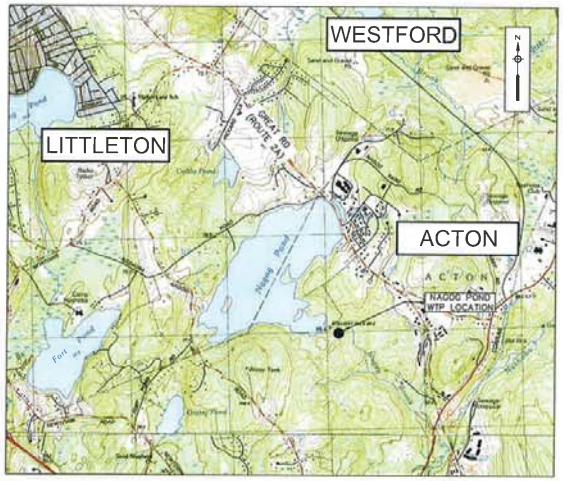
ATTACHMENT L
PERMIT DESIGN PLANS

NAGOG POND WATER TREATMENT PLANT
CONCORD, MASSACHUSETTS
AUGUST 2016

APPLICATION FOR
SPECIAL USE PERMIT AND
SITE PLAN SPECIAL PERMIT



VICINITY MAP
1"= 2,000'

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CONCORD PUBLIC WORKS
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OVAM FIRMA RES CONCORDIA
CONCORD INCORPORATED A.D. 1635

COMMONWEALTH OF MASSACHUSETTS
PAUL C. MILLETT
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No. 37250
REGISTERED PROFESSIONAL ENGINEER

Paul C. Millett 8/25/16

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GENERAL NOTES:

1. BASE MAP INFORMATION SHOWN ON THE DESIGN SHEETS IS BASED ON A COMPILATION OF A SURVEY PERFORMED BY ENVIRONMENTAL PARTNERS GROUP IN MAY 2015 AND A SURVEY PERFORMED BY MERRILL CORPORATION IN AUGUST 2015. BASE MAP INFORMATION WAS ALSO COMPILED FROM THE NAGOG POND DAM REPAIRS RECORD DRAWINGS CREATED BY THE PARE CORPORATION IN JULY 2013 AND THE SKYLINE DRIVE ACCESS ROAD DESIGN PLANS CREATED BY BOHLER ENGINEERING IN MARCH 2012.
2. USGS BATHYMETRY WAS OBTAINED FROM LEVIN, A.B., ARCHFIELD, S.A., AND MASSEY, A.J., 2011, REFINEMENT AND EVALUATION OF THE MASSACHUSETTS FIRM–YIELD ESTIMATOR MODEL VERSION 2.0: U.S. GEOLOGICAL SURVEY SCIENTIFIC INVESTIGATIONS REPORT 2011–5125. RAW SURVEY POINTS WERE OBTAINED FROM SARA LEVIN IN AN EMAIL CORRESPONDENCE. BATHYMETRY WAS CONFIRMED BY ENVIRONMENTAL PARTNERS GROUP.
3. ALL ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988.
4. HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983.
5. PROPERTY LINE, STREET LINE, EASEMENT LINE, AND OWNER INFORMATION WAS COMPILED FROM RECORDS ON FILE AT THE MIDDLESEX NORTH REGISTRY OF DEEDS AND THE TOWN OF ACTON ASSESSORS DEPARTMENT.
6. BORDERING VEGETATED WETLAND LIMIT (WL/BVW), MEAN ANNUAL HIGH WATER (MHW), AND VERNAL POOL (VP) FLAGS WERE DELINEATED BY PINEBROOK CONSULTING IN MAY 2015, AUGUST 2015, OCTOBER 2015, AND NOVEMBER 2015 AND WERE SURVEYED BY ENVIRONMENTAL PARTNERS GROUP AND MERRILL CORPORATION.
7. THE SUBJECT PROPERTY IS LOCATED IN ZONE X AND ZONE AE EL. 208 THROUGH 213 OF THE FLOOD INSURANCE RATE MAP, AS SHOWN ON COMMUNITY PANEL No. 250176 0243I, WHICH BEARS AN EFFECTIVE DATE OF JULY 7, 2014, AND IS PARTIALLY WITHIN A SPECIAL FLOOD HAZARD AREA.
8. THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, OR EQUIPMENT ON DRAINAGE STRUCTURES, PRIVATE PROPERTY OR WITHIN 100 FEET OF WETLANDS, UNLESS DIRECTED TO DO SO BY THE CONTRACT DOCUMENTS.
9. NORTH DIRECTION SHOWN IS APPROXIMATE.
10. ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS IN ADVANCE, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO ANY EXCAVATION.
11. DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSION AND STATIONING SHALL PREVAIL. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
12. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
13. THE CONTRACTOR SHALL RESTORE ALL PUBLIC AND PRIVATE PROPERTY TO ITS PRE–CONSTRUCTION CONDITION AT NO ADDITIONAL COST TO THE OWNER.
14. IN THOSE INSTANCES WHERE POWER OR TELEPHONE POLE SUPPORT IS REQUIRED, THE CONTRACTOR SHALL PROVIDE A MINIMUM 48–HOUR NOTIFICATION TO THE RESPECTIVE UTILITY COMPANY. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR TEMPORARY BRACING OF UTILITIES.
15. THE CONTRACTOR IS TO TAKE SPECIAL CARE NOT TO DAMAGE TREES, BUSHES, PLANTS, FLOWERS, STONEWALLS, FENCES, ETC. WITHIN THE CONSTRUCTION AREA UNLESS THEY ARE NOTED TO BE REMOVED. CONTRACTOR SHALL REPLACE ALL DAMAGED ITEMS AT NO COST TO OWNER.
16. CONTRACTOR SHALL REMOVE AND REPLACE, OR REPAIR, ALL CURBS, SIDE WALKS, PAVEMENT AND OTHER ITEMS DAMAGED BY THEIR CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, AND TO THE SATISFACTION OF THE OWNER AND ENGINEER.
17. THE CONTRACTOR SHALL INSTALL AND MAINTAIN TRAFFIC CONTROL DEVICES AS NECESSARY AND IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
18. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH AND MAINTAIN A TELEPHONE NUMBER WHERE THE CONTRACTOR CAN BE REACHED 24 HOURS A DAY, 7 DAYS A WEEK.
19. THE CONTRACTOR IS RESPONSIBLE FOR SECURING SITE STORAGE AND LAYDOWN AREAS. THE LOCATION AND LIMITS OF ALL ON–SITE WORK AND STORAGE AREAS SHALL BE REVIEWED/COORDINATED WITH, AND ACCEPTED BY THE TOWN OF HOLBROOK. THE CONTRACTOR SHALL LIMIT HIS ACTIVITIES TO THESE AREAS.
20. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR WORK IN ROADWAYS AND FOR BLASTING. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO ALL PERMITS AS AN INTEGRAL PART OF THE WORK.
21. THE CONTRACTOR SHALL HANDLE GROUNDWATER, WHERE ENCOUNTERED, IN AN APPROVED MANNER. DURING ANY DEWATERING, THE CONTRACTOR SHALL USE STONE AROUND THE SUCTION END TO MINIMIZE DISCHARGE OF TRENCH MATERIALS. THE DISCHARGED WATER SHALL PASS THROUGH FILTER FABRIC.
23. HAULING OF EARTH TO AND FROM THE SITE SHALL BE RESTRICTED TO BETWEEN THE HOURS OF 9 AM AND 4 PM ON WEEKDAYS.
24. ALL MATERIALS TO BE REMOVED MUST BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
25. THE LOCATION AND LIMITS OF ALL ON–SITE WORK AREAS SHALL BE REVIEWED/COORDINATED WITH, AND ACCEPTABLE TO THE OWNER AND THE ENGINEER. THE CONTRACTOR SHALL LIMIT HIS/HER ACTIVITIES TO THESE AREAS.
26. THE CONTRACTOR SHALL MARK THE LIMITS OF WORK IN THE FIELD PRIOR TO INSTALLING EROSION CONTROL DEVICES AND PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES INCLUDING SITE CLEARING.
27. FILL CONTAINING HAZARDOUS MATERIALS IS FORBIDDEN TO BE USED AS REQUIRED BY THE TOWN OF ACTION ZONING BYLAW.
28. INSTALL FILTER SOCK PRIOR TO COMMENCEMENT OF EARTHWORK OPERATIONS. INSPECT EROSION CONTROLS IMMEDIATELY AFTER EACH STORM, AND REMOVE ACCUMULATED SEDIMENT AS REQUIRED. REPLACE DAMAGED EROSION CONTROLS AS REQUIRED. FILTER SOCK SHALL BE STAGGERED TO ACCOMMODATE FOR ANIMAL PASSAGE THROUGH THE BARRIER.
29. SILT SACKS AND OTHER EROSION AND SEDIMENT CONTROL MEASURES/DEVICES SHALL BE INSPECTED, CLEANED, REPLACED AND/OR REPAIRED DAILY AND AS NECESSARY, AND AFTER EACH SIGNIFICANT RAINFALL.
30. THE CONTRACTOR SHALL FOLLOW THE SPECIAL PRACTICES DESCRIBED IN THE PROJECT DOCUMENTS AND COMPLY WITH THE DIRECTIONS OF THE ENGINEER AND/OR ACTON CONSERVATION COMMISSION AGENT TO ADDRESS EROSION AND SEDIMENTATION CONDITIONS THAT MAY ARISE ON A CASE BY CASE BASIS DURING CONSTRUCTION.
31. STOCKPILES OF EXCAVATED MATERIAL AND AGGREGATE MATERIALS (GRAVEL, SAND, AND STONE) ARE NOT ANTICIPATED TO BE MAINTAINED ON–SITE. IT IS EXPECTED THAT THESE TYPES OF MATERIALS WILL BE DELIVERED ON AN AS–NEEDED BASIS. HOWEVER, IF STOCKPILING IS REQUIRED, THEN SUITABLE EROSION CONTROL MEASURED WILL BE EMPLOYED INCLUDING PERIMETER SILT FENCING.

SITE IMPROVEMENTS SUMMARY

CHARACTERISTIC	LEGAL ZONING REQUIREMENTS	EXISTING CONDITIONS	PROPOSED CONDITIONS
LOT SIZE	N/A	59.79 ACRES	59.79 ACRES
TOTAL LOT COVERAGE (IMPERVIOUS)	N/A	17,374 SQUARE FEET	28,758 SQUARE FEET
% OF LAND IN ANY ZONING DISTRICT WHERE THE PROPOSED USE IS NOT PERMITTED	N/A	0	0
OPEN SPACE	N/A	56.39 ACRES	56.11 ACRES
UNDISTURBED OPEN SPACE	N/A	56.13 ACRES	57.93 ACRES
% WETLANDS	N/A	2.74%*	2.74%*
% FLOOD PLAIN	N/A	< 1%	< 1%
DEVELOPABLE SITE AREA	N/A	57.96 ACRES	57.96 ACRES
MAXIMUM BUILDING HEIGHT	N/A	17	34
PEAK RUNOFF RATES	N/A	2-YR: .68 CFS 10-YR: 1.41 CFS	2-YR: .86 CFS 10-YR: 1.39 CFS
NET FLOOR AREA	N/A	1,760 SF	9,338 CFS
FLOOR AREA RATIO	N/A	1.00	5.31
PARKING SPACES	N/A	3	5

* PERCENTAGE IS BASED ON WETLANDS DELINEATED NEAR AND AROUND PROPOSED PROJECT WORK SITE. REMAINING PROPERTY LIKELY TO HAVE ADDITIONAL WETLANDS.

LEGEND:

EXISTING
- 100–YEAR FEMA FLOOD ZONE
- BORDERING VEGETATED WETLANDS
- MEAN ANNUAL HIGH WATER LINE
- VERNAL POOL
- SHORELINE
- 25' WETLAND BUFFER
- 50' WETLAND BUFFER
- 75' WETLAND BUFFER
- 100' WETLAND BUFFER
- ZONE A 400' BUFFER
- WATER MAIN
- INTAKE PIPE
- DRAIN LINE
- SEWER MAIN
- GAS MAIN
- UNDERGROUND ELECTRIC AND TELEPHONE
- EXISTING FENCE
- CONTOUR MINOR
- CONTOUR MAJOR
- TREE LINE
- PROPERTY LINE
- EASEMENT LINE
- ROCK WALL
- RIP RAP
- WETLAND FLAG
- HYDRANT
- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- HAND HOLE
- WATER SHUTOFF
- GATE VALVE
- LIGHT POLE
- BORING LOCATION AND NUMBER
- WETLAND FLAG AND NUMBER

PROPOSED
- 3/4" CRUSHED STONE
- TREE LINE
- ASPHALT
- PROCESSED GRAVEL
- RIP RAP
- FIRE HYDRANT
- ROOF DRAIN CLEANOUT
- CONCRETE BOLLARD
- SEPTIC TANK EFFLUENT
- CHAIN LINK FENCE
- SEPTIC SYSTEM BUFFER
- WATER SERVICE
- GAS SERVICE
- INTAKE PIPE
- RAW WATER PIPING
- FINISHED WATER PIPING
- STEEL GUARD RAIL
- PROPOSED CONTOUR
- AIR BURST
- SEPTIC TANK
- GATE VALVE
- DRAIN MANHOLE
- CATCH BASIN
- LEACHING PIT
- WALL MOUNTED FLOOD LIGHT
- 360° SECURITY CAMERA
- FILTER SOCK/HAY BALES
- REDI–ROCK BLOCK WALL
- FRACTURED LEDGE RETAINING WALL
- AREA TO BE DEMOLISHED
- LIMIT OF WORK
- EVERGREEN TREE
- SHRUB
- GROUND COVER OR PERENNIAL PLANTING
- AREA TO BE MULCHED

COMMONWEALTH OF MASSACHUSETTS
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Paul C Millett 8/28/16

Environmental Partners GROUP
A partnership for engineering solutions
LIN ASSOCIATES, INC. CONSULTING ENGINEERS
DiMarinisi & Wolfe ARCHITECTS • URBAN DESIGNERS BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

Scale	AS SHOWN
Date	NOVEMBER 2015
Job No.	200-1501
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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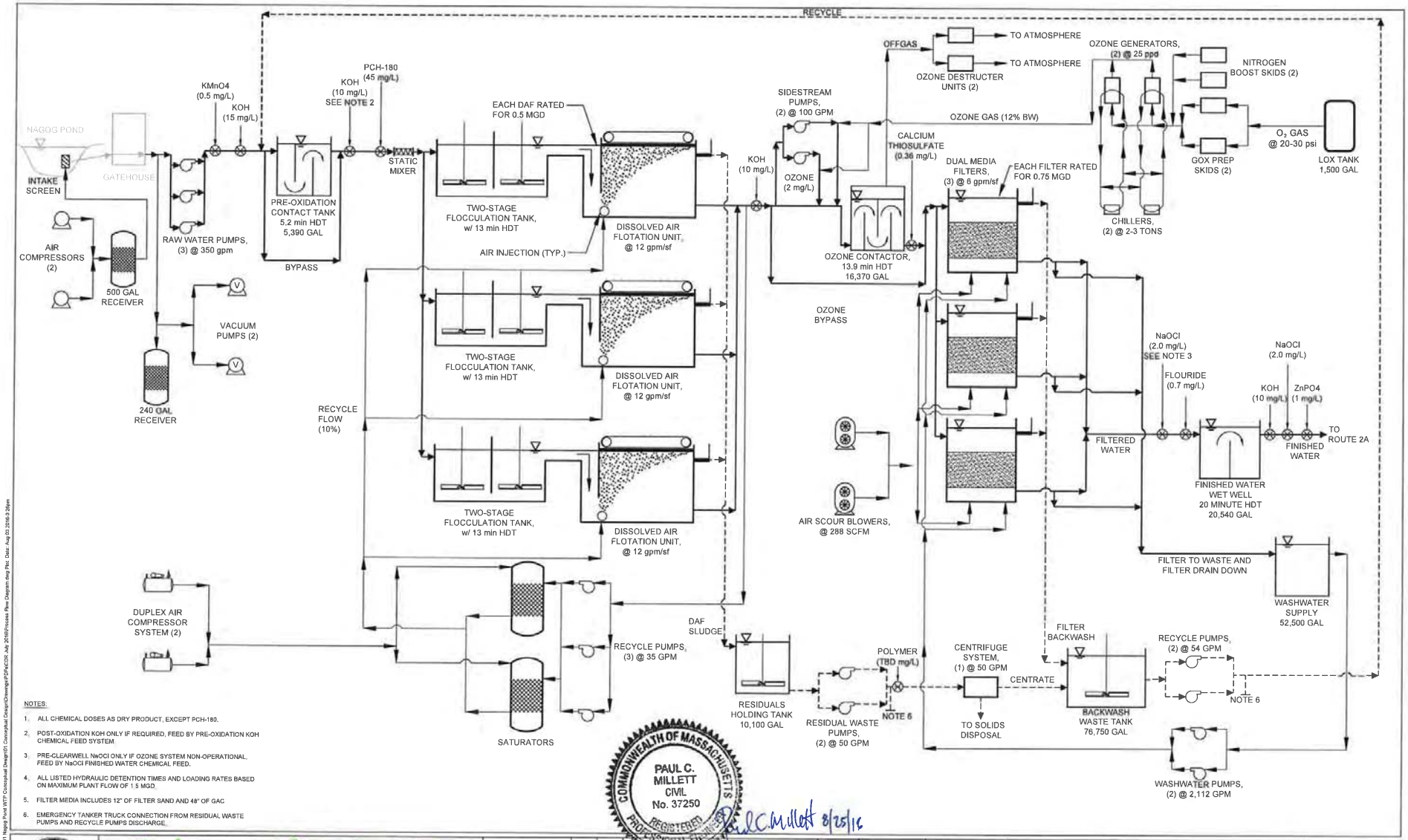
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
GENERAL NOTES AND LEGEND

FOR PERMITTING
Sheet No.
G-1

Drawing file: I:\Concord 200\200-1501 Nagog Pond WTP Conceptual Design\01 Conceptual Design\Drawings\CAD\General Notes and Legend.dwg Plot Date: Aug 22 2016 3:06pm



NOTES:

1. ALL CHEMICAL DOSES AS DRY PRODUCT, EXCEPT PCH-180.
2. POST-OXIDATION KOH ONLY IF REQUIRED, FEED BY PRE-OXIDATION KOH CHEMICAL FEED SYSTEM
3. PRE-CLEARWELL NaOCl ONLY IF OZONE SYSTEM NON-OPERATIONAL, FEED BY NaOCl FINISHED WATER CHEMICAL FEED.
4. ALL LISTED HYDRAULIC DETENTION TIMES AND LOADING RATES BASED ON MAXIMUM PLANT FLOW OF 1.5 MGD.
5. FILTER MEDIA INCLUDES 12" OF FILTER SAND AND 48" OF GAC
6. EMERGENCY TANKER TRUCK CONNECTION FROM RESIDUAL WASTE PUMPS AND RECYCLE PUMPS DISCHARGE.

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LIN ASSOCIATES, INC.
CONSULTING ENGINEERS

DiMarinisi & Wolfe
ARCHITECTS • URBAN DESIGNERS
BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

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Date	JULY 2016
Job No.	200-1501
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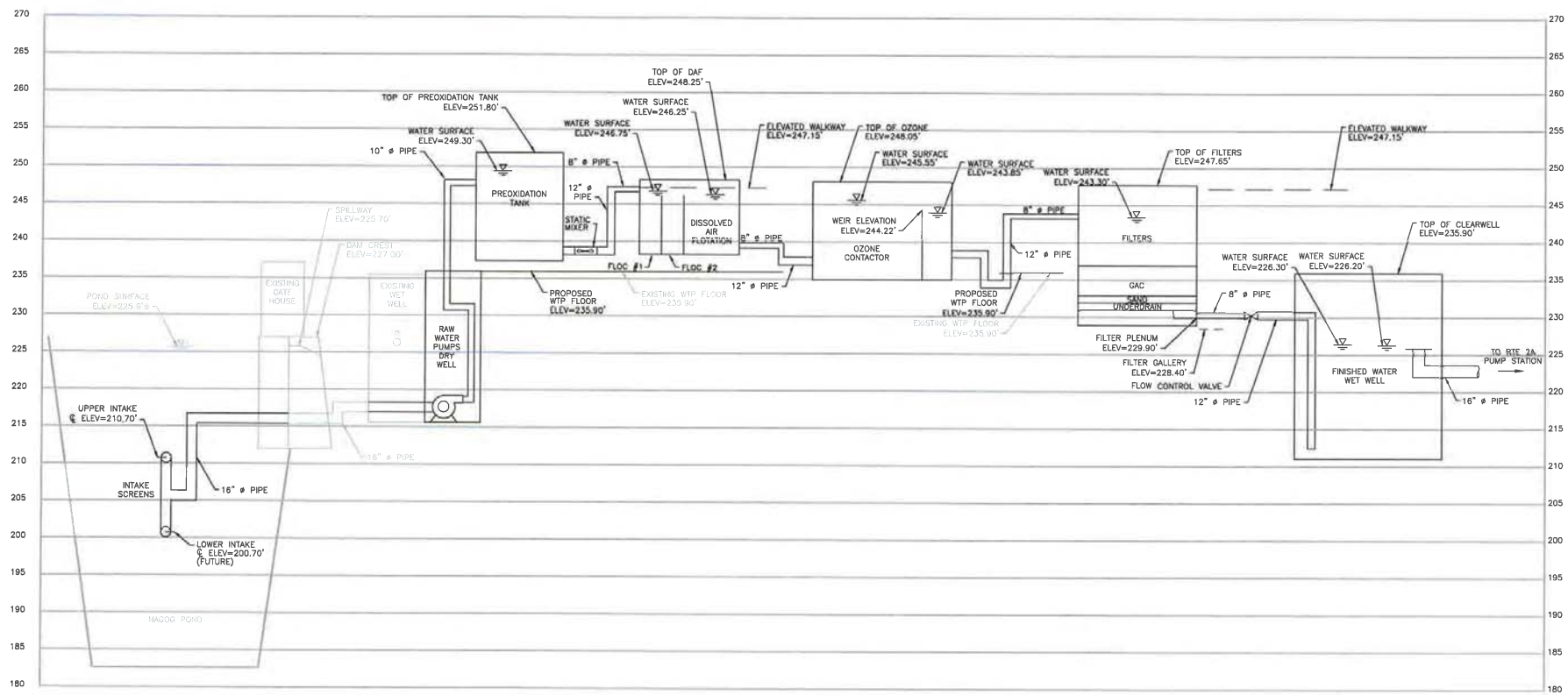
NAGOG POND WTP CONCEPTUAL DESIGN
TOWN OF CONCORD, MASSACHUSETTS
PROCESS FLOW DIAGRAM

CONCEPTUAL DESIGN
Sheet No.
G-2

Drawing file: I:\Concord 200\200-1501 Nagog Pond WTP Conceptual Design\01 Conceptual Design\Drawings\PDF\eCOR July 2016\Process Flow Diagram.dwg Plot Date: Aug 03 2016-3:26pm



BASIS OF HYDRAULIC PROFILE		
FLOW DESCRIPTION	FLOW (MGD)	NUMBER OF UNITS IN SERVICE
MAXIMUM DESIGN	1.5 1.5 1.5 1.5 1.5	3 – RAW WATER PUMPS 3 – DAF 1 – OZONE CONTACTOR 2 – FILTERS 1 – CLEARWELL

ELEVATIONS BASED ON 1988 NAVD.

