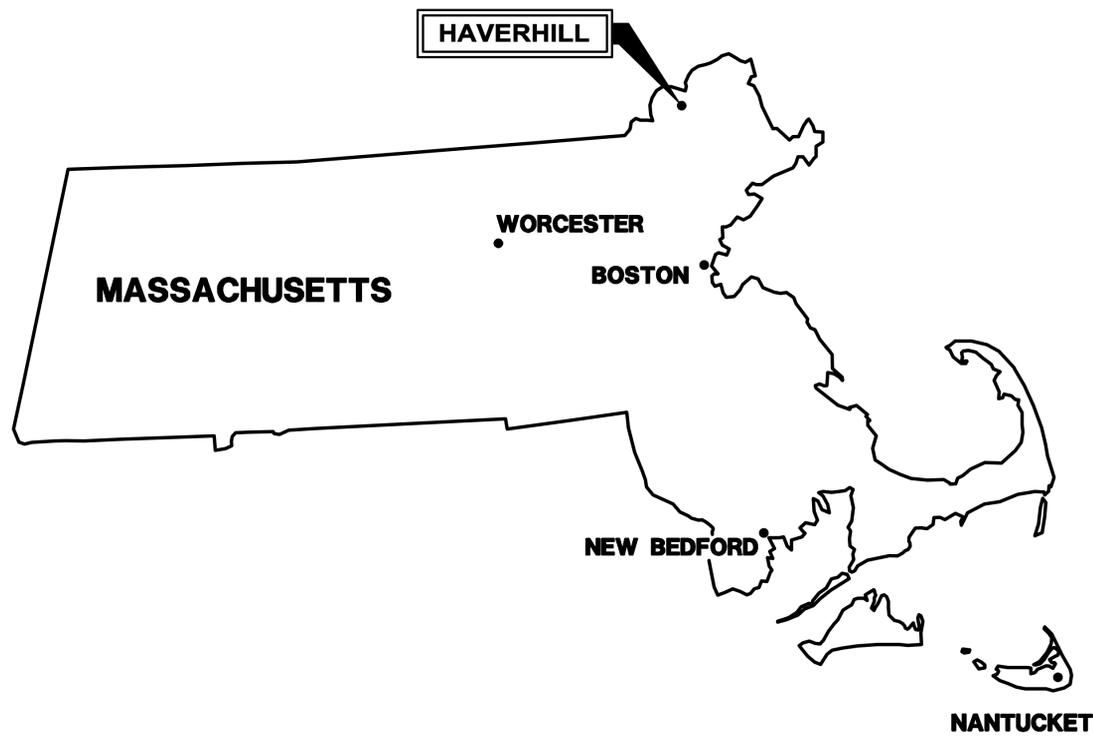


CITY OF HAVERHILL, MASSACHUSETTS

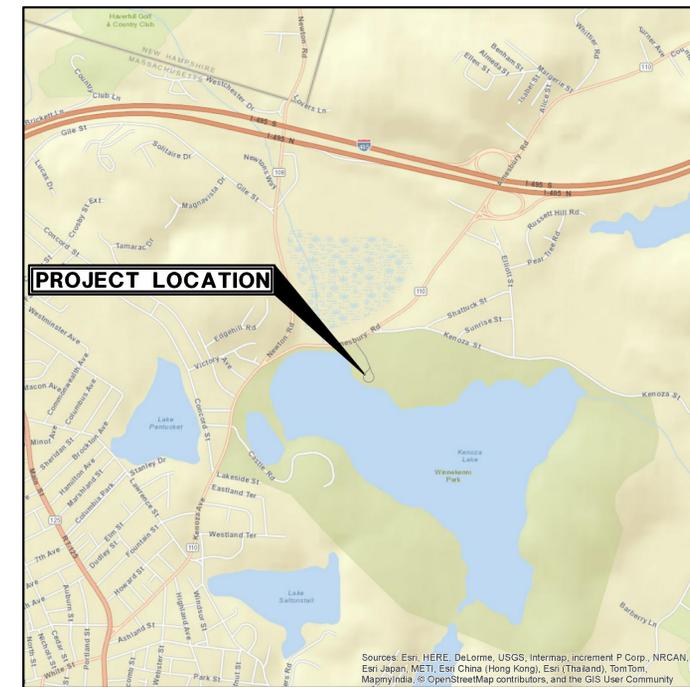
CONTRACT DRAWINGS FOR

WATER TREATMENT PLANT UPGRADES

OCTOBER 2016
DWSRF NO. 4074



- CIVIL:**
- C-1 GENERAL NOTES, LEGEND AND ABBREVIATIONS
 - C-2 OVERALL PLAN
 - C-3 EXISTING AND DEMOLITION PLAN I
 - C-4 EXISTING AND DEMOLITION PLAN II
 - C-5 SITE LAYOUT PLAN I
 - C-6 SITE LAYOUT PLAN II
 - C-7 PIPING PLAN I
 - C-8 PIPING PLAN II
 - C-9 GRADING PLAN I
 - C-10 GRADING PLAN II
 - C-11 EROSION CONTROL NOTES AND DETAILS
 - C-12 DETAILS I
 - C-13 DETAILS II
 - C-14 DETAILS III
 - C-15 DETAILS IV



LOCATION PLAN
NTS

WRIGHT-PIERCE 
Engineering a Better Environment

Offices Throughout New England
888.621.8156 | www.wright-pierce.com

FOR REVIEW OCTOBER 2016
FOR BIDDING -
WP PROJECT No. 13109A

GENERAL NOTES

- 1. THE CONTRACTOR IS REFERRED TO DIVISION 1 OF THE SPECIFICATIONS REGARDING COORDINATION WITH OTHERS, INCLUDING RESPONSIBILITIES AND RELATED COSTS.
2. THE LOCATIONS OF UNDERGROUND UTILITIES AND STRUCTURES, AS SHOWN ON THE DRAWINGS, ARE APPROXIMATE AND MAY NOT BE COMPLETE. NO GUARANTEE IS MADE THAT UTILITIES OR STRUCTURES WILL BE ENCOUNTERED WHERE SHOWN OR THAT ALL UNDERGROUND UTILITIES AND STRUCTURES ARE SHOWN. PRIVATE UNDERGROUND UTILITIES SUCH AS, BUT NOT LIMITED TO, SEWER LINES, WATER LINES AND BURIED ELECTRICAL SERVICE ENTRANCES ARE NOT SHOWN. THE CONTRACTOR SHALL ASCERTAIN THE LOCATION AND SIZE OF EXISTING UTILITIES IN THE FIELD WITH THE RESPECTIVE UTILITY COMPANY REPRESENTATIVE PRIOR TO COMMENCING WORK. ADDITIONAL TEST PITS, BEYOND THOSE SHOWN, MAY BE REQUIRED. IDENTIFIED CONFLICTS WITH EXISTING PIPING AND UTILITIES WILL BE REVIEWED WITH THE ENGINEER PRIOR TO COMMENCING INSTALLATION. THE HORIZONTAL ALIGNMENT OF NEW PIPING MAY BE ADJUSTED IN THE FIELD SUBJECT TO PRIOR REVIEW AND ACCEPTANCE OF THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY LAYOUT OF ALL PROPOSED WORK AS SHOWN ON THE DRAWINGS AND REPORT ANY LAYOUT DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
3. ALL EXISTING SEWER AND STORM DRAIN LINES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE. ANY EXISTING SEWERS, STORM DRAIN LINES OR CULVERTS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER, EXCEPT WHEN IN DIRECT CONFLICT WITH THE NEW PIPING OR WHEN NOT SHOWN OR INDICATED.
4. ALL PIPING, EQUIPMENT AND MATERIALS TO BE DEMOLISHED AND/OR REMOVED FROM SERVICE SHALL BE COORDINATED WITH THE OWNER AND ENGINEER BEFORE COMMENCING THAT WORK. EXISTING PIPES AND CONDUITS DESIGNATED AS "ABANDONED" MAY BE REMOVED IF THE CONTRACTOR SO CHOOSES. IF ABANDONED PIPE CONFLICTS WITH PROPOSED PIPING, THEN A PORTION OF THE ABANDONED PIPE SHALL BE REMOVED AND THE NEW ENDS OF ABANDONED PIPE CAPPED, OR PLUGGED WITH CONCRETE.
5. ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO ANY TRENCH EXCAVATION SHALL BE PROTECTED AND FIRMLY SUPPORTED BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. DAMAGE TO ANY SUCH STRUCTURES CAUSED BY OR RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED THROUGH THE OWNER.
6. CONTRACTOR SHALL INSTALL AND MAINTAIN TRAFFIC CONTROL SIGNS IN ACCORDANCE WITH MUTCD REQUIREMENTS.
7. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW ON THE SITE AT ALL TIMES. THE CONTRACTOR IS REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN TO THE OWNER PRIOR TO COMMENCING CONSTRUCTION.
8. THE OWNER WILL BE RESPONSIBLE FOR OBTAINING THE PERMITS LISTED IN THE SUPPLEMENTARY CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE APPLICABLE PROVISIONS OF EACH PERMIT AS THEY APPLY TO THE WORK PRIOR TO BIDDING AND ABIDE BY THOSE PROVISIONS DURING CONSTRUCTION. ALL PERMITS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
9. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RIGHTS-OF-WAY AND EASEMENTS. THE CONTRACTOR SHALL VERIFY THAT THE NECESSARY EASEMENTS HAVE BEEN SECURED BY THE OWNER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE APPLICABLE PROVISIONS OF EACH EASEMENT AS THEY APPLY TO THE WORK PRIOR TO BIDDING AND ABIDE BY THOSE PROVISIONS DURING CONSTRUCTION. COPIES OF ALL RIGHTS-OF-WAY AND EASEMENTS ARE AVAILABLE FOR REVIEW FROM THE HAVERHILL DEPARTMENT OF PUBLIC WORKS. THE CONTRACTOR'S WORK SHALL BE LIMITED TO WITHIN THE EASEMENTS AND RIGHT-OF-WAY AT ALL TIMES, AND SHALL NOT IMPACT PRIVATE PROPERTY.
10. ALL TEST PITS SHALL BE EXCAVATED PRIOR TO CONSTRUCTION LAYOUT AND RESULTS REPORTED TO THE ENGINEER FOR REVIEW FOR CONFORMANCE TO THE PLANS. TEST PITS ARE REQUIRED WHERE SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF ALL PROPOSED LINES AND STRUCTURES AS SHOWN ON THE DRAWINGS. THE LAYOUT PLAN SHALL BE REVIEWED BY THE ENGINEER PRIOR TO CONSTRUCTION.
11. CONTRACTOR SHALL MINIMIZE CLEARING OPERATIONS. CLEARING AND GRUBBING SHALL BE IN ACCORDANCE WITH DIVISION 2. CLEARING LIMITS SHALL BE AS INDICATED ON THE DRAWINGS, BUT AT ALL TIMES WITHIN EXISTING ROAD RIGHTS-OF-WAY AND PROPERTY LINES ON STATE OR CITY OWNED PROPERTY OR EASEMENTS. ALL GRUBBINGS AND EXCESS EXCAVATED MATERIAL ARE THE PROPERTY OF THE CONTRACTOR AND WILL BE DISPOSED OF AT A SITE PROVIDED BY THE CONTRACTOR IN COMPLIANCE WITH ALL STATE AND LOCAL LAWS.
12. THE CONTRACTOR SHALL PROVIDE PROPER EROSION CONTROL AND DRAINAGE MEASURES IN ALL AREAS OF WORK, AND CONFINE SOIL SEDIMENT TO WITHIN THE LIMITS OF EXCAVATION AND GRADING. PRIOR TO BEGINNING EXCAVATION WORK, EROSION CONTROL FENCE SHALL BE INSTALLED AT THE DOWN GRADIENT PERIMETER OF THE ACTUAL LIMITS OF GRUBBING AND/OR GRADING, AND AS SHOWN ON THE DRAWINGS. EROSION CONTROL MEASURES SHOWN ON THE DRAWINGS ARE A MINIMUM, CONTRACTOR SHALL TAKE ALL OTHER NECESSARY MEASURES. ALL DISTURBED EARTH SURFACES ARE TO BE STABILIZED IN THE SHORTEST PRACTICAL TIME AND TEMPORARY EROSION CONTROL DEVICES SHALL BE EMPLOYED UNTIL SUCH TIME AS ADEQUATE SOIL STABILIZATION HAS BEEN ACHIEVED. TEMPORARY STORAGE OF EXCAVATED MATERIAL IS TO BE IN A MANNER THAT WILL MINIMIZE EROSION. THE CONTRACTOR SHALL DISPOSE OF UNSUITABLE EXCAVATED MATERIAL AT A SITE PROVIDED BY HIM WHICH IS IN COMPLIANCE WITH ALL STATE AND LOCAL LAWS. ALL INSTALLED EROSION CONTROL FACILITIES SHALL BE REMOVED AT THE END OF THE PROJECT. REFER TO DIVISION 2.
13. COMPACTION TESTS SHALL BE PERFORMED IN ACCORDANCE WITH DIVISION 2. ANY SETTLEMENT OCCURRING WITHIN ONE YEAR OF SUBSTANTIAL COMPLETION OF THE PROJECT WILL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
14. OPEN TRENCHES IN THE ROADWAY MUST BE BACKFILLED AT THE END OF THE WORKDAY. OPEN TRENCHES OUTSIDE OF THE WAY MAY BE LEFT OPEN IF THE CONTRACTOR PROVIDES ADEQUATELY SAFE BARRICADING AND LIGHTS.
15. CONTRACTOR SHALL CONTROL DUST TO A TOLERABLE LIMIT AS OUTLINED IN DIVISION 1. CONTRACTOR SHALL NOT TRACK OR SPILL EARTH AND DEBRIS ON PUBLIC STREETS OUTSIDE THE PROJECT AREA. STREETS OPENED TO THE PUBLIC SHALL BE KEPT SWEEPED AND FREE OF DEBRIS.
16. WHEREVER PROPOSED STRUCTURES ARE LOCATED PARTLY WITHIN A PAVED AREA AND PARTLY IN A NON-PAVED AREA, A BITUMINOUS CONCRETE PAVED APRON 2 FEET WIDE SHALL BE SUPPLIED AROUND THE PROPOSED COVER. PAVEMENT SHALL SLOPE AWAY FROM THE COVER.
17. ALL MANHOLES ARE 4 FOOT DIAMETER, ECCENTRIC CONE TOP, UNLESS OTHERWISE NOTED. THE INVERTS SHOWN ARE AT THE INSIDE FACE OF THE MANHOLE.
18. ALL ROAD AND PARKING AREA SURFACES SHALL PITCH 1/4 INCH PER FOOT MINIMUM UNLESS OTHERWISE NOTED. ALL VEGETATED AREAS ABOVE MEAN HIGH WATER ELEVATION THAT ARE EXCAVATED, FILLED OR OTHERWISE DISTURBED BY THE CONTRACTOR AND ARE NOT TO BE PAVED OR FILLED WITH RIPRAP SHALL BE LOAMED, GRADED, LIMED, FERTILIZED, SEEDED AND MULCHED AT NO ADDITIONAL EXPENSE TO THE OWNER.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESETTling ALL EXISTING PROPERTY MONUMENTATION THAT IS DISTURBED BY HIS OPERATIONS AT NO EXPENSE TO THE OWNER. THIS WORK IS TO BE DONE BY A LAND SURVEYOR REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS.
20. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
21. SEE APPENDIX A OF THE SPECIFICATIONS FOR BORING LOGS. THESE ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
22. THE CONTRACTOR SHALL NOT HAVE ANY RIGHT OF PROPERTY IN ANY MATERIALS TAKEN FROM ANY EXCAVATION. SUITABLE EXCAVATED MATERIAL MAY BE INCORPORATED IN THE PROJECT, WITH EXCESS MATERIAL DISPOSED OF AT A LOCATION PROVIDED BY THE CONTRACTOR. THESE PROVISIONS SHALL IN NO WAY RELIEVE THE CONTRACTOR OF HIS OBLIGATIONS TO PROPERLY DISPOSE OF AND REPLACE ANY MATERIAL DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING. THE CONTRACTOR SHALL DISPOSE OF UNSUITABLE AND EXCESS MATERIAL IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CONTRACT DOCUMENTS.
23. CONTRACTOR TO NOTE THAT, IN GENERAL, ALL EXISTING CONDITION INFORMATION ON THE DRAWINGS ARE SHOWN WITH A LIGHTER LINE WEIGHT AND WITH A SLANTED TYPE TEXT.
24. ALL STORM DRAINAGE INLETS SHALL BE PROTECTED BY HAY BALE FILTERS TO PREVENT ENTRY OF SEDIMENT FROM RUNOFF WATERS DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL COLLECTED SEDIMENT, AND THAT WHICH COLLECTS IN THE STORM DRAIN SYSTEM.
25. ALL CATCH BASINS, MANHOLES, VALVE PITS, VALVE BOXES AND OTHER BURIED FACILITIES WITH SURFACE ACCESS SHALL BE ADJUSTED TO MATCH FINAL GRADES, UNLESS OTHERWISE INDICATED.

