STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Janet T. Mills
GOVERNOR

Bruce A. Van Note
COMMISSIONER

June 3, 2025
Subject: Woodland Fish Passage System
WIN: PH20250514WFP
Location: **Baileyville**
Amendment No. 2

Dear Sir/Ms.:

Please make the following changes:

REMOVE, "Notice to Contractors" dated May 16, 2025, and **REPLACE** with the attached revised "Notice to Contractors" dated June 3, 2025.

REMOVE, "Contract Bid Book" dated May 16, 2025, and **REPLACE** with the attached revised "Contract Bid Book" dated June 3, 2025.

REMOVE, select sheets of "Exhibit B Design Plans" dated May 16, 2025, and **REPLACE** with the attached revised sheets of "Exhibit B Design Plans" dated June 3, 2025, as noted in the Drawing Updates list below.

REMOVE, select sections of "Exhibit C Design Specifications" dated May 16, 2025, and **REPLACE** with the attached revised sections of "Exhibit C Design Specifications" dated June 3, 2025, as noted in the Specification Updates list below.

Refer to the black margin revision bars in the "Bid Book" and the "Notice to Contractors" to identify revised areas of text from the superseded versions previously provided.

The following has been revised or added:

"Price Component Schedule" previously omitted has been attached, now reflecting Section 1 as the Base Bid work items and Section 2 as optional Bid Supplement work items for the intake and downstream bypass.

"Woodland Fish Passage Bidders Conference Agenda" with the agenda topics, presentation and discussion minutes, and questions and answers covered during the optional virtual bidders' conference on May 27, 2025, is attached. Also included in this agenda are confirmed details for the upcoming mandatory Site Walk on June 5, 2025.

“Exhibit B-6 Intake Design for Downstream Fish Passage” by Kleinschmidt Group is attached and represents intake work under Section 2.

The following Drawing Sheets and Specification sections of Exhibits B and C were revised to denote "Bid Supplement" work items associated with Section 2, thereby superseding or removing all instances of "Not in Contract" or "(NIC)" previously depicted. Refer to the updated Notice to Contractors for additional information. Changes have not been clouded, redlined, or otherwise highlighted where applicable due to the nontechnical nature of the updates; this list therefore informs Bidders where to find “Bid Supplement” revisions and minor corrections as noted.

Drawing Updates ("Bid Supplement")

Drawing No.	Title	Exhibit
G-002	Drawing List	B-1
G-004	Abbreviations & Legend	B-1
G-120	Construction Limits & Staging Areas	B-1
G-130	Erosion Control & Dewatering Plan	B-1
D-100	Demolition Plan	B-1
D-103	Concrete Removal at Intake Dam	B-1
C-010	Overall Site Plan - General	B-2
C-011	Structure Control Plan	B-2
C-160	Downstream Bypass General Arrangement Plan	B-2
C-161	Downstream Bypass Section	B-2
C-162	Downstream Eel Bypass Sections and Details	B-2
C-163	Eel Package Backwash System	B-2
C-307	Fish Bypass 3 Profile	B-2
S-003	General Overview	B-3
S-160	Downstream Fish Bypass Plan	B-3
S-161	Downstream Fish Bypass Section	B-3
S-162	Bypass Trough Section	B-3
S-163	Bypass Trough Sections & Details	B-3
S-164	Bypass Trough Plans & Details	B-3
S-165	Downstream Fish Passage Section	B-3
M-001	General Mechanical Notes	B-4
M-002	General Mechanical Layout	B-4
M-160	Downstream Bypass Slide Gate (DSG-14 & DSG-15)	B-4

Specification Updates ("Bid Supplement")

Spec No.	Title	Exhibit
09 90 00	Painting and Coating	C
35 20 16	Fabricated Gates, Guides, and Lifts	C
35 20 16	Rubber Seals	C

The following specification sections have also been corrected as noted:

Specification Updates (Corrections Only)		
Spec No.	**Title**	**Exhibit**
09 90 00	Painting and Coating - footer correction only to match Section No.	C
35 20 16	Rubber Seals - Section No. revised to 35 20 17 only to correct duplication with Fabricated Gates, Guides, and Lifts	C

Consider these changes and information prior to submitting your bid on **June 25, 2025.**

Sincerely,

George M. A. Macdougall P.E.
Contracts & Specifications Engineer

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS

The Maine Department of Marine Resources (Department) is soliciting Bids for fish passage improvements at the Woodland Pulp LLC dam and mill site in Baileyville, Maine. The bidding process is hosted and assisted by the Maine Department of Transportation (MaineDOT or MDOT).

Sealed Bids addressed to the **Maine Department of Transportation, Augusta, Maine 04333** and endorsed on the wrapper "**Bids for Woodland Fish Passage System in the Town of Baileyville, Maine**" will be received from contractors at the Reception Desk, Maine DOT Building, Capitol Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on **June 25, 2025**. Bids will be accepted from all bidders. The lowest responsive bidder must have completed, or successfully complete, **Marine Construction prequalification category,** with project specific prequalification requirements indicated below to be considered for the award of this contract.

Description: Maine Project No. PH20250514WFP

Location: In Washington County, the Project is located at the Woodland Pulp LLC mill property in Baileyville, Maine.

Outline of Work: This Project partially removes and replaces an existing fish ladder and includes construction of a new fish lift with exit flume, attraction water supply system, downstream migrant bypass system, access bridge, and other incidental work.

The basis of award will be Section 1 (Base Bid). Bidders must also complete Section 2 (Bid Supplement) for additional Intake Work Items. However, Section 2 may be awarded or excluded solely at the Department's discretion.

Prequalification Requirements: Bidders must provide directly relevant previous project experience working on or within the operating footprint of hydroelectric facilities and constructing and commissioning of fish passage facilities or similar, complex flow control systems to meet Marine Construction prequalification requirements. Bidders must also identify their barge experience and anticipated engineering subcontractor for stability analysis if their work plan includes use of one or more crane barge(s). In addition to the MDOT Prequalification standard process, Bidders must submit project experience documentation described above completed within the last seven (7) years. Contractors who are already prequalified may separately e-mail the additional experience documentation to both contractor.prequal@maine.gov per the MDOT process and to the Project Manager at Sean.M.Ledwin@maine.gov. Project Experience beyond the last seven (7) years may be submitted but will be reviewed at the sole discretion of the Department.

For general information regarding Bidding and Contracting procedures, contact George Macdougall at (207) 624-3410. Our webpage at http://www.maine.gov/mdot/contractors/ contains a copy of the Price Component Schedule, Plan Holders List, written portions of bid amendments, drawings, bid results and an electronic form for RFI submittal. For Project-specific information, use electronic RFI form or email bid questions to RFI-Contracts.MDOT@maine.gov. The Project

name and identification number should be in the subject line. Questions received after 12:00 noon of Thursday prior to bid date, or 4 business days prior to bid date if amended, will not be answered. Bidders shall not contact any other Departmental or MDOT staff for clarification of Contract provisions, and the Department and MDOT will not be responsible for any interpretations so obtained. TTY users call Maine Relay 711.

Bid Documents, specifications and bid forms can be viewed and obtained digitally at no cost at http://www.maine.gov/mdot/contractors/ . They may be purchased from the Department by check only made payable to Treasurer, State of Maine, and sent to the Department of Marine Resources at 21 State House Station, Augusta, Maine 04330, Attn: Sean Ledwin. Full size plans **$70.00** by mail. Half size plans **$40.00** by mail. Specifications **$30.00** if requested in addition to a plan set or **$40.00** by mail. Bid Book and/or 8.5x11 Exhibits **$10.00** if requested in addition to plans and/or specifications or **$13.00** by mail. Payment must be made in advance, all non-refundable, and a print request specifying which document(s) and the shipment destination must be sent via e-mail to Sean.M.Ledwin@maine.gov and CHerrera@Verdantas.com.

Each Bid must be made upon blank forms provided by MDOT and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of 5% of the bid amount, payable to Treasurer, State of Maine as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each in the amount of 100 percent of the Contract price, will be required of the successful Bidder.

ONLY PAPER BIDS WILL BE ACCEPTED. A courtesy electronic copy shall be transmitted by e-mail to Sean.M.Ledwin@maine.gov; multiple-part transmittals are acceptable to send large files.

This Contract is subject to all applicable Federal Laws and the laws of the State of Maine.

All work shall be governed by the Contract, *Division 100 General Conditions,* Plans, Specifications, and all documents incorporated by reference that comprise the Bid Documents (Exhibits A through H). The Bid Documents may be amended as necessary given RFIs or agency reviews.

A virtual Bidder's Conference/Informational Meeting will be held on May 27, 2025, from 9:00AM to 11:00AM Eastern Time via Microsoft Teams.

The purpose of the Bidder's Conference is to provide an opportunity to ask questions about the Project, including the Bid package and requirements. All questions will be responded to in writing and written responses will be posted on the MDOT website as indicated above. Any verbal response will be subject to review and only written responses should be considered when preparing the Bid. Although participation at the Bidders' Conference is not mandatory, it is strongly encouraged that interested Bidders participate.

A mandatory site visit will be held on June 5, 2025, from 9:00AM to 12:00 noon Eastern Time. All Bidders planning to attend the site visit must submit their intention to attend listing all

representative attendees and expected number of vehicles via email to Sean.M.Ledwin@maine.gov no later than 12:00 noon on May 29, 2025. Bidders who have not submitted their intention to attend prior to the date of the site visit will not be permitted on site. Each Bidder is required to have and use the following safety equipment: hard hat, eye protection, high visibility shirt or vest, safety shoes with hard toes. Requirements such as parking location, other PPE, safety, access, etc. for the site visit will be provided at the time of the virtual Bidder's Conference.

Updated 05/15/2020

STATE PROJECT

Effective May 15, 2020
Supersedes April 22, 2020

BIDDING INSTRUCTIONS

FOR ALL PROJECTS:

1. Use pen and ink to complete all paper Bids.
2. As a minimum, the following must be received prior to the time of Bid opening:

For a Paper Bid:

   a) a copy of the Notice to Contractors, b) the completed Acknowledgement of Bid Amendments form, c) the completed Schedule of Items, d) two copies of the completed and signed Contract Offer, Agreement & Award form, e) a Bid Guaranty, (if required), and f) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

3. Include prices for all items in the Price Component Schedule (excluding non-selected alternates).
4. Bid Guaranty acceptable forms are:
   a) a properly completed and signed Bid Bond on the Department's prescribed form (or on a form that does not contain any significant variations from the Department's form as determined by the Department) for 5% of the Bid Amount or
   b) an Official Bank Check, Cashier's Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors.

5. "FedEx First Overnight" delivery is suggested as the package is delivered directly to the DOT Headquarters Building located at 16 Child Street in Augusta. Other means, such as U.S. Postal Service's Express Mail has proven not to be reliable.

IN ADDITION, FOR FEDERAL AID PROJECTS:

6. **Build America Buy America**

   The Build America Buy America Act, enacted as part of the Infrastructure Investment and Jobs Act on November 15, 2021, established a domestic content procurement preference for all Federal financial assistance obligated for infrastructure projects after May 14, 2022. The domestic content procurement preference requires that all iron, steel, manufactured products, and construction materials used in covered infrastructure projects are produced in the United States. This project is subject to two approved waivers of the Build America Buy America Act through its funding sources and funding contributions from the Passamaquoddy Tribe. These waivers include a full waiver of all non-compliant sourced items up to $11,589,176 and a waiver on the full project for Manufactured Products as defined consistent with OMB regulations, 2 CFR § 184.3. We do ask that applicants track all purchases that would be subject to Build America Buy America requirements so we can

track compliance with applicable requirements and waivers. Information on approved waivers is available here: https://www.commerce.gov/oam/build-america-buy-america

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207) 624-3410.

For complete bidding requirements, refer to Section 102 of Division 100 General Conditions and to the Notice to Contractors.

April 28, 2017
Supersedes November 05, 2014

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled and allow for an electronic downloading of bid packages from our website, while continuing to maintain an optional plan holders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments must fill out the on-line plan holder registration form and provide an email address to the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department.

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open
PIN:
Town:
Date of Bid Opening:
Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed
PIN:
Town:
Date of Bid Opening:
Name of Contractor:
This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following information:

Bid Enclosed: Do Not Open
PIN:
Town:
Name of Contractor:

STATE OF MAINE DEPARTMENT OF MARINE RESOURCES

Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT_____

_____, of the City/Town of _____and State of_____

as Principal, and _____as Surety, a Corporation duly organized under the laws of the State of___and having a usual place of Business in ____and hereby held and firmly bound unto the Treasurer of the State of Maine in the sum of_____, for payment which Principal and Surety bind themselves, their heirs, executers, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of Marine Resources, hereafter Department, a certain bid, attached hereto and incorporated as a part herein, to enter into a written contract for the construction of _____ and if the Department shall accept said bid and the Principal shall execute and deliver a contract in the form attached hereto (properly completed in accordance with said bid) and shall furnish bonds for this faithful performance of said contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full force, and effect.

Signed and sealed this_____day of _____20_____

WITNESS:	PRINCIPAL:
_____	By _____
_____	By _____
_____	By _____
WITNESS:	SURETY:
_____	By _____
_____	By _____
_____	Name of Local Agency: _____

NOTICE

Bidders:

Please use the attached "Request for Information" form when submitting questions concerning specific Contracts that have been advertised for Bid, include additional numbered pages as required. RFIs may be submitted electronically through the Maine DOT's web page of advertised projects by selecting the RFI tab on the project details page or via e-mail to RFI-Contracts.MDOT@maine.gov.

These are the only allowable mechanisms for answering Project specific questions. Maine DOT will not be bound to any answers to Project specific questions received during the Bidding phase through other processes.

When submitting RFIs by Email please follow the same guidelines as stated on the "Request for Information" form and include the word "RFI" along with the Project name and Identification number in the subject line.

State of Maine
Department of Transportation

RFI No: _____

REQUEST FOR INFORMATION

Date _____ Time _____

Information Requested for:

WIN: _____ Town: _____ Bid Date: _____

Question(s):

Reference Document	Reference Section, Spec, Page, or Location	Question

Request by:
Company Name:_____**Phone:(_____)**_____

Email: _____ Fax: (_____)_____

Complete this form and email questions to RFI-Contracts.MDOT@maine.gov, Please include the word "RFI" along with the Project Name and Identification Number in the Subject line, or electronically by using the RFI Tab located on the Individual Projects Detail page.

September 14, 2007

Vendor Registration

Prospective Bidders must register as a vendor with the Department of Administrative & Financial Services if the vendor is awarded a contract. Vendors will not be able to receive payment without first being registered. Vendors/Contractors will find information and register through the following link –
http://www.maine.gov/purchases/venbid/index.shtml

April 14, 2011
Supersedes August 3, 2004

ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at http://www.maine.gov/mdot/contractors/ . It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The Maine DOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

_____
Date

_____
Signature of authorized representative

_____
(Name and Title Printed)

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Marine Resources (Department), an agency of state government with its principal administrative offices located at 21 State House Station, Augusta, Maine, with a mailing address at 21 State House Station, Augusta, Maine 04330, and _____ _____, a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at _____(address of the firm bidding the job)_____.

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract and reasonably inferable therefrom including Extra Work in conformity with the Contract for the **Woodland Fish Passage System** in the town/city of **Baileyville,** County of **Washington**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **June 30, 2028.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages of $2,100 per day as more fully set forth in Sections 107.7 and 107.8 of *Division 100 General Conditions*.

C. Price.

The quantities given in the Price Component Schedule of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is:

Section 1 $ _____

Section 2 $ _____

Performance Bond and Payment Bond each being 100% of the amount awarded under this Contract (see award amount in Section G below).

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Bid Documents as updated through advertisement, Division 100 General Conditions, Specifications, Contract Agreement, and Contract Bonds. The Bid Documents include the Notice to Contractors, Contract Bid Book, Amendments, and the following Contract Exhibits:

Exhibit A - Division 100 General Conditions
Exhibit B - Design Plans (General & Demolition, Civil, Structural, Mechanical, Electrical, Intake Design)
Exhibit C - Design Specifications
Exhibit D - Project Overview
Exhibit E - Permits
Exhibit F - Woodland Safety Procedures
Exhibit G - Woodland General Requirements
Exhibit H - Federal Award Conditions

It is agreed and understood that this Contract will be governed by the documents listed above.

E. Amendments

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, and the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the *Division 100 General Conditions*, Plans, Specifications, Contract Agreement; and Contract Bonds contained herein for construction of: **Woodland Fish Passage System**

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the

materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the lump sum prices in the attached "Price Component Schedule."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Price Component Schedule" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Price Component Schedule," which may be ordered by the Project Manager, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in *Division 100 General Conditions*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of *Division 100 General Conditions* and complete the Work within the time limits given in this Contract.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date	**(Sign Here)** (Signature of Legally Authorized Representative of the Contractor)
(Witness Sign Here) Witness	**(Print Name Here)** (Name and Title Printed)

G. Award.

Your offer is hereby accepted for (see checked boxes):

Section 1 ❑
Section 2 ❑

Contract Amount: _____

This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF MARINE RESOURCES

Date	By:Carl Wilson, Commissioner
(Witness)	

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ **in the State of** _____, as principal, and…
.....,
a corporation duly organized under the laws of the State of.....and having a usual place of business.....,
as Surety, are held and firmly bound unto the Treasurer of the State of Maine in the sum of _____ **and 00/100 Dollars ($),**
to be paid said Treasurer of the State of Maine or his successors in office, for which payment well and truly to be made, Principal and Surety bind themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the Contract to construct Project Number _____ in the Municipality of _____ promptly and faithfully performs the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the State of Maine.

Signed and sealed this ..... day of ....., 20….. .

WITNESSES:	SIGNATURES:
	CONTRACTOR:
Signature.....	.....….....
Print Name Legibly	Print Name Legibly ...……....
	SURETY:
Signature	.....……....
Print Name Legibly	Print Name Legibly .....
SURETY ADDRESS:	NAME OF LOCAL AGENCY:
.....	ADDRESS .....
.....	..……....
.....	.....……....
TELEPHONE.....	.....……....

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ **in the State of** _____, as principal, and.....
a corporation duly organized under the laws of the State of.....and having a usual place of business in ....., as Surety, are held and firmly bound unto the Treasurer of the State of Maine for the use and benefit of claimants as herein below defined, in the sum of _____ **and 00/100 Dollars ($)** for the payment whereof Principal and Surety bind themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the Contract to construct Project Number _____ in the Municipality of _____ promptly satisfies all claims and demands incurred for all labor and material, used or required by him in connection with the work contemplated by said Contract, and fully reimburses the obligee for all outlay and expense which the obligee may incur in making good any default of said Principal, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material or both, used or reasonably required for use in the performance of the contract.

Signed and sealed this ..... day of ...……....., 20 ... .

WITNESS:	SIGNATURES:
	CONTRACTOR:
Signature…….....	.....….....
Print Name Legibly .....……..	Print Name Legibly …....
	SURETY:
Signature.....	...….....
Print Name Legibly	Print Name Legibly …....
SURETY ADDRESS:	NAME OF LOCAL AGENCY:
...….....	ADDRESS ….....
.....	…….....
TELEPHONE	…….....

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following applicable non- discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21. The Uniform Relocation Assistance and Real Prope1iy Acquisition Policies Act of 1970, (42 U.S.C.§ 460 I), (prohibits unfair treatment of persons displaced or whose prope1iy has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C.§ 324 et seq.), (prohibits discrimination on the basis of sex);
  Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of1982, (49 USC§ 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL I 00-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. §47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Woodland Fish Passage Project
Price Component Schedule

Part I: Lump Sum Base Pricing

The following lump sum pricing shall constitute full payment for Contractor's completion of the Work as required in the Contract and all reference documents. Estimated quantities are provided as basis for bid pricing only and do not relieve Contractor of its obligation to accurately measure and verify all quantities.

Contractor shall also complete Part II of this Price Component Schedule containing select Unit Prices and enclosing Contractor's rate schedule for changes in accordance with Division 100 General Conditions.

Price Component Schedule - Section 1, Base Bid			
Specification 01 20 00 Item No(s). and Title(s)		**Estimated Qty**	**Lump Sum Price**
4.01	Mobilization and Demobilization (A)	-	
4.02	Project Management & Quality Control	-	
4.03	Record Documents	-	
4.04	Environmental Controls	-	
4.05-4.06	Cofferdams & Dewatering	-	
4.07	Earthwork	-	
4.08	Rock Excavation (includes hauling & disposal)	1500 CY	
4.09	Concrete Demolition (includes hauling & disposal)	1000 CY	
4.10	Cast-in-Place, Reinforced Concrete	-	
4.11	Micropiles	1000 FT (B)	
4.12	Structural Steel Framing at Fish Lift	-	
4.13	Exit Flume and Bypass Flume Structural Steel	-	
4.14	Downstream Pipe Systems and Steel Framing	-	
4.15	AWS Pipe Systems and Steel Framing	-	
4.16	Stairs, Grating, Ladders, and Railing	-	
4.17-4.18	Fish Hopper & Cranes and Hoists at Fish Lift	-	
4.19	Gates and Screens	-	
4.20-4.21	Access Road & Access Bridge	-	
4.22	Electrical Enclosure	-	
4.23	System Testing and Start-Up	-	
4.24	Bonds and Insurance	-	
	TOTAL SECTION 1 LUMP SUM COST		

Notes:

(A) Item shall not exceed 5% of the Total Cost.

(B) Combined total length of all micropiles.

Section 2 includes all Work Tasks denoted as "Bid Supplement" in the revised plans and specifications of Exhibits B-1 through B-4 and C (refer to the Bid Amendment 2 List of Plan and Specification Updates) and associated with the "Intake Design for Downstream Fish Passage" plans by Kleinschmidt Associates, Exhibit B-6. Parts 1, 2, and 3 of Section 01 20 00 of the Specifications, Exhibit C, shall apply.

The pay quantity for Section 2 Items shall be percentage of Work completed in alignment with Contractor's Payment Schedule at the time of billing, less any applicable retention, in accordance with the Contract. No specific measurement for payment will be made.

Price Component Schedule - Section 2, Bid Supplement (Intake Work at MaineDMR's Option)		
Bid Supplement Item	**Estimated Qty**	**Lump Sum Price**
Concrete Penetrations & Decking (includes dam penetration and deck demolition and new decking formwork, rebar, dowels, and concrete)	-	
Intake Rack Concrete Footing (includes sediment removal, surface preparation, formwork, rebar, dowels, and concrete)	-	
Intake Rack (includes existing steel demolition, existing rack removal, temporary guide columns and ancillary pieces, and new trash rack panels)	-	
Eel Bypass and Backwash System (includes piping, supports, valves, operators, and/or gates)	-	
Downstream Bypass System & Steel Trough (includes piping, supports, valves, operators, and/or gates)	-	
Automated Rake (includes supports)	-	
Additional System Testing and Start-Up	-	
TOTAL SECTION 2 LUMP SUM COST		

Woodland Fish Passage Project
Price Component Schedule

Part II: Unit Pricing for Changes

The following Unit Prices may be applied to Changes under Section 109 of Division 100 and shall be valid for the entire duration of the Contract, which shall be complete payment inclusive of but not limited to delivery, hauling, disposal, installation, placement, overhead, profit, fees, and/or taxes as applicable by item. Provide any proposed annual escalation percentage to Unit Prices where indicated. Unit Prices are subject to adjustment when Section 109.1.2 of Division 100 General Conditions applies.

Contractor shall also provide its rate schedule for labor and equipment to be valid for Extra Work, which shall note applicable annual pay increases and escalations that shall be in effect for the entire duration of the Contract.

Unit Pricing for Changes			
Item	**Unit**	**Unit Price**	**Annual Escalation %**
Rock Excavation (includes hauling & disposal)	CY		
Concrete Demolition (includes hauling & disposal)	CY		

The following Unit Prices for equipment not included in Contractor's rate schedule shall also apply for the entire duration of the Contract, with annual escalation if applicable, for standby time where Compensable Delay requirements are met. Specify the unit, such as weekly barge rental, for each item.

Compensable Delay Standby Unit Pricing			
Item	**Unit (i.e. day/wk/mon)**	**Unit Price**	**Annual Escalation %**
Crane Barge Standby Time (if used)			
_____ Standby Time (add as needed)			
_____ Standby Time (add as needed)			
_____ Standby Time (add as needed)			
_____ Standby Time (add as needed)			

Bidders' Conference

Date	May 27, 2025	**Time**	9:00-11:00 AM Eastern
Location	Online Only	**Format(s)**	Microsoft Teams
Project	Woodland Fish Passage System	**Project No.**	PH20250514WFP
Purpose	Review of project and RFP for construction bidders		
Site Link	https://www.maine.gov/dot/doing-business/bid-opportunities/ph20250514wfp-baileyville-region-4-wed-06252025-1200		
Enclosed	1) Verdantas PowerPoint Presentation Slides 2) Site Walk Location Map		

Attendees		
	☒ Sean Ledwin (DMR)	☒ Greg Allen (Verdantas)
	☐ Erica Maltz (DMR)	☐ Paul Williams (Verdantas)
	☒ Casey Clark (DMR)	☒ Chelsea Herrera (Verdantas)
	☒ Justin Stevens (DMR)	☒ Dan Parker (Verdantas
	☒ Zach Sheller (DMR)	☒ Eric Rossignol (ECI)
	☒ John McAuliffe (WPLLC)	☒ Chris McGonagle (ECI)
	☒ Steve Strout (WPLLC)	☒ Keith Locke (On Point)
	☐ George Macdougall (DOT)	☒ Chet Muckenhirn (On Point)
	☒ Garrick Frost (Bancroft)	☒ Dave Brogan (GeoStabilization)
	☒ Alan Fisher (Cianbro)	☒ Pete Marcotte (MD&B)
	☒ Andrew Bisol (Cianbro)	☒ Rory Saunders (NOAA)
	☒ Brenda Nichols (Cianbro)	☒ Art Cavanagh (Reed & Reed)
	☒ Chris Pickles (Cianbro)	☒ Darryl Coombs (Reed & Reed)
	☒ John Garland (Cianbro)	☒ Dustin Littlefield (Reed & Reed)
	☒ Andy Kittredge (CPM Constructors)	☒ James McCarthy (Sargent Corp.)

Agenda at a Glance

Topic	Presenter(s)
Attendance, Stakeholder Introductions	Sean Ledwin, Chelsea Herrera
Project Overview	Sean Ledwin, Greg Allen
RFP Overview and Bid Process	Chelsea Herrera
Award and Contract Processes	Sean Ledwin
Mandatory Site Walk Review	Chelsea Herrera, John McAuliffe

Attendance, Introductions

Core Team

- Maine Department of Marine Resources (DMR) – Contract Administrator, "Department"
  - Sean Ledwin – Project Manager
- Maine Department of Transportation (DOT) – RFP/Bidding Administrator
- Woodland Pulp LLC (WPLLC) – Property Owner
- Verdantas – Engineer, Prime Consultant with the following subconsultants:
  - Electrical Consultants, Inc. (ECI) – Electrical & controls engineering design
  - Kleinschmidt Associates (KA) – Intake rack & rake engineering design
  - On Point Construction Services (On Point) – Construction management

Project Overview

DMR Project Introduction

- Project purpose, DMR's role with contract and project management, federal funding sources
  - This Project is part of a public-private partnership to restore fish in the St. Croix River and one of three main projects going on in the watershed:
    1. Milltown Dam was removed over the last two years and is complete
    2. This Project for fish passage improvements at Woodland
    3. A planned project at Grand Falls also owned by Woodland Pulp LLC (to be issued for bid in the near future)
    - The overall goal is to restore six anadromous fish to the river system, which is recognized nationally as one of the highest priority efforts with highest potential for River Herring (Alewife and Blueback Herring). A large response is expected from those species.
  - DMR has secured the funding for construction and will execute and manage the contract; Sean Ledwin is the Project Manager
  - Federally funded project with a lot of different federal sources, the largest of which is from NOAA. Funding has also been collected from USFWS, National Fish & Wildlife Foundation, and via a Congressionally Directed funding request from Senator Collins. Many awards are publicly available information, but bidders are advised caution in trying to guess the overall Project budget based on award amounts found publicly as not all funding awarded can be applied to construction and applied for science, staffing, construction support, or indirect costs for the State of Maine.
    - Given the funding sources, there are unique aspects to this project. Differences need to be captured in the bids. Please submit RFIs for questions.

Verdantas PowerPoint Presentation

- Refer to Enclosure 1 for presentation slides with key notes

Site and Working Considerations

- Construction occurs within the footprint of an active hydroelectric station, paper mill, and dam with spillway features

- Bidders shall refer to language included in Division 100 regarding coordination requirements; adherence to safety procedures on Woodland Pulp LLC's property; and the safe and reliable operation of the dam, hydroelectric station, and mill equipment
- Bidders are also advised to heed City of Baileyville sensitivity and constraints regarding heavy construction traffic

Design Status

- Kleinschmidt intake to be issued for bid at 90% by Bid Amendment, which is forthcoming (ECI design plans were already issued at 90% design)
  - The Bid Amendment for downstream passage and intake work items previously excluded will create a Section 2 - Bid Supplement
  - 100% design plans will be released by Bid Amendment
    - Verdantas drawings partially rely on Kleinschmidt intake design and will require minor adjustments once final designs are received
    - Kleinschmidt 100% plans expected June 6th, to be released within a few business days for Verdantas to incorporate any design impacts
  - Section 2 downstream passage and intake work is at DMR's option only and may be excluded from the final contract

RFP Overview and Bid Process

Timeline & Key Contract Dates

Description	Date	Reference Document
Bids Due:	June 25, 2025	Notice to Contractors
Notice of Intent to Award:	July 25, 2025 (within 30 days)	Exhibit A – 103.4
In-Water Work Period:	July 1 through May 14 annually	Exhibit A – 101.2
Fish Passage Operational:	May 1, 2028 (tied to Suppl. LDs)	Exhibit A – 107.8
Final Completion:	June 30, 2028	Contract Bid Book

RFP Contents

- Notice to Contractors
- Bid Book
- Price Component Schedule
- Exhibits to the Contract:
  - A – Division 100 General Conditions
  - B – Design Plans
  - C – Design Specifications
  - D – Project Overview (informational only)
  - E – Permits
  - F – Woodland Safety Procedures
  - G – Woodland General Requirements
  - H – Federal Award Conditions

Bid Amendments

- Amendment 1
  - Revised Notice to Contractors & Contract Form in Contract Book
  - Replaced Exhibit H
- Amendment 2 (upcoming)
  - Revises Price Component Schedule, Notice to Contractors, Contract Agreement Offer & Award:
    - Relabeling with Section 1, Base Bid (basis of award)
    - Adding Section 2, Bid Supplement – Intake Work (at DMR's Option)

Bidding Process

- Use of DOT's Bidding Process
  - Website advertisement, prequalification, questions, RFIs, amendments, and bid submission through DOT processes
  - Paper Bids Only
- Deviations:
  - E-Mail Courtesy Copy of Bid to DMR
  - Division 100 – General Conditions (Exhibit A)
    - No use of Special Provisions, revisions made directly within applicable sections
  - Technical Specifications
    - Verdantas is Engineer of Record for the fish passage system except electrical and controls design, for which ECI is Engineer of Record
    - Kleinschmidt Associates is Engineer of Record for the intake rack and rake work
    - DOT Divisions 200+ are not used except as explicitly referenced in the specifications
  - Prequalification
    - Additional project experience required; submit through or in addition to DOT prequalification process to both e-mail addresses in the Notice to Contractors

Award and Contract Processes

Award

- Notice of Intent to Award sent by DMR within 30 days of bids due

Contract Offer & Execution

- The Contract is offered by and executed with the State of Maine through DMR
- The apparent successful bidder should assume a period of negotiation and contract approvals that may not align with DOT standard timeframes

Mandatory Site Walk Details

Date	June 5, 2025	**Time**	9:00 AM – 12:00 PM Eastern
Location	144 Main St., Baileyville, ME	**RSVP By**	12:00 PM on May 29, 2025

Pre-Arrival Requirements

- Each attendee must complete WPLLC **Contractor Safety Orientation** available at: **https://woodlandpulp.com/contractor-safety/**
  - This training requires creation of a Sine account – new accounts must be activated by WPLLC security at the main gate upon arrival anytime from 8:00-8:45am
  - Contractor PSM Safety Overview is **not required**
  - Completion of the Contractor Safety Orientation is valid for one year
- **No photography is permitted** by bidders during the site walk
  - Verdantas and DMR will be issued camera passes to take photos on bidders' behalf, review with WPLLC for approval, and post to a secure shared location for bidder access

Rendezvous Details

- Arrive no later than 8:45 AM at the WPLLC administrative building
  - 144 Main Street, Baileyville, ME 04694
  - Park in the flat lot SE of office building
  - Refer to Enclosure 2, Site Walk Map
  - Front door will be staffed to permit attendee entrance
  - Meet in Sprague Conference Room
- All attendees will be required to sign in and out electronically (see pre-arrival requirements)

Minimum PPE

- Hard hat
- Steel or safety toe footwear
- High visibility vest/clothing
- Safety glasses

Arrival Coordination

- Contact John McAuliffe or Steve Strout of WPLLC for day-of coordination:
  - John McAuliffe (c): 207-512-6088
  - Steve Strout (c): 207-214-4628

Tentative Agenda

- Roll Call & Safety Brief in Sprague Conference Room
- WPLLC escorted group walk as follows:
  - Contractor lower staging areas & proposed gate location
  - West access path to top of dam and intake structure
  - Return across the dam and pass through the powerhouse to the island
  - Enter the substation by qualified WPLLC E&I escort only for island perimeter viewing
  - Return through powerhouse, follow East access path to the berm area and south bridge access road/shoreline location
- Return to Sprague Conference Room, debrief with Q&A
- Attendee sign-out and site departure

Questions & Answers

- Questions verbally raised by attendees during the call were answered by WPLLC, DMR, and/or Verdantas as follows. Responses to similar questions raised by RFI shall be assumed to supersede any verbal responses noted below.

Question:	What is the allowable weight limit across the dam?
Response:	*This question must be submitted via RFI. The following responses therefore informally capture verbal discussion for informational purposes only. A formal response will be provided to an RFI.* Informally, the biggest vehicle WPLLC uses across the dam is a 15,000 lb carry-deck. Passenger trucks come & go. Bidders should expect a formal response by Bid Amendment.
Question:	What are the overhead restrictions on the path to the right to the new access road? (East access path)
Response:	There is a set of cables off the corner of the building near the "construction access to island" callout that will restrict crane passage (refer to presentation slide 4 or plan sheet G-121). This will be evident during the site walk and is the only height restriction along this path.
Question:	Is there a location upstream on mill property for launching barge sections?
Response:	Yes. There are a couple of launch spots coming out of the chipyard and also a boat ramp just past the landfill entrance a couple miles up the road.
Question:	Are there wage determinations for this project, such as Davis Bacon, given federal funding?
Response:	No, there are no Davis-Bacon requirements due to funding sources and authorities. No state prevailing wage requirements either per the State of Maine Department of Labor. This is unique compared to many DOT projects. However, general labor and wage requirements still apply. Regarding Buy America Build America (BABA) provisions that bidders should review carefully, there are two waivers for this project: one related to a grant received from the Passamaquoddy Tribe, and one broad exemption for manufactured products.
Question:	Is there a sample contract? Do you expect to have the final contract available for bidders to review prior to final bid submissions due? Bidders need to see the final contract language if the draft does not follow DOT's template.
Response:	The sample contract based on DOT's template is included in the Bid Book. DMR was not expecting to finalize the contract prior to bids due but will explore this option. If the contract is modified or otherwise formalized, it will be released via Bid Amendment.

Question:	WPLLC, please discuss gate requirements and working hours.
Response:	The mill is a 24/7 operation. The Contractor will have access but must establish its own gate and provide security staffing for personnel tracking and site control.
Question:	What is the basis of award—low bid?
Response:	Yes, low bid.
Question:	What is the timeline for issuing final designs?
Response:	Kleinschmidt final design is expected June 6th. The 90% plans will be issued sooner for bidders to preview the nearly-completed design package.
Question:	Have the adjusted IWW periods been formalized yet?
Response:	There is a concurrence process with resource agencies, and DMR has been informed by the Army Corps of Engineers and NOAA that they're finalizing. Full concurrence is therefore forthcoming since it has been received from all other agencies except NOAA. There is no need for an amendment to the Corps. NOAA is working through internal processes but advised that DMR could represent the in-water work period provided in Division 100 General Conditions.
Question:	Will the Contractor be able to have outages during different phases of this work? If so, will contractors need to identify lengths and numbers of outages in the bids?
Response:	*This question must be submitted via RFI. The following responses therefore informally capture verbal discussion for informational purposes only. A formal response will be provided to an RFI.* There are two different types of outages, hydro station with flow outages and electrical outages. Electrical outages include Grand Falls 34kV and the elevated cable duct, the latter of which is not ever taken out of service. The mill water intake up on the dam that can't be impacted for operations. Other generators are up for discussion. Units 8 and 9 are favored during fish migration but are otherwise flexible. DMR clarified that the question was addressing hydro station outages during cofferdam installation. If cofferdam installation duration is on the order of weeks, then season can be leveraged instead of taking an outage. Availability of water for generation is limited by late summer, so there may not be much to shut down.

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Woodland Fish Passage Project

Virtual Bidders' Conference

May 27, 2025

Enclosure 1 - Verdantas PowerPoint Presentation Slides

Note that the red intake pipe that crosses the island and over the tailrace must be protected during construction and is critical to WPLLC operations. Elevated electrical duct runs on top of the pipe and branches off at the island before routing to the powerhouse, which must also be protected. International boundary is center of the river. All activities occur on the US side of the river.

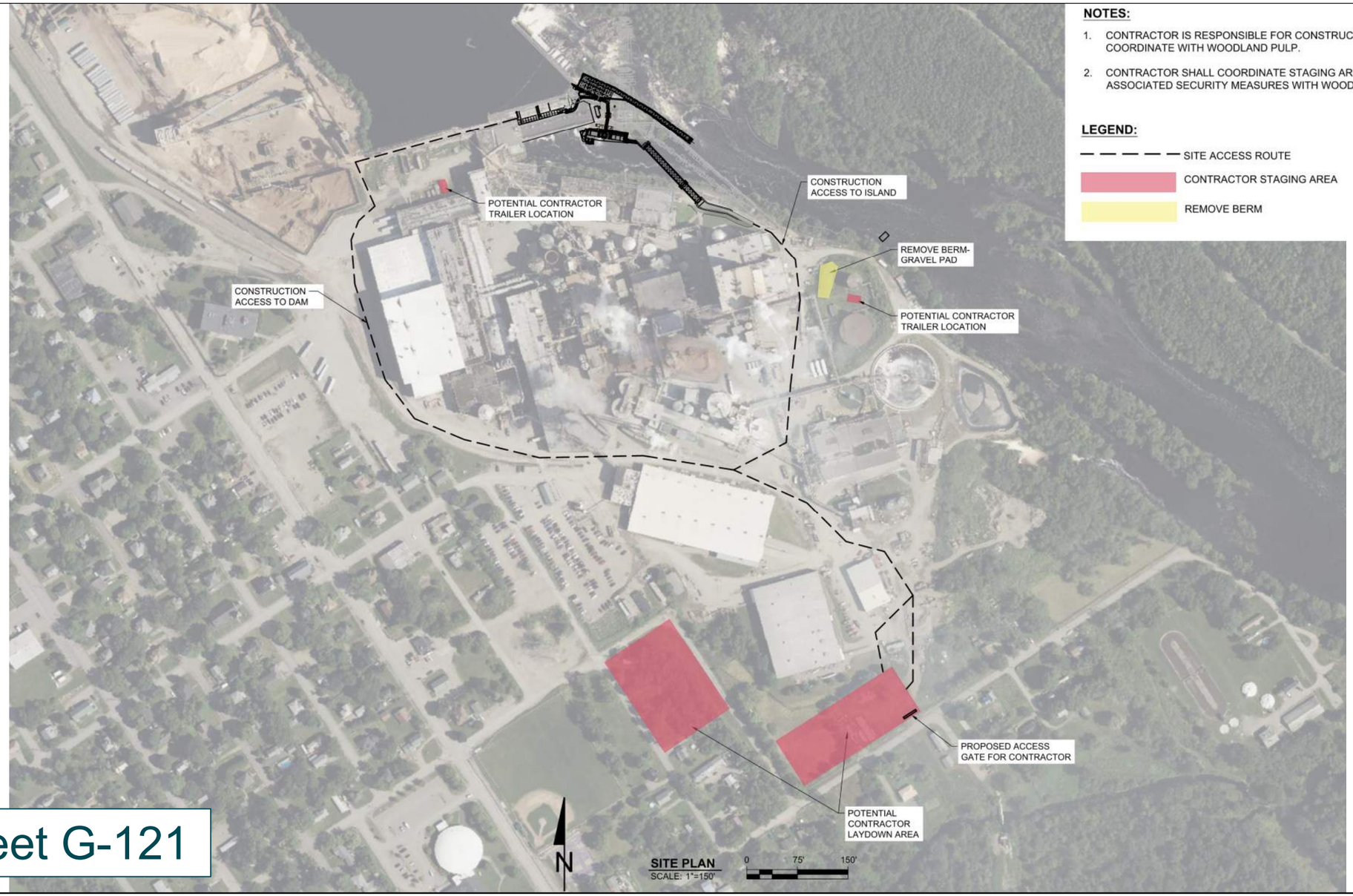
Woodland Dam and Powerhouse

Powerhouse flow	3200 cfs nominal capacity
River flow (fishway design operational conditions)	
Design low	895 cfs (95% exceedance, June & July)
Normal	2350 cfs (50% exceedance, May & June)
Design high	7620 cfs (5% exceedance, May & June)
Target Fish Passage Attraction flow	160 cfs (5% of powerhouse)

Primary Target Species

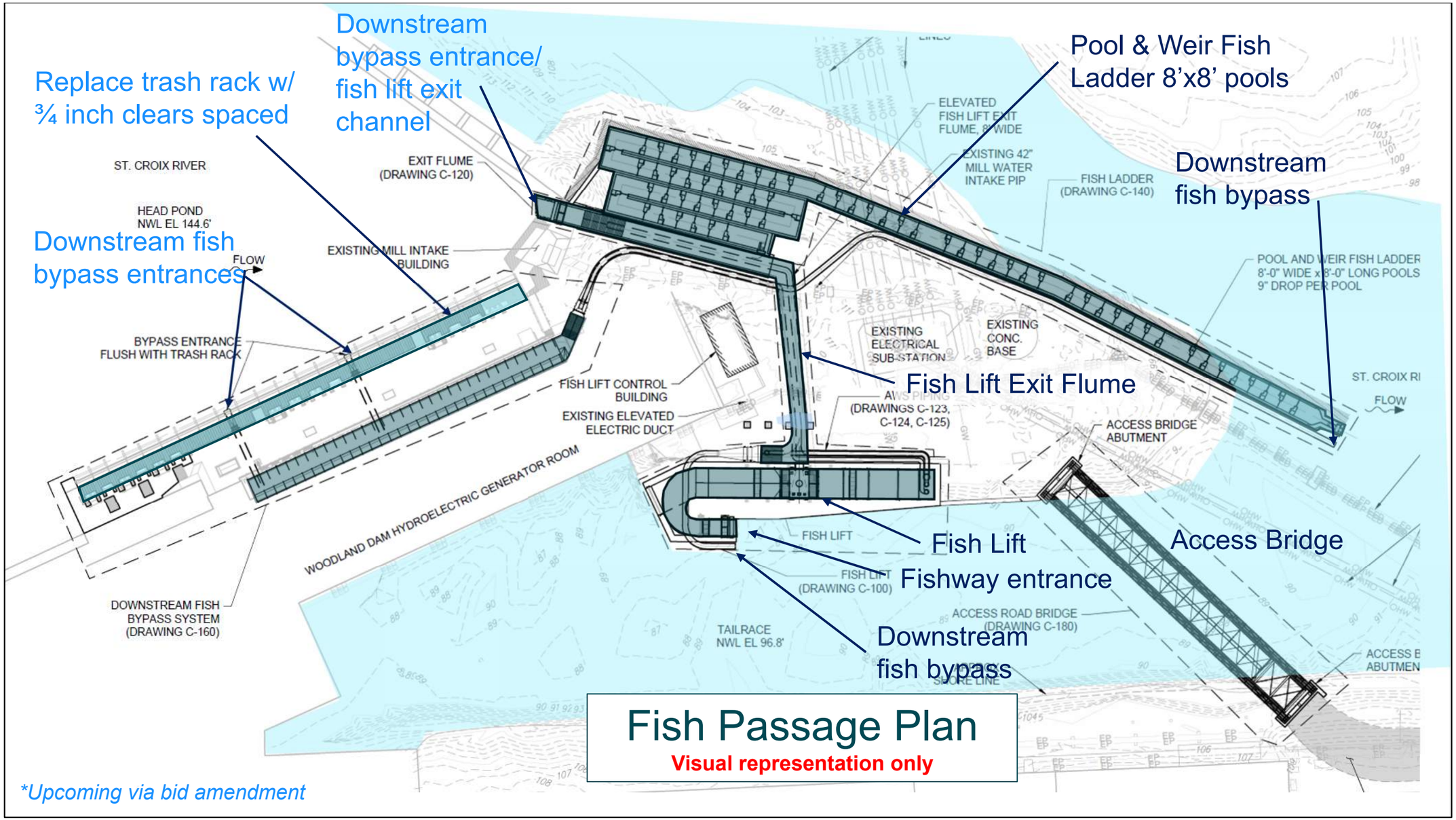
American Shad	165,000
Alewives	26,000,000
Blueback Herring	1,597,213

The stated flow ranges are for fishway operation only and do not represent all river flow conditions possible at the site. The attraction flow of 160 cfs is the design target flow only.



Sheet G-121

Note that the righthand contractor laydown (south end of site map) lies within the existing WPLLC fence. The lefthand laydown is outside of existing fencing.

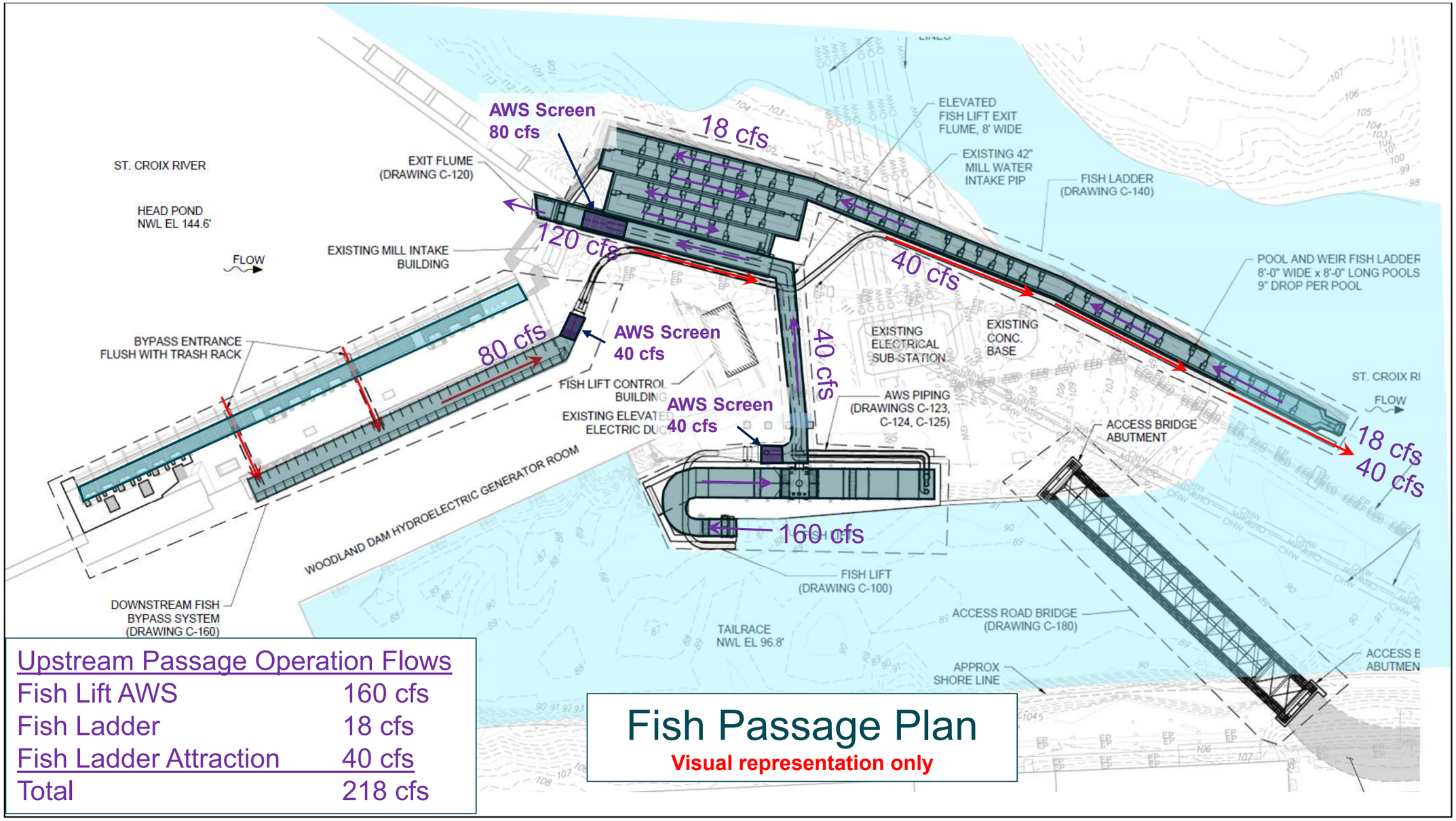


Upstream passage features:

- Existing fishway is to be demolished, new fish lift structure to be in place and includes steel superstructure that supports a hopper to elevate fish to the upper lift exit flume leading to the head pond.
- The exit flume meets up with the exit channel to the new proposed fish ladder.
- Adding new fish ladder with entrance on north side of pipe crossing over the tailrace.

Downstream passage features:

- Also providing downstream passage for the fish so they can safely avoid going through intakes and get safe passage downstream.
- Coming in a future bid amendment is replacement of existing intake racks with new narrow-spaced, ¾-inch rack and 2 bypasses within the rack.
- Bypasses will route to a flume attached to downstream face of dam and then to the fish ladder entrance in the tailrace.
- The other major bypass route will be the fish lift exit flume.

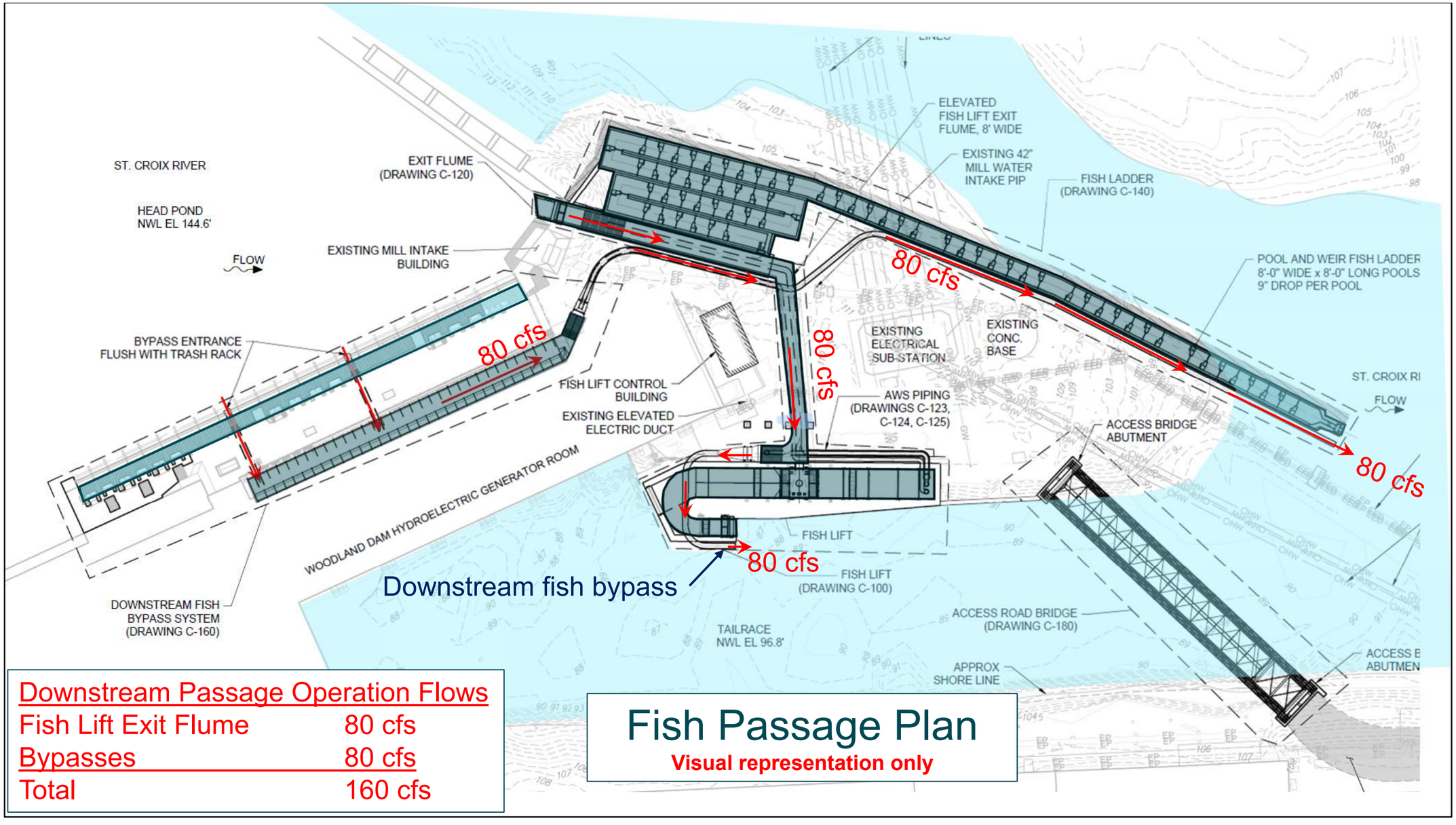


Upstream Passage Operation Flows	
Fish Lift AWS	160 cfs
Fish Ladder	18 cfs
Fish Ladder Attraction	40 cfs
Total	218 cfs

Fish Passage Plan

Visual representation only

An 80 cfs AWS screen routes to the fish lift. Two 40 cfs AWS screens route to the exit flume. During upstream passage runs, an additional 40 cfs discharges at the ladder entrance for attraction.



Around June 30th, the project will be operated for downstream passage. 40 cfs enters each of the bypasses, combining to 80 cfs for the downstream bypass flume, which transitions to pipe and discharges near the ladder entrance. Another 80 cfs runs through the fish lift exit flume to the end.

