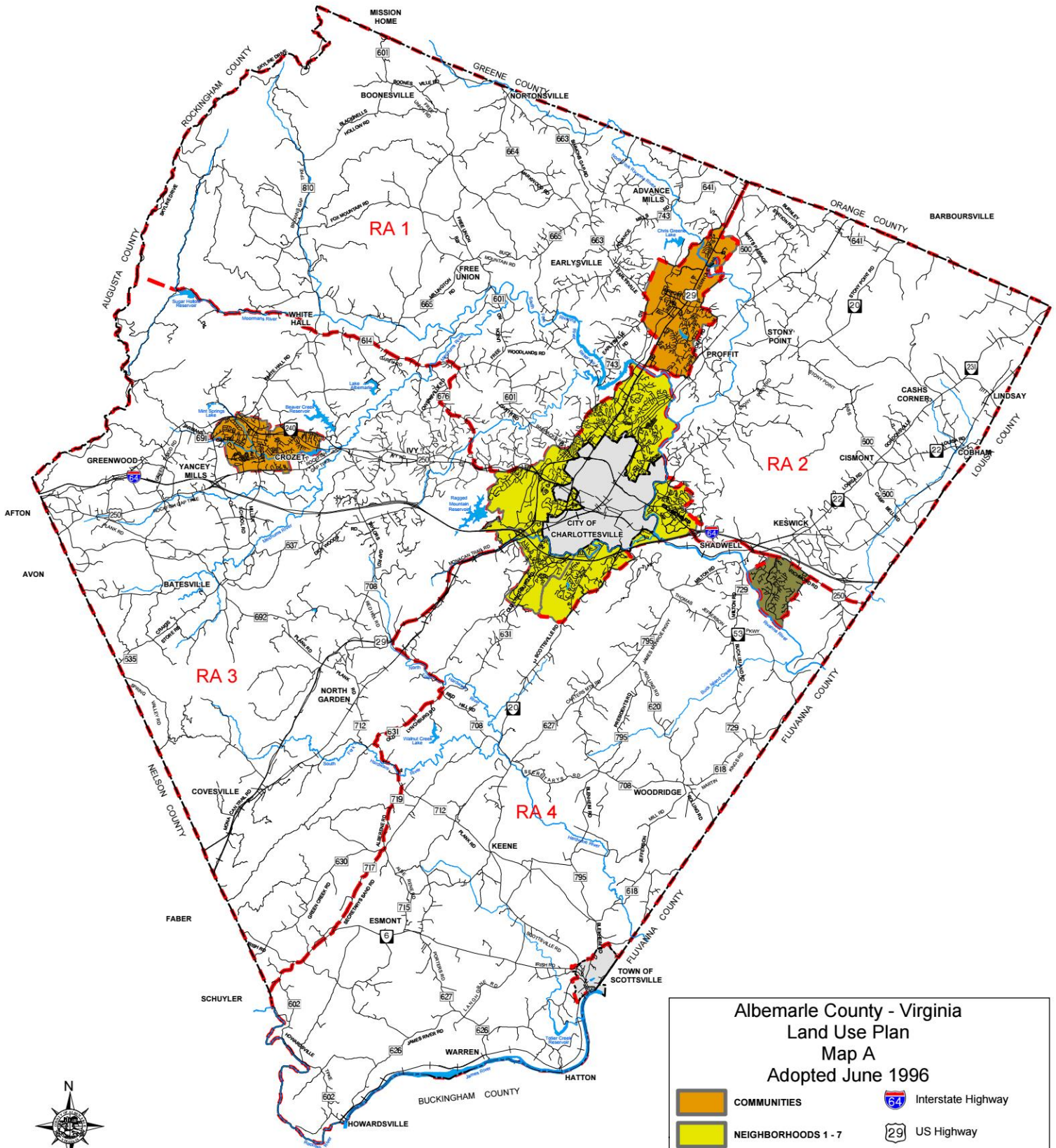


# Jefferson Mill Hydroelectric Project

## Appendix C: CONCEPTUAL PLANS

# County of Albemarle



## Albemarle County - Virginia Land Use Plan Map A Adopted June 1996

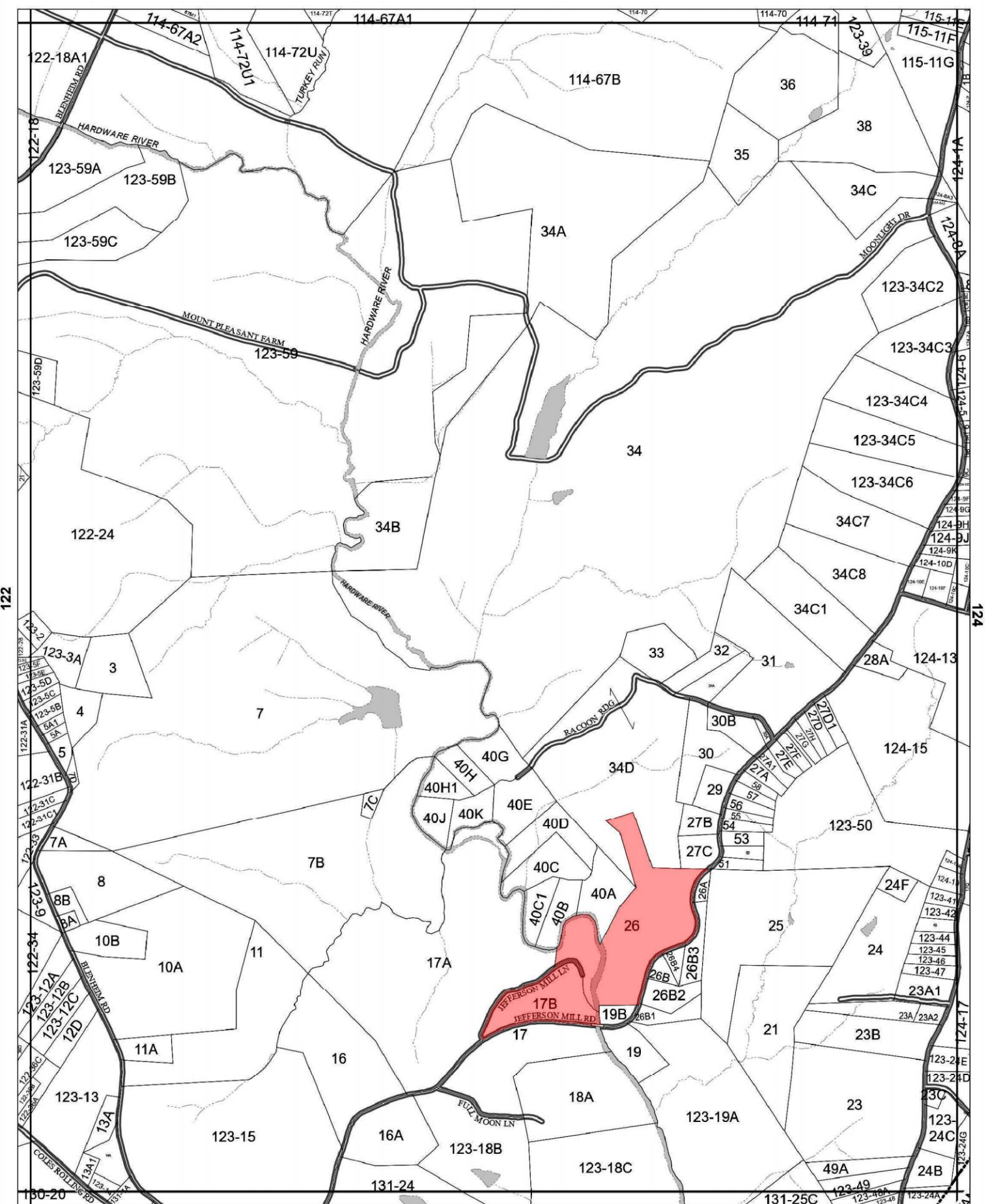
	COMMUNITIES		Interstate Highway
	NEIGHBORHOODS 1 - 7		US Highway
	VILLAGES		VA Primary Highway
	RURAL AREAS		VA Secondary Highway
	Roads		Incorporated Town or City Boundary
	Railroads		County Boundary
	Streams		



0 1 2 3 4 5 6 Miles  
0 1 2 3 4 5 6 7 8 9 Kilometers

Prepared by: Department of Community Development  
Office of Geographic Data Services  
This Map is for Display Purposes Only.  
MAP CREATED: 01/10/2020





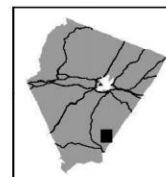
# Albemarle County

Tax Map:  
123



0 800 Scale 1,600 2,400  
Feet

Note: This map is for display purposes only  
and shows parcels as of 12/31/2019.  
See Map Book Introduction for additional details.





# Jefferson Mill Existing Structures

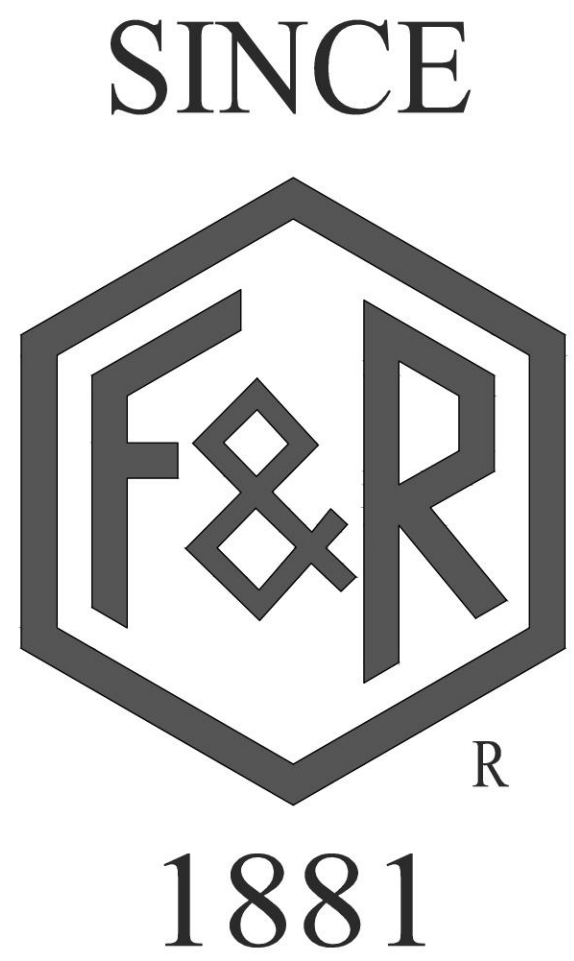


## Legend

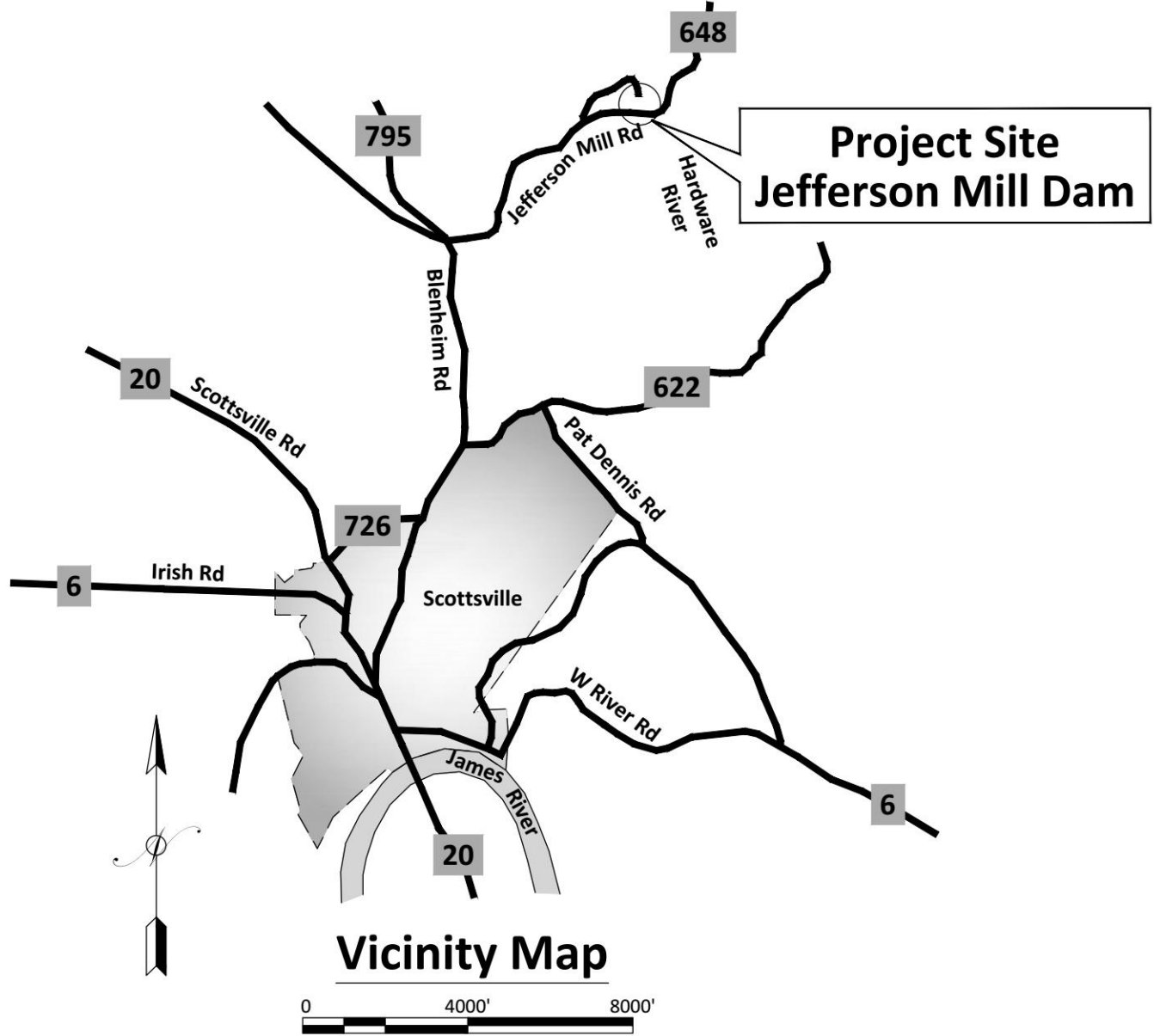
-  Road\_paved
-  River
-  Albemarle County Land Parcels



Froehling and Robertson, Inc. makes no representation or warranties, express or implied, with respect to the reuse of the data provided herewith, regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability of this data for any purpose. The user accepts the data "as is", and assumes all risks associated with its use. By acceptance of this data, the user agrees not to transmit this data or provide access or any part of it to another party unless the user shall include with the data a copy of this disclaimer. Froehling and Robertson, Inc. assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data.