- 27. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS AND EXCESS EXCAVATED MATERIAL FROM WITHIN THE CONSTRUCTION LIMIT OF WORK, TO A SUITABLE SITE PROVIDED BY THE CONTRACTOR, IN COMPLIANCE WITH ALL STATE AND LOCAL REGULATIONS. ANY EXCESS SUITABLE MATERIAL MAY REMAIN ON SITE AT THE REQUEST OF THE OWNER.
28. CONTRACTOR SHALL REMOVE AND REPLACE, OR REPAIR, ALL CURBS, SIDEWALKS, PAVEMENT AND OTHER ITEMS DAMAGED BY HIS CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, TO THE SATISFACTION OF THE OWNER AND ENGINEER.
29. WHERE EXISTING PAVEMENT IS REMOVED AND REPLACED, MATCH EXISTING GRADES TO THE EXTENT POSSIBLE. COORDINATE FINE GRADING WITH THE ENGINEER.
30. SEVERING OF EXISTING UTILITIES FOR ABANDONMENT, OR REMOVAL OF A SEGMENT FROM SERVICE, SHALL BE PERFORMED IN SUCH A MANNER AS TO ALLOW THE REMAINING ACTIVE SEGMENT TO CONTINUE IN ITS INTENDED SERVICE. CAP ACTIVE SEGMENTS WITH APPROPRIATE FITTINGS, JOINT RESTRAINT, ETC. TO ENSURE THEIR INTEGRITY. PLUG ENDS OF ABANDONED PIPE SEGMENTS WITH CONCRETE UNLESS SPECIAL CIRCUMSTANCES DICTATE PLUGGING ABANDONED PIPES WITH BLIND FLANGES, RESTRAINED MECHANICAL JOINT PLUGS, ETC. AS APPROPRIATE.
31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND DISPOSING OF ALL DEMOLISHED PIPING, EQUIPMENT AND MATERIALS. DISPOSAL SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.
32. THE CONTRACTOR SHALL KEEP A RECORD OF DEMOLITION AS PART OF THE PROJECT RECORD DOCUMENTS IN ACCORDANCE WITH SPECIFICATION DIVISION 1.
33. THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO ENSURE THAT ALL PROCESS FLOWS ARE MAINTAINED DURING CONSTRUCTION. GRAVITY OR PUMPED BYPASSES AND OTHER MEANS OF MAINTAINING FLOW SHALL BE SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE ENGINEER. THE CONTRACTOR SHALL COORDINATE ANY TEMPORARY STOPPAGES OR BYPASSES WITH THE OWNER AND ENGINEER.
34. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE APPROPRIATE DISPOSAL OF FLOWS RESULTING FROM PRECIPITATION AND HIS DEWATERING OPERATIONS.
35. FLOWS FROM DEWATERING EFFORTS SHALL NOT BE DISCHARGED TO SANITARY SEWERS, OR TO KENOZA LAKE WITHOUT PRIOR TREATMENT.
36. THE CONTRACTOR IS TO TAKE SPECIAL CARE NOT TO DAMAGE TREES WITHIN THE CONSTRUCTION AREA UNLESS THEY ARE NOTED TO BE REMOVED.
37. TRENCH INSULATION SHALL BE USED WHERE DEPTH OF COVER IS LESS THAN 4 FEET. REFER TO CIVIL DETAILS.
38. REFER TO DIVISION 2 FOR PIPE AND STRUCTURE BEDDING AND BACKFILL REQUIREMENTS.
39. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE AS REQUIRED TO COMPLETE THE CONNECTION. CONTRACTOR SHALL VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. TEST PITS SHALL BE USED AS REQUIRED.
40. CONTRACTOR SHALL RE-SHAPE INVERTS AS REQUIRED WHEN CONNECTING INTO EXISTING MANHOLES. WHERE EXISTING PIPE INTO AN EXISTING MANHOLE IS ABANDONED, MANHOLE PIPE PENETRATION SHALL BE PLUGGED WITH BRICK AND MORTAR AND SHALL BE WATERTIGHT.
41. IF RELOCATION IS REQUIRED, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED, IF POSSIBLE. WHERE A WATER LINE CROSSES UNDER A WASTEWATER LINE, A FULL LENGTH OF PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE.
42. ALL BURIED CONNECTIONS TO NEW STRUCTURES WHICH CONNECT TO EXISTING PIPING, INCLUDING BUT NOT LIMITED TO MANHOLES SHALL HAVE SLEEVE TYPE FLEXIBLE CONNECTIONS (FERNCO OR EQUIVALENT) APPROXIMATELY 4 FEET FROM THE STRUCTURES. REFER TO DIVISION 2 AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION. COUPLINGS ARE NOT REQUIRED ON PROPOSED SEWER BETWEEN NEW MANHOLES OR STRUCTURES.
43. REFER TO DIVISION 1 FOR RESTRICTIONS ON MAXIMUM DURATION OF SHUTDOWNS AND NOTIFICATION REQUIREMENTS.
44. ALL LEAD AND ASBESTOS CONTAINING MATERIALS ARE LOCATED ON-SITE. WORK MUST BE CONDUCTED IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

SITE LAYOUT NOTES

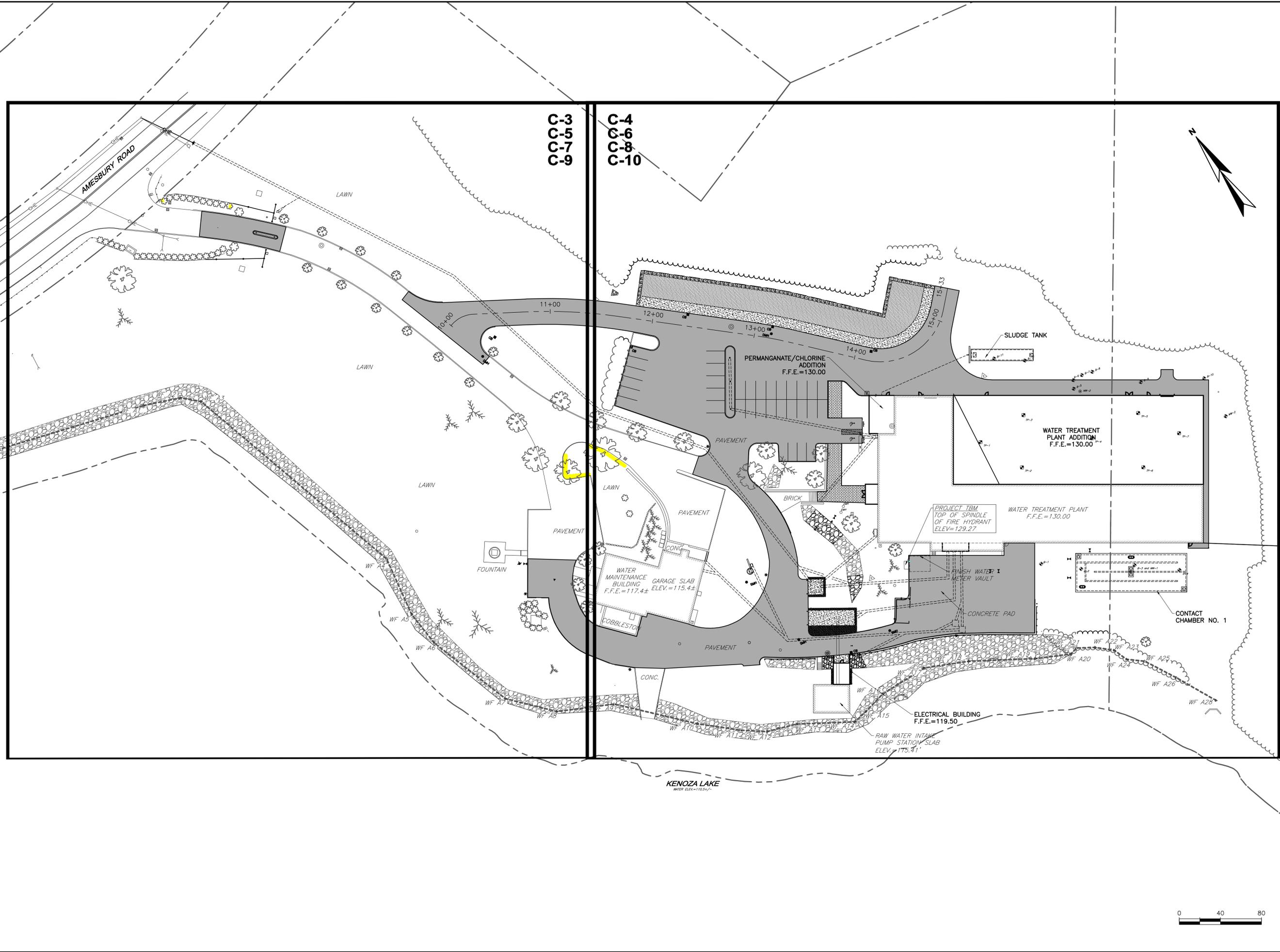
- 1. THE LOCATION AND LIMITS OF ALL ON SITE WORK AND STORAGE AREAS SHALL BE REVIEWED AND COORDINATED WITH, AND ACCEPTABLE TO, THE OWNER AND ENGINEER. THE CONTRACTOR SHALL LIMIT HIS ACTIVITIES TO THESE AREAS.
2. BOLLARD LOCATIONS ARE APPROXIMATE, COORDINATE LOCATIONS WITH THE ENGINEER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF ALL PROPOSED WORK AS SHOWN ON THE DRAWINGS. THE ENGINEER WILL PROVIDE ELECTRONIC DATA FOR HORIZONTAL CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THIS CONTROL THROUGHOUT THE PROJECT.
4. DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSIONS AND COORDINATES SHALL PREVAIL. TOPOGRAPHY BASED ON SURVEY COMPILED BY WOODD AND CURRAN AND BY WRIGHT-PIERCE DATED APRIL 15, 2015. ORIENTATION IS GRID NORTH AND COORDINATE SYSTEM IS NAD 83 MASSACHUSETTS STATE PLANE MAINLAND ZONE U.S. FOOT. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.

CIVIL ABBREVIATIONS

Table listing civil abbreviations such as DIA (Diameter), NO (Number), AC (Asbestos Cement), APP'D (Approved), BLDG (Building), BOT (Bottom), CB (Catch Basin), CEN (Center), CFS (Cubic Feet Per Second), CI (Cast Iron), CL (Centerline), CMP (Corrugated Metal Pipe), CO (Cleanout), CONC (Concrete), COR (Corner), CY (Cubic Yard), DEMO (Demolition), DMH (Drain Manhole), DI (Ductile Iron), DR (Drain), DWG (Drawing), EL (Elevation), FM (Force Main), FT (Feet), G (Gas), HYD (Hydrant), HDPE (High Density Polyethylene Pipe), IN (Inch), INV (Invert), LBS (Pounds), MAX (Maximum), MH (Manhole), MIN (Minimum), MW (Monitoring Well), N (North), NGVD (National Geodetic Vertical Datum), N/A (Not Available/Applicable), NTS (Not to Scale), OD (Outside Diameter), PC (Perforated Clay), PSF (Pounds Per Square Foot), PSI (Pounds Per Square Inch), PT (Point of Tangency), PVC (Polyvinyl Chloride), RCP (Reinforced Concrete Pipe), REQ'D (Required), S (Slope, Sewer), SD (Storm Drain), SF (Square Feet), SMH (Sanitary Sewer Manhole), STA (Station), T, XFMR (Transformer), TBM (Temporary Bench Mark), THK (Thickness), TOS (Top of Structure), TYP (Typical), UD (Underdrain), UG (Underground), UGE (Underground Electric), VC (Vitrified Clay), W/ (With), W (Potable Water).

Legend table with columns for EXISTING and PROPOSED symbols. Includes symbols for PROPERTY/ROW LINE, SETBACK LINE, EASEMENT LINE, CENTERLINE, EDGE OF PAVEMENT, CURBING, EDGE OF GRAVEL, EDGE OF CONCRETE, CONTOUR, BUILDING, STONEWALL, TREELINE, CHAIN LINK FENCE, STOCKADE FENCE, BARB WIRE FENCE, RETAINING WALL, GUARDRAIL, SEWER, SEWER FORCE MAIN, GAS, WATER, STORM DRAIN, UNDERDRAIN, CULVERT, UNDERGROUND ELECTRIC, OVERHEAD ELECTRIC, IRON PIPE/REBAR, DRILLHOLE, MONUMENT, SURVEY CONTROL POINT, SPOT ELEVATION, SEWER MANHOLE, DRAINAGE MANHOLE, CATCH BASIN, ELECTRIC MANHOLE, TELEPHONE MANHOLE, SHUTOFF VALVE, WATER SERVICE SHUTOFF, YARD HYDRANT, HYDRANT, UTILITY POLE, UTILITY POLE W/ GUY, UTILITY POLE W/ LIGHT, LIGHT POLE, BOLLARD, FLAGPOLE, CONFERIFEROUS TREE, DECIDUOUS TREE, SHRUB, EDGE OF WATER, STREAM, EDGE OF WETLANDS, FLOODPLAIN, WETLANDS, DRAINAGE FLOW, DRAINAGE SWALE, PAVEMENT MARKINGS, SIGN, MAILBOX, TEMPORARY BENCH MARK, TEST PIT, TEST BORING, TEST PROBE, MONITORING WELL, LIMIT OF WORK, SILT FENCE, RIPRAP, RAILROAD, MATCHLINE, ROCK OUTCROP.

Project information and title block including: SUBMISSIONS/REVISIONS table, CONCOM SUBMITTAL table, DESIGNED BY: JDP, EBAJ, CAL, COORD: EBAJ, RIB, CHECKED BY: DATE, APPROVED BY: DATE, PROJECT NO: 13109A, WRIGHT-PIERCE logo, Engineering a Better Environment, Offices Throughout New England | www.wright-pierce.com, 888.621.8156, MASSACHUSETTS WATER TREATMENT PLANT UPGRADES, GENERAL NOTES, LEGEND AND ABBREVIATIONS, DRAWING C-1.



