

1100 SWEENEY STREET

CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK



LOCATION MAP
NTS

OWNER:

MCW CONSTRUCTION INC
MIKE WACHOWICZ
391 RIVER ROAD
NORTH TONAWANDA, NEW YORK 14120

PHONE No. (716) 694-0456

CIVIL ENGINEER:

METZGER CIVIL ENGINEERING, PLLC.
8560 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

PHONE No. (716) 633-2601

FAX No. (716) 633-2704

METENG@ROADRUNNER.COM



METZGER CIVIL ENGINEERING, PLLC

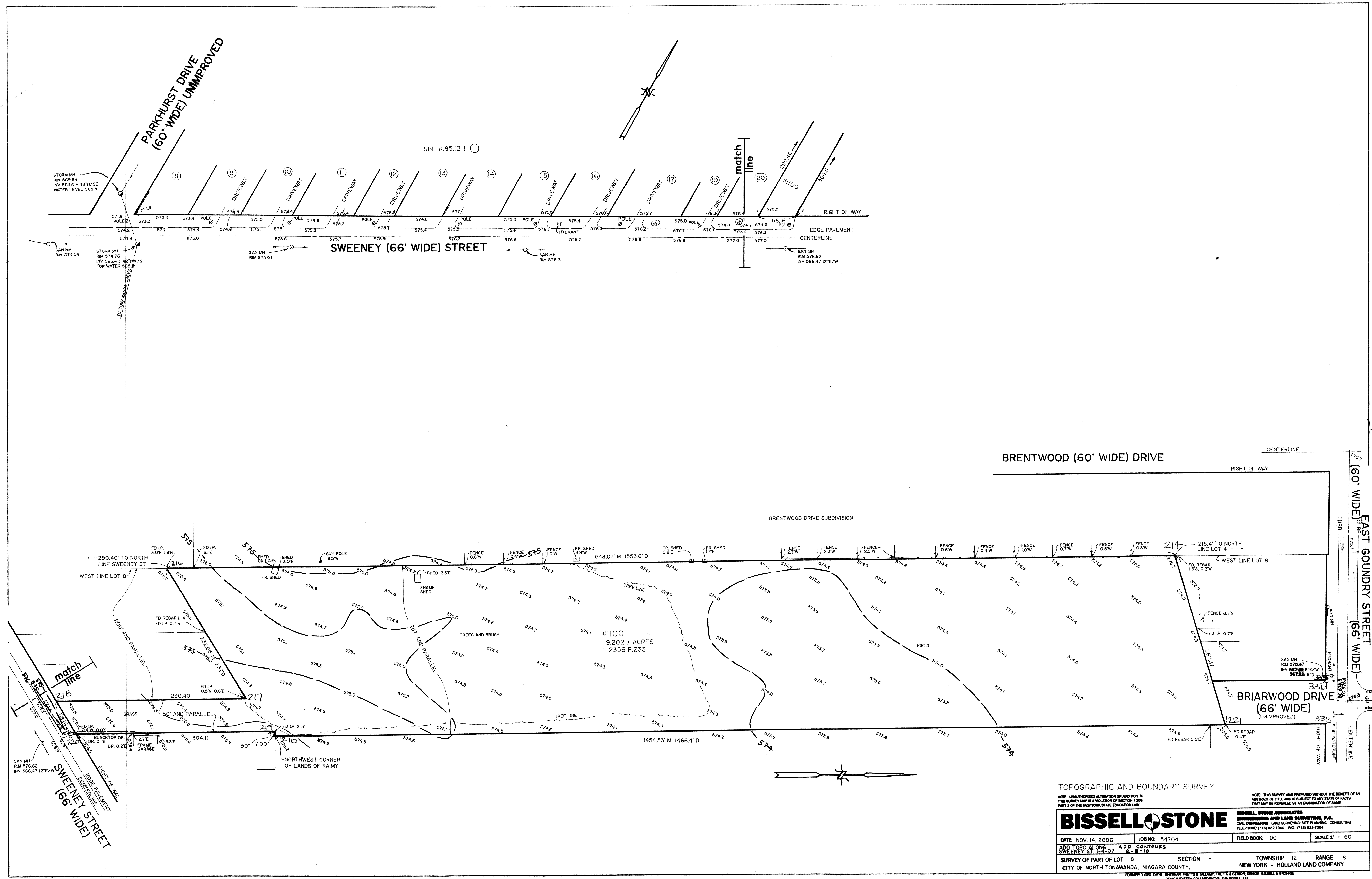
SCHEDULE OF DRAWINGS:

- 1 CS-1 COVER SHEET
- 2 SV-1 SURVEY
- 3 SP-1 SITE PLAN - 1
- 4 SP-2 SITE PLAN - 2
- 5 PD-1 PAVING, DRAINAGE & GRADING PLAN - 1
- 6 PD-2 PAVING, DRAINAGE & GRADING PLAN - 2
- 7 PD-3 PAVING, DRAINAGE & GRADING PLAN - 3
- 8 PD-4 PAVING, DRAINAGE & GRADING PROFILES
- 9 SS-1 SANITARY AND WATER PLAN - 1
- 10 SS-2 SANITARY AND WATER PLAN - 2
- 11 SS-3 SANITARY PROFILES
- 12 LP-1 LANDSCAPE AND SIGNAGE PLAN - 1
- 13 LP-2 LANDSCAPE AND SIGNAGE PLAN - 2
- 14 LP-3 LANDSCAPE AND SIGNAGE PLAN - 3
- 15 EC-1 EROSION AND SEDIMENT CONTROL PLAN
- 16 DT-1 DETAILS
- 17 DT-2 DETAILS
- 18 DT-3 DETAILS
- 19 DT-4 DETAILS
- 20 DT-5 DETAILS

REV: 01.18.17
REV: 03.20.17
REV: 04.03.17
REV: 12.11.17
REV: 03.22.18

SCALE:	NTS
DATE:	OCTOBER 28, 2016
JOB NO:	M-1604
SHEET NO:	

CS-1



BRENTWOOD (60' WIDE) DRIVE

EAST GONDRY STREET (66' WIDE)

TOPOGRAPHIC AND BOUNDARY SURVEY

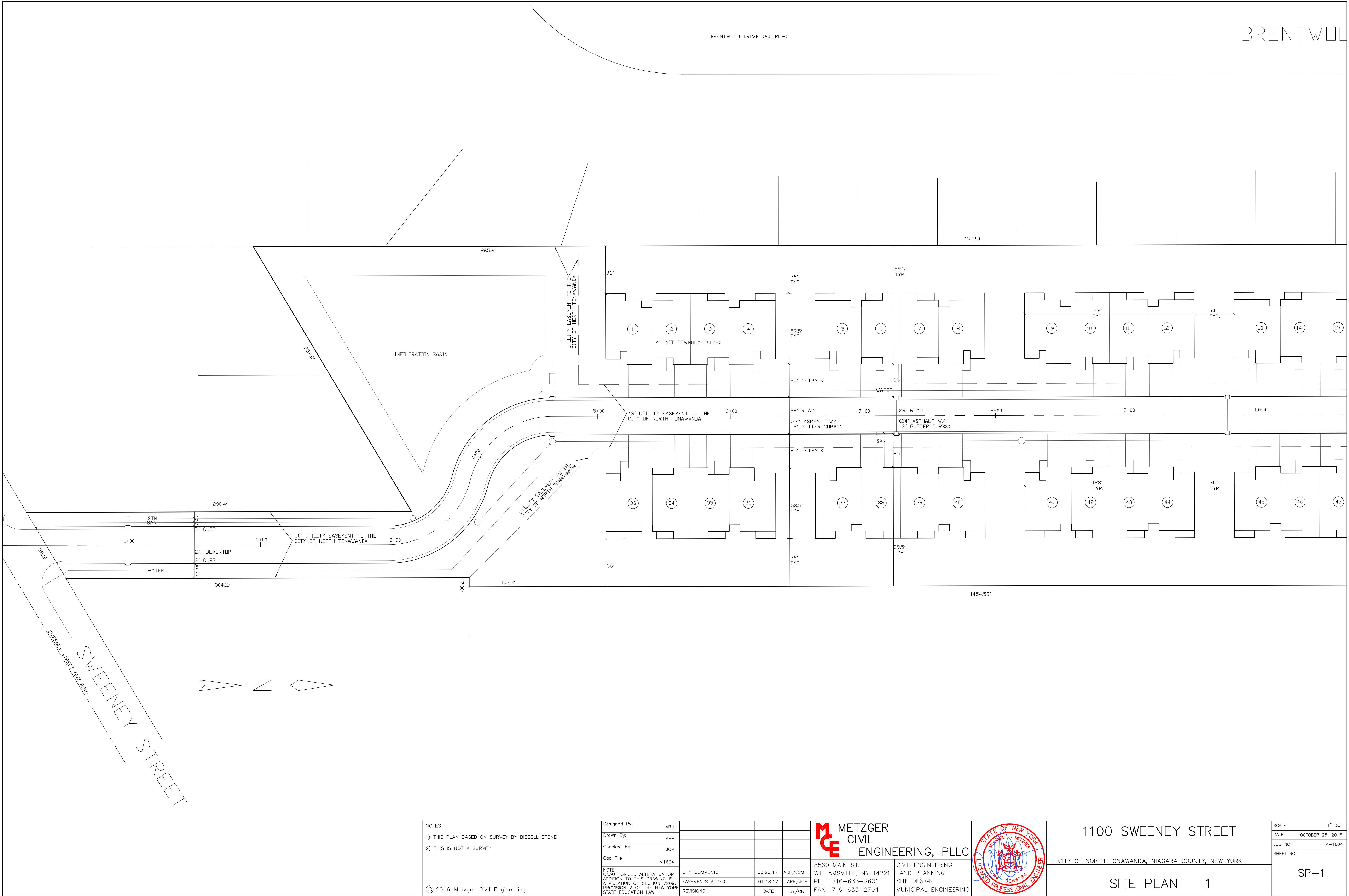
NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SAME.

BISSELL & STONE
 ENGINEERING AND LAND SURVEYING, P.C.
 CIVIL ENGINEERING, LAND SURVEYING, SITE PLANNING, CONSULTING
 TELEPHONE: (716) 632-7000 FAX: (716) 632-7004

DATE: NOV. 14, 2006	JOB NO: 54704	FIELD BOOK: DC	SCALE 1" = 60'
ADD TOPO ALONG SWEENEY ST. 1-4-07 ADD CONTOURS 2-8-10			
SURVEY OF PART OF LOT 8		SECTION -	TOWNSHIP 12 RANGE 8
CITY OF NORTH TONAWANDA, NIAGARA COUNTY,		NEW YORK - HOLLAND LAND COMPANY	

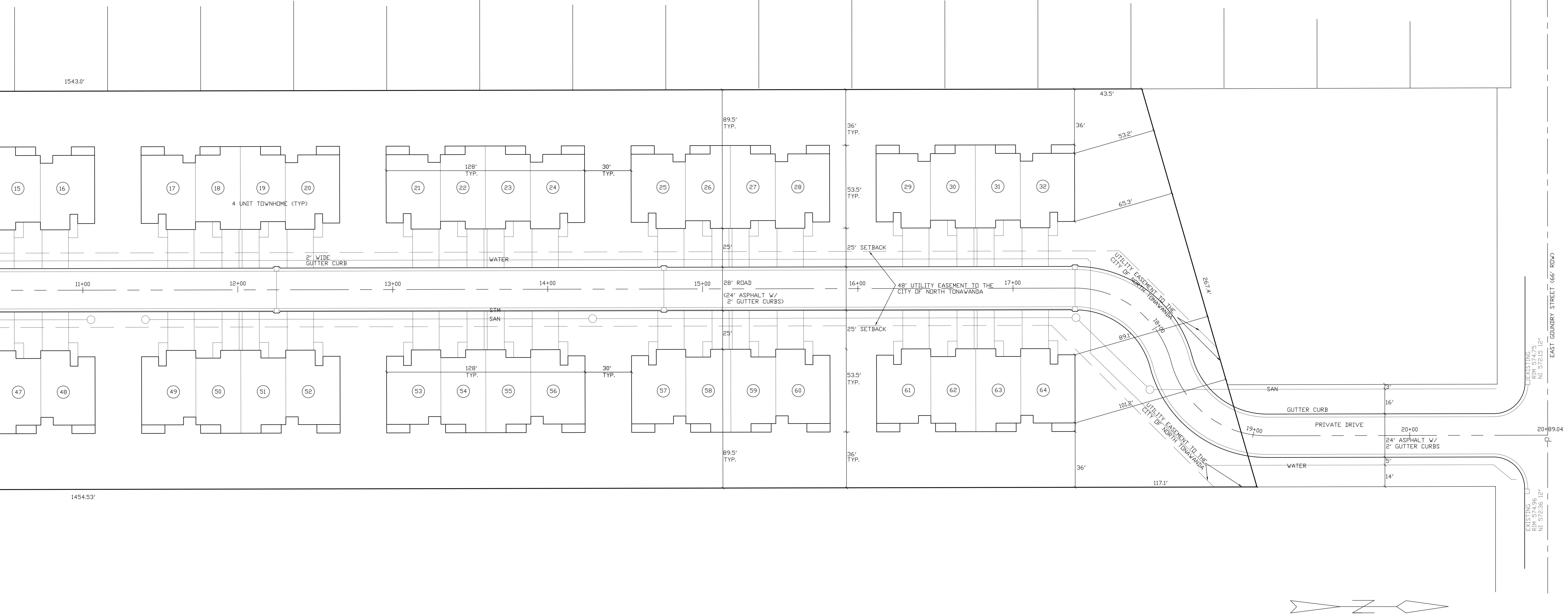
FORMERLY DESIGNED BY BRENNAN, PRETIS & VILLARD; PRETIS & SENIOR SENIOR; BISSSELL & BROWNE
 DESIGN SYSTEM COLLABORATIVE, THE BISSSELL CO.