# JEFFERSON MILL DAM DESIGN SCOTTSVILLE, VA



## PROJECT DESCRIPTION

THESE DRAWINGS AND DESIGN INFORMATION ARE FOR CONSTRUCTION OF THE STRUCTURES NEEDED TO SUPPORT A HYDRAULIC POWER TURBINE INSTALLATION AT JEFFERSON MILL. THE STRUCTURE WILL CONSIST OF ENCLOSING THE EXISTING MILL WHEEL ROOM TO HOUSE THE TURBINE WITH NEW REINFORCED CONCRETE WALLS AND FLOOR ALONG WITH THE PENSTOCK UPSTREAM TO A CONCRETE INLET STRUCTURE LOCATED AT THE EDGE OF THE RIVER.

APPLICABLE BUILDING CODE: VA USBC 2012.

### PLAN INDEX:

- 1.0 Project Information Sheet
- 2.0 Site Plan
- 3.0 Turbine Room Details
- 4.0 Inlet & Penstock Details
- 5.0 Eel Ladder Details
- 6.0 E&SC Site Plan
- 6.1 E&SC Notes and Details

### SUBMITTALS

1. Pipe
2. Valves
3. Sluice Gate
4. Pipe supports
5. Access Hatch/Ladder
6. Trash Rack

- PREPARED FOR -  
Natel Energy  
2401 Monarch St.  
Alameda, CA 94501  
360-949-8554

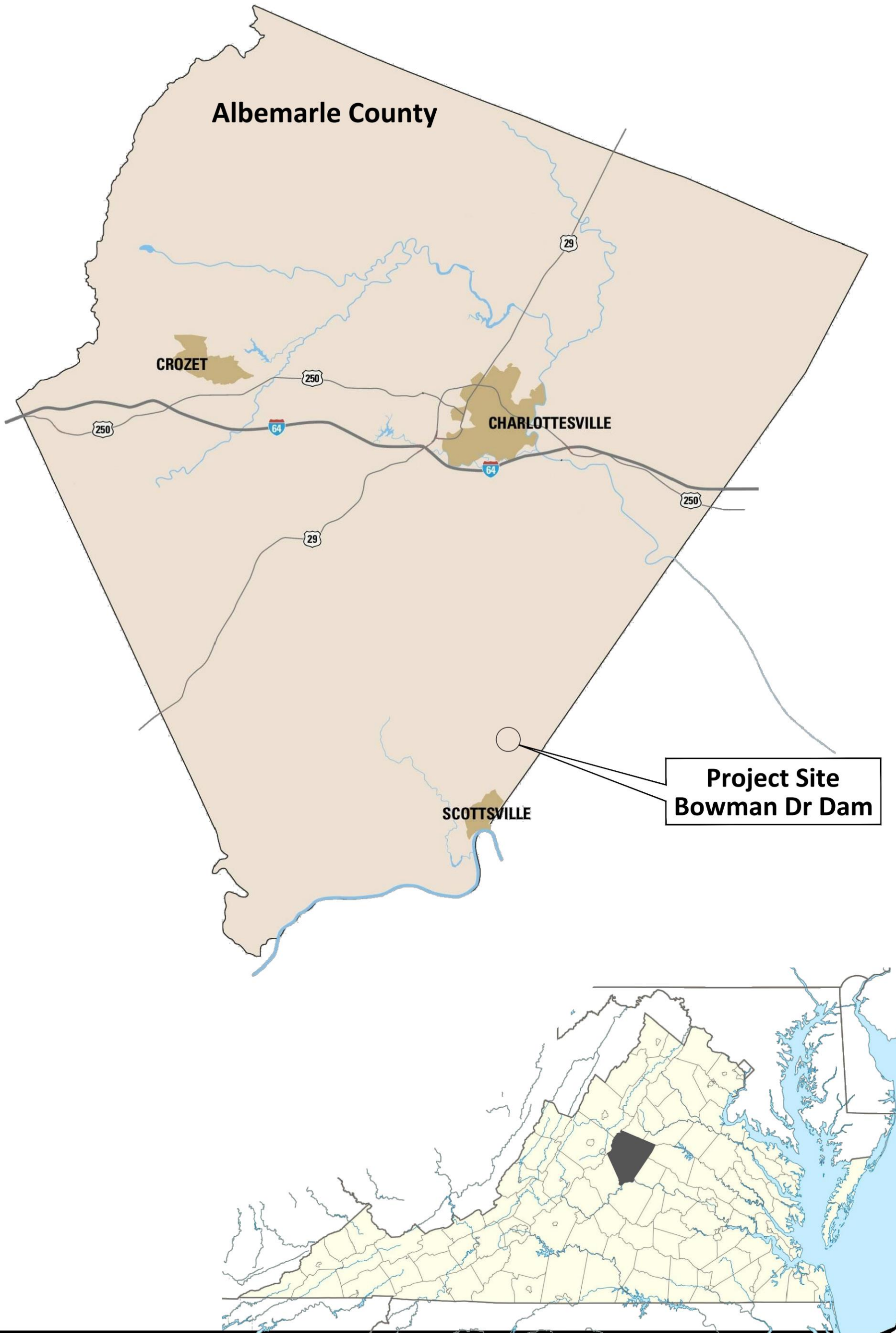
- BY -  
Froehling & Robertson, Inc.  
540-344-7939

-PROJECT LOCATION-  
724 Jefferson Mill Ln  
Scottsville, VA 24590  
37°50'29" Lat.  
78°28'29" Long.

## GENERAL NOTES

### GENERAL

1. THE WORK SHALL INCLUDE THE FURNISHING BY THE CONTRACTOR OF ALL SUPERVISION, TRAINING, LABOR, MATERIALS, TOOLS AND EQUIPMENT, AND THE PERFORMANCE OF ALL OPERATIONS NECESSARY FOR SITE EXCAVATION AND GRADING, INSTALLATION OF THE NEW CONCRETE CUT-OFF WALL, EROSION CONTROL MEASURES, AND WORK INDICATED IN THE CONTRACT DRAWINGS, SPECIFIED HEREIN, AND/OR AS DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL HAVE ON THE JOB AT ALL TIMES DURING THE WORK AN EXPERIENCED SUPERINTENDENT WHO SHALL HAVE CONTROL OVER ALL ASPECTS OF THE WORK.
3. THE CONTRACTOR SHALL VISIT THE SITE AND INDEPENDENTLY VERIFY ACCESS AND WORK-RELATED RESTRICTIONS.
4. CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF EXISTING CONSTRUCTION AND REPORT ANY DISCREPANCIES FROM THE CONTRACT DRAWINGS TO THE OWNER PRIOR TO COMMENCING WORK.
5. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER WORK SHOWN ON ALL OTHER DRAWINGS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, DEWATERING, SHORING AND TEMPORARY BRACING. CONTRACTOR SHALL UNDERTAKE ALL NECESSARY MEASURES TO ENSURE THE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE AND ADJACENT TO THE SITE.
7. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' WRITTEN INSTRUCTIONS AND RECOMMENDATIONS, UNLESS NOTED OTHERWISE.
8. IF CERTAIN FEATURES ARE NOT SHOWN OR CALLED FOR ON THE CONTRACT DRAWINGS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER FOR SIMILAR CONDITIONS THAT ARE SHOWN OR CALLED FOR WITH APPROVAL OF THE ENGINEER
9. THERE ARE NO GUARANTEED QUANTITIES ASSOCIATED WITH THIS WORK.
10. DEMOBILIZATION INCLUDES REMOVAL OF ALL TRASH, DEBRIS, EQUIPMENT, SUPPLIES, AND RESTORATION OF DISTURBED AREAS TO SATISFACTORY CONDITIONS.
11. CONTRACTOR SHALL PROVIDE A RECORD SET OF AS-BUILT DRAWINGS UPON COMPLETION OF CONSTRUCTION. DRAWINGS SHALL BE PROVIDED IN ELECTRONIC FORMAT COMPATIBLE WITH AUTOCAD. SURVEY SHALL PERFORMED BY REGISTERED LAND SURVEYOR LICENSED IN THE STATE OF VIRGINIA.



## General Notes

No. Revision/Issue Date

SINCE 1881  
Froehling & Robertson, Inc.  
1734 Seibel Drive, N.E.  
Roanoke, Virginia

@ COPYRIGHT 2012  
FROEHLING & ROBERTSON, INC.  
ALL RIGHTS RESERVED

60%  
SUBMISSION

Jefferson Mill  
Dam Design  
Scottsville, VA

Project  
Information Sheet

Prepared For:

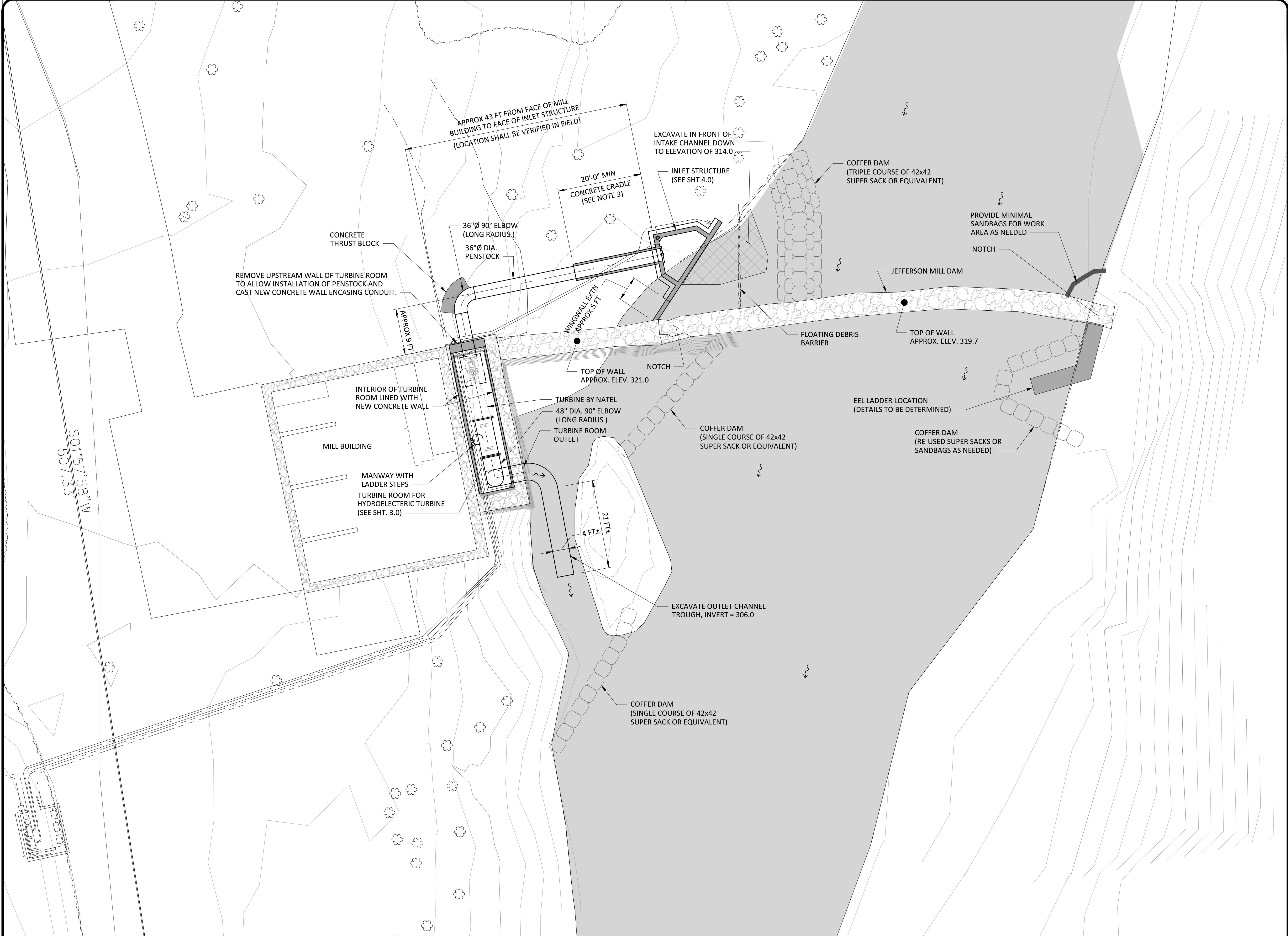
Natel Energy  
2401 Monarch St.  
Alameda, CA 94501

DIR.	KHH	CHK.	DAK	REV.	
PROJECT	62Y-0257			SHEET	1.0
DATE	March, 2021				
SCALE	NA				1 of 7



Froehling and Robertson, Inc. makes no representation or warranties, express or implied, with respect to the reuse of the data provided herewith, regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability of this data for any purpose. The user accepts the data "as is", and assumes all risks associated with its use. By acceptance of this data, the user agrees not to transmit this data or provide access or any part of it to another party unless the user shall include with the data a copy of this disclaimer. Froehling and Robertson, Inc. assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data.

