PROPOSED REHABILITATION PROJECT

MACALLEN DAM

ABUTMENTS AND OUTLET STRUCTURE

NEWMARKET, NEW HAMPSHIRE

NID # NH00365 STATE ID # D177.01

DAM OWNER AND OPERATOR

THE TOWN OF NEWMARKET
186 MAIN STREET
NEWMARKET, NEW HAMPSHIRE 03857

PROJECT ENGINEER

GZA GEOENVIRONMENTAL, INC.
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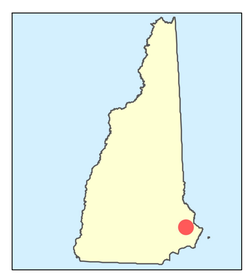

PROJECT LOCUS MAP

SOURCE: THIS MAP CONTAINS THE ESRI ARCGIS ONLINE USA TOPOGRAPHIC MAP SERVICE, PUBLISHED DECEMBER 2009 BY ESRI RCIMS SERVICES. LAST UPDATED MARCH 2014.

0 500' 1000' 2000' 3000'
SCALE: 1" = 1000 FEET

NOTE: ALL SCALES APPLICABLE FOR 22"X34" DRAWINGS. USE SCALE BAR FOR ALTERNATE SIZE DRAWINGS.

INDEX OF DRAWINGS

GENERAL

G-1 TITLE SHEET, SITE LOCUS AND INDEX OF DRAWINGS
G-2 GENERAL NOTES AND CONSTRUCTION SEQUENCE
G-3 EXISTING CONDITIONS OVERVIEW
G-4 EXISTING CONDITIONS & SUBSURFACE INVESTIGATIONS PLAN
G-5 EXISTING CONDITIONS SECTIONS

CIVIL

C-1 TEMPORARY SEDIMENT, EROSION, & WATER CONTROL PLAN
C-2 TEMPORARY WATER CONTROL PLAN PHASES
C-3 TEMPORARY SEDIMENT, EROSION, & WATER CONTROL DETAILS
C-4 DEMOLITION AND MODIFICATIONS PLAN
C-5 FINAL CONDITIONS PLAN
C-6 FINAL CONDITIONS SECTIONS (1 OF 2)
C-7 FINAL CONDITIONS SECTIONS (2 OF 2)
C-8 FINAL CONDITIONS ELEVATIONS (1 OF 2)
C-9 FINAL CONDITIONS ELEVATIONS (2 OF 2)
C-10 CONSTRUCTION DETAILS (1 OF 3)
C-11 CONSTRUCTION DETAILS (2 OF 3)
C-12 CONSTRUCTION DETAILS (3 OF 3)

STRUCTURAL

S-1 STRUCTURAL NOTES AND SPECIFICATIONS
S-2 STRUCTURAL DEMOLITION PLAN - EXISTING OUTLET STRUCTURE
S-3 STRUCTURAL DEMOLITION SECTIONS - EXISTING OUTLET STRUCTURE
S-4 STRUCTURAL PROPOSED PLAN VIEW - GATE STRUCTURE
S-5 STRUCTURAL PROPOSED PLAN VIEW - RIGHT ABUTMENT
S-6 STRUCTURAL PROPOSED SECTIONS - NEW GATE STRUCTURE
S-7 STRUCTURAL FOOTING DETAILS - NEW GATE STRUCTURE
S-8 STRUCTURAL ABUTMENT DETAILS - WEST ABUTMENT
S-9 STRUCTURAL ABUTMENT DETAILS - EAST ABUTMENT
S-10 CONTROL VAULT SOE & FOUNDATION PLAN AND NOTES
S-11 CONTROL VAULT SOE & FOUNDATION SECTION

MECHANICAL & ELECTRICAL

E-1 SCHEMATIC MECHANICAL, PIPING, CONDUIT PLAN AND DETAIL

OBERMEYER CREST GATE CONSTRUCTION PLANS

* 18-2133-100 SPILLWAY PLAN VIEW COVER SHEET
* 18-2133-101 SPILLWAY PLAN VIEW
* 18-2133-102 PLAN VIEW MAIN ANCHOR LAYOUT AND SPACING
* 18-2133-110 SECTION ELEVATION
* 18-2133-111 ELEVATION SURFACE FEATURES
* 18-2133-112 ABUTMENT PLATE INSTALLATION
* 18-2134-004 MECHANICAL VAULT

* INCLUDED AS PART OF THE CONTRACTOR'S WORK SCOPE AND BID PRICE, THE CONTRACTOR SHALL COORDINATE WITH THEIR PNEUMATIC CREST GATE MANUFACTURER TO DEVELOP ADDITIONAL FINAL DESIGN/INSTALLATION DRAWINGS FOR TOWN/ENGINEER REVIEW AND APPROVAL.

NO.	ISSUE/DESCRIPTION	BY	DATE
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	TEM	3/14/2019

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

TITLE SHEET, SITE LOCUS, AND INDEX OF DRAWINGS

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	SHEET
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	G-1
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 1 OF 36

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

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PROJECT PURPOSE

MACALLEN DAM IS A RUN-OF-THE-RIVER DAM LOCATED IN NEWMARKET, NEW HAMPSHIRE THAT CONSISTS OF A GRANITE MASONRY SPILLWAY AND CONCRETE OUTLET WORKS STRUCTURE. THE DAM HAS EARTHEN ABUTMENTS CONFINED BY MASONRY TRAINING WALLS CAPPED WITH CONCRETE ON BOTH SIDES. THE DAM IS APPROXIMATELY 150 FEET LONG AND HAS A MAXIMUM HEIGHT OF 27 FEET. THERE IS A DENIL-TYPE FISH LADDER (CIRCA 1970) ALONG THE RIGHT ABUTMENT. A FUNCTIONAL BUT AGING GATE STRUCTURE ALONG THE LEFT ABUTMENT (CIRCA 1925) IS MOUNTED TO THE CONCRETE OUTLET STRUCTURE. PROPOSED REPAIRS ARE DESIGNED TO ADDRESS STRUCTURAL DEFICIENCIES AT THE ABUTMENTS AND INCREASE THE HYDRAULIC CAPACITY TO PASS THE SPILLWAY DESIGN FLOOD (100-YEAR STORM). PRIMARY REPAIRS INCLUDE:

- CONSTRUCTION OF A NEW CONCRETE OUTLET STRUCTURE WITH A PNEUMATICALLY OPERATED GATE FOR INCREASED HYDRAULIC CAPACITY.
- REHABILITATING AND REPAIRING THE LEFT AND RIGHT TRAINING WALLS TO ADDRESS STRUCTURAL DEFICIENCIES.
- SLIGHTLY RAISING THE TOP OF THE RIGHT ABUTMENT EMBANKMENT TO INCREASE IMPOUNDMENT CAPACITY.
- CONSTRUCTION OF A NEW ARMORED RIGHT UPSTREAM EMBANKMENT PORTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK NEEDED TO ACHIEVE INDICATED FINAL CONDITIONS AS SHOWN ON THE PLANS AND AS STATED IN THE SPECIFICATIONS.

GENERAL CONDITIONS

1. LOCATIONS OF UNDERGROUND UTILITIES (IF SHOWN) ARE APPROXIMATE ONLY, AND ARE NOT GUARANTEED TO BE CORRECT. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED FOR SERVICE, SIZE, INVERT ELEVATION, LOCATION, ETC. PRIOR TO ANY CONSTRUCTION WORK IN THE VICINITY THEREOF. THE CONTRACTOR MUST NOTIFY DIG SAFE (811) AT LEAST 3 FULL WORKING DAYS PRIOR TO ANY CONSTRUCTION. APPROPRIATE MUNICIPAL DEPARTMENTS MUST ALSO BE NOTIFIED.

2. TEMPORARY BENCHMARKS AND CONTROL POINTS WERE LOCATED OR SET BY DOUCET SURVEY INC. IN APRIL 2018. NO GUARANTEE IS MADE AS TO THE EXISTENCE OR ACCURACY OF SUCH MARKS AT THE TIME OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, VERIFYING, AND RE-SETTING (IF NECESSARY) CONTROL POINTS AND BENCHMARKS FOR THE WORK OF THE CONTRACT.

3. THE RESPONSIBILITY FOR SAFETY IN, ON, OR ABOUT THE SITE SHALL BE THAT OF THE CONTRACTOR. THESE DRAWINGS DO NOT INCLUDE COMPONENTS WHICH MAY BE NECESSARY FOR CONSTRUCTION SAFETY.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION, EXCEPT WHERE SPECIFICALLY DETAILED IN THE PLANS AND SPECIFICATIONS. LIKEWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SEQUENCE OF THE WORK, EXCEPT WHERE SPECIFICALLY DETAILED IN THE PLANS, SPECIFICATIONS AND PERMIT CONDITIONS.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SURFACE AND GROUNDWATER CONTROL DURING THE WORK OF THE CONTRACT. TEMPORARY WATER CONTROL MEASURES SHALL BE, AT MINIMUM, AS REQUIRED BY THE PROJECT PLANS, SPECIFICATIONS, AND PERMIT CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL MEASURES NECESSARY FOR WATER CONTROL NECESSARY TO EXECUTE THE WORK OF THE CONTRACT "IN THE DRY." WATER CONTROL MEASURES ARE SUBJECT TO SPECIFIC PHASING, LIMITS AND CONDITIONS.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL DURING THE WORK OF THE CONTRACT. TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE, AT MINIMUM, AS REQUIRED BY THE PROJECT PLANS, SPECIFICATIONS, AND PERMIT CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL MEASURES NECESSARY FOR THE PREVENTION OF SEDIMENT DISCHARGE OR EROSION AT THE SITE.

7. A SPECIFIC AREA HAS BEEN DESIGNATED AND DELINEATED ON THE PLANS AS A CONTRACTOR STAGING AREA. THE CONTRACTOR SHALL USE THIS AREA, AND THIS AREA ONLY, FOR ON-SITE PARKING, OFFICE TRAILERS (IF NECESSARY), EQUIPMENT AND MATERIAL STORAGE, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY NECESSARY SIGNAGE, FENCING, SAFETY, SEDIMENT/EROSION CONTROL, IMPROVEMENTS, RESTORATIONS ETC. IN THESE AREAS. AREAS WITHIN THE LIMITS OF THE WORK MAY BE USED FOR TEMPORARY STORAGE, HAUL ROADS, PARKING, ETC.; HOWEVER, NO ADDITIONAL CONSIDERATION OR PAYMENT WILL BE MADE FOR WORK NECESSARY TO RE-GRADE AND RESTORE SUCH AREAS TO PRE-CONSTRUCTION CONDITIONS OR RELOCATE ANY MATERIALS OR EQUIPMENT TEMPORARILY STORED WITHIN THE LIMITS OF THE WORK. IF THE CONTRACTOR REQUIRES AND IDENTIFIES ADDITIONAL STAGING AREAS ON THE OWNER'S PROPERTY, THE CONTRACTOR SHALL MAKE A WRITTEN REQUEST TO THE OWNER AND ENGINEER DESCRIBING THE NEED AND LOCATION OF THE PROPOSED AREA. NO GUARANTEE IS MADE THAT ADDITIONAL LAY-DOWN AREAS WILL BE MADE AVAILABLE.

8. THE CONTRACTOR SHALL RESTORE AREAS DISTURBED BY CONSTRUCTION AS PER THE PLANS AND SPECIFICATIONS. WHERE NO SPECIFIC INSTRUCTION IS GIVEN, CONDITIONS SHALL, AT A MINIMUM, BE RESTORED TO ORIGINAL CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.

9. THE CONTRACTOR IS SPECIFICALLY INFORMED THAT THE RESTORATION REQUIREMENT APPLIES TO ALL AREAS DISTURBED AS A RESULT OF THE PROJECT.

10. IN THE EVENT OF THE DISCOVERY OF THE PRESENCE OF AN ENDANGERED PLANT OR ANIMAL IN THE WORK AREA OR STAGING AREA, ALL WORK IN THE IMMEDIATE AREA OF THE FIND SHALL STOP AND THE OWNER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY. WORK IN THE IMMEDIATE AREA AND/OR THE ENTIRE SITE (AT THE DISCRETION OF THE OWNER) SHALL BE DISCONTINUED UNTIL CLEARANCE IS GRANTED BY THE OWNER.

11. IN THE EVENT OF THE DISCOVERY OF A PREVIOUSLY UNKNOWN ARCHEOLOGICAL SITE, POTENTIAL CULTURAL ARTIFACTS OR RESOURCES, OR ANY OTHER UNUSUAL ITEMS OR CONDITIONS, ALL WORK IN THE IMMEDIATE AREA OF THE FIND SHALL STOP AND THE OWNER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY. WORK IN THE IMMEDIATE AREA SHALL BE DISCONTINUED UNTIL CLEARANCE IS GRANTED BY THE OWNER.

12. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL DEVELOP, SUBMIT, AND MAINTAIN AN EMERGENCY CONTACT LIST WITH NAMES AND PHONE NUMBERS (DAY AND NIGHT) OF ALL KEY PERSONNEL INVOLVED WITH THE PROJECT. THE LIST SHALL SPECIFICALLY INCLUDE THE PERSON FROM THE CONTRACTOR WHO SHALL BE RESPONSIBLE FOR ENVIRONMENTAL COMPLIANCE. THE LIST SHALL BE PROVIDED TO THE OWNER, ENGINEER, CONSERVATION COMMISSION AND OTHER REGULATING ENTITIES HAVING JURISDICTION AND UPDATED AS NEEDED.

13. IN THE EVENT OF UNANTICIPATED ENVIRONMENTAL AND/OR ARCHEOLOGICAL CONDITIONS WHICH PREVENT CONTINUED WORK, THE OWNER MAY DIRECT THE CONTRACTOR TO STOP WORK AND STABILIZE THE SITE. THE OWNER RESERVES THE RIGHT TO TERMINATE THE CONTRACT IN SUCH A CASE.

14. THE CONTRACTOR IS RESPONSIBLE FOR ALL PENALTIES AND DELAYS DUE TO NON-COMPLIANCE WITH PERMIT CONDITIONS.

15. CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD.

PLAN REFERENCES

1. ELEVATIONS, IN FEET, ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (HEREAFTER REFERRED TO AS NAVD88).

2. BASE MAP DEVELOPED FROM CADD FILES PROVIDED BY DOUCET SURVEY INC. OF NEWMARKET, NEW HAMPSHIRE, TITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER" DATED JULY 31, 2018. MACALLEN DAM IMPOUNDMENT WATER LEVEL ON DATE OF SURVEY (APRIL 21, 2018) RECORDED AT 23.3 FEET.

3. WETLANDS AT THE SITE WERE DELINEATED BY JENNIFER GRAWIN, A CERTIFIED WETLANDS SCIENTIST (CWS) AND CERTIFIED WETLANDS BIOLOGIST (CWB) FROM GZA GEOENVIRONMENTAL, INC., ON JULY 12, 2018. THE WETLAND DELINEATION WAS PERFORMED IN ACCORDANCE WITH THE 1987 UNITED STATES ARMY CORPS OF ENGINEERS (USACE) WETLAND DELINEATION METHOD IN CONJUNCTION WITH THE REGIONAL SUPPLEMENT TO THE USACE WETLAND DELINEATION MANUAL AND THE 2012 NATIONAL WETLAND PLANT LIST.

HYDROLOGY AND HYDRAULICS

- NEW SPILLWAY DESIGN FLOOD (100-YR) INFLOW: 10,930 CFS (REFER TO REGULATORY STANDARDS SECTION)
- CONTRIBUTING DRAINAGE AREA: 211 SQUARE MILES
- WATER SURFACE ELEVATION UPSTREAM OF DAM DURING SDF:
  - EXISTING CONDITIONS: 33.6 FT (9,284 CFS)
  - PROPOSED CONDITIONS: 31.2 FT (10,930 CFS)
- TAILWATER CONDITIONS DOWNSTREAM OF THE DAM ARE TIDALLY INFLUENCED. THE HIGH TIDE LINE (MHHW) IS ESTIMATED TO BE ELEV. 3.5 FEET NAVD88 AND THE LOW TIDE LINE (MLLW) IS ESTIMATED TO BE ELEV. -3.9 FEET NAVD88. THE TIDAL ELEVATIONS ARE BASED ON NOAA TRANSFORMATION PREDICTIONS FOR SQUAMSCOTT RIVER RR. BRIDGE, NH (8422687) WHICH ARE OFFSET BY *0.75 FROM ELEVATIONS FOR THE REFERENCE STATION PORTLAND, ME (8418150).

REGULATORY STANDARDS

- ENV-WR101 AND RSA 482
- MACALLEN DAM HAZARD CLASSIFICATION: HIGH
- NEW SPILLWAY DESIGN FLOOD: 100-YEAR FLOOD = 10,930 CFS
- DETERMINATION OF THE SPILLWAY DESIGN FLOOD (SDF) FOR MACALLEN DAM WAS ORIGINALLY PERFORMED BY WRIGHT PIERCE AND THE RECOMMENDATION FOR THE SDF WAS DETAILED IN A FINAL MEMORANDUM DATED AUGUST 23, 2016. THE MEMORANDUM RECOMMENDED THE USE OF AN INCREMENTAL DAM FAILURE ANALYSIS TO DEVELOP A SITE SPECIFIC INFLOW DESIGN FLOOD (IDF). THE NHDES DAM BUREAU APPROVED THE CONCLUSIONS OUTLINED IN THE FINAL MEMORANDUM IN 2016. THROUGH ACCEPTANCE OF THE FINAL MEMORANDUM, THE NHDES APPROVED THE SITE SPECIFIC IDF TO BE EQUAL TO THE 100-YEAR STORM AND ALSO APPROVED THE IDF OF 9,284 CFS. THE NHDES ALSO APPROVED USE OF THE FINAL HYDRAULIC MODEL DEVELOPED IN HEC-RAS FOR FUTURE USE IN ESTIMATING THE WATER SURFACE ELEVATION RESULTING FROM THE 100-YEAR FLOOD BASED ON PROPOSED DAM REHABILITATION ALTERNATIVES. THE PROPOSED DAM CONFIGURATION AND GATE STRUCTURE INCREASES THE SPILLWAY CAPACITY OF THE DAM. THE NEW 100-YEAR FLOOD ESTIMATED USING THE APPROVED HEC-RAS MODEL IS 10,930 CFS WITH A RESULTING PEAK WATER SURFACE ELEVATION OF 31.2. THEREFORE, THE TOP OF DAM SHALL BE DESIGNED TO BE ELEVATION 32.2 TO CONVEY THE SDF WITH ONE FOOT OF FREEBOARD.

GENERAL SCOPE AND ANTICIPATED CONSTRUCTION SEQUENCE

THE GENERAL SCOPE OF WORK INCLUDES THE EXECUTION OF THE REPAIRS TO THE DAM AND APPURTENANCES AS PRESENTED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MATERIAL, EQUIPMENT, AND LABOR NECESSARY TO CONSTRUCT THE PROJECT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND AS SHOWN ON THE FINAL CONDITIONS PLAN(S). THE INTENT OF THE ANTICIPATED CONSTRUCTION SEQUENCE IS TO PROVIDE GUIDANCE TO THE CONTRACTOR TOWARDS MEETING THE TERMS AND CONDITIONS OF ENVIRONMENTAL PROTECTION PERMITS AND BEST MANAGEMENT PRACTICES. CERTAIN ASPECTS OF THE ANTICIPATED CONSTRUCTION SEQUENCE MAY BE ALTERED BY THE CONTRACTOR WITH APPROVAL FROM THE OWNER, EXCEPT AS REQUIRED BY PERMIT CONDITIONS AND SPECIFIC INSTRUCTIONS CONTAINED IN THE SPECIFICATIONS. THE FOLLOWING LIST IS NOT COMPREHENSIVE AND DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR EXECUTING ALL REQUIRED WORK AS PER THE CONTRACT DOCUMENTS.

1. MOBILIZE TO THE SITE AND DEPLOY TEMPORARY SEDIMENT AND EROSION CONTROLS ASSOCIATED WITH THE PROJECT, INCLUDING PERIMETER EROSION AND SEDIMENT CONTROL BARRIERS, AND OTHER BMP'S. ESTABLISH AND MAINTAIN CONTROLS AS NECESSARY TO PROTECT THE WORK ZONE.
2. NOTIFY OWNER, RESIDENT ENGINEER, AND REPRESENTATIVES FROM THE VARIOUS ENVIRONMENTAL AGENCIES HAVING JURISDICTION ONCE SEDIMENT AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED AND SCHEDULE AND CONDUCT SITE WALK TO INSPECT SEDIMENT AND EROSION CONTROL MEASURES. MODIFY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED. WORK MAY PROCEED ONCE APPROVAL HAS BEEN GRANTED FROM SAID ENTITIES.
3. CLEAR TREES, SHRUBS, BRUSH AND RELATED VEGETATIVE GROWTH WITHIN THE LIMITS ESTABLISHED ON THE DRAWINGS TO ALLOW FREE AND EASY ACCESS TO THE WORK ZONES.
4. BEGIN/COMPLETE INSTALLATION OF FIRST TEMPORARY COFFERDAM (SUPER SAC OR OTHER APPROVED EQUIVALENT) OR APPROVED WORK PLAN THAT ALLOWS FOR WORK 'IN THE DRY' AT THE FOLLOWING LOCATIONS:
   - A. THE FIRST ACTIVE LOCATION WOULD GENERALLY BE SITUATED UPSTREAM OF THE DAM ALONG THE RIGHT ABUTMENT ENDING AT, AND INCLUDING THE EXISTING FISH LADDER AS NECESSARY. THIS WOULD ALLOW CONSTRUCTION OF THE NEW RIGHT ABUTMENT ARMORING AND INSTALLATION OF NEW CONCRETE FACING ON EXISTING RIGHT ABUTMENT WALL, AS WELL AS ALL OF EARTHWORK ASSOCIATED WITH THE WORK.
   - B. AFTER THE WORK IN 4A ABOVE IS COMPLETE, THE SECOND ACTIVE LOCATION WOULD GENERALLY BE SITUATED UPSTREAM OF THE DAM FROM THE LEFT ABUTMENT TO THE EDGE OF THE LEFT SIDE OF THE SPILLWAY ENCOMPASSING THE OUTLET STRUCTURE AS SHOWN IN THE CONTRACT DRAWINGS. THIS WOULD ALLOW CONSTRUCTION OF THE NEW OUTLET GATE STRUCTURE AND EXECUTION OF ALL MASONRY REPOINTING WORK UPSTREAM OF THE GATE STRUCTURE ALONG THE LEFT ABUTMENT WALL.
   - C. DEWATER THE AREA DOWNSTREAM OF THE COFFERDAMS VIA USE OF APPROVED PUMPING MEANS AND/OR IN THE CASE OF 4B EXISTING GATE OPERATIONS SO THAT THE REHABILITATION WORK CAN PROMPTLY BEGIN.
   - D. SET UP AND BEGIN OPERATION OF SURFACE WATER AND GROUNDWATER CONTROLS SO THAT WORK CAN BE CONDUCTED "IN-THE-DRY." WHERE APPLICABLE. MAINTAIN OPERATION OF SAID CONTROLS UNTIL CONSTRUCTION IS COMPLETE AND ALL AREAS ARE BACKFILLED TO PROPER LINE AND GRADE.
   - E. CONTRACTOR WILL BE ABLE TO LOWER IMPOUNDMENT LEVEL USING THE EXISTING GATE STRUCTURE TO APPROXIMATELY ELEVATION 16.0. THE CONTRACTOR WILL COORDINATE WITH THE TOWN FACILITIES MANAGER TO OPERATE THE EXISTING GATE STRUCTURE TO LOWER THE IMPOUNDMENT TO APPROXIMATELY 16.0 FT. ACTUAL IMPOUNDMENT ELEVATIONS ARE SUBJECT TO CHANGE DUE WITH WEATHER CONDITIONS . CONTRACTOR WILL BE ALLOWED TO MAINTAIN IMPOUNDMENT AT ELEVATION 16.0 FOR UP TO FOUR WEEKS AS INDICATED IN THE LETTER PROVIDED BY NHF&G DATED FEBRUARY 25, 2019. THE EXISTING FISH LADDER SHALL NOT BE UTILIZED FOR WATER CONTROL BY THE CONTRACTOR WITHOUT PERMISSION FROM NHF&G. THE FISH LADDER SHALL BE REQUIRED TO BE OPERATED BY NHF&G IN THE SPRING OF 2020, AND IF WORK IS DELAYED, THE CONTRACTOR SHALL ALLOW USE OF THE FISH LADDER BY NHF&G UNTIL THE WORK CAN RECOMMENCE.
5. SAWCUT AND REMOVE EXISTING CONCRETE CAP AND FACING FROM THE RIGHT ABUTMENT TRAINING WALL IN AREAS AGREED UPON BY THE OWNER AND CONTRACTOR. FORM AND POUR NEW CONCRETE FACING ALONG RIGHT ABUTMENT WALL, INSTALL REINFORCING AS NCESSARY. FILL ANY AND ALL VOIDS AS NEEDED.
   - A. REMOVE EXISTING TIMBER CRIBBING AS NECESSARY ONLY TO PLACE FORMS FOR NEW CONCRETE FACING ON RIGHT ABUTMENT TRAINING WALL.
6. ONCE CONCRETE FACING AND CURING IS COMPLETE, PLACE RIPRAP ARMORING SLOPE ALONG UPSTREAM FACE OF ABUTMENT END WALL. RIP RAP IS NOT TO BE PLACED ABOVE OR NEAR THE EXISTING FISH LADDER INTAKE STRUCTURE.
7. ONCE ALL WORK ALONG THE UPSTREAM FACE AND TOP OF THE RIGHT ABUTMENT END WALL IS COMPLETE, BEGIN REGRADING AND RAISING THE RIGHT EMBANKMENT EARTHEN AREA TO THE STATED ELEVATIONS IN THE TECHNICAL SPECIFICATIONS AND IN THE CONTRACT DRAWINGS. INSTALL CONTRACTOR DESIGNED RETAINING WALL ALONG RIGHT ABUTMENT AS INDICATED IN THE CONTRACT DRAWINGS. GRADE RAISED EMBANKMENT AS INDICATED ON CONTRACT DRAWINGS.
8. FORM AND INSTALL NEW CONCRETE STEPS AND RETAINING WALL FOR EASE OF ACCESS TO THE EXISTING FISH LADDER. FORM AND INSTALL NEW CAST IN PLACE REINFORCED CONCRETE RETAINING WALL IN AREAS INDICATED ON CONTRACT DRAWINGS. INSTALL DAVIT CRANE ANCHOR PLATE AS INDICATED. REMOVE AND REPLACE EXISTING SECURITY CHAIN-LINK FENCING WITH SIMILAR ALONG TOP OF NEW CAST-IN0PLACE CONCRETE RETAINING WALL.
9. REMOVE AND REPLACE EXISTING PLAQUE AT FISH LADDER AS INDICATED ON CONTRACT DRAWINGS.
10. ONCE WORK ON THE RIGHT ABUTMENT IS COMPLETE, WORK ON THE LEFT ABUTMENT, GATE STRUCTURE REPLACEMENT, AND ALL APPURTENANCES WILL BEGIN.
11. DEMOLISH AND REMOVE THE EXISTING GATE STRUCTURE AFTER INSTALLATION OF THE SECOND COFFERDAM STRUCTURE AS INDICATED IN NOTE 4B ABOVE. EXISTING CONCRETE GATE FOUNDATION SLAB TO REMAIN. SURFACE TO BE ROUGHENED FOR INSTALLATION OF NEW CONCRETE SLAB OVERLAY.
12. INSTALL NEW CONCRETE SLAB OVERLAY AND REINFORCED CONCRETE ABUTMENT CONNECTIONS FOR PNEUMATIC CREST GATE INSTALLATION AS INDICATED IN CONTRACT DRAWINGS.
13. INSTALL THE NEW PNEUMATICALLY OPERATED CREST GATE AND ACCOMPANYING VAULT STRUCTURE AT LOCATIONS INDICATED IN THE CONTRACT DRAWINGS AND TECHNICAL SPECIFICATIONS.
14. COMPLETE ALL EARTHWORK ASSOCIATED WITH THE GATE CONTROL VAULT STRUCTURE WITH THE EXCEPTION OF LOAMING AND SEEDING.
15. EXECUTE WET AND DRY GATE TESTING AND REMOVE COFFER DAM AFTER SUCCESSFUL TESTING OF NEW GATE STRUCTURE.
16. REMOVE THE TEMPORARY COFFERDAM.
17. REMOVE TEMPORARY FACILITIES.
18. EXECUTE REMAINING SITE RESTORATION ACTIVITIES.
19. NOTIFY OWNER, RESIDENT ENGINEER, AND ENVIRONMENTAL PERSONNEL HAVING JURISDICTION OF FINAL STABILIZATION. SCHEDULE AND CONDUCT SITE INSPECTION.
20. MODIFY/STABILIZE AREAS AS NECESSARY.
21. UPON APPROVAL FROM CLIENT AND RESIDENT ENGNEER, REMOVE ALL PERIMETER SEDIMENT AND SITE ACCESS CONTROLS.
22. COMPLETE DEMOBILIZATION.

WATER CONTROL NOTES

1. TEMPORARY WATER CONTROL BY THE CONTRACTOR SHALL BE PERFORMED AS SPECIFIED IN THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY WATER CONTROL, SURFACE WATER, GROUNDWATER AND RIVER FLOW CONTROL, NECESSARY TO EXECUTE AND COMPLETE THE WORK OF THE CONTRACT, SUBJECT TO THE RESTRICTIONS CONTAINED IN THE CONTRACT AND PROJECT PERMITS. CONTROLS SHOWN IN THE CONTRACT DRAWINGS AND MENTIONED IN THE TECHNICAL SPECIFICATIONS SHALL BE CONSIDERED MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL EMPLOY WHATEVER SUPPLEMENTARY MEASURES NECESSARY TO PROTECT THE SITE AND THE WORK.
3. ALL TEMPORARY WATER CONTROL MEASURES SHALL BE IMPLEMENTED IN CONJUNCTION WITH APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES SO AS TO MINIMIZE TO THE GREATEST EXTENT POSSIBLE RELEASE OF SEDIMENT INTO WATER BODIES AND POTENTIAL EROSION OF SOIL.
4. THE CONTRACTOR IS HEREBY NOTIFIED THAT STRICT ADHERENCE TO THE WATER CONTROL CONDITIONS AND LIMITATIONS AND USE OF BEST MANAGEMENT PRACTICES IS CRITICAL TO PREVENT POSSIBLE IMPACTS TO SENSITIVE ENVIRONMENTAL AREAS.

WATER CONTROL ON THIS PROJECT SHALL REQUIRE THE CONTRACTOR TO IMPLEMENT PHASED CONSTRUCTION TEMPORARY COFFERDAMS ALONG THE UPSTREAM LEFT AND RIGHT ABUTMENTS AND ALONG TRAINING WALLS OF THE DAM AS PER SHEETS C-1 AND C-2 THESE DRAWINGS AND SECTION 01565 OF THE SPECIFICATIONS. THE ALIGNMENT OF THE COFFERDAM AS SHOWN ON THE DRAWINGS IS APPROXIMATE AND MAY BE VARIED TO ACCOMMODATE ACTUAL CONDITIONS WITHIN THE LIMIT OF WORK AND PERMIT CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR INVESTIGATING AND VERIFYING RIVER BOTTOM CONDITIONS PRIOR TO SELECTION OF COFFERDAM TYPE AND INSTALLATION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, MAINTENANCE, AND REMOVAL OF THE COFFERDAM SYSTEM(S).

5. THE COFFERDAMS SHALL NOT BE CONSTRUCTED OF UNCONTAINED FILL (SOIL, ROCK, OR ANY OTHER LOOSE MATERIAL).
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREPARATION AND SUBMISSION OF A CONSTRUCTION-PHASE FLOOD CONTROL / EMERGENCY RESPONSE PLAN PRIOR TO COFFERDAM INSTALLATION.
7. ANY TEMPORARY PUMPS UTILIZED AT THE SITE MUST BE PROPERLY BAFFLED AGAINST EXCESSIVE NOISE. PUMPS OR GENERATORS WHICH UTILIZE LIQUID FUEL MUST BE PLACED WITHIN AN IMPERMEABLE SECONDARY CONTAINMENT AREA WITH SUFFICIENT CAPACITY TO CONTAIN THE FULL VOLUME OF THE FUEL TANK.
8. WATER PUMPED FROM THE EXCAVATIONS MUST BE PASSED THROUGH A PUMPED WATER FILTER BAG OR OTHER SUCH BEST MANAGEMENT PRACTICE (BMP) FEATURE PRIOR TO BEING DISCHARGED BACK TO A SURFACE WATER BODY. DISCHARGE WATER SHALL MEET APPROPRIATE WATER QUALITY STANDARDS.
9. PUMPED WATER DISCHARGE AREAS MUST BE PROPERLY PROTECTED TO PREVENT EROSION BY HIGH VELOCITY FLOW.

3 / G3 — SECTION NO. / SHEET NO. — SECTION - CIVIL

1 / C9 — ELEVATION NO. / SHEET NO. — ELEVATION - CIVIL

C / S-3 S-4 — SECTION - STRUCTURAL

F / S-3 S-6 — DETAIL

LEGEND – SYMBOLS

- TAX MAP LINE
- HAND RAIL
- CHAIN LINK FENCE
- GUARDRAIL
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- SHRUB LINE
- EDGE OF WETLAND
- EDGE OF WATER
- CONCRETE
- RIP RAP
- LANDSCAPED AREA
- CRUSHED STONE
- BRICK
- UTILITY POLE STUB
- VP — VERTICAL PIPE
- UTILITY BOX
- TELEPHONE MANHOLE
- LIGHT POLE W/ARM
- FLAG POLE
- DECIDUOUS TREE
- CONIFEROUS SHRUB
- DRAINAGE FLOW DIRECTION
- IRRIGATION CONTROL VALVE
- ×14.7 — SPOT GRADE
- TYP. — TYPICAL
- CONC. — CONCRETE
- GRAN. — GRANITE
- RET. WALL — RETAINING WALL
- EP — EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- SGC — SLOPED GRANITE CURB
- SBB — SLOPED BITUMINOUS BERM
- GM — GAS METER
- ▲A-1 — WETLAND FLAG

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No. 15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

NO.	ISSUE/DESCRIPTION	BY	DATE
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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

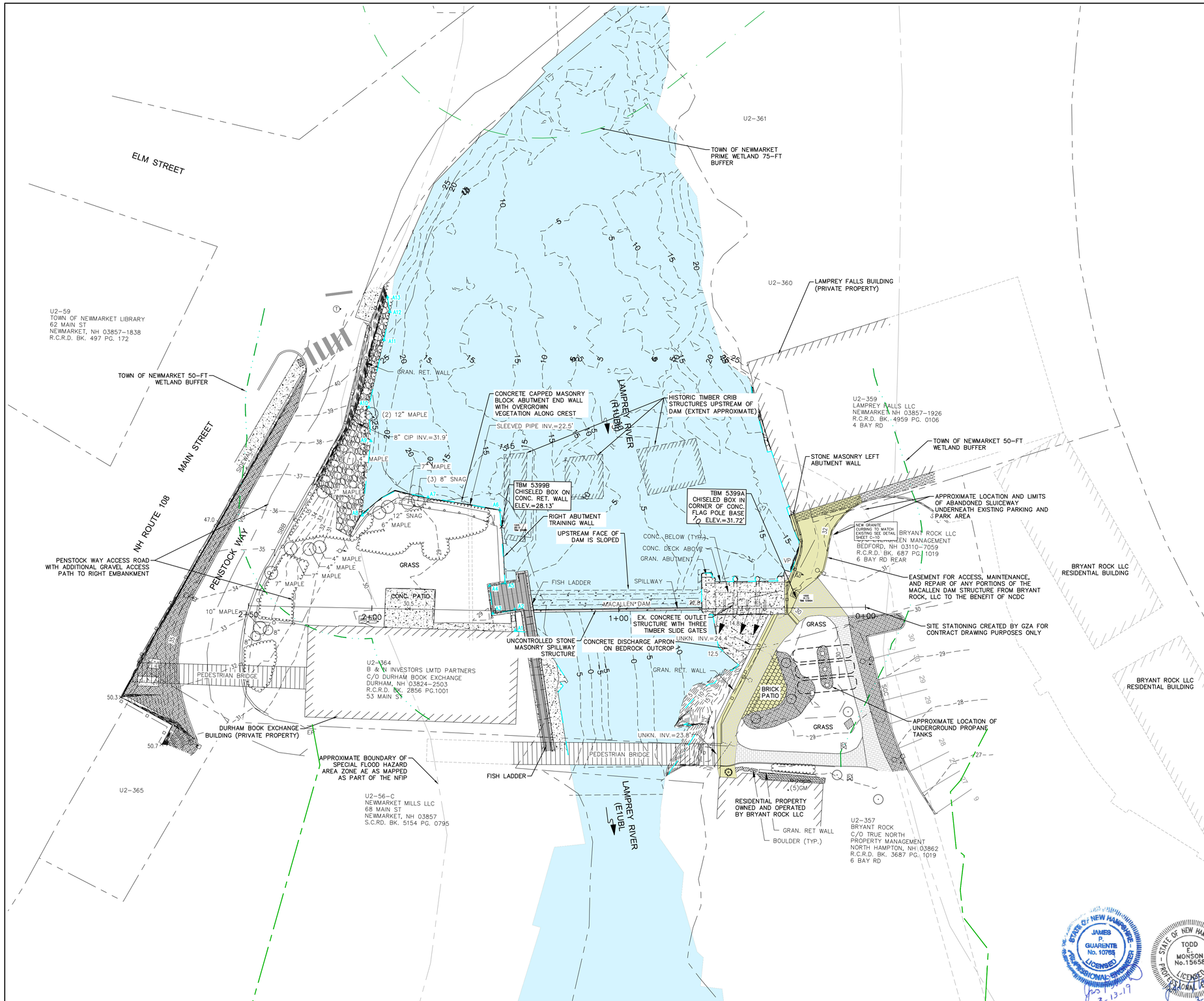
GENERAL NOTES AND CONSTRUCTION SEQUENCE

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG G-2
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 2 OF 36

© 2019 – GZA GeoEnvironmental, Inc. GZA-\\GZANGR\JOBS\170,000-179,999\173346\173346-10.TEM\WORK\CAD\PLANSET\100%-DESIGN\COVER SHEET_03-06-19.DWG G-2 – NOTES MARCH 14, 2019 11:57AM TODD MONSON



LEGEND

- EXISTING CONTOUR
- APPROXIMATE LIMITS OF WETLAND RESOURCE
- HIGHEST OBSERVABLE TIDE LINE
- APPROXIMATE LIMIT OF WATER AT TIME OF SURVEY (AUGUST 9, 2018)
- +206.98 EXISTING SPOT ELEVATION
- APPROXIMATE LIMIT OF IMPOUNDMENT AT TIME OF AUGUST 2018 SURVEY (WATER ELEVATION 23.3 FT NAD83)
- APPROXIMATE LOCATION OF MACALLEN DAM SPILLWAY AND OUTLET STRUCTURE
- APPROXIMATE FEMA FLOOD ZONE LIMIT
- APPROXIMATE LIMIT OF EASEMENT ACCESS
- APPROXIMATE 50-FT WETLAND BUFFER
- APPROXIMATE 75-FT WETLAND BUFFER
- APPROXIMATE 100-FT UPLAND TIDALBUFFER

GENERAL NOTES

1. OVERALL PARCEL BOUNDARIES AS SHOWN HEREON ARE BASED ON TOWN OF NEWMAREKT GIS DATA AND ARE IN THEIR ORIGINAL LOCATION. THE PARCEL BOUNDARIES HAVE NOT BEEN ADJUSTED TO MATCH FOUND PROPERTY MONUMENTS OR THE EDGE OF RIGHT OF WAY AS DETERMINED BY THE SURVEYOR.
2. LOCATION OF EXISTING EASEMENT BOUNDARY APPROXIMATE AND NOT BASED ON FIELD SURVEY. EASEMENT LOCATION DETERMINED FROM EASEMENT PLAN BY ALTUS ENGINEERING, INC. DATED JANUARY 14, 2002.
3. EXISTING GEOTECHNICAL INFORMATION IS PRESENTED ON SHEET G-4.
4. SEE G-2 FOR BASE PLAN INFORMATION.
5. BASELINE GEOMETRY TABLE BELOW IN NAD83 DATUM IN FEET.

