TOWN OF CLARENCE

ENGINEERING and BUILDING DEPARTMENTS
6221 Goodrich Road
Clarence Center, NY 14032
716-741-8952
FAX: 716-407-8915

Timothy M. Lavocat, P.E., CFM
Town Engineer

August 20, 2024

Michael Metzger, P.E.
Metzger Civil Engineering, PLLC
8245 Sheridan Dr
Williamsville, New York 14221

Re: ***Clarence Solar Industrial Park***
Research Parkway
Development Plan Submittal #5

Dear Mr. Metzger:

The Town of Clarence Engineering Department received the development plan information for the above referenced project dated August 1, 2024 and received by this department August 6, 2024 and has the following comments relative to the Engineering Department requirements only. **The Development Plan meets the technical requirements of the Engineering Department and is subject to the conditions below. Additional Town Committee/Board approvals are required for final Development Plan approval.**

1. Public Improvement Permits (PIP's) are required for pavement and curbing, storm drainage and grading prior to any site work.
2. All sheets of the PIP plans are to be wet stamped and signed. Four (4) sets of plans are required to be submitted with the PIP applications to the Engineering Department. Other departments may require additional plans.
3. All conditions of approval by the Engineering Department and the Planning Board Resolution for Development Plan approval shall be clearly presented on the cover sheet of the PIP Plans.
4. Only approved plan sets bearing the signature of the Town Engineer shall be considered valid plans to be used on site. All sheets of PIP plans to be clearly labeled "ISSUED FOR CONSTRUCTION".
5. PDF copies of the PIP plan set and SWPPP/Engineer's Report must be provided to the Engineering Department.
6. Full compliance with and all signatory requirements of GP-0-20-001 are required.
7. The Owner/Operator, qualified inspector and contractor certifications, as part of the SWPPP must be signed prior to issuance of PIP's.
8. Please be advised that SWPPP site inspections are required under permit GP-0-20-001 and are the responsibility of the owner/operator to ensure continued maintenance of the stormwater management system. The maintenance agreement required under permit GP-0-20-001 is required prior to certificate of occupancy.
9. A preconstruction meeting is required prior to issuance of PIP's.

Should you have any questions or require further clarification regarding the review of the above referenced project please feel free to contact me.

Very truly yours,

Joseph Lancellotti
Asst. Municipal Engineer

Cc: Timothy Lavocat, P.E., Town Engineer
Jonathan Bleuer, Director of Community Development
Paul Gross, Sr. Code Enforcement Officer
Research Parkway, LLC, 9580 Main Street, Clarence, NY 14031
File

CLARENCE SOLAR INDUSTRIAL PARK
RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

LOCATION MAP
N.T.S.

N

DESCRIPTION:

INSTALL THE FOLLOWING IN THE CLARENCE SOLAR INDUSTRIAL PARK WITHIN THE TOWN OF CLARENCE, UNDER ECWA, BUILDER, CONTRACTOR, DEVELOPER (BCD) AGREEMENT

WATER MAIN (L.F.)			
8" PVC (AWWA C-900 DR-18) 1,920±	8" DIP (CLASS 52) --	TOTAL 1,920±	HYDRANTS 3

SIGNATURES:

EXECUTIVE ENGINEER OF ECWA ______ DATE ______

TOWN ENGINEER, TOWN OF CLARENCE ______ DATE ______

FIRE CHIEF ______ DATE ______

ECWA NOTE:
CONTACT MARK JARMUZ PRIOR TO THE START OF CONSTRUCTION
716-685-8266
mjarmuz@ecwa.org

SCHEDULE OF DRAWINGS:

SHEET NO	DRAWING	DESCRIPTION
1	CS	COVER SHEET
2	--	BOUNDARY SURVEY
3	--	TOPOGRAPHIC SURVEY
4	OS-1	OVERALL SITE PLAN & PHASING PLAN
5	DP-1	PAVING & DRAINAGE PLAN - 1
6	DP-2	PAVING & DRAINAGE PLAN - 2
7	GD-1	GRADING PLAN - 1
8	GD-2	GRADING PLAN - 2
9	UP-1	UTILITY PLAN - 1
10	UP-2	UTILITY PLAN - 2
11	ESC-1	EROSION & SEDIMENT CONTROL PLAN - 1
12	ESC-2	EROSION & SEDIMENT CONTROL PLAN - 2
13	DT-1	SITE DETAILS - 1
14	DT-2	SITE DETAILS - 2
15	DT-3	UTILITY DETAILS - 1
16	DT-4	UTILITY DETAILS - 2
17	DT-5	ROAD & UTILITY PROFILE
18	LL-1	LIGHTING PLAN

OWNER:
RESEARCH PARKWAY LLC
9580 MAIN STREET
CLARENCE, NEW YORK 14031

CIVIL ENGINEER:
METZGER CIVIL ENGINEERING, PLLC.
8245 SHERIDAN DRIVE
WILLIAMSVILLE, NEW YORK 14221
PHONE: (716) 633-2601
FAX: (716) 633-2704
EMAIL: meteng@roadrunner.com

PROJECT LEGEND

EXISTING FEATURES*	PROPOSED FEATURES*
PROJECT BOUNDARY LINE	STORM CATCH BASIN
CENTERLINE	WATER VALVE
MAIL BOX	SANITARY SEWER LATERAL
SIGN	STORM SEWER LINE
ELECTRIC MANHOLE	WATERLINE
TELEPHONE MANHOLE	SIGN
SANITARY MANHOLE & LINE	SPOT ELEVATION (× 575.75)
WATER LINE	FLOW DIRECTION
UTILITY POLE	INLET PROTECTION
WATER VALVE	SILT SOCK
HYDRANT	STABILIZED CONSTRUCTION ENTRANCE
GAS LINE	
OVERHEAD WIRES	

* WHERE APPLICABLE

METZGER CIVIL ENGINEERING, PLLC

TOWN OF CLARENCE NOTES:
1) CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL TOWN CONSTRUCTION SPECIFICATIONS WHERE APPLICABLE AND/OR SUBJECT TO THE LATEST REVISIONS.

SCALE:	NTS
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	CS SHEET 1

NO IRONS SET OR FOUND AT PROPERTY CORNERS UNLESS NOTED HEREON.

3556 Lake Shore Road, Suite 500, Buffalo, NY 14219
p (716) 827-8000 f (716) 270-6091 www.nussclarke.com

This survey was prepared without the benefit of an abstract of title and is subject to any state of facts that may be revealed by an examination of such.

Unauthorized alterations or additions to any survey, drawing, design, specification, plan or report is a violation of section 7209, provision 2 of the New York State Education Law.

NUSSBAUMER & CLARKE, INC. ENGINEERS AND SURVEYORS EST. 1933

PRELIMINARY SUBDIVISION SURVEY

10000 Wehrle Drive

Part of Lot 2-8, Township 12, Range 6, Section 5
Holland Land Company's Survey
Town of Clarence
County of Erie, State of New York

Date of Survey: 11/28/17 Scale : 1" = 200' Project No. : 1732-1154

LANDS FORMERLY OF NEW YORK CENTRAL RAILROAD

3800.12'

BIKE PATH

APPROXIMATE LOCATION OF SANITARY SEWER LINE

LOT 4

1986.05'

LOT 6

LOT 8

WEST LINE OF LOT 8

375.32'DEED&MEAS.
372.57'DEED

FOUND IRON

WESTER OF T 7

WEST LINE OF LOT 7

1784.76'MEAS.
1781.68'DEED&MEAS.
1828.48'DEED

LOT 7

LOT 5

PARCEL 'A'
TOTAL AREA
193.85± ACRES
(INCLUDING HIGHWAY)

WETLAND AREA #12

WETLAND AREA #5

WETLAND AREA #1

WETLAND AREA #3

WETLAND AREA #4

WETLAND AREA #8

WETLAND AREA #11

WETLAND AREA #15

WETLAND AREA #10

WETLAND AREA #9

℄ 20'WIDE SANITARY EASEMENT TO ERIE COUNTY SEWER DISTRICT NO.5 AS SHOWN IN L.9802,P.453

EXCEPTION TO ERIE COUNTY SEWER DISTRICT NO.5

℄ 40'WIDE INGRESS & EGRESS EASEMENT TO ERIE COUNTY SEWER DISTRICT NO.5 BY L.9802,P.459

FOUND IRON 0.26'S

587.69'

25°04'44"

64°23'

NORTHEAST CORNER LOT 3

2131.51'

PARCEL 'B'
TOTAL AREA
42.11± ACRES
(INCLUDING HIGHWAY)

LOT 3

FENCE 0.1'W

33.13'

625.45'

658.58'

313.09'

422.45'

300.00'

544.19'

307.77'

554.00'

688.41'

236.42'

543.00'

122.00'

311.00'

572.48'

746.08'

378.00'

173.58'

R=2296.84'
L=278.68'

R.O.W.

BLACKTOP PARKING

LAND ACQUIRED BY ERIE COUNTY AS PER PARCEL NO.113 MAP NO.SK 221-114RR

FOUND IRON 35.00'NE

FOUND IRON 0.18'N 0.46'NW

FOUND IRON 0.36'N 0.12'W

FOUND IRON 4.83'E 0.97'SE

FOUND IRON 0.24'SW

FOUND IRON 0.24'SE

FOUND IRON 0.14'SE

NO IRONS SET OR FOUND AT PROPERTY CORNERS UNLESS NOTED HEREON.

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p (716) 827-8000 f (716) 270-6091 www.nussclarke.com

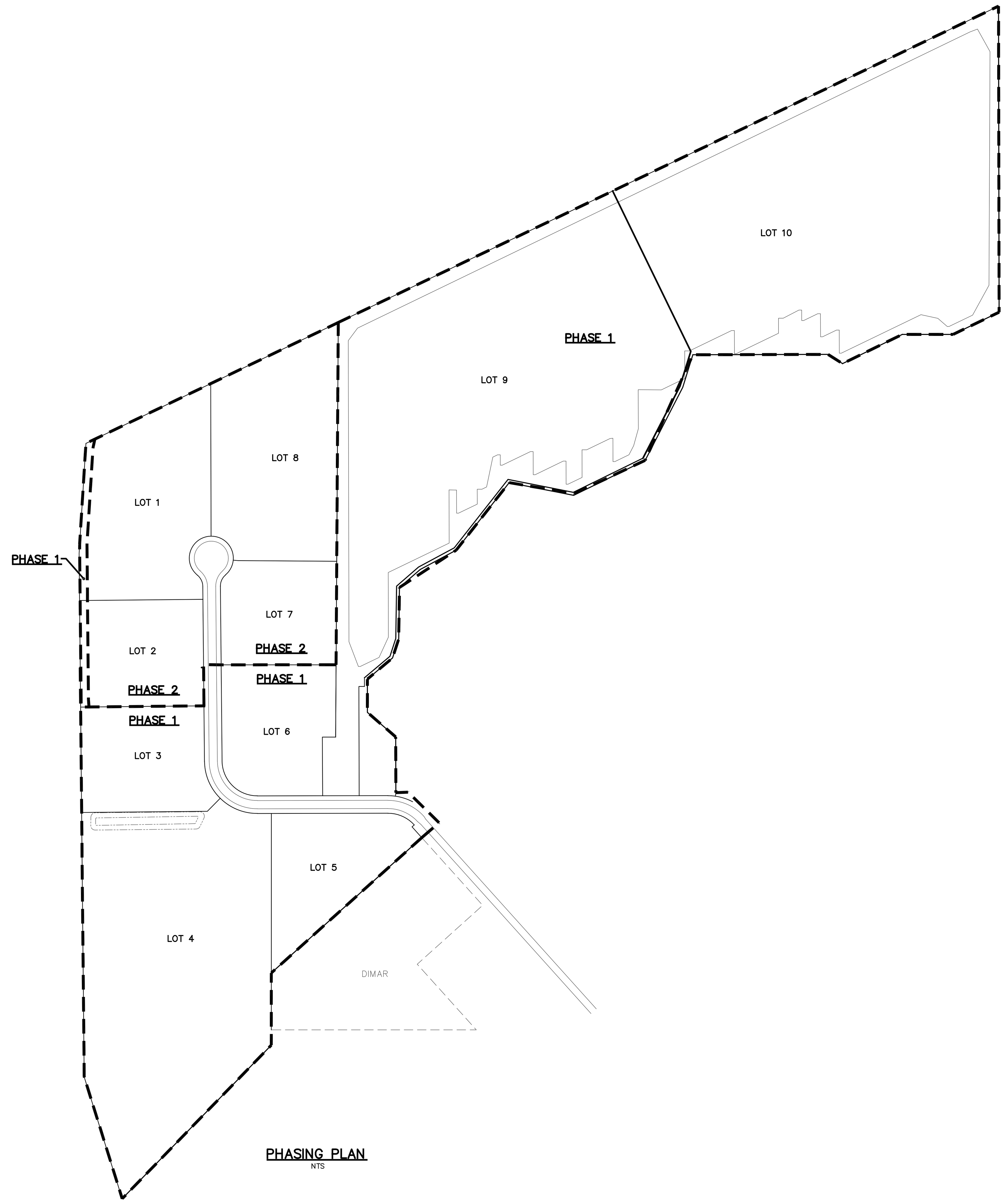
NUSSBAUMER & CLARKE, INC. ENGINEERS AND SURVEYORS EST. 1933

TOPOGRAPHIC SURVEY

10000 Wehrle Drive

Part of Lots 3-8, Township 12, Range 6, Section 5
Holland Land Company's Survey
Town of Clarence
County of Erie, State of New York

Date of Survey: 08/22/2023 Scale : 1" = 200' Project No. : 23J2-0992



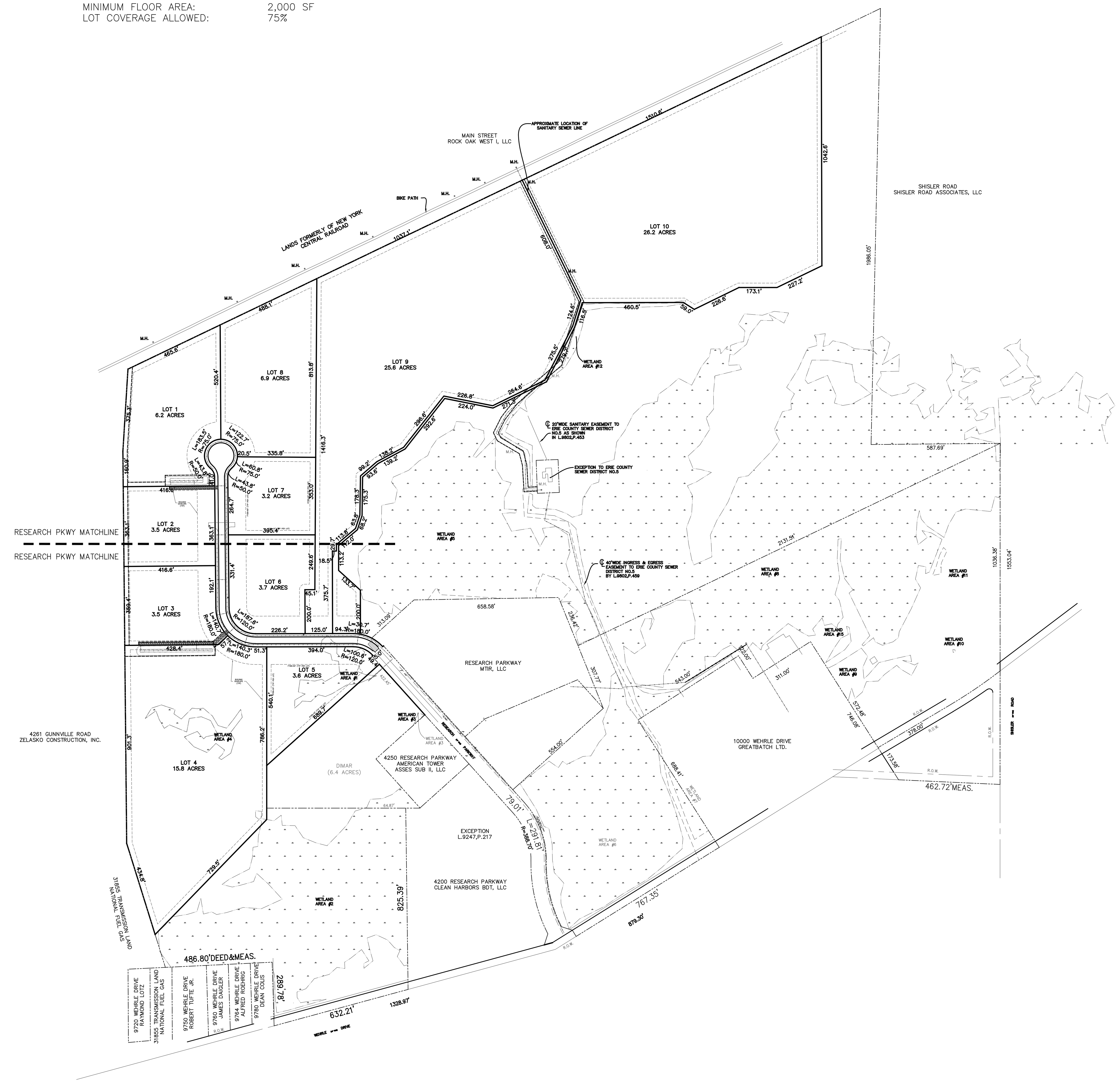
PHASING PLAN
NTS

SITE DATA TABLE

ZONING CLASSIFICATION:	INDUSTRIAL BUSINESS PARK

BUSINESS PARK REQUIREMENTS

MINIMUM LOT SIZE REQUIRED:	1.0 ACRE
MINIMUM LOT SIZE PROPOSED:	3.1 ACRES
MINIMUM LOT WIDTH REQUIRED:	125.0'
MINIMUM LOT WIDTH PROPOSED:	125.0'
MINIMUM LOT DEPTH REQUIRED:	200.0'
MINIMUM LOT DEPTH PROPOSED:	390'±
FRONT YARD SETBACK REQUIRED:	80.0'
SIDE YARD SETBACK REQUIRED:	20.0'
REAR YARD SETBACK REQUIRED:	25.0'
MAXIMUM BUILDING HEIGHT:	45'
MINIMUM FLOOR AREA:	2,000 SF
LOT COVERAGE ALLOWED:	75%



NOTES:
1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW

REVISIONS	DATE	BY/CHK

METZGER CIVIL ENGINEERING, PLLC
8245 SHERIDAN DR.
WILLIAMSVILLE, NY 14221
PH: 716-633-2601
FAX: 716-633-2704

CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK · LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

OVERALL SITE PLAN & PHASING PLAN

SCALE:	1" = 300'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	OS-1

SHEET 4

NOTES:

1. INSTALL ALL MATERIALS TO MANUFACTURER'S RECOMMENDATIONS AND BEST STANDARDS OF TRADE INVOLVED.
2. SUBSTITUTIONS SHALL BE MADE ONLY WITH OWNER'S AND ENGINEER'S APPROVAL AND BE OF EQUIVALENT QUALITY TO WHAT IS SPECIFIED.
3. WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND OSHA SAFETY RULES AND REGULATIONS.
4. VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AT THE SITE. NOTIFY OWNER & ENGINEER OF DISCREPANCIES IN CONDITIONS SHOWN ON DRAWINGS PRIOR TO PROCEEDING WITH THE WORK. ANNOTATED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
5. CONTRACTOR SHALL KEEP JOB FREE OF DEBRIS AND MAKE FINAL CLEANUP TO SATISFACTION OF OWNER.
6. CONTRACTOR SHALL ASCERTAIN LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION SO THAT THIS WORK WILL NOT DISTURB EXISTING LINES AND/OR INSTALLATIONS. COORDINATE ALL WORK WITH THE APPLICABLE UTILITY COMPANIES.
7. CONTRACTORS SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS NECESSARY TO PERFORM THE WORK.
8. INITIAL RESPONSIBILITY OF MAINTENANCE OF THE INFILTRATION BASIN WILL LIE WITH THE DEVELOPER OF THE INDUSTRIAL PARK. UPON THE SALE OF THE LOTS ON WHICH THE INFILTRATION BASINS ARE PLACED (LOTS 1 & 4), THE MAINTENANCE RESPONSIBILITY WILL BE TRANSFERRED TO THE PRIVATE LOT OWNER VIA DEED IS PERPETUITY.

NOTES:

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STATE OF NEW YORK LICENSED PROFESSIONAL ENGINEER 066788

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

PAVING & DRAINAGE PLAN – 1

SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	DP-1

SHEET 5

NOTES:

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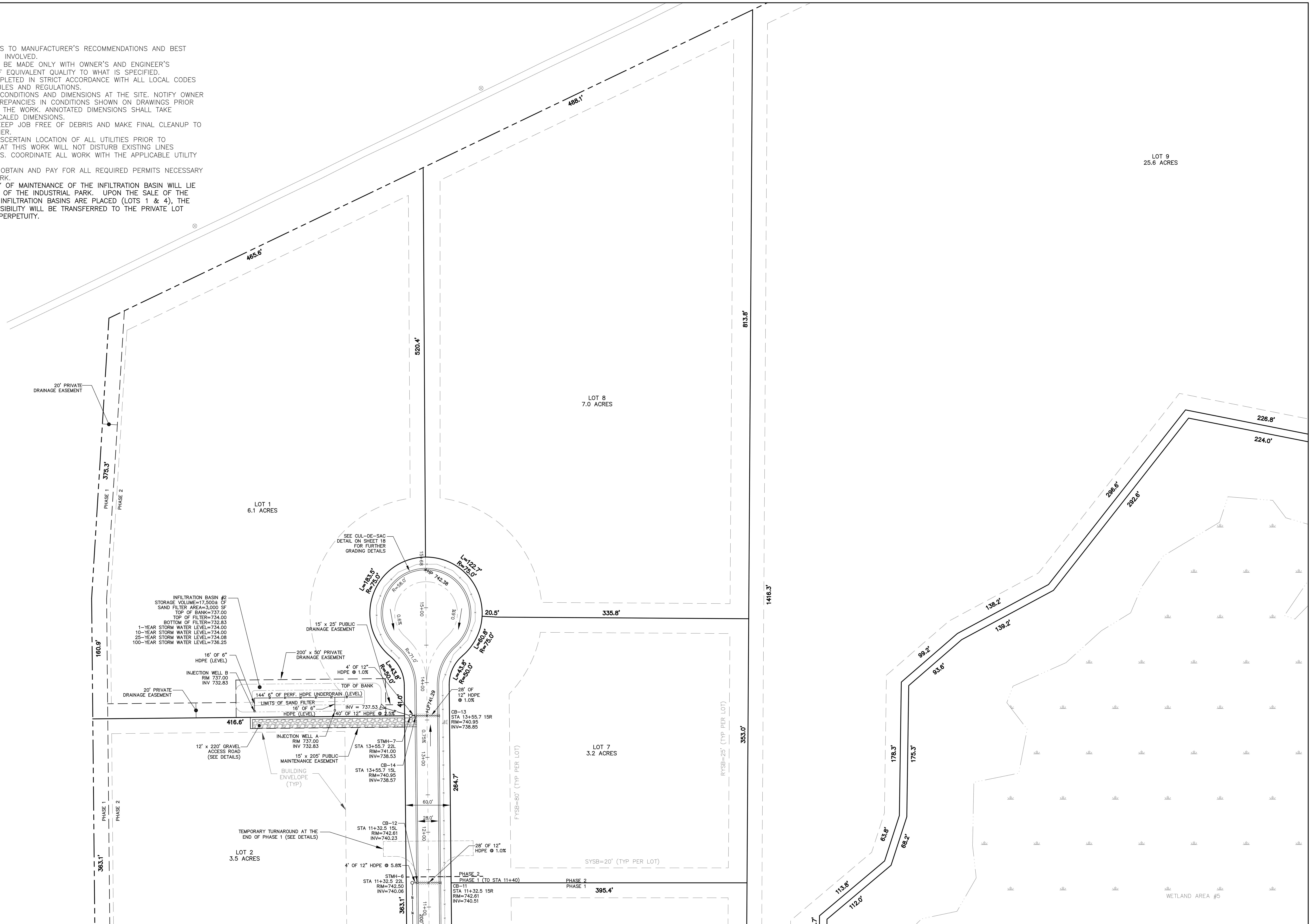
7. CONTRACTORS SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS NECESSARY TO PERFORM THE WORK.
8. **INITIAL RESPONSIBILITY OF MAINTENANCE OF THE INFILTRATION BASIN WILL LIE WITH THE DEVELOPER OF THE INDUSTRIAL PARK. UPON THE SALE OF THE LOTS ON WHICH THE INFILTRATION BASINS ARE PLACED (LOTS 1 & 4), THE MAINTENANCE RESPONSIBILITY WILL BE TRANSFERRED TO THE PRIVATE LOT OWNER VIA DEED IS PERPETUITY.**



NOTES:

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WILLIAMSVILLE, NY 14221
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FAX: 716-633-2704
CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK — MICHAEL J. METZGER — 066786 — LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

PAVING & DRAINAGE PLAN – 2

SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	DP-2

SHEET 6

NOTES:

1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

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STATE OF NEW YORK — MICHAEL METZGER — 066786 — LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

GRADING PLAN – 1

SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	GD-1

SHEET 7

NOTES:

1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

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STATE OF NEW YORK · MICHAEL METZGER · 066786 · LICENSED PROFESSIONAL ENGINEER

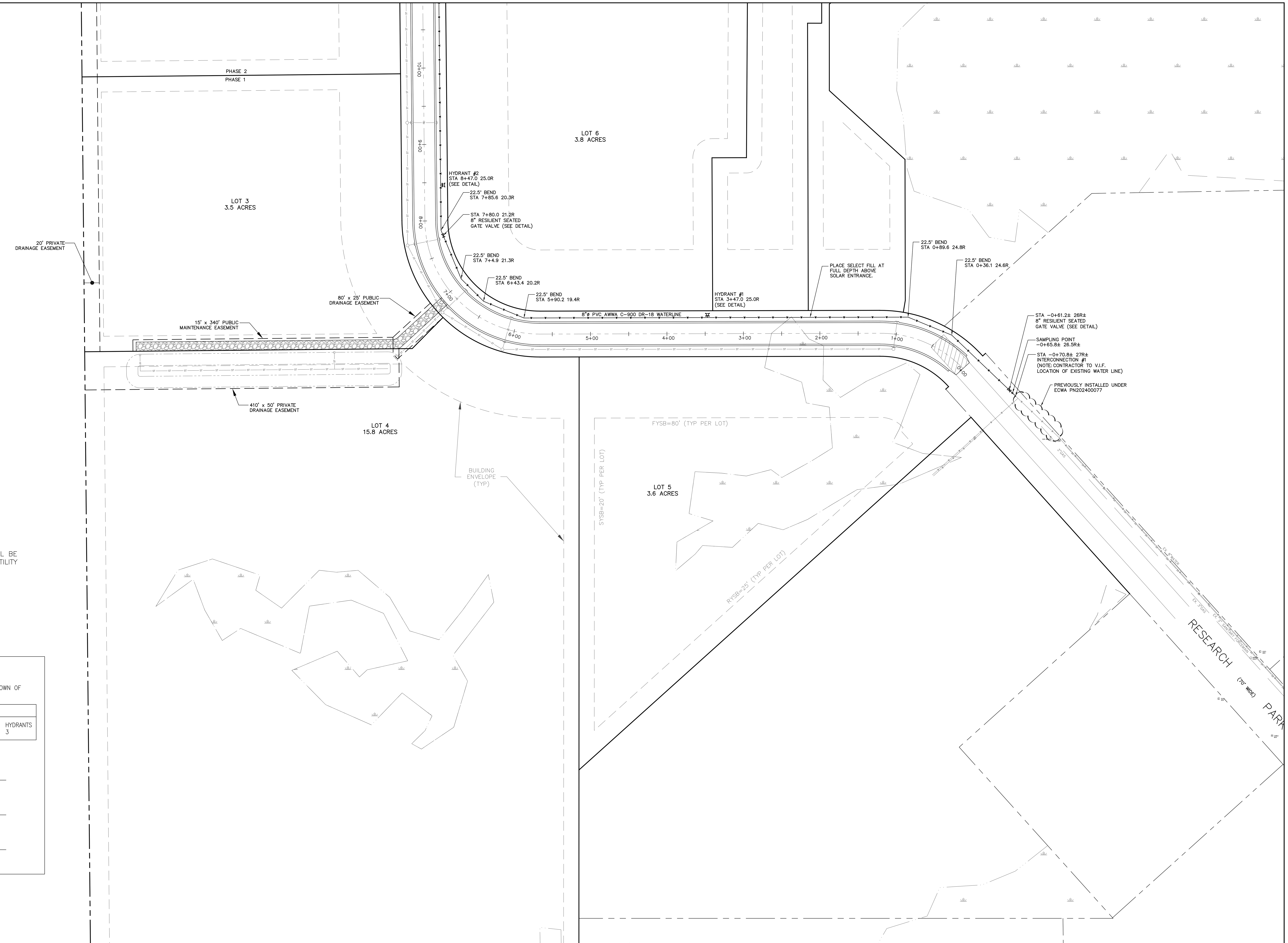
CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

GRADING PLAN – 2

SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	GD–2

SHEET 8



NOTES:

1. GAS, ELECTRIC AND TELECOMMUNICATIONS UTILITY SERVICES WILL BE EVALUATED AND/OR DESIGNED BY EACH RESPECTIVE PRIVATE UTILITY COMPANY.

DESCRIPTION:

INSTALL THE FOLLOWING IN THE CLARENCE SOLAR INDUSTRIAL PARK WITHIN THE TOWN OF CLARENCE, UNDER ECWA, BUILDER, CONTRACTOR, DEVELOPER (BCD) AGREEMENT

WATER MAIN (L.F.)			
8" PVC (AWWA C-900 DR-18) 1,920±	8" DIP (CLASS 52) --	TOTAL 1,920±	HYDRANTS 3

SIGNATURES:

EXECUTIVE ENGINEER OF ECWA ________ DATE ________

TOWN ENGINEER, TOWN OF CLARENCE ________ DATE ________

FIRE CHIEF ________ DATE ________

ECWA NOTE:
CONTACT MARK JARMUZ PRIOR TO THE START OF CONSTRUCTION
716-685-8266
mjarmuz@ecwa.org

NOTES:
1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

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REVISIONS	DATE	BY/CHK

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STATE OF NEW YORK · LICENSED PROFESSIONAL ENGINEER · 066788

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

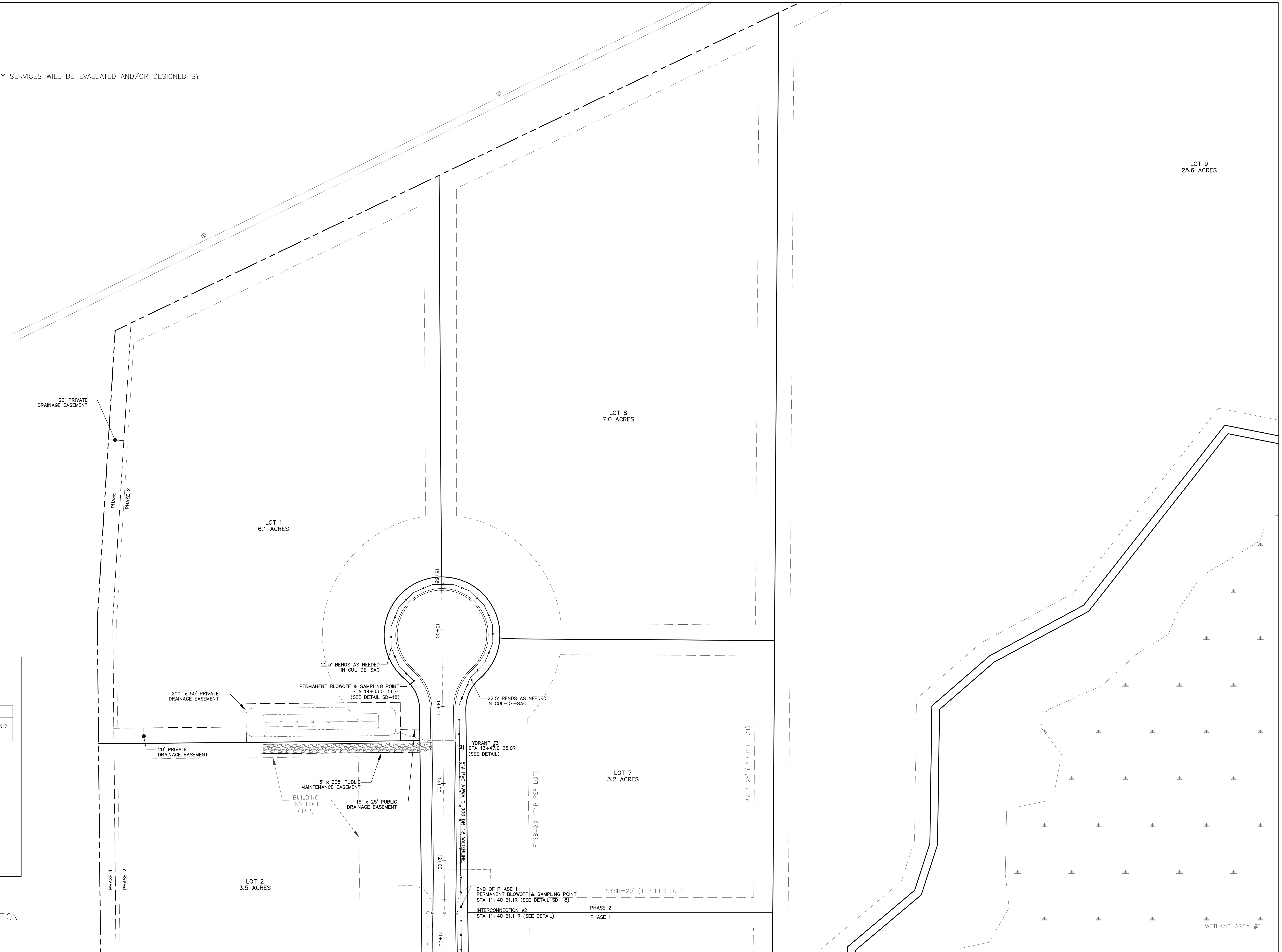
UTILITY PLAN – 1

SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	UP-1

SHEET 9

NOTES:

1. GAS, ELECTRIC AND TELECOMMUNICATIONS UTILITY SERVICES WILL BE EVALUATED AND/OR DESIGNED BY EACH RESPECTIVE PRIVATE UTILITY COMPANY.



DESCRIPTION:

INSTALL THE FOLLOWING IN THE CLARENCE SOLAR INDUSTRIAL PARK WITHIN THE TOWN OF CLARENCE, UNDER ECWA, BUILDER, CONTRACTOR, DEVELOPER (BCD) AGREEMENT

WATER MAIN (L.F.)			
8" PVC (AWWA C-900 DR-18) 1,920±	8" DIP (CLASS 52) --	TOTAL 1,920±	HYDRANTS 3

SIGNATURES:

EXECUTIVE ENGINEER OF ECWA ____________ DATE ______

TOWN ENGINEER, TOWN OF CLARENCE ____________ DATE ______

FIRE CHIEF ____________ DATE ______

ECWA NOTE:
CONTACT MARK JARMUZ PRIOR TO THE START OF CONSTRUCTION
716-685-8266
mjarmuz@ecwa.org

NOTES:
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REVISIONS	DATE	BY/CHK

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CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

UTILITY PLAN – 2

SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	UP-2

SHEET 10

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL DISTURBED AREAS AND SITE STOCKPILES ARE TO HAVE TEMPORARY VEGETATIVE COVER ESTABLISHED WITHIN 14 DAYS.
2. AFTER EACH RAINFALL EVENT OR WHENEVER WARRANTED, THE CONTRACTOR MUST INSPECT AND IF NECESSARY, REPAIR ALL EROSION CONTROL DEVICES.
3. THE CONTRACTOR SHALL USE ALL MEASURES APPROPRIATE TO LIMIT THE AMOUNT OF SEDIMENTS, DIRT AND MUD FROM TRACKING ONTO RESEARCH PARKWAY. CONTINUOUS SWEEPING MAY BE NECESSARY.
4. AFTER "FINAL STABILIZATION" HAS BEEN ACHIEVED, INCLUDING THE ESTABLISHMENT OF COMPETENT VEGETATION, THE CONTRACTOR IS TO REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES.

NOTES:

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CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

EROSION & SEDIMENT CONTROL PLAN – 1

SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	ESC–1

SHEET 11

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL DISTURBED AREAS AND SITE STOCKPILES ARE TO HAVE TEMPORARY VEGETATIVE COVER ESTABLISHED WITHIN 14 DAYS.
2. AFTER EACH RAINFALL EVENT OR WHENEVER WARRANTED, THE CONTRACTOR MUST INSPECT AND IF NECESSARY, REPAIR ALL EROSION CONTROL DEVICES.
3. THE CONTRACTOR SHALL USE ALL MEASURES APPROPRIATE TO LIMIT THE AMOUNT OF SEDIMENTS, DIRT AND MUD FROM TRACKING ONTO RESEARCH PARKWAY. CONTINUOUS SWEEPING MAY BE NECESSARY.
4. AFTER "FINAL STABILIZATION" HAS BEEN ACHIEVED, INCLUDING THE ESTABLISHMENT OF COMPETENT VEGETATION, THE CONTRACTOR IS TO REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES.

NOTES:

1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW

REVISIONS	DATE	BY/CHK

METZGER CIVIL ENGINEERING, PLLC
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CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

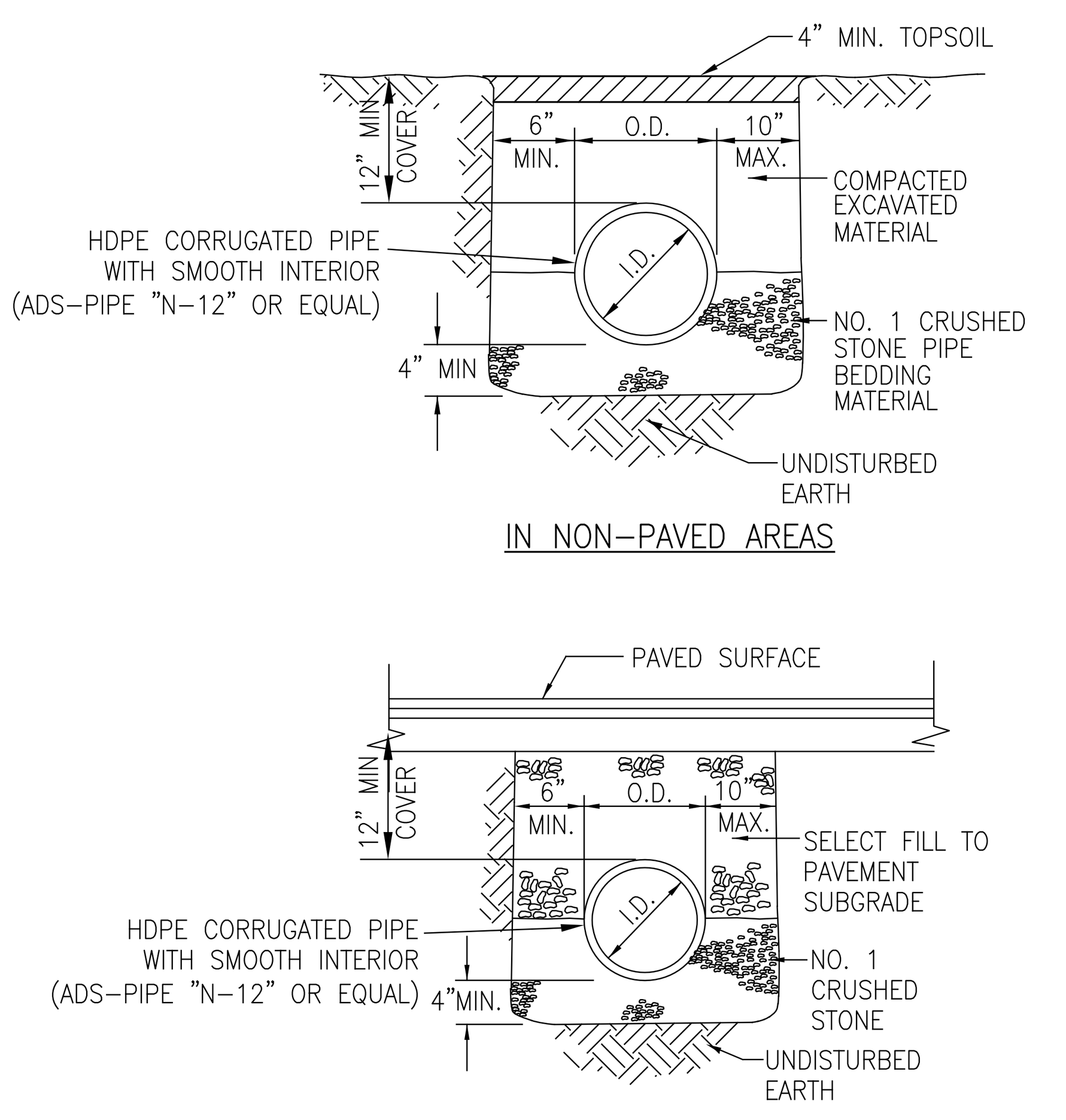
CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

EROSION & SEDIMENT CONTROL PLAN – 2

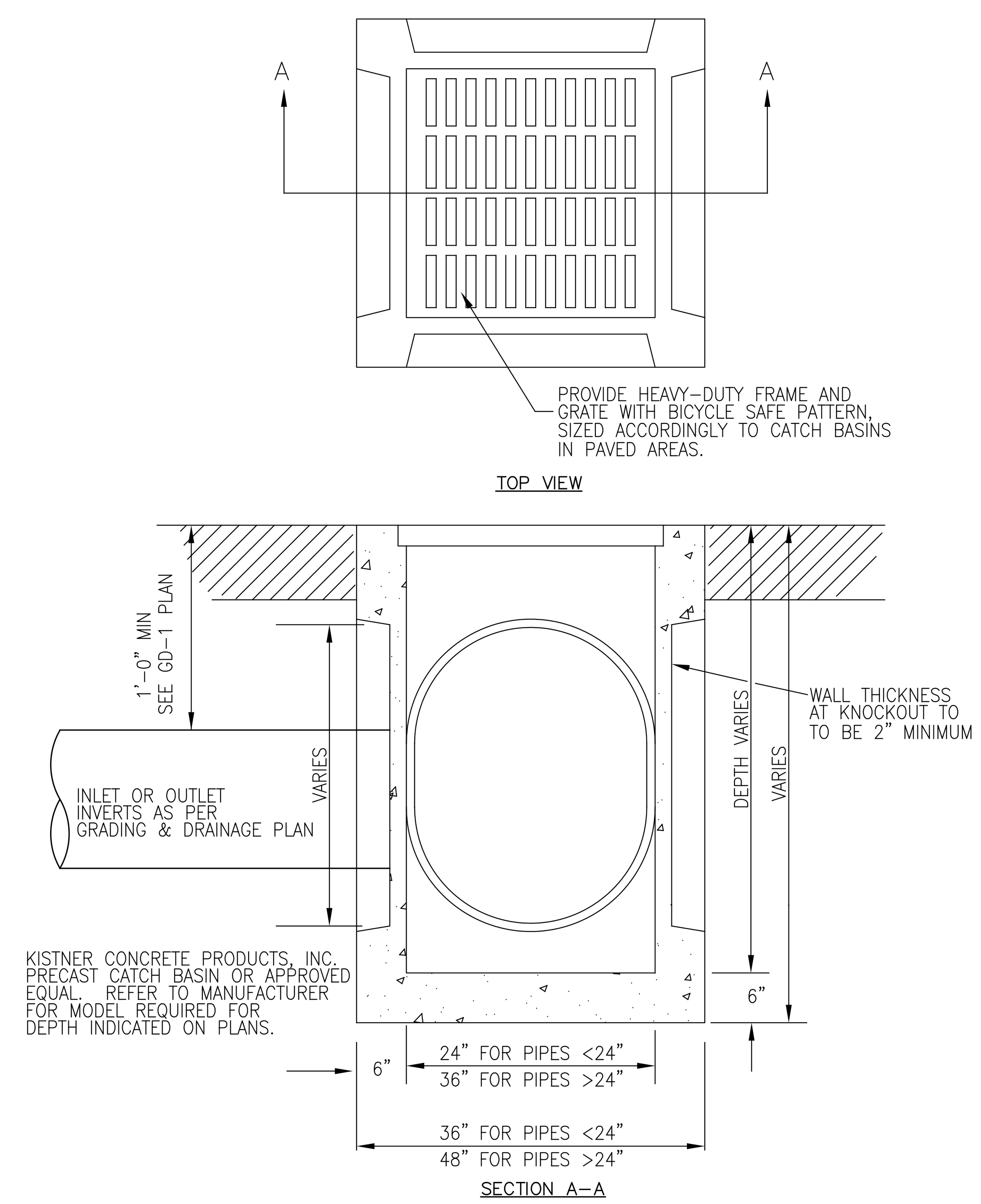
SCALE:	1" = 60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	ESC–2

SHEET 12



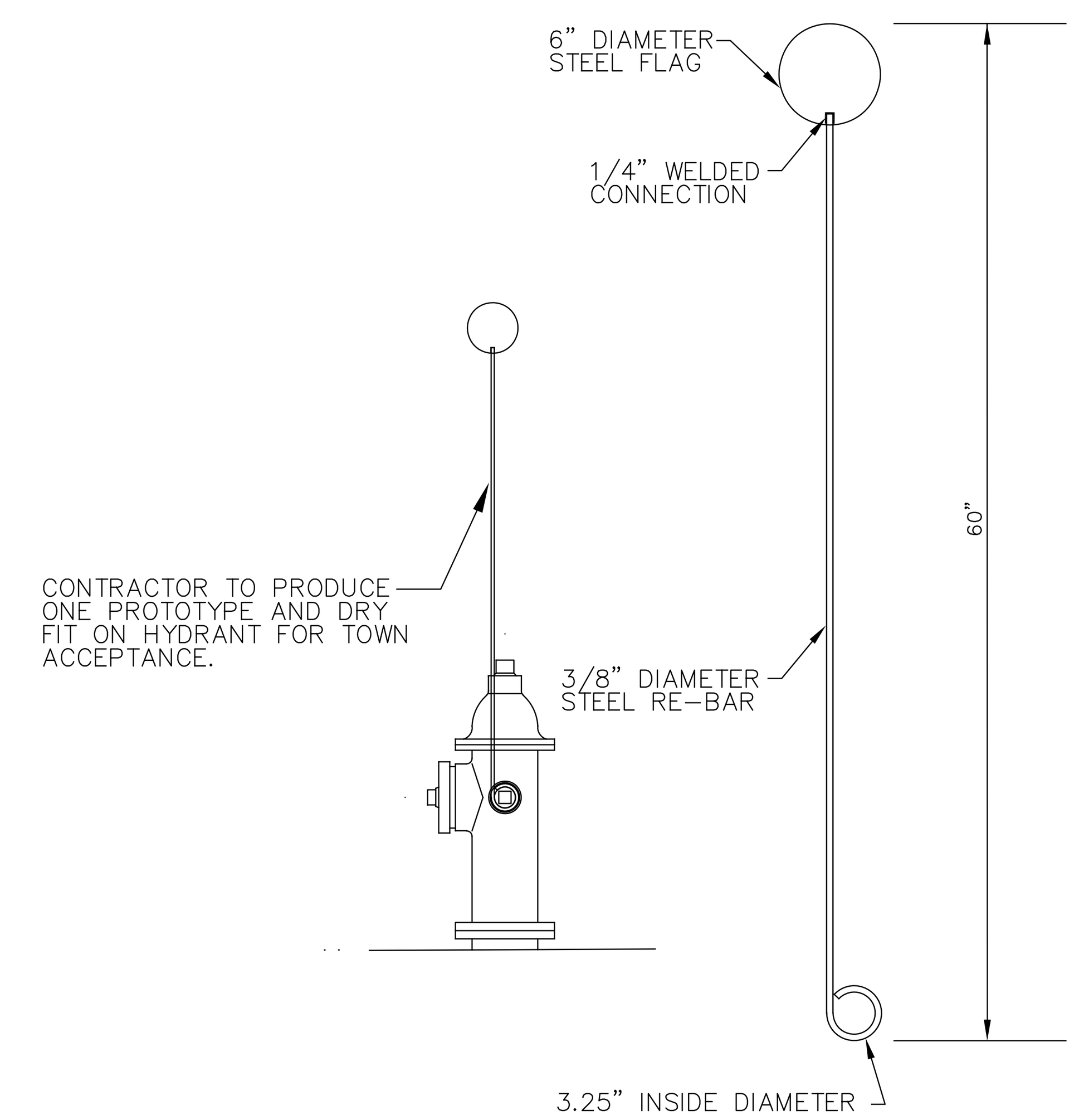
STORM SEWER TRENCH DETAILS

N.T.S.