X:\Ref6 - STD 24x36 bdr | DAK-PE  
Khy\toa Mar 11, 2021 - 12:53pm  
C:\Users\Khy\ton\Desktop\Projects\ Jefferson Mill\CAD\62Y-0257 Jefferson Mill C3D.dwg



#### General Notes

1. STRUCTURAL FILL: 95% MAX DRY DENSITY ±3% OF OPT. MOISTURE. GREEN AREA : 85% MAX DRY DENSITY ±5% OF OPT. MOISTURE, ALL LIFTS SHALL BE 8" MAX. BEFORE COMPACTION.
2. CONTRACTOR SHALL EXERCISE CARE IN ALL TREE CLEARING EFFORTS TO MINIMIZE CLEARING TO ONLY TREES REQUIRED TO PERFORM WORK AND SATISFY DESIGN REQUIREMENTS.
3. PROVIDE FLOWABLE FILL UNDER PENSTOCK WHEN ON TOP OF BEDROCK.

No.	Revision/Issue	Date

SINCE



1881

Froehling & Robertson, Inc.  
1734 Seibel Drive, N.E.  
Roanoke, Virginia

@ COPYRIGHT 2012  
FROEHLING & ROBERTSON, INC.  
ALL RIGHTS RESERVED

60%  
SUBMISSION

Jefferson Mill  
Dam Design  
Scottsville, VA

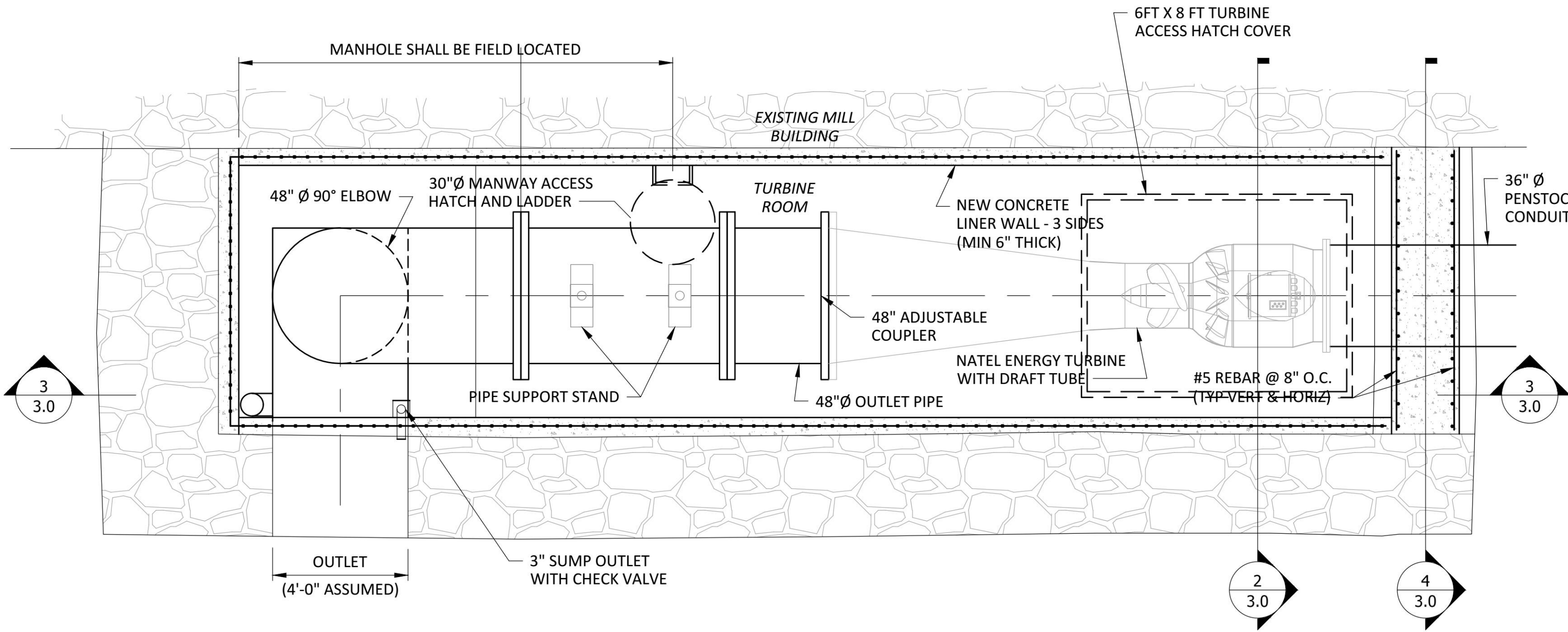
#### Site Plan

Prepared For:  
**Natel Energy**  
2401 Monarch St.  
Alameda, CA 94501

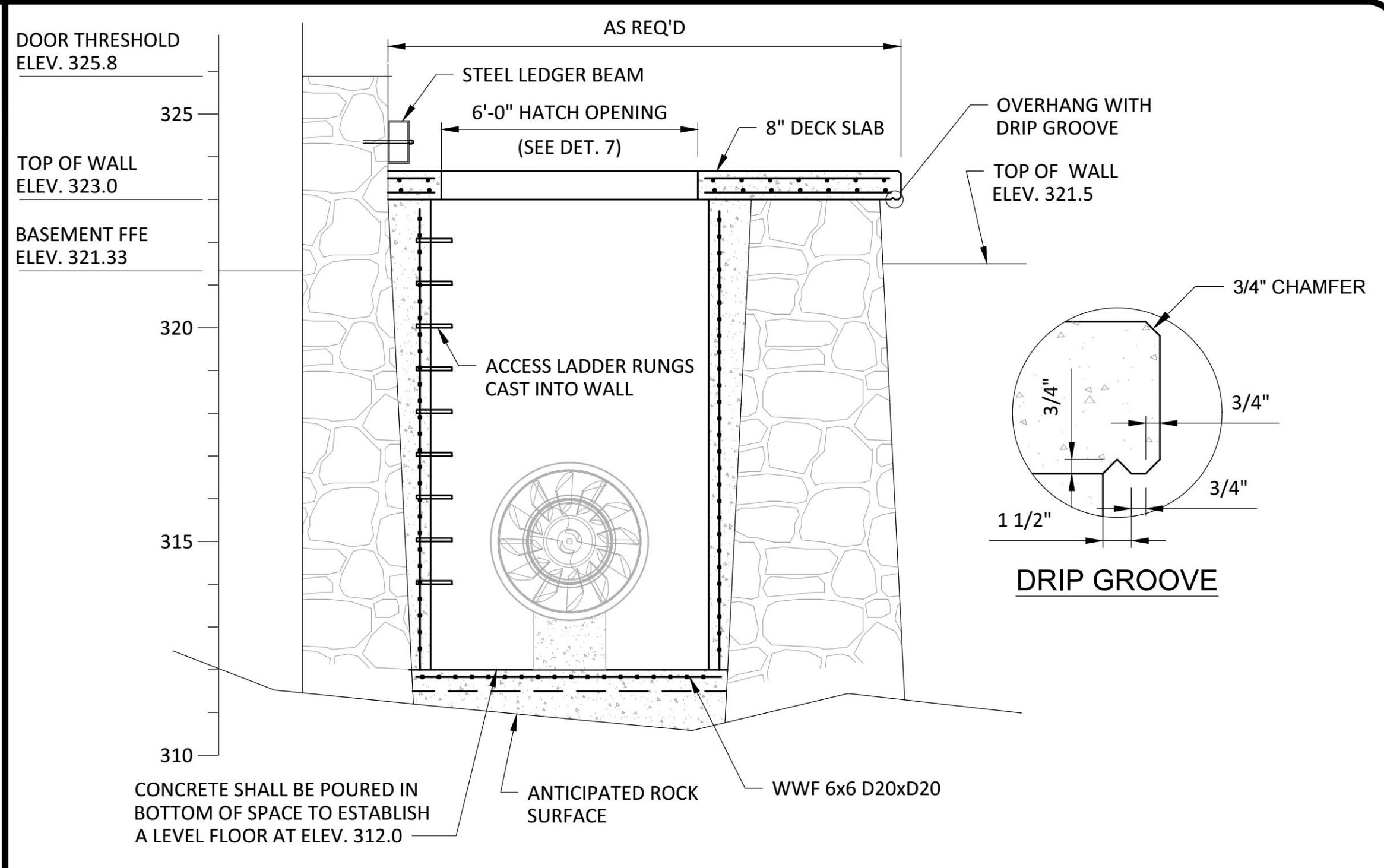
DIR. KHH	CHK. DAK	REV.
PROJECT 62Y-0257	SHEET 2.0	
DATE March, 2021		
SCALE NA	2 of 7	



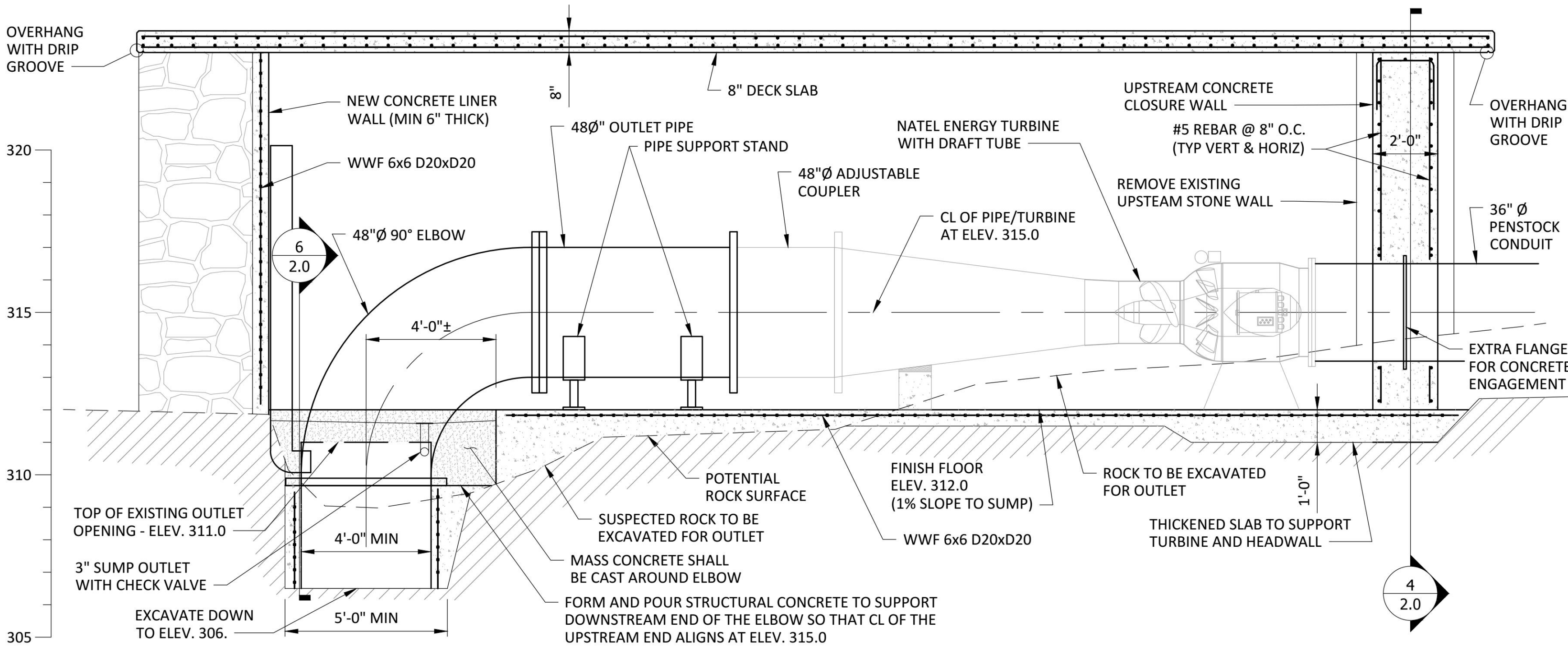
Froehling and Robertson, Inc. makes no representation or warranties, express or implied, with respect to the reuse of the data provided herewith, regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability of this data for any purpose. The user accepts the data "as is", and assumes all risks associated with its use. By acceptance of this data, the user agrees not to transmit this data or provide access or any part of it to another party unless the user shall include with the data a copy of this disclaimer. Froehling and Robertson, Inc. assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data.



