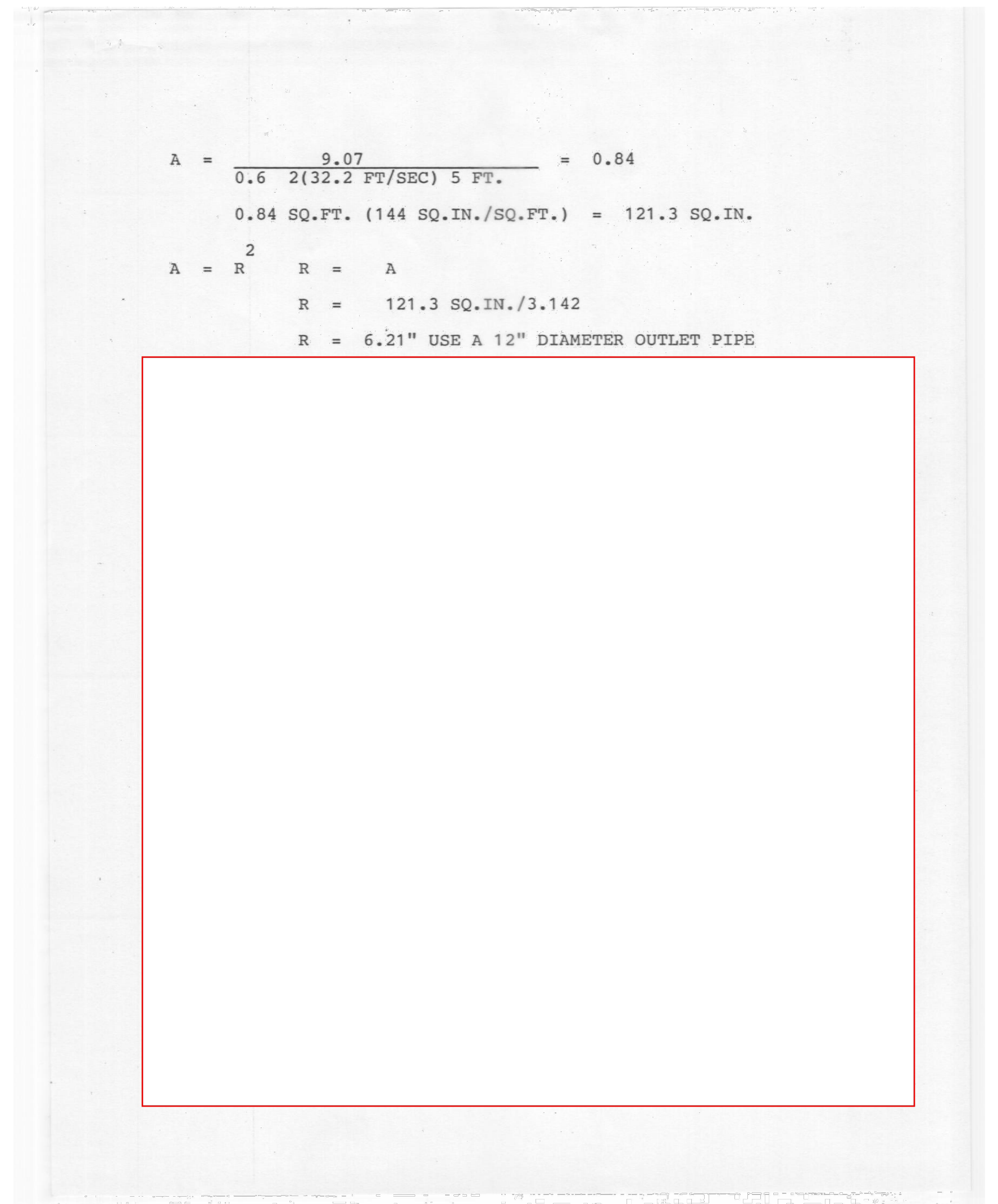
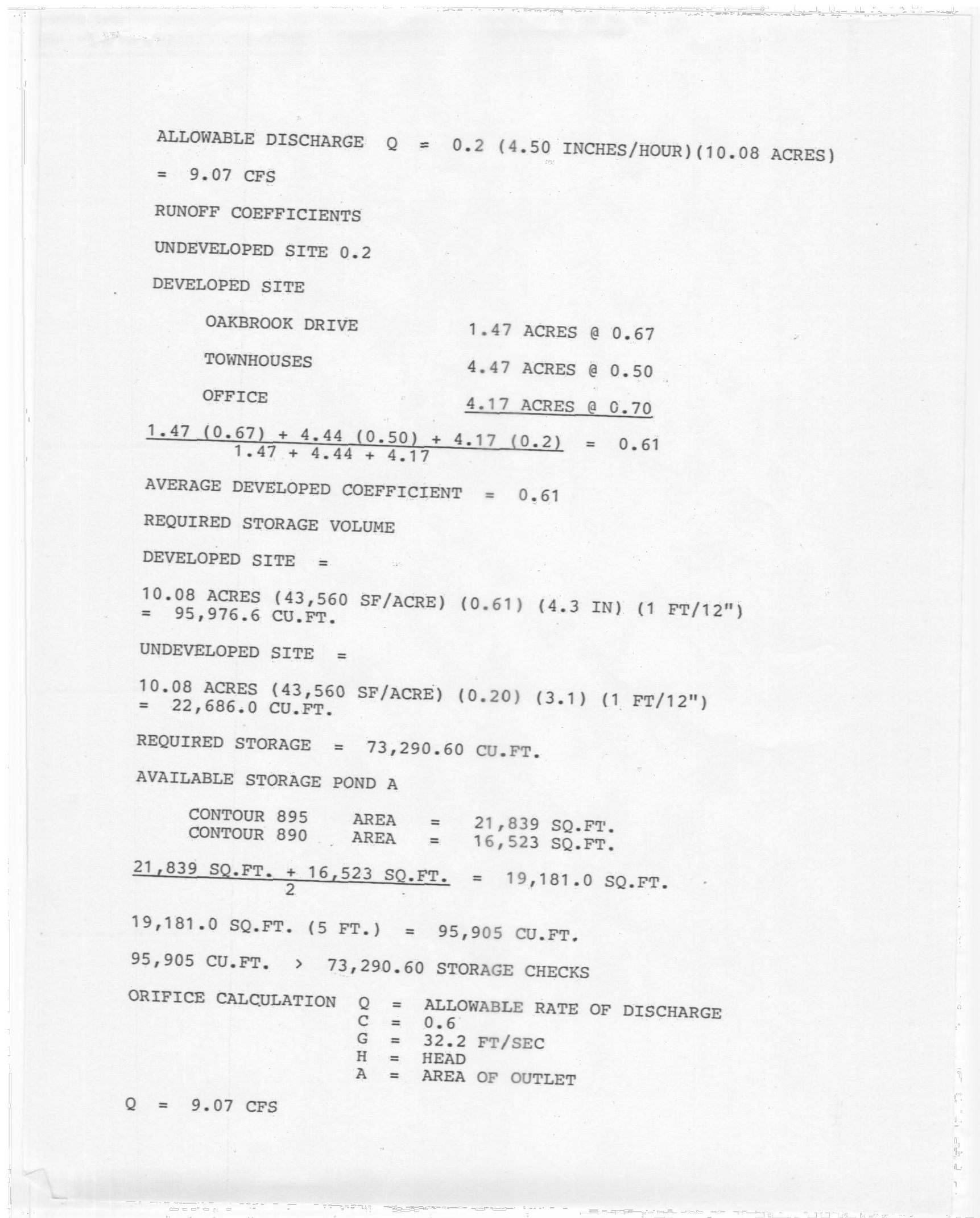
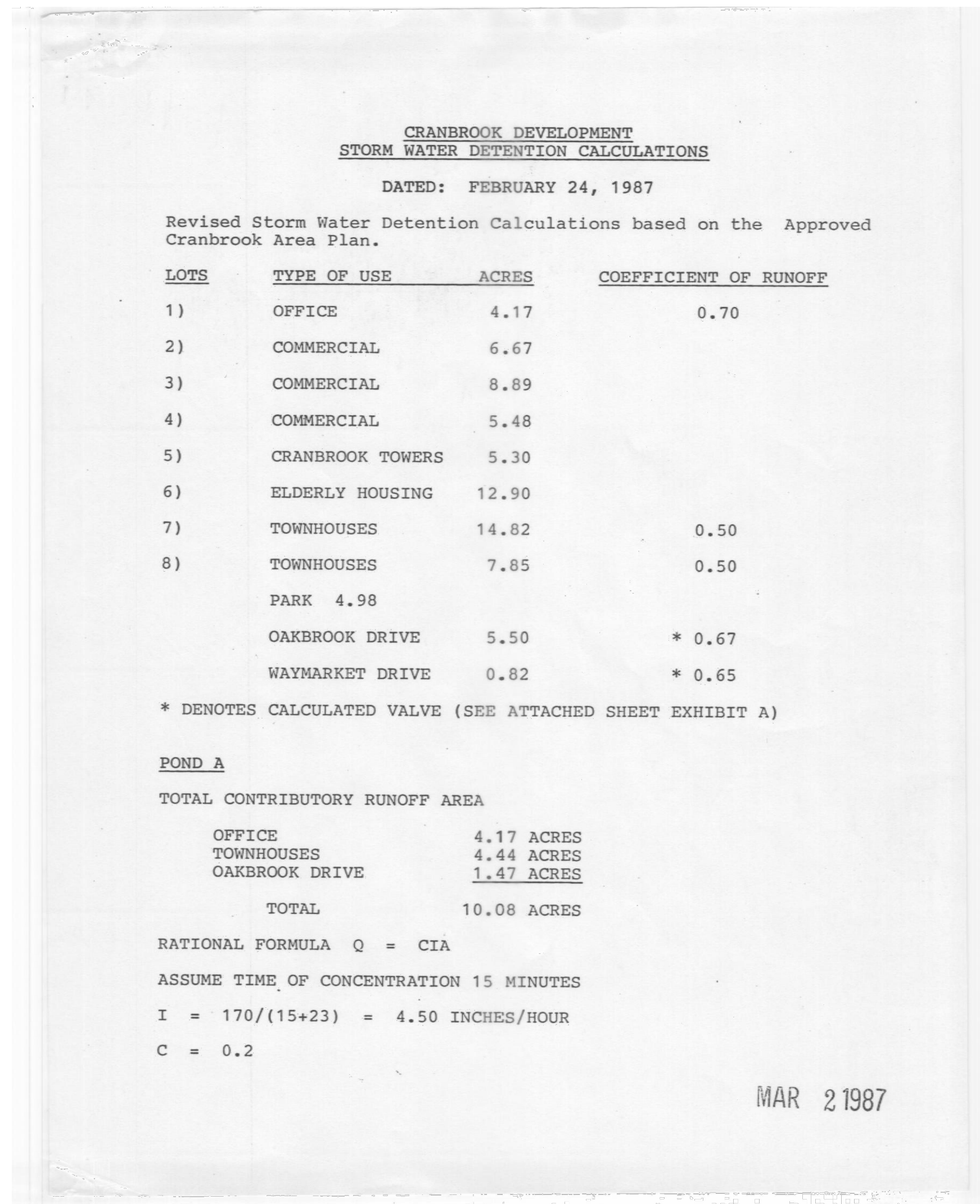
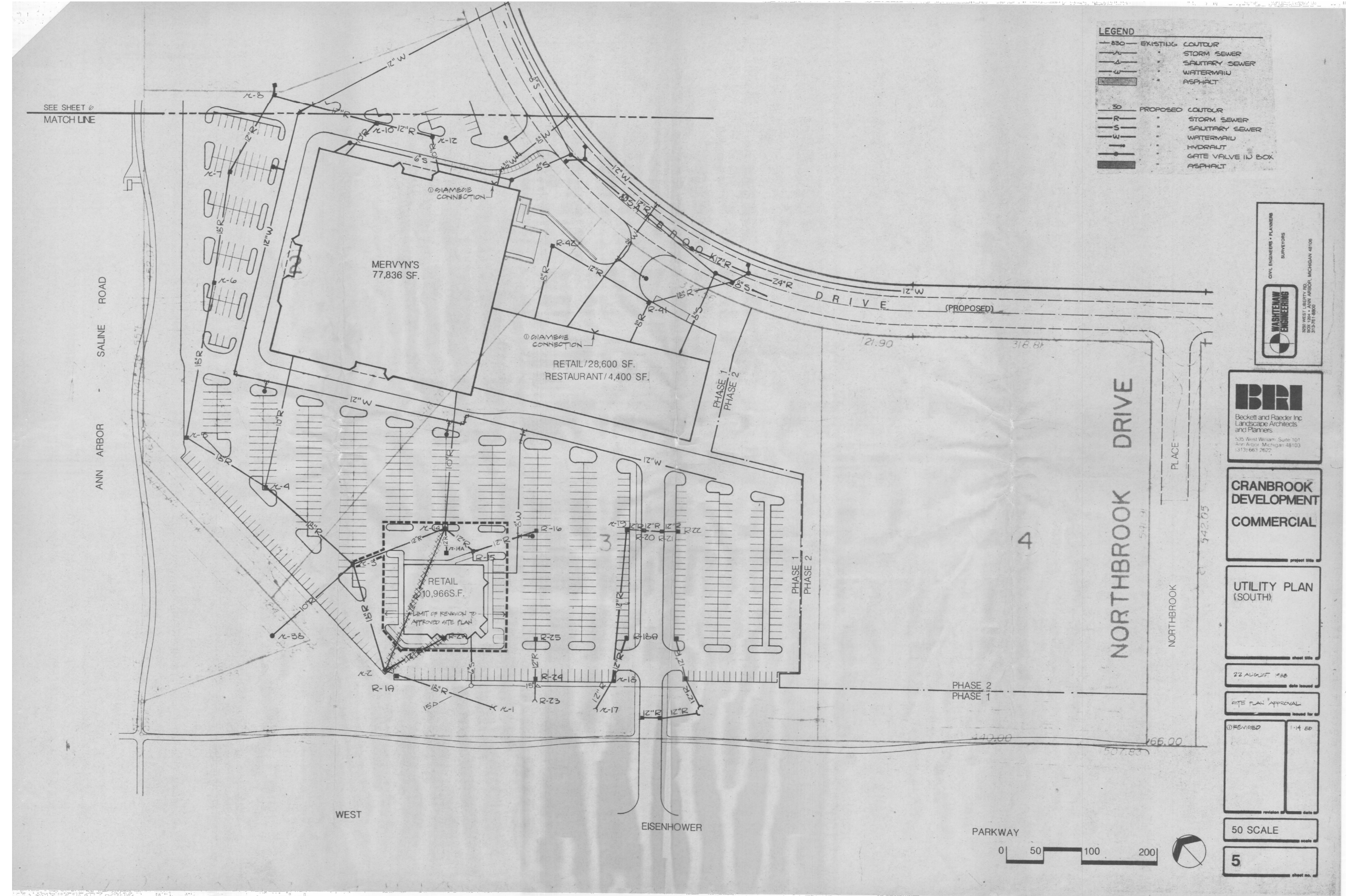
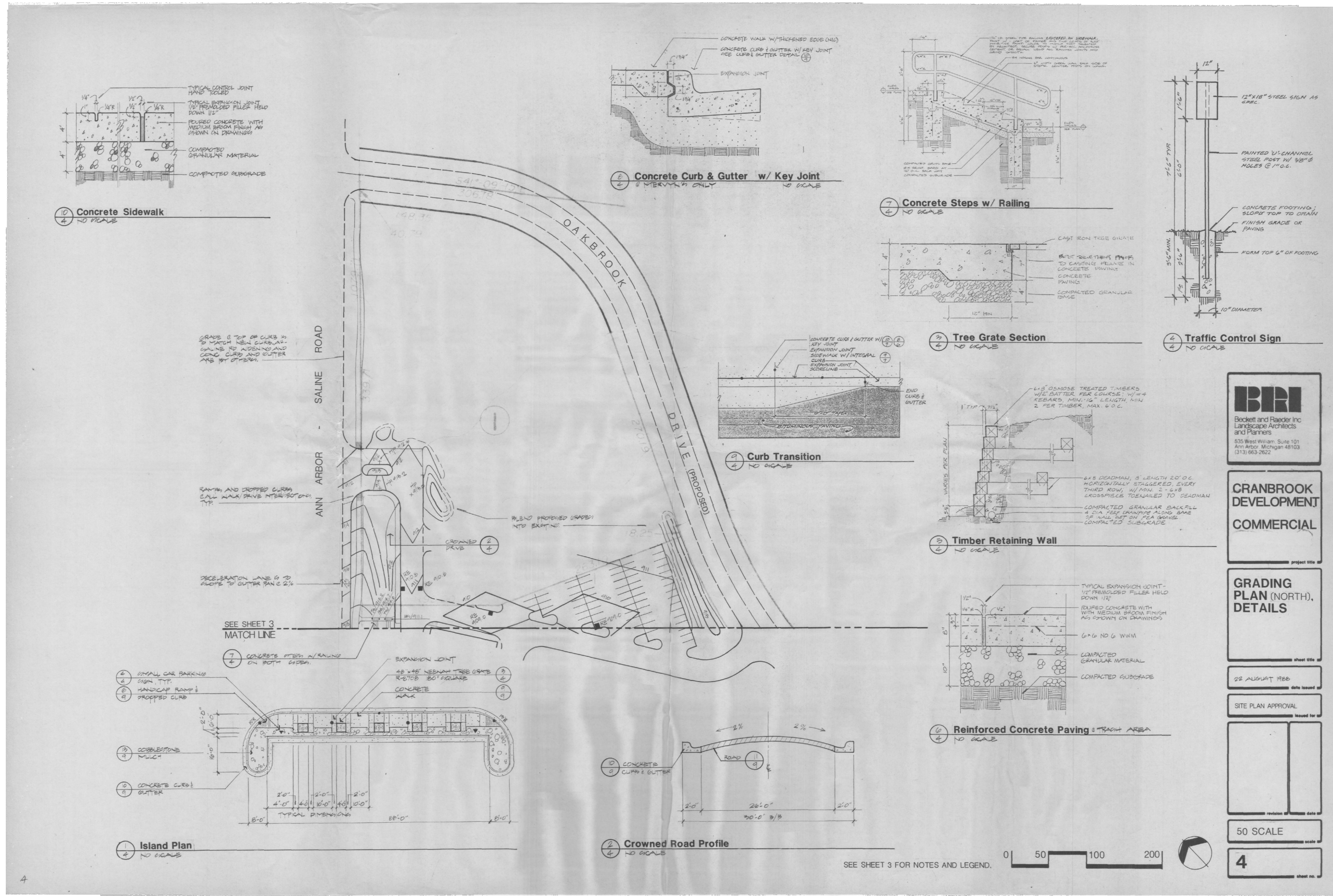
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JOB No.	23351	DATE: 04/18/24	SHEET 19 OF 35
REVISIONS:	REV. DATE	CADD: CWM	ENG: CWM
SITE PLAN SUBMITTAL #2	05/14/24	ENG: CWM	TECH: RCW
SITE PLAN SUBMITTAL #3	12/12/24	ENG: CWM	TECH: RCW
SITE PLAN SUBMITTAL #4	03/28/25	ENG: CWM	TECH: RCW
SITE PLAN SUBMITTAL #5	05/23/25	ENG: CWM	TECH: RCW

CLIENT	CRANBROOK VILLAGE LIMITED PARTNERSHIP 6735 TELEGRAPH ROAD, SUITE 110 BLOOMFIELD HILLS, MICHIGAN 48301 ATTN: NOAH JACOB
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2024 CORRECTED BASIN VOLUME CALCULATIONS

Based on coefficient values used in original calculations for basin (03/02/1987).

Undeveloped Site Runoff Coefficient = 0.2

Drainage Sub-area	Runoff Coefficient	Area (acres)
Oakbrook Drive	0.67	1.47
Townhouses	0.50	3.74
Office Area	0.70	4.17

Required storage for Oakbrook Drive area, Townhouses area, Office (Pond Easement Area), and Office (Current Project) area using data from the original calculations.

$$\text{Average Runoff Coefficient (C)} = \frac{(1.47 \times 0.67) + (3.74 \times 0.50) + (4.17 \times 0.70)}{1.47 + 3.74 + 4.17} = 0.616$$

$$\text{Developed Volume (V}_d\text{)} = 9.38\text{ac} \times \frac{43,560\text{ sft}}{1\text{ ac}} \times 0.616 \times 4.3\text{ in} \times \frac{1\text{ ft}}{12\text{ in}} = 90,190\text{ cft}$$

$$\text{Undeveloped Volume (V}_u\text{)} = 9.38\text{ac} \times \frac{43,560\text{ sft}}{1\text{ ac}} \times 0.20 \times 3.1\text{ in} \times \frac{1\text{ ft}}{12\text{ in}} = 21,111\text{ cft}$$

$$\text{Required Storage (V}_r\text{)} = 90,190\text{ cft} - 21,111\text{ cft} = \mathbf{69,079\text{ cft}}$$

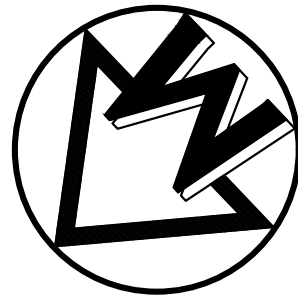
PORTION OF BASIN VOLUME FOR RE-DEVELOPMENT AREA

Office Area = 4.17 acres

Oakbrook Drive Area + Townhomes Area = 5.21 acres

Total Area = 9.38 acres

$$\text{Percentage of basin volume for redevelopment area (V}_{\%}\text{)} = \frac{4.17\text{ acres}}{9.38\text{ acres}} = \mathbf{44.5\%}$$



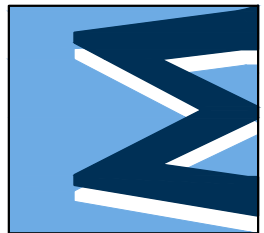
SCALE: 1" = 60'



LEGEND

- 838 PROP. CONTOUR
- * EXIST. LIGHT POLE
- * EXIST. ELECTRIC POLE
- e EXIST. ELECTRIC LINE
- g EXIST. GAS LINE
- g EXIST. GAS VALVE
- f.o. EXIST. FIBER OPTIC LINE
- w EXIST. WATER MAIN
- w PROP. WATER MAIN
- h EXIST. HYDRANT
- h PROP. HYDRANT
- h EXIST. GATE VALVE IN BOX
- h PROP. GATE VALVE IN BOX
- r EXIST. REDUCER
- R EXIST. STORM SEWER
- R PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- RD PROP. ROOF DRAIN
- RD END SECTION
- ps PROP. DOWNSPOUT
- s-o EXIST. SANITARY SEWER
- S-o PROP. SANITARY SEWER
- o EXIST. CLEANOUT
- o PROP. CLEANOUT
- o SIGN
- FF SILTFENCE
- FF FINISH FLOOR ELEVATION

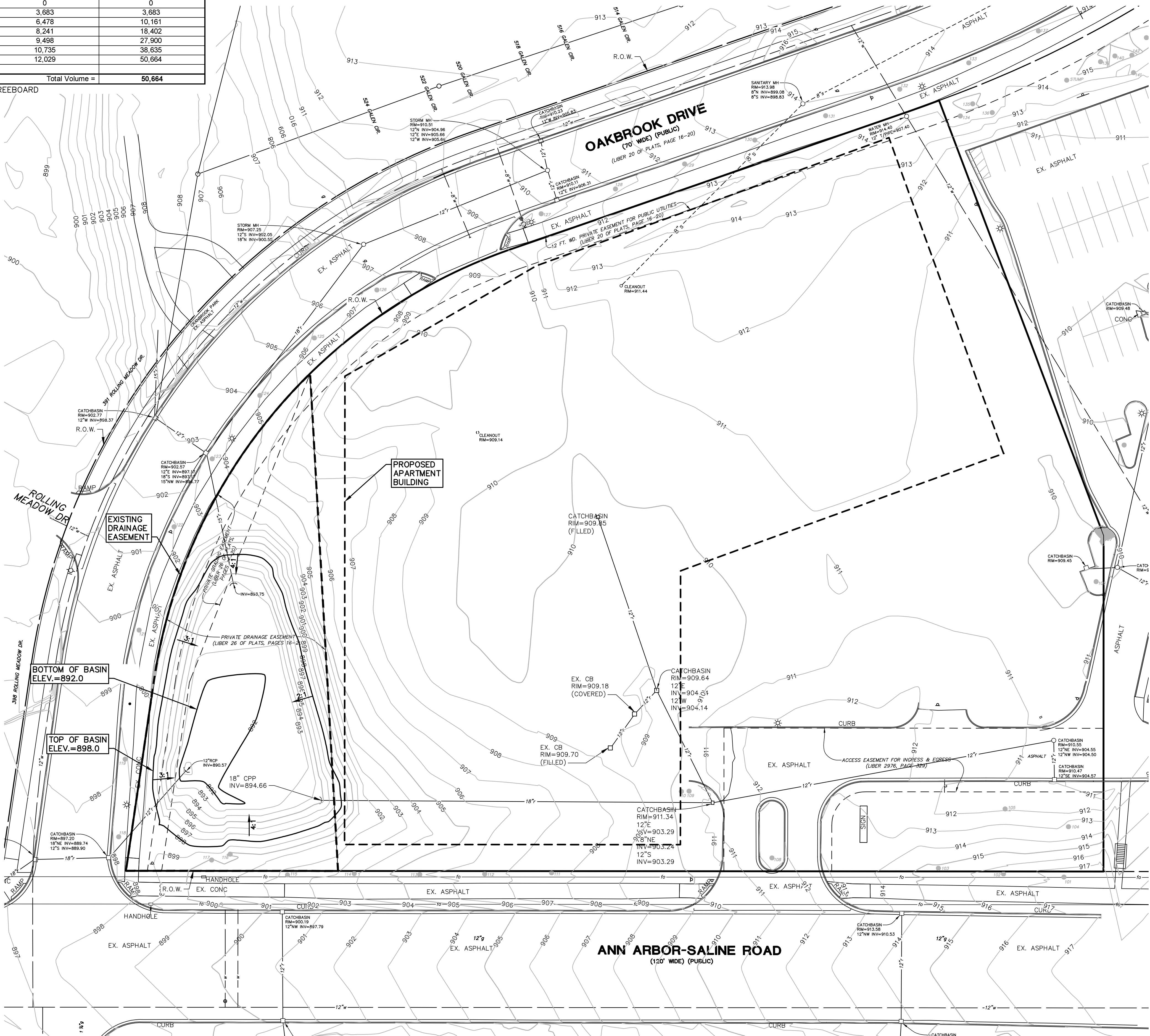
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EXISTING BASIN VOLUME