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MARK	DATE	DESCRIPTION

Scale	N.T.S.
Date	JULY 2016
Job No.	200-1501
Designed by	DNRP
Drawn by	JFB
Checked by	DNRP
Approved by	PCM

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NAGOG POND WTP CONCEPTUAL DESIGN
TOWN OF CONCORD, MASSACHUSETTS
HYDRAULIC PROFILE

CONCEPTUAL DESIGN
Sheet No.
G-3

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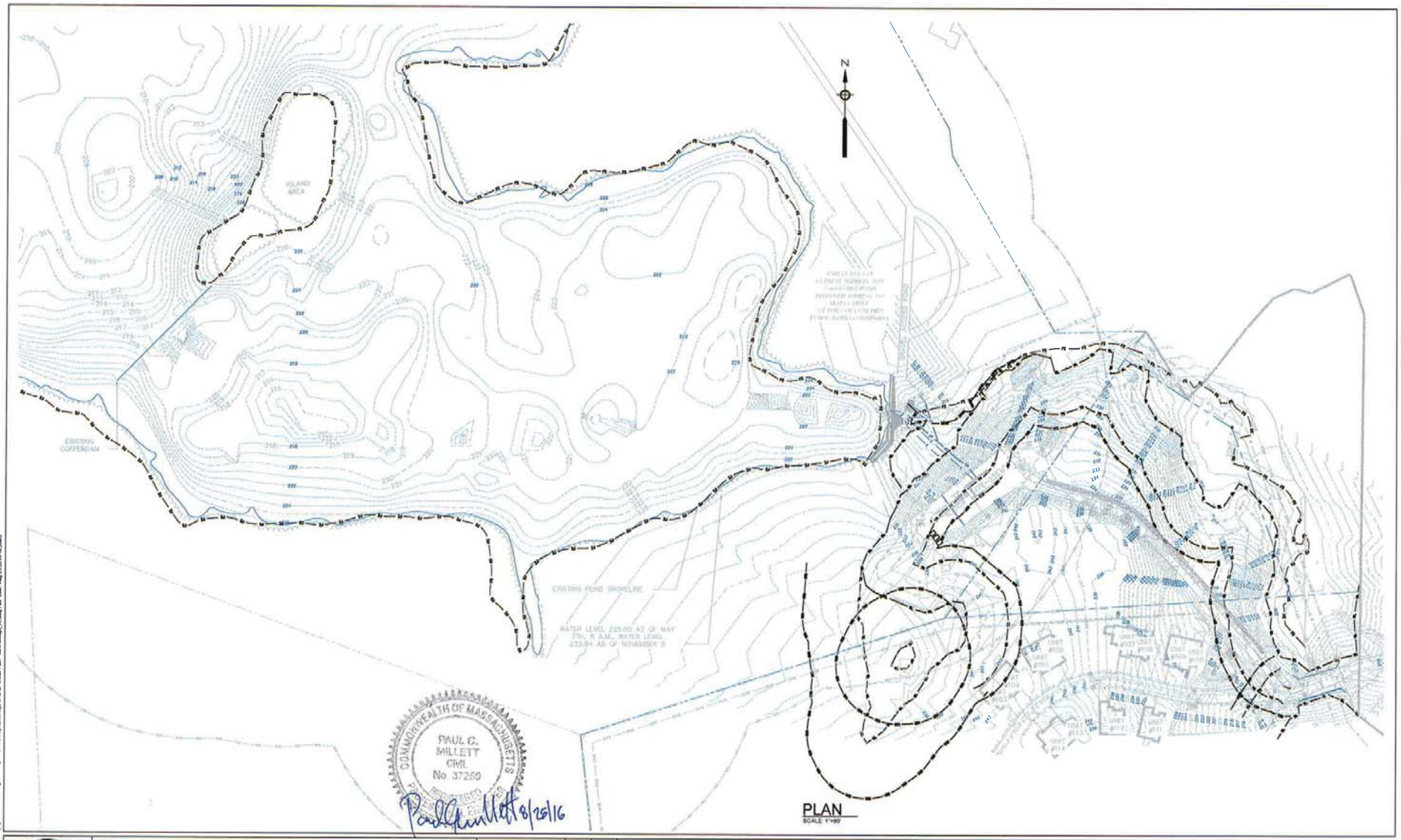

PLAN
SCALE 1"=80'

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MARK	DATE	DESCRIPTION

Scale	1" = 80'
Date	AUGUST 2016
Job No.	200-1601
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NAGOG POND WATER TREATMENT PLANT

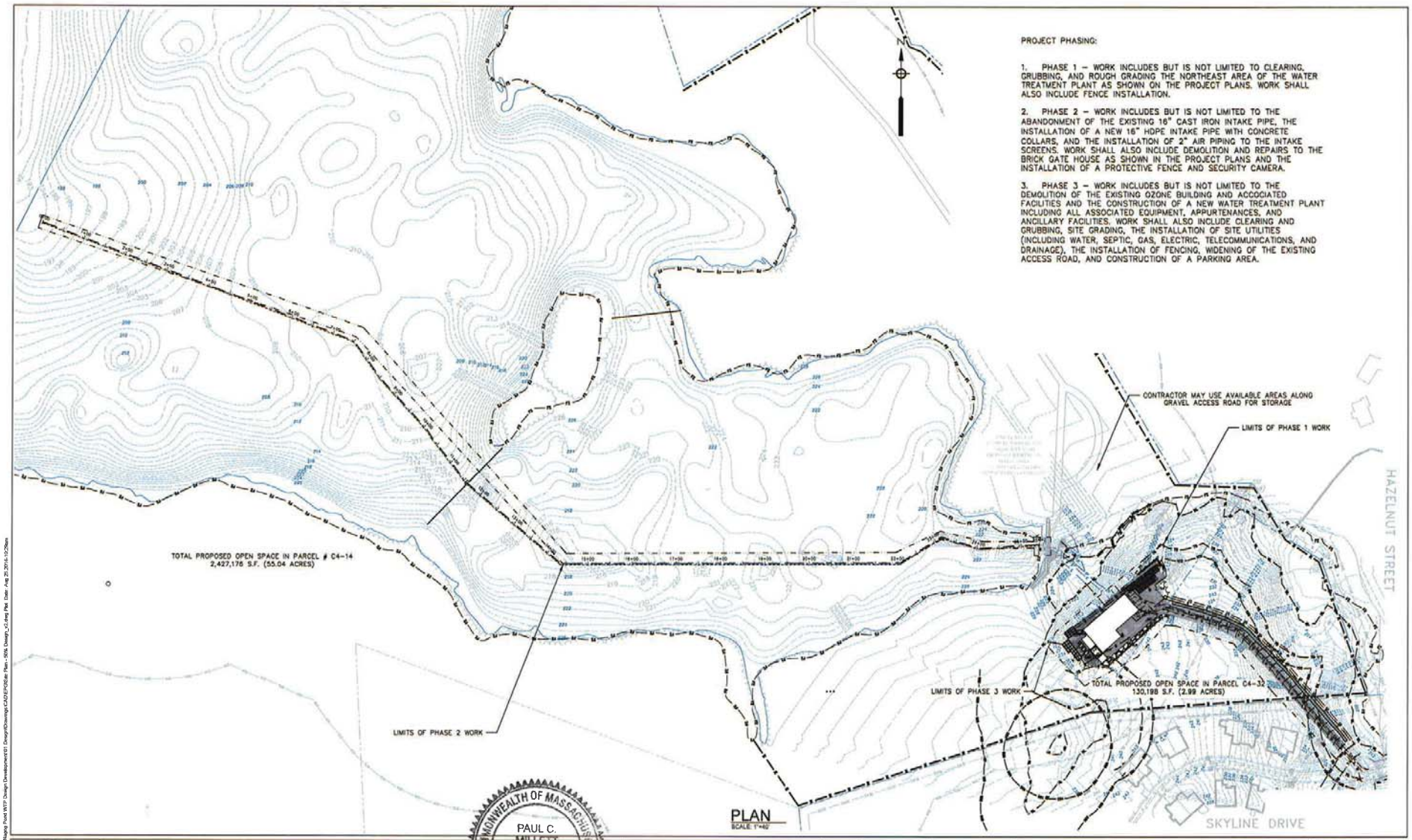
TOWN OF CONCORD, MASSACHUSETTS

OVERALL EXISTING CONDITIONS PLAN

50% DESIGN

Sheet No.

C-1



PLAN
SCALE 1"=40'

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COMMONWEALTH OF MASSACHUSETTS
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No. 37250
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MARK	DATE	DESCRIPTION

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
PROJECT PHASING PLAN

50% DESIGN
Sheet No.
C-2

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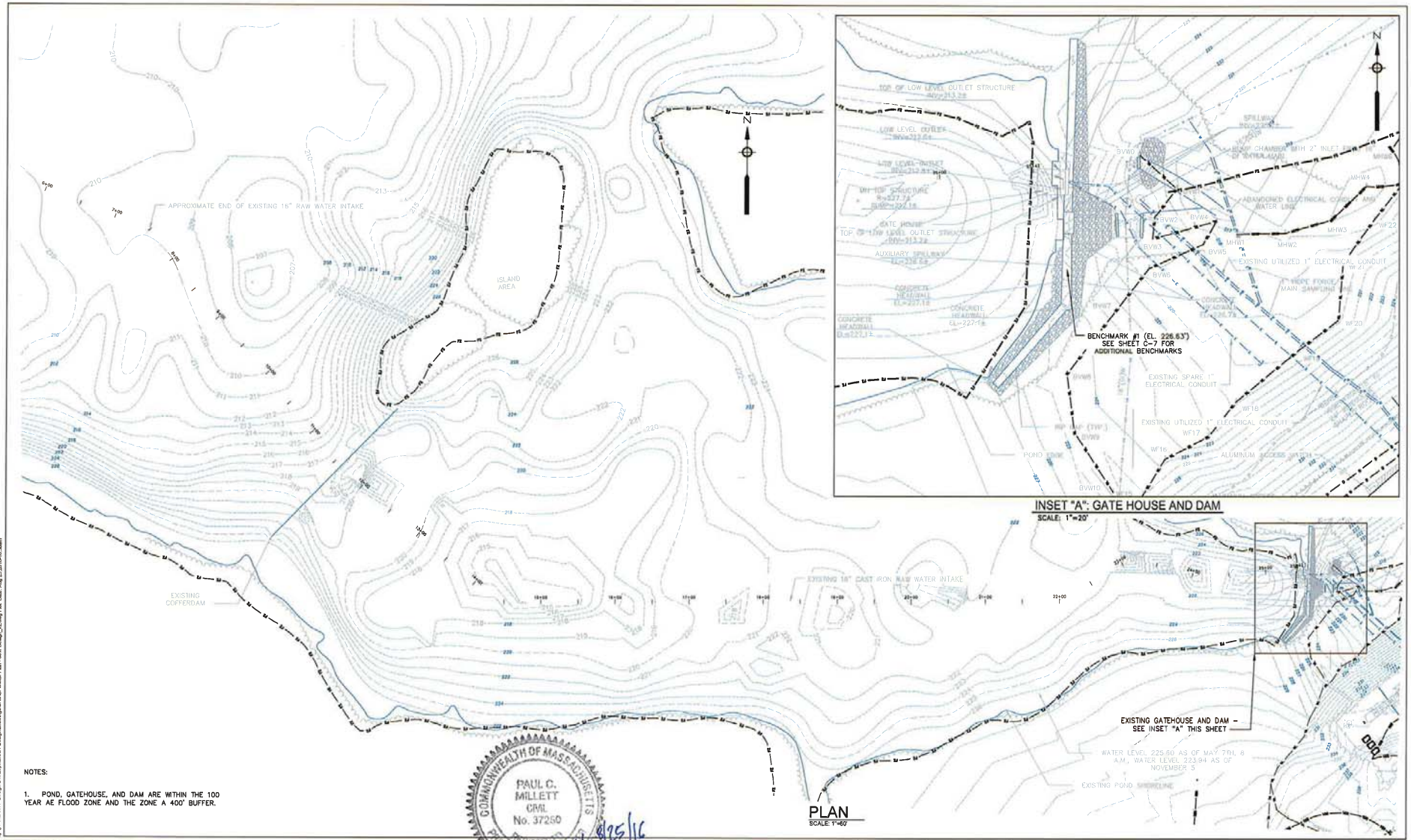

PLAN
SCALE: 1"=60'

INSET "A": GATE HOUSE AND DAM
SCALE: 1"=20'

NOTES:

1. POND, GATEHOUSE, AND DAM ARE WITHIN THE 100 YEAR AE FLOOD ZONE AND THE ZONE A 400' BUFFER.

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MARK	DATE	DESCRIPTION

Scale	1" = 60'
Date	AUGUST 2016
Job No.	200-1601
Designed by	ZFK/DNRP
Drawn by	LEU
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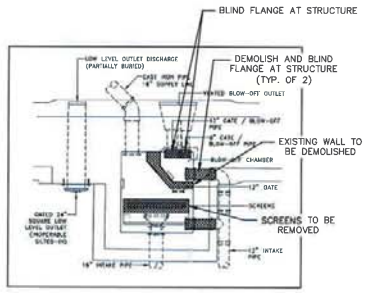
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
INTAKE EXISTING CONDITIONS PLAN

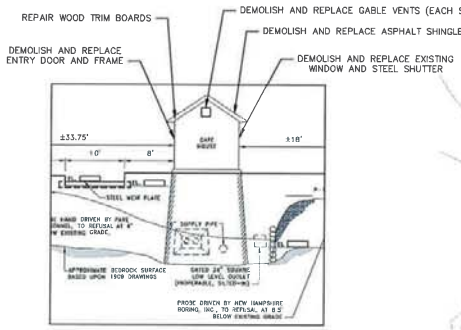
50% DESIGN
Sheet No.
C-3

Drawing file: I:\Concord\200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPGSite Plan - 30% Design_v2.dwg Plot Date: Aug 25, 2016 - 10:30am



INSET "B": EXISTING GATE HOUSE PLAN (BELOW SLAB)

SCALE: NTS



INSET "C": EXISTING DAM PROFILE (LOOKING UPSTREAM)

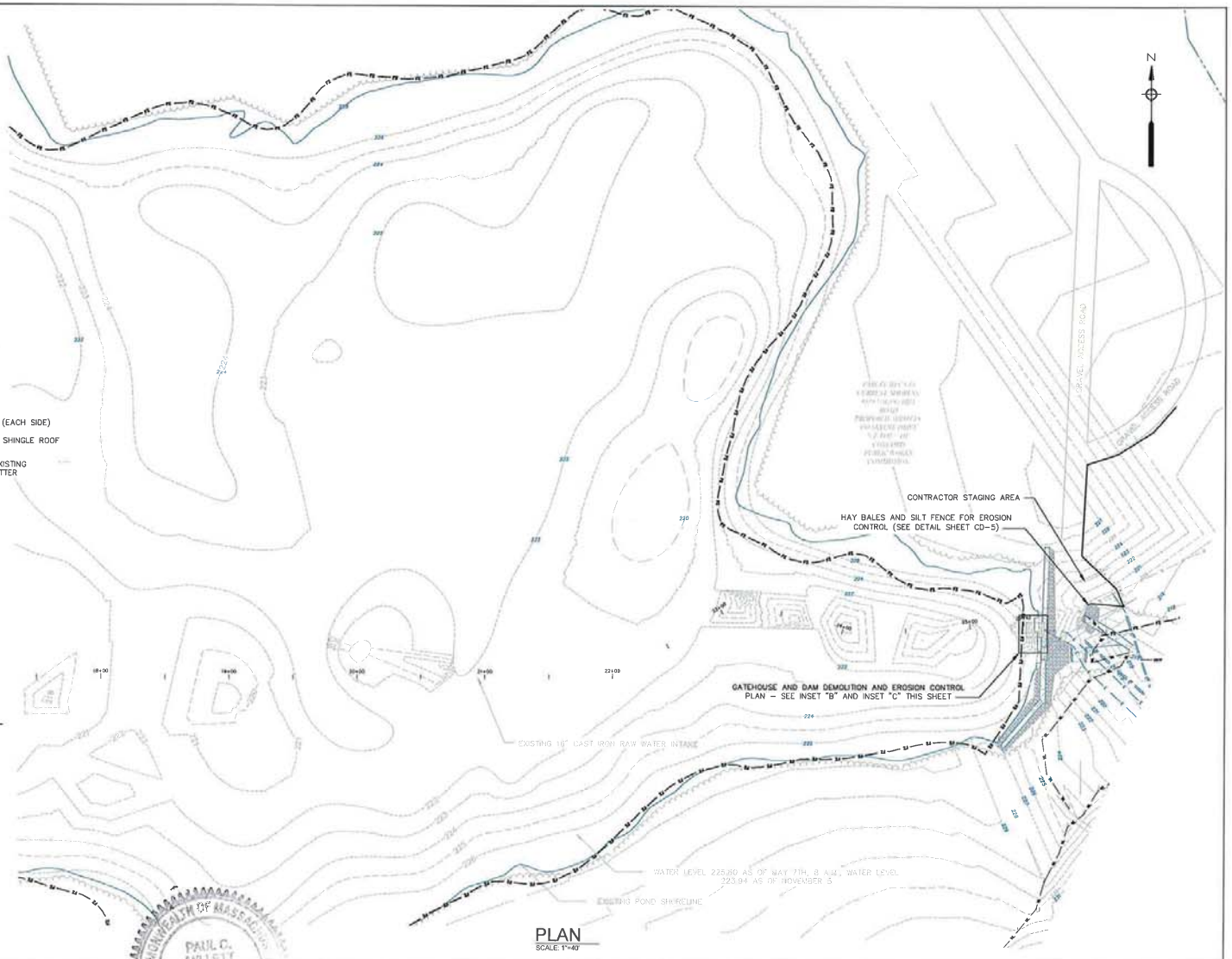
SCALE: 1" = 10'

NOTES:

A. REPAIR VISIBLE MASONRY WALL CRACKS.
B. REPAIR DAMAGED EXTERIOR BRICK.
C. COAT MASONRY WALLS WITH PENETRATING SEALER (NSF 61 APPROVED).
D. COAT INTERIOR/EXTERIOR CONCRETE SURFACES WITH PENETRATION CORROSION INHIBITOR (NSF 61 APPROVED).
E. CLEAN ALL MASONRY WITH PROSOCO DEFACE ERASER, OR APPROVED EQUAL.

NOTES:

1. POND, GATEHOUSE, AND DAM ARE WITHIN THE 100 YEAR AE FLOOD ZONE AND THE ZONE A 400' BUFFER.
2. THE CONTRACTOR SHALL LIMIT CONSTRUCTION STAGING AND PARKING TO STAGING AREA AND GRAVEL ACCESS ROAD.



PLAN

SCALE: 1"=40'

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No. 37250
REGISTERED PROFESSIONAL ENGINEER
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MARK	DATE	DESCRIPTION

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	ZFK/DNRP
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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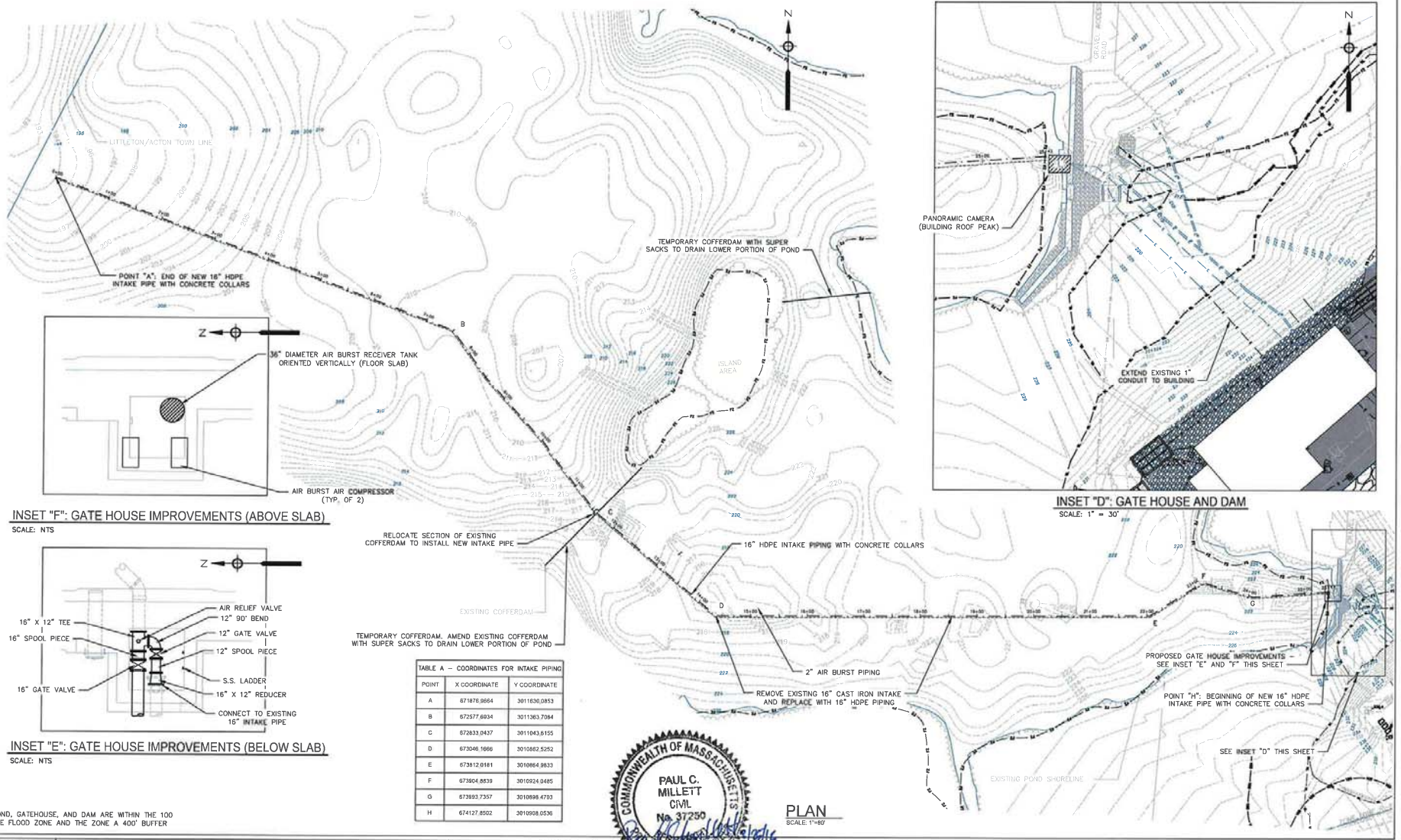
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
INTAKE DEMOLITION AND EROSION CONTROL PLAN

50% DESIGN

Sheet No.
C-4

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD-EPG\Site Plan - 50% Design_v2.dwg Plot Date: Aug 25, 2016 - 10:31am



INSET "F": GATE HOUSE IMPROVEMENTS (ABOVE SLAB)

SCALE: NTS

INSET "E": GATE HOUSE IMPROVEMENTS (BELOW SLAB)

SCALE: NTS

INSET "D": GATE HOUSE AND DAM

SCALE: 1" = 30'

PLAN

SCALE: 1"=80'

TABLE A – COORDINATES FOR INTAKE PIPING

POINT	X COORDINATE	Y COORDINATE
A	671876.9664	3011830.0853
B	672577.6934	3011363.7084
C	672833.0437	3011043.6155
D	673046.1666	3010882.5252
E	673812.0181	3010864.9833
F	673904.8839	3010924.0485
G	673993.7357	3010898.4703
H	674127.8502	3010908.0536

NOTES:

1. POND, GATEHOUSE, AND DAM ARE WITHIN THE 100 YEAR AE FLOOD ZONE AND THE ZONE A 400' BUFFER

COMMONWEALTH OF MASSACHUSETTS
PAUL C. MILLETT
CIVIL
No. 37250
REGISTERED PROFESSIONAL ENGINEER

Environmental Partners GROUP
A partnership for engineering solutions.