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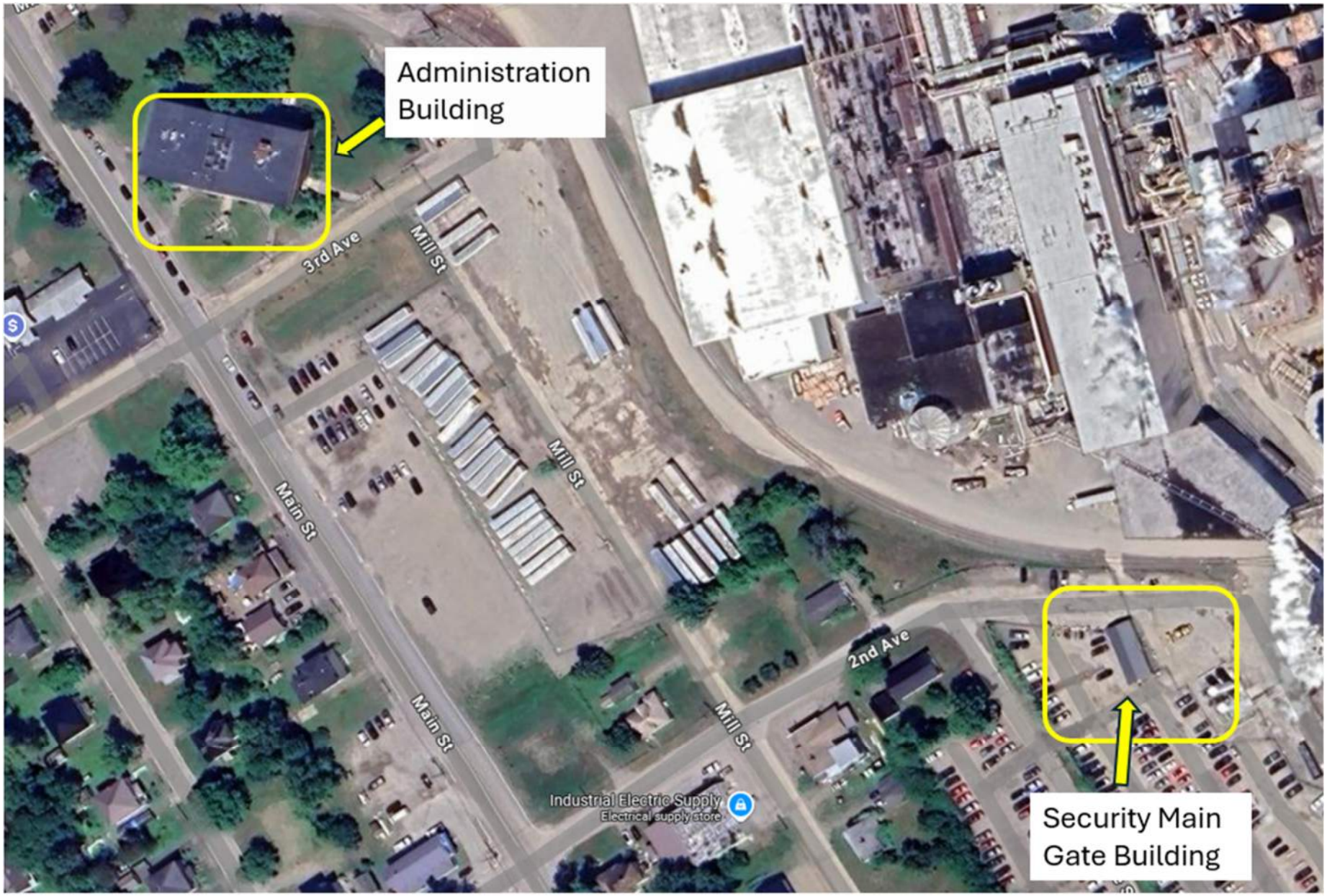
Thank You

Enclosure 2 – Site Walk Location Map



DRAWING LIST		
Sheet Number	Sheet Title	Drawing Name
GENERAL		
1	G-001	COVER SHEET, LOCATION MAPS & VICINITY MAP
2	G-002	DRAWING LIST
3	G-003	GENERAL NOTES
4	G-004	ABBREVIATIONS & LEGEND
5	G-100	EXISTING CONDITIONS - OVERALL SITE PLAN
6	G-101	UTILITIES TO BE PROTECTED
7	G-110	GEOTECHNICAL BORINGS & SURVEY CONTROL
8	G-111	GEOTECHNICAL BORING LOGS
9	G-112	GEOTECHNICAL BORING LOGS
10	G-113	GEOTECHNICAL BORING LOGS
11	G-114	GEOTECHNICAL BORING LOGS
12	G-120	CONSTRUCTUION LIMITS & STAGING AREAS
13	G-121	SITE ACCESS & STAGING AREAS
14	G-130	EROSION CONTROL & DEWATERING PLAN
15	G-131	EROSION CONTROL & DEWATERING DETAILS
DEMOLITION		
16	D-100	DEMOLITION PLAN
17	D-101	DEMOLITION VIEWS
18	D-102	CONCRETE REMOVAL SECTIONS
19	D-103	CONCRETE REMOVAL AT INTAKE DAM (BID SUPPLEMENT)
20	D-104	PIPE PLUGS AT DAM
CIVIL		
21	C-001	EXCAVATION PLAN
22	C-002	ROCK EXCAVATION SECTIONS
23	C-003	ROCK EXCAVATION SECTIONS
24	C-004	EXCAVATION SECTIONS
25	C-010	OVERALL SITE PLAN - GENERAL
26	C-011	STRUCTURE CONTROL PLAN
27	C-012	FINAL GRADING AND DRAINAGE PLAN
28	C-013	GRADING AND DRAINAGE DETAILS
29	C-100	FISH LIFT GENERAL ARRANGEMENT PLAN
30	C-101	FISH LIFT GENERAL ARRANGEMENT SECTION
31	C-120	EXIT FLUME GENERAL ARRANGEMENT PLAN
32	C-121	EXIT FLUME GENERAL ARRANGEMENT SECTION
33	C-122	EXIT FLUME GENERAL ARRANGEMENT SECTION
34	C-123	EXIT FLUME BYPASS SECTION
35	C-124	VIEWING WINDOW & COUNTING BUILDING
36	C-125	VIEWING WINDOW DETAILS
37	C-140	FISH LADDER GENERAL ARRANGEMENT PLAN
38	C-141	FISH LADDER PLATFORM OVERALL ISOMETRIC VIEW
39	C-142	FISH LADDER PLAN & PROFILE
40	C-143	FISH LADDER PLAN & PROFILE
41	C-144	FISH LADDER PLAN & PROFILE
42	C-160	DOWNSTREAM BYPASS GENERAL ARRANGEMENT PLAN
43	C-161	DOWNSTREAM BYPASS SECTION (BID SUPPLEMENT)
44	C-162	DOWNSTREAM EEL BYPASS SECTIONS AND DETAILS (BID SUPPLEMENT)
45	C-163	EEL PACKAGE BACKWASH SYSTEM (BID SUPPLEMENT)
46	C-180	ACCESS BRIDGE GENERAL PLAN
47	C-181	ACCESS BRIDGE GENERAL ARRANGEMENT SECTIONS
48	C-182	ACCESS ROAD PLAN AND PROFILE
49	C-183	ACCESS ROAD SECTIONS
50	C-184	ACCESS ROAD SECTIONS
51	C-185	ACCESS ROAD 3 PLAN, PROFILE & SECTIONS
52	C-186	VEHICULAR GUARDRAIL DETAILS
53	C-300	SYMBOLS AND ABBREVIATIONS
54	C-301	AWS PIPE 1 PLAN AND PROFILE
55	C-302	AWS PIPE 2 PLAN AND PROFILE
56	C-303	AWS PIPE 3 PLAN AND PROFILE
57	C-304	FISH BYPASS 1 PLAN AND PROFILE STA 0+00 TO STA 2+50
58	C-305	FISH BYPASS 1 PLAN AND PROFILE STA 2+50 TO STA 3+84.53
59	C-306	FISH BYPASS 2 PLAN AND PROFILE
60	C-307	FISH BYPASS 3 PROFILE (BID SUPPLEMENT)
61	C-350	PIPE DETAILS
62	C-351	PIPE DETAILS
STRUCTURAL		
63	S-001	STRUCTURAL NOTES
64	S-002	STRUCTURAL DESIGN CRITERIA
65	S-003	GENERAL OVERVIEW
66	S-100	FISH LIFT - STRUCTURAL CONCRETE EL 110.00
67	S-101	FISH LIFT - STRUCTURAL CONCRETE SECTION
68	S-102	FISH LIFT - STRUCTURAL CONCRETE SECTION
69	S-103	FISH LIFT - STRUCTURAL CONCRETE SECTION
70	S-104	FISH LIFT - SECONDARY ENTRANCE
71	S-105	FISH LIFT - CONCRETE CORBELS
72	S-106	FISH LIFT - CONCRETE SECTIONS
73	S-110	FISH LIFT CONCRETE ENTRANCE FLUME EMBEDMENT DETAILS
74	S-120	EXIT FLUME PLAN
75	S-121	EXIT FLUME ENLARGED PLANS
76	S-122	CONCRETE EXIT FLUME SECTIONS
77	S-123	EXIT FLUME CONCRETE SECTIONS
78	S-124	TRAP AND CROWDER FRAMING PLAN AT EL 135.5 AND DETAILS
79	S-125	TRAP AND CROWDER FRAMING PLAN AT EL 146.36 AND DETAILS
80	S-126	MONORAIL FRAMING PLAN AND SECTION
81	S-127	VIEWING ROOM PLAN AND SECTIONS
82	S-128	VIEWING ROOM PLAN AND SECTIONS
83	S-129	MONORAIL FRAMING SECTIONS AND DETAILS
84	S-130	BAR RACK ELEVATION AND DETAILS
85	S-131	STEEL EXIT FLUME PLANS AND SECTIONS
86	S-132	STEEL EXIT FLUME SECTIONS & DETAILS
87	S-133	STEEL EXIT FLUME SUPPORT FRAMING SECTIONS & DETAILS
88	S-134	STEEL EXIT FLUME SUPPORT FRAMING DETAILS
89	S-135	STEEL EXIT FLUME TRANSITION PLANS AND DETAILS
90	S-136	STEEL EXIT FLUME PLANS AND SECTIONS
91	S-137	STEEL EXIT FLUME PLANS AND SECTIONS
92	S-138	STEEL EXIT FLUME DETAILS
93	S-139	STEEL EXIT FLUME DETAILS
94	S-140	FISH LADDER PLAN
95	S-141	ENLARGED FISH LADDER FOUNDATION PLAN
96	S-142	FISH LADDER ENLARGED PLAN
97	S-143	ENLARGED FISH LADDER PLANS
98	S-144	FISH LADDER SECTIONS
99	S-145	FISH LADDER SECTIONS
100	S-146	FISH LADDER SECTIONS
101	S-147	FISH LADDER SECTION AND DETAILS
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103	S-149	COLUMN CAP SECTIONS & DETAILS
104	S-150	WEIR DETAILS
105	S-151	WEIR 64 & 65 SECTION AND DETAILS
106	S-160	DOWNSTREAM FISH PASSAGE PLAN
107	S-161	DOWNSTREAM FISH PASSAGE SECTION (BID SUPPLEMENT)
108	S-162	BYPASS TROUGH SECTION (BID SUPPLEMENT)
109	S-163	BYPASS TROUGH SECTIONS & DETAILS
110	S-164	BYPASS TROUGH PLANS & DETAILS
111	S-165	DOWNSTREAM FISH PASSAGE SECTION (BID SUPPLEMENT)
112	S-166	BYPASS FLUME TRANSITION SEGMENT 1
113	S-167	BYPASS FLUME TRANSITION SEGMENT 1 SECTIONS & DETAILS
114	S-168	BYPASS FLUME TRANSITION SEGMENT 2
115	S-169	BYPASS FLUME TRANSITION SEGMENT 2 SECTIONS & DETAILS
116	S-170	BYPASS FLUME TRANSITION SEGMENT 3
117	S-171	BYPASS FLUME TRANSITION SEGMENT 3 SECTIONS & DETAILS
118	S-172	BYPASS FLUME TRANSITION SEGMENT 4
119	S-173	BYPASS FLUME TRANSITION SEGMENT 4 SECTIONS & DETAILS
120	S-174	DOWNSTREAM FISH PASSAGE SECTION
121	S-175	DOWNSTREAM FISH PASSAGE FLUME
122	S-176	DOWNSTREAM FISH PASSAGE FLUME DETAILS
123	S-177	DOWNSTREAM FISH PASSAGE FLUME DETAILS
124	S-178	DOWNSTREAM FISH PASSAGE FLUME SUPPORTS
125	S-180	ACCESS BRIDGE ABUTMENT AND PIER PLAN
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128	S-183	EXISTING FISH LADDER SECTIONS
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132	S-190	ELECTRICAL ENCLOSURE PLAN
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134	S-210	FISH LIFT TOWER COLUMN LOCATION PLAN
135	S-211	FISH LIFT TOWER FRAMING PLAN
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139	S-220	FISH LIFT TOWER FRAMING ELEVATIONS
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150	S-303	PIPE SUPPORTS
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152	S-305	PIPE SUPPORTS 8B
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157	S-310	PIPE SUPPORT FRAMING DETAILS
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162	S-401	FISH LIFT WALKWAY 1 PLAN, SECTIONS AND DETAILS
163	S-402	FISH LIFT WALKWAYS 2, 3, 4 AND 5 PLANS
164	S-403	WALKWAY SECTIONS AND DETAILS
165	S-404	EXIT FLUME WALKWAYS 1 AND 2 PLANS AND SECTIONS
166	S-405	EXIT FLUME WALKWAY 2 DETAILS
167	S-406	EXIT FLUME WALKWAYS 3 AND 4 PLANS
168	S-407	EXIT FLUME WALKWAYS 5 AND 6 PLANS
169	S-408	FISH LADDER WALKWAY 1 PLAN, SECTIONS AND DETAILS
170	S-409	FISH LADDER WALKWAYS 1, 2 AND 4 PLANS
171	S-410	FISH LADDER WALKWAY 6 SECTION AND DETAILS
172	S-411	FISH LADDER WALKWAYS 1, 2, AND 6 SECTIONS AND DETAILS
173	S-412	FISH LADDER PLATFORM OVERALL ISOMETRIC VIEWS
174	S-413	FISH LADDER PLATFORM FRAMING PLAN
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176	S-415	FISH LADDER PLATFORM FRAMING ELEVATION
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181	S-450	OVERALL FOUNDATION PLAN AND SCHEDULE
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184	S-453	FOUNDATION PLANS AND SECTIONS
185	S-454	FOUNDATION PLANS AND SECTIONS
186	S-455	FOUNDATION PLANS AND SECTIONS
187	S-456	FOUNDATION PLANS AND SECTIONS
188	S-457	FOUNDATION PLANS AND SECTIONS
189	S-458	MICROPILE NOTES & DETAILS
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192	S-501	STRUCTURAL STANDARD DETAILS
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194	S-503	STRUCTURAL STANDARD DETAILS
195	S-504	STRUCTURAL STANDARD DETAILS
196	S-505	STRUCTURAL STANDARD DETAILS
197	S-506	STRUCTURAL STANDARD DETAILS
198	S-507	STRUCTURAL STANDARD DETAILS
199	S-508	EXIT FLUME TRANSITION DETAILS
MECHANICAL		
200	M-001	GENERAL MECHANICAL NOTES
201	M-002	GENERAL MECHANICAL LAYOUT
202	M-100	FISH LIFT ISOLATION GATE (IG-1)
203	M-101	FISH LIFT ENTRANCE GATE (EG-2)
204	M-102	FISH LIFT V-GATE (VG-3)
205	M-103	FISH LIFT V-GATE (VG-3) OPERATOR SUPPORT ASSEMBLY
206	M-104	FISH LIFT V-GATE (VG-3) GRATING DETAILS
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218	M-119	FISH LIFT PERFORATED PLATE
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225	M-126	EXIT FLUME TRAP GATE (TG-18 & TG-19) EMBEDMENT AND BEARING DETAILS
226	M-127	MOVING FLOOR PLANS AND DETAILS
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228	M-129	CROWDER SCREEN DETAILS
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232	M-133	AIR BURST PIPE LAYOUT
233	M-140	FISH LADDER ISOLATION GATE (IG-12)
234	M-141	FISH LADDER AUTOMATIC ENTRANCE GATE (OWG-11)
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237	M-160	DOWNSTREAM BYPASS SLIDE GATE (DSG-14 & DSG-15) (BID SUPPLEMENT)
238	M-161	DOWNSTREAM BYPASS SCREEN
239	M-163	DOWNSTREAM ISOLATION GATE (IG-16)
240	M-200	WATER LEVEL SENSOR (WLS) AND STAFF GAUGE DETAILS

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WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

DRAWING LIST

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	2 OF 240
DRAWING:	G-002

ABBREVIATIONS:

'	FEET
"	INCHES
&	AND
@	AT
Ø	DIAMETER
#	NUMBER
±	PLUS OR MINUS
%	PERCENT
100 FP	100-YEAR FLOOD PLAIN
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ACI	AMERICAN CONCRETE INSTITUTE
ADD'L	ADDITIONAL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALUM	ALUMINUM
APPROX	APPROXIMATE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
AVE	AVENUE
AWS	AUXILIARY WATER SYSTEM/AMERICAN WELDING SOCIETY
B/O, B.O., BO	BOTTOM OF
BOC	BOTTOM OF CONCRETE
BTM	BOTTOM
BTWN	BETWEEN
C	CHANNEL SECTION
C/C	CENTER TO CENTER
C/L, CL, ℄	CENTERLINE
Ce	EXPOSURE FACTOR
CFS	CUBIC FEET PER SECOND
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLR	CLEAR
CO	COMPANY
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONT'D	CONTINUED
COORD	COORDINATED
CUFT	CUBIC FEET
CY	CUBIC YARDS
D	DEPTH
D/S	DOWNSTREAM
db	REBAR DIAMETER
DEG	DEGREE
DEMO	DEMOLISH
DIA	DIAMETER
DIMS	DIMENSIONS
DWG	DRWING
EA	EACH
EF	EACH FACE
EL, ELEV	ELEVATION
ELF	EQUIVALENT LATERAL FORCE
EMBED	EMBEDMENT
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EQ	EQUAL
EQUIV	EQUIVALENT
EW	EACH WAY
f'c	COMPRESSIVE STRENGTH OF CONCRETE
FLG	FLANGE
FLGS	FLANGES
FP	FLOOD PLAIN
FT	FOOT/FEET
fy	YIELD STRENGTH
GA	GAUGE
GALV	GALVANIZED
GP	GUSSET PLATE
H	HIGH
HAS	HEADED ANCHOR STUD
HDPE	HIGH-DENSITY POLYETHYLENE
HL	HEIGHT LIMIT
HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTION
HWL	HIGH WATER LEVEL
I	IMPORTANCE FACTOR (ICE)
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
Ie	IMPORTANCE FACTOR (EARTHQUAKE)
IN	INCH
INV	INVERT
Is	IMPORTANCE FACTOR (SNOW)
Iw	IMPORTANCE FACTOR (WIND)
JT	JOINT
KSI	KIPS PER SQUARE INCH
L	ANGLE/LENGTH
LB	POUND
LBS	POUNDS

Ld	DEVELOPMENT LENGTH
LF	LINEAR FEET
LH	LEFT HAND
LOC	LOCATIONS
LWL	LOW WATER LEVEL
MAX	MAXIMUM
MC	MC CHANNEL SECTION
MFR	MANUFACTURE/MANUFACTURER
MIN	MINUTES
MIN	MINIMUM
MISC	MISCELLANEOUS
MPH	MILES PER HOUR
N&F	NEAR AND FAR
NAVD	NORTH AMERICAN VERTICAL DATUM
NHW	NORMAL HIGH WATER LINE
NL	NO LIMIT
NOAA	NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NPS	NORMAL PIPE SIZE
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
OC	ON CENTERS
OCBF	ORDINARY CONCENTRICALLY BRACED FRAME
OD	OUTSIDE DIAMETER
OHW	ORDINARY HIGH WATER LINE
OHW	OVERHEAD WIRE
OPNG	OPENING
PCF	POUNDS PER CUBIC FOOT
Pg	GROUND SNOW
PI	POINT OF INTERSECTION
PL	PLATE
PP	POLYPROPYLENE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
R	RISERS
R	RADIUS
RD	ROAD
REINF	REINFORCING
REQ'D	REQUIRED
RH	RIGHT HAND
SCH, SCHED	SCHEDULE
SEC	SECOND
SF	SILT FENCE
SF	SQUARE FEET
SIM	SIMILAR
SQ	SQUARE
SS, SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STRUC	STRUCTURE
SYM	SYMMETRICAL
T	TREAD (FOR STAIRS)
T	FOOTING THICKNESS
T&B	TOP AND BOTTOM
T/O, T.O., TO	TOP OF
TBD	TO BE DETERMINED
TC	TURBIDITY CURTAIN
TEL	TELEPHONE
THK	THICK
THRU	THROUGH
TOC	TOP OF CONCRETE
TOG	TOP OF GRATING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TPI	THREADS PER INCH
TYP	TYPICAL
U/S	UPSTREAM
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
USACE	UNITED STATES ARMY CORPS OF ENGINEERS
VERT	VERTICAL
W	WIDE FLANGE SECTION
W	WIDTH
W/	WITH
WP	WORKPOINT
WS	WATERSTOP
WSL	WATER SURFACE LEVEL
WT	STRUCTURAL T SECTION
XXS	EXTRA EXTRA STRONG
YD	YARD
YR	YEAR

LEGEND & SYMBOLS

- SF — SF — SILT FENCE
- TC — TC — TURBIDITY CURTAIN
- COFFERDAM / BULKHEAD / DEWATERING STRUCTURE
- CONSTRUCTION LIMITS
- EXISTING STRUCTURE(S) BOUNDARY/LIMITS
- GRATING SPAN DIRECTION
- HAND RAILING
- FLOW
- OHW — OVERHEAD WIRES
- GW — GW — GUIDE WIRES
- EBP — EBP — EXISTING BURIED PIPE
- EP — EP — EXISTING PIPE
- EED — EED — EXISTING ELECTRICAL

- UNDISTURBED SOIL
- DEMOLITION
- CONCRETE
- GRATING
- FLOW FILL
- EXCAVATE BEDROCK
- GRAVEL
- BEDROCK
- CONTRACTOR STAGING AREA

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WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

ABBREVIATIONS & LEGEND

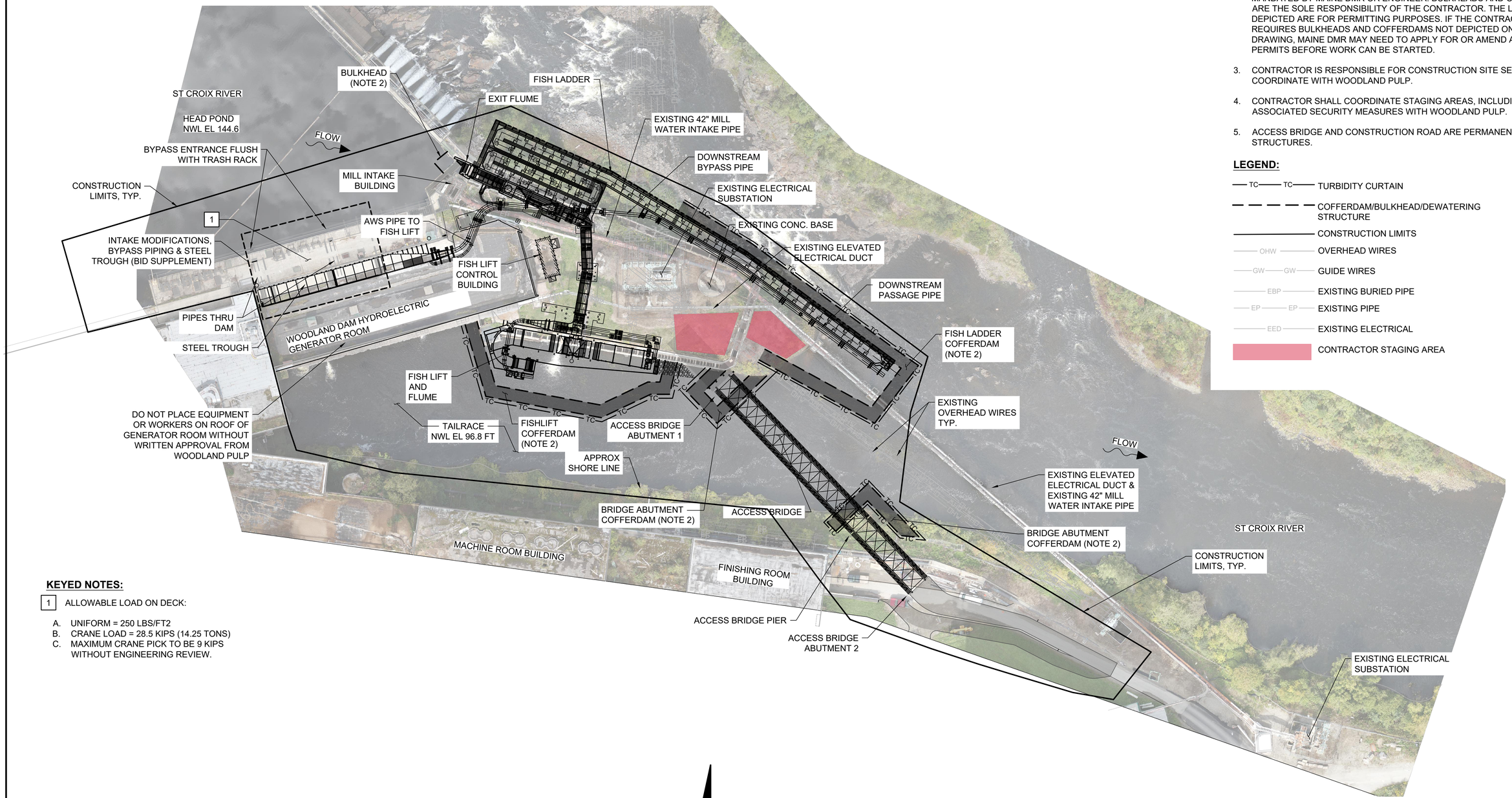
PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	4 OF 240
DRAWING:	G-004

NOTES:

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES AND STRUCTURES.
2. BULKHEADS AND COFFERDAMS DEPICTED ON THIS DRAWING ARE NOT MANDATED BY MAINE DMR OR ENGINEER. BULKHEADS AND COFFERDAMS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE LOCATIONS DEPICTED ARE FOR PERMITTING PURPOSES. IF THE CONTRACTOR REQUIRES BULKHEADS AND COFFERDAMS NOT DEPICTED ON THIS DRAWING, MAINE DMR MAY NEED TO APPLY FOR OR AMEND APPLICABLE PERMITS BEFORE WORK CAN BE STARTED.
3. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SITE SECURITY. COORDINATE WITH WOODLAND PULP.
4. CONTRACTOR SHALL COORDINATE STAGING AREAS, INCLUDING ASSOCIATED SECURITY MEASURES WITH WOODLAND PULP.
5. ACCESS BRIDGE AND CONSTRUCTION ROAD ARE PERMANENT STRUCTURES.

LEGEND:

- TC — TC — TURBIDITY CURTAIN
- COFFERDAM/BULKHEAD/DEWATERING STRUCTURE
- CONSTRUCTION LIMITS
- OHW — OVERHEAD WIRES
- GW — GW — GUIDE WIRES
- EBP — EXISTING BURIED PIPE
- EP — EP — EXISTING PIPE
- EED — EXISTING ELECTRICAL
- CONTRACTOR STAGING AREA



KEYED NOTES:

1 ALLOWABLE LOAD ON DECK:

A. UNIFORM = 250 LBS/FT2
B. CRANE LOAD = 28.5 KIPS (14.25 TONS)
C. MAXIMUM CRANE PICK TO BE 9 KIPS WITHOUT ENGINEERING REVIEW.

N

SITE PLAN
SCALE: 1"=40'
0 40' 80'

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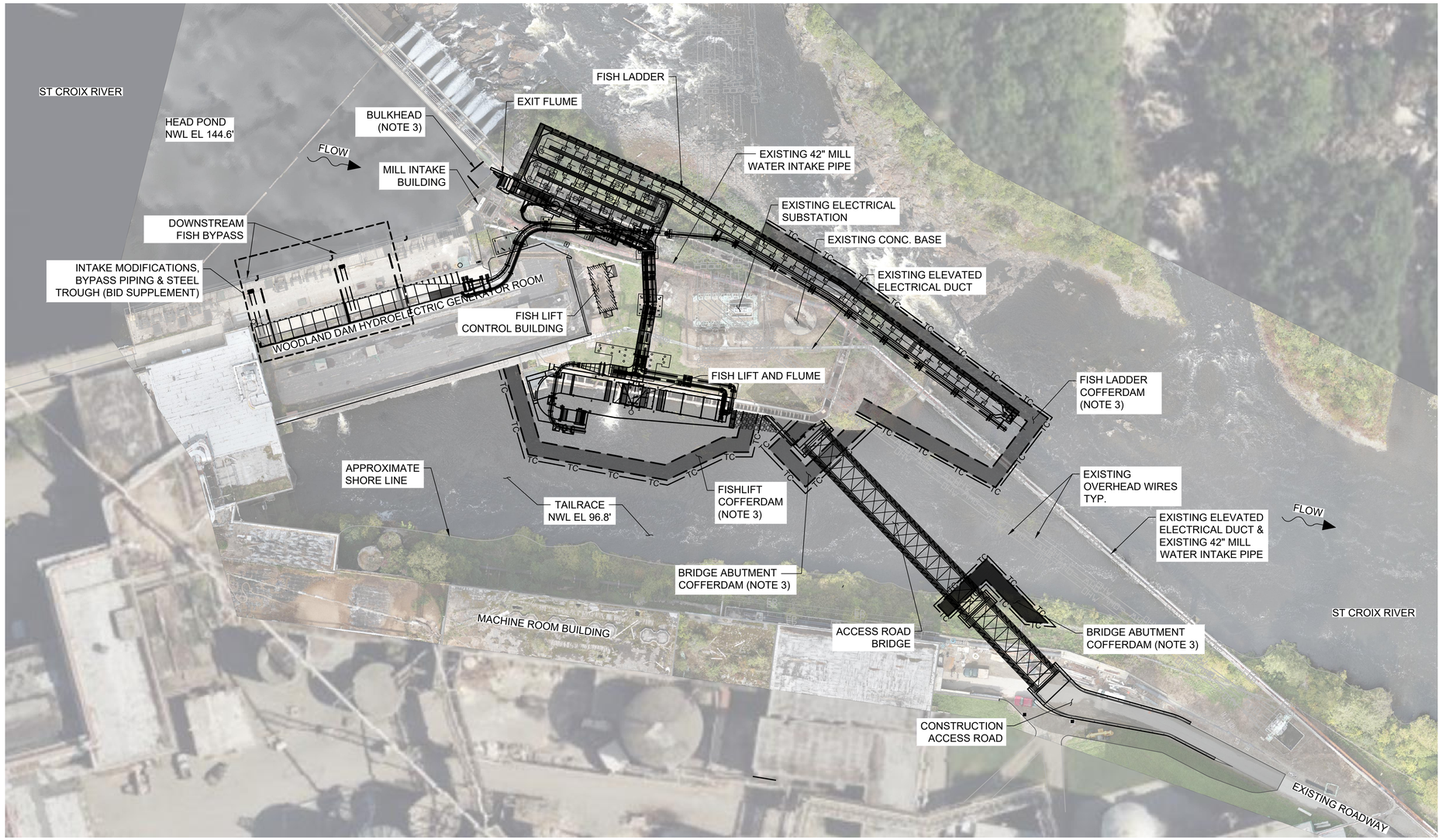
WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

CONSTRUCTUION LIMITS & STAGING AREAS

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	12 OF 240
DRAWING:	G-120



SITE PLAN
SCALE: 1"=40'

N

40' 0 40' 80'

NOTES:

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES AND STRUCTURES.
2. SEE DRAWING G-131 FOR TYPICAL EROSION CONTROL AND DEWATERING DETAILS.
3. BULKHEADS AND COFFERDAMS DEPICTED ON THIS DRAWING ARE NOT MANDATED BY THE MAINE DMR OR ENGINEER. BULKHEADS AND COFFERDAMS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. AREAS WHERE PERMANENT DISTURBANCE IS NOT AUTHORIZED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION, WHICH UNDER NO CIRCUMSTANCE SHALL BE HIGHER THAN THE PRE-CONSTRUCTION ELEVATION. ORIGINAL CONDITIONS MEANS CAREFUL PROTECTION AND/OR REMOVAL OF EXISTING SOIL AND VEGETATION, AND REPLACEMENT BACK TO THE ORIGINAL LOCATIONS SUCH THAT THE ORIGINAL SOIL LAYERING AND VEGETATION SCHEMES ARE APPROXIMATELY THE SAME, UNLESS OTHERWISE AUTHORIZED.
5. VERTICAL DATUM IS BASED ON NAVD88
6. HORIZONTAL DATUM IS THE STATE PLANE COORDINATE SYSTEM NAD83 MAINE EAST ZONE.

LEGEND:

- SF — SF — SILT FENCE
- TC — TC — TURBIDITY CURTAIN
- COFFERDAM/BULKHEAD/DEWATERING STRUCTURE
- X — X — EXISTING FENCE
- OHW — OVERHEAD WIRES
- GW — GW — GUIDE WIRES
- EBP — EXISTING BURIED PIPE
- EP — EP — EXISTING PIPE
- EED — EXISTING ELECTRICAL

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WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

EROSION CONTROL & DEWATERING PLAN

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	14 OF 240
DRAWING:	G-130

NOTES:

1. COORDINATE DEMOLITION AND CONCRETE REMOVAL WITH WOODLAND PULP AND ENGINEER PRIOR TO WORK.
2. CONTRACTOR'S OPTION TO KEEP EXISTING FISH LADDER CONCRETE WALLS AT FULL HEIGHT OR REMOVE THE TOP OF THE FISH LADDER CONCRETE WALLS DOWN TO EL 110.0' FOR ACCESS DURING CONSTRUCTION.

LEGEND:

- DEMOLITION OR FULL CONCRETE REMOVAL
- FISH LADDER CONCRETE REMOVAL DOWN TO EL 110.0'. SEE NOTE 2
- FISH LADDER CONCRETE REMOVAL DOWN TO EL 107.75' FOR NEW BRIDGE ACCESS
- TC — TURBIDITY CURTAIN
- COFFERDAM/BULKHEAD/DEWATERING STRUCTURE
- EXISTING STRUCTURE(S) BOUNDARY/LIMITS

ST. CROIX RIVER

HEAD POND
NWL EL 144.6

FLOW

BULKHEAD

PROTECT MILL INTAKE BUILDING

REMOVE EXISTING FISH LADDER CONCRETE

APPROX. EXISTING OVERHEAD TRANSMISSION LINES

PROTECT EXISTING 42" MILL WATER INTAKE PIPE

REMOVE EXISTING GRATING & STAIRS

REMOVE EXISTING THRUST BLOCK AND STAIRS

REMOVE EXISTING 24" DOWNSTREAM BYPASS PIPE

EXISTING PIPE IN CONCRETE DAM

PROTECT EXISTING ELECTRICAL SUB-STATION

EXISTING CONC. BASE

REMOVE EXISTING CONCRETE WALL

CONTRACTOR SHALL DEMO EXISTING FISH LADDER TO ACCOMMODATE INSTALLATION OF THE DOWNSTREAM BYPASS PIPE

FISH LADDER COFFERDAM

ST. CROIX RIVER

FLOW

NOTE 2

PROTECT EXISTING ELEVATED ELECTRIC DUCT

REMOVE EXISTING 16" PIPE

PROTECT EXISTING RETAINING WALL

RELOCATE GUIDE WIRES

REMOVE EXISTING FISH TRAP STRUCTURE

PROTECT EXISTING ELEVATED ELECTRICAL DUCT & EXISTING 42" MILL WATER INTAKE PIPE

REMOVE EXISTING GATE STRUCTURE (GRATING, GATES, CONCRETE, & RAILING)

WOODLAND DAM HYDROELECTRIC GENERATOR ROOM

CONTRACTOR TO RELOCATE DUCTWORK AROUND NEW BYPASS FLUME, COORDINATE W/ WOODLAND PULP

REMOVE EXISTING GRATING & STAIRS

REMOVE EXISTING FISH LADDER CONCRETE & PIPING

REMOVE EXISTING GRATING

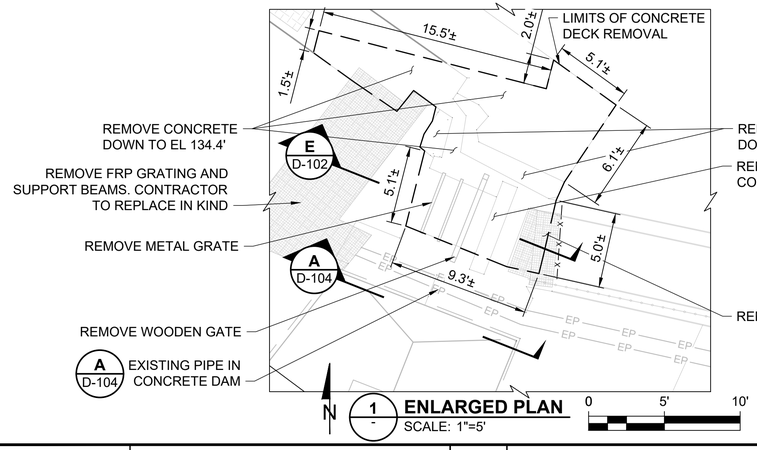
FISH LADDER TO REMAIN IN PLACE. CONTRACTOR TO STABILIZE FISH LADDER DURING DEMOLITION WORK

APPROX. EXISTING OVERHEAD TRANSMISSION LINES

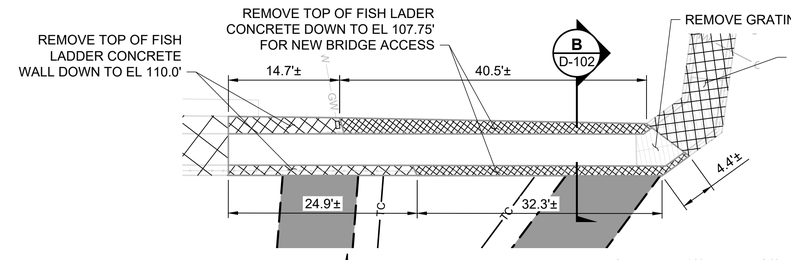
FISH LIFT COFFERDAM

TAILRACE
NWL EL 96.8

SITE PLAN
SCALE: 1"=20'
0 20' 40'



1 - ENLARGED PLAN
SCALE: 1"=5'



2 - ENLARGED PLAN
SCALE: 1"=10'

5/2/2025	ISSUED FOR BID	M. GRAESER	
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MAY 2, 2025

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WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

DEMOLITION PLAN

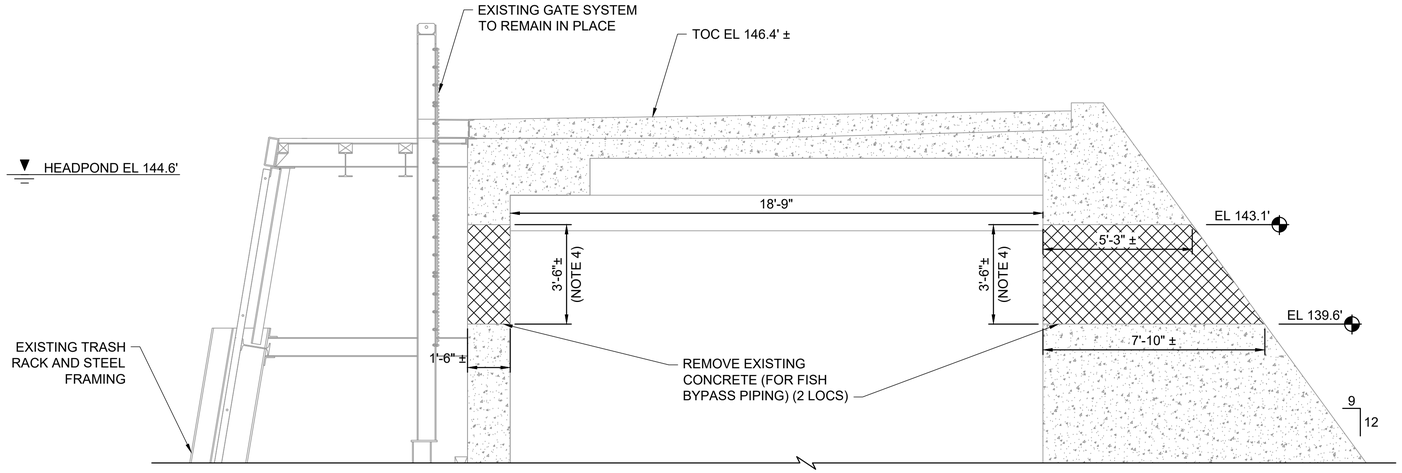
PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	16 OF 240
DRAWING:	D-100

LEGEND:

CONCRETE REMOVAL

CONCRETE REMOVAL NOTES:

1. SUBMIT PLAN AND COORDINATE DEMOLITION AND CONCRETE REMOVAL WITH WOODLAND PULP AND ENGINEER PRIOR TO WORK.
2. REFER TO RECORD DRAWINGS FOR EXISTING STRUCTURE ELEVATION, DIMENSIONS, AND MEMBER SIZES.
3. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITION DIMENSIONS PRIOR TO CONCRETE REMOVAL.
4. CONCRETE CORE/REMOVAL SIZE SHOWN IS APPROXIMATE. CONCRETE REMOVAL SHALL BE AS REQUIRED TO INSTALL NEW PIPE, LINK SEAL, AND GROUT.



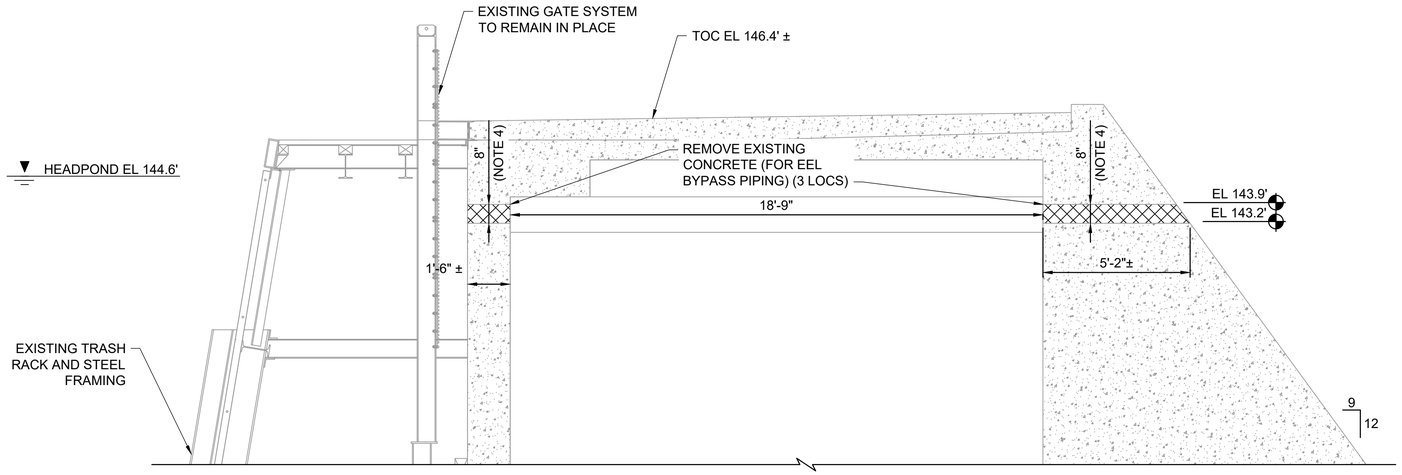
D / D-100 **CONCRETE REMOVAL SECTION (FOR NEW FISH BYPASS, 2 LOCS)**

SCALE: 3/8"=1'-0"

0 2' 4'

1 / D-100 **EXISTING DUCTWORK AT BACK OF DAM**

SCALE: N.T.S.



E / D-100 **CONCRETE REMOVAL SECTION (FOR NEW EEL BYPASS, 3 LOCS)**

SCALE: 3/8"=1'-0"

0 2' 4'

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WOODLAND FISH LIFT PASSAGE DESIGN

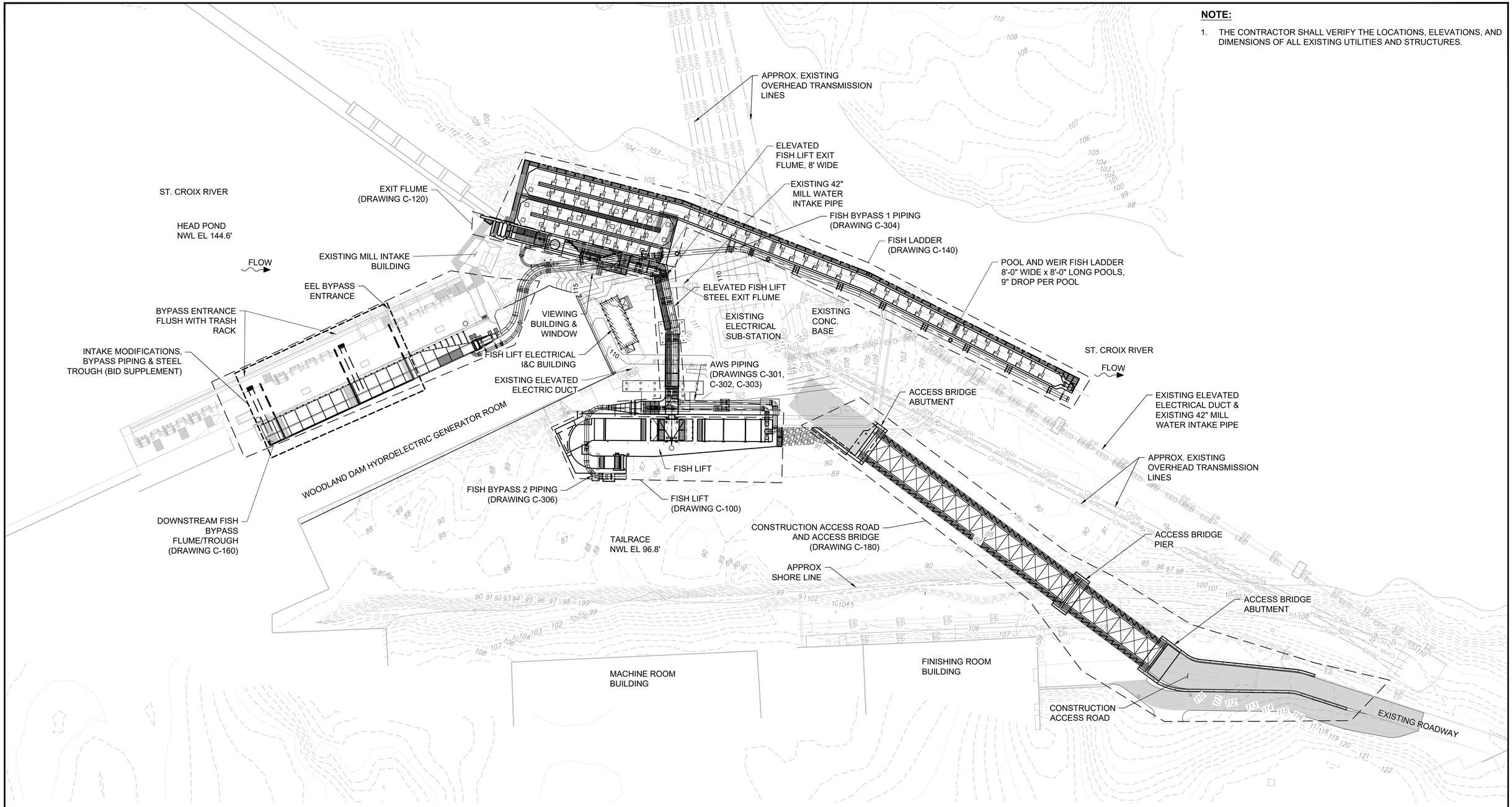
MAINE DEPARTMENT OF MARINE RESOURCES

CONCRETE REMOVAL AT INTAKE DAM (BID SUPPLEMENT)

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	19 OF 240
DRAWING:	D-103

NOTE:

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES AND STRUCTURES.



SITE PLAN
SCALE: 1"=30'

30' 0 30' 60'

5/2/2025	ISSUED FOR BID	M. GRAESER
REVISION	DESCRIPTION OF ISSUE / REVISION	REVISED BY

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WOODLAND FISH LIFT PASSAGE DESIGN

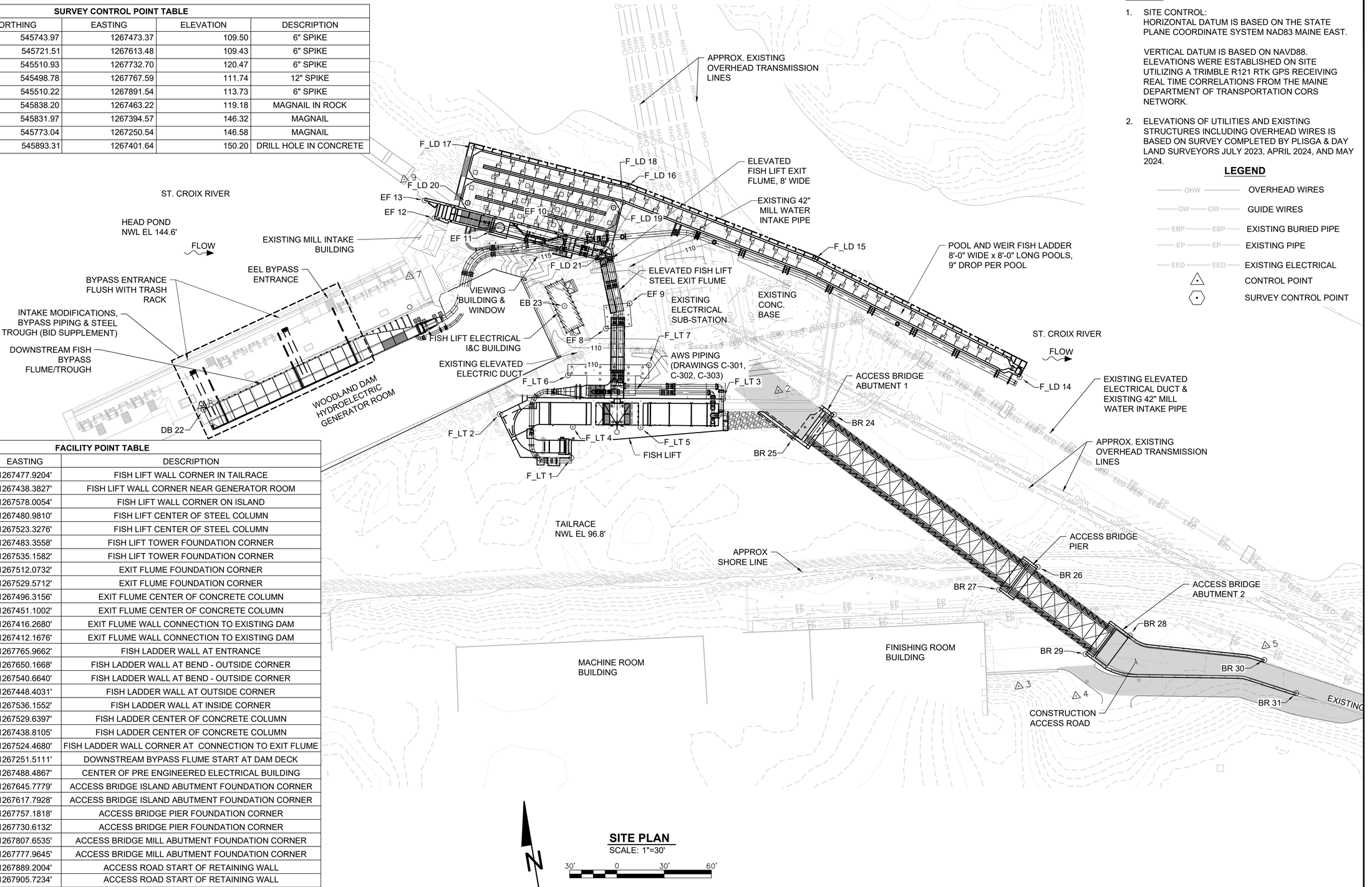
MAINE DEPARTMENT OF MARINE RESOURCES

OVERALL SITE PLAN - GENERAL

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	25 OF 240
DRAWING:	C-010

SURVEY CONTROL POINT TABLE				
POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	545743.97	1267473.37	109.50	6" SPIKE
2	545721.51	1267613.48	109.43	6" SPIKE
3	545510.93	1267732.70	120.47	6" SPIKE
4	545498.78	1267767.59	111.74	12" SPIKE
5	545510.22	1267891.54	113.73	6" SPIKE
6	545838.20	1267463.22	119.18	MAGNAIL IN ROCK
7	545831.97	1267394.57	146.32	MAGNAIL
8	545773.04	1267250.54	146.58	MAGNAIL
9	545893.31	1267401.64	150.20	DRILL HOLE IN CONCRETE

FACILITY POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
F_LT 1	545702.5072'	1267477.9204'	FISH LIFT WALL CORNER IN TAILRACE
F_LT 2	545733.9924'	1267438.3827'	FISH LIFT WALL CORNER NEAR GENERATOR ROOM
F_LT 3	545722.0917'	1267578.0054'	FISH LIFT WALL CORNER ON ISLAND
F_LT 4	545720.4495'	1267480.9810'	FISH LIFT CENTER OF STEEL COLUMN
F_LT 5	545712.9816'	1267523.3276'	FISH LIFT CENTER OF STEEL COLUMN
F_LT 6	545753.3301'	1267483.3558'	FISH LIFT TOWER FOUNDATION CORNER
F_LT 7	545751.1886'	1267535.1582'	FISH LIFT TOWER FOUNDATION CORNER
EF 8	545778.5569'	1267512.0732'	EXIT FLUME FOUNDATION CORNER
EF 9	545791.8662'	1267529.5712'	EXIT FLUME FOUNDATION CORNER
EF 10	545840.6173'	1267496.3156'	EXIT FLUME CENTER OF CONCRETE COLUMN
EF 11	545852.1244'	1267451.1002'	EXIT FLUME CENTER OF CONCRETE COLUMN
EF 12	545865.7740'	1267416.2680'	EXIT FLUME WALL CONNECTION TO EXISTING DAM
EF 13	545878.0414'	1267412.1676'	EXIT FLUME WALL CONNECTION TO EXISTING DAM
F_LD 14	545704.4650'	1267765.9662'	FISH LADDER WALL AT ENTRANCE
F_LD 15	545800.0033'	1267650.1668'	FISH LADDER WALL AT BEND - OUTSIDE CORNER
F_LD 16	545865.1980'	1267540.6640'	FISH LADDER WALL AT BEND - OUTSIDE CORNER
F_LD 17	545905.8595'	1267448.4031'	FISH LADDER WALL AT OUTSIDE CORNER
F_LD 18	545855.8527'	1267536.1552'	FISH LADDER WALL AT INSIDE CORNER
F_LD 19	545853.4998'	1267529.6397'	FISH LADDER CENTER OF CONCRETE COLUMN
F_LD 20	545871.9469'	1267438.8105'	FISH LADDER CENTER OF CONCRETE COLUMN
F_LD 21	545829.5442'	1267524.4680'	FISH LADDER WALL CORNER AT CONNECTION TO EXIT FLUME
DB 22	545770.3285'	1267251.5111'	DOWNSTREAM BYPASS FLUME START AT DAM DECK
EB 23	545797.1158'	1267488.4867'	CENTER OF PRE ENGINEERED ELECTRICAL BUILDING
BR 24	545700.6149'	1267645.7779'	ACCESS BRIDGE ISLAND ABUTMENT FOUNDATION CORNER
BR 25	545690.4411'	1267617.7928'	ACCESS BRIDGE ISLAND ABUTMENT FOUNDATION CORNER
BR 26	545583.6837'	1267757.1818'	ACCESS BRIDGE PIER FOUNDATION CORNER
BR 27	545573.4771'	1267730.6132'	ACCESS BRIDGE PIER FOUNDATION CORNER
BR 28	545530.9781'	1267807.6535'	ACCESS BRIDGE MILL ABUTMENT FOUNDATION CORNER
BR 29	545524.0140'	1267777.9645'	ACCESS BRIDGE MILL ABUTMENT FOUNDATION CORNER
BR 30	545501.4943'	1267889.2004'	ACCESS ROAD START OF RETAINING WALL
BR 31	545477.2854'	1267905.7234'	ACCESS ROAD START OF RETAINING WALL



SITE PLAN
SCALE: 1"=30'

30' 0 30' 60'

NOTES:

1. SITE CONTROL:
   HORIZONTAL DATUM IS BASED ON THE STATE PLANE COORDINATE SYSTEM NAD83 MAINE EAST.

   VERTICAL DATUM IS BASED ON NAVD88. ELEVATIONS WERE ESTABLISHED ON SITE UTILIZING A TRIMBLE R121 RTK GPS RECEIVING REAL TIME CORRELATIONS FROM THE MAINE DEPARTMENT OF TRANSPORTATION CORS NETWORK.