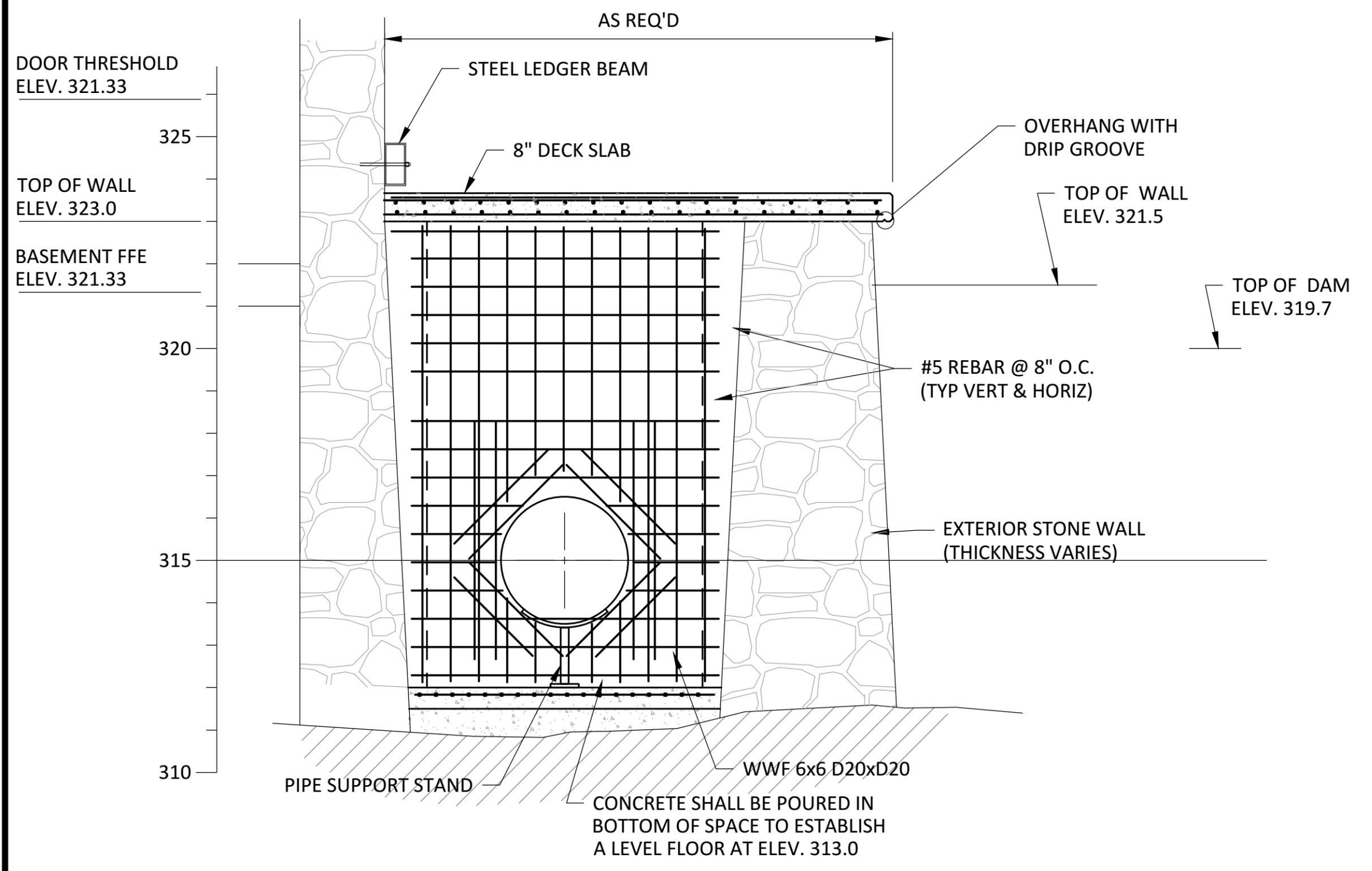
1 TURBINE ROOM STRUCTURAL PLAN



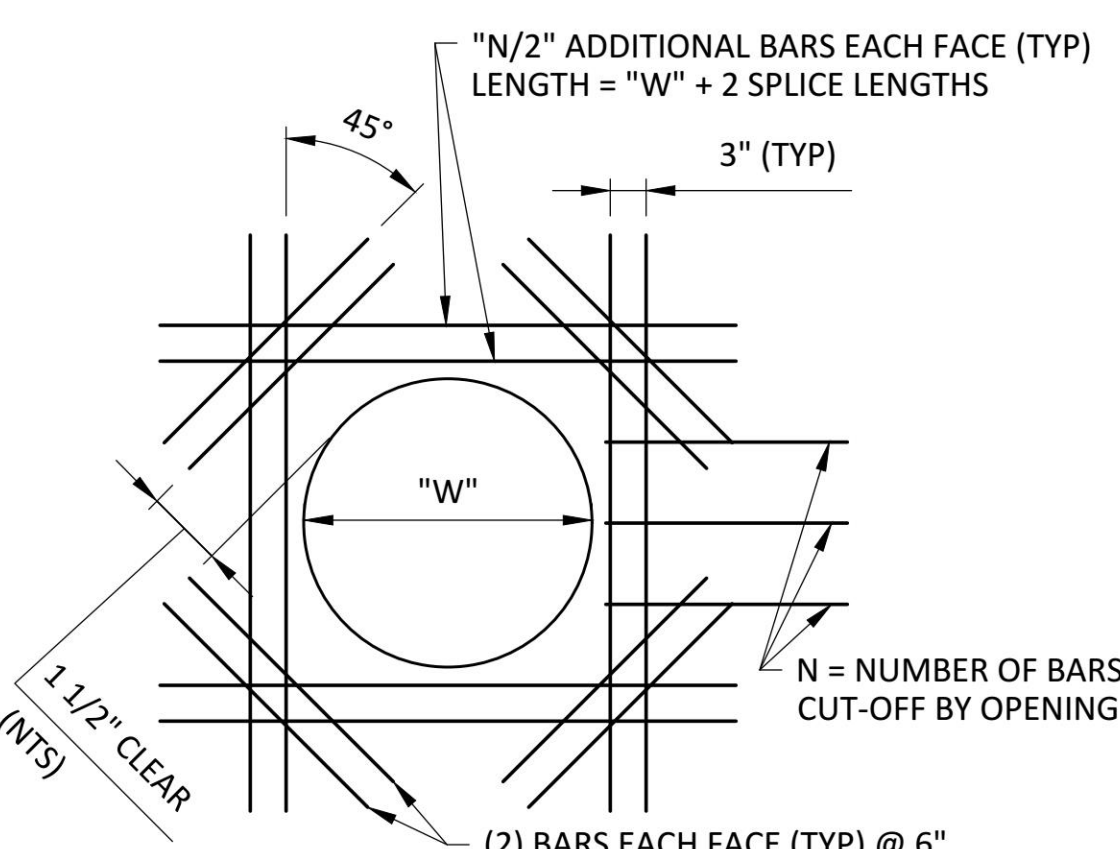
2 SECTION THROUGH TURBINE ROOM



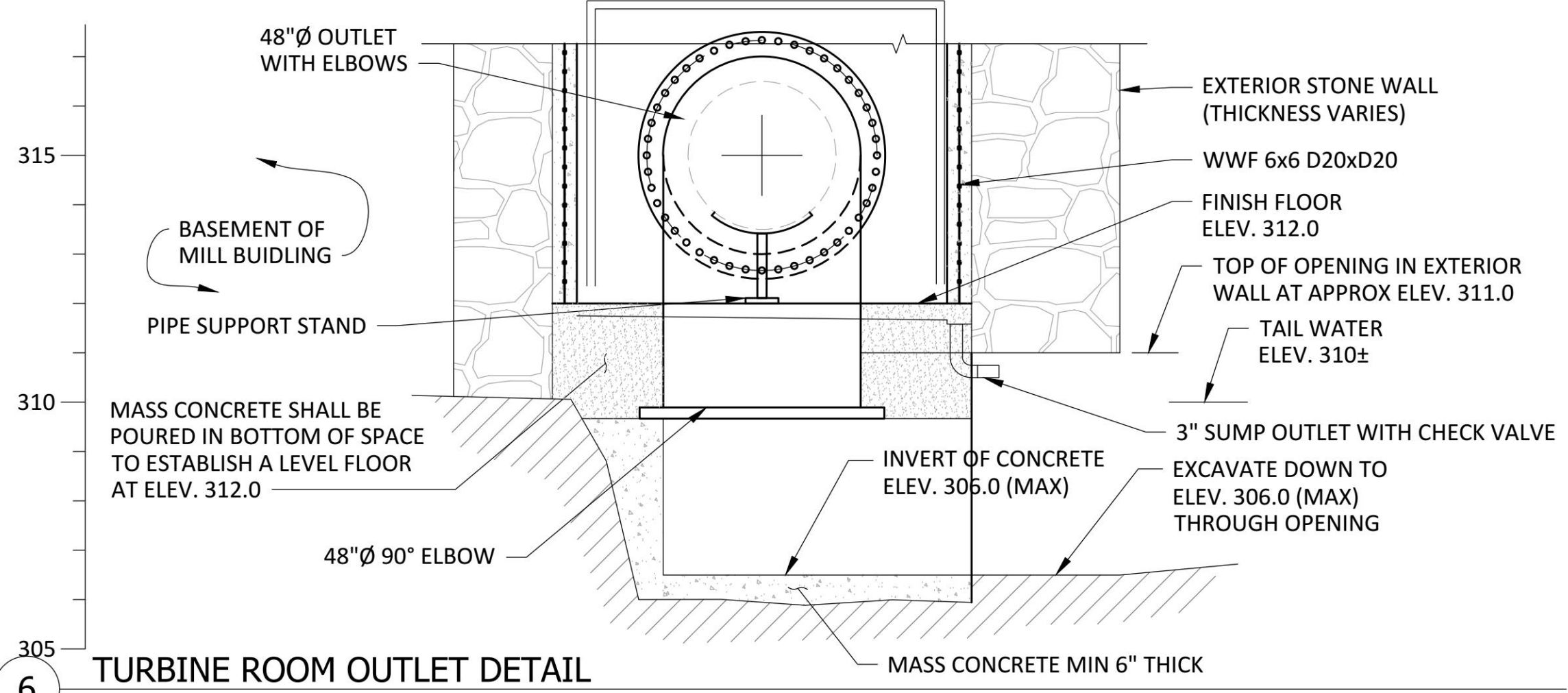
3 TURBINE ROOM ELEVATION VIEW



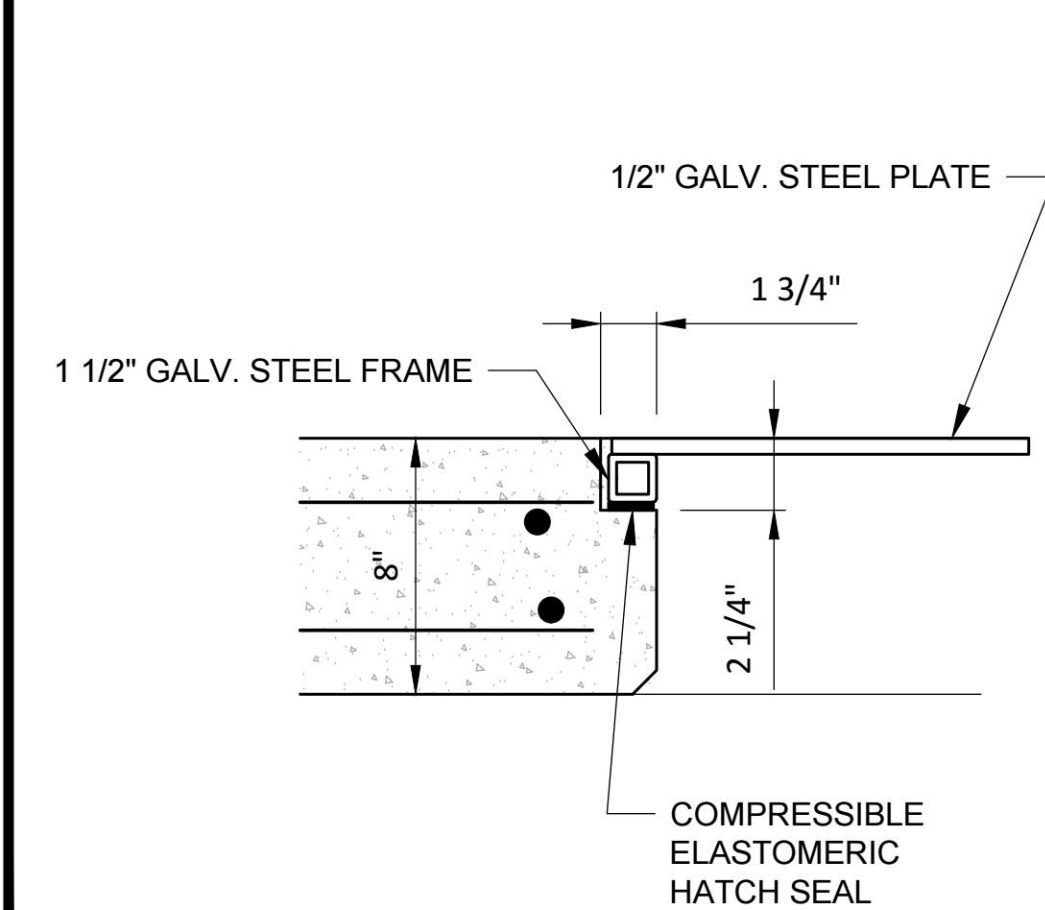
4 TURBINE ROOM UPSTREAM WALL RECONSTRUCTION