F:\MCE\1604 - 1100 Sweeney St Townhomes\DWG\SITE 2.dwg, 3/20/2017 4:56:18 PM



000 DRIVE

BRENTWOOD DRIVE (60' RDW)




NOTES
1) THIS PLAN BASED ON SURVEY BY BISSELL STONE
2) THIS IS NOT A SURVEY

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Cad File: M1604

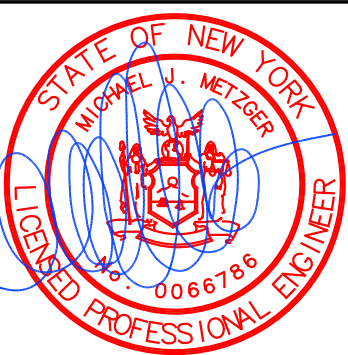
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CITY COMMENTS	03.20.17	ARH/JCM
EASEMENTS ADDED	01.18.17	ARH/JCM
REVISIONS	DATE	BY/CK

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WILLIAMSVILLE, NY 14221
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FAX: 716-633-2704

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SITE DESIGN
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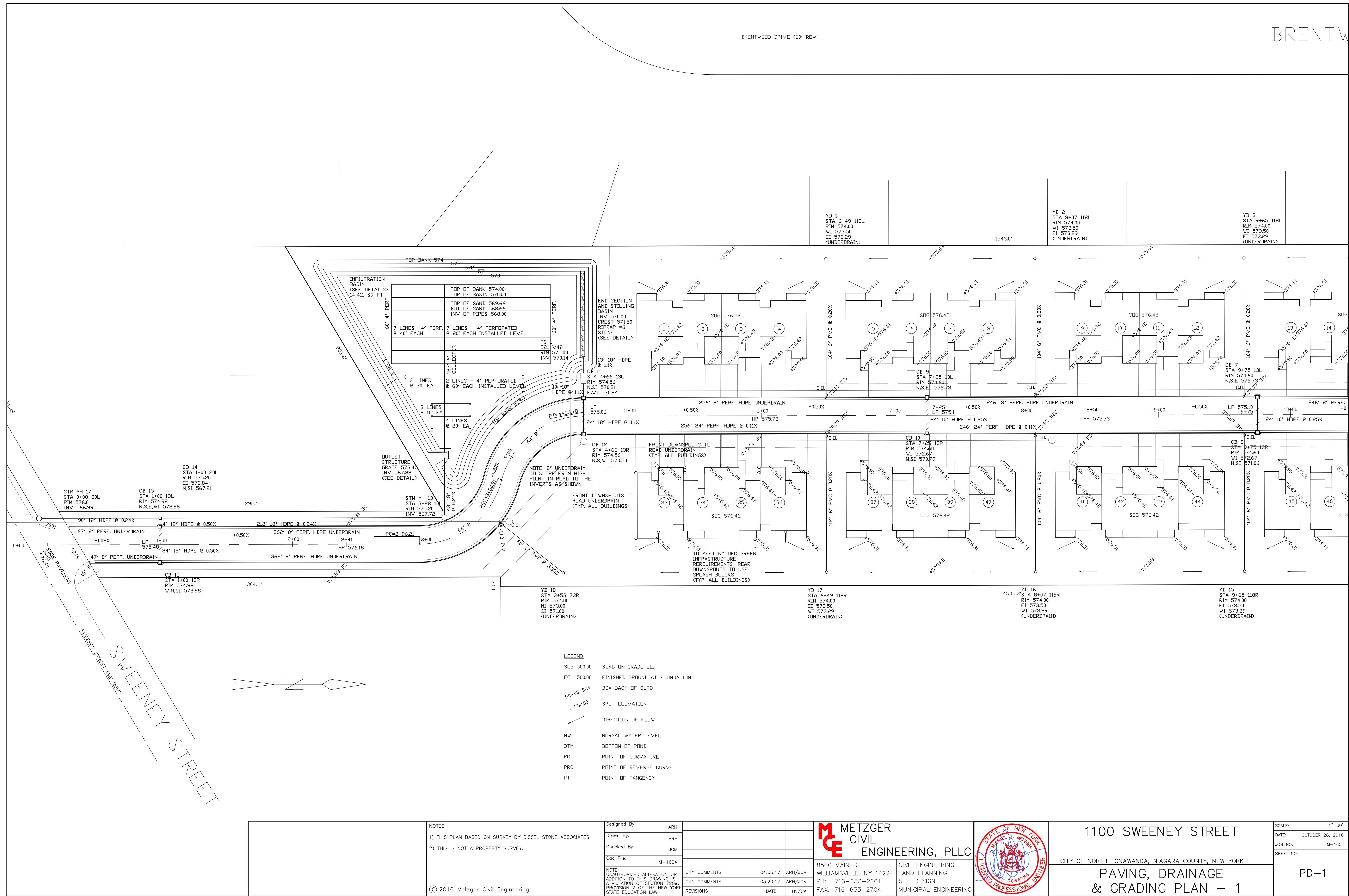
1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK

SITE PLAN - 2

SCALE: 1"=30'
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO: SP-2

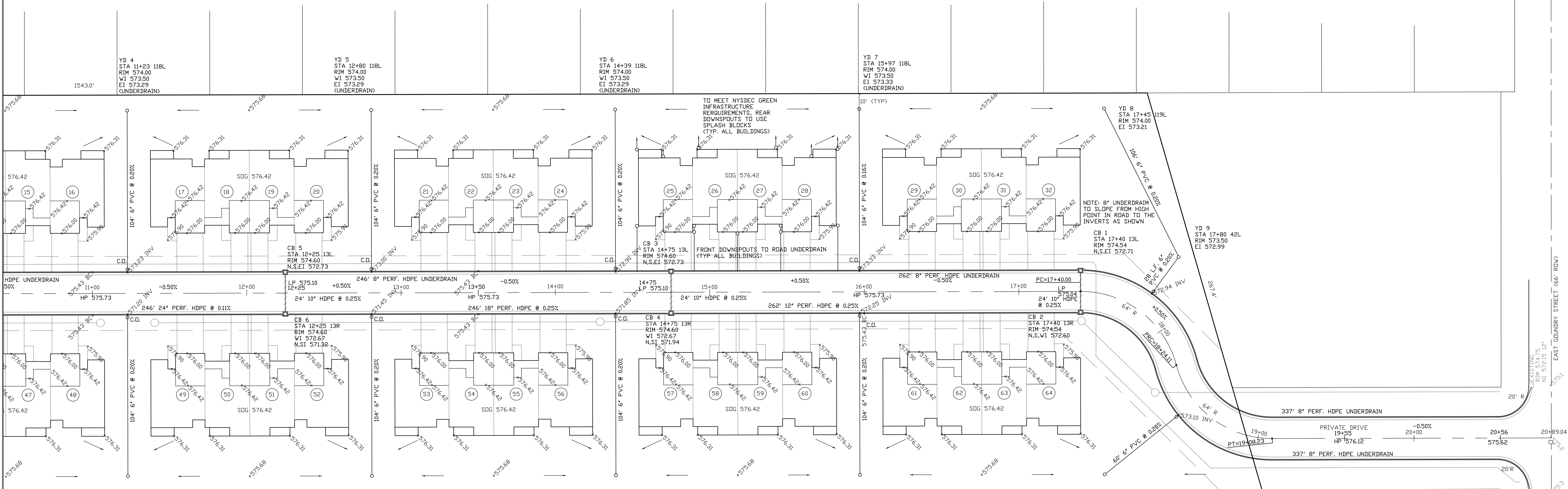
BRENTWOOD DRIVE (60' ROW)

BRENTWOOD DRIVE

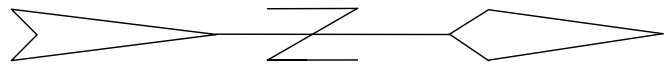


WOOD DRIVE

BRENTWOOD DRIVE (60' ROW)



- LEGEND
- SDG 500.00 SLAB ON GRADE EL.
 - FG 500.00 FINISHED GROUND AT FOUNDATION
 - BC+ BACK OF CURB
 - 500.00 BC+ SPOT ELEVATION
 - + 500.00 DIRECTION OF FLOW
 - NWL NORDMAL WATER LEVEL
 - BTM BOTTOM OF POND
 - PC POINT OF CURVATURE
 - PRC POINT OF REVERSE CURVE
 - PT POINT OF TANGENCY



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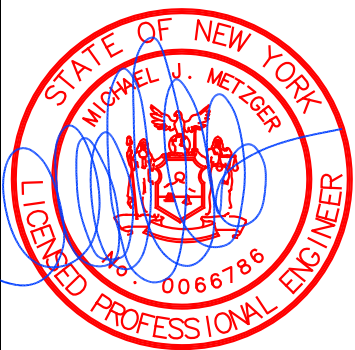
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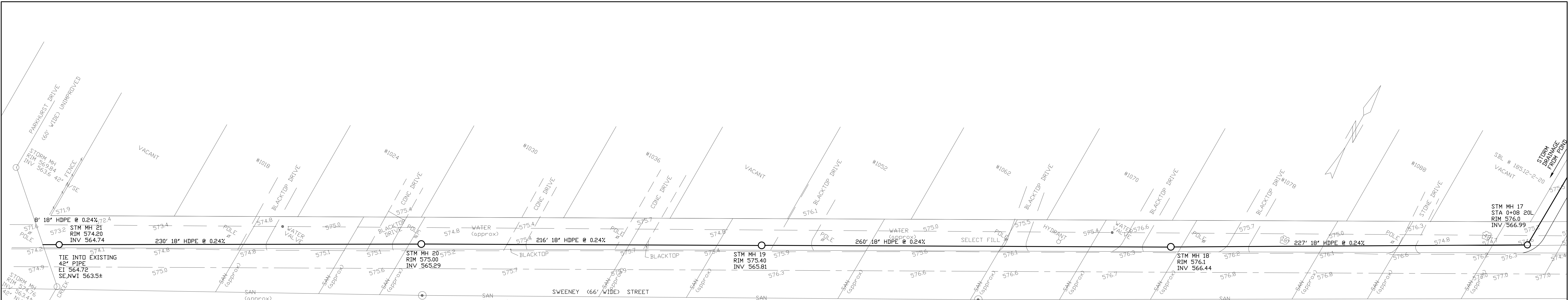
1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK

PAVING, DRAINAGE
& GRADING PLAN - 2

SCALE: 1"=30'
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO:

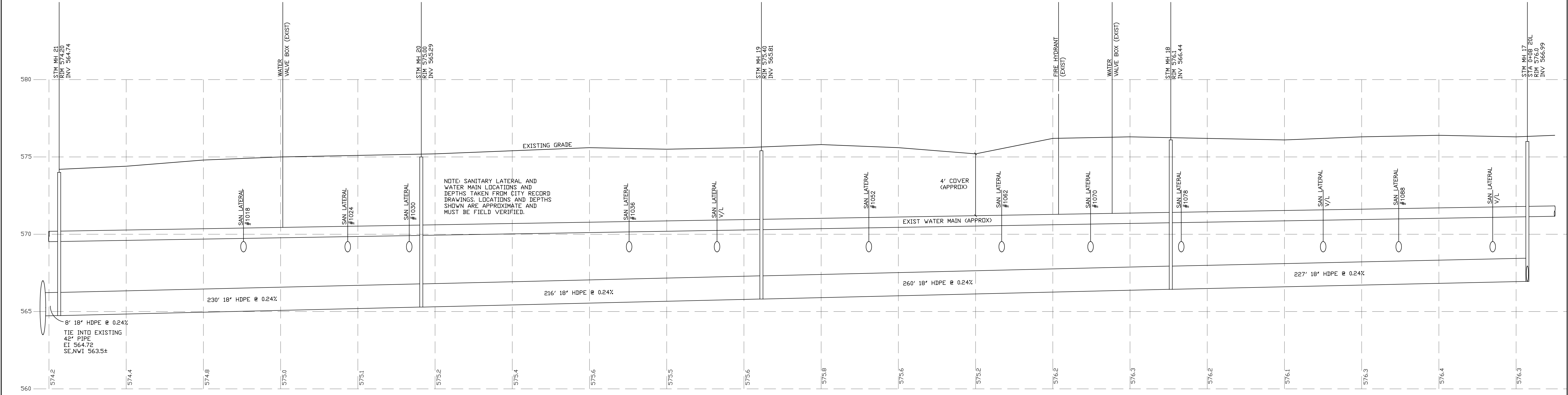
PD-2

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SWEENEY STREET
STORM SEWER PLAN
SCALE 1" = 30'

- SWEENEY STREET DRAINAGE WORK
NOTES:
1) CONTRACTOR TO NOTIFY DIG SAFELY NEW YORK PRIOR TO ANY WORK.
2) ALL EXISTING UTILITY LOCATION AND DEPTH TO BE FIELD VERIFIED PRIOR TO ANY WORK.
3) ALL TRENCH SHORING TO BE IN STRICT CONFORMANCE WITH OSHA REGULATIONS.
4) 'ROAD WORK AHEAD' SIGNAGE, SHOULDER CLOSURE AND FLAG PERSONNEL TO MEET ALL CITY OF NORTH TONAWANDA SPECIFICATIONS.
5) EXISTING PAVEMENT, DRIVEWAYS, SIGNAGE, MAILBOXES, ETC. AND LAWN AREAS TO BE REPLACED AND RESTORED TO ITS PREDEVELOPMENT CONDITIONS.
6) ALL WORK AND STAGING OF EQUIPMENT AND MATERIALS TO BE CONTAINED WITHIN THE SWEENEY STREET RIGHT OF WAY.