MARK	DATE	DESCRIPTION
1	12/22/15	NOI HEA

Scale	1" = 80'
Date	AUGUST 2016
Job No.	200-1601
Designed by	ZFK/DNRP
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

NAGOG POND WATER TREATMENT PLANT

TOWN OF CONCORD, MASSACHUSETTS

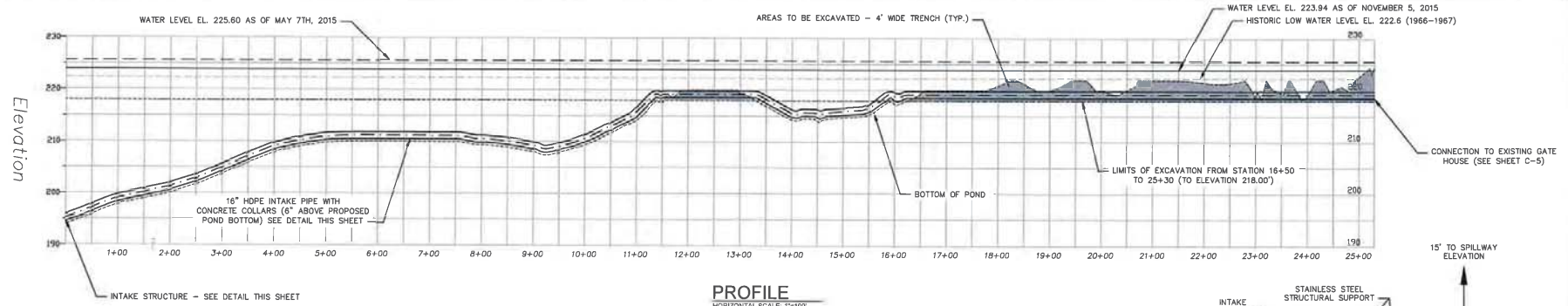
INTAKE LAYOUT PLAN

50% DESIGN

Sheet No.

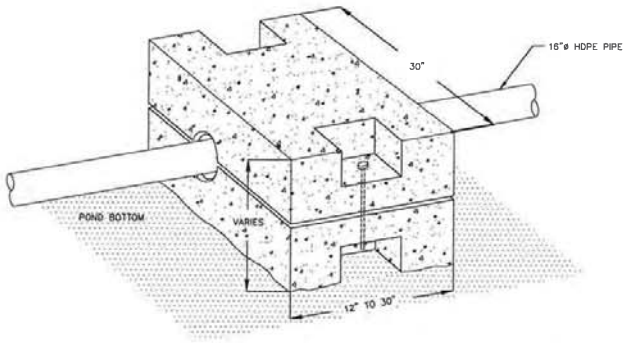
C-5

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_v2.dwg Plot Date: Aug 25,2016-12:40pm



PROFILE

HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=4'

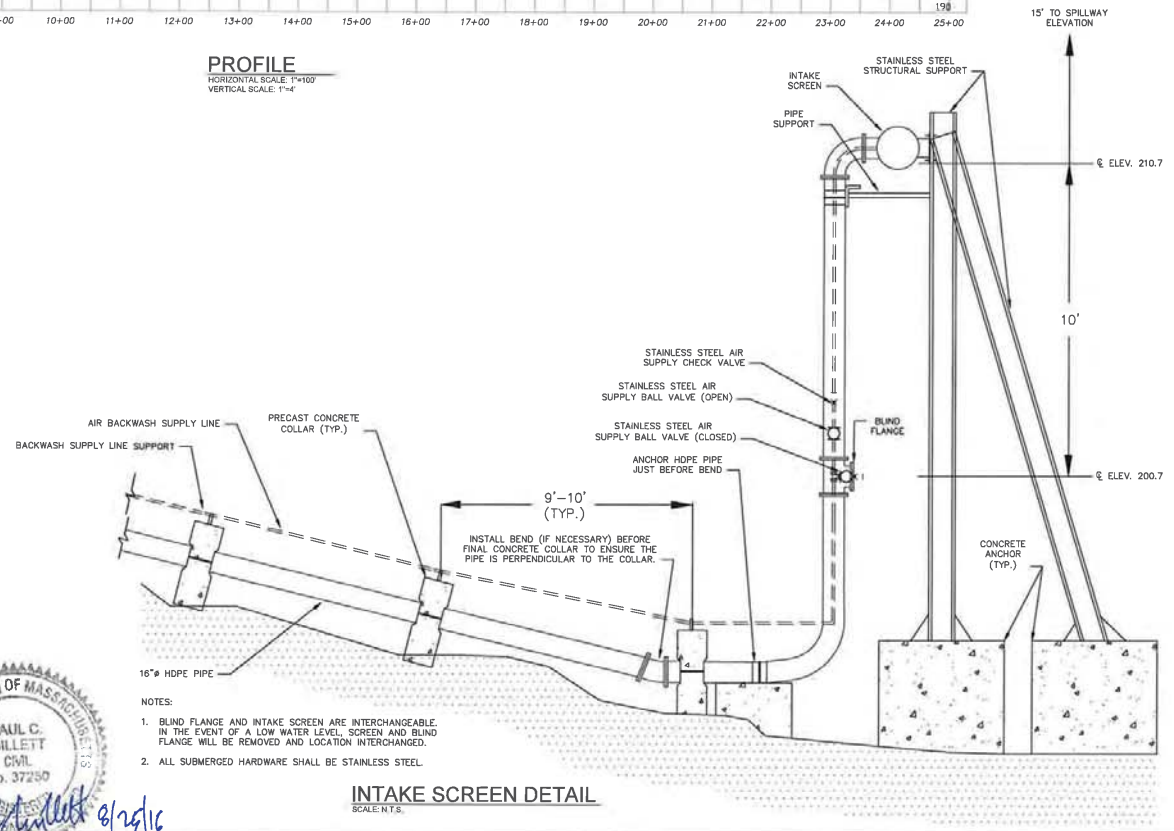


PROPOSED PRECAST CONCRETE COLLAR

SCALE: N.T.S.

NOTES:

1. FLEXIBLE COUPLINGS OR EXPANSION LOOPS SHALL BE PROVIDED ALONG HDPE PIPE ALIGNMENT.
2. PROVIDE FLEXIBLE CONNECTOR AT HDPE CONNECTION TO INTAKE SCREENS.
3. AIR BURST PIPING SHALL BE SUPPORTED FROM CONCRETE COLLARS.



NOTES:

1. BLIND FLANGE AND INTAKE SCREEN ARE INTERCHANGEABLE. IN THE EVENT OF A LOW WATER LEVEL, SCREEN AND BLIND FLANGE WILL BE REMOVED AND LOCATION INTERCHANGED.
2. ALL SUBMERGED HARDWARE SHALL BE STAINLESS STEEL.

INTAKE SCREEN DETAIL

SCALE: N.T.S.

COMMONWEALTH OF MASSACHUSETTS
PAUL C. MILLETT
CIVIL
No. 37250
REGISTERED PROFESSIONAL ENGINEER
8/24/16

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MARK	DATE	DESCRIPTION
1	12/22/15	NOI HEARING REVISIONS

Scale	AS SHOWN
Date	AUGUST 2016
Job No.	200-1601
Designed by	ZFK/DNRP
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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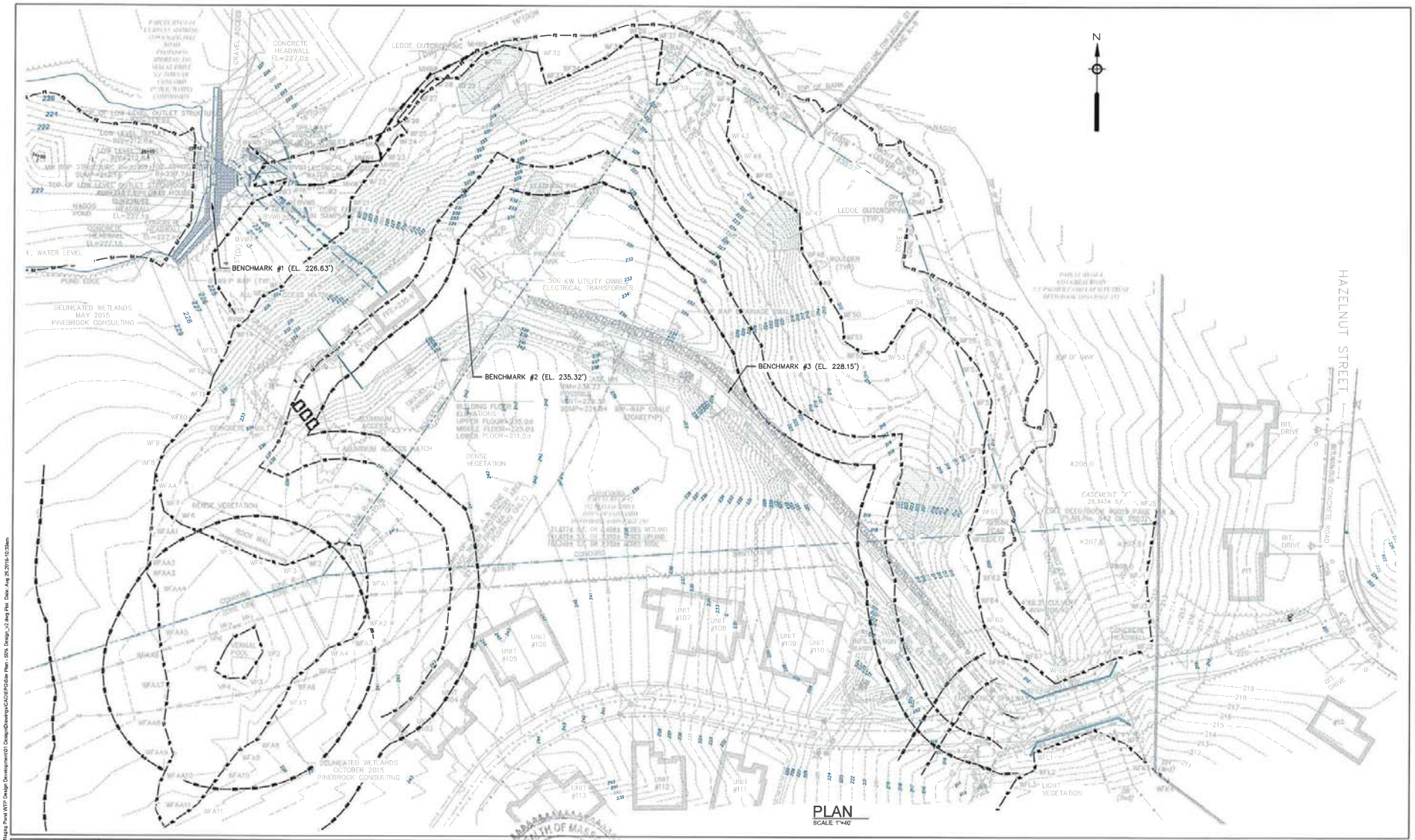
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
INTAKE LAYOUT PROFILE AND DETAILS

50% DESIGN
Sheet No.
C-6

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_v2.dwg Plot Date: Aug 25 2016 - 10:32am



PLAN
SCALE: 1"=40'

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MARK	DATE	DESCRIPTION

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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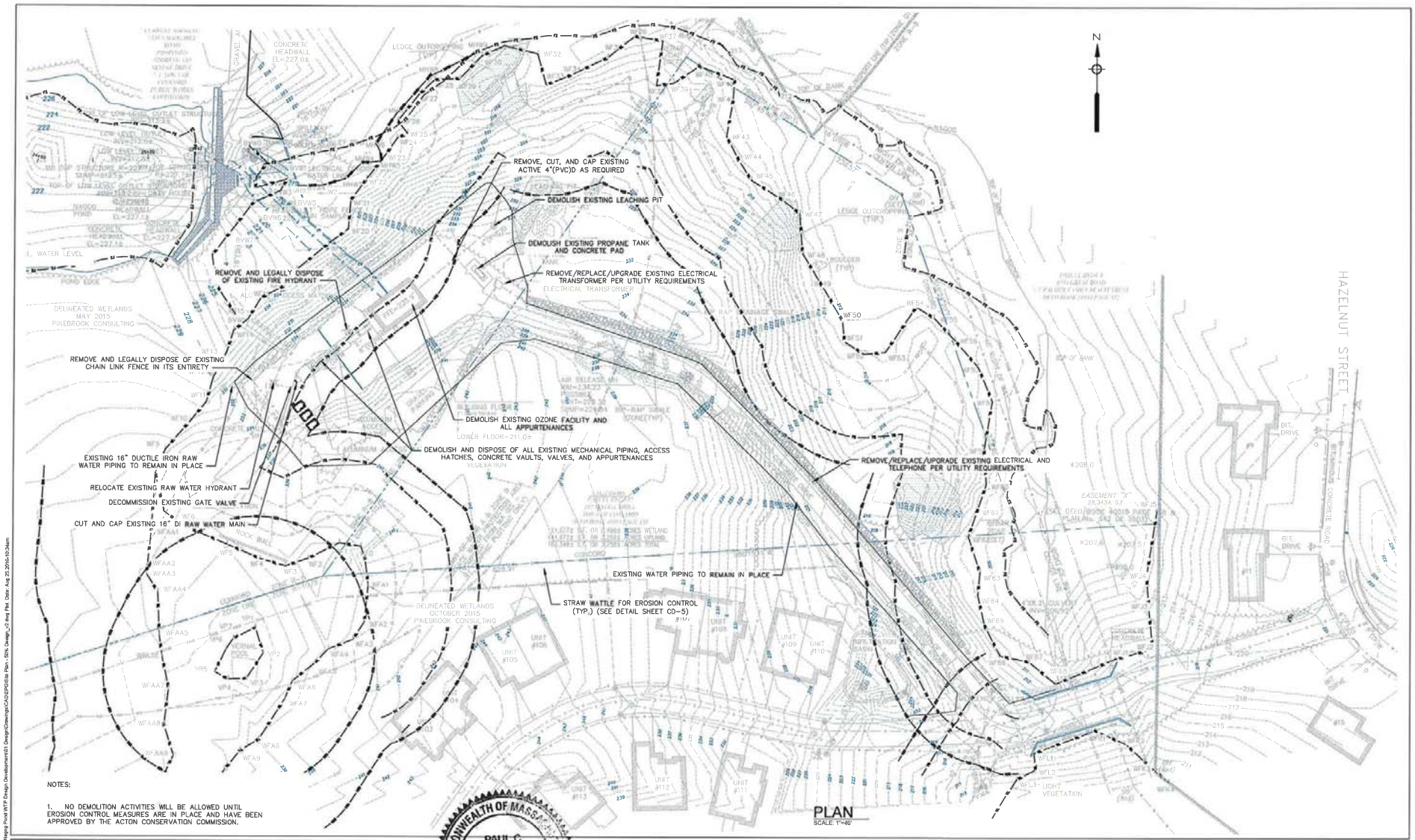
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WTP EXISTING CONDITIONS PLAN

50% DESIGN
Sheet No.
C-7

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_v2.dwg Plot Date: Aug 25,2016-10:33am



NOTES:

1. NO DEMOLITION ACTIVITIES WILL BE ALLOWED UNTIL EROSION CONTROL MEASURES ARE IN PLACE AND HAVE BEEN APPROVED BY THE ACTON CONSERVATION COMMISSION.

PLAN
SCALE: 1"=40'

COMMONWEALTH OF MASSACHUSETTS
PAUL C. MILLETT
CIVIL
No. 37250
REGISTERED PROFESSIONAL ENGINEER
9/19/16

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MARK	DATE	DESCRIPTION
1	12/22/15	NOI HEARING REVISIONS

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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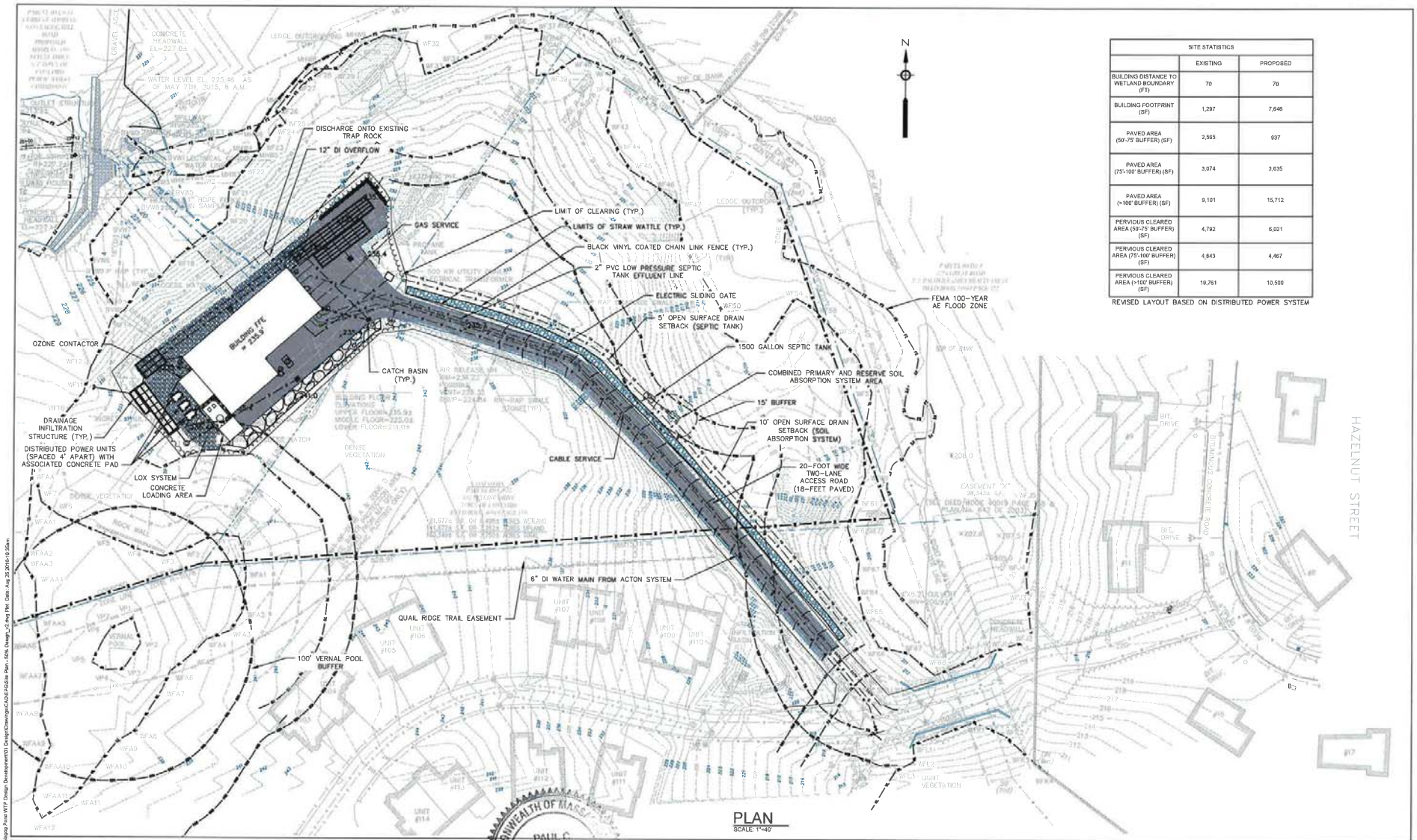
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WATER TREATMENT PLANT DEMOLITION AND EROSION CONTROL PLAN

50% DESIGN

Sheet No.
C-8

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPGIS\Site Plan - 50% Design_v3 Aug Rev. Date: Aug 25 2016-10:34am



PLAN
SCALE: 1"=40'

SITE STATISTICS		
	EXISTING	PROPOSED
BUILDING DISTANCE TO WETLAND BOUNDARY (FT)	70	70
BUILDING FOOTPRINT (SF)	1,297	7,646
PAVED AREA (50'-75' BUFFER) (SF)	2,585	937
PAVED AREA (75'-100' BUFFER) (SF)	3,074	3,635
PAVED AREA (>100' BUFFER) (SF)	9,101	15,712
PERVIOUS CLEARED AREA (50'-75' BUFFER) (SF)	4,792	6,021
PERVIOUS CLEARED AREA (75'-100' BUFFER) (SF)	4,843	4,467
PERVIOUS CLEARED AREA (>100' BUFFER) (SF)	19,761	10,500

REVISED LAYOUT BASED ON DISTRIBUTED POWER SYSTEM

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PAUL C. MILLETT CIVIL No. 37258 REGISTERED PROFESSIONAL ENGINEER
9/23/16