CATCH BASIN DETAIL

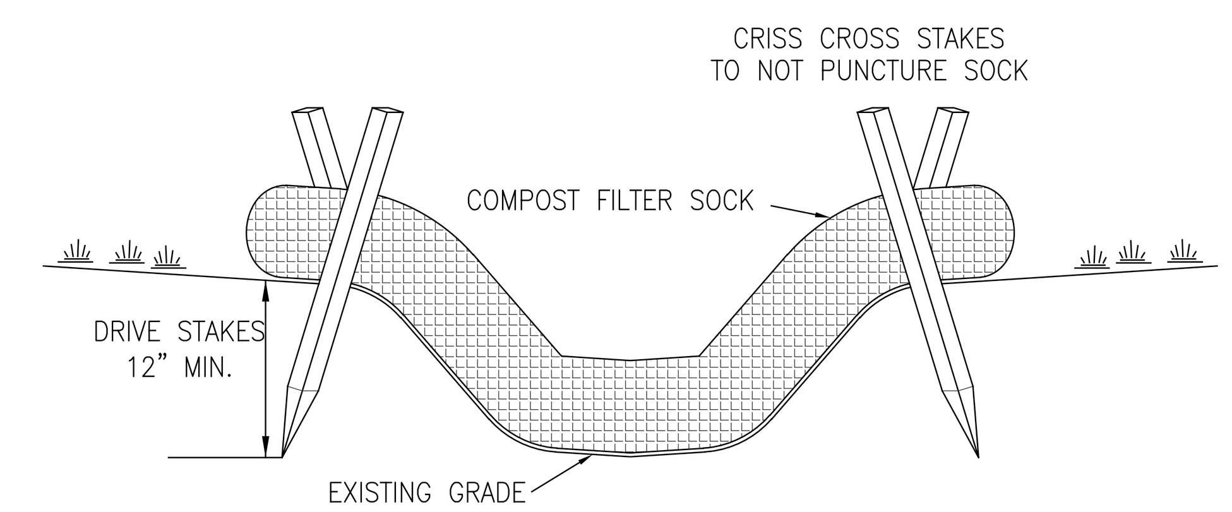
N.T.S.



NOTES:
1. PAINT ENTIRE ASSEMBLY WITH RED EPOXY PAINT.
2. CONTRACTOR TO PROVIDE A ¼" SPACER FOR THE HYDRANT MARKER RING.

HYDRANT MARKER DETAIL

N.T.S.



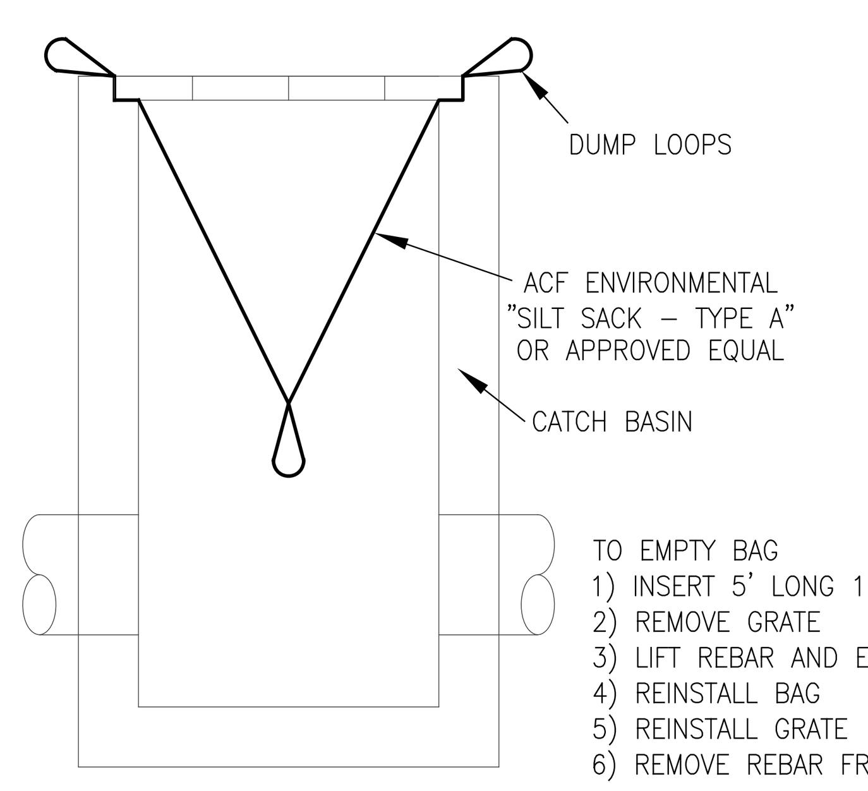
NOTES:

1. COMPOST FILTER SOCK MUST CONFORM TO NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (FILTREXX SILTSOXX OR APPROVED EQUAL).
2. INSTALL 3' LONG 2"x2" HARDWOOD STAKES AT 10' INTERVALS OR AS SPECIFIED BY THE SOCK MANUFACTURER.
3. WOODEN STAKES TO BE INSTALLED IN A CRISS CROSS PATTERN SO AS NOT TO PUNCTURE THE SOCK.
4. WOODEN STAKES TO BE DRIVEN AT LEAST 12" INTO GROUND.
5. ABUTTING ENDS MUST BE OVERLAPPED TO PROVIDE CONTINUOUS PROTECTION.
6. ALL SOCK SHALL BE 12".

MINIMUM SOCK SPACING	
SLOPE %	12 INCH SOCK
0-2%	250'
2-5%	225'
5-10%	125'

COMPOST FILTER SILT SOCK & CHECK DAM DETAIL

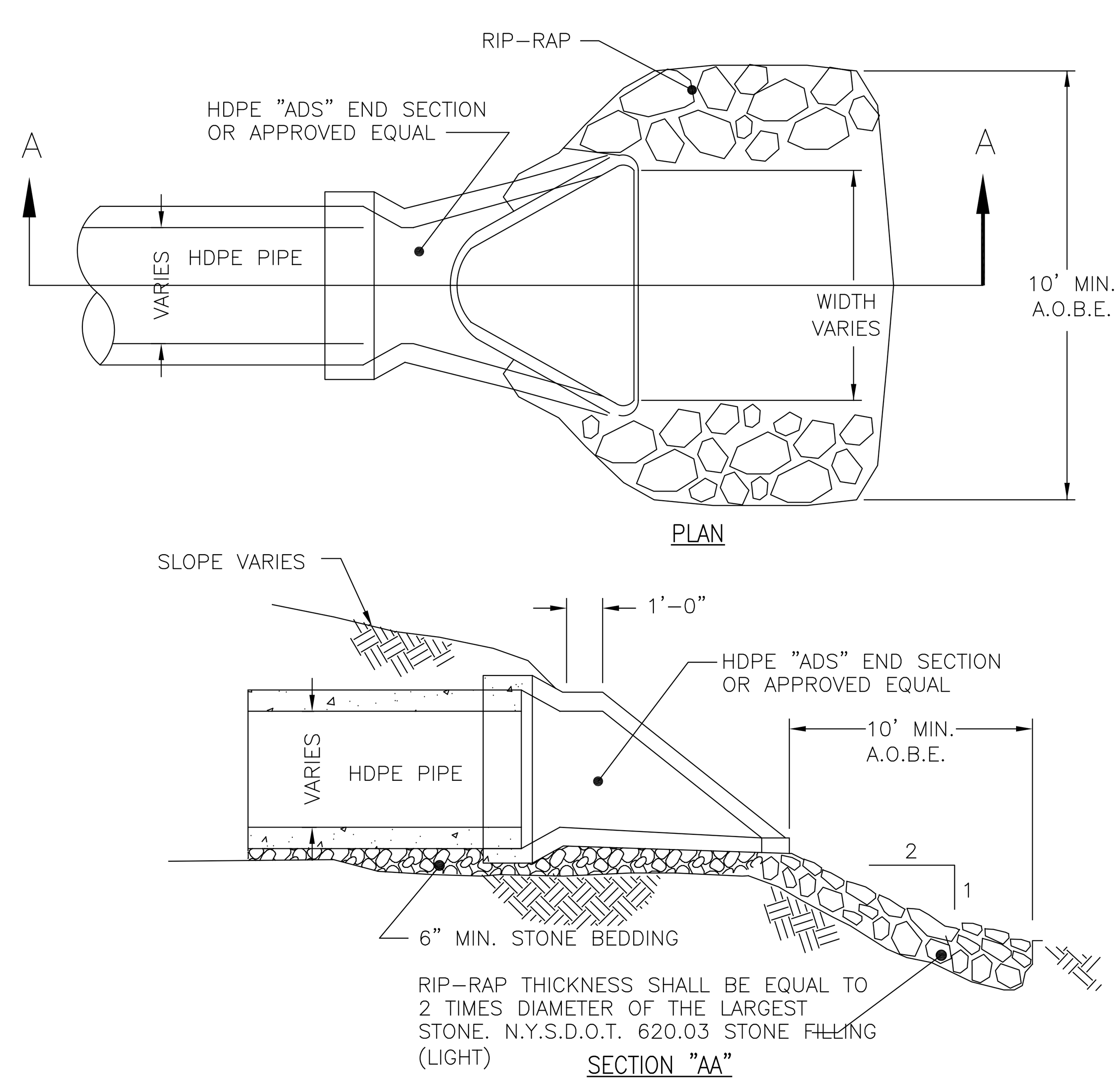
N.T.S.



TO EMPTY BAG
1) INSERT 5' LONG 1"ø REBAR INTO DUMP LOOPS
2) REMOVE GRATE
3) LIFT REBAR AND EMPTY BAG
4) REINSTALL BAG
5) REINSTALL GRATE
6) REMOVE REBAR FROM DUMP LOOPS

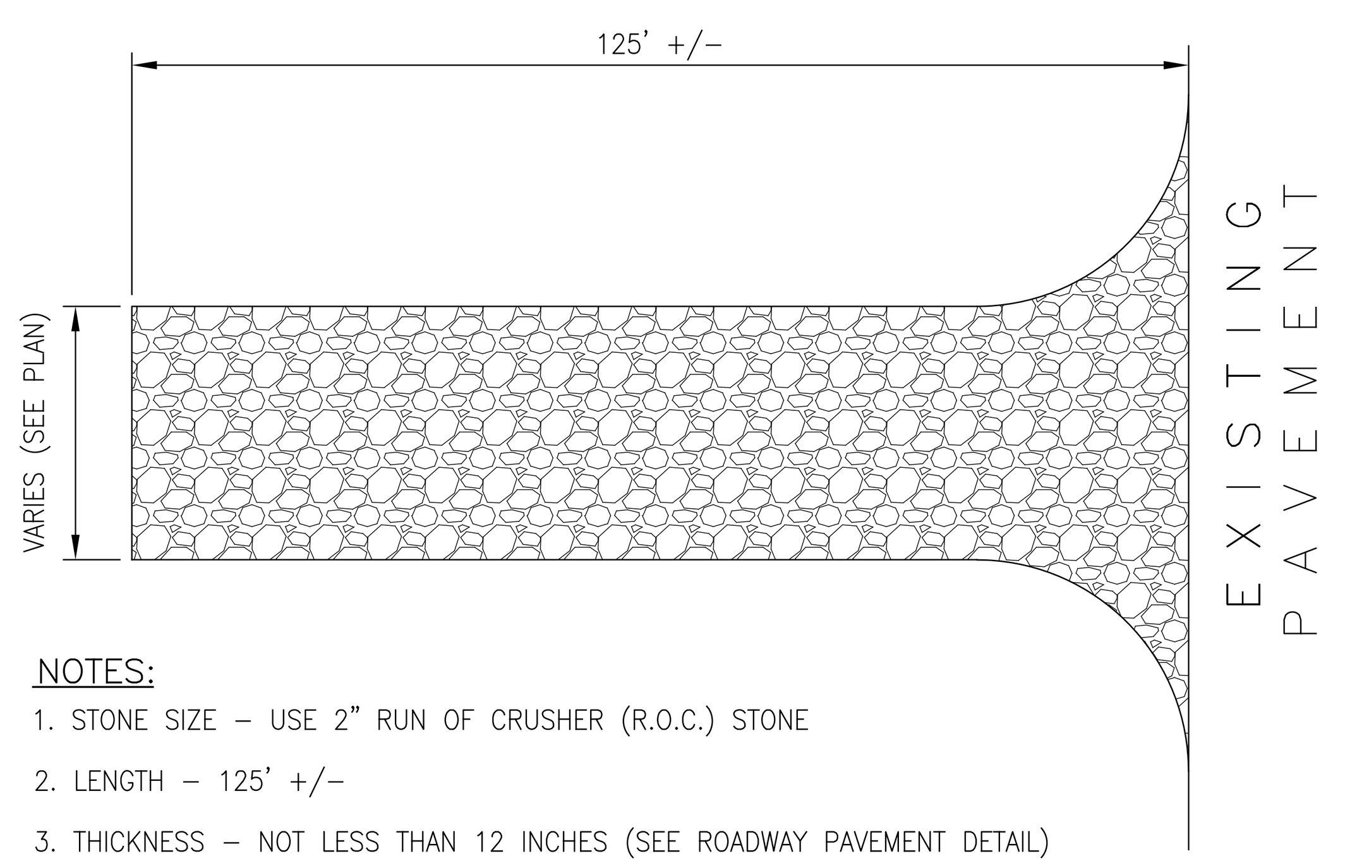
DI PROTECTION DETAIL

N.T.S.



END SECTION WITH RIP-RAP DETAIL

N.T.S.

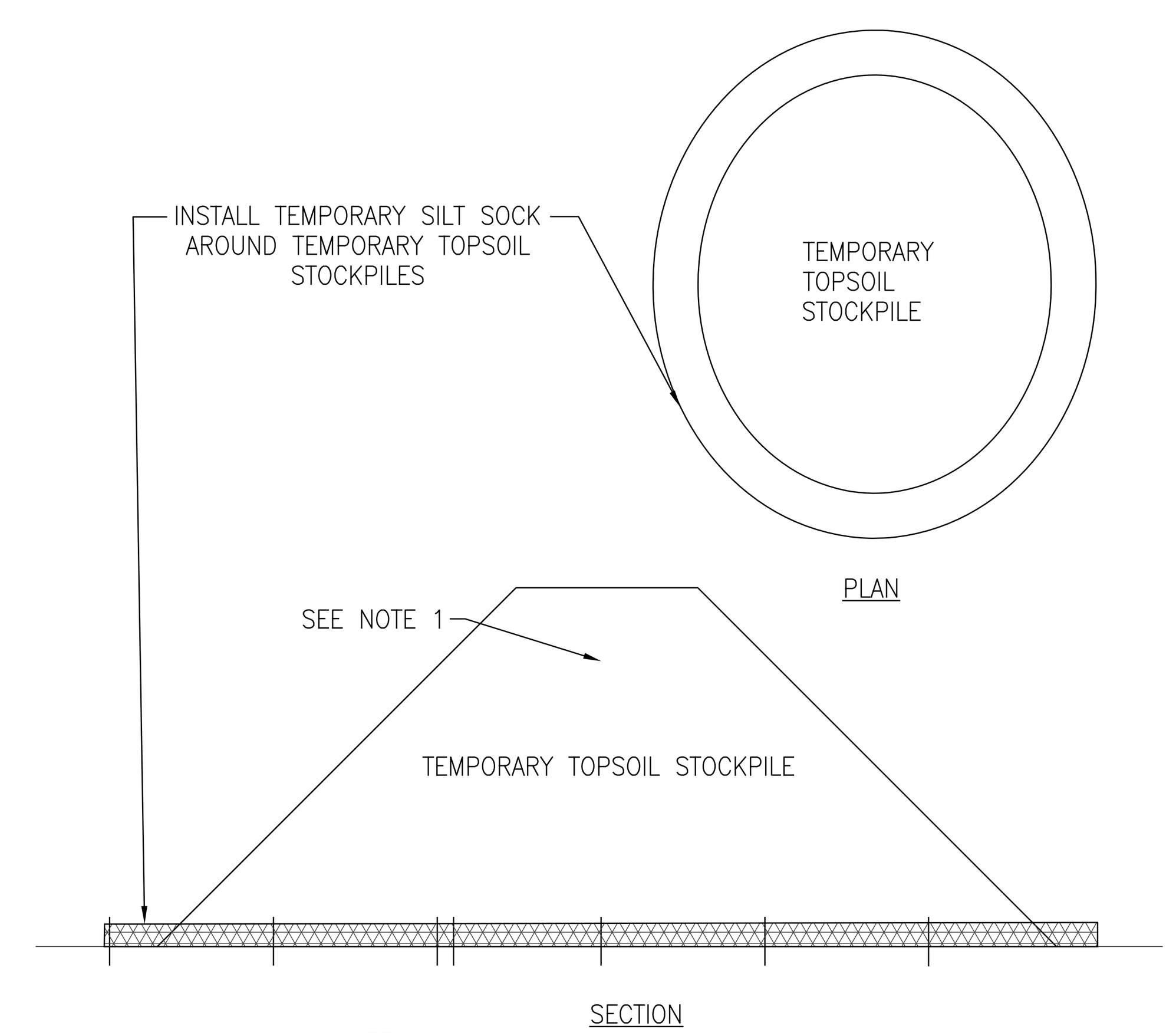


NOTES:

1. STONE SIZE - USE 2" RUN OF CRUSHER (R.O.C.) STONE
2. LENGTH - 125' +/-
3. THICKNESS - NOT LESS THAN 12 INCHES (SEE ROADWAY PAVEMENT DETAIL)
4. WIDTH - VARIES (SEE PLAN)
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE (SEE ROADWAY PAVEMENT DETAIL).
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

TYPICAL STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.

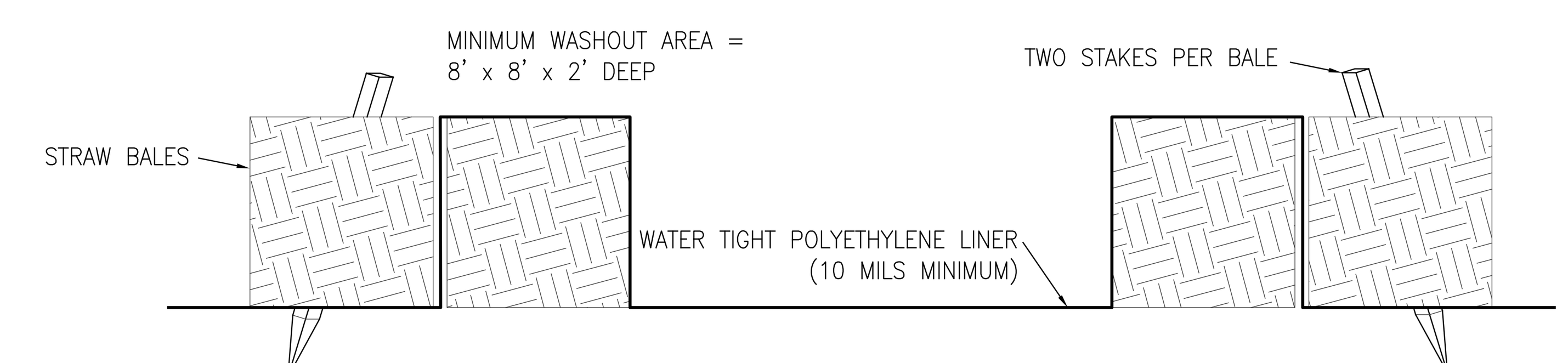


NOTE:

1) ESTABLISH TEMPORARY GRASS COVER ON TOPSOIL STOCKPILES IN ACCORDANCE WITH THE "SPDES GENERAL PERMIT FOR STORMWATER RUNOFF FROM CONSTRUCTION ACTIVITY, GP 0-20-001 OR THE CURRENT SPDES GENERAL PERMIT AT THE TIME OF CONSTRUCTION.

TEMPORARY TOPSOIL STOCKPILE

N.T.S.



CONCRETE WASHOUT SECTION

N.T.S.

NOTES:

1. CONCRETE WASHOUT BASIN TO CONFORM TO THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL DESIGN CRITERIA.
2. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY IS FILLED.
3. INSPECT WASHOUT FACILITY DAILY AND REPAIR LEAKING LINER AS NECESSARY.

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DRAWN BY:	JCM			
CHECKED BY:	ARH			
CAD FILE:	M2121			
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SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK · MICHAEL J. METZGER · 066788 · LICENSED PROFESSIONAL ENGINEER

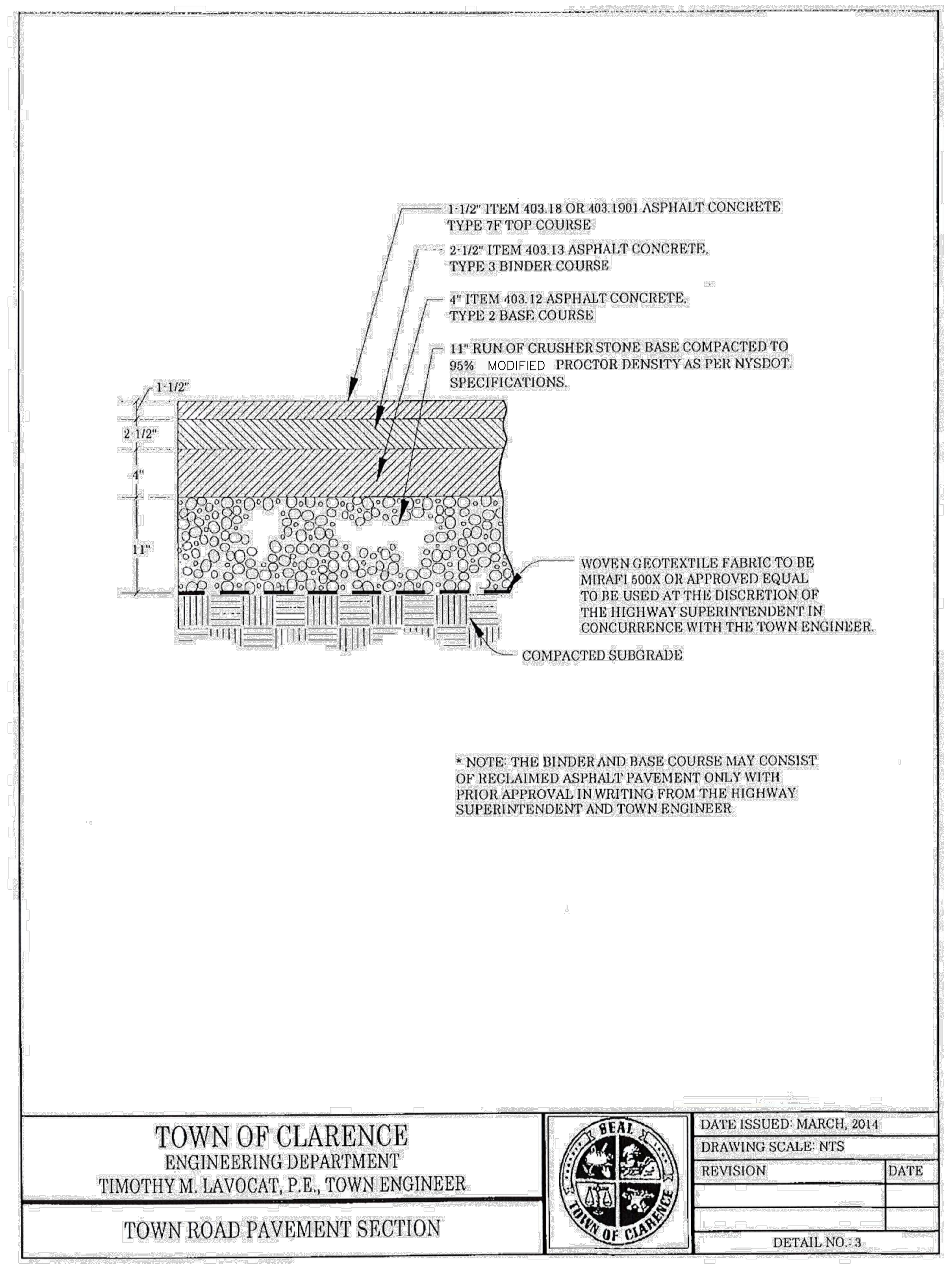
CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

SITE DETAILS – 1

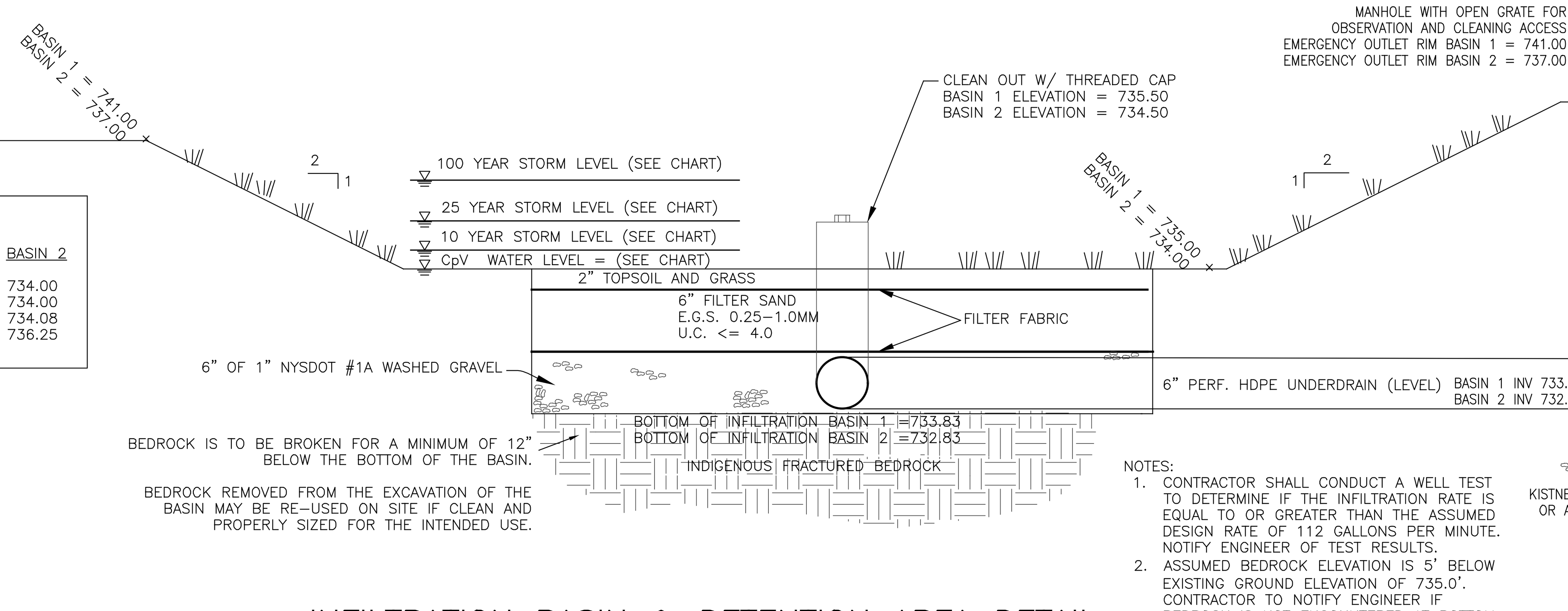
SCALE:	AS SHOWN
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	DT-1

SHEET 13



STORMWATER LEVELS:

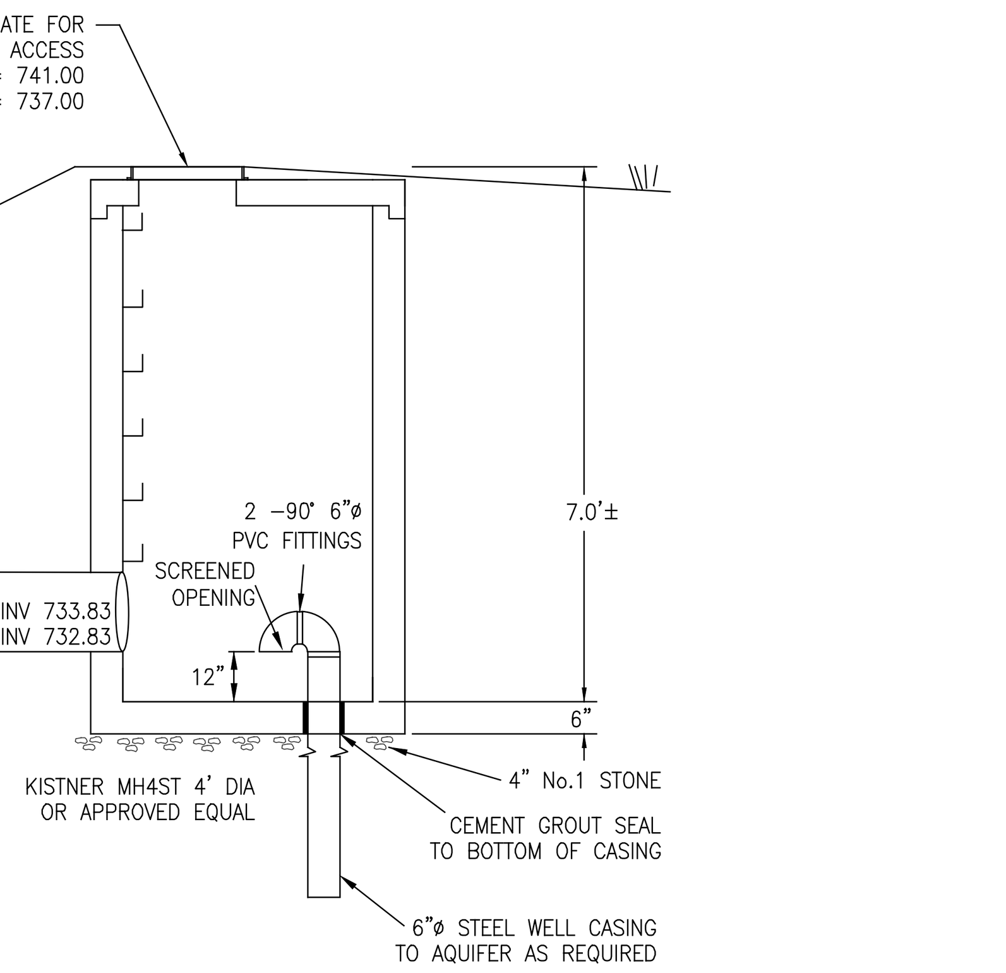
	BASIN 1	BASIN 2
1 YEAR:	735.00	734.00
10 YEAR:	735.00	734.00
25 YEAR:	735.58	734.08
100 YEAR:	740.33	736.25



INFILTRATION BASIN & DETENTION AREA DETAIL

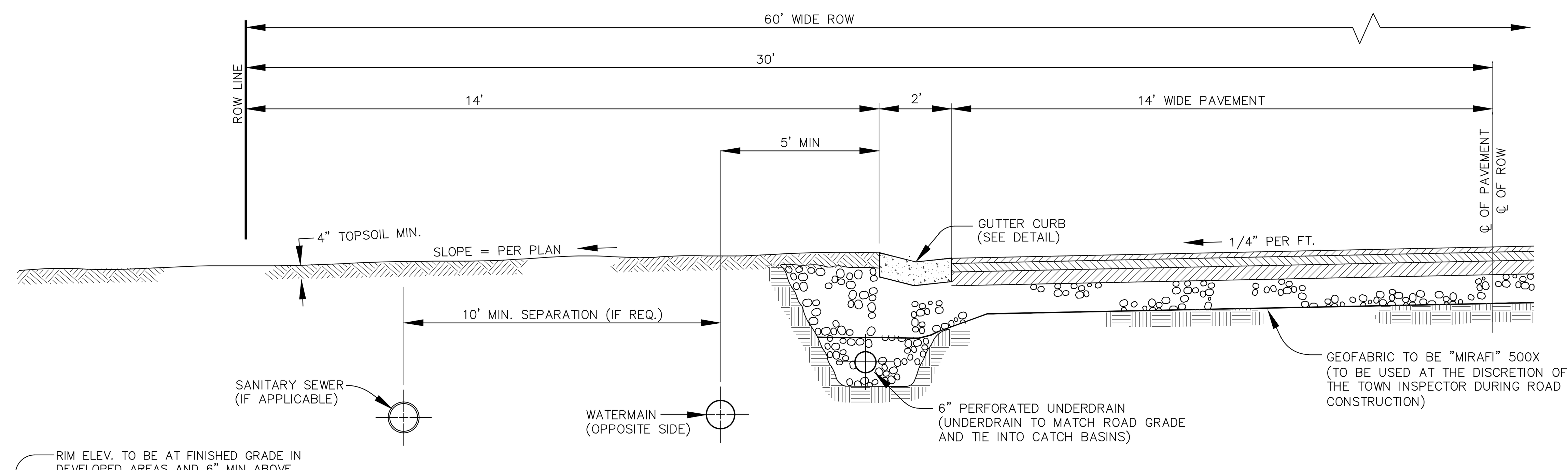
N.T.S

NOTES:
1. CONTRACTOR SHALL CONDUCT A WELL TEST TO DETERMINE IF THE INFILTRATION RATE IS EQUAL TO OR GREATER THAN THE ASSUMED DESIGN RATE OF 112 GALLONS PER MINUTE. NOTIFY ENGINEER OF TEST RESULTS.
2. ASSUMED BEDROCK ELEVATION IS 5' BELOW EXISTING GROUND ELEVATION OF 735.0'. CONTRACTOR TO NOTIFY ENGINEER IF BEDROCK IS NOT ENCOUNTERED AT BOTTOM DESIGN ELEVATION OF INFILTRATION BASIN.



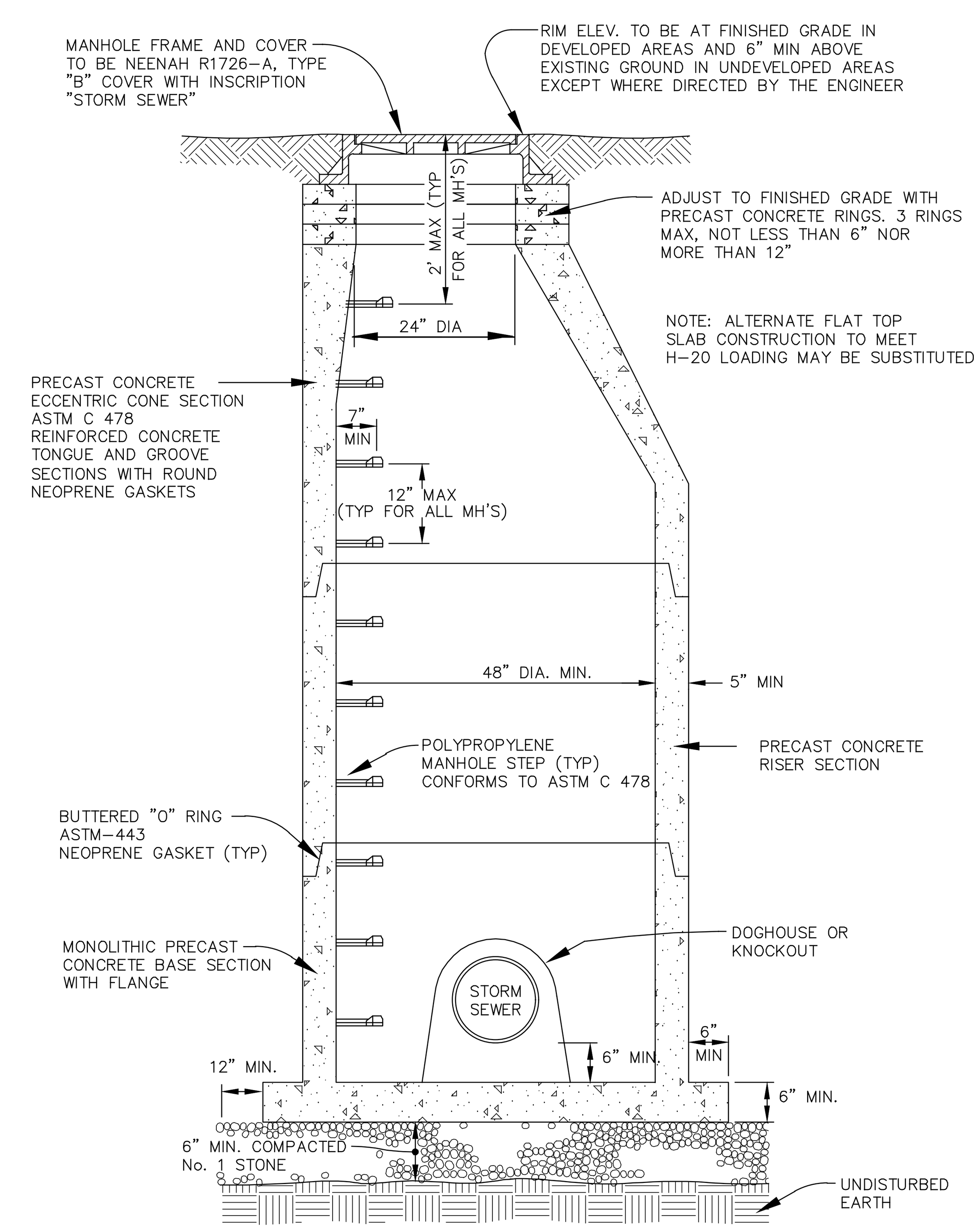
INJECTION WELL DETAIL

N.T.S.