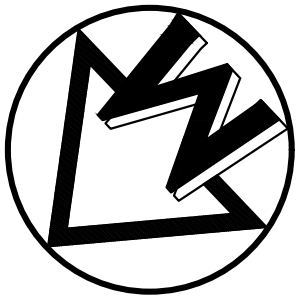
Elevation	Area (sq ft)	Depth (ft)	Volume (cu ft)	Cum. Volume (cu ft)
892.00	1,999	0.00	0	0
893.00	5,367	1.00	3,683	3,683
894.00	7,589	2.00	6,478	10,161
895.00	8,892	3.00	8,241	18,402
896.00	10,104	4.00	9,498	27,900
897.00	11,366	5.00	10,735	38,635
898.00	12,692	6.00	12,029	50,664
Total Volume =			50,664	

NOTE: 1987 BASIN DESIGN DID NOT A REQUIRE A FREEBOARD



LEGEND

- 838 PROP. CONTOUR
- * EXIST. LIGHT POLE
- * PROP. LIGHT POLE
- e EXIST. ELECTRIC LINE
- g EXIST. GAS LINE
- g EXIST. GAS VALVE
- f.o. EXIST. FIBER OPTIC LINE
- w EXIST. WATER MAIN
- w PROP. WATER MAIN
- h EXIST. HYDRANT
- h PROP. HYDRANT
- g EXIST. GATE VALVE IN BOX
- g PROP. GATE VALVE IN BOX
- r EXIST. REDUCER
- r PROP. STORM SEWER
- r PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- RD PROP. ROOF DRAIN
- END SECTION
- ds PROP. DOWNSPOUT
- s-o EXIST. SANITARY SEWER
- s-o PROP. SANITARY SEWER
- o EXIST. CLEANOUT
- o PROP. CLEANOUT
- p SIGN



SCALE: 1" = 30'



THE CRESCENT
SITE PLAN
EXISTING BASIN CALCULATIONS

22

JOB No. 23351

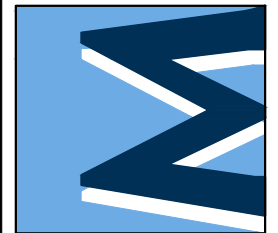
REVISIONS:	REV. DATE	SHEET 22 OF 35
PRELIMINARY CITY SUBMITTAL	04/18/24	CADD: CWM
SITE PLAN SUBMITTAL #1	04/18/24	ENG: CWM
SITE PLAN SUBMITTAL #2	05/14/24	PM: RCW
SITE PLAN SUBMITTAL #3	05/14/24	TECH: RCW
SITE PLAN SUBMITTAL #4	05/14/24	TECH: RCW
SITE PLAN SUBMITTAL #5	05/14/24	TECH: RCW

CLIENT

CRANBROOK VILLAGE LIMITED PARTNERSHIP
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

MIDWESTERN
CONSULTING

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ADJUSTED BASIN VOLUME

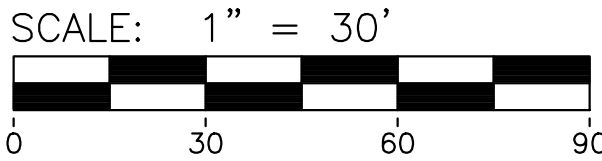
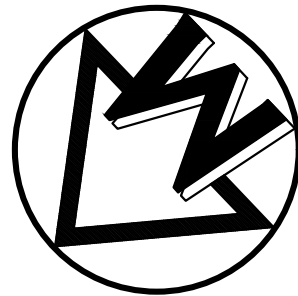
Elevation	Area (sq ft)	Depth (ft)	Volume (cft)	Cum. Volume (cft)
890.60	6,018	0.00	0	0
891.00	6,593	0.40	2,522	2,522
892.00	7,784	1.40	7,189	9,711
893.00	9,032	2.40	8,408	18,119
894.00	10,336	3.40	9,684	27,803
895.00	11,697	4.40	11,017	38,819
896.00	13,115	5.40	12,406	51,225
897 [FULL]	14,589	6.40	13,852	65,077
898 [FREEBOARD]	16,120	7.40	15,355	80,432
			Total Volume =	65,077

BASIN VOLUME AVAILABLE FOR RE-DEVELOPMENT AREA

Adjusted Basin Volume = 65,077 cft
Percentage of basin volume for redevelopment area (V_{re}) = 44.5%
Basin volume available for re – development area (V) = 65,077 cft * 0.445 = 28,959 cft

ADJUSTED BASIN NARRATIVE

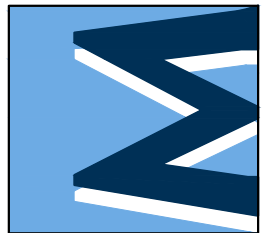
THE ADJUSTED BASIN LAYOUT HAS REMOVED A PORTION OF THE BASIN THAT WAS OUTSIDE OF THE DRAINAGE EASEMENT. THE RE-GRADED BASIN HAS BEEN DESIGNED TO FIT WITHIN THE DRAINAGE EASEMENT WITH 3:1 SLOPES AND A 6' FENCE SURROUNDING THE BASIN. SEE SHEET 25 FOR PROPOSED DEVELOPMENT VOLUME CALCULATIONS. THE ADJUSTED BASIN WILL HAVE A TOTAL CAPACITY OF 65,077 CFT BELOW FREEBOARD.



LEGEND	
838	PROP. CONTOUR
*	EXIST. LIGHT POLE
*	PROP. LIGHT POLE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
w	PROP. WATER MAIN
+	EXIST. HYDRANT
+	PROP. HYDRANT
+	EXIST. GATE VALVE IN BOX
+	PROP. GATE VALVE IN BOX
+	REDUCER
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
+	EXIST. CATCH BASIN OR INLET
+	PROP. CATCH BASIN OR INLET
RD	PROP. ROOF DRAIN
RD	END SECTION
ps	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
⊙	EXIST. CLEANOUT
⊙	PROP. CLEANOUT
p	SIGN
FF	SILTENCE
FF	FINISH FLOOR ELEVATION

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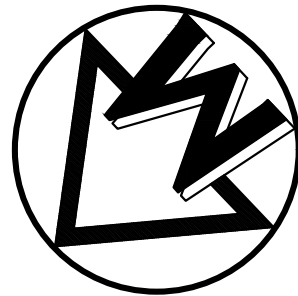
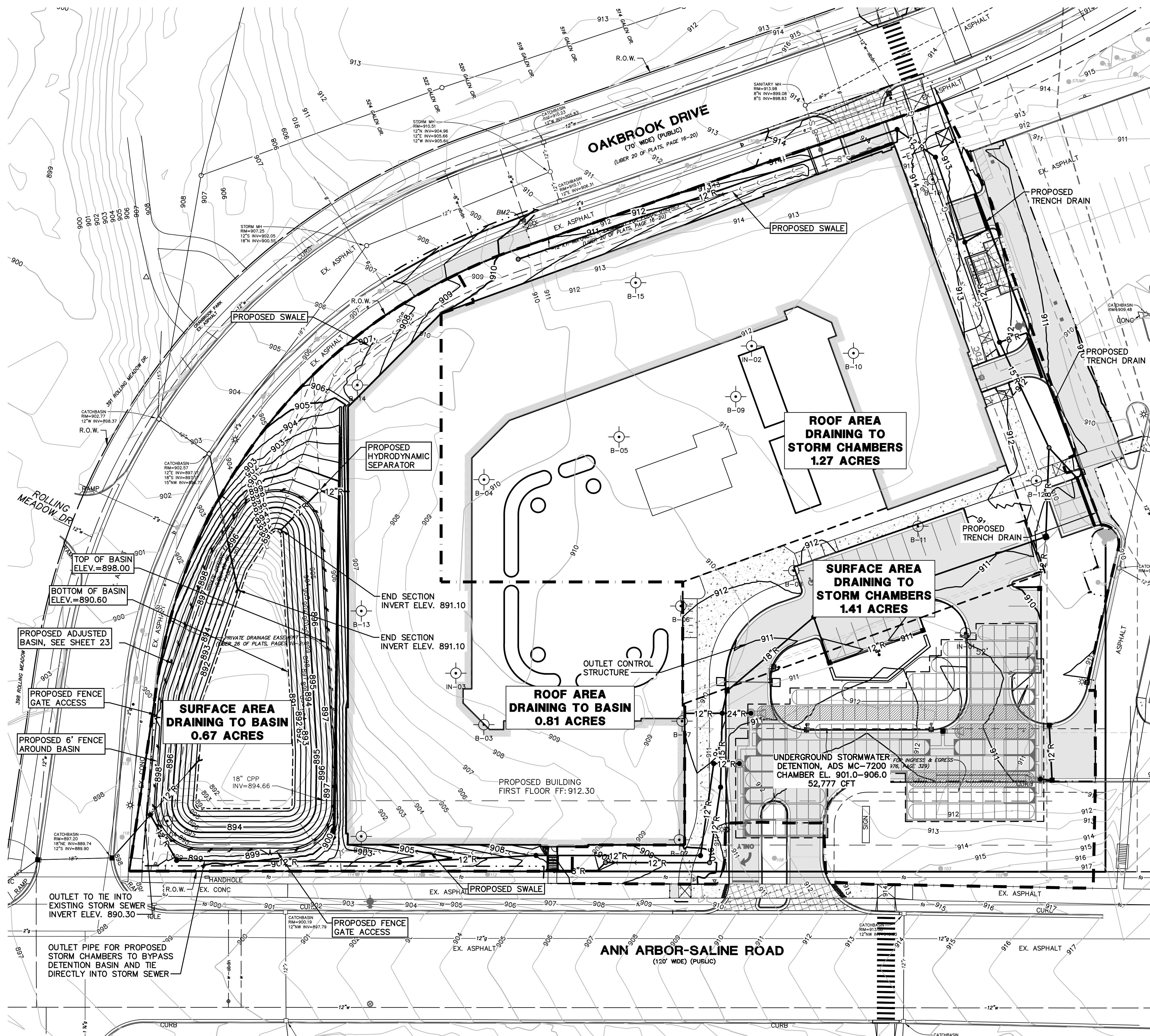


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6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

THE CRESCENT
SITE PLAN
ADJUSTED BASIN CALCULATIONS

23

JOB No.	23351	DATE	04/18/24	SHEET	23 OF 35
REVISIONS:	REV. DATE	REV. DATE	REV. DATE	REV. DATE	REV. DATE
PRELIMINARY CITY SUBMITTAL	04/05/24	CADD: CWM			
SITE PLAN SUBMITTAL	04/18/24	ENG: CWM			
SITE PLAN SUBMITTAL #2	05/14/24	PM: RCW			
SITE PLAN SUBMITTAL #3	05/17/24	TECH: RCW			
SITE PLAN SUBMITTAL #4	05/21/24	TECH: RCW			
SITE PLAN SUBMITTAL #5	05/23/24	TECH: RCW			



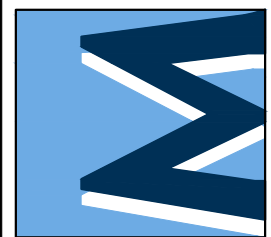
SCALE: 1" = 30'



LEGEND

- | | |
|------|-----------------------------|
| 838 | PROP. CONTOUR |
| * | EXIST. LIGHT POLE |
| * | PROP. LIGHT POLE |
| e | EXIST. ELECTRIC LINE |
| g | EXIST. GAS LINE |
| g | EXIST. GAS VALVE |
| f.o. | EXIST. FIBER OPTIC LINE |
| w | EXIST. WATER MAIN |
| w | PROP. WATER MAIN |
| h | EXIST. HYDRANT |
| h | PROP. HYDRANT |
| B | EXIST. GATE VALVE IN BOX |
| B | PROP. GATE VALVE IN BOX |
| R | REDUCER |
| R | EXIST. STORM SEWER |
| R | PROP. STORM SEWER |
| C | EXIST. CATCH BASIN OR INLET |
| C | PROP. CATCH BASIN OR INLET |
| RD | PROP. ROOF DRAIN |
| RD | END SECTION |
| ps | PROP. DOWNSPOUT |
| s | EXIST. SANITARY SEWER |
| s | PROP. SANITARY SEWER |
| C | EXIST. CLEANOUT |
| C | PROP. CLEANOUT |
| P | SIGN |
| FF | FINISH FLOOR ELEVATION |
| --- | PROP. DRAINAGE BOUNDARY |
| ○ | SOIL BORING |

NOTE: ROOF PIPING WILL BE DESIGNED TO DIRECT THE ROOF DRAINAGE TO THE TWO OUTLETS, WITHIN AN ACCURACY OF +/- 1,000 SFT.



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CRANBROOK VILLAGE LIMITED PARTNERSHIP
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

THE CRESCENT
SITE PLAN
PROPOSED STORMWATER PLAN

24

JOB No.	23351	DATE	04/18/24	SHEET	24	OF	35
REVISIONS:	REV.	DATE	04/18/24	CADD:	CWM		
PRELIMINARY CITY SUBMITTAL				ENG:	CWM		
SITE PLAN SUBMITTAL #1				PM:	RCW		
SITE PLAN SUBMITTAL #2				TECH:	RCW		
SITE PLAN SUBMITTAL #3							
SITE PLAN SUBMITTAL #4							
SITE PLAN SUBMITTAL #5							

DETENTION CALCULATIONS (AREA TO BASIN)

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

Soil Type	Percent of site	Soil Classification
Blount Loam (BntaaaB)	97.2%	D
Glynnwood Loam (MoB)	2.8%	D

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building Roof		36,225	0.83	0.95	0.79
Pavement		0	0.00	0.95	0.00
Grass	D	20,004	0.46	0.5	0.23
Gravel	D	0	0.00	0.85	0.00
Water Surface		9,238	0.21	1.00	0.21
Total		65,467	1.50		1.23

$$\text{Weighted C} = (\text{Sum}(C)(x(\text{Area})) / (\text{Area Total})) = 0.82$$

NCRS Variables (Pervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Grass	D	20,004	0.46	80	0.37
Total		20,004	0.46		0.37

$$\text{Weighted CN} = (\text{Sum}(\text{CN})(x(\text{Area})) / (\text{Area Total})) = 80$$

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Building Roof		36,225	0.83	98	0.81
Pavement		0	0.00	98	0.00
Gravel	D	0	0.00	91	0.00
Water Surface		9,238	0.21	98	0.21
Total		45,463	1.04		1.02

$$\text{Weighted CN} = (\text{Sum}(\text{CN})(x(\text{Area})) / (\text{Area Total})) = 98$$

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations (V100-per-post)

- A. 100 year / 24 hour storm event: P= 5.11 in
B. Pervious Cover CN From Worksheet 1 CN= 80
C. S = (1000 / CN) - 10 S= 2,500 in
D. Q = [(P-0.2S)²] / [P+0.8S] Q= 2,989 in
E. Pervious Cover Area from Worksheet 1 20,004 sf
F. V100-per-post = Q x (1/12) x Area V100-per-post = 4,983 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations (V100-imp-post)

- A. 2 year / 24 hour storm event: P= 5.11 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)²] / [P+0.8S] Q= 4.873 in
E. Impervious Cover Area from Worksheet 1 45,463 sf
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 18,462 cft

W8 - Time of Concentration (Tc-hrs)

- A. Assume 15-minute minimum time of concentration Tc= 0.25 hr

W9 - Runoff Summary & On-Site Infiltration Requirement

- A. Summary from Previous Worksheets
Pervious Cover Post-Development 100-Year Volume (V100-per-post) 4,983 cft
Impervious Cover Post-Development 100-Year Volume (V100-imp-post) 18,462 cft
Total 100-Year Volume (V100) 23,445 cft

W13 - Site Summary of Infiltration & Detention

- B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved.
% Required Infiltration NOT Provided 100.0 %
(100% - % Minimum Required Infiltration Provided)
Net % Penalty (20% x % Required Infiltration NOT Provided) 20.0 %
Total Required Detention Volume, including penalty 27,671 cft
[(100% + Net % Penalty) x Net Required Detention Volume]

DETENTION CALCULATIONS (ENTIRE SITE)

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

Soil Type	Percent of site	Soil Classification
Blount Loam (BntaaaB)	97.2%	D
Glynnwood Loam (MoB)	2.8%	D

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building Roof		90,218	2.07	0.95	1.97
Pavement		33,000	0.76	0.95	0.72
Grass	D	48,829	1.12	0.5	0.56
Water Surface		9,238	0.21	1.00	0.21
Total		181,285	4.16		3.46

$$\text{Weighted C} = (\text{Sum}(C)(x(\text{Area})) / (\text{Area Total})) = 0.83$$

NCRS Variables (Pervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Grass	D	48,829	1.12	80	0.90
Total		48,829	1.12		0.90

$$\text{Weighted CN} = (\text{Sum}(\text{CN})(x(\text{Area})) / (\text{Area Total})) = 80$$

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Building Roof		90,218	2.07	98	2.03
Pavement		33,000	0.76	98	0.74
Water Surface		9,238	0.21	98	0.21
Total		132,456	3.04		2.98

$$\text{Weighted CN} = (\text{Sum}(\text{CN})(x(\text{Area})) / (\text{Area Total})) = 98$$

W2 - W2 - First Flush Runoff Calculations (Vfr)

- A. Vfr = 1" x 1/12" x 43560 sf/ac x A x C where A= 4.16 and where C= 0.83

$$\text{Vfr} = 1" \times 1/12" \times 43560 \text{ sf/ac} \times 4.16 \times 0.83 = 12,539 \text{ cf}$$

W3 - W3 - Pre-Development Bankfull Runoff Calculations (Vbf-pre)

- A. 2 year / 24 hour storm event: P= 2.35 in
B. Pre-Development CN CN= 79
(Woods-Grass Combination, Good, Type D Soils)
C. S = (1000 / CN) - 10 S= 2,658 in
D. Q = [(P-0.2S)²] / [P+0.8S] Q= 0.739 in
E. Total Site Area excluding "Self-Crediting" BMPs 181,285 sf
F. Vbf-pre = Q x (1/12) x Area Vbf-pre = 11,158 cft

W4 - Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)

- A. 2 year / 24 hour storm event: P= 2.35 in
B. Pervious Cover CN From Worksheet 1 CN= 80
C. S = (1000 / CN) - 10 S= 2,500 in
D. Q = [(P-0.2S)²] / [P+0.8S] Q= 0.787 in
E. Pervious Cover Area from Worksheet 1 48,829 sf
F. Vbf-per-post = Q x (1/12) x Area Vbf-per-post = 3,201 cft

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)

- A. 2 year / 24 hour storm event: P= 2.35 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)²] / [P+0.8S] Q= 2.122 in
E. Impervious Cover Area from Worksheet 1 132,456 sf
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 23,419 cft

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations (V100-per-post)

- A. 100 year / 24 hour storm event: P= 5.11 in
B. Pervious Cover CN From Worksheet 1 CN= 80
C. S = (1000 / CN) - 10 S= 2,500 in
D. Q = [(P-0.2S)²] / [P+0.8S] Q= 2,989 in
E. Pervious Cover Area from Worksheet 1 48,829 sf
F. V100-per-post = Q x (1/12) x Area V100-per-post = 12,163 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations (V100-imp-post)

- A. 2 year / 24 hour storm event: P= 5.11 in
B. Impervious Cover CN From Worksheet 1 CN= 98
C. S = (1000 / CN) - 10 S= 0.204 in
D. Q = [(P-0.2S)²] / [P+0.8S] Q= 4.873 in
E. Impervious Cover Area from Worksheet 1 132,456 sf
F. Vbf-imp-post = Q x (1/12) x Area Vbf-imp-post = 53,788 cft

W8 - Time of Concentration (Tc-hrs)

Upstream Structure	Downstream Structure	Tc (Minutes)	K	Change in Elevation	Length (L)	Slope % (S)	S ^{0.5}	V=K*S ^{0.5}	Travel Time =L/(V*3600)
	R37	15.00							
R37	R36	15.16	2.1	0.29	74	0.39%	0.063	0.131	0.16
R36	R35	15.23	2.1	0.22	40	0.55%	0.074	0.156	0.07
R35	R34	15.32	2.1	0.69	70	0.99%	0.099	0.208	0.09
R34	R33	15.34	2.1	0.05	10	0.50%	0.071	0.148	0.02
R33	R32	15.49	2.1	0.39	78	0.50%	0.071	0.148	0.15
R32	R31	15.68	2.1	0.52	103	0.50%	0.071	0.149	0.19
R31	R16	15.77	2.1	0.25	50	0.50%	0.071	0.148	0.09
R16	R15	15.85	2.1	0.21	42	0.50%	0.071	0.148	0.08
R15	R14	15.86	2.1	0.88	16	5.50%	0.235	0.492	0.01
R14	R13	15.90	2.1	0.12	23	0.52%	0.072	0.152	0.04
R13	R12	15.93	2.1	0.08	16	0.50%	0.071	0.148	0.03
R12	Detention	15.95	2.1	0.05	10	0.50%	0.071	0.148	0.02

$$\text{Tc} = 0.27 \text{ hr}$$

W9 - Runoff Summary & On-Site Infiltration Requirement

- A. Summary from Previous Worksheets
First Flush Volume (Vfr) 12,539 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre) 11,158 cft
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post) 3,201 cft
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post) 23,419 cft
Total BF Volume (Vbf-post) 26,621 cft
Pervious Cover Post-Development 100-Year Volume (V100-per-post) 12,163 cft
Impervious Cover Post-Development 100-Year Volume (V100-imp-post) 53,788 cft
Total 100-Year Volume (V100) 65,951 cft
B. Determine Onsite Infiltration Requirement
Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume
Total Post-Development Bankfull Volume (Vbf-post) 26,621 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre) 11,158 cft
Bankfull Volume Difference 15,462 cft
Infiltration Requirement (Vinf) 15,462 cft

W10 - Detention/Retention Requirement

- A. Qp = 238.6 Tc^{-0.82} 707.12 cfs/(in x sq. mi)
B. Total Site Area excluding "Self-Crediting" BMPs 4.16 ac
C. Q100 = Q100-per + Q100-imp (from W6 and W7, respectively) 7,862 in
D. Peak Flow (PF) = Qp x Q100 x Area / 640 36.15 cfs
E. Delta = PF - 0.15 x Area (ac) 35.53 cfs
[0.15 x Area (ac)] 0.62 cfs
F. Vdet = Delta / PF x V100 64,812 cft
Required Detention not including infiltration credit or penalty.
Sediment Forebay Volume Required (5% of V100) 3,298 cft

Retention

- A. Vret = 2 x V100 131,902 cft

W11 - Determine Applicable BMPs and Associated Volume Credits

Proposed BMP	Area (sf)	Storage Volume (cft)		Design Infil. Rate (in/hr)	Infil. Volume in 6-hr Drawdown (cft)	Total Volume Reduction (cft)			
		Surface	In Soil						
		Total Volume Reduction Credit by Proposed Structural BMPs (cft)					0		
		Runoff Volume Infiltration Requirement (Vinf) from W9 (cft)					15,462		
		Runoff Volume Credit (cft)					0		

W12 - Natural Features Inventory

Refer to Sheet 2 for location and size of natural features.