SWEENEY STREET
STORM SEWER PROFILE
SCALE 1" = 30' H
1" = 3' V

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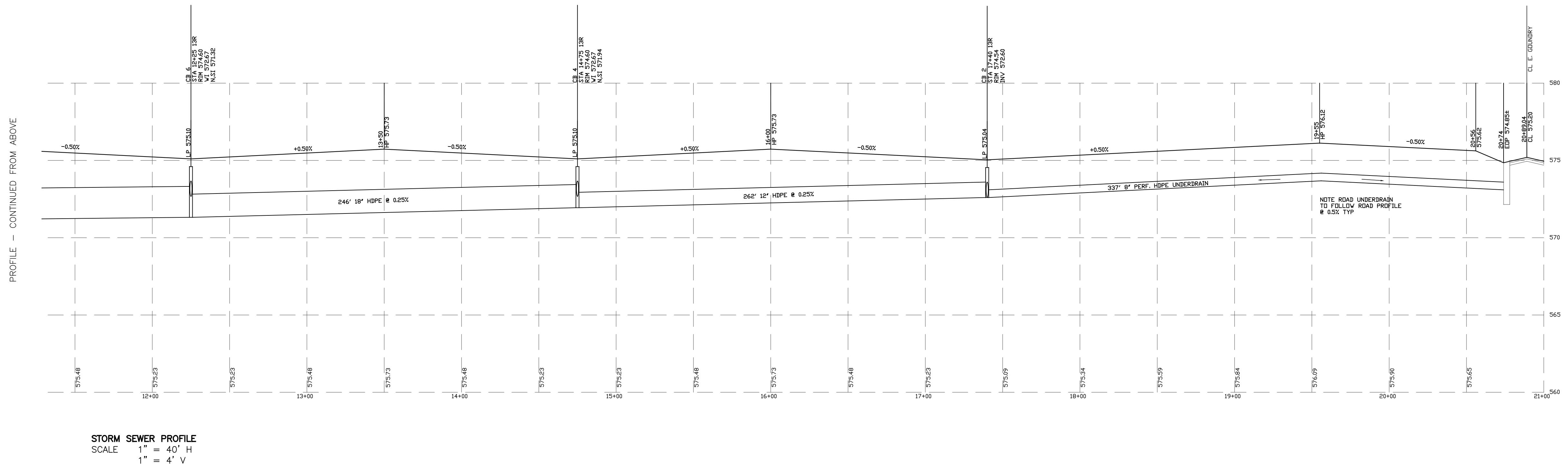
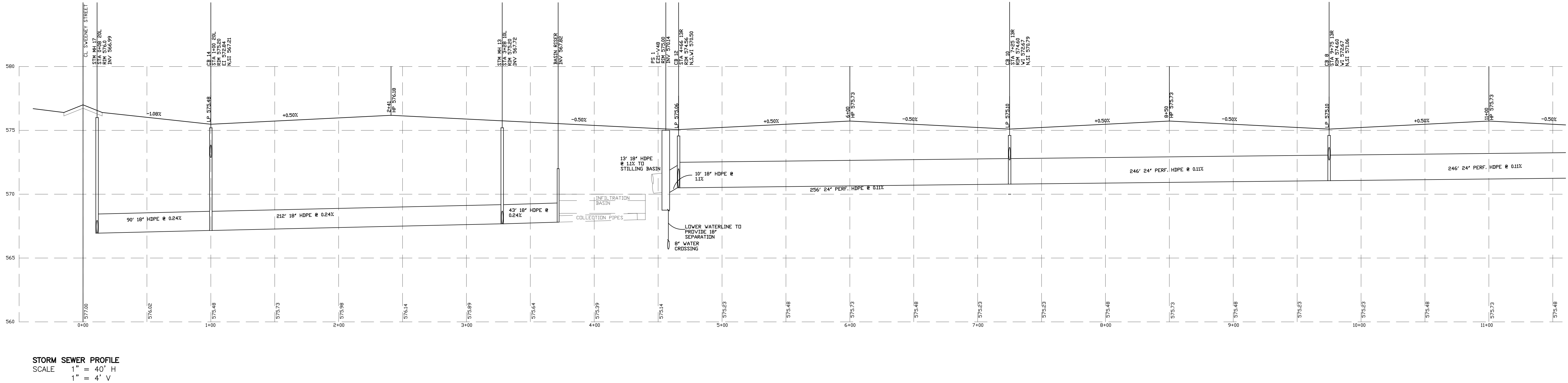
CB TO MANHOLES	04.03.17	ARH/JCM
PROFILE ADDED	01.18.17	ARH/JCM
REVISIONS	DATE	BY/CK

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LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING



1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK
PAVING, DRAINAGE
& GRADING PLAN - 3

SCALE:	1"=30'
DATE:	OCTOBER 28, 2016
JOB NO:	M-1604
SHEET NO:	PD-3



NOTES

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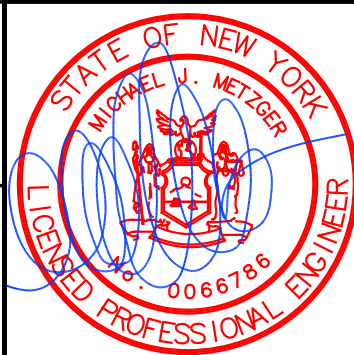
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LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING



1100 SWEENEY STREET

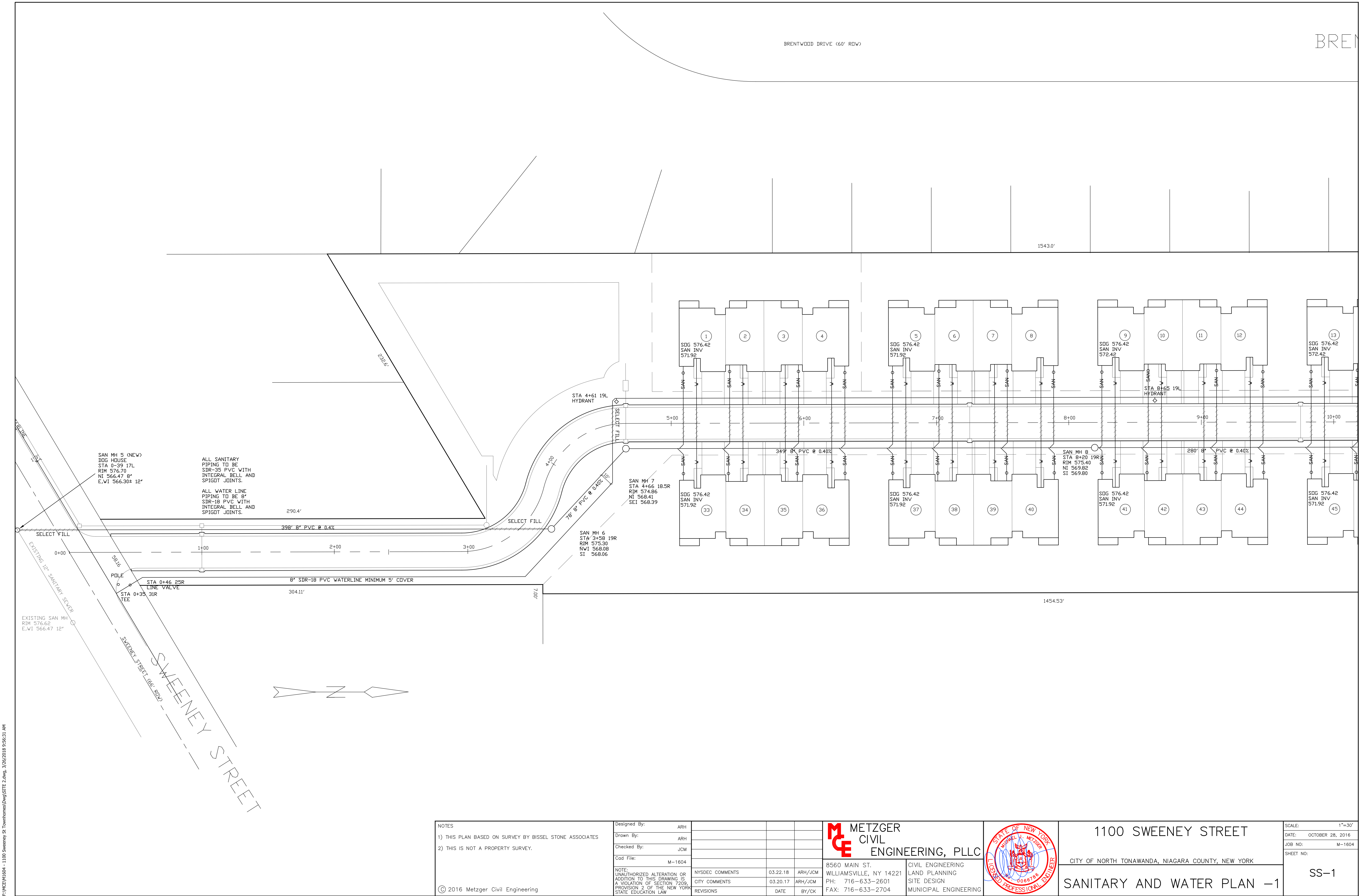
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK

PAVING, DRAINAGE
& GRADING PROFILES

SCALE: 1"=40'
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO:

PD-4

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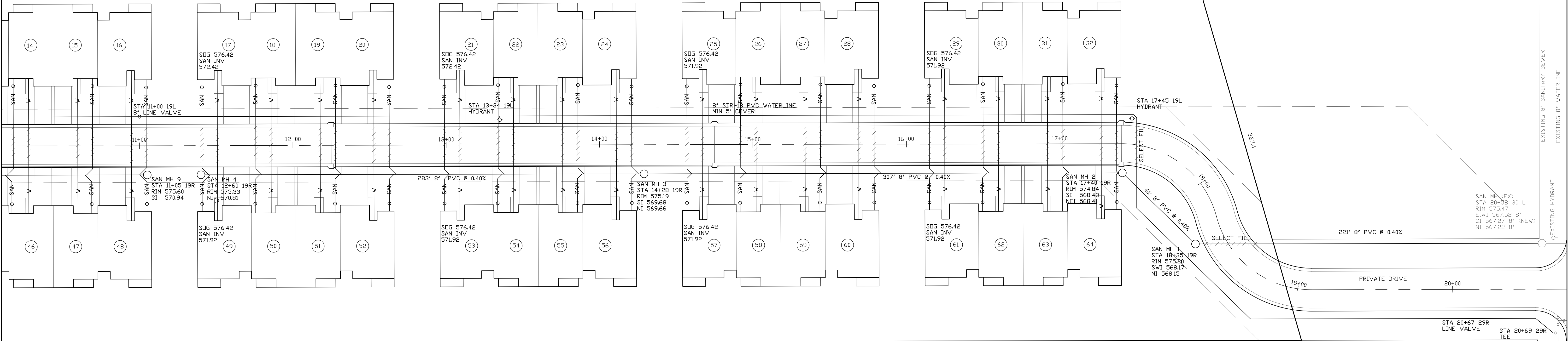
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REVISIONS	DATE	BY/CK
NYSDEC COMMENTS	03.22.18	ARH/JCM
CITY COMMENTS	03.20.17	ARH/JCM

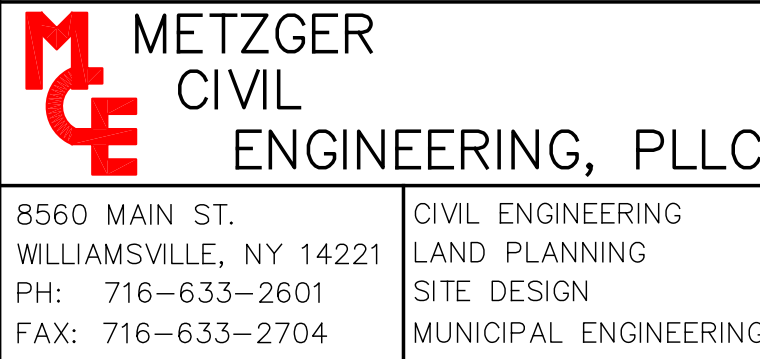

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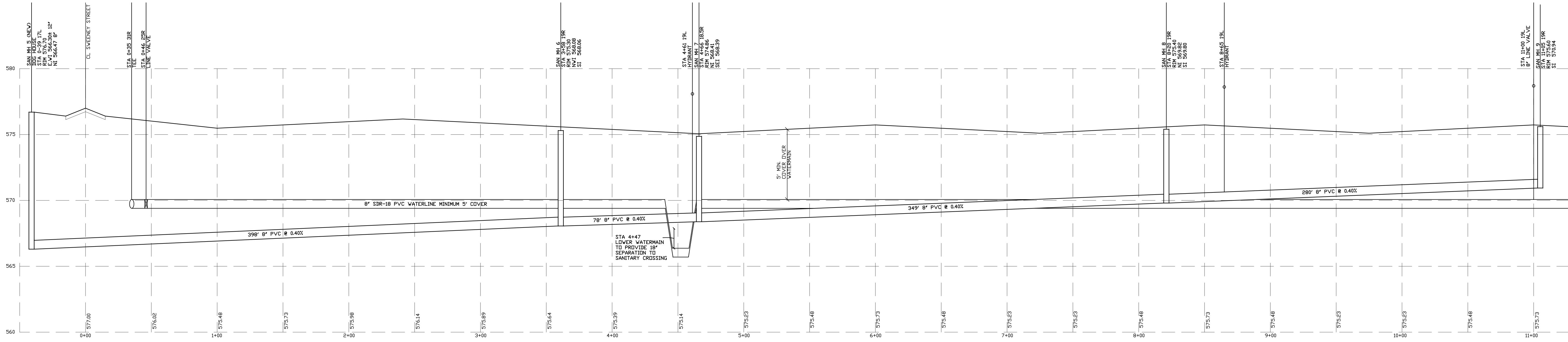
INTWOOD DRIVE

BRENTWOOD DRIVE (60' ROW)



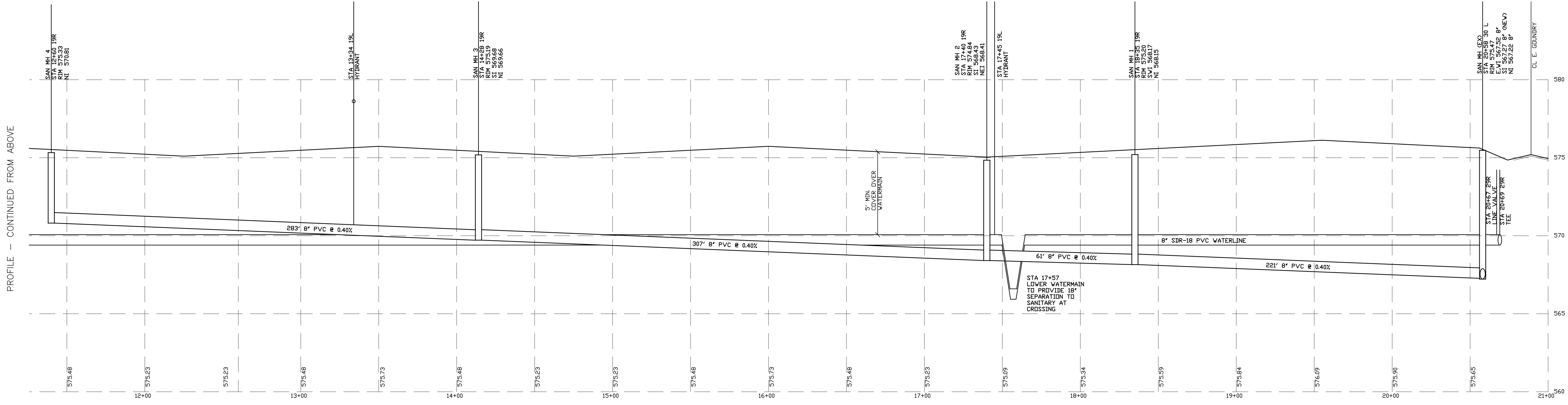
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	Drawn By: ARH							DATE: AUGUST 8, 2016
	Checked By: JCM							JOB NO: M-1604
	Cad File: M-1604							SHEET NO:
	NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW	NYSDEC COMMENTS	03.22.18	ARH/JCM				SS-2
		NCHD COMMENTS	12.11.17	ARH/JCM				
		CITY COMMENTS	03.20.17	ARH/JCM				
		SAN INVERT UNIT 17	01.18.17	ARH/JCM				
		REVISIONS	DATE	BY/CK				