MARK	DATE	DESCRIPTION
1	9/20/16	REMOVE PV SYSTEM, ADD COGEN SYSTEM,
2		
3		
4		
5		

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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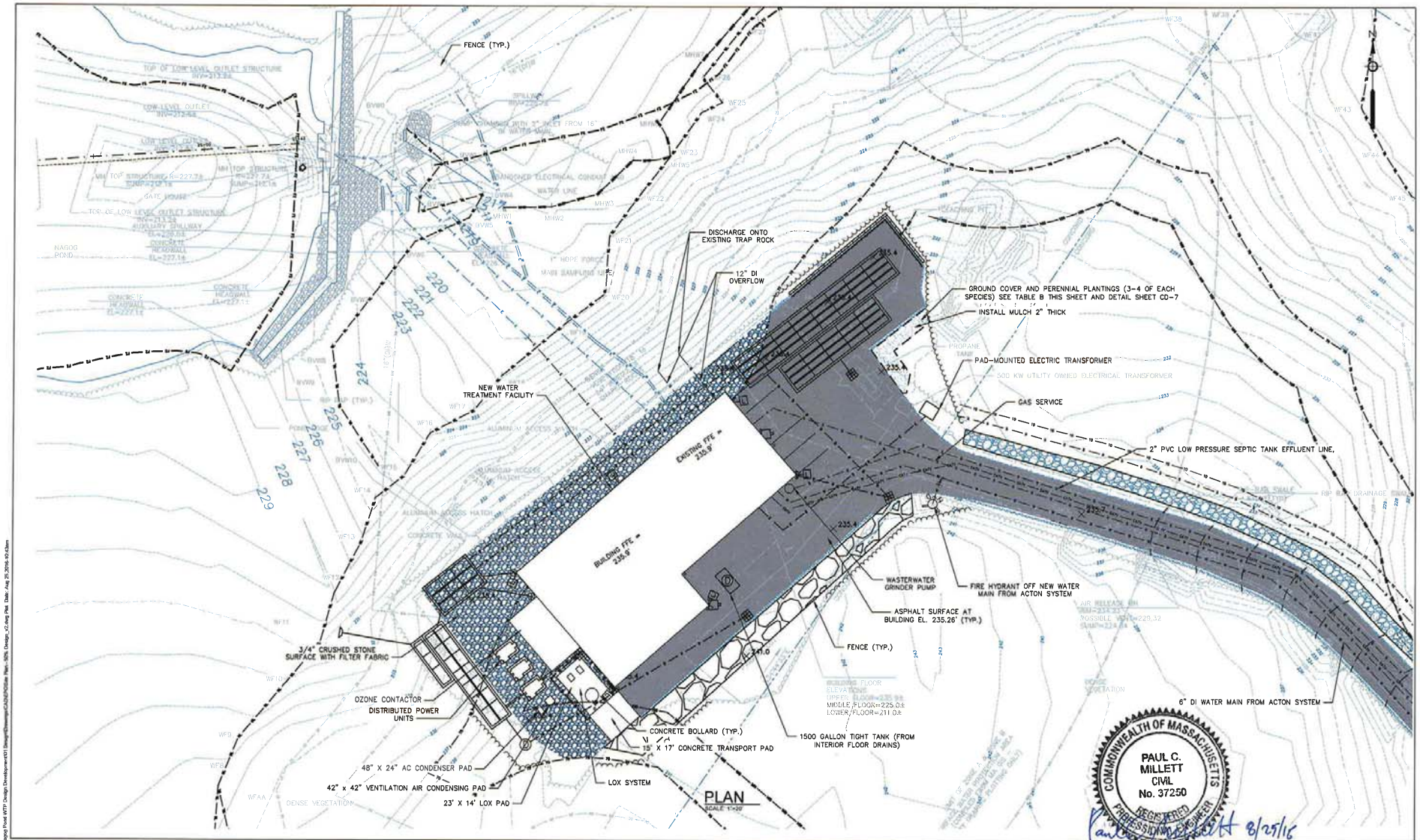
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WATER TREATMENT PLANT
LAYOUT PLAN - 40 SCALE

50% DESIGN
Sheet No.
C-9

Drawing file: I:\Concord 2002\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_v3_Proj Plot Date: Aug 25 2016 - 9:35am



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MARK	DATE	DESCRIPTION

Scale	1" = 20'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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NAGOG POND WATER TREATMENT PLANT

TOWN OF CONCORD, MASSACHUSETTS

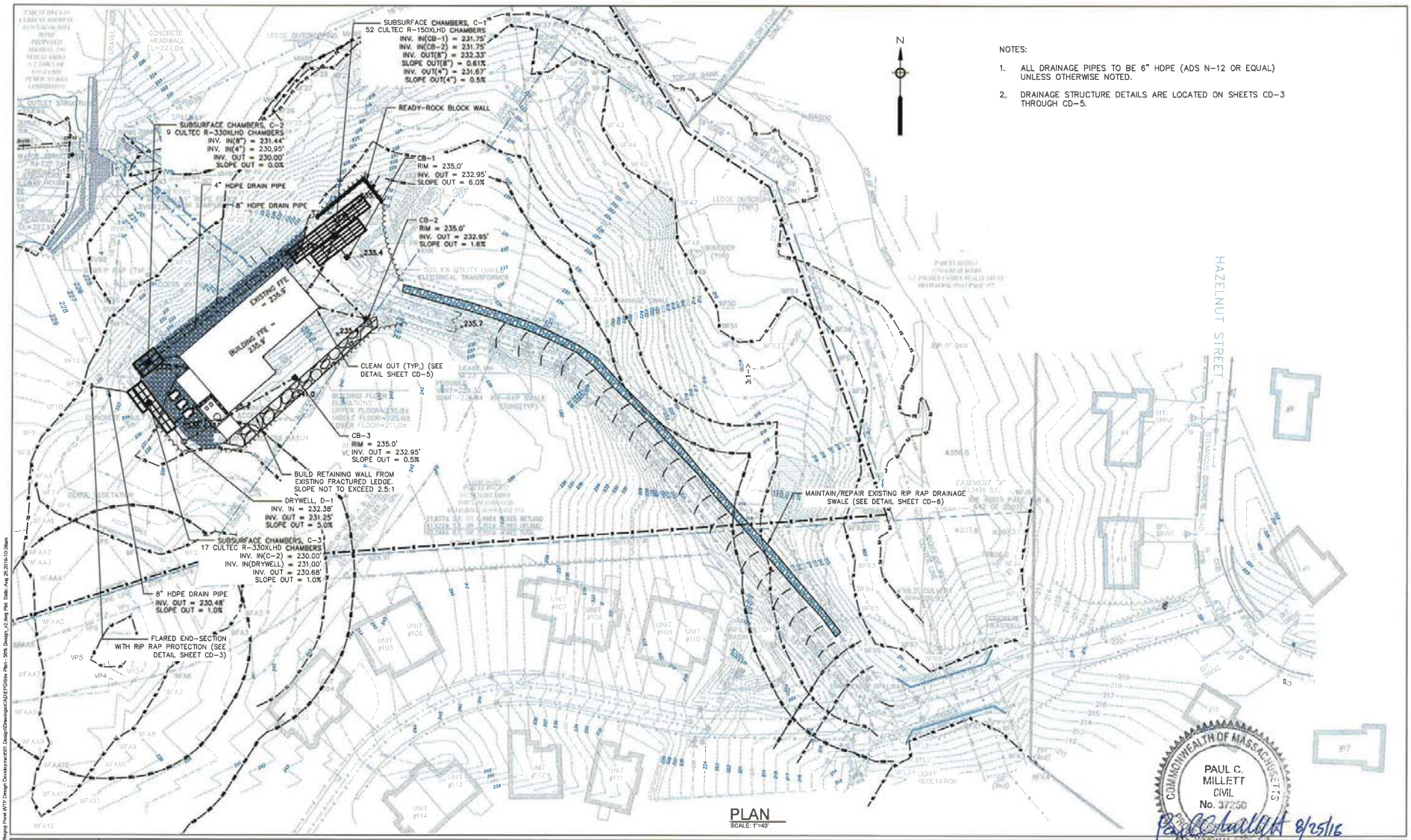
WATER TREATMENT PLANT

LAYOUT PLAN - 20 SCALE

50% DESIGN

Sheet No.

C-10



NOTES:

1. ALL DRAINAGE PIPES TO BE 6" HDPE (ADS N-12 OR EQUAL) UNLESS OTHERWISE NOTED.
2. DRAINAGE STRUCTURE DETAILS ARE LOCATED ON SHEETS CD-3 THROUGH CD-5.

PLAN
SCALE: 1"=40'

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MARK	DATE	DESCRIPTION

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU/ZFK
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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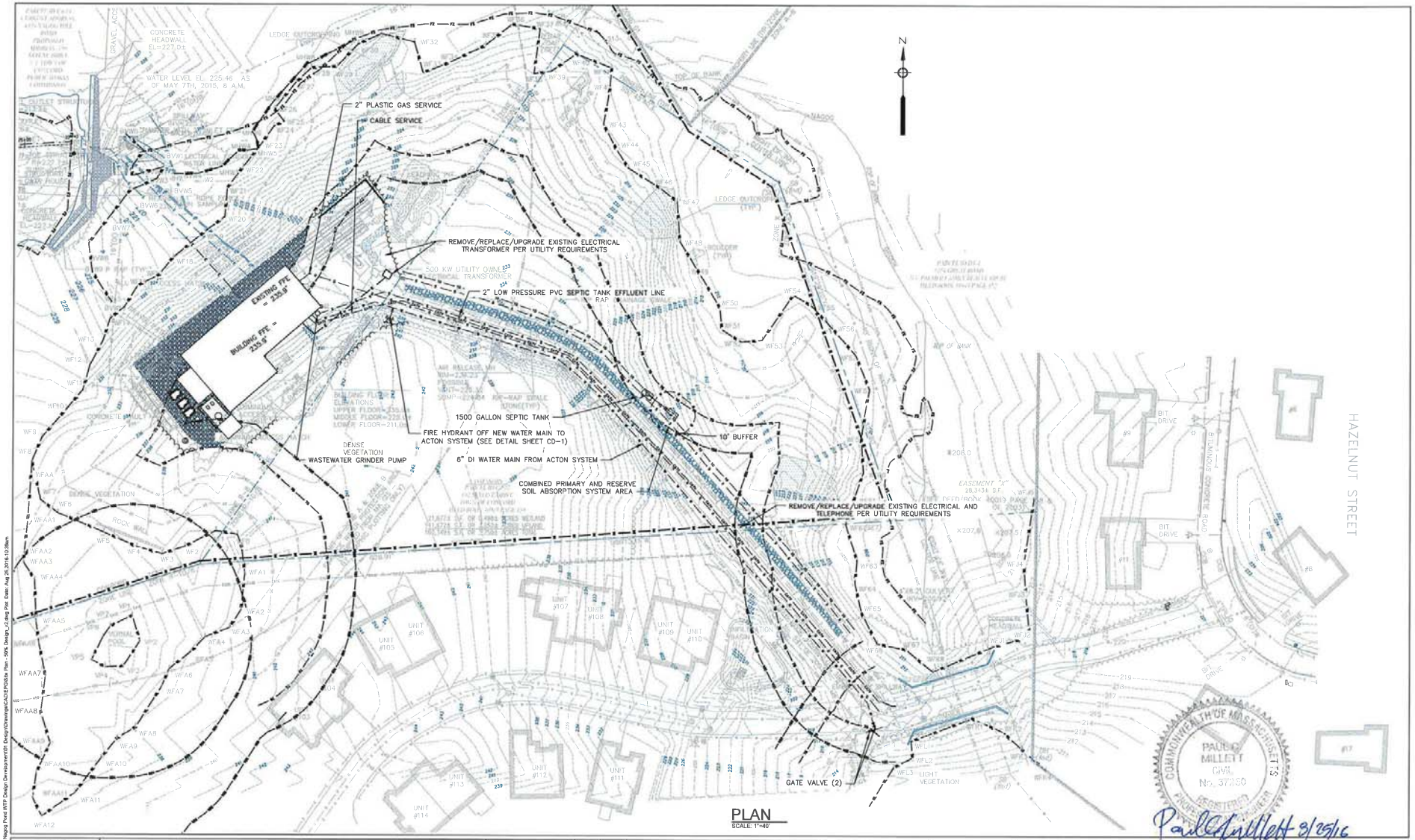
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WATER TREATMENT PLANT
GRADING AND DRAINAGE PLAN

50% DESIGN
Sheet No.
C-11

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_v2.dwg Plot Date: Aug 25,2016-10:38am



PLAN
SCALE: 1"=40'

PAUL G. MILLETT CIVIL No. 37230 COMMONWEALTH OF MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER

Paul G Millett 8/25/16

Environmental Partners GROUP
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MARK	DATE	DESCRIPTION

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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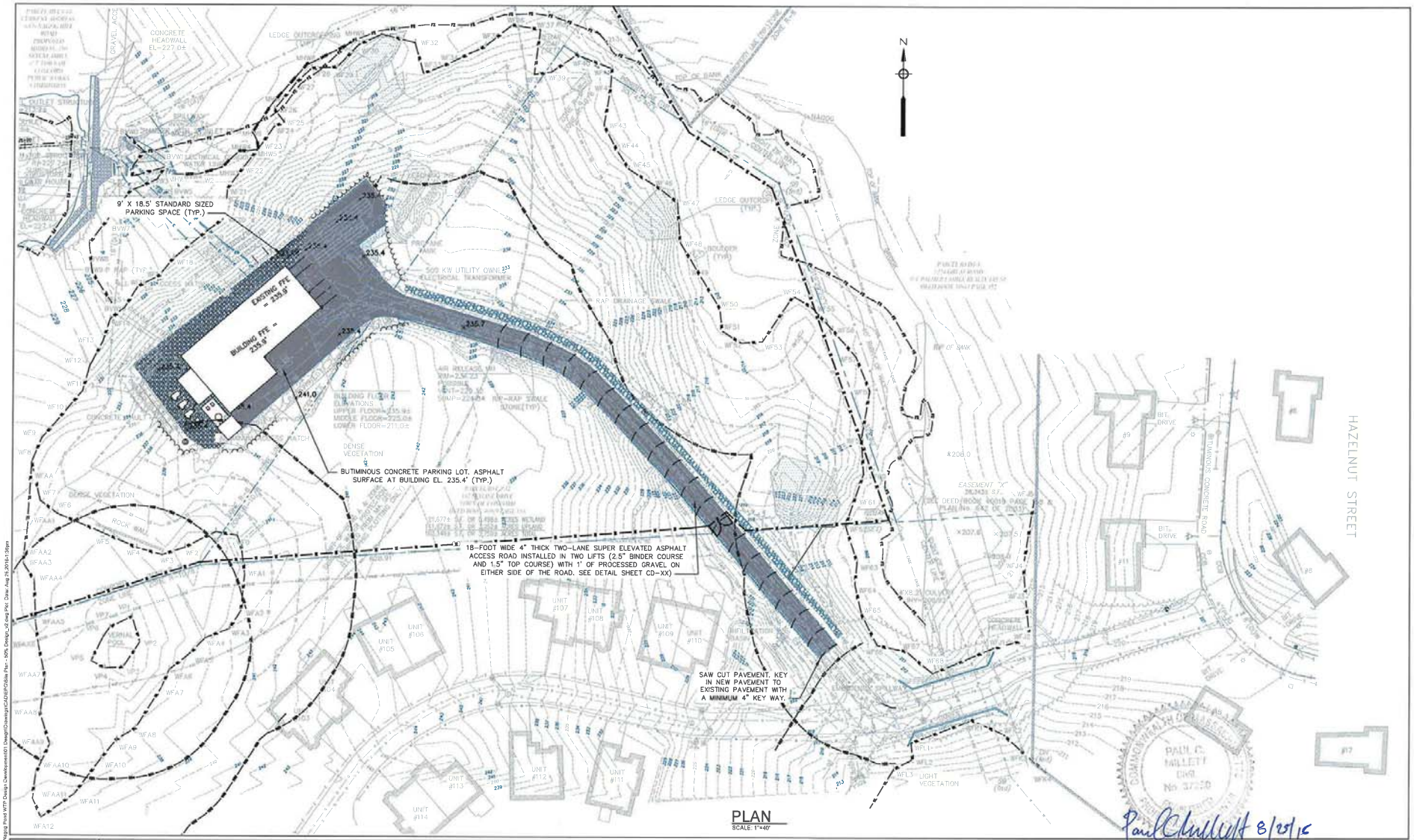
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WATER TREATMENT PLANT
SITE UTILITIES PLAN

50% DESIGN

Sheet No.
C-12

Drawing file: K:\Concord,200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_v2.dwg Plot Date: Aug 25,2016-10:39am



PLAN
SCALE: 1"=40'

Paul C. Millett 8/25/16

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MARK	DATE	DESCRIPTION

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU/ZFK
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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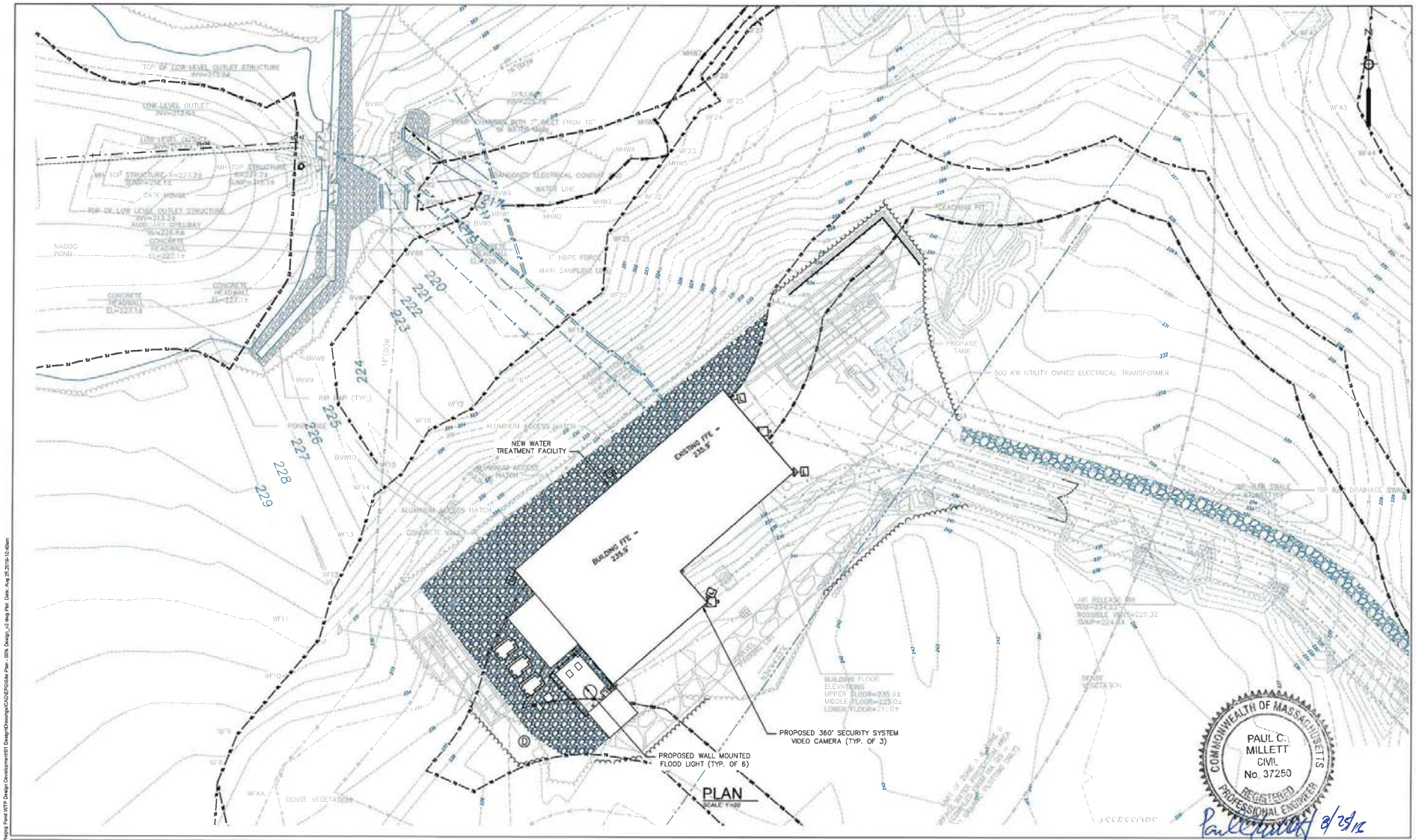
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WTP AND ACCESS ROAD
PAVING AND GRADING PLAN

50% DESIGN
Sheet No.
C-13



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MARK	DATE	DESCRIPTION

Scale	1" = 20'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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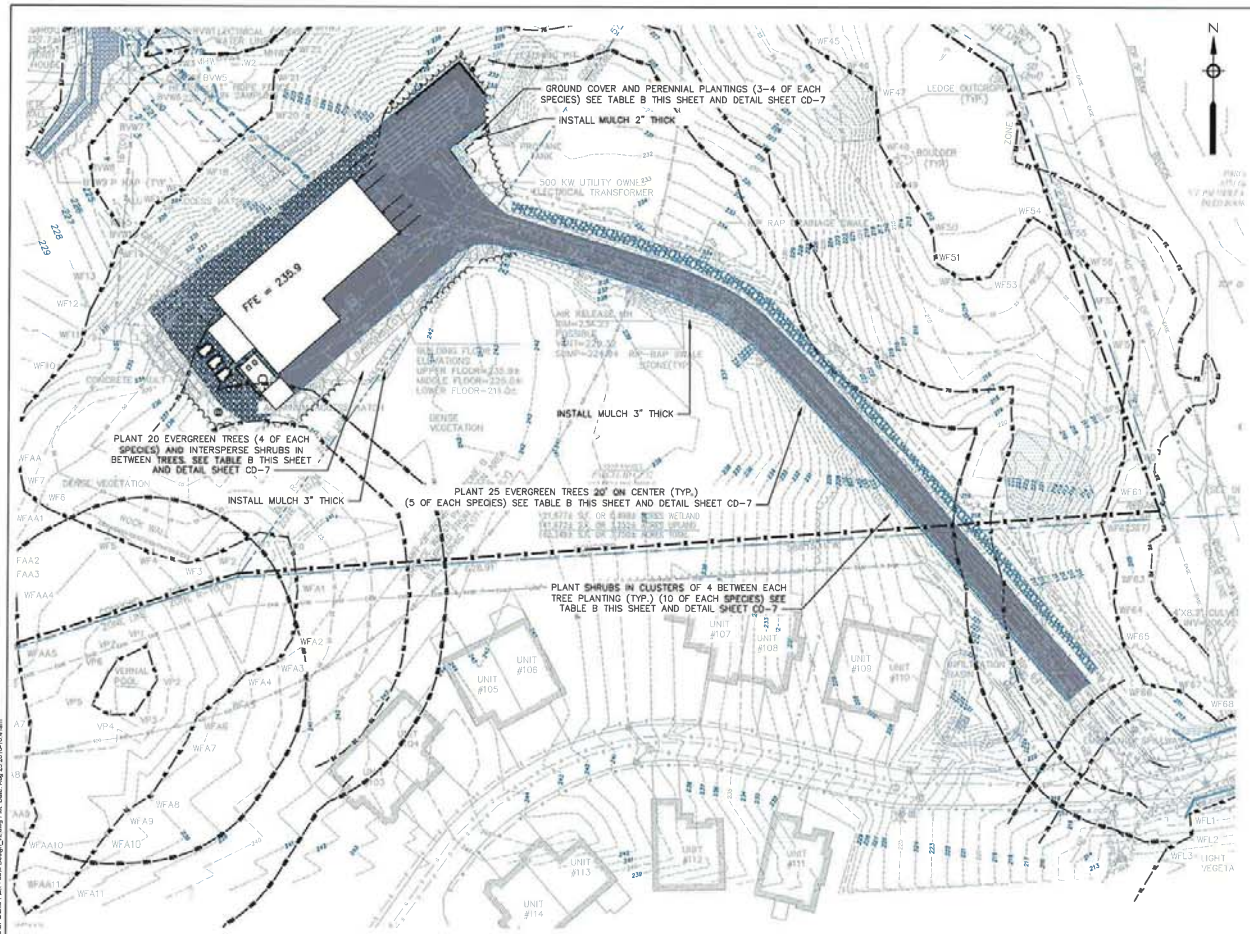
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WATER TREATMENT PLANT
EXTERIOR LIGHTING AND SECURITY PLAN

50% DESIGN
Sheet No.
C-14

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTP Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_v2.dwg Plot Date: Aug 25,2016-10:40am



PLAN
SCALE: 1"=40'

TABLE B - NAGOG POND WATER TREATMENT FACILITY PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
EVERGREEN TREES					
ABS BAL	39	Abies balsamea	Balsam Fir	8' B&B	Mass. Native species
ILX OPA	25	Ilex opaca	American Holly	8' B&B	Mass. Native species
PIN RES	35	Pinus resinosa	Red Pine	8' B&B	Mass. Native species
PIN STR	41	Pinus strobus	White Pine	8' B&B	Mass. Native species
TSG CAN	18	Tsuga canadensis	Eastern Hemlock	8' B&B	Mass. Native species
SHRUBS					
Cle aln	13	Clethra alnifolia 'Hummingbird'	Sweet Pepperbush	3 gal.	Mass. Native species
Cor amo	3	Cornus amomum	Silky Dogwood	3 gal.	Mass. Native species
Cor rac	21	Cornus racemosa	Grey-twigged Dogwood	3 gal.	Mass. Native species
Cor ser	9	Cornus sericea 'Flaviramea'	Yellowtig Dogwood	3 gal.	Mass. Native species
Ham vrn	5	Hamamelis vernalis	Spring Witchhazel	3 gal.	Mass. Native species
Ilx glb	11	Ilex glabra 'Chamzin/Nordic'	Nordic Inkberry	3 gal.	Mass. Native species
Ilx vrt	18	Ilex verticillata 'Sparkleberry'	Sparkleberry Winterberry	3 gal.	Mass. Native species
Vac cry	19	Vaccinium corymbosum	Highbush Blueberry	3 gal.	Mass. Native species
Vib det	15	Viburnum dentatum	Arrowwood Viburnum	3 gal.	Mass. Native species
Vib lnt	8	Viburnum lentago	Nannyberry	3 gal.	Mass. Native species
PERENNIALS & GROUND COVERS					
Arc uva	44	Arctostaphylos uva-ursi	Bearberry	1 gal.	Mass. Native species
Asa can	65	Asarum canadense	Wild Ginger	1 gal.	Mass. Native species
Hem spp	44	Hemerocallis spp.	Daylily	1 gal.	
Ver spc	65	Veronica spicata	Speedwell	1 gal.	