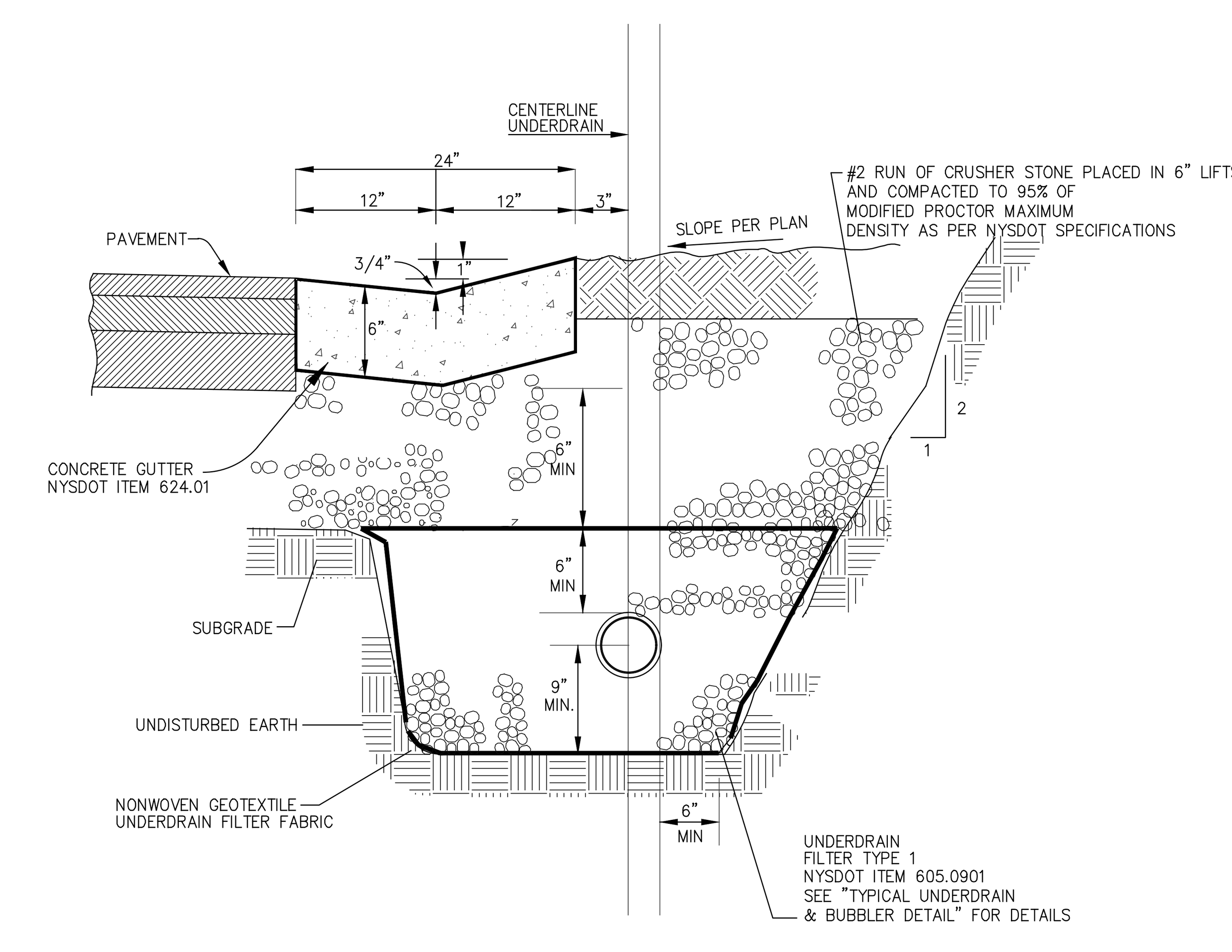
TYPICAL 60' ROW HALF SECTION

N.T.S



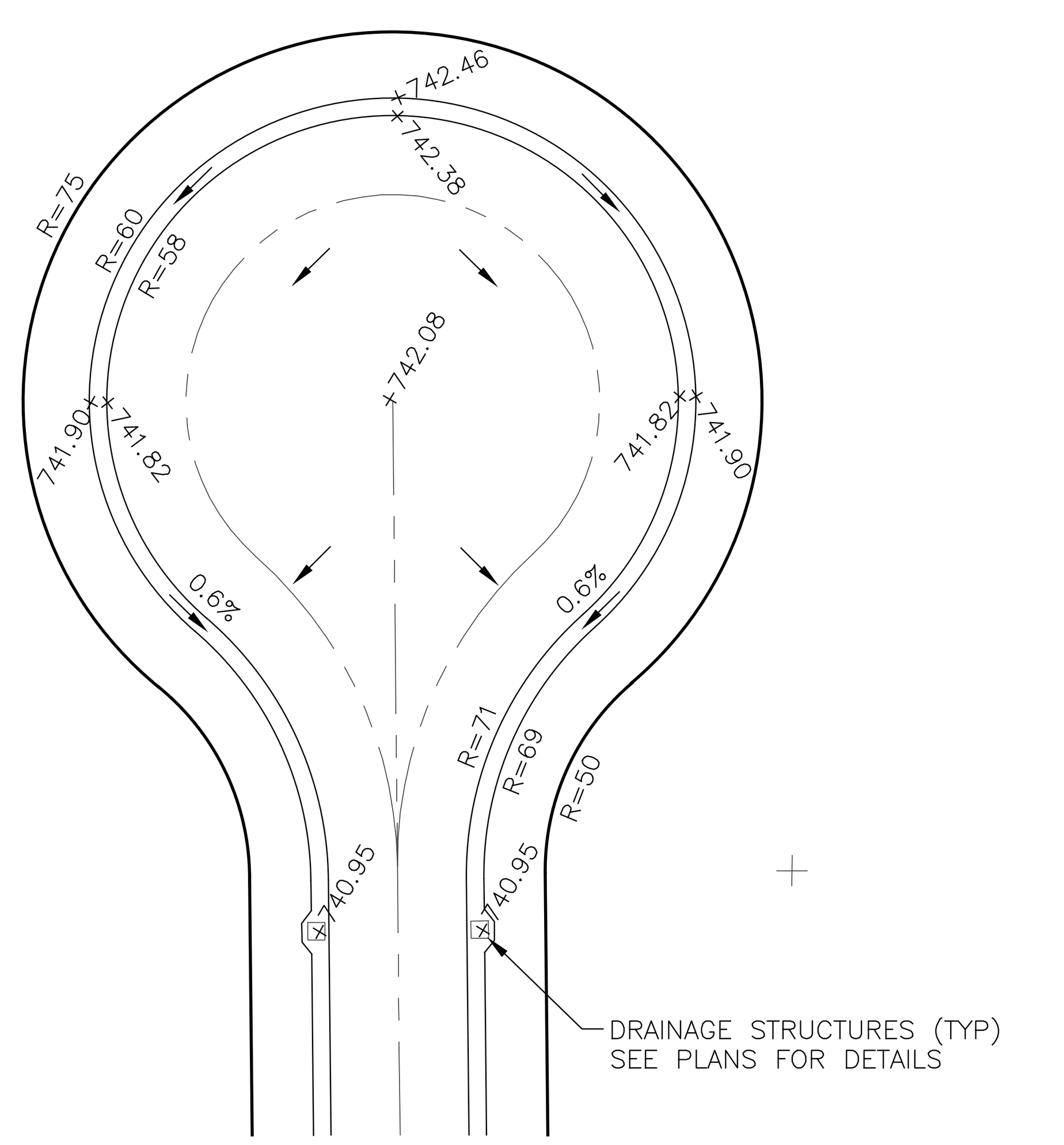
STANDARD PRECAST CONCRETE STORM MANHOLE

N.T.S



TYPICAL GUTTER CURB DETAIL

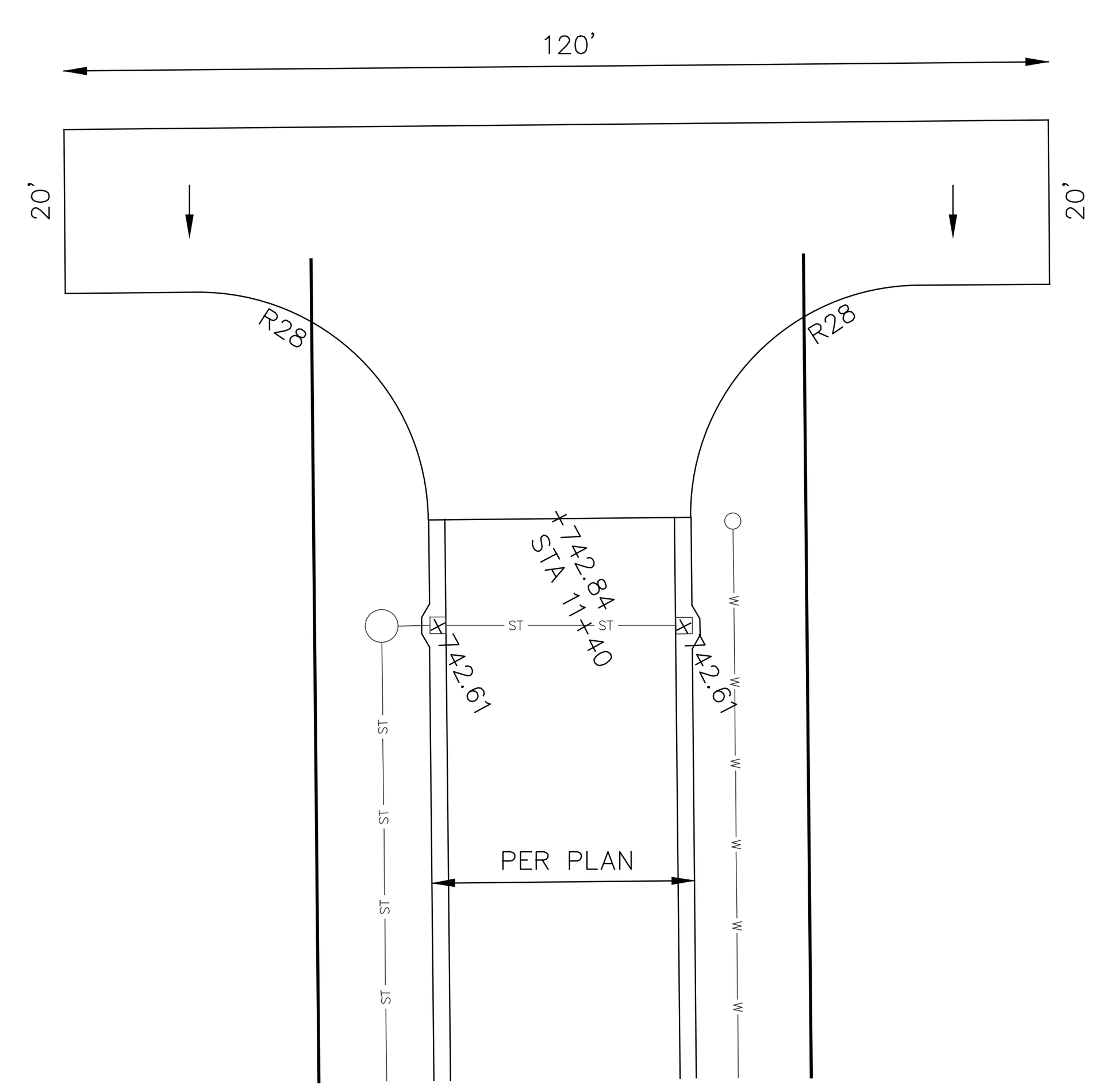
N.T.S



NOTES:
1. ENTIRE CUL-DE-SAC TO BE PAVED. NO INTERNAL ISLANDS SHALL BE PLACED.
2. THE EXTERIOR EDGE OF CURBING SHALL BE 1" HIGHER THAN THE INSIDE EDGE OF THE CURBING IN ACCORDANCE WITH THE "TYPICAL GUTTER CURB DETAIL ON THIS SHEET.
3. SLOPE OF GUTTER CURB AROUND PERIMETER OF CUL-DE-SAC SHALL BE 0.6%.

CUL-DE-SAC DETAIL

NTS



NOTES:
1. TEMPORARY TURNAROUND SECTION TO BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN OF CLARENCE TOWN ROAD PAVEMENT SECTION (ABOVE).

TEMPORARY TURNAROUND DETAIL (END OF PHASE 1)

NTS

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DRAWN BY: JCM				
CHECKED BY: ARH				
CAD FILE: M2121				
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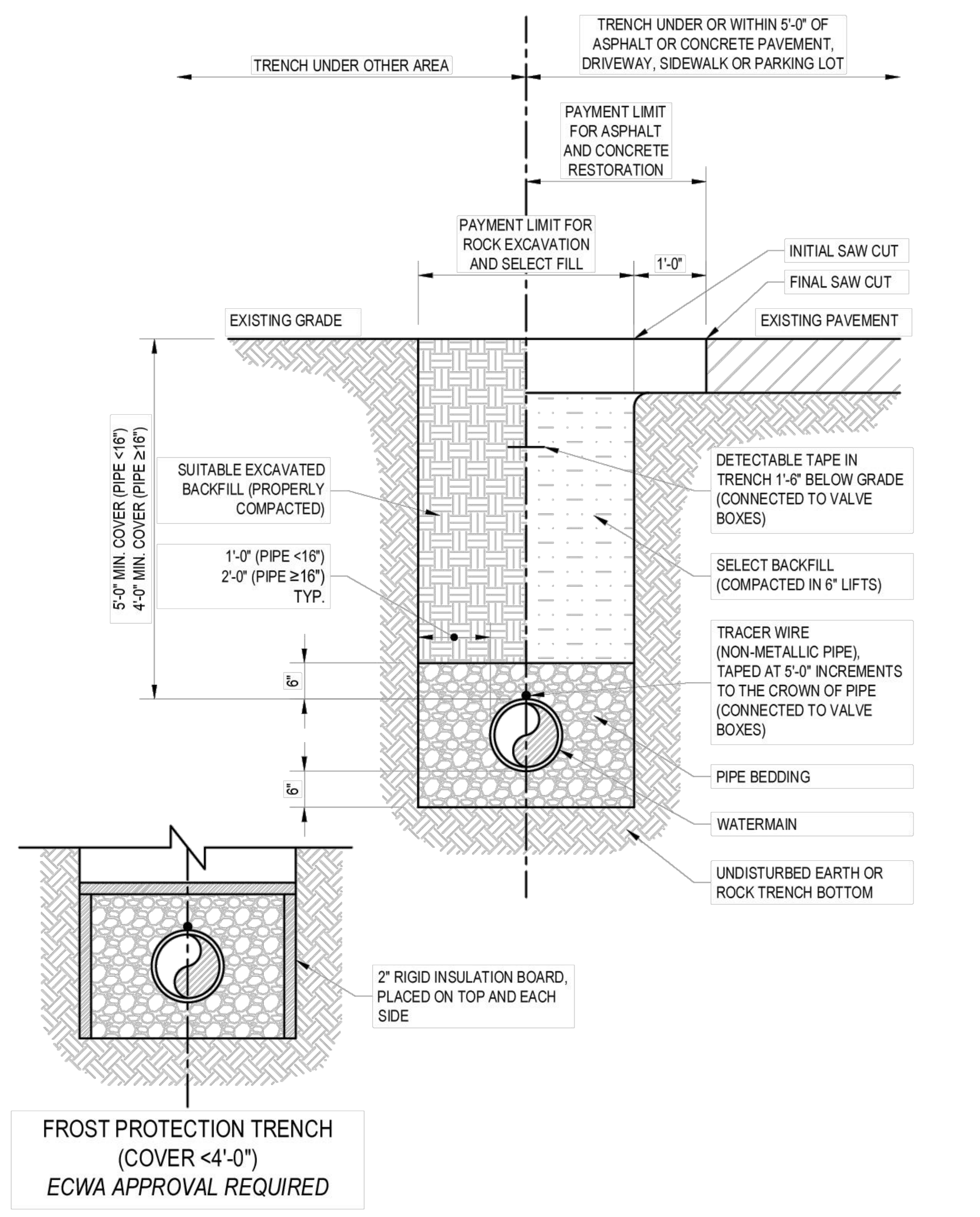
CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

SITE DETAILS – 2

SCALE: AS SHOWN
DATE: AUGUST 1, 2024
JOB NO: M-2121
DRAWING NO: DT-2
SHEET 14

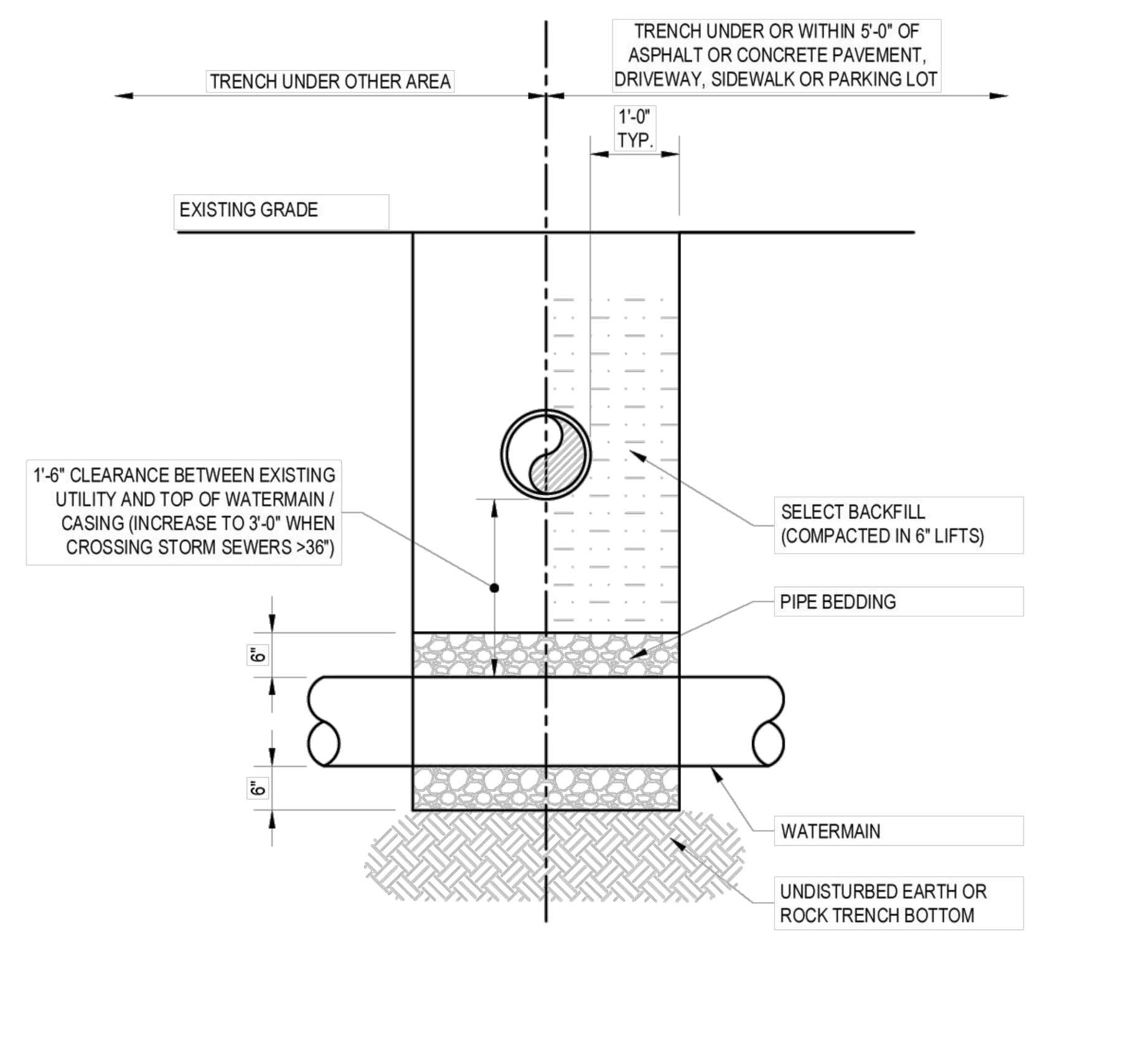


TYPICAL TRENCH DETAIL

SCALE: NTS

Revision: 2024-01

Detail: SD-01



NOTES:

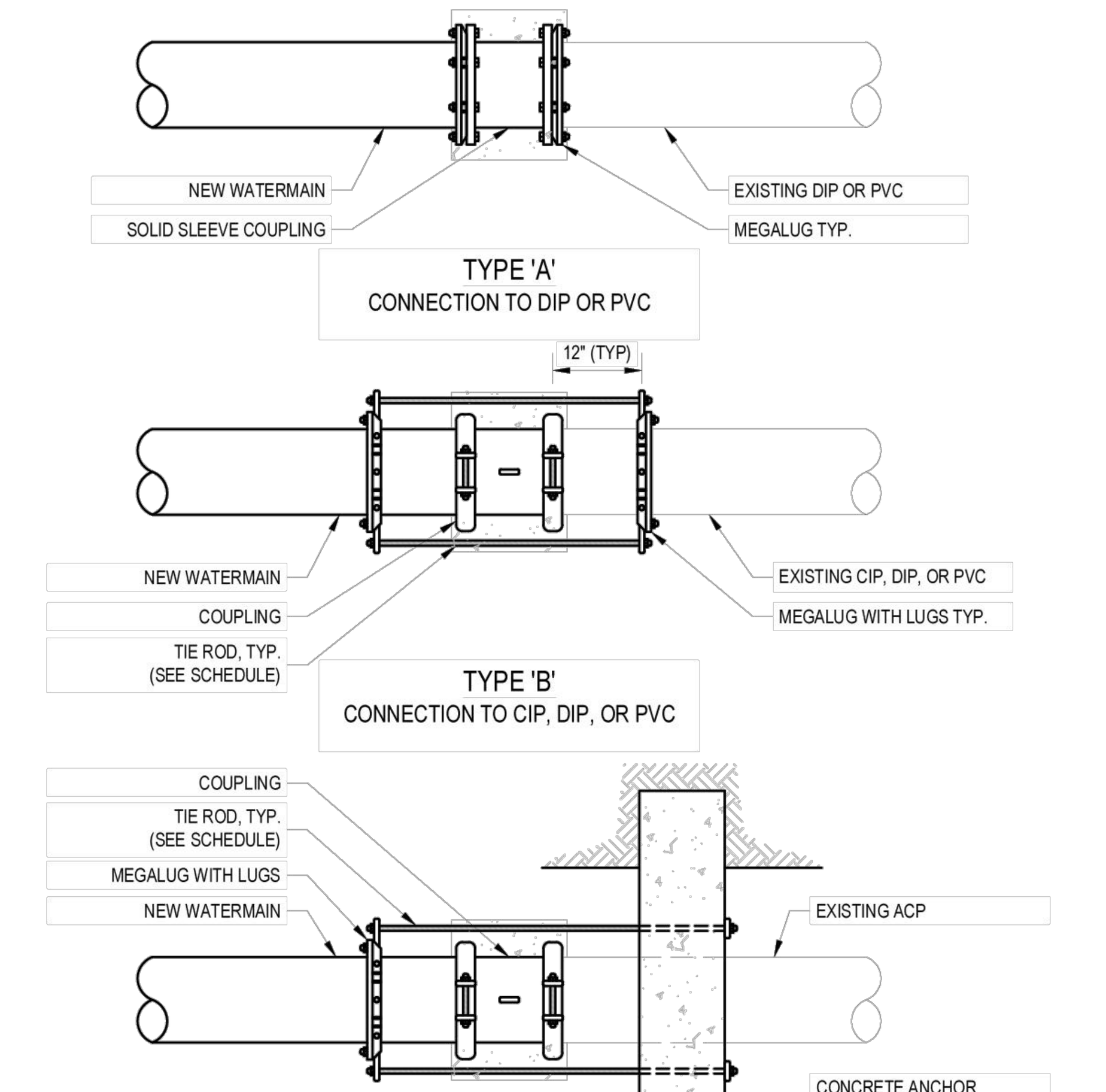
1. ALL EXISTING UTILITIES MUST BE SUPPORTED WITH APPROPRIATE CHAINS / STRAPS DURING CONSTRUCTION OF THE NEW WATERMAIN. CONTRACTOR IS REQUIRED TO COORDINATE WITH THE OWNER FOR THEIR PREFERRED SUPPORT REQUIREMENTS.
2. WHEN CROSSING A SEWER LINE WITH NEW WATERMAIN (AND WITHOUT A CASING PIPE), ONE FULL LENGTH (18'-0" MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWER.
3. IF CASING PIPE IS USED, IT SHALL EXTEND 5'-0" BEYOND THE EXISTING PIPE OUTER EDGE IN EACH DIRECTION, AND NO WATERMAIN JOINTS OR FITTINGS SHALL BE LOCATED WITHIN 4'-0" FROM THE CASING PIPE EDGE.

PIPE CROSSING DETAIL

SCALE: NTS

Revision: 2024-01

Detail: SD-02



NOTES:

1. VALVES, TEES, AND FITTINGS MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE. PIPE AND FITTINGS MUST BE SUPPORTED ON FIRM BEDDING (4"x8"x16" SOLID CONCRETE BLOCKING AS REQUIRED) AND BACKFILLED CAREFULLY.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

TIE ROD SCHEDULE

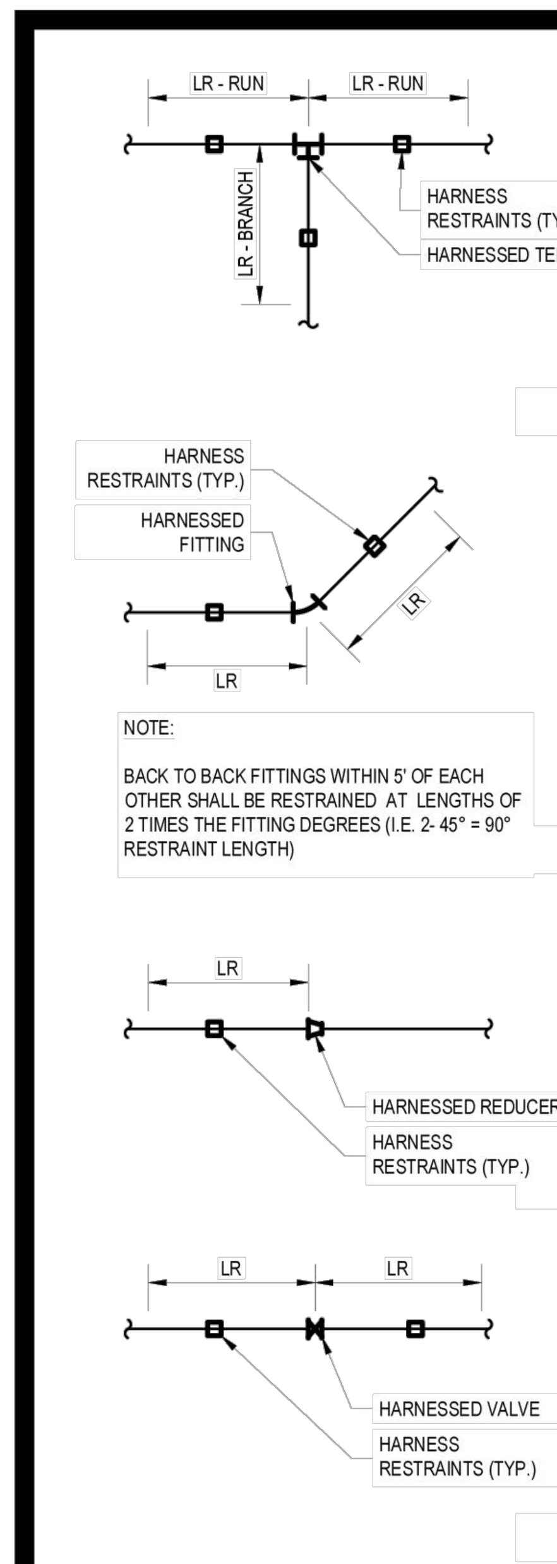
PIPE SIZE	THREAD ROD #	Ø

TYPICAL CONNECTION TO EXISTING WATERMAIN

SCALE: NTS

Revision: 2024-01

Detail: SD-08



TEE SIZE (RUN x BRANCH)	LR RUN	LR BRANCH	TEE SIZE (RUN x BRANCH)	LR RUN	LR BRANCH
8"x6"	5'	40'	12"x10"	5'	80'
8"x8"	5'	70'	12"x12"	5'	110'
10"x6"	5'	30'	16"x6"	5'	20'
10"x8"	5'	60'	16"x8"	5'	35'
10"x10"	5'	90'	16"x10"	5'	65'
12"x6"	5'	20'	16"x12"	5'	90'
12"x8"	5'	55'	16"x16"	5'	145'

*LENGTHS SHOWN ARE MINIMUM REQUIREMENTS

TEES

PIPE SIZE	LR 90° BEND	45° BEND	22.5° BEND	11.25° BEND
6"	35'	15'	10'	5'
8"	40'	20'	10'	5'
10"	55'	25'	15'	10'
12"	60'	30'	15'	10'
16"	80'	35'	20'	10'

*LENGTHS SHOWN ARE MINIMUM REQUIREMENTS

NOTE:

BACK TO BACK FITTINGS WITHIN 5' OF EACH OTHER SHALL BE RESTRAINED AT LENGTHS OF 2 TIMES THE FITTING DEGREES (I.E. 2- 45° = 90° RESTRAINT LENGTH)

BENDS

REDUCER SIZE	LR	REDUCER SIZE	LR
6"x4"	40'	12"x8"	75'
8"x4"	70'	12"x10"	40'
8"x6"	45'	16"x6"	150'
10"x6"	75'	16"x8"	130'
10"x8"	40'	16"x10"	105'
12"x6"	100'	16"x12"	75'

*LENGTHS SHOWN ARE MINIMUM REQUIREMENTS

REDUCERS

REDUCER SIZE	LR
4"	55'
6"	75'
8"	100'
10"	115'
12"	140'
16"	175'

*LENGTHS SHOWN ARE MINIMUM REQUIREMENTS

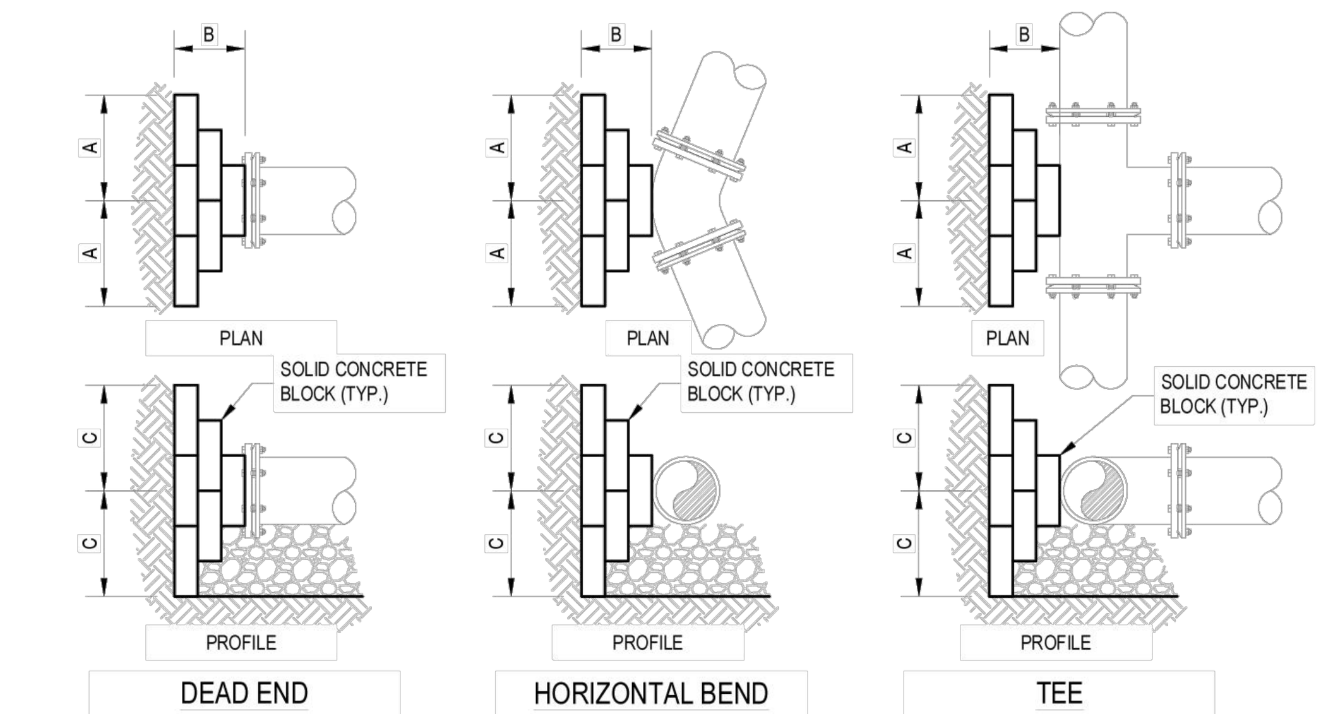
VALVES / END CAPS

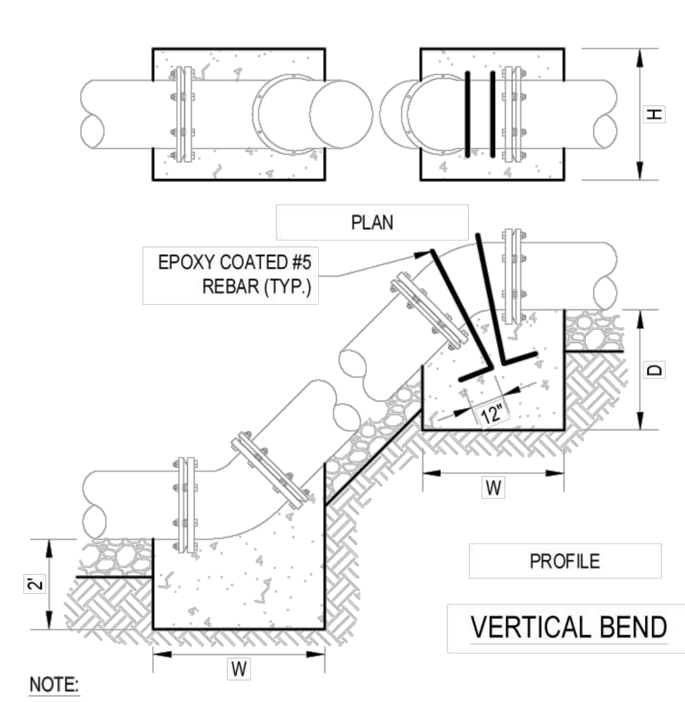
RESTRAINED JOINT SCHEDULE

SCALE: NTS

Revision: 2024-01

Detail: SD-09





PIPE SIZE	90° BEND, TEE, OR DEAD END A	B	C	45° BEND A	B	C
6"	1.5'	1.0'	0.5'	0.75'	1.0'	0.5'
8"	1.5'	1.0'	0.75'	1.5'	1.0'	0.5'
10"	1.5'	1.5'	1.0'	1.5'	1.5'	0.75'
12"	2.0'	2.0'	1.0'	1.75'	1.75'	0.75'

PIPE SIZE	22.5° BEND A	B	C	11.25° BEND A	B	C
6"	0.5'	1.0'	0.5	0.5'	1.0'	0.5
8"	0.75'	1.0'	0.5'	0.5'	1.0'	0.5'
10"	1.0'	1.5'	0.75'	1.0'	1.0'	0.75'
12"	1.25'	1.75'	0.75'	1.25'	1.25'	0.75'

PIPE SIZE	VERTICAL BEND UP D	H	W	VERTICAL BEND DOWN D	H	W
6"	2.0'	5.0'	3.0'	3.5'	3.5'	3.0'
8"	2.0'	6.0'	4.0'	4.5'	4.5'	4.0'
10"	2.0'	6.25'	4.5'	4.75'	4.75'	4.5'
12"	2.0'	6.5'	5.0'	5.0'	5.0'	5.0'

*LENGTHS SHOWN ARE MINIMUM REQUIREMENTS

NOTE:

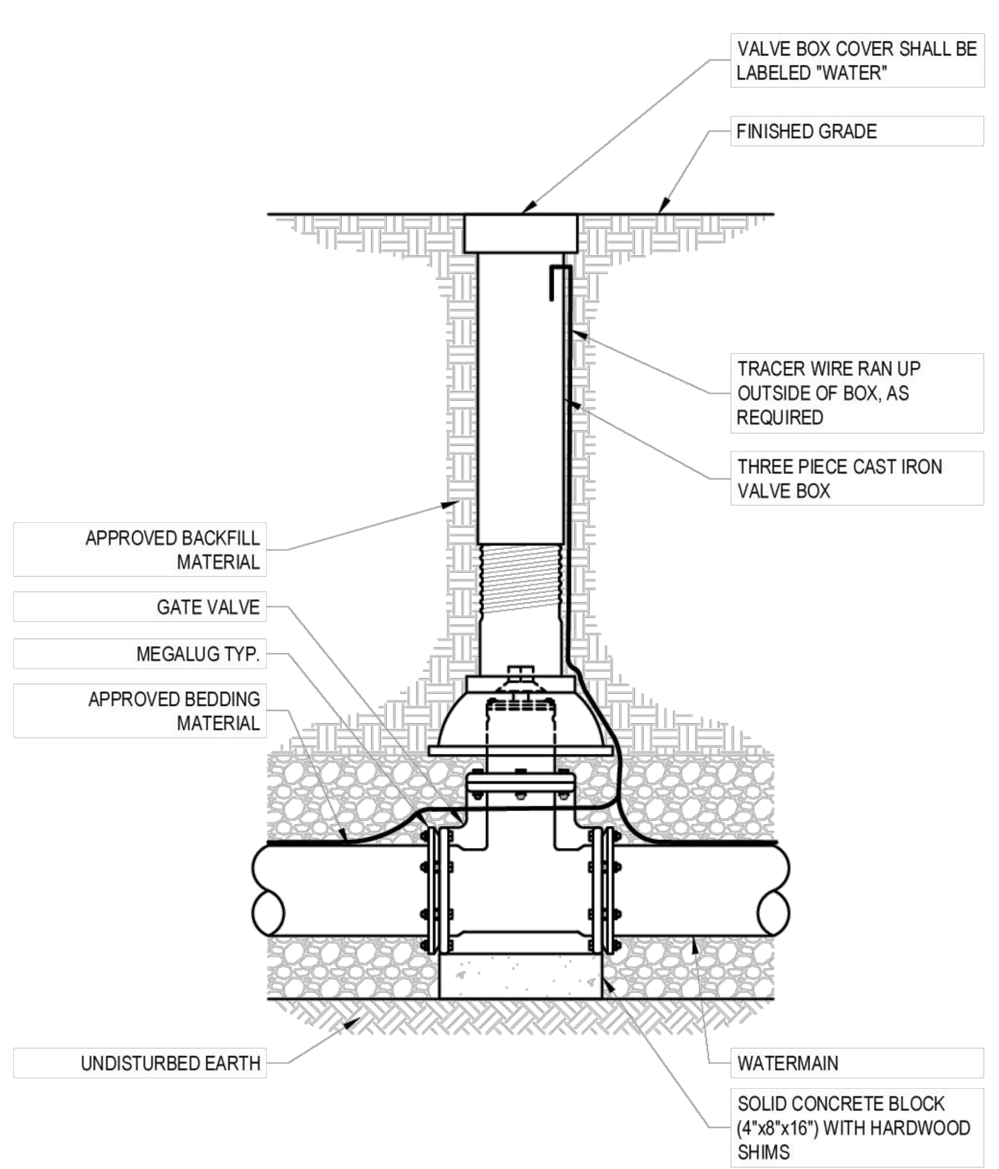
FULL CONCRETE THRUST BLOCKS AS SHOWN ARE REQUIRED WHEN THRUST RESTRAINT IS NOT PROVIDED BY OTHER MEANS SUCH AS MJ RESTRAINTS

THRUST BLOCKS

SCALE: NTS

Revision: 2024-01

Detail: SD-10



NOTES:

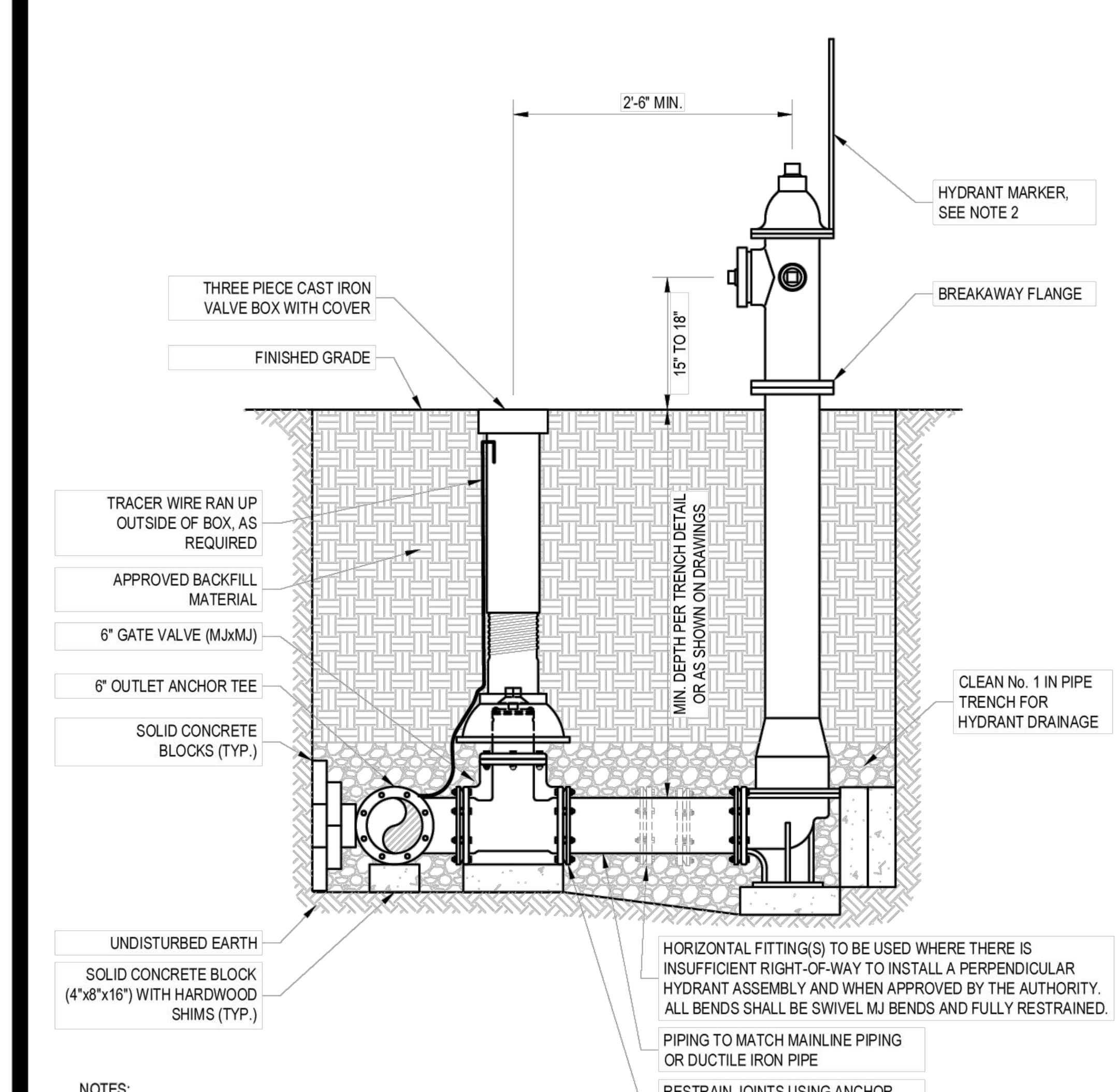
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL AND VERTICALLY PLUMB.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

GATE VALVE SETTING

SCALE: NTS

Revision: 2024-01

Detail: SD-12



NOTES:

1. HYDRANT RISER SHALL BE INSTALLED PLUMB
2. FOR WATERMAIN REPLACEMENT PROJECTS, RELOCATE EXISTING MARKERS TO NEW HYDRANTS. MUNICIPALITY SHALL BE RESPONSIBLE TO PROVIDE ANY NEW HYDRANT MARKERS AS NEEDED. CONTRACTOR TO COORDINATE WITH ALL MUNICIPALITIES AND FIRE DISTRICTS.
3. HYDRANT FACE TO BE A MINIMUM OF 3'-0" FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5'-0" FROM ALL EDGE OF PAVEMENT.

HYDRANT ASSEMBLY INSTALLATION

SCALE: NTS

Revision: 2024-01

Detail: SD-16

DESCRIPTION:

INSTALL THE FOLLOWING IN THE CLARENCE SOLAR INDUSTRIAL PARK WITHIN THE TOWN OF CLARENCE, UNDER ECWA, BUILDER, CONTRACTOR, DEVELOPER (BCD) AGREEMENT

WATER MAIN (L.F.)			
8" PVC (AWWA C-900 DR-18) 1,920±	8" DIP (CLASS 52) --	TOTAL 1,920±	HYDRANTS 3

SIGNATURES:

EXECUTIVE ENGINEER OF ECWA ____________ DATE ________

TOWN ENGINEER, TOWN OF CLARENCE ____________ DATE ________

FIRE CHIEF ____________ DATE ________

ECWA NOTE:
CONTACT MARK JARMUZ PRIOR TO THE START OF CONSTRUCTION
716-685-8266
mjarmuz@ecwa.org

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

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STATE OF NEW YORK · MICHAEL L. METZGER · 066786 · LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

UTILITY DETAILS - 1

SCALE:	AS SHOWN
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	DT-3

SHEET 15

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain all necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTORS work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority only shall operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut- down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. GEN_1	
		DATE 3/05	REVISED 11/21

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item. Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be returned to the Erie County Water Authority Service Center, 3030 Union Road Cheektowaga.
19. The CONTRACTOR shall place temporary pavement (consisting of hot mix asphalt of cold patch) in all trench excavation in traveled areas including driveways, sidewalks and parking areas.
20. The CONTRACTOR shall not restrict school bus access.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for approval.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. GEN_2	
		DATE 3/05	REVISED 10/21

Erie County Water Authority Design Manual (10–06)

3.16 Pressure and Leakage Testing Procedure

A. All pipelines shall be pressure and leakage tested in accordance with the methods described in ECWA's standard specifications and AWWA standard C600. Refer to AWWA C600 for specific conditions not covered in the ECWA specification.

B. In the event of a conflict between ECWA standard specification and AWWA standard C600, the more stringent of any requirement shall apply. The methods described in the ECWA standard specification applies to all pressure watermain.

C. The Engineer shall consider the following when determining the test pressure:

1. Test pressure shall be 170 psi at the low point along the watermain for pipe sizes through 12 inches. Test pressure shall be 150 psi for pipe sizes 16 inches and larger.
2. The test pressure shall not exceed valve, pipe or thrust–restraint pressures.
3. The test pressure shall not vary by more than (+ –) 5 psi for the duration of the test.

3.17 Disinfection

A. All new or repaired watermain shall be cleaned, chlorinated, flushed and bacteriologically tested in accordance with the methods described in ECWA's Standard Specification. This specification is based on AWWA standard C651, Disinfecting Water Mains. Refer to AWWA C651 for specific conditions not covered. In the event of a conflict between the ECWA Standard Specification and AWWA standard C651, the more stringent of any requirement shall apply. Existing mains shall be protected at all times from cross connections with watermains being chlorinated. Cross connection protection shall be achieved by use of a reduced pressure zone backflow preventer (RPZ).

B. Large diameter transmission mains may require the installation of temporary components to adequately provide for proper disinfection and disposal. These requirements shall be included on the design drawings.

C. Hydrants shall not be used as a source for taking samples for bacteriological testing.

GENERAL NOTES:

1) WHILE SEVERAL DRIVEWAY CULVERT PIPES ARE SHOWN HERE WITH PROPOSED INVERTS, ONLY THOSE APPROVED BY THE ENGINEER IN THE FIELD SHALL BE REPLACED

2) LAWN RESTORATION.
UPON INSTALLATION OF THE WATERLINE:
A) REPLACE AND COMPACT REMOVED SOILS TO AN ELEVATION 6" BELOW EXISTING GRADE.
B) INSTALL 6" OF TOPSOIL, SEED AND COVER WITH SMALL GRAIN STRAW MULCH OR HYDROSEED.
C) WATER DAILY AS NECESSARY UNTIL GRASS IS ESTABLISHED.

3) EXISTING DRIVEWAY RESTORATION SHALL BE PER DETAIL THIS SHEET

4) EROSION CONTROL NOTE: FABRIC SOCK SHALL BE INSTALLED AT THE DISTANCES SPECIFIED ON THE DETAIL ON SHEET D-1 AND UPSTREAM OF ALL CULVERT PIPES AND DITCH CROSSINGS

5) ADD FITTINGS AS NEEDED TO PROVIDE MINIMUM PIPE COVER WITHOUT EXCESSIVE DEPTH.

6) INSTALL NEW DRIVEWAY AND HYDRANT CROSSING CULVERTS SO INVERTS ARE 0.1' BELOW PROPOSED BOTTOM OF DITCH GRADE TO IMPROVE THE FLOW IN THE DITCH. INVERTS SHOWN SHALL BE ADJUSTED IN THE FIELD AS NECESSARY.