2. ELEVATIONS OF UTILITIES AND EXISTING STRUCTURES INCLUDING OVERHEAD WIRES IS BASED ON SURVEY COMPLETED BY PLISGA & DAY LAND SURVEYORS JULY 2023, APRIL 2024, AND MAY 2024.

LEGEND

- OHW — OVERHEAD WIRES
- GW — GUIDE WIRES
- EBP — EXISTING BURIED PIPE
- EP — EXISTING PIPE
- EED — EXISTING ELECTRICAL
- CONTROL POINT
- SURVEY CONTROL POINT

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MAY 2, 2025

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5/2/2025	ISSUED FOR BID	M. GRAESER

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WOODLAND FISH LIFT PASSAGE DESIGN

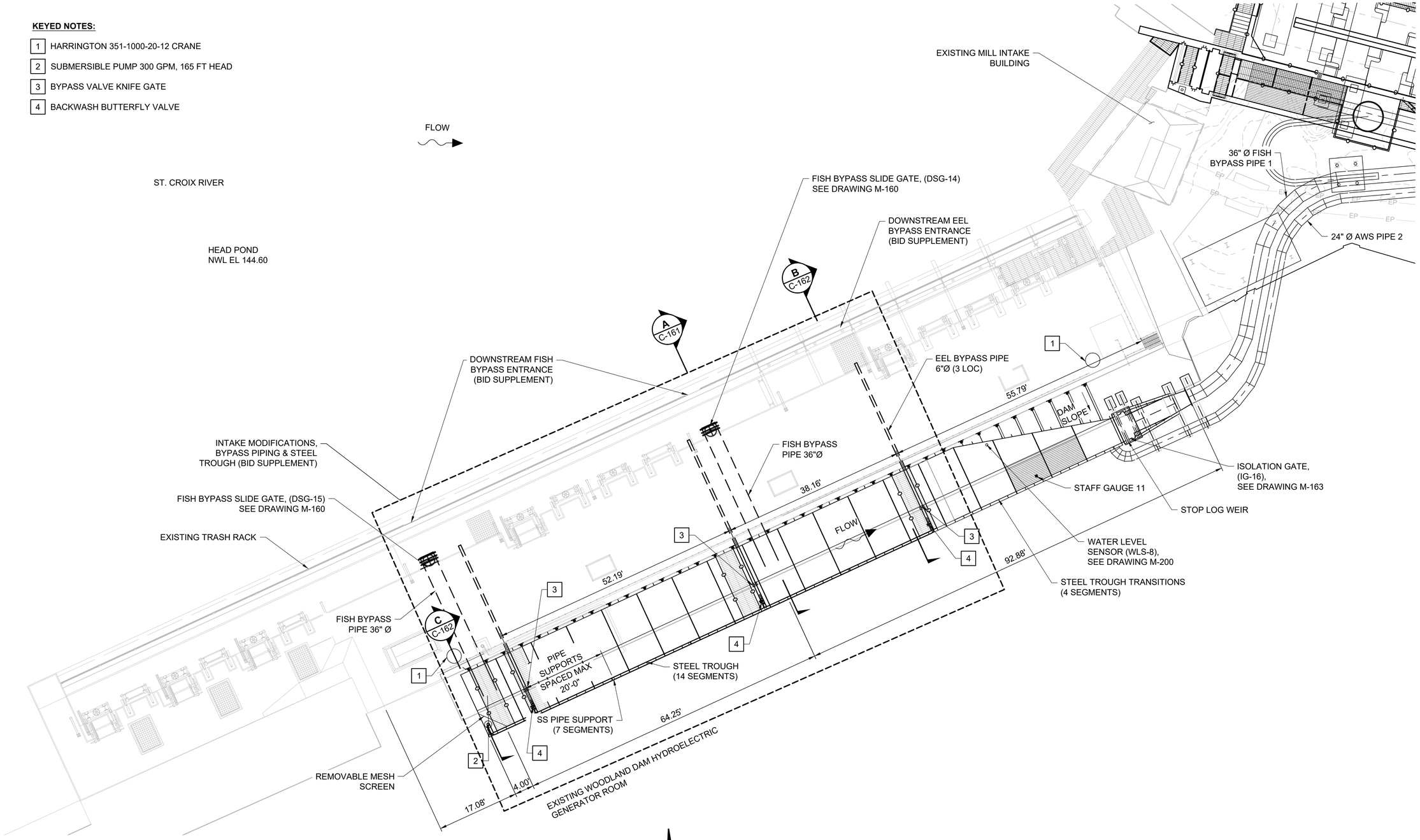
MAINE DEPARTMENT OF MARINE RESOURCES

STRUCTURE CONTROL PLAN

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	26 OF 240
DRAWING:	C-011

KEYED NOTES:

1. HARRINGTON 351-1000-20-12 CRANE
2. SUBMERSIBLE PUMP 300 GPM, 165 FT HEAD
3. BYPASS VALVE KNIFE GATE
4. BACKWASH BUTTERFLY VALVE



DOWNSTREAM BYPASS GENERAL ARRANGEMENT PLAN

SCALE: 1"=10'

0 10' 20'

NOTE:

1. CONTRACTOR TO FIELD VERIFY EXISTING DIMENSIONS AND ELEVATIONS PRIOR TO NEW CONSTRUCTION.

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MAY 2, 2025

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WOODLAND FISH LIFT PASSAGE DESIGN

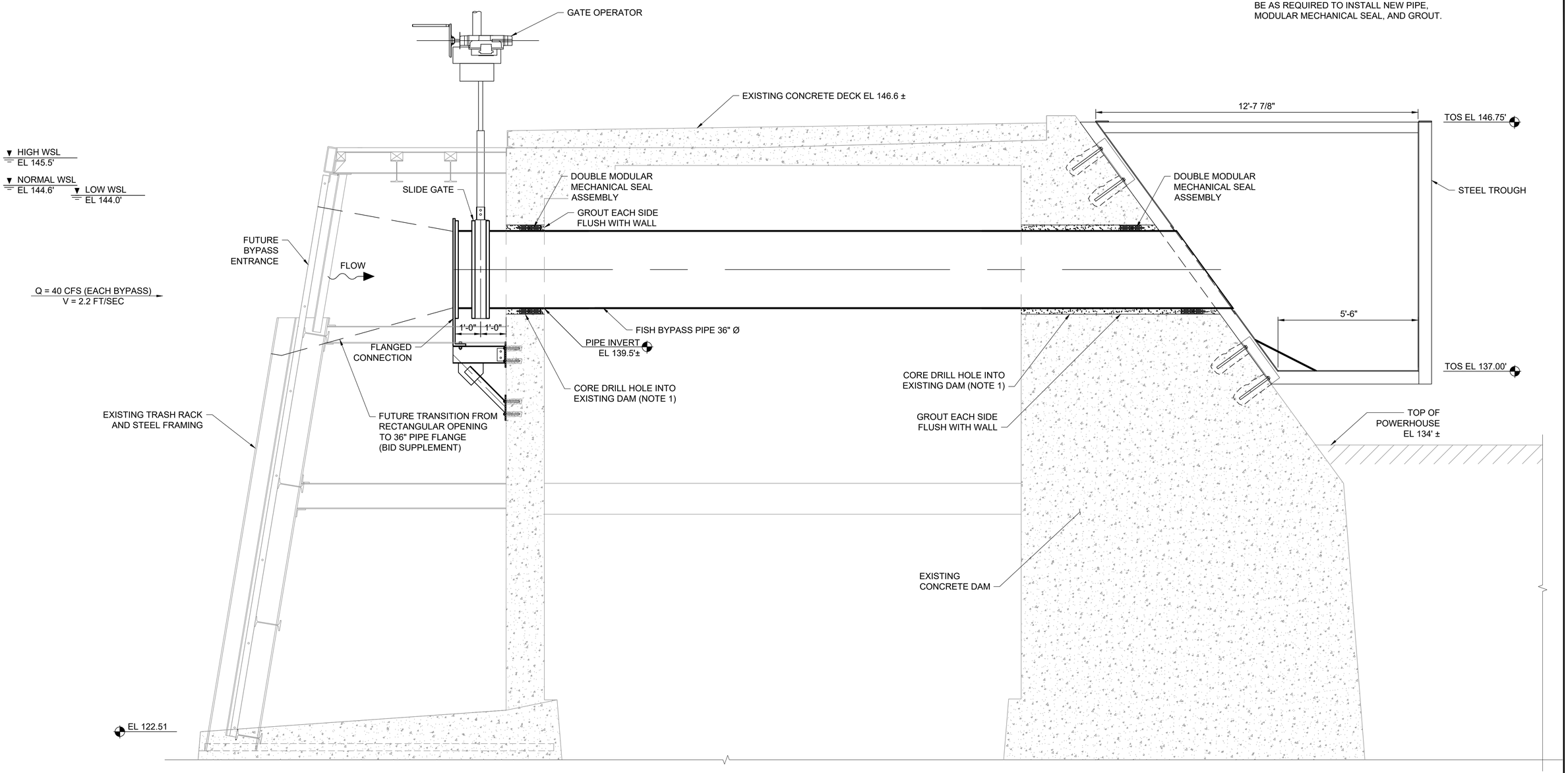
MAINE DEPARTMENT OF MARINE RESOURCES

DOWNSTREAM BYPASS GENERAL ARRANGEMENT PLAN

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	42 OF 240
DRAWING:	C-160

NOTE:

1. CONCRETE CORE/REMOVAL SIZE SHOWN IS APPROXIMATE. CONCRETE REMOVAL SHALL BE AS REQUIRED TO INSTALL NEW PIPE, MODULAR MECHANICAL SEAL, AND GROUT.



A / C-160 **DOWNSTREAM FISH PASSAGE SECTION**
SCALE: 1/2"=1'-0"
1' 0 1' 2'

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5/2/2025	ISSUED FOR BID	M. GRAESER

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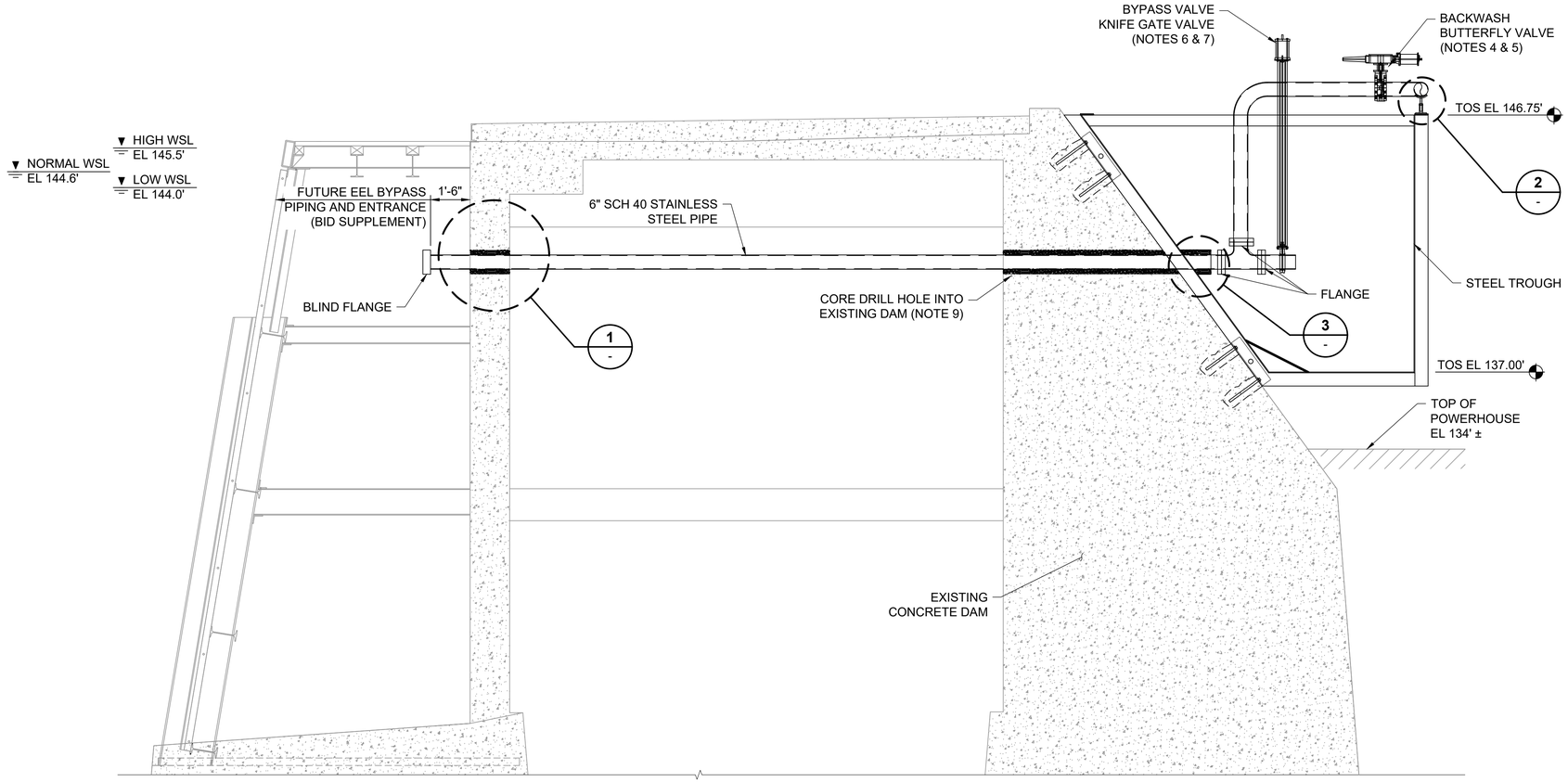
WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

DOWNSTREAM BYPASS SECTION (BID SUPPLEMENT)

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	43 OF 240
DRAWING:	C-161

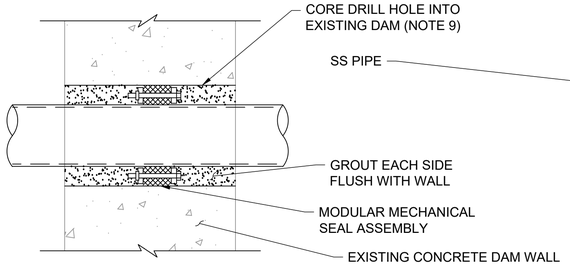


B C-160 **EEL BYPASS SECTION**
SCALE: 3/8"=1'-0"

0 2' 4'

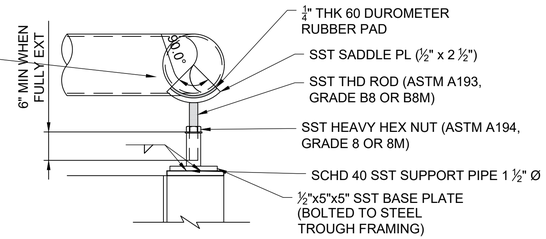
NOTES:

1. STAINLESS STEEL PIPE SUPPORTS SHALL BE SPACED AT 18' ON CENTER.
2. PIPE SUPPORTS SHALL BE PLACED INLINE WITH ANGLE OR CHANNEL HORIZONTAL MEMBERS.
3. PUMP SHALL BE SHAKTI SUBMERSIBLE PUMP MODEL QF100 15 OR APPROVED ALTERNATIVE.
4. BUTTERFLY VALVE SHALL BE MODEL BAW AS MANUFACTURED BY DeZURIK OR APPROVED ALTERNATIVE.
5. BUTTERFLY VALVE ACTUATOR SHALL BE ROTORK IQT125 FA 10 OR APPROVED ALTERNATIVE.
6. KNIFE GATE VALVE SHALL BE RED VALVE SEIRES G PNEUMATIC/ELECTRIC OR APPROVED ALTERNATIVE.
7. KNIFE GATE ACTUATOR SHALL BE ROTORK IQ12 FA10 A OR APPROVED ALTERNATIVE.
8. COORDINATE STEEL PIPE STUB OUT SIZE WITH MODULAR MECHANICAL SEAL MFR.
9. CONCRETE CORE/REMOVAL SIZE SHOWN IS APPROXIMATE. CONCRETE REMOVAL SHALL BE AS REQUIRED TO INSTALL NEW PIPE, MODULAR MECHANICAL SEAL, AND GROUT.



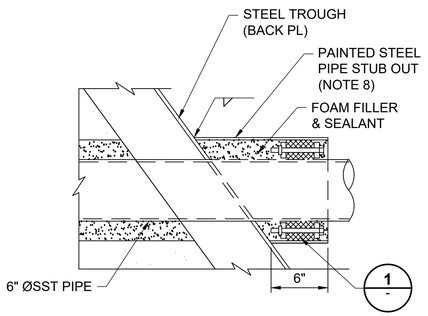
1 - **SINGLE MODULAR MECHANICAL SEAL**
SCALE: 1-1/2"=1'-0"

0 1' 2'



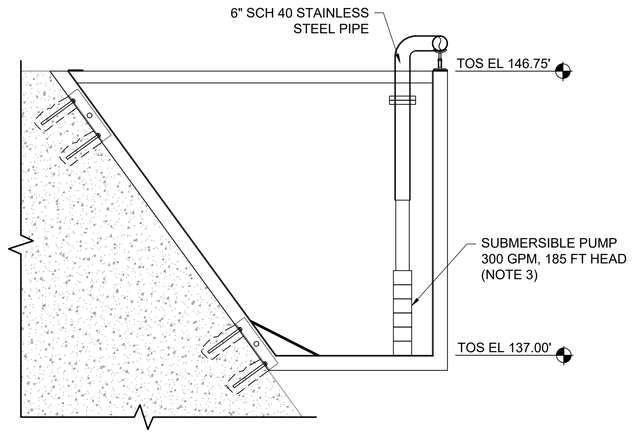
2 - **STAINLESS STEEL PIPE SUPPORT**
SCALE: 1-1/2"=1'-0"

0 1' 2'



3 - **PIPE PENETRATION THROUGH TROUGH**
SCALE: 1-1/2"=1'-0"

0 1' 2'



C C-160 **EEL BYPASS PUMP SECTION**
SCALE: 3/8"=1'-0"

0 2' 4'

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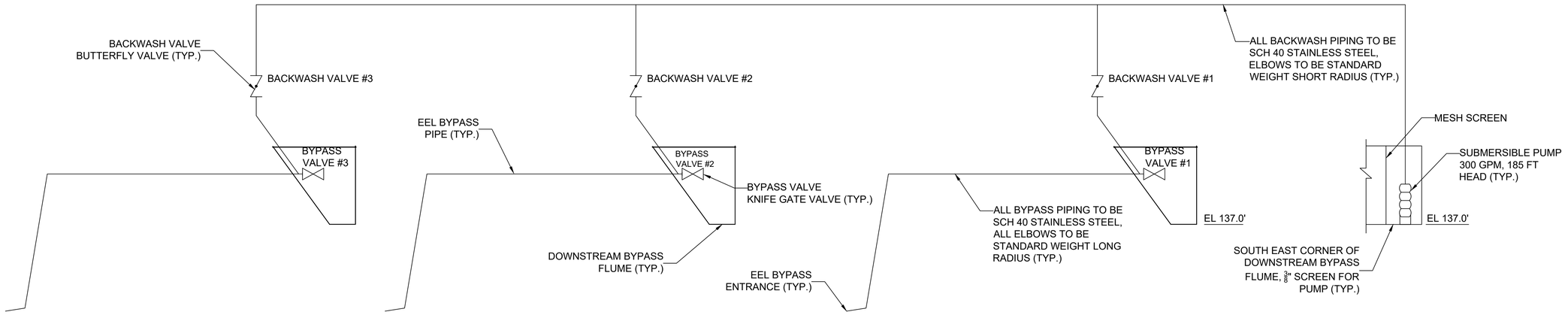
WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

DOWNSTREAM EEL BYPASS SECTIONS AND DETAILS (BID SUPPLEMENT)

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	44 OF 240
DRAWING:	C-162



EEL PACKAGE BACKWASH SYSTEM
SCALE: NTS

BACKWASH CYCLE:
1. OPEN BACKWASH VALVE 1
2. START PUMP
3. CLOSE BYPASS VALVE 1
4. FLUSH FOR 10 MIN.
5. OPEN BYPASS VALVE 1
6. CLOSE BYPASS VALVE 2
7. CLOSE BACKWASH VALVE 1
8. OPEN BYPASS VALVE 1
9. FLUSH FOR 10 MIN.
10. REPEAT STEPS 5 THROUGH 9 FOR REMAINING BYPASS.
11. SHUT OFF PUMP
12. OPEN BYPASS VALVE
13. CLOSE BACKWASH VALVE.

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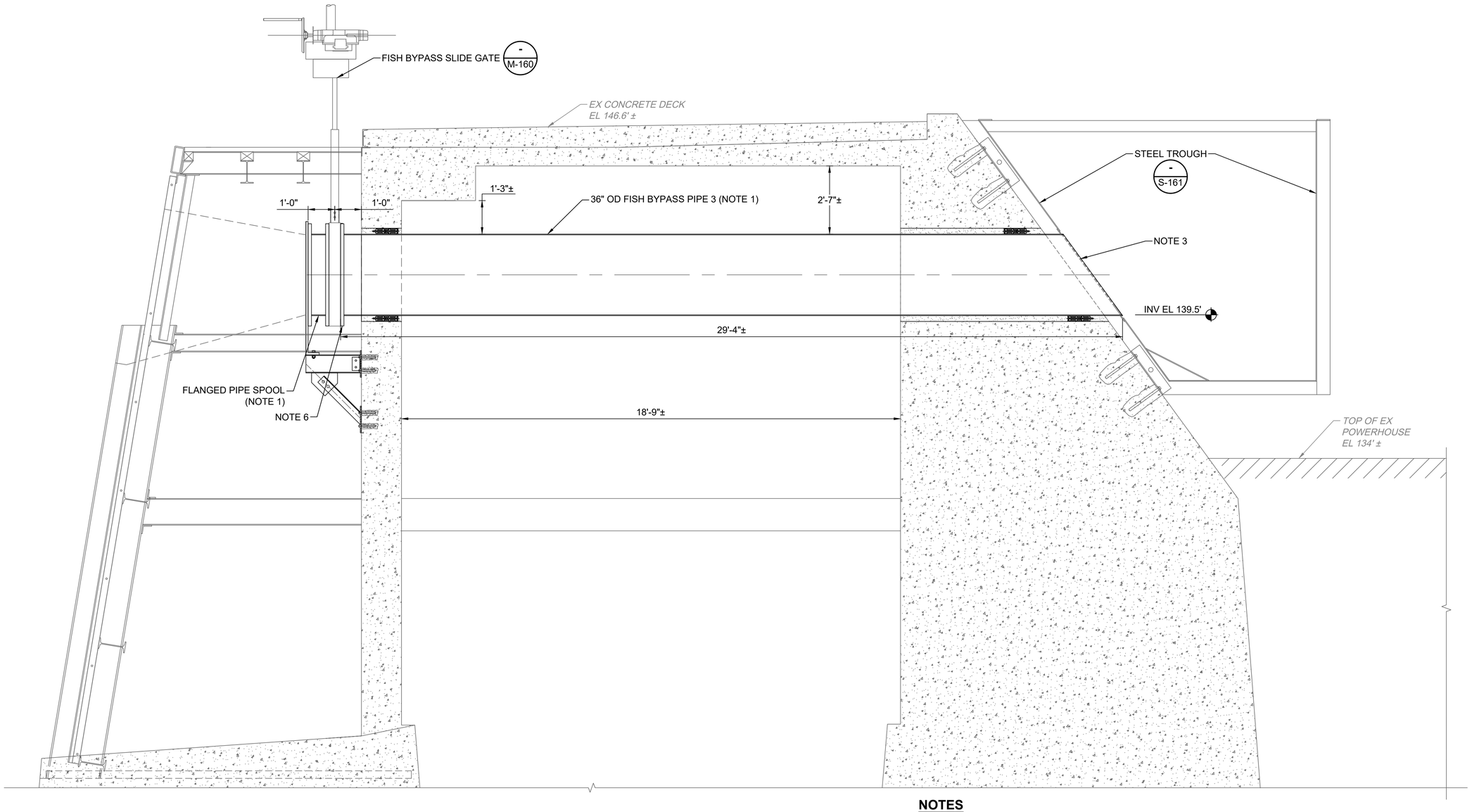
WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

EEL PACKAGE BACKWASH SYSTEM (BID SUPPLEMENT)

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	45 OF 240
DRAWING:	C-163



A - **FISH BYPASS 3 PROFILE**
SCALE: 1/2"=1'-0"
1' 0 1' 2'

NOTES

1. 36" OD ASME B36.10M STL PIPE (t=STD WT (0.375")); ASME B16.47 CL 150A FLANGES.
2. PIPE INTERIOR AND EXTERIOR TO BE LINED AND COATED PER SPEC SECTION 09 90 00. ALL PIPE FABRICATION WELDS TO BE GROUND SMOOTH ON THE INSIDE OF PIPE PRIOR TO LINING.
3. PIPE TO BE CUT-TO-FIT AT THE STEEL TROUGH. THE END OF PIPE SHALL EXTEND 1/2" PAST THE EDGE OF THE STEEL TROUGH WALL FOR WELDING. SEE STRUCTURAL FOR STEEL TROUGH SIDE SLOPE AND CONNECTION DETAILS.
4. SEE S-161 FOR STRUCTURAL DETAILS.
5. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS PRIOR TO ORDERING AND FABRICATING PIPE MATERIALS.
6. FLANGE TO BE SHIPPED LOOSE AND WELDED ON IN THE FIELD AFTER THE FISH BYPASS PIPE HAS BEEN INSTALLED THROUGH THE DAM WALL.
7. CONTRACTOR TO VERIFY REQUIRED WIDTH OF FLANGED PIPE SPOOL FOR CONNECTING THE TRANSITION FLUME TO THE SLIDE GATE PRIOR TO ORDER AND FABRICATION.

PROVIDENCE INFRASTRUCTURE CONSULTANTS
300 PLAZA DR., SUITE 320
HIGHLANDS RANCH, CO 80129
(303)997-5035
www.providenceic.com

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5/2/2025

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5/2/2025	ISSUED FOR BID	WD

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WOODLAND FISH PASSAGE

MAINE DEPARTMENT OF MARINE RESOURCES

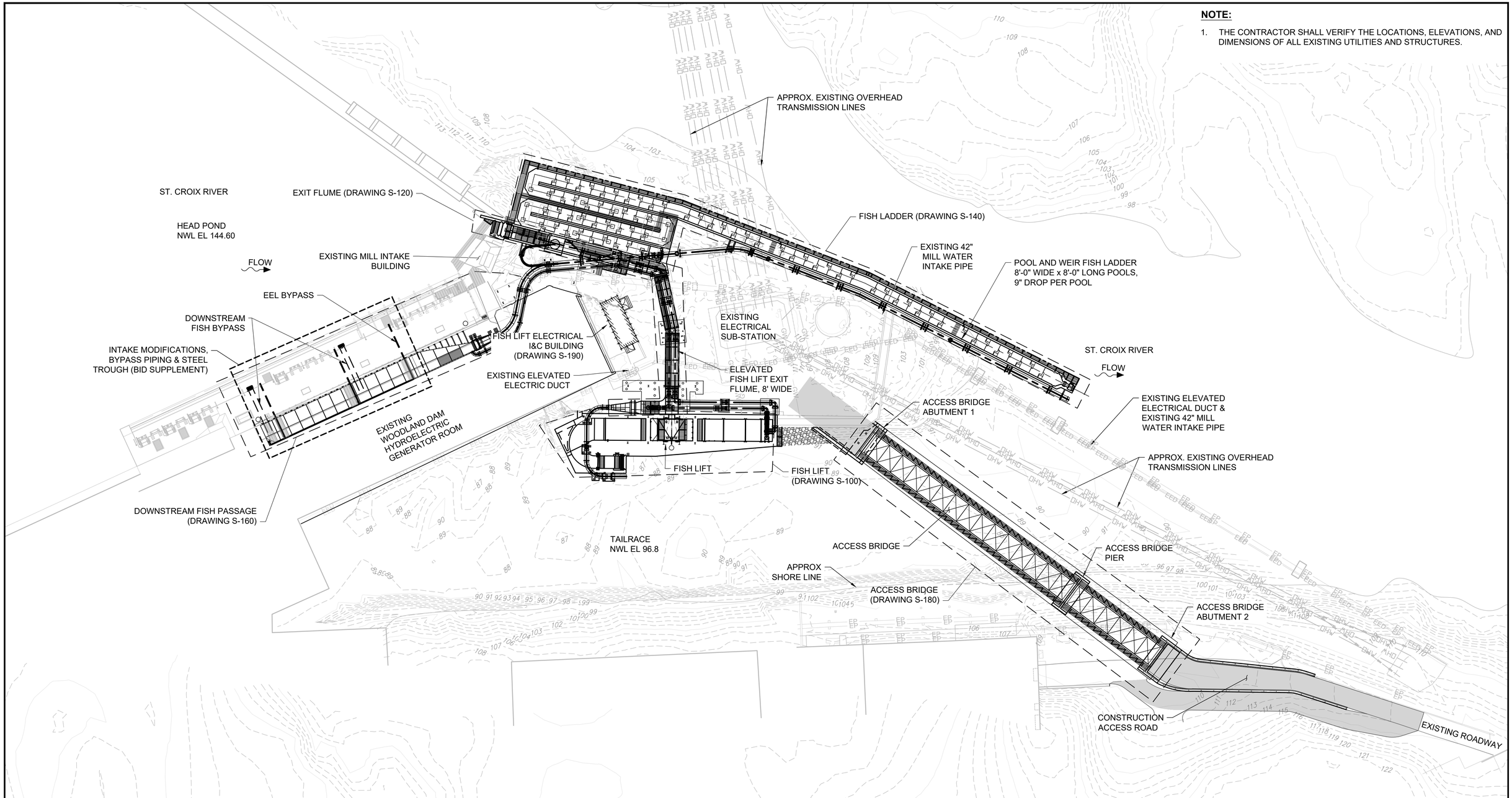
FISH BYPASS 3 PROFILE
(BID SUPPLEMENT)

PROJECT:	220002
DRAWN BY:	N. LONG
DESIGNED BY:	W. DAUGHTRY
APPROVED BY:	W. DAUGHTRY
SHEET:	60 OF 240
DRAWING:	C-307

DWG: Z:\Shared\200 Projects\240006 (WOODLAND-FP)\900 CAD\02 - Sheets\Civil\240006_C-307.dwg USER: wdaughtry
DATE: Apr 30, 2025 2:40pm XREFS: 240006_BD 240006_PBASE_SECT

NOTE:

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES AND STRUCTURES.



SITE PLAN

SCALE: 1"=30'

30' 0 30' 60'

N

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MAY 2, 2025

REVISION	DESCRIPTION OF ISSUE / REVISION	REVISED BY
5/2/2025	ISSUED FOR BID	M. GRAESER

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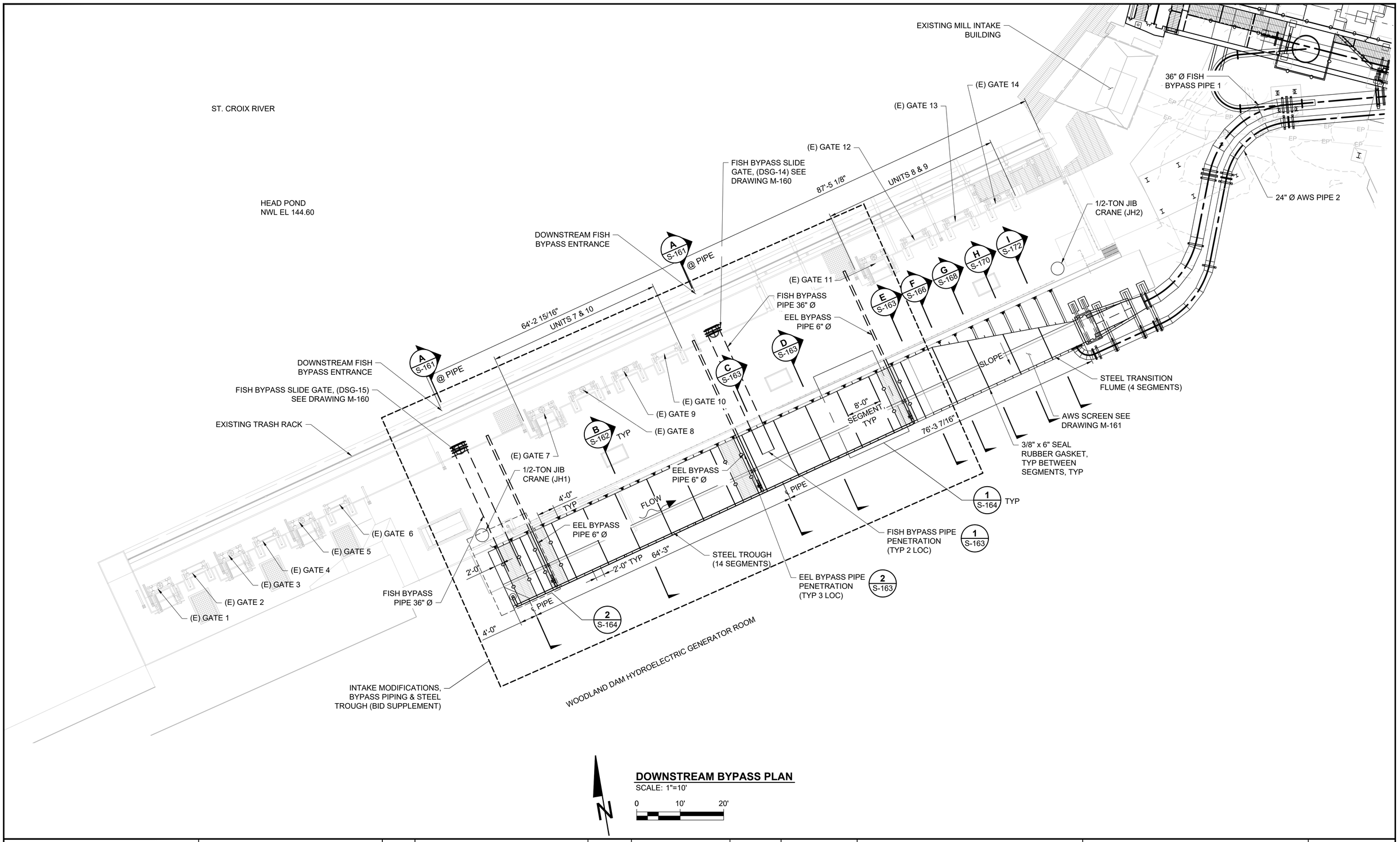
WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

GENERAL OVERVIEW

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	65 OF 240
DRAWING:	S-003



DOWNSTREAM BYPASS PLAN

SCALE: 1"=10'

0 10' 20'

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ISSUED FOR BID
NOT FOR CONSTRUCTION
MAY 2, 2025

REVISION	DESCRIPTION OF ISSUE / REVISION	REVISED BY
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WOODLAND FISH LIFT PASSAGE DESIGN

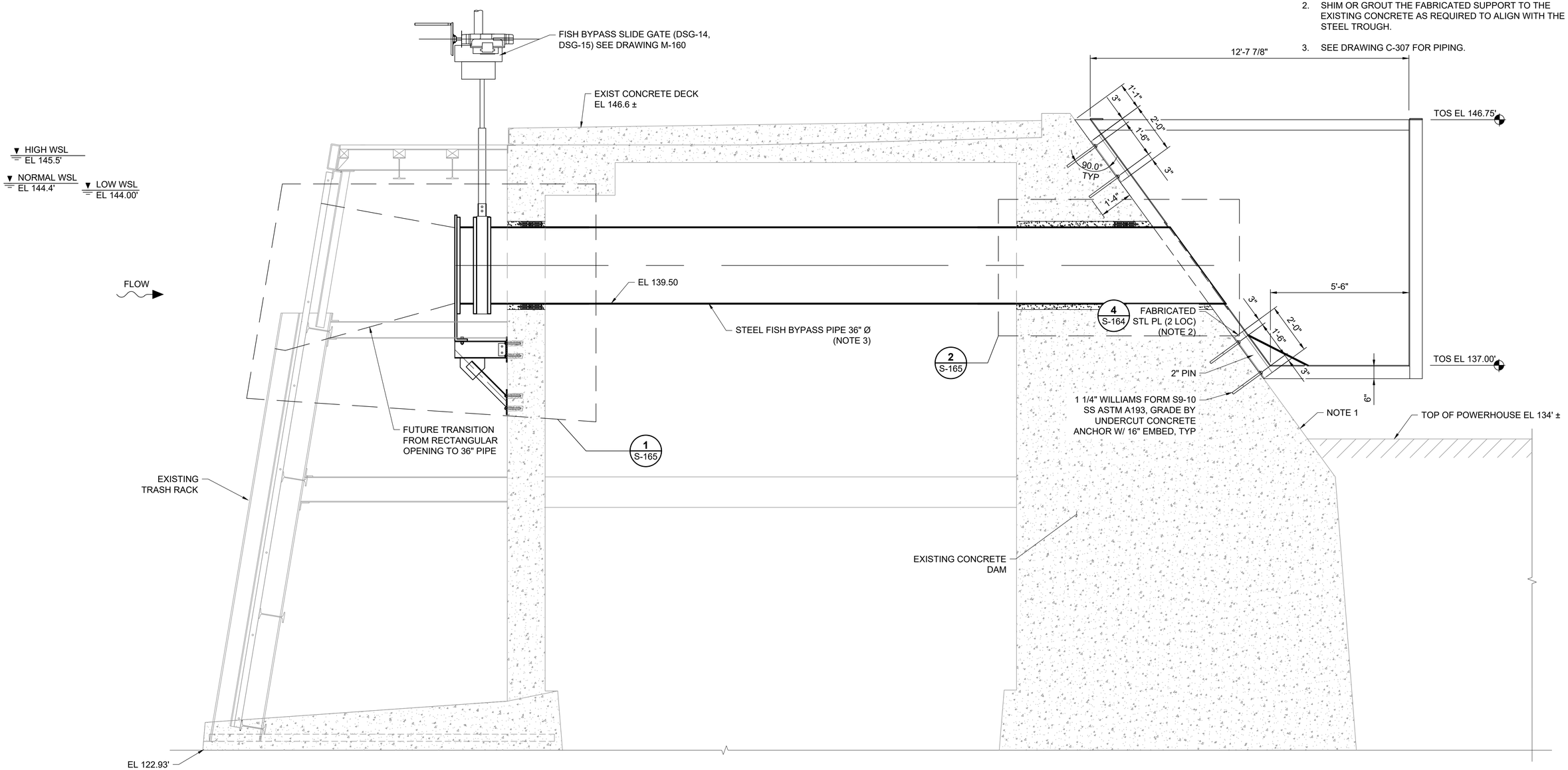
MAINE DEPARTMENT OF MARINE RESOURCES

DOWNSTREAM FISH PASSAGE PLAN

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	106 OF 240
DRAWING:	S-160

NOTES:

1. VERIFY EXISTING CONCRETE SLOPE PRIOR TO STEEL TROUGH FABRICATION.
2. SHIM OR GROUT THE FABRICATED SUPPORT TO THE EXISTING CONCRETE AS REQUIRED TO ALIGN WITH THE STEEL TROUGH.
3. SEE DRAWING C-307 FOR PIPING.



A S-160 DOWNSTREAM FISH PASSAGE SECTION (2 LOC)

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

0 2' 4'

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MAY 2, 2025

REVISION	DESCRIPTION OF ISSUE / REVISION	REVISED BY
5/2/2025	ISSUED FOR BID	M. GRAESER

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WOODLAND FISH LIFT PASSAGE DESIGN

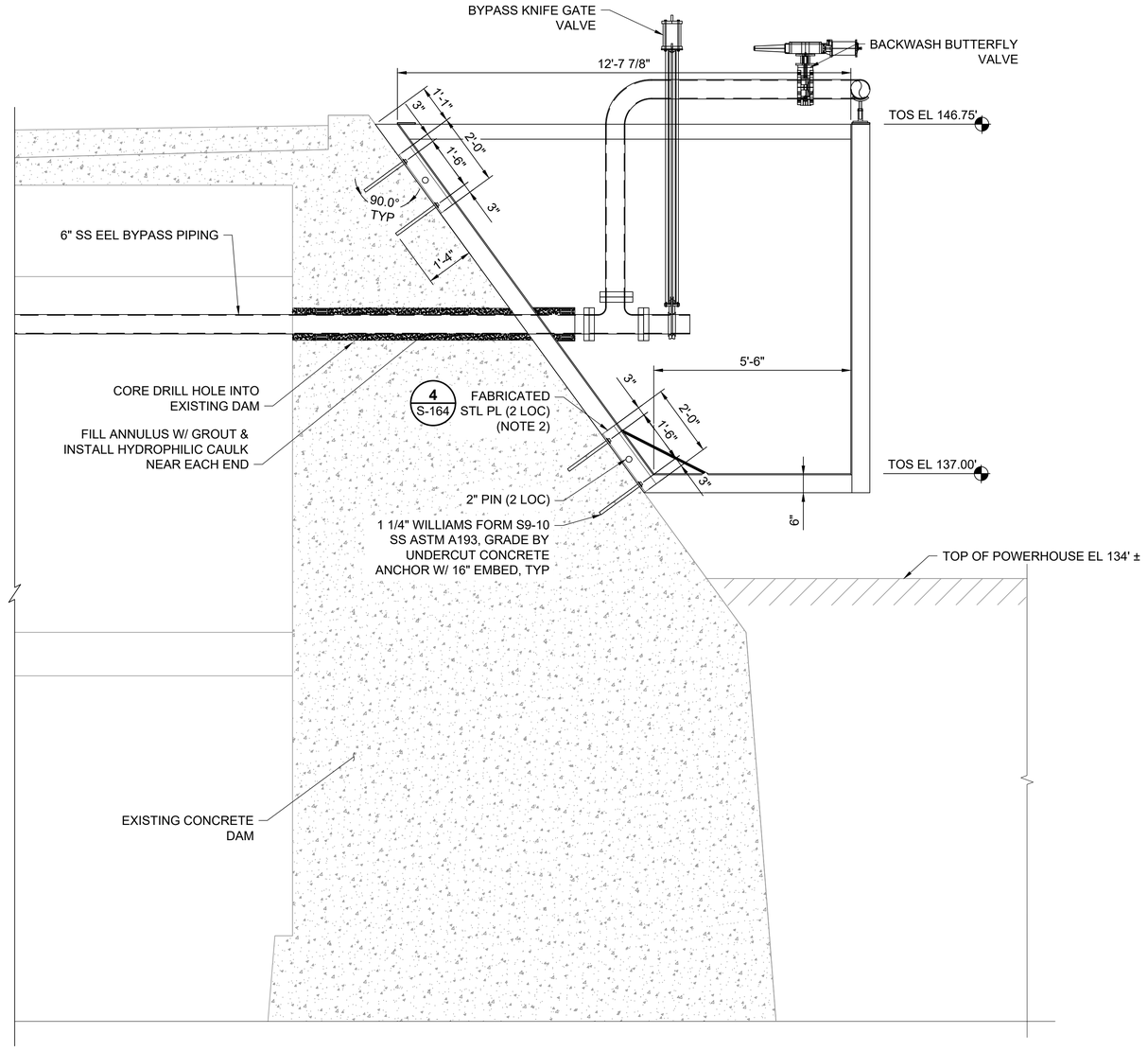
MAINE DEPARTMENT OF MARINE RESOURCES

DOWNSTREAM FISH PASSAGE SECTION (BID SUPPLEMENT)

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	107 OF 240
DRAWING:	S-161

NOTES:

1. VERIFY EXISTING CONCRETE SLOPE PRIOR TO STEEL TROUGH FABRICATION.
2. SHIM OR GROUT THE FABRICATED SUPPORT TO THE EXISTING CONCRETE AS REQUIRED TO ALIGN WITH THE STEEL TROUGH.



B
S-160
DOWNSTREAM FISH PASSAGE SECTION (TYP)
SCALE: 1/2"=1'-0"

0 2' 4'

1/2" = 1'-0

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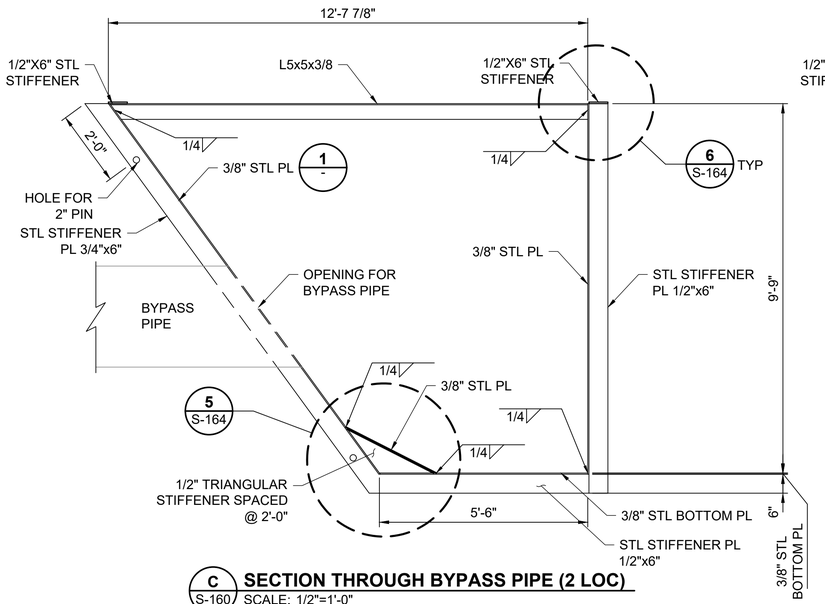
WOODLAND FISH LIFT PASSAGE DESIGN

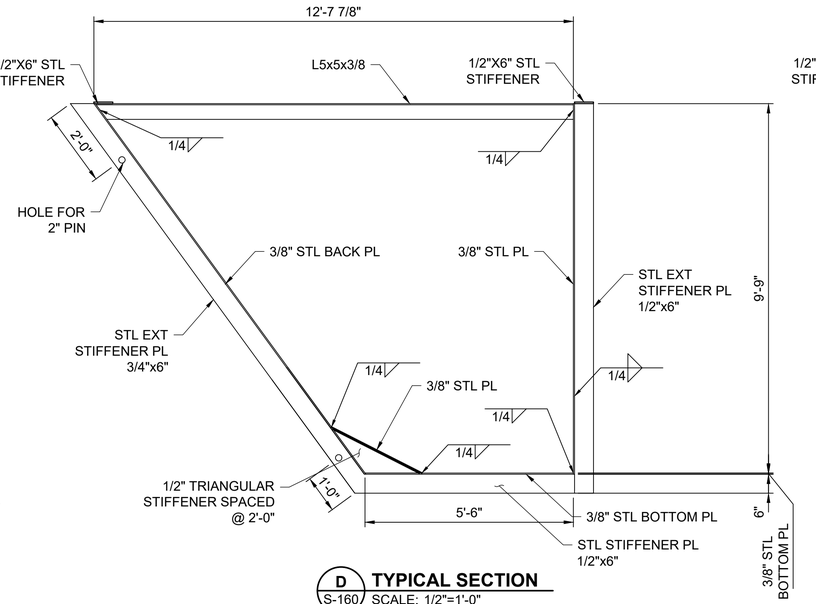
MAINE DEPARTMENT OF MARINE RESOURCES

BYPASS TROUGH SECTION (BID SUPPLEMENT)

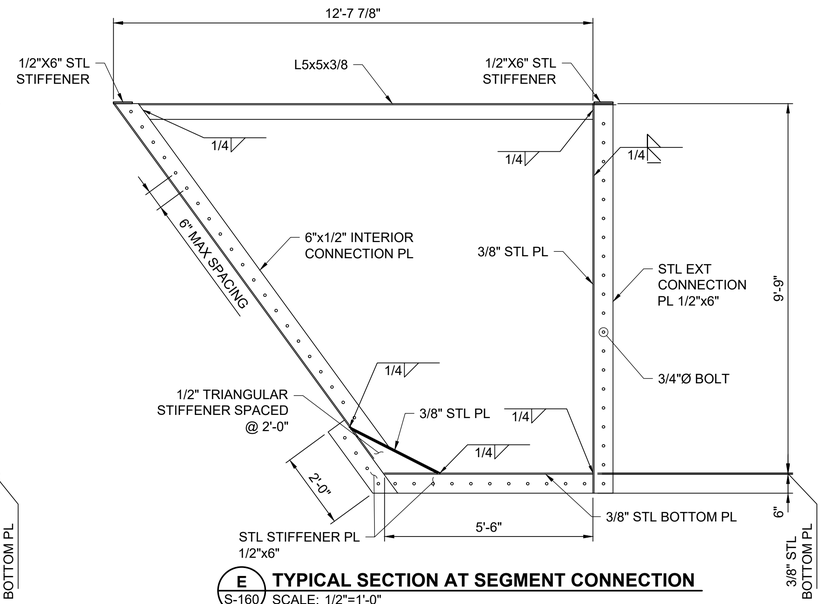
PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	108 OF 240
DRAWING:	S-162



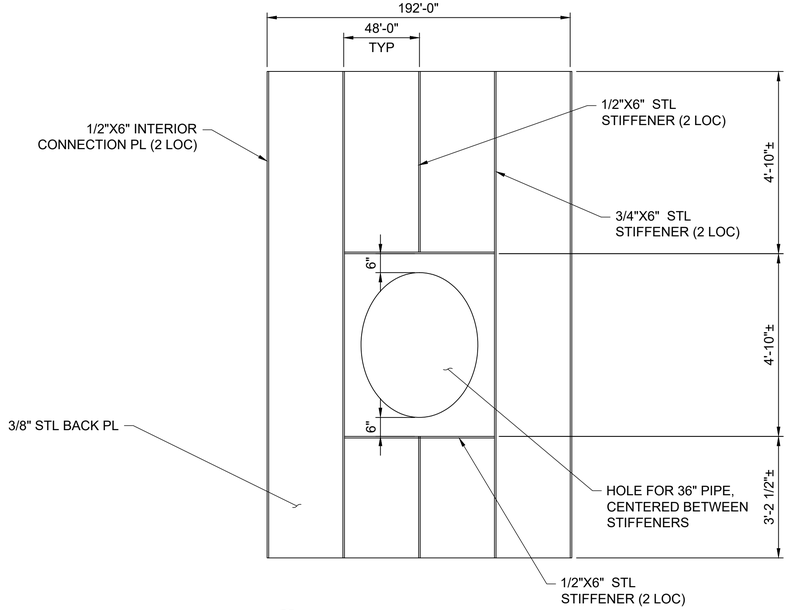
C S-160 **SECTION THROUGH BYPASS PIPE (2 LOC)**
SCALE: 1/2"=1'-0"
0 2' 4'



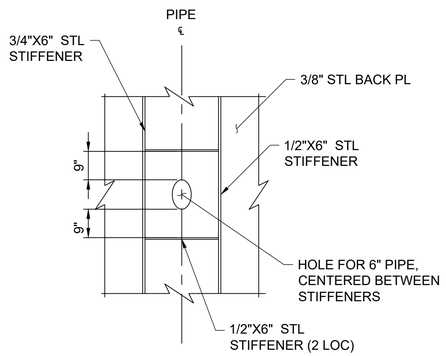
D S-160 **TYPICAL SECTION**
SCALE: 1/2"=1'-0"
0 2' 4'



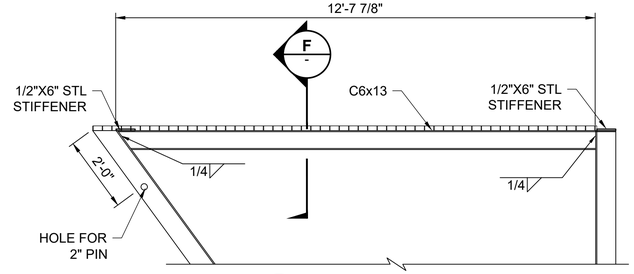
E S-160 **TYPICAL SECTION AT SEGMENT CONNECTION**
SCALE: 1/2"=1'-0"
0 2' 4'



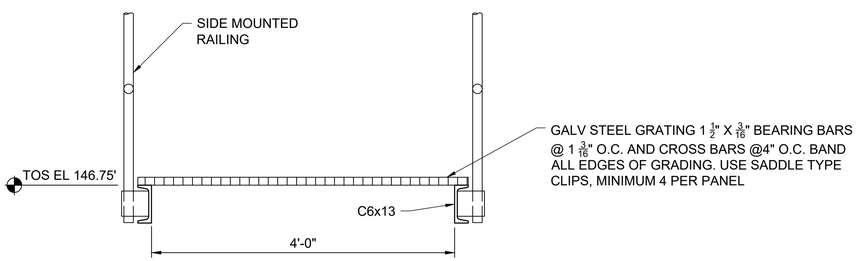
1 S-160 **PIPE BACK WALL PLATE (2 LOC)**
SCALE: 1/2"=1'-0"
0 2' 4'



2 S-160 **PIPE WALL PLATE (3 LOC)**
SCALE: 1/2"=1'-0"
0 2' 4'



D S-160 **TYPICAL SECTION AT WALKWAY**
SCALE: 1/2"=1'-0"
0 2' 4'



F - **TYPICAL SECTION AT WALKWAY**
SCALE: 1"=1'-0"
0 1' 2'