SANITARY & WATER PROFILE
SCALE 1" = 40' H
1" = 4' V

PROFILE - CONTINUED BELOW



SANITARY & WATER PROFILE
SCALE 1" = 40' H
1" = 4' V


PROFILE - CONTINUED FROM ABOVE

- NOTES
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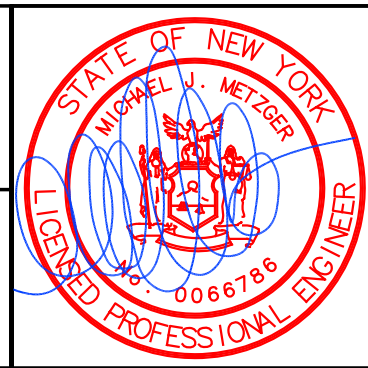
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REVISIONS	DATE	BY/CK



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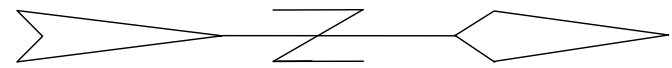
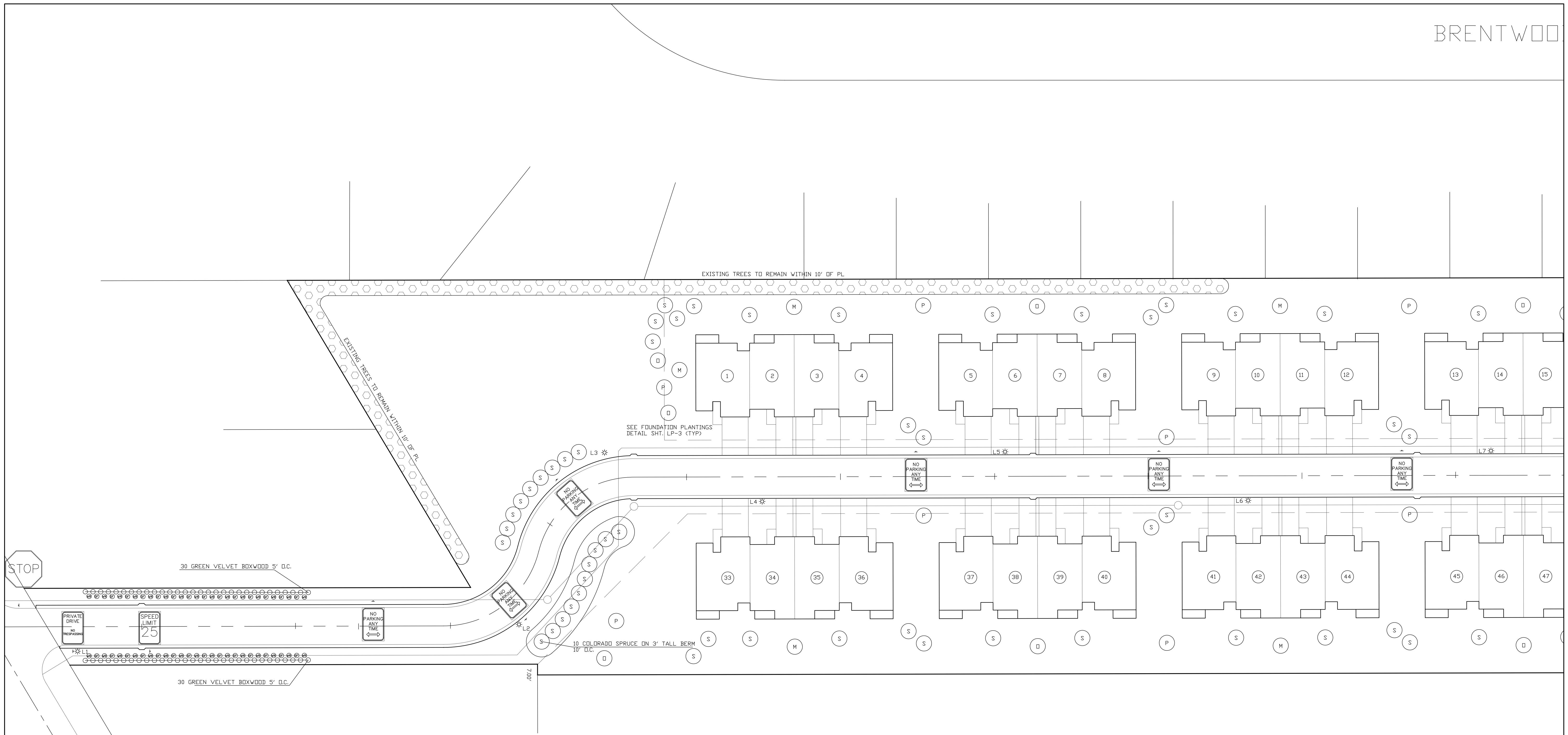
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WILLIAMSVILLE, NY 14221
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FAX: 716-633-2704

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LAND PLANNING
SITE DESIGN
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1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK
SANITARY AND WATER PROFILES

SCALE: 1"=40'
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO: SS-3



- LEGEND**
- *L2 10' TALL STREET LIGHT - 2' OFF PAVEMENT EDGE
 - O GREEN VELVET BOXWOOD - QTY. 60
 - O_{WR} WINE AND ROSES WEIGELA - QTY. 30
 - O_{GF} GOLD FLAME SPIREA - QTY. 28
 - S SPRUCE - COLORADO SPRUCE - QTY. 114
 - M MAPLE - CRIMSON KING
RED MAPLE TREE - QTY. 9
 - D OAK - AMERICAN OAK TREE - QTY. 11
 - P PEAR - FLOWERING PEAR TREE - QTY. 17

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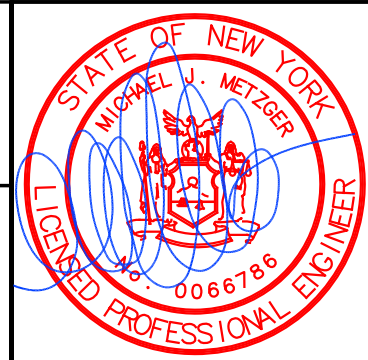
Signature	04.03.17	ARH/JCM
CITY COMMENTS	03.20.17	ARH/JCM
REVISIONS	DATE	BY/CK



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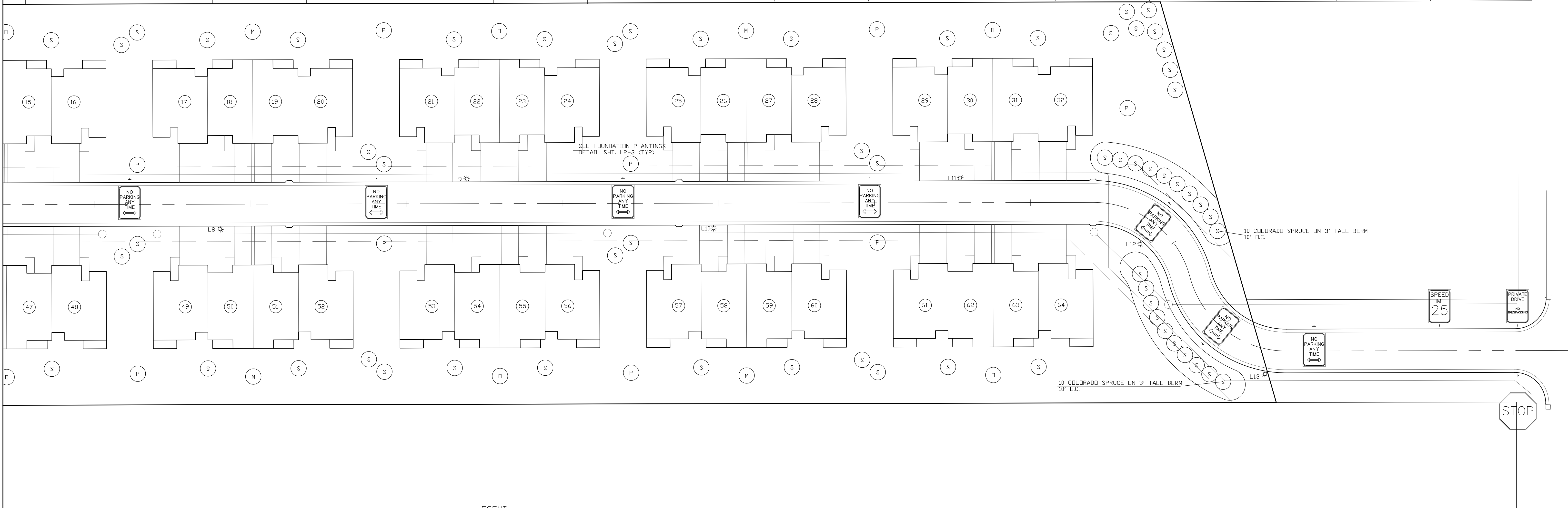
1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK

**LANDSCAPE
AND SIGNAGE PLAN - 1**

SCALE: 1"=30'
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO:

LP-1

WOOD DRIVE



- LEGEND**
- *L2 10' TALL STREET LIGHT - 2' OFF PAVEMENT EDGE
 - O GREEN VELVET BOXWOOD - QTY. 60
 - O_{WR} WINE AND ROSES WEIGELA - QTY. 30
 - O_{GF} GOLD FLAME SPIREA - QTY. 28
 - S SPRUCE - COLORADO SPRUCE - QTY. 114
 - M MAPLE - CRIMSON KING RED MAPLE TREE - QTY. 9
 - D DAK - AMERICAN DAK TREE - QTY. 11
 - P PEAR - FLOWERING PEAR TREE - QTY. 17

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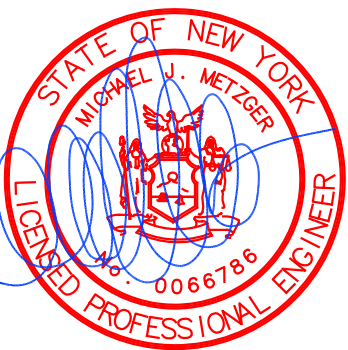
SIGNAGE	04.03.17	ARH/JCM
CITY COMMENTS	03.20.17	ARH/JCM
REVISIONS	DATE	BY/CK



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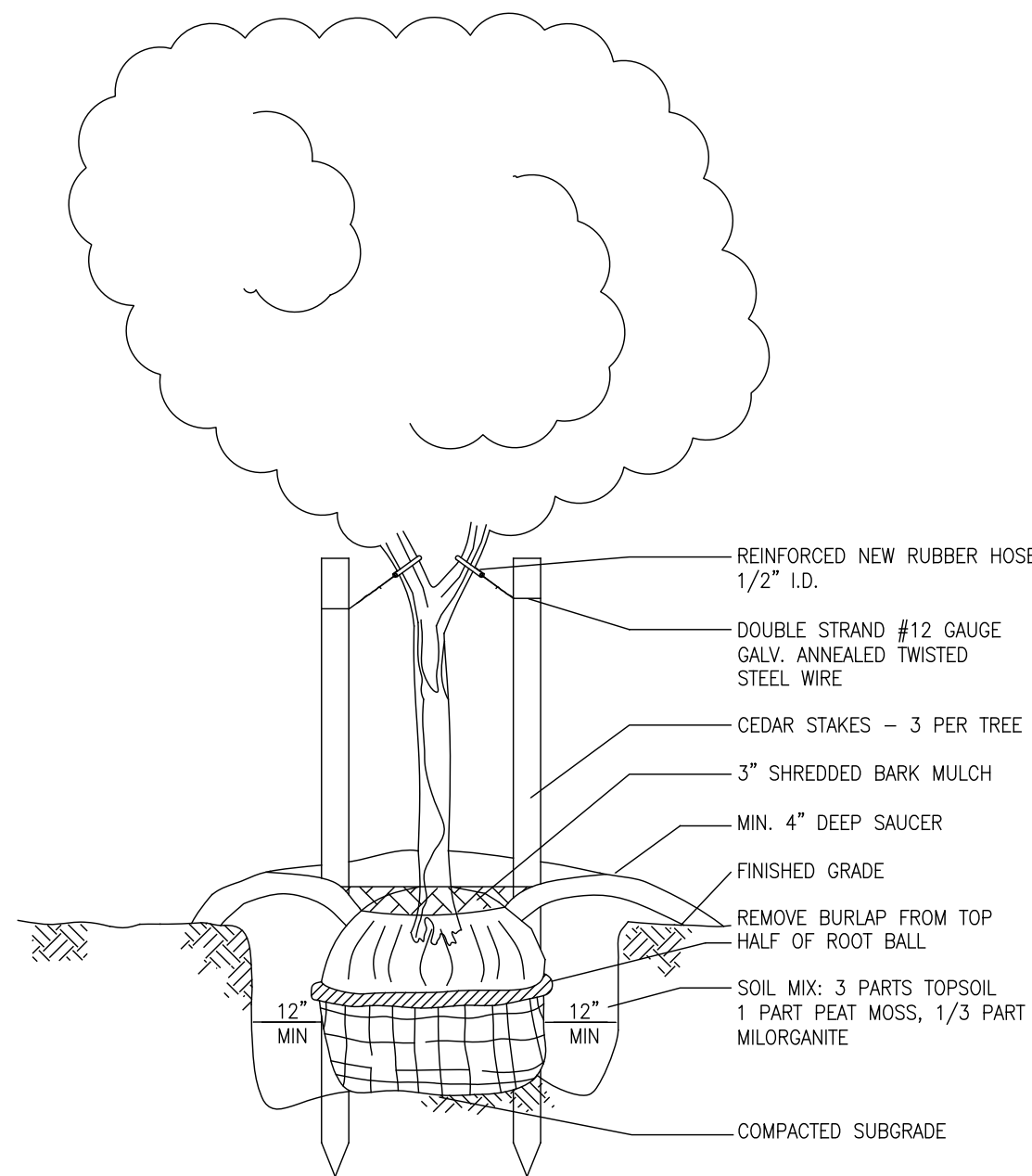