7) CONTRACTOR TO SECURE RIGHT OF WAY WORK PERMITS FROM THE NYSDOT AND ERIE COUNTY HIGHWAY DEPARTMENT PRIOR TO THE START OF ANY WORK IN THE RIGHT OF WAY.

8) NOTE REMOVED.

9) CONTRACTOR SHALL PROVIDE A WORK ZONE TRAFFIC CONTROL PLAN TO THE NYSDOT AND ERIE COUNTY HIGHWAY DEPARTMENT. THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL MEASURES DURING CONSTRUCTION IDENTIFIED IN THE PLAN. ALL WORK ZONE TRAFFIC CONTROL SHALL CONFORM TO THE 2009 MUTCD, THE CURRENT NYS SUPPLEMENT, NYSDOT STANDARD SHEETS AND NYSDOT WORK ZONE TRAFFIC CONTROL MANUAL DATED JANUARY 2012.

10) CONTRACTOR TO REPLACE ALL EXISTING SITE FEATURES THAT ARE DISTURBED DURING CONSTRUCTION (MAILBOXES, FLOWERBOXES, FENCING, FLAGPOLES, ETC.) TO THEIR PRECONSTRUCTION CONDITION EXCEPT THAT MAILBOXES MUST BE TO REINSTALLED TO MEET USPS STANDARDS. ALL TREES ARE TO BE AVOIDED AND PRESERVED TO THE GREATEST EXTENT POSSIBLE.

11) NO STOCKPILING, STORAGE OF OF ANY MATERIALS, OR PARKING OF EQUIPMENT IS ALLOWED IN THE STATE ROW.

11) THE DITCHES IN THE STATE DOT ROW MUST BE RESTORED TO THEIR ORIGINAL SIDE SLOPE AND FLOW LINE FOR POSITIVE DRAINAGE.

DESCRIPTION:

INSTALL THE FOLLOWING IN THE CLARENCE SOLAR INDUSTRIAL PARK WITHIN THE TOWN OF CLARENCE, UNDER ECWA, BUILDER, CONTRACTOR, DEVELOPER (BCD) AGREEMENT

WATER MAIN (L.F.)			
8" PVC (AWWA C–900 DR–18) 1,920±	8" DIP (CLASS 52) --	TOTAL 1,920±	HYDRANTS 3

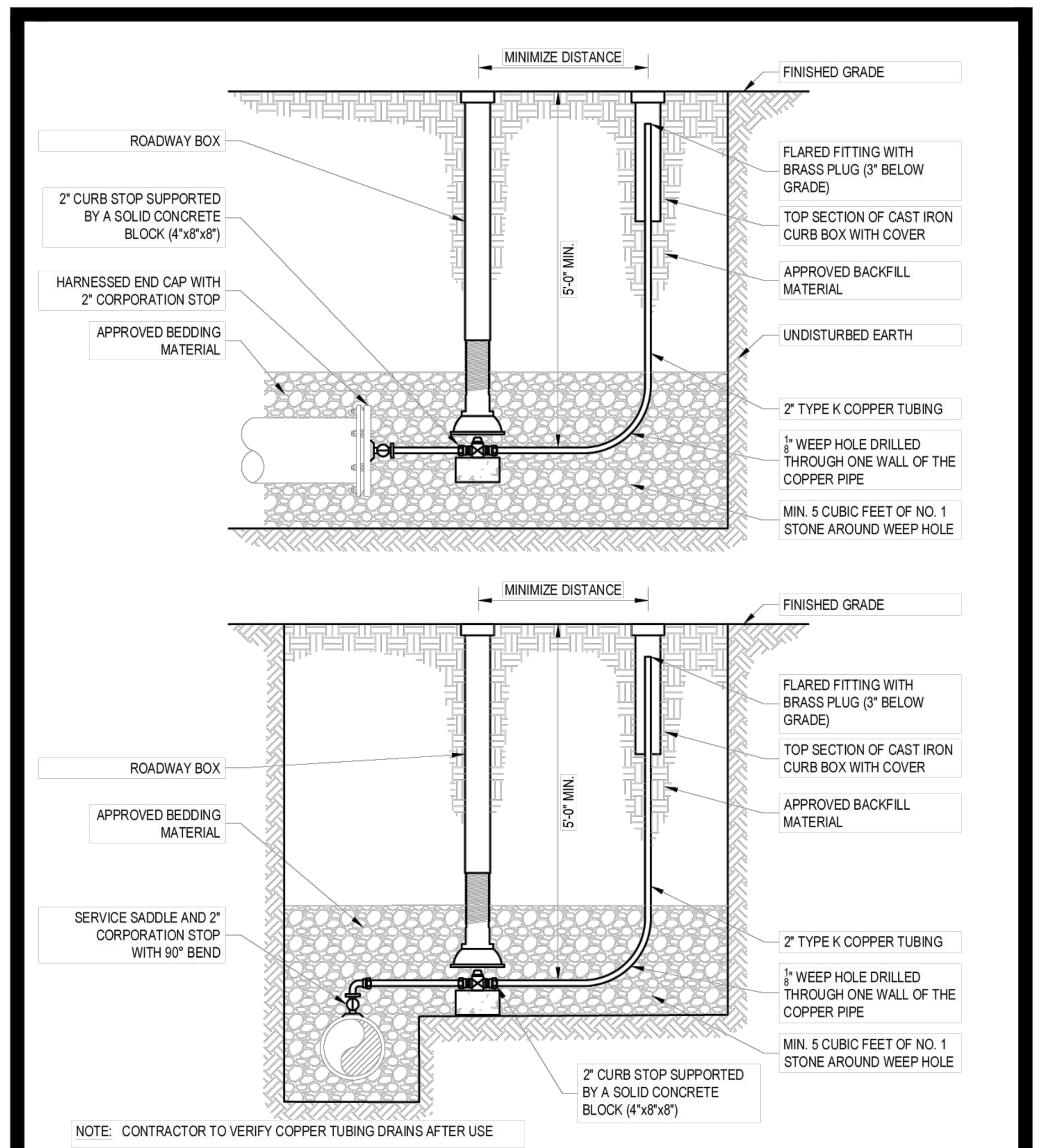
SIGNATURES:

EXECUTIVE ENGINEER OF ECWA ________ DATE ________

TOWN ENGINEER, TOWN OF CLARENCE ________ DATE ________

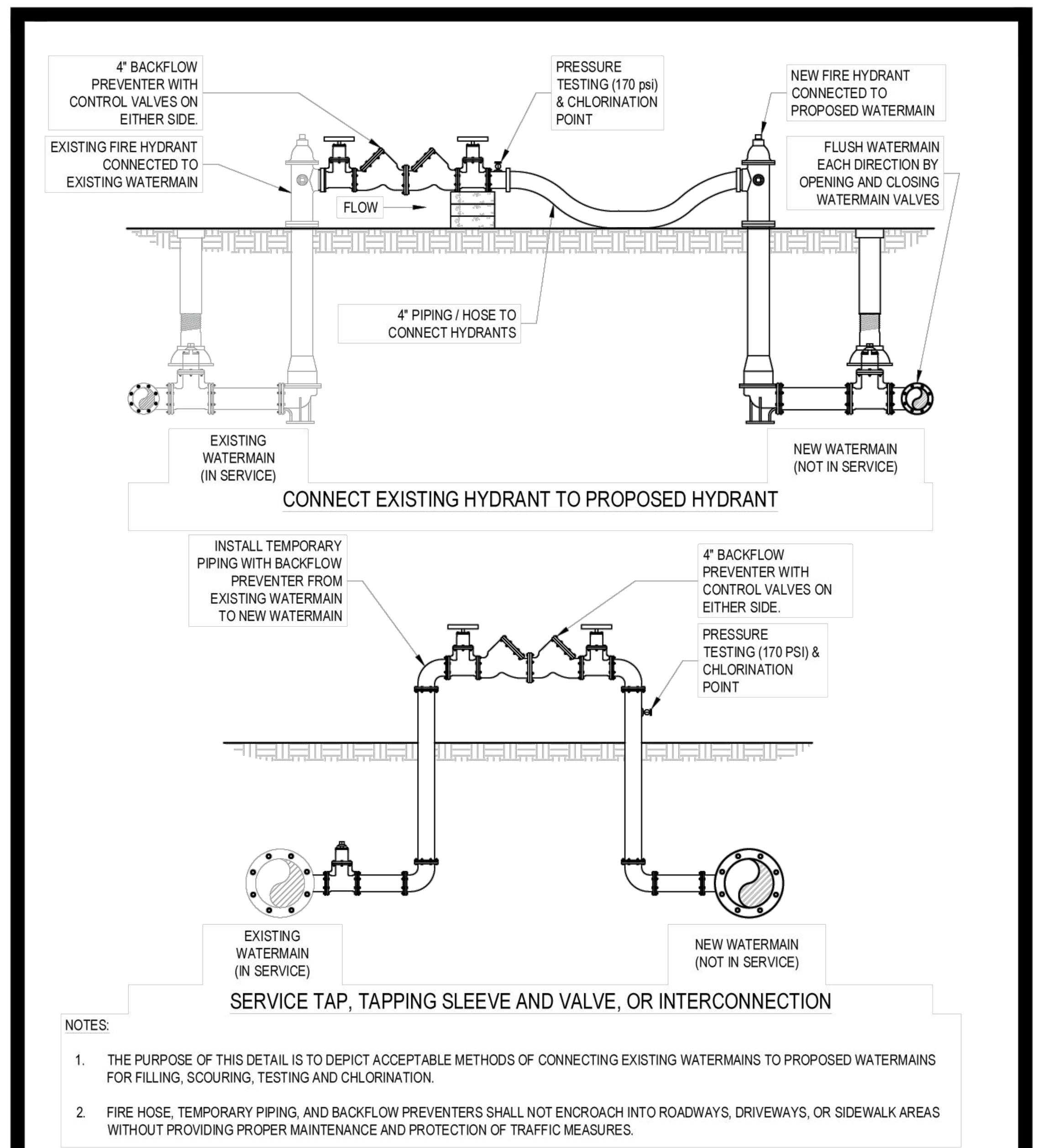
FIRE CHIEF ________ DATE ________

ECWA NOTE:
CONTACT MARK JARMUZ PRIOR TO THE START OF CONSTRUCTION
716-685-8266
mjarmuz@ecwa.org



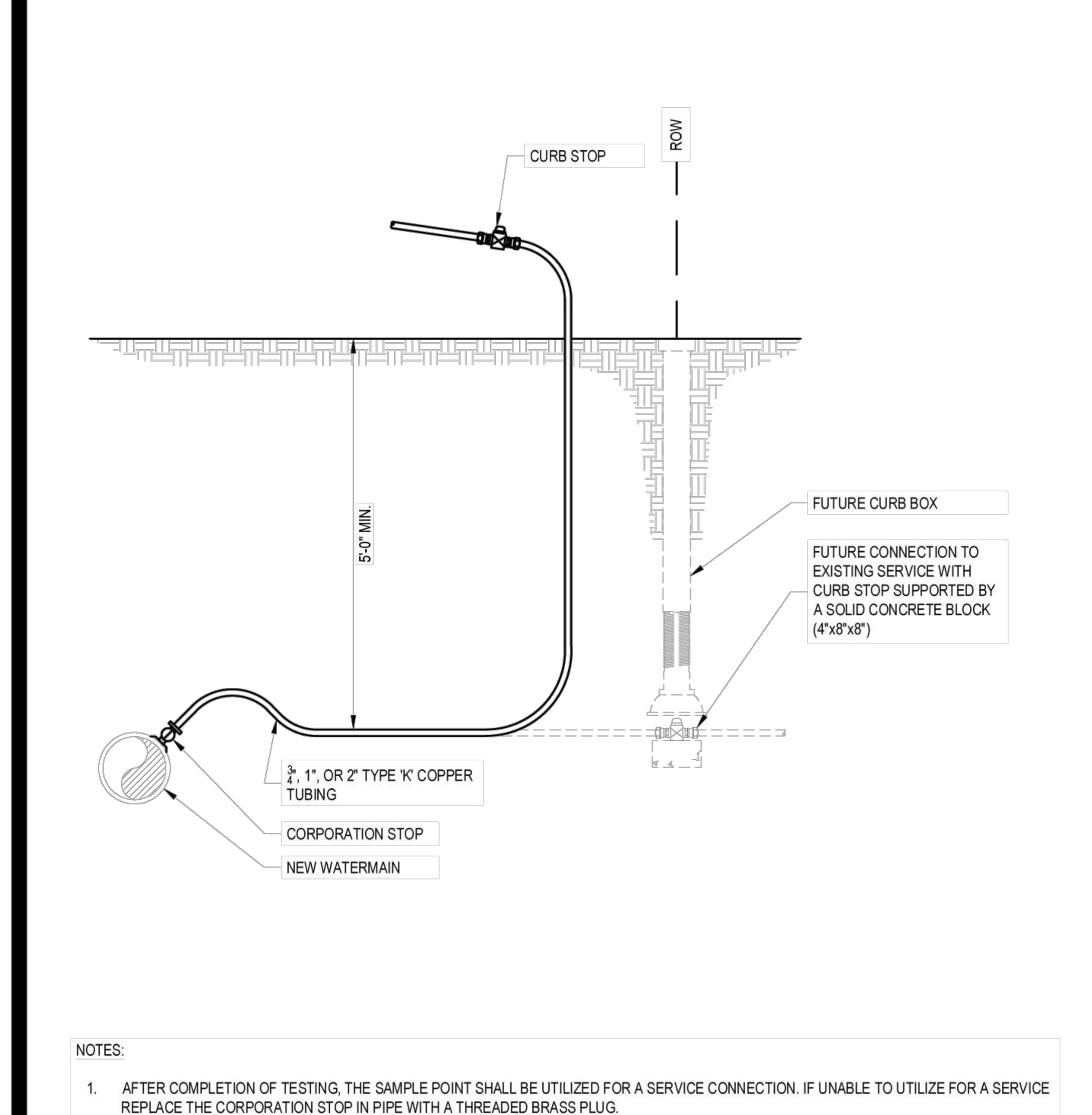
BLOW-OFF
SCALE: NTS

Revision: 2024-01
Detail: SD-24



SOURCE WATER CONNECTIONS AND PRESSURE TESTING / CHLORINATION POINT
SCALE: NTS

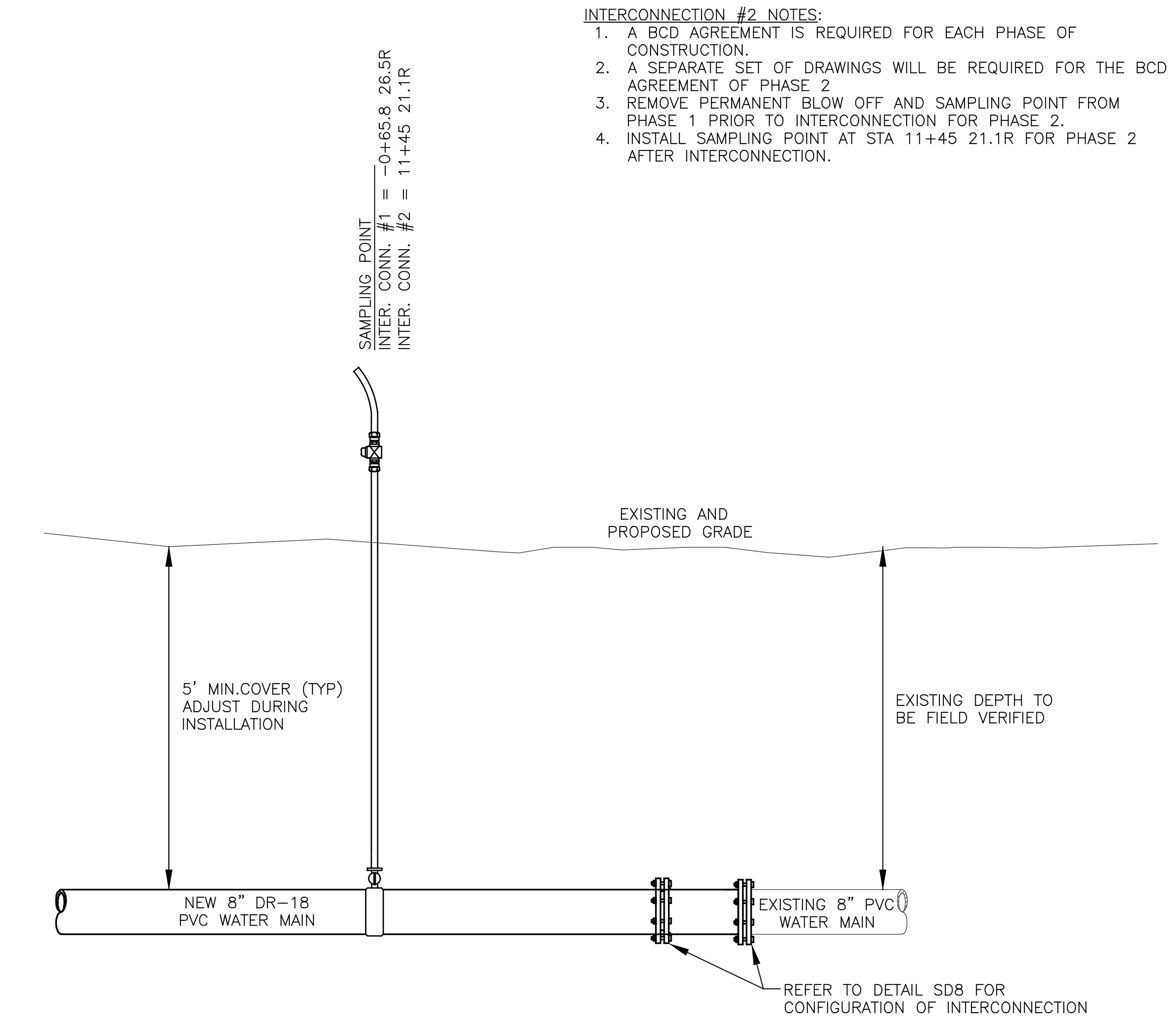
Revision: 2024-01
Detail: SD-29



TEMPORARY BLOW-OFF / SAMPLING POINT
SCALE: NTS

Revision: 2024-01
Detail: SD-30

INTERCONNECTION #2 NOTES:
1. A BCD AGREEMENT IS REQUIRED FOR EACH PHASE OF CONSTRUCTION.
2. A SEPARATE SET OF DRAWINGS WILL BE REQUIRED FOR THE BCD AGREEMENT OF PHASE 2
3. REMOVE PERMANENT BLOW OFF AND SAMPLING POINT FROM PHASE 1 PRIOR TO INTERCONNECTION FOR PHASE 2.
4. INSTALL SAMPLING POINT AT STA 11+45 21.1R FOR PHASE 2 AFTER INTERCONNECTION.



INTERCONNECTION #1 & #2 DETAIL
NTS

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW

REVISIONS	DATE	BY/CHK

METZGER CIVIL ENGINEERING, PLLC
8245 SHERIDAN DR.
WILLIAMSVILLE, NY 14221
PH: 716-633-2601
FAX: 716-633-2704
CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK — LICENSED PROFESSIONAL ENGINEER — MICHAEL METZGER — 066788

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY
TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

UTILITY DETAILS – 2

SCALE:	AS SHOWN
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	DT-4

SHEET 16

RESEARCH PARKWAY PROFILE (LEFT SIDE)
HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'
NOTE:
1. SELECT FILL FOR THE ROADWAY SUBBASE SHALL BE TESTED EVERY 100 LINEAL FEET AT 12" LIFTS AT MINIMUM, OR AT THE DISCRETION OF THE TOWN OR ITS REPRESENTATIVES.
STMH-1 STA 1+01 19.5L RIM=743.46 INV=741.16
CB-2 STA 1+01 15L RIM=743.56 INV=741.18
STA 3+44 HP 744.82
507' OF 12" HDPE @ 0.4%
STMH-2 STA 6+08 26.9L RIM=743.25 INV=739.13
CB-4 STA 6+08 15L RIM=743.49 INV=741.11
88' OF 18" HDPE @ 0.5%
STA 6+87 LP 743.45
STMH-3 STA 6+87.4 26L RIM=743.25 NE INV=740.06 NW,SW,SE INV=738.70
CB-6 STA 6+87.4 15L RIM=743.17 INV=740.79
95' OF 18" HDPE @ 0.3%
STMH-4 STA 7+73 26L RIM=743.25 INV=738.99
CB-8 STA 7+73 15L RIM=743.51 INV=741.13
156' OF 18" HDPE @ 0.3%
PVC STA 9+03 ELEV=744.31
STA 9+20 HP 744.34
STMH-5 STA 9+28.5 22L RIM=744.00 INV=739.46
CB-10 STA 9+28.5 15L RIM=744.13 INV=741.75
PVT STA 9+53 ELEV=744.22
50' VERTICAL CURVE CL ELEV=744.34 CL STA=9+20 PVI ELEV=744.41 PVI STA=9+28
200' OF 12" HDPE @ 0.3%
STMH-6 STA 11+32.5 22L RIM=742.50 INV=740.06
CB-12 STA 11+32.5 15L RIM=742.61 INV=740.23
WATERLINE NOTES:
1. 22.5° BENDS AS NEEDED IN CUL-DE-SAC FROM STA 14+33 TO STA 15+58 (LEFT SIDE)
2. RESTRAIN ALL WATERLINE JOINTS FROM STA 14+33 TO 15+58
PVC STA 13+32 ELEV=741.40
STMH-7 STA 13+55.7 22L RIM=741.00 INV=738.53
CB-14 STA 13+55.7 15L RIM=740.95 INV=738.57
PVT STA 13+82 ELEV=741.36
50' VERTICAL CURVE CL ELEV=741.29 CL STA=13+60 PVI ELEV=741.21 PVI STA=13+57
PERMANENT BLOWOFF & SAMPLING POINT STA 14+33.0 36.7L
8"Ø PVC AWWA C-900 DR-18 WATERLINE
5' MINIMUM COVER
STA 14+93 742.04 CENTER CUL-DE-SAC
ROW
CENTERLINE OF ROAD
EXISTING GRADE
EXISTING 8" PVC WATER LINE
STA -0+70.8± 27R± INTERCONNECTION #1
SAMPLING POINT -0+65.8± 26.5R±
STA -0+61.2± 26R± 8" RESILIENT SEATED GATE VALVE
MATCHLINE
ECWA NOTE:
CONTACT MARK JARMUZ PRIOR TO THE START OF CONSTRUCTION
716-685-8266
mjarmuz@ecwa.org
DESCRIPTION:
INSTALL THE FOLLOWING IN THE CLARENCE SOLAR INDUSTRIAL PARK WITHIN THE TOWN OF CLARENCE, UNDER ECWA, BUILDER, CONTRACTOR, DEVELOPER (BCD) AGREEMENT
WATER MAIN (L.F.) | 8" PVC (AWWA C-900 DR-18) 1,920± | 8" DIP (CLASS 52) -- | TOTAL 1,920± | HYDRANTS 3
SIGNATURES:
EXECUTIVE ENGINEER OF ECWA DATE
TOWN ENGINEER, TOWN OF CLARENCE DATE
FIRE CHIEF DATE
RESEARCH PARKWAY PROFILE (RIGHT SIDE)
HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'
NOTE:
1. SELECT FILL FOR THE ROADWAY SUBBASE SHALL BE TESTED EVERY 100 LINEAL FEET AT 12" LIFTS AT MINIMUM, OR AT THE DISCRETION OF THE TOWN OR ITS REPRESENTATIVES.
MATCHLINE
22.5° BEND STA 0+36.1 24.6R
22.5° BEND STA 0+89.6 24.8R
CB-1 STA 1+01 15R RIM=743.56 INV=741.46
RESTRAIN ALL JOINTS
5' MINIMUM COVER
8"Ø PVC AWWA C-900 DR-18 WATERLINE
PLACE SELECT FILL AT FULL DEPTH ABOVE SOLAR ENTRANCE
STA 3+44 HP 744.82
HYDRANT #1 STA 3+47.0 25.0R
22.5° BEND STA 5+90.2 19.4R
CB-3 STA 6+08 15R RIM=743.49 INV=741.39
22.5° BEND STA 6+43.4 20.2R
CB-5 STA 6+87.4 15R RIM=743.17 INV=741.07
STA 6+87 LP 743.45
22.5° BEND STA 7+4.9 21.3R
CB-7 STA 7+73 15R RIM=743.51 INV=741.41
STA 7+80.0 21.2R 8" RESILIENT SEATED GATE VALVE
22.5° BEND STA 7+85.6 20.3R
HYDRANT #2 STA 8+47.0 25.0R
PVC STA 9+03 ELEV=744.31
CB-9 STA 9+28.5 15R RIM=744.13 INV=742.03
PVT STA 9+53 ELEV=744.22
50' VERTICAL CURVE CL ELEV=744.34 CL STA=9+20 PVI ELEV=744.41 PVI STA=9+28
CB-11 STA 11+32.5 15R RIM=742.61 INV=740.51
PERMANENT BLOWOFF & SAMPLING POINT STA 11+40 21.1R (END OF PHASE 1)
INTERCONNECTION #2 STA 11+40 21.1 R (SEE DETAIL)
PVC STA 13+32 ELEV=741.40
HYDRANT #3 STA 13+47.0 25.0R
CB-13 STA 13+55.7 15R RIM=740.95 INV=738.85
PVT STA 13+82 ELEV=741.36
50' VERTICAL CURVE CL ELEV=741.29 CL STA=13+60 PVI ELEV=741.21 PVI STA=13+57
22.5° BENDS AS NEEDED IN CUL-DE-SAC FROM STA 14+01 TO 15+58 (RIGHT SIDE)
STA 14+93 742.04 CENTER CUL-DE-SAC
ROW
© 2024 METZGER CIVIL ENGINEERING, PLLC
DESIGNED BY: JCM
DRAWN BY: JCM
CHECKED BY: ABH
CAD FILE: M2121
NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW
REVISIONS DATE BY/CHK
METZGER CIVIL ENGINEERING, PLLC
8245 SHERIDAN DR. WILLIAMSVILLE, NY 14221
PH: 716-633-2601
FAX: 716-633-2704
CIVIL ENGINEERING LAND PLANNING SITE DESIGN MUNICIPAL ENGINEERING
CLARENCE SOLAR INDUSTRIAL PARK
RESEARCH PARKWAY
TOWN OF CLARENCE, ERIE COUNTY, NEW YORK
ROAD & UTILITY PROFILES
SCALE: AS SHOWN
DATE: AUGUST 1, 2024
JOB NO: M-2121
DRAWING NO: DT-5
SHEET 17

NOTES:

1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW

REVISIONS	DATE	BY/CHK

METZGER CIVIL ENGINEERING, PLLC

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WILLIAMSVILLE, NY 14221
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FAX: 716-633-2704

CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK · MICHAEL J. METZGER · 066786 · LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

LIGHTING PLAN

SCALE:	1"=60'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	LL-1

SHEET 18

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2021-AEA-17740-OE

Issued Date: 01/05/2022

Elie Schecter
OurGeneration LLC
87 Neds Mountain Rd
Ridgefield, CT 06877

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Ground Mount Solar Structures
Location:	Clarence, NY
Latitude:	42-57-44.10N NAD 83
Longitude:	78-37-37.70W
Heights:	737 feet site elevation (SE) 10 feet above ground level (AGL) 747 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 07/05/2023 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

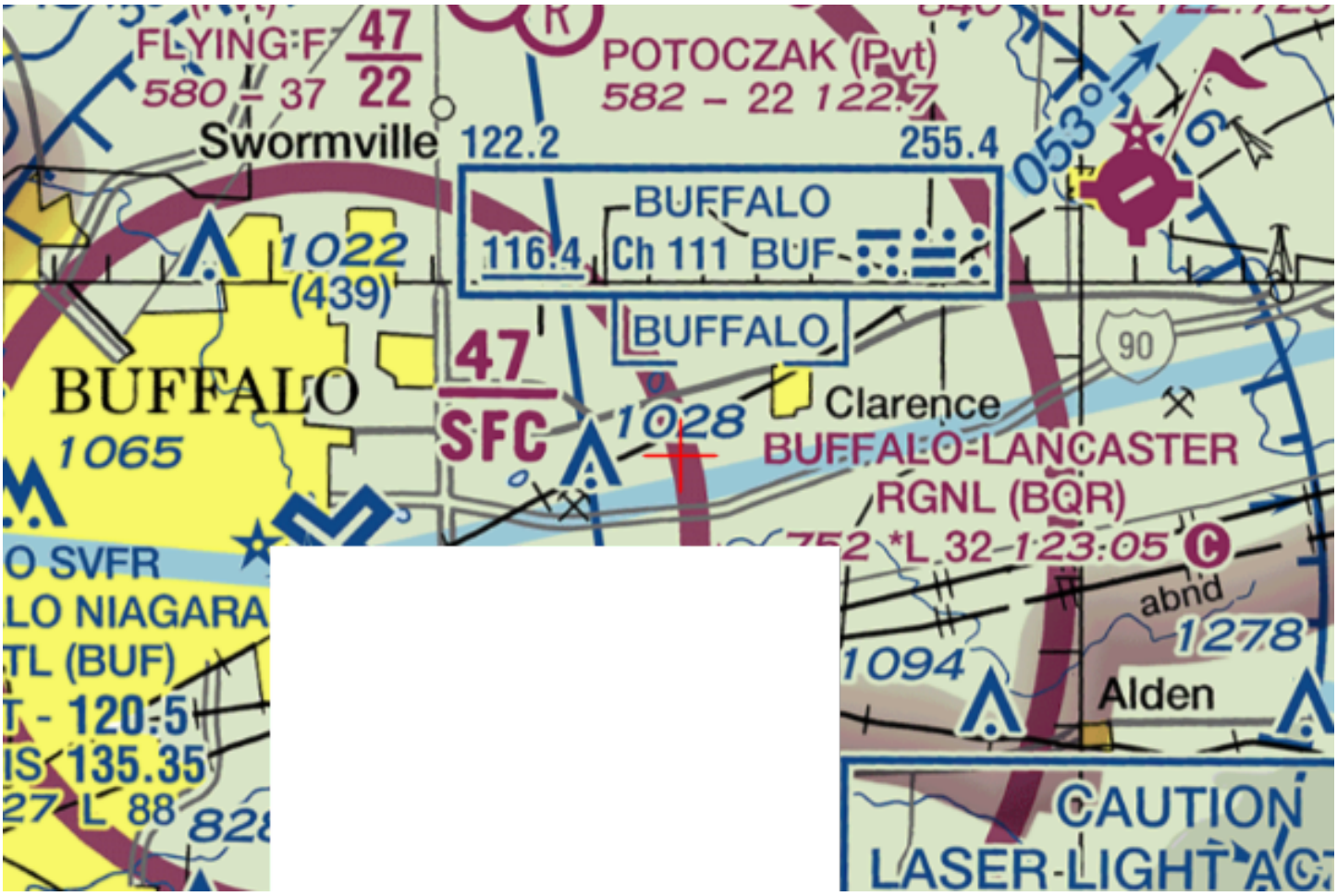
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2021-AEA-17740-OE.

Signature Control No: 504685314-506706261 (DNE)
Stephanie Kimmel
Specialist

Attachment(s)
Map(s)

Sectional Map for ASN 2021-AEA-17740-OE



Decommissioning Plan

For the Proposed Solar Generating Facility located at

Research Parkway Clarence, NY

Tax ID 83.00-3-15.111

Applicant:

Clarence Solar One LLC and Clarence Solar Two LLC

87 Ned's Mountain Road Ridgefield, CT 06877

September 19, 2022

1. Narrative Description

The proposed project includes the installation of two (2) 5.0 Megawatt-Alternating Current (MW-AC) ground-mounted solar power systems. The project will feature solar modules installed on a single axis-tracker racking system with driven pile foundations, along with six concrete equipment pads, a perimeter fence, and underground conduits. The project is expected to have an operational life of 25+ years. At the conclusion of the project's operational life, the decommissioning of the project will be performed by a Licensed General Contractor, and all infrastructure associated with the facility will be removed and the Lot restored to pre-development conditions. Decommissioning activities will include the following:

- A Construction Permit will be filed with the Town of Clarence, and coverage obtained under the most current SPDES General Permit for Stormwater Discharges from Construction Activities, and any other required Environmental Permits.
- Erosion and Sediment Control Materials (Silt Fence) will be installed around the perimeter of the project site.
- All equipment will be de-energized and disconnected in accordance with Manufacturer's Instructions.
- All electrical components and equipment will be removed from the site and disposed of in accordance with Section 2 of this Decommissioning Plan.
- All below-ground foundations, conduits, wiring, equipment pads, and fencing to a depth of four feet will be removed from the site.
- The Site will be graded and restored with a local grass seed mix.

Decommissioning and Restoration of the Project Site is expected to be completed during a period of 4-6 weeks.

2. Disposal

All waste will be disposed of in accordance with all local, state, and federal waste disposal regulations, and will include the following:

- No hazardous materials will be used in the construction of the solar generating facility. The solar modules are comprised of silicon solar cells with an aluminum frame and glass cover.
- All equipment and electrical components will be properly disconnected and de-energized, and removed from the site. Equipment will be disposed of in the following manner:
    - All items with resale value will be removed from the site and sold at fair market value.
    - All aluminum, steel, and other metal parts without resale value will be sold for scrap value.
    - All items with no resale or scrap value will be removed from the site, recycled where applicable, and otherwise disposed of in accordance with all laws and regulations.

Note: It is widely believed that the resale value and scrap value alone will exceed the costs of system removal. Solar modules themselves, which carry a limited power warranty of >80% of their rated capacity after 25 years, may cover most, if not all, of the costs of decommissioning. This resale and scrap value is not included in the estimated decommissioning costs and financial surety discussed in sections 4 and 5 of this plan.

3. Anticipated Life

With proper maintenance, servicing, and upkeep of the associated components, the Solar generating facility is expected to be operational for a period of 25+ years.

4. Estimated Costs

The estimated decommissioning costs will be **$301,045.00**. This estimate is based on decommissioning guidance from the New York State Energy Research and Development Authority (NYSERDA) containing a cost estimate to decommission a 2 MW-AC ground-mounted solar generating facility (See enclosed Appendix A). Based on this NYSERDA recommendation, the extrapolated costs for the two 5.0 MW-AC Clarence Solar Projects would be as follows:

Item	Estimated Cost	
Remove Rack Wiring	$	12,295.00
Remove Panels	$	12,250.00
Dismantle Racks	$	61,750.00
Remove Electrical Equipment	$	9,250.00
Breakup and Remove Concrete Pads	$	7,500.00
Remove Racks	$	39,000.00
Remove Cable	$	32,500.00
Remove Ground Screws and Power Poles	$	69,250.00
Remove Fence	$	24,750.00
Grading	$	20,000.00
Seed Disturbed Area	$	1,250.00
Truck to Recycling Center	$	11,250.00
Total	**$**	**301,045.00**

These estimated decommissioning costs will be re-evaluated by a licensed Professional Engineer every five (5) years during the life of the project. The accompanying decommissioning cost estimate shall be incorporated into a revised Decommissioning Plan, and submitted to the Code Enforcement Officer of the Town of Clarence every five (5) years following the revision of this Plan. The accompanying financial surety described in section 5 of this agreement shall also be updated accordingly with the revised decommissioning costs.

5. Method of Ensuring Available Funds

The Project Owner will provide an annually renewing Decommissioning Bond during the operational life of the project, naming the Town of Clarence as Obligee, to ensure sufficient funds for decommissioning and site restoration.

6. Implementation

The Owner and/or Operator of the Solar generating facility must implement this Decommissioning Plan within one hundred eighty (180) days following the abandonment or termination of operations of the System. The Decommissioning Bond will remain in place until the system is properly decommissioned.

Appendix A – Decommissioning Guidance from the New York State Energy Research and Development Authority (NYSERDA)

FACT SHEET

DECOMMISSIONING SOLAR PANEL SYSTEMS

NEW YORK STATE OF OPPORTUNITY. | NY-Sun

This fact sheet provides information to local governments and landowners on decommissioning of large-scale solar panel systems.

As local governments develop solar regulations and landowners negotiate land leases, it is important to understand the options for decommissioning solar panel systems and restoring project sites to their original status.

From a land use perspective, solar panel systems are generally considered large-scale when they constitute the primary use of the land, and can range from less than one acre in urban areas to 10 or more acres in rural areas. Depending on where they are sited, large-scale solar projects can have habitat, farmland, and aesthetic impacts. As a result, large-scale systems must often adhere to specific development standards.

Abandonment and decommissioning defined

Abandonment occurs when a solar array is inactive for a certain period of time.

- Abandonment requires that solar panel systems be removed after a specified period of time if they are no longer in use. Local governments establish timeframes for the removal of abandoned systems based on aesthetics, system size and complexity, and location. For example, the Town of Geneva, NY, defines a solar panel system as abandoned if construction has not started within 18 months of site plan approval, or if the completed system has been nonoperational for more than one year.[1]
- Once a local government determines a solar panel system is abandoned, and has provided thirty (30) days prior written notice to the owner it can take enforcement actions, including imposing civil penalties/fines, and removing the system and imposing a lien on the property to recover associated costs.

Decommissioning is the process for removing an abandoned solar panel system and remediating the land.

- When describing requirements for decommissioning sites, it is possible to specifically require the removal of infrastructure, disposal of any components, and the stabilization and re-vegetation of the site.

What is a decommissioning plan?

Local governments may require to have a plan in place to remove solar panel systems at the end of their lifecycle, which is typically 20-40 years. A decommissioning plan outlines required steps to remove the system, dispose of or recycle its components, and restore the land to its original state. Plans may also include an estimated cost schedule and a form of decommissioning security (see Table 1).

What is the estimated cost of decommissioning?

Given the potential costs of decommissioning and land reclamation, it is reasonable for landowners and local governments to proactively consider system removal guarantees. A licensed professional engineer, preferably with solar development experience, can estimate decommissioning costs, which vary across the United States. Decommissioning costs will vary depending upon project size, location, and complexity. Table 1 provides an estimate of potential decommissioning costs for a ground-mounted 2-MW solar panel system. Figures are based on estimates from the Massachusetts solar market. Decommissioning costs for a New York solar installation may differ. Some materials from solar installations may be recycled, reused, or even sold resulting in no costs or compensation. Consider allowing a periodic reevaluation of decommissioning costs during the project's lifetime by a licensed professional engineer, as costs could decrease and the required payment should be reduced accordingly.

Table 1: Sample list of decommisioning tasks and estimated costs

Tasks	Estimated Cost ($)
Remove Rack Wiring	$2,459
Remove Panels	$2,450
Dismantle Racks	$12,350
Remove Electrical Equipment	$1,850
Breakup and Remove Concrete Pads or Ballasts	$1,500
Remove Racks	$7,800
Remove Cable	$6,500
Remove Ground Screws and Power Poles	$13,850
Remove Fence	$4,950
Grading	$4,000
Seed Disturbed Areas	$250
Truck to Recycling Center	$2,250
Current Total	$60,200
Total After 20 Years (2.5% inflation rate)	$98,900

[1] *Town of Geneva, N.Y. CODE § 130-4(D)(5) (2016):*

How can decommissioning be ensured?

Landowners and local governments can ensure appropriate decommissioning and reclamation by using financial and regulatory mechanisms. However, these mechanisms come with tradeoffs. Including decommissioning costs in the upfront price of solar projects increases overall project costs, which could discourage solar development. As a result, solar developers are sometimes hesitant to provide or require financial surety for decommissioning costs.

It is also important to note that many local governments choose to require a financial mechanism for decommissioning. Although similar to telecommunications installations, there is no specific authority to do so as part of a land use approval for solar projects (see Table 2). Therefore, a local government should consult their municipal attorney when evaluating financial mechanisms.

The various financial and regulatory mechanisms to decommission projects are detailed below.

Table 2: Relevant Provisions of General City, Town, and Village Laws Relating to Municipal Authority to Require Conditions, Waivers, and Financial Mechanisms

Site Plan Review	General City Law	Town Law	Village
Conditions	27-a (4)	274-a (4)	7-725-a (4)
Waivers	27-a (5)	274-a (5)	7-725-a (5)
Performance bond or other security	27-a (7)	274-a (7)	7-725-a (7)
Subdivision	**General City Law**	**Town Law**	**Village Law**
Waivers	33 (7)	277 (7)	7-730 (7)
Performance bond or other security	33 (8)	277 (9)	7-730 (9)
Special	**General City Law**	**Town Law**	**Village Law**
Conditions	27-b (4)	274-b (4)	7-725-b (4)
Waivers	27-b (5)	274-b (5)	7-725-b (5

Source: Referenced citations may be viewed using the NYS Laws of New York Online

Excerpts from these statutes are also contained within the "Guide to Planning and Zoning Laws of New York State," New York State Division of Local Governments Services, June 2011: **www.dos.ny.gov/lg/publications/Guide_to_planning_and_zoning_laws.pdf**

Financial mechanisms

Decommissioning Provisions in Land-Lease Agreements. If a decommission plan is required, public or private landowners should make sure a decommissioning clause is included in the land-lease agreement. This clause may depend on the decommissioning preferences of the landowner and the developer. The clause could require the solar project developer to remove all equipment and restore the land to its original condition after the end of the contract, or after generation drops below a certain level, or it could offer an option for the landowner to buy-out and continue to use the equipment to generate electricity. The decommissioning clause should also address abandonment and the possible failure of the developer to comply with the decommissioning plan. This clause could allow for the landowner to pay for removal of the system or pass the costs to the developer.

Decommissioning Trusts or Escrow Accounts. Solar developers can establish a cash account or trust fund for decommissioning purposes. The developer makes a series of payments during the project's lifecycle until the fund reaches the estimated cost of decommissioning. Landowners or third-party financial institutions can manage these accounts. Terms on individual payment amounts and frequency can be included in the land lease.

Removal or Surety Bonds. Solar developers can provide decommissioning security in the form of bonds to guarantee the availability of funds for system removal. The bond amount equals the decommissioning and reclamation costs for the entire system. The bond must remain valid until the decommissioning obligations have been met. Therefore, the bond must be renewed or replaced if necessary to account for any changes in the total decommissioning cost.

Letters of credit. A letter of credit is a document issued by a bank that assures landowners a payment up to a specified amount, given that certain conditions have been met. In the case that the project developer fails to remove the system, the landowner can claim the specified amount to cover decommissioning costs. A letter of credit should clearly state the conditions for payment, supporting documentation landowners must provide, and an expiration date. The document must be continuously renewed or replaced to remain effective until obligations under the decommissioning plan are met.[2]

Nonfinancial mechanisms

Local governments can establish nonfinancial decommissioning requirements as part of the law. Provisions for decommissioning large-scale solar panel systems are similar to those regulating telecommunications installations, such as cellular towers and antennas. The following options may be used separately or together.

- **Abandonment and Removal Clause.** Local governments can include in their zoning code an abandonment and removal clause for solar panel systems. These cases effectively become zoning enforcement matters where project owners can be mandated to remove the equipment via the imposition of civil penalties and fines, and/or by imposing a lien on the property to recover the associated costs. To be most effective, these regulations should be very specific about the length of time that constitutes abandonment. Establishing a timeframe for the removal of a solar panel system can be based on system aesthetics, size, location, and complexity. Local governments should include a high degree of specificity when defining "removal" to avoid ambiguity and potential conflicts.

[2] *See a letter of credit submitted to the Vermont Public Service Board by NextSun Energy, LLC. http://psb.vermont.gov/sites/psb/files/docketsandprojects/Solar/Exhibit%20Petitioner%20JL-7%20(Revised%20326.14).pdf*

- **Special Permit Application.** A local government may also mandate through its zoning code that a decommissioning plan be submitted by the solar developer as part of a site plan or special permit application. Having such a plan in place allows the local government, in cases of noncompliance, to place a lien on the property to pay for the costs of removal and remediation.
- **Temporary Variance/Special Permit Process.** As an alternative to requiring a financial mechanism as part of a land use approval, local governments could employ a temporary variance/special permit process (effectively a re- licensing system). Under this system, the locality would issue a special permit or variance for the facility for a term of 20 or more years; once expired (and if not renewed), the site would no longer be in compliance with local zoning, and the locality could then use their regular zoning enforcement authority to require the removal of the facility.

What are some examples of abandonment and decommissioning provisions?

The New York State Model Solar Energy Law provides model language for abandonment and decommissioning provisions: **www.cuny.edu/about/resources/sustainability/reports/NYS_Model_Solar_Energy_LawToolkit_FINAL_final.pdf**

The following provide further examples that are intended to be illustrative and do not confer an endorsement of content:

- Town of Geneva, N.Y., § 130-4(D): **ecode360.com/28823382**
- Town of Olean, N.Y., § 10.25.5: **www.cityofolean.org/council/minutes/ccmin2015-04-14.pdf**

Is there a checklist for decommissioning plans?

The following items are often addressed in decommissioning plans requirements:[3]

- Defined conditions upon which decommissioning will be initiated (i.e., end of land lease, no operation for 12 months, prior written notice to facility owner, etc.).
- Removal of all nonutility owned equipment, conduit, structures, fencing, roads, and foundations.
- Restoration of property to condition prior to solar development.
- The timeframe for completion of decommissioning activities.
- Description of any agreement (e.g., lease) with landowner regarding decommissioning.
- The party responsible for decommissioning.
- Plans for updating the decommissioning plan.
- Before final electrical inspection, provide evidence that the decommissioning plan was recorded with the Register of Deeds.