W13 - Site Summary of Infiltration & Detention

- A. Stormwater Management Summary
Min Infiltration Requirement (Vinf) 15,462 cft
Designed/Provided Infiltration Volume 0 cft
% Minimum Required Infiltration Provided 0 %
Total Calculated Detention Volume, Vdet 64,812 cft
Net Required Detention Volume (Entire Site) 64,812 cft
(Vdet - Designed/Provided Infiltration Volume)
100-year Detention Volume to Basin 23,445 cft
Required 100-year Detention Volume to Chambers (Net Required Detention Volume - Total Detention Volume to Basin) 41,367 cft

- B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved.
% Required Infiltration NOT Provided 100.0 %
(100% - % Minimum Required Infiltration Provided)
Net % Penalty (20% x % Required Infiltration NOT Provided) 20.0 %
Total Required Detention Volume, including penalty 77,774 cft
[(100% + Net % Penalty) x Net Required Detention Volume]

$$\text{Total Detention Volume to Basin} = 27,641 \text{ cft}$$

- Additional Detention chamber volume required 50,133 cft
Total Required Detention Volume - Basin Volume for re-development area

Detention Outlet Calculations

- A. Required Detention Volumes
Required Detention Volumes (Reduced by Volume to existing Basin)
Storm Event Req'd Volume less Infil. Credit = Final Volume to Underground Detention
First Flush (Entire Site) 12,539 cft - 0 cft = 12,539 cft
Bankfull (Entire Site) 26,621 cft - 0 cft = 26,621 cft
100 -year (Area to Underground Detention) 41,367 cft - 0 cft = 41,367 cft
100-year + Req'd Penalty (Area to U.G. Deter Forebay Volume Required (5% of 100-yr) 50,133 cft - 0 cft = 50,133 cft
2,068 cft

B. Underground Detention Volumes Provided

Elevation	Depth (ft)	Volume (cft)	Cum. Volume (cft)
900.25	0.00	0	0
901.00	0.75	3,188	3,188
902.00	1.75	10,993	14,181
903.00	2.75	10,501	24,682
904.00	3.75	9,683	34,365
905.00	4.75	8,379	42,744
906.00	5.75	5,781	48,525
907.00	6.75	4,252	52,777
		Total Volume =	52,777

Storage Elevation Calculation

$$\text{First Flush Elevation (Xfr)} = \frac{902.0 - 901.0}{14,181 - 3,188} = \frac{Xfr - 901.0}{12,539 - 3,188} \quad Xfr = 901.85 \text{ ft}$$

$$\text{Bankfull Elevation (Xbf)} = \frac{905.0 - 903.0}{42,744 - 24,682} = \frac{Xbf - 903.0}{26,621 - 24,682} \quad Xbf = 903.21 \text{ ft}$$

$$\text{100-Year Elevation (X100)} = \frac{907.0 - 906.0}{52,777 - 48,525} = \frac{X100 - 906.0}{50,133 - 48,525} \quad X100 = 906.38 \text{ ft}$$

C. Two-Stage Outlet Design

- First Flush Discharge (24-36 hours for the detention of first flush storm event)
Average Head (Have) = 2/3 (Xfr - Xbot) = 2/3 (901.85 - 900.25) = 1.07 ft
First Flush Max. Flowrate (Qfr-max) = Vfr / 24 hrs = 12538.88cfs / (24 hrs*3600) = 0.15 cfs
Req Area (Afr) = Qfr-max / 0.62 / sqrt(2*g*Have) = 0.15/0.62/(sqrt(2*32.2*1.07))^0.5= 0.029 sf
Orifice Diameter, Proposed 1.250 in
Orifice Area = 0.0085 sf
Number Required for 24 hr drainage = Afr / Orifice Area= 0.029 sf / 0.0085 sf = 3.42 holes
Number of Holes to Use 3 holes
Area of (3) - 1.25 inch Orific Afr 0.0256 sf
Actual Flow (Qfr) = 0.62 * Afr * sqrt(2*g*Have) = 0.62 * 0.0256 * sqrt(2*32.2*1.07) = 0.132 cfs
Actual Time (Tfr) = Vfr / Qfr = 12539 cf / 0.132 cfs / 3600 = 28.44 hr

- Bankfull Discharge (36-48 hours)
Average Head (Have) = 2/3 (Xbf - Xbot) = 2/3 (903.21 - 900.25) = 1.97 ft
Actual Flow (Qbr) = 0.62 * Abf * sqrt(2*g*Have) = 0.62 * 0.0256 * sqrt(2 * 32.2 * 1.97)= 0.179 cfs
Actual Time (Tbr) = Vbf / Qbr = 26621 cf / 0.179 cfs / 3600 = 41.36 hr
Drawdown Time for Bankfull Volume is between 36 and 48 hours

Therefore use (3) 1.25 inch Diameter Holes at Elev 900.25

- 100-year Discharge (0.15 cfs/acre max. allowed)
Max Head to Lowest Holes (Hmax100-fr) = X100 - Xbot= 906.38 - 900.25 = 6.13 ft
Max Flow at Lowest Holes (Qmax-fr) = 0.62 * Afr * sqrt(2 * g * Hmax) = 0.62 * 0.0256 * sqrt(2 * 32.2 * 6.13) = 0.315 cfs
Max Head to 100yr Holes (Hmax-100) = X100 - Xbf = 906.38 - 903.21 = 3.17 ft
QA (Allowable 100-year release rate)= 0.15 cfs/acre = 0.15 cfs * 4.16 ac = 0.624 cfs
Max flow through 100-year holes = Qmax-100 = QA - Qmax-fr =0.62 cfs - 0.32 cfs = 0.31 cfs
Max. Area for Orifices (A100) = Qmax / 0.62 / sqrt (2*g*h-100max) 0.03 sf
Orifice Diameter 1.500 in
Orifice Area 0.012 sf
Number Required for 0.15 cfs/acre drainage 2.84
Number of holes used 2 ea
Area of (2) - 1.5 inch Orifice (A100) 0.025 sf
100-year orifices - Actual Flow (Qmax-100) = 0.62 * A100 * sqrt (2 * g * Hmax100) = 0.62 * 0.025 * sqrt (2 * 32.2 * 3.17) = 0.220 cfs
Actual Max Release Rate (Qmax) = Qmax-100 + Qmax-fr = 0.22 cfs + 0.315 cfs = 0.54 cfs

- 100-year Drawdown Time (72-hour max. to the lowest orifice)
Average head to first flush holes with all orifice in use (Hfr-ave) = 2/3 (X100 - Xbf) + (Xbf - Xbot) = 2/3 (906.38 - 903.21) + (903.21 -900.25) = 5.07 ft
Average flow through lowest holes to bankfull elevation = 0.62 * Afr * sqrt (2 * g * Hfr-ave) = 0.62 * 0.0256 * SQRT(2 * 32.2 * 5.07) 0.287 cfs
Average head to 100-year holes with all orifices in use = 2/3 (X100-Xbf) = 2/3 (906.38 - 903.21) = 3.17 ft
Average flow through 100-yr holes with all holes in use = 0.62 * A100 * sqrt (2 * g * H100-ave) = 0.62 * 0.025 * sqrt(2 * 32.2 * 2.11) = 0.181 cfs
Combined drawdown flow (Q100-br) = Qfr-ave + Q100-ave = 0.287 cfs + 0.181 cfs = 0.467 cfs
Volume of Storage above Bankfull Elev (Vrem) = V100 - Vbf = 50133 - 26621 = 23,512 cft
Time to drain Volume between 100yr and bankfull elevations = Vrem/Q100-br/3600 = 23512.4842877198 cf / 0.467 cfs / 3600 = 13.97 hr
Total 100-year drawdown time = T100 = T100-br + Tbf = 41.36 hrs + 13.97 hrs = 55.33 hr
Therefore use (2) 1.5 inch Diameter Holes at Elev 903.21

THE CRESCENT

SITE PLAN
PROPOSED DETENTION CALCULATIONS

25

JOB No. 23351

DATE: 04/18/24

SHEET 25 OF 35

REV. DATE

PRELIMINARY CITY SUBMITTAL 04/18/24 CADD: CMW

SITE PLAN SUBMITTAL #2 08/14/24 ENG: CMW

SITE PLAN SUBMITTAL #3 12/12/24 PM: RCW

SITE PLAN SUBMITTAL #4 05/23/25 SN05

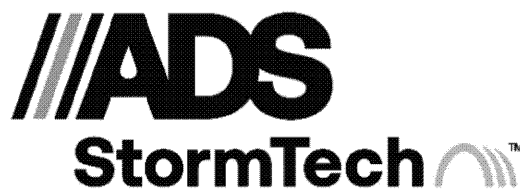
SITE PLAN SUBMITTAL #5 05/23/25

STORMTECH STORAGE CALCULATION

Project: THE CRESCENT

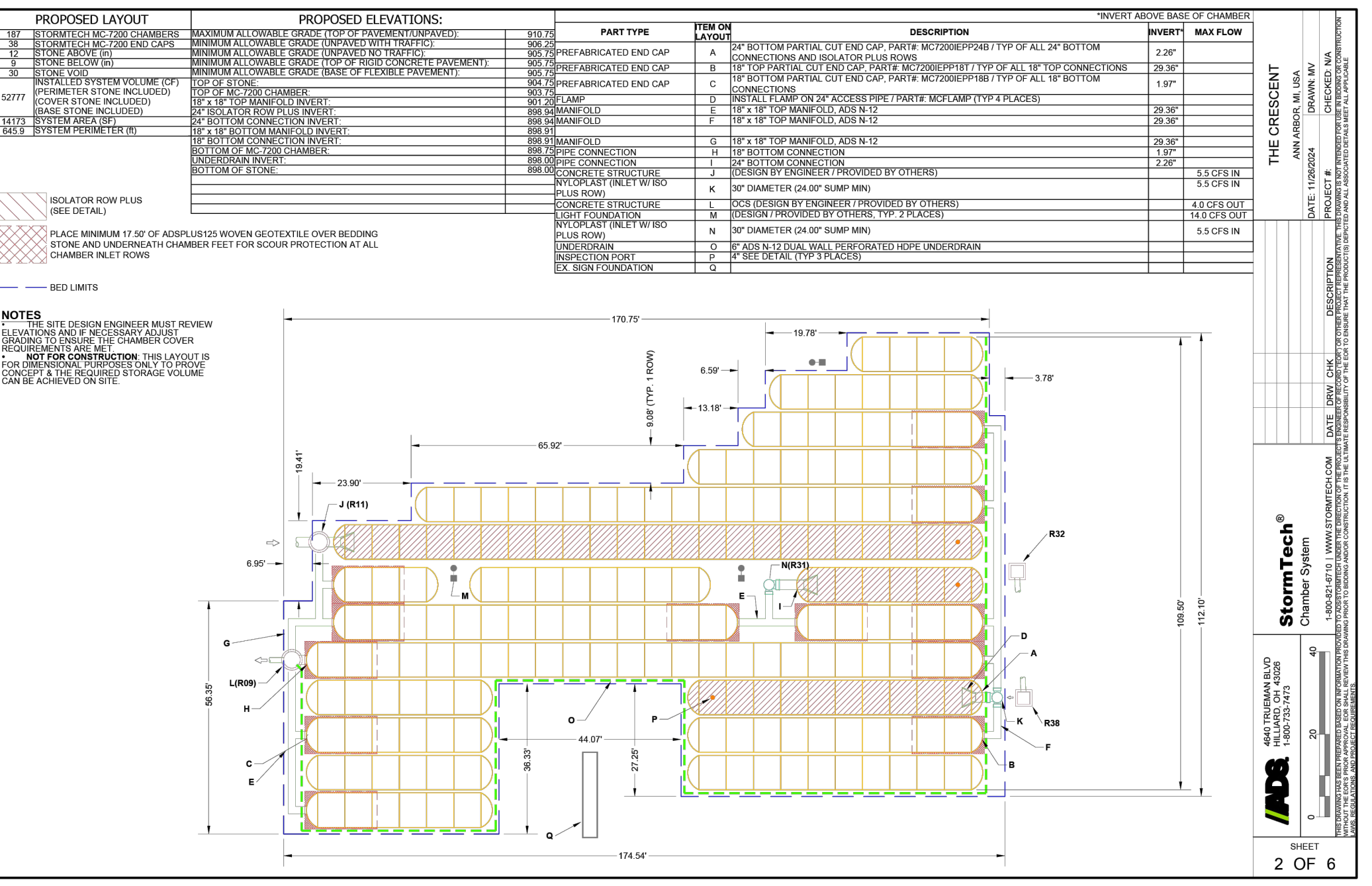
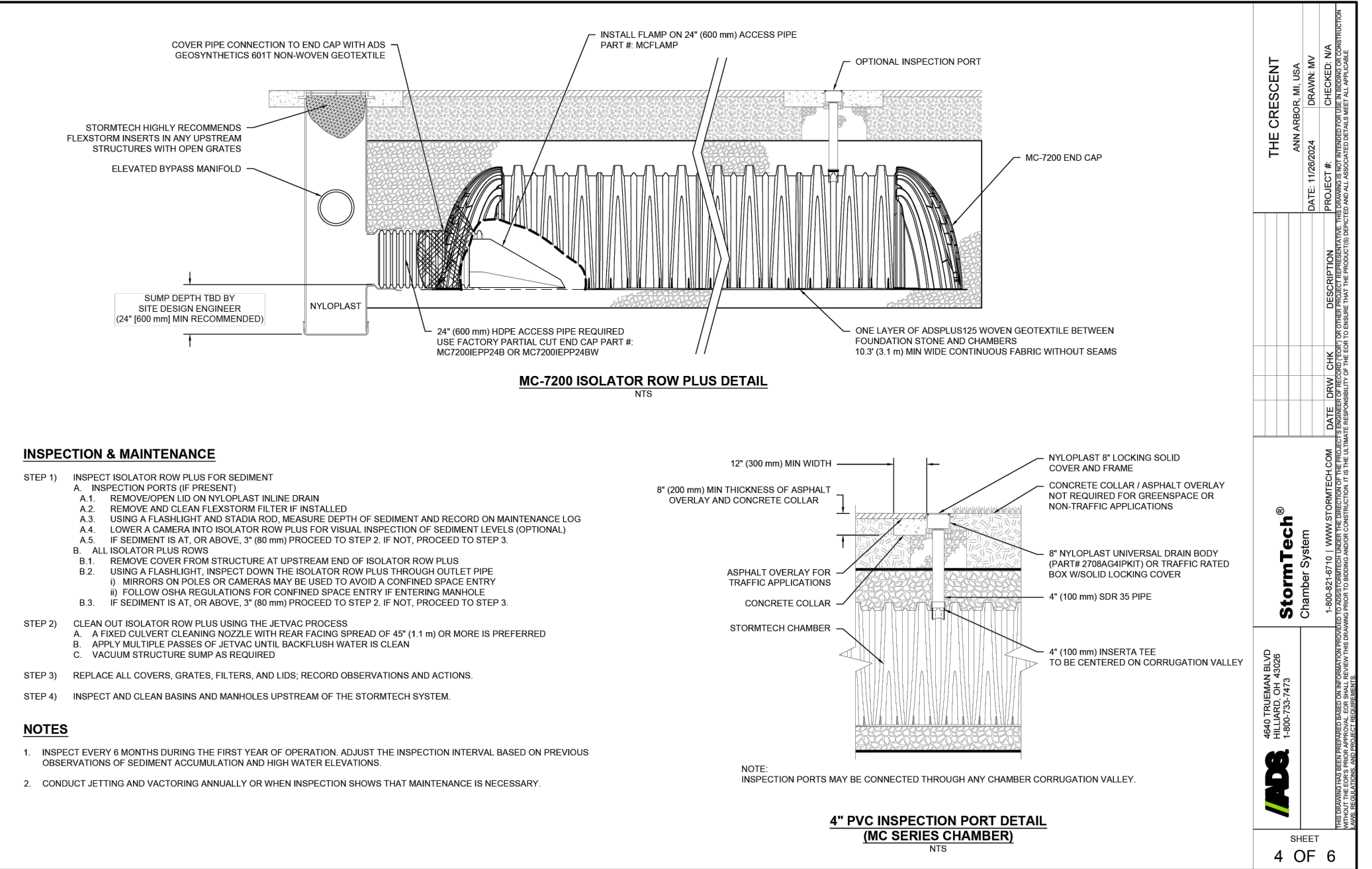
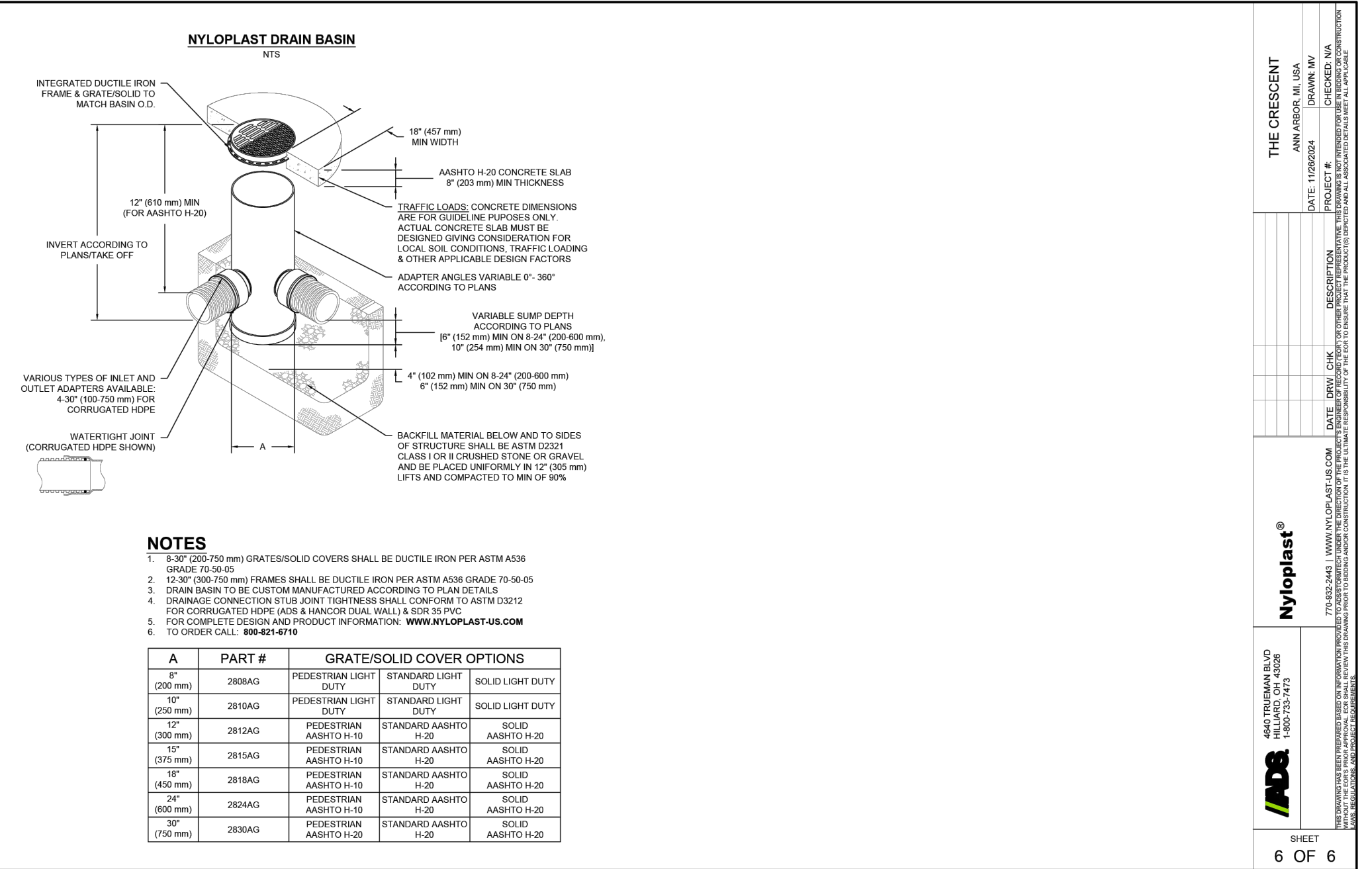
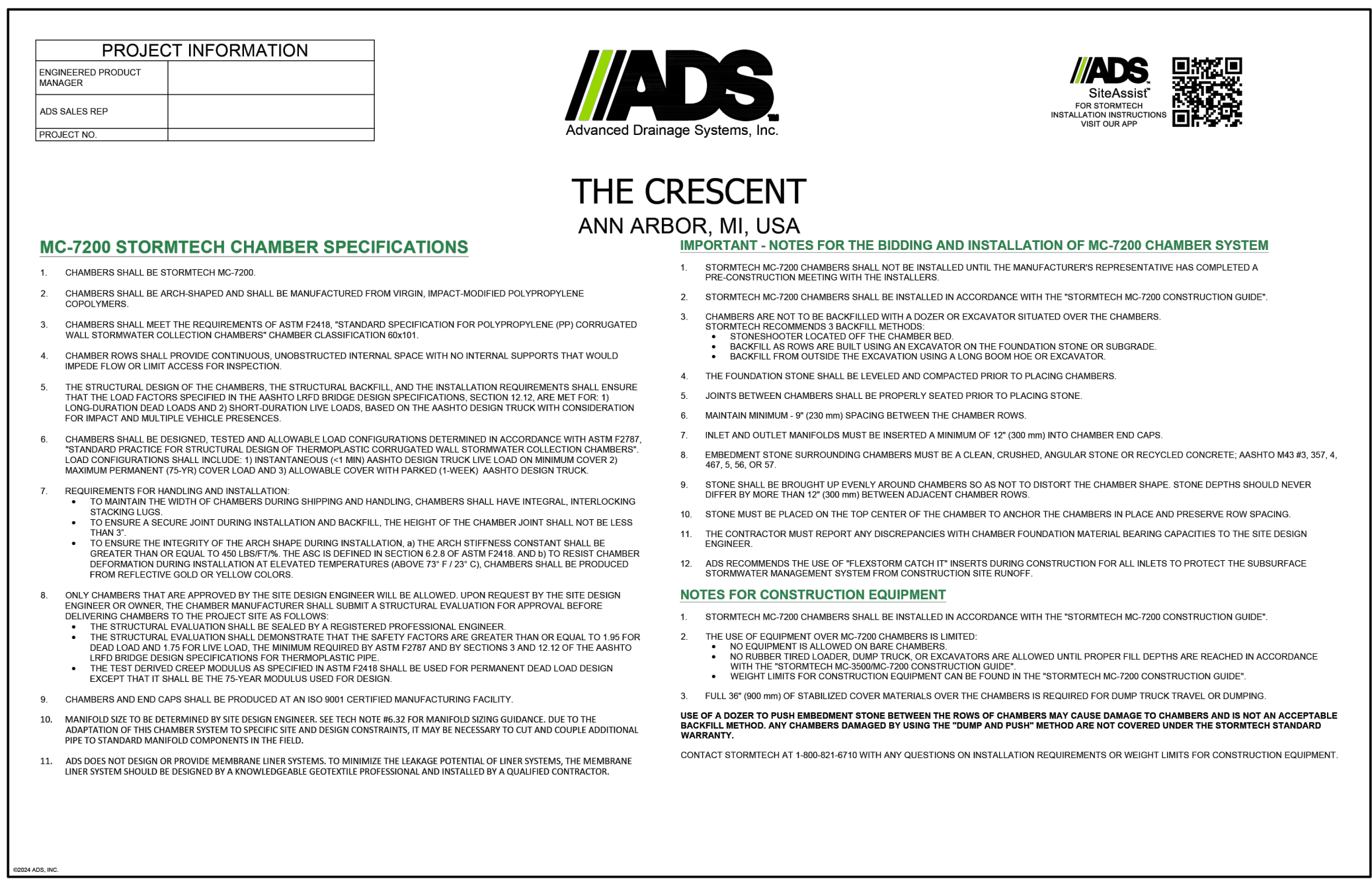
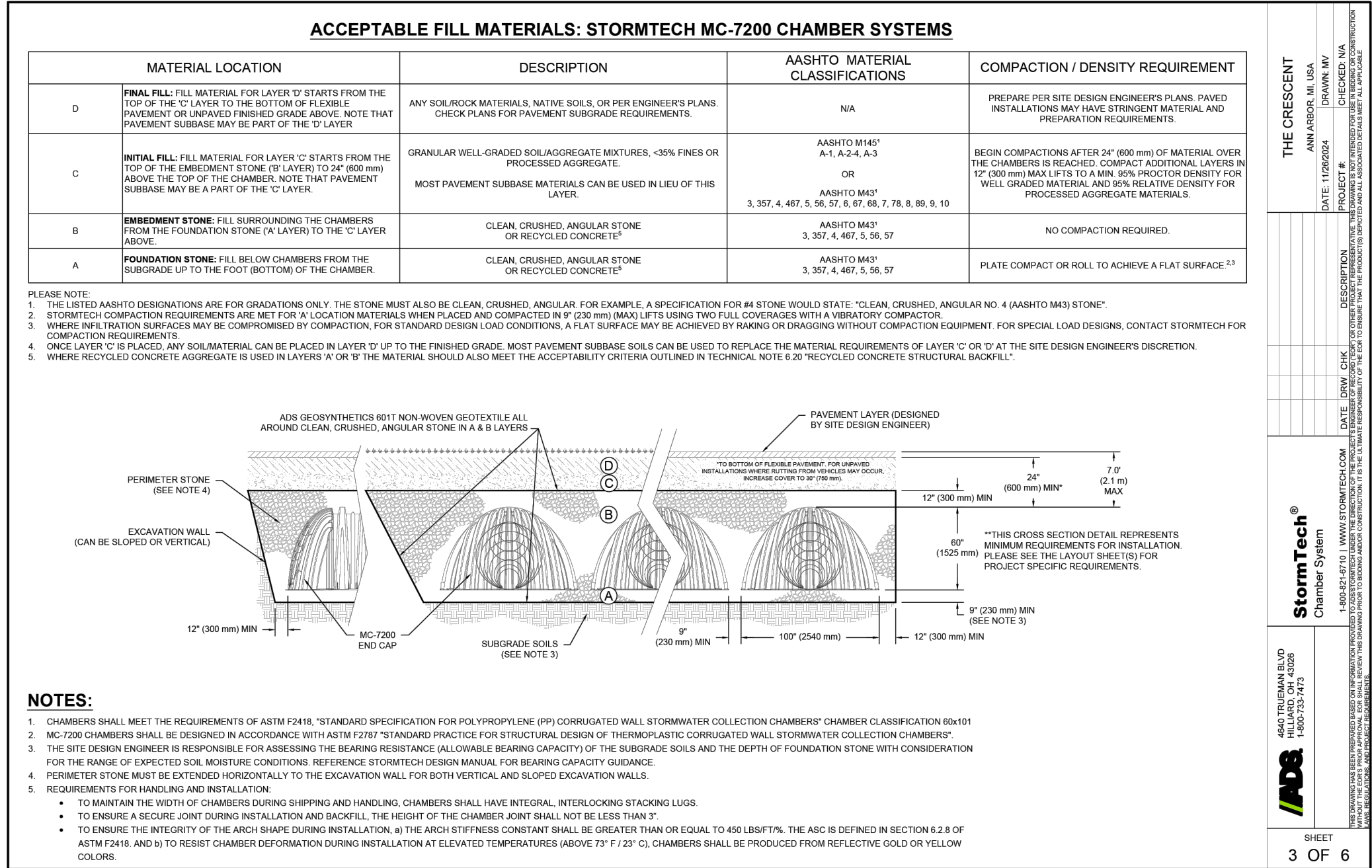
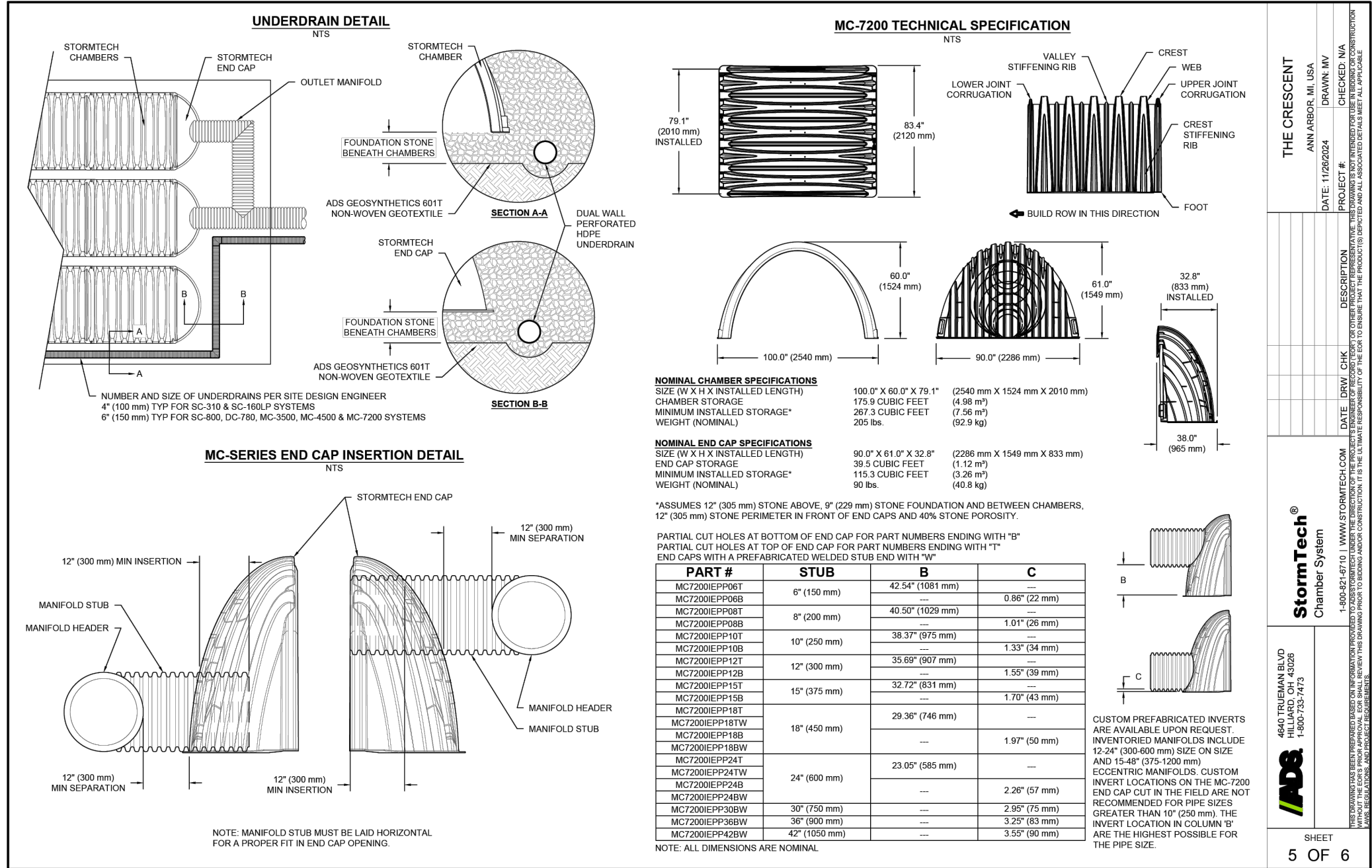
Chamber Model - MC-7200
Units - Imperial
Number of Chambers - 187
Number of End Caps - 38
Voids in the stone (porosity) - 30 %
Base of Stone Elevation - 898.00 ft
Amount of Stone Above Chambers - 12 in
Amount of Stone Below Chambers - 9 in