C-3
C-5
C-7
C-9

C-4
C-6
C-8
C-10



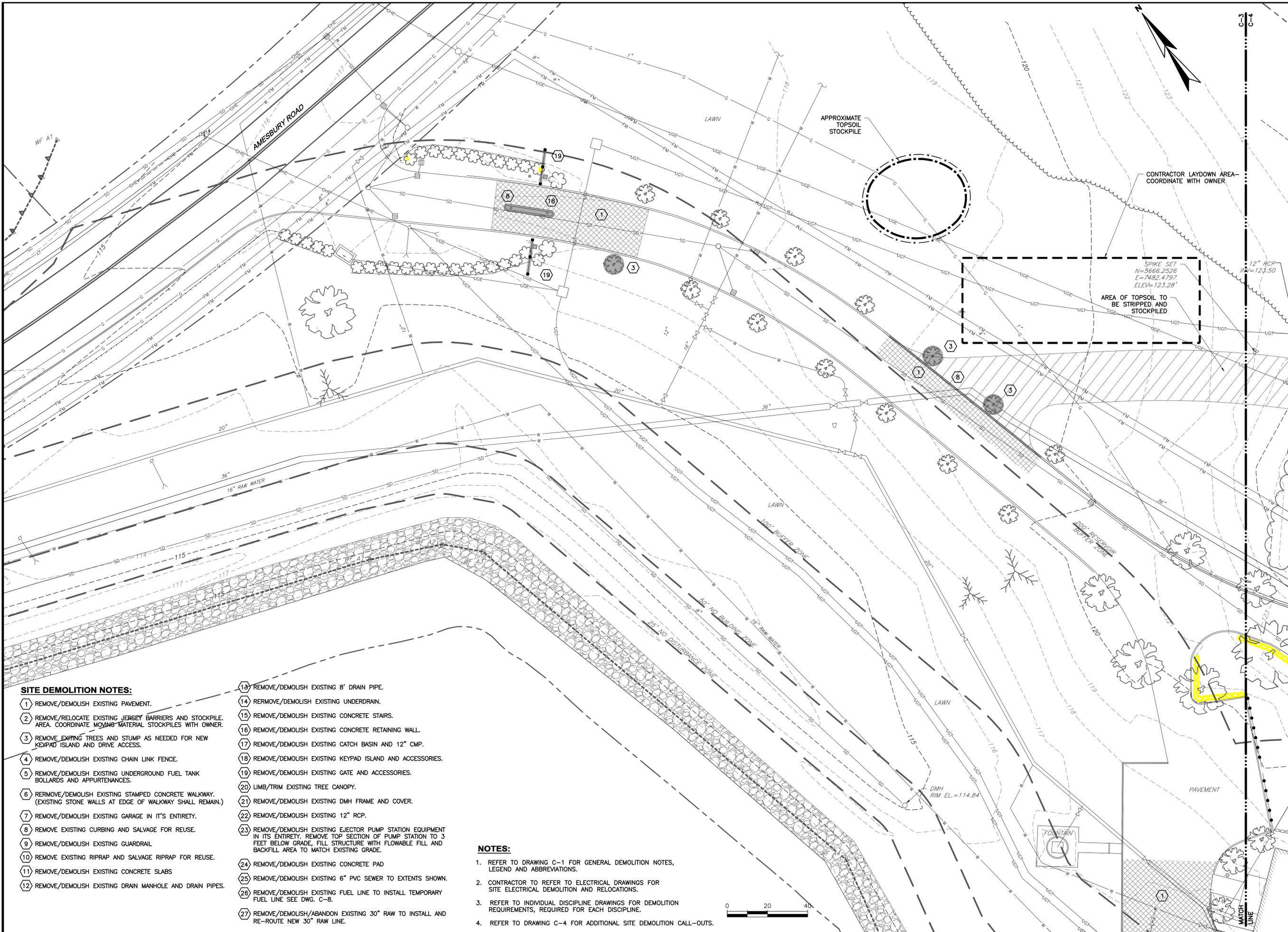
SUBMISSIONS/REVISIONS		APP'D	DATE
NO	CONCOM. SUBMITTAL	ACC	10-16
DESIGNED BY: JDP	CAD. COORD.: EAJ	CHECKED BY:	DATE:
CAD. COORD.: RJB	CHECKED BY:	APPROVED BY:	DATE:
PROJECT NO.: 13109A	DATE: 10/12/16		

WRIGHT-PIERCE
Engineering a Better Environment
Offices Throughout New England
888.621.8156 | www.wright-pierce.com

HAVERHILL, MASSACHUSETTS
WATER TREATMENT PLANT UPGRADES

DRAWING
C-2

OVERALL PLAN



SITE DEMOLITION NOTES:

- 1 REMOVE/DEMOLISH EXISTING PAVEMENT.
- 2 REMOVE/RELOCATE EXISTING JERSEY BARRIERS AND STOCKPILE. AREA. COORDINATE MOVING MATERIAL STOCKPILES WITH OWNER.
- 3 REMOVE EXISTING TREES AND STUMP AS NEEDED FOR NEW KEYPAD ISLAND AND DRIVE ACCESS.
- 4 REMOVE/DEMOLISH EXISTING CHAIN LINK FENCE.
- 5 REMOVE/DEMOLISH EXISTING UNDERGROUND FUEL TANK BOLLARDS AND APPURTENANCES.
- 6 REMOVE/DEMOLISH EXISTING STAMPED CONCRETE WALKWAY. (EXISTING STONE WALLS AT EDGE OF WALKWAY SHALL REMAIN.)
- 7 REMOVE/DEMOLISH EXISTING GARAGE IN ITS ENTIRETY.
- 8 REMOVE EXISTING CURBING AND SALVAGE FOR REUSE.
- 9 REMOVE/DEMOLISH EXISTING GUARDRAIL
- 10 REMOVE EXISTING RIPRAP AND SALVAGE RIPRAP FOR REUSE.
- 11 REMOVE/DEMOLISH EXISTING CONCRETE SLABS
- 12 REMOVE/DEMOLISH EXISTING DRAIN MANHOLE AND DRAIN PIPES.
- 13 REMOVE/DEMOLISH EXISTING 8" DRAIN PIPE.
- 14 REMOVE/DEMOLISH EXISTING UNDERDRAIN.
- 15 REMOVE/DEMOLISH EXISTING CONCRETE STAIRS.
- 16 REMOVE/DEMOLISH EXISTING CONCRETE RETAINING WALL.
- 17 REMOVE/DEMOLISH EXISTING CATCH BASIN AND 12" CMP.
- 18 REMOVE/DEMOLISH EXISTING KEYPAD ISLAND AND ACCESSORIES.
- 19 REMOVE/DEMOLISH EXISTING GATE AND ACCESSORIES.
- 20 LIMB/TRIM EXISTING TREE CANOPY.
- 21 REMOVE/DEMOLISH EXISTING DMH FRAME AND COVER.
- 22 REMOVE/DEMOLISH EXISTING 12" RCP.
- 23 REMOVE/DEMOLISH EXISTING EJECTOR PUMP STATION EQUIPMENT IN ITS ENTIRETY. REMOVE TOP SECTION OF PUMP STATION TO 3 FEET BELOW GRADE, FILL STRUCTURE WITH FLOWABLE FILL AND BACKFILL AREA TO MATCH EXISTING GRADE.
- 24 REMOVE/DEMOLISH EXISTING CONCRETE PAD
- 25 REMOVE/DEMOLISH EXISTING 6" PVC SEWER TO EXTENTS SHOWN.
- 26 REMOVE/DEMOLISH EXISTING FUEL LINE TO INSTALL TEMPORARY FUEL LINE SEE DWG. C-8.
- 27 REMOVE/DEMOLISH/ABANDON EXISTING 30" RAW TO INSTALL AND RE-ROUTE NEW 30" RAW LINE.

NOTES:

- 1. REFER TO DRAWING C-1 FOR GENERAL DEMOLITION NOTES, LEGEND AND ABBREVIATIONS.
- 2. CONTRACTOR TO REFER TO ELECTRICAL DRAWINGS FOR SITE ELECTRICAL DEMOLITION AND RELOCATIONS.
- 3. REFER TO INDIVIDUAL DISCIPLINE DRAWINGS FOR DEMOLITION REQUIREMENTS, REQUIRED FOR EACH DISCIPLINE.
- 4. REFER TO DRAWING C-4 FOR ADDITIONAL SITE DEMOLITION CALL-OUTS.

DESIGNED BY: JDP	DATE: 10-10-16
CAD. COORD: BAJ	ACC: 10-16
CAL. RIB	
CHECKED BY:	
DATE:	
APPROVED BY:	
DATE:	
PROJECT NO: 13109A	