COMMONWEALTH OF MASSACHUSETTS
PAUL C. MILLETT
CIVIL
No. 37250
REGISTERED PROFESSIONAL ENGINEER
8/25/16

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MARK	DATE	DESCRIPTION

Scale	1" = 40'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
WATER TREATMENT PLANT
LANDSCAPING PLAN

50% DESIGN
Sheet No.
C-15

Drawing file: I:\Concord 200\200-1601 Nagog Pond WTF Design Development\01 Design\Drawings\CAD\EPG\Site Plan - 50% Design_Outline Plot Date: Aug 25, 2016-10:43am

PLAN
SCALE: 1"=100'

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MARK	DATE	DESCRIPTION

Scale	1" = 100'
Date	AUGUST 2016
Job No.	200-1601
Designed by	LEU
Drawn by	LEU
Checked by	DNRP
Approved by	PCM

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NAGOG POND WATER TREATMENT PLANT

TOWN OF CONCORD, MASSACHUSETTS

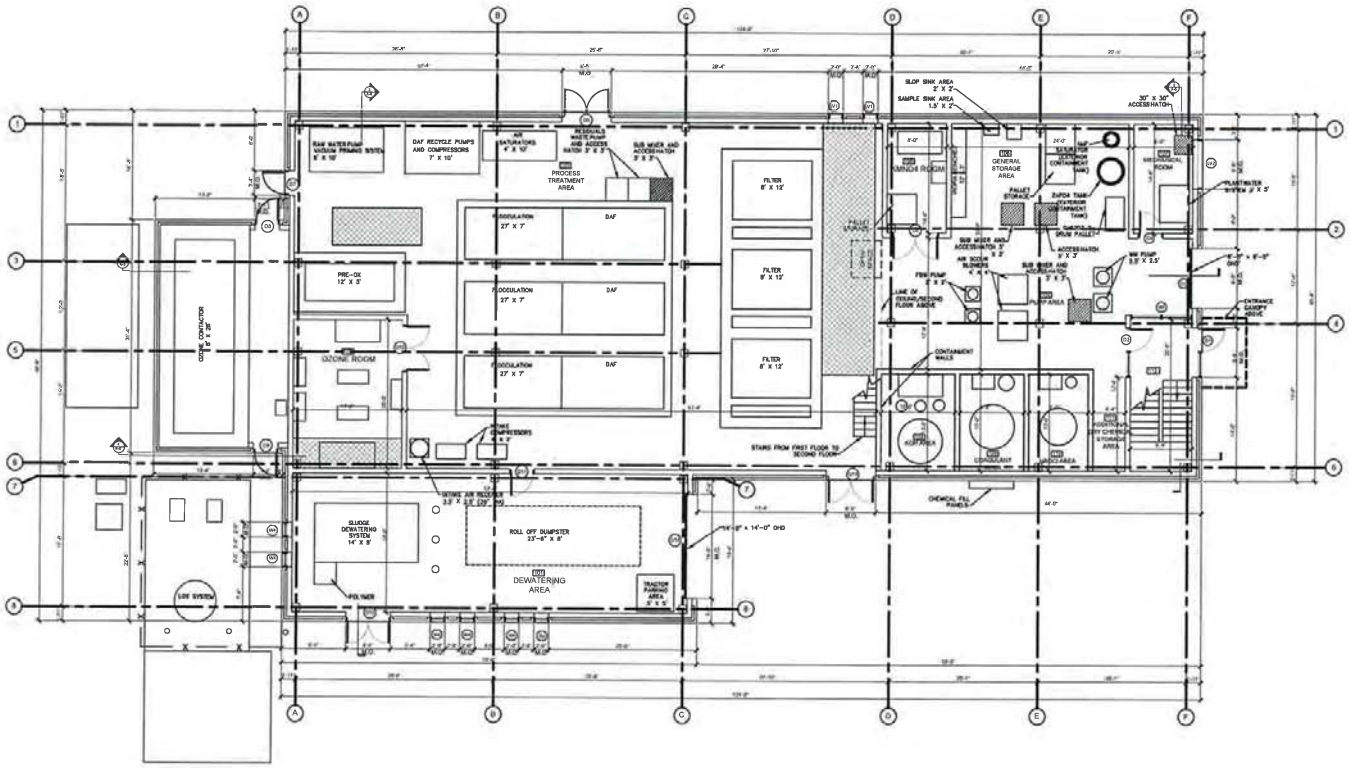
FENCING PLAN

50% DESIGN

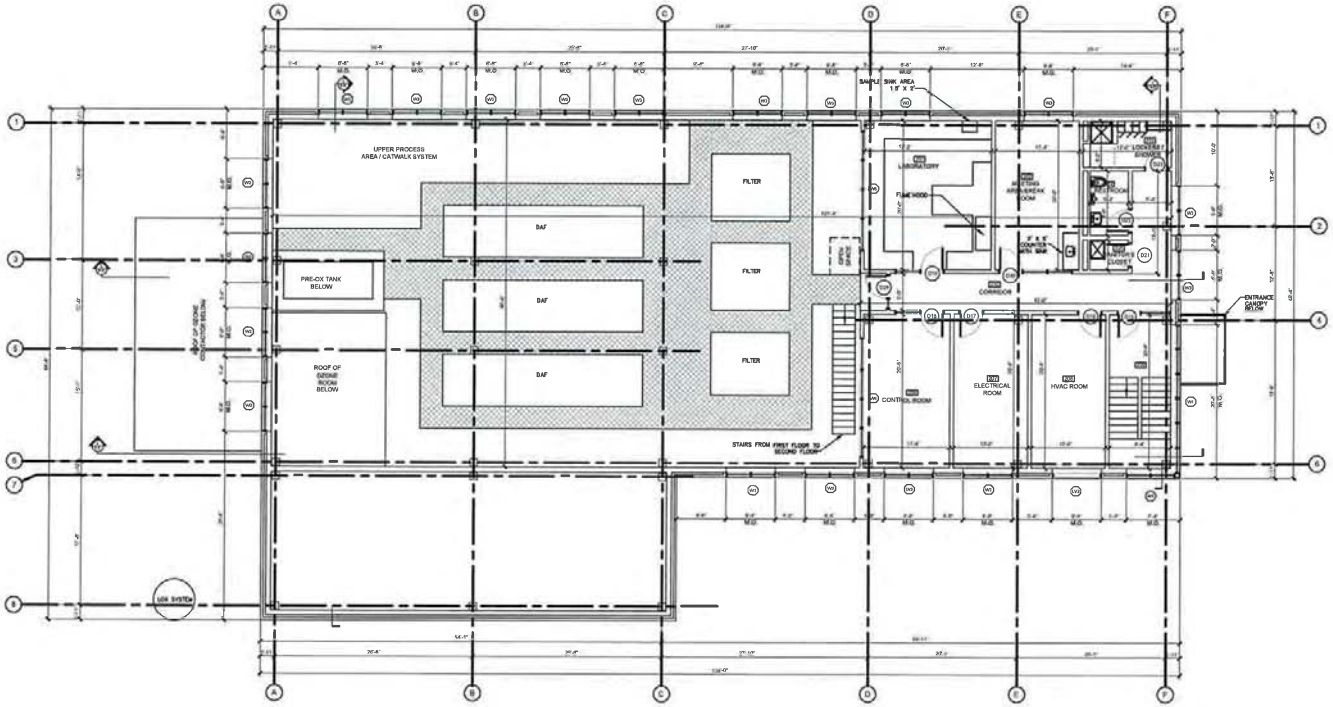
Sheet No.

C-16

8/25/16



	Environmental Partners GROUP A partnership for engineering solutions. LIN ASSOCIATES, INC. CONSULTING ENGINEERS DiMarinisi & Wolfe ARCHITECTS • URBAN DESIGNERS BOSTON, MASSACHUSETTS		MARK DATE DESCRIPTION	Scale 1/8" = 1'-0" Date JUNE 2016 Job No. 200-1501 Designed by AJD Drawn by TBC Checked by AJD Approved by AJD	THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING	NAGOG POND WATER TREATMENT PLANT TOWN OF CONCORD, MASSACHUSETTS FIRST FLOOR PLAN	DESIGN DEVELOPMENT Sheet No. A-1



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LIN ASSOCIATES, INC. CONSULTING ENGINEERS	DiMarinisi & Wolfe ARCHITECTS • URBAN DESIGNERS BOSTON, MASSACHUSETTS	

MARK	DATE	DESCRIPTION

Scale	1/8" = 1'-0"
Date	JUNE 2016
Job No.	200-1501
Designed by	AJD
Drawn by	TBC
Checked by	AJD
Approved by	AJD

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NAGOG POND WATER TREATMENT PLANT

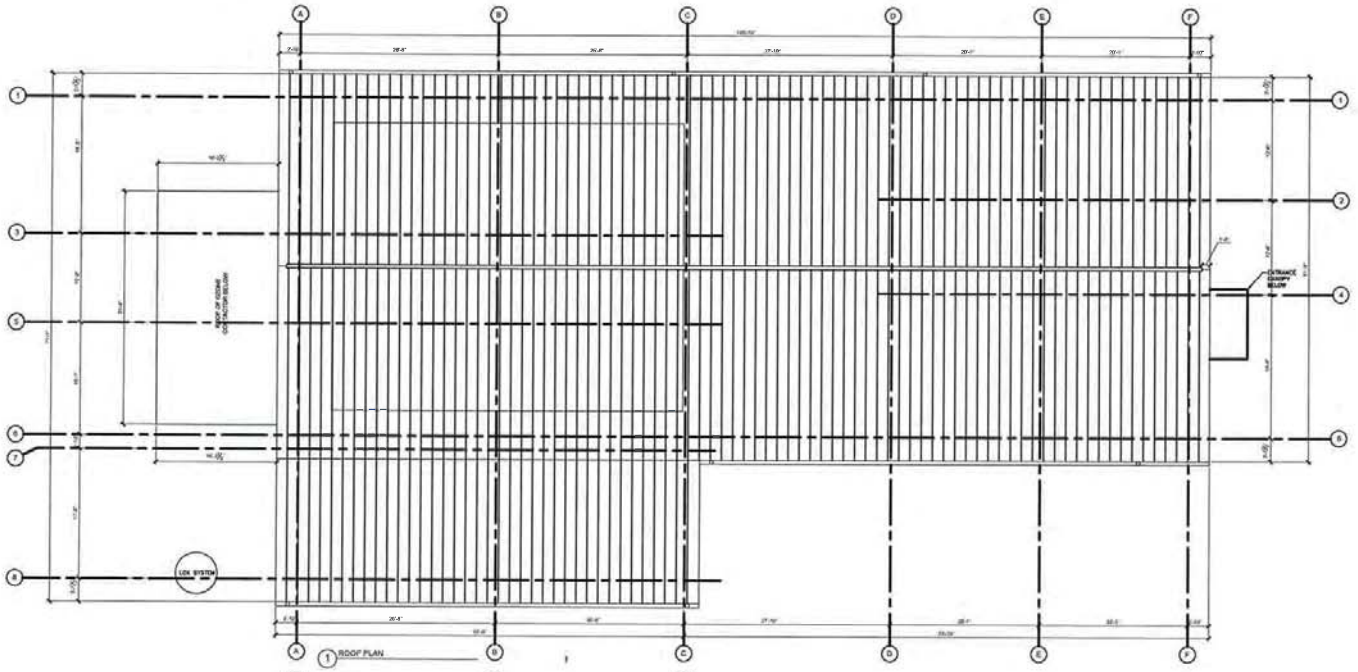
TOWN OF CONCORD, MASSACHUSETTS

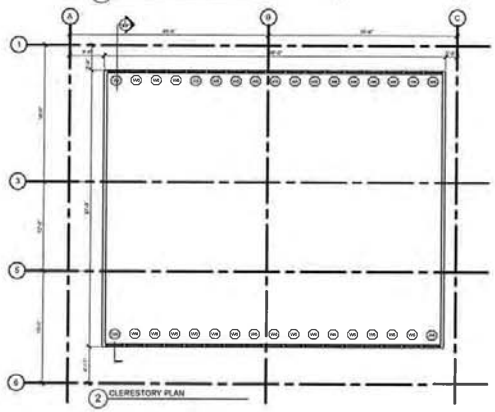
SECOND FLOOR PLAN

DESIGN DEVELOPMENT

Sheet No.

A-2





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CONSULTING ENGINEERS

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BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

Scale	1/8" = 1'-0"
Date	JUNE 2016
Job No.	200-1501
Designed by	AJD
Drawn by	TBC
Checked by	AJD
Approved by	AJD

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NAGOG POND WATER TREATMENT PLANT

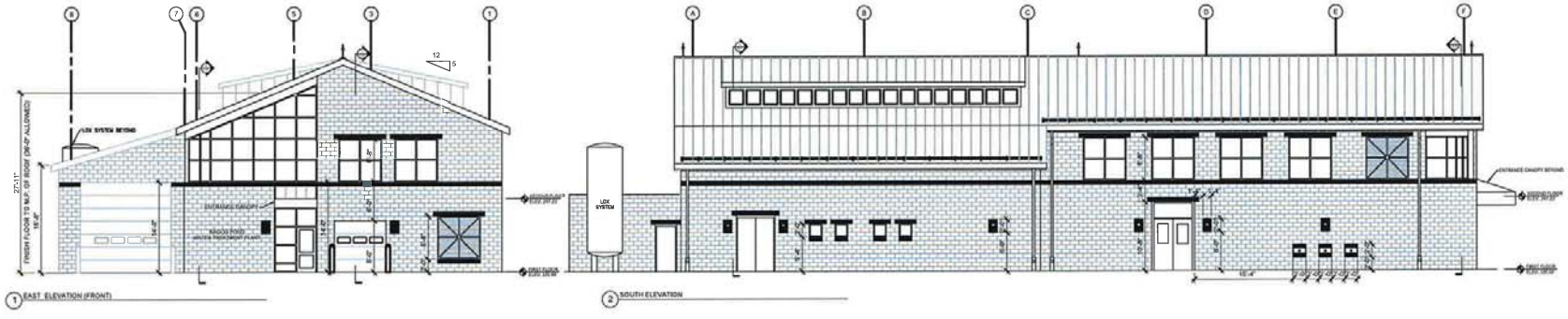
TOWN OF CONCORD, MASSACHUSETTS

ROOF AND CLERESTORY PLAN

DESIGN DEVELOPMENT

Sheet No.

A-3



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LIN ASSOCIATES, INC.

DiMarinisi & Wolfe
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BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

Scale	1/8" = 1'-0"
Date	JUNE 2016
Job No.	200-1501
Designed by	AJD
Drawn by	TBC
Checked by	AJD
Approved by	AJD

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NAGOG POND WATER TREATMENT PLANT

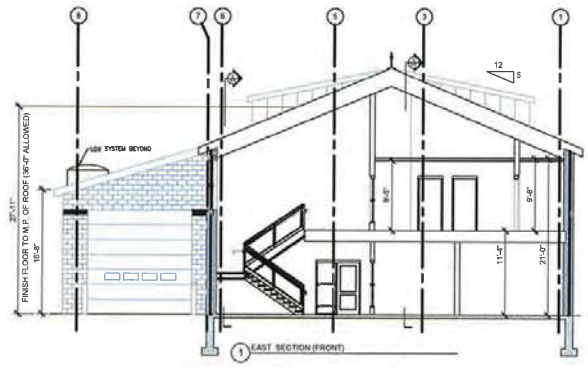
TOWN OF CONCORD, MASSACHUSETTS

EXTERIOR ELEVATIONS

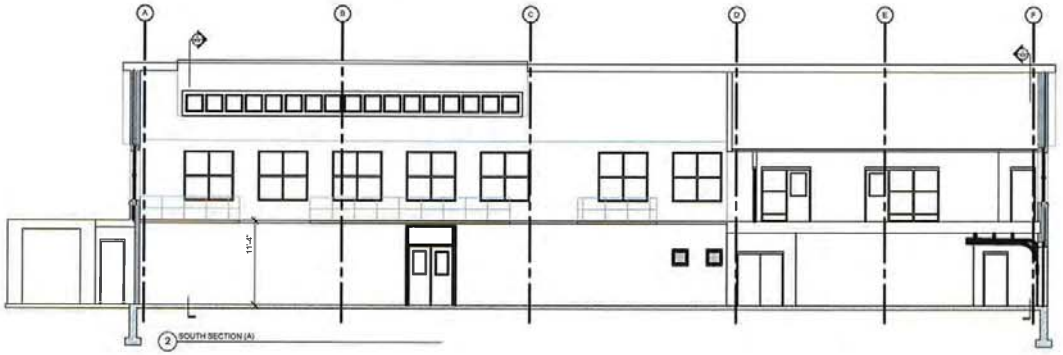
DESIGN DEVELOPMENT

Sheet No.

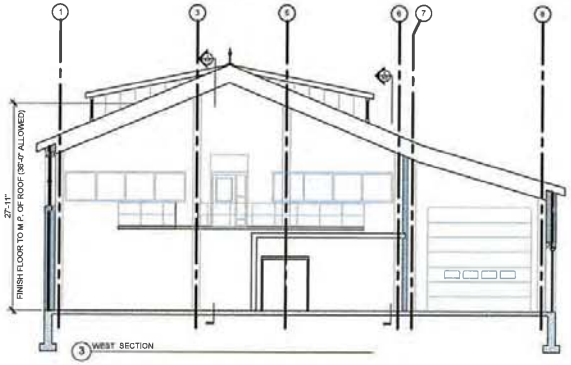
A-4



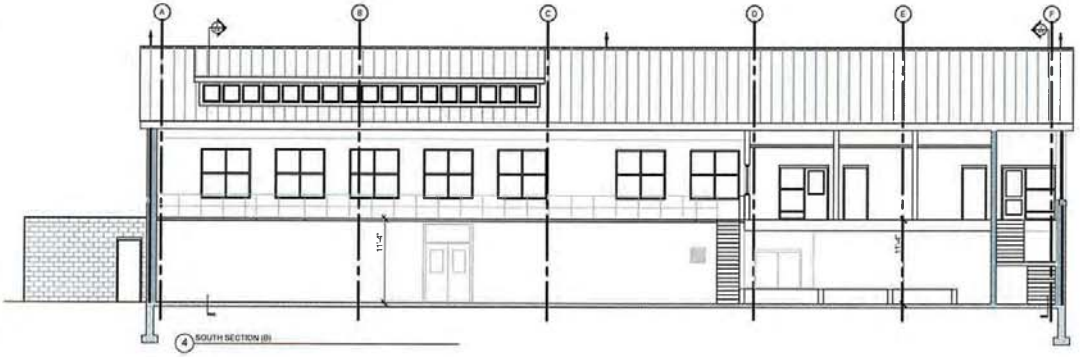
1 EAST SECTION (FRONT)



2 SOUTH SECTION (A)



3 WEST SECTION



4 SOUTH SECTION (B)

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BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

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Date	JUNE 2016
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Designed by	AJD
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Approved by	AJD

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NAGOG POND WATER TREATMENT PLANT

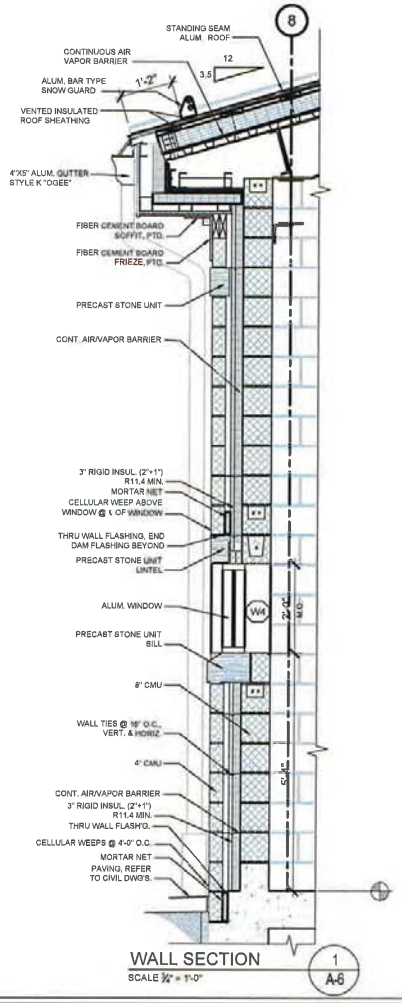
TOWN OF CONCORD, MASSACHUSETTS

BUILDING SECTIONS

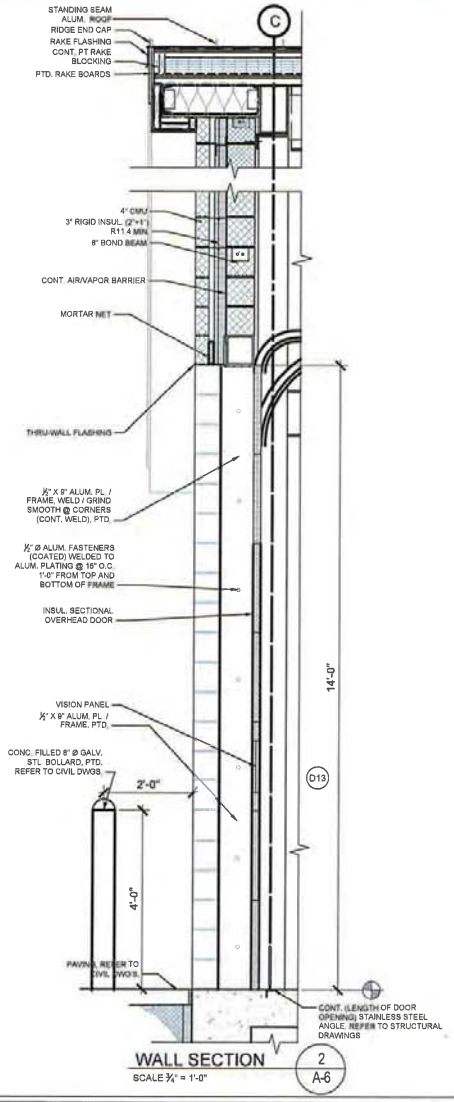
DESIGN DEVELOPMENT

Sheet No.