Additional Resources

Template Solar Energy Development Ordinance for North Carolina (see Appendix G at pg. 21 for Sample Decommissioning Plan): **nccleantech.ncsu.edu/wp-content/uploads/Template-Solar-Ordinance_V1.0_12-18-13.pdf**

Land Use Planning for Solar: **training.ny-sun.ny.gov/images/PDFs/Land_Use_Planning_for_Solar_Energy.pdf**

Zoning Guide for Solar: **training.ny-sun.ny.gov/images/PDFs/Zoning_for_Solar_Energy_Resource_Guide.pdf**

Information on First Solar's recycling program for all of their modules: **www.firstsolar.com/en/Technologies-and-Capabilities/Recycling-Services**

PV Cycle: Europe's PV recycling program: **www.pvcycle.org/**

Solar Energy Industries Association (SEIA) information on solar panel recycling: **www.seia.org/policy/environment/pv-recycling**

Silicon Valley Toxics Coalition: **svtc.org/**

Silicon Valley Toxic Coalition Solar Scorecard: **www.solarscorecard.com/2015/2015-SVTC-Solar-Scorecard.pdf**

End-of-life PV: then what? - Recycling solar panels: **www.renewableenergyfocus.com/view/3005/end-of-life-pv-then-what-recycling-solar-pv-panels/**

NY-Sun, a dynamic public-private partnership, will drive growth in the solar industry and make solar technology more affordable for all New Yorkers. NY-Sun brings together and expands existing programs administered by the New York State Energy Research and Development Authority (NYSERDA), Long Island Power Authority (LIPA), PSEG Long Island, and the New York Power Authority (NYPA), to ensure a coordinated, well-supported solar energy expansion plan and a transition to a sustainable, self-sufficient solar industry.

[3] *North Carolina Solar Center, NC Sustainable Energy Center. December 2013. Template Solar Energy Development Ordinance for North Carolina.* ***https://nccleantech.ncsu.edu/wp-content/uploads/Template-Solar-Ordinance_V1.0_12-18-13.pdf***

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Clarence Solar – Fire & Emergency Response Plan

Introduction

The following information summarizes the standard operating procedures that should be followed in order to safely de-energize and isolate the Clarence Solar Project in the case of a fire or emergency. It should be noted that the recommended best practices outlined in this document include steps that should only be undertaken by qualified personnel. It is expected that inspections and in-person trainings will be completed with the local Fire Authority as part of the project close-out process to obtain a Certificate of Completion from the Town of Clarence Code Enforcement Division. At that time, members of the local Fire Authority will be given an overview of the System Components and the locations of all Emergency Disconnects, including placards on site identifying the locations of these disconnects. It is also expected that in an emergency, qualified Fire Personnel will be able to appropriately respond in a manner consistent with their training and protocols, including ensuring that any fires are contained to the area within the Solar Panel fenceline, to ensure there are no Fire Life Safety threats to any people or adjacent properties.

System Maps and placards will be placed at the main entrance gate to the solar field, and will also indicate the emergency contact information for the System Owner's Emergency Personnel. The phone number/hotline will be staffed 24/7, in order to respond during an emergency.

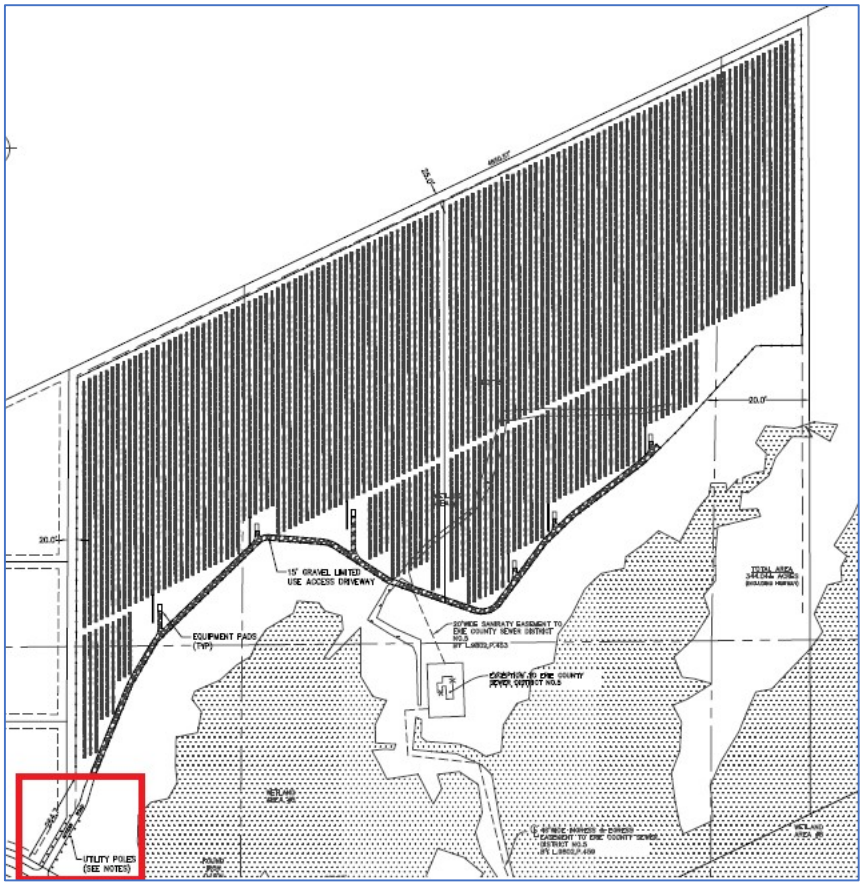
Hazard Overview

The system will be properly grounded in accordance with all National Electrical Code requirements. All circuits and devices will also contain appropriately sized overcurrent protection, ground fault detection, and arc-fault circuit interruption. These measures together will minimize the likelihood of a fire or thermal event from any damage to the system.

It should be noted that the system does not contain any hazardous chemicals or materials that would pose an environmental hazard, such as a spill or explosion, in the event of damage. As such, a thermal event, in the form of a fire or arc flash, is the single hazard for an Emergency Responder to be prepared to remedy.

Disconnecting Means

The Clarence Solar Project has been designed to meet all National Fire Protection Association (NFPA), National Electrical Code (NEC), and Utility Safety Requirements, including providing a single disconnect switch at close proximity to the site entrance, accessible 24/7. The switch will immediately disconnect the system from the Electrical Grid, and shut down the Inverters in the system, ceasing energy production. The Disconnect Switch is a Gang-Operated Air Break (GOAB) Switch located near the site access drive entrance at the area shown in Red below. This Switch will also be clearly identified with Emergency Signage at the Site:

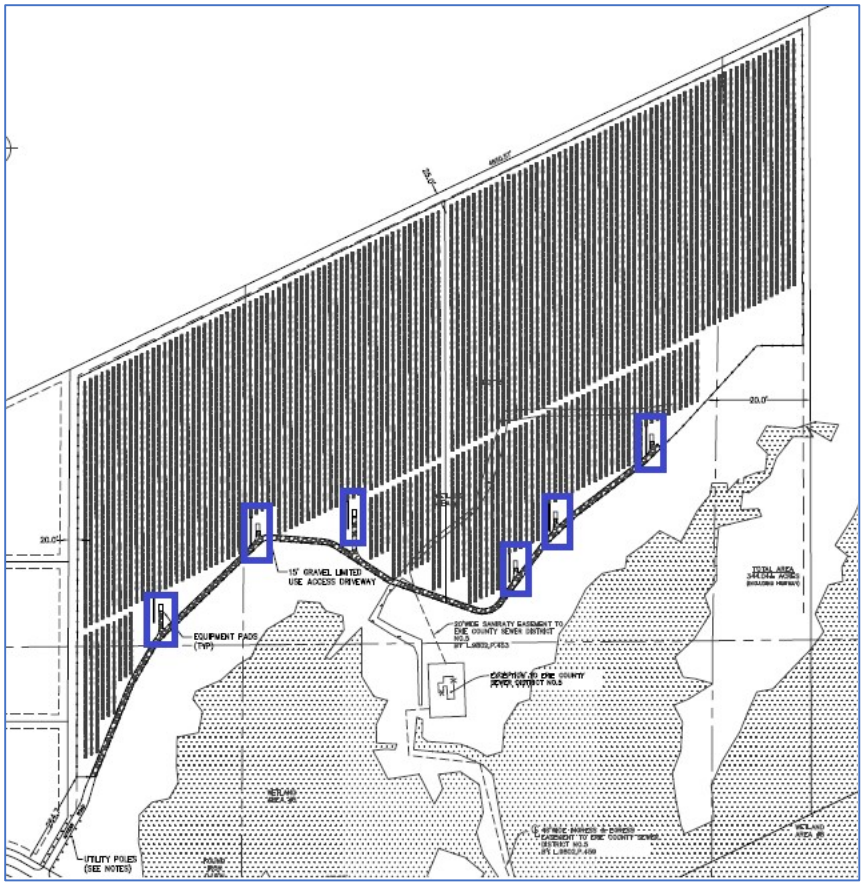


Please see the enclosed Manufacturer's Operating Instructions for the GOAB Switch, along with instructions extracted from the Manual below:

Reciprocating Handle Operating Instructions:

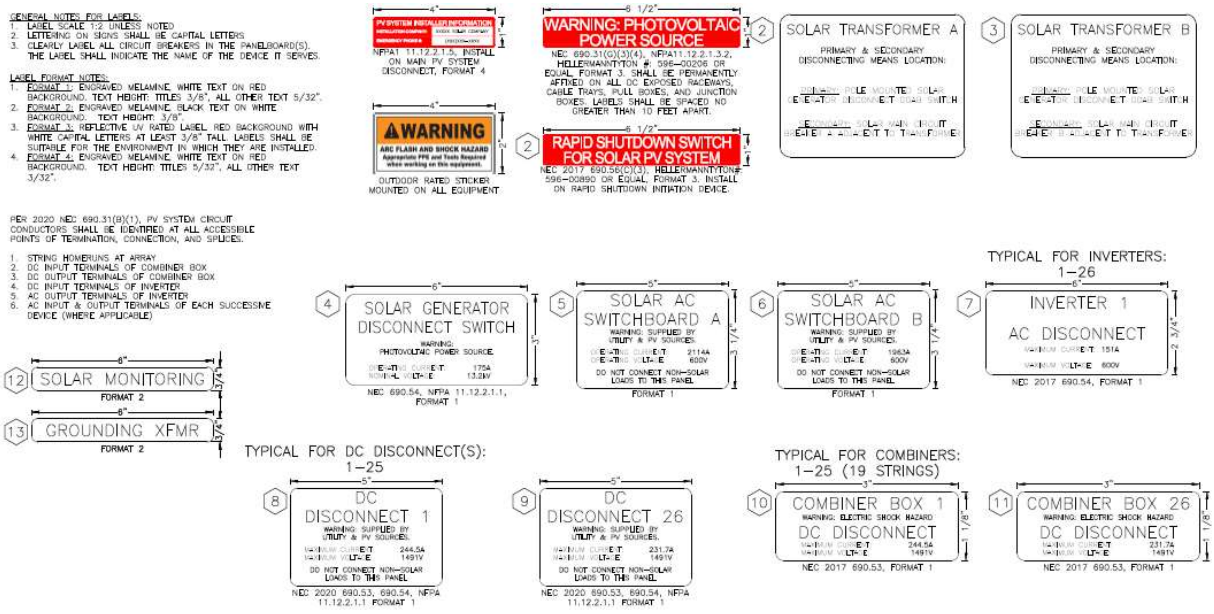
- Unlock the control handle if it is in a locked position.
- Operator should position body so that stable footing is ensured throughout the entire motion of the control handle.
- Once the operator is ready to begin the opening or closing sequence, begin the motion quickly and continue the movement from the upper limit to lower limit (or vice versa) until the control mechanism is fully open or closed. This should result in a fully opened or closed blade position with respect to the contacts. It is important to not stop motion during the open/close sequence as a partially closed blade could introduce arcing.
- Ensure the control handle is in a secured position, and lock it if necessary.

Should the need arise for Emergency Responders to enter the Solar Panel Field inside the perimeter fence, there will also be additional disconnect switches installed at the switchgear, transformers, and inverters. These disconnect switch locations are identified in blue in the image below, and the locations will be shown on site placards at the site:



Signage

Signage and site placards will be installed at the main entrance to the site, around the perimeter fence, and at major system components in accordance with all NFPA and NEC requirements, as well as industry best practices. There will also be a main placard at the entrance to the site identifying the system owner, and posting the telephone number that can be called 24/7 to reach an emergency technician. Samples and specifications of the signage that will be posted at the site include the following (see following page):



CLARENCE SOLAR FACILITY

OWNER: CLARENCE SOLAR ONE/TWO, LLC

WARNING: PHOTOVOLTAIC POWER SOURCE

NO UNAUTHORIZED ACCESS BEYOND THIS POINT

FOR ACCESS, PLEASE CONTACT (xxx) xxx-xxxx

Clarence Solar One & Two –Maintenance & Removal Plan

This document outlines the measures that will be taken over the operational life of the Solar Project to ensure proper Operation & Maintenance of the Solar Power System (SPS). This document will also reference the accompanying Decommissioning Plan, as a guide for proper removal and disposal of the SPS at the end of its Operational Life.

In order to efficiently operate and maintain the Solar Generating Facility, access to the site as shown on the approved Site Plan will be maintained year-round, including necessary snow removal following snow events to ensure that the site is accessible for maintenance personnel 24 hours per day, 365 days per year. Following completion of construction, and as a condition of receiving a certificate of occupancy for the project, the Project Owner will provide training and a safety overview to emergency personnel and first responders.

Types of Maintenance Performed

There are four main types of maintenance that will be performed on the SPS: Vegetative, Preventive, Corrective, and Condition-Based maintenance.

Vegetative Maintenance will be performed as needed in order to ensure that the grass under the solar panel arrays is kept at a low and manageable height. This will be accomplished using either grazing animals or mowing. No pesticides will be used on the site. The frequency of mowing or grazing activities is yet to be determined, but it is expected that the site will either be mowed once per month from April – October, or grazing animals brought to the site once per month for 3-4 days at a time at each visit, in order to accomplish this Vegetative Maintenance. Grazing Animals will not be permanently housed within the solar panel area. A sub-contracted farmer will be hired to care for, provide water, and clean up after the animals during and following each scheduled Maintenance occurrence.

Vegetative Maintenance will also include maintenance and replacement of any screening, especially during the first five years of the project's operational life to ensure that the screening remains viable.

Preventive Maintenance (PM) will be performed at a minimum of once per year. PM is used to reduce the probability of equipment failures, and includes routine inspections, equipment servicing, and cleaning. PM typically includes:

- Racking Inspections
- Module Inspections
- Wire Inspection
- Connector Inspection
- Combiner and Recombiner Inspections
- Torque Inspections
- Inverter PM as per MFG Warranty Requirements
- Inverter Air Filters
- Transformer PM
- AC Equip. Inspections
- DAS Inspection
- IV Curve Testing
- Thermal Imaging
- Site Inspection (Fences, signs, etc)

Corrective Maintenance (CM) is performed to fix equipment that has broken. Depending on the equipment that has failed, how it impacts the site production, and the site's safe operation, it will be

determined how quickly a technician must address the deficiency. For example, if the entire site stops producing energy, a technician will visit the site as soon as possible. On the other hand, if a single panel optimizer fails, it is most likely that the repair will be noted, and a replacement scheduled while a technician is onsite for another reason.

Condition Based Maintenance (CBM) can be thought of as using the data gathered from the System's operation to anticipate failure, prioritize maintenance, and speed repairs. For example, data can be used to determine when it is most cost effective to clean solar modules, and/or to locate systems or parts of systems that are underperforming. Data can also be used to locate performance anomalies like unexpected inverter clipping.

For both Corrective and Condition Based Maintenance, a database will be managed to record any findings and repairs made, and to build a history that can be easily reviewed. This will inform not only about the history of the site, but also to review the equipment that has been used and replaced to date.

Key Performance Indicators (KPI)

As we data is recorded from the System, several KPIs are gathered to help monitor the performance of the SPS portfolio. These include the following:

- Performance Ratios
- Plant Availability
- Equipment Uptime
- Actual vs Expected Energy Output
- Energy Losses
- Unscheduled outages
- Performance to any production guarantees

KPI data will be provided to the Town on an annual basis to ensure that the facility remains operational and viable, so that the Town can assess future considerations for decommissioning of the facility.

Continuous Improvement

To ensure continuous improvement, the information gathered from O&M activities provides a feedback loop to other parts of the business. For example, the reliability of hardware and the ease of equipment's warranty repairs directly influences future project designs. Additionally, as a Project ages, performance data is gathered and compared with the Engineering production forecasts to verify financial models.

Industry best practices are constantly monitored, and where practical, new methods may be implemented to better determine the health of a Project. For example, 100% thermal mapping of the solar array using drone technology offers better insight into the hidden health of an array, and at a greatly reduced cost from manual scans, and was thus recently incorporated into standard O&M practices across much of the solar industry.

Repowering of the System

As the system ages, and certain electrical components reach the end of their warranty or useful operational life, they may need to be replaced. These components might include the Inverters, Transformers, and Recloser. The need for replacement of these components will be identified in the KPI's indicated above, so that the necessary maintenance activities can be included in either Preventive or Corrective Maintenance schedules. These maintenance activities will be coordinated with Town Code Enforcement, so that if they involve major equipment with earth moving activities, the proper permits can be obtained, and if the activities extend the useful life of the system, then the Maintenance & Removal and Decommissioning Plans can be updated accordingly.

Removal of the System

The procedure for removing the SPS at the end of its Operational Life is outlined in the accompanying Decommissioning Plan to this document. The Decommissioning Plan outlines the permitting, construction, disposal, and financial surety requirements, all of which will be necessary to ensure the safe and proper decommissioning of the SPS.

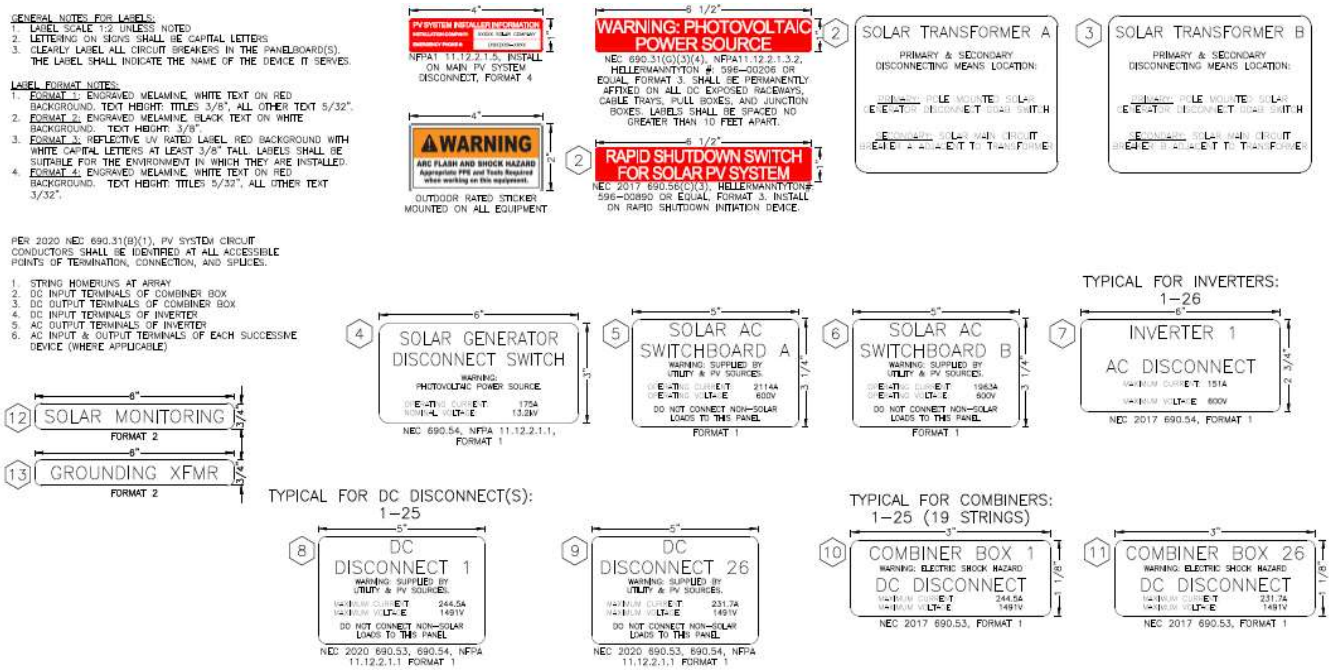
Clarence Solar One & Two –Safety Plan

Following Construction of the Solar Power System (SPS), and as a condition to receiving a Certificate of Completion or Occupancy, the System Owner will conduct a Site Orientation and Safety Training with Fire Personnel and First Responders from the Town of Clarence. The Training will include an overview of major system components, and the locations of emergency shut-offs/disconnects.

The entire area of the SPS will be secured with a galvanized 7’-0” high chain link fence. The fence will surround the SPS, and will include warning signs as mandated by the National Electrical Code. Additionally, a large sign will be placed at the gated entrance to the perimeter fence, and at the intersection of Research Parkway and Wehrle Drive, highlighting notification phone numbers to report vandalism, unsecured fencing, or any other hazardous conditions. Sample signage for the SPS is included in the following pages of this Safety Plan.

The perimeter fence to the SPS will be secured with daisy-chained locks in order to limit access to the solar panel areas. The daisy chain will include locks placed by the System Owner, New York State Electric & Gas (NYSEG), and the local Fire Department and First Responders.

Sample Signage



Sign to be posted at the gated entrance to the perimeter fence, and at the intersection of Research Parkway and Wehrle Park Drive

CLARENCE SOLAR SOLAR FACILITY

OWNER: CLARENCE SOLAR (ONE/TWO), LLC

WARNING: PHOTOVOLTAIC POWER SOURCE

NO UNAUTHORIZED ACCESS

FOR ACCESS, PLEASE CONTACT

(###) ###-####

100/125kW, 1500Vdc String Inverters for North America

CPS SCH100/125KTL-DO/US-600

The 100 & 125kW medium power CPS three phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.0% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125kW products ship with the standard wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The CPS Flex Gateway enables communication, controls and remote product upgrades.

Key Features

- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- Touch safe DC Fuse holders adds convenience and safety
- CPS Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 16 and 20 inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 compatible)
- kVA Headroom yields 100kW @ 0.9PF and 125kW @ 0.95PF
- Generous 1.5 DC/AC Inverter Load Ratio
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years

100/125kW Standard Wire-box

100/125kW Centralized Wire-box

Intertek 4004522
Conforms to UL Std. 1741
Cert.to CSA Std.C22.2 No.107.1-01

This device complies with part 15 of the FCC Rules

Chint Power Systems America
7060 Koll Center Parkway, Suite 318 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV Power	150kW	187.5kW
Max. DC Input Voltage	1500V	
Operating DC Input Voltage Range	860-1450Vdc	
Start-up DC Input Voltage / Power	900V / 250W	
Number of MPP Trackers	1	
MPPT Voltage Range	870-1300Vdc	
Max. PV Input Current (Isc x1.25)	220A	275A
Number of DC Inputs	16 fused inputs (Standard) / 2 (Centralized)	20 fused inputs (Standard) / 2 (Centralized)
DC Disconnection Type	Load rated DC switch	
DC Surge Protection	Type II MOV, Up=2.5kV , In=20kA(8/20us)	
AC Output		
Rated AC Output Power	100kW	125kW
Max. AC Output Power[1]	100kVA (111KVA @ PF>0.9)	125kVA (132KVA @ PF>0.95)
Rated Output Voltage	600Vac	
Output Voltage Range[2]	528-660Vac	
Grid Connection Type[3]	3Φ / PE / N (Neutral optional)	
Nominal AC Output Current @600Vac	106.9A	127.2A
Rated Output Frequency	60Hz	
Output Frequency Range[2]	57-63Hz	
Power Factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
AC Disconnection Type	Load rated AC switch (Standard Wire-box only)	
AC Surge Protection	Type II MOV, Up=2.5kV , In=20kA(8/20us)	
System		
Topology	Transformerless	
Max. Efficiency	99.0%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<2W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range	-22°F to +140°F / -30°C to +60°C (derating from +113°F / +45°C)	
Non-Operating Temperature Range[4]	-40°F to +158°F / -40°C to +70°C maximum[4]	
Operating Humidity	0-100%	
Operating Altitude	8202ft / 2500m (no derating)	
Audible Noise	<65dBA@1m and 25°C	
Display and Communication		
User Interface and Display	LED Indicators, WiFi + APP	
Inverter Monitoring	Modbus RS485, PLC Option (Standard Wire-box only)	
Site Level Monitoring	CPS Flex Gateway (1 per 70 inverters)	
Modbus Data Mapping	SunSpec/CPS	
Remote Diagnostics/FW Upgrade Functions	Standard	
Mechanical		
Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box	
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (standard); 33lbs / 15kg (centralized)	
Mounting/Installation Angle	15 - 90 degrees from horizontal (vertical, angled)	
AC Termination[5]	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL[5], Lugs not supplied)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #12 - #6AWG CU) - Standard Wire-box Busbar, M8 PEMserts (Wire range: #1AWG - 250kcmil CU/AL, Lugs not supplied) - Centralized Wire-box	
Fused String Inputs	20A fuses provided (Fuse values of 15 or 20A allowed)	
Safety		
Safety and EMC Standard	UL1741-SA-2016, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Grid Standard	IEEE 1547a-2014, CA Rule 21	
Smart-Grid Features	Voltage-RideThru, Frequency-RideThru, Soft-Start, Volt-Var, Frequency-Watt	
Warranty		
Standard	10 years	
Extended Terms	15 and 20 years	

1) "Max. AC Apparent Power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100KW PF ≥0.9 and 125KW PF ≥0.95
2) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
3) Wye neutral-grounded, Delta may not be corner-grounded.
4) See user manual for further requirements regarding non-operating conditions.
5) AL requires bi-metallic compression lug or bi-metallic adapter.

TOWN OF CLARENCE

ENGINEERING and BUILDING DEPARTMENTS
6221 Goodrich Road
Clarence Center, NY 14032
716-741-8952
FAX: 716-407-8915

Timothy M. Lavocat, P.E., CFM
Town Engineer

September 6, 2024

Michael Metzger, P.E.
Metzger Civil Engineering, PLLC
8245 Sheridan Dr
Williamsville, New York 14221

Re: ***Clarence Solar Industrial Park***
Solar Park Parcels
Development Plan Submittal #1

Dear Mr. Metzger:

The Town of Clarence Engineering Department received the development plan information for the above referenced project dated August 1, 2024 and received by this department August 6, 2024 and has the following comments relative to the Engineering Department requirements only. **The Development Plan meets the technical requirements of the Engineering Department and is subject to the conditions below. Additional Town Committee/Board approvals are required for final Development Plan approval.**

1. **A certified plat map for Research Parkway, Phase 1 must be filed with Erie County, all ROW and easements must be filed and a legal boundary survey for sublots 9 and 10 must be submitted to the Engineering Department prior to the issuance of Private Improvement Permits (PIP's) and/or any disturbance on site.**
2. PIP's are required for grading and stoning prior to any site work.
3. All sheets of the PIP plans are to be wet stamped and signed. Four (4) sets of plans are required to be submitted with the PIP applications to the Engineering Department. Other departments may require additional plans.
4. All conditions of approval by the Engineering Department and the Planning Board Resolution for Development Plan approval shall be clearly presented on the cover sheet of the PIP Plans.
5. Only approved plan sets bearing the signature of the Town Engineer shall be considered valid plans to be used on site. All sheets of PIP plans to be clearly labeled "ISSUED FOR CONSTRUCTION".
6. PDF copies of the PIP plan set must be provided to the Engineering Department.
7. Full compliance with and all signatory requirements of GP-0-20-001 are required.
8. The Owner/Operator, qualified inspector and contractor certifications, as part of the SWPPP must be signed prior to issuance of PIP's.
9. Please be advised that SWPPP site inspections are required under permit GP-0-20-001 and are the responsibility of the owner/operator to ensure continued maintenance of the stormwater management system. The maintenance agreement required under permit GP-0-20-001 is required prior to certificate of occupancy.

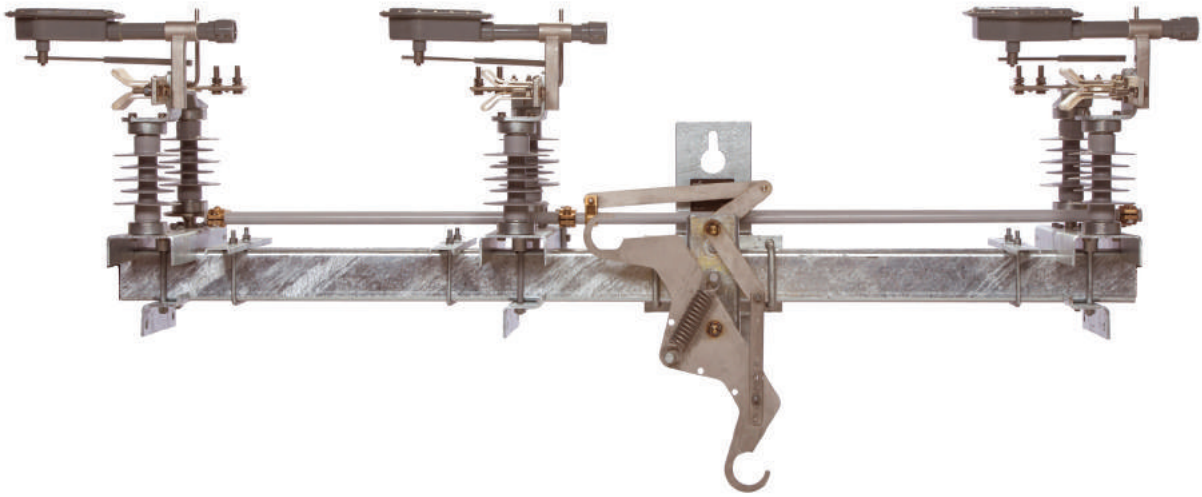
Should you have any questions or require further clarification regarding the review of the above referenced project please feel free to contact me.

Very truly yours,

Joseph Lancellotti
Asst. Municipal Engineer

Cc: Timothy Lavocat, P.E., Town Engineer
Jonathan Bleuer, Director of Community Development
Paul Gross, Sr. Code Enforcement Officer
Research Parkway, LLC, 9580 Main Street, Clarence, NY 14031
File

Manually-Operated M-Force Switch Installation and Operation Instructions



EATON
Powering Business Worldwide

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Contents

Safety for life

Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally-approved safety procedures and safety instructions when working around high-voltage lines and equipment, and support our "Safety For Life" mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high- and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as arc flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

⚠ DANGER

Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally-approved safety procedures when working around high- and low-voltage lines and equipment. G103.3

⚠ WARNING

Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling, or maintenance can result in death, severe personal injury, and equipment damage. G101.0

⚠ WARNING

This equipment is not intended to protect human life. Follow all locally-approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury, and equipment damage. G102.1

⚠ WARNING

Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install, or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage. G122.2

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Introduction

This manual provides installation and operation instructions for Eaton's Cooper Power™ series M-Force™ three-phase overhead loadbreak switch.

Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Additional information

These instructions cannot cover all details or variations in the equipment, procedures, or processes described, nor provide directions for meeting every possible contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user's purpose, contact your Eaton sales representative.

Acceptance and initial inspection

Each switch is completely assembled, inspected, tested, and adjusted at the factory. It is in good condition when accepted by the carrier for shipment. Upon receipt of a switch, inspect the switch thoroughly for damage and loss of parts incurred during shipment. If damage or loss is discovered, file a claim with the carrier immediately.

Handling and storage

Be careful during handling and storage of the switch to minimize the possibility of damage.

If the switch is to be stored for an appreciable time before installation, provide a clean, dry storage area. Locate the switch so as to minimize the possibility of mechanical damage.

Quality standards

ISO 9001:Certified Quality Management System.

Description of operation

The M-Force switch is a distribution-class, gang operated, and factory unitized three-phase overhead loadbreak switch, offered in distribution voltage classifications of 15.5 kV, 27 kV, and 38 kV. The M-Force switch may be used for line sectionalizing, paralleling, by-passing, and isolating. M-Force stands for "magnetic force." The switch has reverse loop contacts found on distribution-class sidebreak switches; a contact usually reserved for transmission switches. The reverse loop contacts utilize high current magnetic forces for added reliability. The reverse loop design allows for high contact pressure to be maintained during fault conditions. This feature prevents pitting and distorting of the switch blade and contacts even under momentary overload.

Ratings and specifications

Check switch ratings prior to installation

The switch must be applied within its specified ratings. Check nameplate ratings and compare with the system characteristics at the point of application prior to installation.

Table 1. Electrical characteristics

	Max	BIL	Cont. Current	Loadbreak	Momentary*	3 Second	Fault Close (ASM)
14.4 kV	15.5 kV	110 kV	900 A	50 @ 600 A/10 @ 900 A	40 kA Asy. rms	25 kA Sym. rms	1 @ 20 kA, 3 @ 15 kA
25 kV	27 kV	150 kV	900 A	50 @ 600 A/10 @ 900 A	40 kA Asy. rms	25 kA Sym. rms	1 @ 20 kA, 3 @ 15 kA
34.5 kV	38 kV	200 kV	900 A	10 @ 900 A	40 kA Asy. rms	25 kA Sym. rms	1 @ 20 kA, 3 @ 15 kA

* Momentary peak current is 65 kA.

Dimensions and weights

Shipping weights and dimensions

The shipping weights as specified in Table 2 include the 2.25" bolt hole circle silicone rubber insulators for 15.5 and 27 kV ratings. For alternate insulators, refer to Table 3 for change in weight.

Table 2. Shipping weights and dimensions (2.25" bolt circle polymer insulators standard, 3.00" on 35 kV)

	Voltage Class	15.5 kV		27 kV		38 kV	
	Crossarm	Steel	Fiberglass	Steel	Fiberglass	Steel	Fiberglass
Horizontal Upright	Crate L" x W" x H"	94" x 27" x 34"	94" x 27" x 34"	104" x 30" x 38"	104" x 30" x 38"	134" x 37" x 41"	134" x 37" x 41"
	Weight	381 lbs.	347 lbs.	414 lbs.	380 lbs.	478 lbs.	444 lbs.
Horizontal Pole-Top	Crate L" x W" x H"	94" x 27" x 34"	94" x 27" x 34"	94" x 27" x 34"	94" x 27" x 34"	134" x 37" x 41"	134" x 37" x 41"
	Weight	377 lbs.	343 lbs.	410 lbs.	376 lbs.	474 lbs.	440 lbs.
Phase-Over-Phase	Crate L" x W" x H"	100" x 27" x 34"	100" x 27" x 34"	110" x 30" x 38"	110" x 30" x 38"	140" x 37" x 41"	140" x 37" x 41"
	Weight	462 lbs.	428 lbs.	495 lbs.	461 lbs.	559 lbs.	525 lbs.
Vertical Riser	Crate L" x W" x H"	94" x 27" x 34"	94" x 27" x 34"	104" x 30" x 38"	104" x 30" x 38"	134" x 37" x 41"	134" x 37" x 41"
	Weight	402 lbs.	368 lbs.	435 lbs.	401 lbs.	499 lbs.	465 lbs.
Triangular	Crate L" x W" x H"	93" x 27" x 73"	94" x 27" x 73"	93" x 30" x 73"	93" x 30" x 73"	199" x 37" x 85"	99" x 37" x 85"
	Weight	471 lbs.	437 lbs.	504 lbs.	470 lbs.	568 lbs.	534 lbs.

Note: G095 spacing and special switch options will cause slight variations.

Table 3. Weight adders

	15.5 kV		27 kV		38 kV
	2.25" B.C.	3.00" B.C.	2.25" B.C.	3.00" B.C.	3.00" B.C.
Polymer Insulators	–	14 lbs.	–	3 lbs.	–
Epoxy Insulators	9 lbs.	41 lbs.	14 lbs.	54 lbs.	57 lbs.
Porcelain Insulators	54 lbs.	114 lbs.	57 lbs	164 lbs.	199 lbs.

Standard M-Force switch configurations

The M-Force switch configurations include horizontal, horizontal pole-top, phase-over-phase, or triangular. Refer to the corresponding Figures 1 through 5 for a specific configuration, and refer to Table 4 for dimensional information.

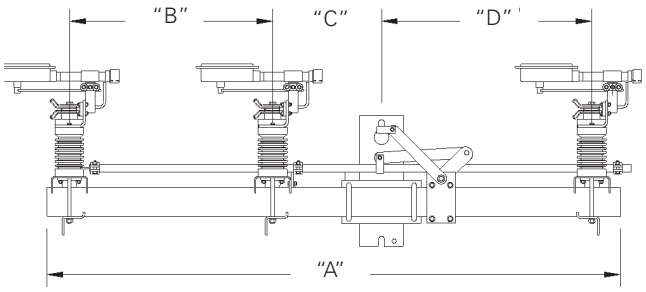


Figure 1. Horizontal switch configuration

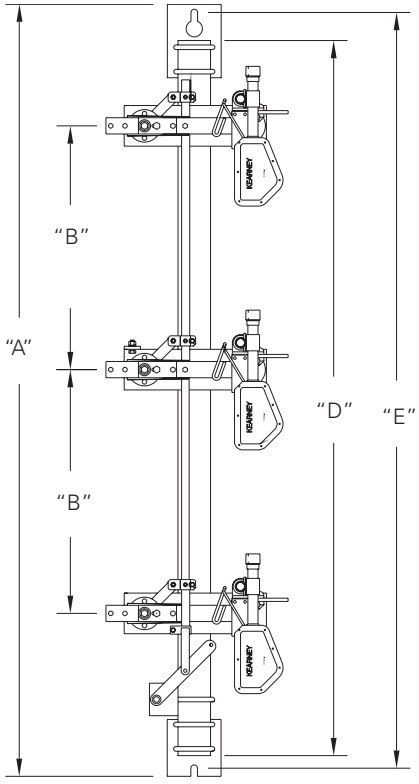


Figure 2. Phase-over-phase switch configuration

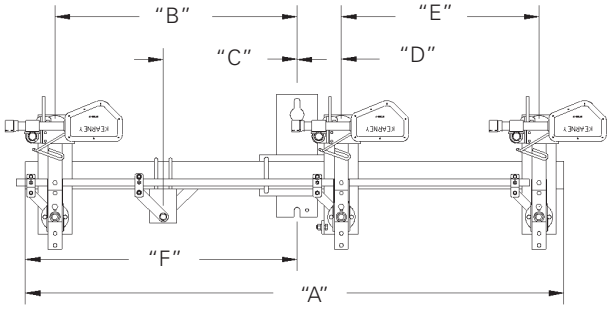


Figure 3. Vertical switch configuration

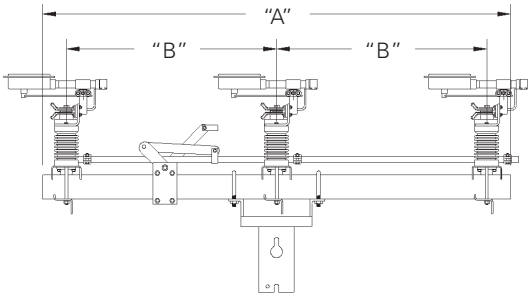


Figure 4. Horizontal pole-top switch configuration

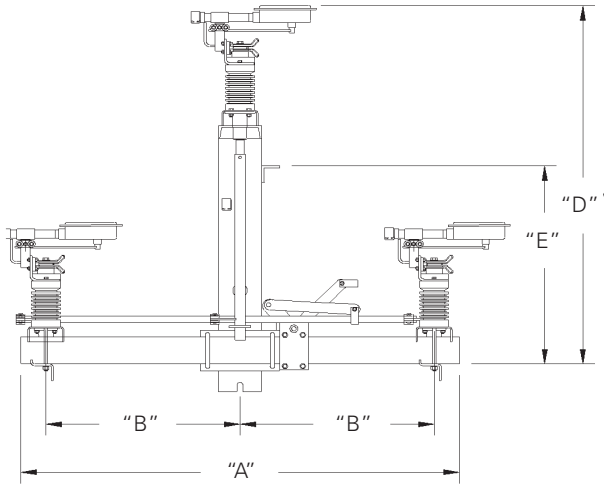


Figure 5. Triangular switch configuration

Table 4. Dimensional information

	Horizontal						Vertical (Riser)						Phase-Over-Phase			Triangular		
	Standard			G095			Standard			G095								
Dim.	15 kV	25 kV	35 kV	15 kV	25 kV	35 kV	15 kV	25 kV	35 kV	15 kV	25 kV	35 kV	15 kV	25 kV	35 kV	15 kV	25 kV	35 kV
A	79"	88"	119"	97"	108"	126"	79"	88"	97"	108"	119"	126"	95"	104"	126"	61"	73"	79"
B	28"	33"	42"	28"	33"	42"	35.5"	40"	45"	49.5"	56"	54.5"	30"	34.5"	45.5"	27"	33"	36"
C	15"	15"	18"	24"	24"	24"	19.5"	19.5"	19.5"	19.5"	19.5"	19.5"	N/A	N/A	N/A	N/A	N/A	N/A
D	29"	33"	52"	38"	43.5"	52.5"	6.5"	6.5"	6.5"	22"	22.5"	22.5"	88"	97"	119"	58"	61"	73"
E	N/A	N/A	N/A	N/A	N/A	N/A	29"	33.5"	45"	29"	33.5"	42"	93"	102"	124"	34"	34"	42"
F	N/A	N/A	N/A	N/A	N/A	N/A	39.5"	45"	48.5"	53.5"	59.5"	58"	N/A	N/A	N/A	N/A	N/A	N/A

Horizontal Pole-Top			
Standard			
Dim.	15 kV	25 kV	35 kV
A	79"	79"	97"
B	36"	36"	45"

Phase units

Each phase unit shall be secured to the crossarm with locking spacers to eliminate distortion of the phase unit base. Dead-end brackets shall incorporate locking tabs that will eliminate movement under side forces present when the conductor is dead-ended at an angle.

Refer to Figure 6 and Table 5 for phase unit dimensions. The switch shall be capable of opening or closing under a 3/8" ice layer without ice shields. The switch shall be capable of opening or closing under a 3/4" ice layer with ice shields.

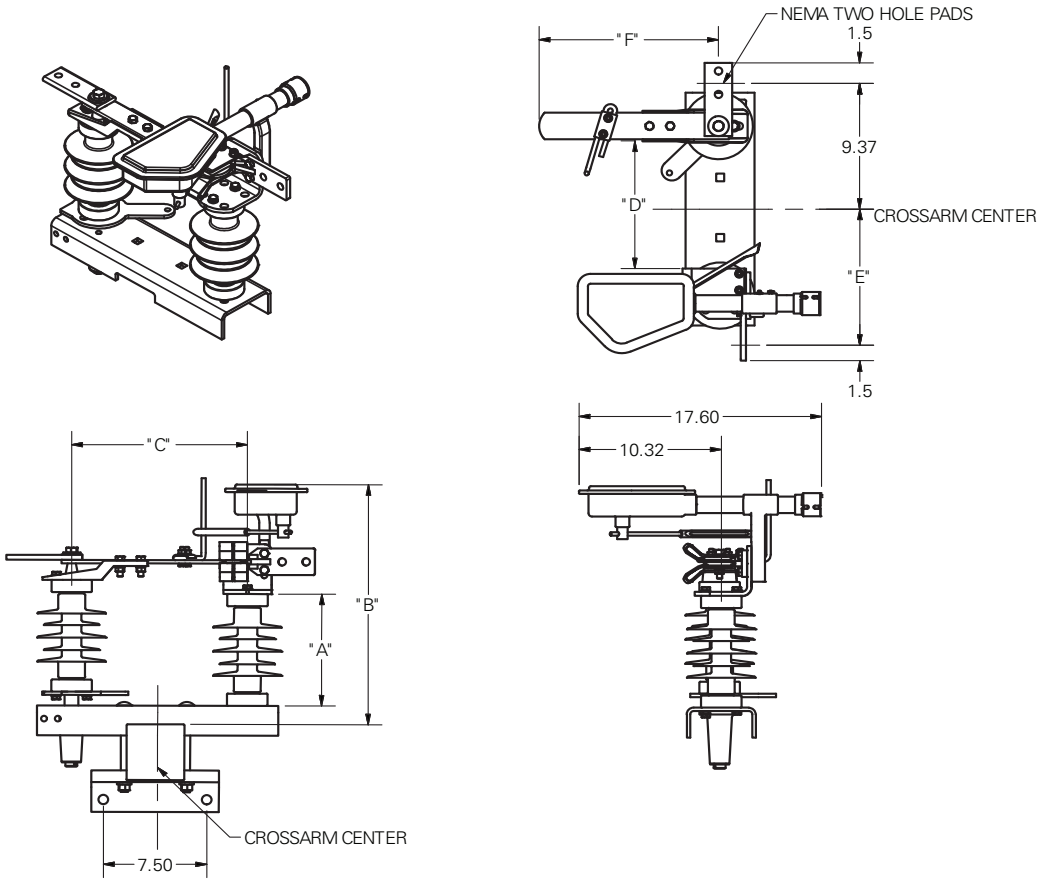


Figure 6. Phase unit for the standard M-Force switch

Table 5. Phase unit dimensions

	Voltage Class	**15.5 kV**		**27 kV**	
Dim.	**Insulator Material**	**57 mm (2.25") B.C.**	**76 mm (3.00") B.C.**	**57 mm (2.25") B.C.**	**76 mm (3.00") B.C.**
A	Cycloaliphatic	178 mm (7.00")	216 mm (8.50")	254 mm (10")	254 mm (10")
	Porcelain	205 mm (8.00")	254 mm (10.00")	254 mm (10")	356 mm (14")
	Silicone Rubber	213 mm (8.4")	254 mm (10.00")	274 mm (10.8")	356 mm (14")
B	B = A + 254 mm (10.00")				
C		324 mm (12.75")		390 mm (15.37")	
D		241 mm (9.48")		310 mm (12.19")	
E		254 mm (10.01")		321 mm (12.63")	
F		330 mm (13.00")		397 mm (15.62")	

Note: Dimensions, given in mm (in), are approximate.