BASELINE GEOMETRY TABLE

STATION	NORTHING	EASTING
TBM 5399A	1179793.6	212762.0
TBM 5399B	1179913.7	212788.3
0+00	1179940.4	212797.3
0+50	1179895.7	212775.0
1+00	1179851.0	212752.7
1+50	1179806.2	212730.3
2+00	1179761.5	212708.0
2+50	1179716.8	212685.6

0 10' 20' 40' 60'
SCALE IN FEET 1" = 20'

N W E S

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

EXISTING CONDITIONS OVERVIEW

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No. 15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG G-3
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 3 OF 36

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Photo A, Crack behind ladder

Photo B

Photo E, Taken 2007

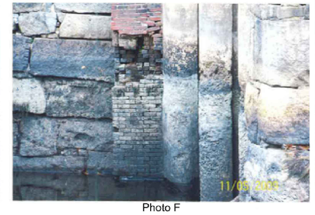
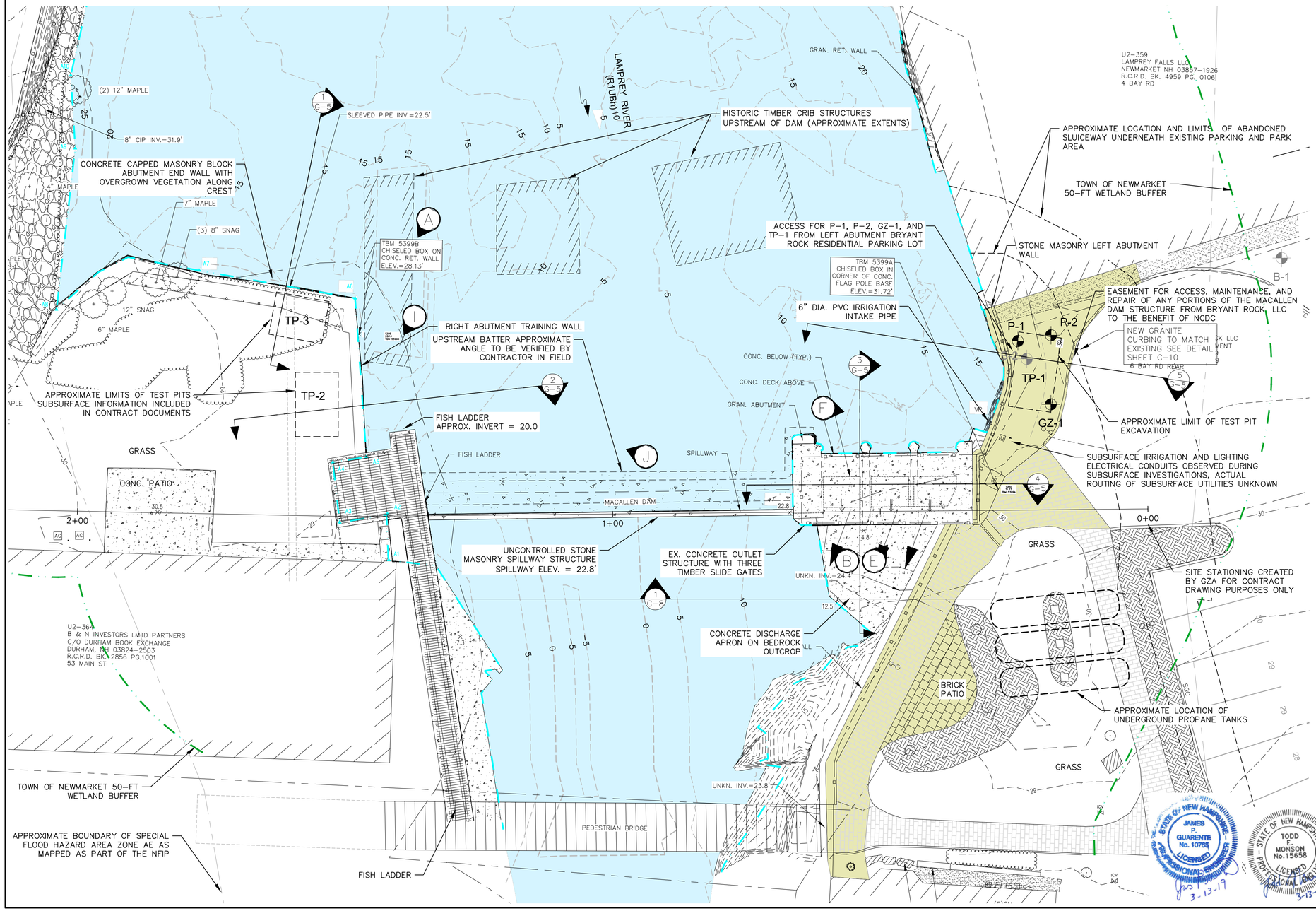


Photo F

Photo I

Photo J



LEGEND

- APPROXIMATE LIMITS OF WETLAND RESOURCE
- HIGHEST OBSERVABLE TIDE LINE
- APPROXIMATE LIMIT OF WATER AT TIME OF SURVEY (AUGUST 9, 2018)
- +206.98 — EXISTING SPOT ELEVATION
- APPROXIMATE LIMIT OF IMPOUNDMENT AT TIME OF AUGUST 2018 SURVEY (WATER ELEVATION 23.3 FT NAD83)
- APPROXIMATE LOCATION OF MACALLEN DAM SPILLWAY AND OUTLET STRUCTURE
- APPROXIMATE FEMA FLOOD ZONE LIMIT
- APPROXIMATE LIMIT OF EASEMENT ACCESS
- APPROXIMATE 50-FT WETLAND BUFFER
- APPROXIMATE 75-FT WETLAND BUFFER
- APPROXIMATE 100-FT UPLAND TIDALBUFFER
- J — PHOTO LOCATION AND IDENTIFICATION
- B-1 — APPROXIMATE LOCATION OF BORINGS PERFORMED BY R.W. GILLESPIE & ASSOCIATES IN JANUARY 2003.
- TP-# — APPROXIMATE LOCATION AND FOOTPRINT OF EXPLORATORY TEST PITS PERFORMED BY NEW ENGLAND BORING CONTRACTORS, INC. ON NOVEMBER 2, 2018.
- GZ/P-# — APPROXIMATE LOCATION OF GEOTECHNICAL BORINGS PERFORMED BY NEW ENGLAND BORING CONTRACTORS, INC. ON OCTOBER 31, 2018.

GENERAL NOTES

1. PHOTOS PROVIDED FOR REFERENCE ONLY. PHOTOS SHOW CONDITIONS DURING DRAWDOWN COMPLETED IN 2013 TO APPROXIMATE ELEVATION 16' – 17'.
2. OVERALL PARCEL BOUNDARIES AS SHOWN HEREON ARE APPROXIMATE AND BASED ON TOWN OF NEWMARKET GIS DATA AND ARE IN THEIR ORIGINAL LOCATION. THE PARCEL BOUNDARIES HAVE NOT BEEN ADJUSTED TO MATCH FOUND PROPERTY MONUMENTS OR THE EDGE OF RIGHT OF WAY AS DETERMINED BY THE SURVEYOR.
3. BORINGS B-1 AND B-2 WERE PERFORMED AS PART OF THE SELECTWOOD BUILDING DEVELOPMENT BY R.W. GILLESPIE & ASSOCIATES, INC. IN JANUARY 2003. THESE BORINGS WERE NOT OBSERVED BY GZA GEOENVIRONMENTAL, INC. BORING INFORMATION WAS OBTAINED IN THE APPENDIX A EXPLORATION LOGS DATED FEBRUARY 20, 2003. AS PART OF THE "GEOTECHNICAL INVESTIGATION REPORT" WHICH WAS PROVIDED TO GZA BY JEFFERY K. CLIFFORD, P.E. OF ALTUS ENGINEERING, INC. ON SEPTEMBER 13, 2018.
4. ONE BORING AND TWO PROBES WERE PERFORMED BY NEW ENGLAND BORING CONTRACTORS, INC. AND OBSERVED BY GZA GEOENVIRONMENTAL, INC. ON OCTOBER 31, 2018.
5. THREE EXPLORATORY TEST PITS WERE PERFORMED BY NEW ENGLAND CONTRACTORS, INC. AND OBSERVED BY GZA GEOENVIRONMENTAL, INC. ON NOVEMBER 2, 2018.
6. AVAILABLE SUBSURFACE EXPLORATION LOGS PROVIDED IN THE CONTRACT DOCUMENTS FOR REFERENCE PURPOSES ONLY.

0 5' 10' 20' 30'
SCALE IN FEET 1" = 10'

N W E S

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

EXISTING CONDITIONS & SUBSURFACE INVESTIGATIONS PLAN

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

STATE OF NEW HAMPSHIRE JAMES P. GUARIENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	G-4
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 4 OF 36

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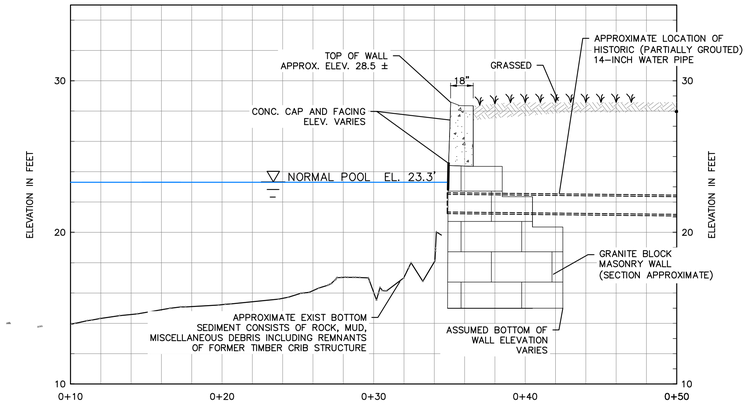
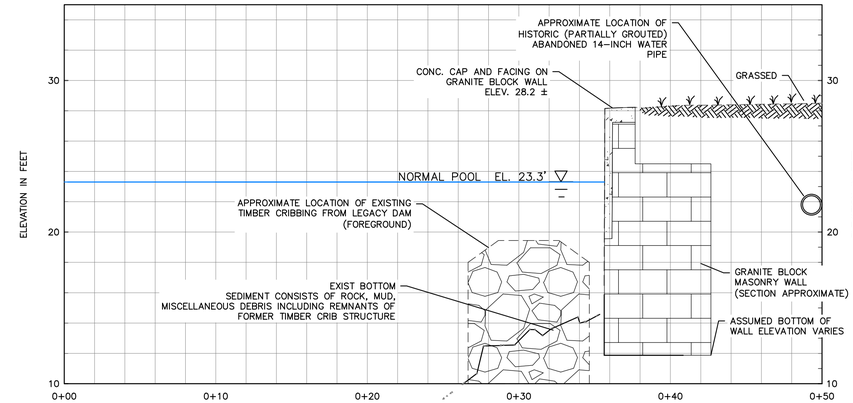


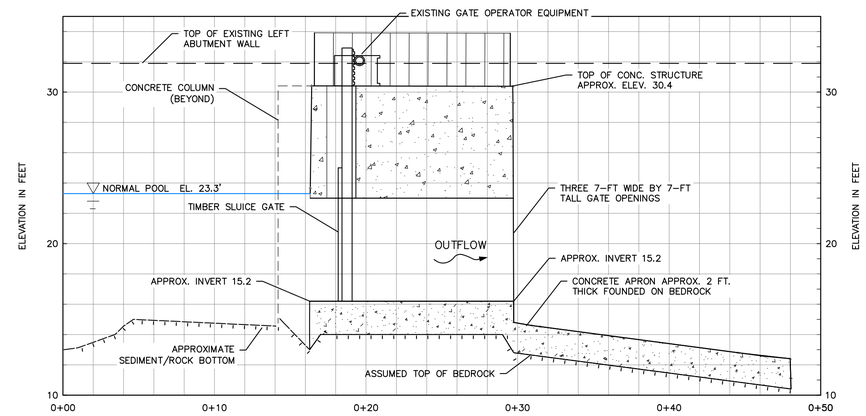
1 / G4 EXISTING CONDITIONS RIGHT ABUTMENT END WALL SECTION UPSTREAM FACE



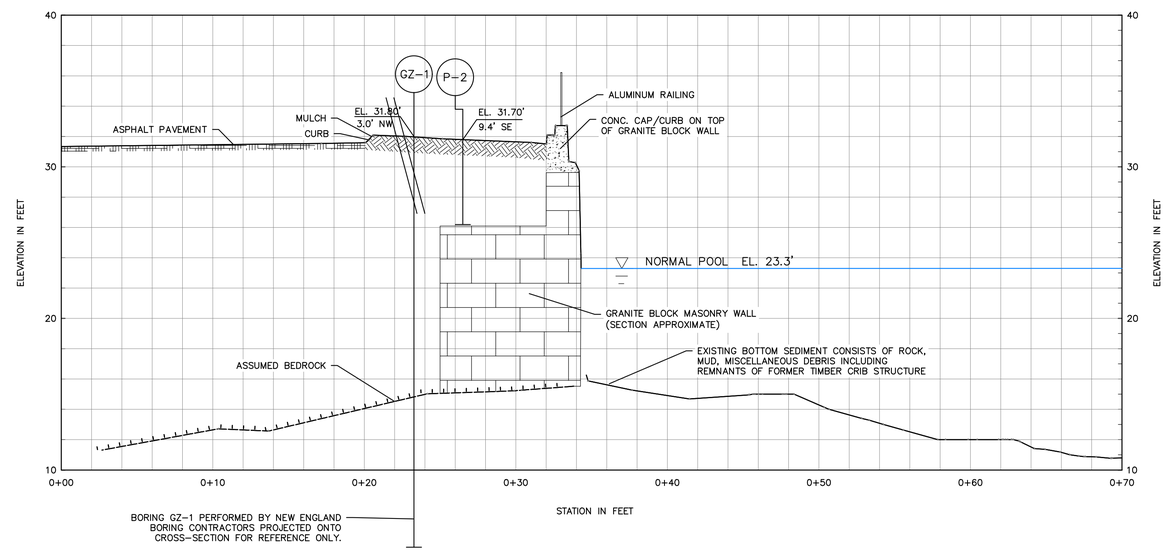
2 / G4 EXISTING CONDITIONS RIGHT ABUTMENT TRAINING WALL SECTION UPSTREAM OF FISH LADDER

NOTES:

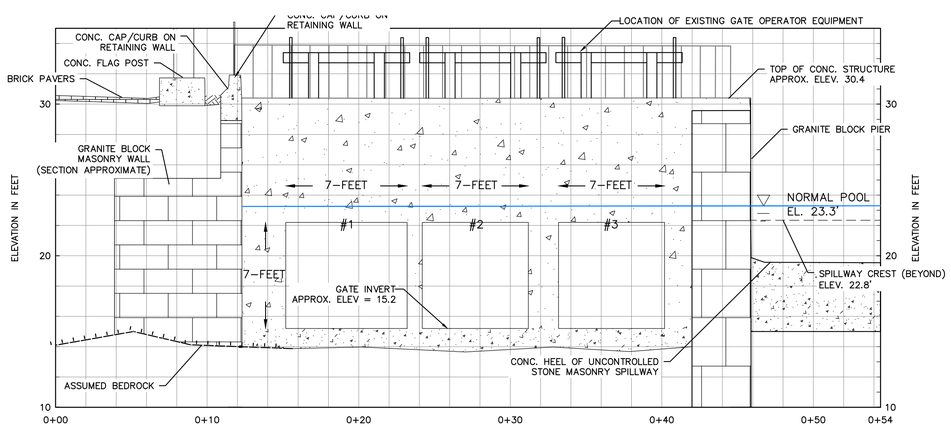
1. EXISTING FEATURES SHOWN IN ELEVATION AND SECTION VIEWS DEVELOPED FROM THE RECENT SURVEY FOR MACALLEN DAM. PLAN SET USED IN DEVELOPMENT OF THESE DRAWINGS INCLUDE PLANS ENTITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER", DATED JULY 31, 2018 BY DOUCET SURVEY INC. OF NEWMARKET NEW HAMPSHIRE.
2. PRESENCE AND LOCATION OF BELOW GRADE FEATURES HAVE NOT BEEN INDEPENDENTLY VERIFIED BY GZA GEOENVIRONMENTAL, INC. AND SHOULD BE CONSIDERED APPROXIMATE OF ACTUAL SITE FEATURES AND LOCATIONS.
3. SECTIONS HAVE THE SAME VERTICAL AND HORIZONTAL SCALE.
4. ELEVATIONS ARE PRESENTED IN UNITS OF FEET REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



3 / G4 EXISTING CONDITIONS OUTLET STRUCTURE SECTION THROUGH SLUICE GATE



5 / G4 EXISTING CONDITIONS LEFT ABUTMENT MASONRY WALL SECTION UPSTREAM OF OUTLET STRUCTURE



4 / G4 EXISTING CONDITIONS OUTLET STRUCTURE SECTION THROUGH STRUCTURE AND SLUICEWAY

0 2.5' 5' 10' 15'
SCALE IN FEET 1" = 5'

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

EXISTING CONDITIONS SECTIONS

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No. 15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		TOWN OF NEWMARKET, NH	
PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG G-5
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 5 OF 36

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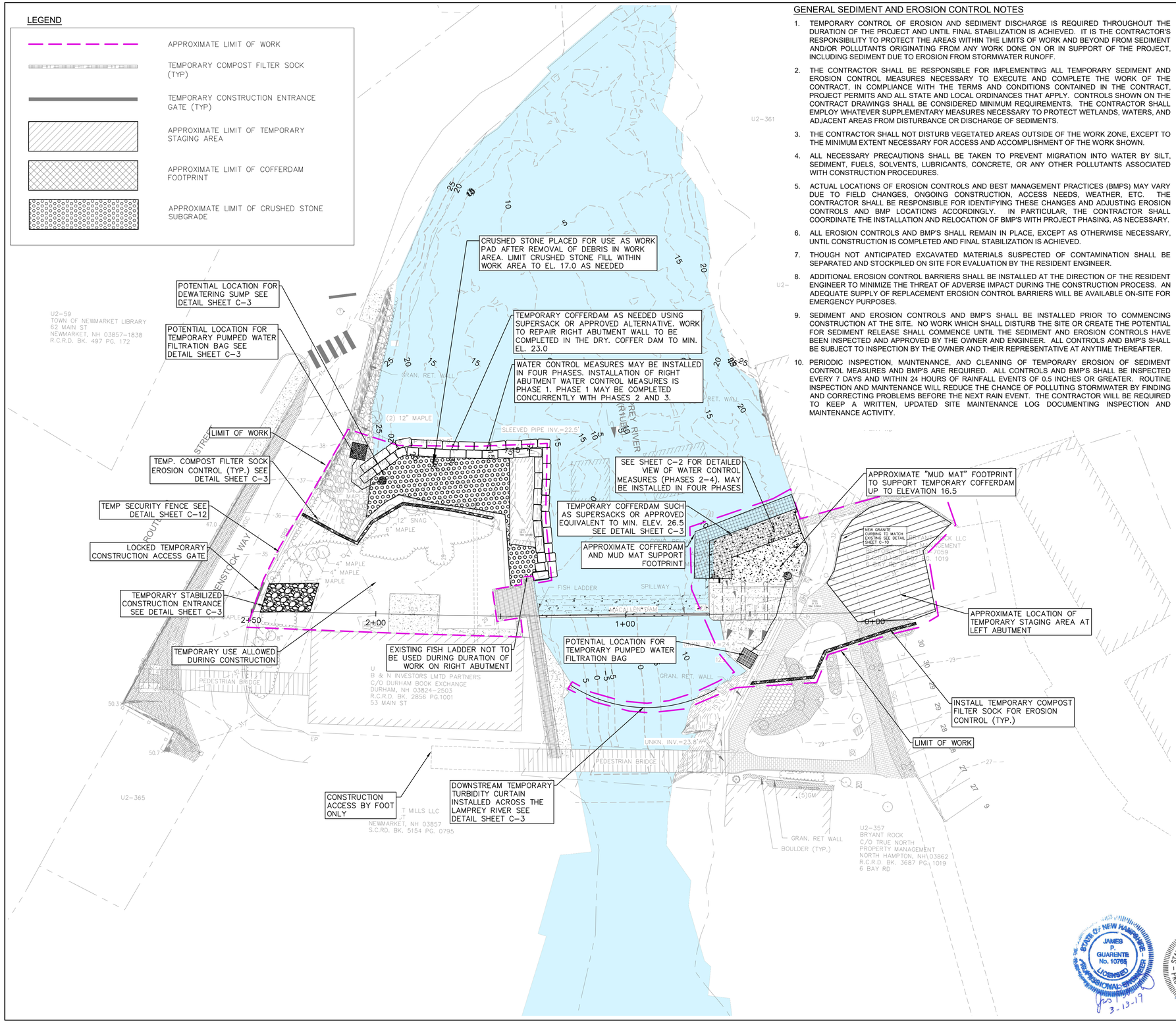
LEGEND

- APPROXIMATE LIMIT OF WORK
- TEMPORARY COMPOST FILTER SOCK (TYP)
- TEMPORARY CONSTRUCTION ENTRANCE GATE (TYP)
- APPROXIMATE LIMIT OF TEMPORARY STAGING AREA
- APPROXIMATE LIMIT OF COFFERDAM FOOTPRINT
- APPROXIMATE LIMIT OF CRUSHED STONE SUBGRADE



GENERAL SEDIMENT AND EROSION CONTROL NOTES

1. TEMPORARY CONTROL OF EROSION AND SEDIMENT DISCHARGE IS REQUIRED THROUGHOUT THE DURATION OF THE PROJECT AND UNTIL FINAL STABILIZATION IS ACHIEVED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT THE AREAS WITHIN THE LIMITS OF WORK AND BEYOND FROM SEDIMENT AND/OR POLLUTANTS ORIGINATING FROM ANY WORK DONE ON OR IN SUPPORT OF THE PROJECT, INCLUDING SEDIMENT DUE TO EROSION FROM STORMWATER RUNOFF.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES NECESSARY TO EXECUTE AND COMPLETE THE WORK OF THE CONTRACT, IN COMPLIANCE WITH THE TERMS AND CONDITIONS CONTAINED IN THE CONTRACT, PROJECT PERMITS AND ALL STATE AND LOCAL ORDINANCES THAT APPLY. CONTROLS SHOWN ON THE CONTRACT DRAWINGS SHALL BE CONSIDERED MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL EMPLOY WHATEVER SUPPLEMENTARY MEASURES NECESSARY TO PROTECT WETLANDS, WATERS, AND ADJACENT AREAS FROM DISTURBANCE OR DISCHARGE OF SEDIMENTS.
3. THE CONTRACTOR SHALL NOT DISTURB VEGETATED AREAS OUTSIDE OF THE WORK ZONE, EXCEPT TO THE MINIMUM EXTENT NECESSARY FOR ACCESS AND ACCOMPLISHMENT OF THE WORK SHOWN.
4. ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT MIGRATION INTO WATER BY SILT, SEDIMENT, FUELS, SOLVENTS, LUBRICANTS, CONCRETE, OR ANY OTHER POLLUTANTS ASSOCIATED WITH CONSTRUCTION PROCEDURES.
5. ACTUAL LOCATIONS OF EROSION CONTROLS AND BEST MANAGEMENT PRACTICES (BMPS) MAY VARY DUE TO FIELD CHANGES, ONGOING CONSTRUCTION, ACCESS NEEDS, WEATHER, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING THESE CHANGES AND ADJUSTING EROSION CONTROLS AND BMP LOCATIONS ACCORDINGLY. IN PARTICULAR, THE CONTRACTOR SHALL COORDINATE THE INSTALLATION AND RELOCATION OF BMP'S WITH PROJECT PHASING, AS NECESSARY.
6. ALL EROSION CONTROLS AND BMP'S SHALL REMAIN IN PLACE, EXCEPT AS OTHERWISE NECESSARY, UNTIL CONSTRUCTION IS COMPLETED AND FINAL STABILIZATION IS ACHIEVED.
7. THOUGH NOT ANTICIPATED EXCAVATED MATERIALS SUSPECTED OF CONTAMINATION SHALL BE SEPARATED AND STOCKPILED ON SITE FOR EVALUATION BY THE RESIDENT ENGINEER.
8. ADDITIONAL EROSION CONTROL BARRIERS SHALL BE INSTALLED AT THE DIRECTION OF THE RESIDENT ENGINEER TO MINIMIZE THE THREAT OF ADVERSE IMPACT DURING THE CONSTRUCTION PROCESS. AN ADEQUATE SUPPLY OF REPLACEMENT EROSION CONTROL BARRIERS WILL BE AVAILABLE ON-SITE FOR EMERGENCY PURPOSES.
9. SEDIMENT AND EROSION CONTROLS AND BMP'S SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE SITE. NO WORK WHICH SHALL DISTURB THE SITE OR CREATE THE POTENTIAL FOR SEDIMENT RELEASE SHALL COMMENCE UNTIL THE SEDIMENT AND EROSION CONTROLS HAVE BEEN INSPECTED AND APPROVED BY THE OWNER AND ENGINEER. ALL CONTROLS AND BMP'S SHALL BE SUBJECT TO INSPECTION BY THE OWNER AND THEIR REPRESENTATIVE AT ANYTIME THEREAFTER.
10. PERIODIC INSPECTION, MAINTENANCE, AND CLEANING OF TEMPORARY EROSION OF SEDIMENT CONTROL MEASURES AND BMP'S ARE REQUIRED. ALL CONTROLS AND BMP'S SHALL BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF RAINFALL EVENTS OF 0.5 INCHES OR GREATER. ROUTINE INSPECTION AND MAINTENANCE WILL REDUCE THE CHANCE OF POLLUTING STORMWATER BY FINDING AND CORRECTING PROBLEMS BEFORE THE NEXT RAIN EVENT. THE CONTRACTOR WILL BE REQUIRED TO KEEP A WRITTEN, UPDATED SITE MAINTENANCE LOG DOCUMENTING INSPECTION AND MAINTENANCE ACTIVITY.
11. REPORTING AND RECORD KEEPING: IN ADDITION TO THE AFOREMENTIONED INSPECTION AND MAINTENANCE PROCEDURES, THE CONTRACTOR IS TO KEEP A RECORD OF THE FOLLOWING INFORMATION:
    - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR IN A PARTICULAR AREA;
    - THE DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA, TEMPORARILY OR PERMANENTLY;
    - THE DATES WHEN AN AREA IS STABILIZED, TEMPORARILY OR PERMANENTLY AND;
    - A COPY OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND ALL REPORTS GENERATED DURING CONSTRUCTION ACTIVITIES ARE TO BE RETAINED AS REQUIRED BY REGULATION.
12. SITE CLEARING: PRIOR TO ANY SITE CLEARING ACTIVITIES, SEDIMENT CONTROL BARRIERS SHALL BE INSTALLED AS INDICATED ON THE CONTRACT DRAWINGS. ALONG THE OUTER LIMIT OF DISTURBANCE. DISTURBED AREAS ARE TO BE KEPT TO A MINIMUM. NO CLEARING IS ALLOWED OUTSIDE THE WORK AREA WITHOUT PRIOR APPROVAL FROM THE OWNER.
13. SEDIMENT AND EROSION CONTROL BARRIERS: SEDIMENT & EROSION CONTROL BARRIERS ARE INTENDED TO TRAP SEDIMENT TRANSPORTED BY RUNOFF BEFORE IT REACHES THE DRAINAGE FEATURES, WATERBODIES, OR WETLANDS, IN ADDITION TO AREAS WHERE HIGH RUNOFF VELOCITIES OR HIGH SEDIMENT LOADS ARE EXPECTED. SAID CONTROLS ARE TO BE REPLACED AS NEEDED AS DETERMINED BY PERIODIC FIELD INSPECTIONS.
14. DUST CONTROL: DUST CONTROL SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
15. STAGING AREA: THE CONTRACTOR MAY ESTABLISH LAYDOWN AND STAGING AREAS IN WHICH TO STORE EQUIPMENT AND MATERIALS ONLY IN THOSE AREAS SPECIFICALLY INDICATED ON THE CONTRACT DRAWINGS OR SPECIFICATIONS OR AS DIRECTED BY THE OWNER. LOCATION OF ADDITIONAL AREAS, IF NEEDED, SHALL BE COORDINATED WITH AND SHALL BE SUBJECT TO APPROVAL BY THE OWNER. STAGING AREAS SHALL BE ENCIRCLED WITH SEDIMENT/EROSION CONTROL BARRIERS AS APPROPRIATE. STAGING AREAS SHALL BE ENCIRCLED BY ORANGE PLASTIC TEMPORARY CONSTRUCTION FENCING OR OTHER MEANS OF DELINEATING THE AREAS. AT THE CONTRACTOR'S OPTION, ADDITIONAL OR MORE STURDY BARRIERS MAY BE INCLUDED AT NO ADDITIONAL COST TO THE OWNER.
16. STOCKPILED MATERIALS: STOCKPILES OF SOIL IN AREAS CREATED DURING CONSTRUCTION ACTIVITIES ARE TO BE SURROUNDED WITH SEDIMENT & EROSION CONTROL MEASURES WHERE POSSIBLE. OTHER ALTERNATIVES UTILIZED MAY INCLUDE GRAVEL FILTER BERMS OR SIMILAR MEASURES LAID AROUND THE PERIMETER OF THE STOCKPILE.
17. TEMPORARY STABILIZATION: WHEN NECESSARY, TEMPORARY SLOPE PROTECTION SHALL BE PROVIDED BY INSTALLING SEDIMENT/EROSION CONTROL BARRIERS AT THE TOE OF FILLS OR CUT SLOPES. IF ADDITIONAL STABILIZATION IS NEEDED, THEN THE CONTRACTOR SHALL INSTALL MATTING, SUCH AS HAY, JUTE, WOOD FIBER, OR BIO OR PHOTO-DEGRADABLE MESH. IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN TWO WEEKS, THE AREAS SHALL BE MULCHED WITH STRAW AT A RATE OF 100 LBS. PER 1,000 S.F. TO HELP CONTROL EROSION. TWO INCHES OF WOOD CHIP MULCH MAY ALSO BE USED AS TEMPORARY COVER. IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN ONE MONTH, THE AREAS SHALL BE TOPSOILED AND SEEDED AT NO ADDITIONAL COST TO THE OWNER. LEAVE THE SURFACE OF ALL EXCAVATIONS AND FILLS IN A FIRM AND STABLE CONDITION AT THE END OF EACH DAY. ROLL OR OTHERWISE TREAT THE SURFACE AS NEEDED.
18. SITE RESTORATION: STABILIZATION OF THE AREAS DISTURBED AS A RESULT OF CONSTRUCTION SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY AND PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS, USING HYDRO-SEEDING, BROADCASTING, OR OTHER APPROVED TECHNIQUES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. UNLESS OTHERWISE SHOWN ON DRAWINGS, RESTORATION SHALL CONSIST OF REPLACEMENT OF TOPSOIL OR PLACEMENT OF IMPORTED LOAM AS NEEDED SUCH THAT A MINIMUM OF 6 INCHES OF SUITABLE MATERIAL IS PRESENT AND APPROPRIATELY, LIMED, FERTILIZED, GRADED, AND SCARIFIED.

RESTORED AREAS SHALL BE ROLLED AND THEN APPROPRIATELY MULCHED OR COVERED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.

FINAL STABILIZATION SHALL BE CONSIDERED COMPLETE WHEN ALL SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF EIGHTY PERCENT HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR EROSION CONTROL MATTING) HAVE BEEN EMPLOYED ON ALL UNPAVED AREAS WITHIN THE CONSTRUCTION LIMITS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF SURFACES LOAMED AND SEEDED UNDER THIS CONTRACT, INCLUDING WATERING, FERTILIZING, AND RE-SEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.

ALL SOIL SURFACES WITHIN THE PROJECT LIMITS WILL BE STABILIZED WITHIN 2 WEEKS OF THE FINAL GRADING. AREAS FAILING TO BE STABILIZED SHALL BE RE-GRADED AND CONTINUED TO BE STABILIZED AS NEEDED.