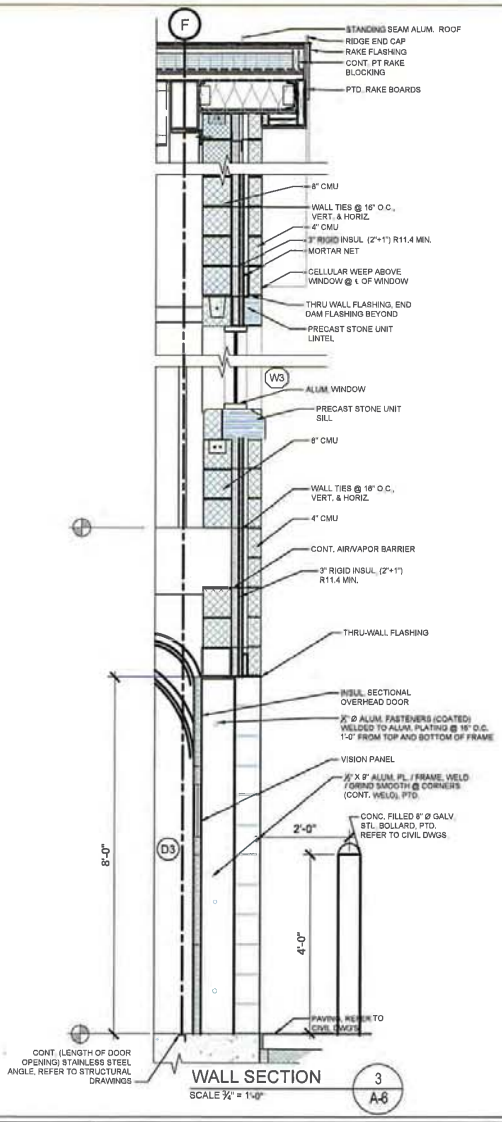
A-5



WALL SECTION
SCALE ¾" = 1'-0"
1 A-6



WALL SECTION
SCALE ¾" = 1'-0"
2 A-6



WALL SECTION
SCALE ¾" = 1'-0"
3 A-6

Environmental Partners GROUP
A partnership for engineering solutions.

LIN ASSOCIATES, INC.

DiMarinisi & Wolfe
ARCHITECTS • URBAN DESIGNERS
BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

Scale	3/4" = 1'-0"
Date	JUNE 2016
Job No.	200-1501
Designed by	AJD
Drawn by	TBC
Checked by	AJD
Approved by	AJD

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

NAGOG POND WATER TREATMENT PLANT

TOWN OF CONCORD, MASSACHUSETTS

WALL SECTIONS

FOR PERMITTING

Sheet No.

A-6

ROOM / SPACE FINISH SCHEDULE

ROOM / SPACE NO.	ROOM NAME	BASE	FLOOR	NORTH WALL	WEST WALL	EAST WALL	SOUTH WALL	CEILING	HEIGHT	REMARKS	ROOM / SPACE NO.
101	DEWATERING AREA	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	ES/PTD	VARIES		101
102	OZONE ROOM	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	CP/PTD	10' - 0"	2-HOUR CONSTRUCTION	102
103	PROCESS TREATMENT AREA	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	ES/PTD	VARIES		103
104	PUMP AREA	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	ES/PTD	10' - 0"		104
105	KMNO4 ROOM	—	CONC/CRFF	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	CONC/PTD	10' - 0"	2-HOUR CONSTRUCTION	105
106	GENERAL STORAGE AREA	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	—	CONC/PTD	10' - 0"		106
107	MECHANICAL ROOM	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	CONC/PTD	10' - 0"		107
108	KOH AREA	—	CONC/CRFF	CONC/CRWF	CONC/CRWF	CONC/CRWF	CMU/CRWF	CONC/PTD	10' - 0"	NOTE: CONC. CONTAINMENT WALLS - 2'-0" (H)	108
109	COAGULANT AREA	—	CONC/CRFF	CONC/CRWF	CONC/CRWF	CONC/CRWF	CMU/CRWF	CONC/PTD	10' - 0"	NOTE: CONC. CONTAINMENT WALLS - 2'-0" (H)	109
110	NAOCI AREA	—	CONC/CRFF	CONC/CRWF	CONC/CRWF	CONC/CRWF	CMU/CRWF	CONC/PTD	10' - 0"	NOTE: CONC. CONTAINMENT WALLS - 2'-0" (H)	110
111	ADDITIONAL DRY CHEMICAL STORAGE AREA	—	CONC/SLR	—	CONC/PTD	CMU/PTD	CMU/PTD	CONC/PTD	10' - 0"		111
112	STAIR	RB	RT	SF	CMU/PTD/SF	CMU/PTD/SF	CMU/PTD	ES/PTD	VARIES		112
201	LABORATORY	RB	RT	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	MRACT	10' - 0"		201
202	MEETING AREA/BREAK ROOM	RB	RT	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	MRACT	10' - 0"		202
203	LOCKERS/SHOWER	RB/CT	RT/CT	CMU/PTD/CT	CMU/PTD/CT	CMU/PTD/CT	CMU/PTD/CT	MRGWB/PTD	10' - 0"		203
204	RESTROOM	CT	CT	CT	CT	CT	CT	MRGWB/PTD	10' - 0"		204
205	JANITOR'S CLOSET	CT	CT	CT	CT	CT	CT	MRGWB/PTD	8' - 0"		205
206	CONTROL ROOM	RB	RT	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	MRACT	10' - 0"		206
207	ELECTRICAL ROOM	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	ES	VARIES		207
208	HVAC ROOM	—	CONC/SLR	CMU/PTD	CMU/PTD	CMU/PTD	CMU/PTD	ES	VARIES		208
209	STAIR	RB	RT	SF	CMU/PTD	CMU/PTD	CMU/PTD	MRGWB/PTD	VARIES		209
210	CORRIDOR	RB	RT	CMU/PTD	—	CMU/PTD	CMU/PTD	MRACT	10' - 0"		210

ABBREVIATIONS :
ACMU - ACOUSTIC CONCRETE MASONRY UNIT
CMU - CONCRETE MASONRY UNIT
CONC - CONCRETE
CP - CONCRETE PLANK
CRFF - CHEMICAL RESISTANT FLOOR FINISH
CRWF - CHEMICAL RESISTANT WALL FINISH
CT - CERAMIC TILE
ES - EXPOSED STRUCTURE
GWB - GYPSUM WALL BOARD
MRGWB - MOISTURE RESISTANT GYPSUM WALL BOARD
MRACT - MOISTURE RESISTANT ACOUSTIC TILE
PTD - PAINTED
RB - RUBBER BASE
RT - RUBBER TILE
SF - STOREFRONT
SLR - SEALER

GENERAL NOTES :
1. ALL EXPOSED STRUCTURAL STEEL SHALL BE PAINTED

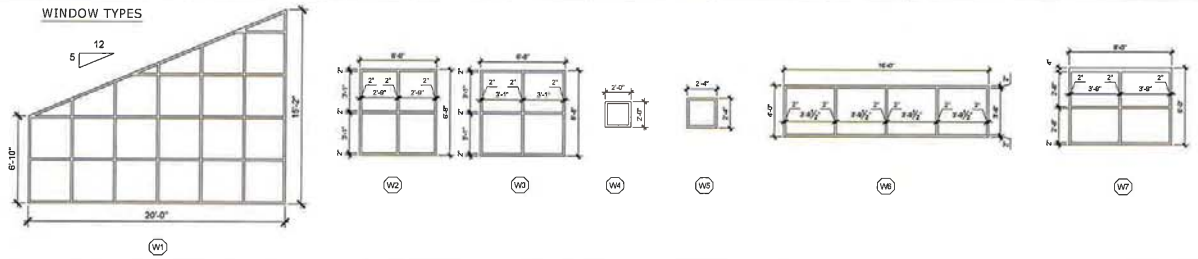
WINDOW / GLAZED OPENING SCHEDULE

NO.	TYPE	QTY.	M.O./R.O. W	M.O./R.O. H	JAMB	JAMB	HEAD	SILL	MATERIAL	FINISH	COLOR	GLAZING	REMARKS
W1	FIXED / STORE FRONT	1	20'-0"	VARIES					ALUM.	F.F.	T.B.S.	INSULATED	
W2	FIXED	4	6'-0"	6'-8"					ALUM.	F.F.	T.B.S.	INSULATED	
W3	FIXED	16	6'-8"	6'-8"					ALUM.	F.F.	T.B.S.	INSULATED	
W4	FIXED	6	2'-0"	2'-0"					ALUM.	F.F.	T.B.S.	INSULATED	
W5	FIXED	34	2'-4"	2'-4"					ALUM.	F.F.	T.B.S.	INSULATED	
W6	FIXED	2	16'-0"	4'-0"					ALUM.	F.F.	T.B.S.	1/4" TEMPERED GLASS	
W7	FIXED	1	8'-0"	8'-0"					ALUM.	F.F.	T.B.S.	1/4" TEMPERED GLASS	

ABBREVIATIONS

F.F.	FACTORY FINISHED
OPP.	OPPOSITE
PTD	PAINTED
SIM.	SIMILAR
T.B.S.	TO BE SELECTED

WINDOW TYPES



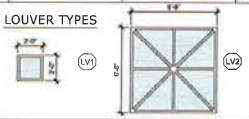
LOUVER SCHEDULE

NO.	QTY.	M.O./R.O. W	M.O./R.O. H	JAMB	JAMB	HEAD	SILL	MATERIAL	FINISH	COLOR	REMARKS
LV1	2	2'-0"	2'-0"					ALUM.	F.F.	T.B.S.	
LV2	2	6'-8"	6'-8"					ALUM.	F.F.	T.B.S.	1" X 1" DECORATIVE ALUMINUM SCREEN

ABBREVIATIONS

ALUM.	ALUMINUM
F.F.	FACTORY FINISHED
T.B.S.	TO BE SELECTED

LOUVER TYPES



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DiMarinisi & Wolfe
ARCHITECTS • URBAN DESIGNERS
BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

Scale	N.T.S.
Date	JUNE 2016
Job No.	200-1501
Designed by	AJD
Drawn by	KMW
Checked by	AJD
Approved by	AJD

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NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
ROOM / SPACE FINISH, WINDOW / GLAZED OPENING & LOUVER SCHEDULES

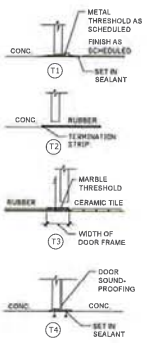
DESIGN DEVELOPMENT
Sheet No.
A-7

DOOR SCHEDULE

DOOR OPNG. NO.	FRAME TYPE	FRAME M.O. / R.O. W	FRAME M.O. / R.O. H	FRAME DEPTH	FRAME JAMB	FRAME JAMB	FRAME HEAD	FRAME THRESHOLD	FRAME MATERIAL	FRAME FINISH	FRAME COLOR	LEAF TYPE	LEAF QTY.	LEAF W	LEAF H	LEAF MATERIAL	LEAF THICKNESS	LEAF FINISH	LEAF COLOR	UL LABEL	HARDWARE	GLAZING	SIGNAGE	REMARKS	DOOR OPNG. NO.
D1	1	6'-8"	10'-0"	8"				T1	ALUM	FF	TBS	E	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		TIG	—	—	D1
D2	2	6'-8"	7'-4"	6"				T2	ALUM	FF	TBS	E	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		TG	—	—	D2
D3	3	8'-0"	8'-0"	MS				—	STL	FF	TBS	F	1	8'-0"	8'-0"	STL	2"	FF	TBS	—	MS	TIG	—	MOTORIZED INSULATED OHD - 115 SINGLE PHASE	D3
D4	4	3'-4"	7'-4"	5-3/4"				T4	ALUM	FF	TBS	C	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	MECHANICAL ROOM	—	D4
D5	5	6'-8"	7'-4"	5-3/4"				T4	ALUM	FF	TBS	C	2	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	2 HR		—	KMNO4 ROOM	2 HOUR CONSTRUCTION	D5
D6	6	6'-8"	10'-8"	5-3/4"				T1	ALUM	FF	TBS	A	1	3'-0"	8'-0"	ALUM	1-3/4"	FF	TBS	—		TIG	—	INSULATED DOORS	D6
D7	4	3'-4"	7'-4"	5-3/4"				T1	ALUM	FF	TBS	B	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	—	INSULATED DOOR	D7
D8	4	3'-4"	7'-4"	5-3/4"				T1	ALUM	FF	TBS	C	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	—	INSULATED DOOR	D8
D9	4	3'-4"	7'-4"	5-3/4"				T1	ALUM	FF	TBS	C	1	8'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	—	INSULATED DOOR	D9
D10	5	6'-8"	8'-8"	5-3/4"				T4	ALUM	FF	TBS	C	2	3'-0"	8'-4"	ALUM	1-3/4"	FF	TBS	2 HR		—	OZONE ROOM	2 HOUR CONSTRUCTION	D10
D11	4	3'-4"	7'-4"	5-3/4"				T4	ALUM	FF	TBS	B	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	DEWATERING	INSULATED DOOR	D11
D12	5	6'-8"	8'-8"	5-3/4"				T4	ALUM	FF	TBS	C	2	3'-0"	8'-4"	ALUM	1-3/4"	FF	TBS	—		—	—	INSULATED DOOR	D12
D13	3	14'-0"	14'-0"	MS				—	STL	FF	TBS	G	1	14'-0"	14'-0"	STL	2"	FF	TBS	—	MS	TIG	—	MOTORIZED INSULATED OHD - 115 SINGLE PHASE	D13
D14	6	6'-8"	10'-8"	5-3/4"				T1	ALUM	FF	TBS	A	1	3'-0"	8'-0"	ALUM	1-3/4"	FF	TBS	—		TIG	—	INSULATED DOORS	D14
D15	8	7'-4"	7'-4"	5-3/4"				—	ALUM	FF	TBS	E	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		TG	—	—	D15
D16	4	3'-4"	7'-4"	5-3/4"				T2	ALUM	FF	TBS	C	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	HVAC ROOM	—	D16
D17	4	3'-4"	7'-4"	5-3/4"				T2	ALUM	FF	TBS	C	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	ELECTRICAL ROOM	—	D17
D18	2	6'-8"	7'-4"	5-3/4"				—	ALUM	FF	TBS	B	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		TG	CONTROL ROOM	—	D18
D19	2	6'-8"	7'-4"	5-3/4"				—	ALUM	FF	TBS	B	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		TG	LABORATORY	—	D19
D20	7	10'-0"	7'-4"	5-3/4"				—	ALUM	FF	TBS	B	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		TG	BREAK ROOM	—	D20
D21	4	3'-4"	7'-4"	5-3/4"				T3	ALUM	FF	TBS	C	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	JANITOR'S CLOSET	—	D21
D22	4	3'-4"	7'-4"	5-3/4"				T3	ALUM	FF	TBS	C	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	RESTROOM	—	D22
D23	4	3'-4"	7'-4"	5-3/4"				—	ALUM	FF	TBS	C	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	LOCKER ROOM	—	D23
D24	9	4'-8"	7'-4"	5-3/4"				—	ALUM	FF	TBS	B	1	3'-0"	7'-0"	ALUM	1-3/4"	FF	TBS	—		—	—	—	D24

ABBREVIATIONS :
ALUM - ALUMINUM
FF - FACTORY FINISH
MS - MANUFACTURER'S STANDARD
OHD - OVERHEAD DOOR
PTD - PAINTED
STL - STEEL
TBS - TO BE SELECTED
TG - ¼" TEMPERED GLASS
TIG - 1" TEMPERED INSULATED GLASS
WGL - ¼" WIRE GLASS

GENERAL NOTES
1. ALL EXTERIOR AND INTERIOR CMU DOOR WALL OPENINGS TO RECEIVE CMU LINTEL BLOCKS, 8" BEARING AT EACH END OR AS OTHERWISE NOTED ON STRUCTURAL DRAWINGS



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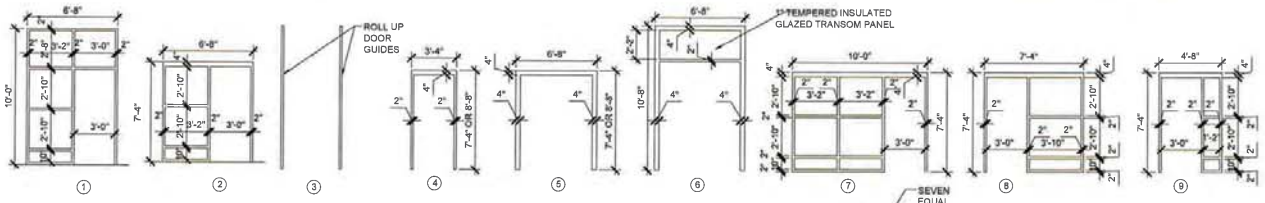

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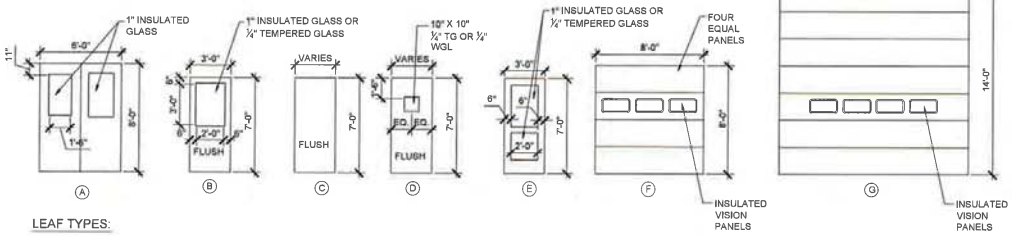

LEAF TYPES:

Environmental Partners GROUP — A partnership for engineering solutions.				Scale	N.T.S.	DESIGN DEVELOPMENT
LIN LIN ASSOCIATES, INC.	DiMarinisi & Wolfe ARCHITECTS • URBAN DESIGNERS BOSTON, MASSACHUSETTS			Date	JUNE 2016	Sheet No. A-8
				Job No.	200-1501	
				Designed by	AJD	
				Drawn by	KMW	
				Checked by	AJD	
				Approved by	AJD	
		MARK	DATE	DESCRIPTION		

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NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
DOOR SCHEDULE

MECHANICAL PROCESS LEGEND

VALVES, COUPLING, & APPURTENANCES

- BUTTERFLY VALVE
- CHECK VALVE
- EXPANSION JOINT
- KOH — CHEMICAL INJECTION LOCATION

LINETYPE LEGEND

- STRUCTURE – AT OR ABOVE GRADE
- STRUCTURE – BELOW GRADE
- PIPING – AT OR ABOVE GRADE
- PIPING – BELOW GRADE

PIPE AND FITTINGS

DOUBLE LINE SINGLE LINE

- PIPE
- ELBOW (90)
- ELBOW (45)
- TEE
- WYE
- CROSS
- RED (CONC)
- RED (ECC)
- FLANGE
- PIPE END
- PIPE BREAK

PIPE AND FITTING SYMBOLOGY SHOWN ABOVE IS FOR FLANGED DUCTILE IRON PIPE. SYMBOLOGY FOR OTHER PIPING SYSTEMS IS SIMILAR. END CONNECTIONS DENOTE JOINING TECHNOLOGY.

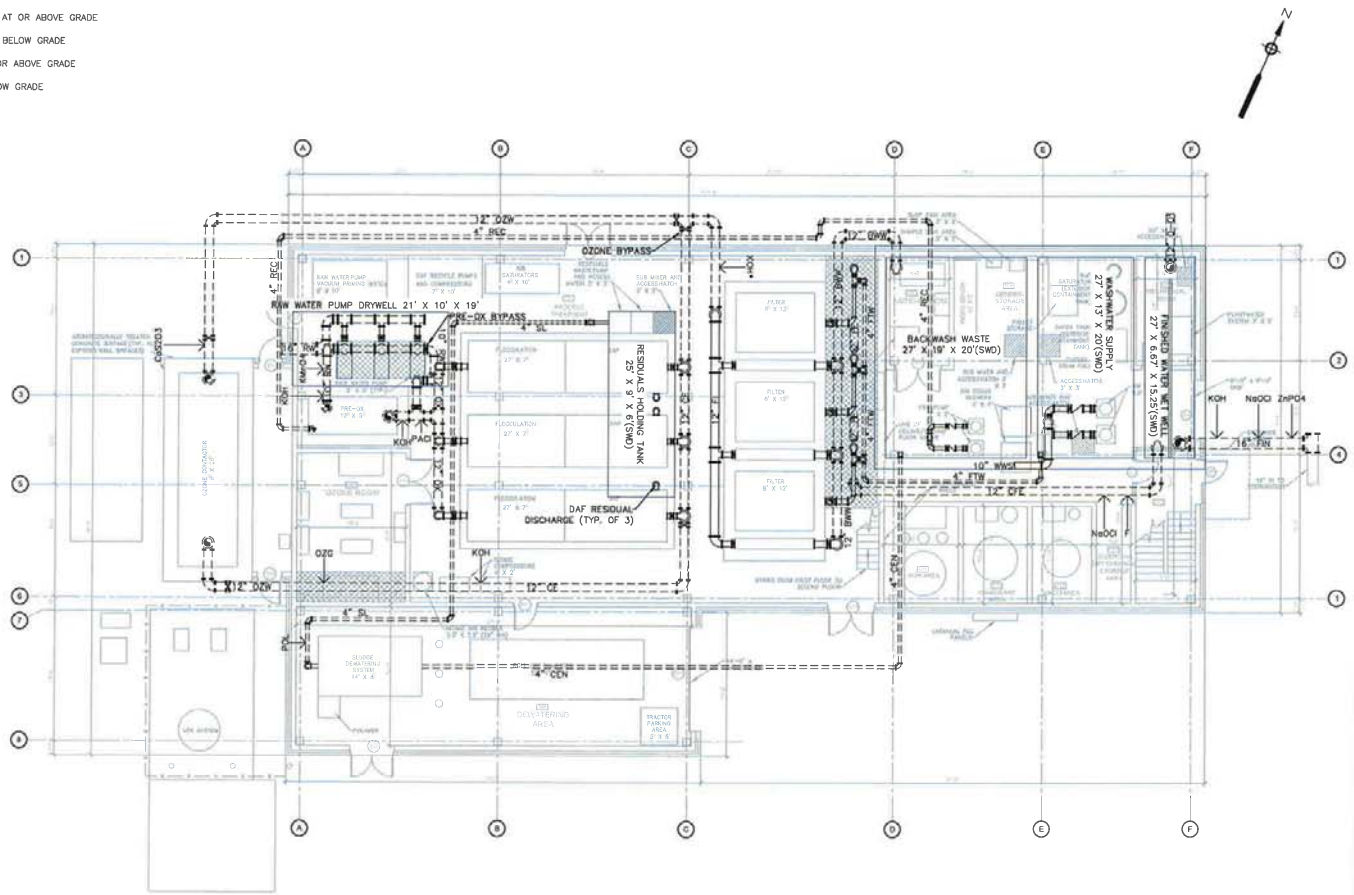
- MECHANICAL JOINT
- WELDED
- SOCKET WELD
- SINGLE LINE (JOINING TECHNOLOGY VARIES)

PROCESS STREAM ABBREVIATIONS

AS	AIR SCOUR
BWA	BACKWASH AIR
BWW	BACKWASH WASTE
CaS2O3	CALCIUM THIOSULFATE
CE	CLARIFIER EFFLUENT
CEN	CENTRATE
CFE	COMBINED FILTER EFFLUENT
D–O	DRAIN, OVERFLOW
DAF	DISSOLVED AIR FLOTATION
DAFR	DAF RECYCLE
DR	DRAIN
F	FLUORIDE
FE	FILTER EFFLUENT
FI	FILTER INFLUENT
FTW	FILTER TO WASTE
FIN	FINISHED WATER
KMnO4	POTASSIUM PERMANGANATE
KOH	POTASSIUM HYDROXIDE
LOX	LIQUID OXYGEN
NaOCl	SODIUM HYPOCHLORITE
OZG	OZONE GAS
OZO	OZONE OFF GAS
OZW	OZONATED WATER
PACl	POLYALUMINUM CHLORIDE
POL	POLYMER
PRE–OX	PER–OXIDATION
PSW	PLANT SERVICE WATER
REC	RECYCLE
RW	RAW WATER
SL	SLUDGE
SWD	SIDEWATER DEPTH
V	VENT
VG	VENT GAS
W1	POTABLE WATER
W2	NON–POTABLE WATER
WWS	WASH WATER SUPPLY
ZnPO4	ZINC ORTHOPHOSPATE

NOTES:

1. *PRE–FILTRATION KOH ONLY USED DURING OZONE SYSTEM BYPASS.