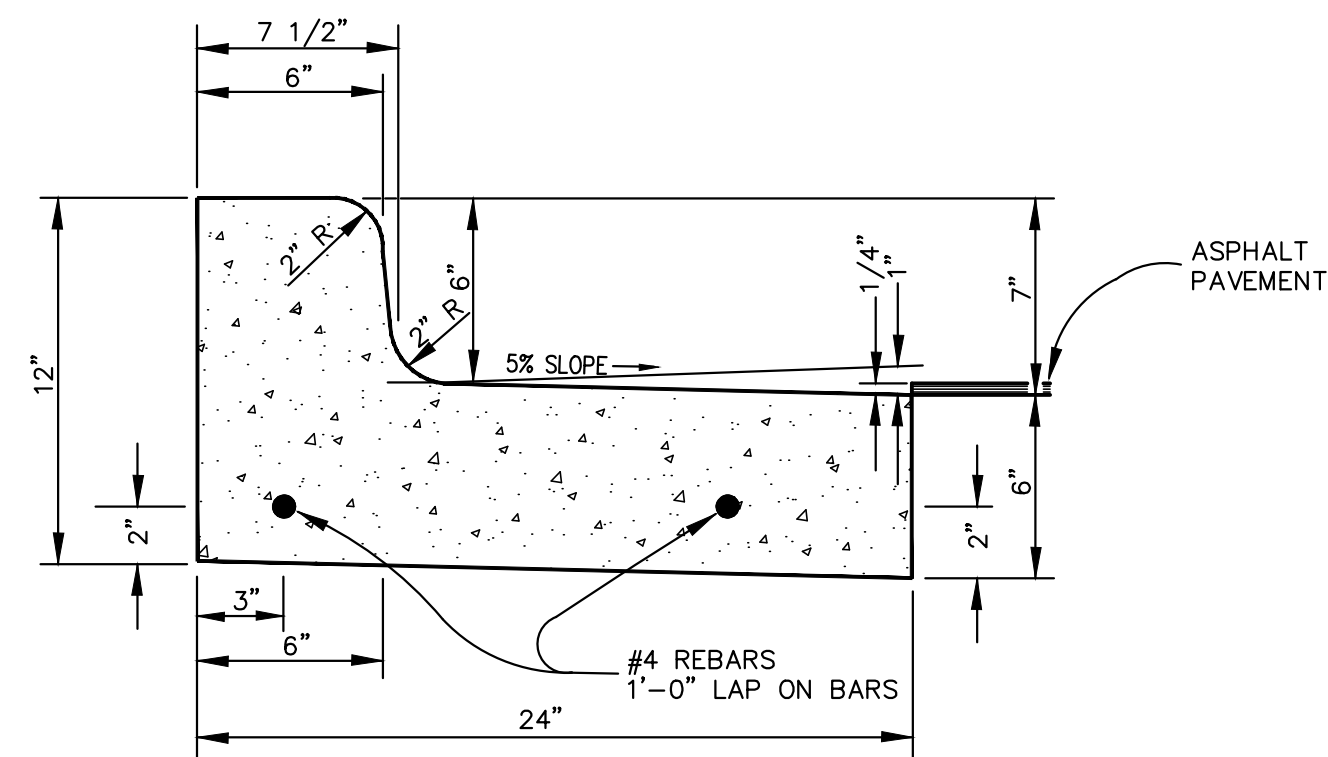
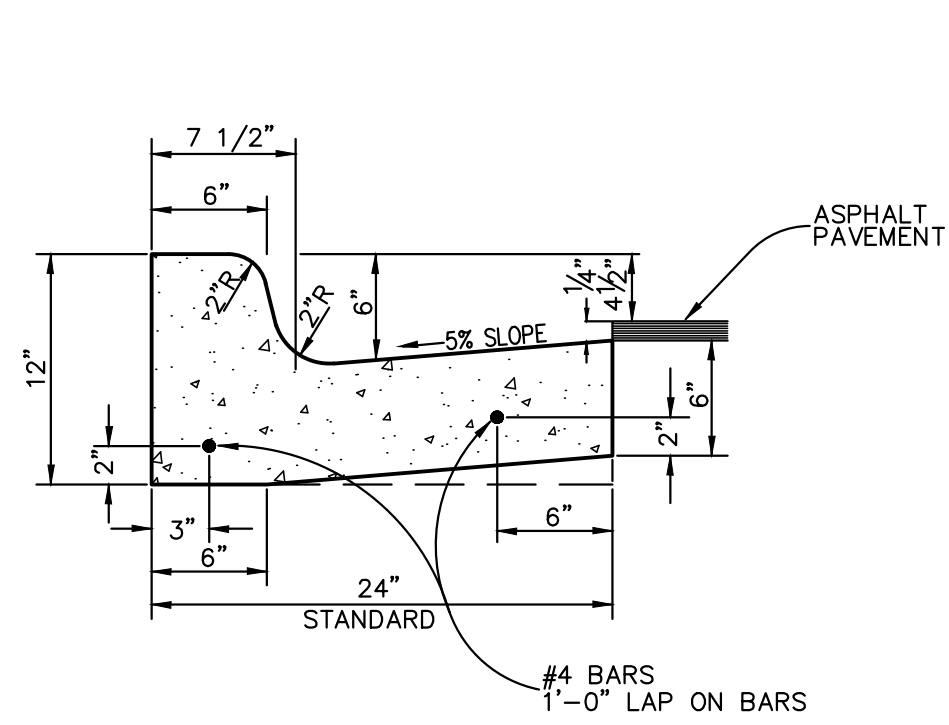
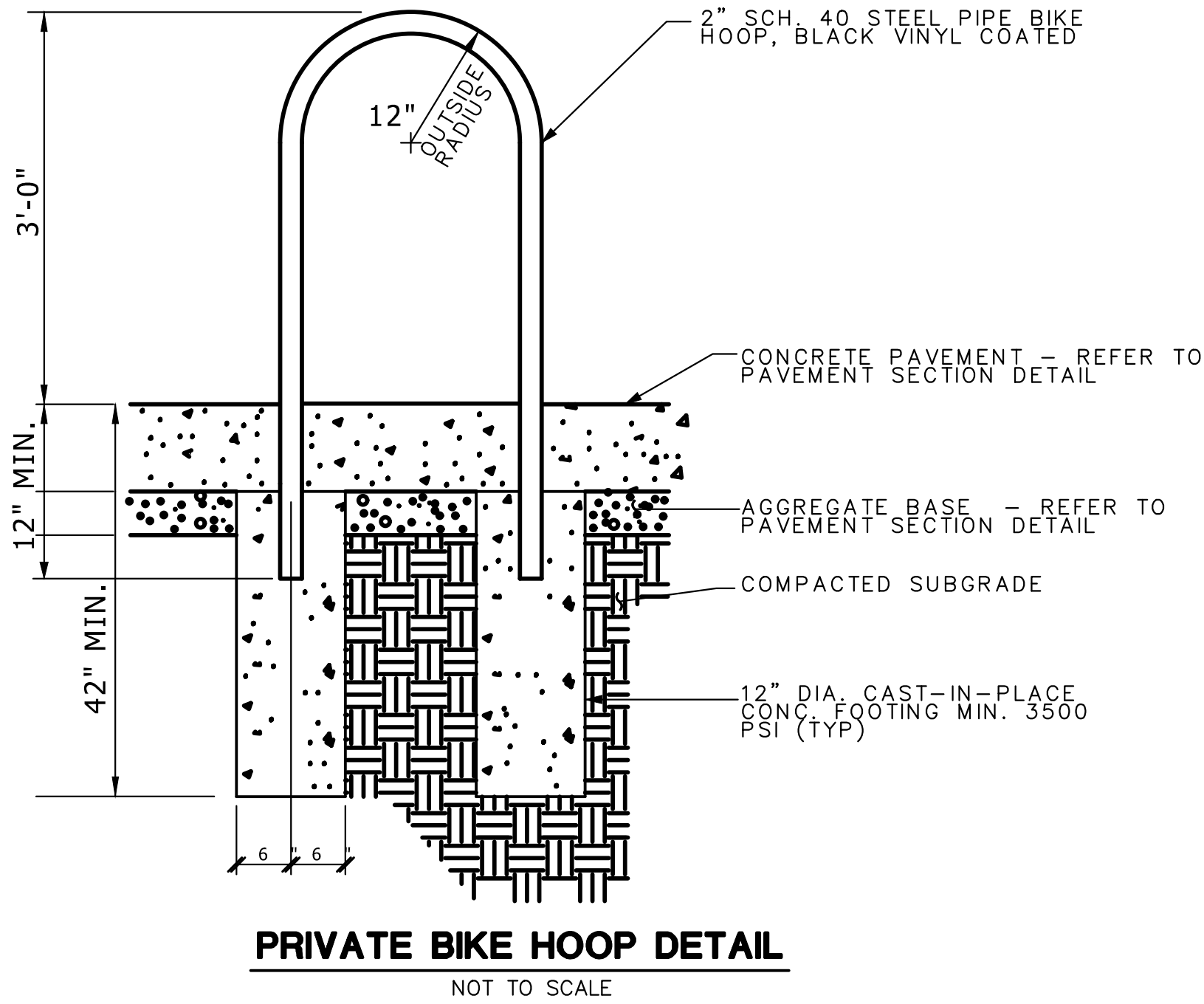
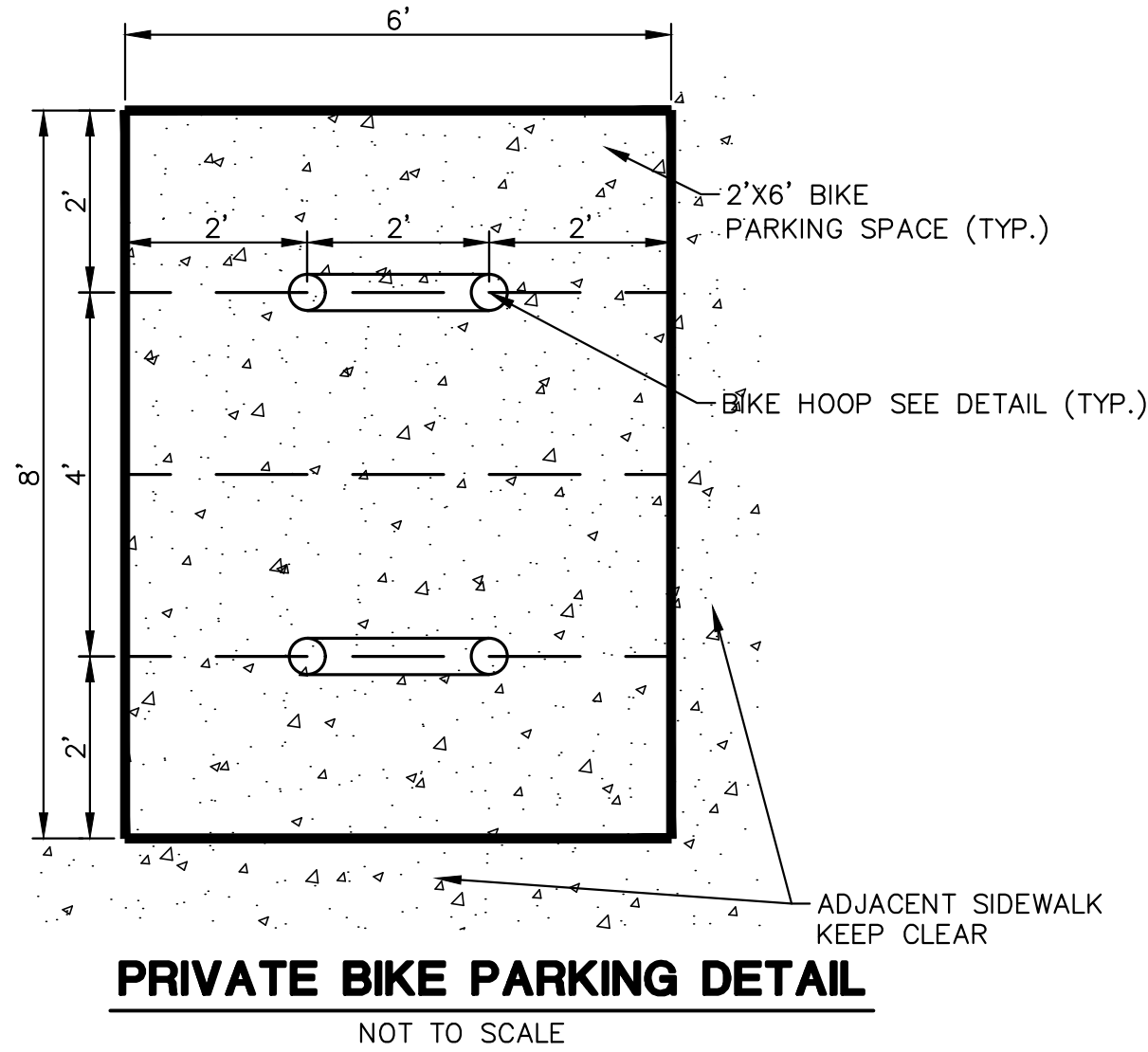
Area of system - 14173 sf Min. Area - 12485 sf min. area



StormTech MC-7200 Cumulative Storage Volumes

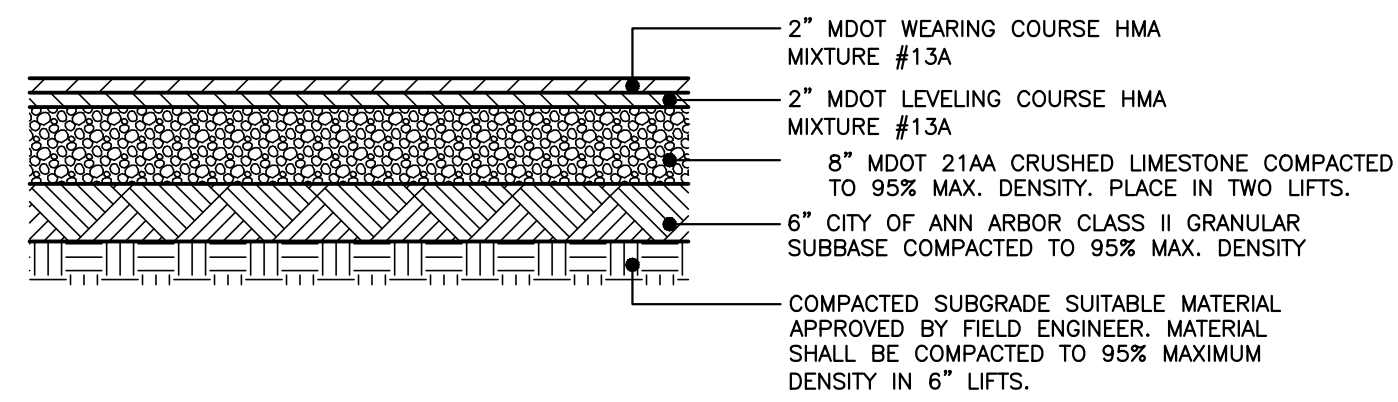
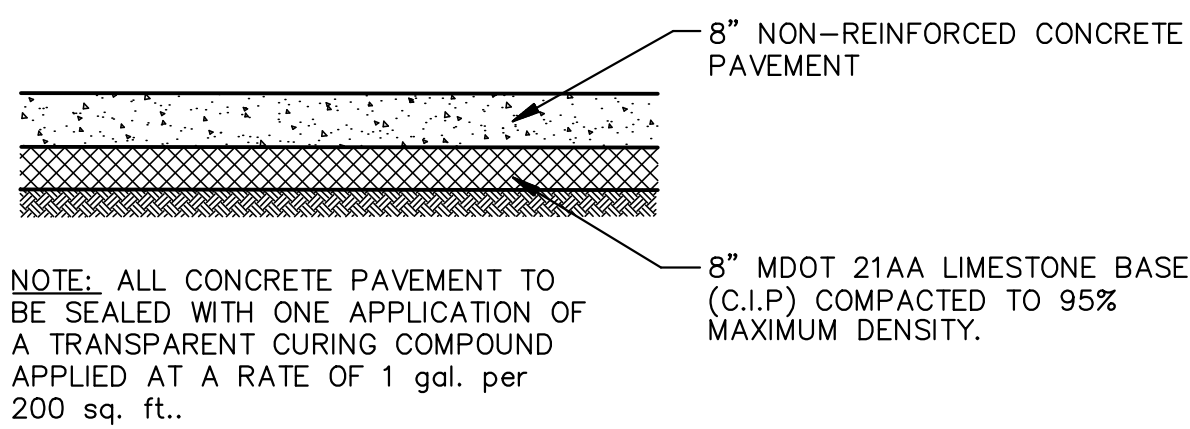
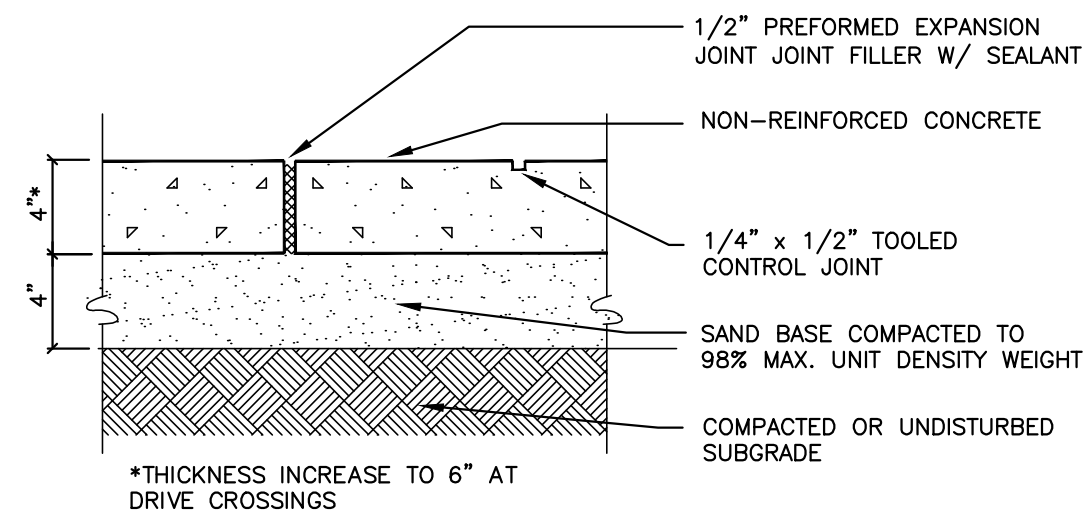
Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System	Elevation
81	0.00	0.00	0.00	0.00	354.33	354.33	52777.77	904.75
80	0.00	0.00	0.00	0.00	354.33	354.33	52423.45	904.67
79	0.00	0.00	0.00	0.00	354.33	354.33	52069.12	904.58
78	0.00	0.00	0.00	0.00	354.33	354.33	51714.80	904.50
77	0.00	0.00	0.00	0.00	354.33	354.33	51360.47	904.42
76	0.00	0.00	0.00	0.00	354.33	354.33	51006.15	904.33
75	0.00	0.00	0.00	0.00	354.33	354.33	50651.82	904.25
74	0.00	0.00	0.00	0.00	354.33	354.33	50297.50	904.17
73	0.00	0.00	0.00	0.00	354.33	354.33	49943.17	904.08
72	0.00	0.00	0.00	0.00	354.33	354.33	49588.85	904.00
71	0.00	0.00	0.00	0.00	354.33	354.33	49234.52	903.92
70	0.00	0.00	0.00	0.00	354.33	354.33	48880.20	903.83
69	0.06	0.01	11.10	0.49	350.85	362.44	48525.87	903.75
68	0.19	0.03	35.56	1.29	343.27	380.12	48163.43	903.67
67	0.28	0.05	51.46	1.97	338.30	391.72	47783.30	903.58
66	0.36	0.07	66.81	2.51	333.53	402.84	47391.58	903.50
65	0.46	0.08	85.72	3.16	327.66	416.54	46988.74	903.42
64	0.74	0.11	138.69	4.00	311.52	454.21	46572.20	903.33
63	1.10	0.13	205.02	5.03	291.31	501.36	46117.99	903.25
62	1.32	0.16	246.56	6.12	278.52	531.20	45616.63	903.17
61	1.50	0.19	280.17	7.17	268.12	555.46	45085.43	903.08
60	1.65	0.22	309.39	8.30	259.02	576.71	44529.97	903.00
59	1.79	0.25	335.47	9.38	250.87	595.72	43953.26	902.92
58	1.92	0.28	358.98	10.46	243.49	612.93	43357.53	902.83
57	2.04	0.30	381.00	11.47	236.58	629.05	42744.60	902.75
56	2.15	0.33	401.18	12.45	230.24	643.86	42115.55	902.67
55	2.25	0.35	420.32	13.47	224.19	657.98	41471.69	902.58
54	2.34	0.38	438.17	14.58	218.50	671.25	40813.71	902.50
53	2.43	0.41	455.05	15.55	213.14	683.75	40142.46	902.42
52	2.52	0.44	471.06	16.75	207.98	695.80	39458.72	902.33
51	2.60	0.47	486.31	17.81	203.09	707.21	38762.92	902.25
50	2.68	0.50	500.86	18.82	198.42	718.10	38055.71	902.17
49	2.75	0.52	514.73	19.79	193.97	728.49	37337.61	902.08
48	2.82	0.54	527.98	20.69	189.72	738.40	36609.12	902.00
47	2.89	0.57	540.69	21.54	185.66	747.89	35870.72	901.92
46	2.96	0.59	552.84	22.36	181.76	756.97	35122.84	901.83
45	3.02	0.61	564.51	23.18	178.02	766.71	34365.87	901.75
44	3.08	0.63	575.71	24.02	174.41	774.13	33600.16	901.67
43	3.14	0.64	586.48	24.44	171.05	781.97	32826.03	901.58
42	3.19	0.68	596.86	25.74	167.55	790.14	32044.06	901.50
41	3.25	0.70	606.82	26.59	164.30	797.71	31253.91	901.42
40	3.30	0.72	616.41	27.45	161.17	805.03	30456.20	901.33
39	3.35	0.74	625.63	28.26	158.16	812.05	29651.17	901.25
38	3.39	0.76	634.51	29.05	155.26	818.82	28839.12	901.17
37	3.44	0.79	643.07	29.85	152.45	825.37	28020.30	901.08
36	3.48	0.80	651.30	30.50	149.78	831.59	27194.94	901.00
35	3.53	0.82	659.24	31.16	147.21	837.60	26363.35	900.92
34	3.57	0.84	666.87	31.86	144.70	843.44	25525.75	900.83
33	3.61	0.85	674.24	32.35	142.35	848.94	24682.31	900.75
32	3.64	0.86	681.33	32.68	140.13	854.12	23833.37	900.67
31	3.68	0.89	688.15	33.80	137.74	859.69	22979.25	900.58
30	3.71	0.90	694.70	34.38	135.61	864.67	22119.56	900.50
29	3.75	0.92	701.01	34.86	133.57	869.43	21254.99	900.42
28	3.78	0.92	707.05	34.95	131.73	873.72	20385.46	900.33
27	3.81	0.94	712.85	35.85	129.71	878.42	19511.74	900.25
26	3.84	0.96	718.40	36.34	127.90	882.64	18633.32	900.17
25	3.87	0.97	723.72	36.81	126.17	886.70	17750.68	900.08
24	3.90	0.98	728.81	37.29	124.49	890.60	16853.98	900.00
23	3.92	0.97	733.69	36.90	123.15	893.74	15973.38	899.92
22	3.95	1.00	738.33	38.12	121.39	897.84	15079.65	899.83
21	3.97	1.01	742.75	38.42	119.97	901.15	14181.81	899.75
20	3.99	1.02	746.98	38.77	118.60	904.35	13280.66	899.67
19	4.02	1.03	750.98	39.15	117.29	907.42	12376.31	899.58
18	4.04	1.04	754.77	39.47	116.05	910.29	11468.69	899.50
17	4.06	1.05	758.38	39.78	114.89	913.01	10558.60	899.42
16	4.07	1.05	761.75	40.05	113.78	915.59	9645.58	899.33
15	4.09	1.05	764.92	39.92	112.87	917.71	8729.99	899.25
14	4.11	1.06	767.95	40.15	111.89	920.00	7812.28	899.17
13	4.12	1.08	770.83	40.87	110.81	922.52	6892.28	899.08
12	4.14	1.08	773.53	41.15	109.92	924.60	5969.78	899.00
11	4.15	1.09	776.05	41.35	109.11	926.50	5045.17	898.92
10	4.17	1.11	779.98	42.04	107.72	929.74	4118.67	898.83
9	0.00	0.00	0.00	0.00	354.33	354.33	3188.93	898.75
8	0.00	0.00	0.00	0.00	354.33	354.33	2834.60	898.67
7	0.00	0.00	0.00	0.00	354.33	354.33	2480.28	898.58
6	0.00	0.00	0.00	0.00	354.33	354.33	2125.95	898.50
5	0.00	0.00	0.00	0.00	354.33	354.33	1771.63	898.42
4	0.00	0.00	0.00	0.00	354.33	354.33	1417.30	898.33
3	0.00	0.00	0.00	0.00	354.33	354.33	1062.98	898.25
2	0.00	0.00	0.00	0.00	354.33	354.33	708.65	898.17
1	0.00	0.00	0.00	0.00	354.33	354.33	354.33	898.08