1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK

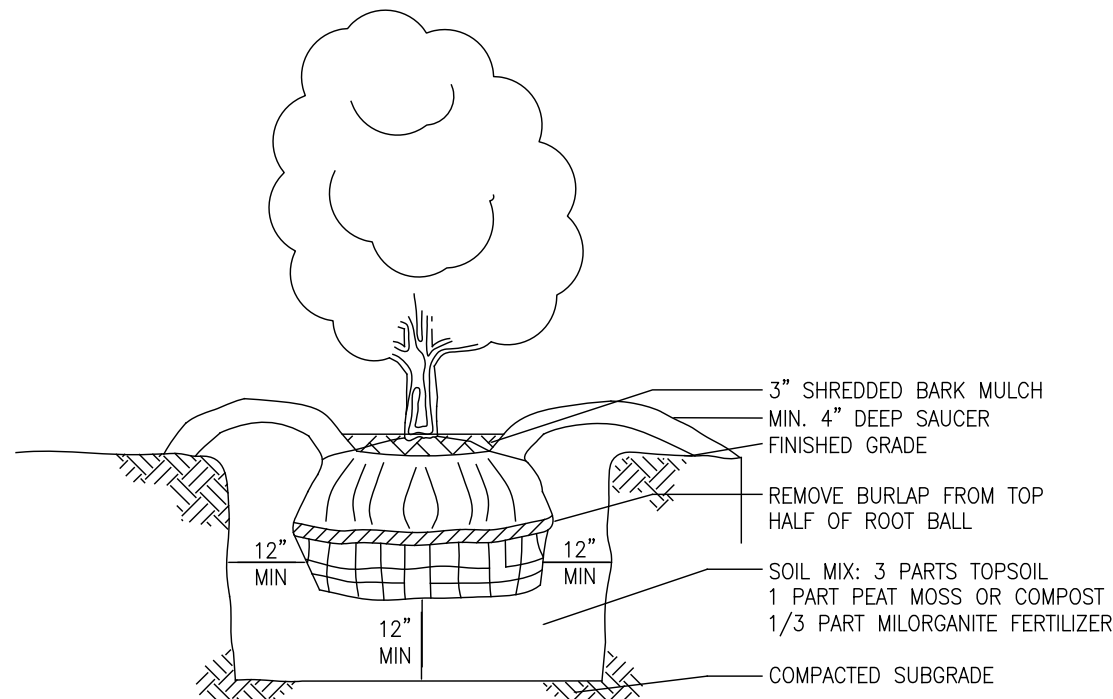
LANDSCAPE
AND SIGNAGE PLAN - 2

SCALE: 1"=30'
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO:

LP-2



TREE PLANTING DETAIL
NOT TO SCALE



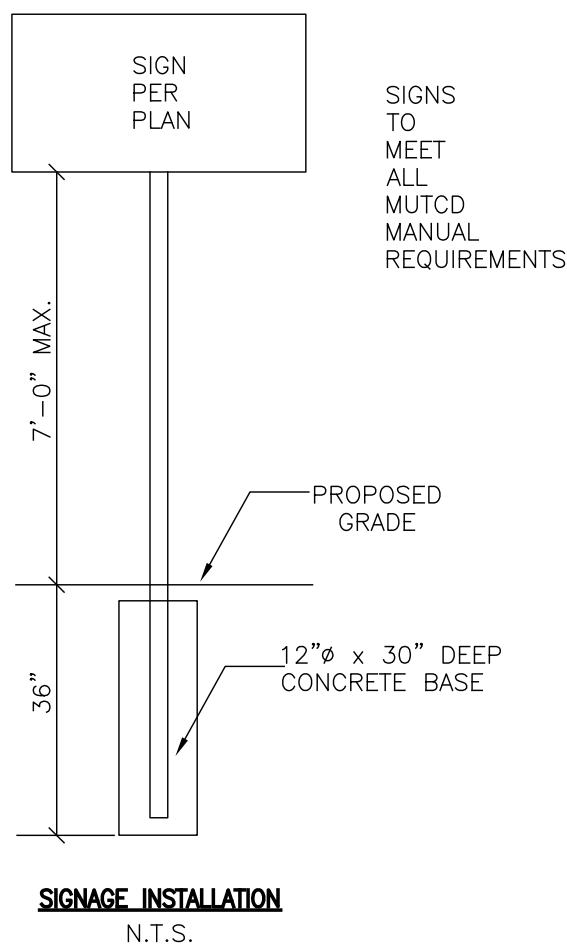
SHRUB PLANTING DETAIL
BALLED AND BURLAP
NOT TO SCALE

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

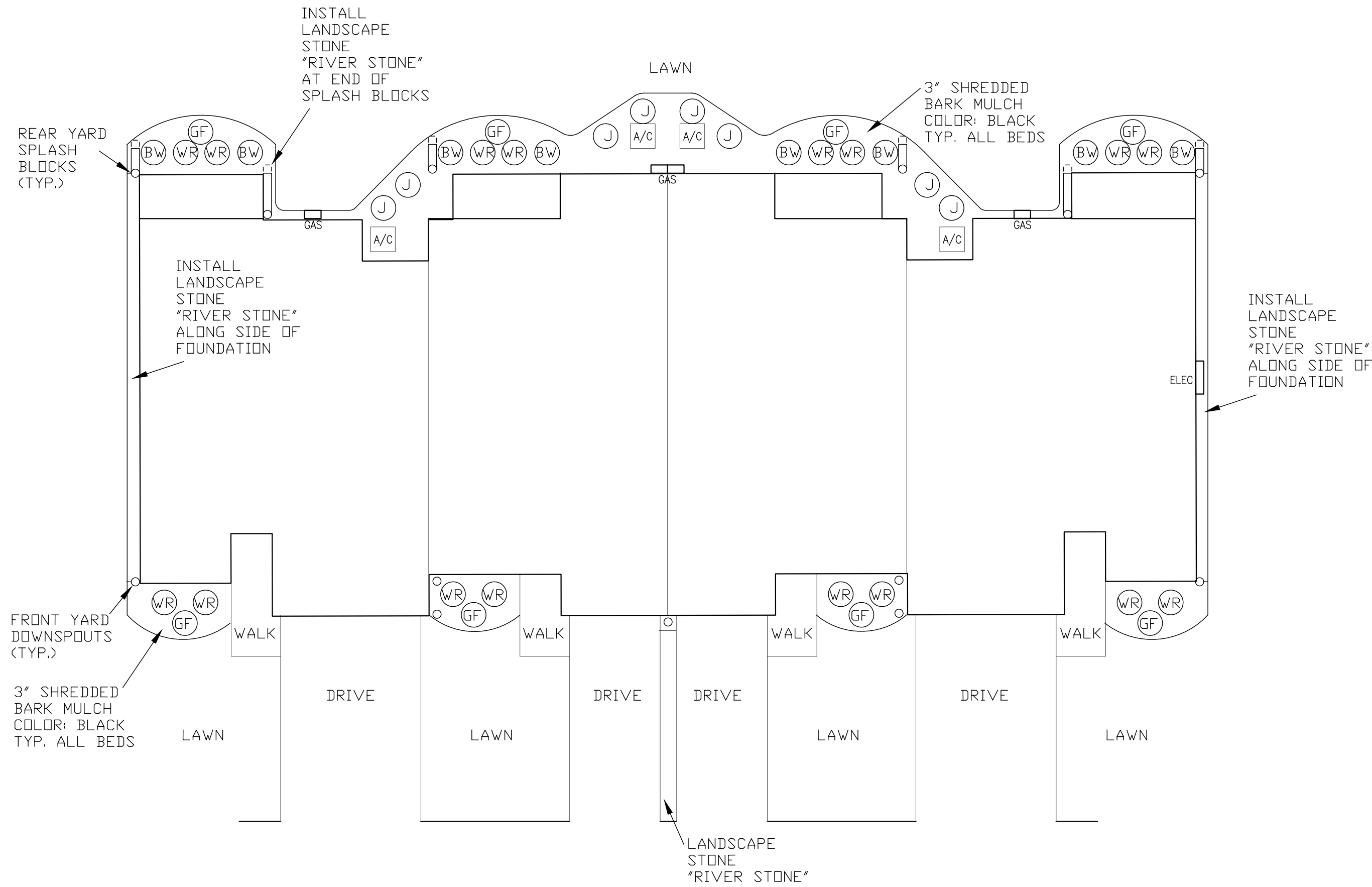
LAWN NOTES
FURNISH TOPSOIL FROM THE STRIPPED SITE. IF INSUFFICIENT QUANTITY IS AVAILABLE, CONTRACTOR TO SUPPLY TOPSOIL FROM OFF SITE AT CONTRACTORS EXPENSE.
TOPSOIL SHALL BE NATURAL, FRABLE GRANULAR SOIL, UNIFORM IN COMPOSITION AND TEXTURE, CLEAN FROM SUBSOIL, CLAY LUMPS, STONES, WEEDS, STUMPS, ROOTS,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



SIGNAGE INSTALLATION
N.T.S.



FOUNDATION PLANTINGS (TYPICAL ALL BUILDINGS)

- BW GREEN VELVET BOXWOOD - QTY. 8
- WR WINE AND ROSES WEIGELA - QTY. 16
- GF GOLD FLAME SPIREA - QTY. 8
- J OLD GOLD JUNIPER - QTY. 8

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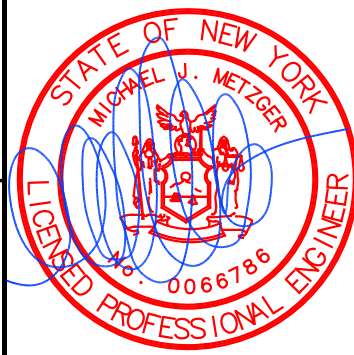
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CITY COMMENTS
REVISIONS

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LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

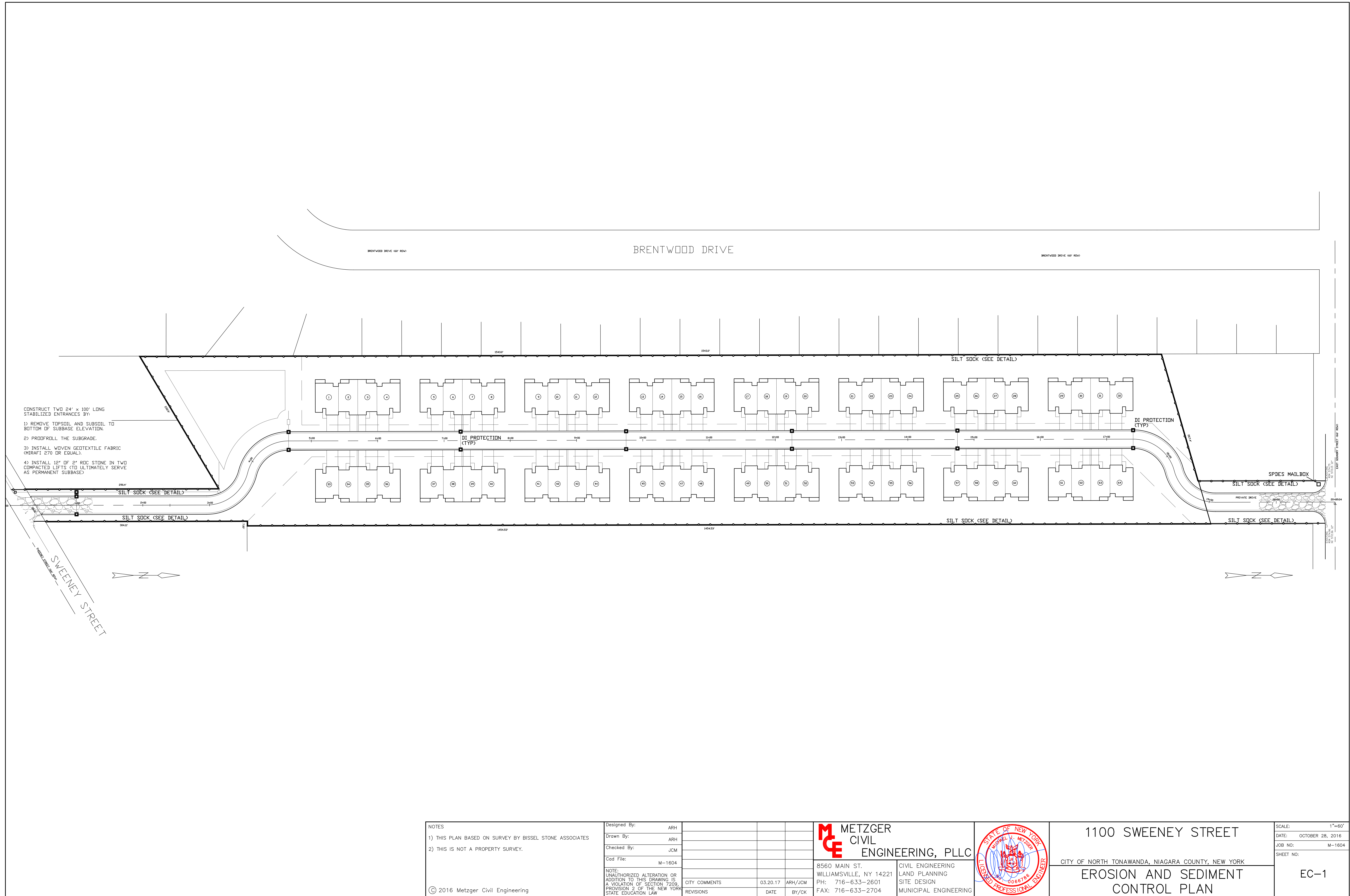


1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK
**LANDSCAPE
AND SIGNAGE PLAN — 3**