Insulators

The M-Force switch comes standard with 57 mm (2.25") bolt circle silicone rubber insulators. These non-porcelain insulators offer exceptional dielectric and mechanical characteristics adding to the reliability of the M-Force switch, while lowering the weight. The switch can also be provided with 76 mm (3.0") bolt circle insulators and with alternate porcelain or cycloaliphatic epoxy designs.

Table 6. Insulator creep distances

	2.25" Bolt Circle Insulators		3.00" Bolt Circle Insulators
	15.5 kV	**27 kV**	**38 kV**
Polymer Insulators	20.2"	28.0"	37.00"
Epoxy Insulators	18.3"	22.70"	37.69"
Porcelain Insulators	14.0"	17.38"	37.00"

Installation procedure

IMPORTANT

Do not remove factory installed wire ties holding the blade to the clips until the switch is fully erected.

⚠ WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury, and equipment damage.

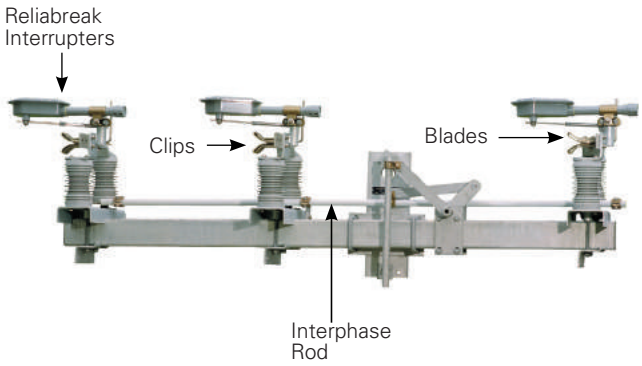


Figure 7. Horizontal M-Force switch

Mounting instructions

1. Do not hoist by or allow lifting slings to contact the switch phase unit parts.
2. Mount the unitized switch to the pole using 3/4" bolts at the desired location. Refer to Figure 8 for pole bracket detail. Remove the lifting straps.
3. Remove the factory installed contact tie wires from the phase units.
4. Operate the crossarm bellcrank, inspecting for operational difficulties.
5. Ensure that there is adequate travel for the switch blades to completely engage.
6. Check all phases for full closure of all main contacts.
7. Adjustment:
   a. If all phases require equal adjustment, loosen the clamp on the hotstick bellcrank extension. Adjust the inter-phase rod, as required.

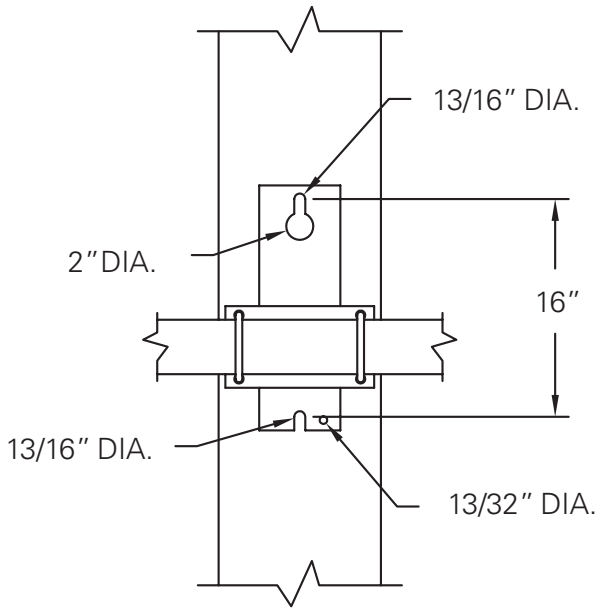


Figure 8. Pole bracket detail

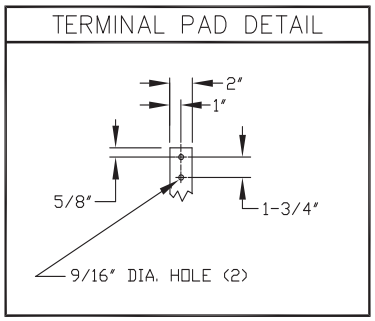


Figure 9. Terminal pad detail

   b. To adjust individual phases, close the switch using a vigorous stroke and loosen the individual clamp on the rotating insulator. Fully close the subject phase and tighten the clamp to the inter-phase rod.
8. Repeat Steps 6 and 7 until the following conditions exist:
   a. When the switch is closed and the hotstick operator is in the locked position, all contacts are fully closed.
   b. When the switch is opened and the hotstick operator is in the locked position, all switch contacts are parallel with the crossarm.

Grounding

Grounding the M-Force switch

Use your local operating practices when installing the M-Force switch. The pole-mounting bracket has a hole at the bottom of the bracket for the purpose of attaching a ground lug. The M-Force switch may be ordered with a grounding lug, option "T". The lug will accommodate cable sizes from #2 AWG to 250 MCM.

⚠ DANGER

Hazardous voltage. Switch must be solidly grounded. Follow all locally approved procedures and safety practices when grounding this equipment. Improper grounding can result in contact with high voltage, which will cause death or severe personal injury.

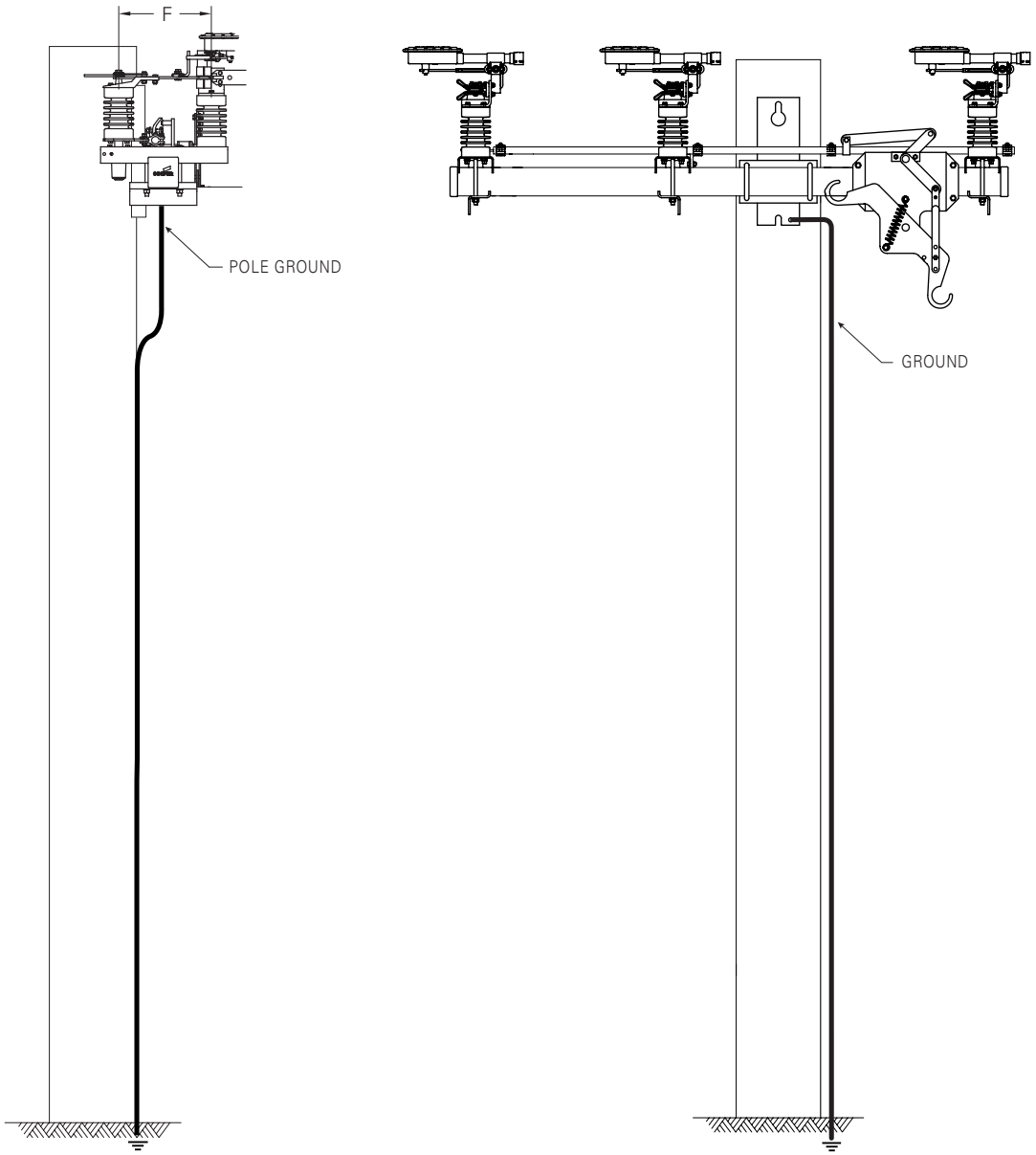


Figure 10. Grounding the M-Force switch

Switch operation

Manual switch operation

Note: Under icy conditions, additional force may be necessary to fully complete an opening or closing sequence.

⚠ WARNING

Equipment misoperation. Never attempt to open an energized M-Force switch giving indication of a partial close operation. In this state, the M-Force switch may not safely interrupt. Failure to comply can result in equipment damage and serious injury.

Hookstick operated

⚠ DANGER

Hazardous voltage. Always use a hotstick when working with this equipment. Failure to do so could result in contact with high voltage, which will cause death or severe personal injury.

IMPORTANT

The hotstick tip must be placed in the groove under the eyelet of the manual operating handle when closing the switch.

The hotstick M-Force switch is opened and closed by applying downward force upon the pivoting bellcrank operator. A hotstick must always be used to operate the bellcrank operator. Follow these steps to manually open and close the hotstick M-Force switch. Refer to Figure 11.

⚠ WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury, and equipment damage.

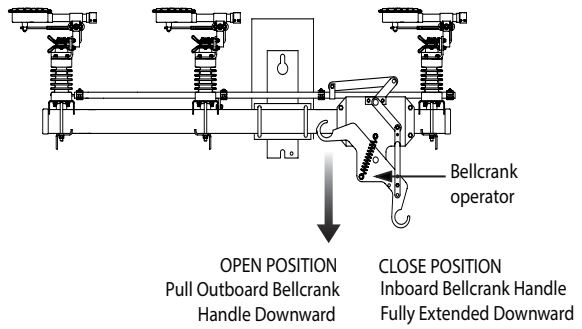


Figure 11. Open and close positions of hotstick M-Force switch manual operation handles

⚠ DANGER

Hazardous voltage. Do not rely on the open position of the hotstick-operated bellcrank; it does not ensure that the line has been de-energized. Always establish a visible disconnect and observe the position of the switch blades. Failure to follow proper safety practices can result in contact with high voltage, which will cause death or severe personal injury.

Opening switch

- Using a hotstick, quickly and forcefully pull the outboard handle of the manual bellcrank operator downward to open the switch.

Closing Switch

- Using a hotstick, quickly and forcefully pull the inboard handle of the manual bellcrank operator to close the switch.

Reciprocating handle

- Unlock the control handle if it is in a locked position.
- Operator should position body so that stable footing is ensured throughout the entire motion of the control handle.
- Once the operator is ready to begin the opening or closing sequence, begin the motion quickly and continue the movement from the upper limit to lower limit (or vice versa) until the control mechanism is fully open or closed. This should result in a fully opened or closed blade position with respect to the contacts. It is important to not stop motion during the open/close sequence as a partially closed blade could introduce arcing.
- Ensure the control handle is in a secured position, and lock it if your company does so.

Note: If control operation is not smooth, refer to the **Maintenance** and **Troubleshooting** sections.

Torsional handle

- Unlock the control handle if it is in a locked position.
- Operator should position body so that stable footing is ensured throughout the entire motion of the control handle.
- Once the operator is ready to begin the opening or closing sequence, begin the motion quickly and continue the movement from one side to the other until the control mechanism is fully open or closed. This should result in a fully opened or closed blade position with respect to the contacts. It is important to not stop motion during the open/close sequence as a partially closed blade could introduce arcing.
- Ensure the control handle is in a secured position, and lock it if your company does so.

Note: If control operation is not smooth, refer to the **Maintenance** and **Troubleshooting** sections.

Returning the switch to service

⚠ WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury, and equipment damage.

The following procedure must be followed to return the switch to service upon completion of in-shop service or maintenance operations.

1. Verify that any termination clamps loosened during the out-of-service period are tight.
2. Verify that ground connections to the switch are secure.
3. Remove any padlock or locking device that may have been attached to the hookstick operator.
4. Complete any procedures normally performed as part of any local Return to Service practices.
5. The switch may be returned to normal service conditions.

Maintenance

The M-Force switch is designed for long life in outdoor conditions. Certain preventative maintenance checks can be performed periodically to extend the life of the switch. These recommended maintenance inspections should be performed yearly, more frequently if located in an environment with pollution. Replacement parts are available from Eaton, if needed.

For additional information, refer to IEEE Std C37.35™-1995 standard, *IEEE Guide for the Application, Installation, Operation, and Maintenance of High Voltage Air Disconnection and Load Interrupter Switches*.

Control rods and mechanisms

- Inspect all connections and bolts for adequate torque and damage.
- Check that control handles do not have excessive play; adjust if necessary.

Mounting hardware

- Inspect all connections and bolts for adequate torque and damage.

Terminal pads

- Inspect terminals and pads to ensure all connections are tight and have no corrosion.
- If necessary, clean with approved solvent, apply approved contact grease, and retighten terminals to pads.

Switch motion

- Inspect all moving parts for corrosion and damage.
- Operate the switch three (3) times to ensure smooth motion of the controls, switch blades, and interrupters.
- If switch motion is not smooth, refer to the **Troubleshooting** section.

Reliabreak interrupter

- Inspect all Reliabreak interrupters for physical damage.
- Ensure that there is no corrosion or carbon deposits from arcing on the Reliabreak arm.
- Ensure the trip arms operate freely and properly during switch operation.

Blades and clip contacts

- Inspect all blades and clip contacts for physical damage.
- Ensure that there is no corrosion on the blades or clips.
- Ensure that there is no evidence of carbon deposits on the contacts.
- If necessary, adjust the blade position so that it is fully latched in the closed position.
- If necessary, relubricate contacts with an appropriate lubricant.

Troubleshooting procedures

Should any components of the M-Force switch need adjustments, follow the steps in this troubleshooting section. For further details, contact your Eaton representative.

Phase spacing

Measure the phase distances as shown on the switch drawing and confirm they are in agreement. If any of the phase spacing dimensions are off by more than 1", bring the unit down to the ground to adjust the spacing. Loosen the hardware under the phase base and move the phase unit to the proper position. Retighten the hardware and torque to 50 ft-lbs.

Closed position of blade

While the switch is in the closed position, check that all blades are fully latched into the clip contacts. When the blade is positioned correctly, it will be entirely within the contact walls. If the blade is not fully within the clip contacts, loosen the set screw and bolt securing the phase unit of that blade and reposition the blade. Tighten the bolt back to 20 ft-lbs.

While the blade is in the closed position, the top and bottom clip contacts should have equal compression distances. If the difference in compression between the top and bottom contact clip is more than 1/8", that means the blade is off center and should be adjusted. Loosen the bolts behind the clip contact brackets and move the contacts to the correct position. If the compression difference cannot be corrected, other potential causes include:

- the retaining ring on the spindle assembly of the moving insulator has become dislodged;
- the blade or connection has become bent; or
- the blade connection hardware has become loose.

If any of these are the root cause of the compression differences, the switch should be taken down from the pole in order to correct it. If further diagnosis is necessary, contact your Eaton representative.

Contact resistance

While in the closed position, the resistance value between the blade and clip should be less than or equal to 60 μΩ. Connect a resistance tester to the terminal pads and measure this resistance value. If it is higher than 60 μΩ, perform a few switch operations and measure again. If the value is still too high, contact your Eaton representative for diagnosis.

Note: If the switch has been stored outside for more than one year prior to installation, the resistance reading may appear higher than the recommended value. In this case, operate the switch several times and measure again.

Reliabreak positioning

Checking the trigger angle – At the closed position, slowly pull the Reliabreak operating rod until the mechanism spring is triggered. Stop at the point where the spring is triggered and check the angle of the rod position. That position should be 90°±10° from the starting position of the rod. If the trigger position is not within that tolerance, the Reliabreak unit should be replaced. When replacing the old unit with a new Reliabreak unit, check that the triggering position is correct.

Checking the closed position – At the closed position, pull the rod until it is in the open position as described in the "Checking the trigger angle" paragraph (approximately 100° from the starting position). Fully release the rod. The rod should snap back to the fully closed position. If it does not snap back to the fully closed position, it should be replaced by a new Reliabreak unit. Check that the new unit snaps back to the fully closed position.

Reliabreak arm

The Reliabreak Pick-up Arm, as shown in Figure 12, is insulated on one side, which isolates the interrupter from the current path during a close operation. This feature allows for a wide range of adjustments between the Reliabreak arm and the blade catch finger. This increased tolerance removes the possibility of misalignment during operation, which ensures proper load interruption.

IMPORTANT

Whatever adjustments are done to the Reliabreak, there must be at least a 0.125" (3 mm) gap between the Reliabreak arm and the edge of the trip rod. When properly adjusted, a 0.125" gap is typical. (See detail in Figure 24).

Reliabreak Arm Adjustment

1. Adjustments may be made by moving the Reliabreak arm in and out.

IMPORTANT

Do not bend the Reliabreak arm. A 0.125" (3 mm) minimum clearance gap must be maintained.

2. When properly adjusted, the distance from the radius to the tip of the Reliabreak arm is typically 300 mm (11.82").
3. Adjustments may be made by moving the trip rod in and out.
4. When properly adjusted, the distance from the edge of the blade to the center of the trip rod is typically 66 mm (2.58").
5. The Reliabreak arm housing may be rotated about the mounting pipe by a maximum of 127 mm (5.0") on the M-Force switch. The housing is typically perpendicular to the blade on 15 kV and 27 kV M-Force switches.

NOTICE

Equipment damage. Verify the Reliabreak arm is fully engaged with the trip rod during an equipment OPEN operation. Failure to comply may result in equipment damage.

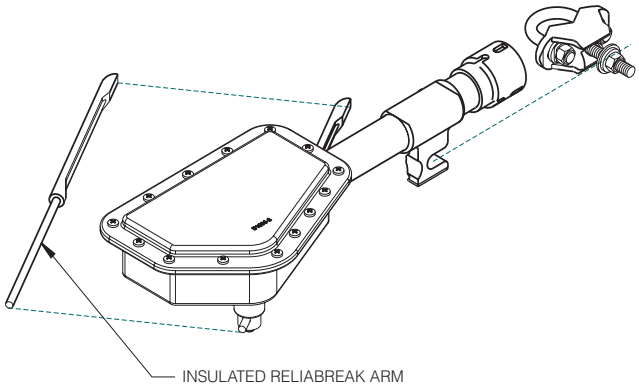


Figure 12. Exploded view of Reliabreak including insulated Reliabreak arm

Control mechanism/rod operation

After installation, operate the control rod/mechanism at least three (3) times to ensure the M-Force switch operates smoothly. Check that the handle base assembly is in the correct open and closed positions. When locking the handle closed or open, ensure that the position of the switch matches the position of the handle. If the control mechanism does not operate smoothly, check that all rod connections are those provided by Eaton and are installed and aligned properly.

Reliabreak Replacement Instructions

Replacing a Reliabreak unit with the offset mounting configuration (October 2016 - present)

1. Inspect the new Reliabreak unit. The Reliabreak trip arm will be factory-preset to 2". See Figure 13.
2. Remove the bolts securing the Reliabreak unit using a 9/16" socket or wrench. See Figure 14.
3. Remove the Reliabreak unit.
4. Line up the through-holes on the Reliabreak mounting arm with the threaded holes in the L-bracket.
5. Insert the bolts and tighten to 25 ft-lbs.
6. Loosen the bolts holding the catch on the switch blade until the catch slides back and forth. Do not remove the bolts completely. See Figure 15.
7. Insert the gauge (supplied) as shown in Figure 16 (the width of the gauge is 1.68").
8. Adjust the catch to the point that it holds the gauge in place.
9. Tighten bolt #1 to ensure the gauge is snug between the blade and the catch. See Figure 16.
10. Remove the gauge.
11. Tighten both bolts and torque to 20ft-lbs.
12. Close the switch and observe the operation of the Reliabreak unit per the instructions in "Guide to proper operation of a Reliabreak type interrupter" on page 16.

Figure 13. Check trip arm setting

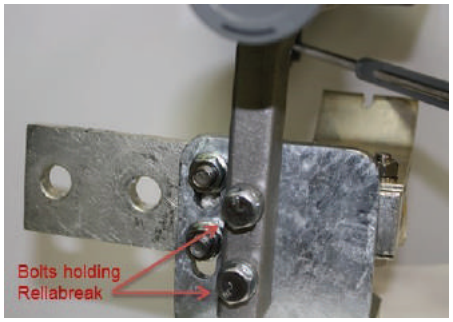


Figure 14. Remove the bolts securing the unit

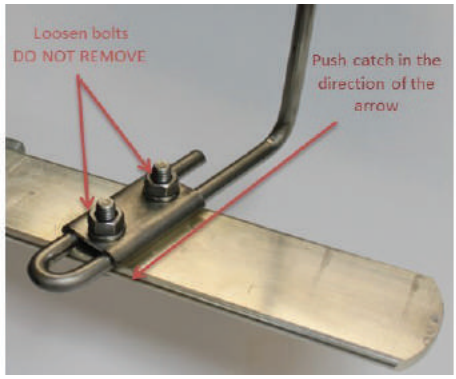


Figure 15. Loosen the bolts holding the catch

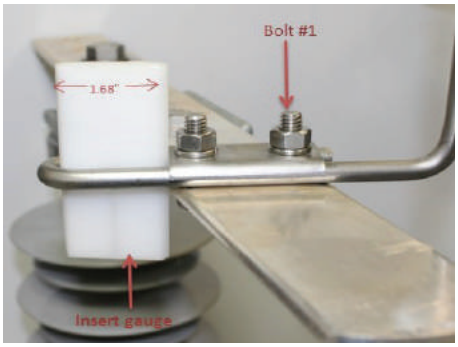


Figure 16. Adjust the catch and tighten the bolt

Replacing a Reliabreak unit with a U-bolt and mounting pipe configuration (pre-2015 version)

1. Loosen the nut as shown in Figure 17.
2. Slide the Reliabreak off the bolt. If the U-clamp has not been damaged, leave it in place.
3. Slide the replacement unit onto the bolt and torque the nut to 25 ft-lbs. See Figure 12.
4. Double check the adjustment per the instructions in "Guide to proper operation of a Reliabreak type interrupter" on page 16.
5. If the U-clamp has been damaged and requires replacement, loosen the two bolts and remove the clamp. Mark the location of the clamp on the pipe.
6. Attach the new clamp and torque to 25 ft-lbs.

Note: The casting must be located flush with the top of the pipe. See Figure 18.

7. Make adjustments per the instructions in "Guide to proper operation of a Reliabreak type interrupter" on page 16.

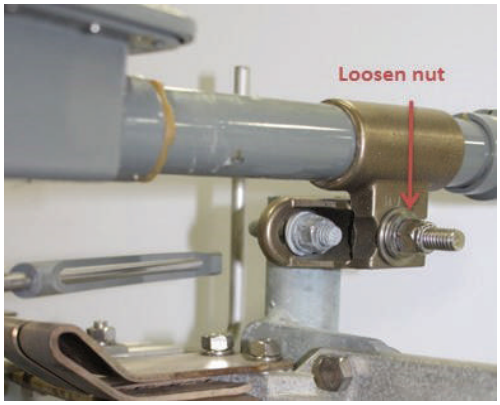


Figure 17. Loosen the nut on the Reliabreak

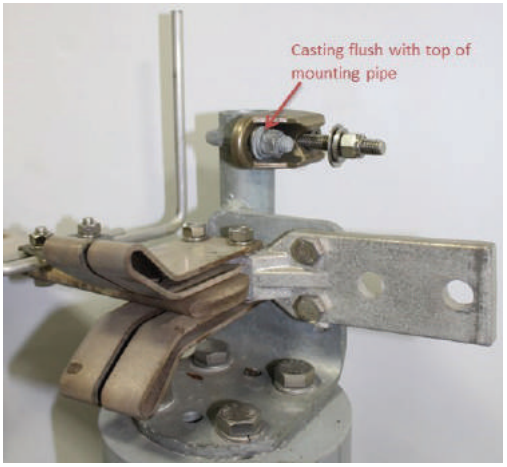


Figure 18. Attach the new clamp

⚠ DANGER

Hazardous voltage. Contact with hazardous voltage will cause severe injury or death. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.

Converting a shared bolt mounting to current offset mounting configuration (April 2015 - October 2016)

Note: To perform this replacement, the switch must be in the open position.

1. De-energize the switch on both the line and load sides.
2. Locate the bolts that connect the L-bracket to the insulator using two 3/8" bolts for 2-1/4" bolt center insulators (four 1/2" bolts are used for 3" BC insulators). See Figure 19.
3. Remove the bolts using a 9/16" wrench or socket for the 3/8" bolts (a 3/4" wrench or socket is required for the 1/2" bolts).
4. Lift and remove the entire Reliabreak/contact assembly.
5. Place the offset Reliabreak/contact assembly onto the insulator and secure with the existing bolts or bolts supplied in the Reliabreak kit. See Figure 20.
6. Torque the bolts to 25 ft-lbs. for 3/8" bolts or 50 ft-lbs. for 1/2" bolts.
7. Follow steps 6 through 12 in the "Replacing a Reliabreak unit with the offset mounting configuration" procedure on page 13.

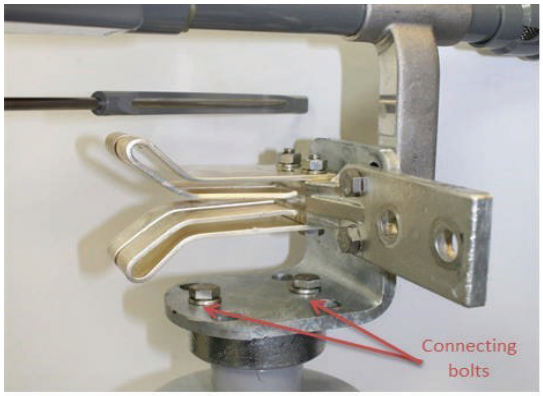


Figure 19. Locate the bolts

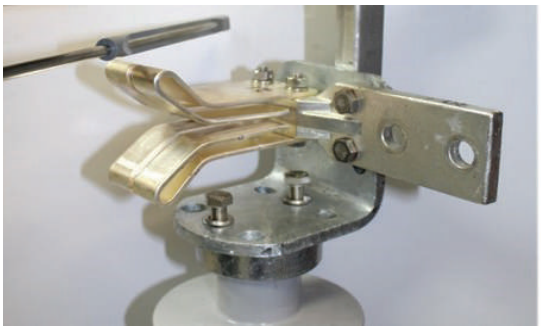


Figure 20. Replace the Reliabreak assembly

Converting the old U-bolt configuration to the new offset mounting configuration

Follow the steps in the "Converting a shared bolt mounting to current offset mounting configuration" procedure on page 15.

Guide to proper operation of a Reliabreak type interrupter

Pre-stroke

Before attempting to operate Reliabreak arm, make sure that the Reliabreak arm and trip rod are in a position so that when the trip rod begins its arcing motion, it will catch on the inside of the Reliabreak arm. Make sure that before the contacts separate from one another that the trip rod is in contact with the bare metal surface of the Reliabreak arm.

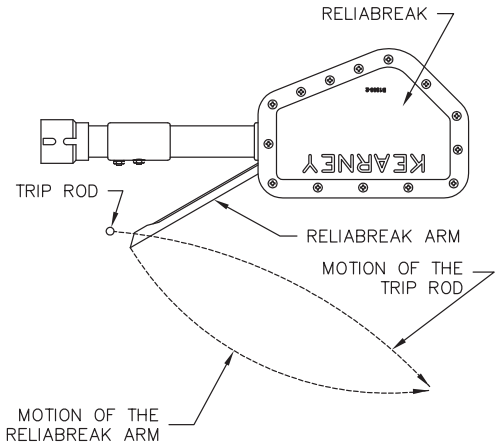


Figure 21. Reliabreak arm pre-stroke position

Mid-stroke (loadbreak)

Trip rod must contact the metal surface of the Reliabreak arm prior to the break of the contacts. From that point to when the Reliabreak breaks, the trip rod must remain in contact with the metal surface of the Reliabreak arm. At approximately 90°, the unit should break, indicated by the snapping sound coming from within the unit. See Figure 22.

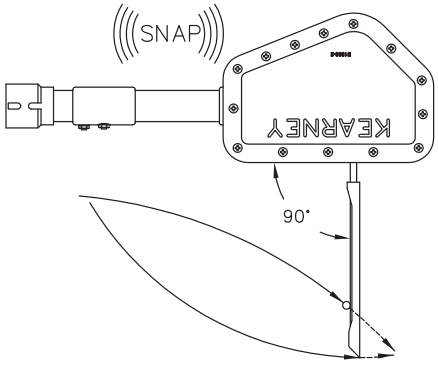


Figure 22. Reliabreak arm snap position

Release of arm

After loadbreak, the Reliabreak arm will travel approximately 10° past center. After this travel, the trip rod should become free and allow the Reliabreak arm to travel back to its resting position. The Reliabreak arm must snap back before the trip rod comes to a stop. See Figure 23.

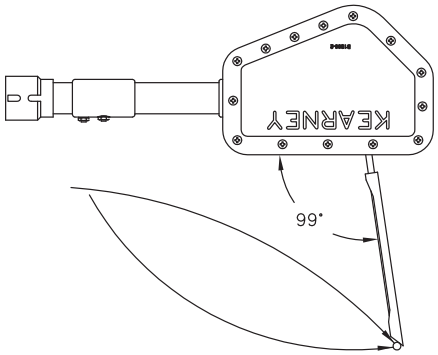


Figure 23. Trip arm full travel

Adjustments

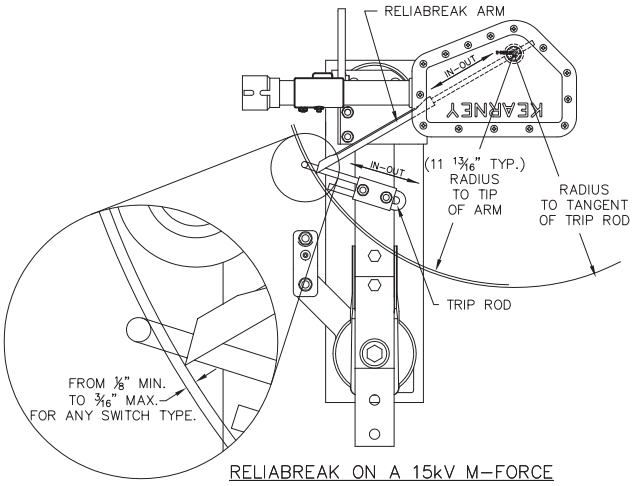


Figure 24. Adjustment dimensions

1/8" clearance gap

No matter what adjustments are done to the Reliabreak arm, there must be at least a 1/8" gap between the Reliabreak arm and the edge of the trip rod. When properly adjusted, a 1/8" gap is typical. See Figure 24.

Reliabreak arm

Adjustments may be made by moving the Reliabreak arm in and out. Do not bend the Reliabreak arm. 1/8" minimum clearance gap must be maintained. When properly adjusted, the distance from the radius to the top of the Reliabreak arm is typically 11-13/16".

Trip rod

Adjustments may be made by moving the trip rod in and out. Do not bend the trip rod. A 1/8" minimum clearance gap must be maintained between 1/8" and 3/16".

Trip arm return

When the trip arm returns to the closed position, it should hit the Reliabreak arm near the tip, travel past it, and return to the position stated in the "Pre-stroke" section on page 16.

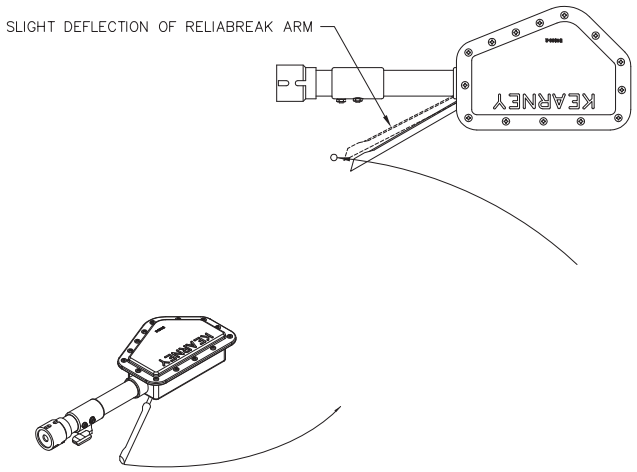


Figure 25. Trip arm path of travel

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Power Systems Division
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

Powering Business Worldwide

Printed in USA
Publication No. MN008003EN Rev. 02
January 2018

For Eaton's Cooper Power series product information, call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.

OurGeneration

solar and energy storage development for our infrastructure, for our communities

OurGeneration LLC is a community solar project developer who;

- Identifies land and rooftop sites that have potential to host a community solar farm
- Engages and educates property owners on the long term community and economic value of hosting a solar array
- Oversees all environmental, electrical, technical, and zoning feasibility studies and due diligence
- Leads projects through local, state, and federal authorities to obtain approvals to proceed with construction and utility IX
- Partners with construction and project financing parties to bring projects to fruition

Why we do this: "More energy from the sun falls on the earth in one hour than is used by everyone in the world in one year" - The National Renewable Energy Laboratory. No digging, no combustion, no environmental waste - capturing and storing this free, virtually unlimited, and renewable fuel source for energy and electricity is our collective challenge. As populations grow and more lives and commerce rely on electricity, providing our communities with clean, local solar energy becomes an increasingly attractive opportunity on multiple fronts for all stakeholders today while paying it forward for the generations to come.

"OurGeneration": regardless of our age, location, or occupation we can all take responsibility and ownership in the impact our choices have on our families, cities, communities, and the environment. A Baby Boomer making the conscious decision to host a solar farm or a Millennial opting for a community solar subscription allows us all to have a piece of ownership in the collective transition to renewable energy as a source of electricity generation. Each able to proudly say their generation is doing something about our grid's infrastructure and our communities' source of power.

What Is Community Solar?

1 The Right Site
Build solar where it makes sense for the local utility grid infrastructure and environmental land use

2 Local Distribution
Solar connects directly with the local utility poles, who then distributes the electrons where needed most

3 Community Savings
Homes and businesses in the area purchase subscriptions to the financial value of the solar energy, directly offsetting their electricity bill

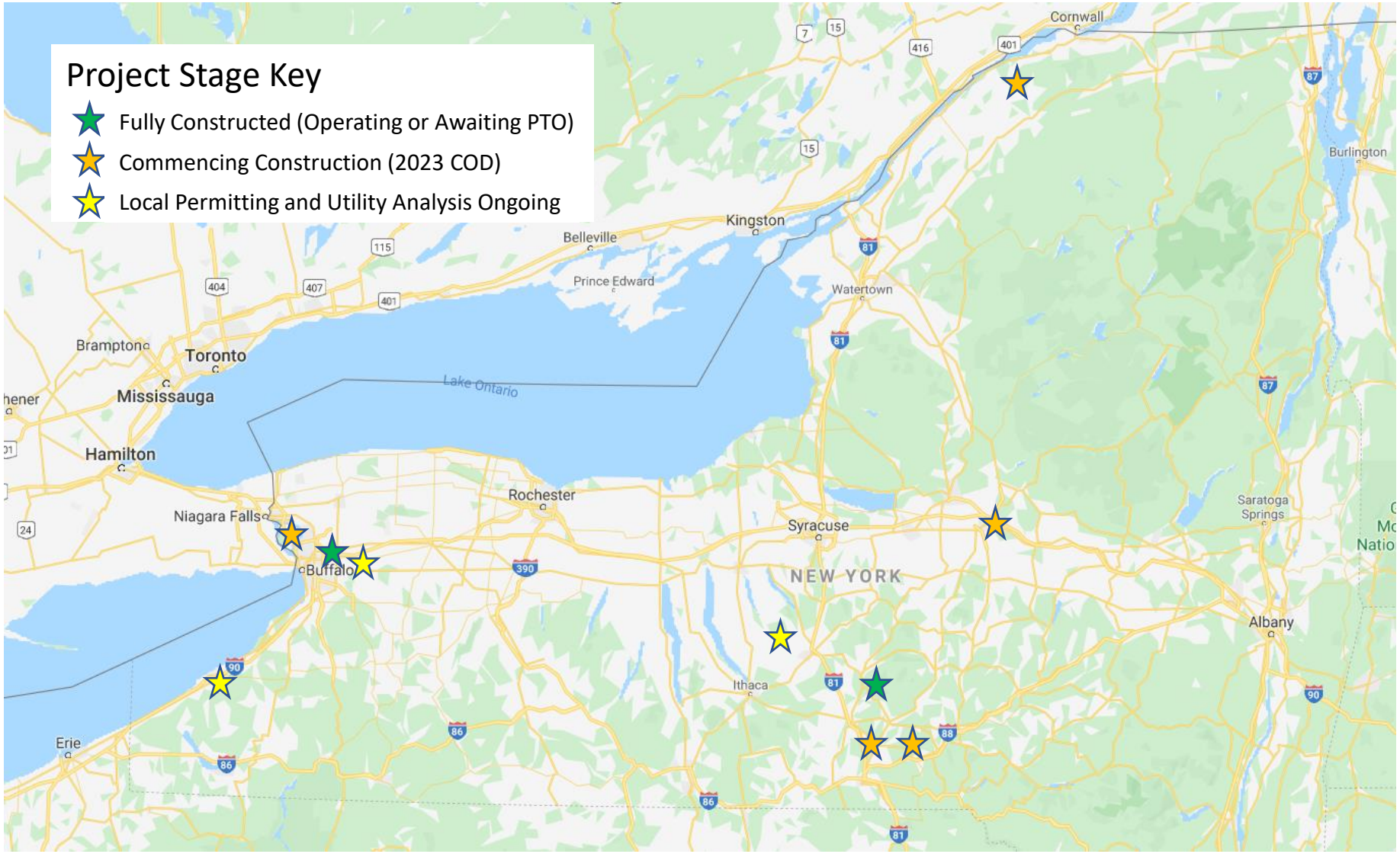
Dual Use Solar

Whenever possible, OurGeneration and our partners incorporate innovative dual land use and agriculture, generating benefits beyond local clean electricity

- Innovative dual land use and mutual benefits
- Solar grazing and pollinator friendly plants
- Dairy, meat, wool, crops, and honey for local community
- Reduce mowing expenses
- Support local farmers

OurGeneration's New York Portfolio

Combination of constructed projects and sites under control advancing through local permitting and/or utility impact studies



Projects: Town, Size, Utility			
★	Amherst	6 MW	NGrid
★	German	7 MW	NYSEG
★	Afton	7 MW	NYSEG
★	Greene	7 MW	NYSEG
★	Frankfort	5 MW	NGrid
★	Potsdam	6 MW	NGrid
★	Grand Island	6 MW	NGrid
★	Dunkirk	14 MW	NGrid
★	Clarence	14 MW	NYSEG
★	Locke	28 MW	NYSEG
	Total	100 MW	

Experience

A small team with over 30 years of collective experience in the solar industry. We have worked at the leading and largest solar and energy storage firms in the US covering project design, engineering, construction management, policy, project development, financial analysis, and asset M&A. Our understanding of the fundamentals that make solar projects a success for landowners, financiers, and the hosting communities is paralleled by others but exceeded by few. Since starting OurGeneration in the summer of 2019 we have successfully originated, developed, and transacted on 50-MW in NY with an additional pre-NTP pipeline over 100MW throughout NY and the Mid-Atlantic.

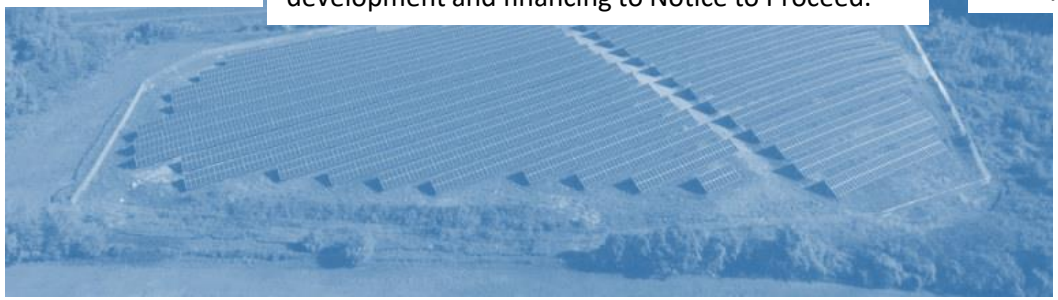
Managing Members

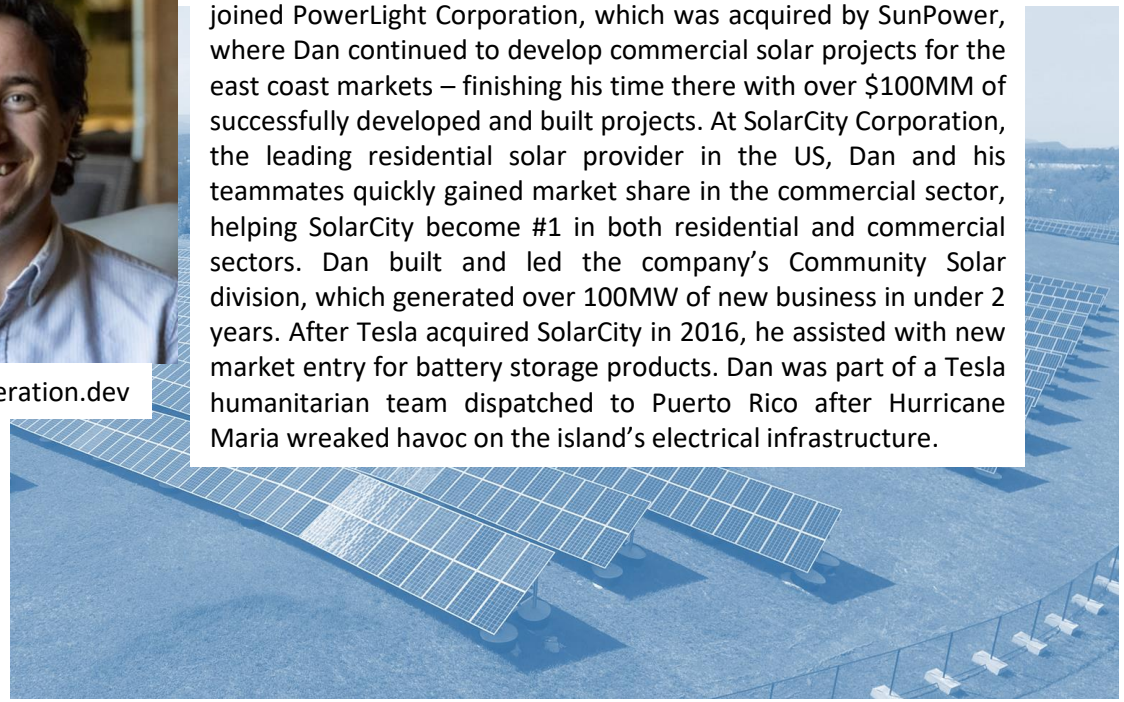
eschecter@ourgeneration.dev

Elie Schecter started his solar career doing policy work in New York City, before joining SolarCity - the largest National Solar Installer in the US. Elie spent 9+ years with SolarCity developing, designing, and managing the construction of large commercial solar projects throughout the Northeastern United States. After leaving SolarCity in early 2018, Elie started his own Consulting and Project Development Business, originating and developing portfolios of large-scale solar projects in NY, MA, and PA. In 2019, Elie successfully brought 27 MW of Community Solar projects in NY through development and financing to Notice to Proceed.

dleary@ourgeneration.dev

Dan Leary has been in the solar business since 2005 when he joined PowerLight Corporation, which was acquired by SunPower, where Dan continued to develop commercial solar projects for the east coast markets – finishing his time there with over $100MM of successfully developed and built projects. At SolarCity Corporation, the leading residential solar provider in the US, Dan and his teammates quickly gained market share in the commercial sector, helping SolarCity become #1 in both residential and commercial sectors. Dan built and led the company's Community Solar division, which generated over 100MW of new business in under 2 years. After Tesla acquired SolarCity in 2016, he assisted with new market entry for battery storage products. Dan was part of a Tesla humanitarian team dispatched to Puerto Rico after Hurricane Maria wreaked havoc on the island's electrical infrastructure.