CONCOM. SUBMITTAL

NO. 1

NO. 2

NO. 3

NO. 4

NO. 5

NO. 6

NO. 7

NO. 8

NO. 9

NO. 10

NO. 11

NO. 12

NO. 13

NO. 14

NO. 15

NO. 16

NO. 17

NO. 18

NO. 19

NO. 20

NO. 21

NO. 22

NO. 23

NO. 24

NO. 25

NO. 26

NO. 27

NO. 28

NO. 29

NO. 30

NO. 31

NO. 32

NO. 33

NO. 34

NO. 35

NO. 36

NO. 37

NO. 38

NO. 39

NO. 40

NO. 41

NO. 42

NO. 43

NO. 44

NO. 45

NO. 46

NO. 47

NO. 48

NO. 49

NO. 50

NO. 51

NO. 52

NO. 53

NO. 54

NO. 55

NO. 56

NO. 57

NO. 58

NO. 59

NO. 60

NO. 61

NO. 62

NO. 63

NO. 64

NO. 65

NO. 66

NO. 67

NO. 68

NO. 69

NO. 70

NO. 71

NO. 72

NO. 73

NO. 74

NO. 75

NO. 76

NO. 77

NO. 78

NO. 79

NO. 80

NO. 81

NO. 82

NO. 83

NO. 84

NO. 85

NO. 86

NO. 87

NO. 88

NO. 89

NO. 90

NO. 91

NO. 92

NO. 93

NO. 94

NO. 95

NO. 96

NO. 97

NO. 98

NO. 99

NO. 100

NO. 101

NO. 102

NO. 103

NO. 104

NO. 105

NO. 106

NO. 107

NO. 108

NO. 109

NO. 110

NO. 111

NO. 112

NO. 113

NO. 114

NO. 115

NO. 116

NO. 117

NO. 118

NO. 119

NO. 120

NO. 121

NO. 122

NO. 123

NO. 124

NO. 125

NO. 126

NO. 127

NO. 128

NO. 129

NO. 130

NO. 131

NO. 132

NO. 133

NO. 134

NO. 135

NO. 136

NO. 137

NO. 138

NO. 139

NO. 140

NO. 141

NO. 142

NO. 143

NO. 144

NO. 145

NO. 146

NO. 147

NO. 148

NO. 149

NO. 150

NO. 151

NO. 152

NO. 153

NO. 154

NO. 155

NO. 156

NO. 157

NO. 158

NO. 159

NO. 160

NO. 161

NO. 162

NO. 163

NO. 164

NO. 165

NO. 166

NO. 167

NO. 168

NO. 169

NO. 170

NO. 171

NO. 172

NO. 173

NO. 174

NO. 175

NO. 176

NO. 177

NO. 178

NO. 179

NO. 180

NO. 181

NO. 182

NO. 183

NO. 184

NO. 185

NO. 186

NO. 187

NO. 188

NO. 189

NO. 190

NO. 191

NO. 192

NO. 193

NO. 194

NO. 195

NO. 196

NO. 197

NO. 198

NO. 199

NO. 200

NO. 201

NO. 202

NO. 203

NO. 204

NO. 205

NO. 206

NO. 207

NO. 208

NO. 209

NO. 210

NO. 211

NO. 212

NO. 213

NO. 214

NO. 215

NO. 216

NO. 217

NO. 218

NO. 219

NO. 220

NO. 221

NO. 222

NO. 223

NO. 224

NO. 225

NO. 226

NO. 227

NO. 228

NO. 229

NO. 230

NO. 231

NO. 232

NO. 233

NO. 234

NO. 235

NO. 236

NO. 237

NO. 238

NO. 239

NO. 240

NO. 241

NO. 242

NO. 243

NO. 244

NO. 245

NO. 246

NO. 247

NO. 248

NO. 249

NO. 250

NO. 251

NO. 252

NO. 253

NO. 254

NO. 255

NO. 256

NO. 257

NO. 258

NO. 259

NO. 260

NO. 261

NO. 262

NO. 263

NO. 264

NO. 265

NO. 266

NO. 267

NO. 268

NO. 269

NO. 270

NO. 271

NO. 272

NO. 273

NO. 274

NO. 275

NO. 276

NO. 277

NO. 278

NO. 279

NO. 280

NO. 281

NO. 282

NO. 283

NO. 284

NO. 285

NO. 286

NO. 287

NO. 288

NO. 289

NO. 290

NO. 291

NO. 292

NO. 293

NO. 294

NO. 295

NO. 296

NO. 297

NO. 298

NO. 299

NO. 300

NO. 301

NO. 302

NO. 303

NO. 304

NO. 305

NO. 306

NO. 307

NO. 308

NO. 309

NO. 310

NO. 311

NO. 312

NO. 313

NO. 314

NO. 315

NO. 316

NO. 317

NO. 318

NO. 319

NO. 320

NO. 321

NO. 322

NO. 323

NO. 324

NO. 325

NO. 326

NO. 327

NO. 328

NO. 329

NO. 330

NO. 331

NO. 332

NO. 333

NO. 334

NO. 335

NO. 336

NO. 337

NO. 338

NO. 339

NO. 340

NO. 341

NO. 342

NO. 343

NO. 344

NO. 345

NO. 346

NO. 347

NO. 348

NO. 349

NO. 350

NO. 351

NO. 352

NO. 353

NO. 354

NO. 355

NO. 356

NO. 357

NO. 358

NO. 359

NO. 360

NO. 361

NO. 362

NO. 363

NO. 364

NO. 365

NO. 366

NO. 367

NO. 368

NO. 369

NO. 370

NO. 371

NO. 372

NO. 373

NO. 374

NO. 375

NO. 376

NO. 377

NO. 378

NO. 379

NO. 380

NO. 381

NO. 382

NO. 383

NO. 384

NO. 385

NO. 386

NO. 387

NO. 388

NO. 389

NO. 390

NO. 391

NO. 392

NO. 393

NO. 394

NO. 395

NO. 396

NO. 397

NO. 398

NO. 399

NO. 400

NO. 401

NO. 402

NO. 403

NO. 404

NO. 405

NO. 406

NO. 407

NO. 408

NO. 409

NO. 410

NO. 411

NO. 412

NO. 413

NO. 414

NO. 415

NO. 416

NO. 417

NO. 418

NO. 419

NO. 420

NO. 421

NO. 422

NO. 423

NO. 424

NO. 425

NO. 426

NO. 427

NO. 428

NO. 429

NO. 430

NO. 431

NO. 432

NO. 433

NO. 434

NO. 435

NO. 436

NO. 437

NO. 438

NO. 439

NO. 440

NO. 441

NO. 442

NO. 443

NO. 444

NO. 445

NO. 446

NO. 447

NO. 448

NO. 449

NO. 450

NO. 451

NO. 452

NO. 453

NO. 454

NO. 455

NO. 456

NO. 457

NO. 458

NO. 459

NO. 460

NO. 461

NO. 462

NO. 463

NO. 464

NO. 465

NO. 466

NO. 467

NO. 468

NO. 469

NO. 470

NO. 471

NO. 472

NO. 473

NO. 474

NO. 475

NO. 476

NO. 477

NO. 478

NO. 479

NO. 480

NO. 481

NO. 482

NO. 483

NO. 484

NO. 485

NO. 486

NO. 487

NO. 488

NO. 489

NO. 490

NO. 491

NO. 492

NO. 493

NO. 494

NO. 495

NO. 496

NO. 497

NO. 498

NO. 499

NO. 500

NO. 501

NO. 502

NO. 503

NO. 504

NO. 505

NO. 506

NO. 507

NO. 508

NO. 509

NO. 510

NO. 511

NO. 512

NO. 513

NO. 514

NO. 515

NO. 516

NO. 517

NO. 518

NO. 519

NO. 520

NO. 521

NO. 522

NO. 523

NO. 524

NO. 525

NO. 526

NO. 527

NO. 528

NO. 529

NO. 530

NO. 531

NO. 532

NO. 533

NO. 534

NO. 535

NO. 536

NO. 537

NO. 538

NO. 539

NO. 540

NO. 541

NO. 542

NO. 543

NO. 544

NO. 545

NO. 546

NO. 547

NO. 548

NO. 549

NO. 550

NO. 551

NO. 552

NO. 553

NO. 554

NO. 555

NO. 556

NO. 557

NO. 558

NO. 559

NO. 560

NO. 561

NO. 562

NO. 563

NO. 564

NO. 565

NO. 566

NO. 567

NO. 568

NO. 569

NO. 570

NO. 571

NO. 572

NO. 573

NO. 574

NO. 575

NO. 576

NO. 577

NO. 578

NO. 579

NO. 580

NO. 581

NO. 582

NO. 583

NO. 584

NO. 585

NO. 586

NO. 587

NO. 588

NO. 589

NO. 590

NO. 591

NO. 592

NO. 593

NO. 594

NO. 595

NO. 596

NO. 597

NO. 598

NO. 599

NO. 600

NO. 601

NO. 602

NO. 603

NO. 604

NO. 605

NO. 606

NO. 607

NO. 608

NO. 609

NO. 610

NO. 611

NO. 612

NO. 613

NO. 614

NO. 615

NO. 616

NO. 617

NO. 618

NO. 619

NO. 620

NO. 621

NO. 622

NO. 623

NO. 624

NO. 625

NO. 626

NO. 627

NO. 628

NO. 629

NO. 630

NO. 631

NO. 632

NO. 633

NO. 634

NO. 635

NO. 636

NO. 637

NO. 638

NO. 639

NO. 640

NO. 641

NO. 642

NO. 643

NO. 644

NO. 645

NO. 646

NO. 647

NO. 648

NO. 649

NO. 650

NO. 651

NO. 652

NO. 653

NO. 654

NO. 655

NO. 656

NO. 657

NO. 658

NO. 659

NO. 660

NO. 661

NO. 662

NO. 663

NO. 664

NO. 665

NO. 666

NO. 667

NO. 668

NO. 669

NO. 670

NO. 671

NO. 672

NO. 673

NO. 674

NO. 675

NO. 676

NO. 677

NO. 678

NO. 679

NO. 680

NO. 681

NO. 682

NO. 683

NO. 684

NO. 685

NO. 686

NO. 687

NO. 688

NO. 689

NO. 690

NO. 691

NO. 692

NO. 693

NO. 694

NO. 695

NO. 696

NO. 697

NO. 698

NO. 699

NO. 700

NO. 701

NO. 702

NO. 703

NO. 704

NO. 705

NO. 706

NO. 707

NO. 708

NO. 709

NO. 710

NO. 711

NO. 712

NO. 713

NO. 714

NO. 715

NO. 716

NO. 717

NO. 718

NO. 719

NO. 720

NO. 721

NO. 722

NO. 723

NO. 724

NO. 725

NO. 726

NO. 727

NO. 728

NO. 729

NO. 730

NO. 731

NO. 732

NO. 733

NO. 734

NO. 735

NO. 736

NO. 737

NO. 738

NO. 739

NO. 740

NO. 741

NO. 742

NO. 743

NO. 744

NO. 745

NO. 746

NO. 747

NO. 748

NO. 749

NO. 750

NO. 751

NO. 752

NO. 753

NO. 754

NO. 755

NO. 756

NO. 757

NO. 758

NO. 759

NO. 760

NO. 761

NO. 762

NO. 763

NO. 764

NO. 765

NO. 766

NO. 767

NO. 768

NO. 769

NO. 770

NO. 771

NO. 772

NO. 773

NO. 774

NO. 775

NO. 776

NO. 777

NO. 778

NO. 779

NO. 780

NO. 781

NO. 782

NO. 783

NO. 784

NO. 785

NO. 786

NO. 787

NO. 788

NO. 789

NO. 790

NO. 791

NO. 792

NO. 793

NO. 794

NO. 795

NO. 796

NO. 797

NO. 798

NO. 799

NO. 800

NO. 801

NO. 802

NO. 803

NO. 804

NO. 805

NO. 806

NO. 807

NO. 808

NO. 809

NO. 810

NO. 811

NO. 812

NO. 813

NO. 814

NO. 815

NO. 816

NO. 817

NO. 818

NO. 819

NO. 820

NO. 821

NO. 822

NO. 823

NO. 824

NO. 825

NO. 826

NO. 827

NO. 828

NO. 829

NO. 830

NO. 831

NO. 832

NO. 833

NO. 834

NO. 835

NO. 836

NO. 837

NO. 838

NO. 839

NO. 840

NO. 841

NO. 842

NO. 843

NO. 844

NO. 845

NO. 846

NO. 847

NO. 848

NO. 849

NO. 850

NO. 851

NO. 852

NO. 853

NO. 854

NO. 855

NO. 856

NO. 857

NO. 858

NO. 859

NO. 860

NO. 861

NO. 862

NO. 863

NO. 864

NO. 865

NO. 866

NO. 867

NO. 868

NO. 869

NO. 870

NO. 871

NO. 872

NO. 873

NO. 874

NO. 875

NO. 876

NO. 877

NO. 878

NO. 879

NO. 880

NO. 881

NO. 882

NO. 883

NO. 884

NO. 885

NO. 886

NO. 887

NO. 888

NO. 889

NO. 890

NO. 891

NO. 892

NO. 893

NO. 894

NO. 895

NO. 896

NO. 897

NO. 898

NO. 899

NO. 900

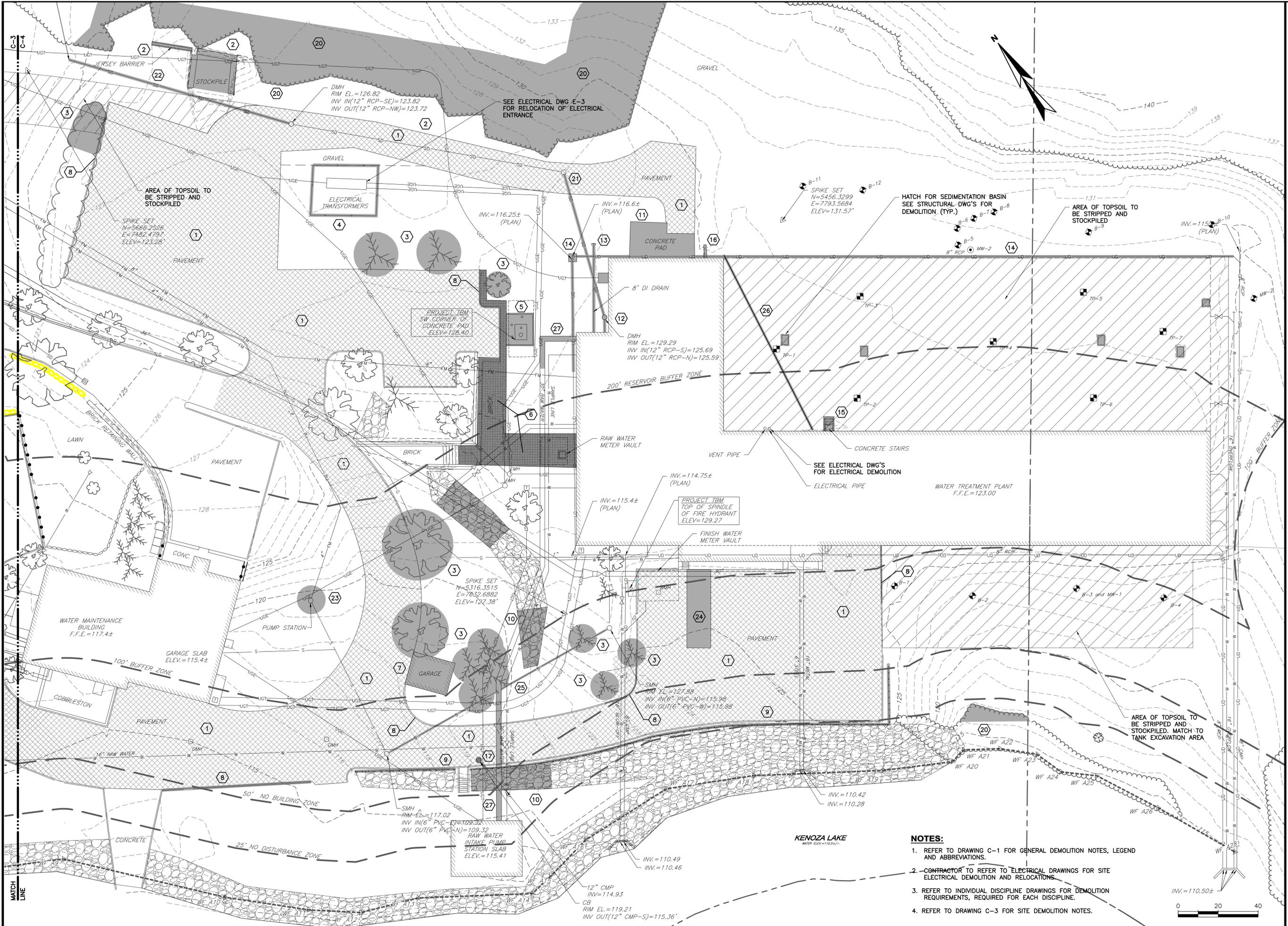
NO. 901

NO. 902

NO. 903

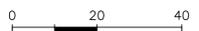
NO. 904

NO.



NOTES:

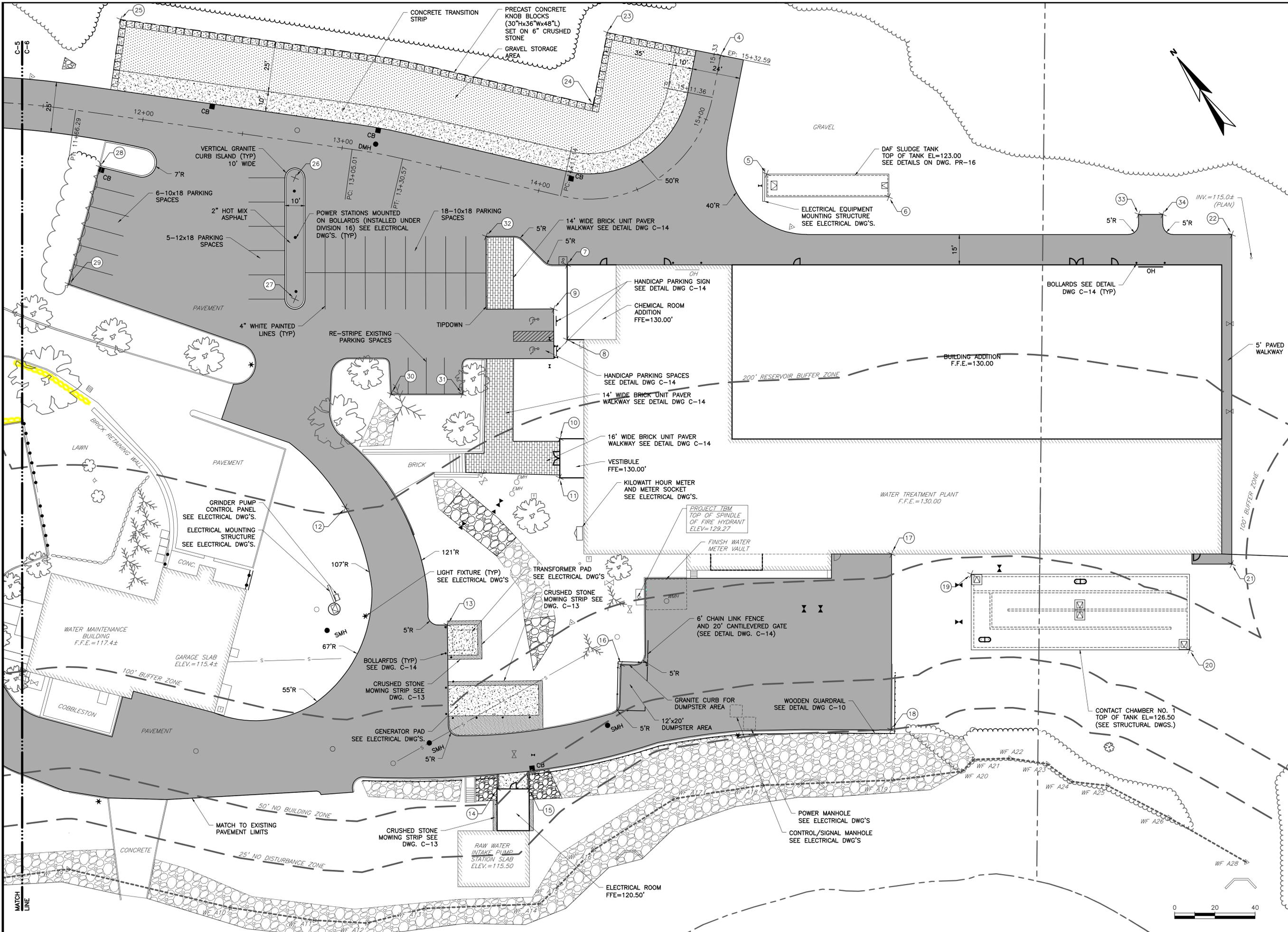
1. REFER TO DRAWING C-1 FOR GENERAL DEMOLITION NOTES, LEGEND AND ABBREVIATIONS.
2. CONTRACTOR TO REFER TO ELECTRICAL DRAWINGS FOR SITE ELECTRICAL DEMOLITION AND RELOCATIONS.
3. REFER TO INDIVIDUAL DISCIPLINE DRAWINGS FOR DEMOLITION REQUIREMENTS, REQUIRED FOR EACH DISCIPLINE.
4. REFER TO DRAWING C-3 FOR SITE DEMOLITION NOTES.



DATE	ACC 10-16
APP'D	
SUBMISSIONS/REVISIONS	
NO	
CONCOM	SUBMITAL
DESIGNED BY: JDP	BAJ
CAD COORD: RIB	RIB
CHECKED BY:	
DATE:	
APPROVED BY:	
DATE:	
PROJECT NO:	13109A

WRIGHT-PIERCE
 Engineering a Better Environment
 Offices Throughout New England | www.wright-pierce.com
 888.621.8156

HAVERHILL, MASSACHUSETTS
 WATER TREATMENT PLANT UPGRADES
 EXISTING AND DEMOLITION PLAN II
 DRAWING
 C-4



DATE	ACC 10-16
SUBMISSIONS/REVISIONS	
NO	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	

DESIGNED BY: JDP
 CAD COORD: EAJ
 CAD: RIB
 CHECKED BY: DATE:
 APPROVED BY: DATE:
 PROJECT NO: 13109A

10/12/16

WRIGHT-PIERCE
 Engineering a Better Environment
 Offices Throughout New England
 888.621.8156 | www.wright-pierce.com

HAVERHILL, MASSACHUSETTS
 WATER TREATMENT PLANT UPGRADES

SITE LAYOUT PLAN II

DRAWING
 C-6

EROSION AND SEDIMENTATION CONTROL NOTES

THIS PLAN HAS BEEN DEVELOPED AS A STRATEGY TO CONTROL SOIL EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION.

THE PROPOSED LOCATIONS OF SILTATION AND EROSION CONTROL STRUCTURES REQUIRED FOR THE SEWER REPLACEMENT ARE SHOWN ON THE GRADING PLANS. PROVIDE SILT FENCE, STONE CHECK DAMS AND OTHER EROSION CONTROL MEASURES AS REQUIRED TO ADEQUATELY PREVENT SEDIMENT TRANSPORT AS NOTED IN THE BMP.

- THIS PLAN IS BASED ON THE STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION IN URBAN AND SUBURBAN AREAS AS CONTAINED IN THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS", FRANKLIN, HAMPTON, HAMPSHIRE CONSERVATION DISTRICTS, DATED MARCH, 1997.
- THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE MAINTAINED IN AN UNTREATED OR UNVEGETATED CONDITION FOR THE MINIMUM TIME REQUIRED. IN GENERAL, AREAS TO BE VEGETATED SHALL BE PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL.
- SEDIMENT BARRIERS (SILT FENCE, STONE CHECK DAMS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF UPGRADIENT DRAINAGE AREAS.
- INSTALL SILT FENCE AT TOE OF SLOPES TO FILTER SILT FROM RUNOFF. SEE SILT FENCE DETAIL FOR PROPER INSTALLATION.
- ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED.
- NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2 TO 1) UNLESS STABILIZED WITH PERMANENT EROSION CONTROL MEASURES.
- IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT TO BE COMPLETED 30 DAYS PRIOR TO THE ANTICIPATED DATE OF THE FIRST KILLING FROST, USE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY PERMANENT SEEDING, UNTIL UPGRADIENT AREAS ARE STABILIZED.
- WHEN FEASIBLE, TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINISH GRADED SHALL BE COMPLETED 30 DAYS PRIOR TO THE FIRST KILLING FROST.
- DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO THE SITE AND REGRADED ONTO OPEN AREAS. POST SEEDING SEDIMENT, IF ANY, WILL BE DISPOSED OF IN AN ACCEPTABLE MANNER.
- REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND REVEGETATED AS FOLLOWS:
 - A MINIMUM OF FOUR (4) INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
 - APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT DEEMED FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 POUNDS PER ACRE OR 18.4 POUNDS PER 1,000 SQUARE FEET USING 10-20-20 (N-P205-K20) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER 1,000 SQ. FT.).
 - FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDDED WITH A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDDED WITH A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYE GRASS. SEEDING RATE IS 3.0 LBS PER 1000 SQ. FT. LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED.
 - HAY MULCH AT THE RATE OF 70-90 LBS PER 1000 SQUARE FEET OR A HYDRO-APPLICATION OF CELLULOSE FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER WILL BE USED ON HAY MULCH FOR WIND CONTROL.
- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE WORK AREA IS STABILIZED.
- IN GENERAL, AREAS WITHIN 100 FEET OF DELINEATED WETLANDS OR STREAMS SHALL HAVE A MAXIMUM PERIOD OF EXPOSURE OF NOT MORE THAN 15 DAYS.
- FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IN ALL AREAS WITHIN 100 FEET OF DELINEATED WETLANDS OR STREAMS.