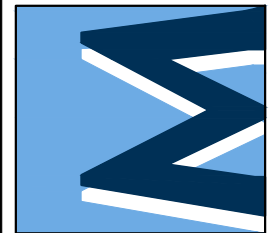
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BARRIER CURB AND GUTTER					
DR. BY	DF	CHK BY	CSS	DRAWING NO.	
SCALE	NONE	DATE	11-6-92	SD-R-1	
INCH				SHEET NO. ____ OF ____	

REVISIONS		REV. NO.	DR.BY	CHK. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR					
SPILL-OUT BARRIER CURB & GUTTER					
DR. BY	DF	CHK. BY	CSS	DRAWING NO.	
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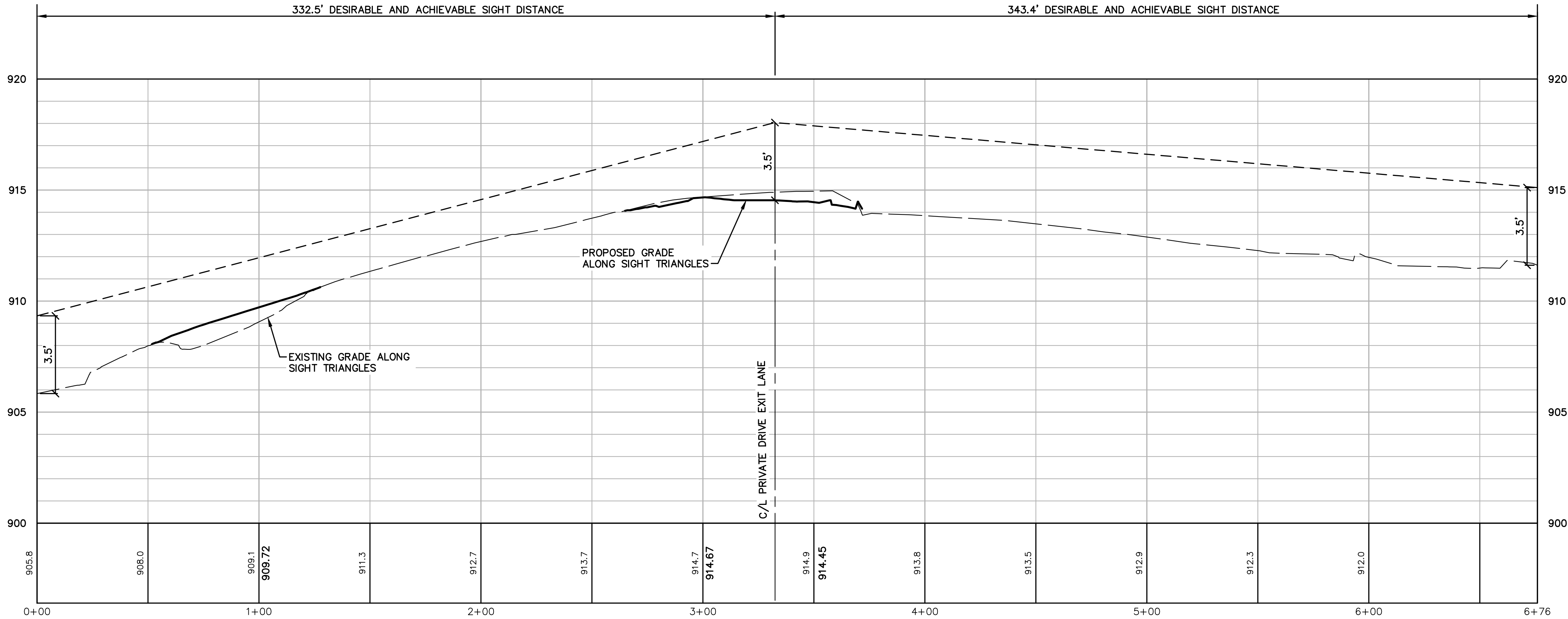
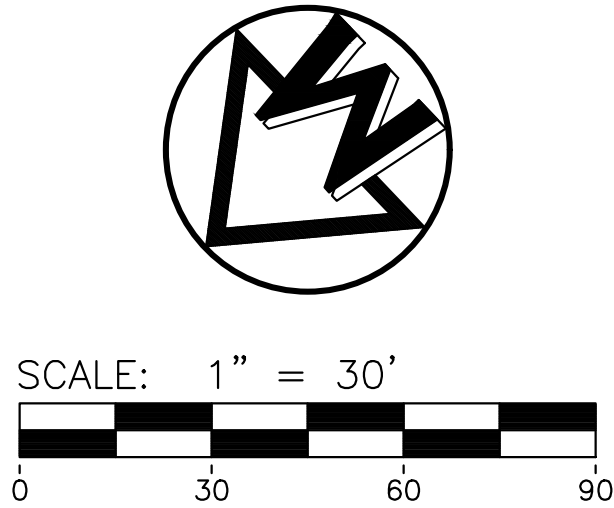
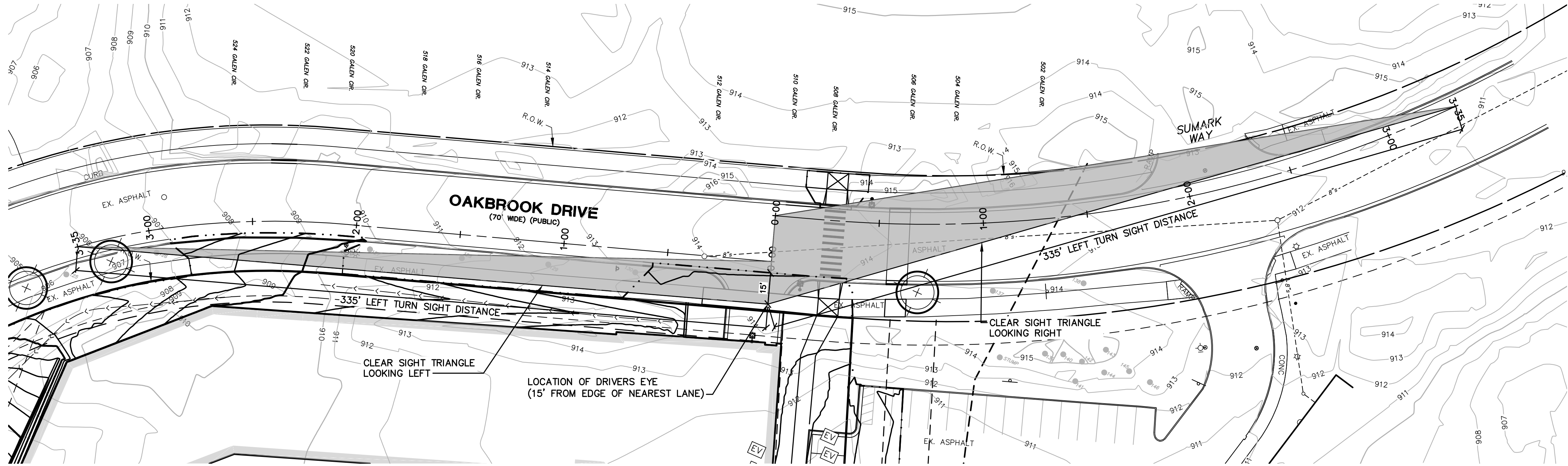


JOB No.	23351	DATE: 04/18/24	SHEET 27 OF 35
REVISIONS:	REV. DATE	REV. DATE	REV. DATE
PRELIMINARY CITY SUBMITTAL	04/05/24	CADD: CMW	
SITE PLAN SUBMITTAL	04/18/24	ENG: CMW	
SITE PLAN SUBMITTAL #2	08/14/24	PM: RCW	
SITE PLAN SUBMITTAL #3	12/12/24	TECH: RCW	
SITE PLAN SUBMITTAL #4	05/23/25	TECH: RCW	
SITE PLAN SUBMITTAL #5	05/23/25	TECH: RCW	

CRANBROOK VILLAGE LIMITED PARTNERSHIP
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB



M:\Civ\134_P\2023\23351\Site Plan\23351 SD01.dwg, 9/11/2025 1:52 PM, Colton M. Wallace, 28 OAKBROOK DRIVE SIGHT DISTANCE, MCLLC PDF, p.3
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OAKBROOK SIGHT LINE

NOTES

AASHTO DESIGN INTERSECTION SIGHT DISTANCE — CASE B1, LEFT TURN FROM STOP & B2, RIGHT TURN FROM STOP.
DESIGN SPEED: 30 MPH
INTERSECTION DESIGN DISTANCE: 335' (LEFT TURN)
INTERSECTION DESIGN DISTANCE: 290' (RIGHT TURN)
DRIVER/OBJECT HEIGHT: 3.5'
POINT OF TRIANGLE ASSUMED TO BE CENTERED ON THE EXITING LANE AND 15' OFFSET OF EDGE OF OUTGOING LANE.

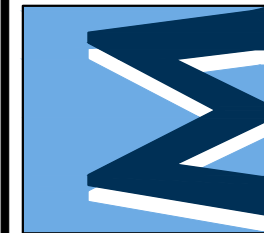
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REVISIONS:	REV. DATE	SHEET 28 OF 35
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SITE PLAN SUBMITTAL #3	12/12/24	ENG: CMW
SITE PLAN SUBMITTAL #4	03/28/25	PM: RCW
SITE PLAN SUBMITTAL #5	05/23/25	TECH: JES

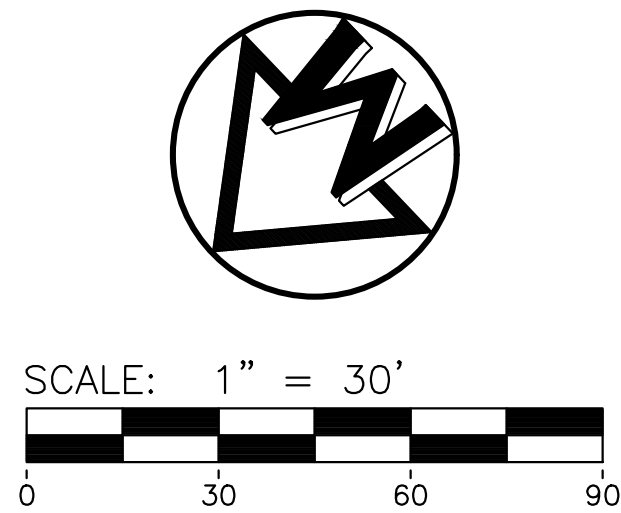
THE CRESCENT
SITE PLAN
OAKBROOK DRIVE SIGHT DISTANCE

28

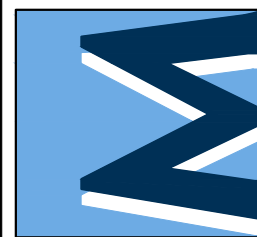
CLIENT
CRANBROOK VILLAGE LIMITED PARTNERSHIP
6735 TELEGRAPH ROAD, SUITE 110
BLOOMFIELD HILLS, MICHIGAN 48301
ATTN: NOAH JACOB

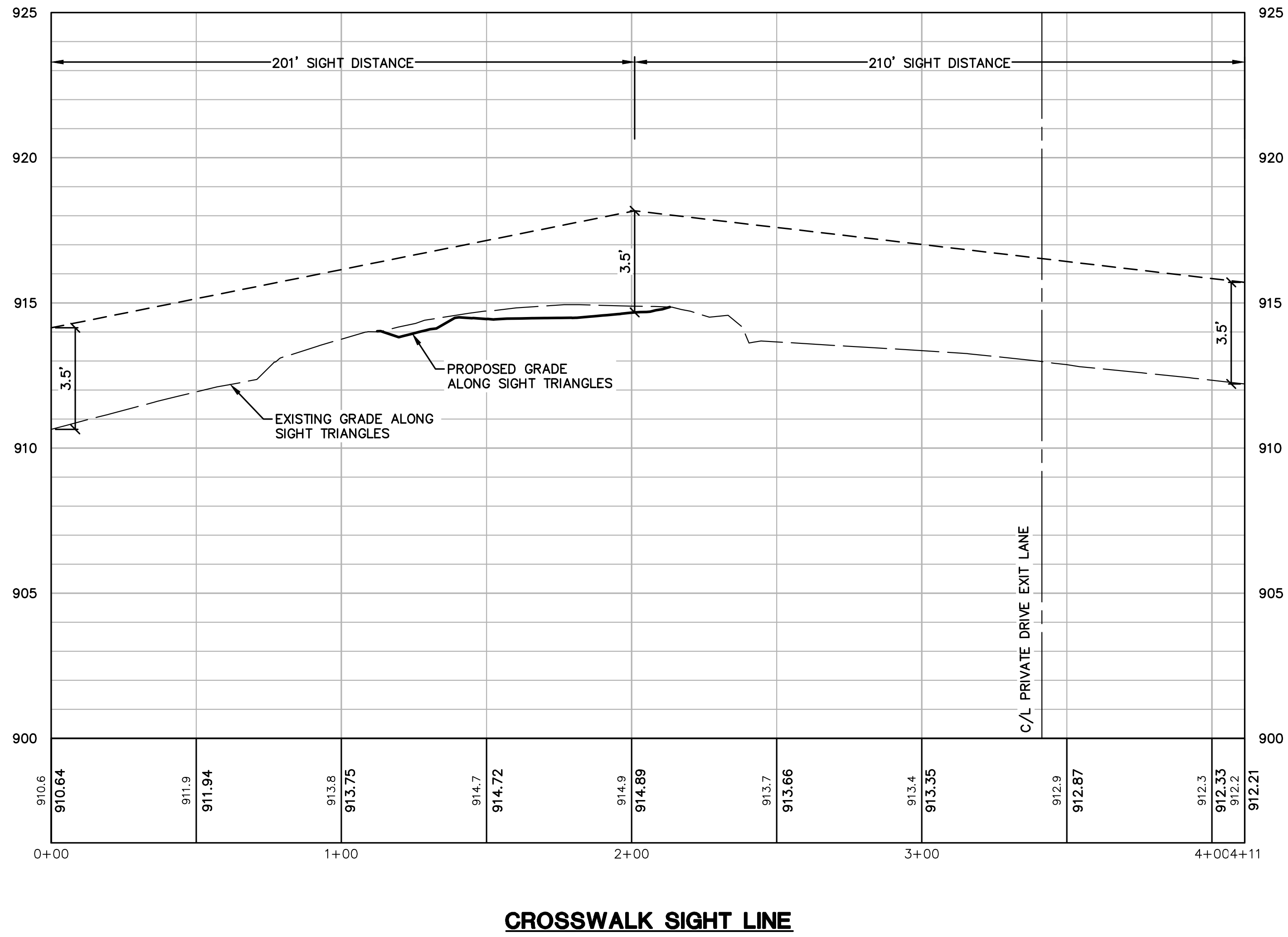
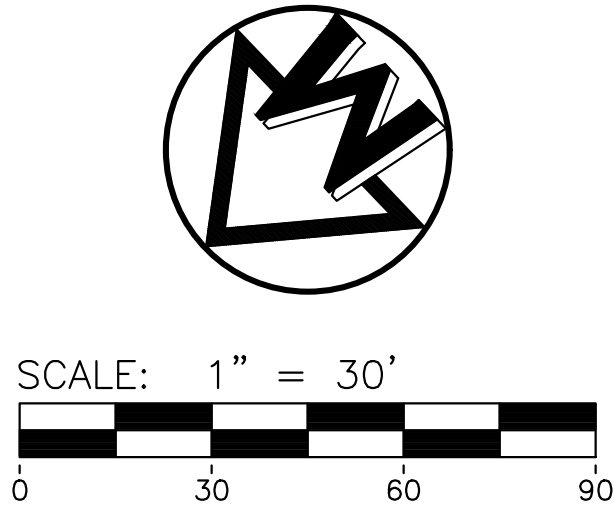
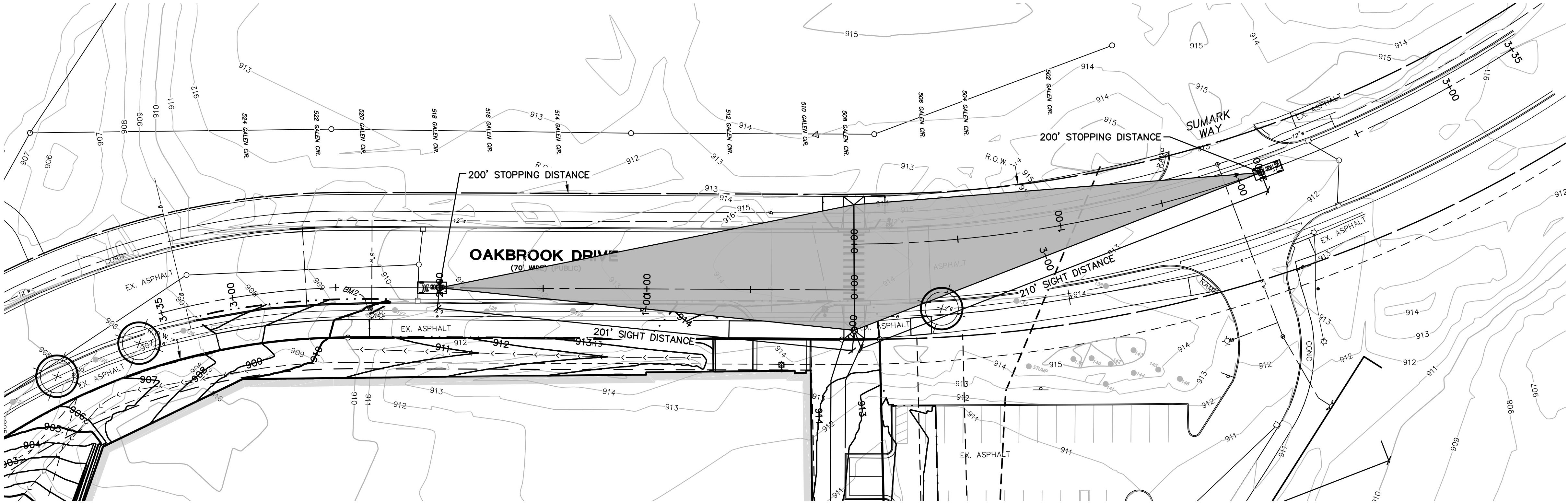