5 WALL PENETRATION REINFORCING DETAIL



6 TURBINE ROOM OUTLET DETAIL



7 HATCH RECESS DETAIL

General Notes

No.	Revision/Issue	Date



Froehling & Robertson, Inc.  
1734 Seibel Drive, N.E.  
Roanoke, Virginia

@ COPYRIGHT 2012  
FROEHLING & ROBERTSON, INC.  
ALL RIGHTS RESERVED

60%  
SUBMISSION

Jefferson Mill  
Dam Design  
Scottsville, VA

Turbine Room  
Details

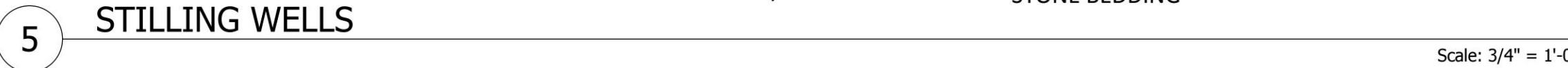
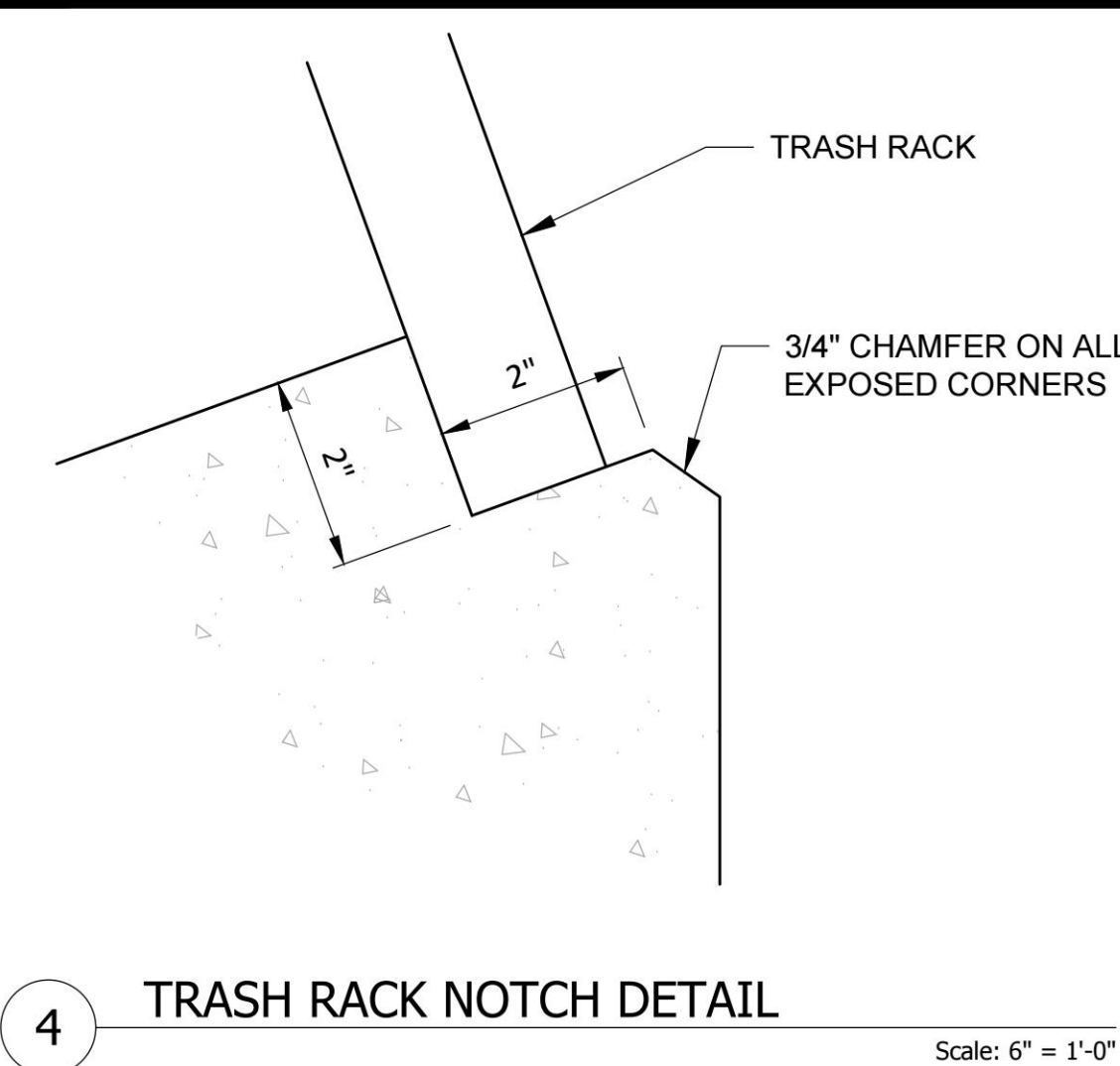
Prepared For:


Natel Energy  
2401 Monarch St.  
Alameda, CA 94501

DR.	CHK.	REV.
KHH	DAK	
PROJECT	62Y-0257	SHEET
DATE	March, 2021	3.0
SCALE	NA	3 of 7



X-Refs = STD 24x36 bdr | DAK-PE  
KHylton Mar 11, 2021 - 12:53pm  
C:\Users\KHylton\Desktop\Desktop\ Projects\ Jefferson Mill\CAD\62Y-0257 Jefferson Mill C3D.dwg



SINCE  
  
 1881

Froehling & Robertson, Inc.  
 1734 Seibel Drive, N.E.  
 Roanoke, Virginia

@ COPYRIGHT 2012  
 FROEHLING & ROBERTSON, INC.  
 ALL RIGHTS RESERVED

60%  
SUBMISSION

Jefferson Mill  
Dam Design  
Scottsville, VA

## Inlet & Penstock Details

Prepared For:  
Natel Energy  
2401 Monarch St.  
Alameda, CA 94501

DR. KHH	CHK. DAK	REV.
PROJECT 62Y-0257		SHEET
DATE March, 2021		4.0
SCALE NA		
		4 of 7



Froehling and Robertson, Inc. makes no representation or warranties, express or implied, with respect to the reuse of the data provided herewith, regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability of this data for any purpose. The user accepts the data "as is", and assumes all risks associated with its use. By acceptance of this data, the user agrees not to transmit this data or provide access or any part of it to another party unless the user shall include with the data a copy of this disclaimer. Froehling and Robertson, Inc. assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data.

USFWS R5

Fish Passage Engineering Design Criteria

June 2019

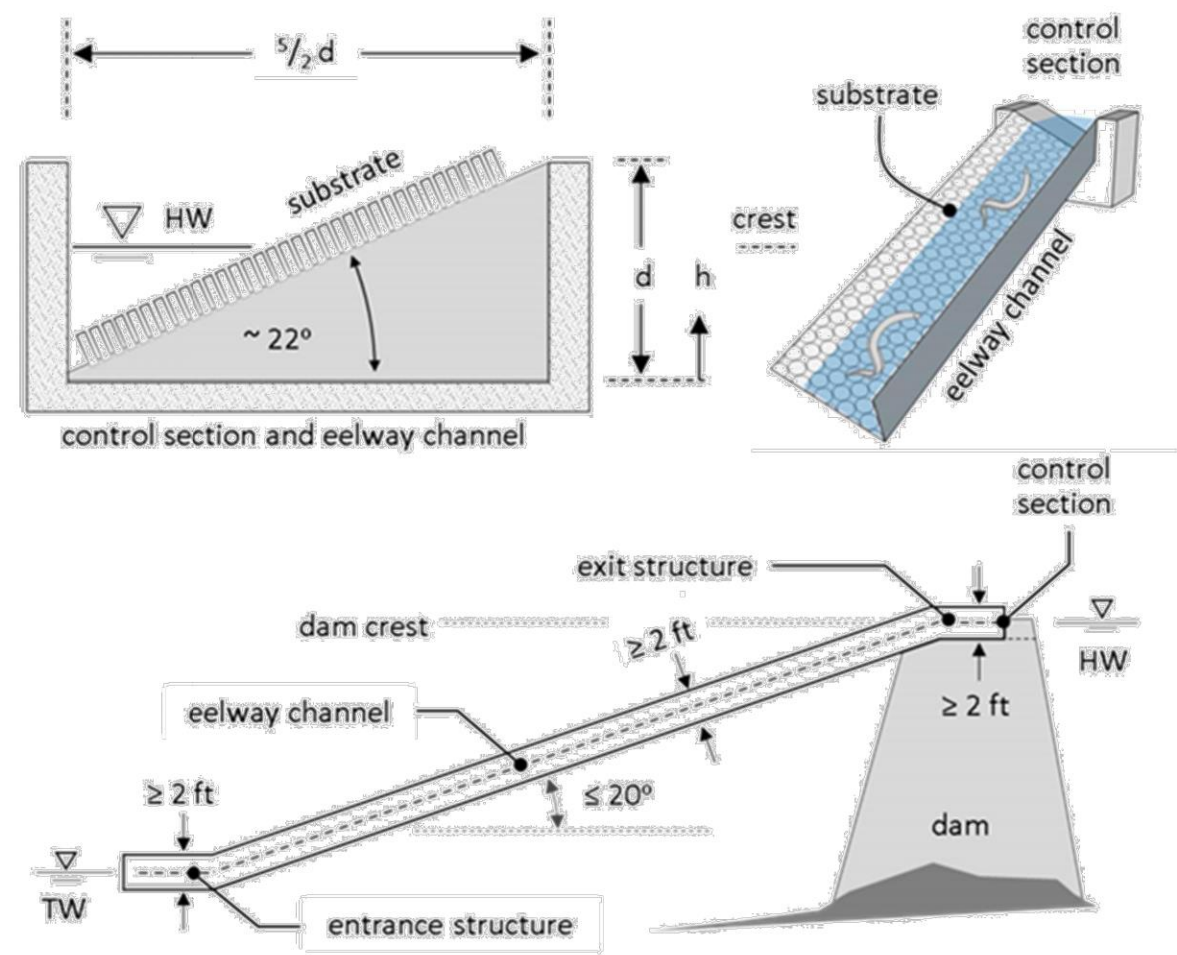


Figure 22: Design parameters for a laterally sloped eel ramp

13.1.5 Helical Eel Ramp

A helical eel ramp consists of a water-retaining channel coiled around a central shaft, with climbing substrate installed on the channel bottom. The unit is installed vertically, thereby connecting the headpond to the tailwater at a climbing angle equivalent to the pitch of the helix. Initial tests of this eel pass at a hydropower project on the Saco River (Lakeside Engineering, 2014) demonstrated passage above 90% for some treatments. Engineering recommends the following:

- Limit total vertical lift to 12 feet; lift may be extended with inclusion of resting sections;