EROSION CONTROL DURING WINTER CONSTRUCTION

- WINTER CONSTRUCTION PERIOD DEFINED: NOVEMBER 1 THROUGH APRIL 15
- WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
- EXPOSED AREA SHOULD BE LIMITED TO THAT THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY PRECIPITATION EVENT.
- AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SUCH THAT SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.
- BETWEEN THE DATES OF OCTOBER 15 AND APRIL 15, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE-FREEZING TEMPERATURES, THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDDED AT A RATE 200 - 300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT EXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.
- BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 15TH ALL MULCH SHALL BE EITHER WOOD CELLULOSE FIBER OR BE ANCHORED WITH MULCH NETTING OR CHEMICAL TACK.
 - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3%, FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
 - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1ST, THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
- AFTER OCTOBER 15TH THE CONTRACTOR SHALL APPLY DORMANT SEEDING OR MULCH AND ANCHORING ON ALL BARE EARTH AT THE END OF EACH WORKING DAY.
- DURING WINTER CONSTRUCTION PERIODS ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

MULCH ANCHORING

ANCHOR MULCH WITH: MULCH NETTING (AS PER MANUFACTURER); ASPHALT EMULSION (0.05 GALLONS PER SQ. YD.); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); OR BE WOOD CELLULOSE FIBER (2000 LBS/ACRE). WETTING FOR SMALL AREAS AND ROAD DITCHES MAY BE PERMITTED.

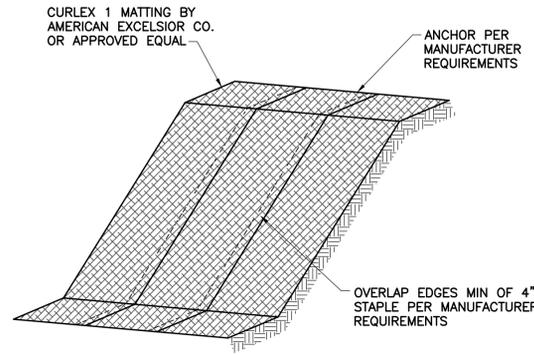
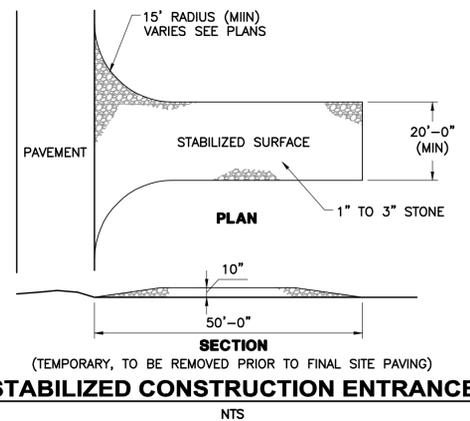
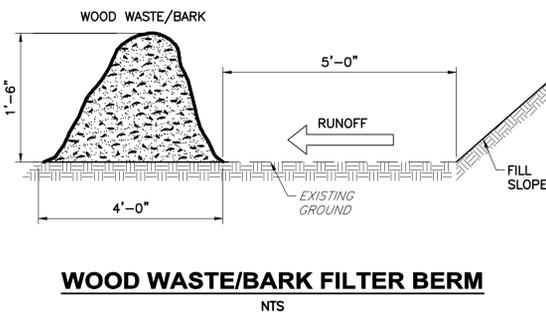
ADDITIONAL TEMPORARY SEED MIXTURE (OR PERIODS LESS THAN 12 MONTHS)

SEED	RATE
OATS	80 LBS/ACRE
ANNUAL RYE GRASS	40 LBS/ACRE
WINTER RYE	120 LBS/ACRE
MULCH W/ DORMANT SEED	80 LBS/ACRE*
FOXTAIL MILLET	30 LBS/ACRE

MULCH AND MULCH ANCHORING

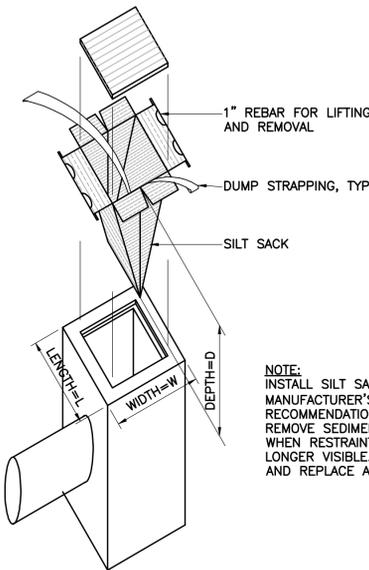
LOCATION	MULCH	RATE (1000 S.F.)
PROTECTED AREA	STRAW OR HAY *	100 POUNDS
WINDY AREAS	STRAW OR HAY (ANCHORED) *	100 POUNDS
MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES (GREATER THAN 3:1)	JUTE MESH, EXCELSIOR MAT OR EQUIV.	AS REQUIRED AS REQUIRED

* A HYDRO-APPLICATION OF CELLULOSE FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SHALL BE USED ON HAY MULCH FOR WIND CONTROL.

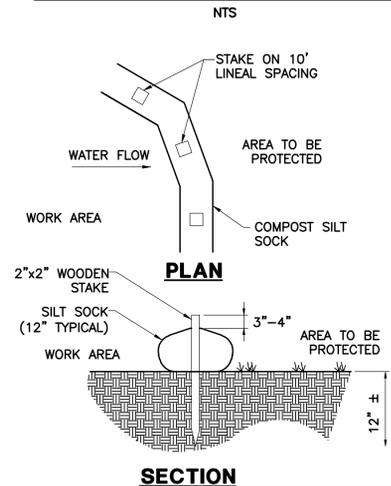


EROSION CONTROL MATTING - SLOPES

INSTALL ON SLOPES 3:1 OR GREATER



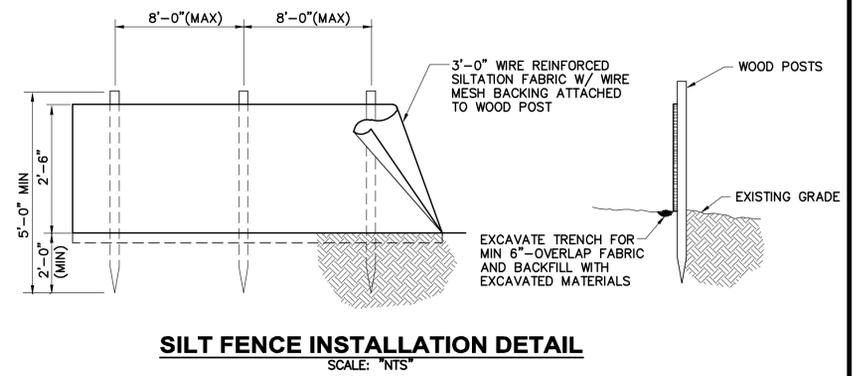
SILT SACK CATCH BASIN INLET



- NOTES:**
- ALL MATERIAL TO MEET SPECIFICATIONS
 - SILT SOCK COMPOST/SOIL/ROCK/SEED FILL TO MEET APPLICATION REQUIREMENTS
 - SILT SOCK DEPICTED IS FOR MINIMUM SLOPES. GREATER SLOPES MAY REQUIRE LARGER SOCKS PER THE ENGINEER
 - COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

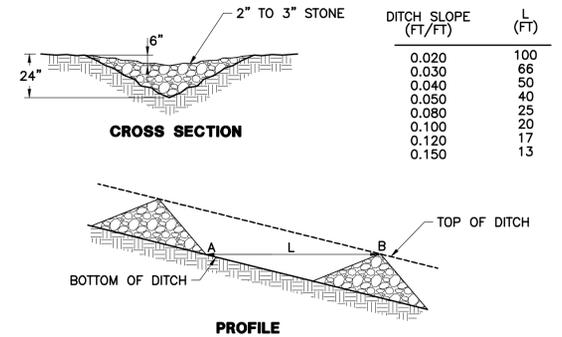
COMPOST SILT SOCK

NTS



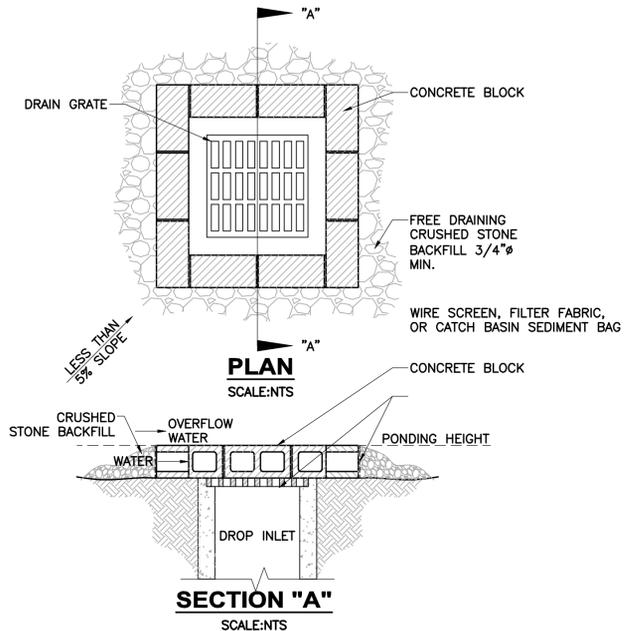
SILT FENCE INSTALLATION DETAIL

SCALE: NTS



STONE CHECK DAM

NTS



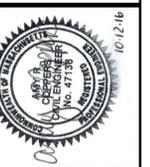
- NOTES:**
- DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS(LESS THAN 3%).
 - EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
 - THE TOP OF THE STRUCTURE, PONDING HEIGHT, MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.
 - SILT BAGS MAY ALSO BE USED FOR CB GRATE INLET PROTECTION.

DROP INLET SEDIMENT BARRIER DETAIL

NTS

NO.	DATE	DESCRIPTION
1	10-16-16	ACC

DESIGNED BY: JDP	APP'D:
CAD. COORD: EAU	DATE:
CHECKED BY: RJB	PROJECT NO: 13109A
DATE: 10/12/16	



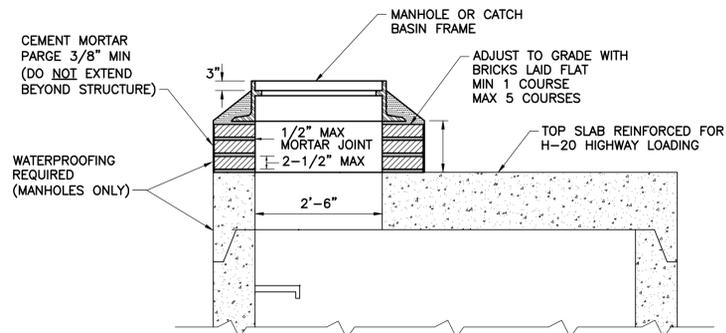
WRIGHT-PIERCE
Engineering a Better Environment
Offices Throughout New England | www.wright-pierce.com
888.621.8156

HAVERHILL, MASSACHUSETTS
WATER TREATMENT PLANT UPGRADES

DRAWING

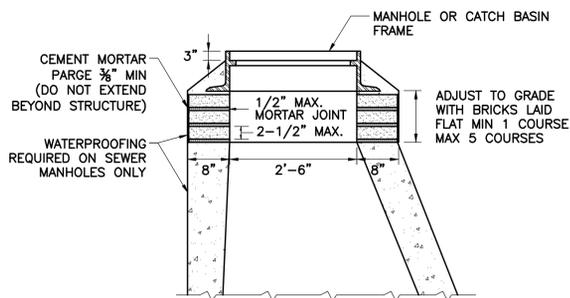
C-11

EROSION CONTROL NOTES AND DETAILS



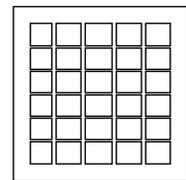
FLAT SLAB TOP MANHOLE FRAME INSTALLATION

NTS

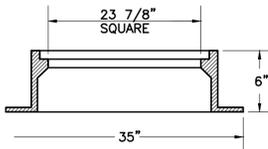


MANHOLE AND CATCH BASIN FRAME INSTALLATION

NTS



GRATE

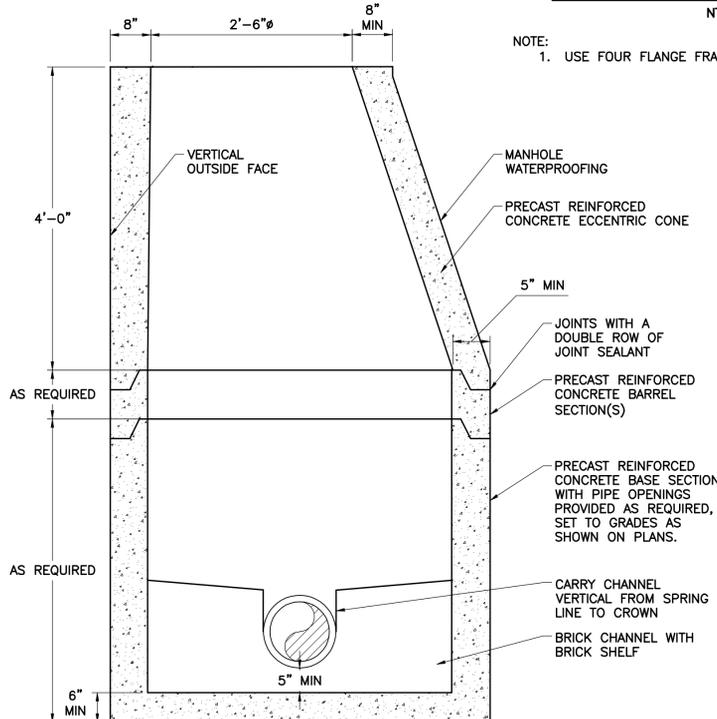


SECTION 4 FLANGE FRAME

GRATE AND FRAME DETAIL

NTS

NOTE: 1. USE FOUR FLANGE FRAME WITHOUT CUT CURB INLET.

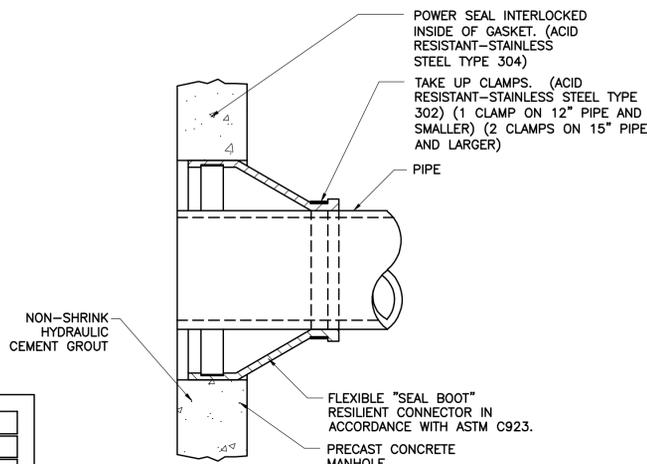


NOTES:

1. MANHOLE CHANNELS REQUIRING A CHANGE IN DIRECTION ARE TO BE BUILT ON A SMOOTH CURVE OF THE LONGEST POSSIBLE RADIUS. IF SIDE PIPES ENTER CHANNEL, SHAPE TO RECEIVE ADDED SIDE FLOW.
2. USE A FLAT SLAB TOP MANHOLE WHEN THE HEIGHT DIFFERENCE BETWEEN THE HIGHEST INVERT AND RIM IS LESS THAN 6'-0" AND WHEN MANHOLE DIAMETER IS GREATER THAN 4'-0".