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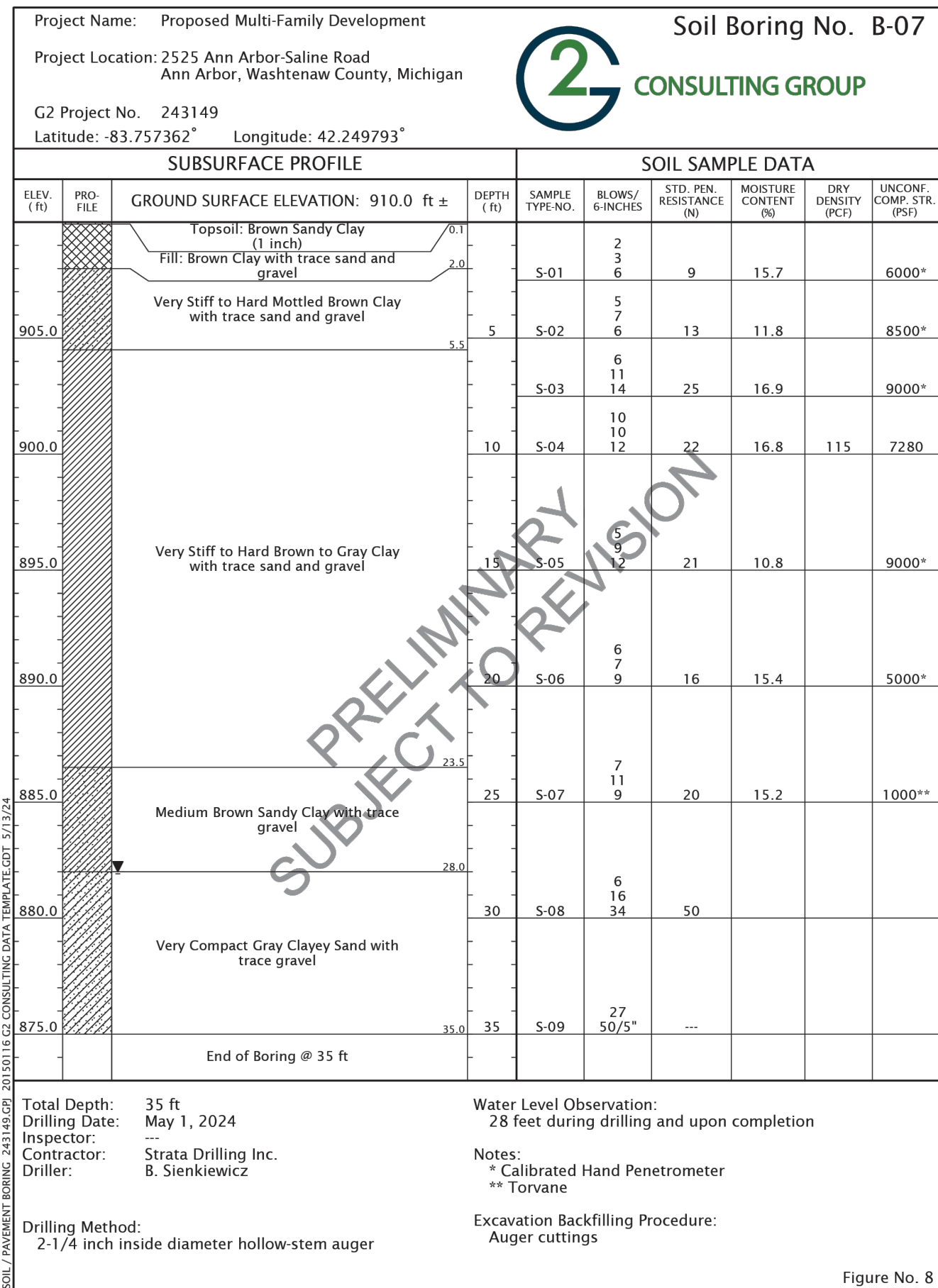
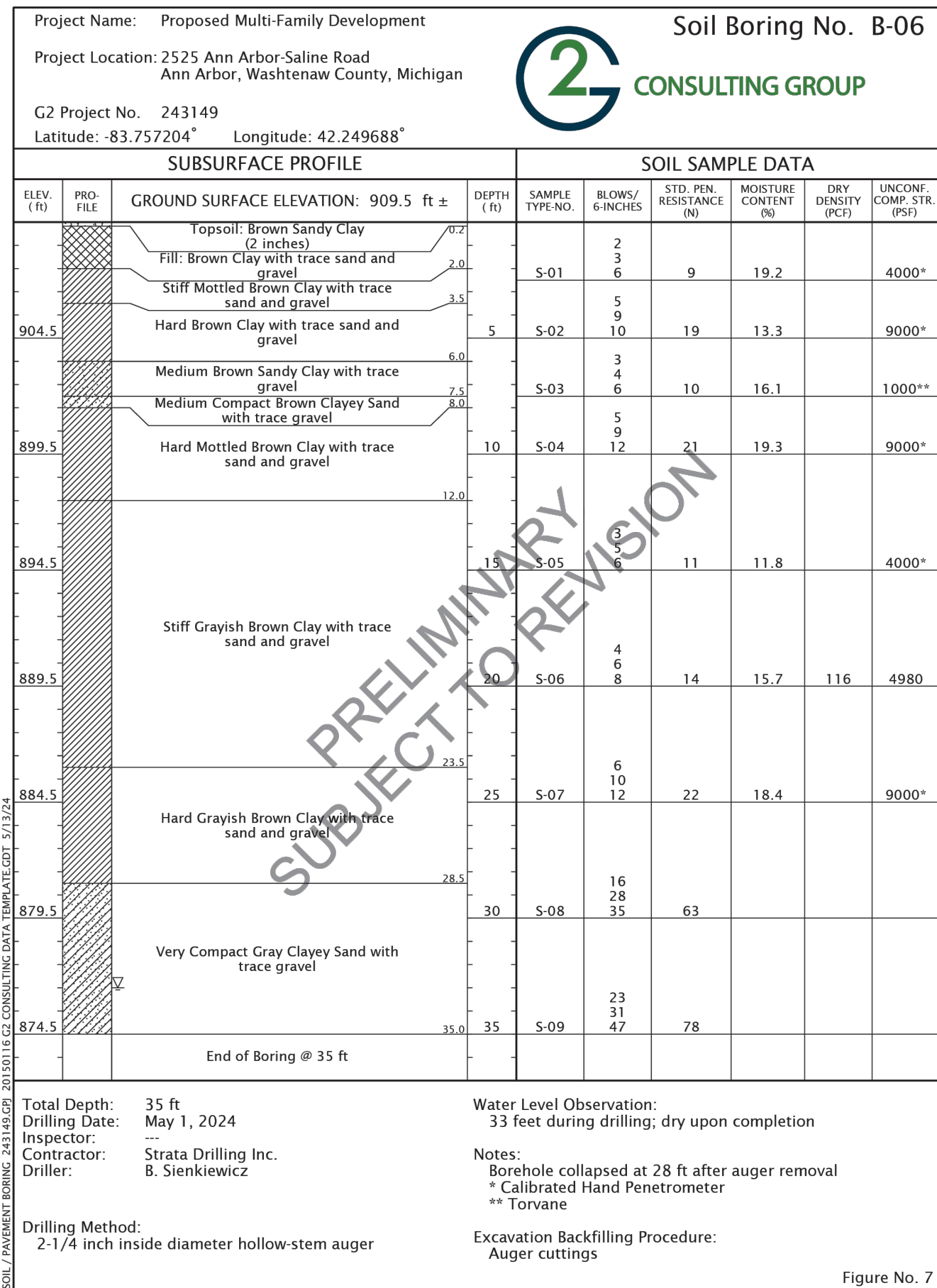
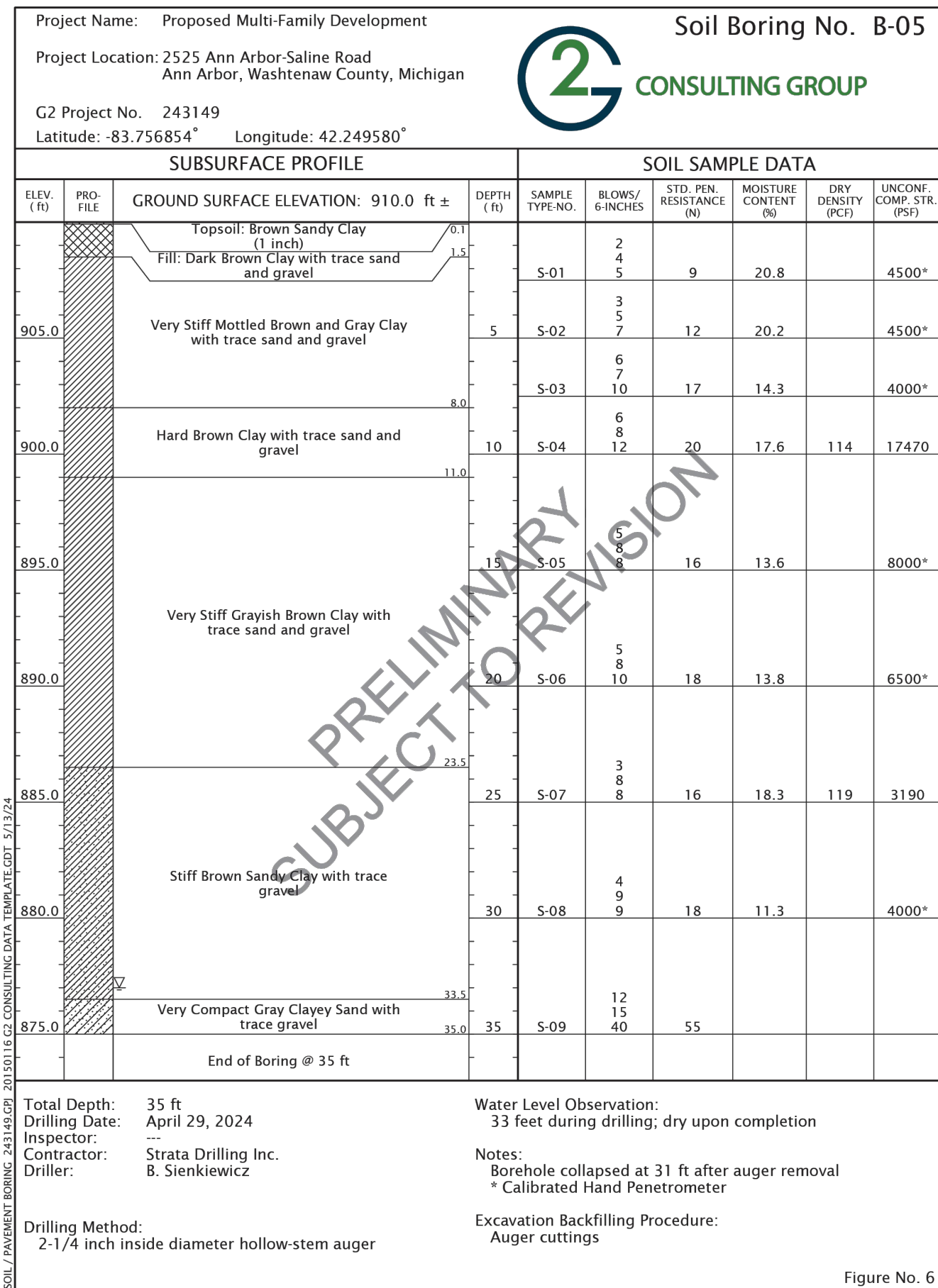
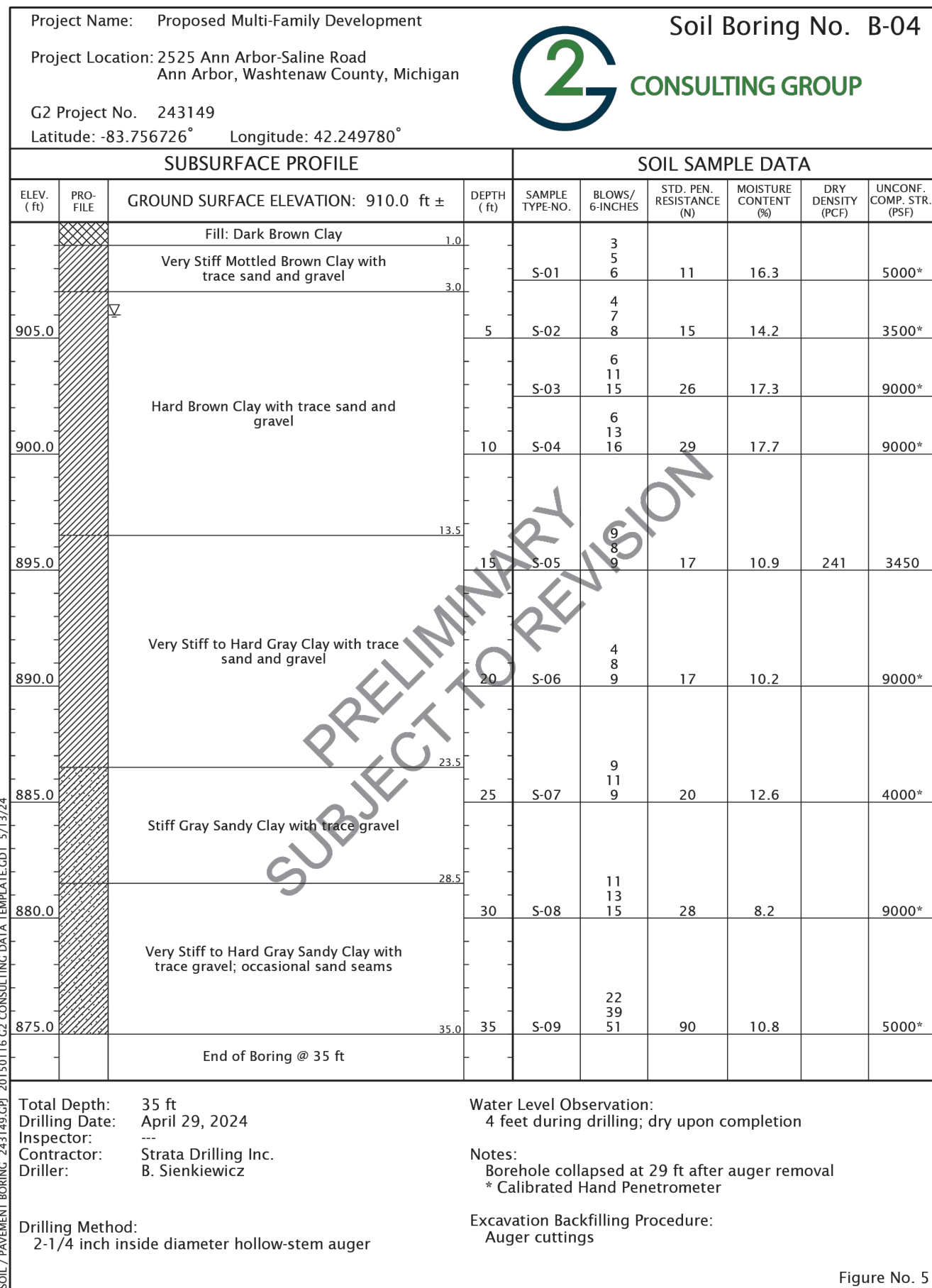
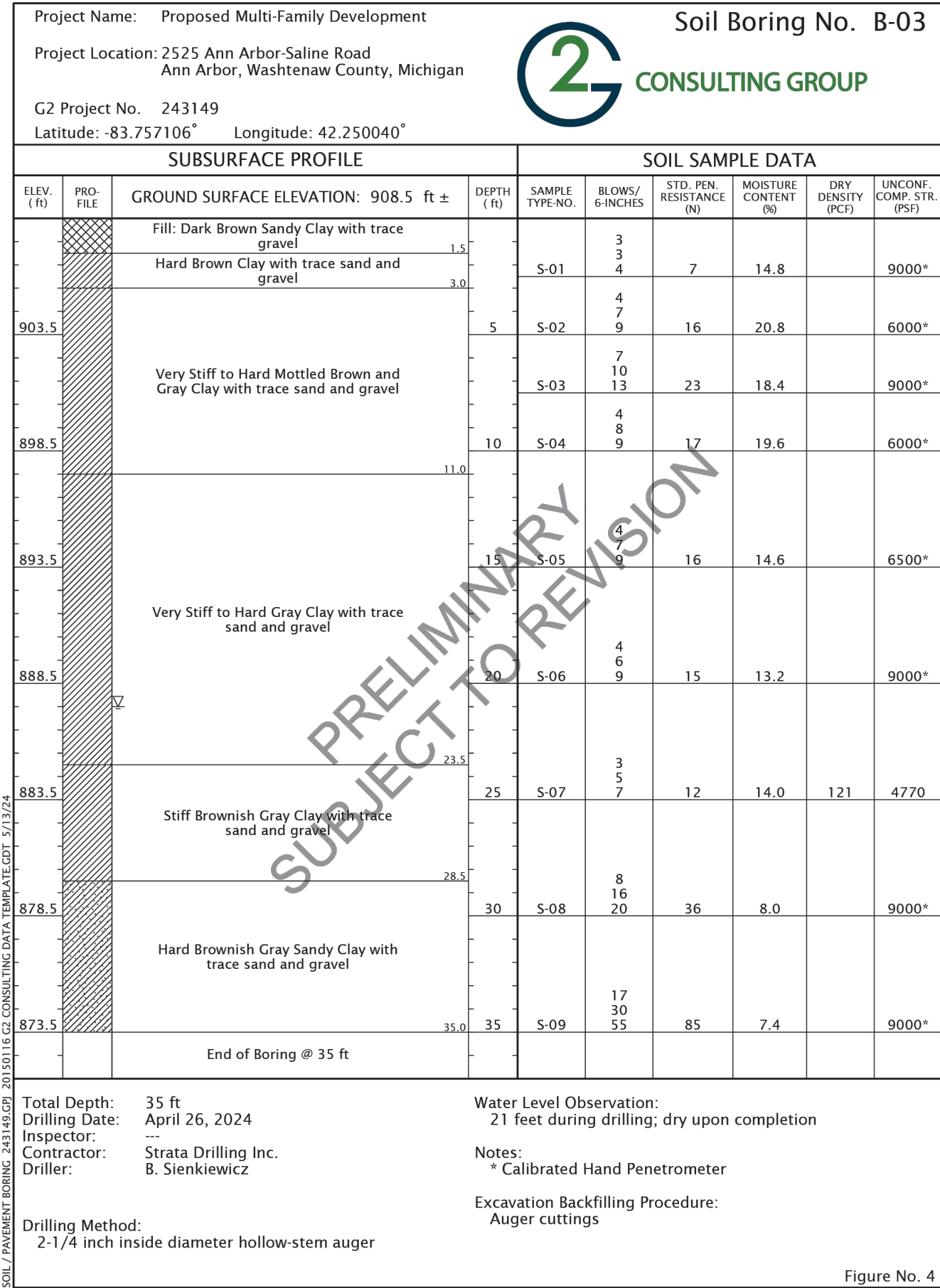
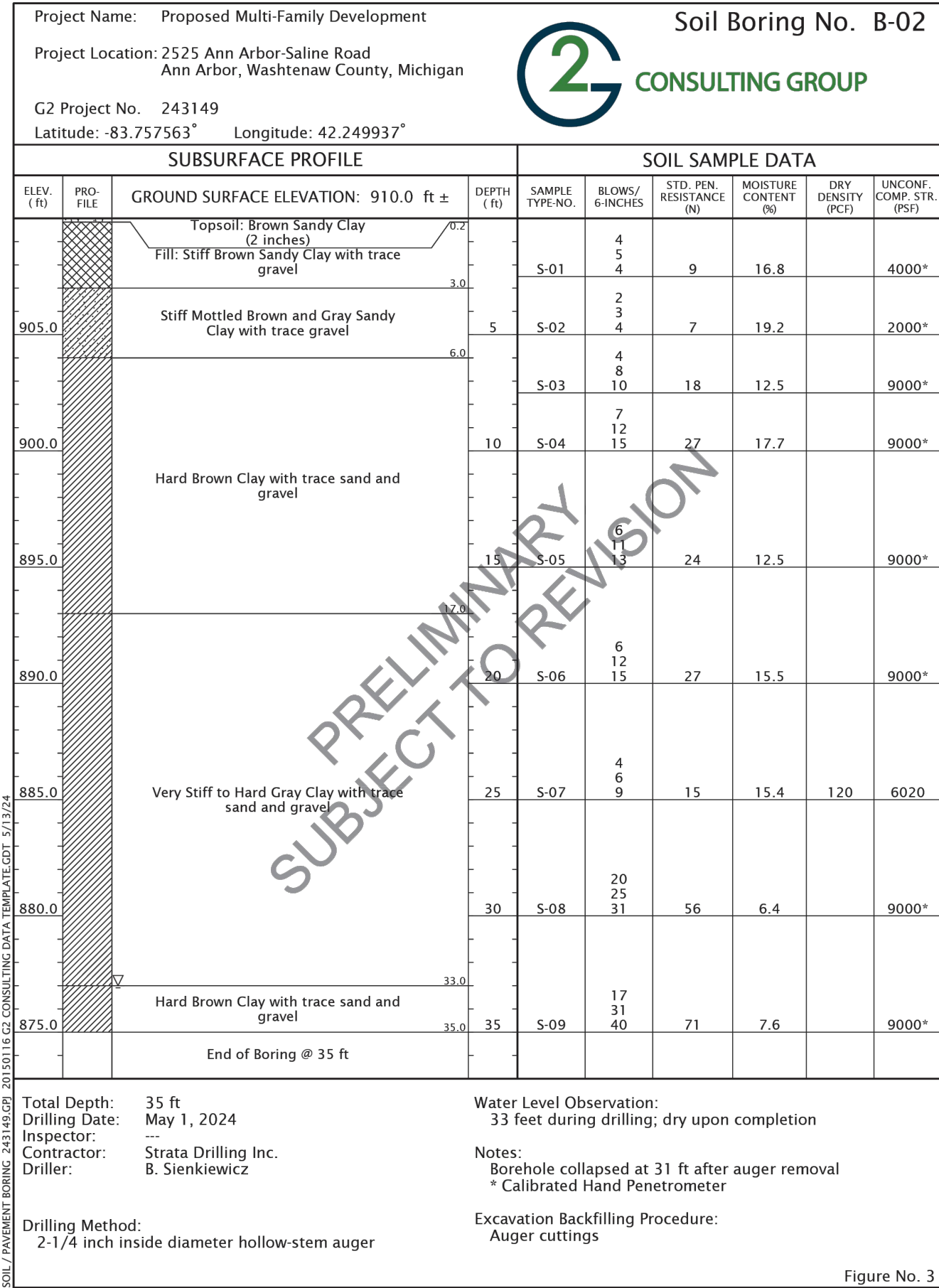
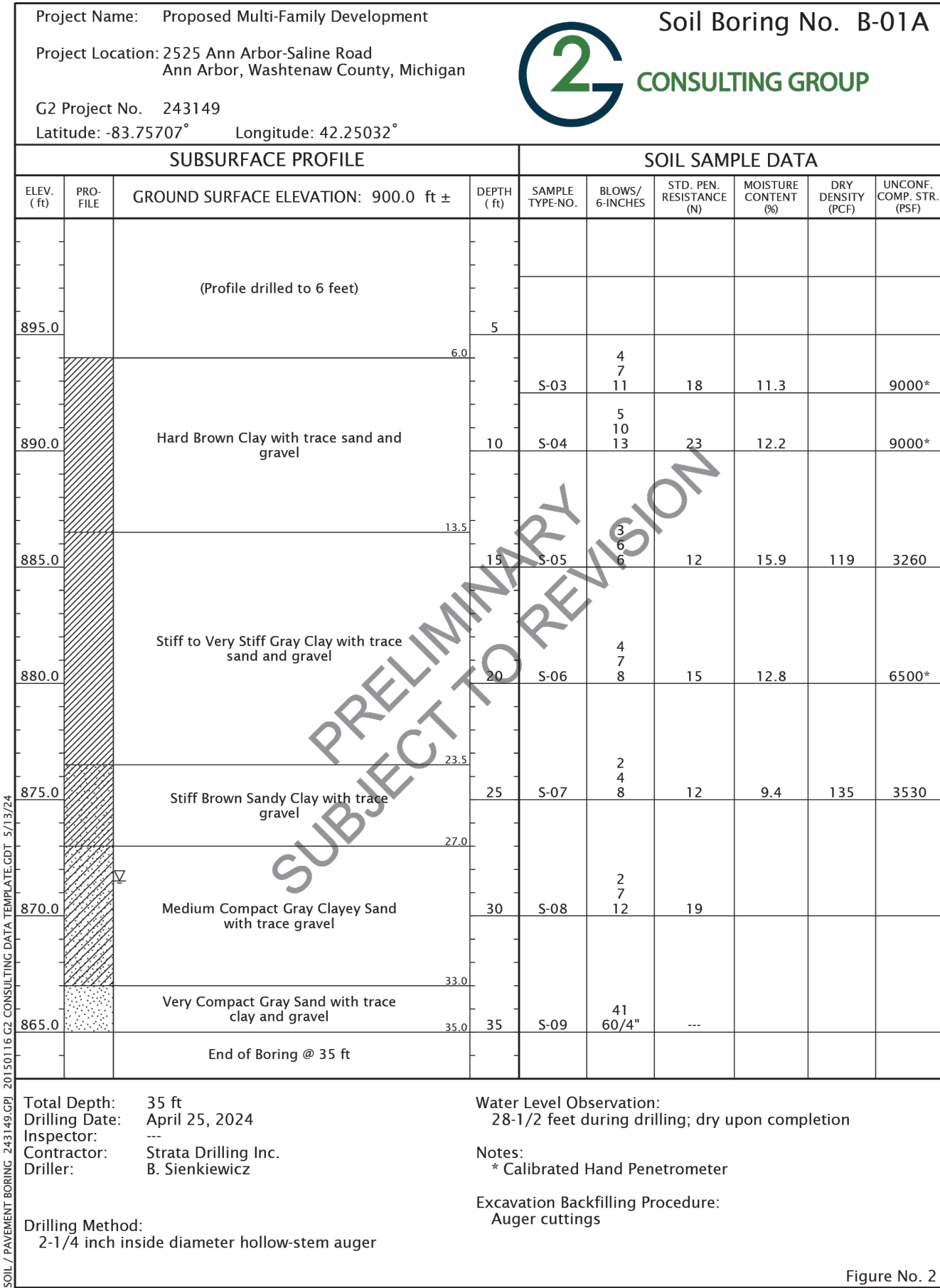
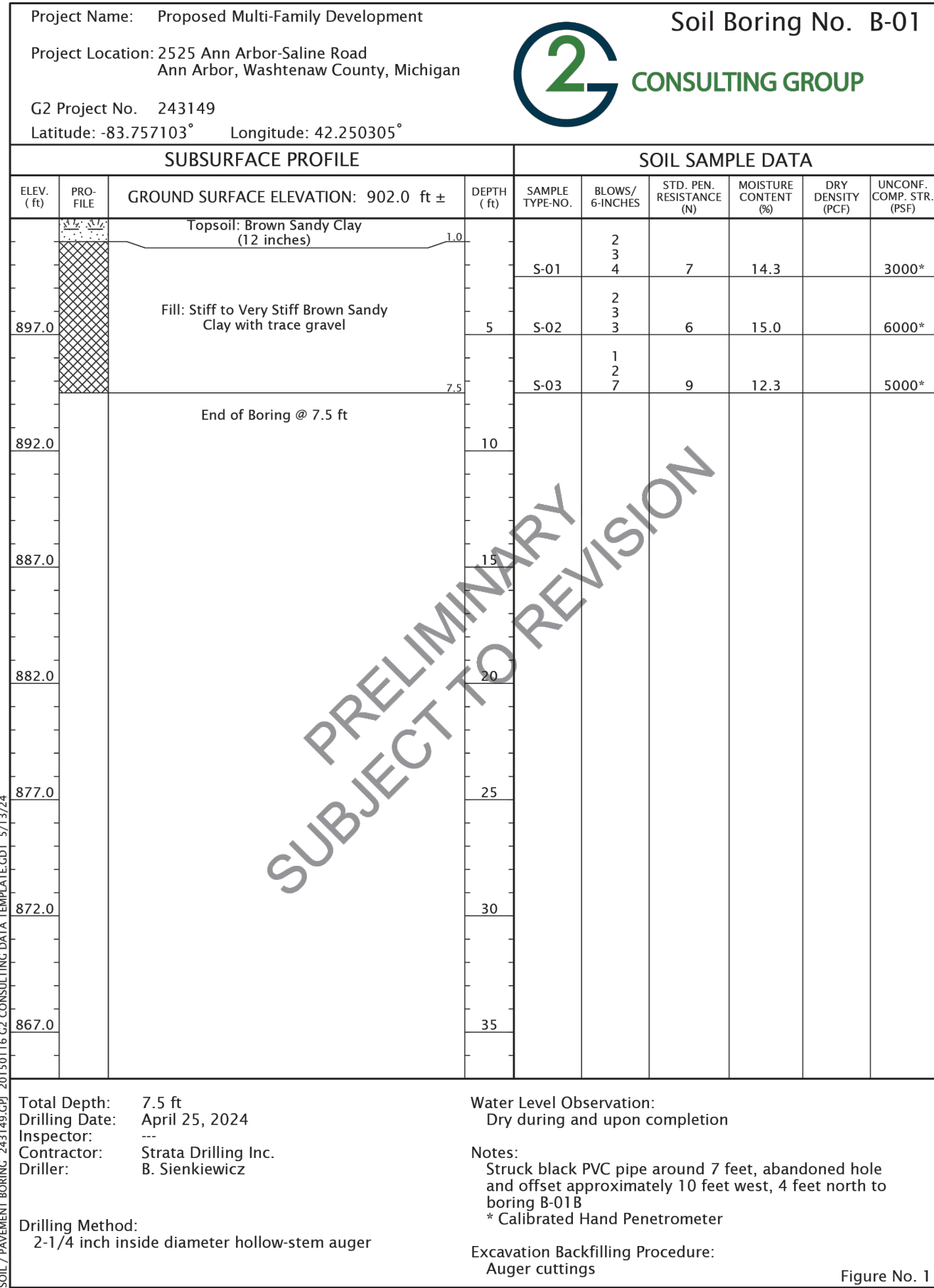
AASHTO DESIGN INTERSECTION SIGHT DISTANCE - CASE B2, RIGHT TURN FROM STOP.
 DESIGN SPEED: 45 MPH
 INTERSECTION DESIGN DISTANCE: 430' (RIGHT TURN)
 DRIVER/OBJECT HEIGHT: 3.5'
 POINT OF TRIANGLE ASSUMED TO BE CENTERED ON THE EXITING LANE AND 15'
 OFFSET OF EDGE OF OUTGOING LANE.