0 10' 20' 40' 60'
SCALE IN FEET 1" = 20'

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

TEMPORARY SEDIMENT, EROSION & WATER CONTROL PLAN

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

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DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 6 OF 36

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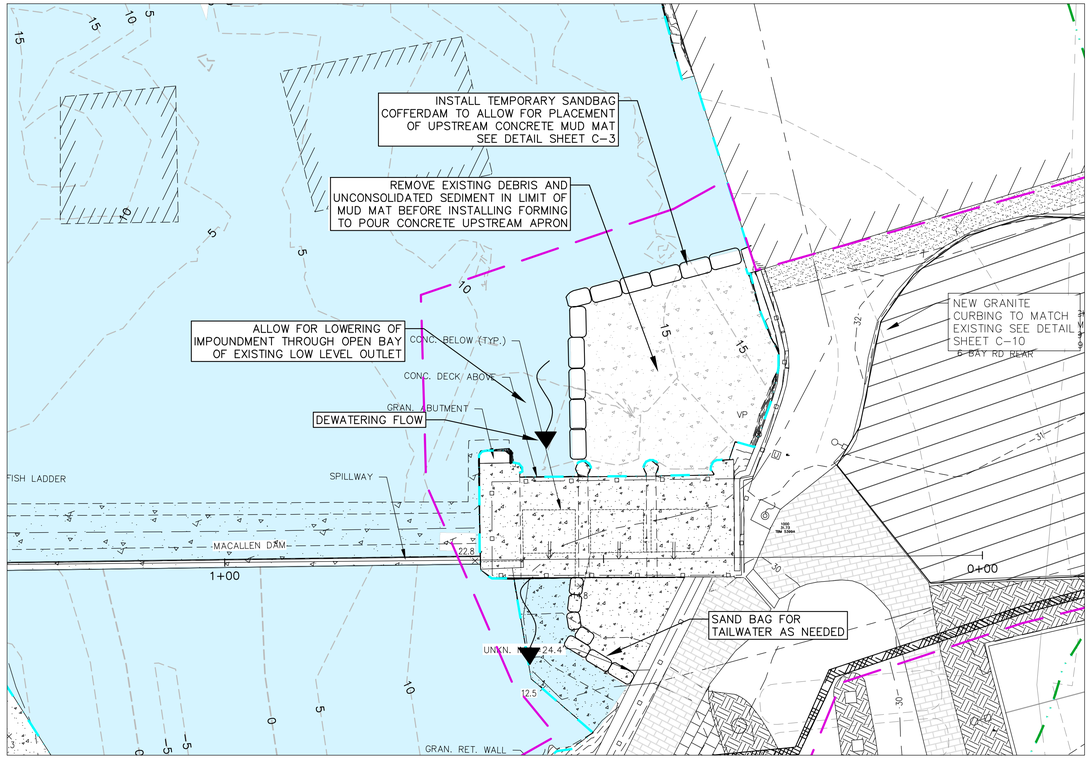
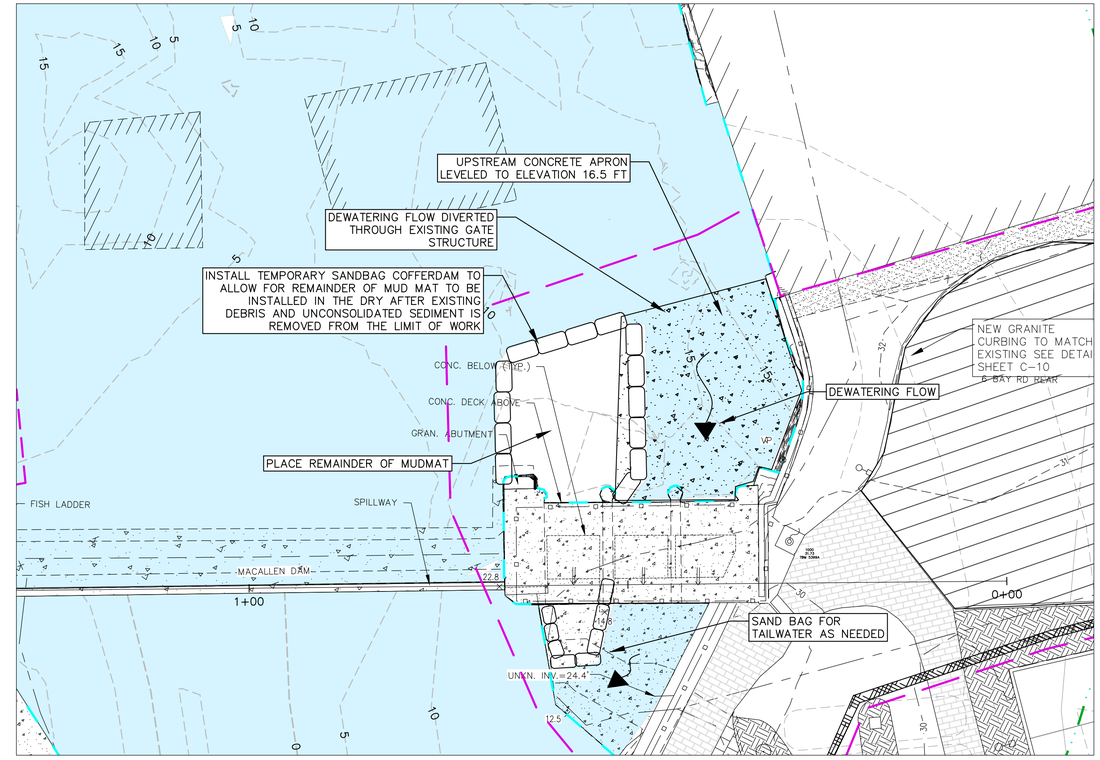
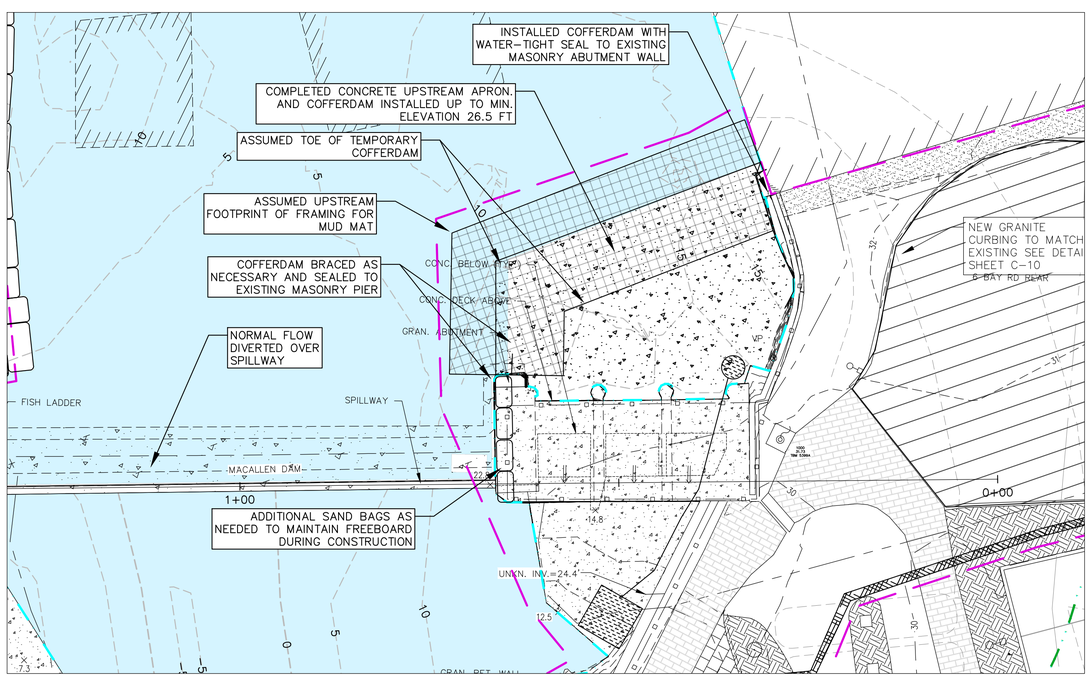


INSET 1 – WATER CONTROL PLAN – PHASE TWO



INSET2 – WATER CONTROL PLAN – PHASE THREE



INSET 3 – WATER CONTROL PLAN – PHASE FOUR

WATER CONTROL SEQUENCE NOTES

IT IS ANTICIPATED THAT THE TEMPORARY WATER CONTROL MEASURES NECESSARY TO EXECUTE AND COMPLETE THE SCOPE OF WORK WILL REQUIRE A PHASED SEQUENCING OF EVENTS. FOUR DISTINCT PHASES MAY BE IMPLEMENTED IN SERIES IN ORDER TO INSTALL TEMPORARY WATER CONTROL METHODS. AT THE COMPLETION OF EACH PHASE, THE WORK SHALL BE INSPECTED BY THE OWNER AND ENGINEER AND MUST BE APPROVED BEFORE BEGINNING THE NEXT PHASE. PHASE 1 WORK ON THE RIGHT ABUTMENT IS SHOWN ON SHEET C-1. PHASE 1 MAY OCCUR DURING PHASES TWO AND THREE DESCRIBED BELOW.

THE WATER CONTROL SEQUENCING ON THIS PROJECT SHALL REQUIRE THE CONTRACTOR TO INSTALL TEMPORARY COFFERDAMS AND WORKING MATS AT TWO DIFFERENT LOCATIONS (ALONG THE LEFT AND RIGHT ABUTMENTS). DRAWDOWN OF THE IMPOUNDMENT WILL LIKELY BE REQUIRED TO FACILITATE CONSTRUCTION. THE ANTICIPATED WATER CONTROL SEQUENCING SHOWN BELOW IS RECOMMENDED BUT MAY BE REVISED BY THE CONTRACTOR AS NECESSARY BEFORE IMPLEMENTATION AND PENDING APPROVAL OF THE CONTRACTORS WATER CONTROL SUBMITTAL BY THE OWNER AND ENGINEER.

AS PART OF PHASE I OF THE WATER CONTROL SEQUENCE, THE EXISTING IMPOUNDMENT OF THE LAMPREY RIVER CREATED BY THE MACALLEN DAM MAY BE LOWERED USING THE EXISTING GATE STRUCTURE BY OPENING THE THREE WOODEN GATES. THE IMPOUNDMENT MAY BE LOWERED, AS FLOW CONDITIONS ALLOW, TO AS LOW AS APPROXIMATELY ELEV. 16 TO 17 FT USING THE GATES. THE DRAWDOWN SHALL BE COMPLETED IN ACCORDANCE WITH CONDITIONS OUTLINED IN THE LETTER FROM NEW HAMPSHIRE FISH & GAME, DATED FEBRUARY 25, 2019, WHICH IS INCLUDED IN THE WATER CONTROL SECTION OF THE TECHNICAL SPECIFICATIONS.

THE ELEVATIONS OF THE IMPOUNDMENT ARE AFFECTED BY FLOWS WITHIN THE LAMPREY RIVER AND THE EXISTING CAPACITY OF THE GATES. THE OWNER CANNOT GUARANTEE THE IMPOUNDMENT WILL BE LOWERED TO ELEVATION 16 TO 17 AS THE ABILITY TO LOWER THE IMPOUNDMENT WILL BE DEPENDENT UPON THE FLOWS AT THE TIME OF CONSTRUCTION. OPERATION OF THE GATES SHALL BE PERFORMED BY THE TOWN OF NEWMARKET FACILITIES MANAGER IN COORDINATION WITH THE CONTRACTOR.

ANTICIPATED WATER CONTROL SEQUENCING SHALL BE IMPLEMENTED AS FOLLOWS:

1. PHASE 1
   A. FOLLOWING DRAW-DOWN OF THE IMPOUNDMENT, THE CONTRACTOR SHALL INSTALL A TEMPORARY COFFERDAM ALONG THE OUTBOARD SIDE OF THE RIGHT ABUTMENT AS SHOWN ON SHEET C-1 TO ENCOMPASS ALL OF THE CONCRETE FACED RIGHT ABUTMENT WALL. DUE TO ANTICIPATED, NON-UNIFORM GROUND CONDITIONS PRESENT ALONG THE RIGHT ABUTMENT. THE CONTRACTOR MAY ESTABLISH A WORKING PLATFORM BY INSTALLING CRUSHED STONE TO APPROXIMATELY ELEVATION 17 FT. IT IS ANTICIPATED THAT THE RIGHT ABUTMENT COFFERDAM MAY BE A SAND BAG (SUPER SACK) STRUCTURE OR APPROVED EQUIVALENT TEMPORARY COFFERDAM. INSTALLATION OF A TEMPORARY DEWATERING SUMP MAY BE REQUIRED TO MAINTAIN DRY CONDITIONS.

   B. THE CONTRACTOR SHALL INSTALL THE TEMPORARY COFFER DAM AT THE LEFT ABUTMENT, WHICH MAY BE COMPLETED CONCURRENTLY WITH PHASE 1 (ON RIGHT ABUTMENT) SHOWN ON SHEET C-1. THE CONTRACTOR SHALL PLACE A CONCRETE MUD MAT UPSTREAM OF THE EXISTING GATE STRUCTURE TO THE EXTENT SHOWN ON INSET ONE, THIS SHEET. A CONCRETE MUD-MAT SHALL BE PLACED UP TO ELEVATION 16.5 FT. THE AREA IN WHICH THE MAT IS TO BE PLACED, IF USED, SHALL BE CLEARED OF EXISTING DEBRIS AND UNCONSOLIDATED SEDIMENT PRIOR TO INSTALLATION.

   C. THE CONTRACTOR MAY UTILIZE THE EXISTING GATE STRUCTURE, BAY #3 FOR THE DURATION OF PHASE I TO PROVIDE CONVEYANCE CAPACITY THROUGH THE DAM.

3. PHASE 2
   A. THE SECOND PHASE OF THE WATER CONTROL SEQUENCING MAY INCLUDE THE PLACEMENT AND INSTALLATION OF THE SECOND PORTION OF THE CONCRETE MUD-MAT TO AID THE INSTALLATION OF A TEMPORARY COFFERDAM UPSTREAM OF THE EXISTING GATES STRUCTURE (SEE INSET TWO, THIS SHEET).

   B. THE CONTRACTOR MAY UTILIZE THE EXISTING CREST GATE BAYS #1 AND #2 FOR PHASE 2 TO ALLOW FOR THE CONTINUED DRAW DOWN OF THE IMPOUNDMENT.

4. PHASE 3
   A. ONCE THE ENTIRE MUD-MAT FOUNDATION IS SUCCESSFULLY PLACED AND ALLOWED TO CURE, A TEMPORARY COFFERDAM SHALL BE INSTALLED UP TO ELEVATION 26.5. A POTENTIAL ALIGNMENT IS SHOWN (INSET THREE, THIS SHEET). IT IS SUGGESTED THAT THE TEMPORARY COFFERDAM ALONG THE LEFT ABUTMENT BE INSTALLED IN THE WET AND TIED INTO THE EXISTING LEFT ABUTMENT WALL AND EXISTING STONE MASONRY PIER TO THE LEFT OF THE SPILLWAY.

5. PHASE 4
   A. THE CONTRACTOR MAY COMPLETE INSTALLATION OF THE WATER CONTROL SYSTEM AS SHOWN ON INSET FOUR ON THIS SHEET.

6. ONCE INSTALLED, THE AREA IMMEDIATELY DOWNSTREAM OF THE COFFERDAM (JUST UPSTREAM OF THE EXISTING GATE STRUCTURE) SHALL BE DEWATERED USING A PUMPING SYSTEM OR USING THE EXISTING GATES, ENGAGING THE COFFERDAM AND CLEARING THE WORK AREA.

7. WITH THE COMPLETION OF THE LEFT ABUTMENT COFFERDAM, THE IMPOUNDMENT WILL FILL BACK TO NORMAL POOL CONDITIONS, APPROXIMATELY ELEVATION 23 FT.

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

0 5' 10' 20' 40'
SCALE IN FEET 1" = 10'

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

TEMPORARY WATER CONTROL PLAN PHASES

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

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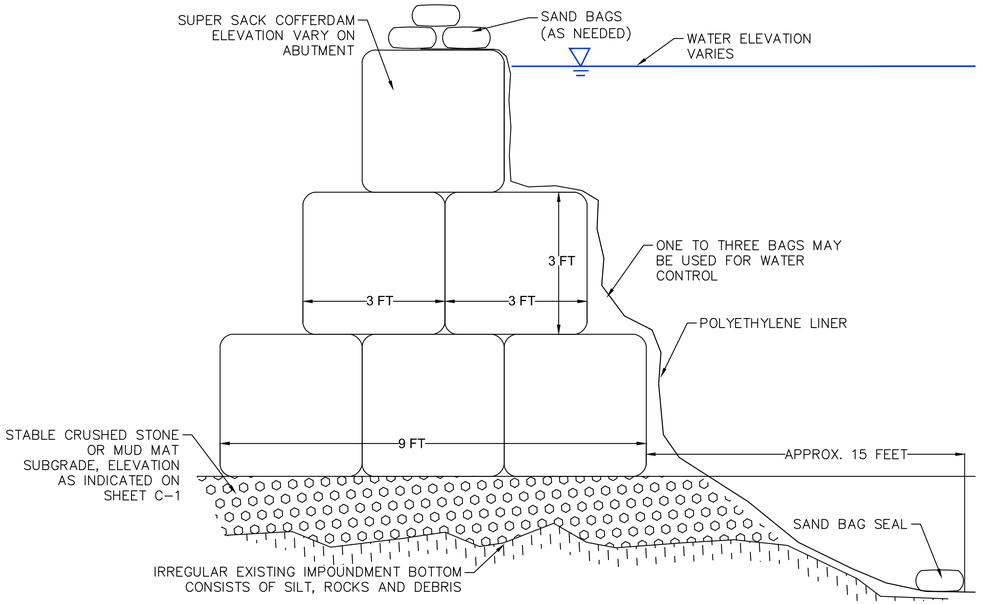
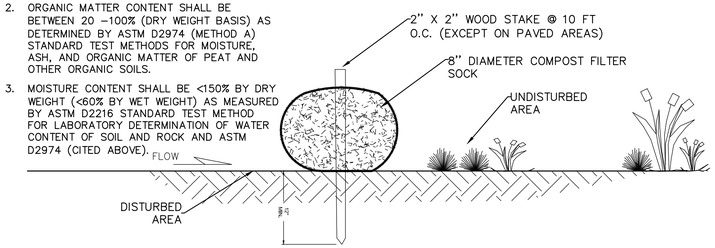


TYPICAL SANDBAG (SUPER SACK) COFFERDAM DETAIL – MINIMUM SECTION

NOT TO SCALE

NOTES:

1. FILTER SOCK SHALL BE MADE OF 100% ORGANIC HESSIAN FABRIC (BURLAP) OR BIO–DEGRADABLE 5 MIL HDPE (NO LONGER THAN 6 MONTHS). REPLACEMENT NEEDED AFTER 6 MONTHS.
2. ORGANIC MATTER CONTENT SHALL BE BETWEEN 20 –100% (DRY WEIGHT BASIS) AS DETERMINED BY ASTM D2974 (METHOD A) STANDARD TEST METHODS FOR MOISTURE, ASH, AND ORGANIC MATTER OF PEAT AND OTHER ORGANIC SOILS.
3. MOISTURE CONTENT SHALL BE <150% BY DRY WEIGHT (<60% BY WET WEIGHT) AS MEASURED BY ASTM D2216 STANDARD TEST METHOD FOR LABORATORY DETERMINATION OF WATER CONTENT OF SOIL AND ROCK AND ASTM D2974 (CITED ABOVE).



4. PARTICLE SIZE IS MEASURED BY SIEVING SHALL BE AS FOLLOWS:

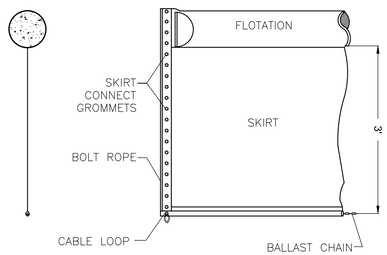
SIEVE SIZE	% PASSING
75MM	100%
19MM	70–100%
#4	30– 75%
#20	20–40%

NO PARTICLE MAY BE LONGER THAN 150MM

5. SOLUBLE SALTS SHALL BE <5.0 MMHOS/CM (DS/M).
6. THE PH SHALL BE BETWEEN 5.5 AND 8.0.
7. FILTER SOCKS MUST BE PLACED PARALLEL TO CONTOUR WITH BOTH ENDS OF THE SOCK EXTENDED UPSLOPE AT A 45 DEGREE ANGLE TO THE REST OF THE SOCK TO PREVENT END–AROUNDS.
8. THE CONTRACTOR SHALL MAINTAIN THE FILTER SOCKS IN A FUNCTIONAL CONDITION AT ALL TIMES, INCLUDING INSPECTIONS AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
9. FOR REMOVAL, THE CONTRACTOR SHALL RAKE OUT SO THAT FILTER MATERIAL IS NO GREATER THAN 3" IN DEPTH ON SOIL SUBSTRATE.

COMPOST FILTER SOCK DETAIL

NOT TO SCALE

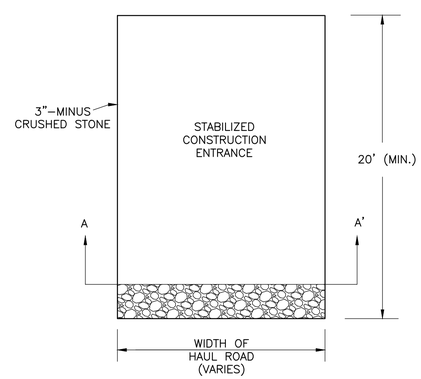


NOTES:

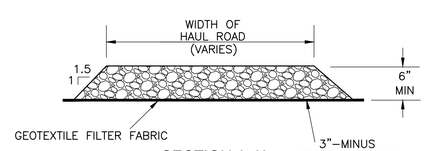
1. ANCHOR CURTAIN LOCATED AT ENDS OF BANK.
2. ANCHOR CURTAIN AT INTERMEDIATE POINTS WITH CONCRETE ANCHOR BLOCKS.

TURBIDITY CURTAIN DETAIL

NOT TO SCALE



PLAN VIEW

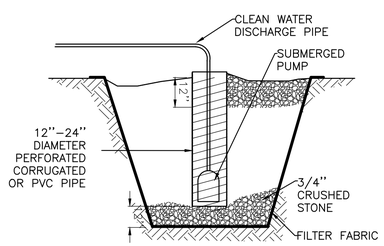


SECTION A-A'

NOTE: REMOVE AT END OF PROJECT AND RESTORE AREA.

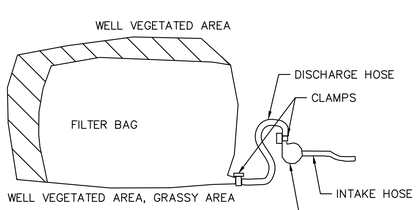
CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

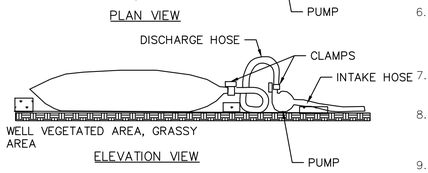


DEWATERING SUMP DETAIL

NOT TO SCALE



PLAN VIEW



ELEVATION VIEW

1. CONTRACTOR SHALL LOCATE FILTER BAG TO COMPLY WITH REQUIREMENTS BELOW. LOCATION IS SUBJECT TO APPROVAL BY THE ENGINEER.
2. FILTER BAGS SHALL BE USED TO FILTER WATER PUMPED FROM DISTURBED AREAS PRIOR TO DISCHARGING.
3. FILTER BAGS SHALL BE MADE FROM NON–WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. CONTRACTOR SHALL PROVIDE A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY (FOR DISPOSAL PURPOSES).
4. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL.
5. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
6. BAGS SHALL BE LOCATED IN WELL–VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%.
7. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED.
8. THE PUMPING RATE SHALL BE NO GREATER THAN 100 GPM OR ½ THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATING AND SCREENED.
9. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

PUMPED WATER FILTER BAG DETAIL

NOT TO SCALE

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

TEMPORARY SEDIMENT, EROSION & WATER CONTROL DETAILS

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Engineers and Scientists
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PREPARED FOR:
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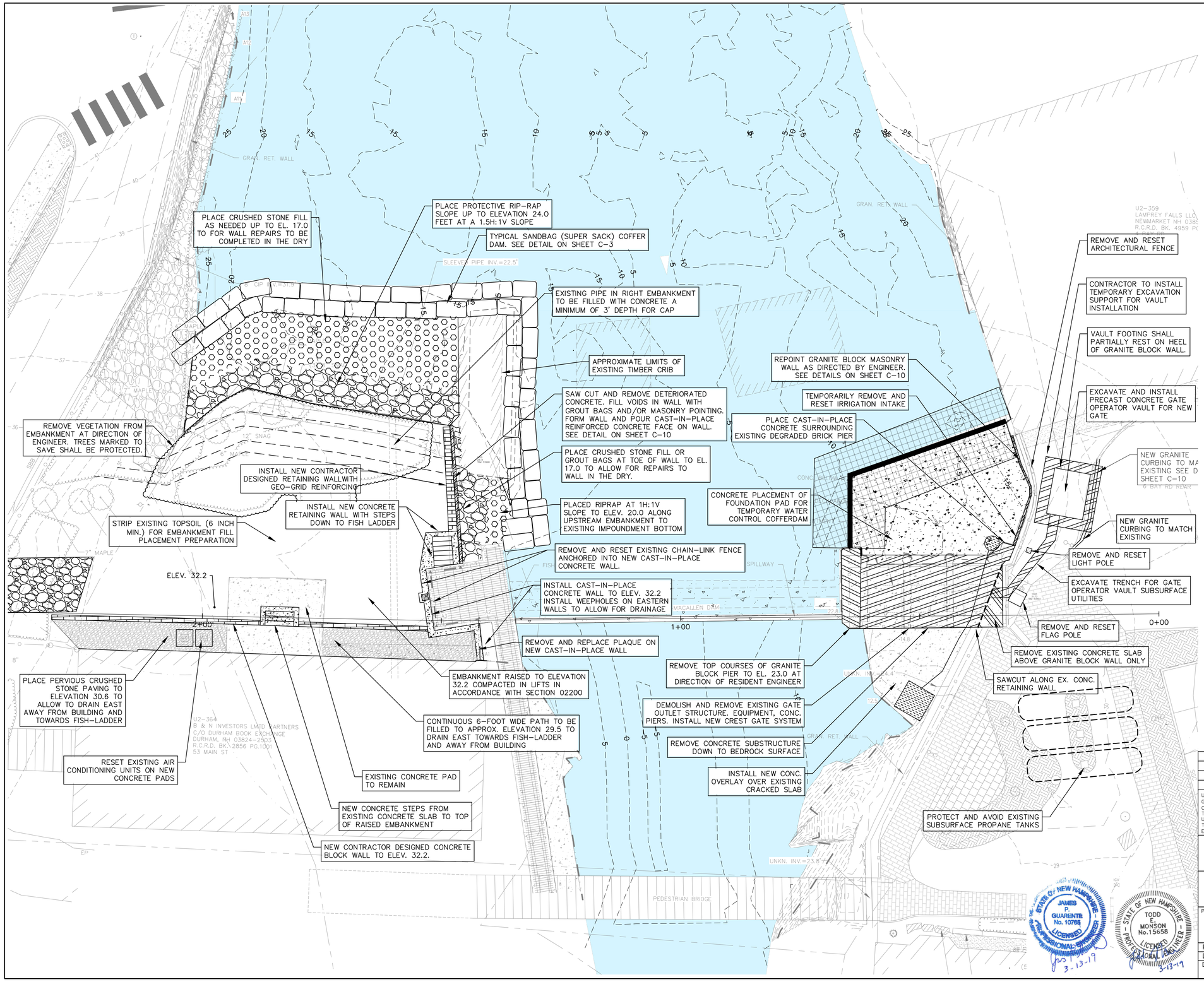

LEGEND

- CRUSHED STONE
- CAST IN PLACE CONCRETE
- RIPRAP
- PRECAST SEGMENTAL BLOCK GRAVITY WALL
- SLAB DEMOLITION ONLY
- APPROXIMATE DEMOLITION AREA

GENERAL NOTES

1. BASE MAP DEVELOPED FROM CADD FILES PROVIDED BY DOUCET SURVEY INC. OF NEWMARKET, NEW HAMPSHIRE, TITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER" DATED JULY 31, 2018.
2. LOCATION OF EXPLORATIONS ARE PROVIDED ON SHEET G-4 . AVAILABLE SUBSURFACE EXPLORATION INFORMATION IS PRESENTED IN THE TECHNICAL SPECIFICATIONS FOR REFERENCE PURPOSES ONLY.
3. CONTRACTOR SHALL CONTACT DIG SAFE PRIOR TO COMPLETING ANY EXCAVATION AT THE SITE. CONTRACTOR SHALL PERFORM EXCAVATIONS IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY REGULATIONS AND IN ACCORDANCE WITH REQUIREMENTS OUTLINED IN THE TECHNICAL SPECIFICATIONS.
4. CONTRACTOR SHALL PHYSICALLY MARK THE LOCATION OF THE ABANDONED SLUICEWAY AND PERIMETER OF THE PROPANE TANKS LOCATED APPROXIMATELY 20 FEET SOUTHEAST OF THE EXISTING GATE STRUCTURE ON GROUND SURFACE. LOCATION OF SUBSURFACE EXTENT OF SLUICEWAY AND PROPANE TANKS IS APPROXIMATE.
5. EXCAVATION SUPPORT DETAILS FOR THE NEW PARTIALLY SUBSURFACE VAULT ARE PROVIDED ON SHEETS S-10 AND S-11.
6. CONTRACTOR'S BID PRICE TO INCLUDE ALLOWANCE FOR ARCHITECTURAL FINISH AND/OR LANDSCAPING AROUND NEW ABOVE-GROUND PORTIONS OF VAULT

DEMOLITION NOTES

1. SEE SECTION 02065 FOR DEMOLITION SPECIFICATION.
2. LEGALLY DISPOSE OFF SITE ALL DEMOLITION AND OTHER DEBRIS GENERATED FROM THE WORK.
3. SALVAGE ALL SLUICE GATES AND OPERATORS AND DELIVER TO LOCATION IN TOWN AS REQUIRED BY THE OWNER.

0 5' 10' 20' 30'
SCALE IN FEET 1" = 10'

NO.	ISSUE/DESCRIPTION	BY	DATE
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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

DEMOLITION AND MODIFICATIONS PLAN

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG C-4
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 9 OF 36

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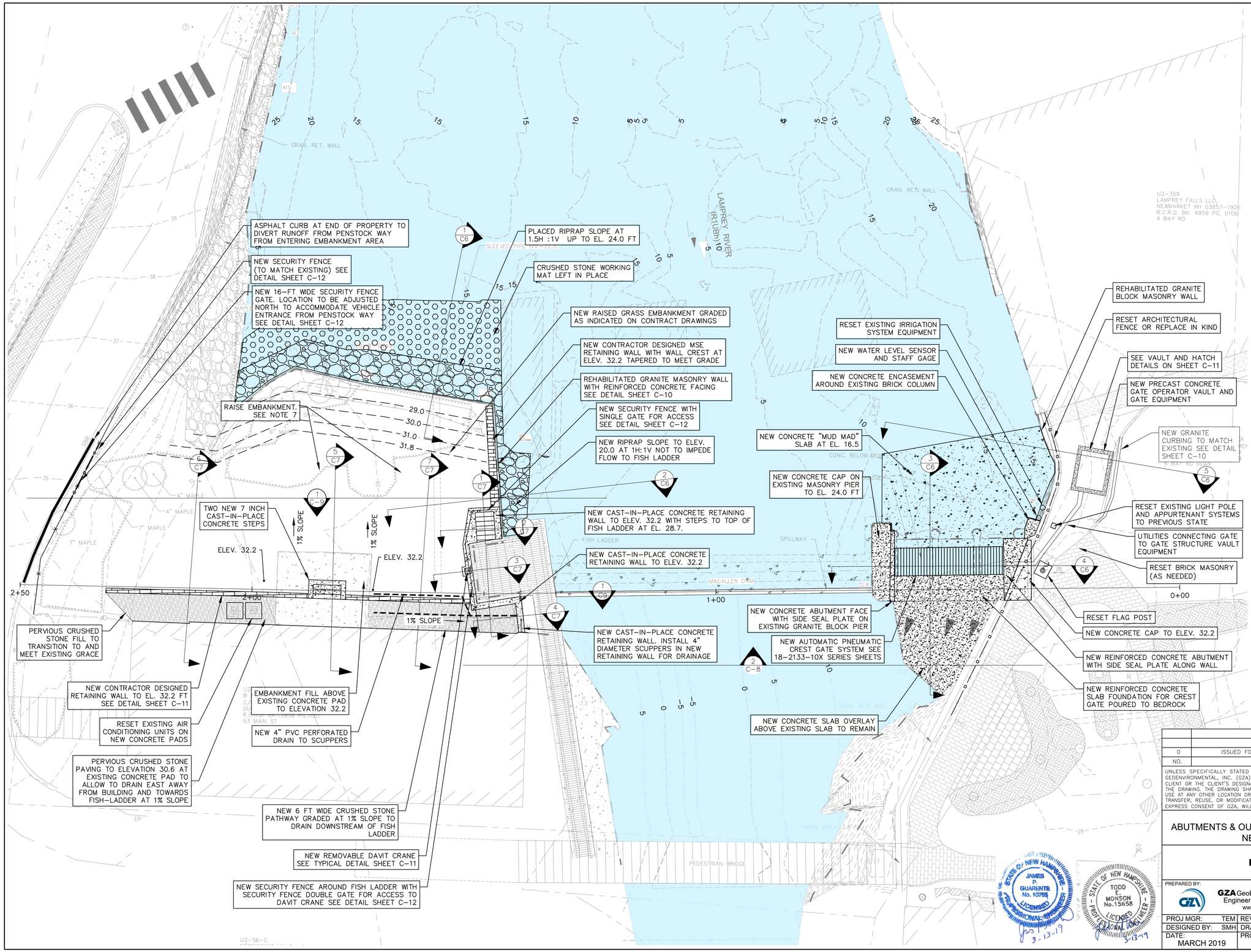

LEGEND

- CRUSHED STONE
- CAST IN PLACE CONCRETE
- RIPRAP
- PRECAST SEGMENTAL BLOCK GRAVITY WALL

NOTES:

1. SEE SHEETS S-1 THROUGH S-9 FOR STRUCTURAL DETAILS.
2. SEE SHEETS S-10 AND S-11 FOR EXCAVATION SUPPORT AND VAULT INSTALLATION DETAILS.
3. SEE SHEETS 18-2133-100 THROUGH 18-2134-004 FOR GATE AND EQUIPMENT DETAILS.
4. FINAL CONCRETE VAULT DESIGN TO BE COORDINATED BETWEEN CONTRACTOR AND PNEUMATIC GATE MANUFACTURER AND APPROVED BY THE ENGINEER / TOWN. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER TO ENSURE VAULT DESIGN INCLUDES SUFFICIENT UTILITY PENETRATIONS TO ACCOMMODATE NECESSARY EQUIPMENT.
5. CONTRACTOR TO INSTALL PERMANENT EXCAVATION SUPPORT FOR VAULT CONSTRUCTION. REFER TO SHEETS S-10 AND S-11 FOR ADDITIONAL DETAIL.
6. CONTRACTOR'S BID PRICE TO INCLUDE ALLOWANCE FOR ARCHITECTURAL FINISH AND/OR LANDSCAPING AROUND NEW ABOVE-GROUND PORTIONS OF VAULT.
7. RAISED AND RESTORED PARCEL TO ELEV. 32.0 WITH LOW PERMEABILITY FILL. TOP OF FILL TO INCLUDE 6 INCHES LOAM AND SEED WITH TEMPORARY STABILIZATION (MULCH OR APPROVED EQUAL). EMBANKMENT TO BE SLOPED AT 1% TO DRAIN AWAY FROM FISH LADDER.

0 5' 10' 20' 30'
SCALE IN FEET 1" = 10'

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

FINAL CONDITIONS PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG C-5
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 10 OF 36

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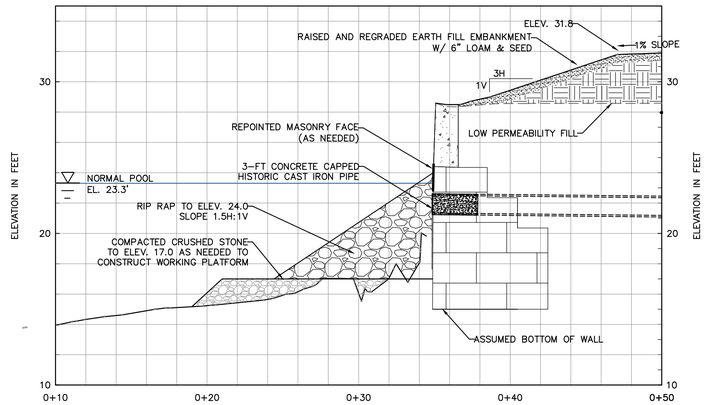
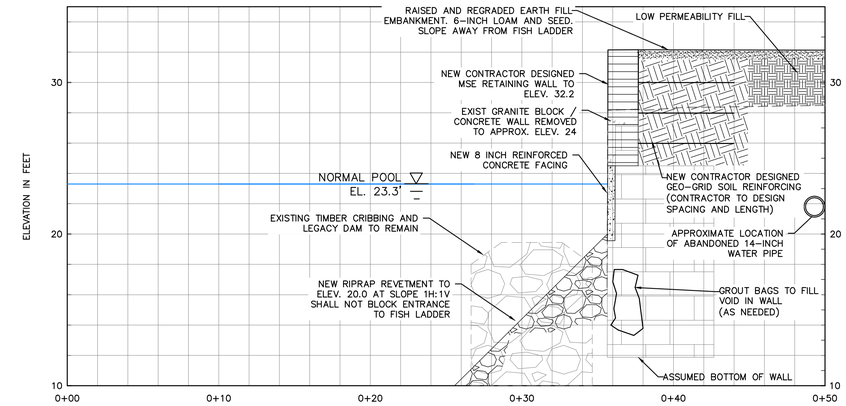


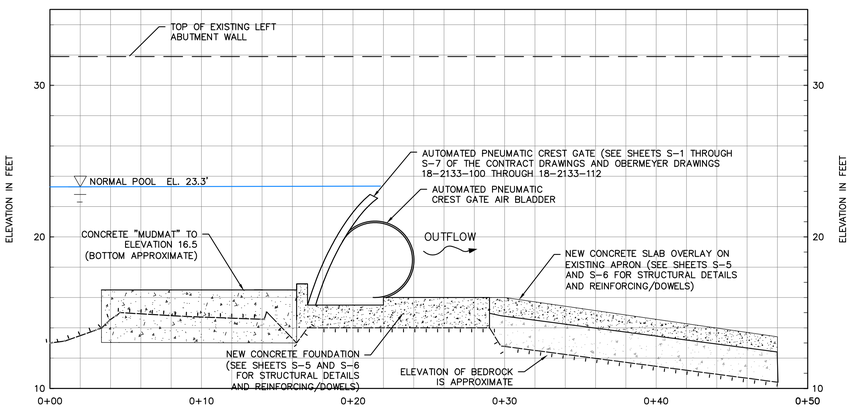
1 / C5 FINAL CONDITIONS RIGHT ABUTMENT & LOW LEVEL OUTLET SECTION



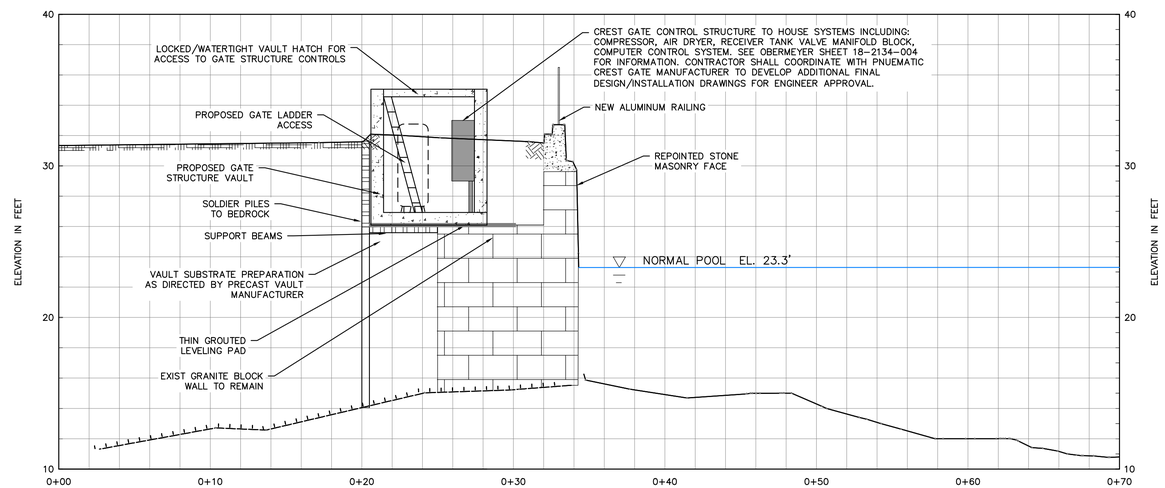
2 / C5 FINAL CONDITIONS RIGHT ABUTMENT – CONTRACTOR DESIGNED WALL UPSTREAM OF FISH LADDER

NOTES:

1. EXISTING FEATURES SHOWN IN ELEVATION AND SECTION VIEWS DEVELOPED FROM THE RECENT SURVEY FOR MACALLEN DAM. PLAN SET USED IN DEVELOPMENT OF THESE DRAWINGS INCLUDE PLANS ENTITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER", DATED JULY 31, 2018 BY DOUCET SURVEY INC. OF NEWMARKET NEW HAMPSHIRE.
2. PRESENCE AND LOCATION OF BELOW GRADE FEATURES HAVE NOT BEEN INDEPENDENTLY VERIFIED BY GZA GEOENVIRONMENTAL, INC. AND SHOULD BE CONSIDERED APPROXIMATE OF ACTUAL SITE FEATURES AND LOCATIONS.
3. SECTIONS HAVE THE SAME VERTICAL AND HORIZONTAL SCALE.
4. ELEVATIONS ARE PRESENTED IN UNITS OF FEET REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

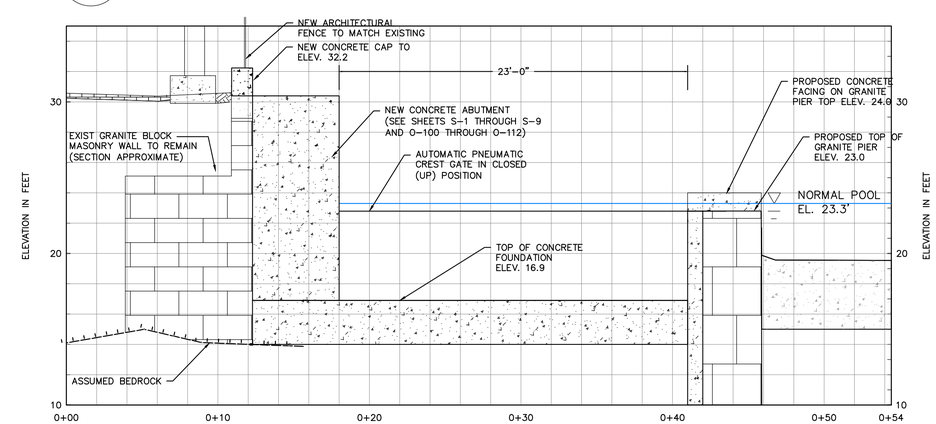


3 / C5 FINAL CONDITIONS OUTLET GATE STRUCTURE PERPENDICULAR VIEW



5 / C5 FINAL CONDITIONS LEFT ABUTMENT MASONRY WALL UPSTREAM OF GATE STRUCTURE

NOTE: SEE SHEETS S-10 AND S-11 FOR ADDITIONAL SUPPORT OF EXCAVATION DETAILS



4 / C5 FINAL CONDITIONS OUTLET GATE STRUCTURE ELEVATION VIEW

NOTE: SEE SHEETS S-1 THROUGH S-9 FOR STRUCTURAL DETAILS

0 2.5' 5' 10' 15'
SCALE IN FEET 1" = 5'

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

FINAL CONDITIONS SECTIONS (1 OF 2)

STATE OF NEW HAMPSHIRE JAMES P. GUARIENTE No. 10769 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No. 15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: TOWN OF NEWMARKET, NH	
PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG C-6
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 11 OF 36

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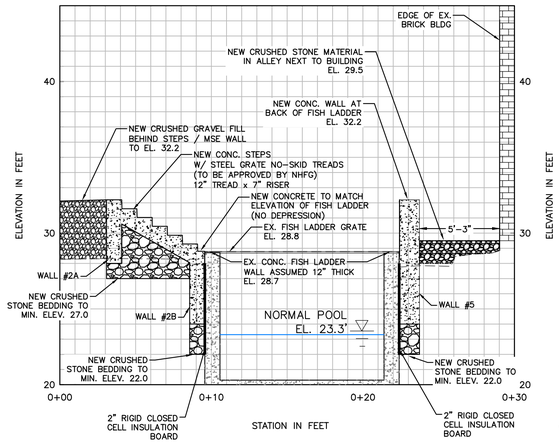
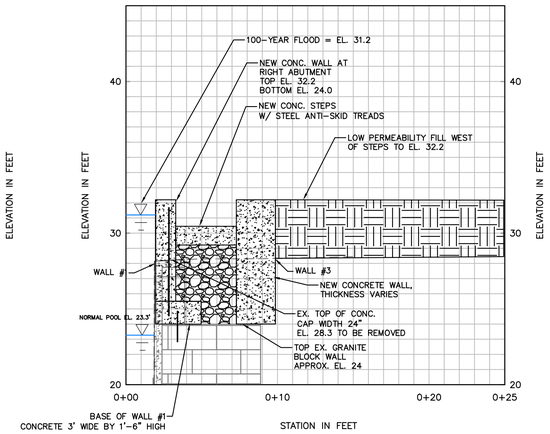
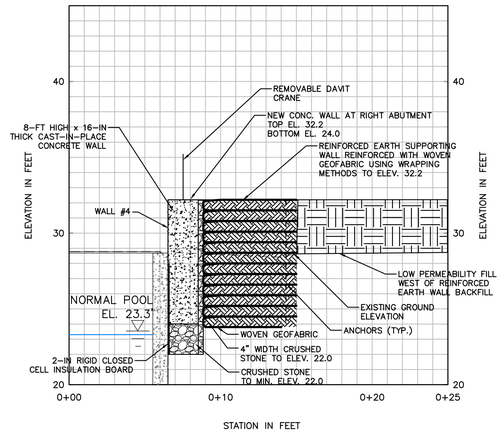


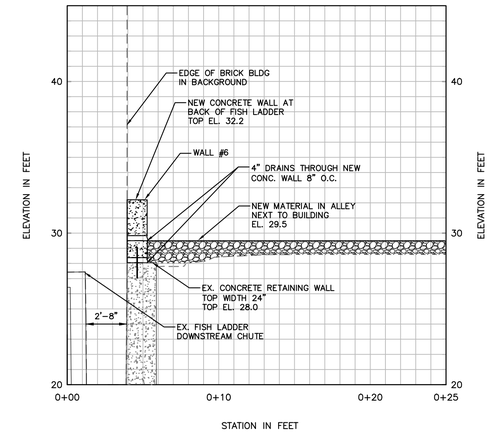
1 C5 FINAL CONDITIONS STAIRS AND WALLS AT FISH LADDER SECTION



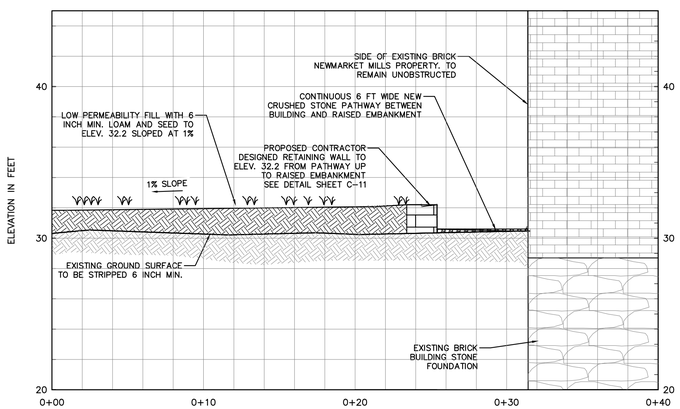
2 C5 FINAL CONDITIONS STAIRS AT FISH LADDER SECTION



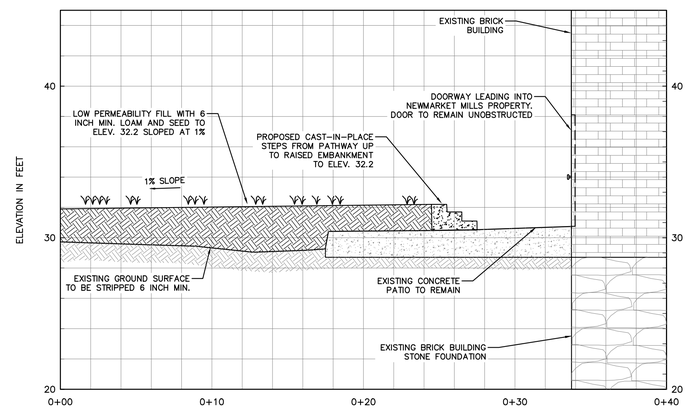
3 C5 FINAL CONDITIONS CONC. WALL THROUGH DAVIT CRANE



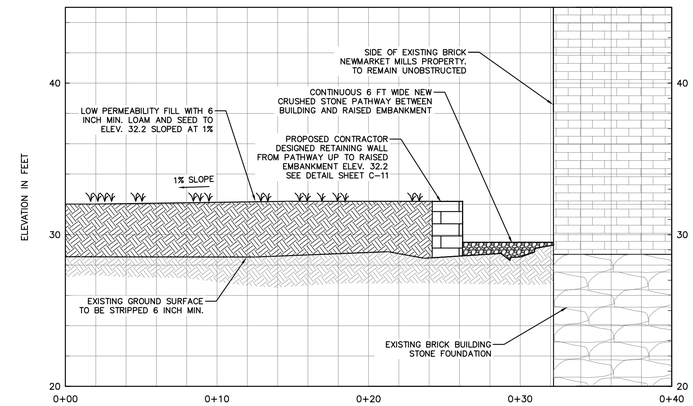
4 C5 FINAL CONDITIONS CONC. WALL ADJACENT TO BLDG. SECTION



5 C5 FINAL CONDITIONS RIGHT ABUTMENT ALLEY SECTION



6 C5 FINAL CONDITIONS RIGHT ABUTMENT AND STAIR SECTION



7 C5 FINAL CONDITIONS RIGHT ABUTMENT AND ALLEY SECTION

0 2.5' 5' 10' 15'
SCALE IN FEET 1" = 5'

NOTES:

1. EXISTING FEATURES SHOWN IN ELEVATION AND SECTION VIEWS DEVELOPED FROM THE RECENT SURVEY FOR MACALLEN DAM. PLAN SET USED IN DEVELOPMENT OF THESE DRAWINGS INCLUDE PLANS ENTITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER", DATED JULY 31, 2018 BY DOUCET SURVEY INC. OF NEWMARKET NEW HAMPSHIRE.
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3. SECTIONS HAVE THE SAME VERTICAL AND HORIZONTAL SCALE.
4. ELEVATIONS ARE PRESENTED IN UNITS OF FEET REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
5. BACKFILL WILL BE GRADED TO DIVERT RUNOFF AND DRAINAGE AWAY FROM FISH LADDER STAIRS, FISH LADDER STRUCTURE, AND EXISTING BUILDING.
6. STAIRWAY FROM CONCRETE PLATFORM TO TOP OF FINAL GRADED BACKFILL TO BE CONSTRUCTED FOR EMERGENCY ACCESS.

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD F. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

NO.	ISSUE/DESCRIPTION	BY	DATE
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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

FINAL CONDITIONS SECTIONS (2 OF 2)

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG C-7
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 12 OF 36

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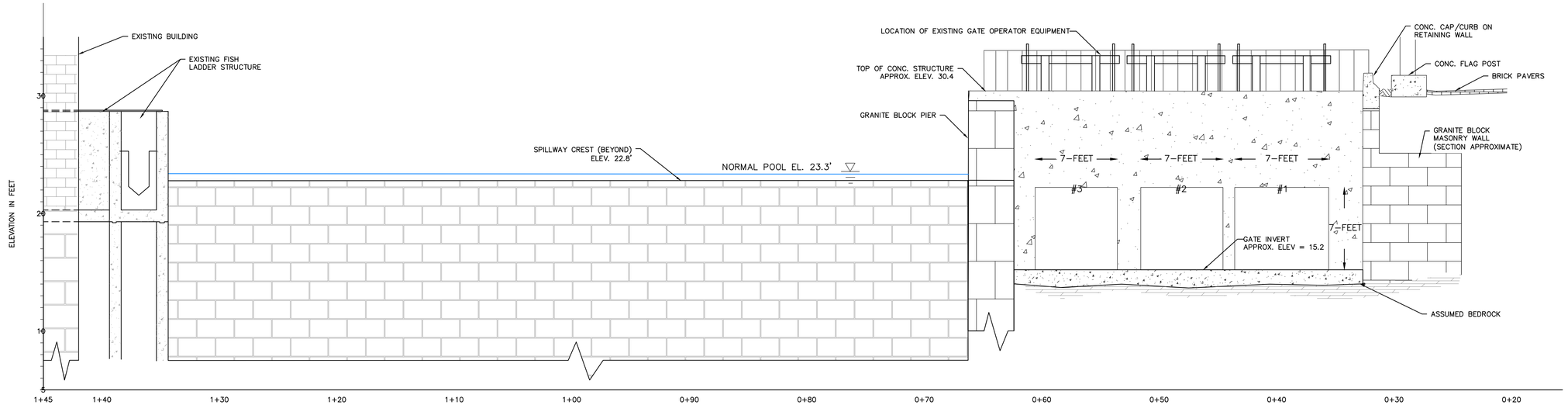
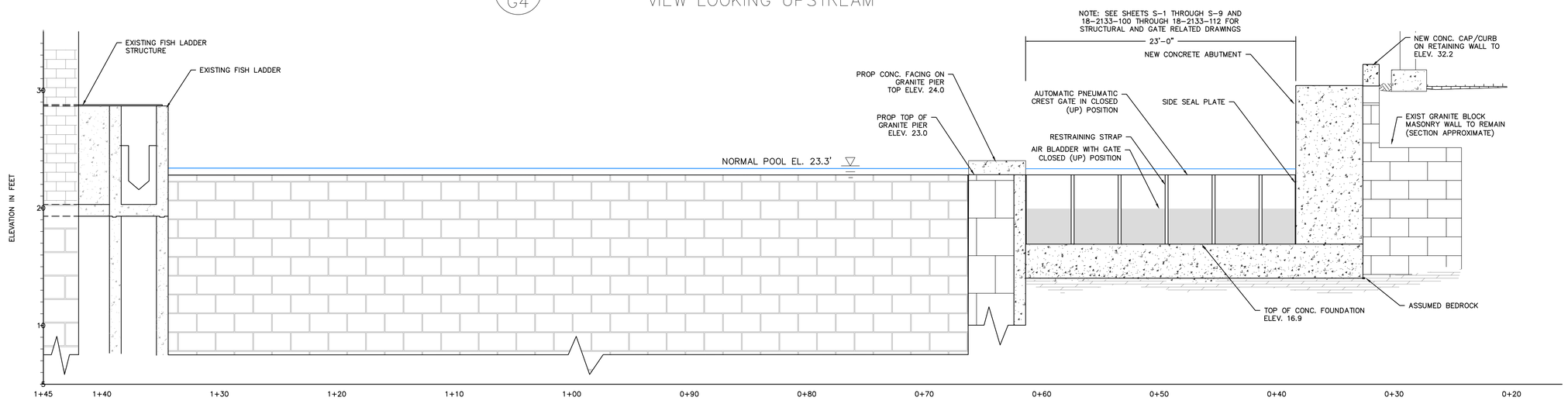


1 / G4 EXISTING CONDITIONS DAM ELEVATION
VIEW LOOKING UPSTREAM



2 / C5 FINAL CONDITIONS DAM ELEVATION
VIEW LOOKING UPSTREAM

0 2.5' 5' 10' 15'
SCALE IN FEET 1" = 5'

NOTES:

1. EXISTING AND PROPOSED SCHEMATICS PROVIDE AN OVERVIEW OF THE WORK. SEE STRUCTURAL DETAILS PROVIDED ON SHEETS S-1 THROUGH S-9 AND PNEUMATIC GATE AND APPURTENANT DETAILS PROVIDED ON SHEETS 18-2133-100 THROUGH 18-2133-112.
2. EXISTING FEATURES SHOWN IN ELEVATION AND SECTION VIEWS DEVELOPED FROM THE SURVEY COMPLETED IN SUPPORT OF THE DESIGN OF DAM ABUTMENT REHABILITATION. PLAN SET USED IN DEVELOPMENT OF THESE DRAWINGS INCLUDE PLANS ENTITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER", DATED JULY 31, 2018 BY DOUCET SURVEY INC. OF NEWMARKET NEW HAMPSHIRE.
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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

FINAL CONDITIONS ELEVATIONS (1 OF 2)

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF
NEWMARKET, NH

STATE OF NEW HAMPSHIRE JAMES P. GUARIENTE No. 10769 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	C-8
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 12 OF 36

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NOTES:

1. EXISTING FEATURES SHOWN IN ELEVATION AND SECTION VIEWS DEVELOPED FROM THE RECENT SURVEY FOR MACALLEN DAM. PLAN SET USED IN DEVELOPMENT OF THESE DRAWINGS INCLUDE PLANS ENTITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER", DATED JULY 31, 2018 BY DOUCET SURVEY INC. OF NEWMARKET NEW HAMPSHIRE.
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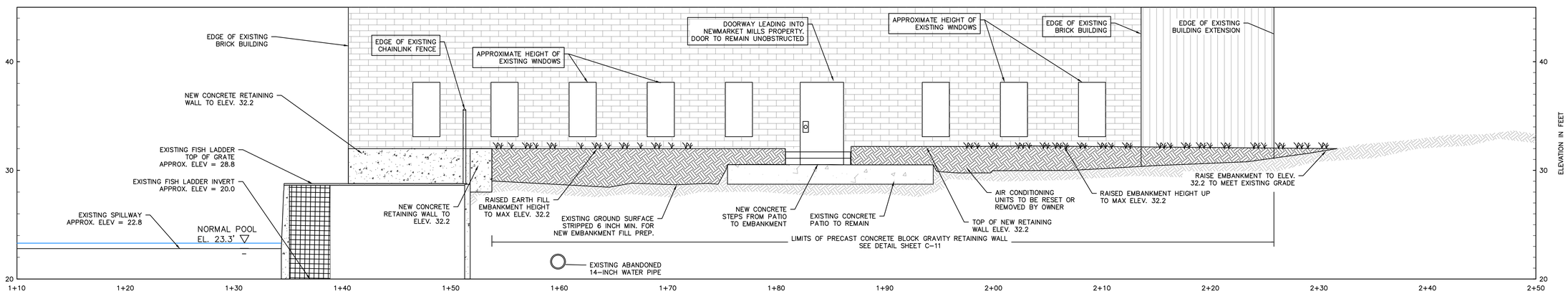
6. STAIRWAY FROM CONCRETE PATIO TO TOP OF FINAL GRADED BACKFILL TO BE CONSTRUCTED FOR EMERGENCY ACCESS.



1 / C5 FINAL CONDITIONS RIGHT ABUTMENT ELEVATION

0 2.5' 5' 10' 15'
SCALE IN FEET 1" = 5'

NO.	ISSUE/DESCRIPTION	BY	DATE
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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

FINAL CONDITIONS ELEVATIONS (2 OF 2)

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	C-9
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 14 OF 36

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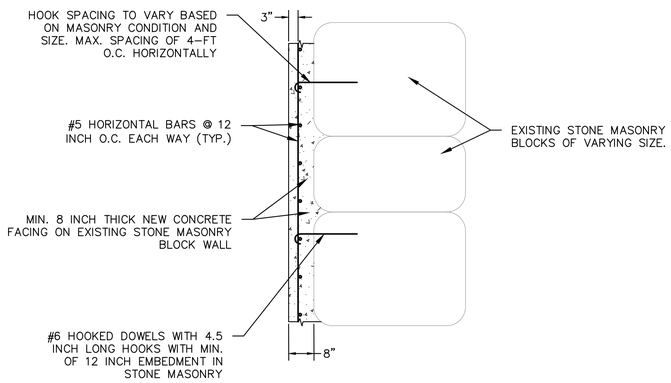
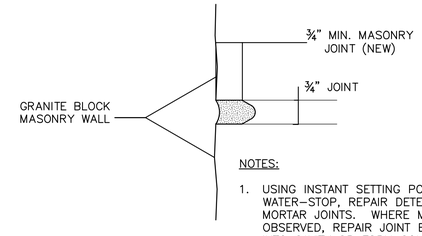


REPAIR TYPE – CONCRETE SURFACE REPAIR DETAIL
NOT TO SCALE

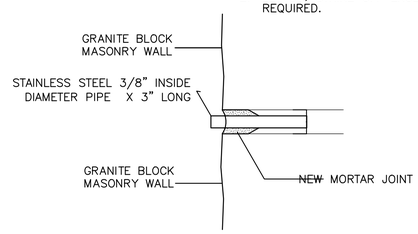
NOTES:

1. REMOVE AND DISPOSE OF EXISTING CONCRETE FACING WITHIN REPAIR LIMITS INDICATED.
2. CLEAN EXISTING MASONRY SURFACES THOROUGHLY WITH HIGH PRESSURE AIR OR WATER. INSTALL FORMWORK AS NECESSARY. REMOVE AND DISPOSE EXISTING DETERIORATED CONCRETE AND STEEL REINFORCING, IF ENCOUNTERED AS DIRECTED BY THE ENGINEER. INSTALL NEW REINFORCING IN REQUIRED AREAS.
3. PLACE BONDING AGENT IF REQUIRED. PLACE AND CURE CONCRETE.
4. REPAIR CONCRETE SHALL BE 5000psi, MINIMUM 28-DAY STRENGTH (SIKACRETE 211 SCC OR EQUIVALENT).
5. DOWELS SHALL BE INSTALLED AS DIRECTED BY ENGINEER. DOWELS WILL CONSIST OF #6 REBAR, WITH 4.5" LONG HOOKS, EMBEDDED A MINIMUM OF 12" INTO SOUND MASONRY BLOCKS.



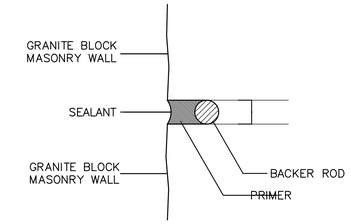
NOTES:

1. USING INSTANT SETTING PORTLAND-CEMENT WATER-STOP, REPAIR DETERIORATED AND MISSING MORTAR JOINTS. WHERE MINOR SEEPAGE IS OBSERVED, REPAIR JOINT BY WEDGING MATERIAL INTO CAVITY OR FORM COMPOUND INTO A CARROT SHAPE AND RAM INTO PLACE. HOLD IN PLACE WITH APPROPRIATE TOOL.
2. LET GO, STRIKE OFF EXCESS AND FINISH AS REQUIRED.



NOTE:

1. INSTALL WEEPHOLES IN MASONRY JOINTS WHERE DIRECTED BY THE ENGINEER.

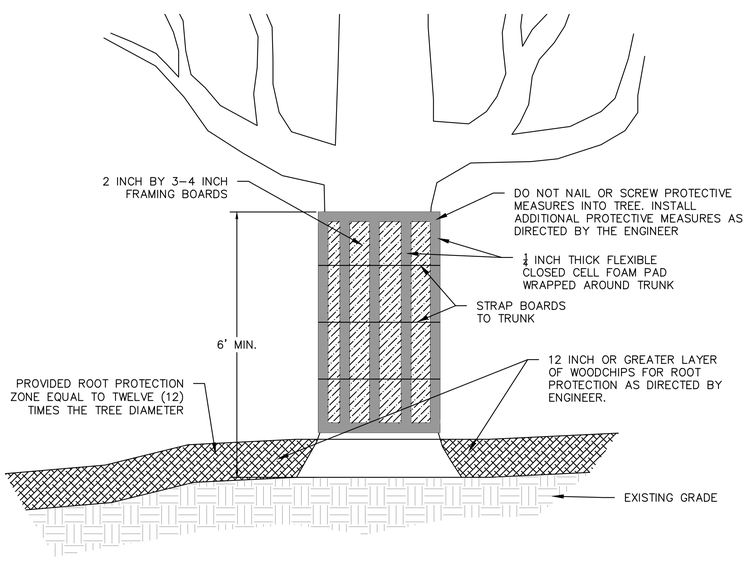


NOTES:

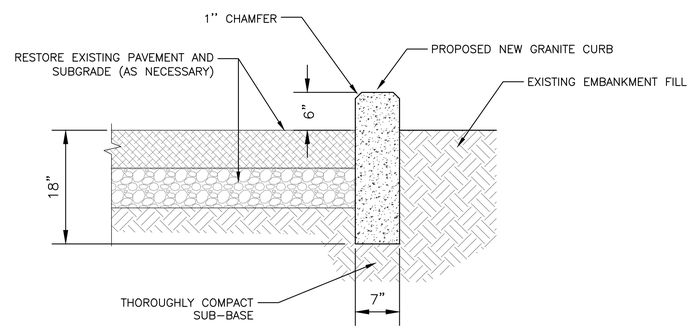
1. INSTALL MODIFIED REPOINTED MASONRY JOINTS WHERE DIRECTED BY THE ENGINEER.
2. INSTALL APPROPRIATE BACKER MATERIAL TO PREVENT THREE SIDED ADHESION AND TO CONTROL SEALANT DEPTH.
3. GUN OR POUR SEALANT INTO JOINT.
4. TOOL AS REQUIRED TO PROPERLY FILL JOINT.

GENERAL NOTES FOR MASONRY REPOINTING

1. SURFACE PREPARATION AND CLEANING
   a. CLEAN ALL VEGETATION, DEPOSITS AND LOOSE SUBSTRATE BY MECHANICAL MEANS FROM ALL EXPOSED SURFACES OF STONE MASONRY.
   b. PREPARE JOINTS FOR REPAIR BY REMOVING ALL DETERIORATED AND UNSOUND SUBSTRATE.
2. INSTALL MODIFIED REPOINTED MASONRY JOINT WHERE EXISTING MORTAR UNSOUND/NON-EXISTANT MORTAR IS NOT ENCOUNTERED BEYOND A LATERAL DEPTH OF 2 INCHES OR AS DIRECTED BY THE ENGINEER.



TEMPORARY TREE PROTECTION DETAIL
NOT TO SCALE



GRANITE CURB REPAIR DETAIL
NOT TO SCALE

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

CONSTRUCTION DETAILS (1 OF 3)

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

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DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 15 OF 36

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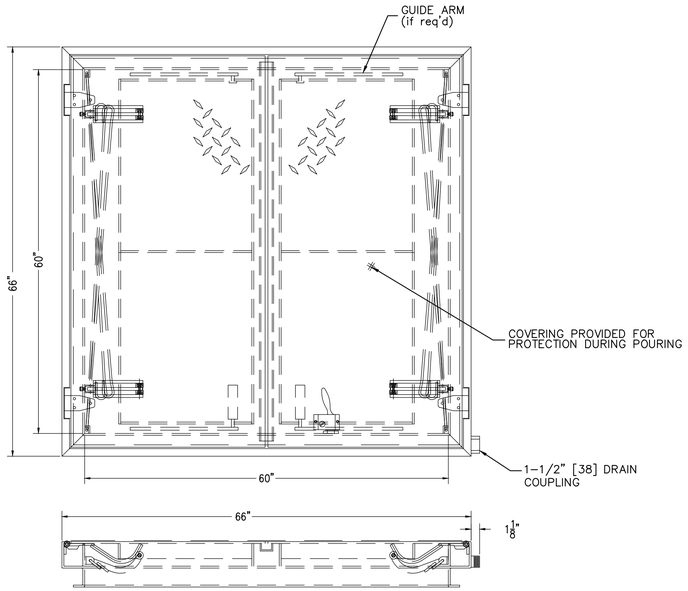
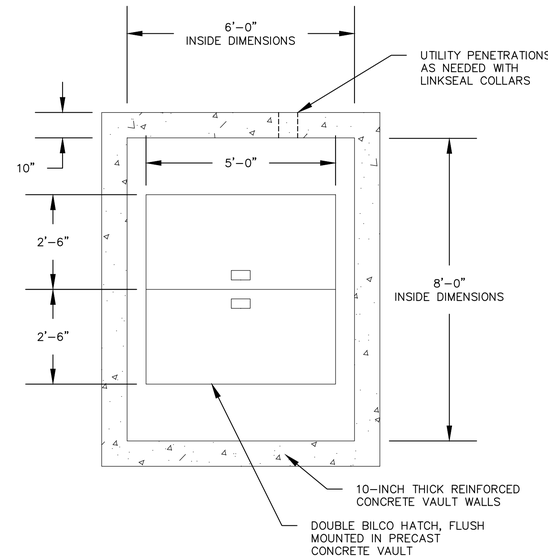
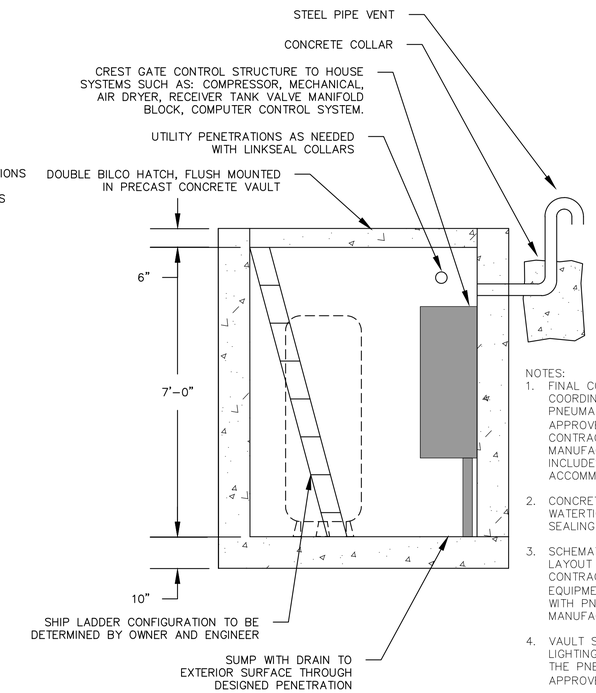


CONCRETE OPERATOR VAULT HATCH DETAIL
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

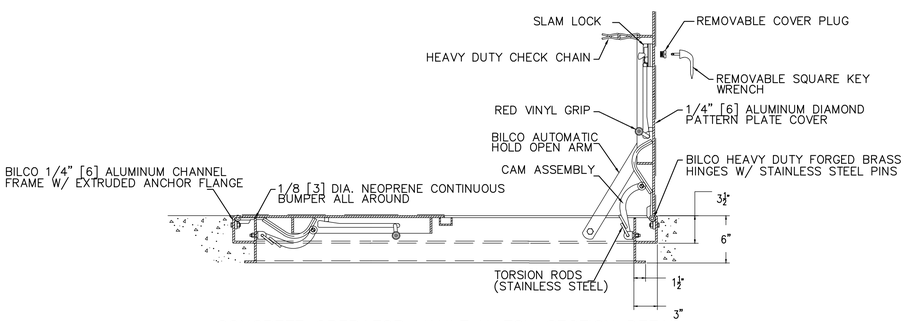


SECTION VIEW
NOT TO SCALE

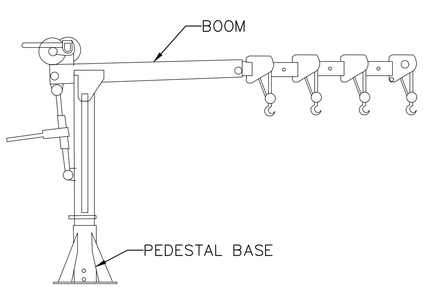
PRECAST CONCRETE OPERATOR VAULT DETAIL
NOT TO SCALE

NOTES:

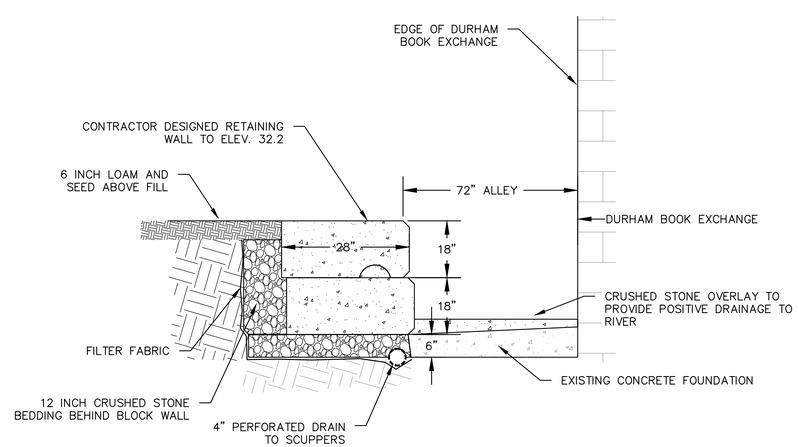
1. FINAL CONCRETE VAULT DESIGN TO BE COORDINATED BETWEEN CONTRACTOR AND PNEUMATIC GATE MANUFACTURER AND APPROVED BY THE ENGINEER / TOWN. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER TO ENSURE VAULT DESIGN INCLUDES SUFFICIENT UTILITY PENETRATIONS TO ACCOMMODATE NECESSARY EQUIPMENT.
2. CONCRETE VAULT SHALL BE DESIGNED TO BE WATERTIGHT AND INCLUDE WATER PROOF SEALING AS NECESSARY.
3. SCHEMATIC OF MECHANICAL VAULT EQUIPMENT LAYOUT PROVIDED ON SHEET 18-2134-004. CONTRACTOR TO VERIFY ALL MECHANICAL EQUIPMENT AND VAULT DIMENSIONS/LAYOUT WITH PNEUMATIC GATE MANUFACTURE PRIOR TO MANUFACTURING VAULT.
4. VAULT SHALL BE DESIGNED TO ACCOMMODATE LIGHTING, VENTING, HEATING, AS DETERMINED BY THE PNEUMATIC GATE MANUFACTURER AND APPROVED BY THE ENGINEER / TOWN.
5. CONTRACTOR TO INSTALL PERMANENT EXCAVATION SUPPORT FOR VAULT CONSTRUCTION. REFER TO SHEETS S-10 AND S-11 FOR ADDITIONAL DETAIL.
6. CONTRACTOR'S BID PRICE TO INCLUDE ALLOWANCE FOR ARCHITECTURAL FINISH AND/OR LANDSCAPING AROUND NEW ABOVE-GROUND PORTIONS OF VAULT.
7. CONTRACTOR SHALL COORDINATE WITH UTILITY AND OWNER REGARDING METER LOCATION



CONCRETE OPERATOR VAULT HATCH SECTION DETAIL
NOT TO SCALE



TYPICAL REMOVEABLE DAVIT CRANE DETAIL
NOT TO SCALE



CONTRACTOR DESIGNED RETAINING WALL AND
DURHAM BOOK EXCHANGE "ALLEY" DETAIL
NOT TO SCALE

STATE OF NEW HAMPSHIRE JAMES P. GUARENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD E. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

CONSTRUCTION DETAILS (2 OF 3)

PREPARED BY:
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PREPARED FOR:
TOWN OF
NEWMARKET, NH

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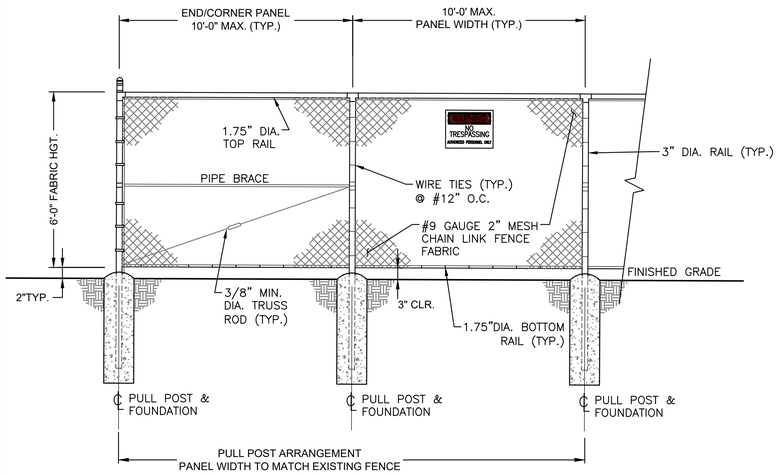
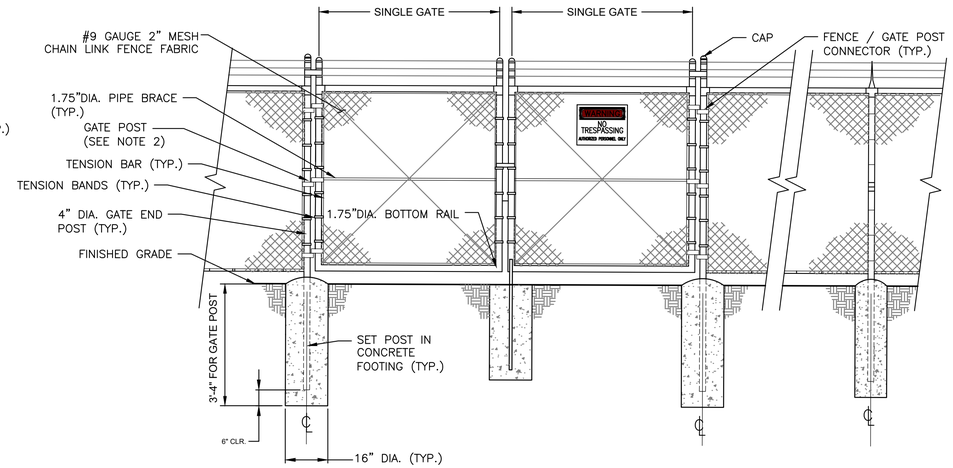


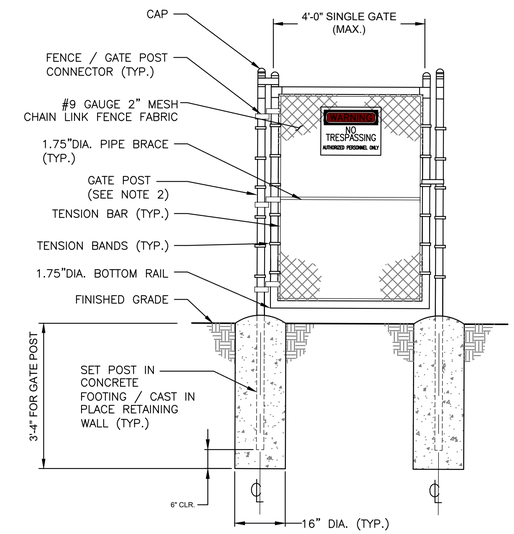
TYPICAL SECURITY FENCE DETAIL

NOT TO SCALE



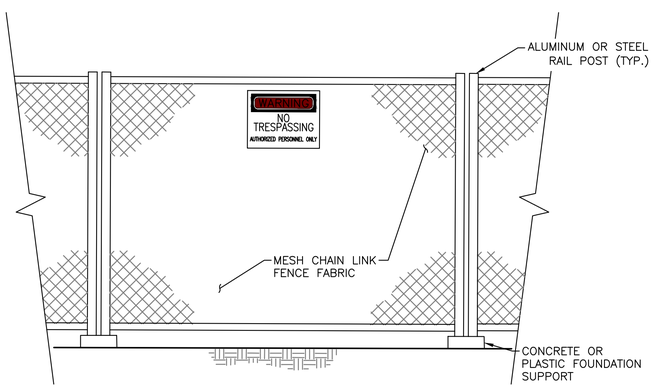
TYPICAL SECURITY FENCE DOUBLE GATE DETAIL

NOT TO SCALE



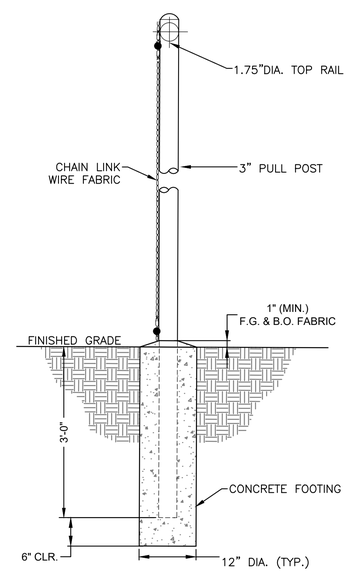
TYPICAL SECURITY FENCE SINGLE GATE DETAIL

NOT TO SCALE



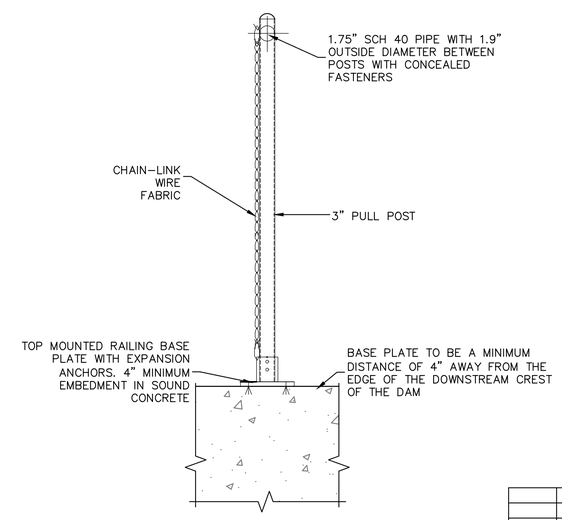
TYPICAL TEMPORARY SECURITY FENCE DETAIL

NOT TO SCALE



TYPICAL SECURITY FENCE SECTION DETAIL

NOT TO SCALE



TOP MOUNTED GUARD RAIL AND FENCE DETAIL

NOT TO SCALE

NOTES:

1. STEEL POST SHALL BE CAPPED WITH STEEL PLATE WELDED TO PIPE AND TO REFLECT SHAPE OF THE POST.
2. ALL WELDS SHALL BE CONTINUOUS AND SHALL BE GROUND DOWN TO BE FREE OF ALL PROTRUSIONS.
3. FINISH ALL METAL WITH ONE COAT OF PRIMER AND TWO COATS OF INDUSTRIAL GRADE ENAMEL, FINISH PAINT COLOR: SAFETY YELLOW.

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

CONSTRUCTION DETAILS (3 OF 3)

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG C-12
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
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GENERAL NOTES:

1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES.
2. THE CONTRACTOR SHALL REPORT ANY CHANGES IN SITE CONDITIONS SO THAT THE EFFECT ON THE DESIGN CAN BE EVALUATED.
3. ON SITE OBSERVATION FOR GENERAL CONFORMANCE WITH THESE DRAWINGS SHALL BE PERFORMED BY THE DESIGN ENGINEER IN ACCORDANCE WITH ALL PROJECT REQUIREMENTS.
4. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD AS REQUIRED PRIOR TO BEGINNING CONSTRUCTION OF NEW STRUCTURES THAT MAY BE AFFECTED. IN SOME SPECIFIC INSTANCES WHERE SPECIAL ATTENTION MAY BE REQUIRED BY THE CONTRACTOR, SOME DIMENSION, ELEVATIONS, ETC. HAVE BEEN NOTED WITH AN *, THIS HOWEVER DOES NOT LIMIT THE CONTRACTORS RESPONSIBILITY TO VERIFY AND COORDINATE ALL NECESSARY INFORMATION FOR CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL BUILDING AND INSPECTION PERMITS AND ALL COST ASSOCIATED WITH THE PERMITS.
6. THE FOLLOWING PLANS SHOW THE GENERAL LAYOUT OF THE PROPOSED CONCRETE STRUCTURES. REFER TO 18–2133 SERIES DRAWINGS BY OBERMEYER HYDRO, INC. DATED DECEMBER 13, 2018 FOR DETAILS ON ANCHORING, CONCRETE CUTOUTS, ABUTMENT PLATES, PLUMBING AND MECHANICAL SYSTEMS FOR THE GATE STRUCTURE.

DEMOLITION:

1. THE CONTRACTOR SHALL COORDINATE THE DEMOLITION AND CONSTRUCTION WITH THE NHDES'S AND TOWN OF NEWMARKET'S REQUIREMENTS.
2. PROTECT ALL EXISTING ITEMS AND EQUIPMENT ADJACENT TO THE WORK AREA. ALL EXISTING ITEMS, EQUIPMENT AND MATERIALS DAMAGED OR AFFECTED BY THE WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE TOWN OF NEWMARKET.
3. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND DISPOSING OF ALL DEMOLISHED CONCRETE, GRANITE STONE, BEDROCK, EQUIPMENT AND MATERIALS. CONTRACTOR SHALL LAWFULLY DISPOSE OF ALL DEMOLITION MATERIAL. TOWN MAY DIRECT CONTRACTOR TO TRANSPORT CERTAIN MATERIAL TO A TOWN FACILITY.
4. TOWN MAY REQUIRE THE CONTRACTOR TO SALVAGE PORTIONS OF THE EXISTING GATE EQUIPMENT AND TRANSPORT TO A TOWN APPROVED FACILITY.
5. IF CONDITIONS SHOWN ON THESE PLANS DIFFER FROM WHAT IS ENCOUNTERED IN THE FIELD, GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER.
6. GENERAL CONTRACTOR SHALL USE CAUTION NOT TO DAMAGE EXISTING STRUCTURES, AND MATERIALS TO REMAIN.
7. GENERAL CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTORS ACTIVITIES AT NO ADDITIONAL COST TO THE TOWN OF NEWMARKET.
8. GENERAL CONTRACTOR SHALL COORDINATE THE INDICATED DEMOLITION WITH THE ASSOCIATED NEW WORK AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

SCOPE OF WORK:

1. INSTALL WATER DIVERSION SYSTEM.
2. REMOVE EXISTING GATE STRUCTURE, GATE OPERATORS AND ASSOCIATED EQUIPMENT TO THE LIMITS SHOWN ON THE DEMOLITION PLANS.
3. CONSTRUCT NEW UPSTREAM CONCRETE MUDMAT TO THE LIMITS SHOWN ON THE PLANS.
4. CONSTRUCT THE NEW GATE STRUCTURE FOOTING AND DOWNSTREAM SLAB. INSTALL EMBEDDED PLUMBING AND ASSOCIATED HARDWARE AS REQUIRED BY THE GATE SYSTEM MANUFACTURER.
5. CONSTRUCT THE EAST AND WEST ABUTMENTS.
6. INSTALL THE NEW PRECAST GATE OPERATOR VAULT
7. INSTALL THE NEW PNEUMATIC GATE SYSTEM AND ASSOCIATED CONTROL EQUIPMENT IN ACCORDANCE WITH ALL MANUFACTURER RECOMMENDATIONS AND REQUIREMENTS.
8. PERFORM TESTING OF THE SYSTEM AS REQUIRED BY THE GATE SYSTEM MANUFACTURER.
9. REMOVE WATER DIVERSION SYSTEM AND RESTORE SITE.

STRUCTURAL DESIGN CRITERIA:

1. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES:
   1.1. DAM HAZARD POTENTIAL CLASSIFICATION – HIGH HAZARD / CLASS C
2. US ARMY CORP OF ENGINEERS:
   2.1. EM 1110–2–2100 STABILITY ANALYSIS OF CONCRETE STRUCTURES
   2.2. EM 1110–2–2400 STRUCTURAL DESIGN AND EVALUATION OF OUTLET WORKS
3. AMERICAN CONCRETE INSTITUTE ACI 318–11
4. NOTES REGARDING LOADING – THE LOADS CONSIDERED IN THE DESIGN OF NEW CONCRETE STRUCTURES WERE HYDROSTATIC FORCES AND DEAD LOADS ONLY. DUE TO THE CONFIGURATION OF THE STRUCTURE ICE LOADING AND HYDRODYNAMIC EFFECTS HAVE BEEN IGNORED.

BENCH MARK:

COORDINATES, IN U.S. SURVEY FEET, ARE IN THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM. REFERENCED TO THE NORTH AMERICAN DATUM OF 1983/CORS ADJUSTMENT (NAD 83/CORS 2007).

ELEVATIONS, IN FEET, ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

BENCHMARK LOCATIONS AND COORDINATES ARE SHOWN ON SHEET G–3.

SURVEY:

1. BASE MAP DEVELOPED FROM AUTOCAD FILES PROVIDED BY DOUCET SURVEY INC. OF NEWMARKET NEW HAMPSHIRE ENTITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER", DATED JULY 31 2018.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS REQUIRED FOR THE PROPER PERFORMANCE OF THEIR WORK. FIELD CONDITIONS MAY EXIST WHICH DEVIATE FROM THE TYPICAL AND THEORETICAL DIMENSIONS SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE FABRICATION AND FIT OF HIS/HER WORK.

ANCHOR BOLTS:

ALL ANCHOR BOLTS SHALL BE SIZED AS NOTED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH BY THE GATE MANUFACTURER, OBERMEYER HYDRO, INC.

REINFORCEMENT:

1. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 DEFORMED BARS AND SHALL BE UNCOATED. ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS	#7 BARS
1.1. NONE	19"	24"	28"	33"
1.2. 12"+ OF CONCRETE BELOW BAR	24"	31"	37"	43"

2. THE FOLLOWING CONCRETE COVER TO REINFORCING STEEL SHALL BE PROVIDED:

CONCRETE CAST AGAINST BEDROCK	3.0"
CONCRETE CAST AGAINST GRANITE STONE	3.0"
ALL OTHER BARS	2.5"

3. DETAILS OF REINFORCING SHOWN ON THESE PLANS ARE SCHEMATIC. GENERAL CONTRACTOR IS RESPONSIBLE TO DETAIL REINFORCING MEETING THE CRITERIA PROVIDED IN THESE PLANS. ALL REINFORCING DETAILING SHALL BE PERFORMED IN ACCORDANCE ACI 318–11.
4. CUT NO BARS AND OMIT NO BARS BECAUSE OF SLEEVE OR DUCT OPENINGS IN SLABS OR WALLS. BARS MAY BE MOVED ASIDE WITHOUT CHANGING THE DISTANCE FROM FACE TO CONCRETE, GENERALLY, NOT MORE THAN 1/2 BAR SPACING. FIELD BENDING OF REINFORCING STEEL IS NOT ALLOWED.

CONCRETE:

1. REFER TO TECHNICAL SPECIFICATIONS SECTION 03300 FOR CAST–IN–PLACE CONCRETE REQUIREMENTS.
2. REFER TO TECHNICAL SPECIFICATIONS SECTION 03305 FOR CONCRETE TESTING REQUIREMENTS.
3. REFER TO TECHNICAL SPECIFICATIONS SECTION 03346 FOR CONCRETE FINISHING, CURING AND REPAIR REQUIREMENTS.

CONTRACTOR REQUIRED SUBMITTALS:

AT A MINIMUM, THE FOLLOWING STRUCTURAL–RELATED SUBMITTALS ARE REQUIRED TO BE SUBMITTED FOR APPROVAL BY THE PROFESSIONAL ENGINEER RESPONSIBLE FOR THESE PLANS PRIOR TO CONSTRUCTION / FABRICATION.

1. STEEL REINFORCING SHOP DRAWINGS
2. PROPOSED CONCRETE MIX DESIGN AND TEST RESULTS
3. CONCRETE TEST RESULTS FROM PLACED CONCRETE

OTHER SUBMITTALS AND SHOP DRAWINGS SHALL BE PROVIDED IN ACCORDANCE WITH REQUIREMENTS OUTLINED IN THE TECHNICAL SPECIFICATIONS.

ROCK / CONCRETE DOWEL DETAILS

1. ROCK DOWEL EMBEDMENT AND GROUTING INTO EXISTING BEDROCK AND EXISTING CONCRETE SLAB SHALL BE A CONTRACTOR DESIGN ITEM.
2. CONTRACTOR SHALL SELECT GROUT TYPE AND METHOD APPROPRIATE TO ACHIEVE REQUIRED BOND STRENGTH.
3. EMBEDMENT LENGTHS MAY NEED TO BE LONGER THAN SHOWN ON THESE PLANS DEPENDING ON THE INSTALLATION METHODS USED BY THE CONTRACTOR AND TESTING RESULTS.
4. ROCK DOWELS HEREIN HAVE BEEN DESIGN FOR THE FOLLOWING ULTIMATE (LRFD) TENSION LOADS.
   4.1. #6 DOWELS = 14.05 KIPS
   4.2. #5 DOWELS = 13.15 KIPS
   4.3. #4 DOWELS = 5.00 KIPS
5. ALL DOWEL BARS SHALL BE GRADE 60 DEFORMED BARS.
6. OWNERS REPRESENTATIVE AND/OR ENGINEER SHALL BE PRESENT TO PROVIDE FIELD OBSERVATION AND VERIFICATION OF THE INSTALLATION OF DOWELS IN ACCORDANCE WITH ALL CONTRACT REQUIREMENTS.
7. GROUTING OF DOWELS SHALL BE IN ACCORDANCE WITH ALL MANUFACTURER'S RECOMMENDATIONS.

ROCK / CONCRETE DOWEL TESTING PROCEDURE

1. ONE OF EVERY FOUR DOWELS SHALL BE PROOF TESTED IN TENSION. THE SELECTED TEST DOWELS SHALL NOT BE LOADED UNTIL GROUT HAS DEVELOPED SUFFICIENT STRENGTH. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE AND ENGINEER IN ADVANCE OF TESTING AND CONFIRM TEST LOCATIONS AND SCHEDULE FOR TESTING. ALL TESTS SHALL BE WITNESSED BY OWNER'S REPRESENTATIVE AND/OR ENGINEER.
2. TESTING SHALL BE PERFORMED BY INCREMENTALLY LOADING THE PROOF TEST DOWEL TO THE DESIGN LOAD (DL), (SEE NOTE 4 OF "ROCK / CONCRETE DOWEL DETAILS").
3. INCREMENTAL LOADING OF THE PROOF TEST DOWELS SHALL FOLLOW THE FOLLOWING SCHECULE:

LOADING	HOLD TIME
0.25DL	UNTIL STABLE
0.5DL	UNTIL STABLE
0.75DL	UNTIL STABLE
1.0DL	10/60 MINUTES (SEE NOTE 4)

4. TEST LOAD INCREMENT SHALL BE HELD UNTIL MOVEMENT STABILIZES. THE MAXIMUM TEST LOAD SHALL BE HELD FOR 10 MINUTES. THE TOTAL DISPLACEMENT (MOVEMENT) IN THE DIRECTION OF THE APPLIED LOADING WITH RESPECT TO A FIXED REFERENCE POINT SHALL BE RECORDED AT 1, 2, 3, 4, 5, 6, AND 10 MINUTES. IF THE TOTAL MOVEMENT EXCEEDS 0.040–IN (1mm) THE TEST LOAD SHALL BE HELD FOR AN ADDITIONAL 50 MINUTES WITH DISPLACEMENT RECORDED AT 10 MINUTE INTERVALS AND SHALL NOT EXCEED 0.08–IN (2mm).
5. ADDITIONAL PROOF TESTING MAY BE REQUIRED AT THE DISCRETION OF THE OWNER'S REPRESENTATIVE AND/OR ENGINEER SHOULD CONDITIONS WARRANT SUCH TESTING IN THEIR OPINION.

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MACALLEN DAM
ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
LICENSED
PROFESSIONAL ENGINEER
3/14/19

STRUCTURAL
NOTES AND SPECIFICATIONS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF
NEWMARKET, NH

PROJ MGR: TM	REVIEWED BY: CG	CHECKED BY: CC	DRAWING
DESIGNED BY: JA	DRAWN BY: JSR	SCALE: AS NOTED	S-1
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 18 OF 36

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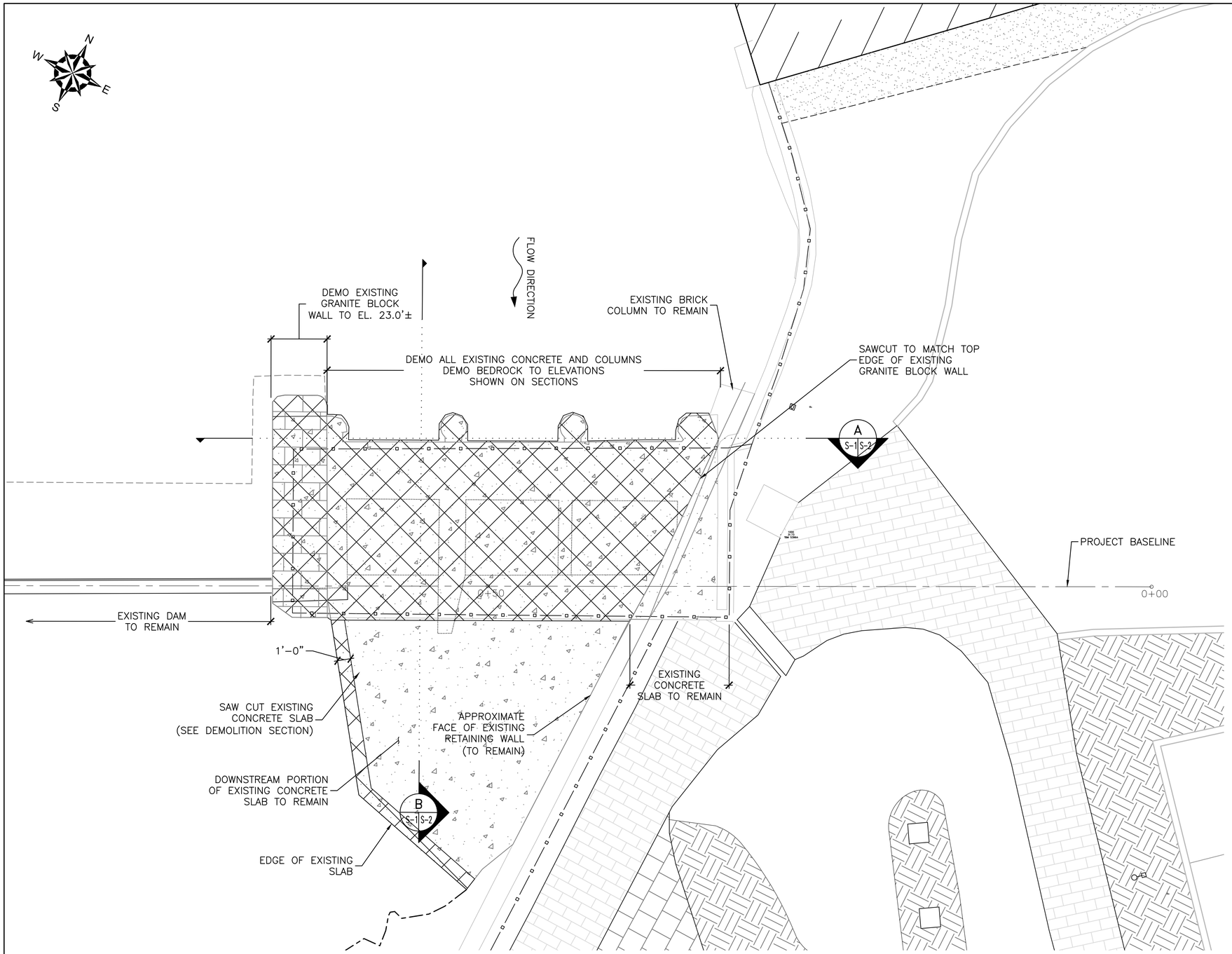

GATE DEMOLITION PARTIAL PLAN

1/4" = 1'-0"

0 2' 4' 8' 12'

SCALE: 1/4" = 1'-0"

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ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
PROFESSIONAL ENGINEER
3/14/19

STRUCTURAL DEMOLITION PLAN
EXISTING OUTLET STRUCTURE

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

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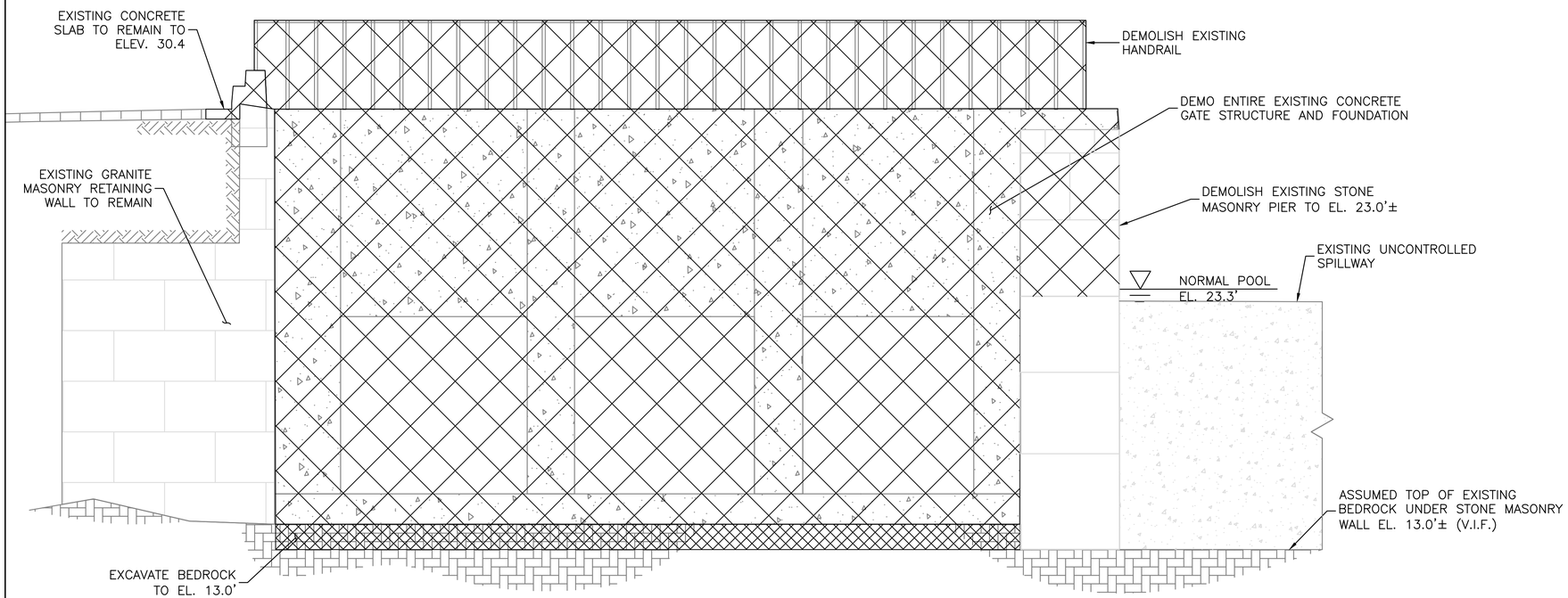
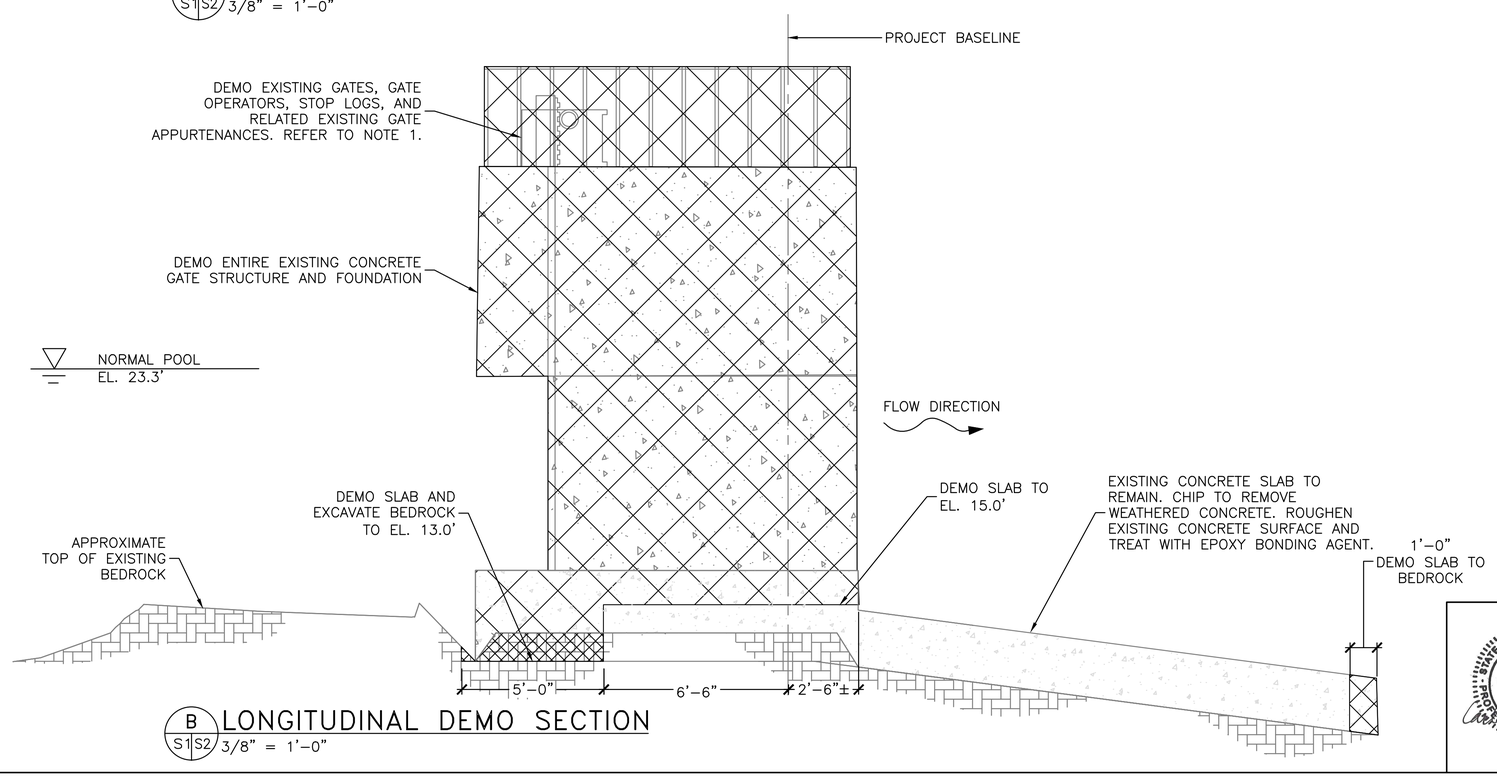


A S1 S2 TRANSVERSE DEMO SECTION
3/8" = 1'-0"



B S1 S2 LONGITUDINAL DEMO SECTION
3/8" = 1'-0"

0 2 4 6 8
SCALE 3/8" = 1'-0"

NOTES:

1. TOWN MAY DIRECT CONTRACTOR TO SALVAGE ONE OR MORE OF THE EXISTING SLIDE GATES AND/OR GATE OPERATORS FOR FUTURE DISPLAY. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE SUCH ITEMS DURING DEMOLITION.

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MACALLEN DAM
ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
PROFESSIONAL ENGINEER
3/14/19

STRUCTURE DEMOLITION SECTIONS
EXISTING OUTLET STRUCTURE

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

PROJ MGR: TM	REVIEWED BY: CG	CHECKED BY: CC	DRAWING
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DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 20 OF 36

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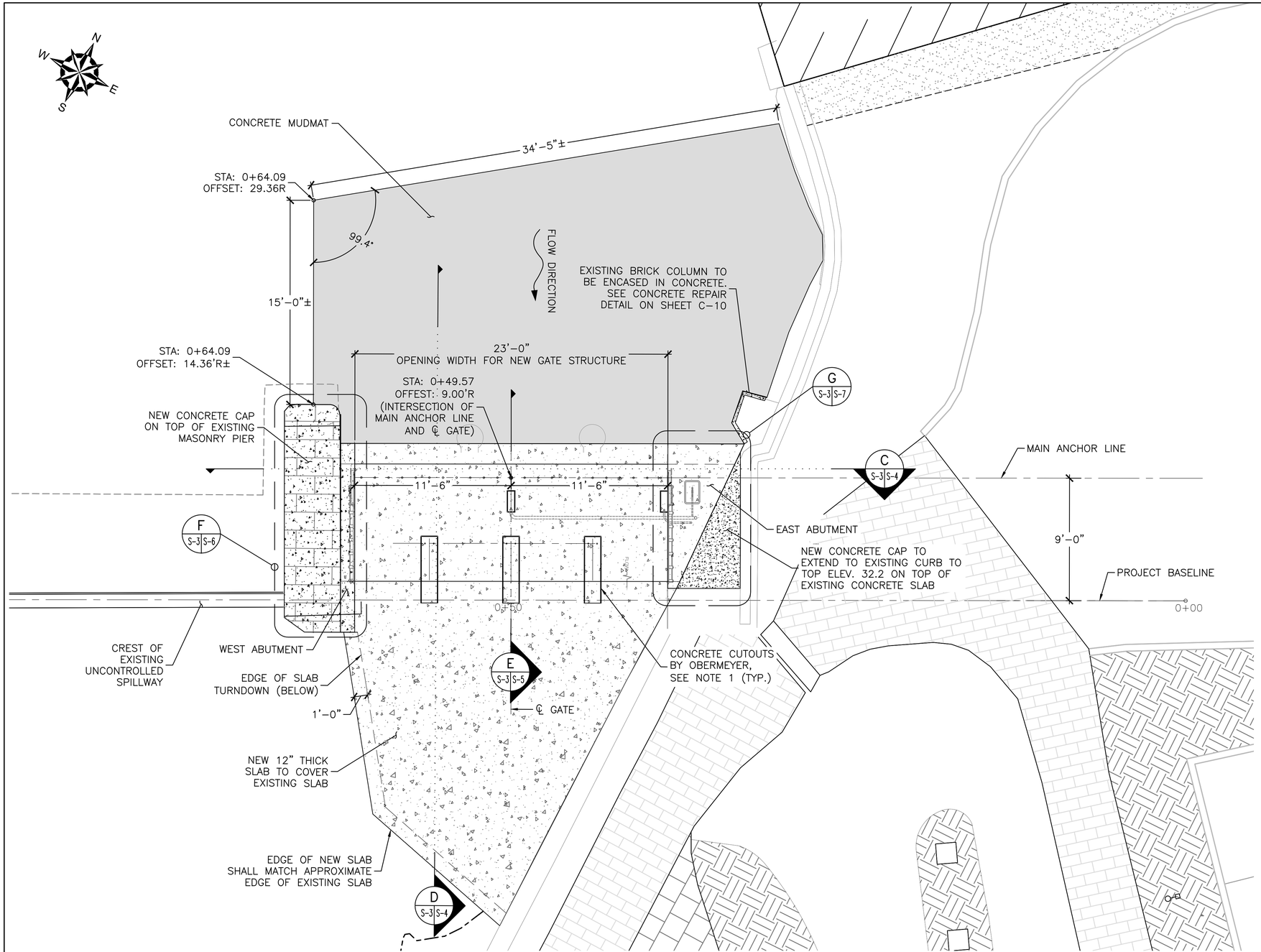

PROPOSED GATE PLAN

1/4" = 1'-0"

NOTES:

1. THE FOLLOWING PLANS SHOW THE GENERAL LAYOUT OF THE PROPOSED CONCRETE STRUCTURES. REFER TO 18-2133 SERIES DRAWINGS BY OBERMEYER HYDRO, INC. DATED DECEMBER 13, 2018 FOR DETAILS ON ANCHORING, CONCRETE CUTOUTS, ABUTMENT PLATES, PLUMBING AND MECHANICAL SYSTEMS FOR THE GATE STRUCTURE.
2. ALL DIMENSIONS, EMBEDS, AND BLOCK OUTS SHALL BE CONFIRMED AGAINST FINAL GATE MANUFACTURER SHOP DRAWINGS.

0 2' 4' 8' 12'

SCALE: 1/4" = 1'-0"

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MACALLEN DAM
ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
LICENSED PROFESSIONAL ENGINEER
3/14/19

STRUCTURAL PROPOSED PLAN VIEW
GATE STRUCTURE

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

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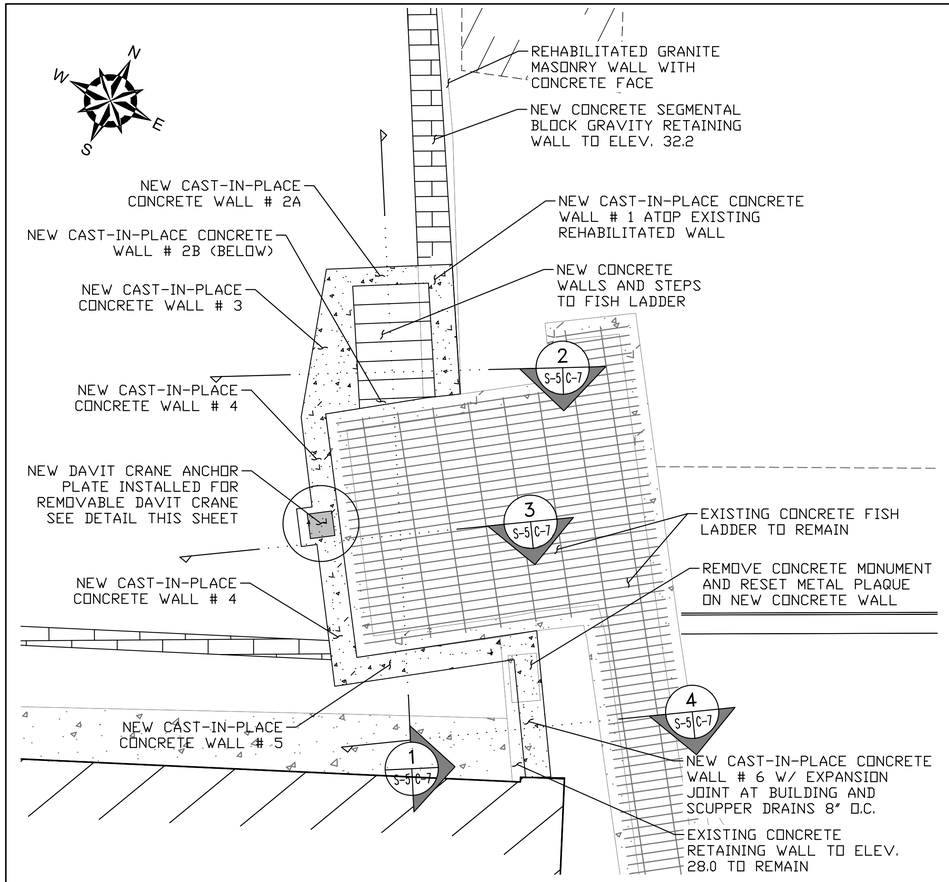
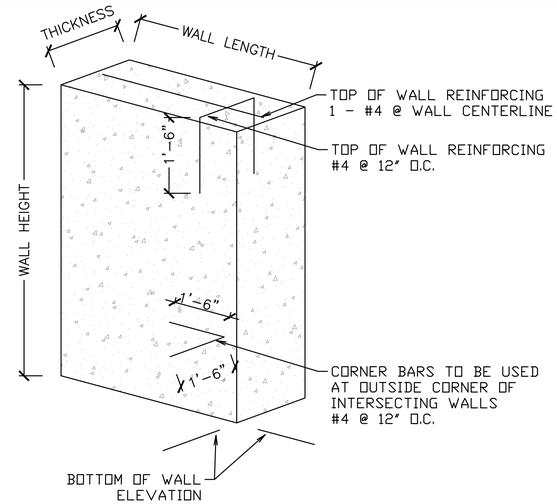


PROPOSED RIGHT ABUTMENT CAST-IN-PLACE WALLS PLAN

1/4" = 1'-0"

0 2' 4' 8' 12'

SCALE: 1/4" = 1'-0"



TYPICAL WALL SCHEMATIC

NOT TO SCALE – (SEE WALL SIZE AND REINFORCING TABLE [THIS SHEET])

WALL SIZE AND REINFORCING TABLE

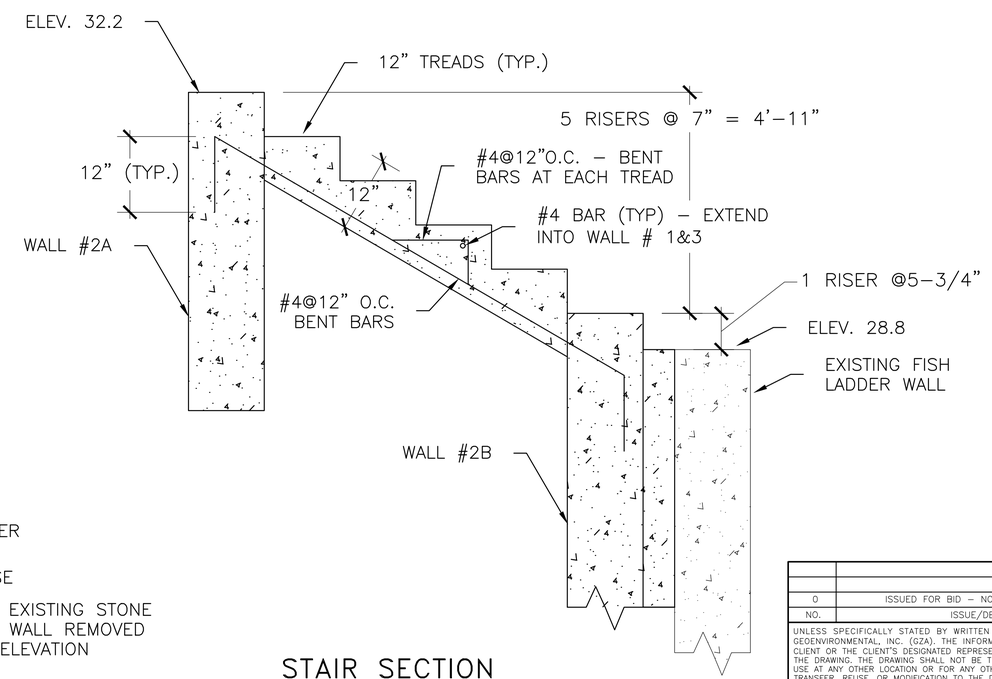
Wall Size and Reinforcing Table

Wall #	Length * (feet)	Thickness (inches)	Depth (feet)	Bottom of wall Elevation (feet)	Reinforcing Each Face	Notes
1	5	16	6.7	25.5	#5@12"OC - Both ways	
2A	3	12	4.2	28	#5@12"OC - Both ways	At high point of stairs
2B	3	12	5.28	24	#5@12"OC - Both ways	At low point of stairs
3	6	Varies - see Notes:	8.2	24	#5@12"OC - Both ways	16" thick at Wall #2A; thickens out to meet outside of Wall #4.
4	12	16; see Notes:	8.2	24	#5@12"OC - Both ways	2'-2" thick in area at Davit crane base.
5	8	16	8.2	24	#5@12"OC - Both ways	
6	6	16	4.2	28	#5@12"OC - Both ways	Dowel into existing concrete wall - #4@12" OC - similar to Wall #1 dowels into stone masonry wall

* - Length of wall is approximate and must be verified in the field by the contractor prior to fabrication and construction.

NOTES:

1. All reinforcing shown on this sheet shall have 2" minimum cover.

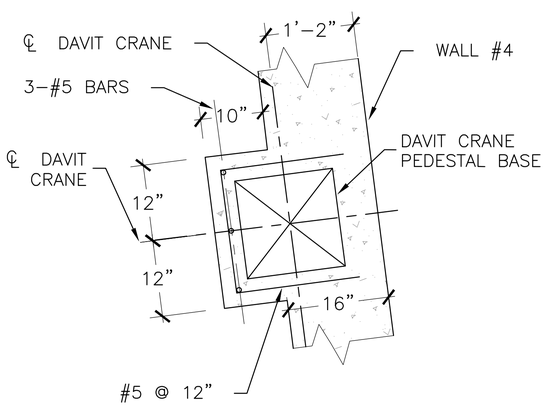


STAIR SECTION

1" = 1'-0"

0 0.5' 1' 2' 3'

SCALE: 1" = 1'-0"

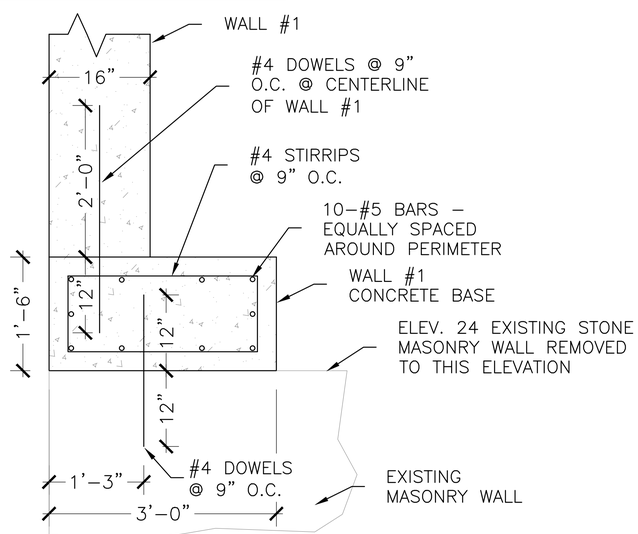


DETAIL – PLAN AT DAVIT CRANE

1" = 1'-0"

0 0.5' 1' 2' 3'

SCALE: 1" = 1'-0"



WALL #1 SECTION

1" = 1'-0"

0 0.5' 1' 2' 3'

SCALE: 1" = 1'-0"

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MACALLEN DAM
ABUTMENTS AND OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
PROFESSIONAL ENGINEER
3/14/19

STRUCTURAL PROPOSED PLAN VIEW
RIGHT ABUTMENT

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

PROJ MGR: TM	REVIEWED BY: CG	CHECKED BY: CC	DRAWING
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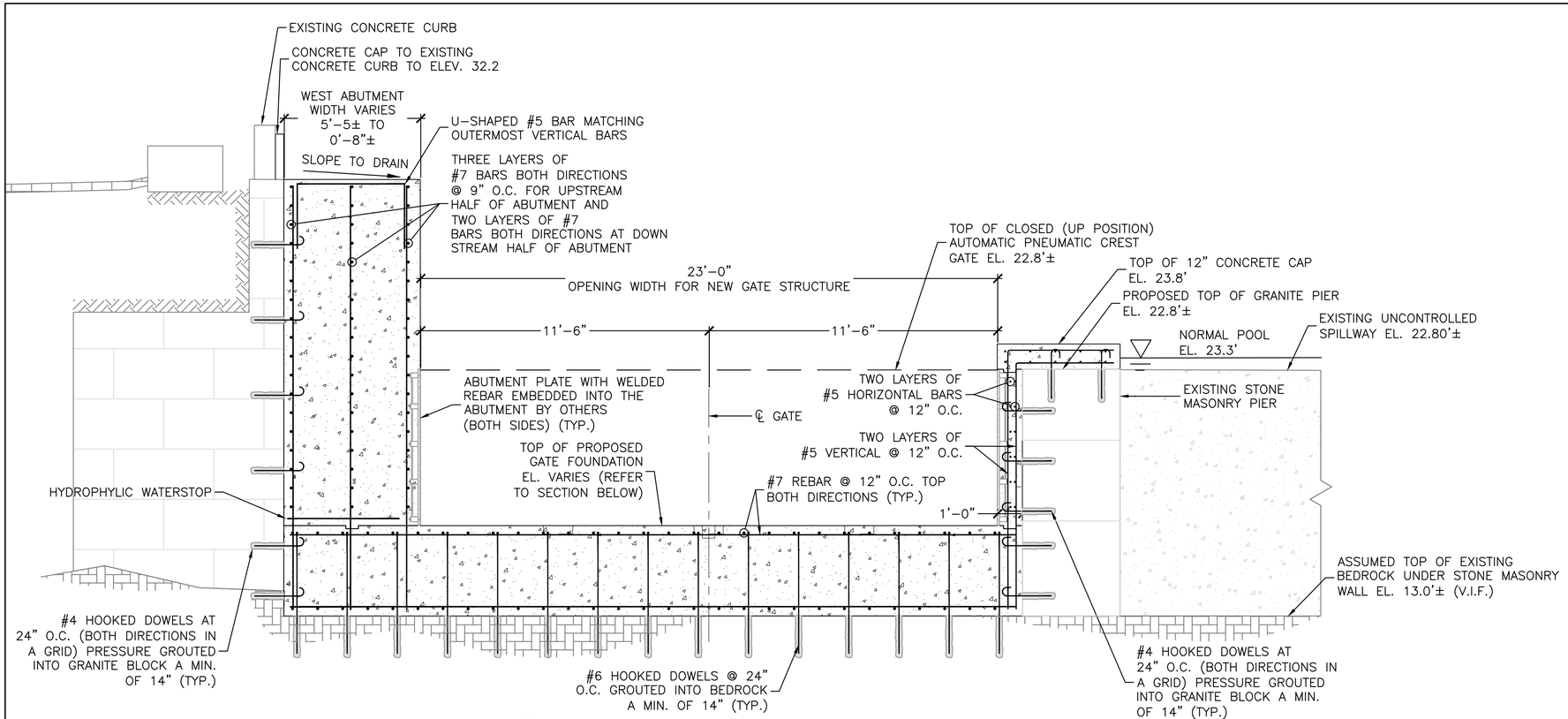


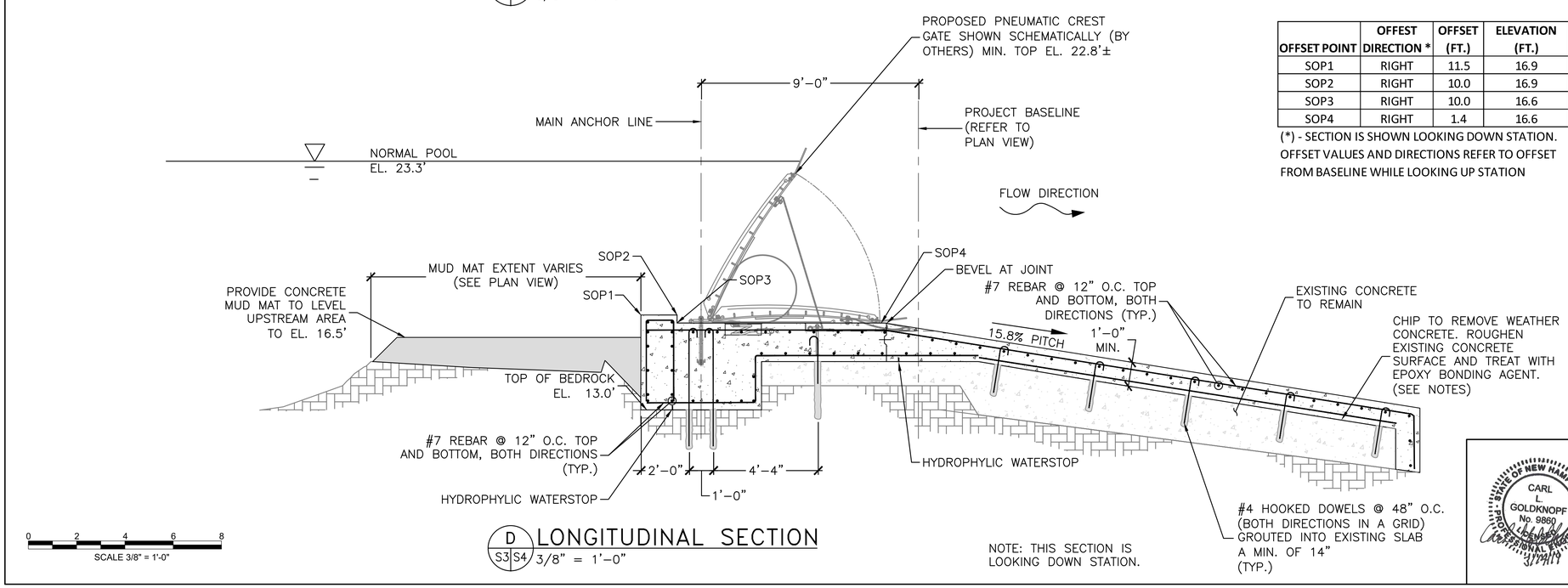
C S3 S4 TRANSVERSE SECTION
3/8" = 1'-0"

NOTES:

1. THE FOLLOWING PLANS SHOW THE GENERAL LAYOUT OF THE PROPOSED CONCRETE STRUCTURES. REFER TO 18-2133 SERIES DRAWINGS BY OBERMEYER HYDRO, INC. DATED DECEMBER 13, 2018 FOR DETAILS ON ANCHORING, CONCRETE CUTOUTS, ABUTMENT PLATES, PLUMBING AND MECHANICAL SYSTEMS FOR THE GATE STRUCTURE.
2. ALL DIMENSIONS, EMBEDS, AND BLOCK OUTS SHALL BE CONFIRMED AGAINST FINAL GATE MANUFACTURER SHOP DRAWINGS.
3. CONTRACTOR SHALL COORDINATE WITH GATE MANUFACTURER WITH RESPECT TO FINAL DIMENSIONS OF NEW CONCRETE SO AS TO ACCOMMODATE NEEDS OF PNEUMATIC CREST GATE INSTALLATION.

OFFSET POINT	OFFEST DIRECTION *	OFFSET (FT.)	ELEVATION (FT.)
SOP1	RIGHT	11.5	16.9
SOP2	RIGHT	10.0	16.9
SOP3	RIGHT	10.0	16.6
SOP4	RIGHT	1.4	16.6

(*) - SECTION IS SHOWN LOOKING DOWN STATION. OFFSET VALUES AND DIRECTIONS REFER TO OFFSET FROM BASELINE WHILE LOOKING UP STATION



D S3 S4 LONGITUDINAL SECTION
3/8" = 1'-0"

NOTE: THIS SECTION IS LOOKING DOWN STATION.

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MACALLEN DAM
ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
PROFESSIONAL ENGINEER
3/14/19

STRUCTURAL PROPOSED SECTIONS
NEW GATE STRUCTURE

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TM	REVIEWED BY: CG	CHECKED BY: CC	DRAWING S-6
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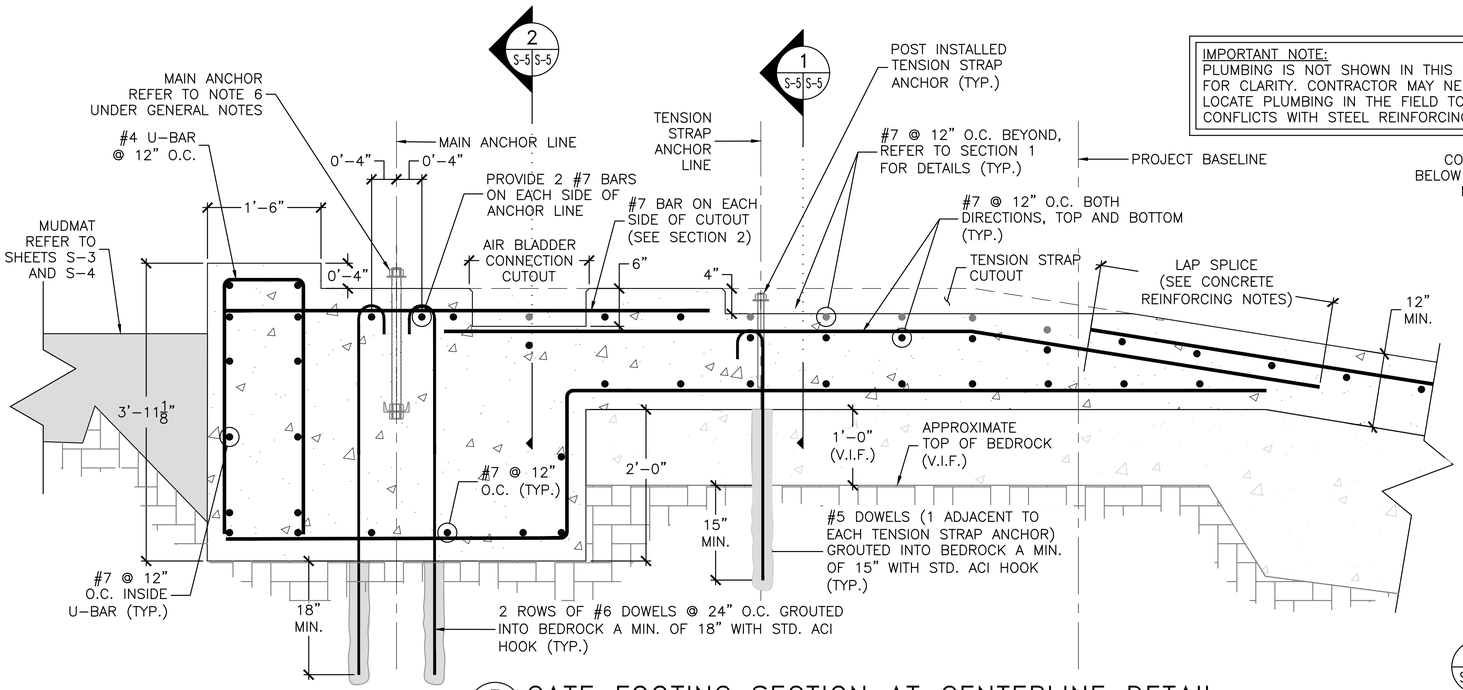
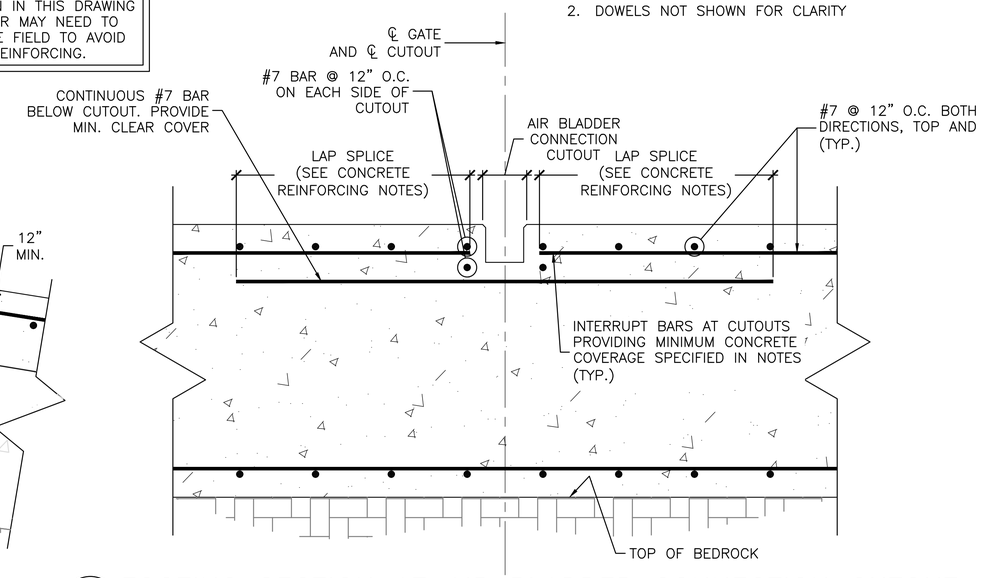


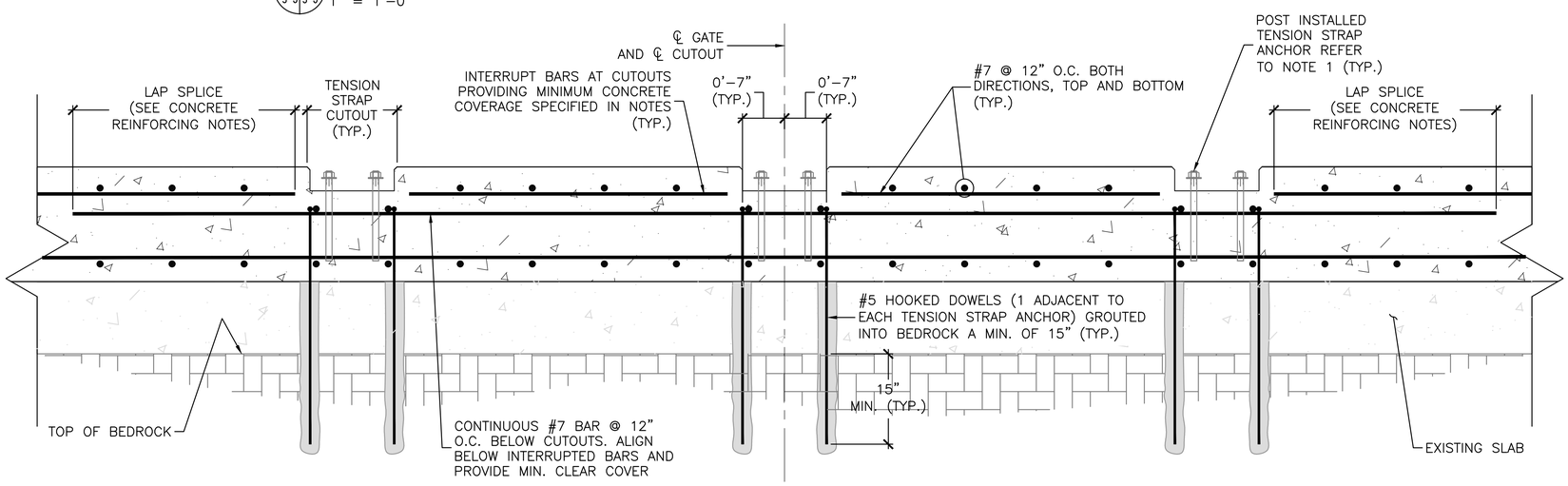
E S-3 S-5 GATE FOOTING SECTION AT CENTERLINE DETAIL
1" = 1'-0"

IMPORTANT NOTE:
PLUMBING IS NOT SHOWN IN THIS DRAWING FOR CLARITY. CONTRACTOR MAY NEED TO LOCATE PLUMBING IN THE FIELD TO AVOID CONFLICTS WITH STEEL REINFORCING.

NOTES:
1. PROVIDE SIMILAR DETAIL AT CUTOUT ADJACENT TO EAST ABUTMENT.
2. DOWELS NOT SHOWN FOR CLARITY



2 S-5 S-5 FOOTING SECTION AT AIR BLADDER CONNECTION CUTOUT
1" = 1'-0"



1 S-5 S-5 FOOTING SECTION AT TENSION STRAP CUTOUT
1/2" = 1'-0"

NOTES:
1. THE FOLLOWING PLANS SHOW THE GENERAL LAYOUT OF THE PROPOSED CONCRETE STRUCTURES. REFER TO 18-2133 SERIES DRAWINGS BY OBERMEYER HYDRO, INC. DATED DECEMBER 13, 2018 FOR DETAILS ON ANCHORING, CONCRETE CUTOUTS, ABUTMENT PLATES, PLUMBING AND MECHANICAL SYSTEMS FOR THE GATE STRUCTURE.
2. ALL DIMENSIONS, EMBEDS, AND BLOCK OUTS SHALL BE CONFIRMED AGAINST FINAL GATE MANUFACTURER SHOP DRAWINGS.
3. CONTRACTOR SHALL COORDINATE WITH GATE MANUFACTURER WITH RESPECT TO FINAL DIMENSIONS OF NEW CONCRETE SO AS TO ACCOMMODATE NEEDS OF PNEUMATIC CREST GATE INSTALLATION.
4. CONTRACTOR TO REFER TO NOTES SHEET S-1 FOR ROCK DOWEL DESIGN CRITERIA.

NO.	ISSUE/DESCRIPTION	BY	DATE
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	CG	3/14/2019

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MACALLEN DAM
ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
PROFESSIONAL ENGINEER
3/14/19

STRUCTURAL FOOTING DETAILS
NEW GATE STRUCTURE

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF
NEWMARKET, NH

PROJ MGR: TM	REVIEWED BY: CG	CHECKED BY: CC	DRAWING
DESIGNED BY: JA	DRAWN BY: JSR	SCALE: AS NOTED	S-7
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 24 OF 36

0 6" 1' 2' 3'
SCALE: 1" = 1'-0"

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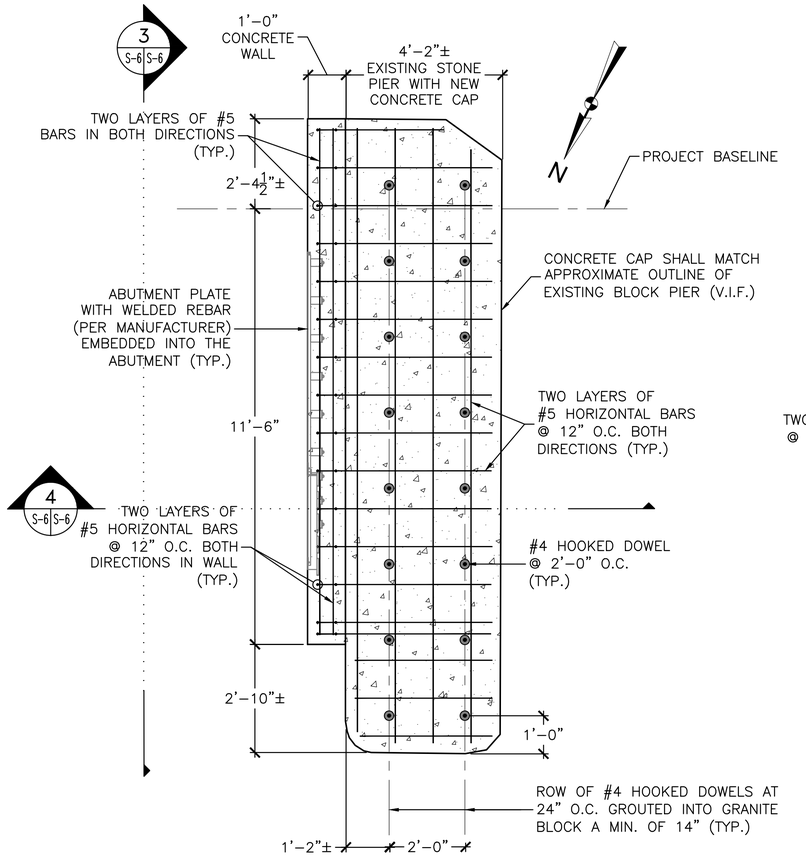
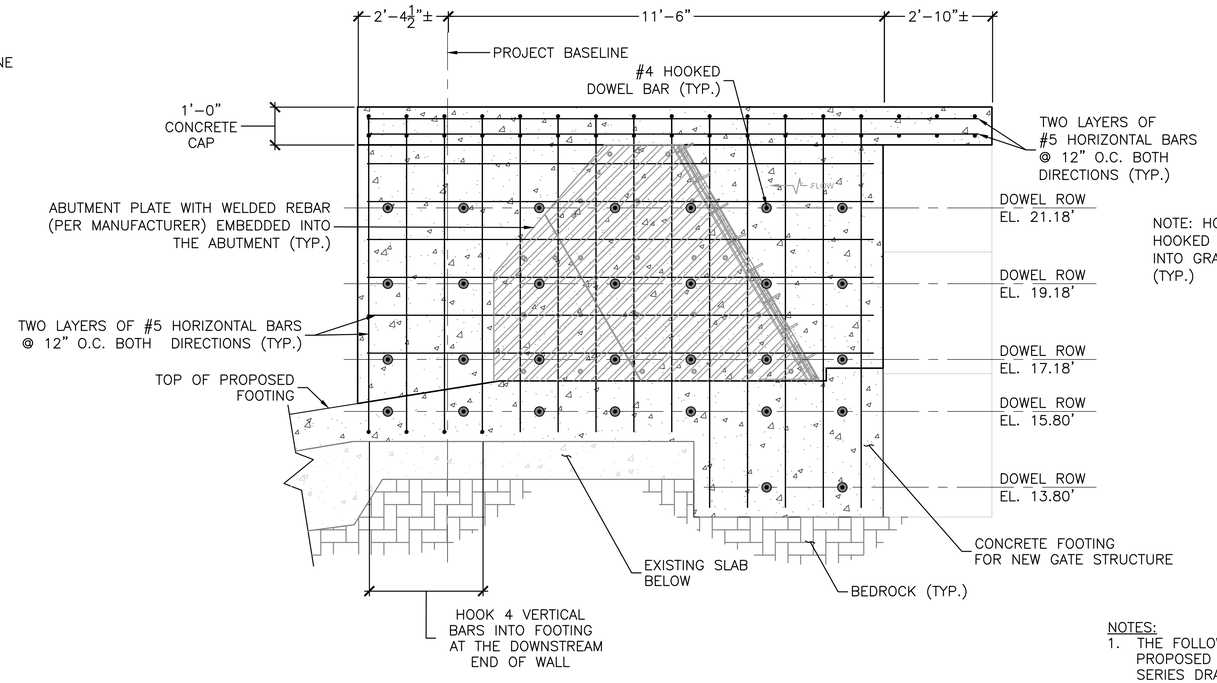


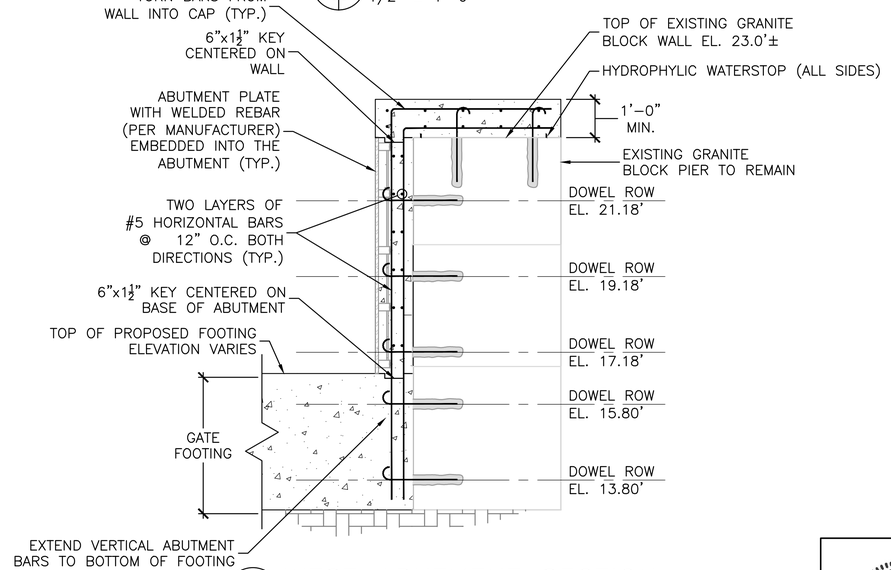
F WEST ABUTMENT PLAN
S-3 S-6 1/2" = 1'-0"

WEST ABUTMENT NOTES:
1. FOOTING REINFORCING NOT SHOWN FOR CLARITY



NOTE: HORIZONTAL DOWELS SHALL BE #4 HOOKED DOWELS AT 24" O.C. GROUTED INTO GRANITE BLOCK A MIN. OF 14" (TYP.)

3 WEST ABUTMENT ELEVATION
S-6 S-6 1/2" = 1'-0"



4 WEST ABUTMENT SECTION
S-6 S-6 1/2" = 1'-0"

NOTES:
1. THE FOLLOWING PLANS SHOW THE GENERAL LAYOUT OF THE PROPOSED CONCRETE STRUCTURES. REFER TO 18-2133 SERIES DRAWINGS BY OBERMEYER HYDRO, INC. DATED DECEMBER 13, 2018 FOR DETAILS ON ANCHORING, CONCRETE CUTOUTS, ABUTMENT PLATES, PLUMBING AND MECHANICAL SYSTEMS FOR THE GATE STRUCTURE.
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3. CONTRACTOR SHALL COORDINATE WITH GATE MANUFACTURER WITH RESPECT TO FINAL DIMENSIONS OF NEW CONCRETE SO AS TO ACCOMMODATE NEEDS OF PNEUMATIC CREST GATE INSTALLATION.
4. DOWELS TO BE DRILLED INTO GRANITE BLOCKS. DOWEL LOCATIONS MAY BE ADJUSTED TO ACCOMMODATE MASONRY JOINTS
5. CONTRACTOR TO COORDINATE WITH GATE MANUFACTURER TO CONFIRM IF SIDE SEAL HEATERS ARE REQUIRED, AND IF REQURIED, BID SUBMITTAL SHALL INCLUDE INSTALLATION

0 1' 2' 4' 6'
SCALE: 1/2" = 1'-0"

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MACALLEN DAM
ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
PROFESSIONAL ENGINEER
3/14/19

STRUCTURAL ABUTMENT DETAILS
WEST ABUTMENT

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: TOWN OF NEWMARKET, NH

PROJ MGR: TM	REVIEWED BY: JA	CHECKED BY: CG	DRAWING
DESIGNED BY: JA	DRAWN BY: JSR	SCALE: AS NOTED	S-8
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 25 OF 36

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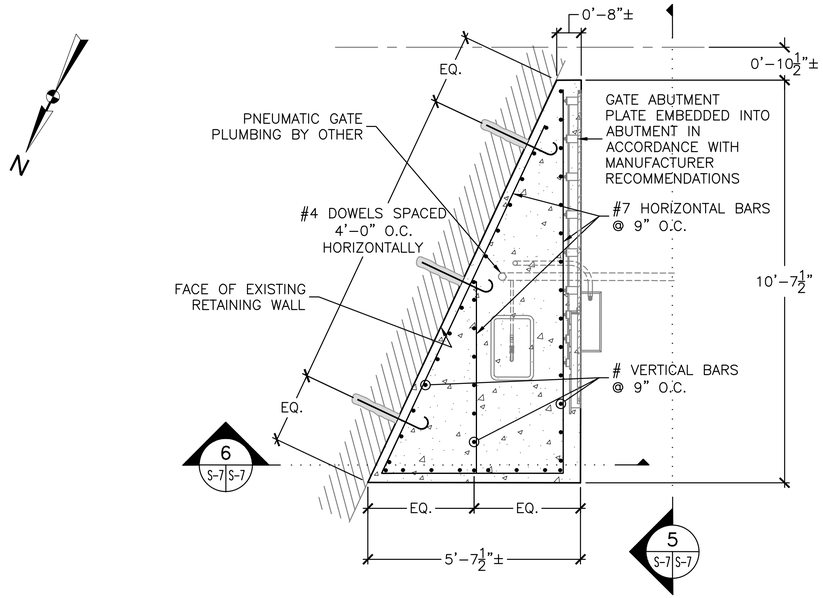
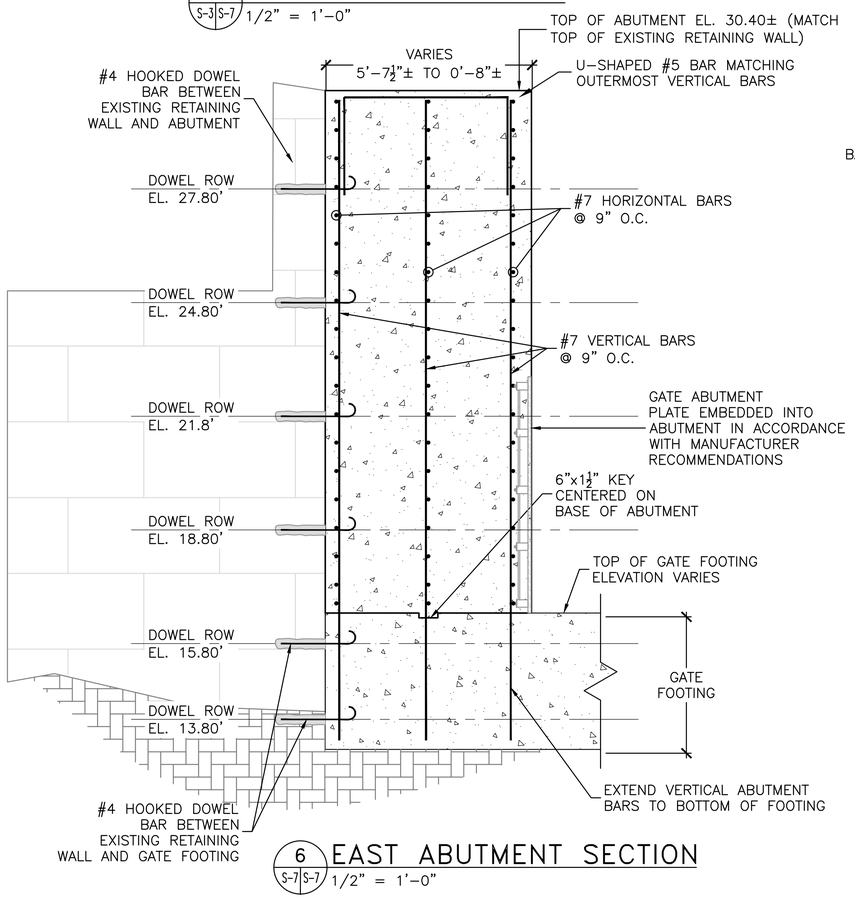
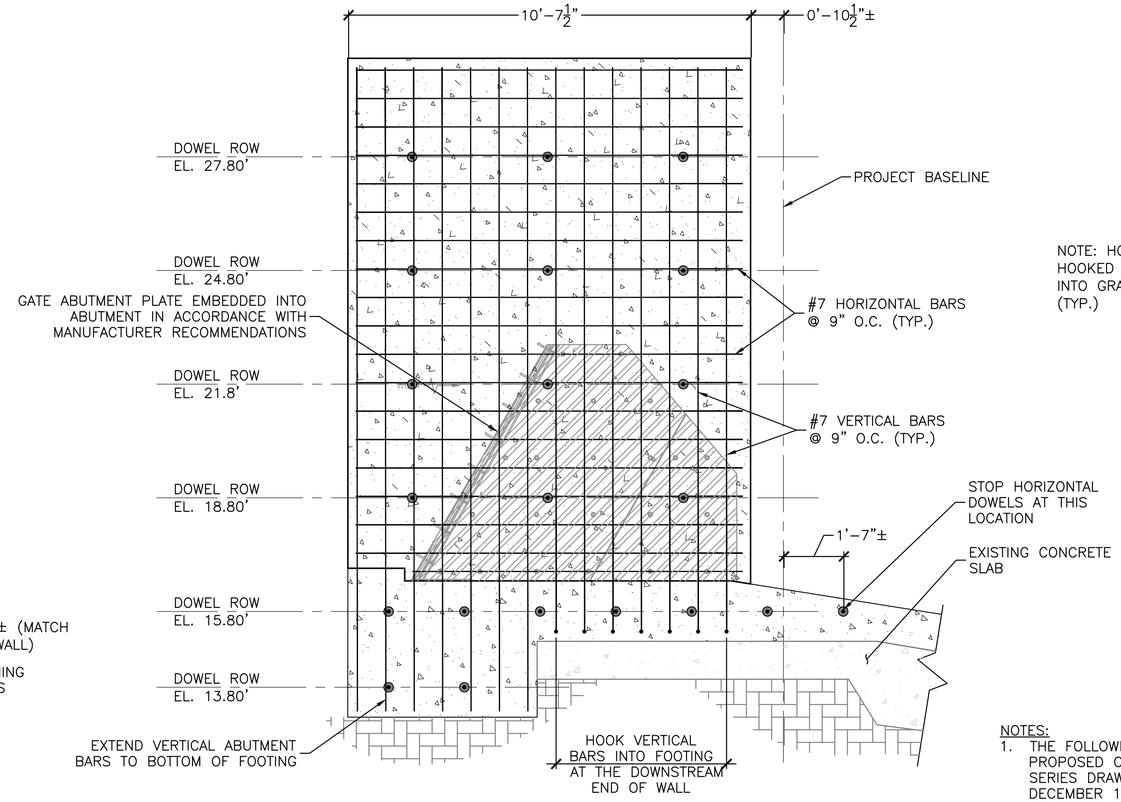


G S-3 S-7 EAST ABUTMENT PLAN
1/2" = 1'-0"



6 S-7 S-7 EAST ABUTMENT SECTION
1/2" = 1'-0"



5 S-7 S-7 EAST ABUTMENT ELEVATION
1/2" = 1'-0"

NOTE: HORIZONTAL DOWELS SHALL BE #4 HOOKED DOWELS AT 24" O.C. GROUTED INTO GRANITE BLOCK A MIN. OF 14" (TYP.)

EAST ABUTMENT NOTES:
1. FOOTING REINFORCING NOT SHOWN FOR CLARITY
2. PLAN DIMENSIONS ARE SHOWN AT BASE OF WALL
3. CONDUITS PLACED AS NEEDED FOR GATE

NOTES:
1. THE FOLLOWING PLANS SHOW THE GENERAL LAYOUT OF THE PROPOSED CONCRETE STRUCTURES. REFER TO 18-2133 SERIES DRAWINGS BY OBERMEYER HYDRO, INC. DATED DECEMBER 13, 2018 FOR DETAILS ON ANCHORING, CONCRETE CUTOUTS, ABUTMENT PLATES, PLUMBING AND MECHANICAL SYSTEMS FOR THE GATE STRUCTURE.
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5. CONTRACTOR TO COORDINATE WITH GATE MANUFACTURER TO CONFIRM IF SIDE SEAL HEATERS ARE REQUIRED, AND IF REQURIED, BID SUBMITTAL SHALL INCLUDE INSTALLATION

0 1' 2' 4' 6'
SCALE: 1/2" = 1'-0"

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MACALLEN DAM
ABUTMENT & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

STRUCTURAL ABUTMENT DETAILS
WEST ABUTMENT

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
LICENSED
PROFESSIONAL ENGINEER
3/14/19

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

PROJ MGR: TM	REVIEWED BY: CG	CHECKED BY: CC	DRAWING
DESIGNED BY: JA	DRAWN BY: JSR	SCALE: AS NOTED	S-9
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 26 OF 36

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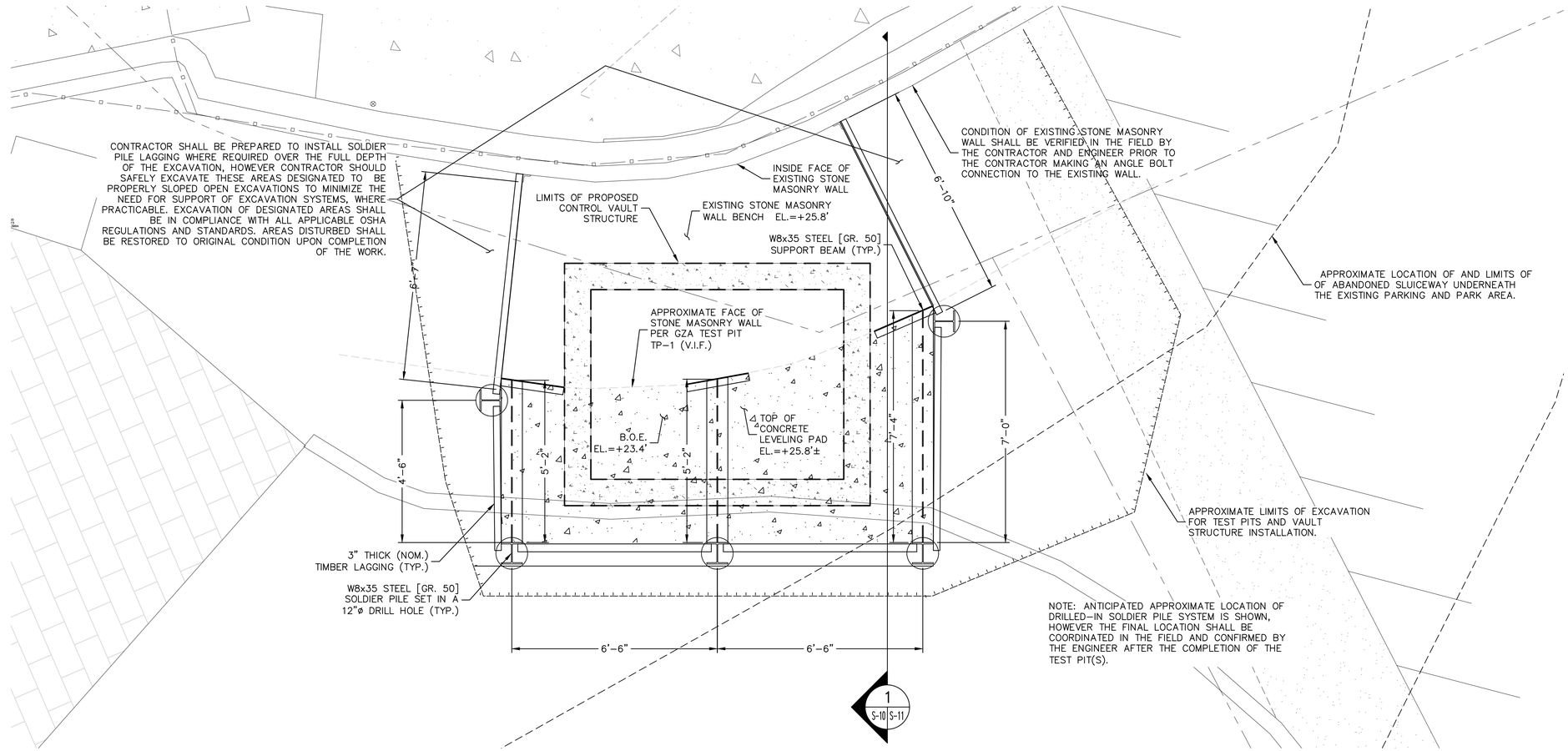

PROPOSED CONTROL VAULT
SUPPORT OF EXCAVATION – PLAN VIEW

SCALE: 1" = 2'

GENERAL NOTES:

1. BASE DRAWINGS AND DESIGN HEREIN ARE BASED ON THE INFORMATION PROVIDED BY DOUCET SURVEY INC. OF NEWMARKET, NEW HAMPSHIRE, TITLED "TOPOGRAPHIC PLAN FOR GZA GEOENVIRONMENTAL, INC. OF THE MACALLEN DAM/LAMPREY RIVER" DATED JULY 31, 2018.
2. THE PROJECT ELEVATION DATUM IS NAVD 88.
3. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.
4. CONFORM TO CONSTRUCTION SEQUENCE, NOTES AND ALL OTHER REQUIREMENTS ON THE THESE DRAWINGS UNLESS OTHERWISE APPROVED BY GZA.
5. SUBSURFACE CONDITIONS SHOWN ON THESE DRAWINGS, USED IN THE RETAINING WALL DESIGN, HAVE BEEN TAKEN FROM BORINGS P-1, P-2. AND GZ-2 AND TEST PIT TP-1 AS DISCUSSED IN SPECIFICATION SECTION 01567 ABD PRESENTED IN APPENDIX C OF THE CONTRACT DRAWINGS. REPORT ANY CHANGES IN SUBSURFACE CONDITIONS TO GZA, SO THAT THE EFFECT ON THE RETAINING WALL DESIGN CAN BE EVALUATED AND MODIFIED AS REQUIRED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY LOCATIONS OF ALL EXISTING AND PROPOSED CONSTRUCTION INCLUDING UTILITIES PRIOR TO INSTALLING PILES AND EXCAVATION. REFER TO CONTRACT DRAWINGS FOR EXISTING AND PROPOSED LOCATIONS.
7. ALL SOLDIER "PILES" SHALL BE DRILLED IN PLACE TO THE TOP OF COMPETENT BEDROCK AND AT LOCATIONS SHOWN ON THE DRAWINGS.
8. ALL EXCAVATIONS SHALL CONFORM TO THE REQUIREMENTS OF THE FEDERAL REGISTER BY THE DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, 29 CFR PART 1926, FOR EXCAVATIONS. CONTRACTOR.
9. THE DESIGN CONSIDERS A 250-PSFx15-FT VERTICAL SURCHARGE LOAD LOCATED 0-FT FROM THE BACK FACE OF THE PROPOSED SOLDIER PILE WALL TO MODEL VEHICLE LOADING. CONTRACTOR SHALL SUBMIT TO GZA ALL PROPOSED EQUIPMENT FOR SURCHARGE LOAD EVALUATED PRIOR TO ITS USE. PROPOSED SURCHARGE LOADING GREATER THAN THAT STATED ABOVE SHALL SUBMITTED TO GZA FOR RE-EVALUATION OF PROPOSED SUPPORT OF EXCAVATION SYSTEM
10. CONTRACTOR TO PROVIDE AS-BUILT INSTALLATION LOGS FOR EACH PILE. AT MINIMUM, INSTALLATION LOGS SHALL INCLUDE DRILL DEPTH, PILE LENGTH, PILE SIZE, PILE TOP ELEVATION, VARIANCE FROM PLANNED LOCATION, AND DEVIATION FROM VERTICALITY.

MATERIAL NOTES

1. ALL STEEL PILES SHALL CONFORM TO ASTM A572, GRADE 50 MIN., AND GALVANIZED
2. ALL STEEL ANGLE SHALL CONFORM TO ASTM A36, GRADE 36 MIN. AND GALVANIZED
3. BACKFILL FOR DRILL HOLE BELOW BOTTOM OF EXCAVATION SHALL BE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI. BACKFILL FOR DRILL HOLE ABOVE BOTTOM OF EXCAVATION SHALL BE SAND AND/OR CONTROLLED LOW STRENGTH MATERIAL (CLSM).
4. ALL REINFORCING STEEL SHALL CONFORM TO ASTM 615, GRADE 60, "SPECIFICATION FOR DEFORMED AND PLAIN CARBON STEEL BARS FOR CONCRETE REINFORCEMENT".
5. ALL TIMBER FOR TEMPORARY LAGGING SHALL BE 3" THICK (NOM.) DOUGLAS FIR, NO. 2 WITH A MINIMUM ALLOWABLE BENDING STRENGTH OF 900 PSI AND SHEAR STRENGTH OF 180 PSI (OR EQUIVALENT).
6. ALL SHOP & FIELD WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE AMERICAN SOCIETY FOR WELDING IN BUILDINGS AND CONSTRUCTION AWS D1.1. WELDING ELECTRODES SHALL BE E70XX.
7. UNLESS OTHERWISE NOTED, ANY SUBSTITUTION OF STRUCTURAL SHAPES OR CONNECTION DETAILS SHALL BE APPROVED BY GZA IN WRITING PRIOR TO USE.

STATE OF NEW HAMPSHIRE
CARL L. GOLDKNOPF
No. 9860
PROFESSIONAL ENGINEER
3/14/19

0 1' 2' 4' 6'
SCALE: 1"=2'-0"

NO.	ISSUE/DESCRIPTION	BY	DATE
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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

CONTROL VAULT SOE AND FOUNDATION PLAN AND NOTES

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	S-10
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 27 OF 36

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CONSTRUCTION SEQUENCE:

1. CONTRACTOR SHALL SUBMIT A WORK PLAN, IN ACCORDANCE WITH REQUIREMENTS OUTLINED IN SPECIFICATION SECTION 0220, FOR THE EXCAVATION OF TEST PITS(S), SUPPORT OF EXCAVATION INSTALLATION, AND SUBSURFACE VAULT INSTALLATION. WORK PLAN SHALL INCLUDE, AT A MINIMUM, EQUIPMENT, MATERIALS, AND SEQUENCE OF WORK AND SHALL BE ACCEPTED BY THE OWNER AND ENGINEER PRIOR TO START OF WORK.

2. ANTICIPATED CONSTRUCTION SEQUENCE IS AS FOLLOWS, BUT SHALL BE OUTLINED IN THE WORKPLAN FOR SUBMITTAL TO THE ENGINEER FOR REVIEW AND APPROVAL.

2.1. INSTALL VIBRATION AND MOVEMENT MONITORING MEASURES, IN ACCORDANCE WITH SPECIFICATION SECTION 01436, PRIOR TO EXCAVATION OF TEST PIT(S), INSTALLATION OF SUPPORT OF EXCAVATION SYSTEM, OR ANY OTHER ACTIVITY CAUSING VIBRATIONS.

2.2. CONTRACTOR SHALL EXCAVATE TEST PIT(S) WITHIN THE PROPOSED HORIZONTAL LIMITS OF THE VAULT EXCAVATION TO DELINEATE THE EXTENTS OF BOTH THE EXISTING STONE MASONRY WALL AND THE EXISTING FOUNDATION AND WALL OF THE ADJACENT 4 BAY ROAD STRUCTURE. IT IS EXPECTED THAT PERSONNEL WILL BE REQUIRED TO ENTER THE TEST PIT TO VERIFY EXTENTS AND CONDITION OF THE EXISTING WALL. THEREFORE, THE TEST PIT SHALL BE EXCAVATED IN COMPLIANCE WITH ALL APPLICABLE OSHA REGULATIONS AND STANDARDS. CONTRACTOR SHALL TAKE CARE TO NOT DAMAGE EXISTING STRUCTURES DURING EXCAVATION OF THE TEST PIT(S).

2.3. CONTRACTOR SHALL CONFIRM THE EXTENTS OF THE EXISTING STONE MASONRY WALL AND EXISTING FOUNDATION AND WALL OF THE 4 BAY ROAD STRUCTURE WITH THE ENGINEER PRIOR TO INSTALLATION OF THE SUPPORT OF EXCAVATION SYSTEM.

2.4. CONTRACTOR SHALL CONFIRM CONDITION OF EXISTING MASONRY WALL, FINAL DESIGN OF THE SUPPORT OF EXCAVATION SYSTEM, AND SHALL CONFIRM AND COORDINATE FINAL PLACEMENT OF DRILLED–IN SOLDIER PILES WITH THE ENGINEER PRIOR TO INSTALLATION.

2.5. IF NECESSARY, SUBMIT A REVISED WORK PLAN FOR THE SUPPORT OF EXCAVATION SYSTEM BASED ON CONFIRMATION OF LOCATION AND CONDITION OF THE EXISTING MASONRY WALL. REVISED WORK PLAN SHALL BE ACCEPTED BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION OF THE SUPPORT OF EXCAVATION AND VAULT.

2.6. INSTALL DRILLED–IN SOLDIER PILES, SUPPORT BEAMS, LAGGING AND VAULT AS SHOWN IN THE CONTRACT DRAWINGS. EXCAVATION AND INSTALLATION ELEMENTS OF THE SUPPORT OF EXCAVATION SYSTEM (INCLUDING DRILLED–IN SOLDIER PILES) FOR THE SUBSURFACE VAULT STRUCTURE SHALL BEGIN FROM THE NORTH SIDE OF THE PROPOSED WORK TOWARD THE SOUTH IN ORDER TO IDENTIFY POTENTIAL OBSTRUCTIONS OR EXISTING WALL OR FOUNDATION ELEMENTS THAT MAY IMPACT THE DESIGN AND INSTALLATION OF THE SUPPORT OF EXCAVATION AND HAD NOT BEEN PREVIOUSLY IDENTIFIED. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY OBSTRUCTIONS ENCOUNTERED DURING INSTALLATION.

2.7. WHEN WORK IS COMPLETE, SITE CLEAN UP SHALL BE IN ACCORDANCE WITH THESE CONTRACT DRAWINGS AND SPECIFICATION SECTION 01740.

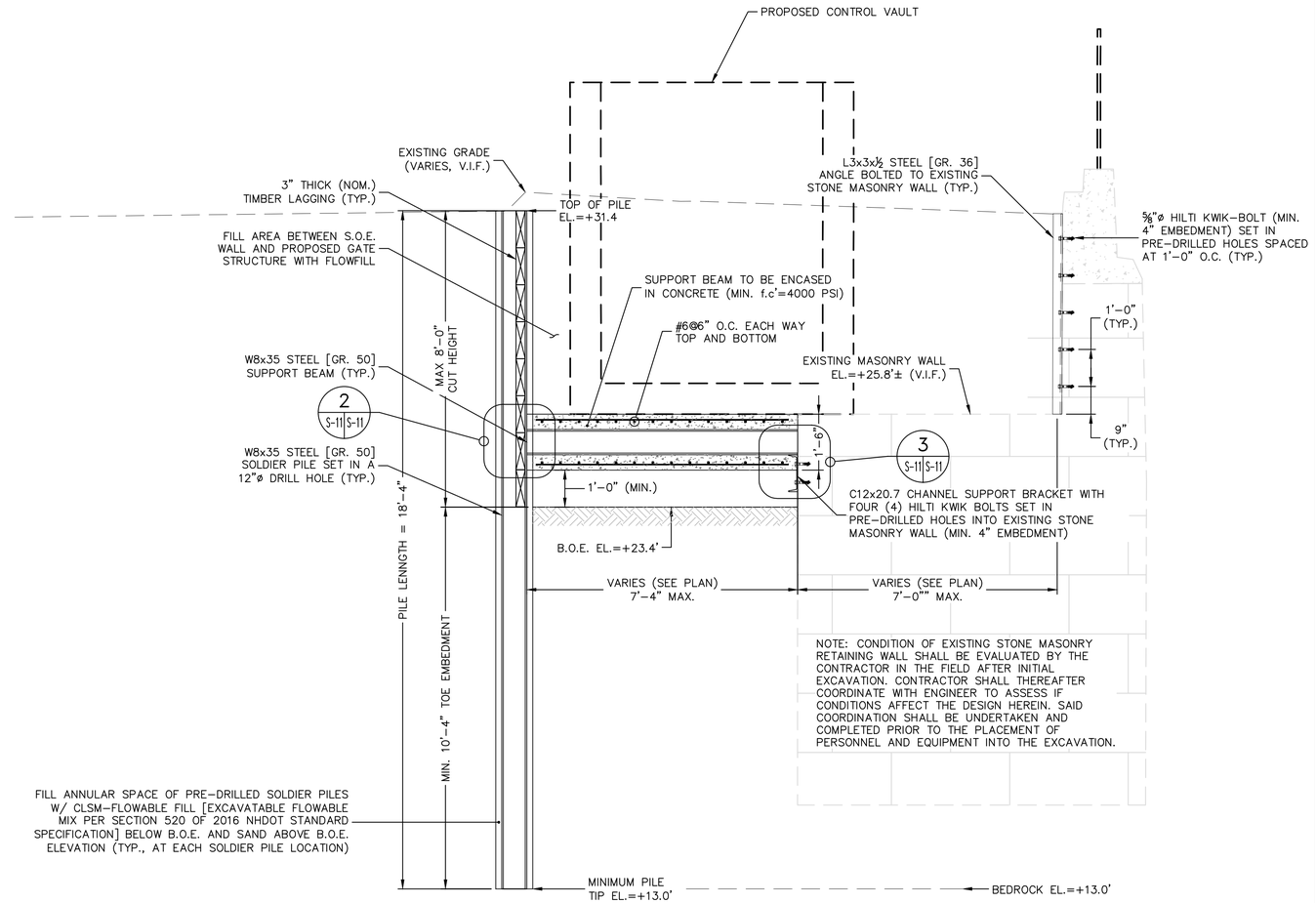
CONNECTION NOTES:

1. THE CONNECTION / SEATING DETAIL FOR THE NEW VAULT WILL DEPEND ON THE CONDITION OF THE EXISTING WALLS AS DETERMINED IN THE FIELD DURING CONSTRUCTION. BASED ON SAID CONDITION, THE FOLLOWING WILL APPLY:

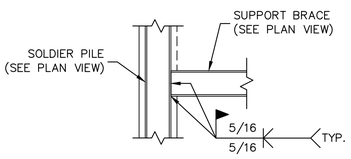
1.1. IF THE CONDITION OF THE EXISTING STONE MASONRY WALL IS DEEMED SATISFACTORY BY THE ENGINEER, THE CONTRACTOR SHALL CAREFULLY REMOVE THE PORTION OF THE EXISTING STONE TO FORM A BEAM SEAT FOR THE SUPPORT BEAM TO BEAR DIRECTLY ON THE EXISTING WALL.

1.2. IF THE CONDITION OF THE EXISTING STONE MASONRY WALL IS DEEMED MODERATELY SUFFICIENT BY THE ENGINEER, THE CONTRACTOR SHALL PROVIDE FOUR (4) ⅝"ø HILTI KWIK–BOLT (MIN. 4" EMBEDMENT) SET IN PRE–DRILLED HOLES SPACED AT 1'–0" O.C. (TYP.) IN AN C12X20.7 STEEL CHANNEL.

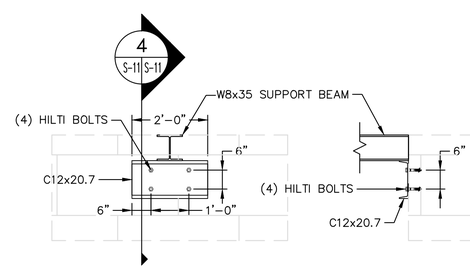
1.3. IF THE CONDITION OF THE EXISTING WALL IS INSUFFICIENT TO RESIST ADDITIONAL LOAD NOTIFY ENGINEER IMMEDIATELY, FURTHER DESIGN MAY BE REQUIRED PRIOR TO SUPPORT OF EXCAVATION SYSTEM CONSTRUCTION.



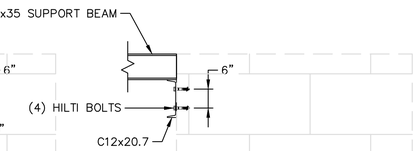
1 S-10 S-11 PROPOSED CONTROL VAULT SUPPORT OF EXCAVATION – SECTION VIEW
SCALE: 1" = 2'



2 S-11 S-11 SUPPORT BEAM TO SOLDIER PILE CONNECTION DETAIL
SCALE: 1" = 2'



3 S-11 S-11 SUPPORT BEAM TO EXISTING MASONRY WALL CONNECTION DETAIL ELEVATION VIEW
SCALE: 1" = 2'



4 S-11 S-11 SUPPORT BEAM TO EXISTING MASONRY WALL CONNECTION DETAIL SECTION VIEW
SCALE: 1" = 2'

0 1' 2' 4' 6'
SCALE: 1"=2'-0"

NO.	ISSUE/DESCRIPTION	BY	DATE
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	CG	3/14/2019

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MACALLEN DAM
ABUTMENTS & OUTLET STRUCTURE REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

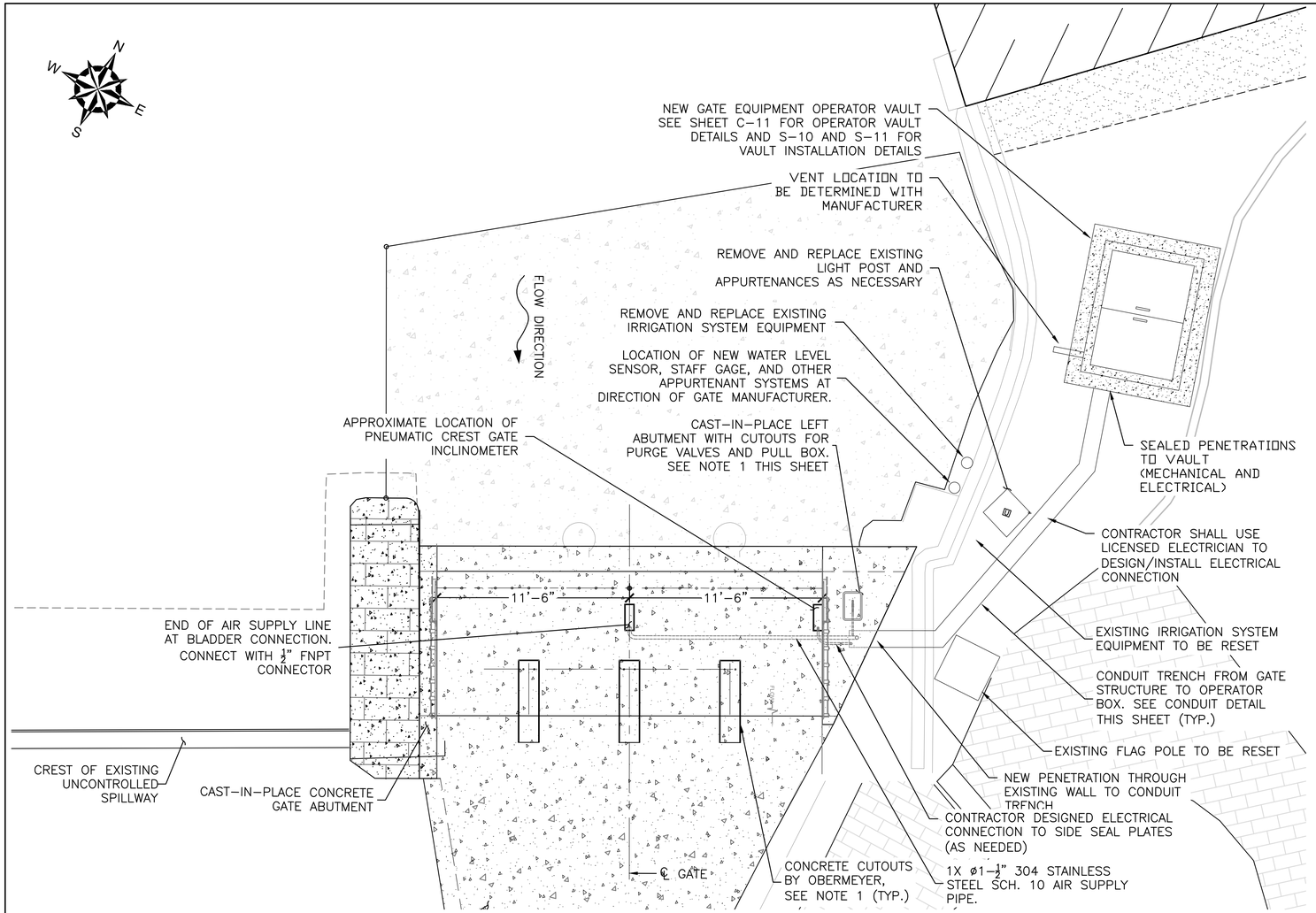
CONTROL VAULT SOE AND FOUNDATION SECTION AND DETAILS

STATE OF NEW HAMPSHIRE CARL L. GOLDKNOPF No. 9860 PROFESSIONAL ENGINEER 3/14/19

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com
PREPARED FOR: TOWN OF NEWMARKET, NH

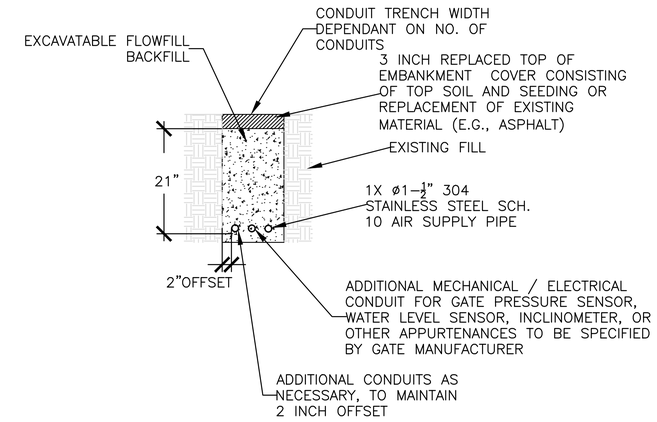
PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	FIG OR DWG S-11
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 28 OF 36

© 2019 – GZA GeoEnvironmental, Inc. GZA–\\GZANGR\JOBS\170,000–179,999\173346\173346–10.TEM\WORK\CAD\PLANSET\100%–DESIGN\SOE DRAWINGS\MACALLEN_DAM_MODIFICATIONS_PLANSET_100% DRAFT PROGESS SET_RMC.DWG S-11 – SOE ELE MARCH 14, 2019 2:15PM TODD MONSON



PROPOSED PNEUMATIC GATE ELECTRICAL / MECHANICAL SCHEMATIC PLAN

1/4" = 1'-0"



DETAIL: TYPICAL CONDUIT SECTION

3/4" = 1'-0"

NOTES:

1. THE PROPOSED LAYOUT AND CONFIGURATION OF MECHANICAL AND ELECTRICAL SYSTEMS IS SCHEMATIC ONLY, AND FINAL LAYOUT AND INSTALLATION TO BE DEVELOPED BY CONTRACTOR IN COORDINATION WITH PNEUMATIC GATE MANUFACTURER, ELECTRICIAN AND TOWN.
2. THE FOLLOWING PLANS SHOW THE GENERAL LAYOUT OF THE PROPOSED MECHANICAL / ELECTRICAL SYSTEMS REQUIRED FOR THE PNEUMATIC CREST GATE. REFER TO 18-2133-10X SERIES DRAWINGS BY OBERMEYER HYDRO, INC. DATED DECEMBER 13, 2018 FOR ADDITIONAL DETAILS ON PLUMBING AND MECHANICAL SYSTEMS FOR THE GATE STRUCTURE.
3. FINAL LAYOUT OF MECHANICAL AND ELECTRICAL EQUIPMENT AND ALL OTHER FEATURES ASSOCIATED WITH GATES AND GATE CONTROL SYSTEMS SHALL BE SUBMITTED BY THE CONTRACTOR TO ENGINEER FOR APPROVAL. LAYOUT SHALL BE DEVELOPED IN CONJUNCTION WITH GATE MANUFACTURER RECOMMENDATIONS AS OUTLINED IN FINAL PNEUMATIC GATE DRAWINGS TO BE DEVELOPED BY CONTRACTOR / GATE MANUFACTURER. THE CONTRACT WORK SCOPE AND COSTS OF WHICH SHALL BE INCLUDED IN CONTRACTOR'S BID PRICE.
4. LOCATION OF WATER LEVEL SENSOR AND RELATED EQUIPMENT TO BE DEVELOPED IN COORDINATION WITH PNEUMATIC GATE MANUFACTURER AND INSTALLED AT A LOCATION APPROVED BY THE ENGINEER.
5. CONTRACTOR SHALL USE LICENSED ELECTRICIAN OR LICENSED PROFESSION ENGINEER TO DESIGN/INSTALL ELECTRICAL CONNECTIONS FOR GATE OPERATOR EQUIPMENT.
6. CONTRACTOR SHALL COORDINATE WITH UTILITY AND OWNER TO DETERMINE LOCATION OF ELECTRICAL LINES, INTERCONNECTION, METER, AND TRANSFORMER (IF REQUIRED).

STATE OF NEW HAMPSHIRE JAMES P. GUARIENTE No. 10765 LICENSED PROFESSIONAL ENGINEER 3-13-19

STATE OF NEW HAMPSHIRE TODD F. MONSON No.15658 LICENSED PROFESSIONAL ENGINEER 3-13-19

NO.	ISSUE/DESCRIPTION	BY	DATE
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	TEM	3/14/2019

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MACALLEN DAM
PROPOSED REHABILITATION PROJECT
NEWMARKET, NEW HAMPSHIRE

SCHEMATIC MECHANICAL, PIPING, CONDUIT PLAN AND DETAIL

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF NEWMARKET, NH

PROJ MGR: TEM	REVIEWED BY: TEM	CHECKED BY: CWC	DRAWING
DESIGNED BY: SMH	DRAWN BY: SMH	SCALE: AS NOTED	E-1
DATE: MARCH 2019	PROJECT NO. 01.0173346.10	REVISION NO. 0	SHEET NO. 29 OF 36

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Macallen Dam
Newmarket, New Hampshire

OHI PROJECT
18-2133

DRAWING LIST	DESCRIPTION	REV
100	COVER SHEET	1
101	SPILLWAY PLAN VIEW	1
102	PLAN VIEW MAIN ANCHOR LAYOUT AND SPACING	1
110	SECTION ELEVATION	1
111	ELEVATION SURFACE FEATURES	1
112	ABUTMENT PLATE INSTALLATION	1

NO	REVISION DESCRIPTION	DATE APRV'D	APRV'D	DRAWN
1	NEW DRAWING	13 Dec 2018		BAH
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OBERMEYER ideas that hold water™ HYDRO, INC.

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DRAWING DESCRIPTION

SPILLWAY PLAN VIEW

SHEETS: 1 of 1

SCALE: NO SCALE

JOB: Macallen Dam

DWG. NO. 18-2133-100

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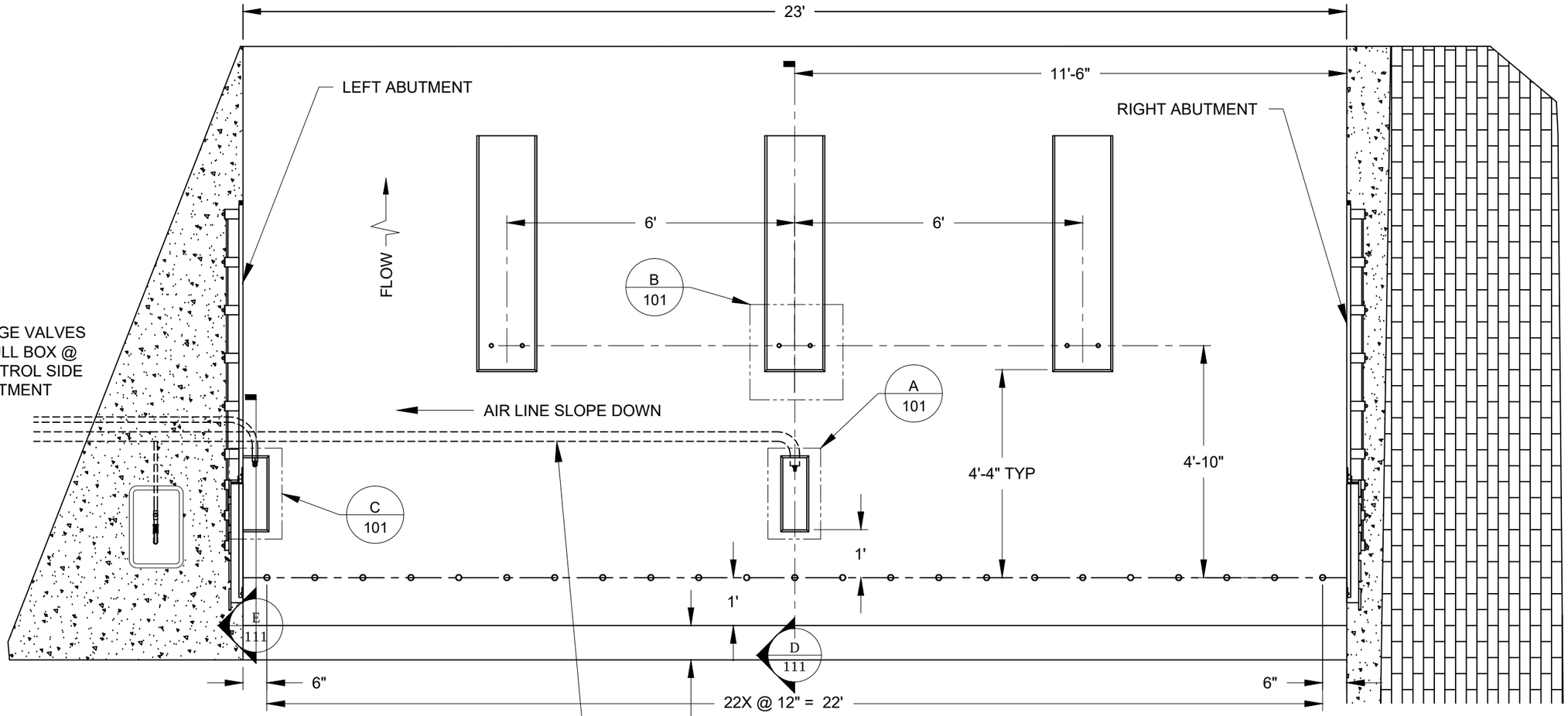
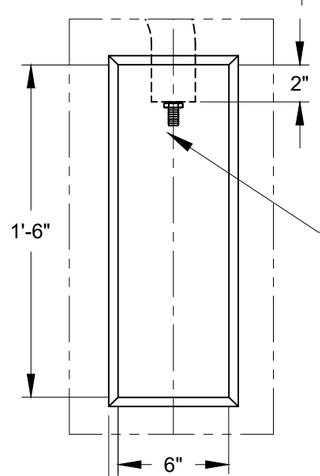
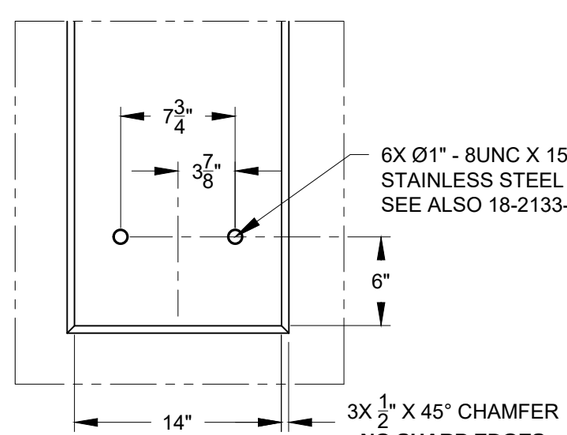
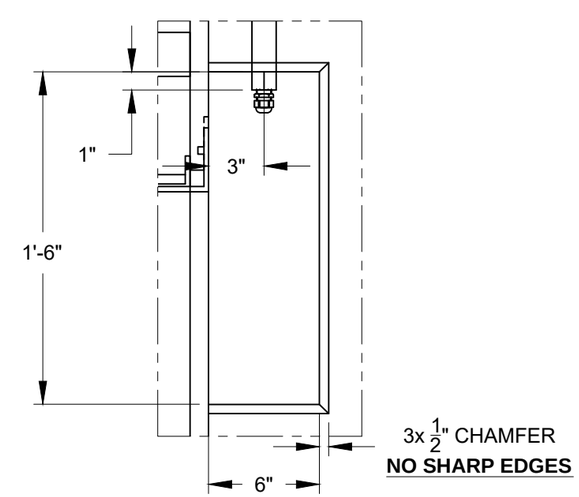




A DETAIL
AIR CONNECTION BLOCK-OUT, TYP 1X, SEE 18-2133-111



B DETAIL
RESTRAINING STRAP BLOCK-OUT, TYP 3X, SEE 18-2133-111



C DETAIL
INCLINOMETER BLOCK-OUT, TYP 1X SEE 18-2133-111

NO	REVISION DESCRIPTION	DATE APRV'D	APRV'D	DRAWN
1	NEW DRAWING	13 Dec 2018		BAH
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DRAWING DESCRIPTION
SPILLWAY PLAN VIEW

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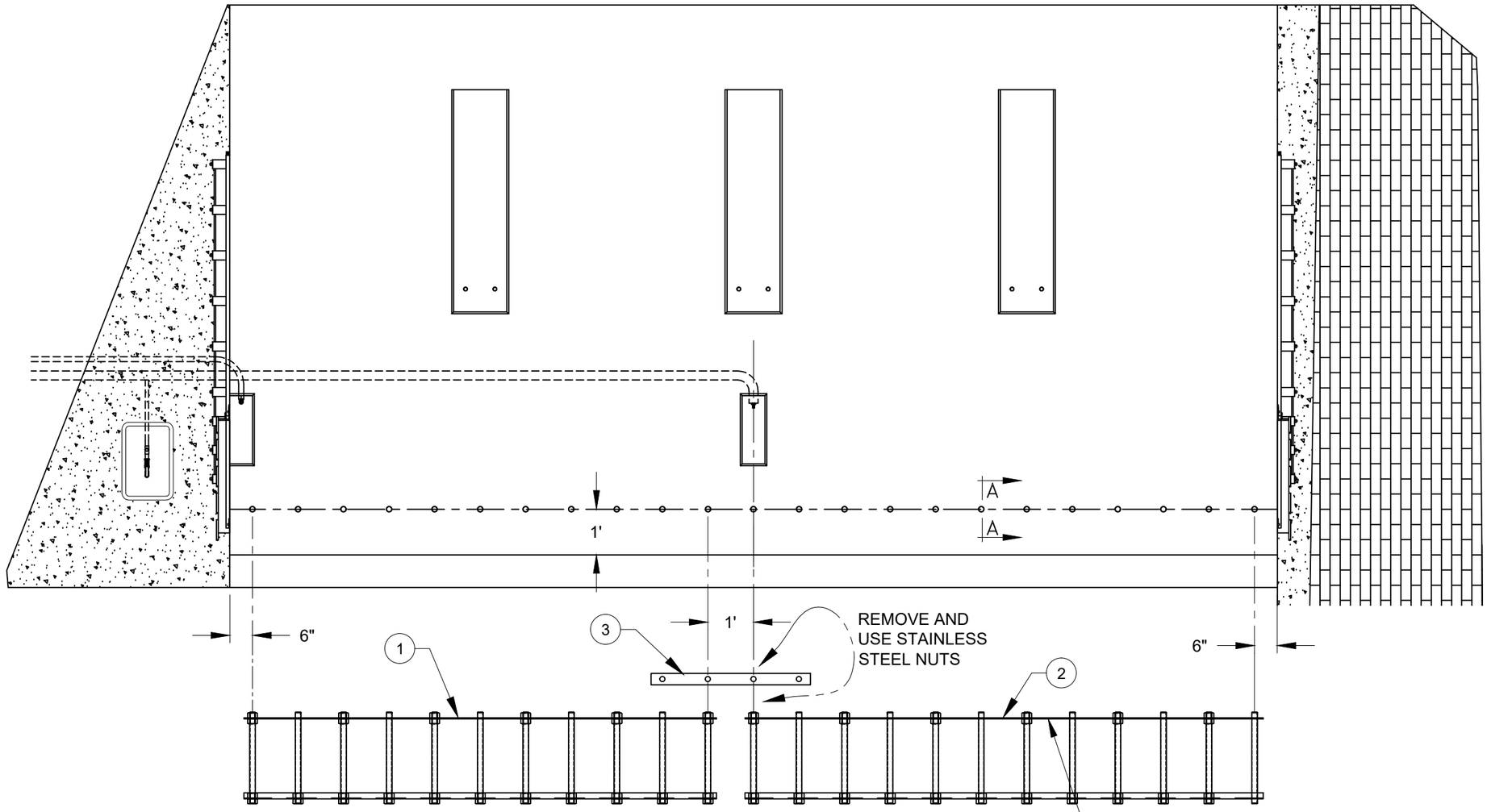
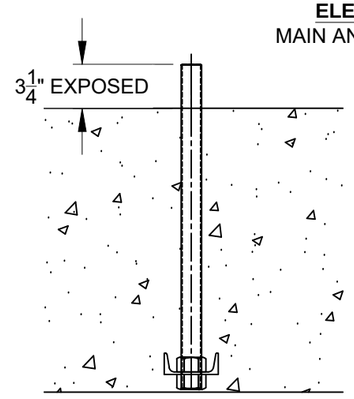
SHEETS: 1 of 1
SCALE: NO SCALE
JOB: Macallen Dam
DWG. NO. 18-2133-101



ELEVATION VIEW
MAIN ANCHOR ASSEMBLY



SECTION A-A

NOTES:

1. TO SPACE MAIN ANCHOR ASSEMBLIES PROPERLY (12") APART USE ITEM #3 SPACER PLATE BETWEEN EACH INDIVIDUAL ASSEMBLY
2. AFTER CONCRETE IS CURED REMOVE EXPOSED SPACER PLATE AND STAINLESS STEEL NUTS (**DO NOT DISCARD** USED ON MAIN CLAMP ASSEMBLY) .
3. "LEFT" IS AT LEFT SIDE WHEN FACING DOWN STREAM.

BILL OF MATERIAL FOR MAIN ANCHOR INSTALLATION

ITEM	PART NO.	DESCRIPTION	FINISH	QTY.	TOTAL
		STEEL			
1	18-2133-207-11	MAIN ANCHOR EMBED ASSEMBLY (11 ANCHOR)	SEE 18-2133-207-11	1	1
2	18-2133-207-12	MAIN ANCHOR EMBED ASSEMBLY (12 ANCHOR)	SEE 18-2133-207-12	1	1
3	18-2133-207-1'	MAIN ANCHOR SPACER PLATE	SEE 18-2133-207-1	1	1

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NO	REVISION DESCRIPTION	DATE APRV'D	APRV'D	DRAWN
1	NEW DRAWING	13 Dec 2018		BAH
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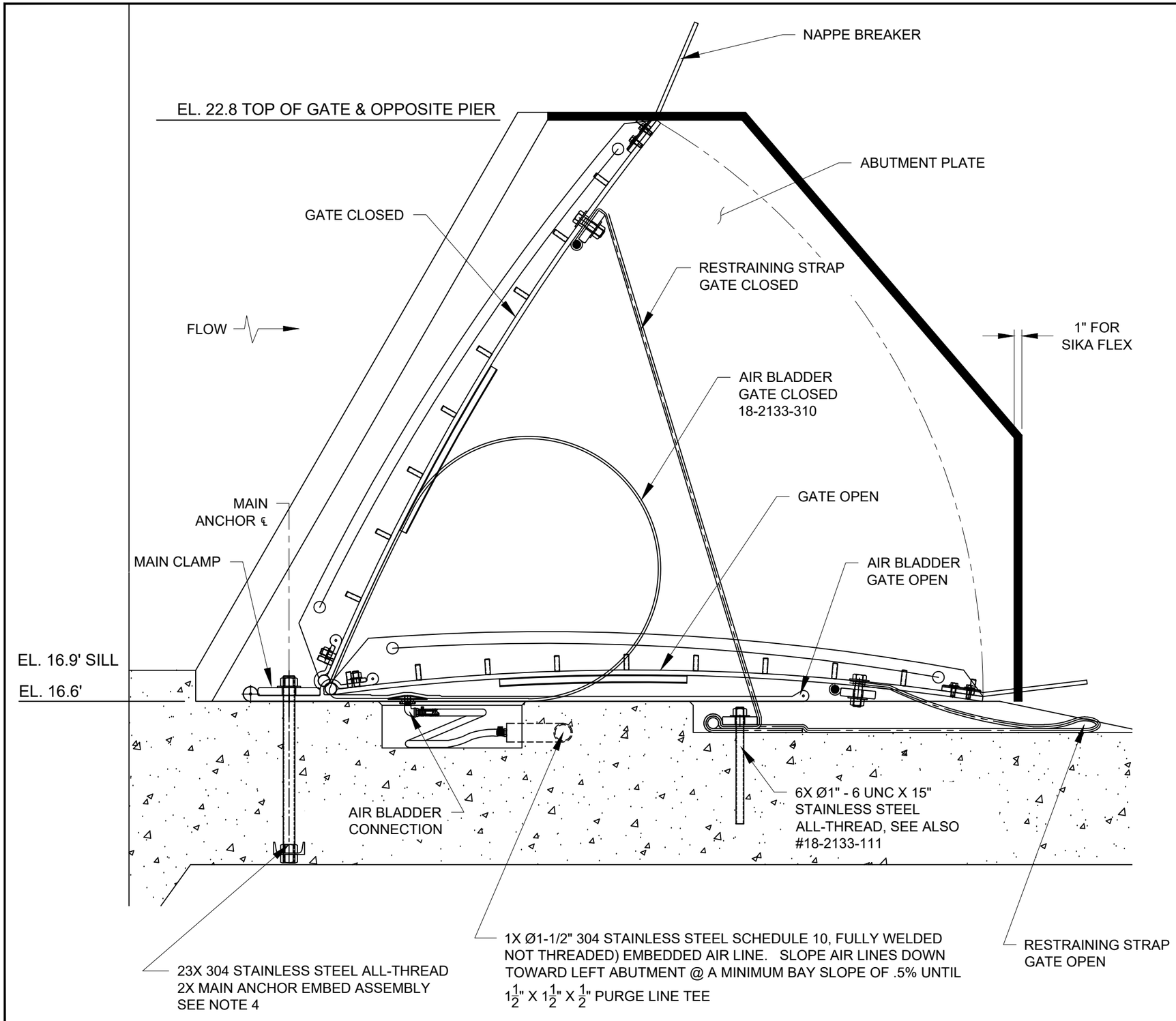
DRAWING DESCRIPTION
PLAN VIEW
MAIN ANCHOR LAYOUT AND SPACING

SHEETS: 1 of 1
SCALE: NO SCALE
JOB: Macallen Dam
DWG. NO. 18-2133-102



NOTES:

1) CONCRETE FINISH: CONCRETE UNDER GATE SYSTEM **MUST** HAVE HIGH QUALITY TROWEL FINISH AND BE FLAT WITHIN ±1/8".

2) THE HORIZONTAL CONCRETE CLAMPING SURFACE EXTENDING 6" DOWNSTREAM OF MAIN ANCHOR BOLT CENTERLINE AND 6" UPSTREAM OF MAIN ANCHOR BOLT CENTERLINE SHOULD BE LEVEL WITHIN ±1/4" FROM ABUTMENT TO ABUTMENT AND SHOULD NEVER VARY MORE THAN 1/8" PER FOOT.

3) ALL DIMENSIONS TO WITHIN ±1/8" OF TRUE POSITION UNLESS OTHERWISE DIMENSIONED OR NOTED ON PART DRAWING. SPACING OF ADJACENT MAIN ANCHOR BOLTS SHOULD NOT VARY MORE THAN 1/16" FROM NOMINAL SPACING.

4) ALL MAIN ANCHOR BOLTS TO BE PLUMB WITHIN ±1/8". MAIN ANCHOR BOLT CENTER LINE TO BE PERPENDICULAR TO ABUTMENT FACE ±0.1°.

5) DURING CONCRETE PLACEMENT, THE FORM WORK SUPPORTING THE ABUTMENT PLATES MUST BE HELD PLANAR, PLUMB AND PERPENDICULAR TO THE MAIN ANCHOR BOLTS WITHIN 1/8" PER FOOT AND WITHIN 1/4" OVERALL. RIGID STEEL BRACING OF FORMS IS RECOMMENDED. CONCRETE LIFTS SHOULD BE LIMITED SO AS TO NOT EXCEED ABOVE DEFLECTION LIMITS OF FORMS.

6) THERE IS **NO WELDING ALLOWED** ON THE MAIN ANCHOR BOLTS. WELDING TO HEAT TREATED ANCHOR BOLTS CAN CAUSE FRACTURE AND CATASTROPHIC SYSTEM FAILURE.

7) ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.

NO	REVISION DESCRIPTION	DATE APRV'D	APRV'D	DRAWN
1	NEW DRAWING	13 Dec 2018		BAH
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DRAWING DESCRIPTION

SECTION ELEVATION

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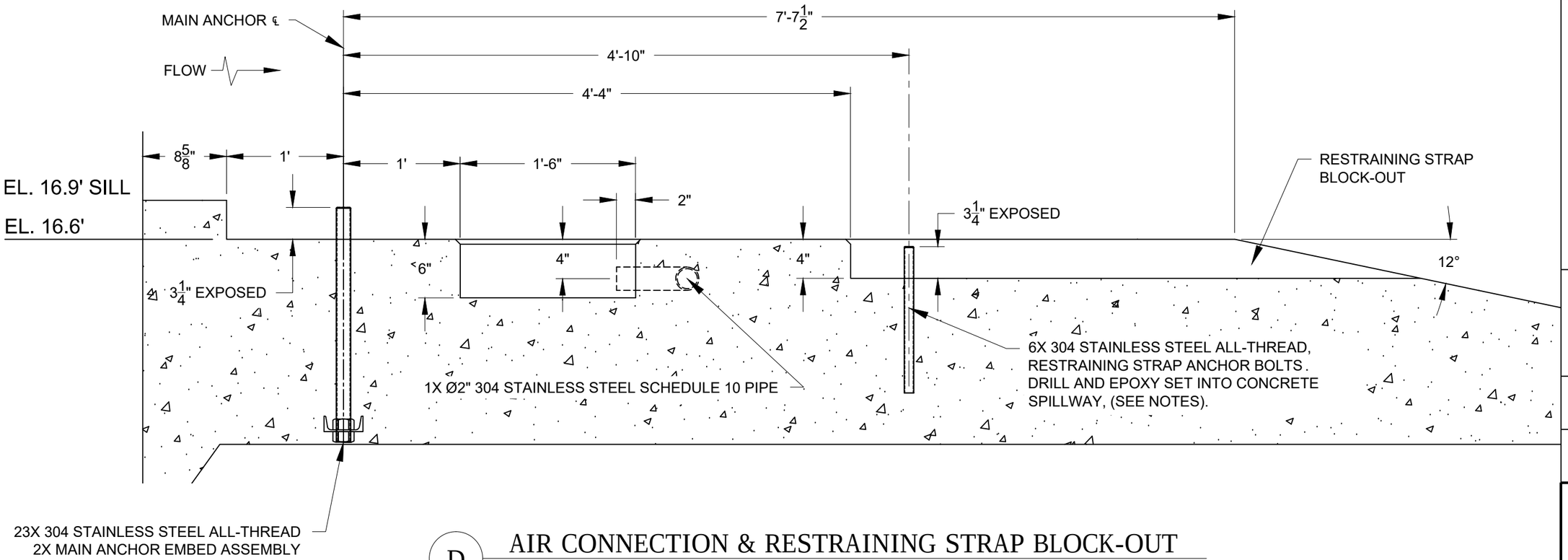
SHEETS	SCALE
1 of 1	NO SCALE

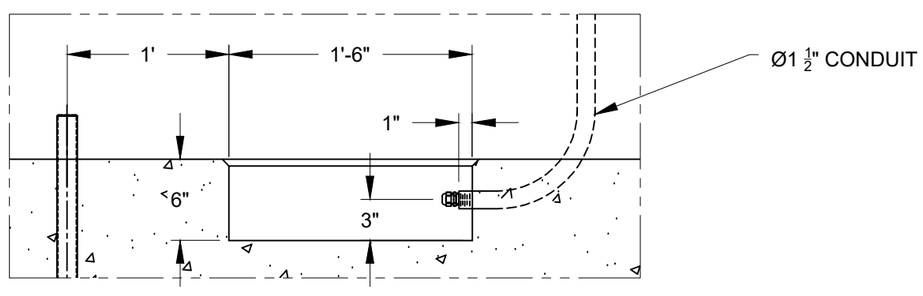
JOB: Macallen Dam

DWG. NO. 18-2133-110



D AIR CONNECTION & RESTRAINING STRAP BLOCK-OUT

REF 18-2133-101



E INCLINOMETER BLOCK-OUT

REF 18-2133-101

NO	REVISION DESCRIPTION	DATE APRV'D	APRV'D	DRAWN
1	NEW DRAWING	13 Dec 2018		BAH
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DRAWING DESCRIPTION

ELEVATION SURFACE FEATURES

SHEETS: 1 of 1
SCALE: NO SCALE
JOB: Macallen Dam
DWG. NO. 18-2133-111

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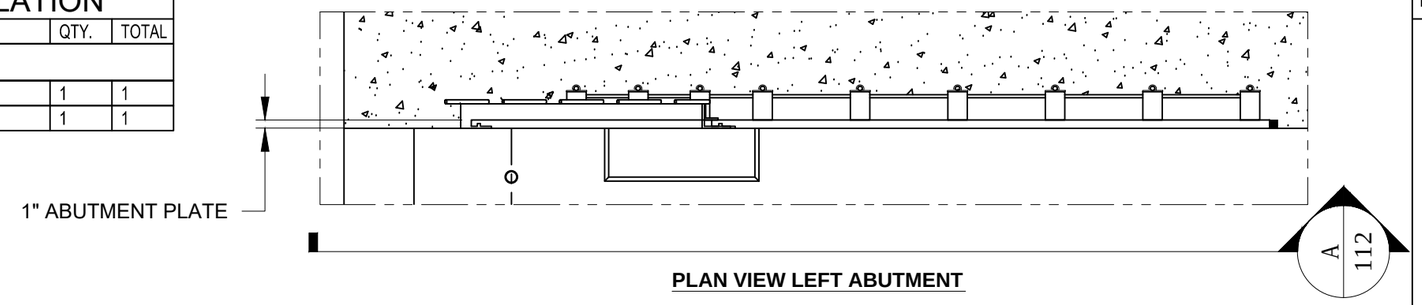
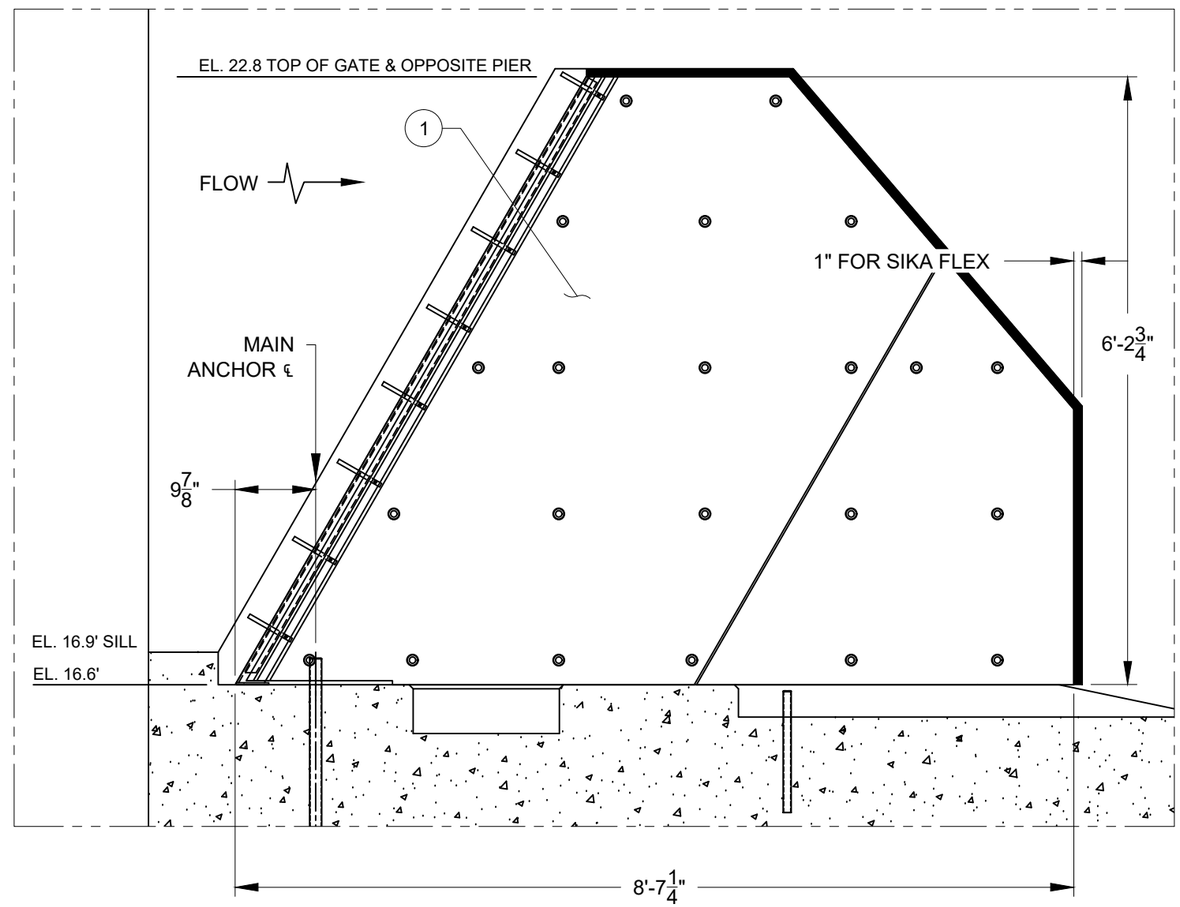
BILL OF MATERIAL FOR ABUTMENT PLATE INSTALLATION

ITEM	PART NO.	DESCRIPTION	FINISH	QTY.	TOTAL
EMBEDS					
1	18-2133-240-L	ABUTMENT PLATE ASSEMBLY, LEFT	UHMW	1	1
2	*18-2133-240-R	ABUTMENT PLATE ASSEMBLY, RIGHT	UHMW	1	1

* ITEM 2 TO BE USED FOR LEFT ABUTMENT IN PLACE OF ITEM 1 .



PLAN VIEW LEFT ABUTMENT



A ELEVATION

LEFT ABUTMENT SHOWN

NO	REVISION DESCRIPTION	DATE APRV'D	APRV'D	DRAWN
1	NEW DRAWING	13 Dec 2018		BAH
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DRAWING DESCRIPTION

ABUTMENT PLATE INSTALLATION

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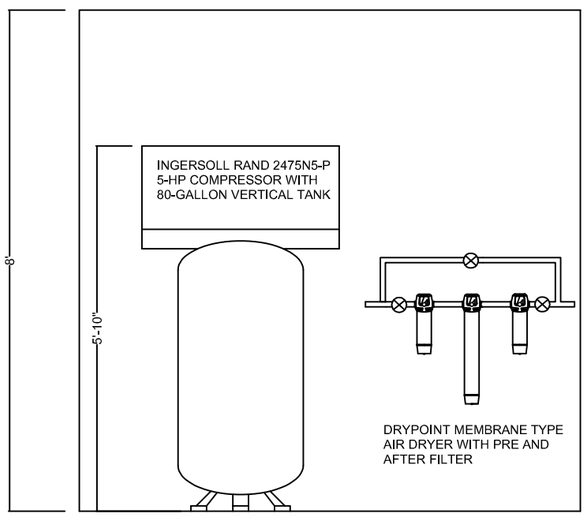
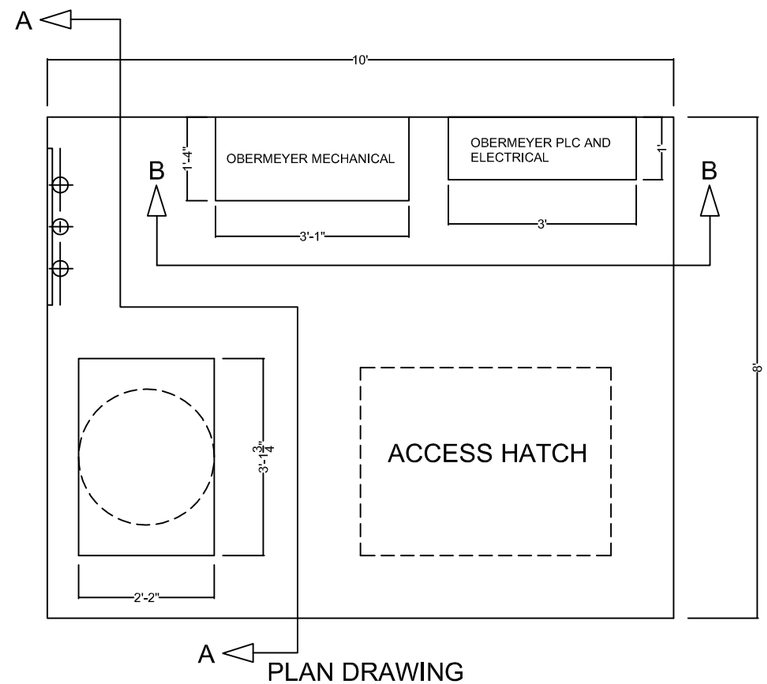
SHEETS	SCALE
1 of 1	NO SCALE

JOB: Macallen Dam

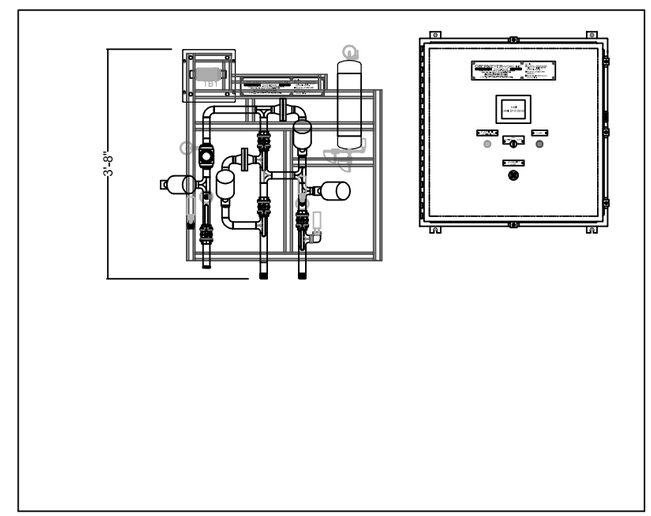
DWG. NO. 18-2133-112



SECTION A-A



PLAN DRAWING



SECTION B-B

NO	REVISION DESCRIPTION	DATE APRV'D	APRV'D	DRAWN
1	PRELIMINARY	SEP 18, 2018		RDE
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TOL: ± 1/16"
TOL: .XX=.060"
TOL: .XXX=.015"
TOL: ±1°
UNLESS OTHERWISE NOTED

DRAWING DESCRIPTION

MECHANICAL VAULT

OBERMEYER HYDRO, INC
P.O. BOX 668
FORT COLLINS, COLORADO 80522
TEL 970-568-9844 FAX 970-568-9845

SHEETS: 1 of 1
SCALE: NO SCALE

JOB: NEW MARKET

DWG. NO. 18-2134-004

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