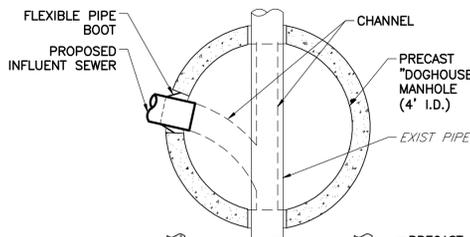
TYPICAL 4-FT MANHOLE

NTS



MANHOLE SEAL

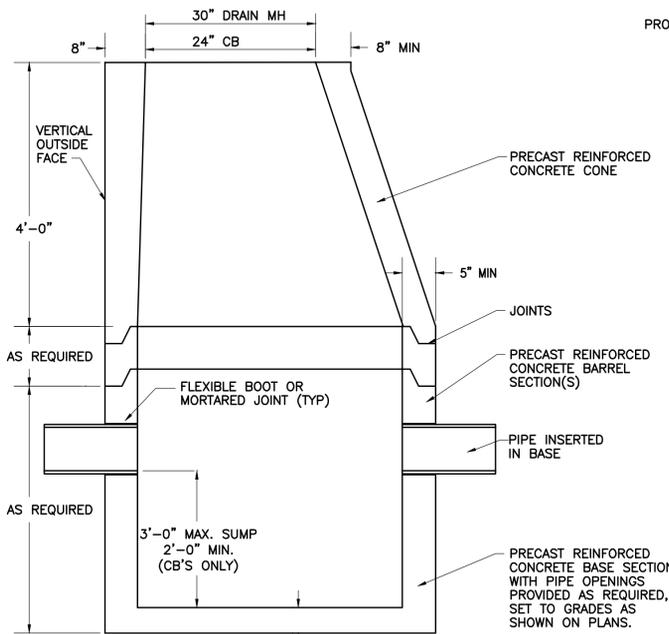
SCALE: "NTS"



DOGHOUSE TYPE MANHOLE

NTS

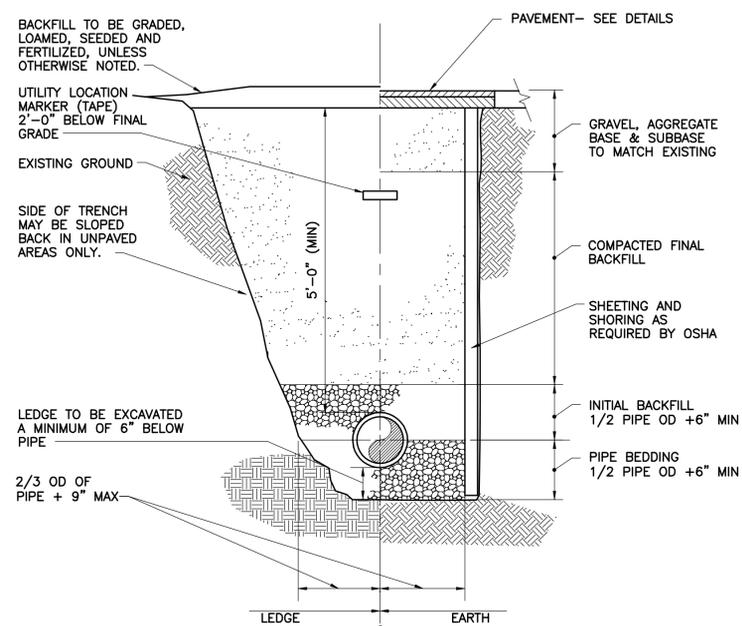
NOTE: CUT TO REMOVE TOP HALF OF EXISTING PIPE FOLLOWING INSTALLATION OF \"DOGHOUSE\" AND PRIOR TO CONSTRUCTION OF BRICK INVERT. NOTCH SIDE OF PIPE TO RECEIVE SIDE FLOWS.



NOTE: USE FLAT SLAB TOP CATCH BASIN WHERE REQUIRED TO MATCH GRADE.

4 FT CATCH BASIN MANHOLE

NTS

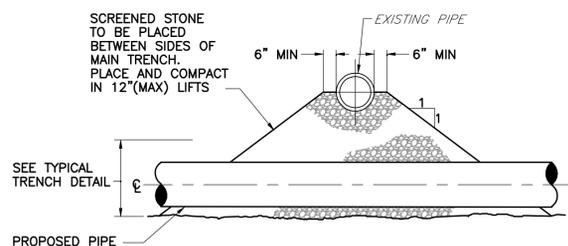


NOTES:

1. ALL EXCAVATION MUST MEET OSHA STANDARDS.
2. INSTALL 3 FOOT LONG IMPERVIOUS MATERIAL DAM IN BEDDING/INITIAL BACKFILL MATERIAL EVERY 100' TO PREVENT TRENCH GROUND WATER FROM BEING CHANNLED ALONG BEDDING/INITIAL BACKFILL 50 FT ON SLOPES EXCEEDING 2:1.
3. SEE SPECIFICATIONS FOR BEDDING AND BACKFILL REQUIREMENTS FOR TRENCHES IN LDF AND NATIVE CLAYS. MINIMUM SOIL COVER 5.0 FEET

PIPE TRENCH DETAIL

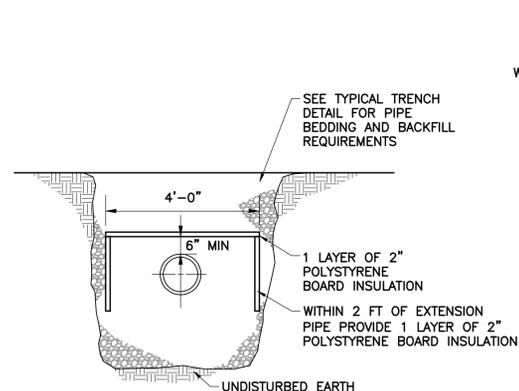
NTS



PIPE CROSSING

SCALE: "NTS"

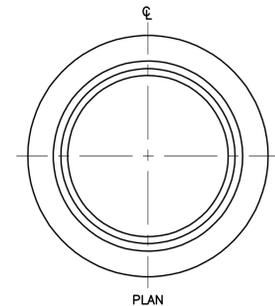
NOTE: JOINTS ON EACH PIPE TO BE AS FAR FROM INTERSECTION AS POSSIBLE



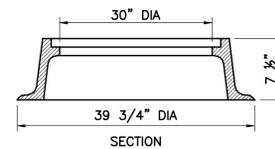
NOTE: TRENCH PIPE INSULATION TO BE USED WHERE DEPTH OF COVER IS LESS THAN 4 FT OR AS DIRECTED BY THE ENGINEER

TRENCH PIPE INSULATION

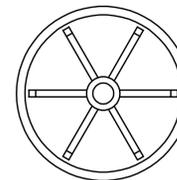
NTS



PLAN



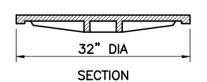
SECTION



BOTTOM



TOP

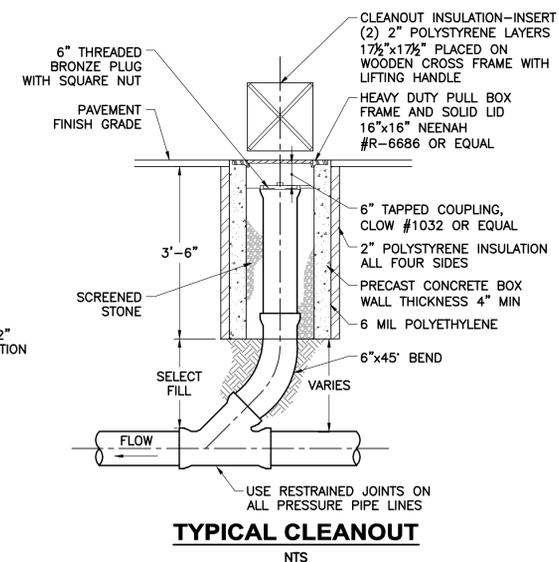


SECTION

MANHOLE COVER AND FRAME

SCALE: NTS

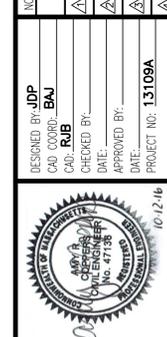
*SEWER



TYPICAL CLEANOUT

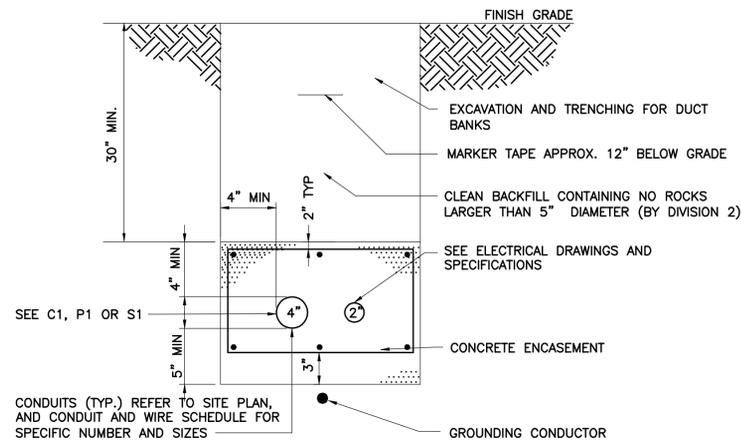
NTS

DATE	ACC 10-16
APP'D	
CONCOM. SUBMITTAL	
NO.	
DESIGNED BY: JDP	
CAD. COORD: EAJ	
CAD. CHECK: RIB	
CHECKED BY:	
DATE:	
APPROVED BY:	
DATE:	
PROJECT NO.:	13109A



WRIGHT-PIERCE
 Engineering a Better Environment
 Offices Throughout New England | www.wright-pierce.com
 888.621.8156

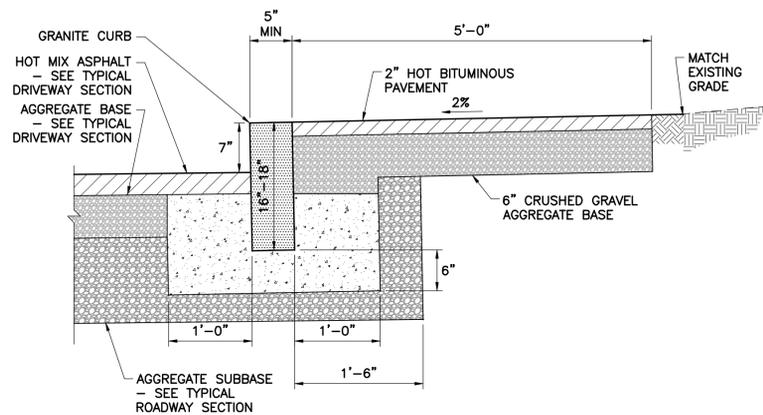
HAVERHILL, MASSACHUSETTS
 WATER TREATMENT PLANT UPGRADES



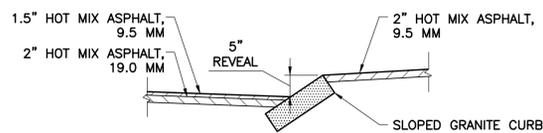
NOTES: (DUCT BANK DETAIL)

- THIS TYPICAL DUCT BANK INSTALLATION DETAIL INDICATES THE REQUIREMENTS FOR UNDERGROUND CONDUIT INSTALLATIONS. BURIAL DEPTH IS TYPICAL FOR ALL DUCT BANKS, UNLESS OTHERWISE NOTED.
- REFERENCES P1, C1 AND/OR S1, DENOTES CONDUIT NUMBERS. FOR ADDITIONAL CONDUIT DETAILS SEE ELECTRICAL DETAILS AND CONDUIT AND WIRE SCHEDULES.
- THE ELECTRICAL SITE PLAN IDENTIFIES THE VARIOUS DUCT BANK SECTIONS AND LOCATIONS.
- SEE THE SPECIFIC ELECTRICAL DUCT BANK SECTION DETAILS TO DETERMINE THE NUMBER AND TYPE OF CONDUITS IN EACH DUCT BANK TO DETERMINE DUCT BANK SIZE.
- THE SIZE OF THE DUCT BANK IS DETERMINED BY THE CLEAR SPACING BETWEEN CONDUITS. FOR PVC CONDUITS THE SPACING BETWEEN LIKE CONDUIT TYPE IS 3". THE SPACING BETWEEN POWER (P) AND EITHER CONTROL (C) OR SIGNAL (S) CONDUITS SHALL BE A MINIMUM OF 12". THE SPACING BETWEEN CONTROL (C) AND SIGNAL (S) SHALL BE 3". SPACING IS TO REDUCE TRANSFER OF ELECTRICAL NOISE INTERFERENCE. ALL CONDUITS SHALL HAVE A MINIMUM 4" EDGE CLEARANCE TO THE EDGE OF THE CONCRETE ENCASEMENT. FOR GALVANIZED CONDUIT SPACING CONTACT ENGINEER FOR REQUIREMENTS.
- EXCAVATION, TRENCHING AND BACKFILL SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 2 OF THIS CONTRACT.
- CONCRETE ENCASEMENT AND REINFORCING STEEL SHALL BE FURNISHED UNDER DIVISION 3 OF THIS CONTRACT. SEE STRUCTURAL DETAILS FOR REINFORCEMENT SIZE AND POSITIONING.
- INSTALL MARKER TAPE THE ENTIRE LENGTH OF EACH DUCT BANK.
- A CONTINUOUS #4/0 BARE COPPER GROUND CONDUCTOR SHALL BE PROVIDED AND ROUTED BENEATH ALL DUCT BANKS AND WITHIN EACH ELECTRICAL MANHOLE IN ORDER TO ELECTRICALLY BOND THE MAIN UTILITY SERVICE AND ALL BUILDINGS SERVICES AND EQUIPMENT TO THE SAME POTENTIAL.
- REFER TO THE ELECTRICAL CONTRACT DRAWING FOR SPECIFIC DUCT BANK LOCATIONS, SECTIONS AND CONDUIT AND WIRING REQUIREMENTS. ELECTRICAL CONDUITS AND WIRES TO BE INSTALLED UNDER DIVISION 16.