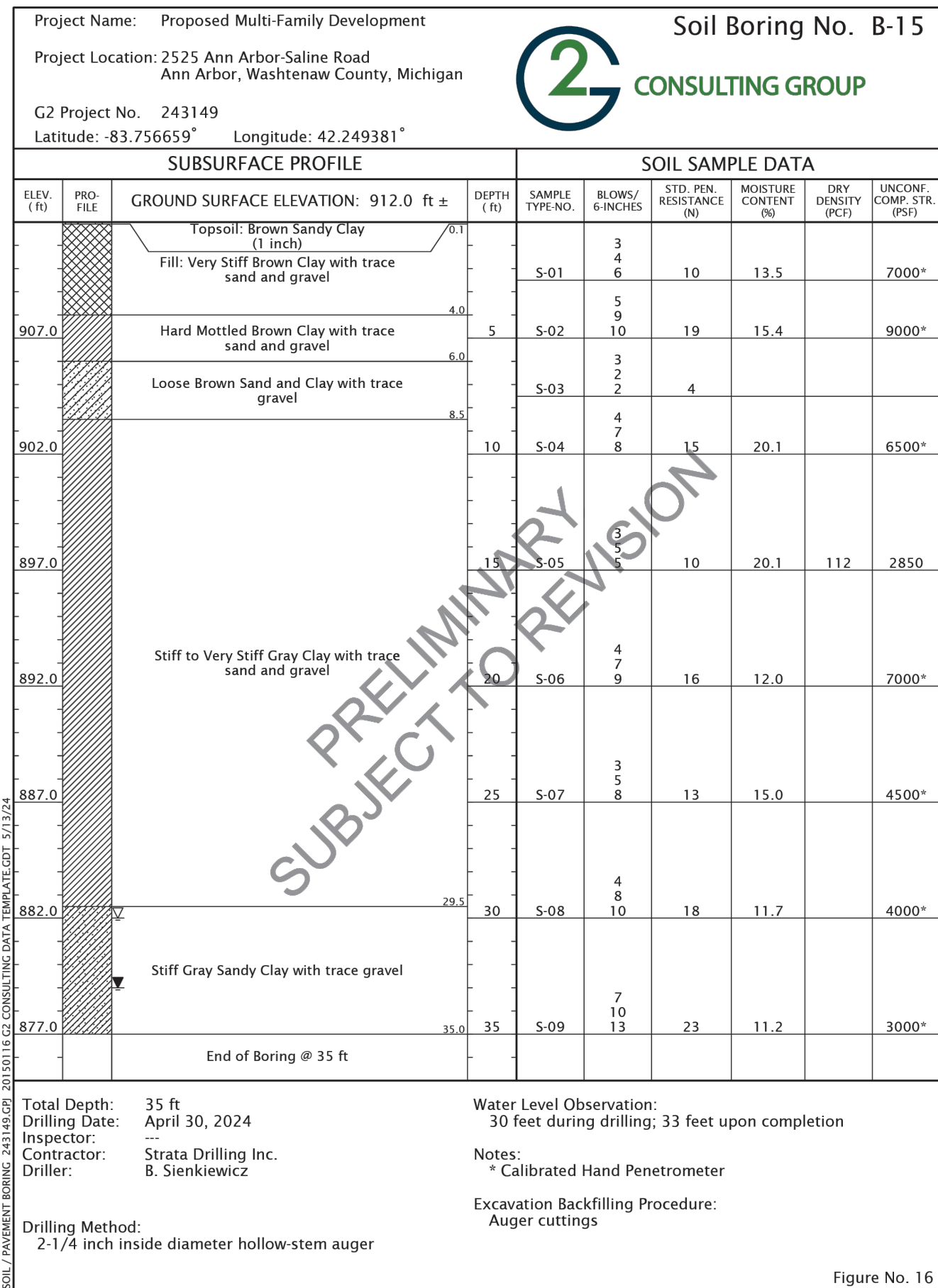
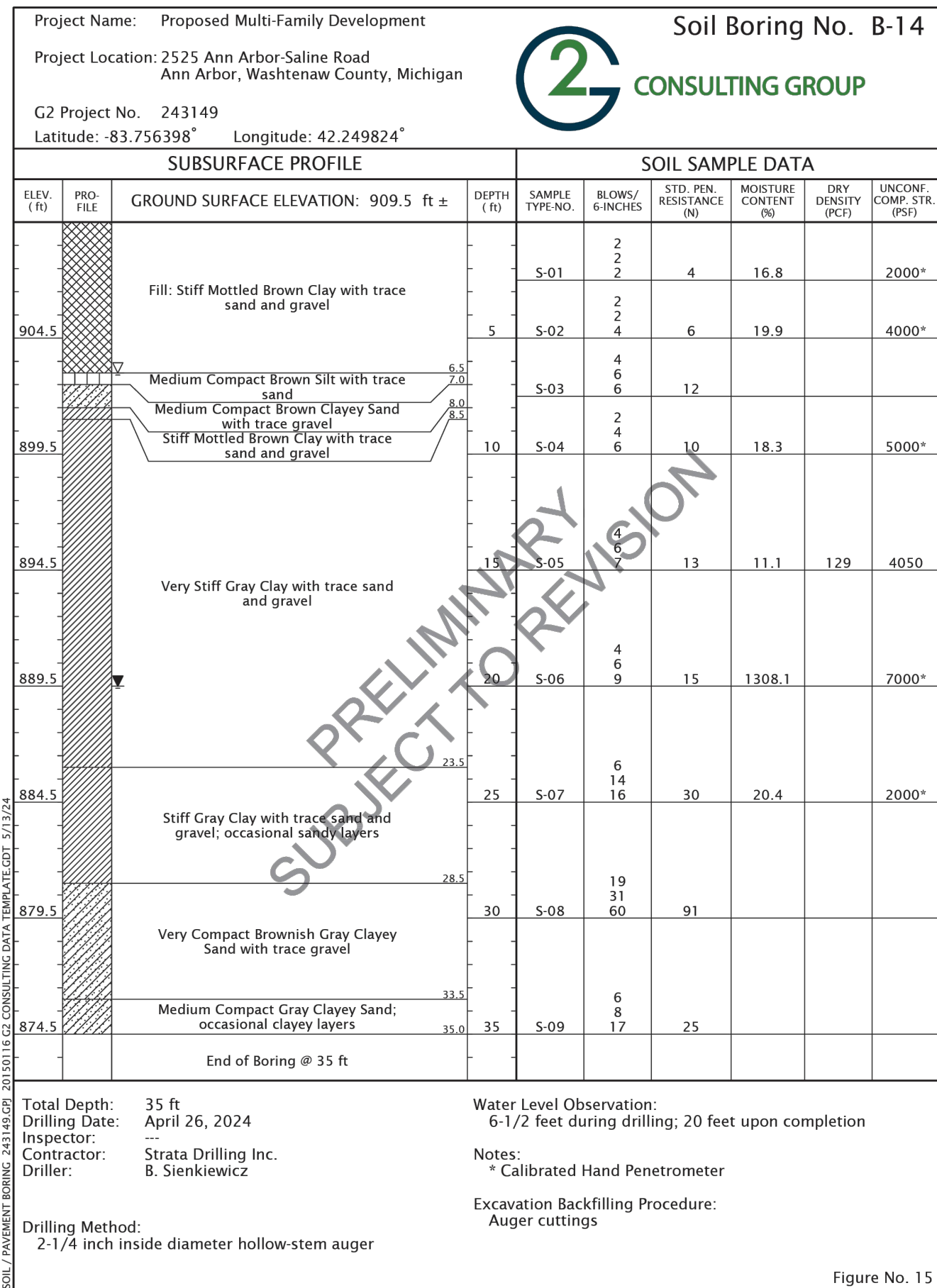
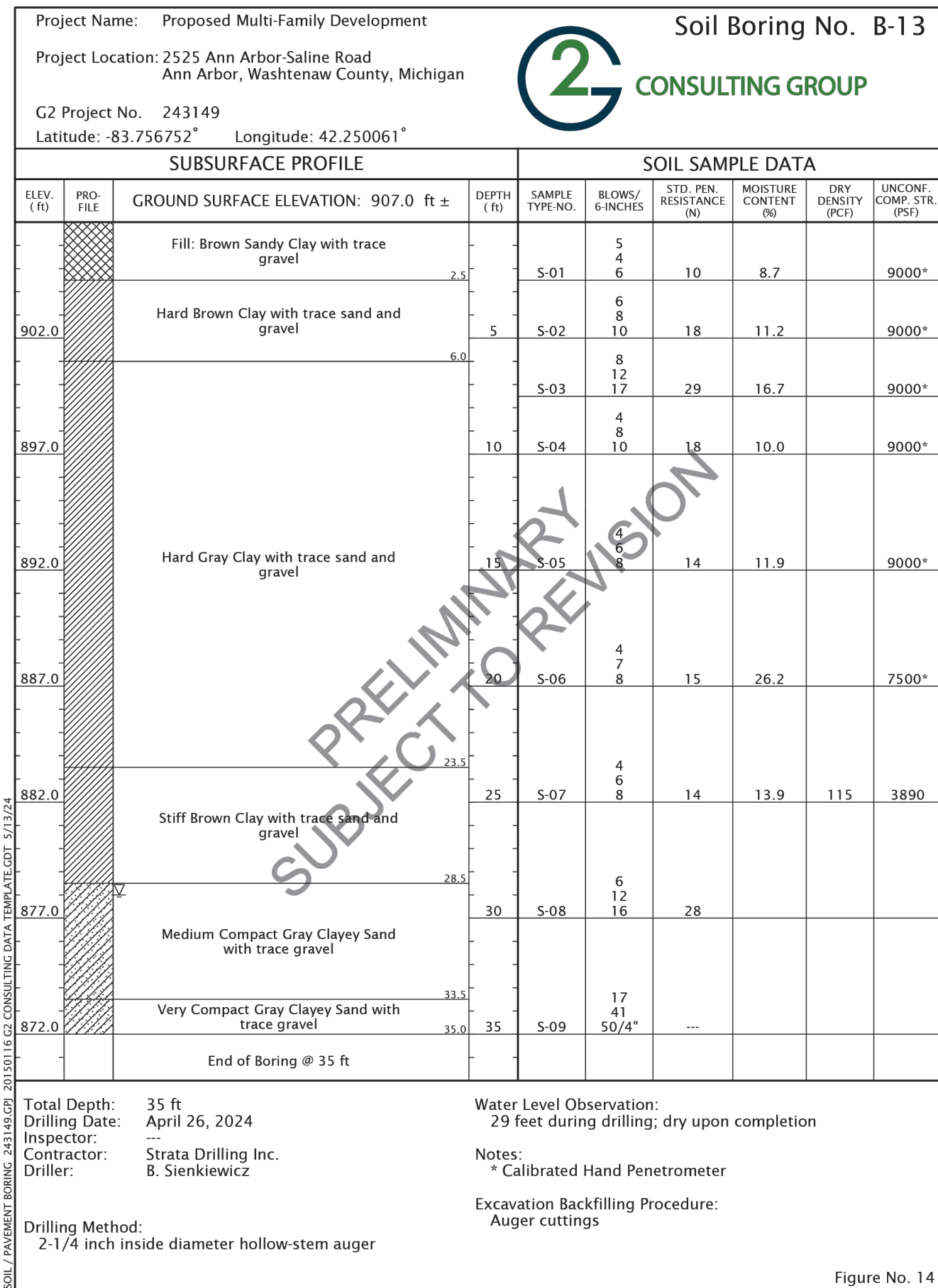
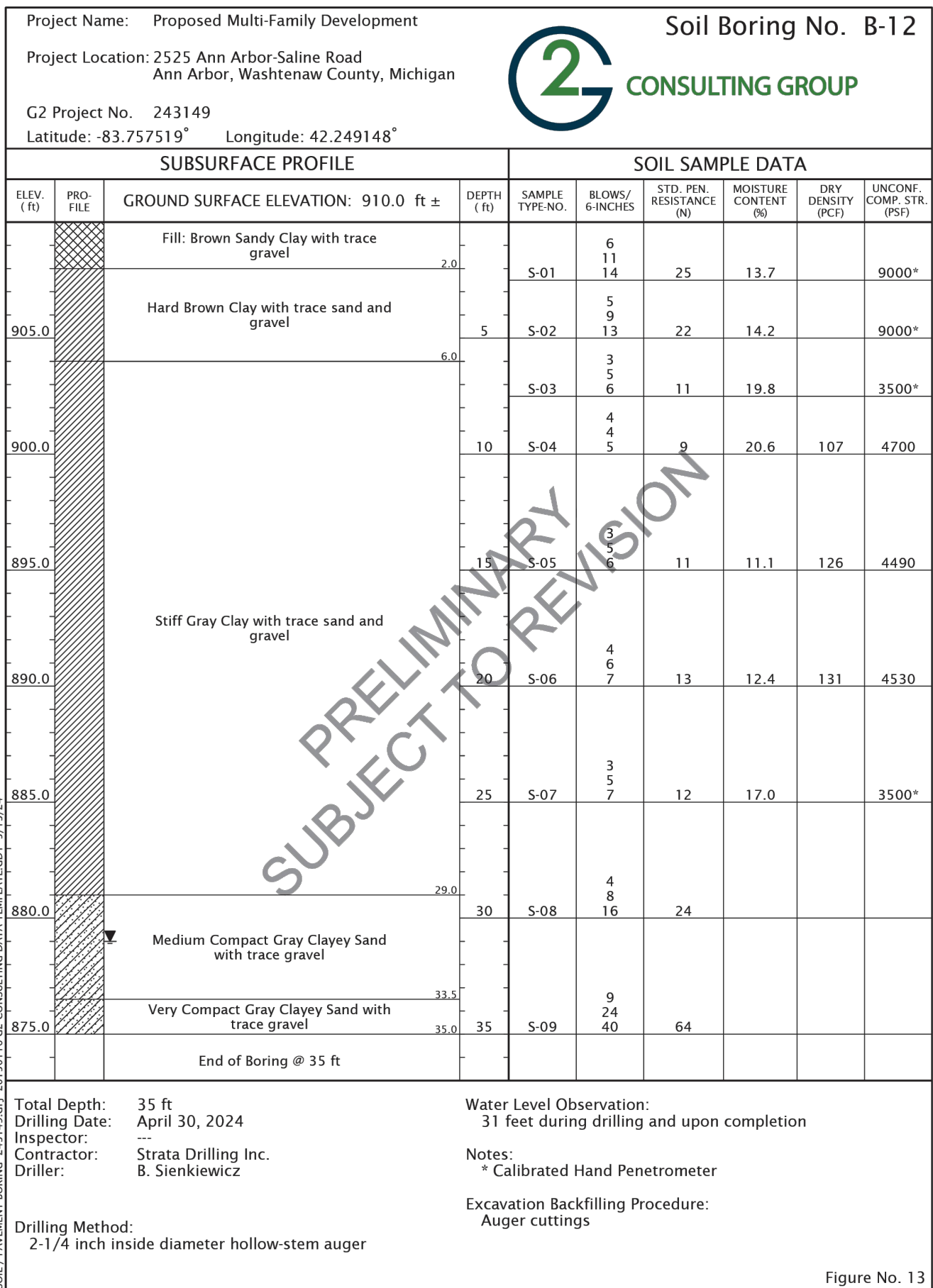
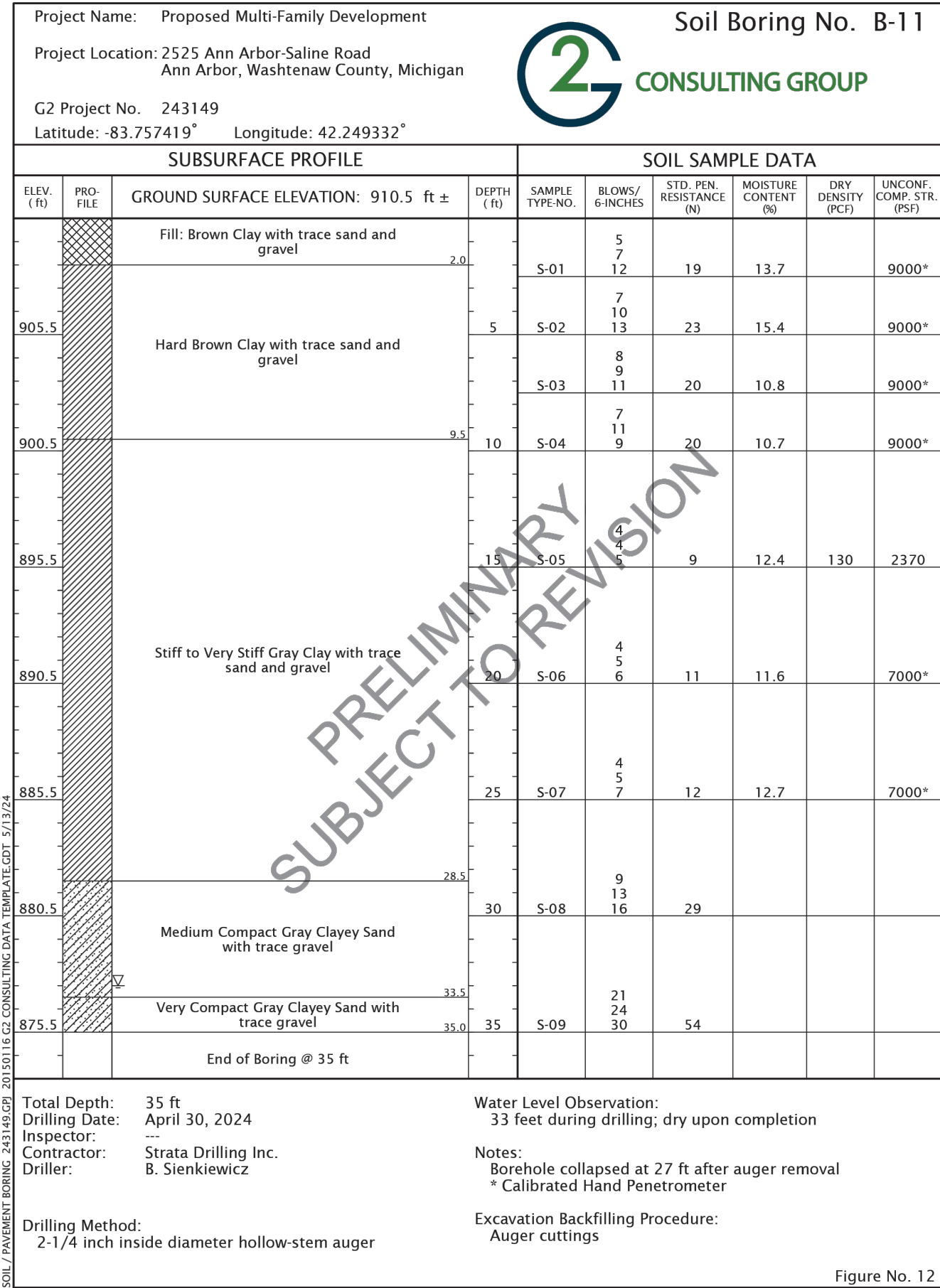
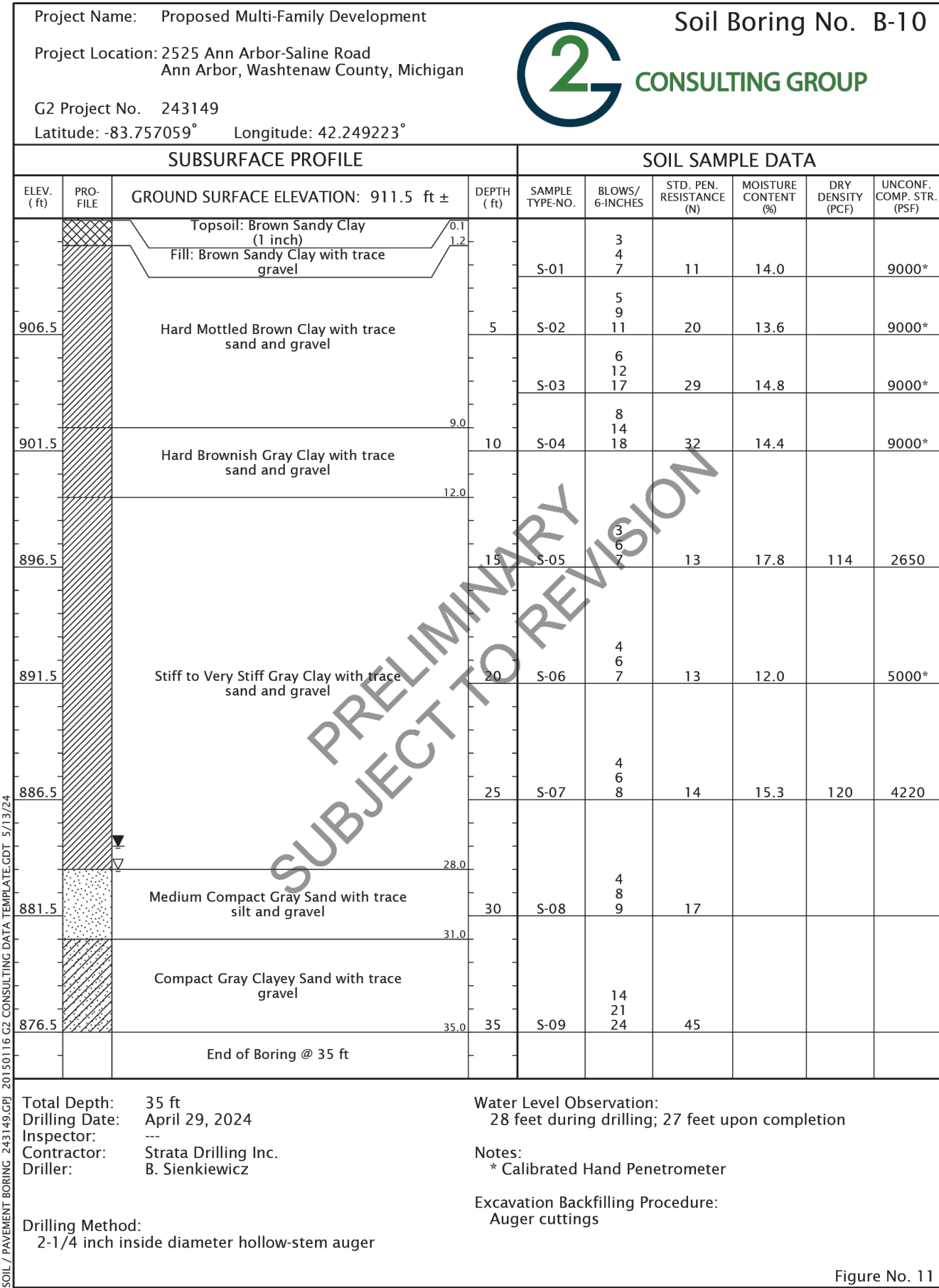
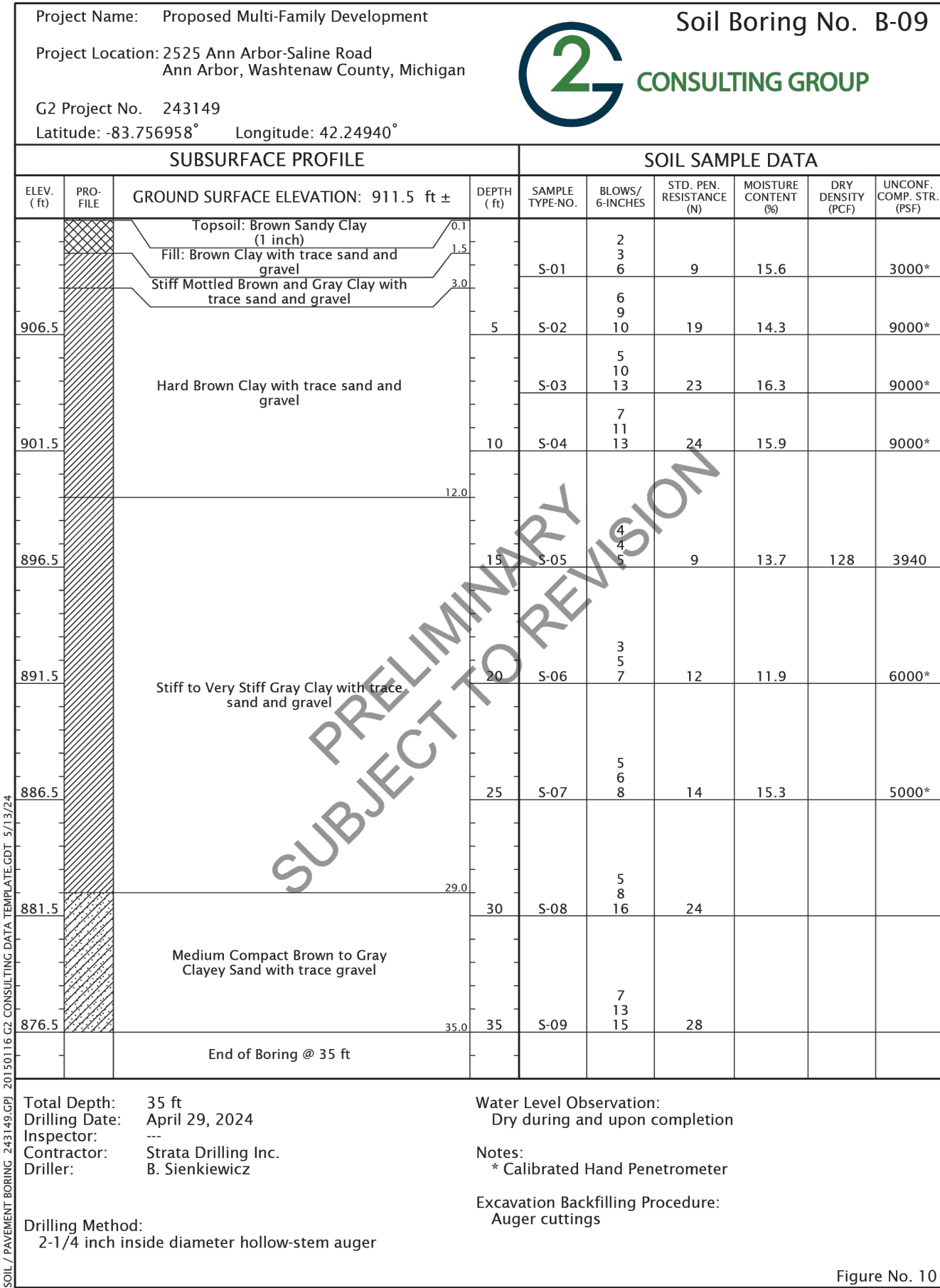
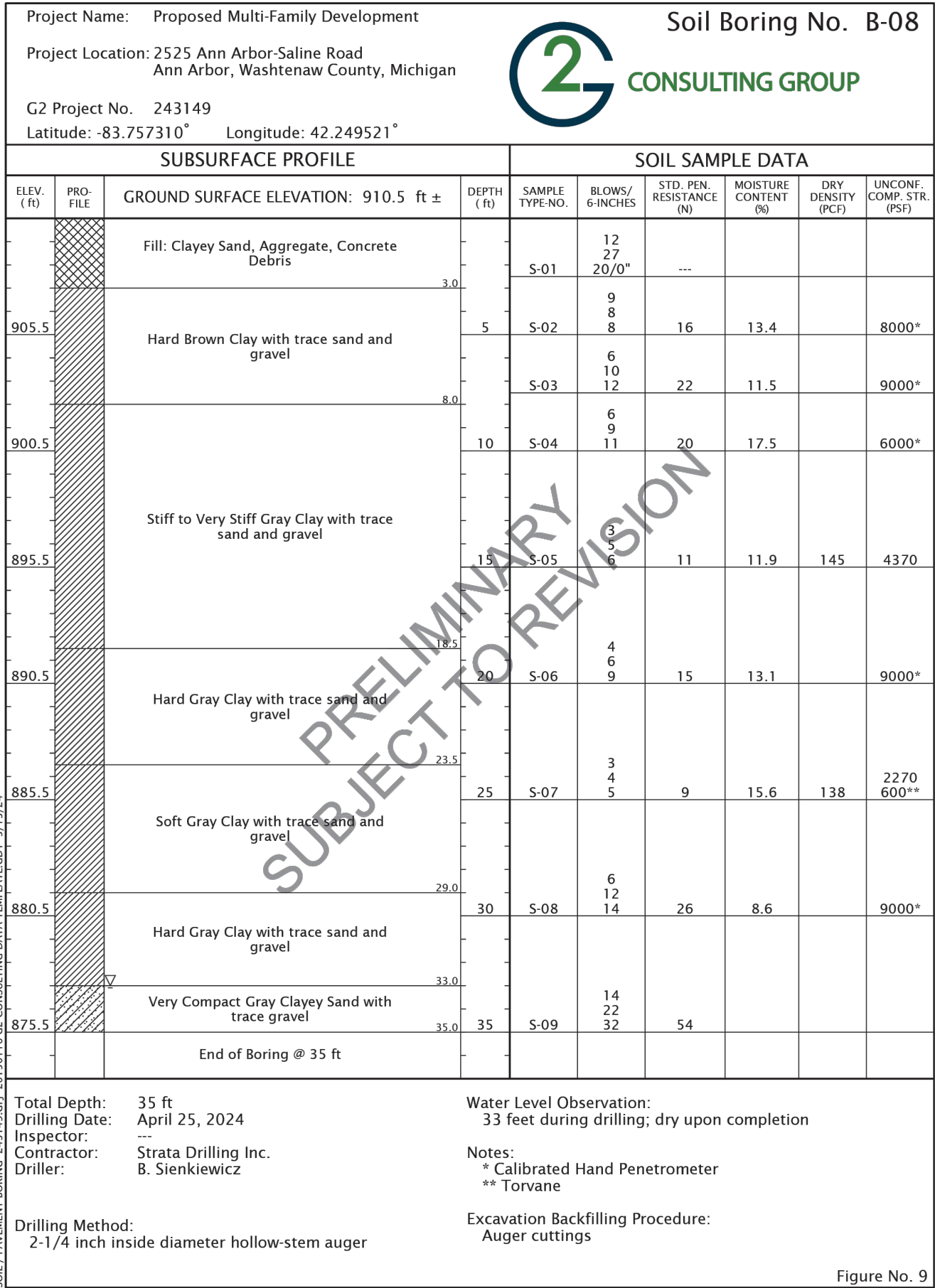