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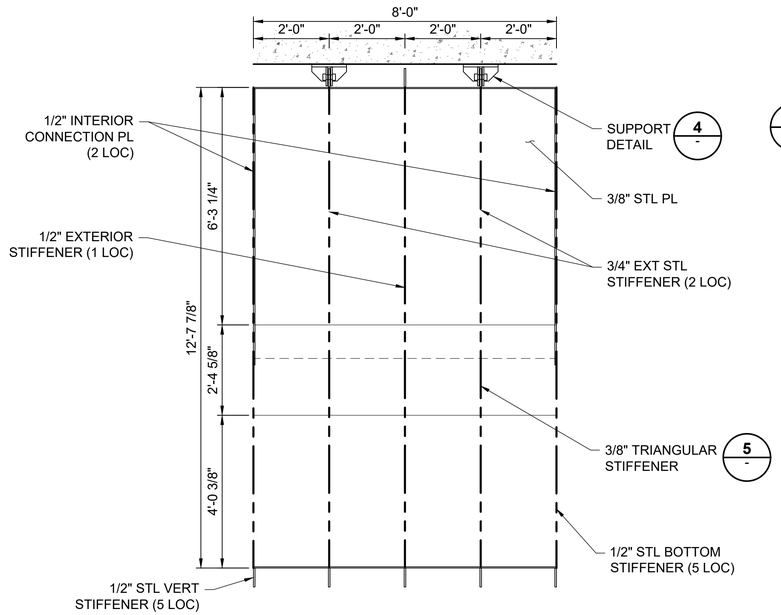
WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

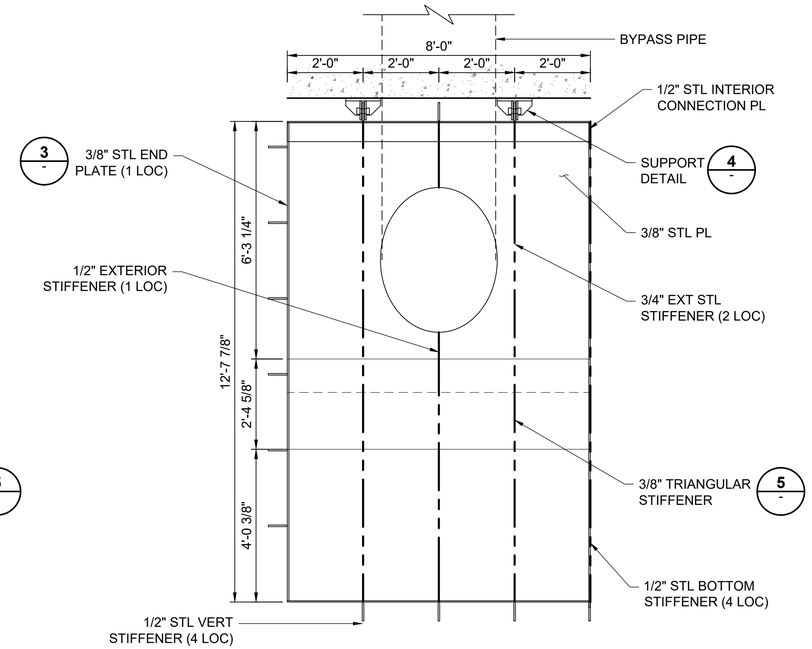
BYPASS TROUGH SECTIONS & DETAILS

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	109 OF 240
DRAWING:	S-163



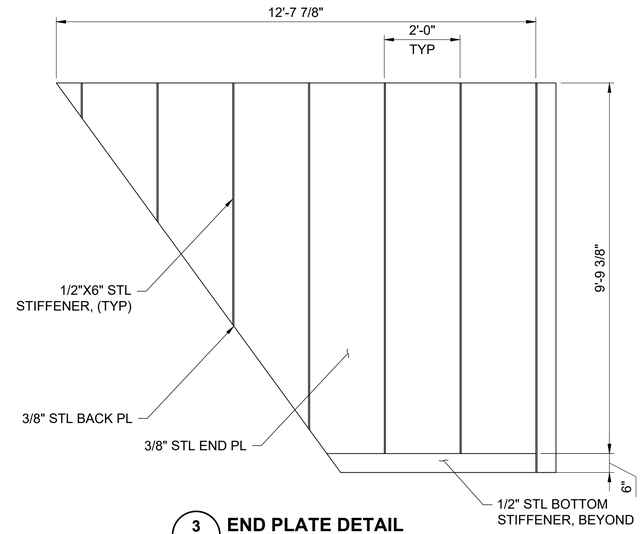
1 / S-160 TROUGH PLAN VIEW - TYPICAL SEGMENT
SCALE: 1/2"=1'-0"

0 2' 4'



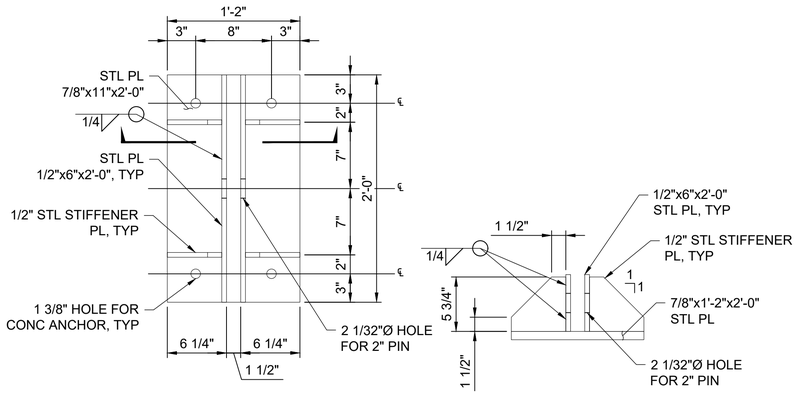
2 / S-160 TROUGH PLAN VIEW - END SEGMENT
SCALE: 1/2"=1'-0"

0 2' 4'



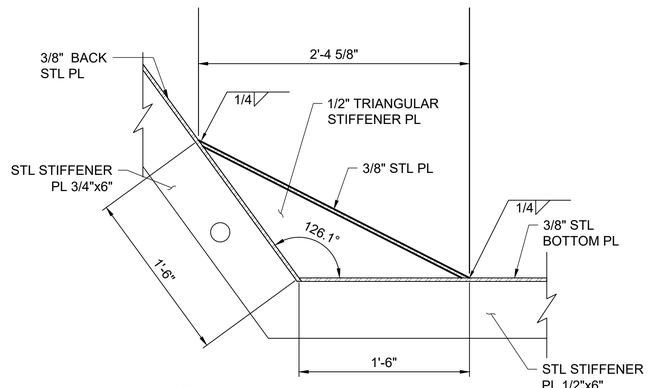
3 / - END PLATE DETAIL
SCALE: 1/2"=1'-0"

0 2' 4'



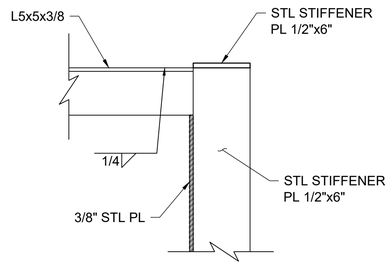
4 / S-161, S-162, S-164 SUPPORT DETAIL
SCALE: 1 1/2"=1'-0"

0 1' 2'



5 / S-163 DETAIL
SCALE: 1 1/2"=1'-0"

0 1' 2'



6 / S-163 DETAIL
SCALE: 1 1/2"=1'-0"

0 1' 2'

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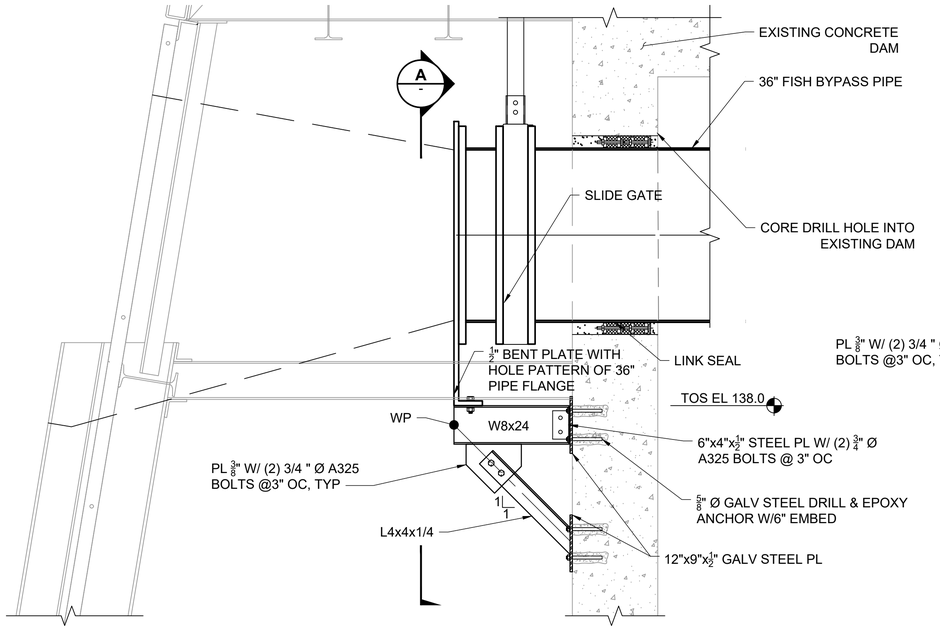
WOODLAND FISH LIFT PASSAGE DESIGN

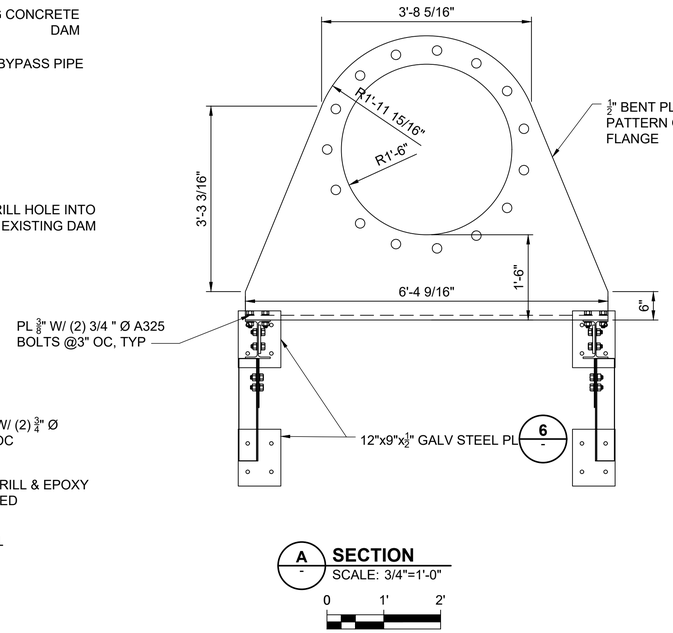
MAINE DEPARTMENT OF MARINE RESOURCES

BYPASS TROUGH PLANS & DETAILS

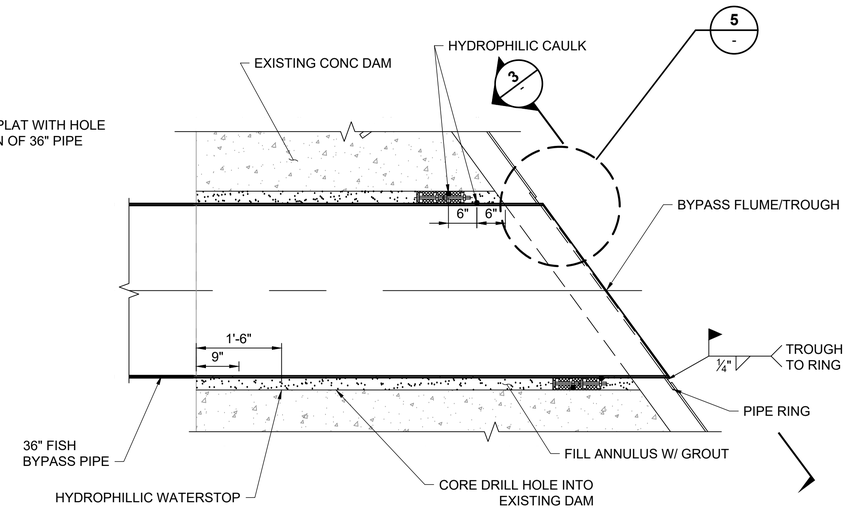
PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	110 OF 240
DRAWING:	S-164



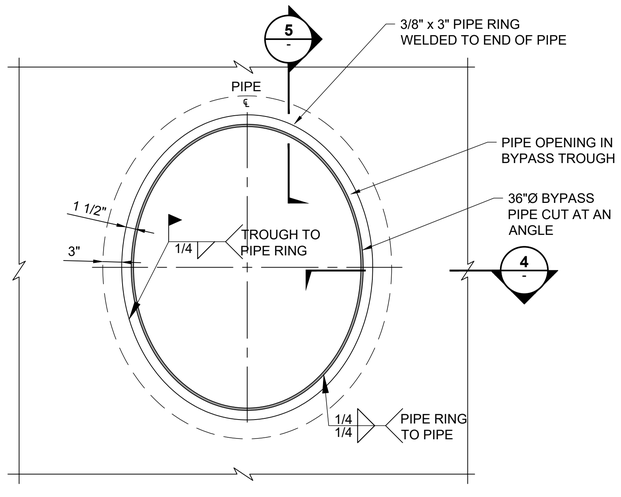
1 S-161 UPSTREAM PIPE PENETRATION
SCALE: 3/4"=1'-0"
0 1' 2'



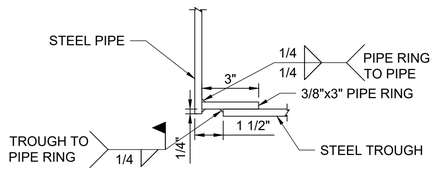
A - SECTION
SCALE: 3/4"=1'-0"
0 1' 2'



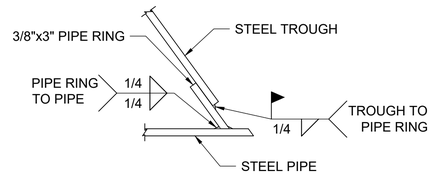
2 S-161 DOWNSTREAM PIPE PENETRATION
SCALE: 3/4"=1'-0"
0 1' 2'



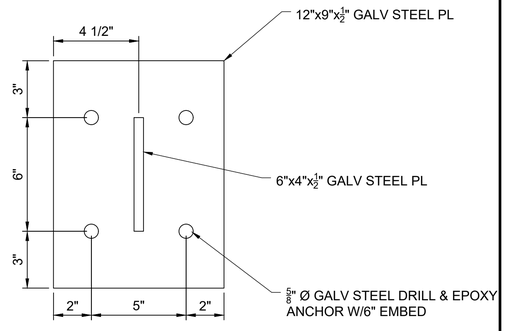
3 - PIPE TO TROUGH CONNECTION
SCALE: 1"=1'-0"
0 1' 2'



4 - CONNECTION/WELD DETAIL
SCALE: 3"=1'-0"
0 6" 1'



5 - CONNECTION/WELD DETAIL
SCALE: 3"=1'-0"
0 6" 1'



6 - END PLATE DETAIL
SCALE: 3"=1'-0"
0 6" 1'

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WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

DOWNSTREAM FISH PASSAGE SECTION (BID SUPPLEMENT)

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	111 OF 240
DRAWING:	S-165

PORTABLE (JIB) CRANE NOTES:

1. ALL STEEL COMPONENTS SHALL BE POWDER COAT FINISH (RED OR YELLOW COLOR.)

2. PERFORM A NO-LOAD TEST AND A LOAD TEST ON EACH CRANE IN THE PRESENCE OF THE ENGINEER AND WOODLAND PULP.
   a. NO-LOAD TEST:
      i RAISE EMPTY HOOK TO WITHIN ABOUT 2 FEET OF ITS UPPER POSITION AND STOP.
      ii RAISE EMPTY HOOK TO ITS MAXIMUM LIFT.
      iii LOWER THE HOOK TO ABOUT 2 FEET ABOVE ITS LOWER POSITION AND STOP.

   b. LOAD TEST: WITH THE SHEAVE BLOCK AT THE FAR END OF THE BOOM, ROTATE THE BOOM TROUGH ITS FULL ROTATIONAL CAPABILITY. MOVE THE SHEAVE BLOCK TO INNER END OF THE BOOM AND ROTATE THE BOOM THROUGH ITS FULL ROTATIONAL CAPABILITY. LOWER LOAD CAREFULLY ONTO ITS SUPPORTS.

3. SYSTEM SHALL RUN SMOOTHLY, WITH NO BINDING, STOPPING, OR STICKING. ADJUST AND REALIGN EQUIPMENT AND RETEST IF BINDING, STOPPING OR STICKING OCCURS.

4. ENSIGN 500 MODEL 5PA5
   a. CONTRACTOR TO PROVIDE 1 ENSIGN 500 MODEL 5PA5 OR APPROVED EQUAL:
   b. 500 LB MINIMUM WORKING LOAD.
   c. MINIMUM HOOK REACH SHALL BE 36 INCHES.
   d. PROVIDE WORM GEAR HAND WINCH WITH BRAKE.
   e. MEET OSHA AND ANSI STANDARDS.
   f. ADJUSTABLE MAST MADE OF STRUCTURAL STEEL.
   g. MAXIMUM WEIGHT OF EACH CRANE PIECE SHALL BE 100 LBS.
   h. FLUSH FLOOR MOUNT SLEEVE, THERN MODEL 5BF5 OR APPROVED EQUAL:
      i MADE OF STRUCTURA STEEL.
      ii LOCATE FLUSH MOUNT SLEEVE WHERE SHOWN OR NOTED ON THE DRAWINGS.
      iii EACH MOUNT SHALL HAVE A CAP TO KEEP WATER AND DEBRIS OUT OF BASE WHEN CRANE IS REMOVED.

5. COMMANDER 2000 MODEL 5FT20
   a. CONTRACTOR TO PROVIDE 2 COMMANDER 2000 MODEL 5FT20 OR APPROVED EQUAL:
   b. 2000 LB MINIMUM WORKING LOAD.
   c. MINIMUM HOOK REACH SHALL BE 82 INCHES.
   d. PROVIDE WORM GEAR HAND WINCH WITH BRAKE.
   e. MEET OSHA AND ANSI STANDARDS.
   f. ADJUSTABLE MAST MADE OF STRUCTURAL STEEL.
   g. FLUSH FLOOR MOUNT SLEEVE, THERN MODEL 5BF20 OR APPROVED EQUAL:
      i MADE OF STRUCTURA STEEL.
      ii LOCATE FLUSH MOUNT SLEEVE WHERE SHOWN OR NOTED ON THE DRAWINGS.
      iii EACH MOUNT SHALL HAVE A CAP TO KEEP WATER AND DEBRIS OUT OF BASE WHEN CRANE IS REMOVED.
   h. WALL MOUNT SLEEVE, THERN MODEL 5BW20 OR APPROVED EQUAL:
      i MADE OF STRUCTURA STEEL.
      ii LOCATE FLUSH MOUNT SLEEVE WHERE SHOWN OR NOTED ON THE DRAWINGS.
      iii EACH MOUNT SHALL HAVE A CAP TO KEEP WATER AND DEBRIS OUT OF BASE WHEN CRANE IS REMOVED.

Staff Gauge

Staff Gauge	Location	Drawings	Staff Gauge Top Elevation (FT)	Staff Gauge Bottom Elevation (FT)	Staff Gauge Length (FT)
1	Tailrace by Fish Lift Entrance	M-002 & M-200	109.5	94.0	15.5
2	Upstream Fish Lift Entrance	M-002 & M-200	109.5	94.0	15.5
3	Between Stilling Wall and Weir Wall	M-002 & M-200	109.5	94.0	15.5
4	Tailrace by Fish Ladder Entrance	M-002 & M-200	109.5	94.0	15.5
5	Fish Ladder Entrance	M-002 & M-200	109.5	94.0	15.5
6	Fish Ladder Weir Pool # 63	M-002 & M-200	146.0	140.0	6.0
7	Fish Ladder Weir Pool # 64	M-002 & M-200	146.0	140.0	6.0
8	Fish Ladder Weir Pool # 65	M-002 & M-200	146.0	140.0	6.0
9	Fish Ladder Exit Pool	M-002 & M-200	146.0	140.0	6.0
10	Exit Flume near Viewing Window	M-002 & M-200	146.0	140.0	6.0
11	Downstream Bypass Trough	M-002 & M-200	146.5	140.0	6.5
12	Exit Flume near Hopper	M-002 & M-200	146.0	140.0	6.0

Water Level Sensor (WLS)

Water Sensor	Location	Drawings	Sensor Top Elevation (FT)	Sensor Bottom Elevation (FT)	Water Level Probe Length (FT)
1	Tailrace by Fish Lift Entrance	M-002 & M-200	110.0	92.0	18.0
2	Upstream Fish Lift Entrance	M-002 & M-200	110.0	92.0	18.0
3	Between Stilling Wall and Weir Wall	M-002 & M-200	110.0	92.0	18.0
4	Tailrace by Fish Ladder Entrance	M-002 & M-200	110.0	92.5	17.5
5	Upstream Fish Ladder Entrance	M-002 & M-200	110.0	92.5	17.5
6	Fish Ladder Exit Pool	M-002 & M-200	146.0	140.0	6.0
7	Exit Flume	M-002 & M-200	146.0	138.0	8.0
8	Downstream Bypass Trough	M-002 & M-200	146.0	139.0	7.0

Stilling Well Information

Stilling Well	Invert Elevation	Orientation
1	92.0	Bottom Opening facing centerline of fish lift entrance
2	92.0	Bottom Opening facing centerline of fish lift entrance
3	92.0	Bottom Opening facing centerline of fish lift flume
4	92.5	Bottom Opening facing tailrace near fish ladder entrance
5	92.5	bottom opening facing centerline of fish ladder
6	140.0	bottom opening facing centerline of fish ladder
7	138.0	Bottom Opening facing centerline of exit flume
8	139.0	Bottom Opening facing centerline of downstream bypass flume

Gate Schedule

Gate ID	Gate Name	Drawings	Material	Opening Width	Gate Height	Operating Head	Discharge
IG1	Fish Lift Isolation Gate	M-002 & M-100	Painted Carbon Steel	8.0'	12.6'	9.7'	Upward Opening
EG2	Fish Lift Entrance Gate	M-002 & M-101	Painted Carbon Steel	8.0'	12.5'	3.0'	Downward Opening
VG3	Fish Lift V-Gate	M-002 & M-102	Painted Carbon Steel	14.0'	15.5'	11.2'	Swing
HG5	Fish Lift Hopper Gate	M-002 & M-112	Painted Carbon Steel	3.0'	5.66'	5.66'	Downward Opening
IG6	Exit Flume Isolation Gate	M-002 & M-120	Painted Carbon Steel	8.0'	11.0'	10.0'	Upward Opening
IG10	Exit Flume Isolation Gate	M-002 & M-131	Painted Carbon Steel	6.0'	5.1'	4.4'	Upward Opening
OWG11	Fish Ladder Automatic Entrance Gate	M-002 & M-141	Painted Carbon Steel	2.0'	Adjustable	3.0'	Downward Opening
IG12	Fish Ladder Isolation Gate	M-002 & M-140	Painted Carbon Steel	2.0'	11.0'	8.1'	Upward Opening
OWG13	Fish Ladder Automatic Exit Gate	M-002 & M-142	Painted Carbon Steel	2.0'	Adjustable	3.0'	Downward Opening
DSG14	Downstream Bypass Knife Gate	M-002 & M-160	Painted Carbon Steel	3.0'	3.0'	7.5'	Upward Opening
DSG15	Downstream Bypass Knife Gate	M-002 & M-160	Painted Carbon Steel	3.0'	3.0'	7.5'	Upward Opening
IG16	Downstream Isolation Gate	M-002 & M-163	Painted Carbon Steel	6.0'	6.75'	5.4'	Upward Opening
IG17	Fish Ladder Exit Isolation Gate	M-002 & M-143	Painted Carbon Steel	2.0'	7.75'	6.8'	Upward Opening
TG18	Exit Flume Trap Gate	M-002 & M-124	Painted Carbon Steel	2.083'	10.292'	10.0'	Swing
TG19	Exit Flume Trap Gate	M-002 & M-124	Painted Carbon Steel	2.083'	10.292'	10.0'	Swing

Permanent Stoplogs (SL) and Spacer Frames (SF)

ID	Location	Type	Quantity	Drawing	Material	Opening Width
SF1	Spare for Fish Lift Concrete Flume	1' High Spacer Frame	2	M-118	Aluminum	14.0'
SF2	Spare for Fish Lift Concrete Flume	2' High Spacer Frame	1	M-118	Aluminum	14.0'
SF3	Fish Lift Stilling Wall	2' High Spacer Frame	3	M-118	Aluminum	14.0'
SF4	Fish Lift Curtain Wall	2' High Spacer Frame	3	M-118	Aluminum	14.0'
SL1	Fish Lift Stilling Wall	12" High Stoplog	9	S-101	Aluminum	14.0'
SL2	Fish Lift Stoplog Weir	12" High Stoplog	11	S-101	Aluminum	14.0'
SL3	Fish Lift Sill Wall	12" High Stoplog	3	S-101	Aluminum	14.0'
SL4	Fish Lift Curtain Wall	12" High Stoplog	9	S-101	Aluminum	14.0'
SL5	Bypass 1 Flume	6" High Stoplog	5	S-174	Aluminum	5.5'
SL6	Fish Lift Steel Flume	6" High Stoplog	5	S-137	Aluminum	6.0'

Hoist and Crane Schedule (Refer to Portable Jib Crane Notes)

Name	Location	Lifting Capacity	Crane/ Hoist/Base Model	Reach	Drawing	What is it lifting
HH4	Fish Lift Tower	30-Tons	See Spec 41 22 00	N/A	M-110	Hopper
CH1	Exit Flume Crowder	2-Ton	Harrington 2-Ton Electric Hoist Hook-Mounted (SNER020L-20)	N/A	S-126	Moving Floor
CH2	Exit Flume Crowder	1/2-Ton	Harrington 1/2 Ton Chain Hoist with Trolley (SNERM005S-L)	N/A	S-129	Crowder Screens
JH1	Bypass Trough	1/2-Ton	Harrington Heavy-Duty Pillar Base Mounted Jib Crane 351-1000-20-12	20 ft	S-160	Backwash Pump
JH2	Bypass Trough	1/2-Ton	Harrington Heavy-Duty Pillar Base Mounted Jib Crane 351-1000-20-12	20 ft	S-160	Stoplogs
JH3	Fish Ladder/Exit Flume	1/2-Ton	Harrington Mast Type Jib Crane 314FC-1000-10-10	10 ft	C-142	Adjustable Weirs
5PT20_FM_1	Fish Lift Concrete Flume	1-Ton	Commander 2000 Series 5PT20 - Flush Mounted Base	N/A	S-100	Stoplogs
5PT20_FM_2	Exit Flume	1-Ton	Commander 2000 Series 5PT20 - Flush Mounted Base	N/A	S-121	Bar Rack and Stoplogs
5PT20_FM_3	Fish Ladder Entrance	1-Ton	Commander 2000 Series 5PT20 - Flush Mounted Base	N/A	C-144	Stoplogs
5PT20_WM_1	Fish Lift Concrete Flume	1-Ton	Commander 2000 Series 5PT20 - Wall Mounted Base	N/A	S-100	V-Gate Screens
5PT20_WM_2	Fish Lift Concrete Flume	1-Ton	Commander 2000 Series 5PT20 - Wall Mounted Base	N/A	S-100	V-Gate Screens
5PT20_WM_3	Fish Lift Concrete Flume	1-Ton	Commander 2000 Series 5PT20 - Wall Mounted Base	N/A	S-100	Perforated Plate Screen
5PT20_WM_4	Fish Lift Concrete Flume	1-Ton	Commander 2000 Series 5PT20 - Wall Mounted Base	N/A	S-100	Perforated Plate Screen
5PT20_WM_5	Fish Lift Concrete Flume	1-Ton	Commander 2000 Series 5PT20 - Wall Mounted Base	N/A	S-100	Perforated Plate Screen
5PT20_WM_6	Fish Lift Concrete Flume	1-Ton	Commander 2000 Series 5PT20 - Wall Mounted Base	N/A	S-100	Perforated Plate Screen
5PA5_FM_0	Fish Ladder Entrance	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-144	Safety Retrieval
5PA5_FM_1	Fish Ladder Pool 1	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-144	Safety Retrieval
5PA5_FM_2	Fish Ladder Pool 2	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-144	Safety Retrieval
5PA5_FM_3	Fish Ladder Pool 3	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-143	Safety Retrieval
5PA5_FM_4	Fish Ladder Pool 4	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-143	Safety Retrieval
5PA5_FM_5	Fish Ladder Pool 5	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-143	Safety Retrieval
5PA5_FM_6	Fish Ladder Pool 6	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-142	Safety Retrieval
5PA5_FM_7	Fish Ladder Pool 7	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-142	Safety Retrieval
5PA5_FM_8	Fish Ladder Exit	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-142	Safety Retrieval
5PA5_FM_9	Exit Flume	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	C-142	Safety Retrieval
5PA5_FM_10	Fish Lift Concrete Flume	1/4 Ton	Ensign 500 Series 5PA5 - Flush Mounted Base	N/A	S-100	Safety Retrieval

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MAY 2, 2025

REVISION	DESCRIPTION OF ISSUE / REVISION	REVISED BY
5/2/2025	ISSUED FOR BID	M. GRAESER

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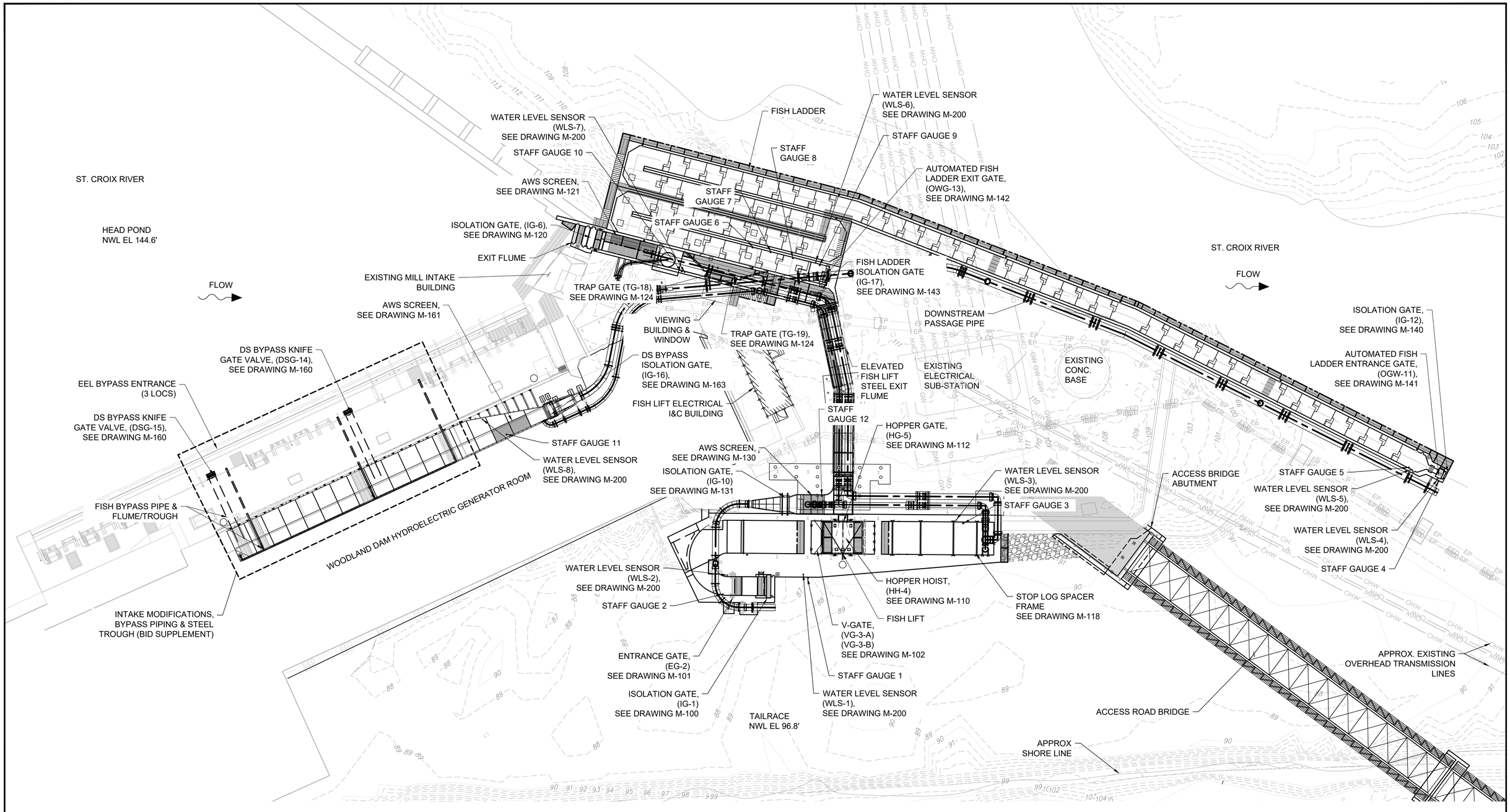
WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

GENERAL MECHANICAL NOTES

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	200 OF 240
DRAWING:	M-001



SITE PLAN
SCALE: 1"=20'

20' 0 20' 40'

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MAY 2, 2025

REVISION	DESCRIPTION OF ISSUE / REVISION	REVISED BY
5/2/2025	ISSUED FOR BID	M. GRAESER

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WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

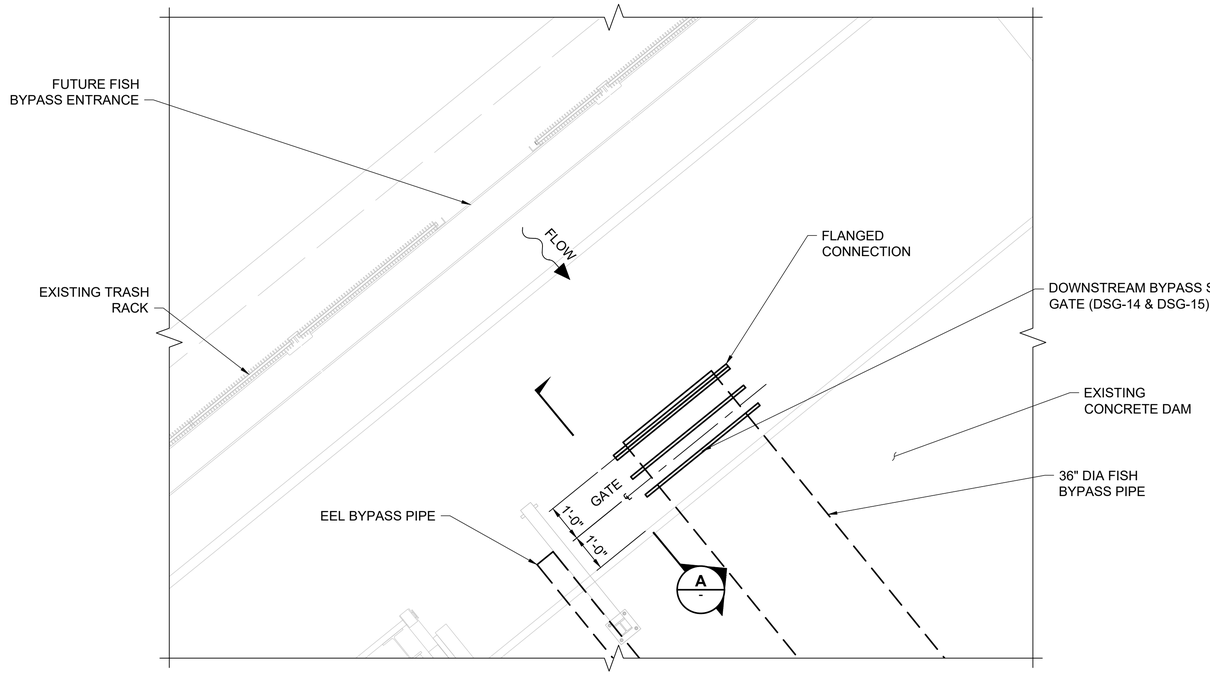
GENERAL MECHANICAL LAYOUT

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	201 OF 240
DRAWING:	M-002

NOTES:

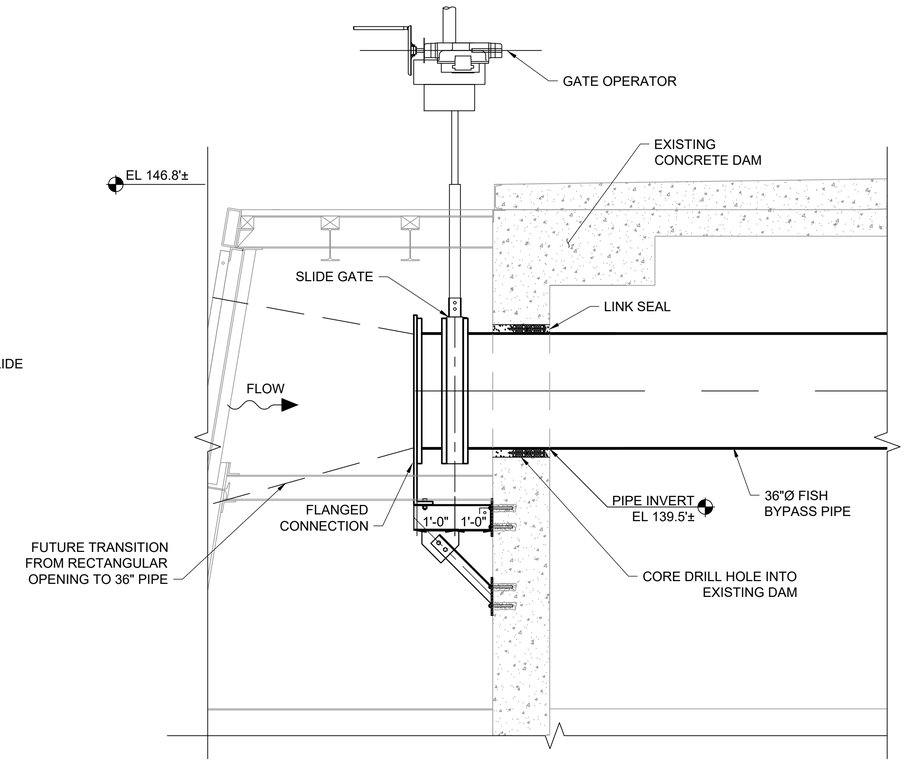
1. GENERAL OVERVIEW OF DOWNSTREAM PASSAGE INTAKE SLIDE GATE (DSG-14 & DSG-15):
   - SIZE OF GATE, 3.0'W x 3.0'H
   - MOVEMENT OF GATE. UPWARD OPENING.
   - OPERATION OF GATE: OPEN / CLOSE
   - DESIGN HEAD - 7FT UNSEATING

2. HEAD POND ELEVATIONS:
   - DESIGN LOW 144.0 FT
   - NORMAL 144.6 FT
   - DESIGN HIGH 145.4 FT



ENLARGED PLAN
SCALE: 1/2"=1'-0"

1' 0 1' 2'



A - SECTION
SCALE: 1/2"=1'-0"

1' 0 1' 2'

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MAY 2, 2025

REVISION	DESCRIPTION OF ISSUE / REVISION	REVISED BY
5/2/2025	ISSUED FOR BID	M. GRAESER

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WOODLAND FISH LIFT PASSAGE DESIGN

MAINE DEPARTMENT OF MARINE RESOURCES

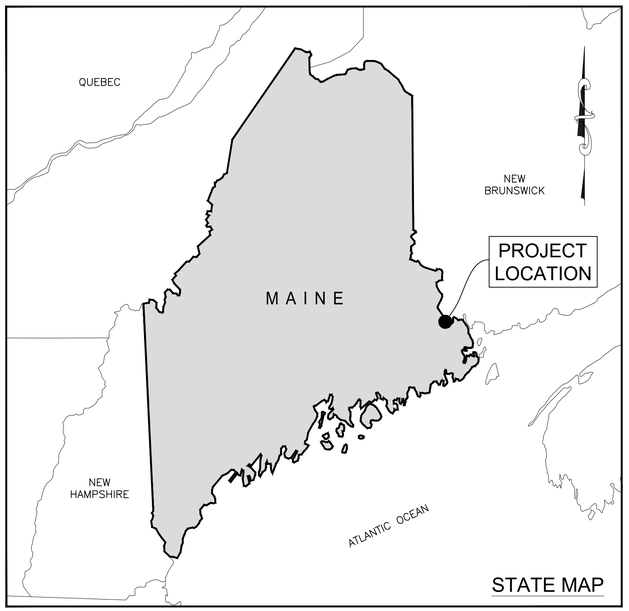
DOWNSTREAM BYPASS SLIDE GATE (DSG-14 & DSG-15) (BID SUPPLEMENT)

PROJECT:	16667
DRAWN BY:	C. HAGLER
DESIGNER:	A. MENGERT
APPROVED BY:	M. GRAESER
SHEET:	237 OF 240
DRAWING:	M-160

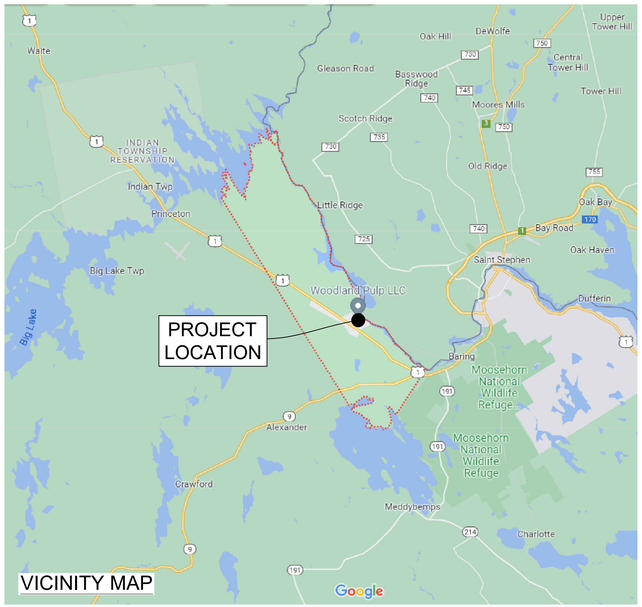
22x34 = FULL SCALE

WOODLAND PULP, LLC
BAILEYVILLE, MAINE

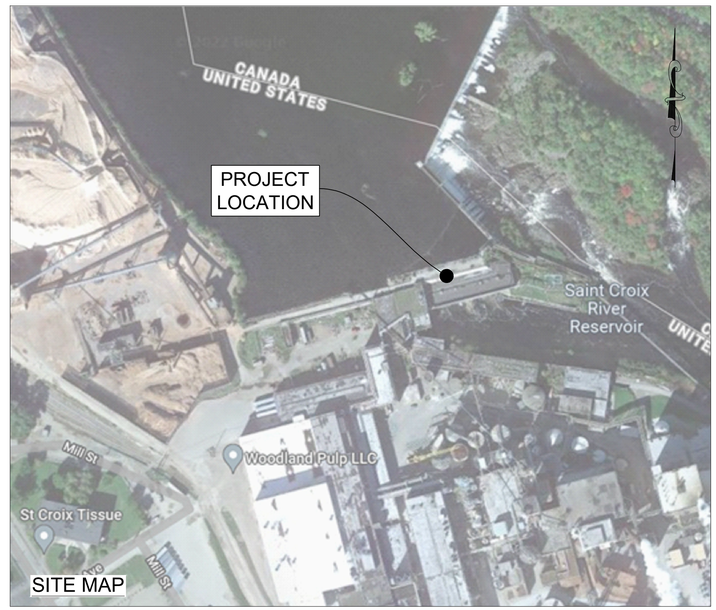
WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE



STATE MAP



VICINITY MAP



SITE MAP

CONCEPT REVIEW 03-07-25

PRELIMINARY NOT FOR CONSTRUCTION

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3" 2" 1" 0
22x34 = FULL SCALE

WOODLAND DAM - INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE				
DRAWING LIST				
SERIES	SHEET NUMBER	DRAWING NAME	DATE	DRAWING STATUS
100 - GENERAL INFORMATION				
	100-00	DRAWING LIST	03/07/2025	CONCEPT REVIEW
	100-01	GENERAL NOTES	03/07/2025	CONCEPT REVIEW
	100-02	GENERAL NOTES	03/07/2025	CONCEPT REVIEW
200 - EXISTING CONDITIONS				
	200-01	ORIGINAL (PRE 2022) CONDITIONS - PLAN AND SECTION	03/07/2025	CONCEPT REVIEW
	200-02	EXISTING CONDITIONS - PLAN AND SECTION	03/07/2025	CONCEPT REVIEW
	200-03	EXISTING CONDITIONS - SHEET WITH PHOTOS	03/07/2025	CONCEPT REVIEW
	200-04	EXISTING CONDITIONS - DEMOLITION	03/07/2025	CONCEPT REVIEW
300 - NEW CONDITIONS				
	300-01	NEW CONDITIONS - PLAN AND SECTION	03/07/2025	CONCEPT REVIEW
	300-02	INTAKE RACK - FRAMING PLAN	__/__/2025	- - -
	300-03	INTAKE RACK - FRAMING ELEVATION	__/__/2025	- - -
	300-04	INTAKE RACK - FRAMING SECTION AT EXISTING W24'S	03/07/2025	CONCEPT REVIEW
	300-05	INTAKE RACK - FRAMING DETAILS	__/__/2025	- - -
	300-06	INTAKE RACK - FRAMING SECTION AT CLOSURE WALL	__/__/2025	- - -
	300-07	CLOSURE WALL DETAILS	__/__/2025	- - -
	300-08	INTAKE RACK - FRAMING SECTION FOR NEW W24'S	__/__/2025	- - -
	300-09	TEMPORARY GUIDE COLUMN AND MISC. DETAILS	03/07/2025	CONCEPT REVIEW
	300-10	SECTION AND DETAILS AT EXISTING DOWNSTREAM FISH PASSAGE	__/__/2025	- - -
400 - TRASHRACK AND RAKER SUPPORT				
	400-01	TRASH RAKER SUPPORT - PLAN VIEW	03/07/2025	CONCEPT REVIEW
	400-02	TRASH RAKER SUPPORT SECTION AT TYPICAL BENT, CLOSURE WALL AND GATE OPERATOR	03/07/2025	CONCEPT REVIEW
	400-03	TRASH RAKER SUPPORT - SECTIONS AND DETAILS	__/__/2025	- - -
	400-04	TRASH RAKER SUPPORT - ADDITIONAL DETAILS	__/__/2025	- - -
	400-05	TRASHRACKS - GENERAL ARRANGEMENT	03/07/2025	CONCEPT REVIEW
	400-06	TRASHRACKS - SUPPORT FRAME	__/__/2025	- - -
	400-07	TRASHRACKS - RACK DETAILS	__/__/2025	- - -
500 - BYPASS ENTRANCE				
	500-01	BYPASS ENTRANCE - PLAN, ELEVATION, PROFILE AND DETAILS	03/07/2025	CONCEPT REVIEW
600 - CONCRETE				
	600-01	CONCRETE DECK TOPPING - PLAN	03/07/2025	CONCEPT REVIEW
	600-02	CONCRETE DECK TOPPING - ELEVATION AND CROSS SECTION	__/__/2025	- - -
700 - ELECTRICAL				
	700-01	ELECTRICAL - SINGLE LINE DIAGRAM	03/07/2025	CONCEPT REVIEW
	700-02	ELECTRICAL - PLAN	03/07/2025	CONCEPT REVIEW
	700-03	ELECTRICAL	__/__/2025	- - -
	700-04	ELECTRICAL	__/__/2025	- - -
710 - CONTROLS				
	710-01	SCHEMATIC - EEL ENTRANCE BACK-FLUSH CONTROL	03/07/2025	CONCEPT REVIEW
	710-02	CABINET LAYOUT - EEL ENTRANCE BACK-FLUSH CONTROL PANEL	03/07/2025	CONCEPT REVIEW

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WOODLAND PULP, LLC
BAILEYVILLE, MAINE

WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

DRAWING LIST

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

Kleinschmidt
888-224-5942
KleinschmidtGroup.com

Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
AJC	JFB	DBN	010252	03-07-25	100-00

3" 2" 1" 0

22x34 = FULL SCALE

GENERAL NOTES

1. ALL ELEVATIONS IN MILL DATUM = (NAVD88 - 3.80 FT +/-). THESE DRAWINGS ARE IN MILL DATUM UNLESS SPECIFICALLY LABELED OTHERWISE.
2. THESE ARE STANDARD NOTES APPLYING TO ALL WORK. SPECIFIC NOTES SHOWN ON OTHER DRAWINGS OR STATED IN THE TECHNICAL SPECIFICATIONS WILL TAKE PRECEDENCE.
3. CONTRACTOR SHALL SCHEDULE WORK IN COOPERATION WITH THE OWNER.
4. DETERMINE LOCATIONS, EXISTING CONDITIONS AND DIMENSIONS BY VISITING THE SITE. VERIFY ALL DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING MATERIAL AND BEGINNING CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED TO THE OWNER IN WRITING.
5. INFORMATION SHOWN ON THESE DRAWINGS IS BASED ON LIMITED INFORMATION. VERIFY ALL DIMENSIONS AND NOTIFY THE OWNER AND ENGINEER OF DISCREPANCIES.
6. WHERE DIMENSIONS ARE NOT SHOWN, CONTACT OWNER OR ENGINEER.
7. CONTRACTOR SHALL DISCUSS LAYDOWN AND STAGING AREAS WITH OWNER PRIOR TO START OF CONSTRUCTION AND BE RESPONSIBLE FOR THE DESIGN AND PLACEMENT OF THEIR EQUIPMENT OVER EXISTING INFRASTRUCTURE.
8. PROTECT ALL EXISTING SITE FEATURES FROM DAMAGE DURING CONSTRUCTION ACTIVITIES.
9. CONTRACTOR SHALL LEAVE SITE IN AS IS OR BETTER CONDITION UPON PROJECT COMPLETION. CONTRACTOR IS RESPONSIBLE FOR REPAIRS TO DAMAGED AREAS CAUSED BY CONSTRUCTION ACTIVITIES.
10. ALL MATERIALS STORED ON SITE SHALL BE IN A NEAR, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND ALLOCATED STORAGE AREAS.
11. CONTRACTOR SHALL CLEAN ANY SPILLS OR DEBRIS CAUSED BY CONSTRUCTION.
12. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR THOROUGHLY REVIEWS AND UNDERSTANDS ALL PLANS AND OTHER DOCUMENTS BY ALL PERMITTING AUTHORITIES. ANY SOLID WASTE FROM THE SITE SHALL BE DISPOSED OF BY CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
13. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY REPSONSIBLE FOR THE MEANS, METHODS, TECHNIQUES AND PROCEDURES OF CONSTRUCTION INCLUDING BUT NOT LIMITED TO BRACING OF THE WORK AS REQUIRED TO PROTECT THE WORK UNTIL THE PROJECT IS COMPLETE.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
15. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND PROTECTING WORK FROM RISING WATERS IN COORDINATION WITH THE OWNER. DAMAGE TO PARTIALLY COMPLETED WORK, MATERIALS, OR EQUIPMENT SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
16. THE STRUCTURES HAVE BEEN DESIGNED TO BE SELF SUPPORTING IN THE FINAL CONDITIONS AS SHOWN IN THE CONTRACT DOCUMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCES TO ENSURE STABILITY AND SAFETY DURING ALL ASPECTS OF CONSTRUCTION. THIS INCLUDES BUT NOT LIMITED TO EXCAVATION, DEMOLITION, AND ERECTION AND MAY INVOLVE THE ADDITION OF SHEETING, SHORING, TEMPORARY BRACING, GUYS, TIE DOWNS, ETC. STABILIZING STRUCTURES DURING CONSTRUCTION, BUT NOT REQUIRED IN THE FINAL CONDITIONS AND SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

STEEL NOTES

1. STRUCTURAL STEEL DESIGN STANDARD - AISC SPECIFICATION FOR DESIGN AND ERECTION OF STRUCTURAL STEEL, 16TH EDITION
   - A. FABRICATOR SHALL DESIGN NEW STEEL TO NEW STEEL CONNECTIONS FOR BEAMS USING AISC STANDARD FRAMED BEAM CONNECTIONS IF NOT SHOWN ON THE DRAWINGS. DESIGN FOR END REACTION SHOWN. IF REACTIONS ARE NOT PROVIDED, DESIGN FOR MAXIMUM UNIFORM END REACTION OR 6 KIPS, WHICHEVER IS GREATER. ALL THE END REACTIONS SHOWN ON THE DRAWINGS ARE FACTORED IN ACCORDANCE WITH THE AISC 16TH EDITION.
   - B. CONNECTIONS SHALL BE SHOP WELDED AND FIELD BOLTED UNLESS NOTED OTHERWISE (U.N.O.).
   - C. BOLTED CONNECTIONS SHALL HAVE A MINIMUM OF 2 BOLTS, MINIMUM BOLT SIZE 3/4" DIA. U.N.O.
   - D. ALL BOLTED CONNECTIONS SHALL USE STANDARD HOLE, U.N.O.
2. MATERIAL PROPERTIES:
   - A. STEEL BARS, PLATES, ANGLES, CHANNELS AND OTHER SHAPES UNLESS NOTES OTHERWISE - ASTM A36.
   - B. STRUCTURAL STEEL SHAPES, W-SHAPES - ASTM A992
   - C. BOLTS, ASTM A325 GALV.
   - D. PIPING - A53 GR. B .
   - E. WELD - AWS D1.1 WITH E70 ELECTRODES. NOTIFY OWNER/ENGINEER IF BASE METALS ARE NOT COMPATIBLE.
   - F. GRATING - TBD.
   - G. GROUT - NON-SHRINK TYPE PRE-MIXED COMPOUND CONSISTING OF NON-METALLIC AGGREGATE, CEMENT, WATER REDUCING AND PLASTICIZING ADDITIVES, CAPABLE OF DEVELOPING A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI AT 28 DAYS. FOR AREAS UNDERWATER USE SUBEC HYDRAULIC CEMENT OR APPROVED EQUAL.
3. COATINGS:
   - A. ALL STEEL SHALL HAVE THE FOLLOWING COATING SYSTEM (OR APPROVED EQUIVALENT).
     - I. SURFACE PREPARATION: SSPC-SP 10 NEAR WHITE BLAST CLEANING 1.0 MIL PROFILE.
     - II. COATING: XXX TBD XXX
     - III. COATINGS SHALL BE APPLIED PER MANUFACTURER'S INSTRUCTIONS.
   - B. ALL TRASHRACK BAR PANELS ARE UNPAINTED.
   - C. ALL BOLTS AND HARDWARE SHALL BE HOT DIPPED GALVANIZED PER ASTM A153.
4. CONCRETE ANCHORS:
   - A. CONCRETE ANCHOR: ADHESIVE ANCHOR BOLTS - HILTI HAS-V-36 HDG (ASTM F1554 GR 36 ANCHORS), U.N.O. ANCHORS SHALL BE INSTALLED WITH HIT-RE 500 V3 INJECTABLE MORTAR, U.N.O. ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS TO DEPTHS SHOWN.
   - B. IF EXISTING REINFORCEMENT IS ENCOUNTERED, STOP DRILLING TO PREVENT DAMAGE TO REBAR. CONTACT ENGINEER FOR GUIDANCE ON WHERE TO MOVE ANCHOR BOLT.