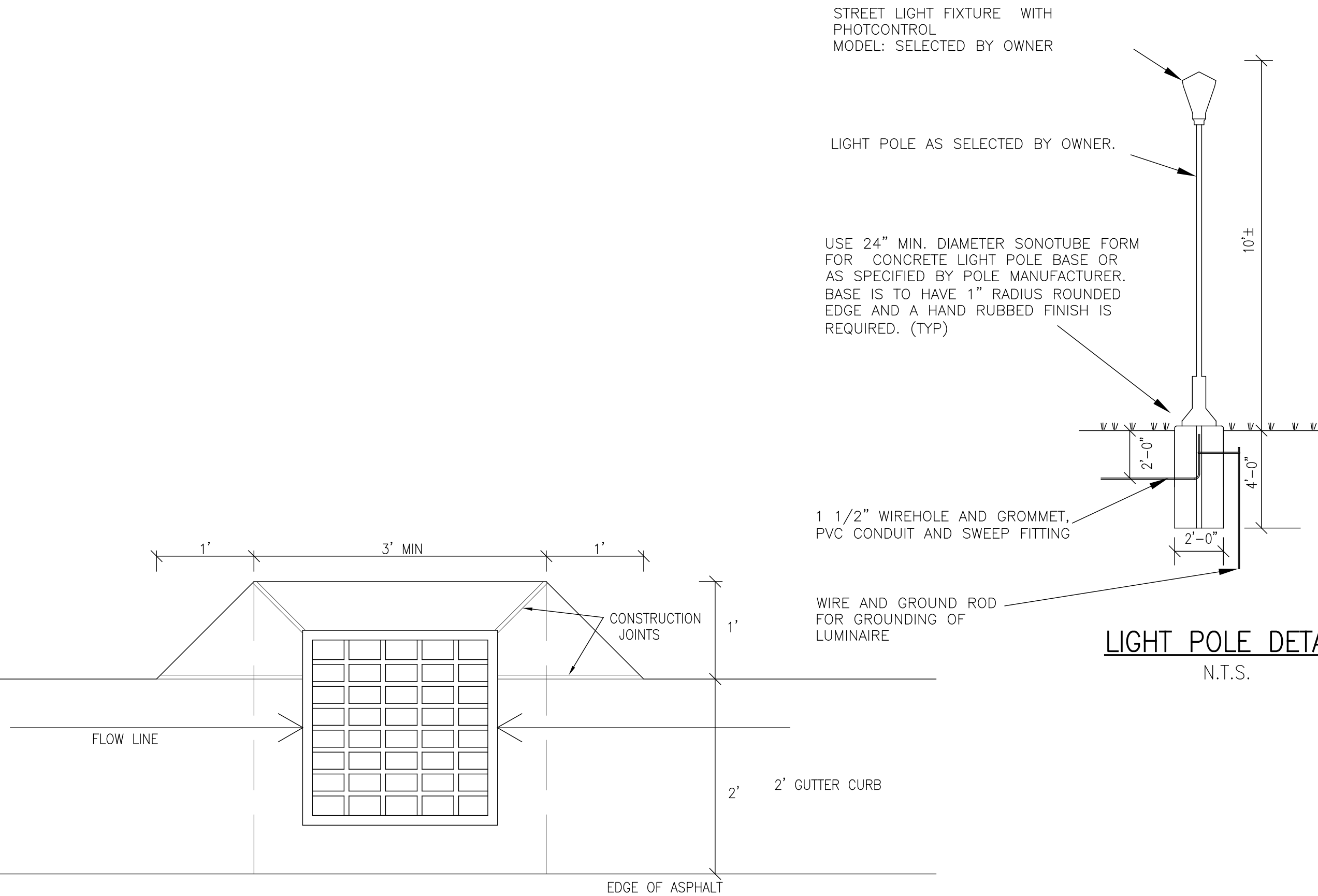
SCALE: NTS
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO:

LP-3

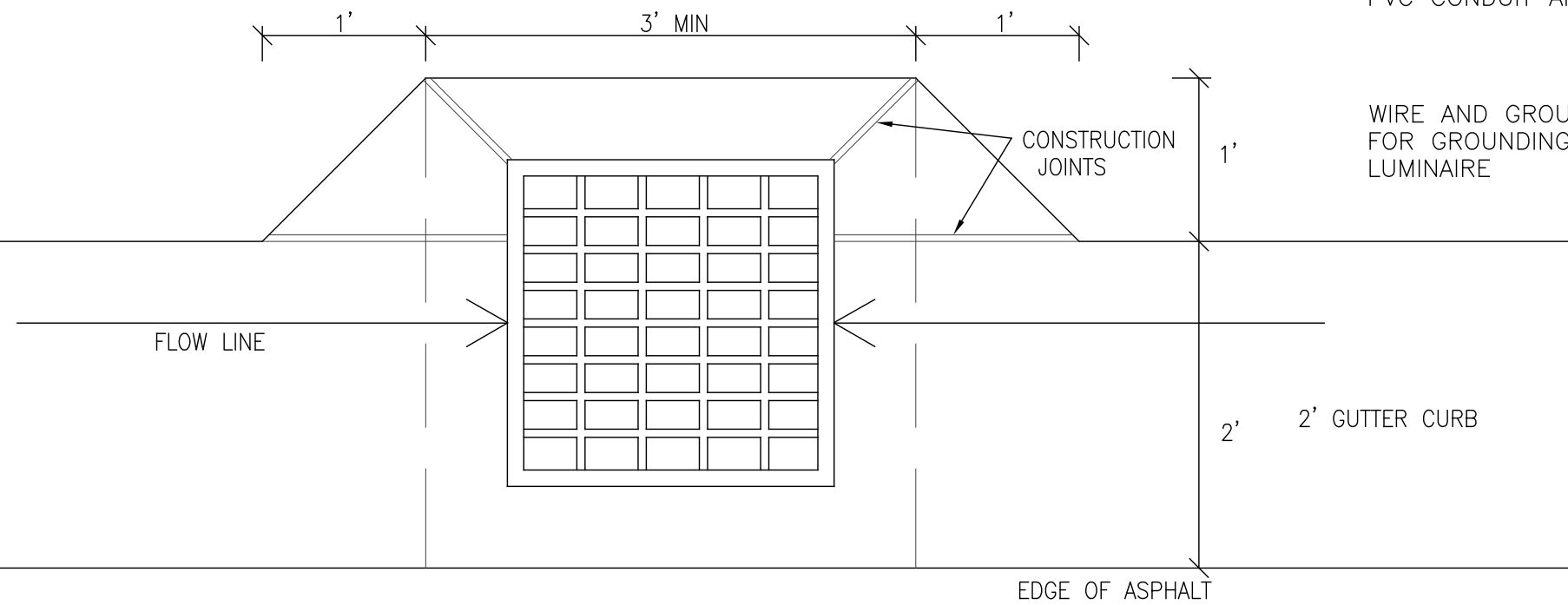
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NOTES 1) THIS PLAN BASED ON SURVEY BY BISSEL STONE ASSOCIATES 2) THIS IS NOT A PROPERTY SURVEY. © 2016 Metzger Civil Engineering	Designed By: ARH				MCE METZGER CIVIL ENGINEERING, PLLC 8560 MAIN ST. WILLIAMSVILLE, NY 14221 PH: 716-633-2601 FAX: 716-633-2704 CIVIL ENGINEERING LAND PLANNING SITE DESIGN MUNICIPAL ENGINEERING		1100 SWEENEY STREET CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK EROSION AND SEDIMENT CONTROL PLAN	SCALE: 1"=60'
	Drawn By: ARH							DATE: OCTOBER 28, 2016
	Checked By: JCM							JOB NO: M-1604
	Cad File: M-1604							SHEET NO:
	NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW	CITY COMMENTS	03.20.17	ARH/JCM				EC-1
		REVISIONS	DATE	BY/CK				

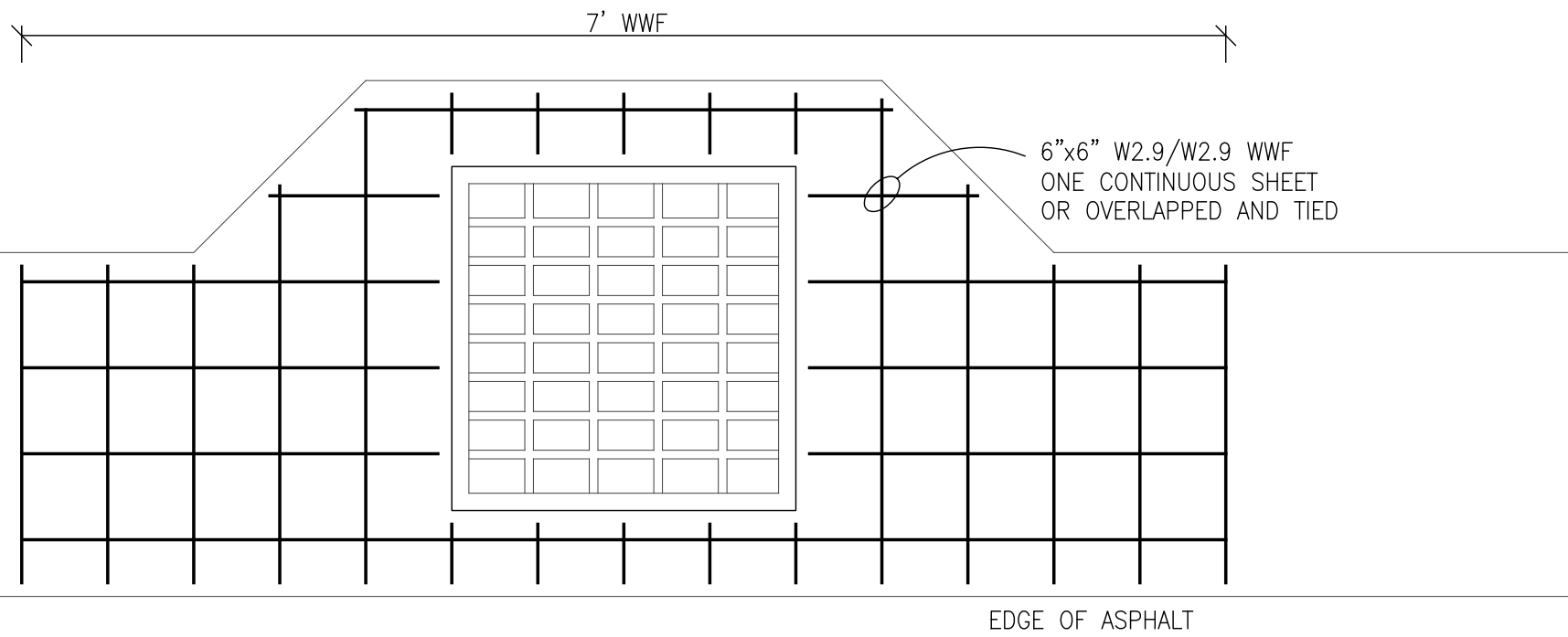


LIGHT POLE DETAIL
N.T.S.

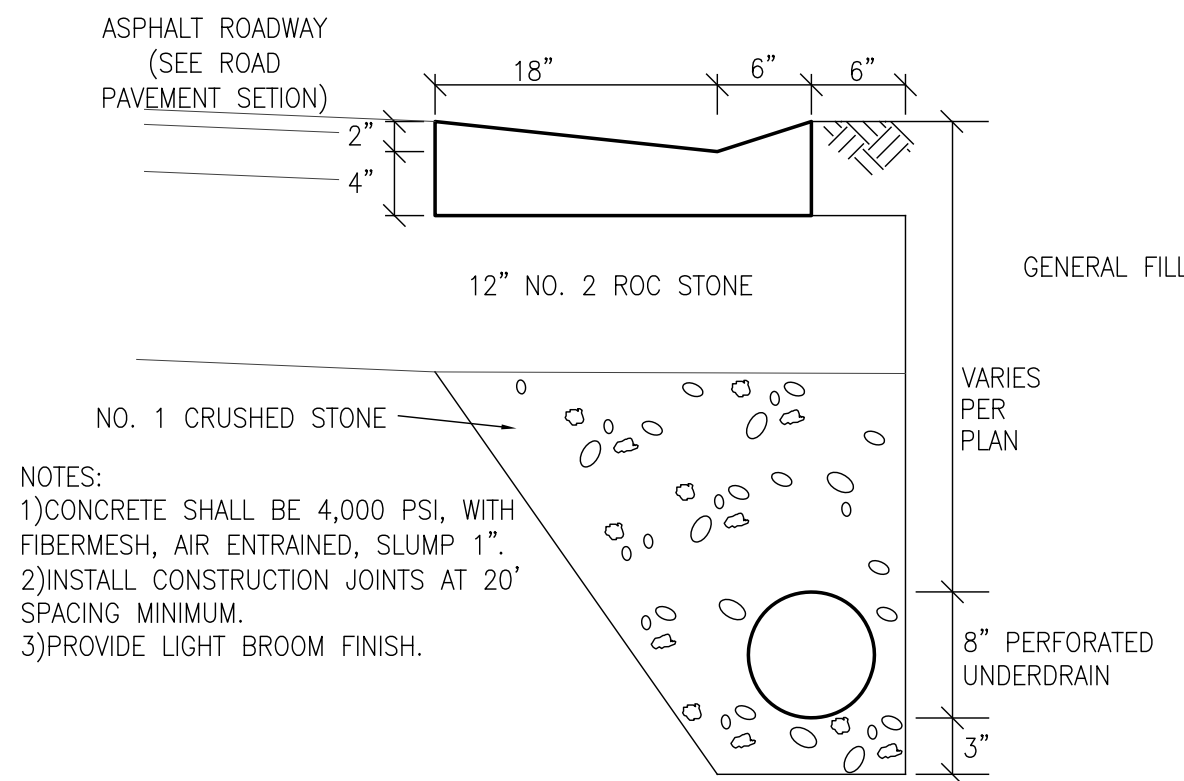


GUTTER FLARE
N.T.S.

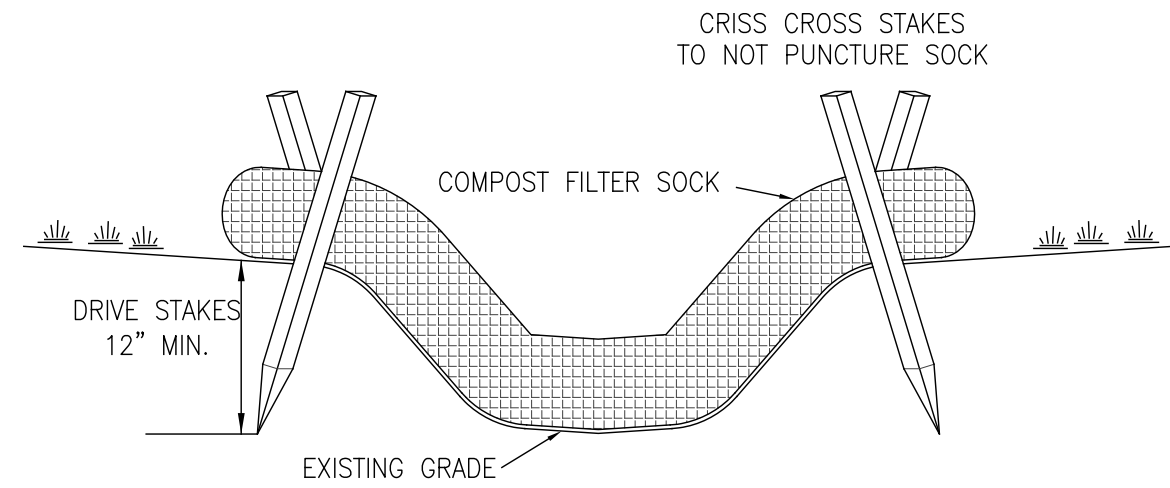
- NOTES:
- 1) CONCRETE SHALL BE 4,000 PSI, WITH FIBERMESH, AIR ENTRAINMENT, SLUMP 1".
 - 2) INSTALL CONSTRUCTION JOINTS AT 20' SPACING MINIMUM.
 - 3) PROVIDE LIGHT BROOM FINISH.
 - 4) FRAME AND GRATE TO BE CAST IN PLACE PER MANUFACTURERS SPECIFICATIONS.