13-7

1 USFWS EEL PASSAGE CRITERIA



2 PRELIMINARY EEL LADDER CONCEPT FOR JEFFERSON MILL

General Notes

No.	Revision/Issue	Date

SINCE



1881

Froehling & Robertson, Inc.  
1734 Seibel Drive, N.E.  
Roanoke, Virginia

@ COPYRIGHT 2012  
FROEHLING & ROBERTSON, INC.  
ALL RIGHTS RESERVED

60%  
SUBMISSION

Jefferson Mill  
Dam Design  
Scottsville, VA

Eel Ladder Details

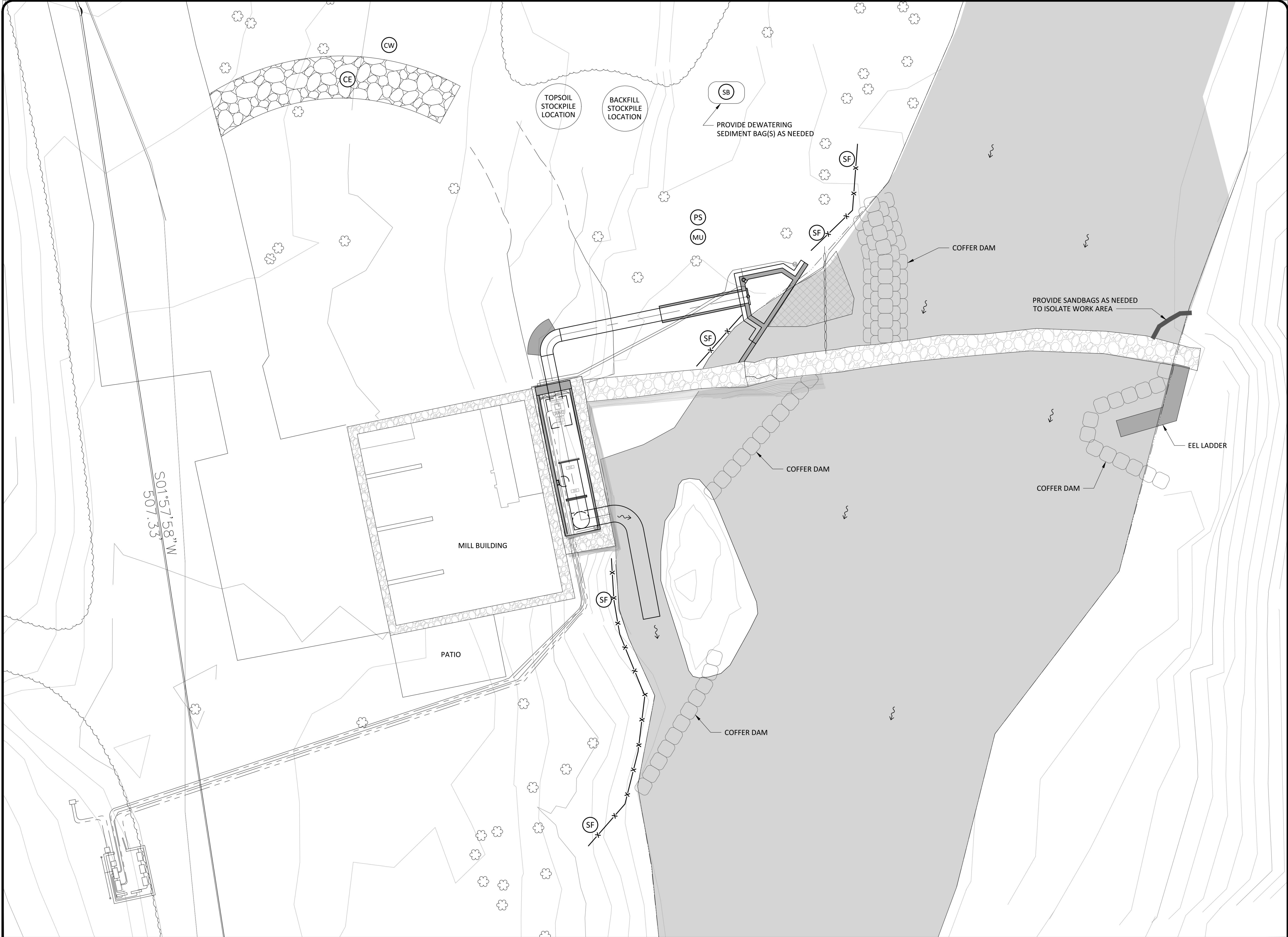
Prepared For:  
Natel Energy  
2401 Monarch St.  
Alameda, CA 94501

DR. KHH	CHK. DAK	REV.
PROJECT 62Y-0257		SHEET 5.0
DATE March, 2021		SCALE NA
		5 of 7



Froehling and Robertson, Inc. makes no representation or warranties, express or implied, with respect to the reuse of the data provided herewith, regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability of this data for any purpose. The user accepts the data "as is", and assumes all risks associated with its use. By acceptance of this data, the user agrees not to transmit this data or provide access or any part of it to another party unless the user shall include with the data a copy of this disclaimer. Froehling and Robertson, Inc. assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data.

X:\Ref\STD 24\3E\4dr\1 DAK\PE  
Khy\toa Mar 11, 2021 - 12:53pm  
C:\Users\Khy\ton\Desktop\Projects\Jefferson Mill\CAD\62Y-0257 Jefferson Mill C3D.dwg



#### General Notes

- CONTRACTOR SHALL EXERCISE CARE IN ALL TREE CLEARING EFFORTS TO MINIMIZE CLEARING TO ONLY TREES REQUIRED TO PERFORM WORK AND SATISFY DESIGN SPECIFICATIONS.
- ALL VEHICLES SHALL BE ADEQUATELY CLEANED PRIOR TO LEAVING THE CONSTRUCTION AREA AND ENTERING ROADWAY.

- CE CONSTRUCTION ENTRANCE
- SF SILT FENCE
- PS PERMANENT SEEDING
- MU MULCH
- CW CONCRETE WASHOUT
- SB SEDIMENT BAG

#### LEGEND

(E) = EXISTING, (P) = PROPOSED

- SECURITY FENCE
  - (E) TREE LINE
  - SILT FENCE DIVERSION
  - (E) MAJOR TOPO
  - (E) MINOR TOPO
  - PROPERTY LINE
  - EC-3 BLANKETS
  - SOIL MAP LIMITS
- REGULATORY DISTURBED AREAS:  
AREA A = 0.26 ACRES

No.	Revision/Issue	Date

SINCE



1881

Froehling & Robertson, Inc.  
1734 Seibel Drive, N.E.  
Roanoke, Virginia

@ COPYRIGHT 2012  
FROEHLING & ROBERTSON, INC.  
ALL RIGHTS RESERVED

60%  
SUBMISSION

Jefferson Mill  
Dam Design  
Scottsville, VA

E&SC Site Plan

Prepared For:

Natel Energy  
2401 Monarch St.  
Alameda, CA 94501

DR. KHH	CHK. DAK	REV.
PROJECT 62Y-0257	DATE March, 2021	SHEET 6.0
SCALE NA	6 of 7	

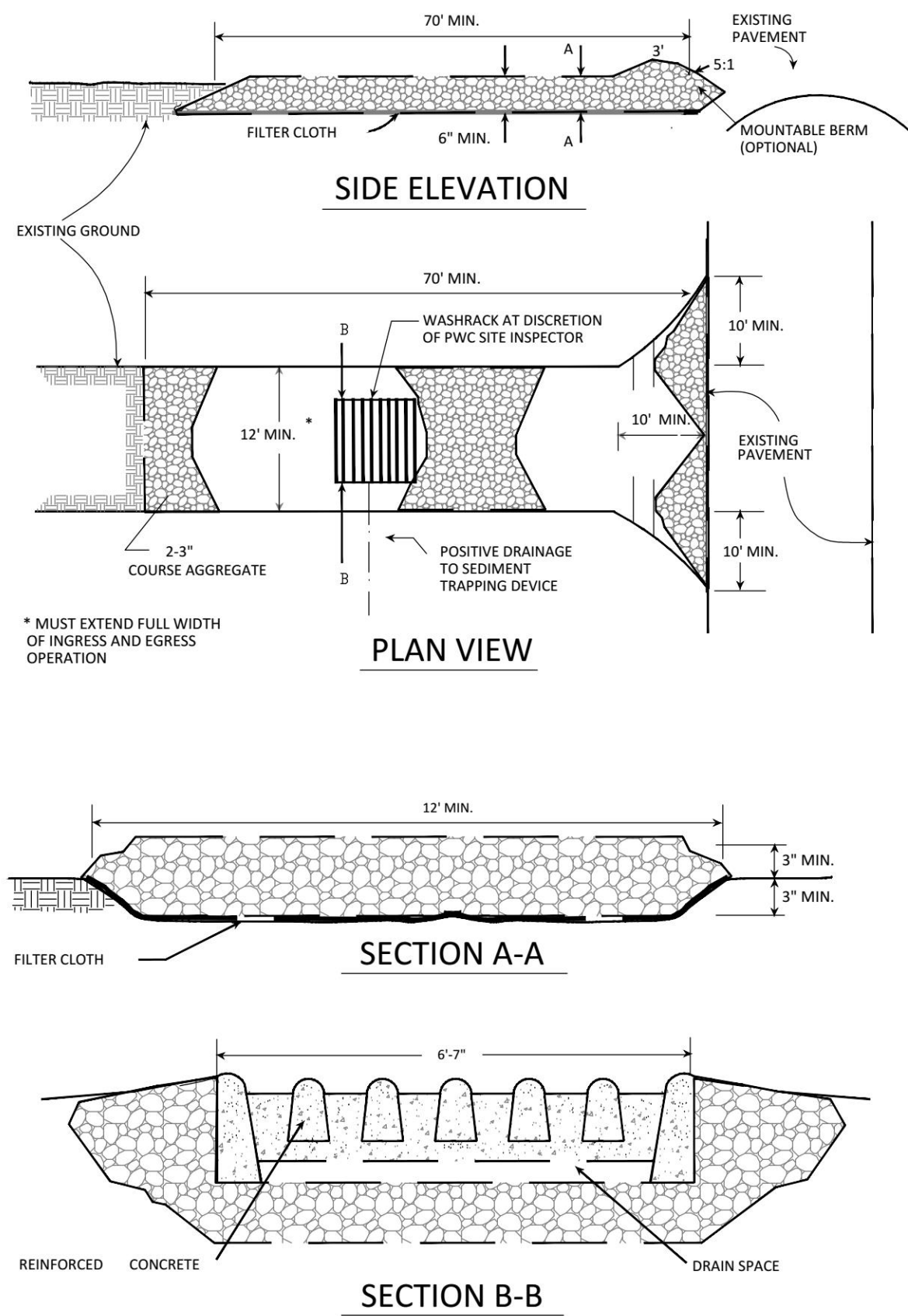


Froehling and Robertson, Inc. makes no representation or warranties, express or implied, with respect to the reuse of the data provided herewith, regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability of this data for any purpose. The user accepts the data "as is", and assumes all risks associated with its use. By acceptance of this data, the user agrees not to transmit this data or provide access or any part of it to another party unless the user shall include with the data a copy of this disclaimer. Froehling and Robertson, Inc. assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data.

X:\Rd6 - STD 24a2c.bdr\1.DAK-PE  
KHY\boa Mar 11, 2021 - 12:53pm  
C:\Users\KHY\ton\Desktop\Projects\Jefferson Mill\CAD\23Y-0257 Jefferson Mill C3D.dwg

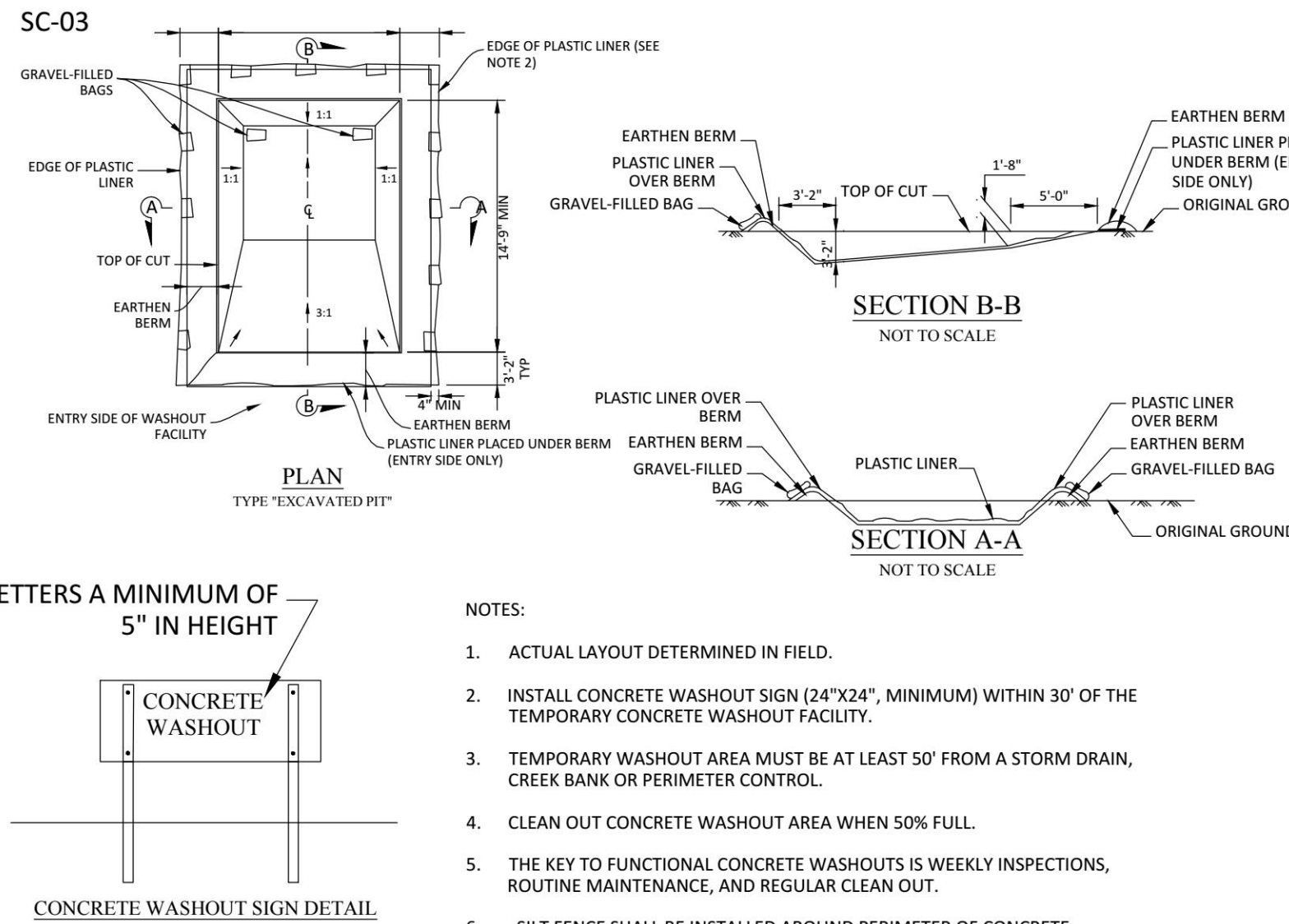
## CE STONE CONSTRUCTION ENTRANCE

(Adapted from Virginia Erosion and Sediment Control Handbook, Plate 3.02-1)

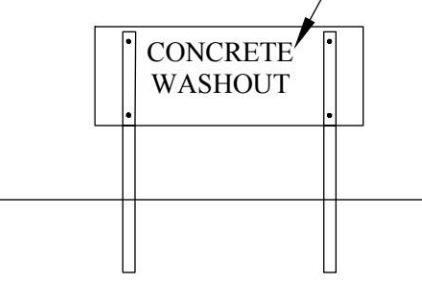


## CW EXCAVATED PIT CONCRETE WASHOUT

THE CONTRACTOR SHALL SUBMIT FOR REVIEW TO THE ENGINEER A PROPOSED METHOD FOR CLEANING OUT WASTE FROM CONCRETE TRUCKS DURING THE PROJECT. AT THE COMPLETION OF THE PROJECT THE CURED CONCRETE WASTE SHALL BE DISPOSED OF OFF-SITE. A SUGGESTED METHOD IS SHOWN BELOW.



LETTERS A MINIMUM OF 5" IN HEIGHT



CONCRETE WASHOUT SIGN DETAIL

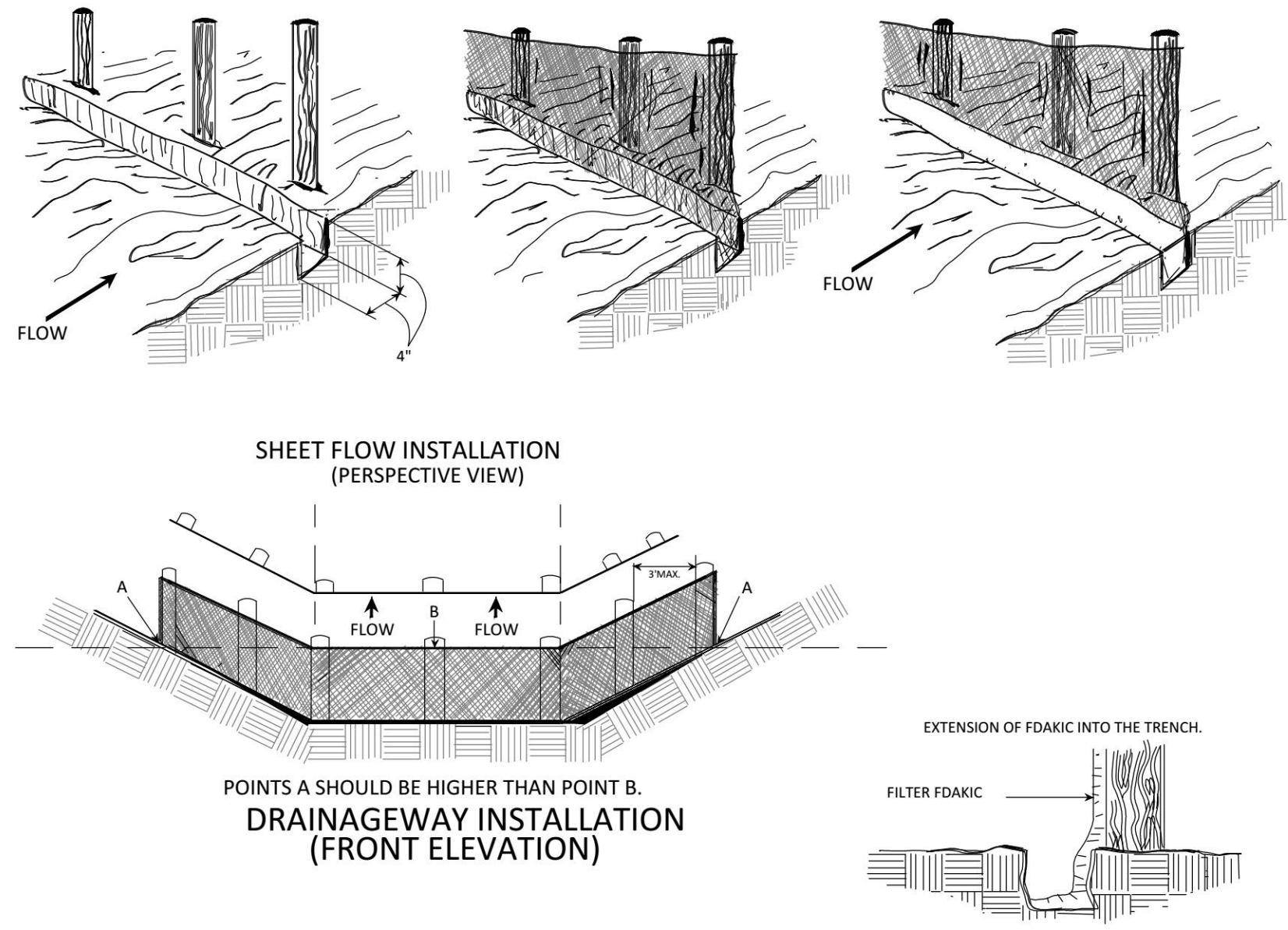
### NOTES:

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. INSTALL CONCRETE WASHOUT SIGN (24"x24", MINIMUM) WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. TEMPORARY WASHOUT AREA MUST BE AT LEAST 50' FROM A STORM DRAIN, CREEK BANK OR PERIMETER CONTROL.
4. CLEAN OUT CONCRETE WASHOUT AREA WHEN 50% FULL.
5. THE KEY TO FUNCTIONAL CONCRETE WASHOUTS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR CLEAN OUT.
6. SILT FENCE SHALL BE INSTALLED AROUND PERIMETER OF CONCRETE WASHOUT AREA EXCEPT FOR THE SIDE UTILIZED FOR ACCESSING THE WASHOUT.
7. A ROCK CONSTRUCTION ENTRANCE MAY BE NECESSARY ALONG ONE SIDE OF THE WASHOUT TO PROVIDE VEHICLE ACCESS.

## SF CONSTRUCTION OF A SILT FENCE (WITH AND WITHOUT WIRE SUPPORT)

(Adapted from Virginia Erosion and Sediment Control Handbook, Plate 3.05-1 and 3.05-2)

1. SET POSTS AND EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.
2. ATTACH FILTER MATERIAL TO STAKES (WITHOUT WIRE SUPPORT), TO WIRE FENCE (WITH WIRE SUPPORT) AND EXTEND IT INTO THE TRENCH.
3. BACKFILL AND COMPACT THE EXCAVATED SOIL.



## PROJECT SPECIFICATIONS

### CONCRETE

1. CONCRETE: 4,000 PSI, 4.5-7.5% AIR, SLUMP 3-5 INCHES. CONTRACTOR SHALL SUBMIT A MIX DESIGN FOR APPROVAL.
2. CONCRETE REFERENCE STANDARDS:
  - (1) ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS."
  - (2) ACI 304 "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE."
  - (3) ACI 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES."
  - (4) ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE."
  - (5) ASTM C94 "STANDARD PRACTICE FOR READY-MIX CONCRETE."
3. REINFORCING:
  - 3.1 STEEL BAR REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 FOR ALL BARS.
  - 3.2 REINFORCEMENT SHALL BE FABRICATED ACCORDING TO PROVISIONS OF ACI 315 "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES."
  - 3.3 ALL REINFORCEMENT STEEL SHALL BE FREE FROM MUD, OIL, OR NON-METALLIC COATINGS AT TIME OF CONCRETING.
  - 3.4 EMBEDMENT OF LAP SPICE LENGTHS FOR ALL REINFORCING STEEL BARS SHALL BE 48 BAR DIAMETERS.
  - 3.5 FABRICATED BARS NOT CONFORMING TO DIMENSIONS AND DETAILS SHALL BE REJECTED.
  - 3.6 WELDING OF CROSSING BARS FOR ASSEMBLY OF REINFORCEMENT IS NOT PERMITTED. THE FOLLOWING MINIMUM COVER WILL BE PROVIDED FOR REINFORCING BARS:  
CAST AGAINST & PERMANENTLY EXPOSED TO EARTH MIN COVER  
EXPOSED TO EARTH OR WEATHER: #6 BARS AND LARGER 3"  
#5 BARS AND SMALLER 1 1/2"
4. TESTING REQUIREMENTS:
  - 4.1) ONE SET OF COMPRESSION TEST CYLINDERS IS REQUIRED FOR EACH POUR OF MORE THAN 5 CY AND FOR EACH 50 CY OF EACH CONCRETE MIX.
  - 4.2) ONE SET OF FIVE COMPRESSION CYLINDERS SHALL BE CAST FROM THE SAME TRUCKLOAD OF CONCRETE. TWO CYLINDERS SHALL BE BROKEN AT 7 DAYS AND TWO CYLINDERS SHALL BE BROKEN AT 28 DAYS. THE FIFTH CYLINDER SHALL BE HELD FOR RE-TESTING. IF NO EVENT SHALL THE STORAGE BOX TEST FAIL TO MEET THE REQUIREMENTS. TESTS SHALL BE MADE BY AN INDEPENDENT LABORATORY RETAINED BY OWNER.
  - 4.3) SLUMP TEST SHALL BE MADE WHENEVER CYLINDERS ARE MADE.
  - 4.4) CYLINDERS SHALL BE PLACED IN A FIELD STORAGE BOX CONTAINING A THERMOMETER. THE TEMPERATURE IN THE BOX SHALL BE KEPT BETWEEN 70°F TO 75°F. WHEN POSSIBLE, IN NO EVENT SHALL THE STORAGE BOX TEMPERATURE BE ALLOWED TO FALL BELOW 40°F OR RISE ABOVE 90°F. CONTRACTOR SHALL PROVIDE THE BOX.
5. NOTES TO CONCRETE PLACEMENT SCHEDULE:
  - 5.1) AIR-ENTRAINED CONCRETE MIX THAT DOES NOT MEET THE MINIMUM AIR-CONTENT REQUIREMENTS SHALL BE REJECTED.
  - 5.2) CONCRETE DISPATCHED MORE THAN 90 MINUTES BEFORE PLACEMENT SHALL BE REJECTED.
  - 5.3) CONCRETE MORE THAN 5" SLUMP SHALL BE REJECTED.

### VEGETATIVE PRACTICES

1. TOPSOILING (TEMPORARY STOCKPILE)

TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER SPREADING ON DAM EMBANKMENT, BERM, EMERGENCY SPILLWAY OR OTHER DISTURBED AREA. STOCKPILE LOCATIONS SHALL BE LOCATED ONSITE AND SHALL BE STABILIZED WITH TEMPORARY VEGETATION.
2. TEMPORARY SEEDING

ALL DENUDED AREAS WHICH WILL BE LEFT DORMANT FOR EXTENDED PERIODS OF TIME SHALL BE SEEDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING OF THOSE AREAS. SELECTION OF THE SEED MIXTURE SHALL DEPEND ON THE TIME OF YEAR IT IS APPLIED.

### 3. MAINTENANCE

RE-FERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, RE-FERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

### 4. FINAL SEEDING

4.1) REMOVE ALL ROOTS, LIMBS, ROCKS GREATER THAN 6 INCHES, AND OTHER DELETERIOUS MATERIALS FROM THE SEEDBED. REMOVED MATERIALS MAY BE DISPOSED OF IN DESIGNATED ON-SITE WASTE AREAS.

4.2) SEEDING MIX, APPLICATION RATE, AND PLANTING TIMES:

#### ALL AREAS

KENTUCKY 31 FESCUE 108 POUNDS PER ACRE  
RED TOP GRASS 2 POUNDS PER ACRE  
SEASONAL NURSE CROP\* 20 POUNDS PER ACRE  
CROWN VETCH 20 POUNDS PER ACRE

\*VARIES MARCH THROUGH MAY 15 USE ANNUAL RYE  
MAY 16 THROUGH AUGUST 15 USE FOXTAIL MILLET  
AUGUST 16 THROUGH OCTOBER USE ANNUAL RYE  
NOVEMBER THROUGH FEBRUARY USE WINTER RYE

4.3) ALL SEED SHALL BE CERTIFIED IN CONFORMANCE WITH CURRENT RULES AND REGULATIONS OF VIRGINIA CROP IMPROVEMENT ASSOCIATION AND SHALL BE THE LATEST CROP AVAILABLE. SEED SHALL BEAR AN OFFICIAL "CERTIFIED SEED" LABEL.

4.4) SEEDING APPLICATION SHALL INCLUDE:

a. FERTILIZER AT THE FOLLOWING RATES: N-50 lbs/ACRE; P/20/2 - 120 lbs/ACRE; K/20 - 90 lbs/ACRE.

THE NITROGEN SHALL BE 50 PERCENT SLOWLY AVAILABLE NITROGEN (SAN). THE WATER INSOLUBLE NITROGEN (WIN) OF 50 PERCENT SHALL BE STATED ON THE CONTAINER OR BAG LABELS.

b. FIBER MULCH COMMONLY USED IN HYDROSEEDING APPLICATIONS AT A MINIMUM OF 0.75 TONS PER ACRE.

c. GUAR BASED TACKIFIERS AT A RATE APPROPRIATE FOR THE SLOPE AND WATERING CONDITIONS EXPECTED AT THE TIME OF APPLICATION.

4.1) INSTALL SEED OVER ALL DISTURBED AREAS.

### 5. MAINTENANCE PLAN:

THE CONTRACTOR SHALL REVISIT THE PROJECT TO CHECK ON THE EFFECTIVENESS OF THE VEGETATIVE GROWTH AT 30 DAY INTERVALS. ANY AREAS THAT DO NOT SHOW SUFFICIENT VEGETATIVE PROGRESS SHALL BE PREPARED AND RESEEDING ACCORDING TO THESE SPECIFICATIONS.

### E&S CONTROLS

EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THESE PLANS AND SPECIFICATIONS.

## GENERAL EROSION AND SEDIMENT CONTROL NOTES

### SURVEY

1. CONTRACTOR SHALL LOCATE AND MARK ALL LOCATING FEATURES BEFORE PROCEEDING WITH SITE CLEARING AND CONSTRUCTION ACTIVITIES.
2. CONTRACTOR SHALL ESTABLISH TEMPORARY BENCHMARKS AS REQUIRED TO ADEQUATELY CONTROL CONSTRUCTION.

### LAKE LEVEL CONTROL

1. LAKE LEVEL IS CURRENTLY FULL. COFFER DAMS SHALL BE INSTALLED AND WORK AREAS PUMPED EMPTY UNTIL WORK IS COMPLETE.

### UTILITIES

1. THE CONTRACTOR SHALL CALL MISS UTILITY 8-1-1 AND LOCATE ALL UTILITIES PRIOR TO ANY WORK.

### STONE

1. STONE USED FOR CONSTRUCTION ENTRANCE SHALL BE 2-3" COURSE AGGREGATE.

### EARTHWORK

1. CLEARING AND GRUBBING
  - 1.1) THE CONTRACTOR SHALL CLEARLY MARK ALL AREAS TO BE CLEARED IN ADVANCE.
  - 1.2) THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROLS PRIOR TO GRADING THE RESPECTIVE AREAS.
  - 1.3) CLEAR AND GRUB ALL WORK AREAS TO AT LEAST 5 FEET BEYOND THE LIMITS OF CONSTRUCTED WORKS.
2. TOPSOIL
  - 2.1) TOPSOIL FROM ON-SITE SOURCES SHALL BE REMOVED DURING SITE CLEARING AND GRUBBING OPERATION ONLY FROM DISTURBED AREAS, AND PLACED IN TEMPORARY STOCK PILES.
  - 2.2) FINAL 4 INCHES OF NEW FILL SHALL CONSIST OF ON-SITE TOPSOIL PREVIOUSLY STRIPPED FROM THE SITE, FREE OF GRASS, ROOTS, WEEDS, STICKS, ROCKS AND COBBLES.
3. GRADING
  - 3.1) EXCAVATION REQUIRED FOR THIS PROJECT WILL BE UNCLASSIFIED. THERE WILL BE ANTICIPATED ROCK EXCAVATION ON THIS PROJECT.
  - 3.2) EXCAVATED SOILS ARE TO BE USED FOR BACKFILL FOR THE PENSTOCK AND INLET STRUCTURE AS SHOWN ON THE PLANS.
  - 3.3) FILL MATERIAL SHALL BE APPROVED SATISFACTORY SOIL MATERIAL. SUFFICIENT QUANTITIES OF EXISTING SOIL IDENTIFIED ON THE PROPERTY IS EXPECTED TO BE SUITABLE.
  - 3.4) FILL MATERIAL SHALL BE LAID IN MAXIMUM 6 INCH LAYERS AND MECHANICALLY COMPACTED. IF HAND OPERATED EQUIPMENT IS USED, LIFT SHALL BE MAXIMUM OF 4 INCHES. BACKFILL FOR THE PARAPET WALL SHALL BE 4" LIFTS WITH 95% COMPACTION.
  - 3.5) ALL FILL SHALL BE COMPACTED TO AT LEAST 95% OF ITS MAXIMUM DENSITY (ASTM D 698). COMPACTION TESTS SHALL BE PERFORMED ONCE FOR EVERY 2500 S.F. OR FOR EVERY 50 LINEAR FEET OF EXCAVATED TRENCH.
  - 3.6) CONTRACTOR SHALL CONTROL MOISTURE CONTENT OF ALL FILL MATERIAL TO WITHIN ±3% OF OPTIMUM AS DETERMINED BY ASTM D698, STANDARD PROCTOR.
  - 3.7) EXCAVATION AND TRENCHING PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS.
  - 3.8) ANY EXCESS SOILS SHALL BE PLACED AS DESIGNATED BY THE ENGINEER.
4. DEWATERING
  - 4.1) THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING SEEPAGE WATER INTO THE SITE EXCAVATIONS AND FOR MAINTAINING THE AREAS IN AN "IN-THEDRY" CONDITION.
  - 4.2) THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS RELATED TO THE DEWATERING ACTIVITY.
5. INSPECTIONS

SOILS/SITE PREPARATIONS, PENSTOCK AND INLET STRUCTURE SUBGRADE, PLACEMENT OF FILL MATERIALS, AND EVALUATION OF IN-PLACE-DENSITY BY TESTING LAB RETAINED BY OWNER.

### ES-1:

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK THIRD EDITION 1992.

### ES-2:

THE LOCAL AUTHORITY HAVING JURISDICTION SHALL BE NOTIFIED OF THE PRE-CONSTRUCTION CONFERENCE. LOCAL AUTHORITIES HAVING JURISDICTION WILL MAKE A CONTINUING REVIEW AND EFFECTIVENESS OF THE METHODS AND EFFECTIVENESS OF THE EROSION CONTROL PLAN.

### ES-3:

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING, GRADING, OR LAND DISTURBANCE.

### ES-4:

ALL EXISTING EROSION CONTROL MEASURES WHICH SERVE THIS SITE SHALL REMAIN IN PLACE AND SHALL BE MAINTAINED UNTIL THE AREAS THEY SERVE HAVE BEEN STABILIZED.

### ES-5:

ALL STREETS AND ROADWAYS SHALL BE MAINTAINED FREE OF MUD AND DIRT, AND CONTROL DUST AS NECESSARY.

### ES-6:

A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

### ES-7:

PROVIDE ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

### ES-8:

ALL DISTURBED AREAS SHALL DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND-DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT.

### ES-9:

DURING DE-WATERING OPERATIONS, WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

### ES-10:

INSPECT ALL EROSION CONTROL MEASURES DAILY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

### ES-11:

PRIOR TO ANY LAND DISTURBING ACTIVITIES THE CONTRACTOR SHALL DESIGNATE A RESPONSIBLE LAND DISTURBER (RLD) TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL ACT SECTION 62.1-44.15:55 B.

### MAINTENANCE

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED DAILY AND AFTER EACH RUN OFF PRODUCING RAINFALL. THE FOLLOWING ITEMS SHALL BE CHECKED IN PARTICULAR:

- A. THE SILT FENCE BARRIER SHALL BE CHECKED FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.
- B. SEEDED AREAS SHALL BE CHECKED TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHALL BE FERTILIZED AND RESEEDING AS NEEDED.

## MINIMUM STANDARDS

- MS-1 APPLY PERMANENT SOIL STABILIZATION TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. APPLY TEMPORARY SOIL STABILIZATION WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS
- MS-2 STABILIZE OR PROTECT TEMPORARY SOIL STOCKPILES WITH SEDIMENT TRAPPING MEASURES. PROVIDE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL TRANSPORTED FROM THE PROJECT SITE.
- MS-3 ESTABLISH A PERMANENT VEGETATIVE COVER ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IN THE OPINION OF THE ENGINEER, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
- MS-4 CONSTRUCT SEDIMENT TRAPS AND DIVERSION DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND MAKE THESE MEASURES FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE OR TIMBERING TAKES PLACE.
- MS-5 APPLY STABILIZATION MEASURES TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- MS-6 DESIGN AND CONSTRUCT SEDIMENT TRAPS AND SEDIMENT BASINS BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN. .
- MS-7 CONSTRUCT CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. PROVIDE SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
- MS-8 CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL.
- MS-9 WHENEVER WATER SEEPS FROM A SLOPE FACE, PROVIDE ADEQUATE DRAINAGE OR OTHER PROTECTION.
- MS-10 PROTECT ALL STORM WATER INLETS MADE OPERABLE DURING CONSTRUCTION SO THAT SEDIMENT-LADEN WATER CAN BE FILTERED BEFORE ENTERING CONVEYANCE SYSTEM.
- MS-11 PROVIDE ADEQUATE OUTLET PROTECTION BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNEL ARE MADE OPERATIONAL.
- MS-12 WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, TAKE PRECAUTIONS TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION
- MS-13 WHEN CROSSING A LIVE WATERCOURSE MORE THAN TWICE IN ANY SIX-MONTH PERIOD, AN ADEQUATE TEMPORARY STREAM CROSSING SHALL BE PROVIDED.
- MS-14 MEET ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES.
- MS-15 STABILIZE THE BED AND BANKS OF A WATERCOURSE IMMEDIATELY FOLLOWING AFTER WORK IN THE WATERCOURSE IS COMPLETED.
- MS-16 UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE STANDARDS AND CRITERIA.
- MS-17 WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, MAKE PROVISIONS TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE, CLEAN THE ROAD THOROUGHLY AT THE END OF EACH DAY. REMOVE SEDIMENT FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORT TO A SEDIMENT CONTROL DISPOSAL AREA, STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.
- MS-18 REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL AUTHORITY HAVING JURISDICTION. PERMANENTLY STABILIZE TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES TO PREVENT FURTHER EROSION AND SEDIMENTATION.
- MS-19 ALL DOWNSTREAM PROPERTIES AND WATERWAYS SHALL BE ADEQUATELY PROTECTED FROM EROSION AND SEDIMENT DEPOSITIONS DUE TO INCREASES IN PEAK STORMWATER RUNOFF RESULTING FROM UPSTREAM LAND DISTURBING ACTIVITIES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS AND CRITERIA.

## General Notes

No.	Revision/Issue	Date
-----	----------------	------

SINCE



1881

Froehling & Robertson, Inc.  
1734 Seibel Drive, N.E.  
Roanoke, Virginia

@ COPYRIGHT 2012  
FROEHLING & ROBERTSON, INC.  
ALL RIGHTS RESERVED

60%  
SUBMISSION

Jefferson Mill  
Dam Design  
Scottsville, VA

## E&SC Notes and Details

Prepared For:

Natel Energy  
2401 Monarch St.  
Alameda, CA 94501

DR.	KHH	CHK.	DAK	REV.
PROJECT	62Y-0257			SHEET
DATE	March, 2021			6.1
SCALE	NA			7 of 7