STRUCTURAL DESIGN CRITERIA FOR TRASHRACKS

1. SILL EL. / BOTTOM OF RACKS EL. 118.75 FT.
2. TOP OF RACKS EL. XXX.X FT. (TBD AFTER REVIEW DISCUSSIONS WITH MILL)
3. HEADWATER / NORMAL POND EL. 140.8 FT.
4. DESIGNED FOR FULL BLINDING AT NORMAL POND.
5. ICE LOAD 2 KIPS PER FT. AT NORMAL POND.
6. BARS 3/8" X 3" WITH 3/4" CLEAR SPACING WITH SPACERS AT XX" OC.
7. MATERIAL PROPERTIES: MIN. ASTM A36 STEEL, TRASHRACK PANELS ARE UNPAINTED.
8. STATION HYDRAULIC CAPACITY - 3000 CFS

TRASH RAKER NOTES

1. RAKE VENDOR: KUENZ
2. RAKE MODEL: TRCM H200
3. COORDINATE WITH TRASH RAKE VENDOR FOR ALIGNMENT TOLERANCES.
4. RAKE LIFTING CAPACITY: 4.4 KIPS
5. INSTALLATION OF TRASH RAKER AND RELATED COMPONENTS: A REPRESENTATIVE FROM THE TRASH RAKER VENDOR WILL BE ONSITE DURING INSTALLATION FOR TECHNICAL SUPPORT.

DESIGN LOADS

1. DEAD LOADS:
   - A. CONCRETE = 150 PSF
   - B. STEEL = 490 PCF
   - C. WATER = 62.4 PCF
   - D. TRASH RAKE = 32.5 KIPS +/-
2. LIVE LOADS
   - A. TRASH RAKE VERTICAL LOADS
     - I. MAX CRANE RAIL LOAD (PER WHEEL) = 110 KN = 25 KIP
     - II. MIN CRANE RAIL LOAD (PER WHEEL) = -50 KN = -11.5 KIP (TENSION)
   - B. TRASH RAKE HORIZONTAL SKEW LOAD
     - I. 10% OF VERTICAL LOADS
3. HYDROSTATIC
   - A. MAX OPERATING POND LEVEL EL 141.6 FT WITH FULL BLINDING
4. SNOW LOAD = XX PSF
5. SEISMIC LOAD (EQ) = SITE CLASS X (DESCRIPTION...)
   - A. SHORT PERIOD SPECTRAL RESPONSE = X.XXX
   - B. ONE SECOND DESIGN SPECTRAL RESPONSE = X.XXX
   - C. PEAK GROUND ACCELERATION = X.XXX
6. WIND LOAD = XX PSF APPLIED IN ANY DIRECTION.
7. ICE LOAD = 2 KLF APPLIED TO TRASHRACK BARS AND HORIZONTAL SUPPORTS AT WATER LEVEL
8. DESIGNED FOR INSTALL TEMPERATURE +/- 70 DEG F.

   T MAX = 110 DEG F

   T MIN = -30 DEG F

   ASSUMING STRUCTURE IS INSTALLED AT 40 DEG F

NOT FOR CONSTRUCTION

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

WOODLAND PULP, LLC
BAILEYVILLE, MAINE

WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

GENERAL NOTES

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Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
AJC	JFB	DBN	010252	03-07-25	100-01

PRINTED: Mar. 6, 2025 - 11:16 AM K:\Jobs\010252\Drawings\CAD\010252-100-01.dwg

DEMOLITION

1. DO NOT BEGIN DEMOLITION OR DECONSTRUCTION UNTIL AUTHORIZATION IS RECEIVED FROM THE OWNER. THE OWNER ASSUMES NO RESPONSIBILITY FOR ACTUAL CONDITION OF STRUCTURES TO BE DEMOLISHED.
2. REMOVE EXISTING STRUCTURES INDICATED TO BE REMOVED TO ELEVATIONS AND LIMITS SHOWN IN THE DRAWINGS.
3. CRACKS OR SPALLING THAT PROPAGATE DEEP INTO OR THROUGH STRUCTURES ARE ONE INDICATION OF POTENTIAL STRUCTURAL DISTRESS. REPORT SUCH OBSERVATIONS TO ENGINEER OR PROJECT MANAGER BEFORE PROCEEDING WITH REPAIRS.
4. CONSULT WITH OWNER TO PLAN AREAS OF CONCRETE REMOVAL AND SURFACE PREP AND OBTAIN APPROVAL OF REPAIR METHODS AND EXTENTS BEFORE PROCEEDING.
5. DO NOT USE EXPLOSIVES OR CHEMICAL AGENTS FOR DEMOLITION OF STRUCTURES.
6. CONDUCT DEMOLITION OPERATIONS AND REMOVAL OF DEBRIS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE OR OBSTRUCT ROADWAYS AND PATHS.
7. ENSURE SAFE PASSAGE OF PERSONS AROUND AREA OF DEMOLITION. CONDUCT OPERATIONS TO PREVENT INJURY TO ADJACENT BUILDINGS, STRUCTURES, OTHER FACILITIES, AND PERSONS.
8. PREVENT THE SPREAD OF DUST AND DEBRIS AND AVOID THE CREATION OF A NUISANCE OR HAZARD IN THE SURROUNDING AREA. DO NOT USE WATER IF IT RESULTS IN HAZARDOUS OR OBJECTIONABLE CONDITIONS SUCH AS, BUT NOT LIMITED TO, ICE, FLOODING, OR POLLUTION.
9. PREVENT MATERIALS FROM ENTERING THE WATERWAY.

SURFACE PREPARATION

1. PREPARE CONCRETE SURFACE AND DO SELECTIVE DEMOLITION.
2. REMOVE DETERIORATED SURFACE MATERIAL IN DESIGNATED AREAS DOWN TO SOUND CONCRETE. SOUND CONCRETE IS DEFINED AS WHEN THE SURFACE IS STRUCK WITH A GEOLOGIST'S HAMMER, THE AGGREGATE OF THE CONCRETE FRACTURES BEFORE THE CEMENT PASTE BOND IS BROKEN.
3. PERFORM LOCALIZED REMOVAL WITH POINTED TOOLS THAT LIMIT IMPACT DAMAGE SUCH AS A GEOLOGIST OR LIGHT DUTY CHIP HAMMER.
4. AREAS GREATER THAN 6" SQUARE, PRIMARY PREPARATION METHOD SHOULD BE ABRASIVE SHOT-BLASTING, WATER-BLASTING, OR HYDRO-DEMOLITION TO MINIMIZE CONCRETE BRUISING IN ACCORDANCE WITH ACI 364.7T-02 (TECH NOTE). PREVENT MATERIALS FROM ENTERING THE WATERWAY.
5. IF REINFORCEMENT STEEL IS ENCOUNTERED, HAMMER CHIP TO EXPOSE CORROSION UNTIL UN-CORRODED REBAR. CLEAN REBAR OF LOOSE AND BOND-INHIBITING MATERIAL WITH HIGH-PRESSURE WATER (3,000 PSI MIN) OR ABRASIVE BLAST.
6. PREPARE CONCRETE SURFACE IN ACCORDANCE WITH THE INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI) TECHNICAL GUIDELINE NO. 310.2R-2013 BUT NO LESS THAN A MINIMUM OF 1/8" AMPLITUDE. CLEAN SURFACE TO REMOVE ALL DELETERIOUS MATERIAL, INCLUDING DIRT, GREASE, ETC. WASH WITH HIGH PRESSURE WASH (AT LEAST 3,000 PSI PRESSURE).
7. DEMO AREAS, INITIAL CONCRETE REMOVAL MAY USE 15-LB OR 30LB JACKHAMMER. USE 15-LB JACKHAMMER FOR DENTAL CONCRETE REMOVAL AROUND REBAR. FINISH REMOVAL IN ACCORDANCE WITH NOTE 3.
8. ANY DETERIORATED REINFORCING STEEL ENCOUNTERED THAT IS LESS THAN 50% OF ORIGINAL CROSS-SECTION, REPLACE WITH NEW REINFORCEMENT DOWELED INTO CONCRETE.
9. EXISTING AND NEW REINFORCING STEEL SHALL HAVE MINIMUM 1" CLEARANCE (U.N.O.) BETWEEN REBAR AND EXISTING CONCRETE SUBSTRATE, MIN. 1/4" GREATER THAN MAXIMUM AGGREGATE SIZE FOR REPAIR MIX BEING USED.
10. CONCRETE SURFACES SHALL BE SATURATED SURFACE DRY IN ACCORDANCE WITH ICRI, AT TIME OF CONCRETE PLACEMENT BUT NO STANDING WATER.

CONCRETE

1. ALL CONCRETE WORKS SHALL BE IN ACCORDANCE WITH THE LATEST ACI 318.
2. MATERIALS USED IN PRODUCING THE CONCRETE SHALL BE FROM THE SAME SOURCE FOR THE DURATION OF THE PROJECT. CHANGE OF SOURCE FOR CEMENT ADMIXTURE OR FINE AND COARSE AGGREGATE CONSTITUTES A NEW MIX DESIGN AND WILL REQUIRE RESUBMITTAL OF ALL DATA AND LABORATORY TESTS. ANY COSTS ASSOCIATED WITH RESUBMITTALS SHALL BE BORNE BY CONTRACTOR AT NO CHARGE TO OWNER.
3. THE TOLERANCES FOR FINISHED CAST-IN-PLACE CONCRETE SHALL CONFORM TO ACI-347.
4. PORTLAND CEMENT: ASTM C 150, TYPE II.
5. LOCAL AGGREGATES NOT COMPLYING WITH ASTM C 33 BUT WHICH CAN BE SHOWN BY SPECIAL TEST OR ACTUAL SERVICE TO PRODUCE CONCRETE OF ADEQUATE STRENGTH AND DURABILITY MAY BE USED WHEN ACCEPTABLE TO THE OWNER.
6. COARSE AGGREGATE SHALL BE 3/4" PER ASTM C 33.
7. PROHIBITED ADMIXTURES: CALCIUM CHLORIDE THYOCYANATES OR ADMIXTURES CONTAINING MORE THAN 0.1 PERCENT CHLORIDE IONS ARE NOT PERMITTED.
8. CONTRACTOR TO PREPARE DESIGN MIXES FOR EACH TYPE AND STRENGTH OF CONCRETE BY EITHER LABORATORY TRIAL BATCH OR FIELD EXPERIENCE METHODS AS SPECIFIED IN ACI 301. IF TRIAL BATCH METHOD USED, USE AN INDEPENDENT TESTING FACILITY ACCEPTABLE TO OWNER'S REPRESENTATIVE FOR PREPARING AND REPORTING PROPOSED MIX DESIGNS.
9. CONCRETE MIX TO BE 4500 PSI 28-DAY COMPRESSIVE STRENGTH; W/C RATIO, 0.42 MAXIMUM BY WEIGHT. AIR ENTRAINMENT 5% TO 7%.
10. FOR PLACING CONCRETE TO COMPLY WITH ACI 304 "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE", AND AS HEREIN SPECIFIED.
11. COLD WEATHER PLACING: PROTECT CONCRETE WORK FROM PHYSICAL DAMAGE OR REDUCED STRENGTH WHICH COULD BE CAUSED BY FROST, FREEZING ACTIONS, OR LOW TEMPERATURES, IN COMPLIANCE WITH ACI 306 AND AS HEREIN SPECIFIED.
12. HOT WEATHER PLACING: WHEN HOT WEATHER CONDITIONS EXIST THAT WOULD SERIOUSLY IMPAIR QUALITY AND STRENGTH OF CONCRETE, PLACE CONCRETE IN COMPLIANCE WITH ACI 305 AND AS HEREIN SPECIFIED.
13. FORM SURFACES SHALL HAVE SMOOTH FINISH, FREE FROM HONEYCOMBING AND OTHER DEFECTS.
14. START INITIAL CURING AS SOON AS FREE WATER HAS DISAPPEARED FROM CONCRETE SURFACE AFTER PLACING AND FINISHING. KEEP CONTINUOUSLY MOIST FOR NOT LESS THAN 7 DAYS, OR USE A CURING COMPOUND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, AND AS APPROVED BY OWNER.
15. REPAIR AND PATCH DEFECTIVE AREAS IN A MANNER ACCEPTABLE TO THE OWNER.
16. REMOVE AND REPLACE CONCRETE HAVING DEFECTIVE SURFACES IF DEFECTS CANNOT BE REPAIRED TO SATISFACTION OF ENGINEER. SURFACE DEFECTS, AS SUCH, INCLUDE COLOR AND TEXTURE IRREGULARITIES, CRACKS, SPALLS, AIR BUBBLES, HONEYCOMB, ROCK POCKETS; FINS AND OTHER PROJECTIONS ON SURFACE; AND STAINS AND OTHER DISCOLORATIONS THAT CANNOT BE REMOVED BY CLEANING.
17. EPOXY INJECT ALL VISIBLE SHRINKAGE CONCRETE CRACKS
18. COMPRESSION TEST SPECIMEN: ASTM C 31; ONE SET OF 5 STANDARD CYLINDERS FOR EACH COMPRESSIVE STRENGTH TEST, UNLESS OTHERWISE DIRECTED. MOLD AND STORE CYLINDERS FOR LABORATORY CURED TEST SPECIMENS EXCEPT WHEN FIELD-CURE TEST SPECIMENS ARE REQUIRED.
19. COMPRESSIVE STRENGTH TESTS: ASTM C 39; ONE SET FOR EVERY 50 CUBIC YARDS PLACED OR A MINIMUM OF ONE SET FOR EACH DAY; TWO SPECIMEN TESTED AT 7 DAYS, TWO SPECIMENS TESTED AT 28 DAYS, AND ONE SPECIMEN RETAINED IN RESERVE FOR LATER TESTING IF REQUIRED.

REINFORCING

1. REINFORCING BARS: ASTM A 615, GRADE 60, DEFORMED.
2. PROVIDE DEFORMED REBAR DOWELS OF SIZE AND DIMENSION SHOWN. GROUTING OF DOWELS SHALL BE DONE EITHER WITH APPROVED CEMENTITIOUS OR PROPRIETARY POLYESTER RESIN GROUT OR EPOXY. CLEAN DRILL HOLES WITH AIR PRESSURE TO REMOVE DUST AND STANDING WATER. HOLES MAY BE DAMP. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
3. SPLICES AND DEVELOPMENT LENGTHS SHALL BE PER ACI STANDARDS PER THE FOLLOWING TABLE, UNLESS NOTED OTHERWISE:

CONCRETE REINFORCEMENT DEVELOPMENT SCHEDULE

BAR SIZE	BAR DIAMETER (in)	DEVELOPMENT LENGTH (in)	CLASS B* SPLICE (in)
4	0.500	19	25
5	0.625	24	31
6	0.750	28	37
7	0.875	42	54
8	1.000	47	62
9	1.128	54	70
10	1.270	60	78
11	1.410	67	87

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WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

GENERAL NOTES

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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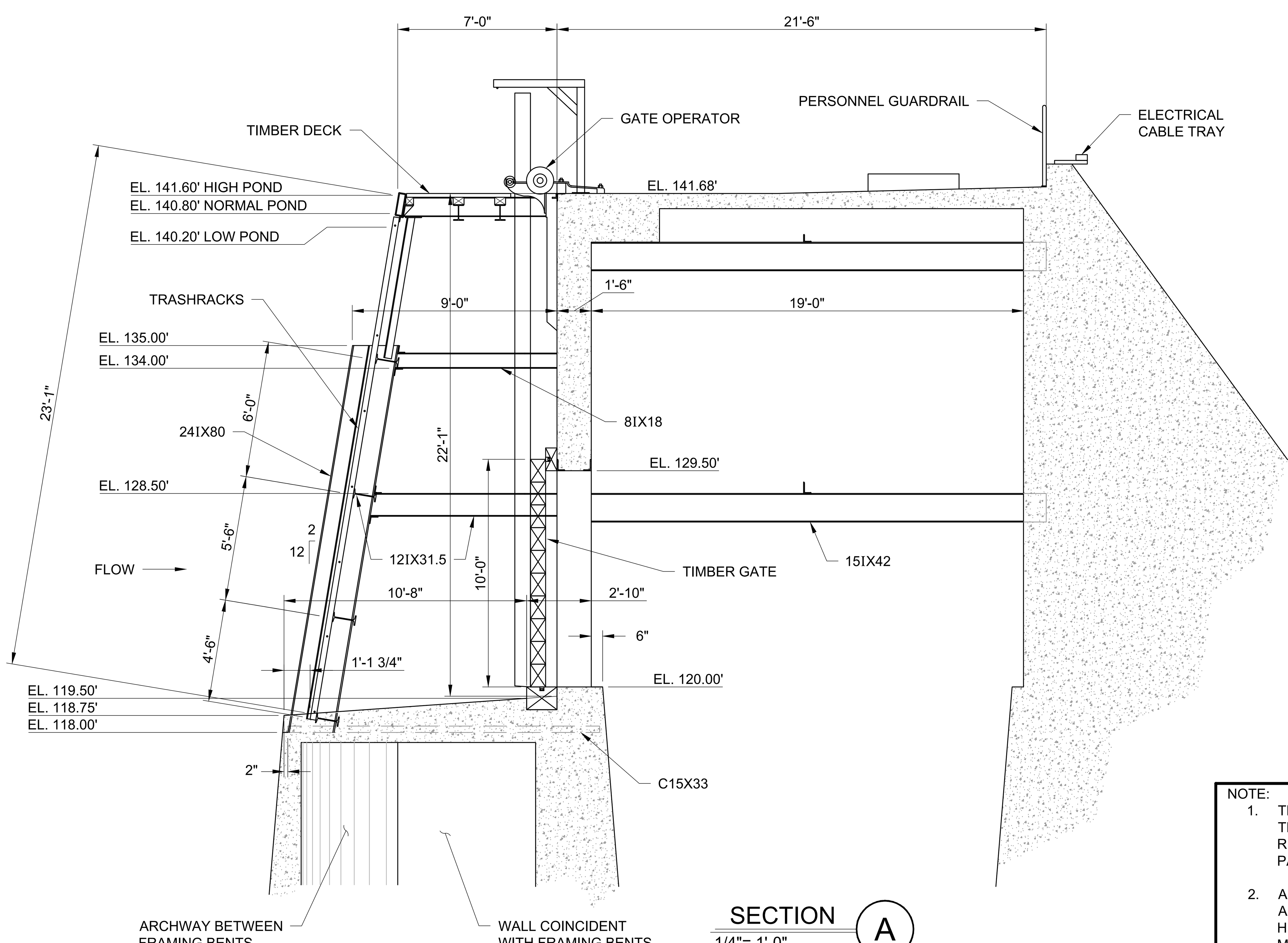
AJC	JFB	DBN	010252	03-07-25	100-02

PLAN

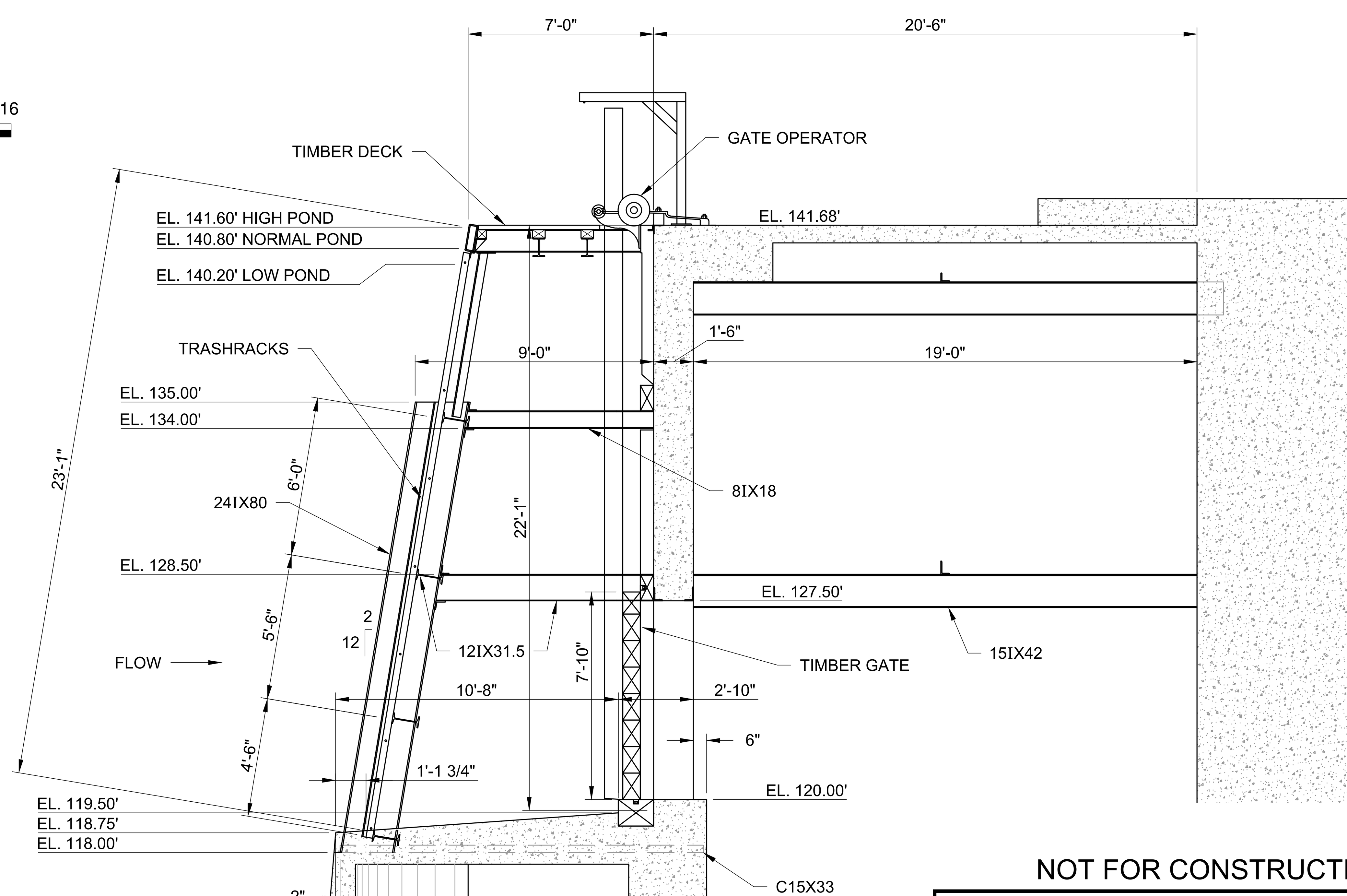
1/8"= 1'-0"

SCALE IN FEET



SECTION A

1/4"= 1'-0"



SECTION B

1/4" = 1'-0"

NOTE:

1. THIS DRAWING SHOWS THE CONDITIONS OF THE INTAKE PRIOR TO 2022, BEFORE THE RECENT INTAKE MODIFICATIONS WERE PARTIALLY COMPLETED.
2. ALL DIMENSIONS/ELEVATIONS SHOWN ARE APPROXIMATE, DERIVED FROM LIMITED HISTORICAL DRAWINGS AND LIMITED FIELD MEASUREMENTS. DIMENSIONS SHALL BE CONFIRMED PRIOR TO START OF WORK

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ORIGINAL (PRE 2022) CONDITIONS
PLAN AND SECTION

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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22x34 = FULL SCALE

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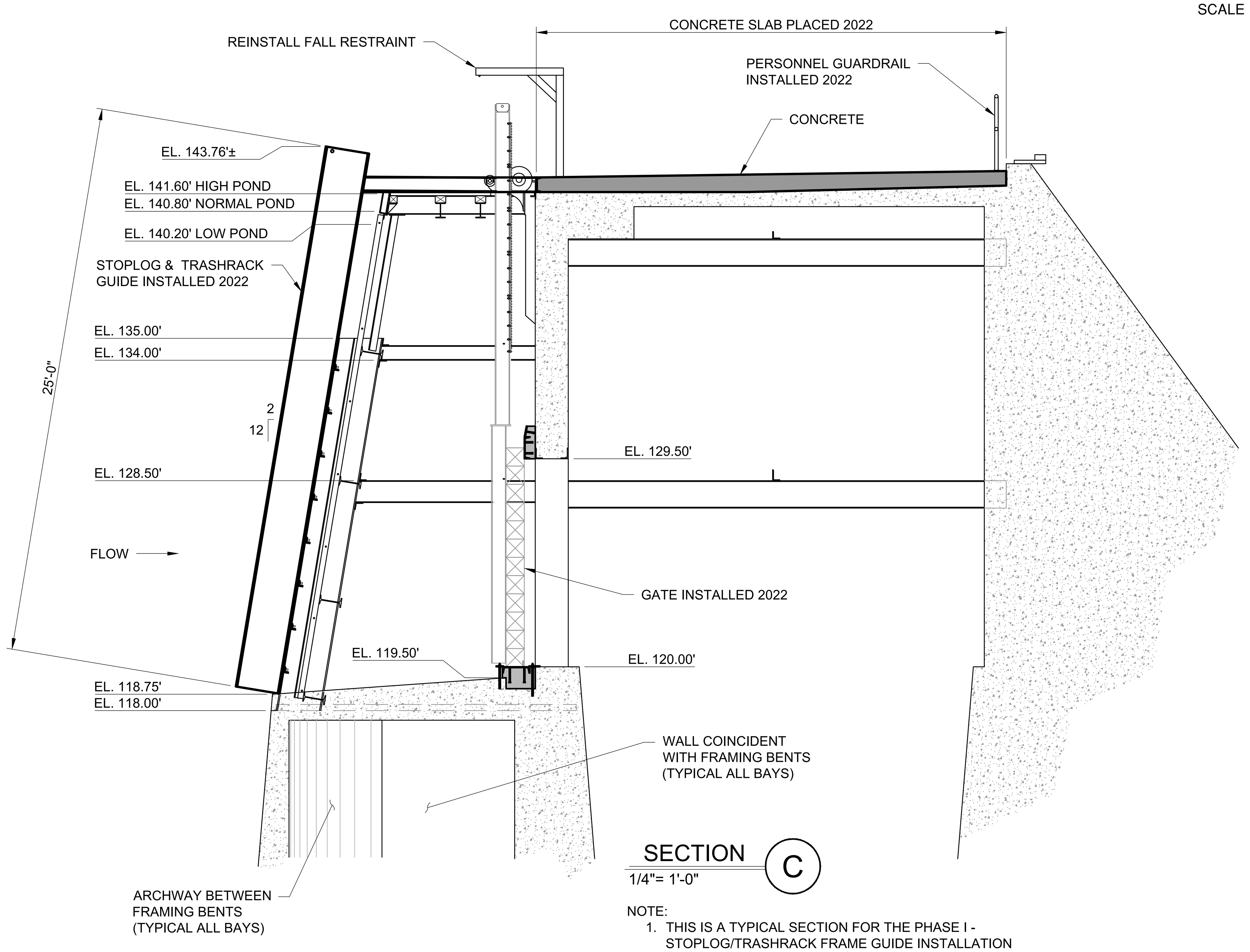
PLAN
1/8"= 1'-0"

8 0 8 16
SCALE IN FEET



SECTION C
1/4"= 1'-0"

NOTE:
1. THIS IS A TYPICAL SECTION FOR THE PHASE I - STOPLOG/TRASHRACK FRAME GUIDE INSTALLATION

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EXISTING CONDITIONS
PLAN AND SECTION

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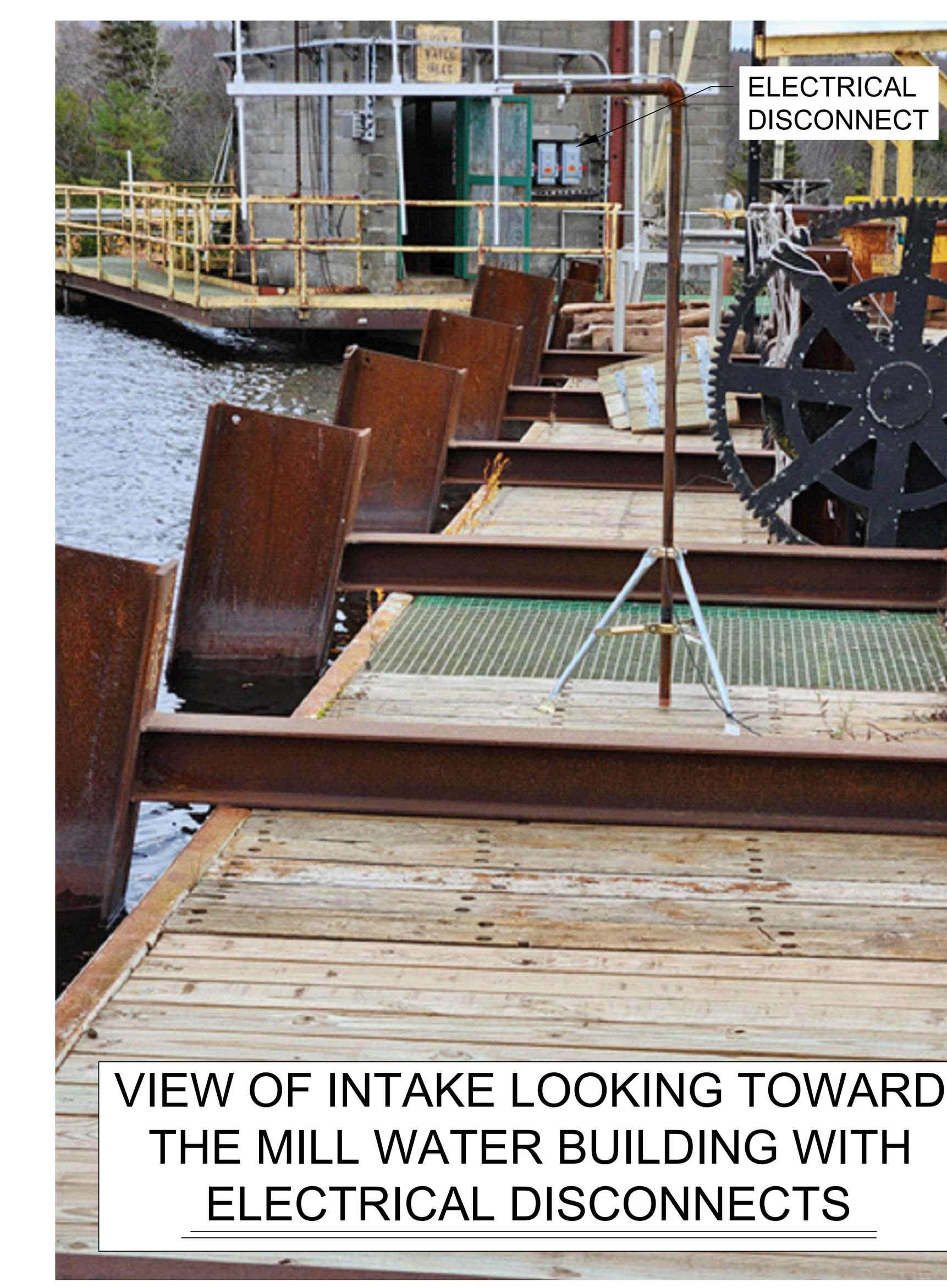
VIEW LOOKING TOWARD THE EAST SIDE OF THE INTAKE


VIEW OF CONCRETE DECK ABOVE INTAKE FOR UNITS 4, 5, AND 6


VIEW AT THE EXISTING FISHWAY LOOKING TOWARD THE WEST SIDE OF THE INTAKE

MINOR VARIATION 1" - 5" IN W24S INSTALLED SO FAR LOOKING TOWARD THE WEST SIDE OF THE INTAKE



VIEW OF INTAKE LOOKING TOWARD THE MILL WATER BUILDING WITH ELECTRICAL DISCONNECTS

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WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

EXISTING CONDITIONS
SHEET WITH PHOTOS

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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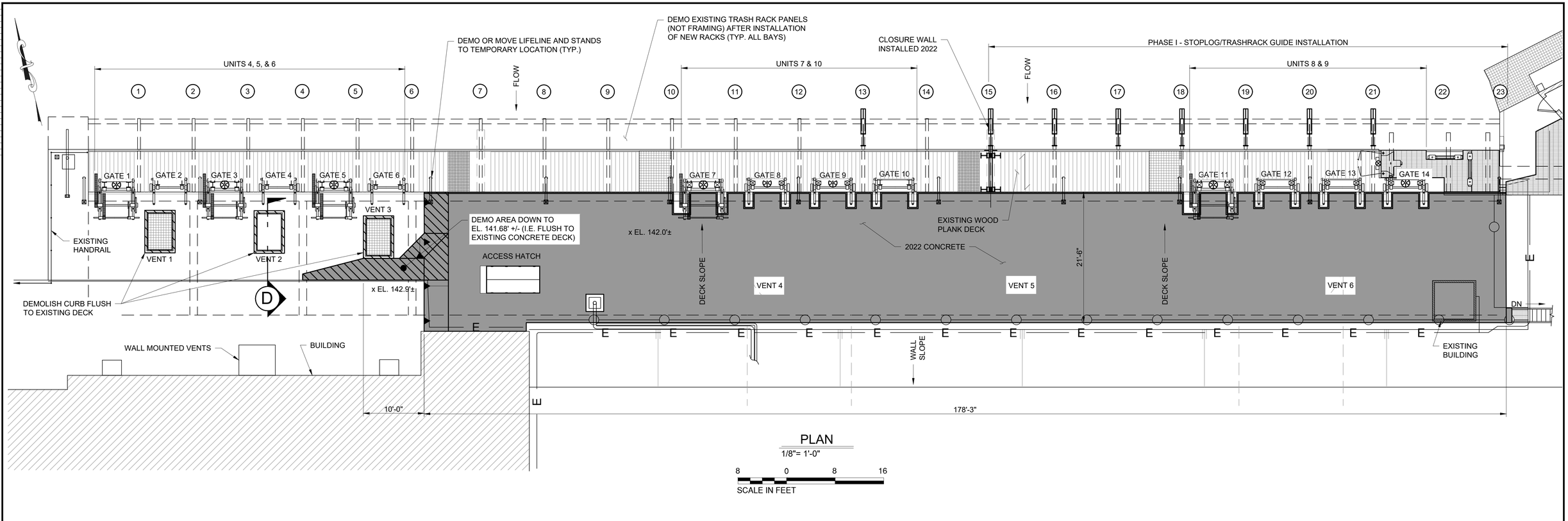
3" 2" 1" 0

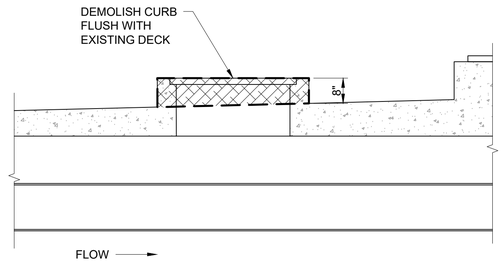


PLAN

1/8"= 1'-0"

8 0 8 16

SCALE IN FEET



SECTION D

1/2"= 1'-0"

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WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

EXISTING CONDITIONS
DEMOLITION

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A	CONCEPT REVIEW	03-07-25	JFB	AJC

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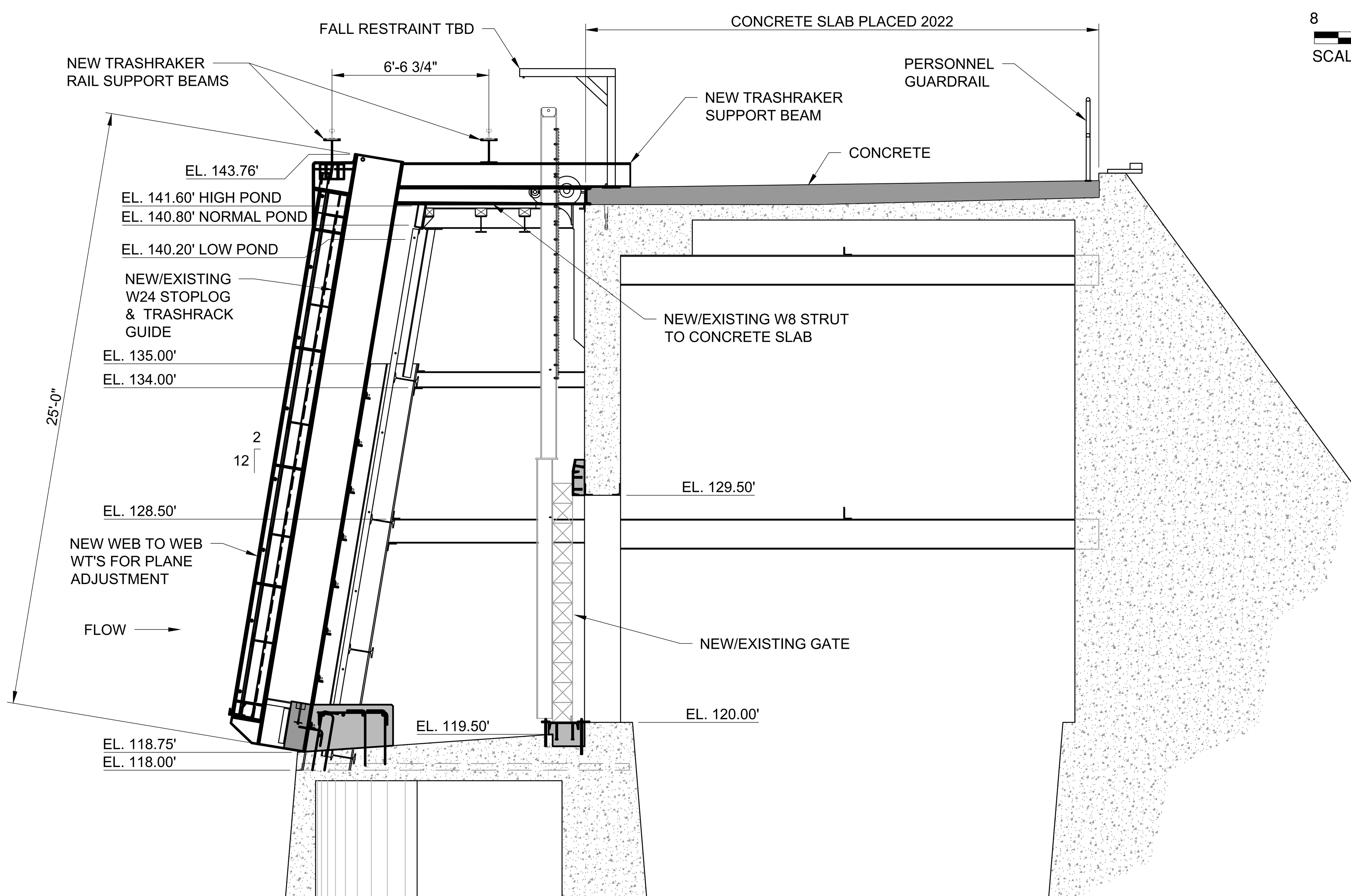
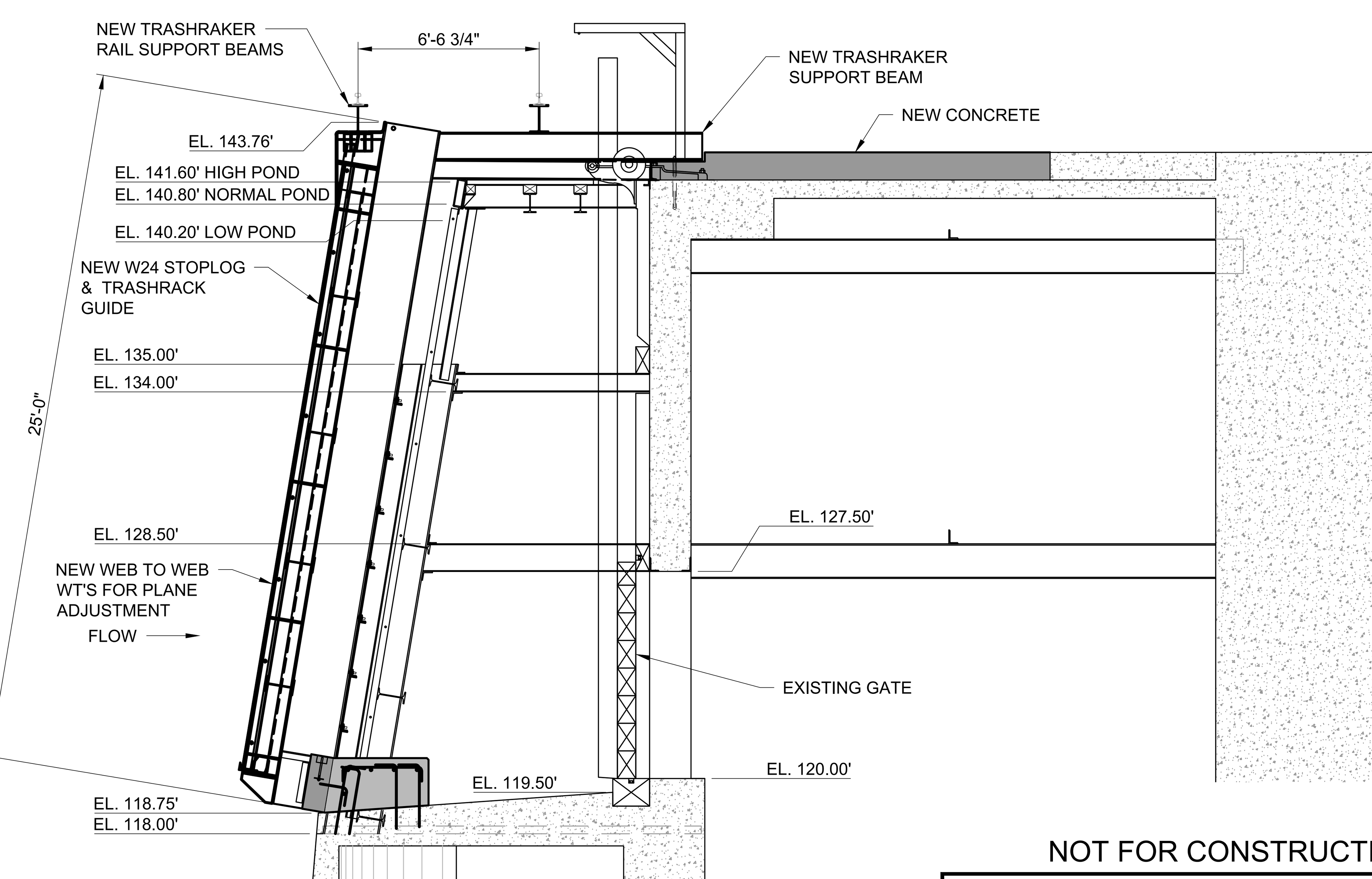
NEW STOPLOG/TRASHRACK GUIDE
NOTE: THIS W24 WAS ALSO INSTALLED AS PART OF 2022 WORK.
CLOSURE WALL INSTALLED 2022
2022 STOPLOG/ TRASHRACK GUIDE
PHASE II - STOPLOG/TRASHRACK GUIDE INSTALLATION
PHASE I - STOPLOG/TRASHRACK GUIDE INSTALLATION STARTED 2022
NEW CLOSURE WALL
DOWNSTREAM FISH BYPASS ENTRANCE (TYP. 2 LOCATIONS)
NEW TRASHRACK RAILS, SEE 400 SERIES FOR MORE DETAIL
UNITS 4, 5, & 6
UNITS 7 & 10
UNITS 8 & 9
FLOW
EEL BYPASS ENTRANCE (TYP. 3 LOCATIONS)
GATE 1
GATE 2
GATE 3
GATE 4
GATE 5
GATE 6
GATE 7
GATE 8
GATE 9
GATE 10
GATE 11
GATE 12
GATE 13
GATE 14
EXISTING/NEW HANDRAIL
VENT 1
VENT 2
VENT 3
NEW CONCRETE
NEW TRASHRAKER, SEE PROCUREMENT SPECIFICATION FOR MORE DETAIL
ACCESS HATCH
x EL. 142.4'±
x EL. 142.9'±
DECK SLOPE
DESIGN SPAN
VENT 4
VENT 5
VENT 6
EXISTING WOOD PLANK DECK
2022 CONCRETE
21'-6"
CURRENT FISHWAY GATE INTERFERENCE WITH TRASH RAKER
DN
WALL MOUNTED VENTS
BUILDING
WALL SLOPE
EXISTING BUILDING
21'-1"
65'-3"
9'-10"
178'-3"
CENTERLINE OF FISH BYPASS (SEE 500 SERIES FOR MORE DETAIL)
FISH BYPASS FLUME (BY VERDANTAS, SEE VERDANTAS DRAWINGS FOR MORE DETAIL)
CENTERLINE OF FISH BYPASS (SEE 500 SERIES FOR MORE DETAIL)

PLAN
1/8"= 1'-0"

8 0 8 16
SCALE IN FEET


FALL RESTRAINT TBD
CONCRETE SLAB PLACED 2022
NEW TRASHRAKER RAIL SUPPORT BEAMS
6'-6 3/4"
PERSONNEL GUARDRAIL
NEW TRASHRAKER SUPPORT BEAM
CONCRETE
EL. 143.76'
EL. 141.60' HIGH POND
EL. 140.80' NORMAL POND
EL. 140.20' LOW POND
NEW/EXISTING W24 STOPLOG & TRASHRACK GUIDE
NEW/EXISTING W8 STRUT TO CONCRETE SLAB
EL. 135.00'
EL. 134.00'
25'-0"
EL. 129.50'
EL. 128.50'
NEW WEB TO WEB WT'S FOR PLANE ADJUSTMENT
FLOW
NEW/EXISTING GATE
EL. 120.00'
EL. 119.50'
EL. 118.75'
EL. 118.00'

SECTION A
1/4"= 1'-0"


NEW TRASHRAKER RAIL SUPPORT BEAMS
6'-6 3/4"
NEW TRASHRAKER SUPPORT BEAM
NEW CONCRETE
EL. 143.76'
EL. 141.60' HIGH POND
EL. 140.80' NORMAL POND
EL. 140.20' LOW POND
NEW W24 STOPLOG & TRASHRACK GUIDE
EL. 135.00'
EL. 134.00'
25'-0"
EL. 127.50'
EL. 128.50'
NEW WEB TO WEB WT'S FOR PLANE ADJUSTMENT
FLOW
EXISTING GATE
EL. 119.50'
EL. 120.00'
EL. 118.75'
EL. 118.00'

SECTION B
1/4" = 1'-0"

22x34 = FULL SCALE

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NEW CONDITIONS
PLAN AND SECTION

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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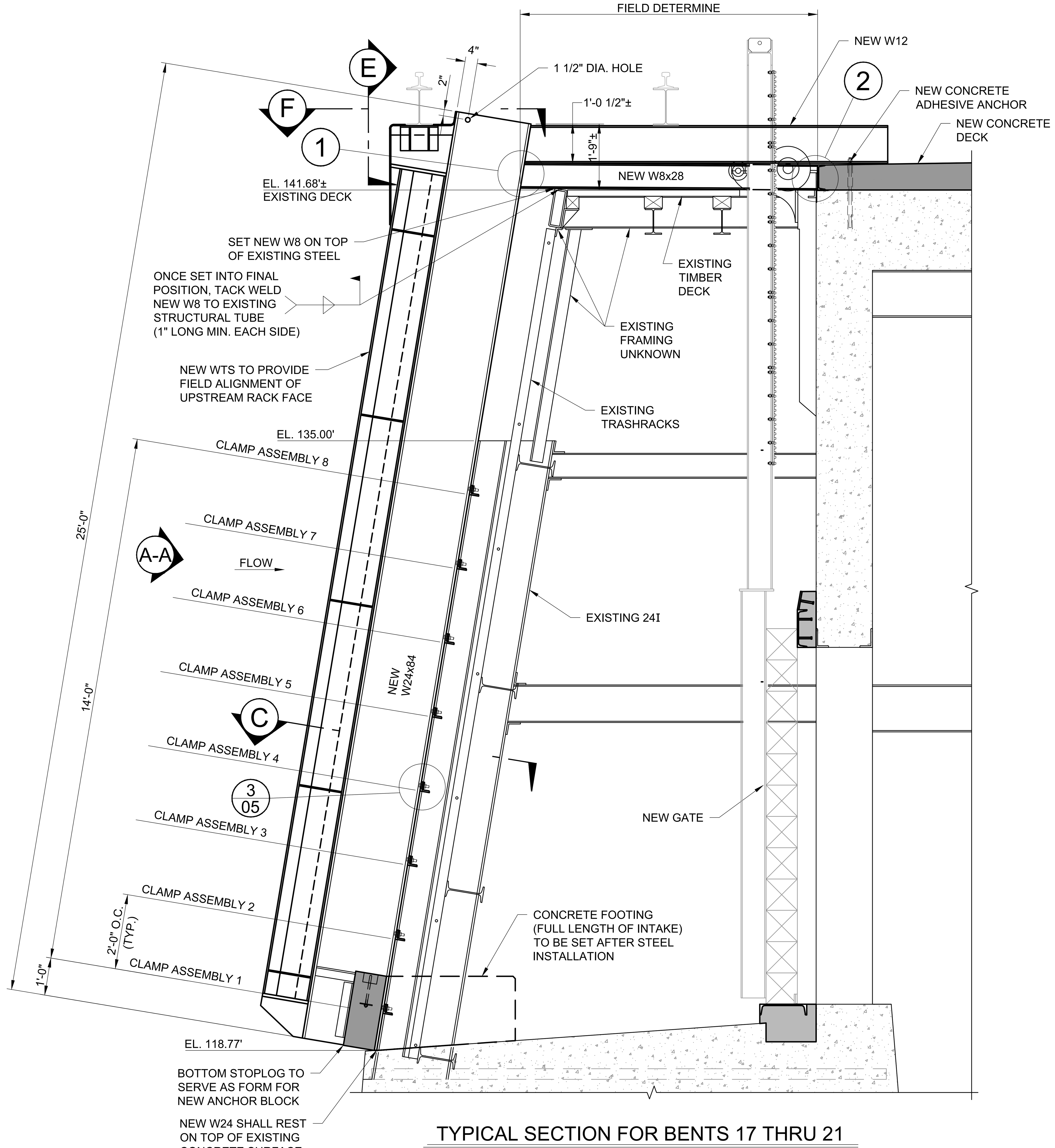
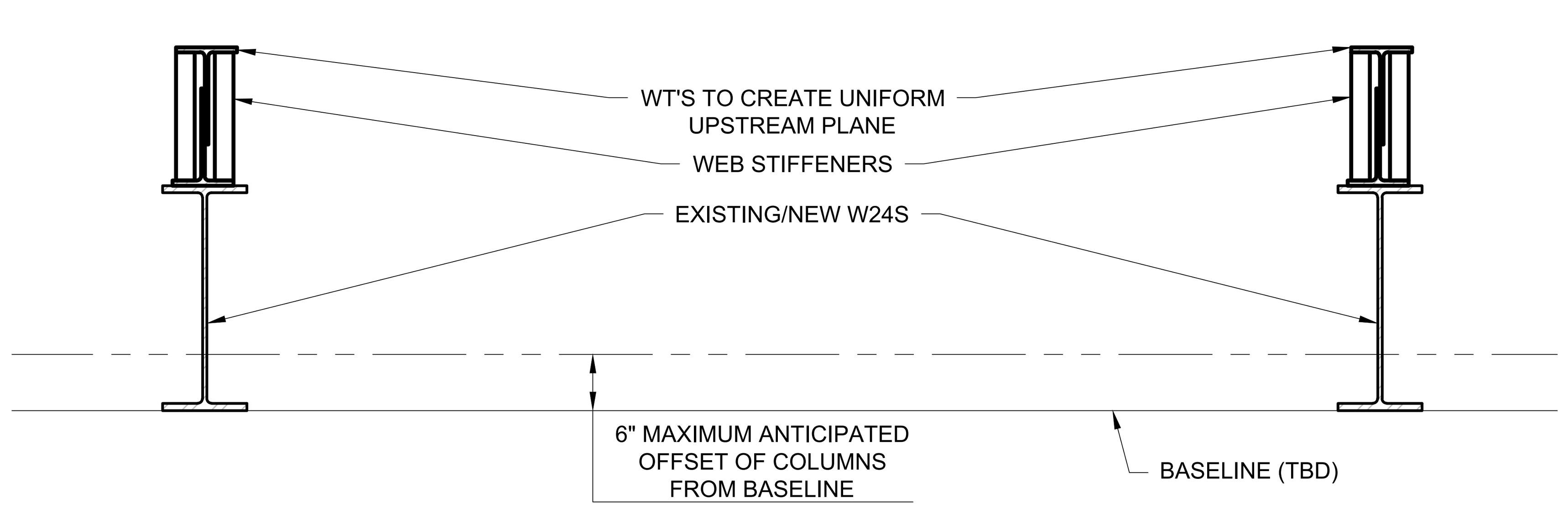
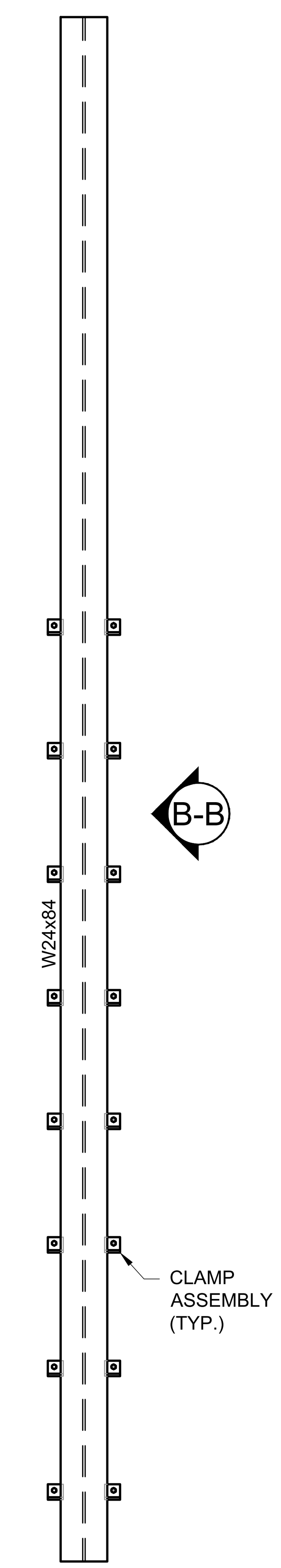
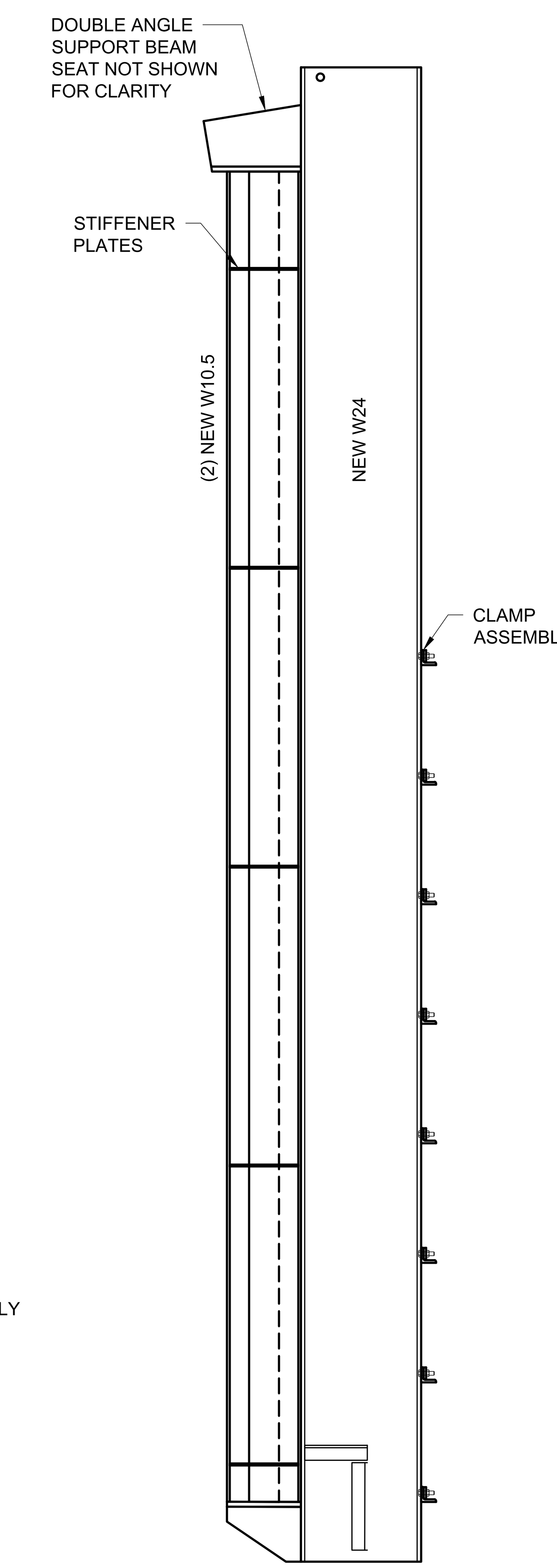