CROSSWALK SIGHT LINE

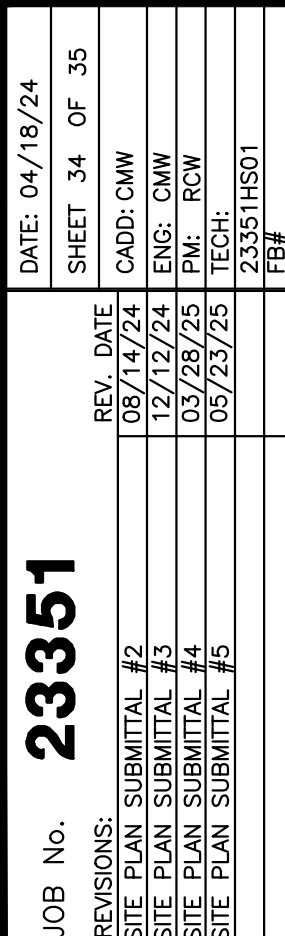
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	03/28/25	PM: RCW
	05/23/25	TECH: JAC
REVISIONS: SITE PLAN SUBMITTAL #2 SITE PLAN SUBMITTAL #3 SITE PLAN SUBMITTAL #4 SITE PLAN SUBMITTAL #5		
CLIENT CRANBROOK VILLAGE LIMITED PARTNERSHIP 6735 TELEGRAPH ROAD, SUITE 110 BLOOMFIELD HILLS, MICHIGAN 48301 ATTN: NOAH JACOB		
THE CRESCENT SITE PLAN CROSS WALK SIGHT DISTANCE		
30		
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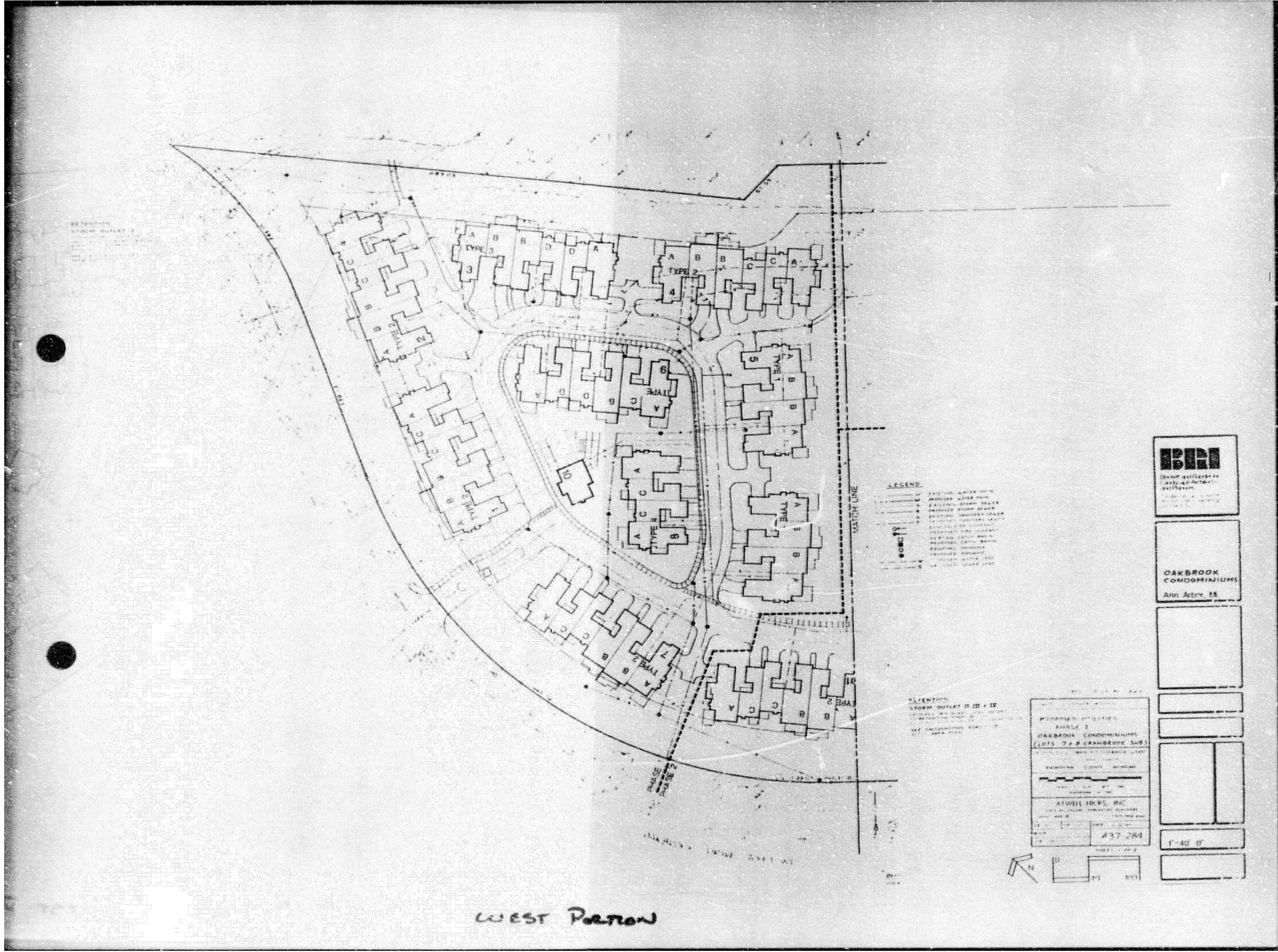


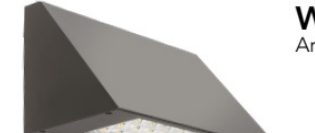
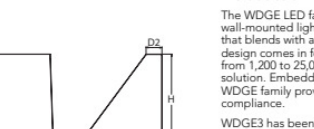
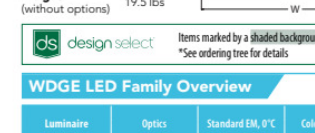
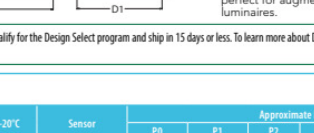
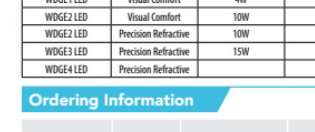
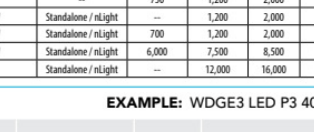
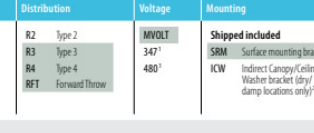
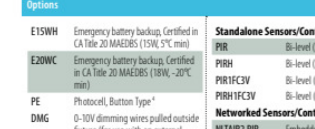
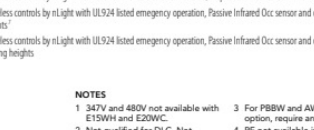
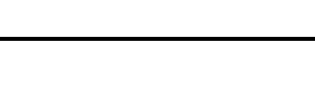
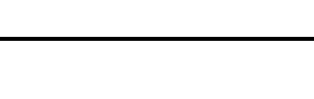
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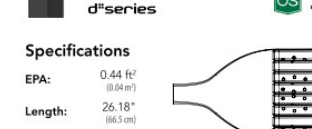
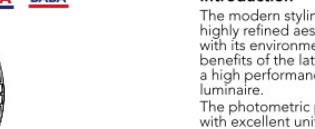
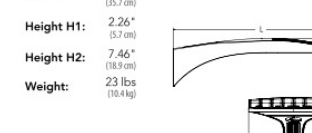
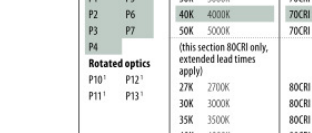
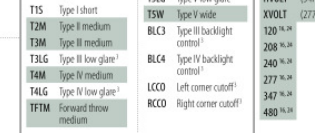
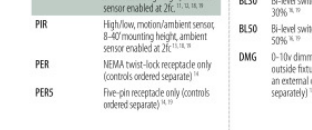
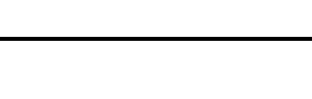
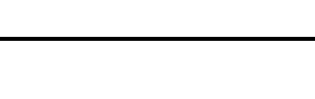








WEDGE3 LED		Architectural Wall Sconce		Form
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D-Series Size 0		LED Area Luminaire		Form
				Form
				Form
				Form
				Form
				Form
				Form
				Form
				Form
				Form
				Form
				Form

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Boundary	+	0.0 fc	0.2 fc	0.0 fc	N/A	N/A
Crosswalk	+	3.9 fc	4.4 fc	3.3 fc	1.3:1	1.2:1
Crosswalk Vertical @ 5'	+	4.9 fc	5.2 fc	4.4 fc	1.2:1	1.1:1
Overall	+	0.3 fc	5.2 fc	0.0 fc	N/A	N/A
Proposed Parking Lot	+	1.4 fc	2.7 fc	0.4 fc	6.8:1	3.5:1

Description	Symbol	Label	QTY	Manufacturer	Catalog	Description	Lamp Output	LLP	Input Power
Existing		S1	5	Lithonia Lighting	EXISTING FIXTURE	EXISTING FIXTURE, TO BE VERIFIED BY OTHERS	8439	0.9	137.9
		S2	1	Lithonia Lighting	DSX0 LED P3 30K 70CRI T3M	D-Series Size 0 Area Luminaire P3 Performance Package 3000K CCT 70 CRI Type 3 Medium	8439	0.9	68.95
		S3	2	Lithonia Lighting	DSX0 LED P5 30K 70CRI BLCC	D-Series Size 0 Area Luminaire P5 Performance Package 3000K CCT 70 CRI Type 4 Extreme Backlight Control	8715	0.9	90.12
		S4	2	Lithonia Lighting	DSX0 LED P5 30K 70CRI T4M	D-Series Size 0 Area Luminaire P5 Performance Package 3000K CCT 70 CRI Type 4 Medium	11774	0.9	90.12
		W1	3	Lithonia Lighting	WDGE3 LED P2 30K 70CRI LCCO	D-Series Size 0 Area Luminaire P2 Performance Package 3000K CCT 70 CRI Left Corner Cutoff Extreme Backlight Control	4352	0.9	45.14
		W2	1	Lithonia Lighting	WDGE3 LED P1 70CRI R4 30K	WDGE3 LED WITH P1 - PERFORMANCE PACKAGE, 3000K, 70CRI, TYPE 4 OPTIC	7145	0.9	51.1717
					WDGE3 LED P1 70CRI R3 30K	WDGE3 LED WITH P1 - PERFORMANCE PACKAGE, 3000K, 70CRI, TYPE 3 OPTIC	6933	0.9	51.1717



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734-460-4036
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- General Note**
- SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
 - SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
 - CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0" & 5' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIREMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT CONTROLS@GASSERBUSH.COM OR 734-266-6705.

Alternates Note

THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

Drawing Note

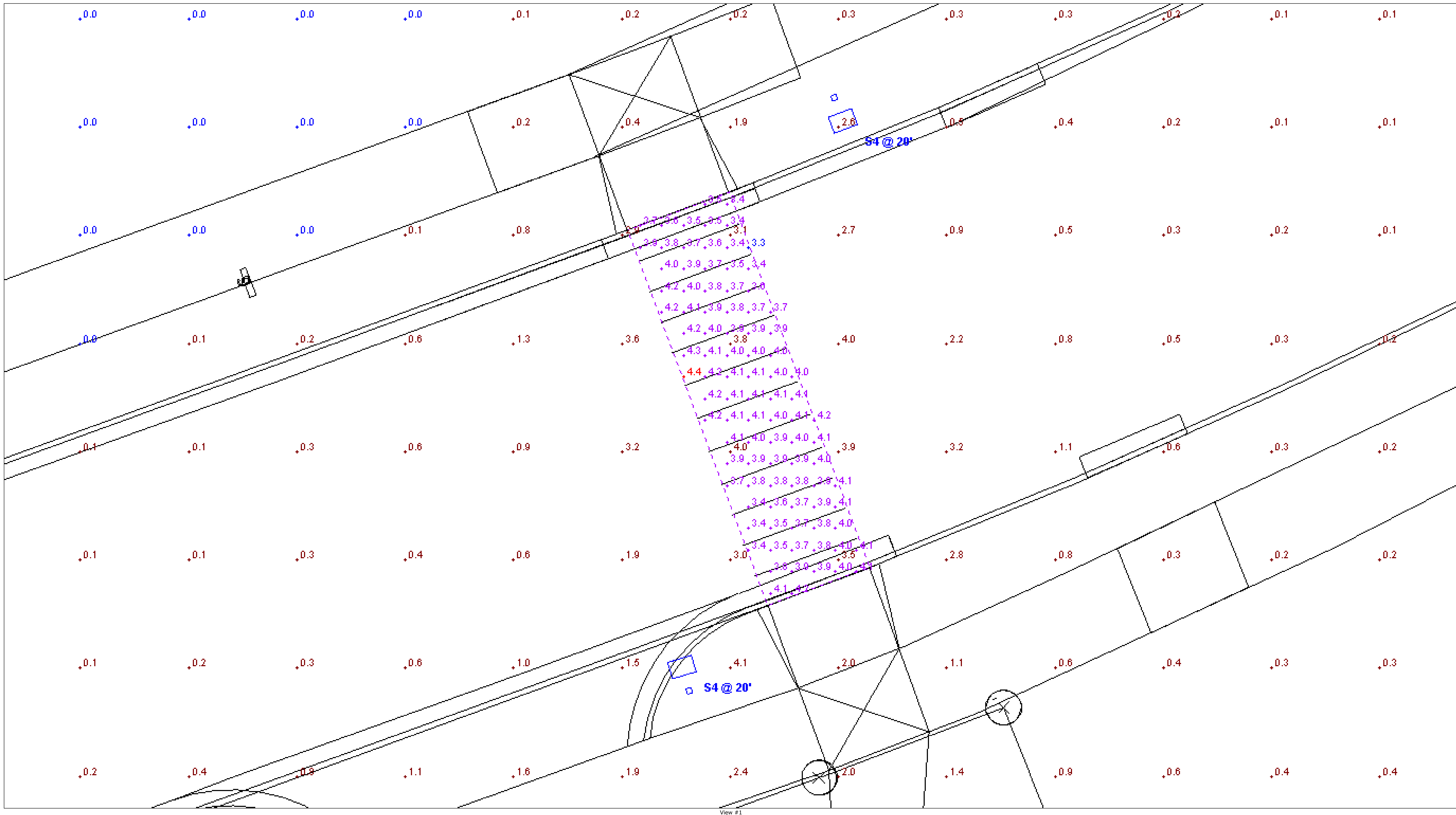
THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

Ordering Note

FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

Mounting Height Note

MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.



WDGE3 LED
Architectural Wall Sconce

Specifications

Item	Value
Power (W)	12
Power (VA)	12
Height (in)	12
Width (in)	12
Depth (in)	12
Weight (lb)	12

WDGE3 LED Family Overview

Model	Power (W)	Power (VA)	Height (in)	Width (in)	Depth (in)	Weight (lb)
WDGE3 LED P1 70CRI	12	12	12	12	12	12
WDGE3 LED P2 30K	12	12	12	12	12	12
WDGE3 LED P3 30K	12	12	12	12	12	12
WDGE3 LED P4 30K	12	12	12	12	12	12
WDGE3 LED P5 30K	12	12	12	12	12	12
WDGE3 LED P6 30K	12	12	12	12	12	12
WDGE3 LED P7 30K	12	12	12	12	12	12
WDGE3 LED P8 30K	12	12	12	12	12	12
WDGE3 LED P9 30K	12	12	12	12	12	12
WDGE3 LED P10 30K	12	12	12	12	12	12

D-Series Size 0
LED Area Luminaire

Specifications

Item	Value
Power (W)	12
Power (VA)	12
Height (in)	12
Width (in)	12
Depth (in)	12
Weight (lb)	12

D-Series Size 0 Family Overview

Model	Power (W)	Power (VA)	Height (in)	Width (in)	Depth (in)	Weight (lb)
D-Series Size 0 P1 70CRI	12	12	12	12	12	12
D-Series Size 0 P2 30K	12	12	12	12	12	12
D-Series Size 0 P3 30K	12	12	12	12	12	12
D-Series Size 0 P4 30K	12	12	12	12	12	12
D-Series Size 0 P5 30K	12	12	12	12	12	12
D-Series Size 0 P6 30K	12	12	12	12	12	12
D-Series Size 0 P7 30K	12	12	12	12	12	12
D-Series Size 0 P8 30K	12	12	12	12	12	12
D-Series Size 0 P9 30K	12	12	12	12	12	12
D-Series Size 0 P10 30K	12	12	12	12	12	12

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Boundary	+	0.0 fc	0.2 fc	0.0 fc	N/A	N/A
Crosswalk	+	3.9 fc	4.4 fc	3.3 fc	1.3:1	1.2:1
Crosswalk Vertical @ 5'	+	4.9 fc	5.2 fc	4.4 fc	1.2:1	1.1:1
Overall	+	0.3 fc	5.2 fc	0.0 fc	N/A	N/A
Proposed Parking Lot	+	1.4 fc	2.7 fc	0.4 fc	6.8:1	3.5:1

Description					Description	Lamp Output	LLP	Input Power
Symbol	Label	QTY	Manufacturer	Catalog				
	Existing	2	EXISTING FIXTURE	EXISTING FIXTURE	EXISTING FIXTURE, TO BE VERIFIED BY OTHERS	8439	0.9	137.9
	S1	5	Lithonia Lighting	DSX0 LED P3 30K 70CRI T3M	D-Series Size 0 Area Luminaire P3 Performance Package 3000K CCT 70 CRI Type 3 Medium	8439	0.9	68.95
	S2	1	Lithonia Lighting	DSX0 LED P5 30K 70CRI BLC4	D-Series Size 0 Area Luminaire P5 Performance Package 3000K CCT 70 CRI Type 4 Extreme Backlight Control	8715	0.9	90.12
	S3	2	Lithonia Lighting	DSX0 LED P5 30K 70CRI T4M	D-Series Size 0 Area Luminaire P5 Performance Package 3000K CCT 70 CRI Type 4 Medium	11774	0.9	90.12
	S4	2	Lithonia Lighting	DSX0 LED P2 30K 70CRI LCCO	D-Series Size 0 Area Luminaire P2 Performance Package 3000K CCT 70 CRI Left Corner Cutoff Extreme Backlight Control	4352	0.9	45.14
	W1	3	Lithonia Lighting	WDGE3 LED P1 70CRI R4 30K	WDGE3 LED WITH P1 - PERFORMANCE PACKAGE, 3000K, 70CRI, TYPE 4 OPTIC	7145	0.9	51.1717
	W2	1	Lithonia Lighting	WDGE3 LED P1 70CRI R3 30K	WDGE3 LED WITH P1 - PERFORMANCE PACKAGE, 3000K, 70CRI, TYPE 3 OPTIC	6933	0.9	51.1717

General Note

1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0" & 5' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIREMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT CONTROLS@GASSERBUSH.COM OR 734-266-6705.

Alternates Note

THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

Ordering Note

FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

Drawing Note

THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

Mounting Height Note

MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

Designer

KS

Date

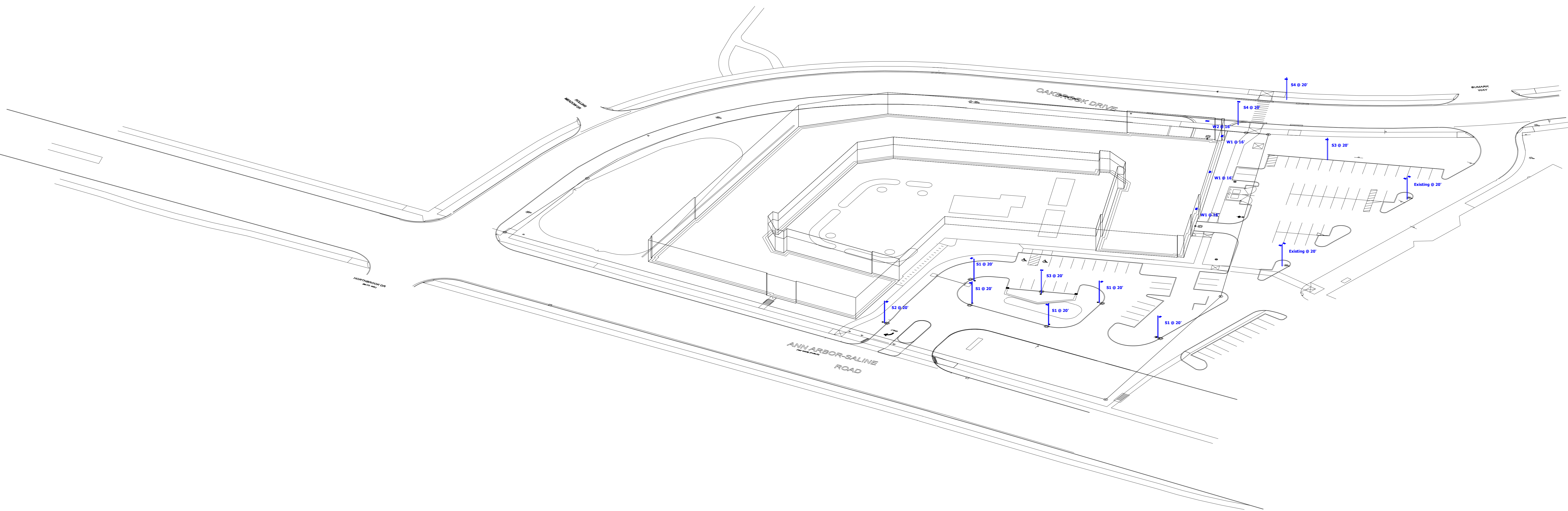
03/19/2025

Scale

Not to Scale

Drawing No.

#24-27930-34



South East View

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Boundary	+	0.0 fc	0.2 fc	0.0 fc	N/A	N/A
Crosswalk	+	3.9 fc	4.4 fc	3.3 fc	1.3:1	1.2:1
Crosswalk Vertical @ 5'	+	4.9 fc	5.2 fc	4.4 fc	1.2:1	1.1:1
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