CLARENCE SOLAR FARM
RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

N

LOCATION MAP
N.T.S.

OWNER:
RESEARCH PARKWAY LLC
9580 MAIN STREET
CLARENCE, NEW YORK 14031

CIVIL ENGINEER:
METZGER CIVIL ENGINEERING, PLLC.
8245 SHERIDAN DRIVE
WILLIAMSVILLE, NEW YORK 14221
PHONE: (716) 633–2601
FAX: (716) 633–2704
EMAIL: meteng@roadrunner.com

PROJECT LEGEND

EXISTING FEATURES*
- PROJECT BOUNDARY LINE
- CENTERLINE
- MB — MAIL BOX
- SIGN
- ELEC. M.H. — ELECTRIC MANHOLE
- TELE. M.H. — TELEPHONE MANHOLE
- SA — SANITARY MANHOLE & LINE
- WATER LINE
- UTILITY POLE
- WATER VALVE
- HYDRANT
- G — GAS LINE
- OH — OVERHEAD WIRES

* WHERE APPLICABLE

PROPOSED FEATURES*
- STORM CATCH BASIN
- WV — WATER VALVE
- SANITARY SEWER LATERAL
- STORM SEWER LINE
- WATERLINE
- SIGN
- × 575.75 — SPOT ELEVATION
- FLOW DIRECTION
- INLET PROTECTION
- SILT SOCK
- STABILIZED CONSTRUCTION ENTRANCE

SCHEDULE OF DRAWINGS:

SHEET NO	DRAWING	DESCRIPTION
1	CS	COVER SHEET
2	--	BOUNDARY SURVEY
3	--	TOPOGRAPHIC SURVEY
4	OS–1	OVERALL SITE PLAN
5	SP–1	SITE PLAN
6	GD–1	GRADING PLAN
7	ESC–1	EROSION & SEDIMENT CONTROL PLAN
8	LP–1	LANDSCAPE PLAN
9	DT–1	SITE DETAILS

TOWN OF CLARENCE NOTES:
1) CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL TOWN CONSTRUCTION SPECIFICATIONS WHERE APPLICABLE AND/OR SUBJECT TO THE LATEST REVISIONS.

METZGER CIVIL ENGINEERING, PLLC

SCALE:	NTS
DATE:	AUGUST 1, 2024
JOB NO:	M–2121
DRAWING NO:	CS SHEET 1

NO IRONS SET OR FOUND AT PROPERTY CORNERS UNLESS NOTED HEREON.

3556 Lake Shore Road, Suite 500, Buffalo, NY 14219
p (716) 827-8000 f (716) 270-6091 www.nussclarke.com

This survey was prepared without the benefit of an abstract of title and is subject to any state of facts that may be revealed by an examination of such.

Unauthorized alterations or additions to any survey, drawing, design, specification, plan or report is a violation of section 7209, provision 2 of the New York State Education Law.

NUSSBAUMER & CLARKE, INC.
ENGINEERS AND SURVEYORS
EST. 1935

PRELIMINARY SUBDIVISION SURVEY

10000 Wehrle Drive

Part of Lot 2-8, Township 12, Range 6, Section 5
Holland Land Company's Survey
Town of Clarence
County of Erie, State of New York

Date of Survey: 11/28/17 | Scale : 1" = 200' | Project No. : 1732-1154

LANDS FORMERLY OF NEW YORK CENTRAL RAILROAD

3800.12'

BIKE PATH

APPROXIMATE LOCATION OF SANITARY SEWER LINE

LOT 4

1986.05'

LOT 6

LOT 8

WEST LINE OF LOT 8

375.32'DEED&MEAS.
372.57'DEED

FOUND IRON

WESTER OF T 7

WEST LINE OF LOT 7

1784.76'MEAS.
1781.68'DEED&MEAS.
1828.48'DEED

LOT 7

LOT 5

PARCEL 'A'
TOTAL AREA
193.85± ACRES
(INCLUDING HIGHWAY)

WETLAND AREA #12

WETLAND AREA #5

WETLAND AREA #1

WETLAND AREA #3

WETLAND AREA #4

WETLAND AREA #8

WETLAND AREA #11

WETLAND AREA #15

WETLAND AREA #10

WETLAND AREA #9

℄ 20'WIDE SANITARY EASEMENT TO ERIE COUNTY SEWER DISTRICT NO.5 AS SHOWN IN L.9802,P.453

EXCEPTION TO ERIE COUNTY SEWER DISTRICT NO.5

℄ 40'WIDE INGRESS & EGRESS EASEMENT TO ERIE COUNTY SEWER DISTRICT NO.5 BY L.9802,P.459

FOUND IRON 0.26'S

587.69'

25°04'44"

64°23'

NORTHEAST CORNER LOT 3

2131.51'

PARCEL 'B'
TOTAL AREA
42.11± ACRES
(INCLUDING HIGHWAY)

LOT 3

FENCE 0.1'W

33.13'

625.45'

658.58'

313.09'

422.45'

300.00'

544.19'

307.77'

554.00'

688.41'

236.42'

543.00'

122.00'

311.00'

572.48'

746.08'

378.00'

173.58'

R=2296.84'
L=278.68'

R.O.W.

BLACKTOP PARKING

LAND ACQUIRED BY ERIE COUNTY AS PER PARCEL NO.113 MAP NO.SK 221-114RR

FOUND IRON 35.00'NE

FOUND IRON 0.18'N 0.46'NW

FOUND IRON 0.36'N 0.12'W

FOUND IRON 4.83'E 0.97'SE

FOUND IRON 0.24'SW

FOUND IRON 0.24'SE

FOUND IRON 0.14'SE

NO IRONS SET OR FOUND AT PROPERTY CORNERS UNLESS NOTED HEREON.

3556 Lake Shore Road, Suite 500, Buffalo, NY 14219
p (716) 827-8000 f (716) 270-6091 www.nussclarke.com

NUSSBAUMER & CLARKE, INC. ENGINEERS AND SURVEYORS EST. 1933

TOPOGRAPHIC SURVEY

10000 Wehrle Drive

Part of Lots 3-8, Township 12, Range 6, Section 5
Holland Land Company's Survey
Town of Clarence
County of Erie, State of New York

Date of Survey: 08/22/2023 Scale : 1" = 200' Project No. : 23J2-0992

NOTES:

1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW

REVISIONS	DATE	BY/CHK

METZGER CIVIL ENGINEERING, PLLC
8245 SHERIDAN DR.
WILLIAMSVILLE, NY 14221
PH: 716-633-2601
FAX: 716-633-2704
CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK · MICHAEL J. METZGER · 066786 · LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR FARM
RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

OVERALL SITE PLAN

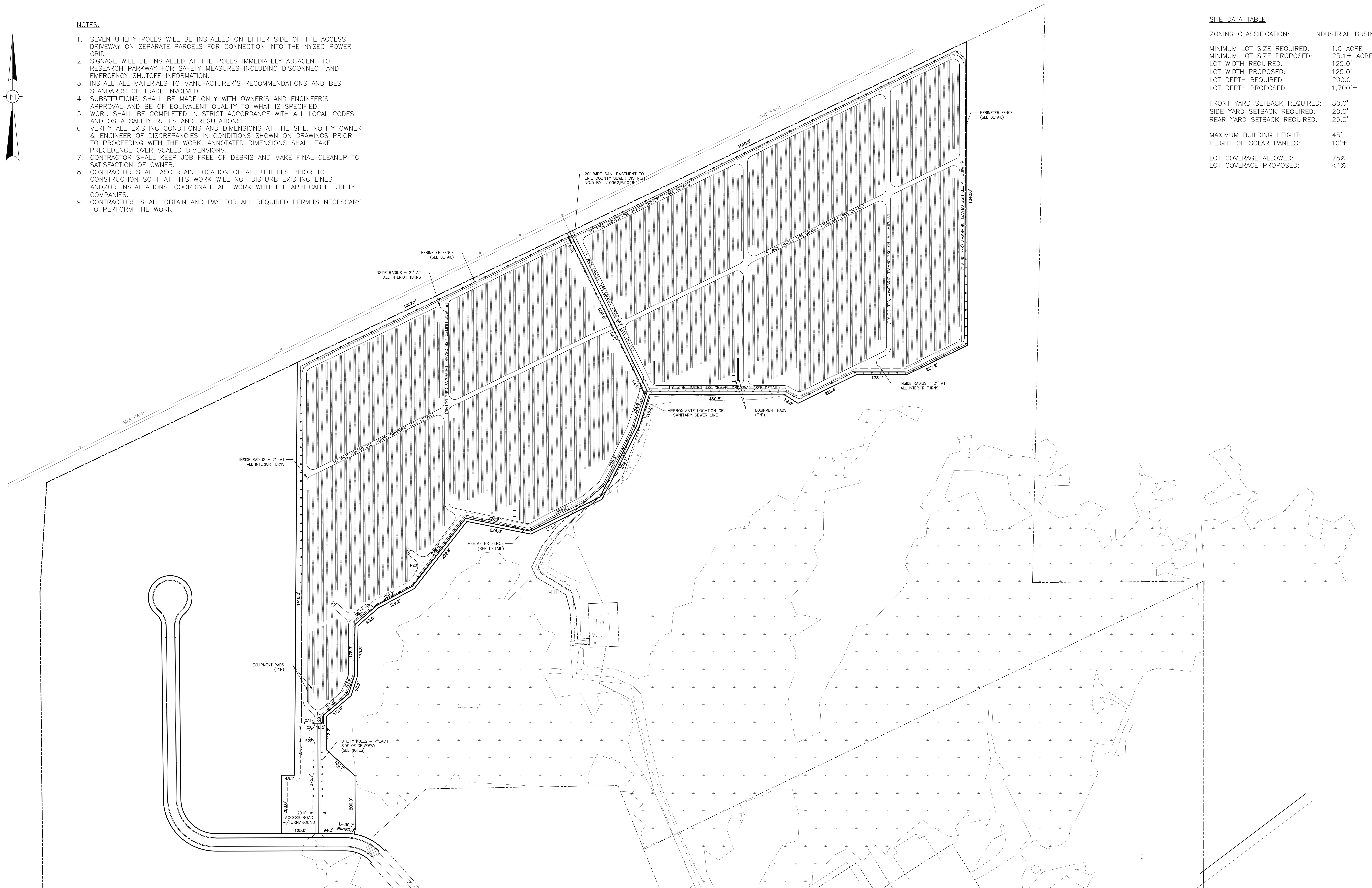
SCALE:	1" = 300'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	OS-1
	SHEET 4

NOTES:

1. SEVEN UTILITY POLES WILL BE INSTALLED ON EITHER SIDE OF THE ACCESS DRIVEWAY ON SEPARATE PARCELS FOR CONNECTION INTO THE NYSEG POWER GRID.
2. SIGNAGE WILL BE INSTALLED AT THE POLES IMMEDIATELY ADJACENT TO RESEARCH PARKWAY FOR SAFETY MEASURES INCLUDING DISCONNECT AND EMERGENCY SHUTOFF INFORMATION.
3. INSTALL ALL MATERIALS TO MANUFACTURER'S RECOMMENDATIONS AND BEST STANDARDS OF TRADE INVOLVED.
4. SUBSTITUTIONS SHALL BE MADE ONLY WITH OWNER'S AND ENGINEER'S APPROVAL AND BE OF EQUIVALENT QUALITY TO WHAT IS SPECIFIED.
5. WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND OSHA SAFETY RULES AND REGULATIONS.
6. VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AT THE SITE. NOTIFY OWNER & ENGINEER OF DISCREPANCIES IN CONDITIONS SHOWN ON DRAWINGS PRIOR TO PROCEEDING WITH THE WORK. ANNOTATED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
7. CONTRACTOR SHALL KEEP JOB FREE OF DEBRIS AND MAKE FINAL CLEANUP TO SATISFACTION OF OWNER.
8. CONTRACTOR SHALL ASCERTAIN LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION SO THAT THIS WORK WILL NOT DISTURB EXISTING LINES AND/OR INSTALLATIONS. COORDINATE ALL WORK WITH THE APPLICABLE UTILITY COMPANIES.
9. CONTRACTORS SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS NECESSARY TO PERFORM THE WORK.

SITE DATA TABLE

ZONING CLASSIFICATION:	INDUSTRIAL BUSINESS PARK
MINIMUM LOT SIZE REQUIRED:	1.0 ACRE
MINIMUM LOT SIZE PROPOSED:	25.1± ACRES
LOT WIDTH REQUIRED:	125.0'
LOT WIDTH PROPOSED:	125.0'
LOT DEPTH REQUIRED:	200.0'
LOT DEPTH PROPOSED:	1,700'±
FRONT YARD SETBACK REQUIRED:	80.0'
SIDE YARD SETBACK REQUIRED:	20.0'
REAR YARD SETBACK REQUIRED:	25.0'
MAXIMUM BUILDING HEIGHT:	45'
HEIGHT OF SOLAR PANELS:	10'±
LOT COVERAGE ALLOWED:	75%
LOT COVERAGE PROPOSED:	<1%



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SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK · MICHAEL L. METZGER · 066786 · LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR FARM RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

SITE PLAN

SCALE:	1" = 150'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	SP-1

SHEET 5

GRADING NOTES:

1. SOLAR PANEL FIELD WILL BE INSTALLED AT EXISTING GRADE. NO CUTS OR FILLS WILL BE PERFORMED. GRADES SHOWN AT INTERSECTIONS ARE APPROXIMATE BASED ON THE EXISTING TOPOGRAPHY AND ARE FOR REFERENCE ONLY. GRADES SHALL MATCH EXISTING GRADE.
2. EQUIPMENT PADS TO BE DESIGNED BY THE EQUIPMENT SUPPLIER.

NOTES:

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MUNICIPAL ENGINEERING

CLARENCE SOLAR FARM
RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

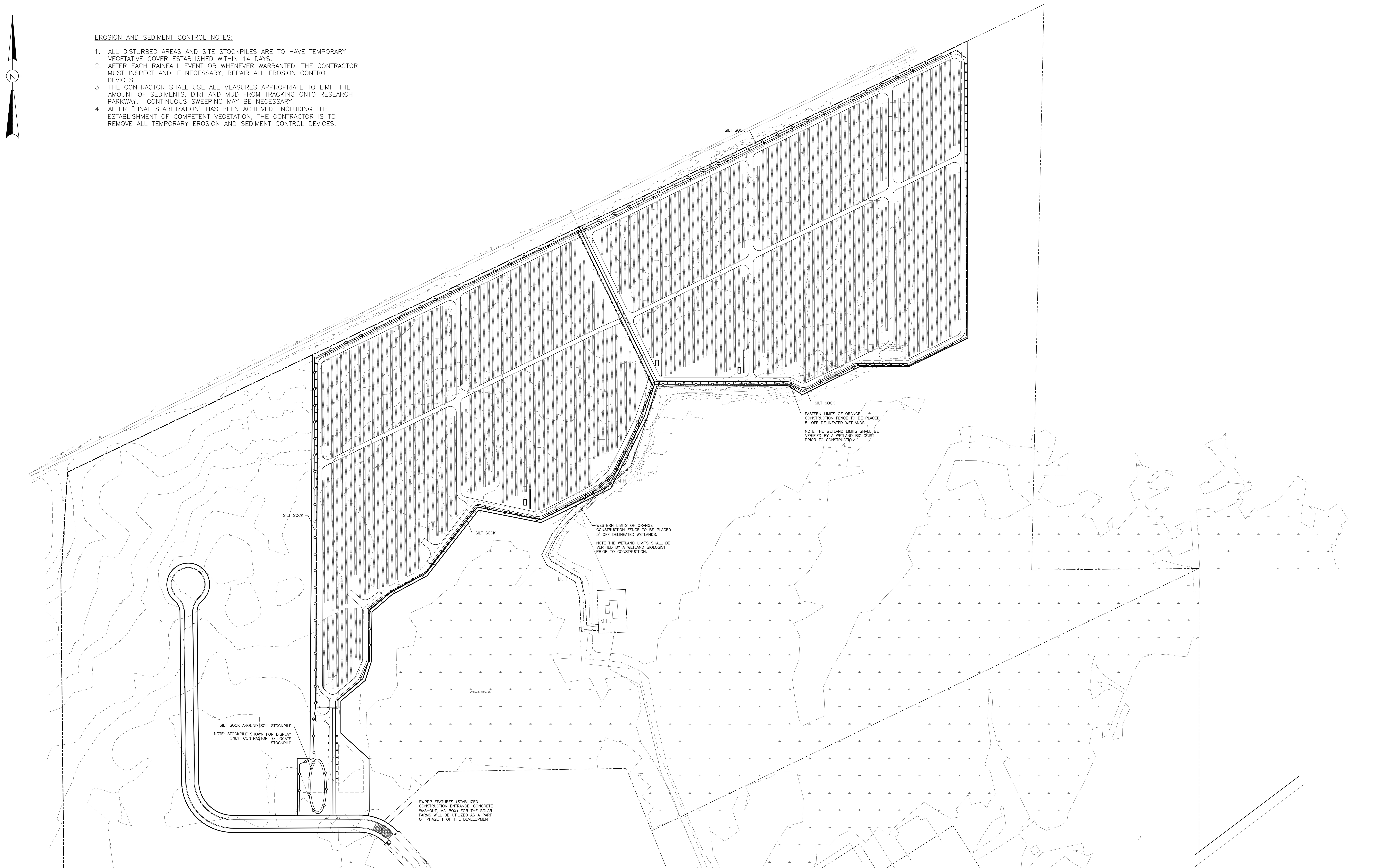
GRADING PLAN

SCALE:	1" = 150'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	GD-1

SHEET 6

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL DISTURBED AREAS AND SITE STOCKPILES ARE TO HAVE TEMPORARY VEGETATIVE COVER ESTABLISHED WITHIN 14 DAYS.
2. AFTER EACH RAINFALL EVENT OR WHENEVER WARRANTED, THE CONTRACTOR MUST INSPECT AND IF NECESSARY, REPAIR ALL EROSION CONTROL DEVICES.
3. THE CONTRACTOR SHALL USE ALL MEASURES APPROPRIATE TO LIMIT THE AMOUNT OF SEDIMENTS, DIRT AND MUD FROM TRACKING ONTO RESEARCH PARKWAY. CONTINUOUS SWEEPING MAY BE NECESSARY.
4. AFTER "FINAL STABILIZATION" HAS BEEN ACHIEVED, INCLUDING THE ESTABLISHMENT OF COMPETENT VEGETATION, THE CONTRACTOR IS TO REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES.



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MUNICIPAL ENGINEERING

STATE OF NEW YORK — LICENSED PROFESSIONAL ENGINEER — 066786

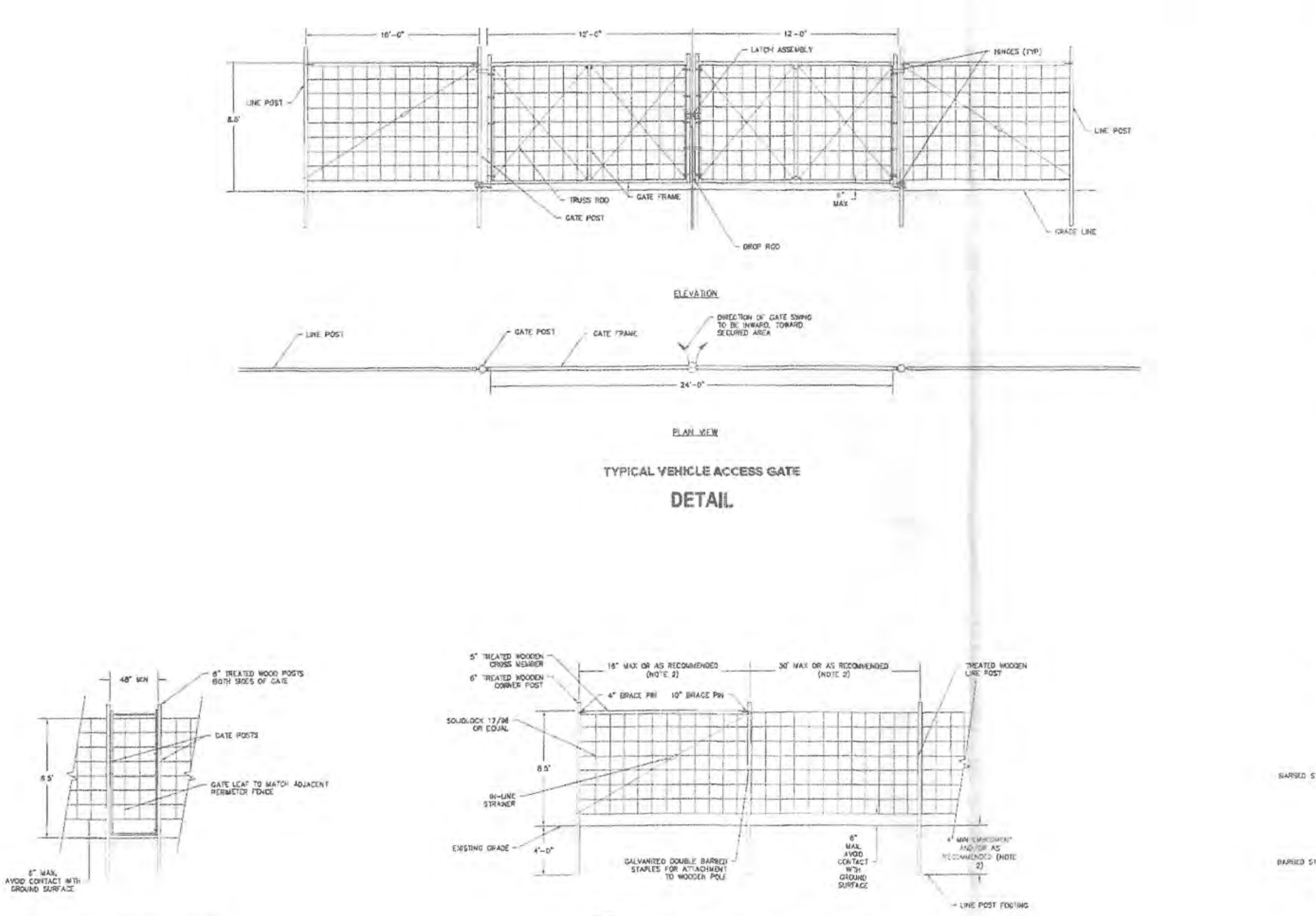
CLARENCE SOLAR FARM RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

EROSION & SEDIMENT CONTROL PLAN

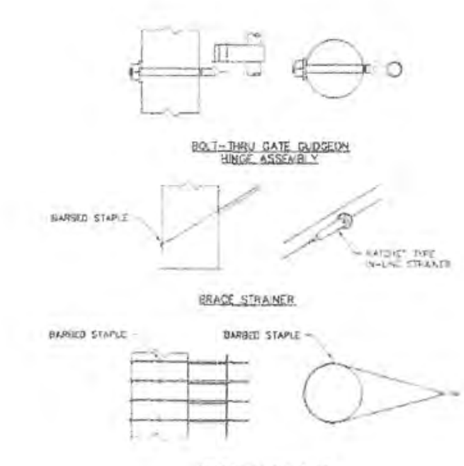
SCALE:	1" = 150'
DATE:	AUGUST 1, 2024
JOB NO:	M-2121
DRAWING NO:	ESC-1

SHEET 7



TYPICAL VEHICLE ACCESS GATE
DETAIL

EMERGENCY PEDESTRIAN GATE
DETAIL



TYPICAL AGRICULTURAL FENCE FASTENING
DETAILS

FENCE & GATE NOTES:

1. INSTALL ALL FENCE POSTS, CONCRETE FOOTINGS AND FASTENINGS ACCORDING TO MANUFACTURERS SPECIFICATIONS.
2. GROUNDING OR BONDING OF THE SECURITY FENCE SYSTEM SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), AND ALL OTHER APPLICABLE STATE AND LOCAL CODES.
3. PROVIDE ALL LABOR, MATERIALS AND APPURTENANCES NECESSARY FOR INSTALLATION.
4. DOUBLE SWING GATES TO OPEN INWARD TOWARD SECURE AREA, AS SHOWN ON DRAWINGS.
5. INSTALL POSTS IN CONCRETE FOOTINGS PER APPLICABLE CODES AND FENCE MANUFACTURER SPECIFICATIONS.
6. INSTALL PERIMETER FENCE WARNING SIGNS 5 FEET ABOVE GRADE IN ACCORDANCE WITH NEC 110.212(B).
7. CONCRETE ANCHOR/BASE SHALL BE MIN. 3000 PSI, CAST-IN-PLACE FOR ALL CORNERS, PULL, TERMINAL AND GATE POSTS. ALL OTHER POSTS CAN BE DIRECT PUSH/BURIAL IF POST IS EMBEDDED MIN. 3 FEET.
8. ALL POSTS SHALL EXTEND A MIN. 8.5 FEET ABOVE GROUND SURFACE.
9. PROVIDE HORIZONTAL AND DIAGONAL BRACING AT ALL CORNERS, PULL, TERMINAL, AND GATE POSTS.
10. ADJACENT POSTS TO GATES SHALL BE SPACED AT A MAXIMUM OF 18'-0", SEE DETAIL FOR GATE POST SPACING.
11. POST SHALL BE PRESSURE TREATED (PT) PINE OR EQUIVALENT.
12. HORIZONTAL WOOD BRACES SHALL BE PINNED OR DOWELED.
13. GATE SHALL BE PT WOOD (4" MIN. SQUARE STOCK), METAL (2"ø BLACK COATED) OR APPROVED EQUIVALENT.
14. MESH SHALL BE HIGH TENSILE STEEL 4"X4" FIXED-KNOT 12.5 GAUGE WIRE PROVIDE SOLIDLOCK 17/96 OR EQUIVALENT.
15. CUT 8"X12" FOX PASSAGE INTO BOTTOM MESH EVERY 50 FEET.
16. INSTALL KNOX BOX OR SIMILAR AT GATE ENTRANCE.

PERIMETER AGRICULTURAL FENCING (ALTERNATE #1)
NTS

PLANT LIST

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
CANOPY TREES				
PS	1	PRUNUS SEROTINA	WILD BLACK CHERRY	2.5"–3" CAL.; B&B; GROWS 50–70' HIGH, 30–40' WIDE*
QR	4	QUERCUS RUBRA	RED OAK	2.5"–3" CAL.; B&B; GROWS 50–75' HIGH AND WIDE*
MID-STORY TREES				
AC	2	AMELANCHIER ARBOREA	DOWNEY SERVICEBERRY	7' HIGH MINIMUM; B&B; CLUMP, MINIMUM 3 MAJOR STEMS
CC	2	CERCIS CANADENSIS	EASTERN REDBUD	7' HIGH MINIMUM; B&B; CLUMP, MINIMUM 3 MAJOR STEMS
CH	2	CRATAEGUS CRUS-GALLI	COCKSPUR HAWTHORN	1.5–1.75" CAL. MINIMUM; B&B; GROWS 20–30' HIGH AND WIDE
UNDER-STORY SHRUBS				
LB	5	LINDERA BENZOIN	SPICE BUSH	NO. 5 CONT.; GROWS 6–12' HIGH AND WIDE
PO	6	PHYSOCARPUS OPULIFOLIUS	COMMON NINEBARK	NO. 5 CONT.; GROW 5–8' HIGH; 4–6' WIDE
SN	12	SAMBUCUS CANADENSIS	AMERICAN BLACK ELDERBERRY	NO. 5 CONT.; GROWS 5–12' HIGH AND WIDE

* MEASURED FROM GROUND TO BOTTOM OF LEADER

NOTES:
1. ALL TREES AND PLANTING BEDS SHALL RECEIVE A 3-INCH LAYER OF SHREDDED HARDWOOD BARK MULCH.
2. ALL PLANT MATERIALS SHALL BE INSPECTED TWICE ANNUALLY, ONCE IN THE SPRING AND AGAIN IN THE FALL. TREES AND SHRUBS THAT ARE DEAD OR ARE IN POOR CONDITION/DISEASED (LESS THAN 50% LEAF COVER) SHALL BE REPLACED BEFORE THE NEXT GROWING SEASON. TREES AND SHRUBS THAT DO NOT EXHIBIT THE CONDITIONS FOR REPLACEMENT SHALL BE PRUNED AT THE TIME OF INSPECTION TO REMOVE DEAD TWIGS AND BRANCHES.
3. ALL NURSERY TAGS TO REMAIN ON PLANTS UNTIL AFTER FINAL INSPECTION AND APPROVAL OF THE LANDSCAPING.
4. NO PLANTINGS CAN BE PLACED WITHIN THE FORCEMAIN SANITARY SEWER EASEMENT. HOWEVER, INFILL PLANTINGS SHALL BE PLACED ON EITHER SIDE OF THE EASEMENT.
5. INFILL PLANTINGS TO THE WEST SHALL BEGIN AT 1,165'± FROM THE WEST PROPERTY LINE.

LAWN NOTES:
FURNISH TOPSOIL FROM THE SITE. IF INSUFFICIENT QUANTITY IS AVAILABLE, CONTRACTOR TO SUPPLY TOPSOIL FROM OFF SITE AT CONTRACTORS EXPENSE. TOPSOIL SHALL BE NATURAL, FRIABLE GRANULAR SOIL UNIFORM IN COMPOSITION AND TEXTURE. CLEAN FROM SUBSOIL, CLAY LUMPS, STONES, WEEDS, STUMPS, ROOTS, TOXIC SUBSTANCES AND DEBRIS 1" OR MORE IS SIZE.

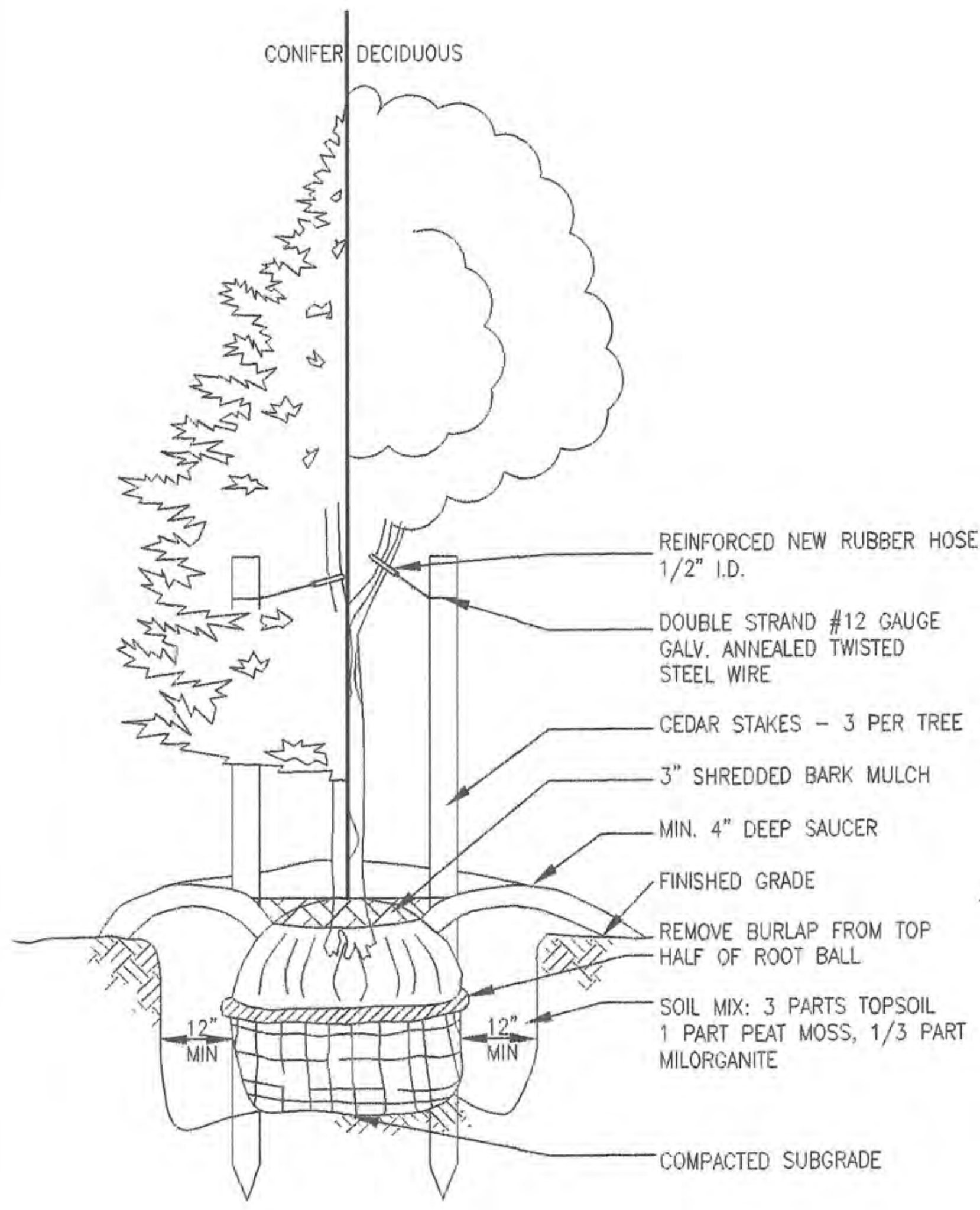
TOPSOIL SHALL HAVE LESS THAN 10% CLAY WITH A pH BETWEEN 5.0–7.0 WITH 5%–20% ORGANIC MATTER.

THE SEED MUST BE SOWN AND FERTILIZED USING APPLICATION RATES AS DIRECTED BY THE SEED SUPPLIER AND COVERED WITH SMALL GRAIN STRAW MULCH WITHIN 7 DAYS AFTER THE END OF DISTURBANCE AND WATERED AS REQUIRED.

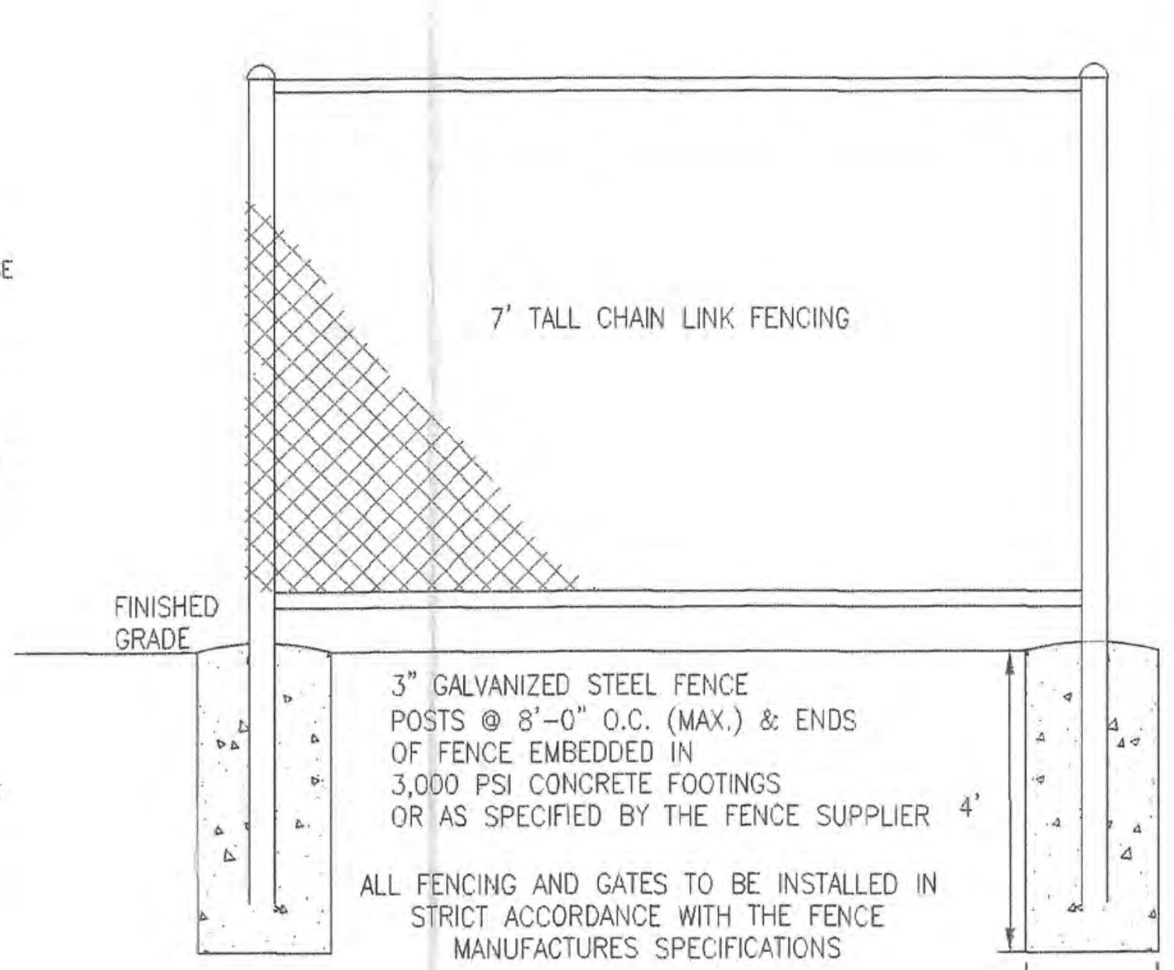
LAWN GRASS MIX
45% KENTUCKY BLUEGRASS
36% CREEPING RED FESCUE
19% PERENNIAL RYEGRASS

MEADOW SEED MIX (IN SOLAR FARM):

1. STANDARD OF QUALITY FOR MEADOW MIX SHALL BE ERNST SOLAR FARM SEED MIX (ERNMX –186) AS MANUFACTURED BY ERNST CONSERVATION SEEDS (OR APPROVED EQUIVALENT)
   ERNST CONSERVATION SEEDS
   8884 MERCER PIKE
   MEADVILLE, PA 16335
   800.873.3321
   www.ernstseed.com
2. SEED AT THE RATE OF 6 LBS. PER 1,000 SF
3. APPLY SEED UNIFORMLY BY CYCLONE SEEDER CULTI-PACKER OR HYDRO-SEEDER AT RATE INDICATED.
4. ALL SEEDED ARES SHALL BE PROTECTED FROM EROSION BY ONE OF THE FOLLOWING ITEMS
   4.1. A UNIFORM BLANKET OF STRAW APPLIED AT A RATE OF 2 TONS/ACRES MINIMUM TO BE APPLIED ONCE SEEDING IS COMPLETE.
   4.2. WOOD FIBER CELLULOSE APPLIED WITH SEED MIX BY HYDROSEEDER AT RATE OF 2,000 LBS/ACRE.
5. ALL SEEDED SLOPES 3:1 OR GREATER SHALL BE PROTECTED FROM EROSION WITH JUTE MESH OR APPROVED EQUAL.
6. IRRIGATE TO FULLY SATURATE SOIL LAYER, BUT NOT TO DISCLOSE PLANTING SOIL.
7. ALL NEWLY PLANTED AREAS SHALL BE KEPT MOIST BY WATERING UNITL GRASSES AND GROUND COVERS ARE WELL ESTABLISHED. THE LANDSCAPE CONTRACTOR MUST WATER PLANT MATERIAL WHEN NECESSARY FOR 60 DAYS AFTER INSTALLATION.
8. MEADOW MIX AREAS ARE TO BE WARRANTED UNTIL THEY BECOME ESTABLISHED. UNTIL FINAL ACCEPTANCE AND NOT LESS THAN 60 DAYS AFTER COMPLETION OF ALL WORK. TREES, SHRUBS, GROUND COVERS, AND PERENNIALS SHALL BE WARRANTED AGAINST DEFECTS INCLUDING POOR GROWTH AND DEATH. EXCEPT CONTROL OF THE LANDSCAPE INSTALLER AND DAMAGE OR ABUSE BY OTHERS FOR A LEAST ONE FULL YEAR AFTER PROJECT COMPLETION.



TREE & SHRUB PLANTING DETAIL
N.T.S.



PERIMETER CHAIN LINK FENCING (ALTERNATE #2)
NTS

NOTES:
1) BASED ON BOUNDARY SURVEY AND TOPOGRAPHY SURVEY BY NUSSBAUMER AND CLARKE DATED SEPTEMBER 22, 2023. THIS IS NOT A PROPERTY SURVEY.

CONDITIONALLY APPROVED BY TOWN OF CLARENCE LANDSCAPE COMMITTEE
DATE: 2/9/2024
BY: Rec 1/9/24 + 2/9/24 LAC Report

RECEIVED
FEB 7 2024
ZONING OFFICE

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

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REVISIONS	DATE	BY/CHK
TOWN COMMENTS	01.31.24	JCM/ARH

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FAX: 716-633-2704
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LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

REGISTERED LANDSCAPE ARCHITECT ROBERT C WALTER 001728 STATE OF NEW YORK

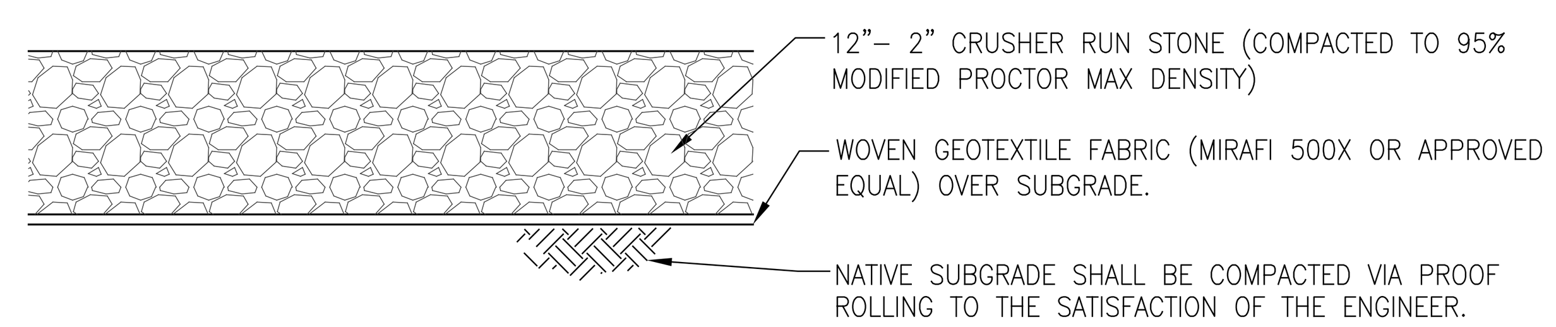
CLARENCE SOLAR INDUSTRIAL PARK RESEARCH PARKWAY

TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

LANDSCAPE PLAN (SOLAR)

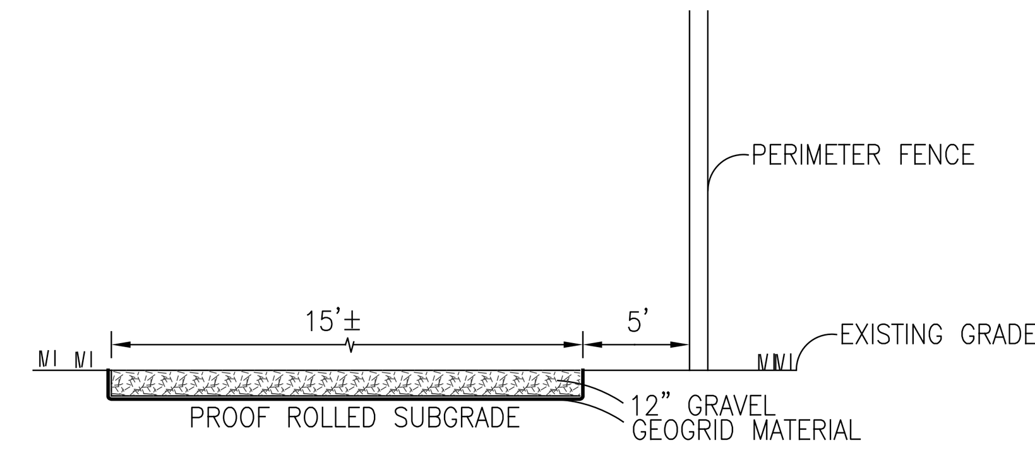
SCALE:	1" = 150'
DATE:	OCTOBER 31, 2023
JOB NO:	M-2121
DRAWING NO:	LP-1

SHEET 16



GRAVEL ACCESS ROAD SECTION

N.T.S.