TYPICAL SECTION FOR BENTS 17 THRU 21
1/2"= 1'-0"

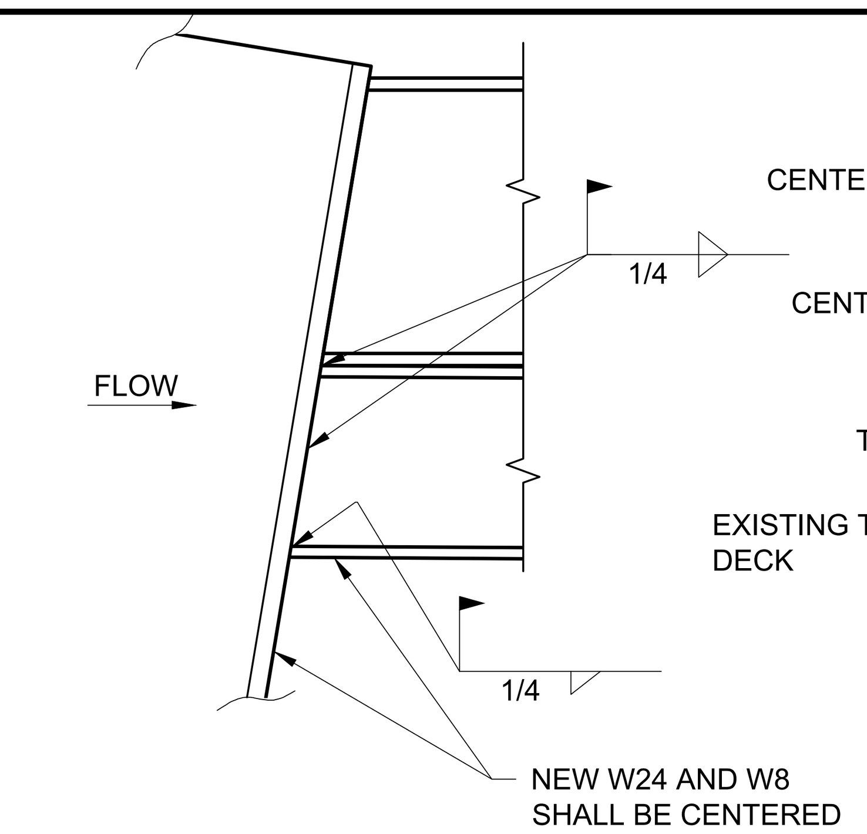




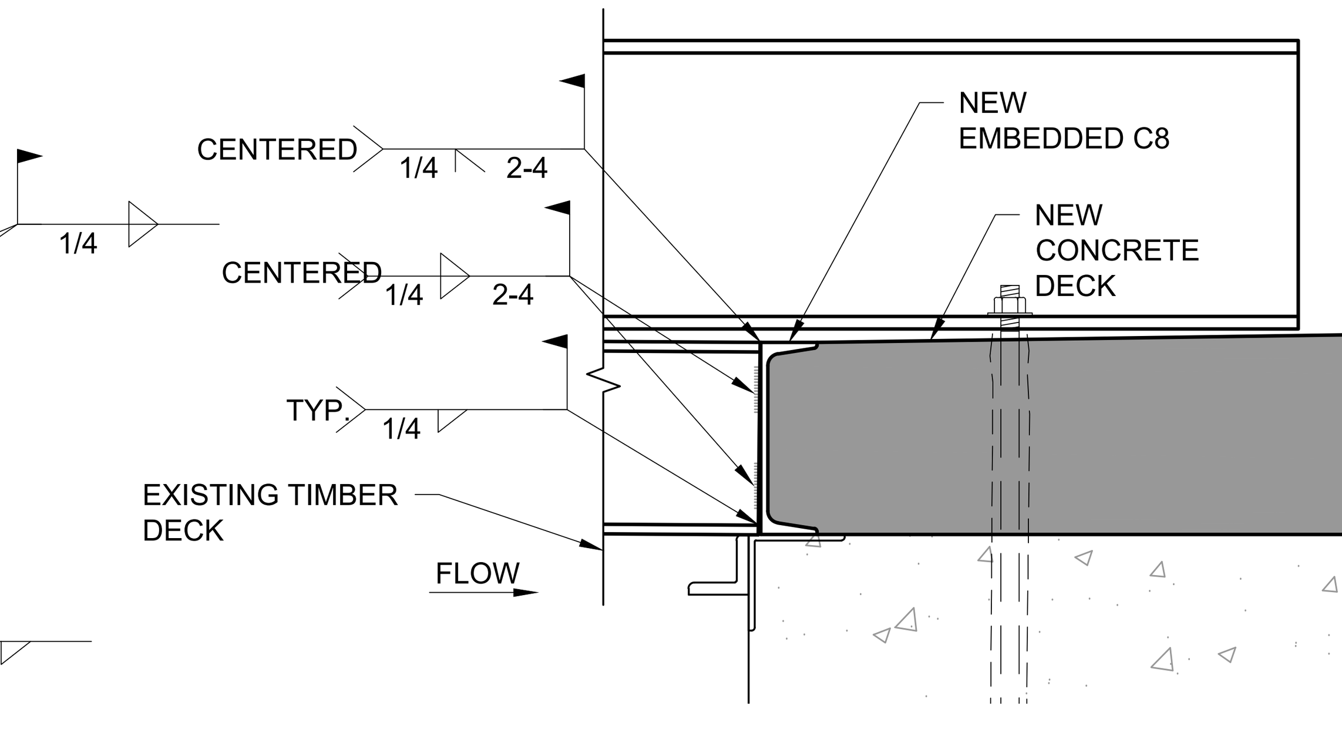
VIEW A-A
1/4"= 1'-0"



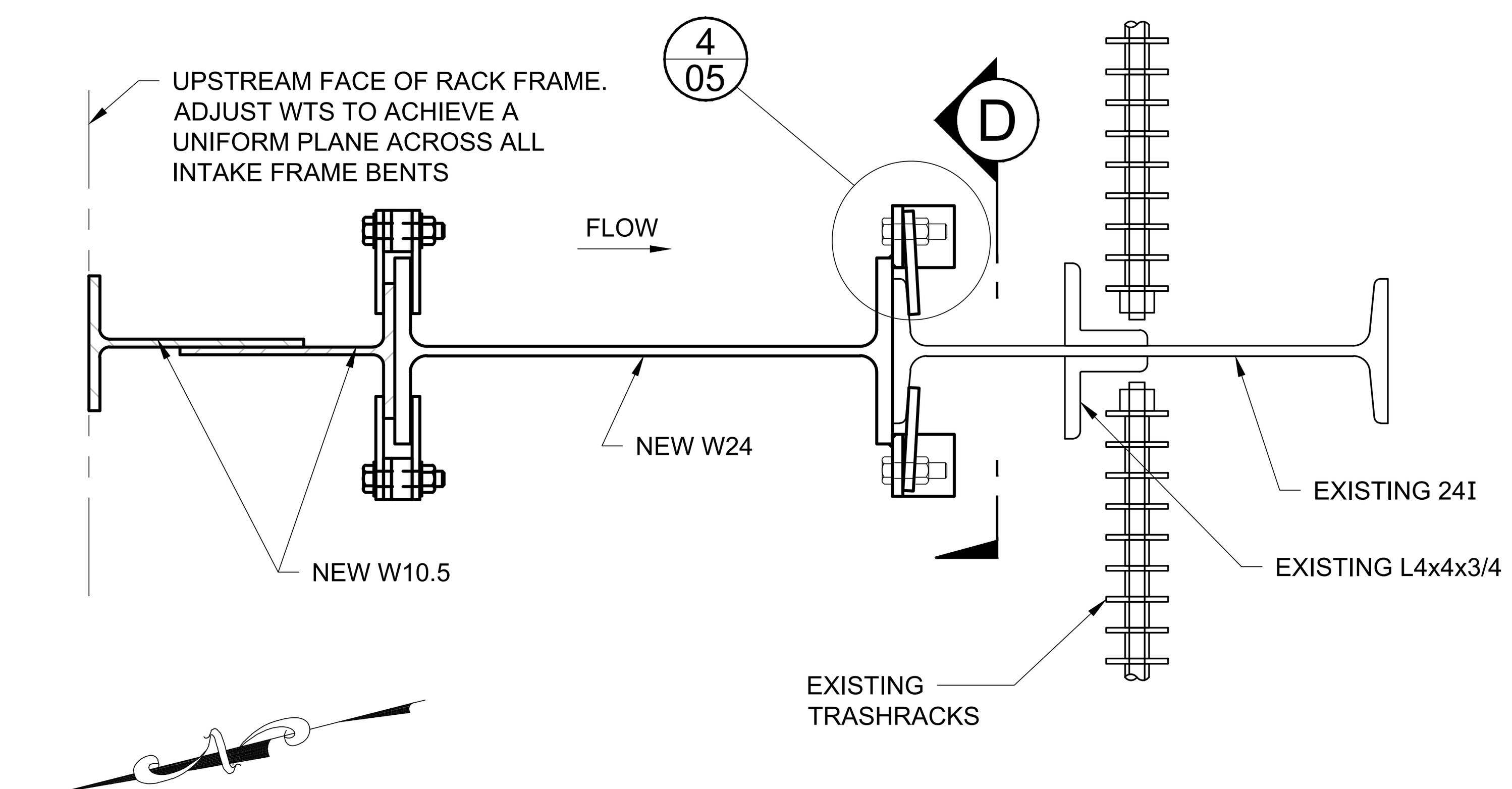
VIEW B-B
1/4"= 1'-0"



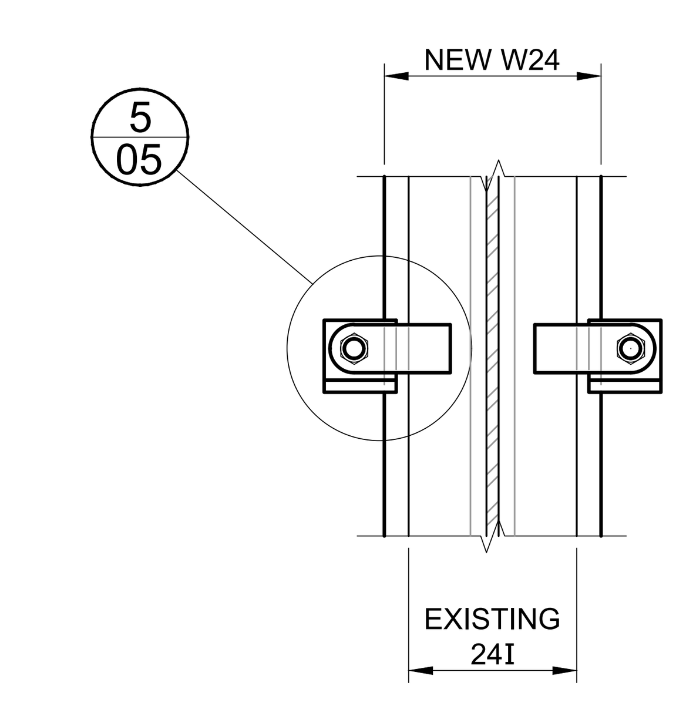
DETAIL 1
1 1/2"= 1'-0"



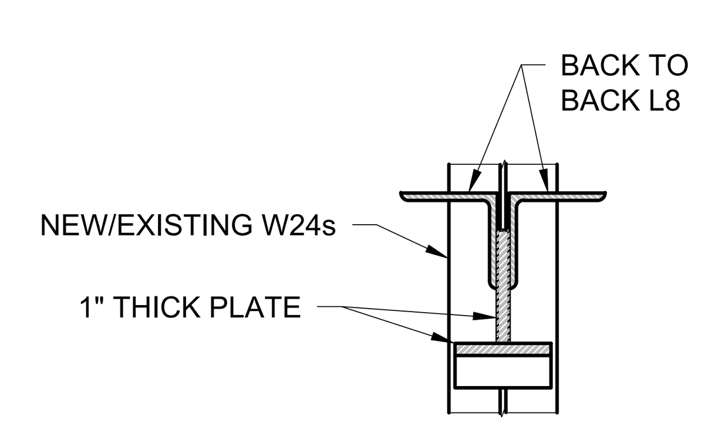
DETAIL 2
1 1/2"= 1'-0"



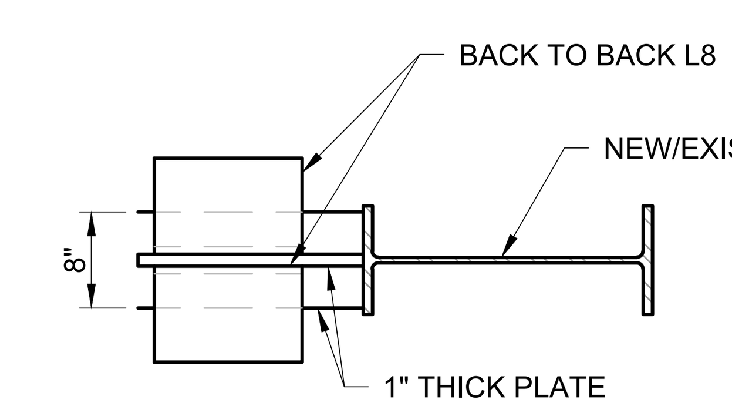
SECTION C
1 1/2"= 1'-0"



SECTION D
1 1/2"= 1'-0"



SECTION E
3/4" = 1'-0"



SECTION F
3/4" = 1'-0"

22x34 = FULL SCALE

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INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

INTAKE RACK
FRAMING SECTION AT EXISTING W24'S

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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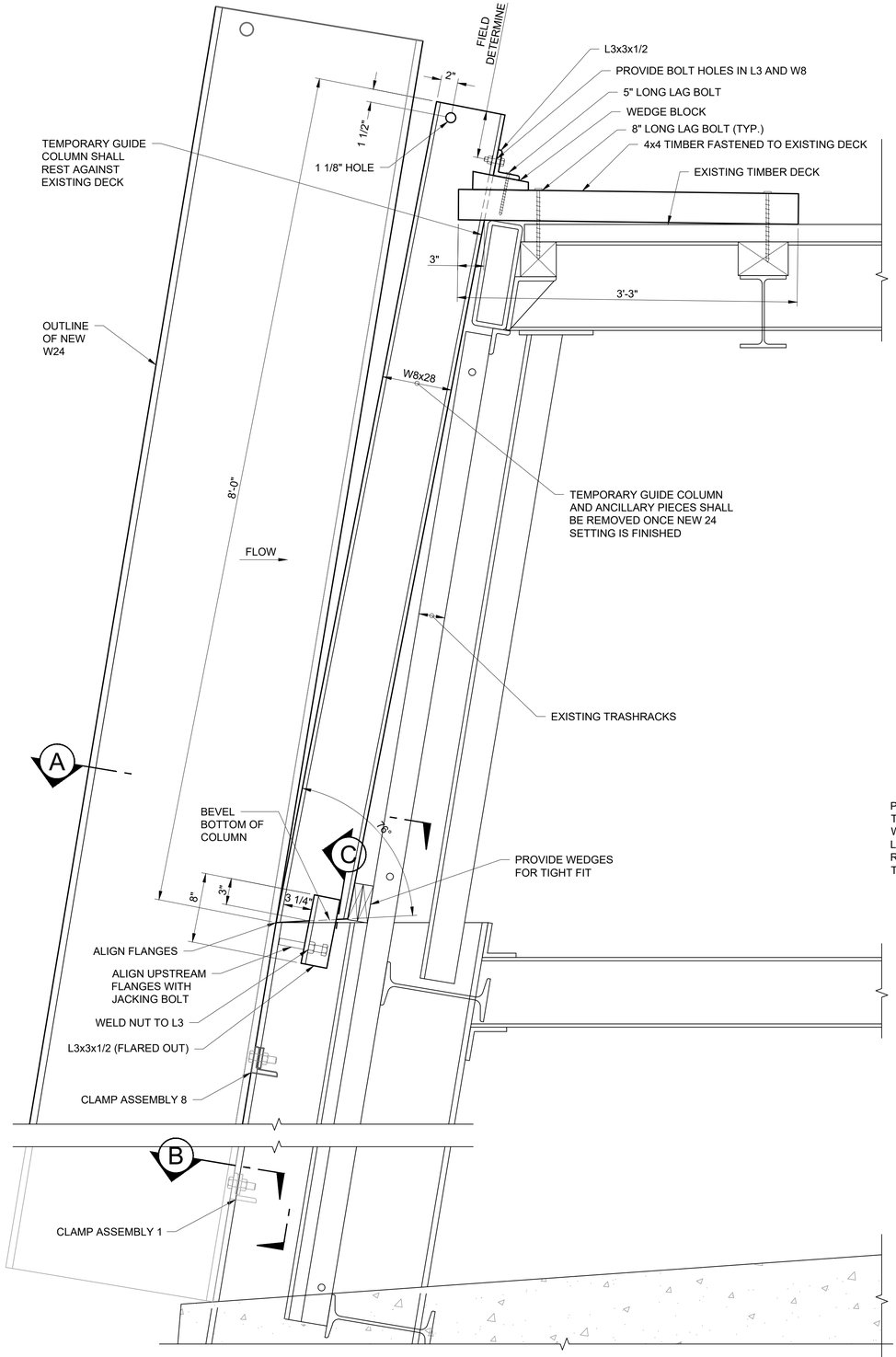
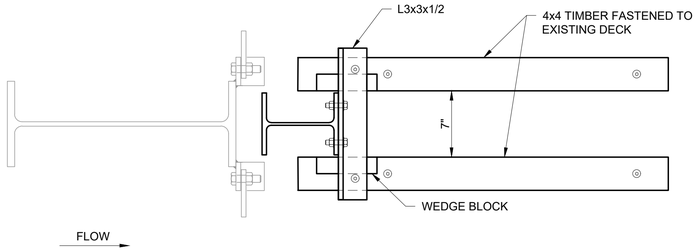
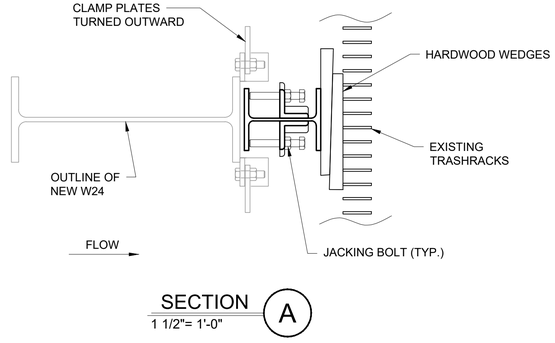


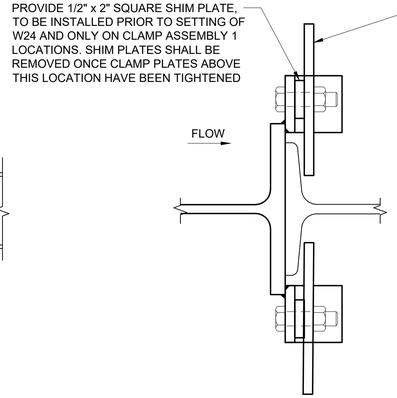
TEMPORARY GUIDE BEAM - PROFILE VIEW
1 1/2"= 1'-0"



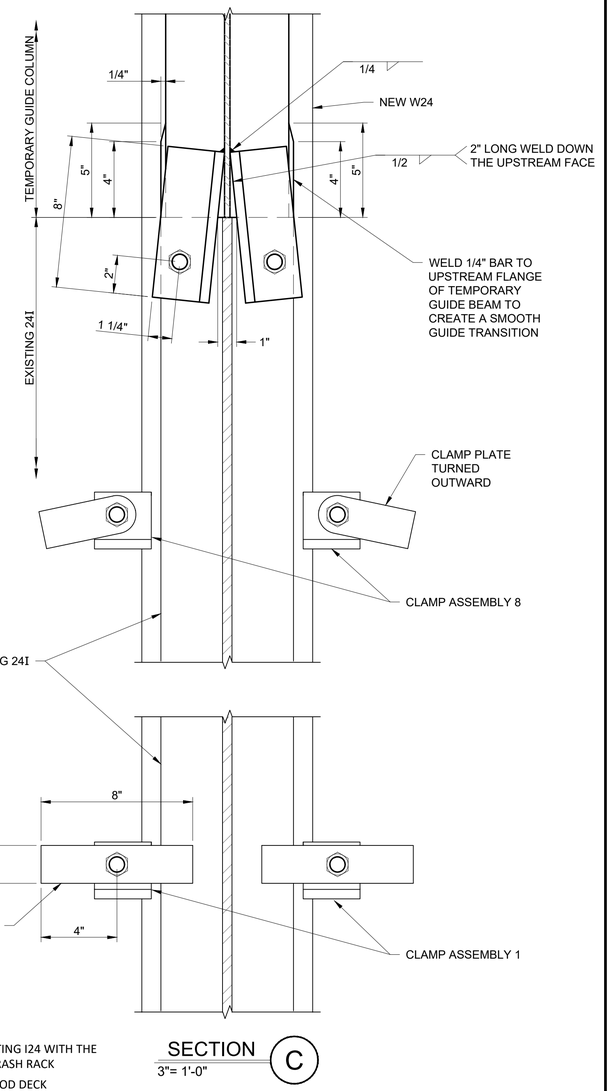
PLAN AT DECK
1 1/2"= 1'-0"



SECTION A
1 1/2"= 1'-0"



SECTION B
1 1/2"= 1'-0"



SECTION C
3"= 1'-0"

GUIDE COLUMN W24 SETTING NOTES

1. POSITION THE W8 GUIDE COLUMN OVER THE I24 WITH DIVER
2. ADJUST THE UPSTREAM FACE OF THE GUIDE COLUMN WITH THE EXISTING I24 WITH THE ADJUSTING BOLTS AND WEDGE TIGHT WITH WEDGES AGAINST THE TRASH RACK
3. SET THE TIMBER GUIDES AS SHOWN ANCHORED TO THE EXISTING WOOD DECK
4. RELEASE THE CRANE ONLY AFTER THE GUIDE COLUMN IS SECURED
5. LOWER THE W24 ONTO THE GUIDE COLUMN ENGAGING THE GUIDE TAB AS SHOWN IN DETAIL B
6. LOWER THE W24 TO THE POINT THE GUIDE TAB HAS ENGAGED THE EXISTING I24 ENSURE THE TOP OF THE W8 AND THE W24 ARE NOT BINDING
7. ONCE THE W24 HAS ENGAGED THE I24 BOOM OUT SO THE W24 IS 12 INCHES FROM THE EXISTING DECK.
8. CONTINUING TO LOWER THE W24 TO THE EXISTING CONCRETE DECK AT ELEVATION 118.77
9. PRIOR TO TIGHTENING THE CLAMPING TABS ENSURE THE BOTTOM OF THE W24 IS CENTERED ON THE I24. THIS MAY REQUIRE TAKING A STRAIN ON THE COLUMN SO THE DIVER CAN DRIFT IT INTO PLACE.
10. ONCE THE TOP CLAMPING PLATES HAVE BEEN TIGHTENED STARTING WITH NUMBER 8 AND WORKING DOWN THE BOTTOM CLAMPING TEMPORARY BAR CAN BE REMOVED AND REPLACED WITH A STANDARD 5" CLAMP PLATE.
11. THE CRANE CAN NOW BE RELEASED AND THE W8 GUIDE COLUMN MAY BE REMOVED FOR THE NEXT SETUP

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TEMPORARY GUIDE COLUMN AND MISC. DETAILS

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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TRASH RAKER RAIL SUPPORT BEAMS - PLAN

1/4" = 1'-0"

NOTES:
1. EXACT LOCATION OF RAILS TO BE CONFIRMED BY KUENZ.

TRASH RAKER RAIL SUPPORT BEAMS - PLAN

1/4" = 1'-0"

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TRASH RAKER SUPPORT
PLAN VIEW

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
AJC	JFB	DBN	010252	03-07-25	400-01

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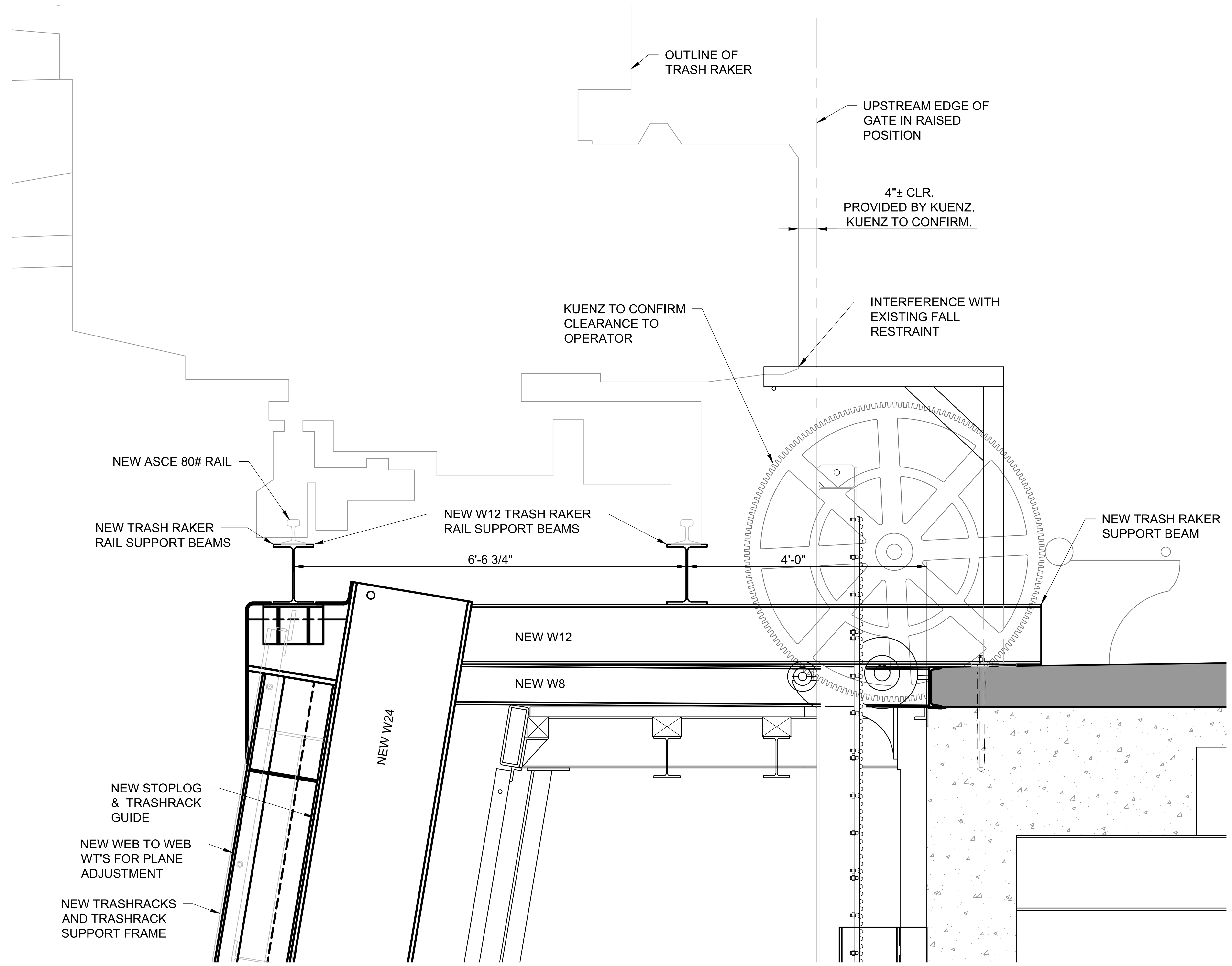
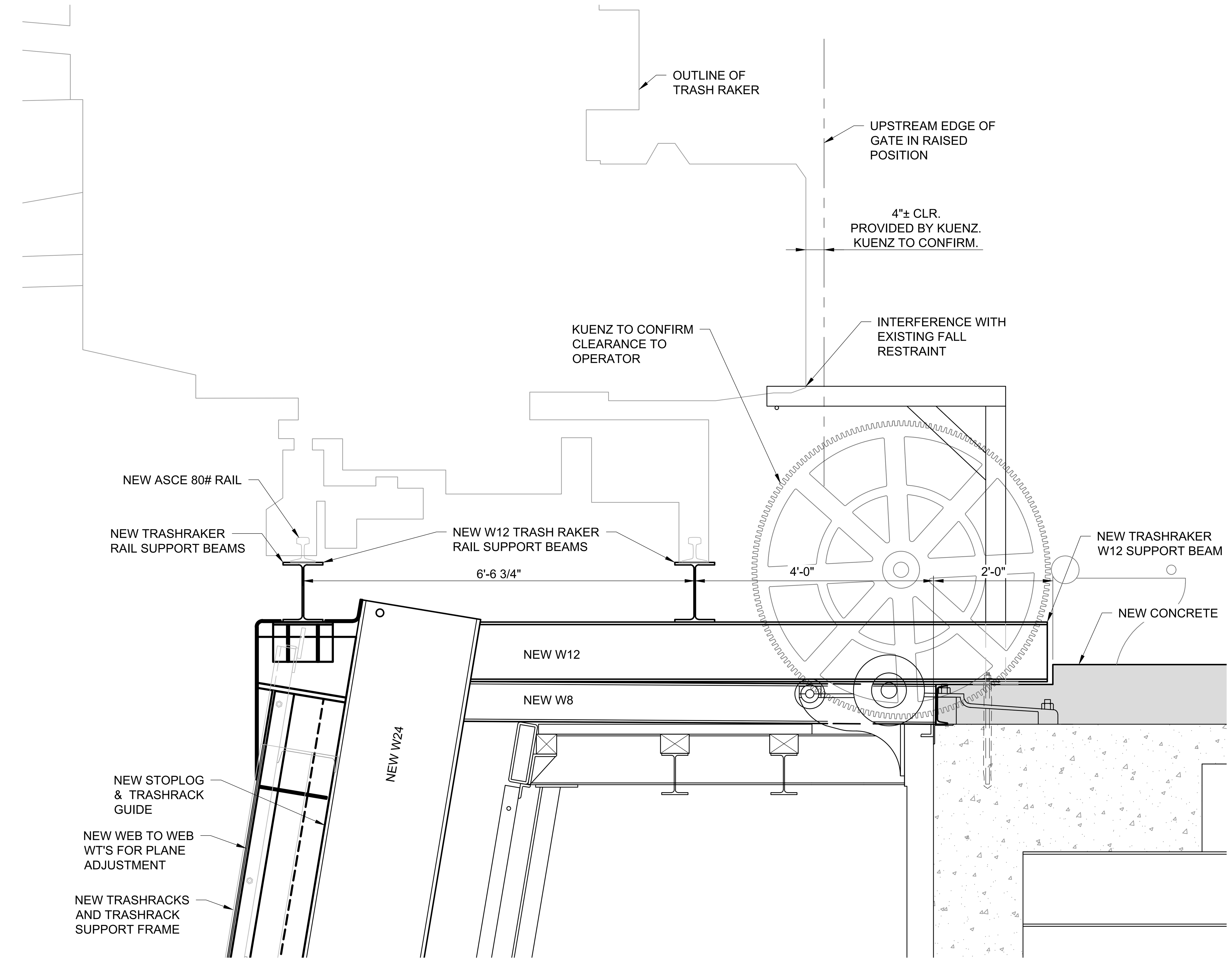


TRASH RAKER SUPPORT - SECTION A 300-01

3/4" = 1'-0"



TRASH RAKER SUPPORT - SECTION B 300-01

3/4" = 1'-0"

22x34 = FULL SCALE

0 1" 2" 3"

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WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

TRASH RAKER SUPPORT SECTION AT TYPICAL BENT, CLOSURE WALL AND GATE OPERATOR

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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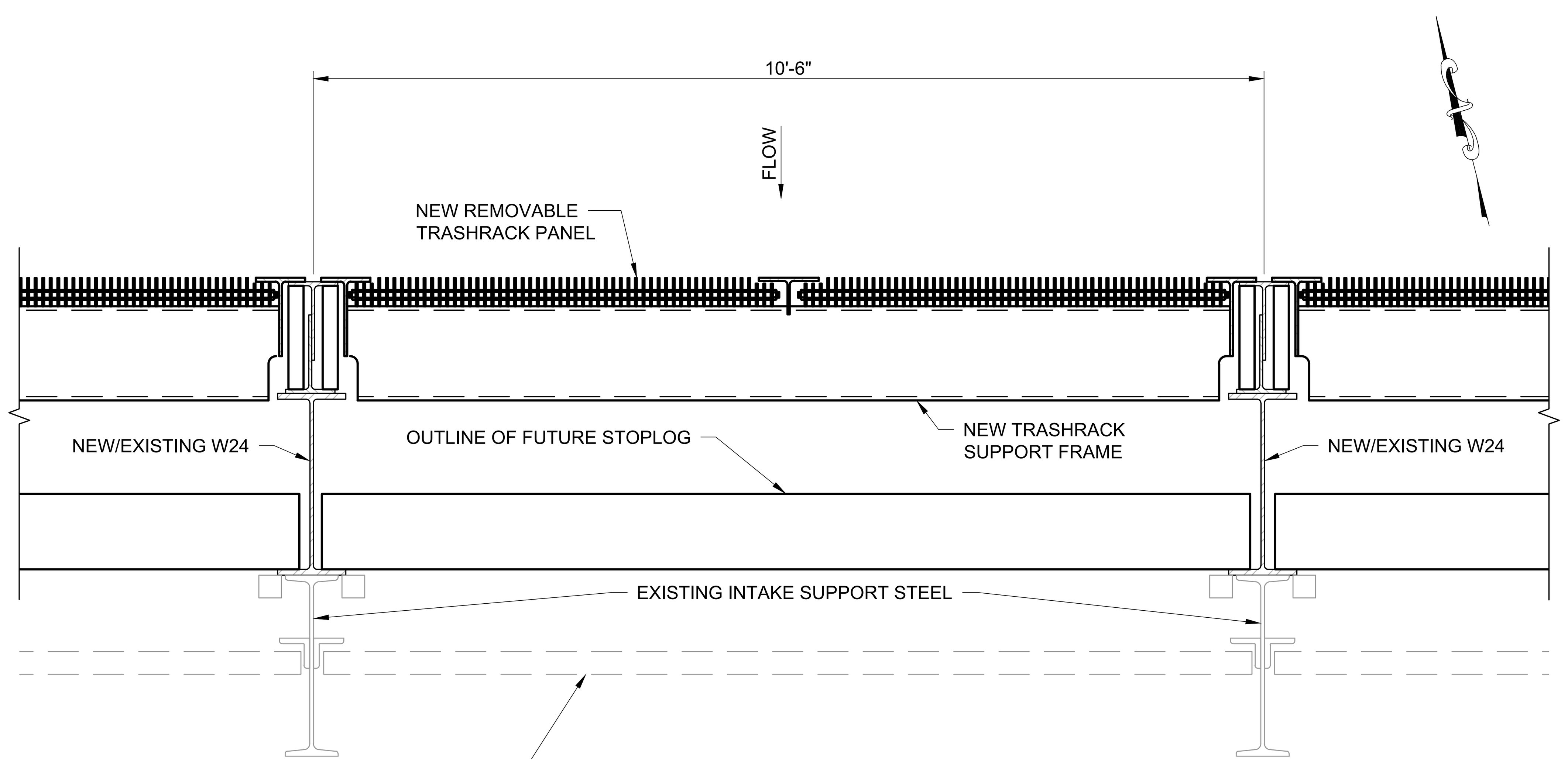
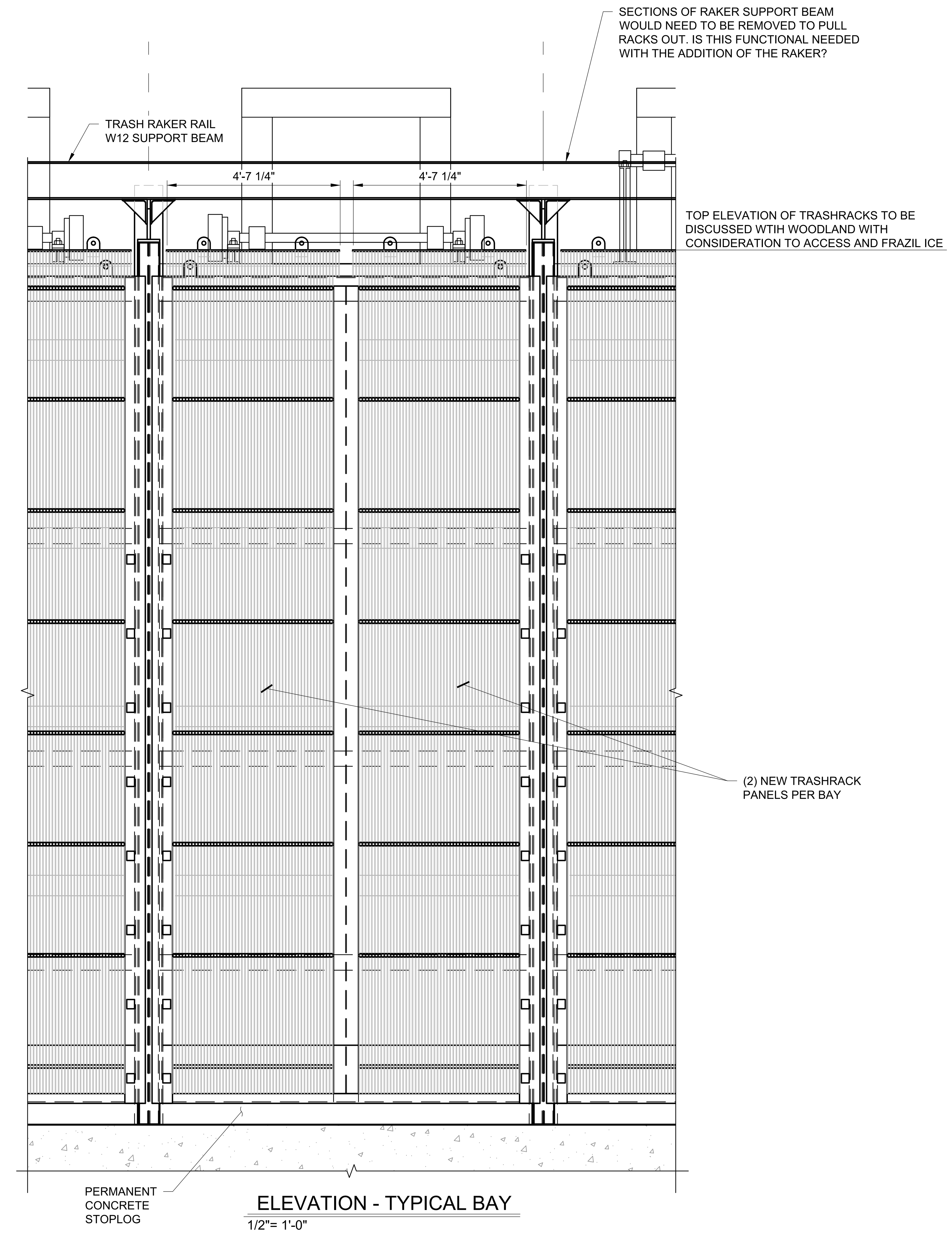
Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
AJC	JFB	DBN	010252	03-07-25	400-02

3" 2" 1" 0

22x34 = FULL SCALE



PLAN VIEW - TYPICAL BAY
1/2"= 1'-0"



ELEVATION - TYPICAL BAY
1/2"= 1'-0"

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INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

TRASHRACKS
GENERAL ARRANGEMENT

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A	CONCEPT REVIEW	03-07-25	JFB	AJC

Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
AJC	JFB	DBN	010252	03-07-25	400-05

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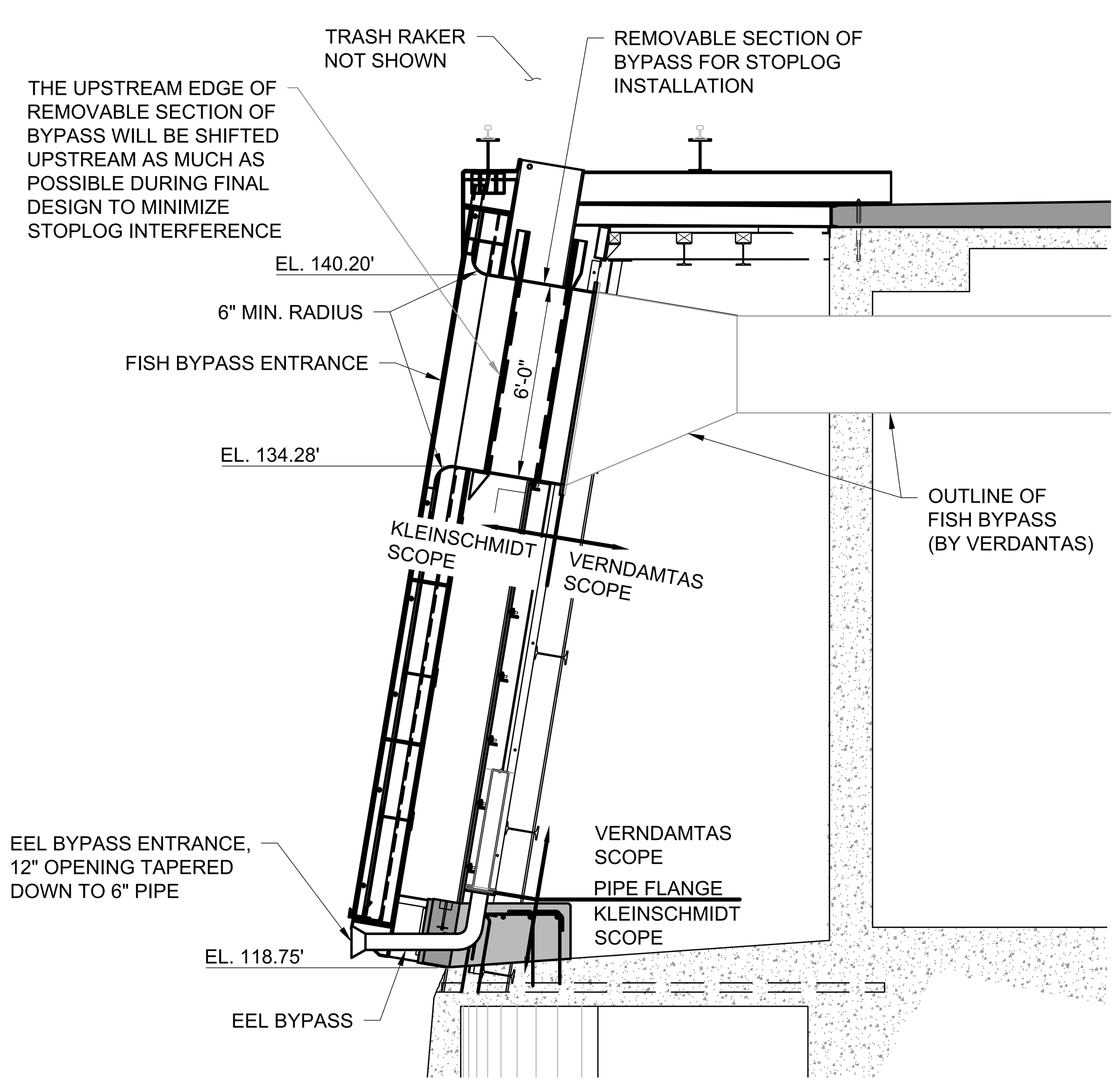
PLAN

1/8"= 1'-0"

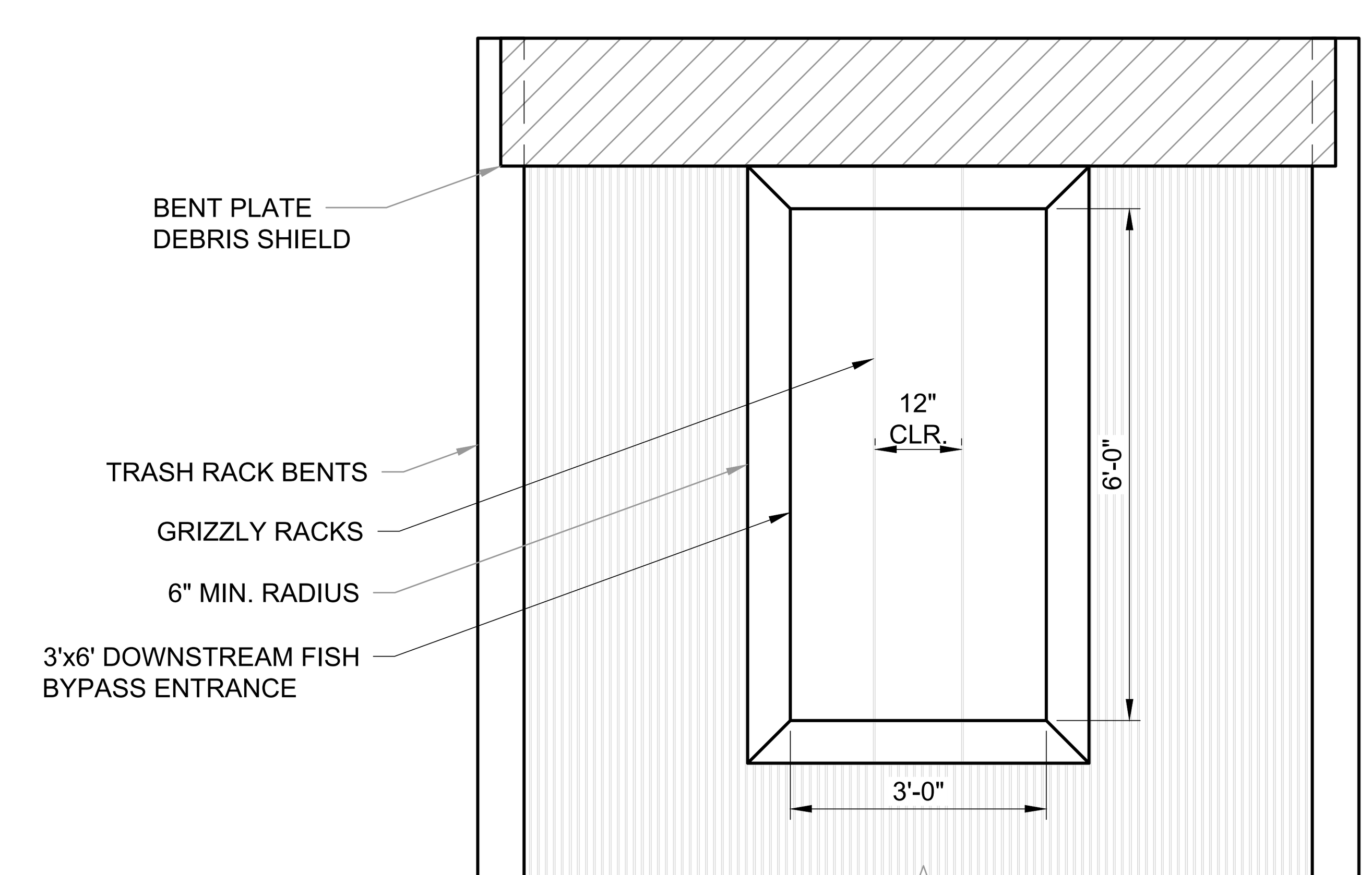
8 0 8 16

SCALE IN FEET



SECTION A

1/4" = 1'-0"



UPSTREAM ELEVATION OF BYPASS ENTRANCE

1/2" = 1'-0"

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BAILEYVILLE, MAINE

WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

BYPASS ENTRANCE
PLAN, ELEVATION, PROFILE AND DETAILS

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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AJC	JFB	DBN	010252	03-07-25	500-01

22x34 = FULL SCALE

0 1" 2" 3"

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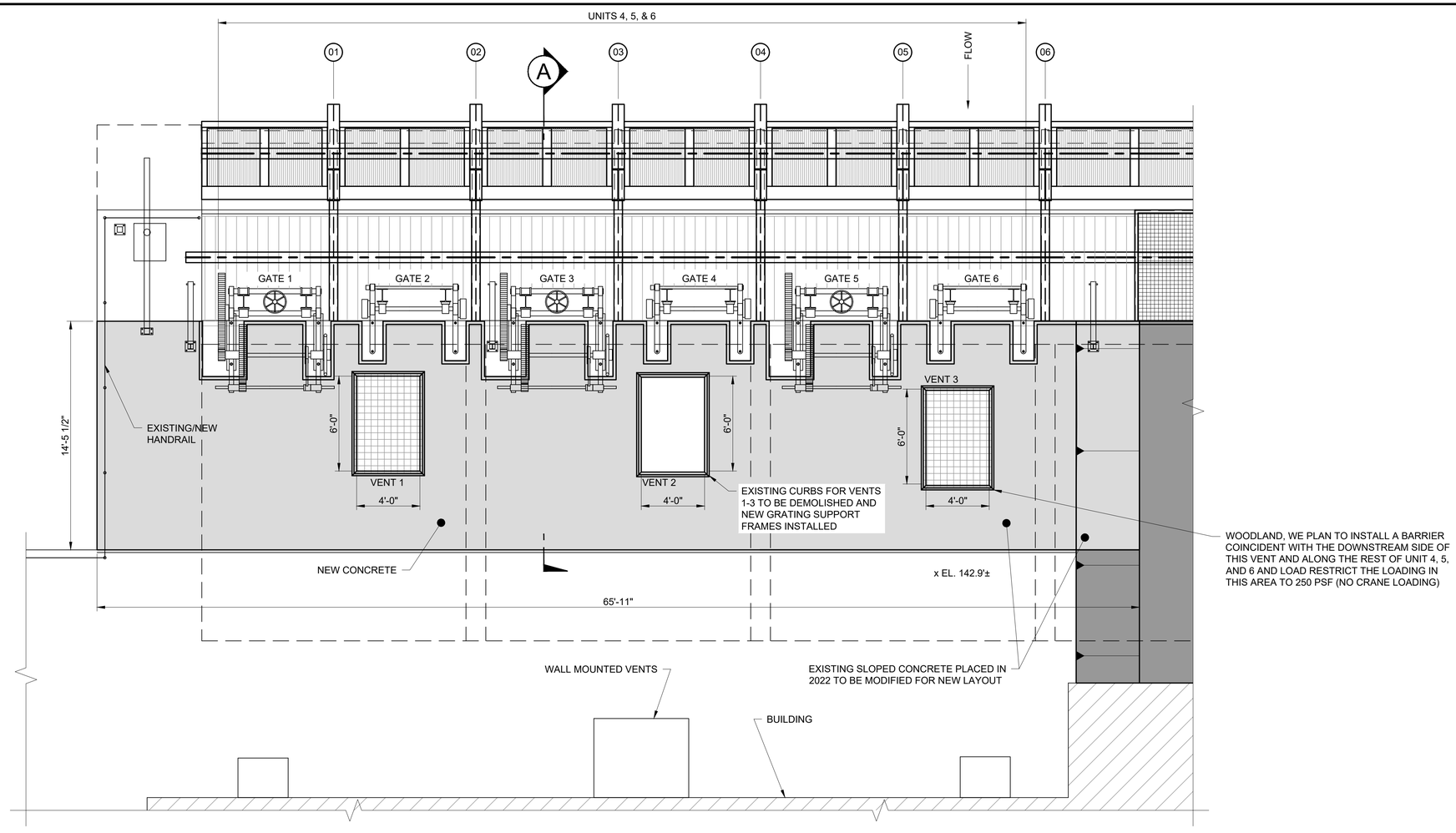
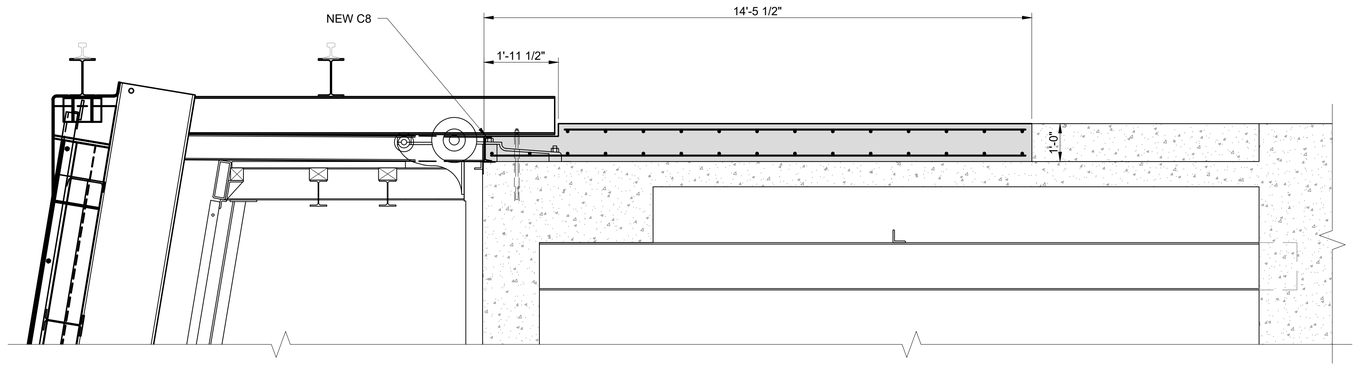
3"
2"
1"
0
22x34 = FULL SCALE



UNITS 4, 5, & 6 CONCRETE DECK PLAN
1/4" = 1'-0"



SECTION A
1/2" = 1'-0"

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WOODLAND PULP, LLC
BAILEYVILLE, MAINE

WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

CONCRETE DECK TOPPING PLAN

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	AJC

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Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
AJC	JFB	DBN	010252	03-07-25	600-01