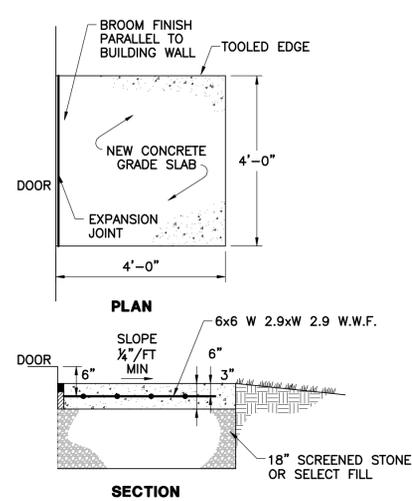
TYPICAL DUCT BANK DETAIL
(REFER TO NOTES FOR ADDITIONAL REQUIREMENTS)
NTS



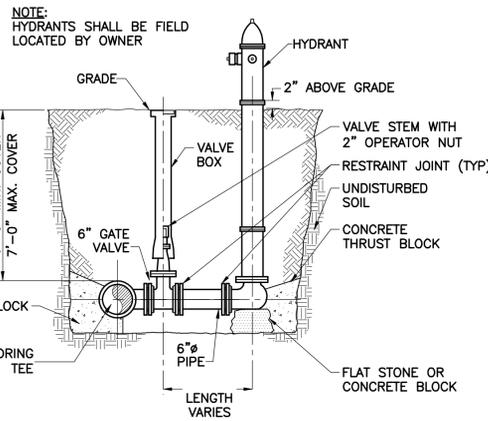
GRANITE CURB WITH CONCRETE
NTS



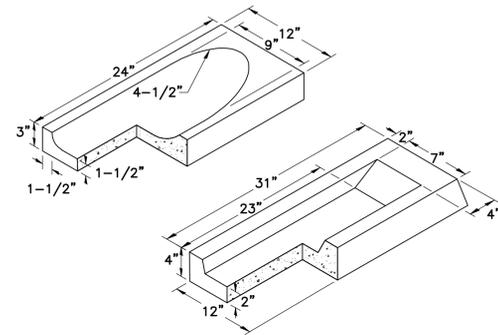
SLOPED GRANITE CURB (TYPE 5)
NTS



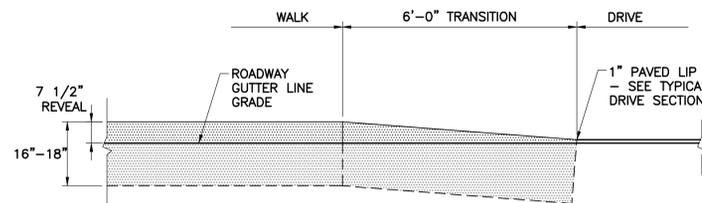
CONCRETE GRADE SLAB
NTS



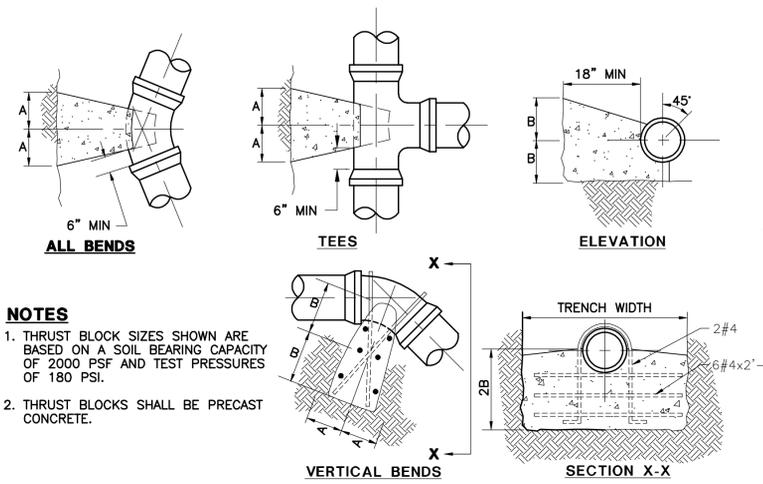
HYDRANT CONNECTION
NTS



CONCRETE SPLASH PAD
SCALE: NTS



GRANITE CURB TRANSITION
NTS

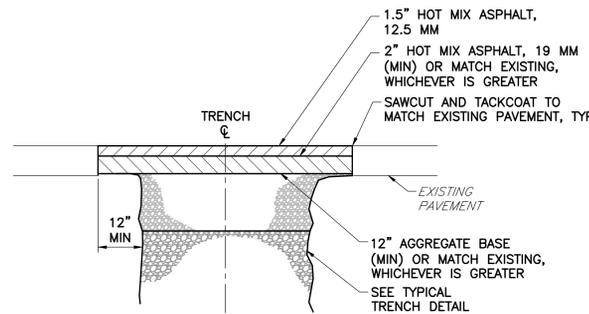


NOTES

- THRUST BLOCK SIZES SHOWN ARE BASED ON A SOIL BEARING CAPACITY OF 2000 PSF AND TEST PRESSURES OF 180 PSI.
- THRUST BLOCKS SHALL BE PRECAST CONCRETE.

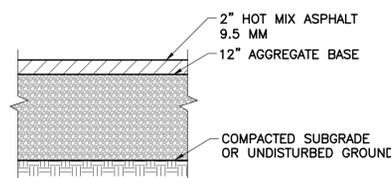
PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		VERTICAL BEND (DOWN)	
	A	B	A	B	A	B	A	B	A	B	A	B
6"	15"	12"	12"	9"	9"	6"	6"	6"	12"	12"	24"	21"
8"	20"	15"	14"	12"	9"	9"	9"	6"	18"	12"	33"	24"
10"	21"	21"	18"	15"	15"	9"	9"	9"	20"	18"	40"	27"
12"	27"	24"	23"	15"	15"	12"	12"	9"	25"	18"	48"	30"
16"	37"	30"	30"	21"	21"	15"	13"	12"	32"	24"	57"	36"

THRUST BLOCK DETAIL
NTS

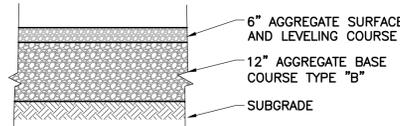


NOTE: INITIAL TRENCH PAVING MAY BE USED AS THE BASE COURSE FOR FINAL PAVING IF IN GOOD REPAIR.

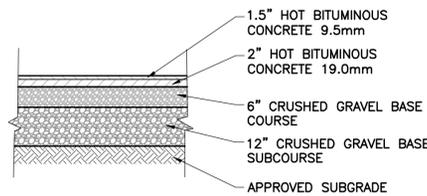
FINAL TRENCH PAVING (WITHOUT OVERLAY)
NTS



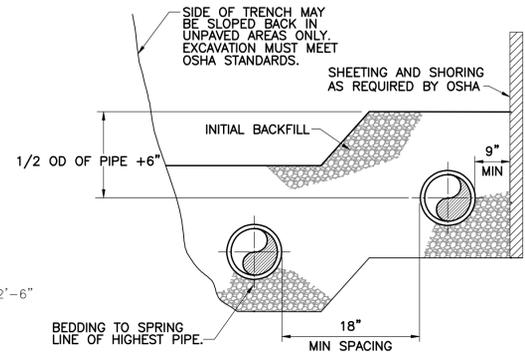
WALKWAY PAVEMENT
NTS



TYPICAL SECTION OF GRAVEL DRIVE
SCALE: NTS

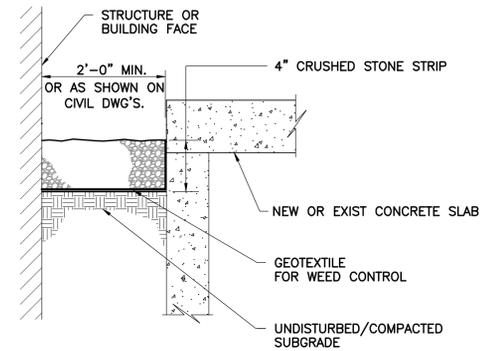


TYPICAL SECTION OF PAVED DRIVE
SCALE: NTS

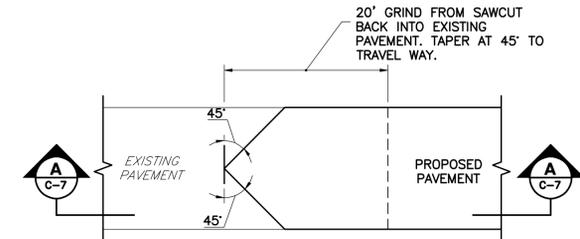


- NOTES:
- THIS SECTION IS SHOWN FOR TWO PIPES. IT IS TO BE USED FOR ANY NUMBER OF PIPES.
 - SEE SPECIFICATIONS FOR BEDDING AND BACKFILL MATERIALS AND COMPACTED BACKFILL REQUIREMENTS.
 - PIPE SPACING SHOWN IS TYPICAL UNLESS OTHERWISE INDICATED.
 - SEE DIVISION 1 FOR PAY WIDTH REQUIREMENTS.

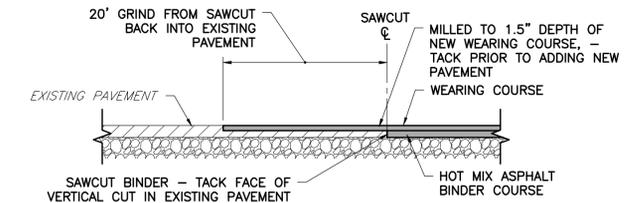
MULTIPLE PIPE TRENCH
NTS



CRUSHED STONE MOWING STRIP
SCALE: NTS



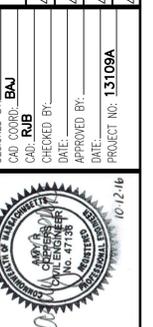
PLAN



SECTION
SCALE: SCALE

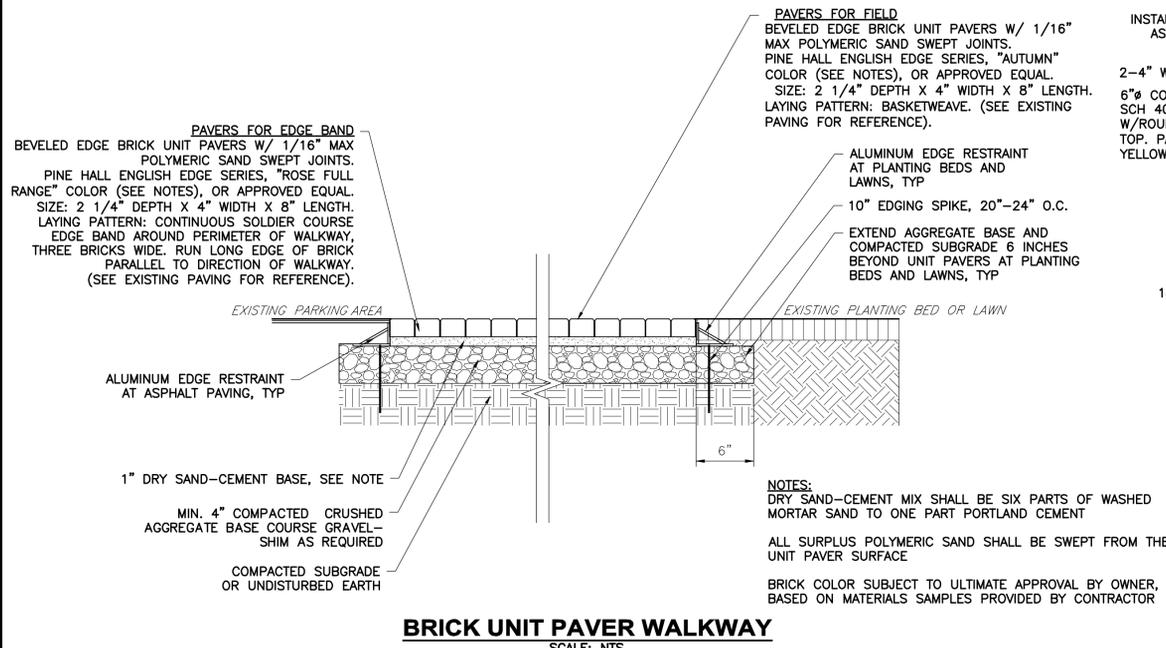
TAPERED GRIND PAVEMENT JOINT
SCALE: NTS

DATE	ACC 10-16
APP'D	
SUBMISSIONS/REVISIONS	
NO	
CONCOM. SUBMITTAL	
NO	
DESIGNED BY: JDP	BAJ
CAD. COORD.:	BAJ
CAD. RIB:	
CHECKED BY:	
DATE:	
APPROVED BY:	
DATE:	
PROJECT NO.:	13109A

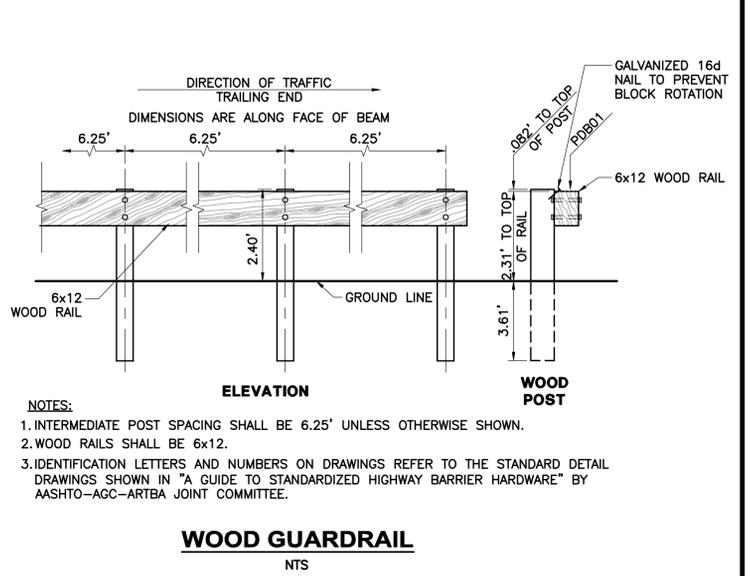
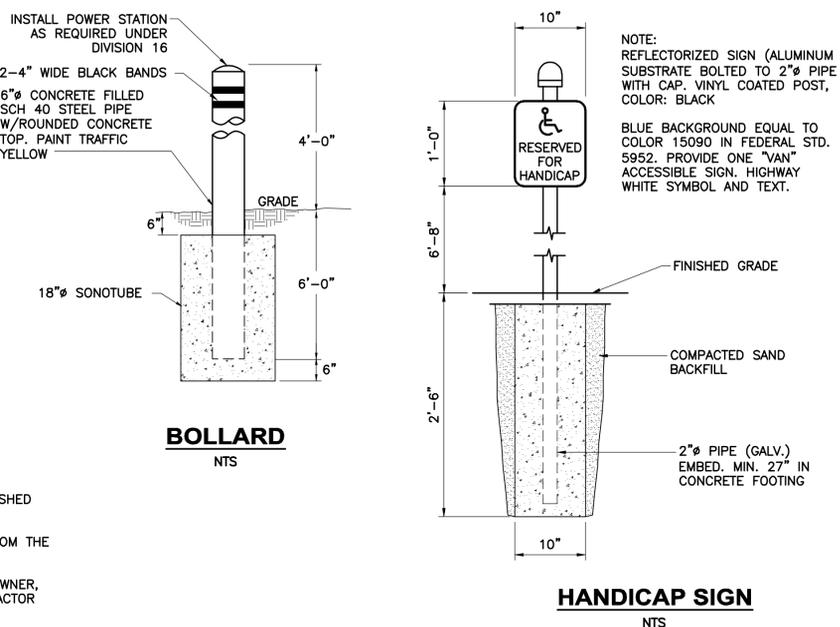


WRIGHT-PIERCE
Engineering a Better Environment
Offices Throughout New England | www.wright-pierce.com
888.621.8156