GUTTER FLARE REINFORCING
N.T.S.



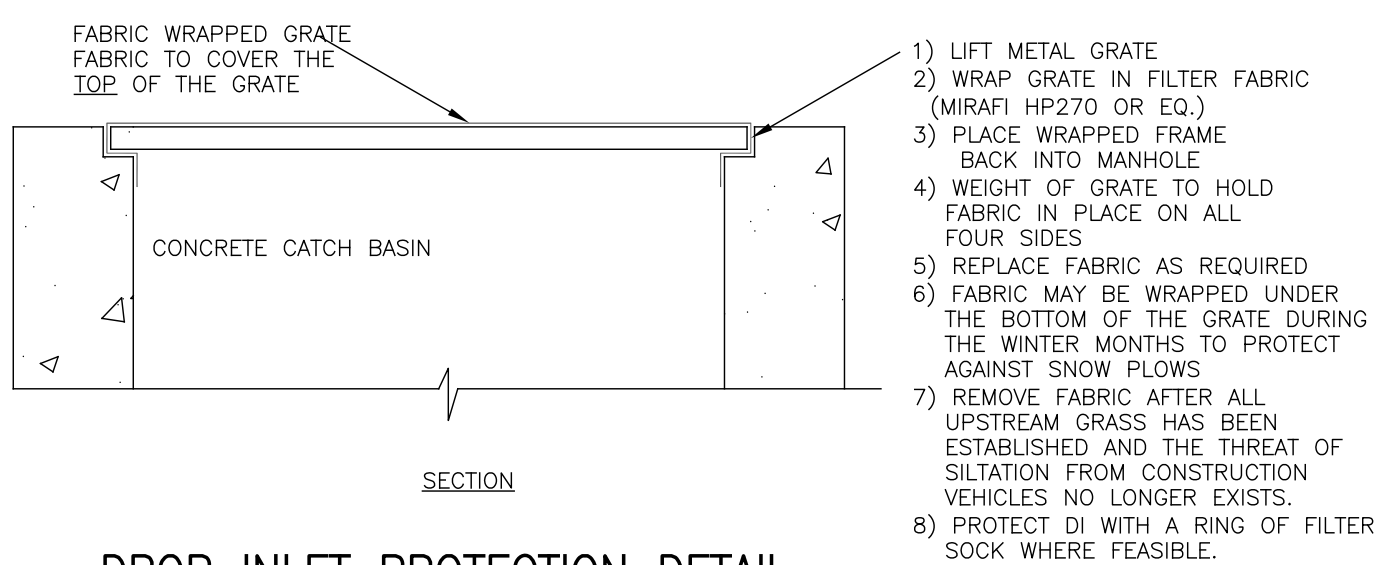
CONCRETE GUTTER CURBING
N.T.S.



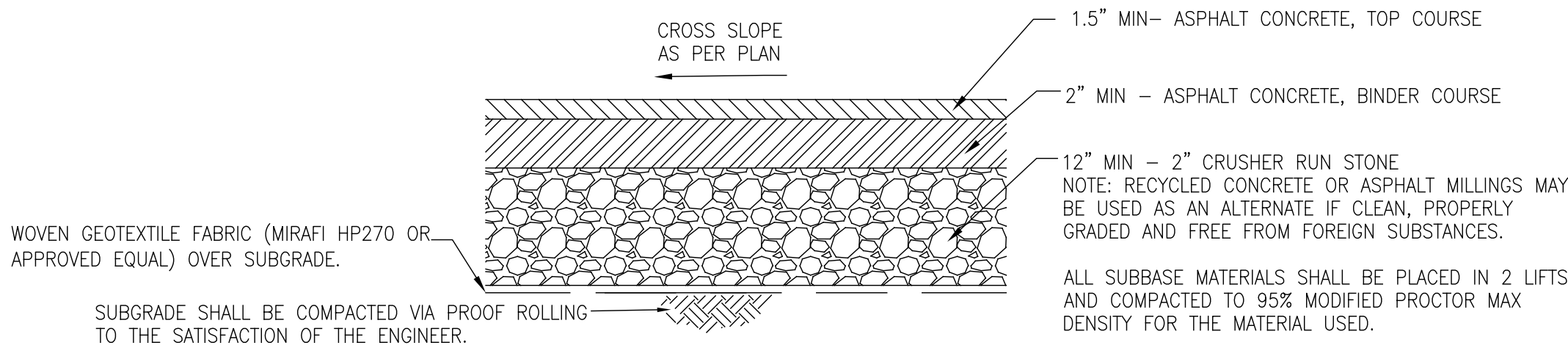
- NOTES:
1. COMPOST FILTER SOCK MUST CONFORM TO NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (FILTEXX SILTXXX OR APPROVED EQUAL).
 2. INSTALL 3' LONG 2"x2" HARDWOOD STAKES AT 10' INTERVALS OR AS SPECIFIED BY THE SOCK MANUFACTURER.
 3. WOODEN STAKES TO BE INSTALLED IN A CRISS CROSS 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" DIAMETER MIN.

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



COMPOST FILTER SOCK
N.T.S.




DROP INLET PROTECTION DETAIL
N.T.S.



ASPHALT PAVING SECTION
N.T.S.

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DETAILS

DT-2

GENERAL NOTES FOR SANITARY SEWER CONSTRUCTION WITHIN THE CITY OF NORTH TONAWANDA SEWER DISTRICTS

1. THE CITY OF NORTH TONAWANDA ("THE CITY"), WHO OPERATES AND MAINTAINS THE EXISTING SEWER LINES AND APPURTENANCES WITHIN THE CITY, IS TO BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE CITY.
3. ALL PERMITS REQUIRED BY THE FEDERAL, STATE, COUNTY, CITY AND/OR TOWN GOVERNMENTS TO PERFORM WORK MUST BE OBTAINED PRIOR TO THE START OF WORK, AND PAID FOR BY THE CONTRACTOR.
4. IF EASEMENT AND/OR OUT OF DISTRICT AGREEMENTS ARE REQUIRED, THEY MUST BE COMPLETE AND READY TO BE FILED BEFORE THE PROJECT WILL BE APPROVED FOR CONSTRUCTION.
5. THE CONTRACTOR SHALL COMPLY IN ALL RESPECTS TO THE INDUSTRIAL CODE PART (RULE NO.) 53 RELATING TO CONSTRUCTION, EXCAVATION, AND DEMOLITION OPERATIONS AT OR NEAR UNDERGROUND FACILITIES, AS ISSUED BY THE STATE OF NEW YORK DEPARTMENT OF LABOR, BOARD OF STANDARD AND APPEALS.
6. THE CONSTRUCTION OF THE SANITARY SEWER FACILITIES SHALL BE UNDER THE SUPERVISION OF A PERSON OR FIRM QUALIFIED TO PRACTICE PROFESSIONAL ENGINEERING IN NEW YORK STATE UNDER THE EDUCATION LAW OF THE STATE, WHENEVER ENGINEERING SERVICES ARE REQUIRED BY SUCH LAW FOR SUCH PURPOSES.
7. WHERE SUCH SANITARY SEWER FACILITIES ARE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER, HE SHALL CERTIFY TO THE CITY AND TO THE APPLICANT THAT THE CONSTRUCTED FACILITIES HAVE BEEN UNDER HIS SUPERVISION AND THAT THE WORK HAS BEEN FULLY COMPLETED IN ACCORDANCE WITH THE APPROVED ENGINEERING REPORTS, PLANS, SPECIFICATIONS, AND APPROVALS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL SITE SAFETY, THE CONTRACTOR'S EQUIPMENT AND METHODS OF OPERATION SHALL BE IN FULL COMPLIANCE WITH OSHA STANDARDS AND SATISFY ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY REGULATIONS.
9. THE CONTRACTOR IS ADVISED A TRENCH SHIELD AND/OR SHORING DESIGNED IN ACCORDANCE WITH OSHA STANDARDS SHALL BE USED IN ALL OPEN TRENCH EXCAVATIONS.
10. ANY CONTRACTOR AND/OR PLUMBER PERFORMING WORK IN A CONFINED SPACE (I.E. MANHOLES, WETWELLS, AND CHAMBERS) OWNED BY THE CITY, MUST CERTIFY TO THE COUNTY THAT THEY HAVE THEIR OWN CONFINED SPACE ENTRY PROGRAM THAT MEETS OR EXCEEDS OSHA'S REGULATIONS. CERTIFICATION MUST BE NOTARIZED BY A NOTARY PUBLIC.
11. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AHEAD OF THE PIPE LAYING OPERATION, SO IF MINOR ADJUSTMENTS MUST BE MADE IN THE PIPE ELEVATION AND/OR ALIGNMENT DUE TO INTERFERENCE FROM THESE UTILITIES, SAID CHANGES CAN BE MADE IN ADVANCE OF THE WORK.
12. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED TREE EXPERT TO REMOVE, WHERE NECESSARY, BRANCHES WHICH INTERFERE WITH THE CONSTRUCTION OPERATION OR TO REPAIR TREES HAVING SUFFERED DAMAGE BY CONSTRUCTION ACTIVITIES. THE COST INVOLVED IS TO BE INCLUDED IN THE VARIOUS ITEMS OF THE CONTRACT.
13. THE SANITARY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) SEWER PIPE CONFORMING TO THE LATEST REVISIONS OF AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) DESIGNATION D3034, SPR-35, INSTALLED IN ACCORDANCE WITH THE ASTM DESIGNATION D-2321-43A OR THE LATEST REVISION THEREOF, OR APPROVED EQUAL.
14. SEWERS SHALL BE LAID WITH STRAIGHT ALIGNMENT BETWEEN MANHOLES AND SHALL BE CHECKED BY USING A LASER BEAM OR LAMPING.
15. SHOULD A FLUID CONDITION BE ENCOUNTERED AT THE TRENCH BOTTOM, THE CONTRACTOR IS TO UNDERCUT THE TRENCH AND PROVIDE SUFFICIENT FILL MATERIAL (STONE & FABRIC) TO STABILIZE THE TRENCH BOTTOM.
16. SANITARY SEWER BEDDING MATERIAL SHALL BE CRUSHED STONE WITH A GRADATION CONFORMING TO THE CITY SPECIFICATIONS FOR SUBDIVISIONS AND SANITARY SEWER EXTENSIONS.
17. BACKFILL SHALL BE OF A SUITABLE MATERIAL REMOVED FROM THE EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. DEBRIS, FROZEN MATERIAL, LARGE CLOUDS OR STONES, ORGANIC MATTER, OR OTHER UNSTABLE MATERIALS SHALL NOT BE USED FOR BACKFILL WITHIN TWO (2) FEET OF THE TOP OF THE PIPE.
18. ALL PIPES CROSSING UNDER PAVED AREAS ARE TO BE BACKFILLED TO SUB-GRADE WITH COMPACTED SELECT MATERIAL (CRUSHED STONE) TO FIVE (5) FEET OUTSIDE THE PAVEMENT EDGES OR AS REQUIRED BY THE HIGHWAY PERMIT. IF ANY PROPOSED SEWER RUNS UNDER PAVED AREAS AND HAS LESS THAN FOUR (4) FEET OF COVER, THEN CONCRETE ENCASEMENT IS REQUIRED.
19. SEWERS PARALLEL TO WATER MAINS - TEN STATE STANDARDS, LATEST EDITION, CHAPTER 30, SECTION 38.31, PAGE 30-11: SEWERS SHALL BE LAID AT LEAST TEN (10') FEET (THREE (3) METERS) HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A TEN (10') FOOT SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE-BY-CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATER MAIN, PROVIDED THAT THE WATER MAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES (460 MM) ABOVE THE TOP OF THE SEWER. IF IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS DESCRIBED ABOVE, BOTH THE WATER MAIN AND SEWER MUST BE CONSTRUCTED OF SLIP-ON OR MECHANICAL JOINT PIPE COMPLYING WITH PUBLIC WATER SUPPLY DESIGN STANDARDS OF THE REGULATORY AGENCY AND BE PRESSURE TESTED TO 150 POUNDS PER SQUARE INCH (PSI) (1,034 KPA) TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
20. SEWERS CROSSING WATER MAINS - TEN STATE STANDARDS, LATEST EDITION, CHAPTER 30, SECTION 38.32, PAGE 30-11 TO 30-12: SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 16-INCHES (460 MM) BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS, WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO MAINTAIN LINE AND GRADE.
21. WHEN IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, ONE OF THE FOLLOWING METHODS MUST BE SPECIFIED:
- a. THE SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPE, AND SHALL BE PRESSURE TESTED AT 150 PSI (1034 KPA) TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
- b. EITHER THE WATER MAIN OR THE SEWER LINE MAY BE ENCASED IN A WATERTIGHT CARRIER PIPE WHICH EXTENDS TEN (10') FEET (THREE (3) METERS) ON BOTH SIDES OF THE CROSSING. MEASURED PERPENDICULAR TO THE WATER MAIN, THE CARRIER PIPE SHALL BE OF MATERIALS APPROVED BY THE REGULATORY AGENCY FOR USE IN WATER MAIN CONSTRUCTION.
- c. THE SEWER SHALL BE ENCASED IN CONCRETE PER THE CROSSING DETAIL TYPICAL FOR ENCASEMENT
22. THE MANHOLE COVERS ARE TO BEAR THE INSCRIPTION "SANITARY" AND COMPLY WITH THE CITY STANDARD FRAME AND COVER DETAIL. FOR PRIVATE PROJECTS THE COVERS SHALL BEAR THE INSCRIPTION "SANITARY SEWER" AND COMPLY WITH THE CITY STANDARD FRAME AND COVER (PRIVATE SEWER) DETAIL.
23. BUILDING SANITARY SEWER VENTS MUST BE INSTALLED SIX (6) INCHES ABOVE FINISHED GRADE IN A GRASSY AREA WITH A MUSHROOM CAP. IF THE VENT IS IN A SIDEWALK OR PAVED AREA, THEN PROTECT WITH 6" DIAMETER BOLLARDS (2 MINIMUM).
24. CLEANOUTS (C.O.) ARE REQUIRED ON 4" AND 6" BUILDING SEWERS EVERY FIFTY FEET AND ONE HUNDRED FEET RESPECTIVELY, AND AT EVERY CHANGE OF ALIGNMENT.
25. ABANDONED BUILDING SEWER CONNECTIONS FROM THE SITE, IF ANY, REQUIRE PROOF OF A PERMIT FOR DISCONNECTION PRIOR TO THE NEW CONNECTION BEING MADE.
26. THE FOLLOWING PERTAINS ONLY FOR DIRECT REPLACEMENT OF IN SERVICE SANITARY SEWERS:
- a. EACH NEW PIPE JOINT SHALL BE ULTRASONIC TESTED AFTER IT IS LAID, BUT BEFORE THE NEXT PIPE IS LAID. ALL TESTS SHALL BE IN ACCORDANCE WITH THE TESTING EQUIPMENT MANUFACTURE RECOMMENDATIONS.
- b. THE ULTRASONIC TEST SHALL BE PERFORMED IN LIEU OF THE HYDROSTATIC TEST.
- c. A VIDEO INSPECTION OF THE ENTIRE SEWER SHALL BE PERFORMED IN LIEU OF THE AIR TEST. FORWARD THE VIDEO INSPECTION TAPE AND RELATED PAPERWORK TO DSM FOR REVIEW AND APPROVAL.
- d. A DEFLECTION TEST IS REQUIRED IN ALL CASES.
27. FOR ALL SANITARY SEWER INSTALLATIONS, A WRITTEN CERTIFICATE OF CONSTRUCTION COMPLETENESS AND COMPLIANCE, INCLUDING THE RESULTS OF THE HYDROSTATIC LEAKAGE TEST, LAMP TEST, DEFLECTION TEST, AIR TEST, ETC. SHALL BE SUBMITTED TO THE COUNTY HEALTH DEPARTMENT AND CITY WITHIN THIRTY (30) DAYS AFTER COMPLETION OF CONSTRUCTION.
28. FOR ALL PUBLIC AND PRIVATE 8" OR LARGER SANITARY SEWER INSTALLATIONS, THE DEVELOPER/CONTRACTOR MUST PROVIDE ONE (1) SET OF RECORD DRAWINGS ON "D" SIZE PAPER (24" X 36") AND/OR IN AN ELECTRONIC FILE FORMAT (CD) COMPATIBLE WITH AUTOCAD, RELEASE 2007.
29. ALL PUBLIC SEWER EXTENSION PROJECTS THAT CONSIST OF MORE THAN 750 LF OF 8" PIPE OR LARGER, SHALL FURNISH A 2 YEAR MAINTENANCE BOND.
30. FINAL CERTIFICATION WILL BE ISSUED UPON THE FULL COMPLETENESS AND COMPLIANCE OF THE PROJECT INCLUDING ANY REQUIREMENT(S) OF II REMEDIAL WORK