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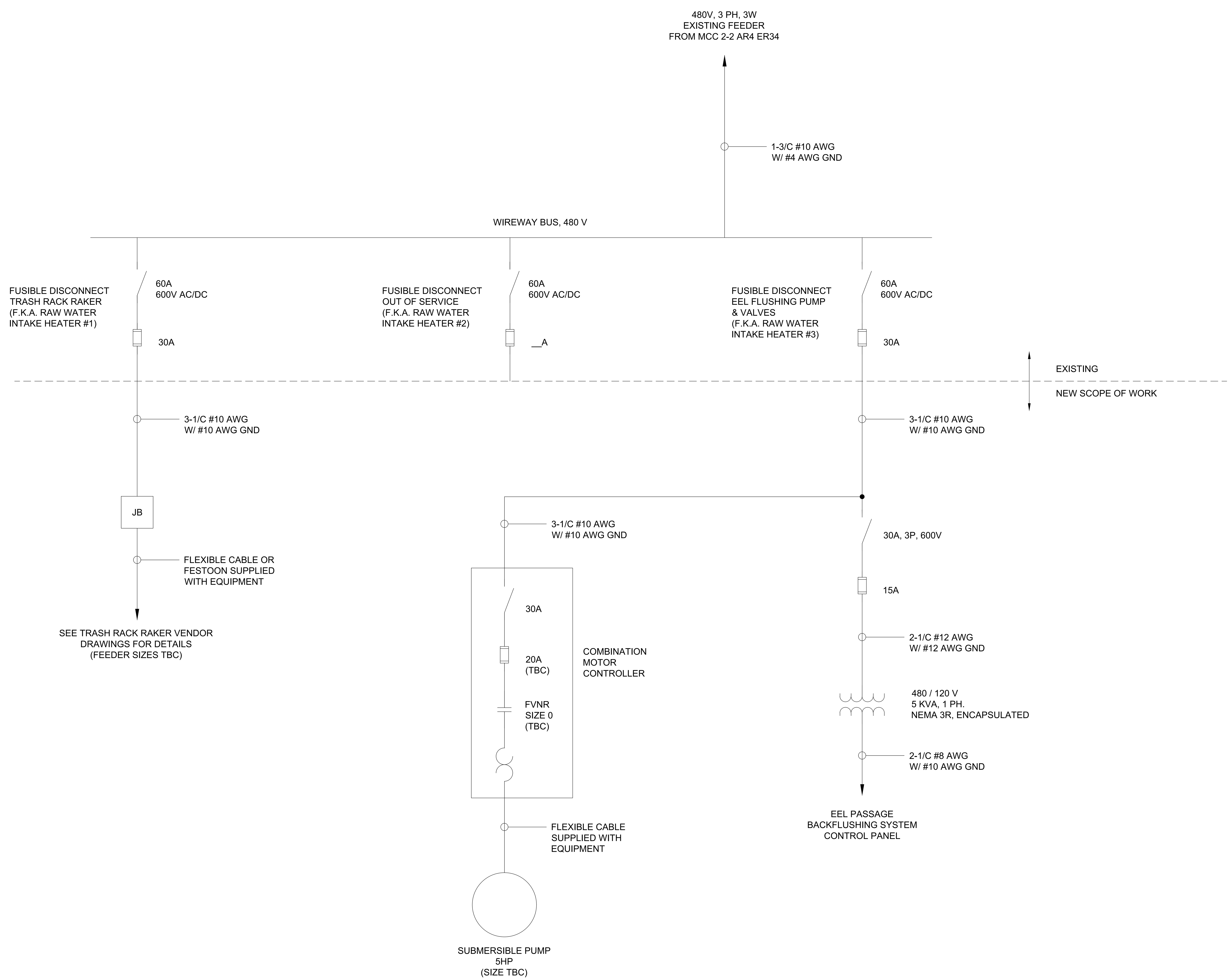
480V, 3 PH, 3W
EXISTING FEEDER
FROM MCC 2-2 AR4 ER34
1-3/C #10 AWG
W/ #4 AWG GND
WIREWAY BUS, 480 V
FUSIBLE DISCONNECT
TRASH RACK RAKER
(F.K.A. RAW WATER
INTAKE HEATER #1)
60A
600V AC/DC
30A
FUSIBLE DISCONNECT
OUT OF SERVICE
(F.K.A. RAW WATER
INTAKE HEATER #2)
60A
600V AC/DC
__A
FUSIBLE DISCONNECT
EEL FLUSHING PUMP
& VALVES
(F.K.A. RAW WATER
INTAKE HEATER #3)
60A
600V AC/DC
30A
EXISTING
NEW SCOPE OF WORK
3-1/C #10 AWG
W/ #10 AWG GND
3-1/C #10 AWG
W/ #10 AWG GND
JB
FLEXIBLE CABLE OR
FESTOON SUPPLIED
WITH EQUIPMENT
SEE TRASH RACK RAKER VENDOR
DRAWINGS FOR DETAILS
(FEEDER SIZES TBC)
3-1/C #10 AWG
W/ #10 AWG GND
30A
20A
(TBC)
COMBINATION
MOTOR
CONTROLLER
FVNR
SIZE 0
(TBC)
FLEXIBLE CABLE
SUPPLIED WITH
EQUIPMENT
SUBMERSIBLE PUMP
5HP
(SIZE TBC)
30A, 3P, 600V
15A
2-1/C #12 AWG
W/ #12 AWG GND
480 / 120 V
5 KVA, 1 PH.
NEMA 3R, ENCAPSULATED
2-1/C #8 AWG
W/ #10 AWG GND
EEL PASSAGE
BACKFLUSHING SYSTEM
CONTROL PANEL

22x34 = FULL SCALE

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WOODLAND PULP, LLC
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WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

ELECTRICAL
SINGLE LINE DIAGRAM

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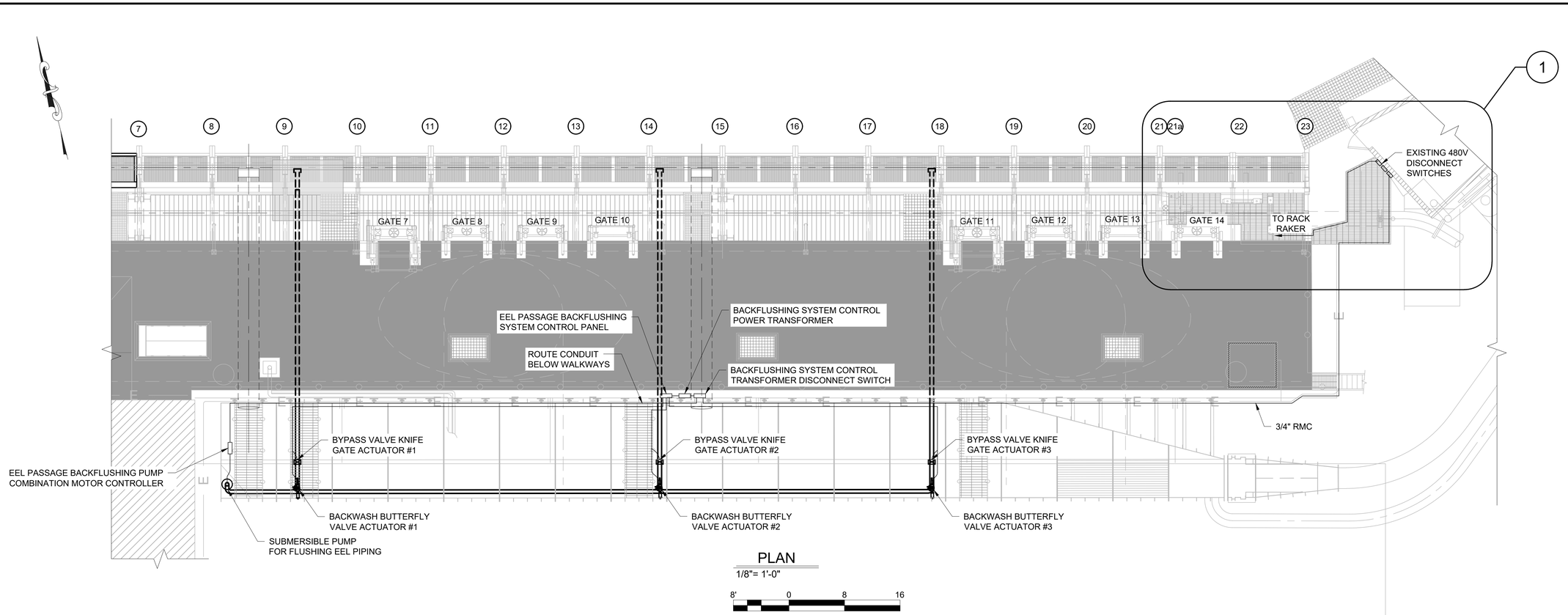
No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	LJD

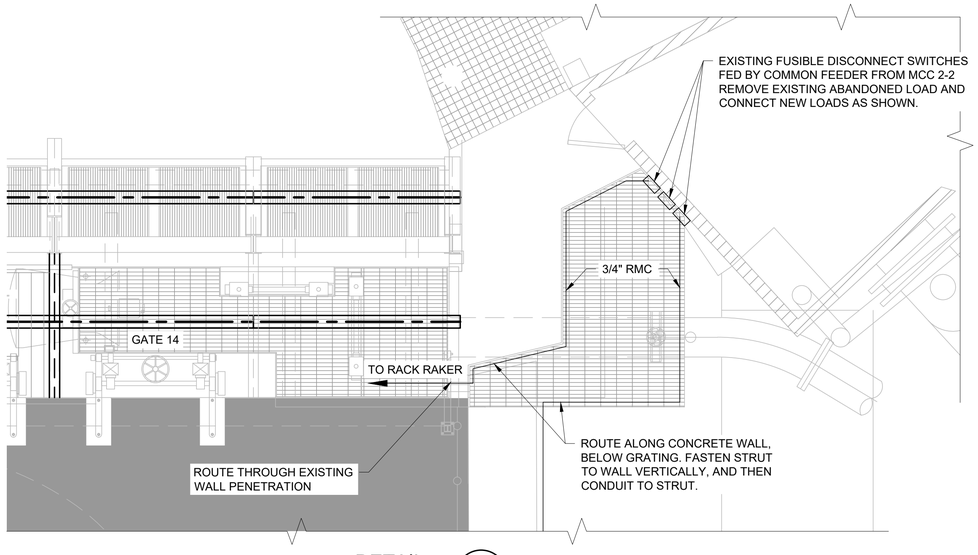
Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
LJD	JFB		010252	03-07-25	700-01



PLAN

1/8"= 1'-0"

8' 0 8 16



DETAIL 1

1/4" = 1'-0"

4' 0 4 8

NOT FOR CONSTRUCTION

WOODLAND PULP, LLC
BAILEYVILLE, MAINE

WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

ELECTRICAL
PLAN

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	LJD

Designed	Drawn	Checked
LJD	JFB	

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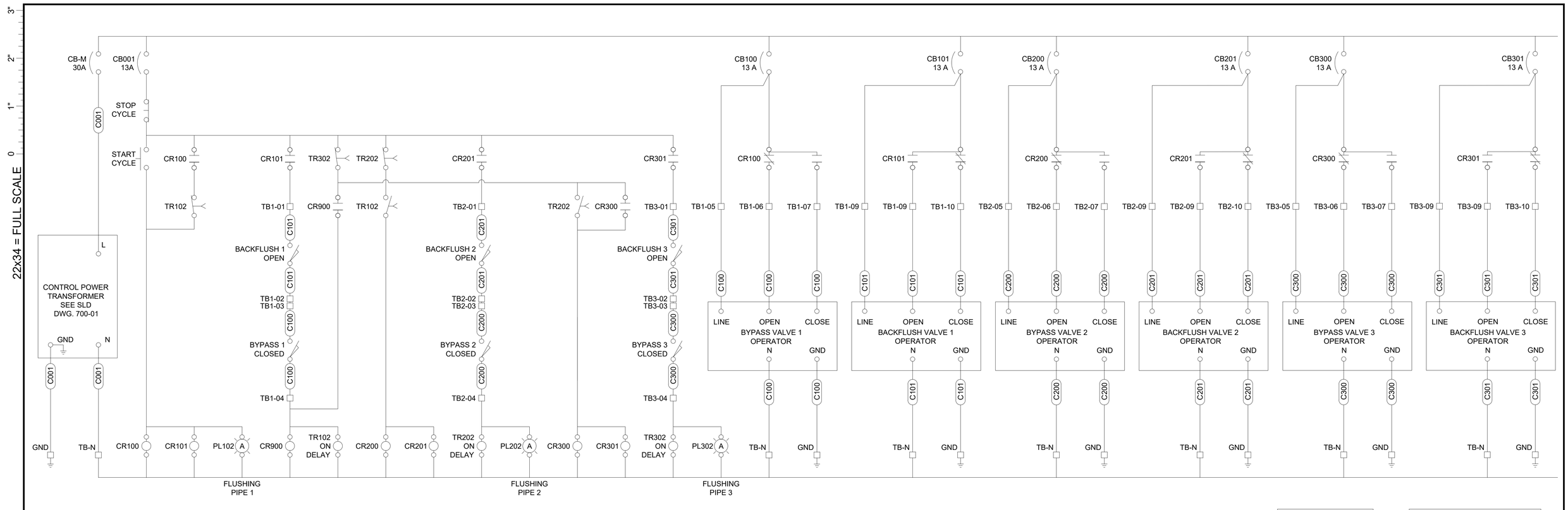
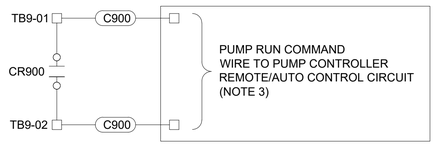
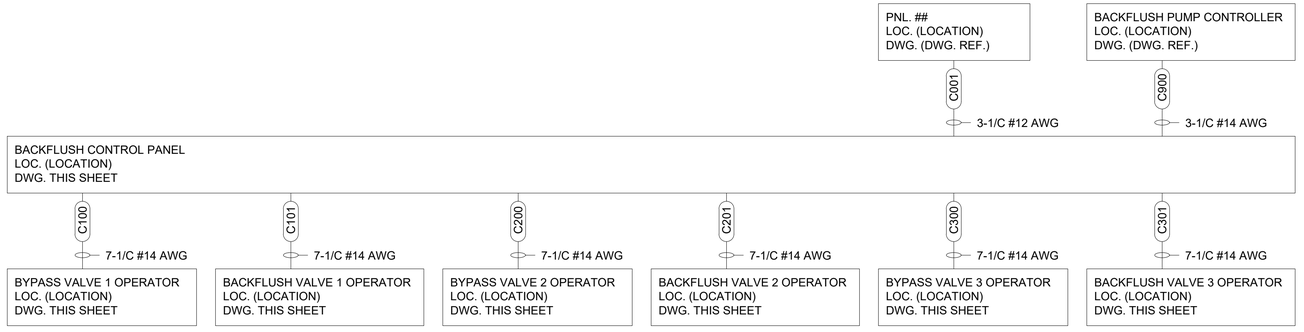
Project No.	Date Revised	Drawing No.
010252	03-07-25	700-02







CR100
BYPASS VALVE 1 CONTROL RELAY

	FUNCTION	REFERENCE
	CLOSE VALVE	THIS SHEET
	OPEN VALVE	THIS SHEET
	SEAL IN	THIS SHEET

CR200
BYPASS VALVE 2 CONTROL RELAY

	FUNCTION	REFERENCE
	CLOSE VALVE	THIS SHEET
	OPEN VALVE	THIS SHEET

CR300
BYPASS VALVE 3 CONTROL RELAY

	FUNCTION	REFERENCE
	CLOSE VALVE	THIS SHEET
	OPEN VALVE	THIS SHEET
	SEAL IN	THIS SHEET

CR101
BACKFLUSH VALVE 1 CONTROL RELAY

	FUNCTION	REFERENCE
	OPEN VALVE	THIS SHEET
	CLOSE VALVE	THIS SHEET
	START PUMP & TIMER TR102	THIS SHEET

CR201
BACKFLUSH VALVE 2 CONTROL RELAY

	FUNCTION	REFERENCE
	OPEN VALVE	THIS SHEET
	CLOSE VALVE	THIS SHEET
	START TIMER TR202	THIS SHEET

CR301
BACKFLUSH VALVE 3 CONTROL RELAY

	FUNCTION	REFERENCE
	OPEN VALVE	THIS SHEET
	CLOSE VALVE	THIS SHEET
	START TIMER TR302	THIS SHEET

TR102
BACKFLUSH 1 TIMER RELAY
MACROMATIC ON-DELAY MODEL TE5022U-15

	FUNCTION	REFERENCE
	START PIPE 2 FLUSH	THIS SHEET
	END PIPE 1 FLUSH	THIS SHEET

TR202
BACKFLUSH 2 TIMER RELAY
MACROMATIC ON-DELAY TE5022U-15

	FUNCTION	REFERENCE
	START PIPE 3 FLUSH	THIS SHEET
	END PIPE 2 FLUSH	THIS SHEET

TR302
BACKFLUSH 3 TIMER RELAY
MACROMATIC ON-DELAY TE5022U-15

	FUNCTION	REFERENCE
	END PIPE 3 FLUSH STOP PUMP	THIS SHEET

CR900
FLUSHING PUMP CONTROL RELAY

	FUNCTION	REFERENCE
	RUN PUMP	THIS SHEET
		THIS SHEET
	SEAL IN	THIS SHEET

NOTES
1. VALVE OPERATORS SHALL BE 120 V, SINGLE-PHASE, MOTOR-OPERATED TYPE WITH BYPASS LIMIT SWITCHES INDICATING FULLY CLOSED AND FULLY OPENED POSITIONS. EACH SHALL INCLUDE PROVISION FOR LOCAL MANUAL OPERATION BY HAND-WHEEL, AND SHALL INCLUDE LOCAL POSITION INDICATION. INTERNAL MOTOR THERMAL PROTECTION AND OVER-TORQUE PROTECTION SHALL BE INCLUDED.
2. MINIMAL TERMINAL BLOCKS ARE SHOWN IN THIS SCHEMATIC. MORE TERMINAL BLOCKS MAY BE USED AS NEEDED TO FACILITATE PANEL WIRING.
3. PUMP CONTROL: THIS DESIGN PROVIDES A SINGLE RUN SIGNAL VIA A DRY RELAY CONTACT.
4. TIME-DELAY RELAY: MACROMATIC MODEL TE5022U-15
   - 4.1. CONTROL VOLTAGE: 24 – 240V AC, 12 – 240V DC
   - 4.2. DELAY: ANALOG ADJUSTABLE. t = 0.3 - 30 MIN. DELAY
   - 4.3. FUNCTION: UPON APPLICATION OF INPUT VOLTAGE, THE TIME DELAY (t) BEGINS. AT THE END OF THE TIME DELAY (t), THE OUTPUT IS ENERGIZED. INPUT VOLTAGE MUST BE REMOVED TO RESET THE TIME DELAY RELAY & DE-ENERGIZE THE OUTPUT.
   - 4.4. CONTACTS: 10 A DPDT
   - 4.5. MOUNTING: 35MM DIN RAIL

DESCRIPTION OF SYSTEM AUTOMATIC OPERATION
1. PRESS CYCLE START BUTTON.
2. CLOSE PIPE 1 BYPASS VALVE AND OPEN PIPE 1 BACKFLUSH VALVE
3. START BACKFLUSH PUMP.
4. WAIT SOME TIME (1 - 10 MINUTES).
5. CLOSE PIPE 2 BYPASS VALVE AND OPEN PIPE 2 BACKFLUSH VALVE AND CLOSE PIPE 1 BACKFLUSH VALVE AND OPEN PIPE 1 BYPASS VALVE.
6. WAIT SOME TIME.
7. CLOSE PIPE 3 BYPASS VALVE AND OPEN PIPE 3 BACKFLUSH VALVE AND CLOSE PIPE 2 BACKFLUSH VALVE AND OPEN PIPE 2 BYPASS VALVE.
8. WAIT SOME TIME.
9. TURN OFF PUMP AND CLOSE PIPE 3 BACKFLUSH VALVE AND OPEN PIPE 3 BYPASS VALVE.

NOT FOR CONSTRUCTION

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	LJD

WOODLAND PULP, LLC
BAILEYVILLE, MAINE

WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

SCHEMATIC
EEL ENTRANCE BACK-FLUSH CONTROL

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Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
LJD	JFB		010252	03-07-25	710-01

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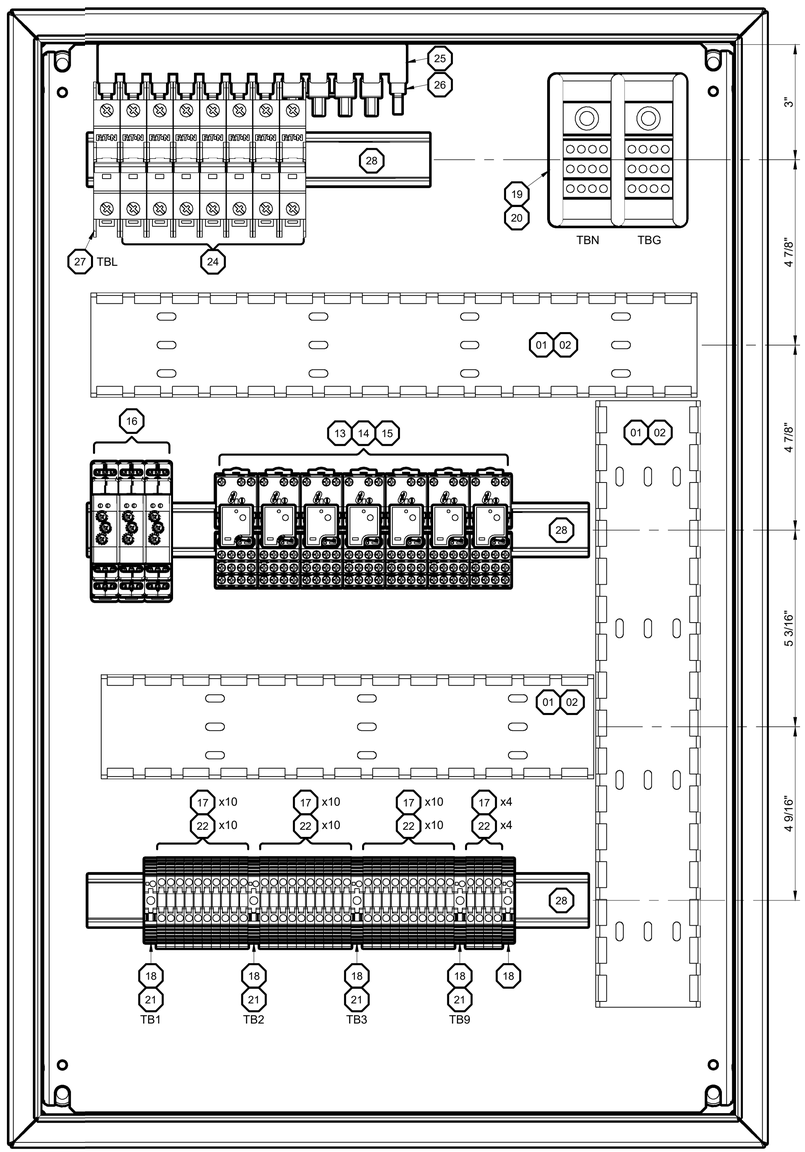
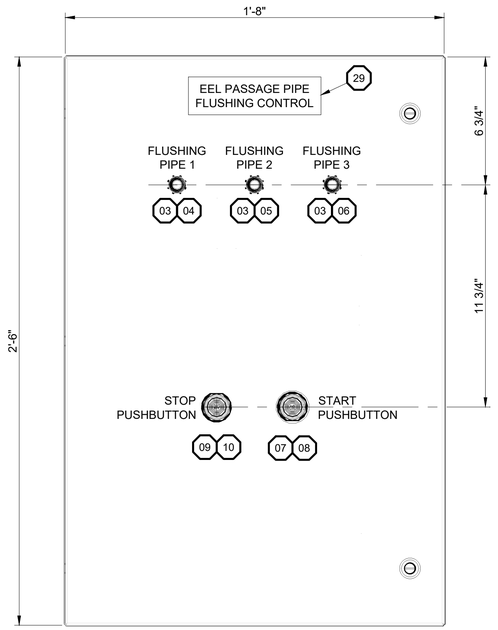
22x34 = FULL SCALE



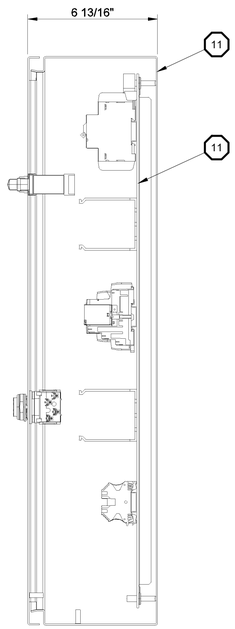
ELECTRICAL ENCLOSURE - FRONT

6" = 1'-0"



ELECTRICAL ENCLOSURE - DOOR

3" = 1'-0"



ELECTRICAL ENCLOSURE - SECTION

3" = 1'-0"

FISH LIFT CONTROL PANEL BILL OF MATERIALS

ITEM #	QTY	ITEM DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	PANDUCT TYPE G WIDE SLOT WIRING DUCT, DUCT NOMINAL SIZE (WXH) 2.5"X3", 6 FOOT SECTIONS	PANDUIT	G2.5X3LG6
2	1	PANDUCT WIDE SLOT WIRING DUCT COVER FOR 2.5" DUCT, 6 FOOT SECTIONS	PANDUIT	C2.5LG6
3	3	TYPE 4/13 METAL (800T) PILOT LIGHT, UNIVERSAL LED, 12-130V AC/DC, AMBER	ALLEN BRADLEY	800T-QH2A
4	1	800T CUSTOM LEGEND NAMEPLATE, CUSTOM TEXT LINE 1: FLUSHING; LINE 2: PIPE 1	ALLEN BRADLEY	800T-X559E
5	1	800T CUSTOM LEGEND NAMEPLATE, CUSTOM TEXT LINE 1: FLUSHING; LINE 2: PIPE 2	ALLEN BRADLEY	800T-X559E
6	1	800T CUSTOM LEGEND NAMEPLATE, CUSTOM TEXT LINE 1: FLUSHING; LINE 2: PIPE 3	ALLEN BRADLEY	800T-X559E
7	1	TYPE 4/13 METAL (800T) PUSH BUTTON, MOMENTARY, FLUSH HEAD, GREEN, 1 N.O. - 1 N.C. CONTACTS.	ALLEN BRADLEY	800T-A1A
8	1	800T STANDARD LEGEND NAMEPLATE, "START"	ALLEN BRADLEY	800T-X547
9	1	TYPE 4/13 METAL (800T) PUSH BUTTON, MOMENTARY, EXTENDED HEAD, RED, 1 N.O. - 1 N.C. CONTACTS.	ALLEN BRADLEY	800T-B6A
10	1	800T STANDARD LEGEND NAMEPLATE, "STOP" (RED)	ALLEN BRADLEY	800T-X550
11	1	ELECTRICAL ENCLOSURE. MILD STEEL, NEMA 3/4/12, HINGED DOOR W/ SLOTTED QUARTER-TURN LATCH, COLLAR STUDS FOR INNER PANEL MOUNTING. ANSI 61 GRAY. 30"x20"x6"	HAMMOND	EN4SD30206GY
12	1	ELECTRICAL ENCLOSURE INNER PANEL	HAMMOND	EP3020
13	7	GENERAL PURPOSE RELAY, 8 BLADE, DPDT, 120 VAC COIL, 12 AMP CONTACTS	MACROMATIC	GB120A2
14	7	GENERAL PURPOSE RELAY SOCKET, 8 BLADE	MACROMATIC	18F-2Z-C5
15	7	GENERAL PURPOSE RELAY RETAINER, PLASTIC	MACROMATIC	GB-PR
16	3	RELAY, SINGLE-FUNCTION, SINGLE-RANGE, FUNCTION: ON DELAY, RANGE: 0.3 - 30 MINUTES. DPDT CONTACTS RATED 10 AMPS. 35MM DIN RAIL MOUNTING	MACROMATIC	TE5022U-15
17	40	TERMINAL BLOCK, SCREW CONNECTION, 4 mm², 35 A, 800 V. 2 CONNECTIONS, 1 LEVEL.	WEIDMÜLLER	WDU 4
18	5	TERMINAL BLOCK END BRACKET FOR WDU-4	WEIDMÜLLER	WEW 35/2
19	1	POWER DISTRIBUTION BLOCK, 2-POLE, ONE LINE-SIDE TERMINAL, 12 LOAD SIDE TERMINALS, 310 A, 100 KA SCCR. UL RECOGNIZED	EATON/BUSSMANN	16370-2
20	1	COVER FOR POWER DISTRIBUTION TERMINAL BLOCK ITEM 32	EATON/BUSSMANN	CPDB-2
21	5	TERMINAL BLOCK END BRACKET GROUP MARKER 33.3 x 8 mm	WEIDMÜLLER	WAD 8 MC NE WS
22	1	TERMINAL BLOCK MARKER FOR WDU-4, 5 MM X 6 MM, (6 MM PITCH) PRE-PRINTED 1 - 50, 10 SETS.	WEIDMÜLLER	468660001 DEK 6 FW 1-50
23	10	TERMINAL BLOCK PE BLOCK, 4 mm², 800 V. 2 CONNECTIONS, 1 LEVEL.	WEIDMÜLLER	WPE 4
24	7	BRANCH CIRCUIT BREAKER, SINGLE POLE, UL 489, DIN RAIL MOUNT. 13 AMP, 10 KAIC. CURVE C	EATON	FAZ-C13/1-NA-L
25	1	BUS BAR - ONE-POLE, 12 TERMINLS	EATON	Z-SV/UL-16/1P-1TE/12
26	2	BUS BAR SHROUD, THREE-POLE	EATON	ZV-BS-UL
27	1	BRANCH CIRCUIT BREAKER, SINGLE POLE, UL 489, DIN RAIL MOUNT. 30 AMP, 10 KAIC. CURVE C	EATON	FAZ-C30/1-NA-L
28	2	DIN RAIL, 35 MM X 7.5 MM X 1 M, ZINC COATED STEEL	MCMASTER-CARR	8961K15
29	1	NAMEPLATE, ENGRAVED LAMINATED PLASTIC, WHITE TEXT ON BLACK FIELD, "EEL PASSAGE PIPE FLUSHING CONTROL". TEXT HEIGHT: 1/2". OVERALL DIMENSIONS AS REQUIRED TO FIT TEXT. FASTEN WITH STAINLESS MACHINE SCREWS	BY DESCRIPTION	BY DESCRIPTION
30	1	NAMEPLATE, ENGRAVED LAMINATED PLASTIC, WHITE TEXT ON BLACK FIELD, "SHORT CIRCUIT CURRENT RATING: 10 KA, 120 VAC MAXIMUM". TEXT HEIGHT: 3/16". OVERALL DIMENSIONS AS REQUIRED TO FIT TEXT. FASTEN WITH STAINLESS MACHINE SCREWS	BY DESCRIPTION	BY DESCRIPTION

(##) BILL OF MATERIAL ITEM NUMBER ##

NOT FOR CONSTRUCTION

WOODLAND PULP, LLC
BAILEYVILLE, MAINE

WOODLAND DAM
INTAKE DESIGN FOR DOWNSTREAM FISH PASSAGE

CABINET LAYOUT
EEL ENTRANCE BACKFLUSH CONTROL PANEL

No.	Revision	Date	Drawn	Checked
A	CONCEPT REVIEW	03-07-25	JFB	LJD

Designed	Drawn	Checked
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Project No.	Date Revised	Drawing No.
010252	03-07-25	710-02

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Woodland Fish Passage Project

Bid Documents

Prepared for:

Maine Department of Marine Resources

Prepared by:

Alden

(A Verdantas Company)

May 22, 2025

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SECTION 01 01 10

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31 23 19	WATER CONTROL MEASURES
31 37 00	RIPRAP
31 63 33	MICROPILES
31 68 00	ROCK ANCHORS
DIVISION 32	**EXTERIOR IMPROVEMENTS**
32 15 00	ACCESS ROADS
32 31 12	SECURITY FENCE
32 34 00	FABRICATED BRIDGES
32 90 10	SITE RESTORATION
DIVISION 33	**UTILITIES**
33 11 00	GENERAL PIPING COMPONENTS AND REQUIREMENTS
33 11 02	FLEXIBLE PIPE COUPLINGS AND EXPANSION JOINTS

33 11 04	MODULAR MECHANICAL SEALS
33 12 16	VALVES FOR WATER WORKS
33 14 00	FIELD HYDROSTATIC TESTING
DIVISION 34	**(NOT USED)**
DIVISION 35	**WATERWAY CONSTRUCTION**
35 20 13	WEDGE WIRE SCREEN AND AIR BURST SYSTEM
35 20 16	FABRICATED GATES, GUIDES, AND LIFTS
35 20 17	RUBBER SEALS
35 21 00	FABRICATED STOP LOGS
DIVISION 36-39	**(NOT USED)**
DIVISION 40	**PROCESS INTERCONNECTIONS**
40 05 13	STAINLESS STEEL PIPING
40 20 55	CARBON STEEL PIPE
40 92 10	ELECTRIC ACTUATORS FOR VALVES
DIVISION 41	**MATERIAL PROCESSING AND HANDLING EQUIPMENT**
41 22 00	HOPPER ELECTRIC WIRE ROPE HOIST
DIVISION 42-46	**(NOT USED)**

SUPPLEMENT A – SURVEY INFORMATION

Site Survey Information (Drawings)

SUPPLEMENT B – GEOTECHNICAL INFORMATION

Verdantas Geotechnical Engineering Report

END OF SECTION

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SECTION 09 90 00

PAINTING AND COATING

PART 1 - GENERAL

1.01. DESCRIPTION

A. This section includes materials and application of painting and coating systems.

1.02. DEFINITIONS

A. Definitions:

1. Contractor is the party or persons directly contracted or subcontracted through a third party to perform the work described herein.

2. Engineer is the Engineer of Record for the Project or a representative for the Engineer of Record for the Project.

3. Manufacturer is the materials supplier.

B. Service Condition Identification:

1. A: Atmospheric: Any metal or surface, indoors or outdoors that is exposed to view.

2. ND: Normally Dry: Substrate is exposed to moisture from environmental conditions but remains dry more than 85 percent of its service life.

3. NW: Normally Wet: Substrate is exposed to moisture from environmental conditions and remains moist not less than 85 percent of its service life.

4. S: Submerged: Substrate is continually immersed in an aqueous solution.

5. SP: Splash and Spill: Substrate is frequently subjected to exposure to aqueous solutions, but is generally cleaned up within 2-8 hours

6. UV: Ultraviolet: Substrate is exposed to ultraviolet sunlight.

1.03. REFERENCES

A. American Society for Testing and Materials International (ASTM):

1. A780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

2. D16: Standard Terminology for Paint, Related Coatings, Materials, and Applications.

3. D2697: Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings.

4. D4417: Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel.

5. D4541: Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.

6. D7091: Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals.

B. NACE International (NACE):

1. SP0178 - Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service.

2. SP0188-06 - Discontinuity (Holiday) Testing of Protective Coatings.

C. The Society for Protective Coatings (SSPC):

1. SSPC-SP 1 - Solvent Cleaning.

2. SSPC-SP 2 - Hand Tool Cleaning.

3. SSPC-SP 3 - Power Tool Cleaning.

4. SSPC-SP 5 / NACE 1 - White Metal Blast Cleaning.

5. SSPC-SP 6 / NACE 3 - Commercial Blast Cleaning.

6. SSPC-SP 7 - Brush off Blast Cleaning.

7. SSPC-SP 10 / NACE 2 - Near White Metal Blast Cleaning.

8. SSPC-SP 11 - Machine Tool Cleaning to Bare Metal.

9. SPSC-SP 12 / NACE 5 - Waterjet Cleaning.

10. SSPC-SP 13 / NACE 6 - Surface Preparation for Concrete.

11. SSPC-SP 14 / NACE 8 - Industrial Blast Cleaning.

12. SSPC-SP 15 - Commercial Grade Power Tool Cleaning.

13. SSPC-SP 16 - Brush off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non Ferrous Metals.

14. SSPC-SP WJ-1 / NACE WJ-1 Clean to Bare Substrate.

15. SSPC-SP WJ-2 / NACE WJ-2 Very Thorough Cleaning.

16. SSPC-SP WJ-3 / NACE WJ-3 Thorough Cleaning.

17. SSPC-SP WJ-4 / NACE WJ-4 Light Cleaning.

18. SSPC-PA1 - Best Practices for Paints and Coatings Application.

19. SSPC-PA2 - Measurement of Dry Coating Thickness with Magnetic Gauges.

20. SSPC-PA71 - Procedure for Determining Conformance to Steel Profile/Surface Roughness/Peak Count Requirements.

D. United States Environmental Protection Agency (EPA):

1. Method 24 - Surface Coatings.

1.04. QUALIFICATIONS

A. Coating manufacturer's authorized representative shall provide a written statement attesting that the applicator has been instructed on proper preparation, mixing and application procedures for coatings specified.

B. Applicators shall have a minimum of 5 years of experience in the application of similar products on similar projects.

1. The contractor shall possess a valid state license as required for performance of the painting and coating work called for in this specification.

2. Provide references for a minimum of 3 different projects completed in the last 5 years with similar scope of work.

a. Include name and address of project, size, and scope of work.

C. Applicators shall possess current SSPC-QP-3 certifications or equivalent as required by the Engineer.

1.05. SUBMITTALS

A. Submit all required documentation noted herein in accordance with Section 01 33 00.

B. Product Data: Manufacturer's data sheets on each paint and coating product should include:

1. Colors available for each product (where applicable).

2. Percent solids by volume.

3. Minimum and maximum recommended dry-film thickness per coat for prime, intermediate, and finish coats.

4. Recommended surface preparation.

5. Recommended thinners.

6. Statement verifying that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.

7. Application instructions including recommended equipment and temperature limitations.

8. Curing requirements and instructions.

9. Storage and handling requirements and recommendations.

10. VOC compliance.

11. Material safety data sheets (MSDS) for each coating.

C. Contractor Work Plan:

1. In general, the Contractor shall supply the Engineer with a work plan. The work plan should detail but is not limited to the following items.

a. Proposed methods of containment, collection, and disposal of related debris, rinse water, or trash.

b. Proposed surface preparation standards and methods to achieve standard for each space or substrate identified on the Drawings or Finish Schedule.

c. Proposed coating system for each space or substrate identified on the Drawings or Finish Schedule.

d. Confirmation of compatibility for shop and field applied coatings. (where applicable).

e. Proposed methods and equipment to be used for paint application.

f. Proposed methods for maintaining proper environmental conditions during surface preparation, application, and curing cycles of the coating materials.

g. Proposed methods and job safety analysis procedures for maintaining a clean, safe and secure jobsite during work activity.

h. Proposed methods to protect coating during curing, shipping, handling, and storage.

i. Proposed methods for storing materials.

j. Proposed methods and examples of daily reports of Contractor work progress.

k. Potential hazards and mitigation, work processes, scheduling conflicts or other planning items which would hinder successful and timely completion of the Project.

D. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's color samples available for each type of coating system.

1.06. QUALITY ASSURANCE

A. Quality assurance procedures and practices shall be at the discretion of the Engineer and Maine DMR. It provides oversight of quality control monitoring of all phases of the installation process including but not limited to surface preparation and application of coatings.

1. Requirements for acceptable quality control methods shall be utilized and defined by the Engineer and Maine DMR.

2. Procedures or practices for quality control practices not specifically defined in this Section may be utilized, provided they meet recognized and acceptable professional standards and are accepted by the Engineer and Maine DMR.

3. Arrange for coating manufacturer's representative to attend preconstruction conferences and make periodic visits at the construction site to provide consultation services during surface preparation work and application of coatings.

4. Quality assurance activities may be performed by a third party inspection firm contracted by Maine DMR or specifying Engineer on their behalf at any time during the Project.

B. Pre-Installation Conference:

1. The Contractor, the installation sub-contractor, and the coating system manufacturer's representative shall meet on site with the Engineer. Particular emphasis shall be placed on these specification requirements, safety, weather conditions, surface preparation, material application, and inspection.

2. The Contractor shall submit to the Engineer any revisions or changes agreed upon, reasons thereof, and parties agreeing or disagreeing with them.

C. Surface Preparation: Preparation of all surfaces and application of coatings specified in this section shall be in strict accordance with coating manufacturer's instructions as supplemented by these specifications.

D. Coating Application: Apply coatings in strict accordance with manufacturer's material data sheets with particular attention to curing and drying times and temperatures.

E. Inspection of Dry Film: Thickness of coatings shall be checked with a nondestructive, magnetic-type thickness gauge.

1. Ensure all dry film thickness requirements as specified have been met. Readings shall be performed at or above the frequency specified in SSPC-PA2. Meet the minimum requirements for SSPC-PA2.

2. Use an instrument such as a Tooke Gauge if a destructive tester is deemed necessary.

3. Test coating integrity of all surfaces with an approved inspection device.

4. Holiday detection testing: Shall be accomplished over 100 percent of coated surfaces, and in strict accordance with NACE SP0188.

a. For "high voltage" holiday inspection equipment used to inspect film thickness between 20 -50 mils adjusted voltage shall not exceed voltage recommended by manufacturer of coating system.

b. For "wet sponge" holiday inspection equipment used to inspect film thickness between 8 and 10 mils, add a non-sudsing type wetting agent to water prior to wetting detector sponge.

5. No pinholes or other irregularities will be permitted in final coating.

F. Inspection Testing Devices: Provide the following testing devices to be jointly used on this Project by the Contractor and Engineer. Devices shall remain property of the Contractor during and after the Project.

1. Surface profile Comparator or Testex Tape to measure surface profile prior to coating application.

2. Psychrometer and psychometric tables or charts for humidity and dew point determination.

3. Dry film thickness gauge and calibration blocks for coating thickness testing.

4. Wet film thickness gauge for coating thickness testing.

5. 10 times magnifier for examination.

6. Holiday detector and associated equipment for coating defect determination.

7. Combustible gas analyzer (sniffer) for safety.

G. Documentation: Provide daily reports of all Contractor activity on site to the Engineer on the Friday, end of work week, for the previous week's activity.

1. Document sample shall be approved by the Engineer prior to reporting.

2. All documentation shall be delivered electronically to the Engineer upon completion of the Project.

3. Documentation should be consistent with inspection reports utilized by NACE certified inspectors.

1.07. DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information:

1. Product name, type (description).

2. Application and use instructions.

3. Surface preparation.

4. VOC content: for two component products, provide mixed VOC in g/L.

5. Environmental issues.

6. Batch date.

7. Color number.

B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

C. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.08. PROJECT CONDITIONS

A. Maintain environmental conditions during surface preparation, application, and curing of installed coating system.

1. Temperature, humidity, and ventilation must be within limits recommended by manufacturer for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.

B. Dehumidification and heating for coating of immersion environments shall be effectively designed and used when needed to maintain proper environmental conditions for proper surface preparation, coatings application, and curing of the installed coating.

1. Confirm site electrical power source availability prior to bidding the Project. If on site power is not available, provide internal combustion engine generators of sufficient power for the dehumidification and heating equipment.

C. Heating equipment including electric, indirect combustion, indirect fired, or steam coil methods may be used.

1. Direct fired propane heaters shall not be used during surface preparation, application and curing of the coating.

2. Heating equipment shall be intrinsically safe or deemed safe by safety personnel prior to use on the job site.

D. Substrate moisture content shall be below manufacturer's recommendation for each substrate to be coated.

PART 2 - PRODUCTS

2.01. MANUFACTURERS

A. Acceptable Manufacturer: The Sherwin-Williams Company, 101 Prospect Avenue NW, Cleveland, OH 44115, www.sherwin-williams.com. Manufacturer Representative: Brian Oras, 617-947-1005, brian.oras@sherwin.com.

B. Substitutions: The Contractor shall identify any proposed product substitutions a minimum of 60 calendar days prior to use. Product substitutions are only allowed

when accepted by the Engineer, Woodland Pulp, and Maine DMR as “or equal”. Submittals shall be in accordance with Specification 01 33 00.

C. To establish equality the Contractor shall furnish satisfactory documentation from the manufacturer of the proposed substitute or "or-equal" product that the material meets the indicated requirements and is equivalent or better in the following properties.

1. Quality.

2. Durability.

3. Resistance to abrasion, impact, or physical damage.

4. Life expectancy.

5. Ability to recoat in the future.

6. Solids content by volume.

7. Dry film thickness per coat.

8. Compatibility with other coatings.

9. Suitability for the intended service.

10. Resistance to chemical attack.

11. Temperature limitations during application and in service

12. Comparable performance test results.

D. Protective coating materials shall be standard products produced by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions. When requested, the Contractor shall provide the Engineer with the names of not less than 10 successful applications of the proposed manufacturer's products that comply with these requirements.

E. Standard approved painting, coating, and lining systems are defined herein. Apply approved systems according to the Finish Schedule.

2.02. PAINTING AND COATING SYSTEMS

A. The following index lists the various painting and coating systems by service and generic type:

Service Type/Location	Service Condition(s)	System No.	Generic Coating
Steel Trough and Flume Interior Lining (Wet Side)	A, NW, S, UV	10A	Elastomeric Polyurethane
		10B	Epoxy
Steel Trough and Flume Exterior Coating (Dry Side)	A, ND, UV	20A	Elastomeric Polyurethane
		20B	Epoxy
Steel Pipe Interior Lining	NW, S	30A	Elastomeric Polyurethane
		30B	Epoxy
Steel Pipe Exterior Coating	A, ND, UV	40	Epoxy Siloxane Hybrid
Other Steel Exterior Coating	A, ND, SP, UV	50	Epoxy Siloxane Hybrid
Repair of Galvanized Surfaces	Repair Damaged Surfaces	100	Cold Galvanizing Compound
Aluminum Protection/Insulation	Insulate from Concrete & Carbon Steel	200	Epoxy

B. Refer to Paragraph 1.02.B for Service Condition definitions.

2.03. STEEL TROUGH AND FLUME: INTERIOR LINING (WET SIDE)

A. Service conditions: A, NW, S, UV.

B. Use System No. 10A - Elastomeric Polyurethane Lining or System No. 10B - Epoxy Lining.

C. System No. 10A - Elastomeric Polyurethane Lining:

1. Surface preparation: SSPC-SP-10, 3 mil profile.

2. Minimum total film thickness, 32 mils dft.

3. Color: Beige or Off White.

4. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

5. Prime:

a. Primer (optional), Minimum to Maximum 2 to 2.5 mils dft: Corothane Galvapac 1K, B65 Series.

6. Finish: PolyCote 110, B62 Series, 30 to 40 mil dft.

D. System No. 10B - Epoxy Lining:

1. Surface preparation: SSPC-SP-10, 3 mil profile.

2. Minimum total film thickness, 25 mils dft.

3. Color: Beige or Off White.

4. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

   a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

5. Finish: Sher-Plate PW, B62 Series, 25 to 30 mil dft.

2.04. STEEL TROUGH AND FLUME: EXTERIOR COATING (DRY SIDE)

A. Service conditions: A, ND, UV.

B. Use System No. 20A - Elastomeric Polyurethane Lining or System No. 20B - Epoxy Lining.

C. System No. 20A - Exterior Elastomeric Polyurethane Coating:

1. Surface preparation: SSPC-SP-10, 3 mil profile.

2. Minimum total film thickness, 36 mil dft.

3. Color: Light color selected by Woodland Pulp.

4. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

   a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

5. Prime:

   a. Primer (optional), Minimum to Maximum 2 to 2.5 mils dft: Corothane Galvapac 1K, B65 Series.

6. Intermediate: PolyCote 110, B62 Series, 30 to 40 mil dft.

7. Topcoat: Sher-Loxane 800, B80 Series, 4 to 6 mil dft.

D. System No. 20B - Exterior Epoxy Coating:

1. Minimum total film thickness, 31 mil dft.

2. Color: Light color selected by Woodland Pulp.

3. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

    a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

4. Prime:

    a. Primer (optional), Minimum to Maximum 2 to 2.5 mils dft: Corothane Galvapac 1K, B65 Series.

5. Intermediate: Sher-Plate PW, B62 Series, 25 to 30 mil dft.

6. Topcoat: Sher-Loxane 800, B80 Series, 4 to 6 mil dft.

2.05. STEEL PIPE: INTERIOR LINING

A. Service conditions: NW, S.

B. Use System No. 30A - Elastomeric Polyurethane Lining or System No. 30B - Epoxy Lining.

C. System No. 30A - Elastomeric Polyurethane Lining:

1. Surface preparation: SSPC-SP-10, 3 mil profile.

2. Minimum total film thickness, 32 mils dft.

3. Color: Beige or Off White.

4. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

    a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

5. Prime:

    a. Primer (optional), Minimum to Maximum 2 to 2.5 mils dft: Corothane Galvapac 1K, B65 Series.

6. Finish: PolyCote 110, B62 Series, 30 to 40 mil dft

D. System No. 30B - Epoxy Lining:

1. Surface preparation: SSPC-SP-10, 3 mil profile.

2. Minimum total film thickness, 25 mils dft.

3. Color: Beige or Off White.

4. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

    a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

5. Finish: Sher-Plate PW, B62 Series, 25 to 30 mil dft.

2.06. STEEL PIPE: EXTERIOR COATING

A. Service conditions: A, ND, UV.

B. System No. 40 - Epoxy Siloxane Hybrid Coating:

1. Surface preparation: SSPC-SP-6, 2 mil profile.

2. Minimum total film thickness, 11 mil dft.

3. Maximum total film thickness, 16 mil dft.

4. Color: Light color selected by Woodland Pulp.

5. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

    a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

6. Primer: Min. to Max. 3 to 4 mils dft: Corothane Galvapac 1K, B65 Series.

7. Intermediate: Sher-Loxane 800, B80 Series, 4 to 6 mil dft.

8. Topcoat: Sher-Loxane 800, B80 Series, 4 to 6 mil dft.

2.07. OTHER STEEL: EXTERIOR COATING

A. Service conditions: A, ND, SP, UV.

B. System No. 50 - Epoxy Siloxane Hybrid Coating:

1. Surface preparation: SSPC-SP-6, 2 mil profile.

2. Minimum total film thickness, 11 mil dft.

3. Maximum total film thickness, 16 mil dft.

4. Color: Selected by Woodland Pulp.

5. Utilize epoxy fairing compound to fill pits, voids, or smooth surface irregularities.

a. Filler and Surfacing Epoxy: Steel Seam FT910, as needed to fill voids or surface irregularities.

6. Primer: Min. to Max. 3 to 4 mils dft: Corothane Galvapac 1K, B65 Series.

7. Intermediate: Sher-Loxane 800, B80 Series, 4 to 6 mil dft.

8. Topcoat: Sher-Loxane 800, B80 Series, 4 to 6 mil dft.

2.08. REPAIR OF GALVANIZED STEEL SURFACES

A. Service Conditions: Repair of damaged galvanized coatings on steel surfaces.

B. System No. 100 – Cold Galvanizing Compound:

1. Type: Cold galvanizing compound consisting of paint containing oils, solvents, and zinc dust and complying with MIL-P-21035. Minimum metallic zinc content in the cured coating shall be 90%.

2. Surface preparation: Clean damaged surfaces per SSPC-SP-1 and SSPC-SP-11.

3. Coating System: Apply Z.R.C. Galvanizing Compound, RAMCO Specialty Products "Zinckit," NuWave "Galv-Match-Plus," Devcon "Cold Galvanizing," Clearco "Cold Galvanizing Spray," or equal.

4. Minimum dry-film thickness of 3 mils.

5. Apply per ASTM A780, Annex A2.

2.09. ALUMINUM PROTECTION

A. Service Conditions: Aluminum insulation from concrete and carbon steel.

B. System No. 200 – Aluminum Protection:

1. Type: High solids epoxy or phenolic epoxy having minimum volume solids of 80% (ASTM D2697).

2. Surface preparation: Solvent or steam cleaning per SSPC-SP-1; do not use alkali cleaning. Then dust blast.

3. Coating System: Apply 3 or more coats of Ameron 400, Tnemec Series 135, ICI Devoe Bar-Rust 233H, Sherwin-Williams Macropoxy B58-600, PPG PITT-Guard Direct-to-Rust Epoxy Mastic Coating 97-145 series, or equal.

4. Minimum total film thickness, 30 mil dft. Maximum thickness of an individual coating shall not exceed the manufacturer’s recommendation.

PART 3 - EXECUTION

3.01. EXAMINATION

A. Examine all substrates and conditions, with Contractor and Engineering representative present for compliance with requirements for maximum moisture content, surface soundness, and other conditions affecting the performance of the Work.

B. Do not begin application of coatings until substrates have been properly prepared, examined, and conditions properly reported. Notify Engineer of unsatisfactory conditions or areas where specified surface preparation cannot be achieved.

C. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation. Proceed with work only after conditions have been corrected, and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions. Beginning coating application constitutes Contractor's acceptance of substrate and conditions.

D. Identify all shop primed items and previously painted surfaces and provide preparation procedures for review and approval.

3.02. SURFACE PREPARATION:

A. General:

1. The surface must be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.

2. Follow all surface preparation guidelines for new construction. In the event of a discrepancy consider the more effective surface preparation as the default method.

3. Verify that the atmospheric conditions are within the acceptable temperature, humidity and sun exposure limits.

    a. Dehumidification must be utilized in the event that atmospheric conditions cannot be maintained.

4. Adhere to manufacturer's recoat time surface preparation requirements.

    a. Surfaces exhibiting rust bloom, moisture weeping, or any other deleterious condition shall be sufficiently repaired prior to the application of coating or lining system. Repair methods include necessary means to meet original specification requirements, including abrasive blasting as needed.

5. Remove any residual dusting or light surface contamination from prepared surfaces prior to the application of the coating system.

6. Protect all surfaces not being coated from any damage due to surface preparation work.

7. Paint all inaccessible items before being assembled.

8. Install coating systems to only properly prepared surfaces.

B. Abrasive Blast Cleaning:

1. Blast cleaned surfaces shall match the standard samples available from the NACE Standard TM-01-70, Visual Standard for Surfaces of New Steel Air Blast Cleaned with Sand Abrasive and TM-01-75, Visual Standard for Surfaces of New Steel Centrifugally Blast Cleaned with Steel Grit.

2. Remove all oil, grease, welding fluxes, and other surface contaminants by solvent cleaning per SSPC-SP1prior to any mechanical surface preparation.

3. Sharp edges shall be rounded or chamfered; burrs, surface defects, and weld splatter shall be ground smooth prior to blast cleaning in accordance with NACE SP0178-07, Design, Fabrication, and surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service.

4. The type and size of abrasive shall be selected to produce a surface profile that meets the coating manufacturer's recommendation of the particular product and service conditions. Abrasives for submerged and severe service coating systems shall be clean, hard, sharp cutting crushed slag. Metal shot or grit shall not be used for surfaces in submerged services.

5. Abrasive shall not be reused unless an automated lasting system is used for surfaces that will be in non-submerged service. For automated blasting systems, clean, oil free abrasives shall be maintained. The abrasive mix shall include at least 50 percent grit.

6. Compressed air for blast cleaning shall be supplied at adequate pressure from well-maintained compressors equipped with oil and moisture separators that remove at least 98 percent of the contaminates.