Environmental Partners GROUP — A partnership for engineering solutions			Scale	1/8" = 1'-0"	THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING
LIN ASSOCIATES, INC. CONSULTING ENGINEERS	DiMarinisi & Wolfe ARCHITECTS • URBAN DESIGNERS BOSTON, MASSACHUSETTS		Date	JULY 2016	
			Job No.	200-1501	
			Designed by	DNRP	
			Drawn by	NJR	
			Checked by	DNRP	
		MARK / DATE / DESCRIPTION	Approved by	PCM	

NAGOG POND WTP CONCEPTUAL DESIGN

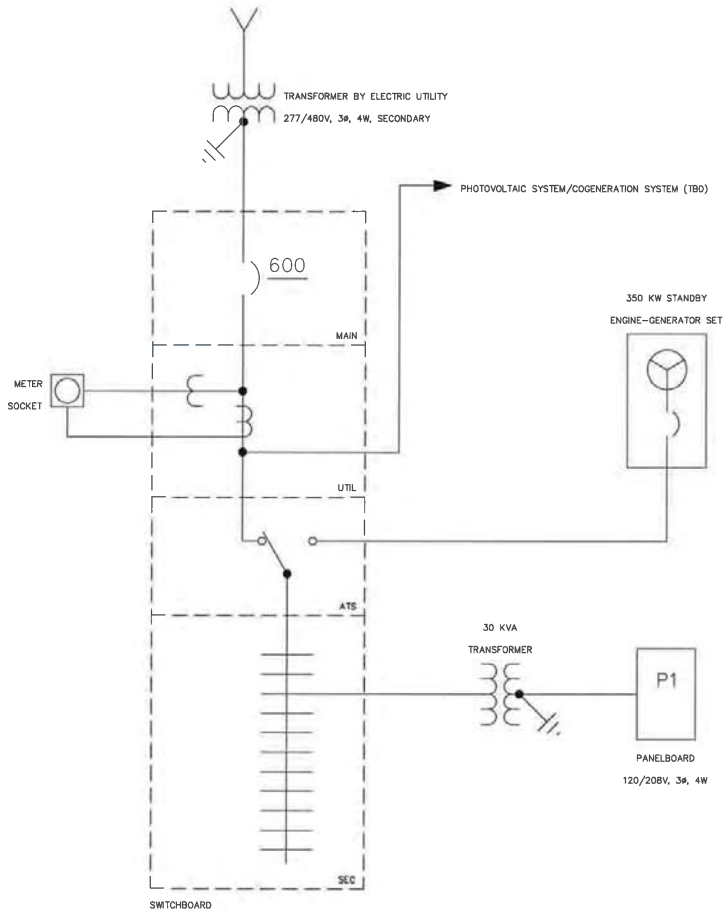
TOWN OF CONCORD, MASSACHUSETTS

PROCESS MECHANICAL PIPING PLAN

CONCEPTUAL DESIGN

Sheet No. M-1

Drawing file: I:\Concord 200\200-1501 Nagog Pond WTP Conceptual Design\01 Conceptual Design\Drawings\PDFs\CDR July 2016\mechanical plan.dwg Plot Date: Jul 22,2016-3:48pm



PRELIMINARY SINGLE LINE DIAGRAM

Environmental Partners GROUP
A partnership for engineering solutions.

LIN ASSOCIATES, INC.
CONSULTING ENGINEERS

DiMarinisi & Wolfe
ARCHITECTS • URBAN DESIGNERS
BOSTON, MASSACHUSETTS

MARK	DATE	DESCRIPTION

Scale	N.T.S.
Date	JULY 2016
Job No.	200-1501
Designed by	EBM, INC
Drawn by	EBM, INC
Checked by	DNRP
Approved by	PCM

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NAGOG POND WTP CONCEPTUAL DESIGN

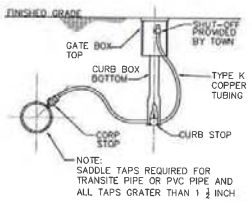
TOWN OF CONCORD, MASSACHUSETTS

SINGLE LINE DIAGRAM

CONCEPTUAL DESIGN

Sheet No.

E-1



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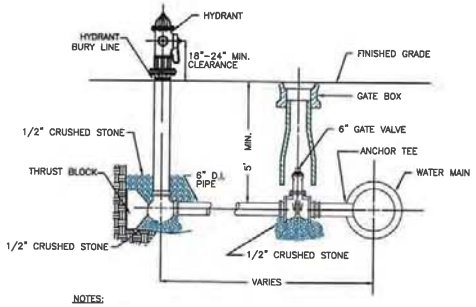
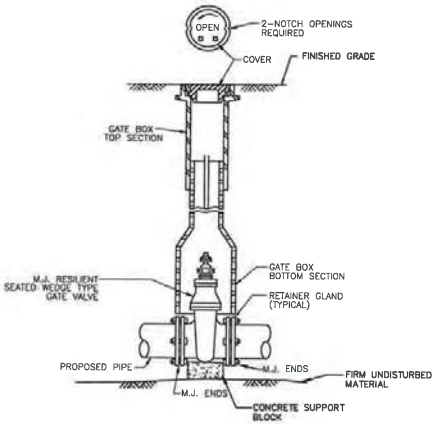
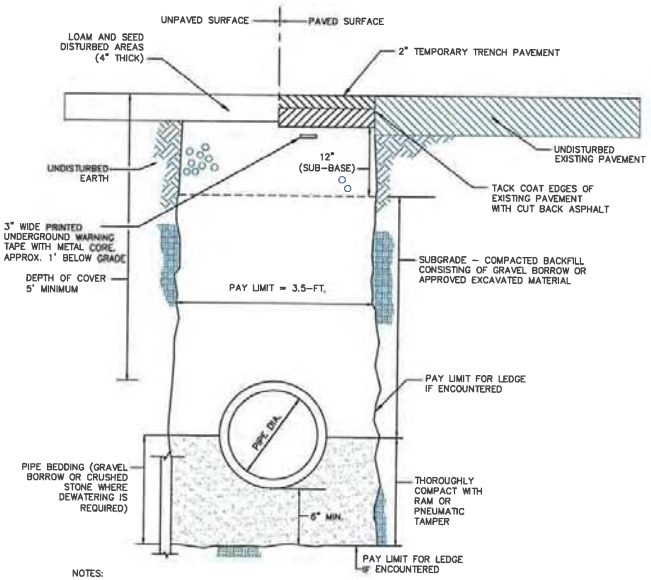


NOTES:
1. ALL HYDRANT, VALVE AND TEE JOINTS TO BE RESTRAINED MECHANICAL JOINTS.
2. DEPTH OF HYDRANT BURY SHALL SUIT INSTALLED DEPTH OF COVER OVER WATERMAIN. INSTALL RISERS AS NECESSARY AT NO ADDITIONAL COST TO THE OWNER.
3. VALVES SHALL OPEN LEFT (COUNTER-CLOCKWISE).

HYDRANT ASSEMBLY DETAIL
N.T.S.

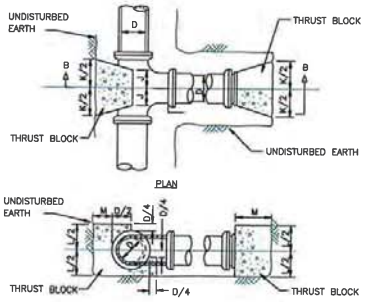


GATE VALVE AND VALVE BOX DETAIL
N.T.S.



NOTES:
1. ANY GRASS AREAS DISTURBED SHALL BE GRADED, LOAMED TO A DEPTH OF 4 INCHES AND SEEDED, WHERE NO GRASS OCCURS USE 6" PROCESSED GRAVEL

TYPICAL WATER MAIN TRENCH DETAIL
N.T.S.

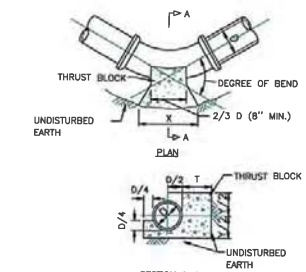


SECTION B-B

NOTES :
1. ALL CONCRETE SHALL BE 3000 PSI @ 28 DAYS (CLASS 'A' CONCRETE).
2. DIMENSIONS SHOWN ARE MINIMUM AND ARE BASED UPON SOIL PRESSURE OF 1500 PSF AND TOTAL PRESSURE OF 250 PSI. TOTAL PRESSURE IS WORKING PRESSURE PLUS SURGE PRESSURE.
3. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.

TABLE OF DIMENSIONS						
D (in)	4	6	8	10	12	14
J (in)	6	6	7	9	10	12
K (in)	16	16	20	26	32	36
L (in)	16	16	21	24	29	34
M (in)	11	11	14	16	19	22

CONCRETE THRUST BLOCK DETAIL AT TEE/PLUG



SECTION A-A

NOTES:
1. ALL CONCRETE SHALL BE 3000 P.S.I. @ 28 DAYS (CLASS "A" CONCRETE)
2. DIMENSIONS SHOWN ARE MINIMUM AND ARE BASED UPON SOIL PRESSURE OF 1500 P.S.F. AND TOTAL PRESSURE OF 250 P.S.I. TOTAL PRESSURE IS WORKING PRESSURE PLUS SURGE PRESSURE.
3. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.

TABLE OF DIMENSIONS

DIMENSION	90° BEND						45° BEND						22 1/2° BEND						11 1/4° BEND					
D (in.)	4	6	8	10	12	14	4	6	8	10	12	14	4	6	8	10	12	14	4	6	8	10	12	14
X (in.)	35	35	50	56	72	80	24	24	35	45	51	60	28	28	30	32	37	42	12	12	19	21	27	33
Y (in.)	20	20	24	32	35	40	16	16	19	21	27	33	13	13	13	16	19	22	8	8	9	12	13	16
T (in.)	11	11	14	16	19	22	11	11	14	16	19	22	11	11	13	16	19	22	11	11	13	16	19	22

CONCRETE THRUST BLOCK DETAIL AT BEND
N.T.S.

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COMMONWEALTH OF MASSACHUSETTS
PAUL C. MILLETT
CIVIL
No. 37250
REGISTERED PROFESSIONAL ENGINEER
8/25/16

MARK	DATE	DESCRIPTION

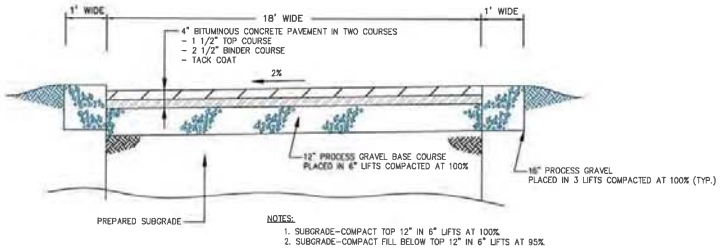
Scale	AS SHOWN
Date	AUGUST 2016
Job No.	200-1501
Designed by	XXX
Drawn by	XXX
Checked by	SCO
Approved by	SCO

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

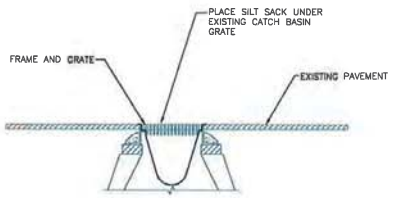
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
CIVIL DETAILS I

FOR PERMITTING
Sheet No
CD-1

Drawing file: I:\Concord 200\200-1501 Nagog Pond WTP Conceptual Design\Drawings\CAD\Detail Sheets.dwg Plot Date: Nov 15 2015 5:20pm



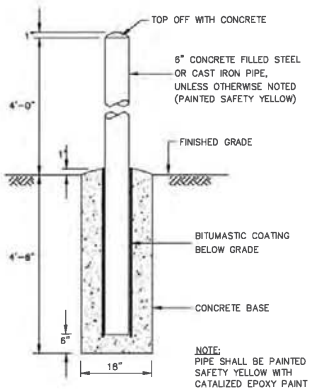
ACCESS ROAD PAVING DETAIL
N.T.S.



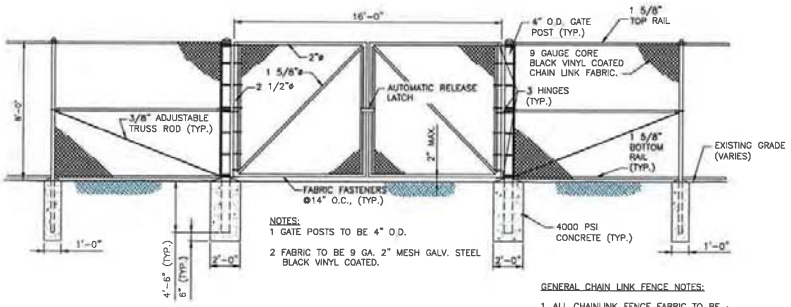
NOTES:

1. SILT SACKS SHALL BE INSPECTED WEEKLY AND ACCUMULATED SILT REMOVED TO ALLOW CATCH BASIN TO FUNCTION PROPERLY.
2. SILT SACK AS MANUFACTURED BY ACF ENVIRONMENTAL (800-448-3636) OR APPROVED EQUAL.

SEDIMENTATION CONTROL AT CATCH BASINS, SILT SACKS
N.T.S.



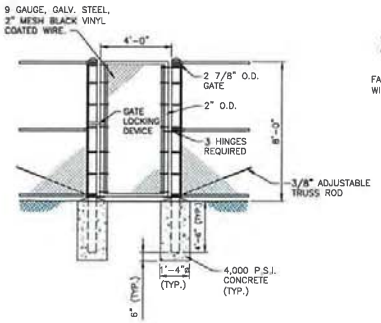
CONCRETE BOLLARD DETAIL
N.T.S.



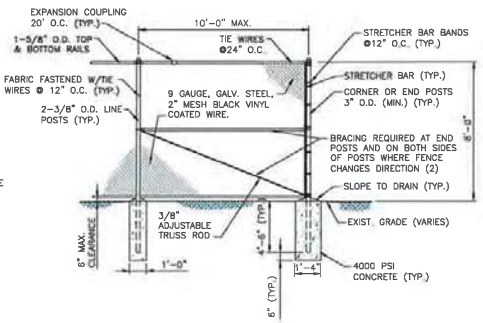
8' WIDE DOUBLE SWING GATE
N.T.S.

GENERAL CHAIN LINK FENCE NOTES:

1. ALL CHAINLINK FENCE FABRIC TO BE KNUCKLED (TOP AND BOTTOM).
2. ALL CHAIN LINK FENCE POSTS, FABRIC, TIES AND MATERIALS SHALL BE BLACK VINYL COATED.
3. ALL SECTIONS INCLUDE BOTTOM RAIL.
4. BOTTOM RAIL TO BE 6" FROM FINISHED GRADE IN PV AREA AND 2" FROM FINISHED GRADE IN ALL OTHER AREAS.



4' WIDE PEDESTRIAN GATE
N.T.S.



8' HIGH FENCE DETAIL
N.T.S.

Drawing file: I:\Concord 2012\201-501 Nagog Pond WTP Concord\1 Design\01 Concord\Civil Design\Drawings\CAD\Detail Sheets.dwg Plot Date: Nov 17,2015 - 1:54pm

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COMMONWEALTH OF MASSACHUSETTS
PAUL G. MILLETT
CIVIL
No. 37260
6/25/16

MARK	DATE	DESCRIPTION

Scale	AS SHOWN
Date	AUGUST 2016
Job No.	200-1501
Designed by	XXX
Drawn by	XXX
Checked by	SCO
Approved by	SCO

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NAGOG POND WATER TREATMENT PLANT

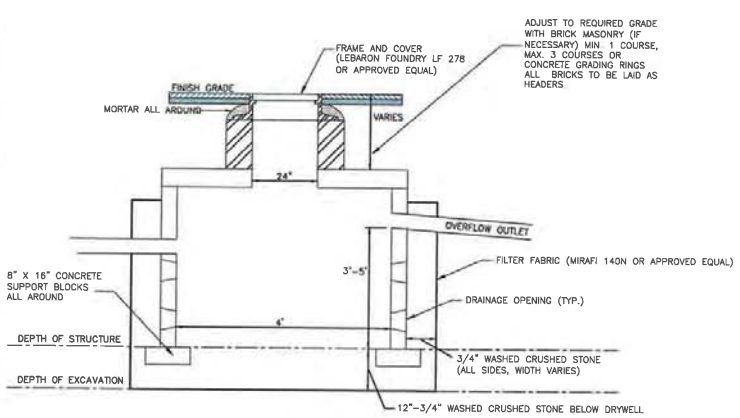
TOWN OF CONCORD, MASSACHUSETTS

CIVIL DETAILS II

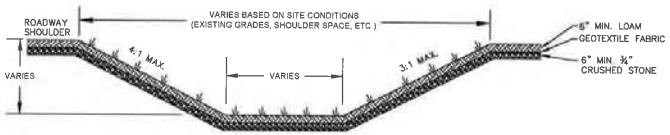
FOR PERMITTING

Sheet No.

CD-2

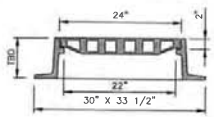


4'Ø PRECAST DRYWELL (PROFILE VIEW)
N.T.S.



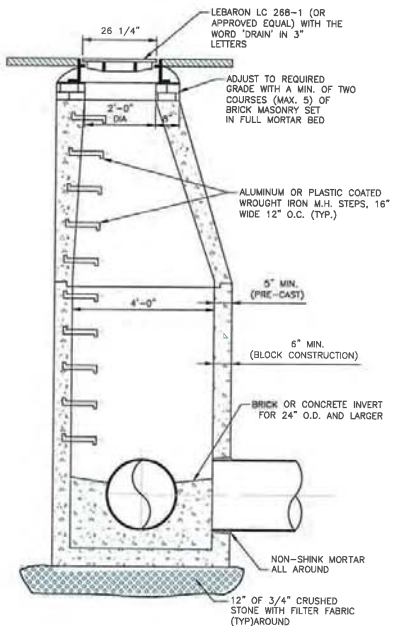
NOTE:
THE GOAL IS TO RETROFIT A VEGETATED SWALE WITHIN THE ROADWAY SHOULDER THAT WILL CONVEY STORMWATER FROM THE HIGH POINT NEAR THE CATCH BASIN/GUTTER INLET TO THE LOW POINT NEAR THE WETLAND AREA.

VEGETATED BACKUP/OVERFLOW SWALE
N.T.S.

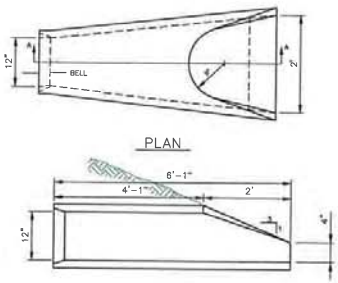


NOTES:
1. CATCH BASIN FRAME SHALL BE ej FRAME 5523, ej FRAME 5524 OR APPROVED EQUAL.
2. CATCH BASIN GRATE SHALL BE ej GRATE 5520,5 OR APPROVED EQUAL.
3. CATCH BASIN DOUBLE FRAMES SHALL BE ej FRAME 5448ZPT OR APPROVED EQUAL.
3. FRAME AND GRATE SHALL BE SET IN FULL BED OF MORTAR ON A MINIMUM OF TWO COURSES OF BRICK.
4. FRAME HEIGHT TO BE DETERMINED BY CONTRACTOR.

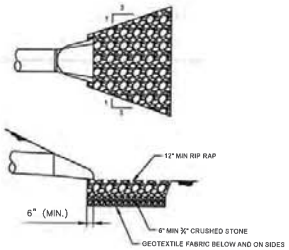
STANDARD CATCH BASIN FRAME AND GRATE
N.T.S.



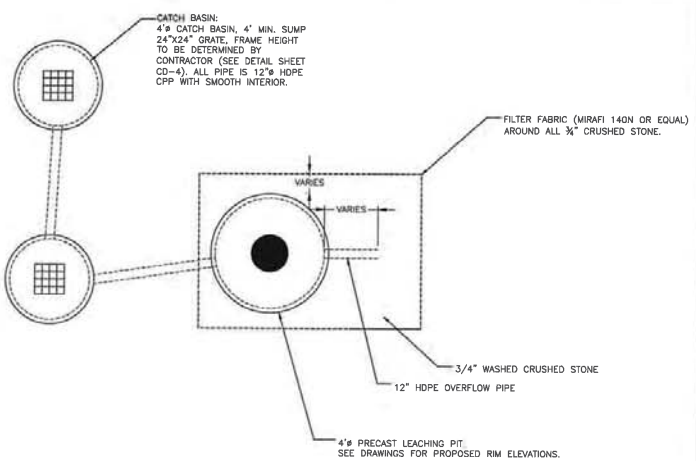
PRECAST CONCRETE DRAIN MANHOLE
N.T.S.



FLARED END DETAIL
N.T.S.

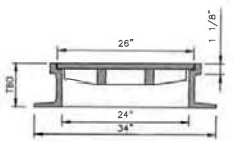


RIP RAP FOR OVERFLOW DETAIL
N.T.S.



4'Ø PRECAST CONCRETE LEACHING PIT (PLAN VIEW)
N.T.S.

LEACHING PIT NOTES:
1. LEACHING PITS SHALL HAVE NO BOTTOM
2. CONCRETE MINIMUM STRENGTH: 4,000 P.S.I. @ 28 DAYS
3. STEEL REINFORCEMENT: ASTM A-615, GRADE 60, 1" MIN. COVER
4. DESIGN LOADING: AASHTO HS20-44.
5. THE NUMBER OF LEACHING PITS, DEPTH OF ¾" CRUSHED STONE BELOW, AND WIDTH OF ¾" CRUSHED STONE AROUND VARY SEE DRAWINGS AND LEACHING PIT CHART FOR DETAILS.
6. DETAILS SHOWN ARE GENERAL. REFER TO DRAWINGS FOR DETAILED DESIGN.
7. DUE TO THE LOCATION OF THE EXISTING UTILITIES, GUTTER INLETS (GI) AND CATCH BASIN MANHOLES (CBMH) WILL BE USED IN SOME AREAS, IN LIEU OF CATCH BASINS (CB). SEE DRAWINGS FOR DETAILED DESIGN



NOTES:
1. FRAME SHALL BE ej FRAME 2114Z OR APPROVED EQUAL.
2. COVER SHALL BE ej COVER 2110A1 OR APPROVED EQUAL.
3. EACH COVER SHALL READ DRAIN IN 3" LETTERING.
4. FRAME AND COVER SHALL BE SET IN FULL BED OF MORTAR.
5. FRAME HEIGHT TO BE DETERMINED BY CONTRACTOR.

STANDARD DRAIN MANHOLE FRAME AND COVER
N.T.S.

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BOSTON, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
PAUL C. MILLETT
CIVIL
No. 37...
Paul C. Millett 8/25/16

NO.	DATE	DESCRIPTION

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Date	AUGUST 2016
Job No	200-1501
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Drawn by	XXX
Checked by	SCO
Approved by	SCO

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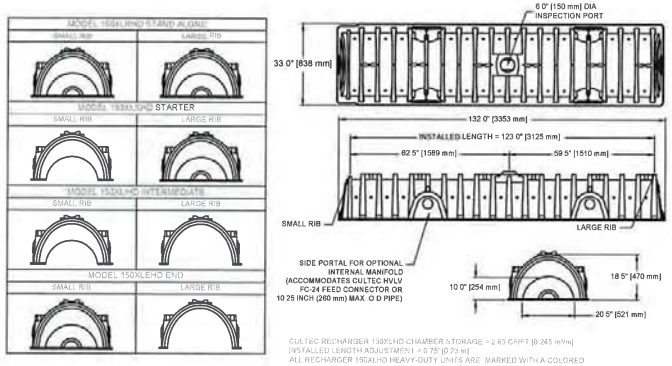
NAGOG POND WATER TREATMENT PLANT
TOWN OF CONCORD, MASSACHUSETTS
CIVIL DETAILS III

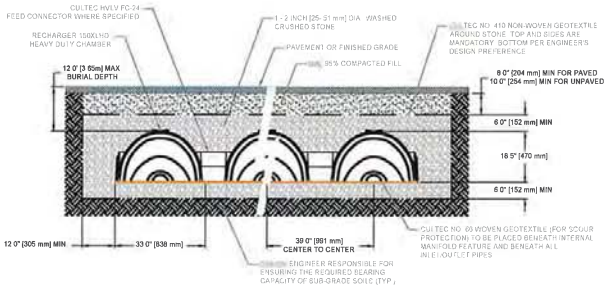
FOR PERMITTING
Sheet No.
CD-3

Drawing file: I:\Concord 200\200-1501 Nagog Pond WTP Conceptual Design\01 Conceptual Design\Drawings\CAD\Detail Sheets (Key Plan) Date: Nov 18,2015-5:21pm



CULTEC RECHARGER 150XLHD HEAVY DUTY THREE VIEW

N.T.S.



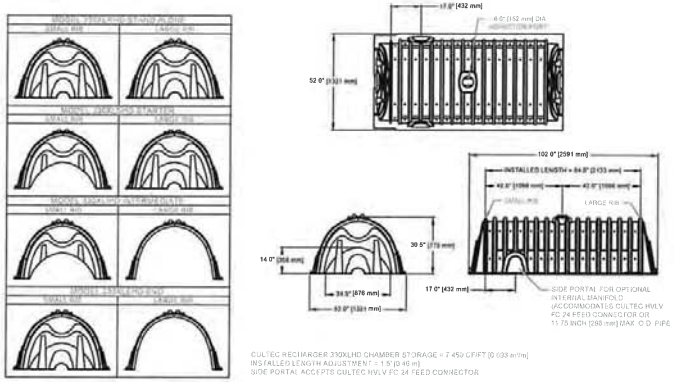
GENERAL NOTES

RECHARGER 150XLHD BY CULTEC, INC. OF BROOKFIELD, CT
STORAGE PROVIDED = 4.88 CF/FT (0.45 m³/m) PER DESIGN UNIT.
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES
MAXIMUM ALLOWED COVER OVER TOP OF UNIT SHALL BE 12' (3.65m)
THE CHAMBER WILL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS

ALL RECHARGER 150XLHD HEAVY DUTY UNITS ARE MARKED WITH A COLORED STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER
ALL RECHARGER 150XLHD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS

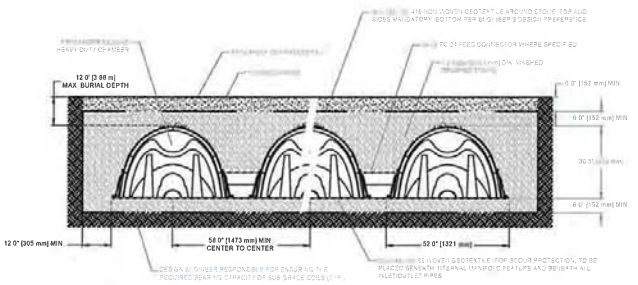
CULTEC RECHARGER 150XLHD HEAVY DUTY TYPICAL CROSS SECTION

N.T.S.



CULTEC RECHARGER 330XLHD HEAVY DUTY TYPICAL THREE VIEW

N.T.S.



GENERAL NOTES

RECHARGER 330XL HD BY CULTEC, INC. OF BROOKFIELD, CT
STORAGE PROVIDED = 11.32 CF/FT (1.05 m³/m) PER DESIGN UNIT
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES
THE CHAMBER WILL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS

ALL RECHARGER 330XL HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER
ALL RECHARGER 330XL HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS

CULTEC RECHARGER 330XLHD HEAVY DUTY TYPICAL CROSS SECTION

N.T.S.

Drawing file: I:\Concord 200\200-1501 Nagog Pond WTP Conceptual Design\01 Conceptual Design\Drawings\CAD\Detail Sheets.dwg Plot Date: Nov 18, 2015 - 5:22pm

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MARK	DATE	DESCRIPTION

Scale	AS SHOWN
Date	AUGUST 2016
Job No.	200-1501
Designed by	XXX
Drawn by	XXX
Checked by	SCO
Approved by	SCO

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

NAGOG POND WATER TREATMENT PLANT

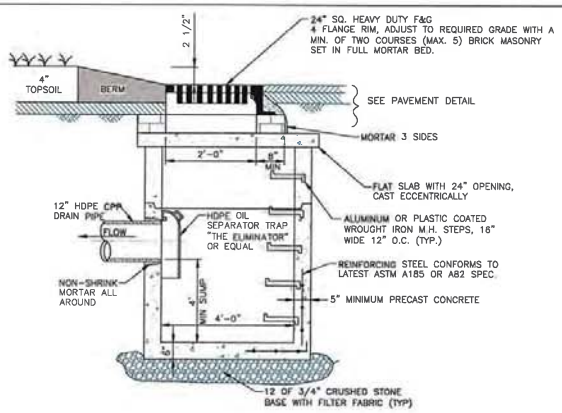
TOWN OF CONCORD, MASSACHUSETTS

CIVIL DETAILS IV

FOR PERMITTING

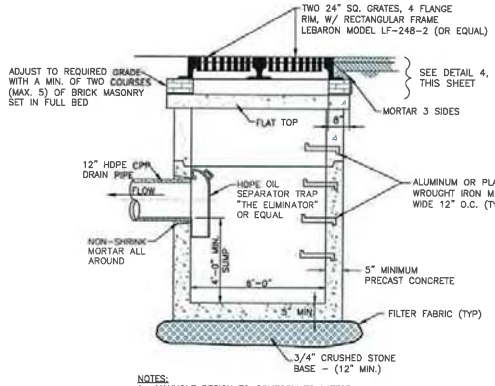
Sheet No.

CD-4



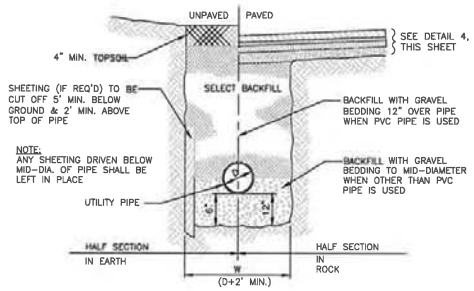
NOTES:
1. MANHOLE DESIGN TO CONFORM TO LATEST ASTM C478 SPEC. FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
2. USE SPECIAL 4" F&G WHERE REQUIRED.

PRECAST CONCRETE CATCH BASIN / CB MANHOLE
N.T.S.

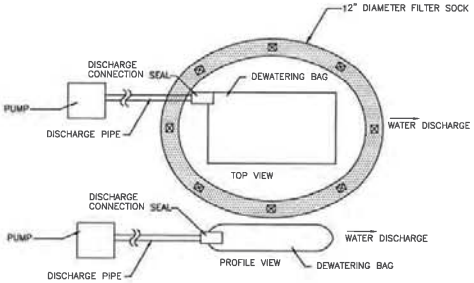


NOTES:
1. MANHOLE DESIGN TO CONFORM TO LATEST ASTM C478 SPEC. FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
2. USE SPECIAL 4" F&G WHERE REQUIRED.

PRECAST CONCRETE DOUBLE CATCH BASIN
N.T.S.

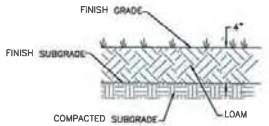


TYPICAL DRAIN UTILITY TRENCH
N.T.S.



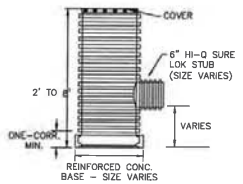
NOTES:
1. DEWATERING BAG SIZE AND QUANTITY SHALL BE AS NEEDED TO ADEQUATELY FILTER ALL PUMP EFFLUENT FROM DEWATERING ACTIVITIES. CONTRACTOR SHALL PROVIDE A REDUNDANT BAG ON SITE AT ALL TIMES.
2. EACH BAG SHALL HANDLE A 2", 3", OR 4" DISCHARGE HOSE.
3. DISCHARGE HOSES CAN BE PLACED ALONG ANY EDGE BY MAKING A SMALL INCISION INTO THE FABRIC, INSERTING THE HOSE, AND THEN CLAMPING THE FABRIC TO THE HOSE VIA WIRE, TIES, CLAMP, ROPE OR SIMILAR TO CREATE A GOOD SEAL.
4. CONTRACTOR SHALL AVOID DISCHARGING MULTIPLE PIPES INTO ONE BAG.

DEWATERING BAGS
N.T.S.

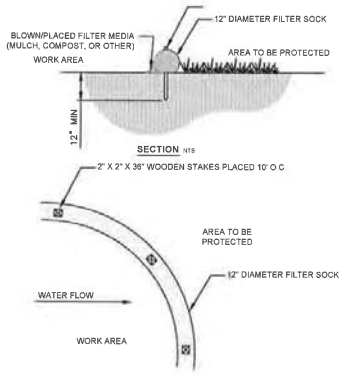


NOTE:
INSTALL CURLEX I EROSION CONTROL BLANKET AS MANUFACTURED BY AMERICAN EXCELSIOR COMPANY (OR APPROVED EQUAL) ON ALL LOAM AND SEEDED SLOPES 3:1 OR STEEPER.

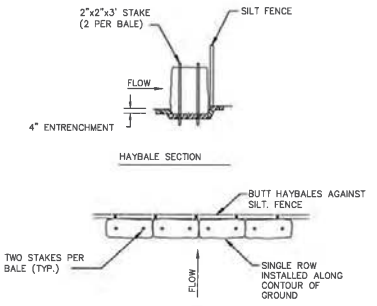
LOAM AND SEED (DISTURBED AREAS)
N.T.S.



ROOF DRAIN ACCESS CLEANOUT
N.T.S.



12" DIAMETER FILTER SOCK
N.T.S.



NOTES:
1. BALES SHALL BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES DRIVEN THROUGH THE BALES. THE FIRST WOODEN STAKE IN EACH BALE SHALL BE ANGLED TOWARD THE PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OF REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED AND REPLACED WHEN THEY BECOME FILLED WITH SEDIMENT AND BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. BALES SHALL BE REMOVED WHEN THE EMBANKMENTS STABILIZE.

HAY BALES AND SILT FENCE DETAIL
N.T.S.

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DiMarinisi & Wolfe
ARCHITECTS • URBAN DESIGNERS
BOSTON, MASSACHUSETTS

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8/29/16

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Designed by	XXX
Drawn by	XXX
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Approved by	SCO

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NAGOG POND WATER TREATMENT PLANT

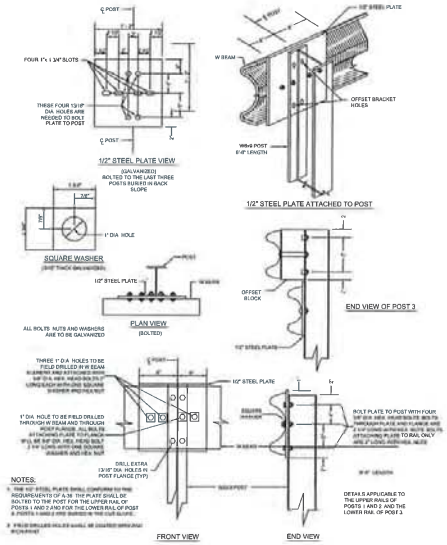
TOWN OF CONCORD, MASSACHUSETTS

CIVIL DETAILS V

FOR PERMITTING

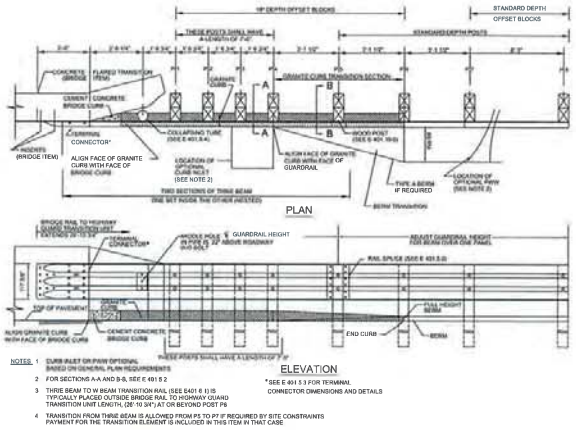
Sheet No.

CD-5



MASSDOT STANDARD GUARDRAIL DETAILS

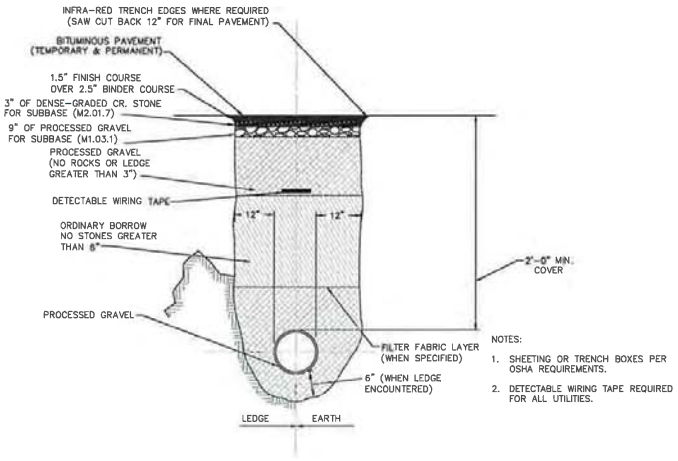
N.T.S.



NOTES:
1 CURB INLET OR PAN OPTIONAL BASED ON GENERAL PLAN REQUIREMENTS
2 FOR SECTIONS A-A AND B-B, SEE E 401.5.2
3 THRIE BEAM TO W BEAM TRANSITION RAIL (SEE E401.6.1) IS TYPICALLY PLACED OUTSIDE BRIDGE RAIL TO HIGHWAY GUARD TRANSITION UNIT LENGTH, (30' TO 34') AT OR BEYOND POST P6
4 TRANSITION FROM THRIE BEAM IS ALLOWED FROM P5 TO P7 IF REQUIRED BY SITE CONSTRAINTS PAYMENT FOR THE TRANSITION ELEMENT IS INCLUDED IN THIS ITEM IN THAT CASE

MASSDOT STANDARD GUARDRAIL PROFILE VIEW

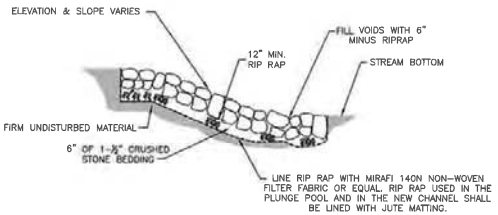
N.T.S.



NOTES:
1. SHEETING OR TRENCH BOXES PER OSHA REQUIREMENTS.
2. DETECTABLE WIRING TAPE REQUIRED FOR ALL UTILITIES.

TYPICAL GAS TRENCH DETAIL

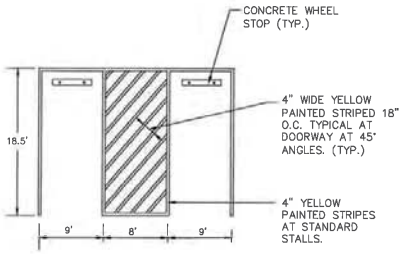
N.T.S.



NOTE: RIPRAP SHALL CONFORM TO MASS DOT STANDARD SPECIFICATION M2.02.3.

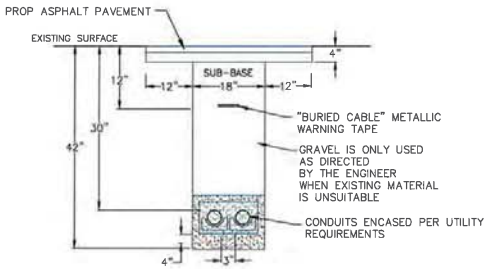
RIP RAP DETAIL

N.T.S.



PARKING SPOT SPACING

N.T.S.



ELECTRIC/CABLE CONDUIT DETAIL

N.T.S.

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NAGOG POND WATER TREATMENT PLANT

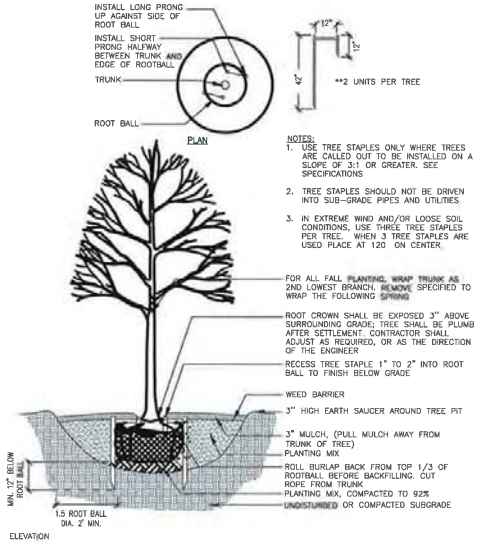
TOWN OF CONCORD, MASSACHUSETTS

CIVIL DETAILS VI

FOR PERMITTING

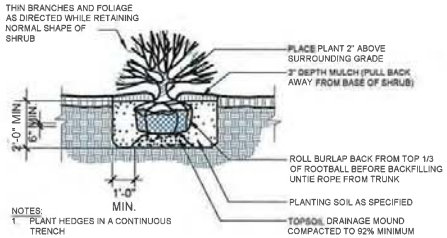
Sheet No.

CD-6



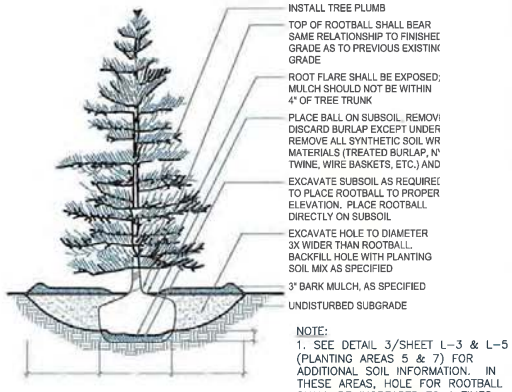
TREE STAPLE DETAIL FOR TREES PLANTED ON SLOPE

N.T.S.



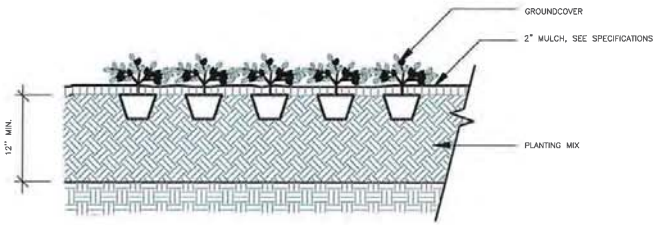
SHRUB PLANTING DETAIL

N.T.S.



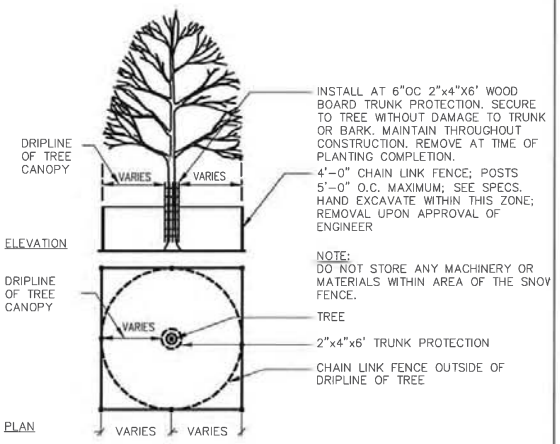
EVERGREEN TREE PLANTING DETAIL

N.T.S.



GROUND COVER/ PERENNIAL PLANTING

N.T.S.



TREE PROTECTION DETAIL

N.T.S.

NOTE:
1. SEE DETAIL 3/SHEET L-3 & L-5 (PLANTING AREAS 5 & 7) FOR ADDITIONAL SOIL INFORMATION. IN THESE AREAS, HOLE FOR ROOTBALL SHALL BE INCREASED TO 4 TIMES ROOTBALL WIDTH

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NAGOG POND WATER TREATMENT PLANT

TOWN OF CONCORD, MASSACHUSETTS

CIVIL DETAILS VII

FOR PERMITTING

Sheet No.

CD-7

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