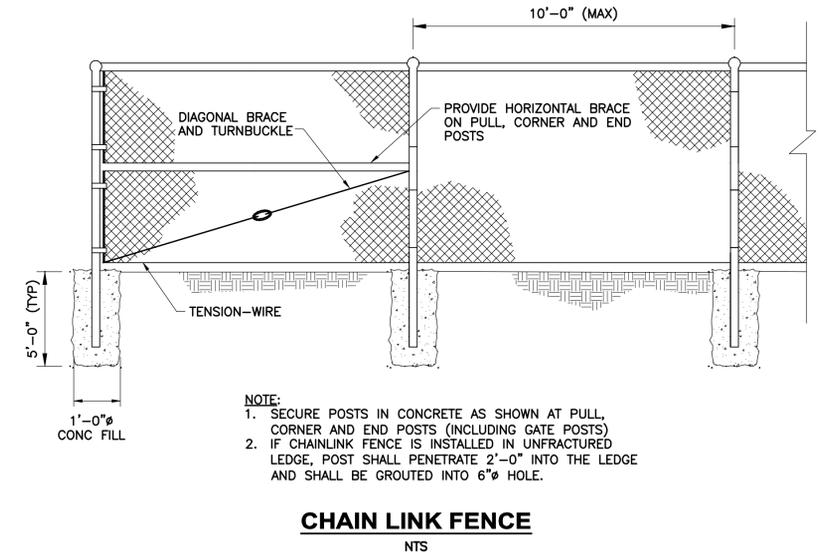
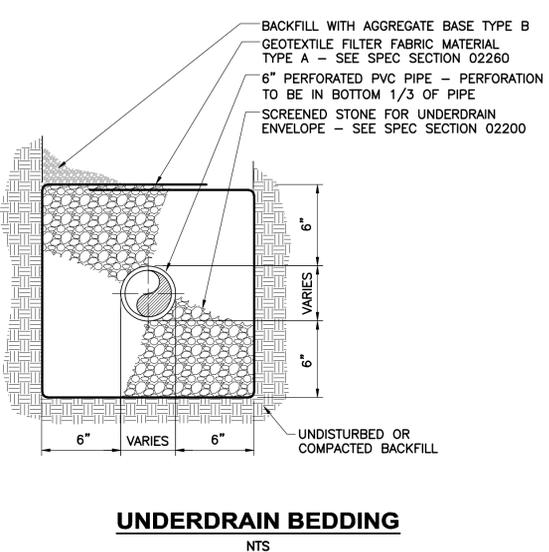
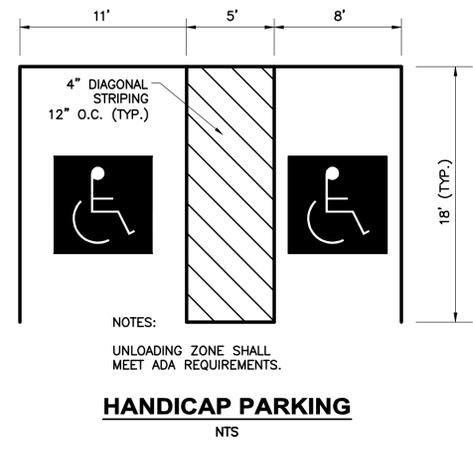
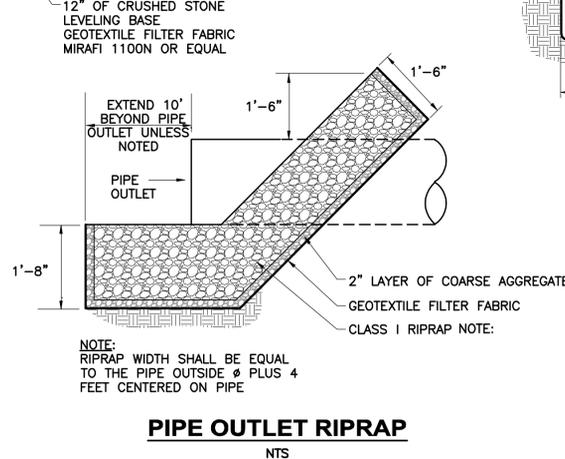
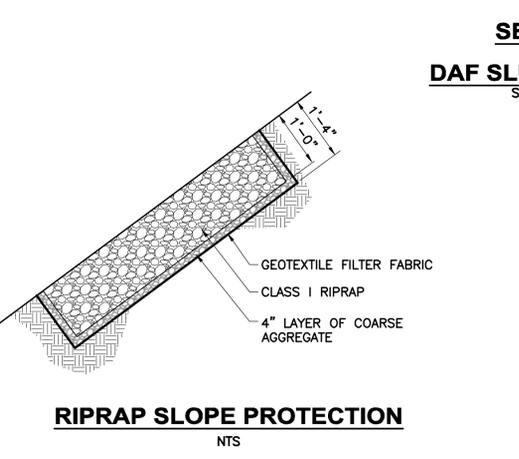
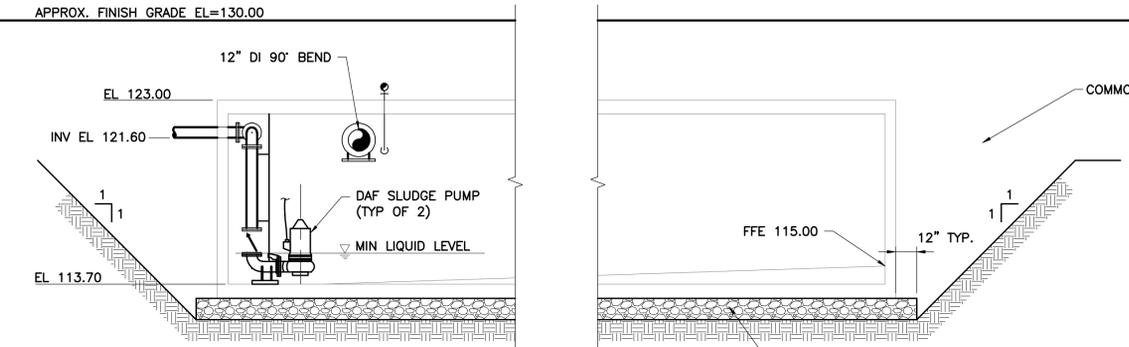
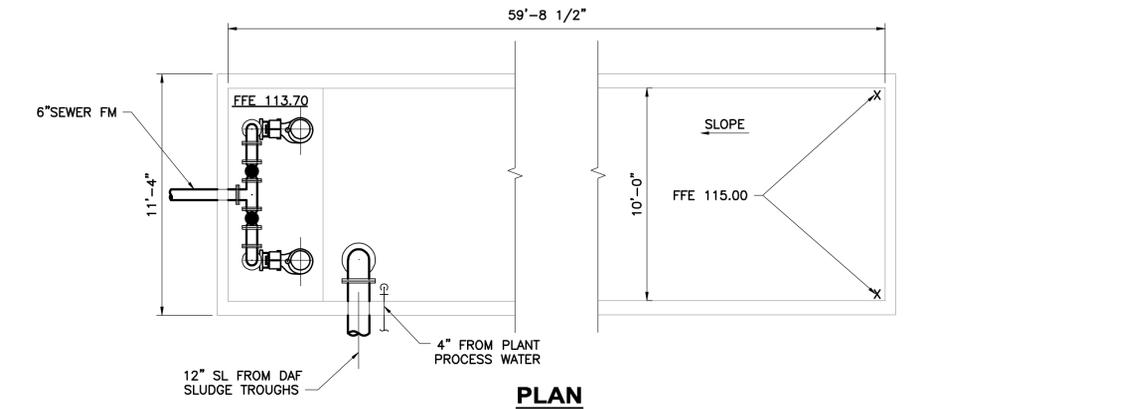
HAVERHILL, MASSACHUSETTS
WATER TREATMENT PLANT UPGRADES



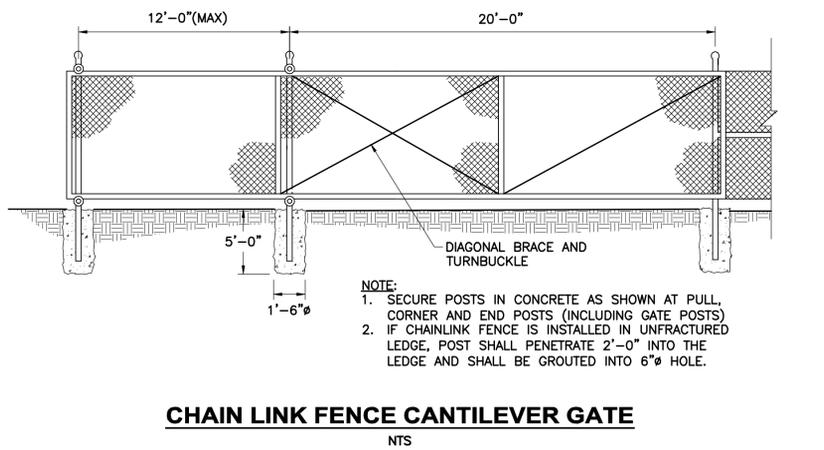
BRICK UNIT PAVER WALKWAY
SCALE: NTS



WOOD GUARDRAIL
NTS



CHAIN LINK FENCE
NTS



CHAIN LINK FENCE CANTILEVER GATE
NTS

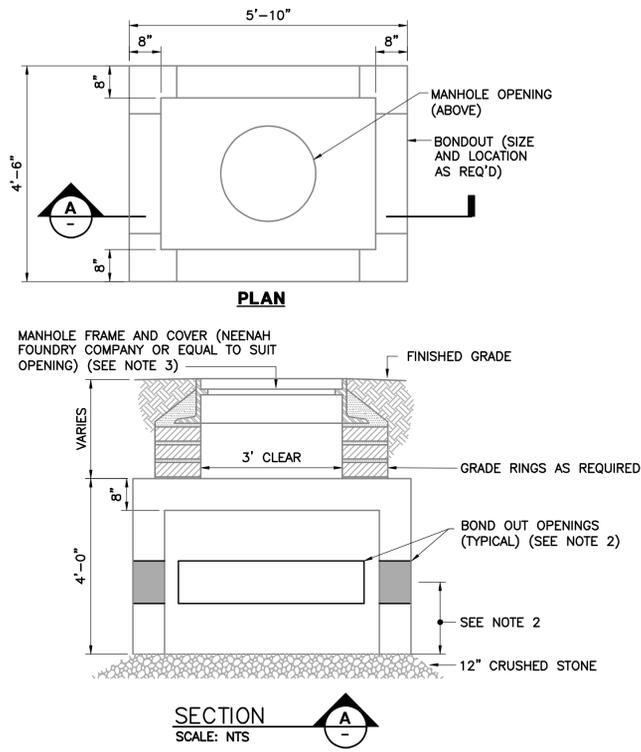
DATE	10-16
APP'D	ACC
SUBMISSIONS/REVISIONS	
NO	DESCRIPTION
1	CONCOM SUBMITTAL
DESIGNED BY: JDP	PROJECT NO: 13109A
CAD COORD: EAJ	
CAD: RIB	
CHECKED BY:	
DATE:	
APPROVED BY:	
DATE:	

WRIGHT-PIERCE
Engineering a Better Environment
Offices Throughout New England | www.wright-pierce.com
888.621.8156

HAVERHILL, MASSACHUSETTS
WATER TREATMENT PLANT UPGRADES

DETAILS III

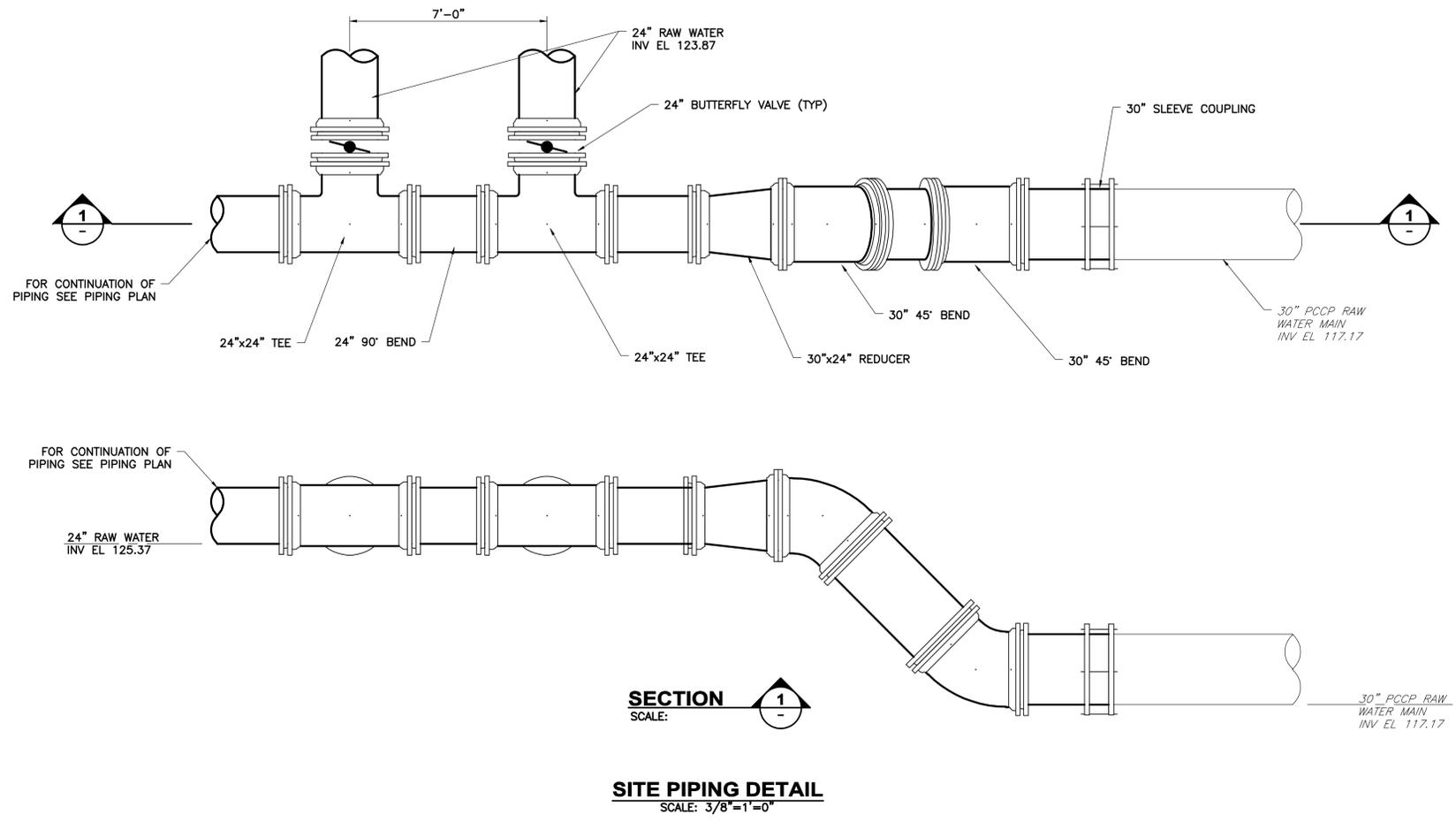
DRAWING
C-14



NOTE:
REFER TO THE ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS

TYPICAL PRECAST CONCRETE ELECTRICAL MANHOLE DETAIL
NTS

- MANHOLE NOTES:**
1. ELECTRICAL MANHOLE DETAILS AND SIZING HAVE BEEN SHOWN AS NOTED ON THIS DRAWING. FURNISH AND INSTALL THESE STRUCTURES IN ORDER TO PROVIDE CONDUIT AND CABLE INSTALLATIONS TO THE REQUIRED EQUIPMENT FOR THIS PROJECT. THE SITE CONDITIONS ARE VERY LIMITED FOR SPACE AND THEREFORE ADJUSTMENTS IN THE FINAL OVERALL DIMENSION AND LOCATIONS OF THESE STRUCTURES NEEDS TO BE COORDINATED WITH DIVISION 16. PRIOR TO SUBMITTING THESE STRUCTURES COORDINATE WITH DIVISION 16 AS TO THE FINAL CONDUIT ROUTING, BOND OUT OPENINGS, LOCATIONS AND SPACE REQUIREMENTS WITHIN THESE STRUCTURES IN ORDER TO MEET NATIONAL ELECTRIC CODE (NEC) REQUIREMENTS FOR PROPER CABLE PULLS AND INSTALLATION. THIS SHALL BE REQUIRED FOR FINAL OVERALL DIMENSIONS OF STRUCTURES.
 2. THE BOND OUT OPENINGS, DIMENSIONS AND HEIGHT ELEVATIONS SHALL BE COORDINATED AND SIZED WITH DIVISION 16. COORDINATE FINAL DIMENSIONS, ELEVATIONS AND LOCATIONS WITH DIVISION 16 FOR THE ENTIRE INSTALLATION OF ALL UNDERGROUND ELECTRICAL STRUCTURES AND INSTALLATIONS.
 3. THE ELECTRICAL MANHOLE COVER SHALL BE STAMPED WITH THE LETTERING WHICH STATES "ELECTRIC".



DATE	10-10-16
APP'D	ACC
SUBMISSIONS/REVISIONS	
NO.	DESCRIPTION
1	CONCOM SUBMITTAL
DESIGNED BY: JDP	PROJECT NO: 13109A
CAD COORD: EAJ	DATE: 10/12/16
CAD: RIB	CHECKED BY: RIB
DATE: 4/1/16	APPROVED BY: [Signature]
<p>WRIGHT-PIERCE Engineering a Better Environment Offices Throughout New England 888.621.8156 www.wright-pierce.com</p>	
<p>HAVERHILL, MASSACHUSETTS WATER TREATMENT PLANT UPGRADES</p>	
<p>DRAWING C-15</p>	
<p>DETAILS IV</p>	