C. Shop Primed Surfaces Surface Preparation for Field Applied Finishes

1. All shop primed surfaces shall be prepared according to the following requirements.

a. Clean all previously coated surfaces to remove dirt, greases, solutions, and any foreign contaminants per SSPC-SP1. Cleaning agent shall be biodegradable, highly concentrated, water reducible, alkaline detergent blend. Cleaned surfaces shall be properly rinsed to remove all cleaners and contaminants.

b. Shop applied primers shall be abraded as needed following cleaning per SSPC-SP1. Overcoating of shop applied epoxy primers shall be within the shop applied manufacturers published recoat parameters. Provide written confirmation of compatibility, timing, and procedure for overcoating from manufacturer.

c. Exposed or corroded substrates shall be mechanically cleaned to remove all corrosion or deteriorated material. Surface preparation requirements of corresponding deteriorated exposed substrate shall be achieved according to original substrate surface preparation for high performance coatings.

d. Sand and feather edge a smooth transition from existing coatings and exposed substrate such that damaged areas are not visible from a distance of two (2) feet.

e. Final surface preparation for existing coatings and deteriorated substrates shall provide intact, tightly adherent coatings, cleaned substrate, dull, and dry.

f. Prime coat used in overcoating existing material must be suitable for the intended use and provide adequate adhesion to the existing material.

g. Overcoating existing coating systems for immersion or submerged conditions shall be made in strict accordance with the coating manufacturer's printed instructions. Coating manufacturer will provide in writing specific steps required to achieve proper adhesion and performance of overcoat system.

3.03. INSTALLATION

A. General Requirements:

1. Apply all coatings and materials according to the Finish Schedule.

2. Apply all coatings and materials with manufacture specifications in mind. Apply coatings by brush, roller, or spray equipment unless otherwise directed by the manufacturer.

3. Mix and thin coatings according to manufacture recommendation.

4. Do not apply to wet or damp surfaces.

5. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen in accordance with SSPC-PA1. Regardless of number of coats specified, apply as many coats as necessary for complete hide, uniform appearance, and achieving the required dry film thickness. Final film of coatings shall have no visible drips, overspray, dry spray, runs, ridges, sags, holidays, dry lap, or brush marks.

6. Inspection: The coated surface must be inspected and approved by the Engineer.

7. Plural component spray applied equipment shall be properly inspected and in working condition prior to the application of materials.

    a. All gauges, valves, pistons, and working parts shall be in proper working order.

    b. Coating materials stored in drums shall be premixed and heated prior to the application of the coating.

    c. Perform successful ratio check of spray material prior to application of coating.

    d. All equipment settings and requirements for proper application including but not limited to pressures, volumes, mix ratio settings, shall be in proper working order and closely monitored during application.

    e. Sample spray application of specific material shall be applied to "sample cards" just prior to the application of plural applied material. Supply sample cards from previous day's application with proper date and time markings to Engineer for verification of cured material.

8. Stripe coats shall be applied to all welds, edges, nuts, bolts, difficult to reach areas.

    a. Stripe coats shall be applied directly to properly prepared surface prior to spray application of primers.

    b. Stripe coats shall also be applied directly to the primed surface prior to spray application of the intermediate coats for multi-coat immersion or submerged applications.

    c. Stripe coat material shall be the same or separately approved material compatible with the material used for spray application of any given coat.

9. Spray application shall be performed when conditions, environments, and permitting allow.

a. Use only spray equipment approved by the manufacturer for the specific coat of material.

10. Multiple coat applications shall be installed according to the manufacturer's printed requirements.

    a. Coats of material shall be sufficiently dry prior to the application of a subsequent coat in a coating system.

    b. Do not allow excessive drying time to pass which will inhibit or reduce the inter-coat adhesion of the multiple coat system.

    c. If recoat requirements have been exceeded, brush blast or scarify prior coat according to the manufacturer's requirement. Provide written confirmation of repair process from manufacturer.

    d. Remove any dust or foreign contamination from the previous coat prior to applying the next coat in a multi coat system.

11. Apply no coating when surrounding air temperature of surface to be coated is below minimum temperature allowed by manufacturer's recommendations for coating application or when it is expected that air temperature will drop below minimum 8 hours after coating application.

12. Apply no coating when surrounding air temperature is forecasted to be less than 5 degrees F above dew point within 8 hours after coating application.

13. Apply no coating to steel which is 5 degrees F below air temperature or which is at a temperature over 115 degrees F, nor shall coating be applied to steel which is at a temperature that will cause blistering or porosity or otherwise will be detrimental to the life of the coating.

14. No coating shall be applied to wet or damp surfaces or in rain, snow, fog, or mist. Coating shall not be applied on frosted or ice-coated surfaces.

15. Dew point shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychometric Tables or equivalent.

16. The coated surface must be inspected after application of individual coats within the multi coat system and after completion of the system. Applied systems must be approved by the Engineer.

B. Curing Requirements:

1. Maintain adequate environmental conditions and ventilation during drying and curing of applied coating systems.

2. Allow all primer and intermediate coats to sufficiently dry prior to the application of subsequent coat of material.

3. Coating systems to be placed into immersion service shall cure under the proper conditions as stated by the manufacturer for the full curing time requirement. Deviations from the proper conditions shall be quickly resolved by the Contractor and the methods used shall be confirmed by the manufacturer.

4. All applied coatings shall be properly and completely cured prior to being placed into their intended service.

C. Shop Application:

1. All structural steel members, steel plate, or other manufactured items may be prepared and coated in a fixed location.

2. Shop application of prime coat shall be completed only when specified surface preparation has been achieve for the substrate. Apply all primers within 4 hours of completion of surface preparation. Ferrous metal shall not be primed if rust bloom is present.

3. Field repair any damaged shop primer, intermediate or finish coats in accordance with the preparation requirements for the given substrate. Apply repair primer, intermediate, and finish coats as required to replace damage materials and restore damaged areas equal to surface before damage.

4. Equipment:

a. Unless otherwise indicated, items of equipment or parts of equipment which are not submerged in service shall be shop primed and finish coated in the field after installation with the indicated or selected color. The methods, materials, application equipment, and other details of shop painting shall comply with this section. If the shop primer requires top coating within a specific period of time, the equipment shall be finish coated in the shop and then touched up after installation.

b. Items of equipment or parts and surfaces of equipment which are submerged or inside an enclosed hydraulic structure when in service, with the exception of pumps and valves, shall have surface preparation and coating performed in the field.

c. For certain pieces of equipment, it may be undesirable or impractical to apply finish coatings in the field. Such equipment may include engine

generator sets, equipment such as electrical control panels, switchgear or main control boards, submerged parts of pumps, ferrous metal passages in valves, or other items where it is not possible to obtain the indicated quality in the field. Such equipment shall be primed and finish-coated in the shop and touched up in the field with the identical material after installation. The Contractor shall require the manufacturer of each such piece of equipment to certify as part of its Shop Drawings that the surface preparation is in accordance with these specifications. The coating material data sheet shall be submitted with the Shop Drawings for the equipment.

d. For certain small pieces of equipment, the manufacturer may have a standard coating system that is suitable for the intended service conditions. In such cases, the final determination of suitability will be made during review of the Shop Drawing submittals. Equipment of this type generally includes only indoor equipment such as instruments, small compressors, and chemical metering pumps.

e. Shop painted surfaces shall be protected during shipment and handling by suitable provisions including padding, blocking, and the use of canvas or nylon slings. Primed surfaces shall not be exposed to the weather for more than 2 months before being top coated or less time if recommended by the coating manufacturer.

D. Prime Coat Application:

1. Prime all surfaces to be painted, unless noted otherwise.

2. Prime and finish all surfaces that will be inaccessible after installation.

3. Primed substrate shall be of consistent film thickness and coverage to meet the specification.

4. Provide proper environmental conditions for curing of prime coat.

E. Finish Coat Application:

1. Apply all intermediate and finish coats to properly primed substrates within the recoat requirements and according to the product data sheet of the manufacturer.

2. Apply contrasting colors for distinguishing between intermediate and finish coats.

3. Field applied intermediate and finish coats shall be applied to shop primed substrates only within sufficient adhesion can be obtained. When required, thoroughly and completely abrade existing primers and apply a subsequent tie coat of approved primer will be applied to the abraded shop primer.

3.04. QUALITY CONTROL

A. In general, the Contractor will maintain appropriate and measurable quality control activities that ensure successful installation of the coating systems.

B. Measure all dry film thickness readings as defined in SSPC-PA2.

C. Apply all coatings using methods defined in SSPC-PA1.

D. Perform all stripe coating using methods defined in SSPC-PA 11.

E. Maintain and provide to the Engineer copies of daily records of Contractor activity while performing work on the Project. Daily record information should include but is not limited to the following.

1. Site foreman responsible for day's activities.

2. Work hours. Start and finish times.

3. Crew members.

4. Atmospheric measurements during exterior work should include evenly sequenced measurements of general weather condition, wind speed, air temperature, and relative humidity.

5. Atmospheric measurements during high performance coating applications particularly submerged or immersion items should include evenly sequenced measurements of general weather condition, wind speed, air temperature, and relative humidity during all surface preparation, application, and curing of applied systems.

6. Substrate temperatures at the time of application and completion of the application.

7. Measure wet film of applied coating using wet film thickness gauges.

8. Detailed record of start and finish times of activities performed on a given space.

F. Maintain accurate quality control records of applied coating systems.

1. Record accurate dry film thickness readings in accordance with SSPC-PA 2.

G. Supply daily reports on a timely basis to the supervising Engineer.

3.05. PROTECTION

A. Protect finished coatings from damage until completion of Project.

1. Applied coatings shall not be placed into service until properly cured.

2. Maintain acceptable environmental conditions for proper curing of the applied coating system.

B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

3.06. FINISH SCHEDULE

A. General:

1. All items not specifically listed in the Finish Schedule shall receive a coating system consistent with corrosive atmosphere or submerged coating schedule by the corresponding substrate and service environment as shown on the Drawings.

2. Any discrepancy in the Drawings or Finish Schedule will default to the high performance coating system as shown per substrate, intended service environment and the corresponding surface preparation requirements.

3. All substrates shall require finish painting unless specifically noted otherwise.

FINISH SCHEDULE				
ID	**Item**	**Material**	**Coating**	**Ref. Dwg**
1	Transition Flume (Bid Supplement)	Carbon Steel	System 10 (Interior) System 20 (Exterior)	C-161
2	Eel Bypass, Piping, & Valves (Bid Supplement)	Stainless Steel	N/A	C-162
3	Trash Rack Steel Framing (Bid Supplement)	Carbon Steel	Galvanized	C-161
4	Access Bridge	Carbon Steel	Per Manufacturer	C-180
5	Vehicle Guard Rail	Carbon Steel	Galvanized	C-186
6	AWS Pipe 1,Valves, & Actuators	Carbon Steel	System 30 (Interior) System 40 (Exterior)	C-301
7	AWS Pipe 2,Valves, & Actuators	Carbon Steel	System 30 (Interior) System 40 (Exterior)	C-302
8	AWS Pipe 3,Valves, & Actuators	Carbon Steel	System 30 (Interior) System 40 (Exterior)	C-303
9	Fish Bypass 1, Valves, & Actuators	Carbon Steel	System 30 (Interior) System 40 (Exterior)	C-304
10	Fish Bypass 2, Valves, & Actuators	Carbon Steel	System 30 (Interior) System 40 (Exterior)	C-306
11	Fish Bypass 3, Valves, & Actuators (Bid Supplement)	Carbon Steel	System 30 (Interior) System 40 (Exterior)	C-307
12	Staff Gauges	PVC	N/A	M-001
13	Permanent Stop Logs & Spacer Frames	Aluminum	N/A	M-001
14	Hoists & Cranes	Carbon Steel	Per Manufacturer	M-001
15	Gates	Carbon Steel	See Spec. 35 20 16	M-001
16	Vgate Grating Panels	Stainless Steel	N/A	M-102
17	Vgate Operator Supports	Carbon Steel	Galvanized	M-103
18	Vgate Operating Stem	Stainless Steel	N/A	M-103
19	Vgate Grating Guides	Carbon Steel	Galvanized	M-105
20	Vgate Bearing Assemblies	Stainless Steel	N/A	M-106
21	Fish Lift Hopper	Carbon Steel	Galvanized	M-110
22	Fish Lift Hopper Gate	Stainless Steel	N/A	M-112
23	Fish Lift Hopper Gate Guide Frame	Carbon Steel	Galvanized	M-113
24	Fish Lift Hopper Lifting Frame	Carbon Steel	Galvanized	M-114
25	Fish Lift Hopper ASCE Rail	Carbon Steel	Galvanized	M-115
26	Perforated Plate Framing	Carbon Steel	Galvanized	M-119
27	Perforated Plate	Carbon Steel	Galvanized	M-119
28	Wedge Wire Screen	Stainless Steel	N/A	M-121
29	Wedge Wire Screen Support Members	Carbon Steel	Galvanized	M-121
30	Exit Flume Baffle	Carbon Steel	Galvanized	M-121
31	Fish Holding Tank Small Diameter Piping	Stainless Steel	N/A	M-123
32	Removable Crowder Screen	Carbon Steel	Galvanized	M-129

33	Trap Gate Operator Support	Carbon Steel	Galvanized	M-125
34	Trap Gate Operating Stem	Stainless Steel	N/A	M-125
35	Trap Gate Grating Panels	Stainless Steel	N/A	M-125
36	Trap Gate Bearing Assembly	Stainless Steel	N/A	M-126
37	Moving Floor	Stainless Steel	N/A	M-128
38	Exit Flume Wedge Wire Screen	Stainless Steel	N/A	M-130
39	Exit Flume Wedge Wire Screen Support Framing	Carbon Steel	Galvanized	M-130
40	Exit Flume Isolation Gate Guide Frame	Carbon Steel	Galvanized	M-131
41	Automated Gate Weir	Carbon Steel	See Spec. 35 20 16	M-142
42	Downstream Isolation Gate Guide Frame	Carbon Steel	See Spec. 35 20 16	M-142
43	Stilling Wells	Stainless Steel	N/A	M-200
44	Fasteners (Bolts, Studs)	Carbon Steel	Galvanized, UNO	S-001
45	Viewing Room Framing	Carbon Steel	Galvanized	S-128
46	Viewing Room Interior	Plywood	Paint	S-128
47	Viewing Room Exterior	Sheet Metal	N/A	S-128
48	Bar Rack	Carbon Steel	Galvanized	S-130
49	Exit Flume Framing	Carbon Steel	System 20 (Exterior)	S-131
50	Exit Flume Skin Plates	Carbon Steel	System 10 (Interior) System 20 (Exterior)	S-131
51	Exit Flume Support Framing	Carbon Steel	System 20 (Exterior)	S-133
52	Exit Flume Transition Pieces	Carbon Steel	System 10 (Interior) System 20 (Exterior)	S-135
53	Exit Flume at Fish Lift	Carbon Steel	System 10 (Interior) System 20 (Exterior)	S-136
54	Steel Trough & Transition Flume	Carbon Steel	System 10 (Interior) System 20 (Exterior)	S-160
55	Downstream Fish Passage Flume	Carbon Steel	System 10 (Interior) System 20 (Exterior)	S-174
56	Tapered Beams	Carbon Steel	Galvanized	S-175
57	Electrical Enclosure	Carbon Steel	Per Manufacturer	S-190
58	Fish Lift Tower Framing	Carbon Steel	Galvanized	S-200's
59	Pipe Support Framing	Carbon Steel	Galvanized	S-300's
60	Pipe Support Cradles	Carbon Steel	Galvanized	S-300's
61	Stairs & Platforms	Carbon Steel	Galvanized	S-413
62	Micropile Casing & Top Plate	Carbon Steel	Galvanized	S-459
63	Ladders & Ship Ladders	Carbon Steel	Galvanized	S-503
64	Fencing	Carbon Steel	Galvanized	S-505
65	Railing	Carbon Steel	Galvanized	S-504
66	Concrete	Concrete	N/A	
67	Concrete Embedments	Carbon Steel, UNO	Galvanized, UNO	

END OF SECTION

SECTION 35 20 16

FABRICATED GATES, GUIDES, AND LIFTS

PART 1 - GENERAL

1.01. DESCRIPTION

A. The work under this section describes the furnishing of gate assemblies and lift mechanisms including their design, manufacture, quality control, shop assembly and testing, delivery, installation supervision, and operational testing. These gates and associated components will serve as the hydraulic control for the Woodland Fish Passage Project.

B. This specification includes gates to be supplied with electric actuators. For additional electric actuator requirements see Specification Section 11 10 00. No part of the gate, gate stem, or lifting yoke can protrude into the water passage opening listed below, unless otherwise noted.

1.02. GATES NOT INCLUDED IN THIS SECTION

A. Fish Lift V-Gate (VG3), see Mechanical Drawings.

B. Fish Lift Hopper Gate (HG5), see Mechanical Drawings.

C. Exit Flume Trap Gates (TG18 & TG19), see Structural Drawings.

1.03. PERFORMANCE REQUIREMENTS AND CHARACTERISTICS

A. Water Passage Dimensions and Elevations at Gate Slots

Gate Number	Gate Name/Location	Opening Width	Gate Height	Sill Elevation	Top Elevation	Discharge
IG1	Fish Lift Isolation Gate	8.0 ft.	12.58 ft.	90.0’	114.58’ (Min)	Upward Opening
EG2	Fish Lift Entrance Gate	8.0 ft.	12.5 ft.	90.0’	98.50’	Downward Opening
IG6	Exit Flume Isolation Gate	8.0 ft.	11.00 ft.	135.4’	157.4’	Upward Opening
IG10	Exit Flume Isolation Gate	6.0 ft	5.1 ft.	141.0’	151.5’	Upward Opening
OWG11	Fish Ladder Automatic Entrance Gate	2.0 ft.	Adjustable	91.6’	97.7’	Downward Opening
IG12	Fish Ladder Isolation Gate	2.0 ft.	11 ft.	91.6’	113.0’	Upward Opening
OWG13	Fish Ladder Automatic Exit Gate	2.0 ft.	Adjustable	138.6’	143.85’	Downward Opening
DSG14 (Bid Supplement)	Downstream Bypass Knife Gate	3.0 ft	3.0 ft.	139.5’	142.5’	Upward Opening
DSG15 (Bid Supplement)	Downstream Bypass Knife Gate	3.0 ft.	3.0 ft.	139.5’	142.5’	Upward Opening
IG16	Downstream Isolation Gate	6.0 ft.	6.75 ft.	139.5’	153.5’	Upward Opening
IG17	Fish Ladder Exit Isolation Gate	2.0 ft.	7.75 ft.	138.6’	154.11’	Upward Opening

B. Dimensions above are the nominal gate opening sizes. Actual gate sizes shall be determined by the Supplier in accommodating guides and seals.

C. Operating Water Elevations. Also refer to Drawings for gate locations and direction of head for gate structural design and actuator sizing.

1. Gate IG1 - Fish Lift Isolation Gate:

   a. Normal Water Level = 96.8’

   b. Max Operating Water Level = 99.7’

2. Gate EG2 – Fish Lift Entrance Gate:

   a. Normal Water Level = 96.8’

   b. Max Operating Water Level = 99.7’

3. Gate IG6 – Exit Flume Isolation Gate:

    a. Normal Water Level = 144.6’

    b. Max Operating Water Level = 145.4’

4. Gate IG10 – Exit Flume Isolation Gate:

    a. Normal Water Level = 144.6’

    b. Max Operating Water Level = 145.4’

5. Gate OWG11 – Fish Ladder Automatic Entrance Gate:

    a. Normal Water Level = 96.8’

    b. Max Operating Water Level = 99.7’

6. Gate IG12 – Fish Ladder Isolation Gate:

    a. Normal Water Level = 96.8’

    b. Max Operating Water Level = 99.7’

7. Gate OWG13 – Fish Ladder Automatic Exit Gate:

    a. Normal Water Level = 144.6’

    b. Max Operating Water Level = 145.4’

8. Gate DSG14 – Downstream Bypass Knife Gate (Bid Supplement):

    a. Normal Water Level = 144.6’

    b. Max Operating Water Level = 145.4’

9. Gate DSG15 – Downstream Bypass Knife Gate (Bid Supplement):

    a. Normal Water Level = 144.6’

    b. Max Operating Water Level = 145.4’

10. Gate IG16 – Downstream Bypass Isolation Gate:

    a. Normal Water Level = 144.6’

    b. Max Operating Water Level = 145.4’

11. Gate IG17 – Fish Ladder Exit Isolation Gate:

    a. Normal Water Level = 144.6’

    b. Max Operating Water Level = 145.4’

D. Gate speed shall be 10 to 14 inches per minute.

E. Gate IG1 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior tailrace elevation of 99.7 ft. and a dewatered entrance channel (elevation 90 ft.). The gate must seal but does not need to be operated under this loading condition.

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 9.7 ft.

3. Gate Attachment: Gate guides shall be embedded in the concrete channel. The guides shall provide a minimum 8 ft. clear distance to match entrance flume width.

4. The bottom of the gate is to be no less than elevation 102.0 ft. in the raised position.

5. The gate leaf shall have continuous top, bottom, and side seals.

6. The gate shall have a positive means of seating (in the closed, full down position) by use of wedges, steel spring leafs or similar method.

7. The seal leakage shall not exceed 0.1 gallons per minute (GPM) per foot of seating perimeter under maximum unbalanced head.

8. The gate shall have a fill gate that shall open with the main operator to reduce the differential head on the gate when the channel is in a dewatered state.

F. Gate EG2 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior tailrace elevation of 99.7 ft.

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 3.0 ft.

3. The top of the gate is to be no less than elevation 98.5 ft. in the raised position.

4. The gate leaf shall have continuous side sweeps.

G. Gate IG6 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior headpond elevation of 145.4 ft. and a dewatered entrance channel (elevation 135.4 ft.). The gate must seal but does not need to be operated under this loading condition.

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 10 ft.

3. Gate Attachment: Gate guides shall be embedded in the concrete channel. The guides shall provide a minimum 8 ft. clear distance to match entrance flume width.

4. The bottom of the gate is to be no less than elevation 146.36 ft. in the raised position.

5. The gate leaf shall have continuous bottom and side seals.

6. The gate shall have a positive means of seating (in the closed, full down position) by use of wedges, steel spring leafs or similar method.

7. The seal leakage shall not exceed 0.1 gallons per minute (GPM) per foot of seating perimeter under maximum unbalanced head.

H. Gate IG10 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior headpond elevation of 145.4 ft. and a dewatered entrance channel (elevation 141.0 ft.). The gate must seal but does not need to be operated under this loading condition.

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 4.4 ft.

3. Gate Attachment: Gate guides shall be embedded in the steel gate guide frame shown on the Drawings. The guides shall provide a minimum 6 ft. clear distance to match flume width.

4. The bottom of the gate is to be no less than elevation 146.1 ft. in the raised position.

5. The gate leaf shall have continuous bottom and side seals.

6. The gate shall have a positive means of seating (in the closed, full down position) by use of wedges, steel spring leafs or similar method.

7. The seal leakage shall not exceed 0.1 gallons per minute (GPM) per foot of seating perimeter under maximum unbalanced head.

I. Gate OWG11 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior tailrace elevation of 99.7 ft. and a dewatered entrance channel (elevation 91.6 ft.).

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 3.0 ft.

3. Gate Attachment: Gate guides shall be embedded in the concrete channel. The guides shall provide a minimum 2 ft. clear distance to match entrance flume width.

4. Gate shall be a three section telescoping leaf gate with fabricated top weir/nose geometry per the Drawings.

5. The top of the gate is to be no less than elevation 97.7 ft. in the raised position.

6. The gate leaf shall have continuous side sweeps.

J. Gate IG12 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior tailrace elevation of 99.7 ft. and a dewatered entrance channel (elevation 91.6 ft.). The gate must seal but does not need to be operated under this loading condition.

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 8.1 ft.

3. Gate Attachment: Gate guides shall be embedded in the concrete channel. The guides shall provide a minimum 2 ft. clear distance to match entrance flume width.

4. The bottom of the gate is to be no less than elevation 102.0 ft. in the raised position.

5. The gate leaf shall have continuous top, bottom, and side seals.

6. The gate shall have a positive means of seating (in the closed, full down position) by use of wedges, steel spring leafs or similar method.

7. The seal leakage shall not exceed 0.1 gallons per minute (GPM) per foot of seating perimeter under maximum unbalanced head.

K. Gate OWG13 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior headpond elevation of 145.4 ft. and a dewatered entrance channel (elevation 138.6 ft.).

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 3.0 ft.

3. Gate Attachment: Gate guides shall be embedded in the concrete channel. The guides shall provide a minimum 2 ft. clear distance to match entrance flume width.

4. Gate shall be a two section telescoping leaf gate with fabricated top weir/nose geometry per the Drawings.

5. The top of the gate is to be no less than elevation 143.85 ft. in the raised position.

6. The gate leaf shall have continuous side sweeps.

L. Gate DSG14 shall be designed for the following (Bid Supplement):

1. Structural Design Head: The gate shall be designed for a maximum exterior headpond elevation of 145.4 ft. and a dewatered pipe (elevation 139.5 ft.).

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 7.5 ft.

M. Gate DSG15 shall be designed for the following (Bid Supplement):

1. Structural Design Head: The gate shall be designed for a maximum exterior headpond elevation of 145.4 ft. and a dewatered pipe (elevation 139.5 ft.).

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 7.5 ft.

N. Gate IG16 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior headpond elevation of 145.4 ft. and a dewatered entrance channel (elevation 139.5 ft.). The gate must seal but does not need to be operated under this loading condition.

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 5.4 ft.

3. Gate Attachment: Gate guides shall be embedded in the steel channel. The guides shall provide a minimum 6 ft. clear distance to match entrance flume width.

4. The bottom of the gate is to be no less than elevation 146.75 ft. in the raised position.

5. The gate leaf shall have continuous bottom and side seals.

6. The gate shall have a positive means of seating (in the closed, full down position) by use of wedges, steel spring leafs or similar method.

7. The seal leakage shall not exceed 0.1 gallons per minute (GPM) per foot of seating perimeter under maximum unbalanced head.

O. Gate IG-17 shall be designed for the following:

1. Structural Design Head: The gate shall be designed for a maximum exterior headpond elevation of 145.4 ft. and a dewatered entrance channel (elevation 138.6 ft.). The gate must seal but does not need to be operated under this loading condition.

2. Operating Head: For purposes of sizing the electric actuator, the Design Operating Head shall be 6.8 ft.

3. Gate Attachment: Gate guides shall be embedded in the concrete channel. The guides shall provide a minimum 2 ft. clear distance to match entrance flume width.

4. The bottom of the gate is to be no less than elevation 146.36 ft. in the raised position.

5. The gate leaf shall have continuous bottom and side seals.

6. The gate shall have a positive means of seating (in the closed, full down position) by use of wedges, steel spring leafs or similar method.

7. The seal leakage shall not exceed 0.1 gallons per minute (GPM) per foot of seating perimeter under maximum unbalanced head.

P. There shall be no leaks in the joints between the spliced/welded gate sections.

Q. Gate guides, stems, and fittings shall not project into the water passage, where fish are present, for all gates.

1.04. REFERENCES

The design, fabrication, and installation of the gates, guides, and lifts shall conform, as a minimum, to the practices advocated by the following agencies, professional societies, trade associations, code organizations, and publications:

A. U.S. Army Corps of Engineers (USACE):

1. ETL 1110-2-584 “Design of Hydraulic Steel Structures”

2. EM 1110-2-2610 “Lock and Dam Gate Operating and Control Systems”

3. EM 1110-2-3001 “Planning and Design of Hydroelectric Power Plant Structures”

4. EM 1110-2-3400 “Painting: New Construction and Maintenance”

5. EM 1110-2-4205 “Hydroelectric Power Plants Mechanical Design”

6. CEGS 09900 “Painting, General”

7. CW 09940 “Painting, Hydraulic Structures and Appurtenant Works”

B. American Institute of Steel Construction (AISC)

C. American Welding Society (AWS): AWS D1.1 “Structural Welding Code - Steel”

D. American Society of Mechanical Engineers (ASME)

E. American National Standards Institute (ANSI)

F. American Water Works Association (AWWA): C540 “Electric Actuators for Valves and Slide Gates”

G. American Water Works Association (AWWA): C561 “Fabricated Stainless-Steel Slide Gates”

H. SSPC: The Society of Protective Coatings (SSPC)

I. National Electric Code (NEC)

J. National Electrical Manufacturers Association (NEMA)

K. Occupational Safety and Health Administration (OSHA)

L. American Society for Testing and Materials (ASTM)

M. American Concrete Institute (ACI)

1.05. QUALIFICATIONS

A. The Supplier shall have been in business for at least 5 years, having successfully designed and built several installations of similar scope. At the request of Maine DMR, the Supplier shall submit references and evidence of performance on other projects with similar design conditions.

1.06. QUALITY ASSURANCE

A. All structures and components covered by this Specification shall be designed and constructed in a thorough and workmanlike manner. Due regard shall be given in the

design for reliable and safe operation, accessibility, interchangeability, and durability of parts. The Manufacturer shall allow the Engineer, Woodland Pulp, and Maine DMR access to witness shop testing.

1.07. WARRANTY

A. The Supplier shall be responsible for ensuring that the structures and associated equipment supplied form an integral, fully operational and serviceable system. The Supplier shall guarantee all products to be free from defects in material and workmanship for a minimum period of two years from date of acceptance by Woodland Pulp and Maine DMR. The Supplier shall expedite and make all necessary efforts and repairs to correct defects and deficiencies at no expense to Woodland Pulp and Maine DMR.

1.08. SUBMITTALS

A. Proposal shall include the following:

1. Schedule and delivery date(s).

2. Description and drawing(s) of the sealing system(s).

3. Number of sections, per gate, to be assembled onsite.

4. Description of the lifting mechanism(s).

5. Description of controls.

6. The number of days anticipated for onsite supervision for installation, startup, testing and training.

7. Warranty terms.

8. Detailed list of all exceptions taken to this Specification.

9. Recommended spare parts.

10. Alternatives and optional features which may be beneficial to Woodland Pulp and Maine DMR accompanied by associated costs and / or savings.

B. Shop Drawings, catalog cut sheets, and procedures shall be submitted within 90 calendar days of the contract issuance and prior to manufacturing, and shall include the following:

1. Detailed gate drawings (plans, sections, and elevations) showing construction of gates, sealing system, clearances, critical dimensions, tolerances, and storage position.

2. Detailed lifting mechanism drawings (plans, sections, and elevations) showing locations and type of lifting equipment, deck space requirements for lifting equipment, location of control and emergency stop panels, actuator schematics and details.

3. Final calculated reactions to be transferred to the guides and to the superstructure. Load cases include lowering under full head and flow, raising under full unbalanced head, and storage.

4. Design calculations for each gate. Design calculations shall be per USACE ETL 1110-2-584 “Design for Hydraulic Steel Structures”. Design calculations shall be stamped by a Registered Professional Engineer.

5. Blockout and installation details for guide, sill, and header recesses, including tolerances.

6. Painting and coating system information and product data.

7. Unit and shipping weights.

8. Written procedure for shop testing.

9. Written procedure for onsite testing.

10. Component data sheets and cut sheets.

11. Wiring diagrams identifying electrical equipment, internal terminations, and schematic of operation, as well as external instrument, control, and power interconnects. Drawings shall include manufacturer’s name, model number, and ratings.

12. Long term onsite storage requirements.

C. Monthly progress reports with schedule updates shall be submitted beginning at the issuance of the contract and ending at the final acceptance by Woodland Pulp and Maine DMR.

D. Manufacturer’s assembly, installation, maintenance, and troubleshooting instructions to be submitted prior to shipment shall include the following:

1. Record drawings.

2. Shop test results.

3. Installation, operation, and maintenance manuals for all equipment.

4. Name, address, and telephone number of nearest authorized service facilities and parts distributor.

5. List of personnel assigned for onsite assembly, installation, testing, and training. The list shall include the name, title, address, telephone number, and description of duties/expertise of each person.

6. Parts list.

7. Safety procedures.

8. Field test procedures.

E. Inspection and Testing results to be available upon request prior to shipment shall include the following:

1. Manufacturing inspection dates shall be submitted at least 14 calendar days prior to testing to allow the Engineer, Woodland Pulp, and Maine DMR the option for test observations.

2. Certified material test reports and certifications for structural steel, fasteners, welding filler materials, wire rope, forgings, and castings shall be submitted.

3. Welder certifications in accordance with AWS for all welders who performed work on the gate structures and lifting equipment shall be submitted.

F. Shop Drawings and Catalog Cut Sheets Submittal Procedure

1. Initial Submittal: All submittals of Section 1.08 shall be sent to the Engineer for review. Acceptable electronic formats include AutoCAD, PDF, Word, Excel, and MS Project.

2. Returned Submittal: The Engineer shall review and return the Supplier's submittals within 30 calendar days after receipt of such submittals from the Supplier, unless quicker return is requested by the Supplier and agreed to by the Engineer. A copy will be returned with the Engineer's comments and with one of the following notations:

a. No Exceptions Taken

b. Make Corrections Noted

c. Revise and Resubmit

d. Rejected

3. Final Review Copy: When the drawings are returned marked with either (a) or (b), the Supplier is authorized to proceed with the work or purchase of equipment indicated by the returned drawing. Drawings marked (b) shall be corrected and resubmitted within 45 calendar days for record purposes.

4. Re-submittals: When the drawings and/or other submittals are returned marked with either (c) or (d), the Supplier shall revise and/or correct and resubmit the drawings or other material within 45 calendar days after their return to the Supplier. The Supplier shall not begin any work covered by a drawing, data, or sample marked with either (c) or (d) until a revision, correction, or written waiver has been marked with an (a) or (b) by the Engineer and returned to the Supplier.

G. Record Copy Submittal

1. Will encompass record copies of all drawings, product data, manuals, etc. for filing with Woodland Pulp and Maine DMR. This submittal shall be made after completion of the commissioning tests and final acceptance of the equipment by Woodland Pulp and Maine DMR. The closeout submittal shall contain AutoCAD compatible CAD files. For product data, instruction manuals, etc., electronic files in PDF, Word, or Excel format shall be furnished containing original Supplier's literature.

PART 2 - PRODUCTS

2.01. GENERAL

A. Materials

1. Materials used in the fabrication of the gate structures and lifting equipment shall be in conformance with prevailing standards as referenced in Paragraph 1.04References or the manufacturer's standards, whichever results in more durable design. Cast iron is not allowed for any component that is subjected to cyclic stress such as gears, drums, sheaves, and couplings.

B. Design and Fabrication

1. Design and fabrication shall comply with applicable portions of the codes and specifications referenced in Paragraph 1.04 References. Loadings, impact allowances, and allowable stresses shall be in accordance with governing industry standards.

2. Gates and guides shall be supplied as an integral unit to the extent possible. If gate and guide dimensions prohibit supply as an assembly, the gates and guides shall be shop assembled and match-marked prior to shipping.

C. Gates must be lockable for lockout/tagout (LOTO) isolation purposes. Coordinate with Woodland Pulp.

2.02. GATES

A. Materials

1. Gate body, skin plate, and guides shall be at the Suppliers option: painted/coated carbon steel, or stainless steel.

2. Carbon steel plates, angles, and channels shall meet the requirements of ASTM A36. High-strength low-alloy steel wide-flange shapes shall meet the requirements of ASTM A992.

3. Stainless steel shall be Type 304L or 316L.

B. Load and Resistance Factor Design (LRFD) Parameters

1. The gate structure and guides shall be designed using LRFD methods in accordance with USACE ETL 1110-2-584 “Design of Hydraulic Steel Structures”.

2. Include the additional reliability / performance factor α = 0.90 from ETL 1110-2-584, Paragraph 3.1.1.

3. Design per the LRFD load factors, load combinations, and guidelines of ETL 1110-2-584, Appendix E Vertical Lift Gates.

C. Girders shall span horizontally. Vertical framing systems shall not be used.

D. Skin plate deflection shall not exceed 0.4 times the plate thickness.

E. If carbon steel material is used, use continuous welds or seal welds to prevent water penetration into the joints.

F. Exceptions are the bolted joints necessary to assemble the gate sections in the field, if required.

G. Water pondage on or within structural members shall be prevented by design or by the use of drain holes.

H. Design for a minimum expected service life of 50 years.

I. Gate leafs shall be shipped as a single fabrication if at all possible.

2.03. SEALS

A. Molded Rubber Seals

1. Compound shall be natural rubber/polyisoprene.

2. 60 (min) to 70 (max) Shore A, Durometer Hardness.

3. Corner seals and angled seals shall be full-molded.

4. All joints shall be vulcanized at the factory such that the side and bottom seals form one continuous length. No field splicing shall be allowed.

B. Mounting Strips, Clamp Bars, and Seal Strips

1. Type 304 or 316 stainless steel.

2. Surface roughness 125 micro inches.

3. Fastening hardware shall be Type 304N or 316N conforming to ASTM A193 Grades B8N, B8NA, B8MN, or B8MNA.

2.04. GUIDES

A. Supplier shall furnish the following:

1. Blockout details for the vertical guides and sill.

2. Anchor bolts.

3. Threaded rods, turnbuckles, and nuts to align and secure the guides.

4. Guides shall be stainless steel or galvanized steel.

5. Stainless steel shall be Type 304L or 316L.

B. The Supplier shall provide a comprehensive installation procedure for the guides, sills, and headers including alignment tolerances. One of the objectives of the guide installation shall be to produce an alignment where the centerlines of the bearing tracks form the edges of an imaginary plane that is square, vertical, and perpendicular to the direction of flow. The Supplier's tolerances for the installed bearing tracks shall be within the limits described below and shall be achieved by a combination of machining, as appropriate, and field alignment. The Supplier is responsible for assuring that its tolerances and fabrication procedures produce a functioning system of gate, seals, and guides that satisfies the travel and leak requirements described in Paragraph 1.03.

1. Along a line-of-action that is perpendicular with the flow, the surface at the centerline of the bearing track shall not deviate more than +1/16" from the vertical plane.

2. The span between points at the same elevation and on the centerlines of the bearing tracks shall be within a tolerance of +1/8".

3. Along a horizontal line-of-action that is across the water flow path, surface points along the centerline of the track shall not deviate more than +1/16 from the vertical.

4. The absolute elevations of the sill sealing surface and the top sealing surface shall not deviate more than +1/16" from their respective theoretical elevations.

5. The rate of change of all of the above shall not exceed more than 1/16" along any 20'-0" length.

2.05. ACTUATORS

A. Actuators, lifting, or torque shafts and interconnecting shafts shall be arranged nominally as shown on Drawings. Alternate arrangements may be proposed for review by the Engineer and Woodland Pulp.

B. Lifting equipment shall incorporate motor, integral reversing starter, local control facilities and terminals for remote control, and indication connections housed within a self-contained, sealed enclosure. Except as modified here, actuator design shall be in accordance with AWWA C540 "Electric Actuators for Valves and Slide Gates".

C. Lifting equipment shall be designed for balanced or unbalanced head and flow conditions as specified in Section 1.03. The entire operating mechanism shall be designed to withstand any shock resulting from operation with improper setting of limit or torque switches or with foreign matter lodged in the gate.

D. All components of gate lifting equipment shall be designed for the maximum normal full load torque of the electric motor, with a minimum factor of safety of five (5.0) based on the ultimate tensile strength of the material. All components shall be designed for a unit stress not to exceed 75 percent of the yield strength of the material, using the locked rotor torque rating of the motor, available through the control system. Components, which may fail in buckling compression, shall be designed for 1.25 times the locked motor thrust, using the Euler or J.B. Johnson formulas, as appropriate. These criteria determine the maximum allowable stresses for all components. Components used as fuses, such as some shear bolts, keys, torque-limiting couplings, etc. shall not be designed to these criteria.

E. The lifting equipment and their supports shall be designed for a seismic acceleration per Specification Section 01 81 10. The member stresses for the seismic condition shall conform to the American Institute of Steel Construction Specification for Structural Steel Buildings.

F. Lifting units shall be o-ring sealed, watertight to IP66/IP68 7m for 72hrs, NEMA 4 or better.

G. Local indicators shall be provided in the form of pilot lights at the local control station to clearly distinguish the fully open and fully closed positions. All gates listed under Section 1.03 of this Specification shall have a Mechanical Dial Position Indicator (MDPI) provided that shows the position of the gate along its entire length of travel.

H. Controls: Local controls shall be provided. They shall include open/stop/close commands and a local/remote selector switch. Each electrical gate actuator shall have a local emergency stop feature.

I. Actuator shall be located, oriented, and configured such that the local controls and hand wheel are readily accessible to personnel. All displays shall be readable between waist and eye level.

J. Protection shall be provided for the motor as follows:

1. Stall - the motor shall be de-energized within 8 seconds in the event of a stall when attempting to unseat a jammed gate.

2. Over temperature - thermostat will cause tripping of the motor. Auto-reset on cooling.

3. Single phasing - lost phase protection.

4. Direction – phase rotation correction.

K. A hand-wheel shall be provided for emergency operation, engaged when the motor is declutched by a lever or similar means, the drive being restored to electrical operation automatically by starting the motor. The hand-wheel or selection lever shall not move on restoration of motor drive.

2.06. WELDING

A. The edges of the members to be welded shall be sheared, flame-cut or machined to suit the required type of welding and to allow thorough penetration. The surfaces of plates to be welded shall be free from slag, rust, grease, and other foreign matter.

B. All welding shall be performed in accordance with applicable piping, structural and welding codes and shall be approved by the Engineer. All welded fabrications shall be designed, fabricated, stress relieved and inspected in accordance with applicable codes.

C. All welders and welding operators assigned to the work shall be certified and experienced on similar projects.

2.07. PAINTING

A. Gates and Guides

1. Carbon steel surfaces shall be prepared in accordance to SSPC SP10 “Near-White Blast Cleaning” after fabrication and just prior to painting.

2. Apply 2 or more coats of N69F Epoxy coating for a minimum dry film thickness of 14 mils.

3. Finish color to be selected by Woodland Pulp from the Supplier’s standard offerings.

4. Paint shall be lead-free, high-solids, low VOC.

5. Submit paint system details for approval by the Engineer.

6. Provide 1 gallon of touch-up paint for each type of paint to match finish and gloss.

B. Lifting Equipment

1. Steel surfaces shall be prepared in accordance to SSPC-SP6 “Commercial Blast Cleaning” after fabrication and just prior to painting.

2. Factory applied primer and paint shall be suitable for long-term outdoor exposure of at least 20 years.

3. Color and surface finish shall be selected by Woodland Pulp from the Supplier’s standard offerings.

4. Paint shall be lead-free, high-solids, low VOC.

5. Submit paint system details for approval by the Engineer.

6. Provide 1 gallon of touch-up paint for each type of paint to match finish and gloss.

C. The following surfaces shall not be painted:

1. Embedment surfaces in contact with concrete.

2. Rail surfaces in contact with wheels.

3. Wheel running surfaces (if any).

4. Stainless steel.

2.08. ELECTRIFICATION

A. Power supply for the lifting mechanisms shall be 480 Volts, 3 Phase, 60 Hertz. All power required for the operation of the lifts shall be developed from a single such branch circuit.

B. For each lifting unit, the Supplier shall provide a non-fused, 480 Volt, 3 phase manual disconnect switch designed and installed in accordance with the requirements of the National Electric Code. Opening of main line manual disconnect shall completely de-energize the lifting unit. The main disconnect switch shall be capable of being padlocked in the “Off” position.

C. Protect and enclose electrical terminations and connections.

D. All enclosures shall be NEMA 4 or better.

E. Ground electric motors and structural frames.

2.09. SAFETY

A. All breakers and valves shall be of a physically lockable design.

B. Install protective guards at all hazardous contact points, pinch points, and moving parts including locations such as the motor drives.

C. Provide an emergency stop pushbutton at each of the lifting units.

2.10. LABELING

A corrosion-resistant metallic nameplate shall be permanently fixed to each gate and to each lifting unit with the following minimum information permanently imprinted into the nameplate:

1. Name of Supplier.

2. Model Number and Serial Number.

3. Date of manufacture (Month and Year).

PART 3 - EXECUTION

3.01. ASSEMBLY, TESTING, AND PREPARATION FOR SHIPPING

A. The Supplier shall provide 14 calendar days advance notice to the Engineer, Woodland Pulp, and Maine DMR prior to shop tests and assemblies to allow the option to witness the shop tests and assembly.

B. The gate sections and seals shall be assembled in the Supplier's plant and the monolithic structure shall be verified to be within the approved tolerances. The gate sections and seals shall be carefully pinned or match-marked, and then disassembled for shipment. Gate sections shall be sized and components shall be assembled to the greatest extent possible for shipping.

C. Prior to shipment, the gates shall be cleaned and all exposed finished parts and electrical equipment protected for shipment. Properly lubricate all gear boxes, bearings, etc. prior to shipment from factory. An extra protective coating shall be applied to allow outdoor storage of structural parts for up to one year prior to installation. Electrical components requiring indoor storage shall be packaged separately and marked for easy identification by onsite personnel.

D. The Engineer and Woodland Pulp shall be given a draft copy of the operation and maintenance instructions before final assembly.

E. The Engineer, Woodland Pulp, and Maine DMR shall be given a final copy of the storage requirement before shipment.

F. No shipment shall be made without final release by Supplier's quality assurance and the acceptance from the Engineer, Woodland Pulp, and Maine DMR.

3.02. SHIPPING, RECEIVING, AND STORAGE

A. Oversized loads may be used to meet the requirements of 2.01; however, the freight cost for oversized loads shall be included by the Supplier in the Contract Price.

B. Deliver embedded parts (guides) prior to gates for ease of construction (if a single assembly cannot be shipped). Coordinate with the Contractor on delivery dates.

C. The equipment shall be unloaded and stored by the Contractor according to the Supplier's specifications prior to installation. Supplier shall furnish long term storage requirements with submittals.

D. No equipment shall be supplied or delivered to the job site until the written approval from the Engineer, Woodland Pulp, and Maine DMR has been obtained by the Supplier.

E. Fourteen (14) calendar days advance notice shall be given by the Supplier to Woodland Pulp of intent to ship any item. The notice shall give expected time of arrival, carrier, quantities, approximate weight, bill of lading number, point of origin, and destination. The Supplier shall specify unloading and storage requirements of the equipment to be delivered.

F. The equipment shall be delivered at the job site only between the hours of 8:00 A.M. and 3:00 P.M. Monday through Friday except on federal or state holidays.

G. Care shall be taken in loading and transporting to prevent damage to the gate sections and appurtenances.

H. All equipment shall be identified with a tag stating the purchase order number, item number, description, job number, and equipment number even if the equipment is crated or boxed. If crated or boxed, the same information shall be placed on the crate or box in letters at least one-inch high.

I. Lifting and support points shall be clearly identified.

J. The Engineer, Woodland Pulp, and Maine DMR shall have the right to inspect in detail all equipment delivered. Any equipment inspected to be defective shall be immediately replaced or repaired by the Supplier. Repairs shall be subject to acceptance by the Engineer, Woodland Pulp, and Maine DMR.

K. The Contractor shall store equipment to permit easy access for inspection and identification. The equipment shall be kept off the ground and protected from corrosion and deterioration.

3.03. INSTALLATION, INSPECTION, OPERATIONAL TESTING, AND TRAINING

A. The Supplier shall furnish competent supervisory installation personnel who shall perform the following services:

1. Provide technical direction for the assembly, alignment, installation, erecting, starting, and operating of the equipment.

2. Inspect embedment placements for conformance with approved shop drawings and contract documents prior to their grouting. Bring nonconforming work to the attention of the Engineer prior to proceeding with the gate installation. Non-conforming assemblies or installations shall be corrected prior to operation and testing.

3. After assembly and installation, the Supplier shall supervise any adjustments, operate and test all gate controls and operations, and supervise the preparation for inspection, testing, and final acceptance by the Engineer, Woodland Pulp, and Maine DMR.

4. Instruct Woodland Pulp's representatives in the operational and maintenance features of the equipment.

B. All Supplier representatives shall read, write, and speak fluent English.

C. The gates and lifting equipment shall be installed in strict conformance with Supplier's drawings and instructions, and inspected by a Supplier's representative. Supplier shall

provide all necessary accessories to make the gate systems complete, usable, and capable of meeting the requirements specified in Paragraph 1.03.

D. The Engineer, Woodland Pulp, and Maine DMR shall witness the startup and operational testing of the gates. Supplier shall notify the Owner at least 5business days prior to conducting each operation or testing. Testing shall be conducted in accordance with written procedures developed by the Supplier and shall include as a minimum:

1. Dry environment:

    a. Move the gate from fully open to fully closed in several cycles.

    b. Open the gate from fully closed to cracked open using auxiliary handwheel.

    c. Inspect the gate, guides, seals, and lifting equipment.

2. Water passages full, no flow, balanced head:

    a. Move the gate from fully open to fully closed in several cycles.

    b. Open the gate from fully closed to cracked open using auxiliary handwheel.

    c. Inspect the gate, guides, seals, and lifting equipment.

3. Water passage initially full, no flow:

    a. Lower gate to closed position.

    b. Drain the water passage downstream from gate.

    c. Observe and measure leakage of seals.

    d. Inspect the gate, guides, seals, and lifting equipment.

4. Flow in the water passages with power to gates:

    a. Move the gate from fully open to fully closed.

    b. Drain the water passage downstream from gate.

    c. Observe and measure leakage of seals.

    d. Inspect the gate, guides, seals, and lifting equipment.

E. Within 5 calendar days after startup and testing, the Supplier shall provide a factory trained instructor for one (1) day to familiarize Woodland Pulp's operations and maintenance personnel with the inspection, operation, and maintenance of the gate

systems. Woodland Pulp shall advise on the availability of personnel, date, and location for training.

3.04. WORK BY CONTRACTOR

A. Unloading and storing of equipment at the site

B. Construct recesses in the concrete substructure for the installation of the guides, sill, and header.

C. Installation of anchor bolts.

D. Placement, alignment, and grouting of the vertical guides, sill, and header in conformance with tolerances specified by the Supplier. These tolerances shall be within the limits described in Paragraph 2.04.

E. Installation of the lifting equipment and ancillary items under the supervision of the Supplier's onsite personnel.

F. Clean equipment for inspection and installation acceptance under the supervision of Supplier's onsite personnel.

G. Power supply to the 480 Volt, 3 Phase disconnect switch.

H. Prior to and after operational tests, check and adjust lifting equipment including anchor bolts, lubricate components, re-top lubrication reservoirs to the full level, and make necessary repairs to the equipment and structures under the direction of the Supplier's onsite personnel.

3.05. ACCEPTANCE

A. Only a written notice of acceptance from the Engineer, Woodland Pulp, and Maine DMR shall constitute final acceptance of the work.

B. Installation, operation, testing, and final inspection constitute the prerequisites for final acceptance. Final inspection shall be made by representatives from the Supplier, the Engineer, Woodland Pulp, and Maine DMR. This final inspection will result in either a written final acceptance or a written punch-list containing items needing corrections, followed by a re-inspection. Final acceptance does not relieve the Supplier of training requirements.

END OF SECTION

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SECTION 35 20 17

RUBBER SEALS

PART 1 - GENERAL

1.01. DESCRIPTION

A. This section describes materials, testing, and installation of rubber seals as specified and as shown on the Contract Drawings.

1.02. REFERENCES

A. American Society for Testing and Materials International (ASTM):

1. D395: Standard Test Methods for Rubber Property—Compression Set

2. D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension

3. D2137: Standard Test Methods for Rubber Property—Brittleness Point of Flexible Polymers and Coated Fabrics

4. D2240: Standard Test Method for Rubber Property - Durometer Hardness

1.03. SUBMITTALS

A. Submit the following shop drawings in accordance with Section 01 33 00.

1. Manufacturer's printed data for specified materials and locations where materials are to be used.

2. Submit one physical sample of each type of seal used for the Project.

3. Submit layout drawings for the seals (include seal cross-section dimensions, length of each piece, and identify shop and field splice locations).

1.04. DELIVERY, STORAGE, AND HANDLING

A. Upon receipt of fabricated assemblies at the job site, the Contractor and the Engineer or applicable representative shall inspect for shipping damage. The Contractor shall replace damaged items at no cost to Maine DMR.

B. Store products parts as unstressed as possible for 24 hours at room temperature to reduce distortion.

C. Seals shall be protected from UV exposure.

PART 2 - PRODUCTS

2.01. RUBBER SEALS

A. Seals shall be EPDM rubber by Mi Conveyance Solutions (formerly Seals Unlimited) compound SU66258 or equivalent. The compound shall contain not less than 70% by volume of the basic polymer, and the remainder shall consist of reinforcing carbon black, zinc oxide, accelerators, antioxidants, vulcanizing agents, and plasticizers.

B. Specified rubber seals per the dimensions shown on the Contract Drawings:

1. Hopper gate seal: Mi Conveyance Solutions, J-bulb seal per the dimensions shown in the Contract Drawings.

2. Seal/gasket between steel flume segments: Mi Conveyance Solutions, molded flat seal per the dimensions shown in the Contract Drawings.

3. Seal/expansion joint between steel exit flume and concrete exit flume: Mi Conveyance Solutions, seal molded or extruded to the custom shape shown in the Contract Drawings.

4. Seal/expansion joint between steel exit flume and steel tower: Mi Conveyance Solutions, seal molded or extruded to the custom shape shown in the Contract Drawings.

C. The tensile strength of all shop splices shall be not less than 50 percent of the tensile strength of the unspliced material.

D. Physical characteristics of the seals shall meet the requirements of Table 1.

Table 1 – Rubber Seal Physical Characteristics

Physical Test	**Test Value**	**Test Method Specification**
Tensile Strength	2,000 psi (min.)	ASTM D412
Elongation at Break	400% (min.)	ASTM D412
300 percent Modulus	600 psi (min.)	ASTM D412
Durometer Hardness (Shore Type A)	55 to 65	ASTM D2240
Compression Set	25% (max.)	ASTM D395
Low Temperature Brittleness	Pass with no cracks	ASTM D2137

PART 3 - EXECUTION

3.01. RUBBER SEALS

A. Rubber seals shall be as long as practical to reduce the number of splices. Continuous rubber seals are preferred.

B. Seals shall be accurately fitted and drilled for proper installation.

C. Seals shall be secured in place by bars and fastenings as shown on the Contract Drawings. Fastenings may not be in the zones of seal and seat contact.

D. Seals shall be fitted by the fabricator to the fabricated steel assemblies. The ends of all pieces must be cut at right angles, not beveled. Seals should be cut, and/or dressed, slightly longer than required to permit such fitting without buckling or misalignment. No cement shall be used during such fitting.

E. Splicing

1. Splices shall be completed in the shop as much as practical.

2. Spliced joints should be prepared with a 90-degree cut relative to the cross-section, and buffed square.

3. Splices done in the shop shall be hot vulcanized.

4. Splices done in the field shall be cold vulcanized. An adhesive or caulk should be selected for the appropriate rubber compound being used.

5. Splices shall be completed per the seal manufacturer’s recommendations.

3.02. INSTALLATION

A. Immediately before installing the rubber seals, clean steel surfaces. Install rubber seal per manufacturer's instructions.

3.03. SHOP/FIELD QUALITY CONTROL

A. The Contractor shall notify the Engineer of readiness for items under this Section to be inspected a minimum of 10 working days prior to the items being covered by further work.

END OF SECTION

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