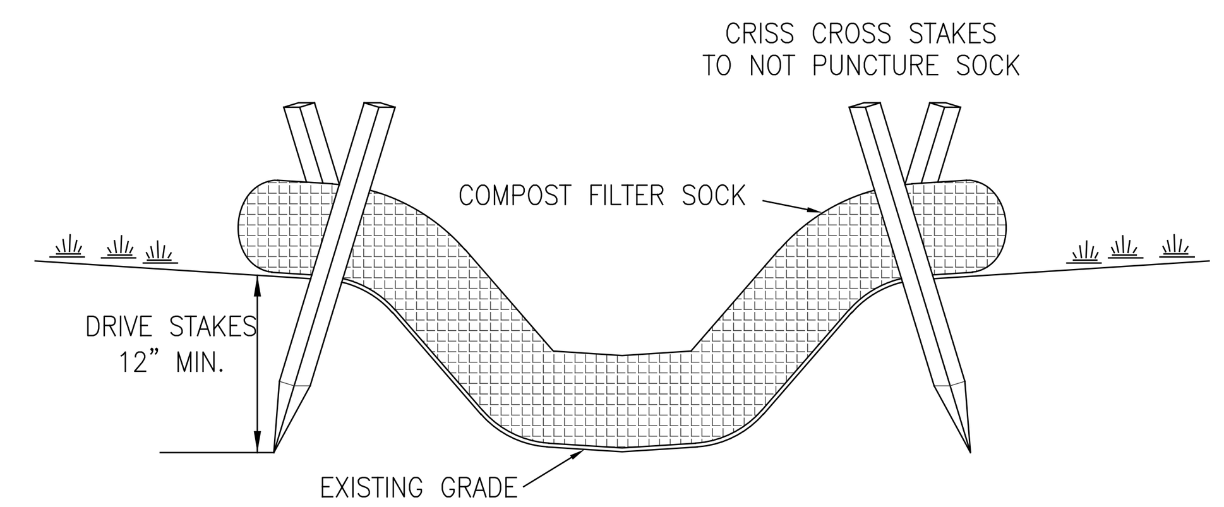


NOTES:

1. GRAVEL FILL MATERIAL SHALL CONSIST OF 1"–4" CLEAN, DURABLE SHARP ANGLED CRUSHED STONE OF UNIFORM QUALITY, MEETING THE SPECIFICATIONS OF NYSDOT ITEM 703–02 SIZE DESIGNATION OF 3–5 OF TABLE 703–4. STONE MAY BE PLACED IN FRONT OF, AND SPREAD WITH, A TRACKED VEHICLE. GRAVEL SHALL BE COMPACTED. TOP DRESS WITH ADDITIONAL STONE AS REQUIRED.
2. GEOGRID SHALL BE MIRIFI BXG110 OR APPROVED EQUAL. GEOGRID SHALL BE DESIGNED BASED ON EXISTING SOIL CONDITIONS AND PROPOSED HAUL ROAD SLOPES.
3. IF MORE THAN ONE ROLL WIDTH IS REQUIRED, ROLLS SHOULD OVERLAP A MINIMUM OF SIX INCHES.
4. REFER TO MANUFACTURER'S SPECIFICATION FOR PROPER TYING AND CONNECTIONS.
5. INSTALL PERIMETER FENCE 5' OFF LIMITED USE GRAVEL DRIVEWAY EDGE, WHERE APPLICABLE.

LIMITED USE GRAVEL DRIVEWAY DETAIL

N.T.S.



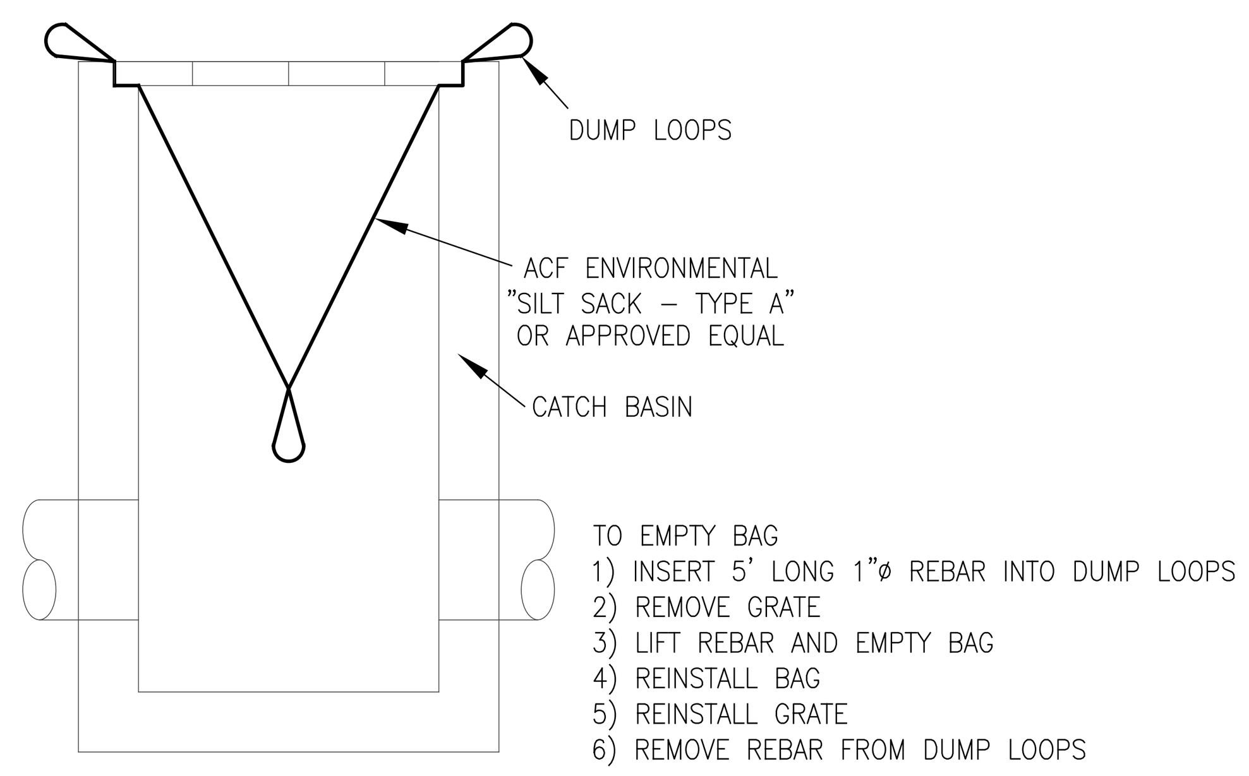
NOTES:

1. COMPOST FILTER SOCK MUST CONFORM TO NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (FILTREXX SILTSOXX OR APPROVED EQUAL).
2. INSTALL 3' LONG 2"x2" HARDWOOD STAKES AT 10' INTERVALS OR AS SPECIFIED BY THE SOCK MANUFACTURER.
3. WOODEN STAKES TO BE INSTALLED IN A CRISS CROSS PATTERN SO AS NOT TO PUNCTURE THE SOCK.
4. WOODEN STAKES TO BE DRIVEN AT LEAST 12" INTO GROUND.
5. ABUTTING ENDS MUST BE OVERLAPPED TO PROVIDE CONTINUOUS PROTECTION.
6. ALL SOCK SHALL BE 12".

MINIMUM SOCK SPACING	
SLOPE %	12 INCH SOCK
0–2%	250'
2–5%	225'
5–10%	125'

COMPOST FILTER SILT SOCK & CHECK DAM DETAIL

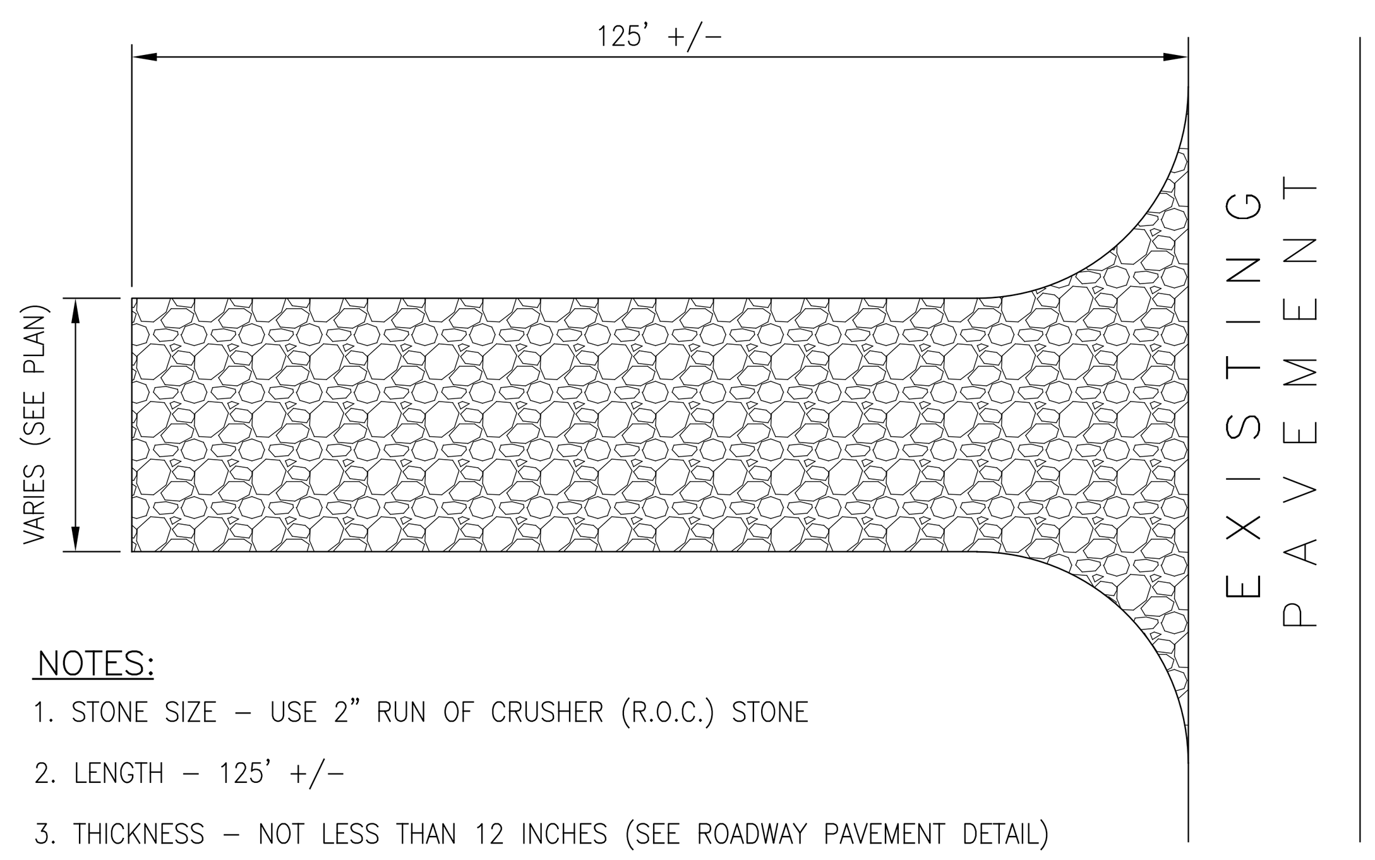
N.T.S.



TO EMPTY BAG
1) INSERT 5' LONG 1"ø REBAR INTO DUMP LOOPS
2) REMOVE GRATE
3) LIFT REBAR AND EMPTY BAG
4) REINSTALL BAG
5) REINSTALL GRATE
6) REMOVE REBAR FROM DUMP LOOPS

DI PROTECTION DETAIL

N.T.S.

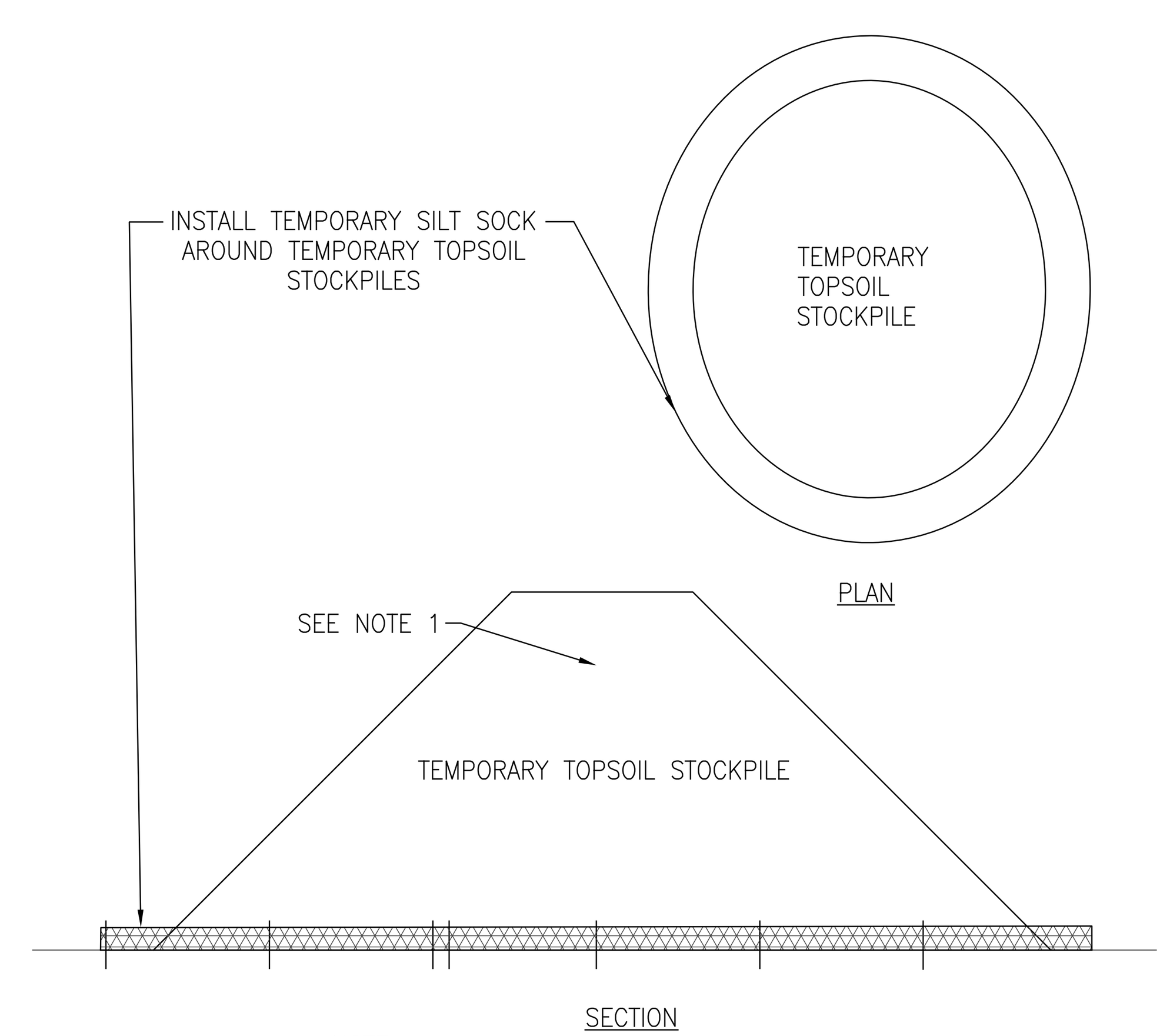


NOTES:

1. STONE SIZE – USE 2" RUN OF CRUSHER (R.O.C.) STONE
2. LENGTH – 125' +/–
3. THICKNESS – NOT LESS THAN 12 INCHES (SEE ROADWAY PAVEMENT DETAIL)
4. WIDTH – VARIES (SEE PLAN)
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE (SEE ROADWAY PAVEMENT DETAIL).
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

TYPICAL STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.

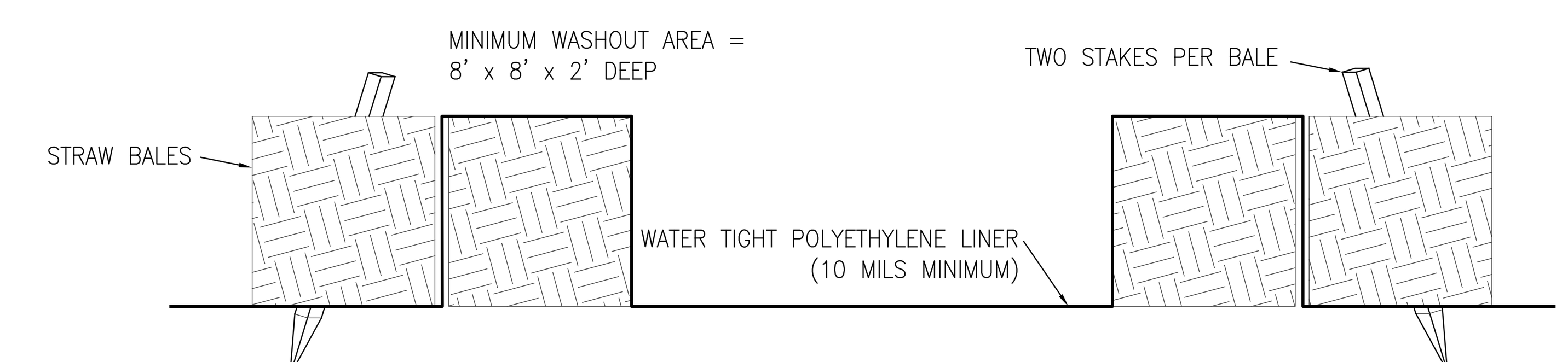


NOTE:

1) ESTABLISH TEMPORARY GRASS COVER ON TOPSOIL STOCKPILES IN ACCORDANCE WITH THE "SPDES GENERAL PERMIT FOR STORMWATER RUNOFF FROM CONSTRUCTION ACTIVITY, GP 0–20–001 OR THE CURRENT SPDES GENERAL PERMIT AT THE TIME OF CONSTRUCTION.

TEMPORARY TOPSOIL STOCKPILE

N.T.S.



CONCRETE WASHOUT SECTION

N.T.S.

NOTES:

1.CONCRETE WASHOUT BASIN TO CONFORM TO THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL DESIGN CRITERIA.
2. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY IS FILLED.
3. INSPECT WASHOUT FACILITY DAILY AND REPAIR LEAKING LINER AS NECESSARY.

DESIGNED BY:	JCM
DRAWN BY:	JCM
CHECKED BY:	ARH
CAD FILE:	M2121

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW

REVISIONS	DATE	BY/CHK

METZGER CIVIL ENGINEERING, PLLC
8245 SHERIDAN DR.
WILLIAMSVILLE, NY 14221
PH: 716–633–2601
FAX: 716–633–2704
CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

STATE OF NEW YORK · MICHAEL J. METZGER · 066786 · LICENSED PROFESSIONAL ENGINEER

CLARENCE SOLAR FARM
RESEARCH PARKWAY
TOWN OF CLARENCE, ERIE COUNTY, NEW YORK

SITE DETAILS

SCALE:	AS SHOWN
DATE:	AUGUST 1, 2024
JOB NO:	M–2121
DRAWING NO:	DT–1

SHEET 9

RBI SOLAR

Single Axis Tracker | Sunflower™ (SAT-2)

The innovative Sunflower™ (SAT-2) design by RBI Solar eliminates the limitations associated with other commercial single axis tracker systems and redefines how trackers are utilized in the marketplace.

Why choose RBI Solar Sunflower™ (SAT-2)?

- Multiple Foundation options available
- Variable slope tolerances, reducing the costs associated with civil work
- Twin purlin design reduces stress on modules
- Independent row lengths up to 120 modules to accommodate various layout constraints
- Lower land acquisition costs
- Gearbox and driveshaft eliminate need for dampeners
- Our in-house team members are an extension of your staff, reducing your vendor coordination
- Structural Engineers licensed in all 50 states
- Professional project management capabilities with responsive site service personnel
- 85+ years of design, engineering, manufacturing and construction experience
- Multiple manufacturing facilities in the U.S. reduces material delivery leadtimes

Sunflower™ (SAT-2) Features

Technology	Distributed Row, making for simple O&M
Row Architecture	Articulating tables to follow variable terrain
Structure Architecture	Twin purlin design reduces stress on modules
System Power	AC or DC power options to fit your situational needs
Drive Architecture	Patented Gearbox and Driveshaft, no dampeners required
Installation	No special tools or heavy equipment needed
Foundations	Multiple foundation types to accommodate any soil conditions
Module Configuration	1-high Portrait
Row Length	Up to 120 modules to accommodate multiple layout configurations
Range of Motion	+/- 55 degrees
Modules Supported	Crystalline, thin film, framed and frameless
Engineering	One size foundation throughout the array
Pre-Assembly	3-step installation process reduces connections required in the field
Slope Accommodation	Lowers land acquisition costs
Bankability	Over 100 MW commissioned across the US

Contact us at info@rbisolar.com or (513) 242-2051

DESIGN • ENGINEERING • MANUFACTURING • INSTALLATION

6715 Steger Drive, Cincinnati, OH 45237 | 513-242-2051 | info@rbisolar.com | www.rbisolar.com

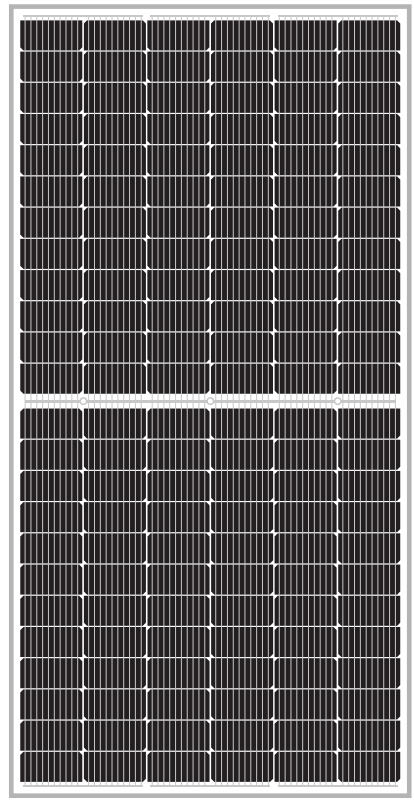
RBI SOLAR

ZXM7-SHLDD144 **Series**

Znshinesolar 10BB HALF-CELL Bifacial Light-Weight Double Glass Monocrystalline PERC PV Module

520W | 525W | 530W | 535W | 540W

ZNSHINESOLAR



Half Cell Technology

Module RS decreases, FF (fill factor) increases, power gain is stable above 1.5%

High Efficiency

Graphene coating can increase the module efficiency by rising the light transmission

Anti PID

Limited power degradation of ZXM7-SHLDD144 module caused by PID effect is guaranteed under strict testing condition for mass production

Certified to withstand the most challenging environmental conditions

- 5400 Pa snow load
- 2400 Pa wind load

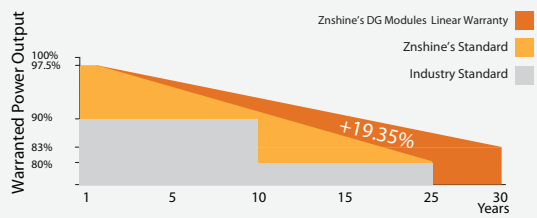
Better Weak Illumination Response

Lower temperature coefficient and wide spectral response,higher power output, even under low-light settings

Grahpene Coating(Optional*)

Graphene coating modules can increase power generation and self-cleaning, also can save maintainance cost

* Can be customized



12 years product warranty
30 years output warranty

0.5% Annual Degradation over 30 years

ZNShine PV-Tech Co., LTD, founded in 1988, is a world-leading high-performance PV module manufacturer, PV power station developer, EPC and power station operator. With its state-of-the-art production lines, the company boasts module output of 5GW. Bloomberg has listed ZNShine as a global Tier 1 PV manufacturer and Top 4 reliable PV supplier.

www.znshinesolar.com

ZXM7-SHLDD144 Series | Znshinesolar 10BB HALF-CELL Bifacial Light-Weight Double Glass Monocrystalline PERC PV Module

ZNSHINESOLAR

ELECTRICAL PROPERTIES | STC*

Module Type	ZXM7-SHLDD144-520/M	ZXM7-SHLDD144-525/M	ZXM7-SHLDD144-530/M	ZXM7-SHLDD144-535/M	ZXM7-SHLDD144-540/M
Nominal Power Watt Pmax(W)	520	525	530	535	540
Power Output Tolerance Pmax(%)	0~+3	0~+3	0~+3	0~+3	0~+3
Maximum Power Voltage Vmp(V)	40.7	40.9	41.1	41.3	41.5
Maximum Power Current Imp(A)	12.79	12.85	12.91	12.96	13.02
Open Circuit Voltage Voc(V)	49.0	49.2	49.4	49.6	49.8
Short Circuit Current Isc(A)	13.53	13.59	13.65	13.71	13.77
Module Efficiency (%)	20.08	20.27	20.46	20.66	20.85

*STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25℃, AM 1.5
*The data above is for reference only and the actual data is in accordance with the pratical testing

ELECTRICAL PROPETIES | NOCT/NMOT*

Maximum Power Pmax(Wp)	389.0	392.7	396.6	400.1	403.9
Maximum Power Voltage Vmpp(V)	37.6	37.8	38.0	38.1	38.3
Maximum Power Current Impp(A)	10.34	10.40	10.45	10.50	10.55
Open Circuit Voltage Voc(V)	45.7	45.9	46.1	46.3	46.5
Short Circuit Current Isc(A)	10.93	10.98	11.02	11.07	11.12

*NMOT(Nominal module operating temperature):Irradiance 800W/m²,Ambient Temperature 20℃,AM 1.5,Wind Speed 1m/s
*The data above is for reference only and the actual data is in accordance with the pratical testing

Electrical characteristics with 25% rear side power gain

Front power Pmax/W	520	525	530	535	540
Total power Pmax/W	650	656	663	669	675
Vmp/V(Total)	40.8	41.0	41.2	41.4	41.6
Imp/A(Total)	15.93	16.01	16.08	16.15	16.23
Voc/V(Total)	49.1	49.3	49.5	49.7	49.9
Isc/A(Total)	16.67	16.75	16.82	16.90	16.97

Temperature ratings

NMOT	44℃ ±3℃
Temperature coefficient of Pmax	-0.36%/℃
Temperature coefficient of Voc	-0.29%/℃
Temperature coefficient of Isc	0.05%/℃
Refer.Bifacial Factor	70±5%

*Do not connect Fuse in Combiner Box with two or more strings in parallel connection

Working conditions

Maximum system voltage	1500 V DC
Operating temperature	-40℃~+85℃
Maximum series fuse	30 A
Maximum load(snow/wind)	5400 Pa / 2400 Pa

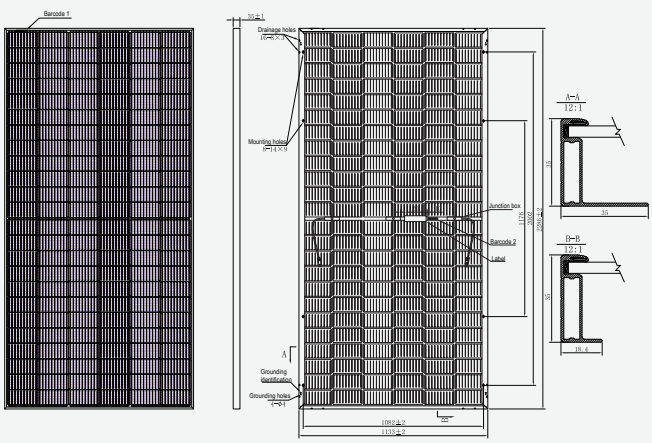
Mechanical data

Solar cells	Mono PERC
No. of Cells	144 (6×24)
Module dimension	2286×1133×35 mm
Weight	34 kg
Glass	2.0mm+2.0mm heat strengthened glass
Junction box	IP 68,3 diodes
Cables	4 mm² ,350 mm or Customized Length
Connectors	MC4-compatible or Customized Connectors

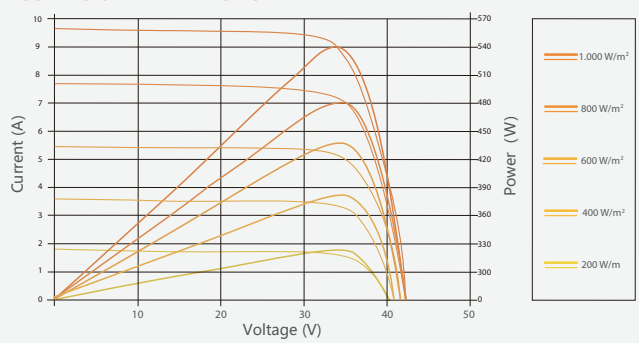
Packaging information

Packing Type	40'HQ
Piece/Box	30
Piece/Container	600

Dimension of the PV module (mm)



I-V CURVES OF THE PV MODULE



Add : 1#, Zhixi Industrial Zone, JintanJiangsu 213251, P.R. China Tel: +86 519 6822 0233 E-mail: info@znshinesolar.com

Proposed Configuration

Legend

Parcels

Parent Parcel:
Size: +/- 0.462 Acres
Sawmill Rd: +/- 124.44'
Boyd Dr: +/- 160.46'

Parcel A:
Size: +/- 0.469 Acres
Sawmill Rd: +/- 125.44'

NOTE:
This map is not an official property survey.

1: 1,128

0.0 0 0.02 0.0 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
THIS MAP IS NOT TO BE USED FOR NAVIGATION

ERIE COUNTY
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GIS

Existing Configuration

Legend

Parcels

Parent Parcel:
Size: +/- 0.93 Acres
Sawmill Rd: +/- 250.89'
Boyd Dr: +/- 160.46'

NOTE:
This map is not an official property survey.

1: 1,128

0.0 0 0.02 0.0 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
THIS MAP IS NOT TO BE USED FOR NAVIGATION

ERIE COUNTY
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GIS

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information

Name of Action or Project:
Building Lot on Sawmill Rd

Project Location (describe, and attach a location map):
Corner of Sawmill Rd + Boyd Rd.

Brief Description of Proposed Action:
Building Lot on Sawmill Rd.

Name of Applicant or Sponsor:	Telephone: 716-844-9057
Kimberly + Richard Worling	E-Mail: 2020111kw9gmail.com

Address:
18 Thamesford Ln. (Kimberly's home)

City/PO:	State:	Zip Code:
Williamsville	NY	14221

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval:	☑	☐

3. a. Total acreage of the site of the proposed action? 0.938 acres
   b. Total acreage to be physically disturbed? 0 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 0.938 acres

4. Check all land uses that occur on, are adjoining or near the proposed action:

5. ☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☐ Commercial ☑ Residential (suburban)
   ☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other(Specify):
   ☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☑	☐

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑

	NO	YES
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?		
If Yes, identify: _____	☑	☐

	NO	YES
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐
b. Are public transportation services available at or near the site of the proposed action?	☑	☐
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☐	☑

	NO	YES
9. Does the proposed action meet or exceed the state energy code requirements?		
If the proposed action will exceed requirements, describe design features and technologies:		
Not Applicable	☐	☐

	NO	YES
10. Will the proposed action connect to an existing public/private water supply?		
If No, describe method for providing potable water:	☐	☐
Not Applicable		

	NO	YES
11. Will the proposed action connect to existing wastewater utilities?		
If No, describe method for providing wastewater treatment:	☐	☐
Not Applicable		

	NO	YES
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	☑	☐
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☐	☑

	NO	YES
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☐	☑
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☑	☐
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____		
Out Flow of Ransom Creek		

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional
☐ Wetland ☐ Urban ☑ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐
16. Is the project site located in the 100-year flood plan?	☑	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources?	☑	☐
If Yes,		
a. Will storm water discharges flow to adjacent properties?	☑	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	☑	☐
If Yes, briefly describe: _____		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)?	☑	☐
If Yes, explain the purpose and size of the impoundment: _____		
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility?	☑	☐
If Yes, describe: _____		
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste?	☑	☐
If Yes, describe: _____		

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

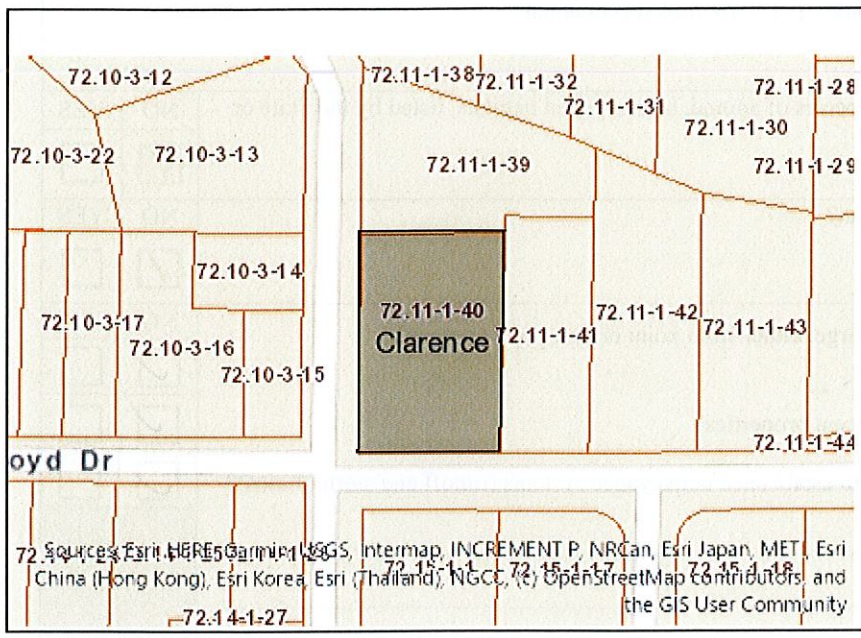
Applicant/sponsor/name: _____ Date: 8/20/24

Signature: [signature] Title: Owner

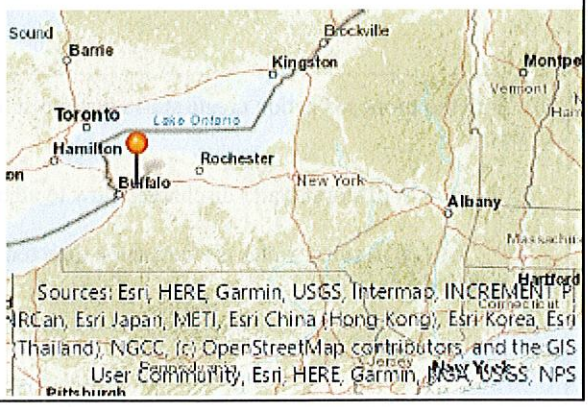
PRINT FORM

EAF Mapper Summary Report

Monday, July 15, 2024 11:09 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	No
Part 1 / Question 20 [Remediation Site]	No

Agency Use Only [If applicable]

Project: 10680 Boyd Dr - Minor Sub

Date: 09-18-2024

Short Environmental Assessment Form
Part 2 - Impact Assessment

Part 2 is to be completed by the Lead Agency.
Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?	☑	☐
2. Will the proposed action result in a change in the use or intensity of use of land?	☑	☐
3. Will the proposed action impair the character or quality of the existing community?	☑	☐
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	☑	☐
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	☑	☐
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	☑	☐
7. Will the proposed action impact existing: a. public / private water supplies?	☑	☐
b. public / private wastewater treatment utilities?	☑	☐
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	☑	☐
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?	☑	☐
10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems?	☑	☐
11. Will the proposed action create a hazard to environmental resources or human health?	☑	☐

PRINT FORM

Agency Use Only [If applicable]

Project: 10680 Boyd Dr - Minor S

Date: 09-18-2024

Short Environmental Assessment Form
Part 3 Determination of Significance

For every question in Part 2 that was answered "moderate to large impact may occur", or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

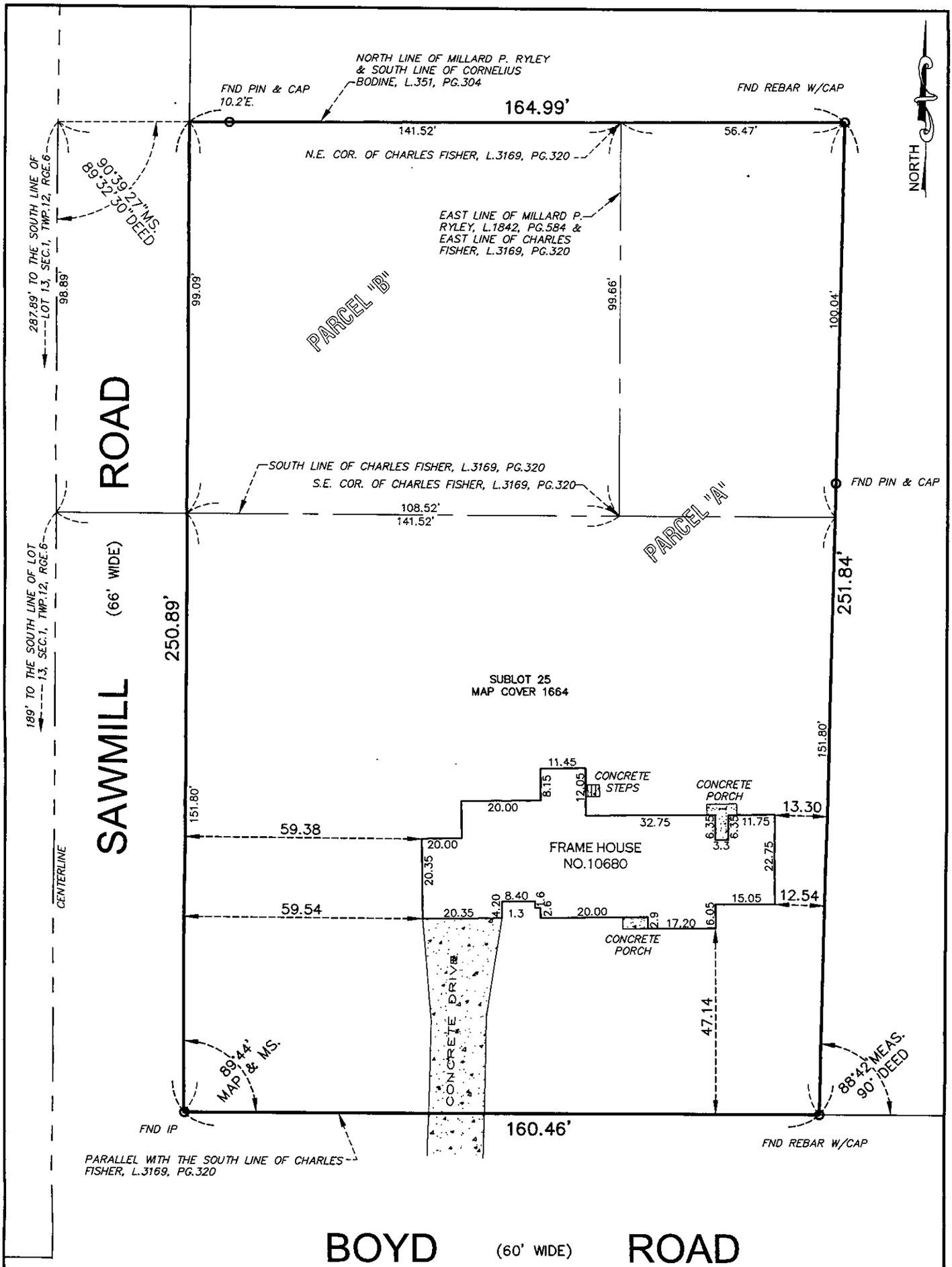
This Minor Subdivision of Land allows for the creation of one (1) new vacant frontage lot. There is no physical land disturbance as a result of this approval. The parent parcel and the newly created frontage lot will both meet the minimum lot standards for the underlying zoning.

☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required.

☑ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.

Town of Clarence Planning Board	09-18-2024
Name of Lead Agency	Date
Robert Sackett	Town of Clarence Planning Board Chair
Print or Type Name of Responsible Officer in Lead Agency	Title of Responsible Officer
Signature of Responsible Officer in Lead Agency	Signature of Preparer (if different from Responsible Officer)

PRINT FORM



BOYD (60' WIDE) ROAD

ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MAP MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S EMBOSSED SEAL AND SIGNATURE SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

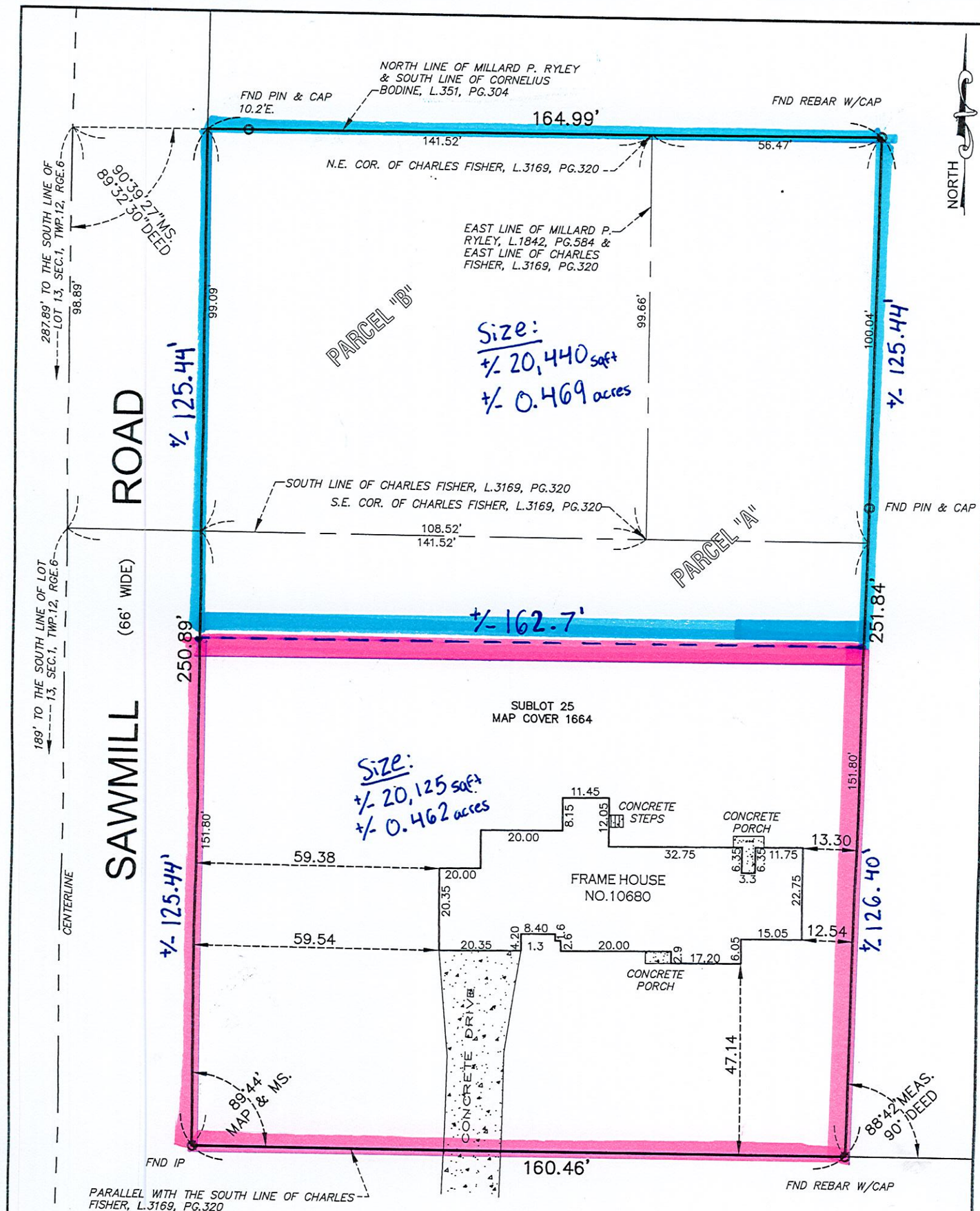
THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN UP-TO-DATE ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

PART OF LOT: 6 HOLLAND LAND COMPANY'S SURVEY	SECT: 1	TWP: 12	RGE: 6
MAP COVER: 1664 AND MORE	SUB LOT: 25 AND MORE		BLK:
LOCATED IN: TOWN OF CLARENCE, COUNTY OF ERIE, STATE OF NEW YORK			

DATE	DRAWING REVISIONS
12/14/20017	REVISED

SCALE: 1"=30'	DATE: 11/17/2017	SURVEY FILE: A/02227-01

WM SCHUTT ASSOCIATES
37 CENTRAL AVE.
LANCASTER, NY 14086-2143
PH. 716-683-5961
FAX 716-683-0169
WWW.WMSCHUTT.COM



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PART OF LOT: 6 HOLLAND LAND COMPANY'S SURVEY	SECT: 1	TWP: 12	RGE: 6
MAP COVER: 1664 AND MORE	SUB LOT: 25 AND MORE		BLK:
LOCATED IN: TOWN OF CLARENCE, COUNTY OF ERIE, STATE OF NEW YORK			

DATE	DRAWING REVISIONS
12/14/20017	REVISED

SCALE: 1"=30'	DATE: 11/17/2017	SURVEY FILE: A/02227-01

WM SCHUTT ASSOCIATES
37 CENTRAL AVE.
LANCASTER, NY 14086-2143
PH. 716-683-5961
FAX 716-683-0169
WWW.WMSCHUTT.COM

MC
1664
SL 25