3.02 AIR TESTS, ALIGNMENT, INSPECTION, INFILTRATION OR EXFILTRATION AND DEFLECTION REQUIREMENTS

A. Requirements

1. After backfilling and prior to the final acceptance of the project, the Contractor will be required to perform the following four tests on all sewers to be built under this project:
- a) Air Tests
- b) Alignment
- c) Infiltration or Exfiltration
- d) Deflection Test (15" dia. and smaller).
2. No more than 1,000 linear feet of installed sewer shall be allowed to remain untested.
3. In view of the fact that house laterals and riser pipes often contribute considerable infiltration, such laterals and risers are to be installed and capped, tied and blocked as the work progresses prior to the air testing of the lines.
4. The Contractor's testing procedures shall be completed in accordance with OSHA Standards for confined space entry. The Contractor will be required to provide and operate all equipment necessary for full compliance for his operation. Equipment such as gas detectors, safety harnesses, ventilating blowers, respirators etc. shall be provided by the contractor.

B. Air Tests (Required for All Diameters up to and including 36")

- 1) The procedure for air testing shall be as specified herein. The minimum allowable time for the test pressure to decrease from 3.5 psi to 3.0 psi shall be not less than as called for in the following table:
- | Minimum Acceptance Times For Length Shown (min:sec) | | | | |
|---|------------|----------|----------|----------|
| Pipe Diameter | Up to 100' | 100-200' | 200-300' | 300-400' |
| 6" | 2:50 | 2:50 | 2:50 | 2:51 |
| 8" | 3:47 | 3:47 | 3:48 | 5:04 |
| 10" | 4:43 | 4:43 | 5:56 | 7:54 |
| 12" | 5:40 | 5:42 | 8:33 | 11:24 |
- 2) Pipe lines in sizes up to 36 inches in diameter can be air tested from manhole to manhole for distances not to exceed 400 feet.
- 3) In wet trenches where pumping to lower the water table is impractical, approved perforated pipe (with approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Ground water elevations will be measured at each manhole in order to calculate the groundwater pressure acting on the pipe exterior. The initial air test pressure shall be increased as necessary to overcome the calculated groundwater pressure.
- 4) The testing procedure outlined shall be strictly adhered to during construction.
- 5) All testing equipment shall be supplied by the Contractor. For the Contractor's information, some of the major equipment required for air tests is the following:
- a) Stop watch graduated in tenths of a second.
- e) Compressor of 50 to 100 psi capacity.
- f) Bulkheads for pipe.
- g) Approximately 100 feet of 3/8" diameter air hose.
- h) Pressure gauge - 0 to 5 psi graduated in 1/16th of a pound increments.
- i) Three 3/8 inch diameter check valves.

C. Visual Inspection

1. All Sewers under 36" in diameter shall be lamped manhole to manhole prior to final acceptance. The lamp shall have an output of between 250 and 500 candlepower. Lamping shall be performed after the sewer has been flushed and the inside surface wet to allow for light reflection. If fifty percent (50%) of the lamp cannot be seen from the other manhole, the contractor will be required to televise that section at his expense.
2. All pipes 36" in diameter and larger shall be entered and visually inspected by the Engineer prior to installation. All equipment required for the inspection shall be furnished by the Contractor. After installation is totally complete, the contractor shall complete an internal television inspection of the pipe conduit., the television inspection shall be completed with the engineer present and a full inspection shall be recorded on a vhs tape. a copy of said tape shall be provided to the engineer. some items of inspection are as follows:

- a) Pipe free from obstructions and debris
- b) Pipe free from cracks
- c) Pipe joints properly sealed
- d) Pipe invert is smooth and free of sags or high points
- e) Hookups, diversions and connections properly made
- f) Concrete pipe walls free from structural defects
- g) Pipes and joints free from visible signs of leakage
- h) Specified coatings properly installed.

3. Pipe sections and joints not meeting all of the above requirements shall be replaced or repaired as directed by the engineer at the contractors expense.

D. Infiltration Tests (Applicable Only if Ground Water is Above Pipe)

1. Infiltration tests for all sewers to be constructed under this project shall not exceed 100 gallons per inch diameter per mile of sewer, per 24 hours. Each individual run of sewer (from one manhole to the next manhole) shall comply with the allowable rate of infiltration. All equipment for the tests shall be furnished by the Contractor.
2. The allowable rate of infiltration given in gallons per mile is not to be construed as a commitment on the part of the Owner to accept an entire line, where overall infiltration is less than the allowable, while one or more runs contribute excessive infiltration.

3. The infiltration test is intended to measure the water tightness of a sewer, as related to the infiltration of ground water, and, therefore, is only applicable if the water table level is 2 feet above the top of the pipe.

- a) Approved perforated pipe (with an approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Ground water elevations will be measured at each manhole so that the ground water level can be correlated with the infiltration measurements.
- b) Before conducting the tests, the water table should be allowed to stabilize at its normal level such that the water completely surrounds the pipe during the test period. The test is usually conducted between adjacent manholes with the upstream end of the sewer bulkheaded in a suitable manner to isolate the test section. All service laterals, stubs and fittings should be properly plugged or capped at the connections to the test pipe section to prevent the entrance of ground water at these locations.
- c) A V notch weir or other suitable measuring device should be installed in the inlet pipe to the downstream manhole. Infiltrating water is then allowed to build up and level off behind the weir until steady, uniform flow is obtained. When steady flow occurs over the weir, leakage is determined by direct reading consecutively for five (5) days from graduations on the weir and converting the flow quantity to gallons per unit length of pipe per unit of time.
- d) An important factor in applying the test criteria is to properly correlate the variable water head over the length of sewer being tested to the high ground water level. The downstream end of the test section will almost always be subjected to a greater external water pressure than the upstream end. To compensate for this variable external pressure, the test pressure should be that pressure corresponding to the average head of water over the test section. A minimum of 2 feet of water over the pipe is required at the upper manhole before the infiltration test will be allowed.

4. After the advent of the first wet weather season, and prior to the acceptance of the project, the owner will require that sections showing excessive infiltration be tested again and defective pipes, manholes, and connections be replaced or repaired at the contractors expense
5. When a sewer run between two consecutive manholes or chambers is found to contribute infiltration at a rate above the allowable, inspection by television or other cameras may be made by the Contractor and at the contractors expense during wet weather, so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

A. Exfiltration Tests

1. The exfiltration test for all diameter sewers shall be as described below. Although actual infiltration will normally be less than that indicated by the water exfiltration test, the test does provide a positive means of subjecting the completed sewer system to an actual pressure test. Since sanitary sewers are not designed or expected to operate as a pressure system, care must be exercised in conducting the test and correlating the results with the allowable exfiltration limit. All equipment required for the tests shall be furnished by the contractor.
- a) The test is usually conducted between adjacent manholes. Prior to the test, all service laterals, stubs and fittings within the test section should be plugged or capped and adequately braced or blocked to withstand the water pressure resulting from the test.
- b) If manholes are to be included in the test, the inlet pipe to each manhole should be bulkheaded and the test section filled with water through the upstream manhole. To allow air to escape from the sewer, the flow should be at a steady rate until the water level in the upstream manhole provides an average pressure of 5 psi (11.6" head) at the center point of the test section or the upstream manhole is filled. If necessary, provisions should be made to bleed off entrapped air during the filling of the test section.
- c) Once the test section is filled, the water should be allowed to stand for an adequate period of time (one day minimum) to allow for water absorption by the pipe and manhole. After water absorption has stabilized, the water level in the upstream manhole is brought up to the proper test level and this level established by measuring down from the manhole cover or other convenient datum point. After 24 hours, the water elevation should be measured from the same reference point and the loss of water during the test period calculated, or the water can be restored to the level existing at the beginning of the test, and the amount added used to determine the leakage.
- d) To exclude both manholes from the test it is necessary to bulkhead the outlet pipe of the upstream manhole. Provision must be made in the bulkhead for filling the pipe and expelling trapped air.
- e) The water level at the upstream manhole shall be computed and varies above the top of the pipe. Since the sewer is installed on a grade, the test section downstream will most likely be subjected to a greater pressure. Therefore, the test pressure head at the upstream manhole should be adjusted such that the maximum pressure on the pipe being tested is no greater than 10 psi.

3. When a sewer run between two consecutive manholes or chambers is found to exfiltrate at a rate above the allowable, inspection by television or other cameras may be made by the Contractor during wet weather, so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

B. Deflection Test

All PVC sewers constructed under this project shall be internally checked, no earlier than 30 calendar days after the trenches are backfilled, with a five percent (5%) deflection "go-no-go pig" to determine if the pipes are deflecting excessively. Any section of pipe unable to pass the deflection test "pig test" shall be removed and replaced at the contractors expense.

Deflection testing mandrels or pig shall be pulled through the pipe by hand or hand operated winch. Power winches or drives are not permitted.

SANITARY SEWER NOTES

- A. "The contractor is advised that a trench shield and/or shoring designed in accordance with OSHA Standards shall be used in all open trench excavations."
- B. "Any contractor and/or plumber performing work in a confined space (i.e., manholes, wetwells, chambers) owned by a county Sewer District, must certify to the County that they have their own Confined Space Entry Program that meets or exceeds OSHA's regulations. Certification must be notarized by a notary public."
- C. "Construction shall conform to the Rules and Regulations for county Sewer Districts".
- D. If any proposed sewer lateral runs under paved area and has less than four (4) feet of cover, then concrete encasement is required. Attach Detail #6 to plans. On site plan and profile hatch mark and/or label "concrete encasement" in affected areas.
- or
- If any proposed sewer lateral runs under paved area and has more than four (4) feet of cover, then on siteplan and profile hatch mark and label, "select fill required" in affected areas.
- E. The contractor must contact the City 48 hours in advance of construction.
- F. Vents must be installed six (6) inches above grade, in a grassy area with a mushroom cap. If the vent is in a sidewalk or paved area, then protect with bollards (3 minimum).
- G. Cleanouts (c. o.) are required every one hundred fast (100') and at change of direction.
- H. Abandoned sanitary sewer connections from the site, if any, require proof of a Permit for Disconnection prior to the new connection being made.

WATER NOTES

FIRE HYDRANT NOTES:

1. HYDRANT NOZZLES SHALL CONFORM TO THE SPECIAL NORTH TONAWANDA WATER DEPT THREADS SAMPLES.
2. HYDRANT SHALL HAVE TWO 2-1/2" HOSE NOZZLES AND ONE 4" INCH PUMPER NOZZLE ALL EQUIPPED WITH ROCKER LUGS AND CHAINS.
3. HYDRANT SHALL BE EQUIPPED WITH A 7/8" SQUARE OPERATING NUT TO OPEN LEFT.
4. HYDRANT SHALL BE EQUIPPED WITH 7/8" SQUARE NOZZLE CAP NUTS TO OPEN LEFT.
5. MAIN VALVE SHALL CLOSE WITH THE WATER PRESSURE AND OPERATING PARTS INCLUDING VALVES SEAT, SHALL REMOVE THROUGH BARREL WITHOUT DIGGING. VALVE SHALL HAVE A 6 INCH OPENING MINIMUM.
6. DRAIN VALVE SHALL BE PLUGGED.
7. OPERATING THREADS SHALL BE SELF-LUBRICATING WITH OIL RESERVOIR AND SHALL BE O-RING SEALED FROM WATER, ATMOSPHERIC MOISTURE AND FOREIGN MATTER.
8. HYDRANT SHALL BE STANDARD NORTH TONAWANDA MUELLER.

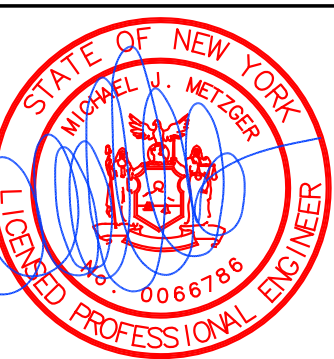
Designed By: ARH
Drawn By: ARH
Checked By: JCM
Cad File: M-1604

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

REVISIONS

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1100 SWEENEY STREET
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK

DETAILS

SCALE: NTS
DATE: OCTOBER 28, 2016
JOB NO: M-1604
SHEET NO:

