CITY OF WEST LINN
LAND USE PRE-APP CONFERENCE MEETING

Thursday, January 7, 2010

City Hall
22500 Salamo Rd.
Willamette Conference Room

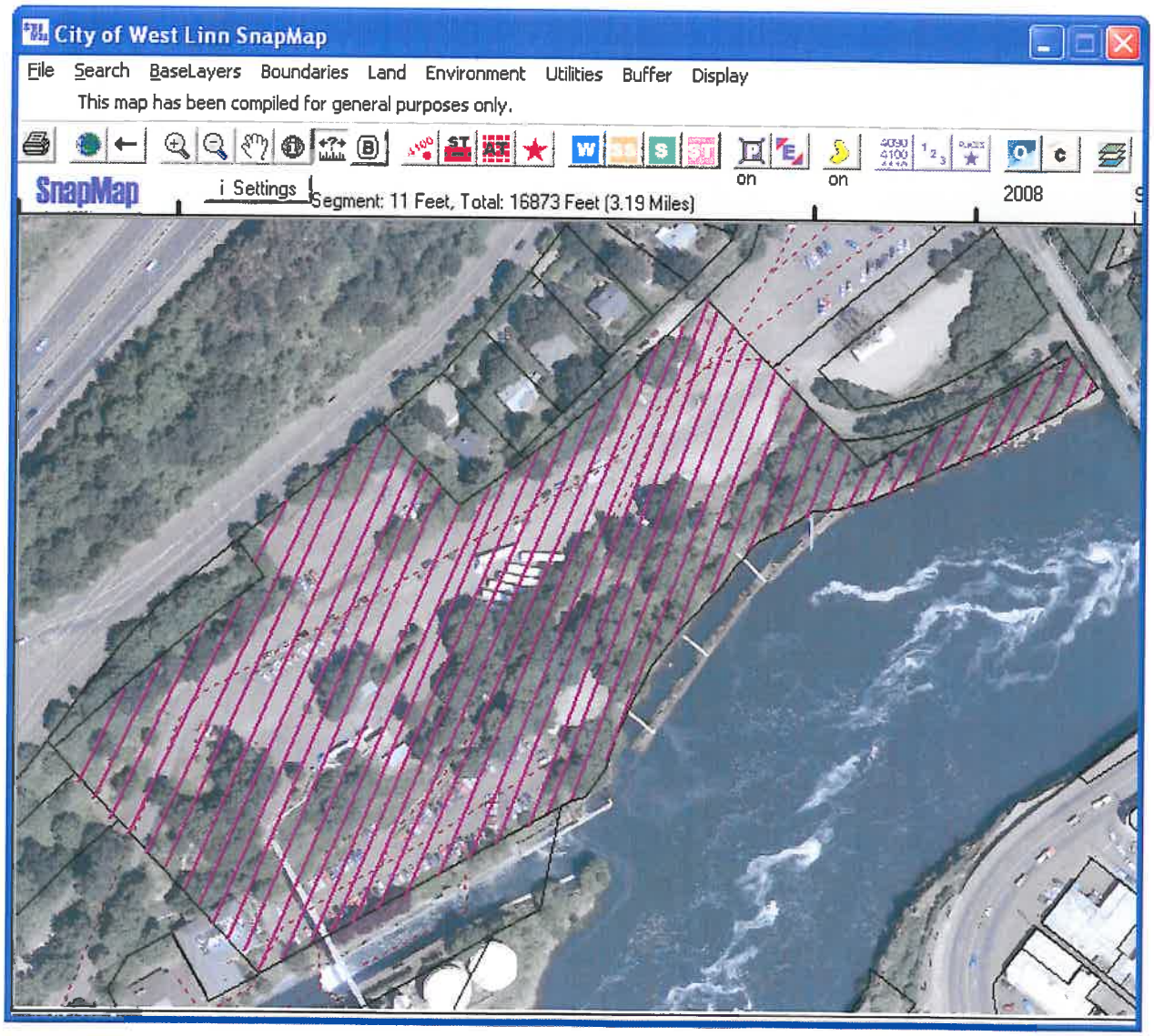
10:00am **Design Review - Willamette Falls Fish Ladder emergency footing repair project**

Applicant: **Oregon Department of Fish and Wildlife**

Address: **4800 Mill Street**

Neighborhood Assn: ***Bolton and Sunset***

PA-09-23 Planner: T. Soppe



CITY OF WEST LINN
PRE-APPLICATION CONFERENCE

DATE OF CONFERENCE ~~12/17/09~~ 1/7/10 TIME OF CONFERENCE 10 am

FEE $350.00 PROJECT # PA-09-23 STAFF CONTACT TOM SOPPE

(This section to be filled in by staff)

Pre-application conferences occur on the first and third Thursdays of each month. In order to be scheduled for a conference, this form including property owner's signature, the pre-application fee, and accompanying materials must be submitted at least 14 days in advance of the conference date. Twenty-four-hour notice is required to reschedule.

APPLICANT'S NAME John Zauner PHONE NO. 971-673-6041

ADDRESS (or map/tax lot) OF SUBJECT PROPERTY Willamette Falls Fishway 4800 Mill Street West Linn, OR 97068

APPLICANT'S MAILING ADDRESS Oregon Department of fish and Wildlife 17330 SE Evelyn Street Clackamas, OR 97015

APPLICANT'S E-MAIL john.r.zauner@state.or.us

BRIEF DESCRIPTION OF PROPOSAL: Willamette Falls Fish Ladder emergency footing repair project completed as designed and planned. ODFW is initiating Flood Management Area Pre-Application Conference with the City of West.

Please attach additional materials relating to your proposal including a site plan on paper up to 11 x 17 inches in size depicting the following items:

- North arrow
- Scale
- Property dimensions
- Streets abutting the property
- Conceptual layout, design and/or building elevations
- Access to and from the site, if applicable
- General location of existing trees
- Location of creeks and/or wetlands
- Location of existing utilities (water, sewer, etc.)
- Easements (access, utility, all others)

Please list any questions or issues that you may have for city staff regarding your proposal:
The applicability of 27.00 in regards to the emergency nature of fish ladder repair project. The type and nature of analysis and steps necessary to fulfill West Linn City Flood management Area codes and next steps to completion.

By my signature below, I grant city staff right of entry onto the subject property in order to prepare for the pre-application conference.

Property owner's signature

11/13/09
Date

Property owner's mailing address (if different from above)

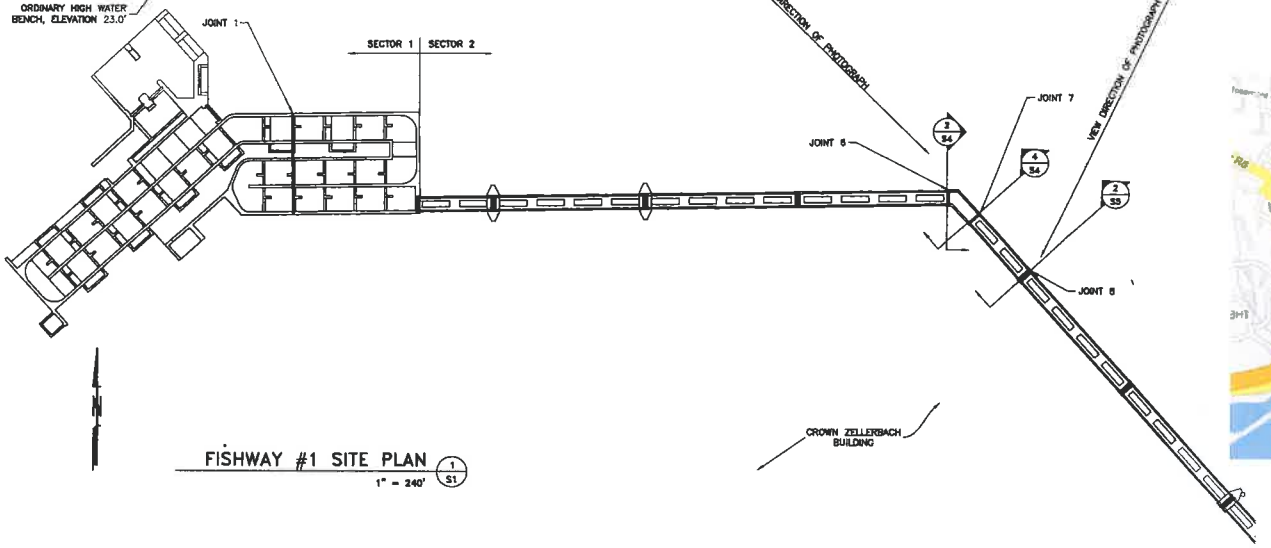
RECEIVED
NOV 13 2009
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

p:\devreview-forms-REVISED-preapp-application (7-21-08)

Post-it® Fax Note 7671	Date	# of pages ▶
To TOM SOPPE	From JOHN ZAUNER	
Co./Dept.	Co. ODFW	
Phone #	Phone # 971 673 6041	
Fax #	Fax #	

ODFW WILLAMETTE FALLS FISHWAY #1 FOUNDATION REPAIRS
JOINTS 6/7 & JOINT 8 FOUNDATION UNDERMINING REMEDIATION

Geotechnical & Environmental Consultants
9725 SW Beaverton Hillsdale Hwy, Ste 140
Beaverton, Oregon 97005-3394
PHONE 503 / 641 / 3478
FAX 503 / 644 / 8034



FISHWAY #1 SITE PLAN (1/S1)
1" = 240'

VICINITY MAP (2/S1)
NTS

OREGON Fish & Wildlife

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 8, 2005 — ERIK WILLIAM PETERSEN — EXPIRES 12/31/10

PSE
Peterson Structural Engineers, Inc.
5319 S.W. Westgate Dr., Suite 215
Portland, Oregon 97221
(503) 292-1635

WILLAMETTE FALLS FISHWAY #1 REPAIRS

CLIENT INFO:
Oregon Dept. of Fish & Wildlife
3406 Cherry Ave. NE
Salem, OR 97303
ODFW File 09-018

PROJECT SITE:
ODFW WILLAMETTE FALLS FISHWAY #1
WEST LINN, OREGON

09-072-01

SHEET CONTENT: TITLE PAGE, SITE PLAN AND PHOTOGRAPHS

JOB No. 09-072
DRAWN JNW CHECKED EWBP
DATE 8/21/09
REVISIONS

SHEET S1 OF 6

SHEET INDEX:

S1 TITLE PAGE, SITE PLAN, AND PHOTOGRAPHS
S2 GENERAL PROJECT NOTES
S3 GENERAL PROJECT NOTES (CONTINUED)
S4 JOINT 6/7 FOUNDATION PLAN AND ELEVATIONS
S5 JOINT 8 FOUNDATION PLAN AND ELEVATIONS
S6 GABION BASKET DETAILS

PROJECT CONTACTS:

STRUCTURAL ENGINEER/PROJECT PRIME
PETERSON STRUCTURAL ENGINEERS, INC. (PSE)
5319 SW WESTGATE DR., SUITE 215
PORTLAND, OR 97221
ERIK PETERSON (503) 292-1635

OWNER
OREGON DEPT. OF FISH AND WILDLIFE (ODFW)
3406 CHERRY AVE. NE
SALEM, OR 97303
DAVE SANDSTROM (503) 947-6218

GEOTECHNICAL ENGINEER
GEOTECHNICAL RESOURCES, INC. (GRI)
9725 SW BEAVERTON-HILLSDALE HWY. SUITE 140
BEAVERTON, OR 97005
PHIL WURST (503) 641-3478

PURPOSE AND SCOPE:

PROVIDE TEMPORARY REPAIRS TO TWO SPREAD FOOTINGS WHICH SUPPORT AN ELEVATED PORTION OF SECTOR 2 OF FISHWAY #1 AT WILLAMETTE FALLS IN WEST LINN, OREGON. THESE REPAIRS ARE NECESSARY TO RESTORE SUPPORT BENEATH THESE FOOTINGS THAT HAVE BEEN SEVERELY UNDERMINED BY EROSION. IT IS IMPERATIVE TO COMPLETE THESE REPAIRS BEFORE THE NEXT SEASON OF HIGH RIVER LEVELS WHICH COULD RESULT IN ADDITIONAL UNDERMINING AND LOSS OF THE FOUNDATIONS. THE REPAIRS CONSIST OF TIED AND ROCK-FILLED GABION BASKETS, RIPRAP PLACEMENT, AND STRUCTURAL GROUT TO BE PLACED BEHIND GEOTEXTILE FABRIC AT THE BACK OF THE BASKETS TO FILL VOIDS BENEATH THE FOOTINGS.

GENERAL NOTES:

1. THESE NOTES ARE GENERAL IN NATURE AND ARE INTENDED TO SET MINIMUM STANDARDS FOR CONSTRUCTION. THE CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH THE CONTRACT DOCUMENTS AND HAVE A COPY OF THEM ON SITE AT ALL TIMES.
2. FOR ANY PORTION OF THE CONSTRUCTION WHICH THE CONTRACTOR IS UNABLE TO ASCERTAIN THE REQUIRED CONSTRUCTION OR WHERE CONFLICTS EXIST, IT IS THE CONTRACTORS RESPONSIBILITY TO REQUEST ADDITIONAL INFORMATION (RFIs) AND/OR CLARIFICATIONS BEFORE CONSTRUCTION.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS BEFORE CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
4. THE CONTRACT DRAWINGS REPRESENT THE FINISHED STRUCTURE. METHODS, PROCEDURES, AND SEQUENCE OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
5. ALL WORK SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION 2008.
6. THE FOLLOWING NOTES ARE EXCERPTED FROM THE OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION 2008 AND ARE PROVIDED FOR PROJECT CONVENIENCE. REFER TO THE ACTUAL SPECIFICATIONS AS APPLICABLE AND NECESSARY.
7. IN ADDITION THE WORK MUST ALSO COMPLY WITH THE MANUFACTURER'S SPECIFICATIONS FOR THE INSTALLATION OF THE GABION BASKETS.

RETAINING WALLS: SECTION 00598

DESCRIPTION
00598.00 SCOPE: THIS WORK CONSISTS OF FURNISHING AND CONSTRUCTING RETAINING WALLS AS SHOWN OR SPECIFIED, AND IN CLOSE CONFORMITY TO THE LINES, GRADES, AND DIMENSIONS SHOWN OR ESTABLISHED. THE SPECIAL PROVISIONS WILL LIST THE TYPES AND LOCATIONS OF WALLS TO BE CONSTRUCTED.

00598.02 DEFINITIONS: GEOSYNTHETIC TERMS NOT DEFINED IN THIS SUBSECTION ARE IDENTIFIED IN ASTM D 123, ASTM D 4439, OR 00350.01. IF THERE IS A CONFLICT, DEFINITIONS IN THIS SUBSECTION TAKE PRECEDENCE.

- ALTERNATE FASTENERS – SPIRAL BINDERS OR HIGH TENSILE LOCKING SPRING STEEL CLIP OR CLAMP-ON RING TYPE FASTENERS SPECIFIED AS AN ALTERNATE TO TIE WIRE FOR ASSEMBLING AND JOINING GABIONS.
- BIN WALLS – CONCRETE OR METAL GRAVITY RETAINING STRUCTURES FILLED WITH GRANULAR BACKFILL MATERIAL. BIN WALLS CONSIST OF INTERLOCKING, PREFABRICATED MODULES OR BOLTED LIGHTWEIGHT STEEL MEMBERS CONSTRUCTED LIKE BUILDING BLOCKS.
- COMPANY – IN THE CASE OF A PROPRIETARY RETAINING WALL, THE FIRM OR OTHER ENTITY THAT IDENTIFIES LAWFUL CLAIM TO THE RETAINING WALL OR DESIGN OF THE RETAINING WALL. IN THE CASE OF NON-PROPRIETARY RETAINING WALL, THE FIRM OR OTHER ENTITY THAT PRODUCES, PROVIDES, OR DESIGNS THE RETAINING WALL.
- CONVENTIONAL SEGMENTAL RETAINING WALLS – A BASIC GRAVITY RETAINING WALL TYPE, AND RETAINING WALLS COMPOSED OF SEGMENTAL RETAINING WALL UNITS ONLY (I.E., NO SOIL REINFORCEMENTS)
- CRIB WALLS – PREFABRICATED, INTERLOCKING REINFORCED OR UNREINFORCED GRAVITY RETAINING STRUCTURES BACKFILLED WITH GRANULAR BACKFILL MATERIAL. CRIB WALLS CONSIST OF ALTERNATING TRANSVERSE AND LONGITUDINAL BEAMS.
- EXTENSIBLE TENSILE REINFORCEMENTS – REINFORCEMENTS IN WHICH THE DEFORMATION AT FAILURE IS COMPARABLE TO OR GREATER THAN THE DEFORMABILITY OF THE REINFORCED BACKFILL (E.G., GEOTEXTILE AND POLYMERIC MATERIALS).
- GABION RETAINING WALLS – A BASIC GRAVITY RETAINING WALL TYPE, AND RETAINING WALLS COMPOSED OF ASSEMBLED WIRE BASKETS, CONNECTED TOGETHER, FILLED WITH SPECIFIED ROCK, AND PLACED WITH A RIPRAP GEOTEXTILE BETWEEN THE BACK FACE OF THE BASKET AND THE BACKFILL MATERIAL.
- GEOGRID – SEE 00350.01 FOR GEOGRID DEFINITION.
- GEOSYNTHETIC – SEE 00350.01 FOR GEOSYNTHETIC DEFINITION.
- GEOTEXTILE – SEE 00350.01 FOR GEOTEXTILE DEFINITION.
- INEXTENSIBLE TENSILE REINFORCEMENTS – REINFORCEMENTS IN WHICH THE DEFORMATION AT FAILURE IS SIGNIFICANTLY LESS THAN THE DEFORMABILITY OF THE REINFORCED BACKFILL (FOR EXAMPLE, METALLIC MATERIALS).
- INTERNAL CONNECTING WIRES – INTERNAL WIRES USED TO PREVENT GABIONS FROM BULGING.

MATERIALS
00598.11 BACKFILL: FURNISH BACKFILL MEETING THE REQUIREMENTS OF SECTION 00510 AND THE FOLLOWING:

(A) GRANULAR DRAIN BACKFILL MATERIAL – PROVIDE GRANULAR DRAIN BACKFILL MATERIAL ACCORDING TO 00430.11. PROVIDE A TYPE 1 DRAINAGE GEOTEXTILE ACCORDING TO SECTION 02320.
(B) SPECIAL FILTER MATERIAL – PROVIDE SPECIAL FILTER MATERIAL ACCORDING TO SECTION 02810.
(C) GABION RETAINING WALLS – PROVIDE A WELL-GRADED 4 INCH TO 10 INCH ROCK FILL MATERIAL INSIDE THE GABION BASKETS MEETING THE REQUIREMENTS OF 00390.11(B). PROVIDE GRANULAR WALL BACKFILL MATERIAL BEHIND THE GABION BASKETS ACCORDING TO 00510.12.
(D) METAL BIN RETAINING WALLS – PROVIDE GRANULAR STRUCTURE BACKFILL MATERIAL FOR THE INTERIOR CELL OF THE METAL BIN RETAINING WALL UNITS ACCORDING TO 00310.13. PROVIDE GRANULAR WALL BACKFILL MATERIAL BEHIND THE METAL BIN RETAINING WALL UNITS ACCORDING TO 00510.12.
(E) LEVELING PADS – PROVIDE GRANULAR STRUCTURE BACKFILL MATERIAL FOR GRAVEL LEVELING PADS ACCORDING TO 00510.13.
(F) SEGMENTAL RETAINING WALL UNITS – PROVIDE GRANULAR STRUCTURE BACKFILL MATERIAL FOR THE INTERIOR CELL OF HOLLOW SEGMENTAL RETAINING WALL UNITS ACCORDING TO 00510.13. PROVIDE BACKFILL MATERIAL BEHIND THE SEGMENTAL RETAINING WALL UNITS AS SPECIFIED.
(G) MSE GRANULAR BACKFILL – PROVIDE MSE GRANULAR BACKFILL MATERIAL MEETING THE FOLLOWING REQUIREMENTS:
(1) GRADATION – GRADATION SHALL MEET ALL REQUIREMENTS IN SECTION 02630 AND TABLE 02630-1. USE EITHER 1" – 0 OR 3/4" – 0 BASE AGGREGATE CONFORMING TO THE REQUIREMENTS OF 02630.10(A) THROUGH 02630.10(C). TEST THE MSE GRANULAR BACKFILL AT THE FREQUENCY SPECIFIED IN THE ODOT MANUAL OF FIELD TESTING PROCEDURES (MFTP) FOR AGGREGATE BASE MATERIAL. ADDITIONALLY, MSE GRANULAR BACKFILL PLACED IN THE SPREAD FOOTING FOUNDATION SUPPORT ZONE SHALL HAVE BETWEEN 90 TO 100 PERCENT PASSING THE 3/4 INCH SIEVE FOR ALL "SEPARATED SIZES" AS DETERMINED BY AASHTO TZ7.
(2) OTHER REQUIREMENTS:
A. MATERIAL PASSING NO. 200 SIEVE – THE PERCENT, BY WEIGHT, PASSING THE NO. 200 SIEVE SHALL NOT EXCEED 15% WHEN TESTED ACCORDING TO AASHTO T 27 AND AASHTO T 11.
B. PLASTICITY INDEX – THE PLASTICITY INDEX OF THE MATERIAL PASSING THE NO. 40 SIEVE SHALL NOT EXCEED 6 WHEN TESTED ACCORDING TO AASHTO T 90.
C. ELECTROCHEMICAL PROPERTIES – THE ELECTROCHEMICAL PROPERTIES OF THE MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS:

PROPERTY	LIMITS	TEST PROCEDURES
pH	5.0– 10.0	AASHTO T 289
RESISTIVITY	5,000 Ω-CM (MIN.)	AASHTO T 288

ROCK GABION BASKETS: SECTION 02340

DESCRIPTION
02340.00 SCOPE: THIS SECTION INCLUDES THE REQUIREMENTS FOR ROCK GABION BASKETS OF TWISTED OR WELDED WIRE MESH.

MATERIALS
02340.10 GENERAL: PROVIDE WIRE MESH MATERIAL FREE OF BREAKS IN THE WIRE. BREAKS AT WELD POINTS OR OTHER DEFICIENCIES. INDIVIDUAL WIRES OF EITHER STYLE MESH SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:

GALVANIZING ..... 0.80 OZ. PER SQ. FT. MINIMUM
TENSILE STRENGTH ..... 60,000 PSI MINIMUM
WIRE DIAMETER TOLERANCE LIMIT ..... ± 0.004"

WELDED WIRE SHALL ALSO CONFORM TO AASHTO M 55 (ASTM A 185) EXCEPT THAT THE WELD SHEARS SHALL BE 600 POUNDS FOR 11 GAUGE, AND 800 POUNDS FOR 9 GAUGE WIRES. ALL WIRE SIZES ARE AFTER GALVANIZING.

TIE WIRES AND INTERNAL CONNECTING WIRES SHALL BE GALVANIZED AND NO SMALLER THAN 13 1/2 GAUGE. SPIRAL BINDERS MAY BE USED AS AN ALTERNATE TO TIE WIRE FOR BASKET ASSEMBLY AND BASKET-TO-BASKET CONNECTIONS. SPIRAL BINDERS SHALL BE 9 GAUGE, GALVANIZED, AND HAVE A 3 INCH PITCH. HIGH TENSILE FASTENERS OF THE LOCKING SPRING STEEL CLIP OR CLAMP-ON RING TYPE MAY BE USED AS ALTERNATES TO TIE WIRE FOR BASKET ASSEMBLY ONLY. HIGH TENSILE FASTENERS SHALL BE FABRICATED FROM 11 GAUGE STEEL WIRE WITH A MINIMUM TENSILE STRENGTH OF 140,000 PSI. PROVIDE A CLASS 3 ZINC COATING ACCORDING TO ASTM A 764. HIGH TENSILE FASTENERS SHALL PROVIDE A CLOSED POSITION TENSILE STRENGTH OF 600 POUNDS.

ALL WIRE SHALL BE GALVANIZED ACCORDING TO ASTM A 641.

02340.12 TWISTED WIRE MESH GABION BASKETS: FURNISH GABION PANELS OF THE TWISTED MESH STYLE MANUFACTURED FROM 11 GAUGE WITH 9 GAUGE SELVAGE WIRES. THE MESH SHALL FORM A UNIFORM HEXAGONAL PATTERN AND SHALL BE FORMED WITH A NON-RAVELING TWIST. THE MAJOR AXIS (MAXIMUM LINE DIMENSIONS) OF ANY HEXAGONAL OPENING SHALL NOT EXCEED 4.75 INCHES. THE AREA OF THE HEXAGONAL OPENING, APPROXIMATELY 3.2 INCHES BY 4.5 INCHES, SHALL NOT EXCEED 9.5 SQUARE INCHES.

02340.20 WELDED WIRE MESH GABION BASKETS: FURNISH GABION PANELS OF THE WELDED MESH STYLE MANUFACTURED FROM 11 GAUGE OR 9 GAUGE WIRE. THE MESH SHALL FORM A NOMINAL 3 INCH BY 3 INCH GRID PATTERN AND CONFORM TO AASHTO M 55 (ASTM A 185). THE MAXIMUM LINE DIMENSION OF ANY OPENING SHALL NOT EXCEED 4.75 INCHES. THE 12 INCH AND 18 INCH HIGH MATTRESSES SHALL BE MADE FROM 11 GAUGE PANELS. GABIONS OF SQUARE CROSS SECTION (CUBICAL-CELLED UNITS) MAY BE MADE WITH EITHER 9 GAUGE OR 11 GAUGE PANELS, EXCEPT THAT WITHIN THE SAME UNIT, PANELS OF DISSIMILAR WIRE SIZES MAY NOT BE MIXED.

GALVANIZED 9 GAUGE STIFFENERS, PLACED DIAGONALLY IN THE BASKETS AT THE VERTICAL ONE-THIRD POINTS, AS SHOWN ON THE PLANS OR AS RECOMMENDED BY THE MANUFACTURER, MAY BE USED INSTEAD OF PERPENDICULAR CROSS TIES.

02340.40 FABRICATION: FABRICATE GABIONS SO THAT THE SIDES, ENDS, LID AND DIAPHRAGMS CAN BE ASSEMBLED AT THE CONSTRUCTION SITE INTO RECTANGULAR BASKETS OF THE SPECIFIED SIZES. DIMENSIONS FOR HEIGHTS, LENGTHS AND WIDTHS OF GABION BASKETS SHALL BE AS INDICATED ON THE PLANS WITH A TOLERANCE OF PLUS OR MINUS 3%. GABIONS SHALL BE OF SINGLE UNIT CONSTRUCTION. EITHER CONNECT THE BASE, LID, ENDS AND SIDES INTO A SINGLE UNIT OR CONNECT ONE EDGE OF THESE MEMBERS TO THE BASE SECTION OF THE GABION IN SUCH A MANNER THAT STRENGTH AND FLEXIBILITY AT THE POINT OF CONNECTION IS AT LEAST EQUAL TO THAT OF THE MESH.

IF THE LENGTH OF THE GABION EXCEEDS ITS HORIZONTAL WIDTH, EQUALLY DIVIDE THE GABION BY DIAPHRAGMS INTO CELLS WHOSE LENGTH DOES NOT EXCEED THE HORIZONTAL WIDTH. THE DIAPHRAGM MATERIAL SHALL BE OF THE SAME MESH AND SIZE AS THE BODY OF THE GABIONS. FURNISH THE GABION WITH THE NECESSARY DIAPHRAGMS SECURED IN PROPER POSITION ON THE BASE IN SUCH MANNER THAT NO ADDITIONAL TYING AT THIS JUNCTURE WILL BE NECESSARY.

ASSEMBLE THE WIRE MESH PANELS (BASE, ENDS, SIDES, DIAPHRAGMS AND LID) SO STRENGTH AND FLEXIBILITY AT CONNECTIONS IS AT LEAST EQUAL TO THAT OF A SINGLE PANEL.

02340.50 ACCEPTANCE: PROVIDE A QUALITY COMPLIANCE CERTIFICATE FOR GABION BASKETS ACCORDING TO 00165.35.

RIPRAP PROTECTION: SECTION 00390

DESCRIPTION
00390.00 SCOPE: THIS WORK CONSISTS OF FURNISHING AND PLACING AN EROSION RESISTANT COVER MATERIAL FOR PROTECTING SLOPES AND BASINS AT LOCATIONS SHOWN OR AS DIRECTED.

00390.01 DEFINITIONS:
- RIPRAP GEOTEXTILE – A GEOTEXTILE PLACED BETWEEN THE AREA PREPARED FOR IT AND THE RIPRAP.
- FILTER BLANKET – A LAYER OF GRADED GRANULAR MATERIAL PLACED BETWEEN THE AREA PREPARED FOR IT AND THE RIPRAP.
- RIPRAP BACKING – AN OPTION OF USING EITHER RIPRAP GEOTEXTILE OR A FILTER BLANKET PLACED BETWEEN THE AREA PREPARED FOR IT AND THE RIPRAP.
- LOOSE RIPRAP – SPECIFIED CLASSES OF GRADED ROCK PLACED ON PREPARED SLOPE. RIPRAP GEOTEXTILE OR FILTER BLANKET, AS SPECIFIED.
- KEYED RIPRAP – LOOSE RIPRAP PLACED ON PREPARED SLOPE, RIPRAP GEOTEXTILE OR FILTER BLANKET, AS SPECIFIED, AND KEYED IN PLACE BY SLAPPING THE SURFACE WITH A PIECE OF ARMOR PLATING.
- GROUTED RIPRAP – LOOSE RIPRAP WITH ALL OR PART OF THE SPACES FILLED WITH PORTLAND CEMENT MORTAR.
- RIPRAP BASIN – ENERGY DISSIPATER CONSISTING OF LOOSE RIPRAP PLACED AT PIPE OUTLETS AS SPECIFIED.

MATERIALS
00390.10 RIPRAP GEOTEXTILE: FURNISH RIPRAP GEOTEXTILE MEETING THE REQUIREMENTS OF SECTION 02320.

00390.11 RIPRAP REQUIREMENTS:
(A) GENERAL – FURNISH ROCK FOR LOOSE RIPRAP MEETING THE FOLLOWING REQUIREMENTS:
- MEET THE TEST REQUIREMENTS OF 00390.11(B).
- BE ANGULAR IN SHAPE. THICKNESS OF A SINGLE ROCK SHALL NOT BE LESS THAN ONE-THIRD ITS LENGTH. ROUNDED ROCK WILL NOT BE ACCEPTED UNLESS AUTHORIZED BY THE ENGINEER.
- MEET THE GRADATION REQUIREMENTS FOR THE CLASS SPECIFIED.
- BE FREE FROM OVERBURDEN, SPOIL, SHALE AND ORGANIC MATERIAL. NON-DURABLE ROCK, SHALE OR ROCK WITH SHALE SEAMS IS NOT ACCEPTABLE.

(B) TEST REQUIREMENTS – FURNISH THE ROCK MEETING THE FOLLOWING TEST REQUIREMENTS:

MATERIAL TEST	REQUIREMENT
APPARENT SPECIFIC GRAVITY (AASHTO T 85)	2.50 MIN.
% ABSORPTION (AASHTO T 85)	6.0 MAX.
DEGRADATION (ODOT TM 208A)	
PASSING NO. 20 SIEVE	35.0% MAX.
SEDIMENT HEIGHT	8" MAX.
SOUNDNESS (AASHTO T 104)	
AVERAGE LOSS OF 2 1/2"-1 1/2" AND 1 1/2"-3/4" FRACTION AFTER 5 ALTERNATIONS	16.0% MAX.

(C) GRADATION REQUIREMENTS – GRADE LOOSE RIPRAP BY CLASS AND WEIGHT OF ROCK ACCORDING TO THE FOLLOWING:

CLASS 50	CLASS 100	CLASS 200	CLASS 200	CLASS 2000	PERCENT (BY WEIGHT)
WEIGHT OF ROCK (POUNDS)					
50 – 30	100 – 60	200 – 140	700 – 500	2000 – 1400	20.0
30 – 15	60 – 25	140 – 80	500 – 200	1400 – 700	30.0
15 – 2	25 – 2	80 – 8	200 – 20	700 – 40	40.0
2 – 0	2 – 0	8 – 0	20 – 0	40 – 0	10.0 – 0

UNIFORMLY GRADE EACH LOAD OF RIPRAP FROM THE SMALLEST TO THE LARGEST WEIGHT SPECIFIED. CONTROL OF GRADATION WILL BE BY VISUAL INSPECTION.

(1) CONTROL SAMPLE – IF DIRECTED, PROVIDE, AT A SATISFACTORY LOCATION NEAR THE PROJECT, A ROCK SAMPLE OF AT LEAST 5 TONS MEETING THE GRADATION FOR THE CLASS SPECIFIED. THIS SAMPLE WILL BE USED AS A FREQUENT VISUAL REFERENCE FOR JUDGING THE GRADATION OF THE RIPRAP SUPPLIED.
(2) SAMPLING AND TESTING ASSISTANCE – ANY DIFFERENCE OF OPINION BETWEEN THE ENGINEER AND THE CONTRACTOR SHALL BE RESOLVED BY DUMPING AND CHECKING THE GRADATION OF TWO RANDOM TRUCK LOADS OF ROCK. MECHANICAL EQUIPMENT, A SORTING SITE AND LABOR NEEDED TO ASSIST IN CHECKING GRADATION SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE AGENCY.

00390.12 GROUTED RIPRAP: FURNISH ROCK FOR GROUTED RIPRAP MEETING THE REQUIREMENTS OF 00390.11, AND FURNISH THE PORTLAND CEMENT GROUT MEETING THE REQUIREMENTS OF 02080.40.

00390.13 FILTER BLANKET: FURNISH FILTER BLANKET MATERIALS MEETING THE FOLLOWING REQUIREMENTS ACCORDING TO RIPRAP CLASS:

RIPRAP CLASS	FILTER BLANKET
CLASS 2000	18 INCH LAYER OF CLASS 50 RIPRAP CONFORMING TO 00390.11
CLASS 700	9 INCH LAYER OF 6" – 0 STONE EMBANKMENT MEETING THE TEST REQUIREMENTS OF 00330.16
CLASS 200	6 INCH LAYER OF 4" – 0 STONE EMBANKMENT MEETING THE TEST REQUIREMENTS OF 00330.16
CLASS 100	NO FILTER BLANKET REQUIRED
CLASS 50	NO FILTER BLANKET REQUIRED

Geotechnical & Environmental Consultants
9725 SW Beaverton Hillsdale Hwy, Ste 140
Beaverton, Oregon 97005-3394
PHONE 503 / 641 / 3478
FAX 503 / 644 / 0034

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 9, 2002
ERIK WILLIAM PETERSON
EXPIRES 12/31/10

PSE
Peterson Structural Engineers, Inc.
5319 S.W. Westgate Dr., Suite 215
Portland, Oregon 97221
(503) 292-1635

CLIENT INFO:
Oregon Dept. of Fish & Wildlife
3406 Cherry Ave. NE
Salem, OR 97303
ODFW File 09-018

PROJECT SITE:
ODFW WILLAMETTE FALLS
FISHWAY #1, OREGON
WEST LINN, OREGON

WILLAMETTE FALLS FISHWAY #1 REPAIRS

09-072-01

SHEET CONTENT
GENERAL PROJECT NOTES

JOB No.
09-072

DRAWN JNW
CHECKED EWBP

DATE 8/21/09

REVISIONS

SHEET
S2 of 6

CONSTRUCTION
00390.40 PREPARATION: REMOVE BRUSH, TREES, STUMPS AND OTHER ORGANIC MATERIAL FROM SLOPES TO BE PROTECTED BY RIPRAP AND DRESS TO A SMOOTH SURFACE. REMOVE ALL UNSUITABLE MATERIAL TO THE DEPTH SHOWN OR DIRECTED AND REPLACE WITH APPROVED MATERIAL. COMPACT FILLED AREAS AS SPECIFIED IN SECTION 00330.

PROVIDE RIPRAP PROTECTION AS EARLY AS THE STRUCTURE FOUNDATION CONSTRUCTION PERMITS. PREPARE THE SURFACES TO BE PROTECTED AS SHOWN. MAINTAIN THE TRENCH SLOPES, RIPRAP GEOTEXTILE OR FILTER BLANKET UNTIL THE RIPRAP IS PLACED.

00390.41 RIPRAP GEOTEXTILE: IF REQUIRED, INSTALL RIPRAP GEOTEXTILE ACCORDING TO THE REQUIREMENTS OF SECTION 00350 AND AS SHOWN OR DIRECTED.

00390.42 FILTER BLANKET CONSTRUCTION: IF REQUIRED, PLACE THE FILTER BLANKET ON THE PREPARED AREA TO THE FULL SPECIFIED THICKNESS IN ONE OPERATION, USING METHODS WHICH WILL NOT CAUSE SEGREGATION. THE SURFACE OF THE FINISHED LAYER SHALL BE REASONABLY EVEN.

00390.43 RIPRAP BACKING: WHEN ALLOWED IN THE SPECIAL PROVISIONS OR INDICATED ON THE PLANS, THE CONTRACTOR SHALL HAVE THE OPTION OF PLACING EITHER RIPRAP GEOTEXTILE OR A FILTER BLANKET BEHIND THE RIPRAP.

INSTALL THE BACKING ACCORDING TO 00390.41 OR 00390.42.

00390.44 RIPRAP:
(A) GENERAL – UNLESS OTHERWISE DIRECTED, PLACE THE RIPRAP PROTECTION AS THE EMBANKMENT IS CONSTRUCTED. ITS PLACEMENT SHALL LAG BEHIND EMBANKMENT CONSTRUCTION ONLY AS NECESSARY TO ALLOW PROPER EMBANKMENT CONSTRUCTION AND PREVENT MIXTURE OF EMBANKMENT AND RIPRAP MATERIAL.

(B) LOOSE RIPRAP – PLACE RIPRAP ON THE PREPARED AREA:
- WITH A CLAM-SHELL, ORANGE-PEEL BUCKET, SKIP OR SIMILAR APPROVED DEVICE WHICH WILL CONTAIN THE RIPRAP MATERIAL TO ITS FINAL DESTINATION. DO NOT OPEN THE BUCKET UNTIL IT HAS BEEN LOWERED TO THE SLOPE ON WHICH THE MATERIAL IS BEING PLACED.
- TO ITS FULL COURSE THICKNESS IN ONE OPERATION.
- ACCORDING TO 00350.43, IF RIPRAP IS PLACED ON GEOTEXTILE.
- BY METHODS THAT DO NOT CAUSE SEGREGATION OF RIPRAP OR DISPLACE THE UNDERLYING MATERIAL.
- TO PRODUCE A COMPACT RIPRAP PROTECTION IN WHICH ALL SIZES OF MATERIAL ARE PLACED IN THEIR PROPER PROPORTION.
- WITH SOME HAND PLACING, OR REARRANGING OF INDIVIDUAL STONES BY MECHANICAL EQUIPMENT, OR SOME OTHER APPROVED MEANS TO PROVIDE A SMOOTH FINISHED SURFACE.
-

WHERE FILTER MATERIAL AND/OR RIPRAP ARE PLACED UNDER WATER, INCREASE THEIR THICKNESSES AS SHOWN OR AS DIRECTED.

(C) KEYED RIPRAP – AFTER PLACING LOOSE RIPRAP MATERIAL ACCORDING TO 00390.44(A) AND 00390.44(B), KEY THE RIPRAP INTO PLACE BY SLAPPING THE SURFACE WITH A PIECE OF ARMOR PLATING (APPROXIMATELY 4 FEET X 5 FEET IN SIZE WEIGHING APPROXIMATELY 5,000 POUNDS) OR OTHER APPROVED MEANS WHICH WILL PRODUCE A NEARLY SMOOTH SURFACE.

(D) GROUTED RIPRAP – PLACE LOOSE RIPRAP MATERIAL ACCORDING TO 00390.44(A) AND 00390.44(B). IF THE DEPTH SPECIFIED FOR GROUTING IS MORE THAN 12 INCHES, PLACE THE RIPRAP IN LIFTS OF 12 INCHES OR LESS AND GROUT EACH LIFT BEFORE PLACING THE NEXT LIFT. CONSTRUCT AND GROUT THE SUCCEEDING LIFTS BEFORE THE GROUT IN THE PREVIOUS LIFT HAS HARDENED.

THOROUGHLY MOISTEN THE STONES AND SLUICE ANY EXCESS FINES TO THE UNDERSIDE OF THE RIPRAP BEFORE GROUTING. DELIVER THE GROUT TO THE PLACE OF FINAL DEPOSIT BY ANY MEANS THAT WILL ENSURE UNIFORMITY AND PREVENT SEGREGATION OF THE GROUT. SPADE OR ROD THE GROUT INTO THE SPACES TO COMPLETELY FILL THE VOIDS IN THE RIPRAP. CONTROL PRESSURE GROUTING AND DO NOT UNSEAT THE STONES. PENETRATION OF THE GROUT SHALL BE TO THE DEPTH SHOWN ON THE PLANS. IF A ROUGH SURFACE IS SPECIFIED, BRUSH THE STONE UNTIL 25% TO 50% OF THE DEPTH OF SURFACE STONE IS EXPOSED. FOR A SMOOTH SURFACE, GROUT THE CREVICES TO WITHIN 5/8 INCH OF THE SURFACE.

PROVIDE WEEP HOLES THROUGH THE RIPRAP AS SHOWN OR AS DIRECTED.

PLACE AND CURE GROUT ACCORDING TO 00440.40(D) AND 00440.40(E) EXCEPT AS PROVIDED ABOVE.

(E) RIPRAP BASINS – EXCAVATE, BACKFILL AND CONSTRUCT RIPRAP BASINS, WITHOUT A RIPRAP GEOTEXTILE OR FILTER BLANKET, AT PIPE OUTLETS WITH CLASS 50 RIPRAP AS SHOWN OR AS DIRECTED.

MAINTENANCE
00390.60 GENERAL: MAINTAIN THE RIPRAP PROTECTION UNTIL ACCEPTED. REPLACE ANY MATERIAL DISPLACED BY ANY CAUSE AT NO ADDITIONAL COST TO THE AGENCY.

MEASUREMENT
00390.80 MEASUREMENT: THE QUANTITIES OF WORK PERFORMED UNDER THIS SECTION WILL BE MEASURED ACCORDING TO THE FOLLOWING:
(A) FILTER BLANKET – FILTER BLANKET WILL BE MEASURED ON THE AREA BASIS OF THE FINISHED SURFACE, LIMITED TO THE NEAT LINES SHOWN OR DIRECTED.
(B) RIPRAP BACKING – RIPRAP BACKING WILL BE MEASURED ON THE AREA BASIS OF THE FINISHED GEOTEXTILE OR THE FILTER BLANKET SURFACE, LIMITED TO THE NEAT LINES SHOWN OR DIRECTED.
(C) RIPRAP – RIPRAP WILL BE MEASURED ON THE VOLUME BASIS IN PLACE OR ON THE WEIGHT BASIS.
WHEN MEASUREMENT OF RIPRAP IS ON THE VOLUME BASIS IN PLACE AND THE ENGINEER DETERMINES THAT THIS BASIS IS IMPRACTICAL, THE PAY VOLUME WILL BE DETERMINED BY LOOSE MEASURE IN THE HAULING VEHICLES ON THE BASIS THAT 1.00 CUBIC YARD, VEHICLE MEASURE, IS EQUIVALENT TO 0.70 CUBIC YARD IN PLACE.
(D) RIPRAP BASINS – RIPRAP BASINS WILL BE MEASURED ON A UNIT BASIS OF BASINS CONSTRUCTED.

GEOSYNTHETICS: SECTION 02320

DESCRIPTION
02320.00 SCOPE: THIS SECTION INCLUDES THE REQUIREMENTS FOR GEOSYNTHETICS USED IN VARIOUS APPLICATIONS.

02320.01 DEFINITIONS: GEOSYNTHETIC TERMS ARE DEFINED IN 00350.01.

MATERIALS
02320.10 ACCEPTANCE:
(A) GENERAL REQUIREMENTS – FURNISH ALL GEOSYNTHETICS MEETING THE FOLLOWING REQUIREMENTS:
- FREE OF DEFECTS, CUTS OR TEARS.
- RESISTANT TO AMBIENT TEMPERATURES, ACID AND ALKALINE CONDITIONS, MICRO-ORGANISMS AND INSECTS.
- FOR THE INTENDED PURPOSE AND HAVE DIMENSIONAL STABILITY.

(1) GEOTEXTILES – FURNISH WOVEN OR NONWOVEN GEOTEXTILES MEETING THE FOLLOWING REQUIREMENTS:
- BE COMPOSED OF LONG CHAIN, SYNTHETIC POLYMERIC FILAMENTS OR YARNS FORMED INTO A STABLE NETWORK THAT RETAINS ITS RELATIVE STRUCTURE DURING HANDLING, PLACEMENT AND DESIGN SERVICE LIFE. AT LEAST 95%, BY WEIGHT, OF THE LONG CHAIN POLYMERS SHALL BE A POLYOLEFIN OR POLYESTER.
- MEET OR EXCEED THE PROPERTIES SPECIFIED IN 02320.20, TABLE 02320-1.
- BE FREE OF ANY CHEMICAL TREATMENT OR COATING WHICH MIGHT SIGNIFICANTLY REDUCE PERMEABILITY.
- HAVE THE SELVAGE FINISHED SO THE OUTER FIBERS ARE PREVENTED FROM PULLING AWAY FROM THE FABRIC.

(2) GEOGRIDS – FURNISH GEOGRIDS MEETING THE FOLLOWING REQUIREMENTS:
- A REGULAR NETWORK OF INTEGRALLY CONNECTED, POLYMER, TENSILE ELEMENTS WITH APERTURE GEOMETRY SUFFICIENT TO PERMIT SIGNIFICANT MECHANICAL INTERLOCK WITH THE SURROUNDING SOIL OR ROCK.
- DIMENSIONALLY STABLE AND ABLE TO RETAIN THEIR GEOMETRY UNDER MANUFACTURE, TRANSPORT AND INSTALLATION.

(B) ACCEPTANCE REQUIREMENTS – THE ACTUAL MINIMUM AVERAGE ROLL VALUES FURNISHED BY THE MANUFACTURER SHALL BE BASED ON REPRESENTATIVE TEST RESULTS FROM THE MANUFACTURING PLANT WHICH PRODUCED THE GEOSYNTHETIC, AND SHALL MEET OR EXCEED EACH OF THE SPECIFIED MINIMUM VALUES. ALL GEOSYNTHETICS SHALL BE CLEARLY LABELED AS BEING PART OF THE SAME PRODUCTION RUN CERTIFIED AS MEETING ALL APPLICABLE REQUIREMENTS.

(C) MANUFACTURER'S DOCUMENTATION – FURNISH A LEVEL A OR LEVEL B CERTIFICATION, AS INDICATED IN THE SPECIAL PROVISIONS FOR THE APPLICABLE GEOSYNTHETICS.
(1) LEVEL A – MANUFACTURER'S TEST RESULT CERTIFICATE – FURNISH A TEST RESULT CERTIFICATE ACCORDING TO 00165.35 FROM THE GEOSYNTHETIC MANUFACTURER. THE CERTIFICATE SHALL:
- INCLUDE THE MINIMUM AVERAGE ROLL VALUES FOR EACH OF THE SPECIFIED PROPERTIES FROM THE SAME PRODUCTION RUN AS THE DELIVERED MATERIAL.
- INCLUDE TEST RESULTS FOR FACTORY SEAMS.
- INCLUDE PRODUCTION RUN NUMBER, PRODUCTION PLANT NAME AND LOCATION.

IF THE GEOSYNTHETIC MATERIAL IS MODIFIED, REMANUFACTURED, RELABELED OR SEWN, FURNISH AN ADDITIONAL CERTIFICATE FROM THE SUPPLIER MAKING THE CHANGES THAT EXPLAIN THE ALTERED PROPERTIES, SEAM STRENGTH OR RELABELING.

(2) LEVEL B – MANUFACTURER'S QUALITY COMPLIANCE CERTIFICATE – AS A BASIS OF ACCEPTANCE, FURNISH EITHER A MANUFACTURER'S BROCHURE OR A QUALITY COMPLIANCE CERTIFICATE, ACCORDING TO 00165.35, WITH GEOSYNTHETIC PROPERTIES SHOWN.

IF THE BROCHURE OR CERTIFICATE LISTS TYPICAL OR AVERAGE ROLL VALUES INSTEAD OF MINIMUM AVERAGE ROLL VALUES, THEN INCREASE BY 25% THE SPECIFIED MINIMUM VALUES IN TABLE 02320-1 FOR GRAB TENSILE STRENGTH, BURST STRENGTH AND PUNCTURE STRENGTH TO DETERMINE COMPLIANCE.

(D) MANUFACTURER'S SAMPLING/TESTING – THE MANUFACTURER'S REPORTED PROPERTY VALUES SHALL BE BASED ON THE FOLLOWING SAMPLING AND TESTING REQUIREMENTS:
(1) SAMPLING – SAMPLE ALL GEOSYNTHETICS ACCORDING TO ASTM D 4354. THE PRODUCTION UNIT USED FOR SAMPLING SHALL BE A ROLL OR SHEET.
(2) TESTING – PERFORM THE SPECIFIED TESTS TO DETERMINE GEOTEXTILE PROPERTIES FOR THE INTENDED APPLICATION(S). THE TENSILE STRENGTH REQUIREMENTS SHALL BE TESTED IN BOTH MACHINE AND CROSS-MACHINE DIRECTIONS.

(E) AGENCY CHECK TESTS – THE AGENCY RESERVES THE RIGHT TO SAMPLE AND TEST PRODUCTS FOR COMPLIANCE WITH PERTINENT REQUIREMENTS, ACCORDING TO 00165.02. WHEN THE AGENCY PERFORMS CHECK TESTS, THE ENTIRE PRODUCTION RUN WILL BE ACCEPTED OR REJECTED ACCORDING TO 00150.25, IF ANY OF THE AVERAGE ROLL VALUES OF TESTED ROLLS ARE LESS THAN THE SPECIFIED MINIMUM VALUES.

02320.11 SEAM TESTING AND ACCEPTANCE:
(A) FACTORY SEAMS – WHERE FACTORY SEAMS ARE MADE, THE SHEETS OF GEOTEXTILE SHALL:
- BE SEWN TOGETHER USING A LOCK TYPE STITCH TYPE 301 OR 401 AS SHOWN.
- BE SEWN WITH POLYMERIC THREAD THAT IS AT LEAST 95%, BY WEIGHT, POLYOLEFIN OR POLYESTER, AND AS RESISTANT TO DETERIORATION AS THE GEOTEXTILE BEING SEWN.
- HAVE TEST RESULTS SHOWING THAT THE SEAMS MEET OR EXCEED 90% OF THE SPECIFIED TENSILE STRENGTH MINIMUM VALUES FOR THE INTENDED APPLICATION.
- NYLON THREAD WILL NOT BE ALLOWED.

(B) FIELD SEAMS – WHERE FIELD SEWN SEAMS WILL BE USED, FURNISH:
- THE MANUFACTURER'S TEST RESULT CERTIFICATE, ACCORDING TO 00165.35, THAT INCLUDES WIDE STRIP, TENSILE STRENGTH TEST RESULTS AND VERIFIES THAT SEAM TENSILE STRENGTH AND SEAM GRAB TENSILE STRENGTH MEET OR EXCEED 90% OF THE MINIMUM SPECIFIED TENSILE STRENGTH VALUES FOR THE GEOTEXTILE.
- A FIELD-STITCHED SEAM TEST SAMPLE.

APPROXIMATE PROJECT FILL VOLUMES

GABION BASKETS – 2 CUBIC YARDS PER BASKET
62 CUBIC YARDS

RIP RAP FILL – FROM ON SITE MATERIAL
60 CUBIC YARDS

ROCK BACKFILL – PER STRUCTURAL NOTES
15 CUBIC YARDS

3/4-INCH-MINUS LEVELING COURSE –
10 CUBIC YARDS

FOOTING GROUT – 5 CUBIC YARDS

Table 02320-1 Geotextile Property Values

Geotextile Property	Test Method	Units	Filtration: Drainage Geotextile Type 1	Filtration: Drainage Geotextile Type 2	Filtration: Riprap Geotextile Type 1	Filtration: Riprap Geotextile Type 2	Filtration: Sediment Fence Geotextile Supported —	Filtration: Sediment Fence Geotextile Unsupported Elongation ≥ 50%[2]	Filtration: Sediment Fence Geotextile Unsupported Elongation < 50%[2]	Separation: Subgrade Geotextile	Reinforcement: Embankment Geotextile	Reinforcement: Pavement Overlay[1] Geotextile
Grab tensile strength minimum Machine Direction Cross Machine Direction	ASTM D 4632	lb	80 80	180 180	200 200	250 250	80 60	120 100	120 100	180 180	230 230	80 80
Grab Elongation minimum	ASTM D 4632	%	15		15		—	—		—	—	50
Burst Strength Diaphragm method minimum	ASTM D 3786	psi	130	250	320	435	—	—		250	435	—
Puncture strength minimum	ASTM D 4833	lb	35		80		—	—		80	110	—
Apparent opening size (AOS) maximum U.S. Standard Sieve	ASTM D 4751 / COE-02215 Corps of Engineers	[illegible]	No. 70		No. 70		No. 30	No. 30	No. 30	No. 30	No. 30	—
Permittivity minimum	ASTM D 4491	s^{-1}	0.5		0.5		0.05	0.05	0.05	0.01	0.01	—
Ultraviolet stability Retained Strength minimum	ASTM D 4355 At 500 hours	%	—		70		70 after 500 hours of exposure			—	—	—
Asphalt retention minimum	ODOT TM 817	gal/yd^2	—		—		—	—		—	—	0.2
Melting point minimum	ASTM D 276	°F	—		—		—	—		—	—	300

[1] Slit film or slit tape fabrics are not acceptable
[2] As measured according to ASTM D 4632

GROUT: SECTION 02080

DESCRIPTION
02080.00 SCOPE: THIS SECTION INCLUDES THE REQUIREMENTS FOR EPOXY, NON-EPOXY, KEYWAY, AND PORTLAND CEMENT GROUT.

MATERIALS
02080.10 EPOXY GROUT: FURNISH EPOXY GROUT FROM THE QPL.

02080.20 NON-EPOXY GROUT: FURNISH NON-EPOXY GROUT FROM THE QPL.

02080.30 KEYWAY GROUT: FURNISH GROUT USED IN THE KEYWAYS OF PRECAST PRESTRESSED CONCRETE MEMBERS THAT IS NON-SHRINK, NONFERROUS, NON-EPOXY GROUT WITH A MINIMUM DESIGN STRENGTH OF 5,000 PSI IN 28 CALENDAR DAYS. FURNISH KEYWAY GROUT FROM THE QPL AND USE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

02080.40 PORTLAND CEMENT GROUT: FURNISH PORTLAND CEMENT GROUT CONSISTING OF ONE PART PORTLAND CEMENT AND THREE PARTS SAND BY WEIGHT, THOROUGHLY MIXED WITH A MINIMUM AMOUNT OF WATER TO PRODUCE A THICK, CREAMY CONSISTENCY. SAND SHALL MEET THE REQUIREMENTS OF 02690.30 AND CEMENT SHALL MEET THE REQUIREMENTS OF SECTION 02010.

02080.50 TENDON GROUT: FURNISH TENDON GROUT FROM THE QPL THAT MEETS VERTICAL RISE REQUIREMENTS.

CONSTRUCTION OBSERVATION REQUIREMENTS:

1. THE OWNER SHALL EMPLOY THE GEOTECHNICAL AND STRUCTURAL ENGINEERS OF RECORD TO PROVIDE CONSTRUCTION OBSERVATIONS IN ACCORDANCE WITH SECTION 1702 OF THE INTERNATIONAL BUILDING CODE.

2. THE PRIMARY FOCUS OF THE OBSERVATION SERVICES WILL BE TO PERIODICALLY OBSERVE THE WORK IN PROGRESS AND PROVIDE CONSULTATION REGARDING THE PROJECT DESIGN WITH RESPECT TO CONDITIONS REVEALED DURING CONSTRUCTION. THE ENGINEERS WILL PROVIDE THE OWNER AND CONTRACTOR WITH A SOURCE OF ADVICE AND OPINION REGARDING THE SUITABILITY OF EARTHWORK AND FOUNDATION REPAIRS WITH RESPECT TO THE INTENT OF THE PROJECT PLANS AND SPECIFICATIONS. EACH SITE VISIT WILL BE SUMMARIZED ON A MEMORANDUM THAT WILL BE DISTRIBUTED TO BOTH THE OWNER AND CONTRACTOR.

3. THE ENGINEERS WILL NOT ASSUME THE DAY-TO-DAY PHYSICAL DIRECTION OF THE WORK, NOR WILL THEY ASSUME RESPONSIBILITY FOR THE SAFETY OF THE CONTRACTOR'S PERSONNEL. THE ENGINEERS WILL NOT GUARANTEE THE CONTRACTOR'S PERFORMANCE, BUT RATHER LOOK FOR GENERAL CONFORMANCE TO THE INTENT OF THE DESIGN AND THE PLANS AND SPECIFICATIONS.

4. THE CONTRACTOR SHALL MAKE AVAILABLE ALL MEANS AND METHODS NECESSARY FOR THE ENGINEERS TO PERFORM THE REQUIRED CONSTRUCTION OBSERVATIONS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEERS A MINIMUM OF 24 HOURS BEFORE THE TIME AT WHICH THE SPECIFIED CONSTRUCTION OBSERVATIONS MAY BE PERFORMED. IN ADDITION THE CONTRACTOR SHALL UPDATE THE ENGINEERS OF THE CONSTRUCTION PROGRESS.

SUBMITTALS:

THE CONTRACTOR SHALL PROVIDE THE ENGINEERS OF RECORD AND THE OWNER SUBMITTALS FOR APPROVAL PRIOR TO CONSTRUCTION FOR THE FOLLOWING ITEMS:

1. GABION BASKETS
2. GABION BACKFILL AND 3/4-INCH-MINUS CRUSHED ROCK
3. GEOTEXTILE FABRIC
4. GROUT MIX DESIGN
5. SPILL PREVENTION/SPILL RESPONSE PLAN
6. INSTALLATION SEQUENCE

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 9, 2001
ERIK WILLIAM PETERSON
EXPIRES 12/31/10

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WILLAMETTE FALLS FISHWAY #1 REPAIRS

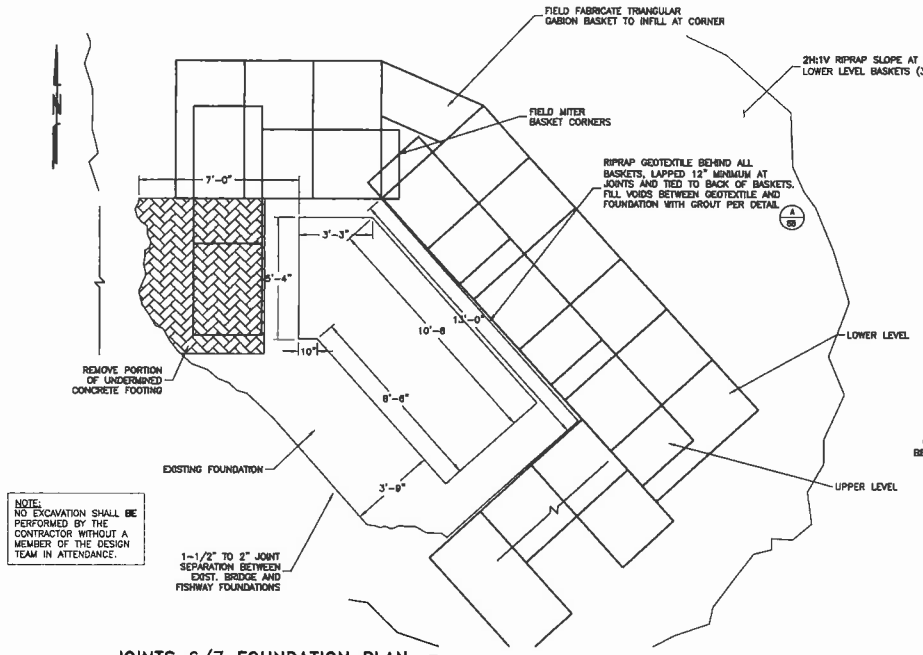
CLIENT INFO:
Oregon Dept. of Fish & Wildlife
3406 Cherry Ave. NE
Salem, OR 97303
ODFW File 09-018

PROJECT SITE:
ODFW WILLAMETTE FALLS
FISHWAY #1
WEST LINN, OREGON

09-072-01

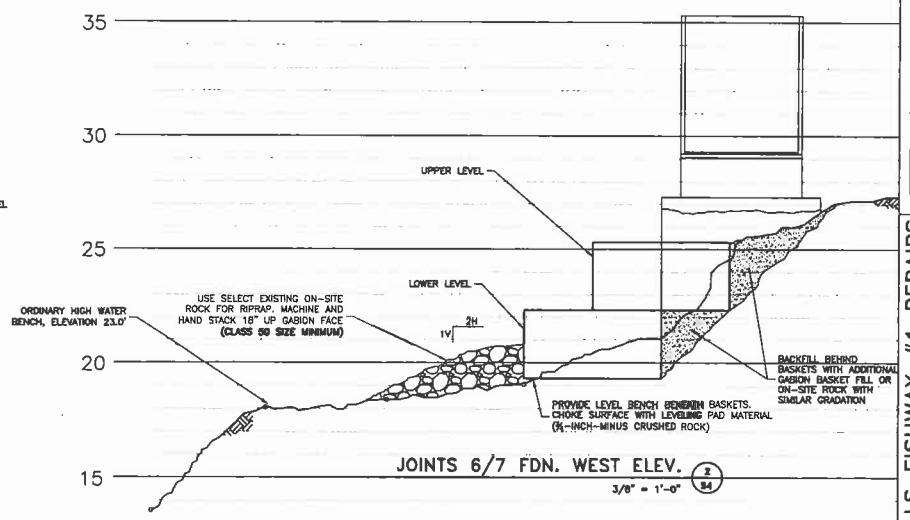
SHEET CONTENT
GENERAL
PROJECT NOTES
(CONTINUED)

JOB No.	09-072
DRAWN JNW	CHECKED EWBP
DATE	8/21/09
REVISIONS	
SHEET	S3 of 6



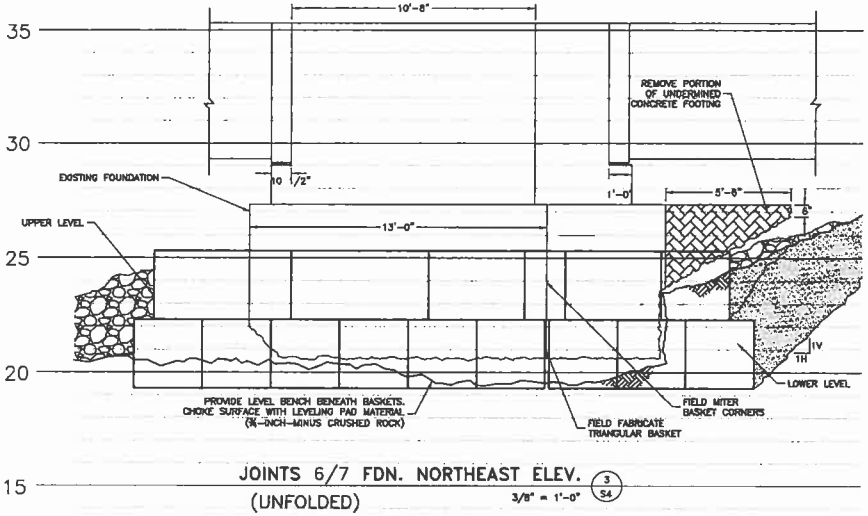
JOINTS 6/7 FOUNDATION PLAN 1/S4
3/8" = 1'-0"

NOTE: ALL ELEVATIONS ARE APPROXIMATE TO NGVD-29 DATUM

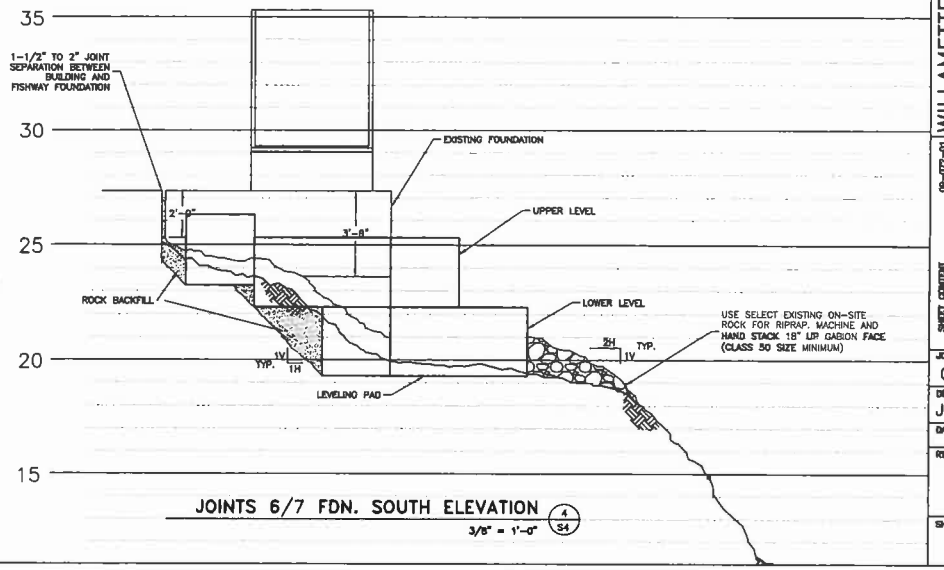


JOINTS 6/7 FDN. WEST ELEV. 2/S4
3/8" = 1'-0"

NOTE: ALL GABION BASKETS 6'x3'x3' FILLED WITH 4" TO 10" ROCK FILL MATERIAL



JOINTS 6/7 FDN. NORTHEAST ELEV. 3/S4
(UNFOLDED)
3/8" = 1'-0"



JOINTS 6/7 FDN. SOUTH ELEVATION 4/S4
3/8" = 1'-0"

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ODFW File 09-018

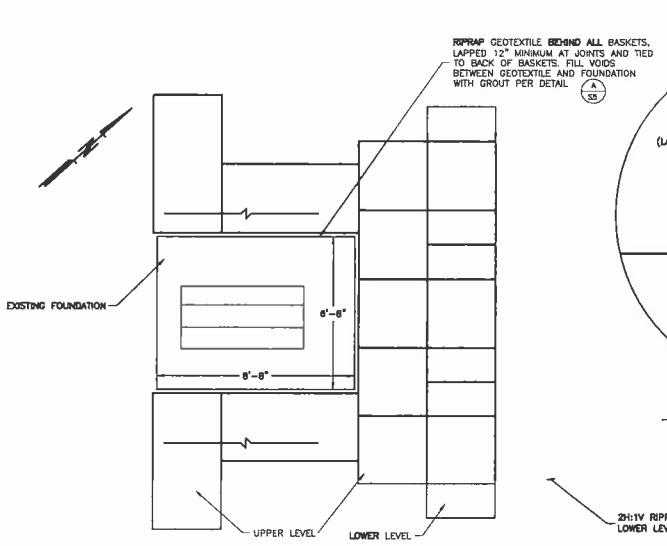
PROJECT SITE:
ODFW WILLAMETTE FALLS FISHWAY #1
WEST LINN, OREGON

WILLAMETTE FALLS FISHWAY #1 REPAIRS

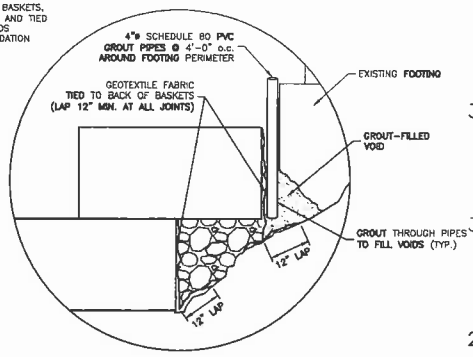
SHEET CONTENT: 09-072-01
JOINT 6/7 FOUNDATION PLAN AND ELEVATIONS

JOB No. 09-072
DRAWN JNW
CHECKED EWBP
DATE 8/21/09
REVISIONS

SHEET S4 of 6



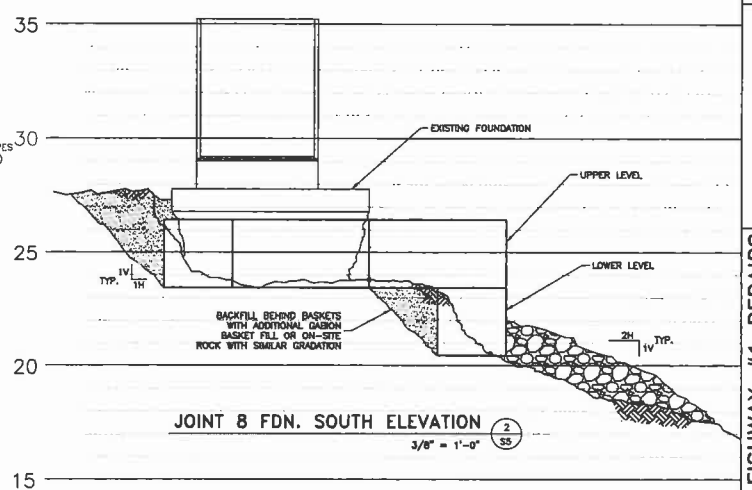
JOINT 8 FOUNDATION PLAN 1/S5
3/8" = 1'-0"



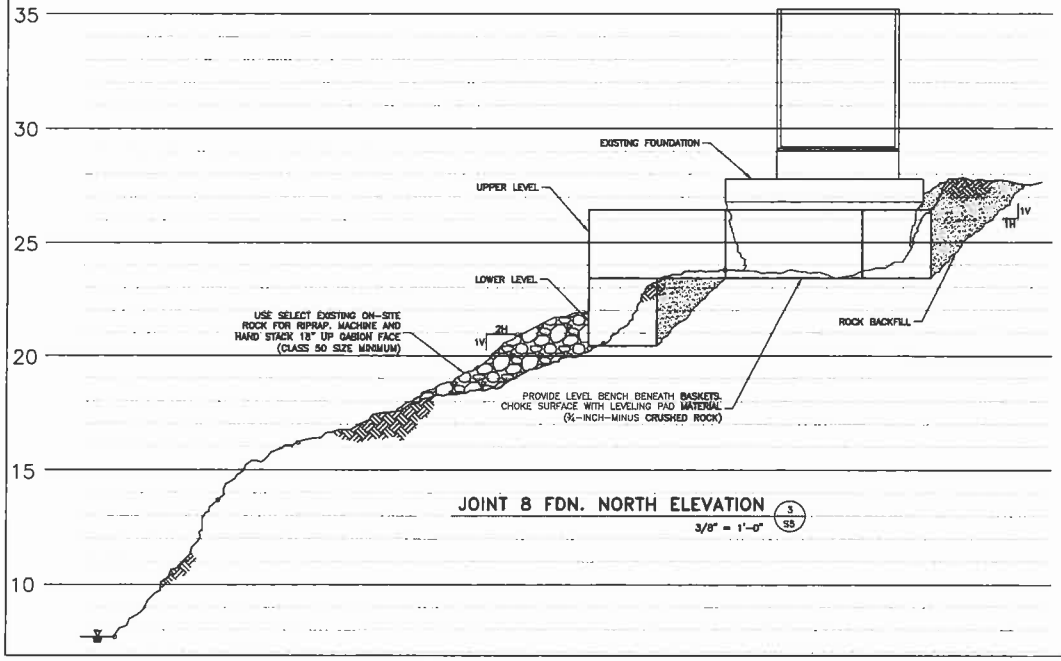
GROUT PIPE DETAIL A/S5
1/2" = 1'-0"

NOTE: ALL GABION BASKETS 6'x3'x3' FILLED WITH 4" TO 10" ROCK FILL MATERIAL

NOTE: ALL ELEVATIONS ARE APPROXIMATE TO NGVD-29 DATUM

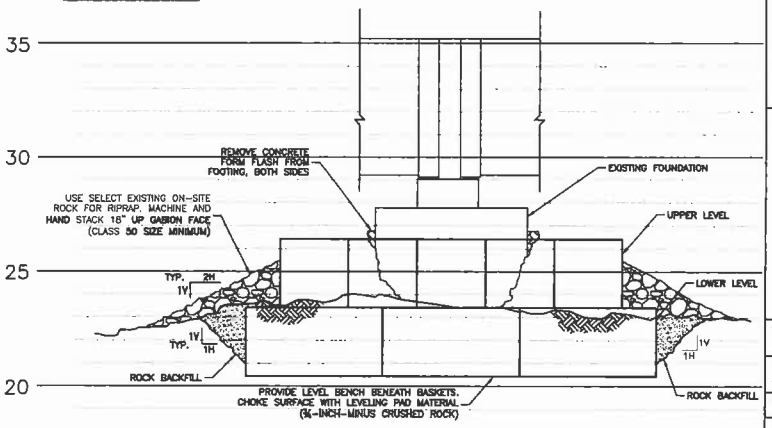


JOINT 8 FDN. SOUTH ELEVATION 2/S5
3/8" = 1'-0"



JOINT 8 FDN. NORTH ELEVATION 3/S5
3/8" = 1'-0"

NOTE:
NO EXCAVATION SHALL BE PERFORMED BY THE CONTRACTOR WITHOUT A MEMBER OF THE DESIGN TEAM IN ATTENDANCE.



JOINT 8 FDN. EAST ELEVATION 4/S5
3/8" = 1'-0"

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WEST LINN, OREGON

WILLAMETTE FALLS FISHWAY #1 REPAIRS

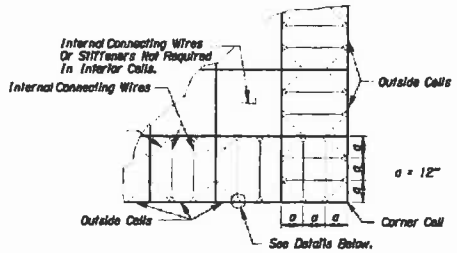
09-072-S1

SHEET CONTENT
JOINT 8 FOUNDATION PLAN AND ELEVATIONS

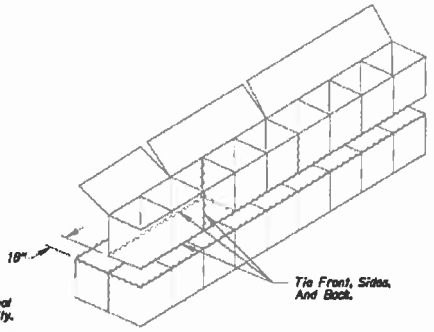
JOB No. 09-072
DRAWN JNW CHECKED EWBP
DATE 8/21/09
REVISIONS

SHEET S5 OF 6

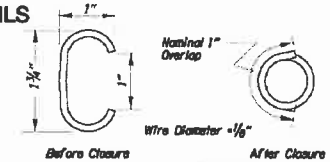
GABION RETAINING WALL DETAILS



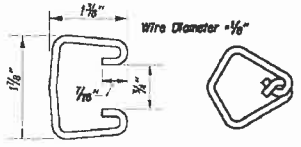
TYPICAL PLAN FOR INTERNAL CONNECTING WIRES



GABION BASKET TYING DETAIL

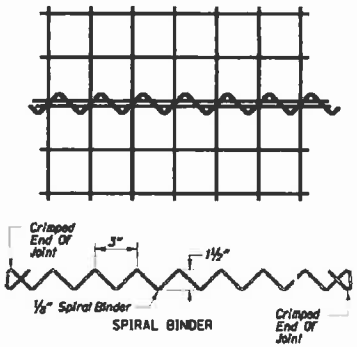


OVERLAPPING FASTENER*



INTERLOCKING FASTENER*

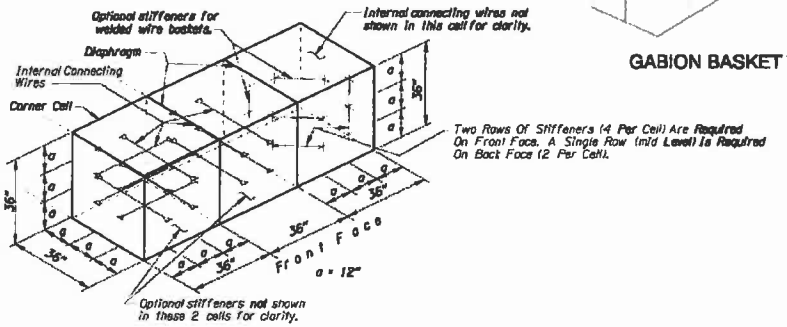
*Use For Basket Assembly Only.



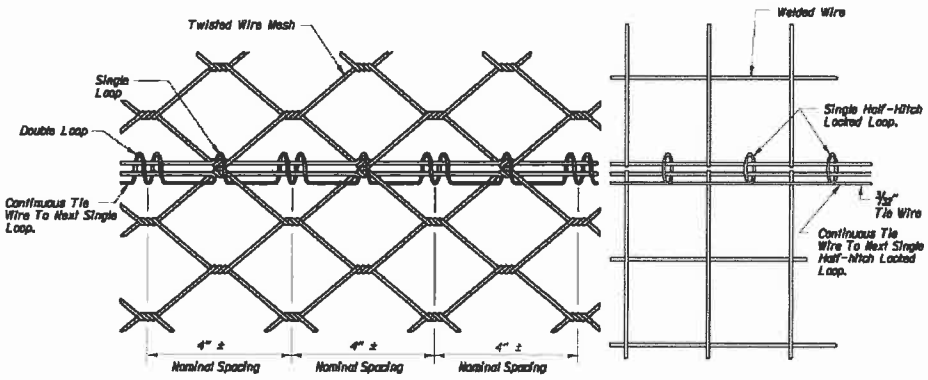
SPIRAL BINDER

ALTERNATE GABION JOINT FASTENERS

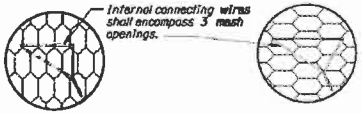
(FASTENER DIMENSIONS NOMINAL)



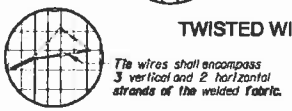
INTERNAL CONNECTING WIRES



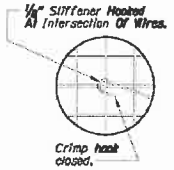
STANDARD ⅛" TIE WIRE DETAIL



TWISTED WIRE BASKETS



WELDED WIRE BASKETS



OPTIONAL STIFFENER CONNECTION FOR WELDED WIRE GABION BASKETS

DRAWING FROM: OREGON DEPARTMENT OF TRANSPORTATION

Geotechnical & Environmental Consultants
9725 SW Beaverton Hillsdale Hwy, Ste 140
Beaverton, Oregon 97005-3394
PHONE 503 / 641 / 3478
FAX 503 / 644 / 9034

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 9, 1997
ERIK WILLIAM PETERSON
EXPIRES 12/31/10

PSE
Peterson Structural Engineers, Inc.
5319 S.W. Westgate Dr., Suite 215
Portland, Oregon 97221
(503) 292-1635

PROJECT SITE:
WILLAMETTE FALLS FISHWAY #1 REPAIRS
ODFW WILLAMETTE FALLS FISHWAY #1
WEST LINN, OREGON

CLIENT INFO:
Oregon Dept. of Fish & Wildlife
3406 Cherry Ave. NE
Salem, OR 97303
ODFW File 09-018

09-072-01
SHEET CONTENT
GABION BASKET DETAILS

JOB No.
09-072

DRAWN JNW
CHECKED EWBP

DATE 8/21/09

REVISIONS

SHEET
S6 of 6

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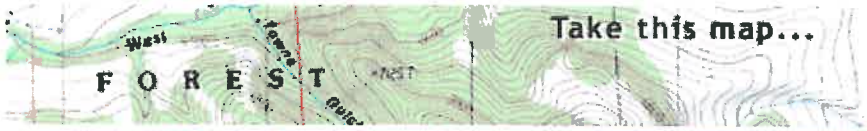

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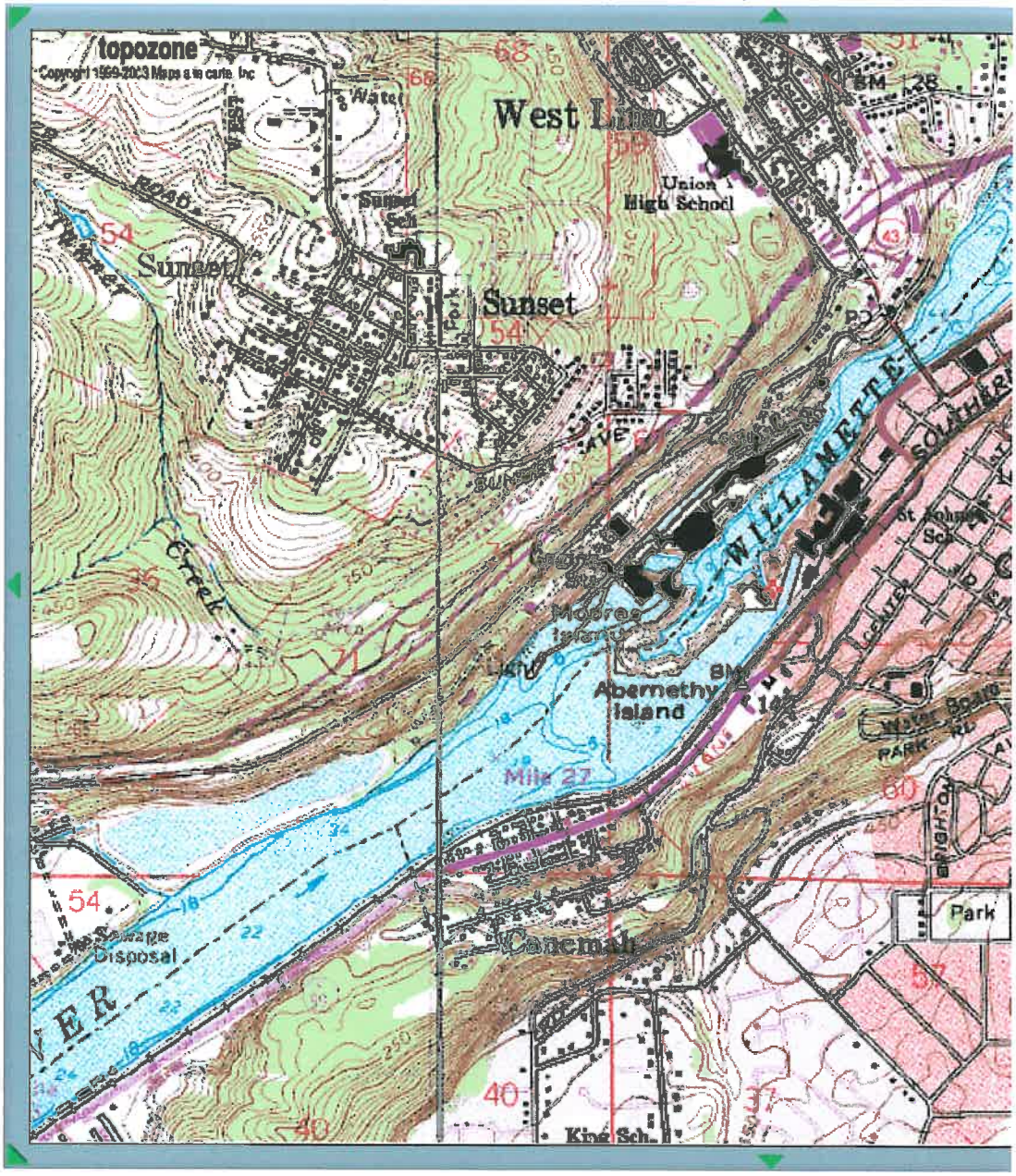

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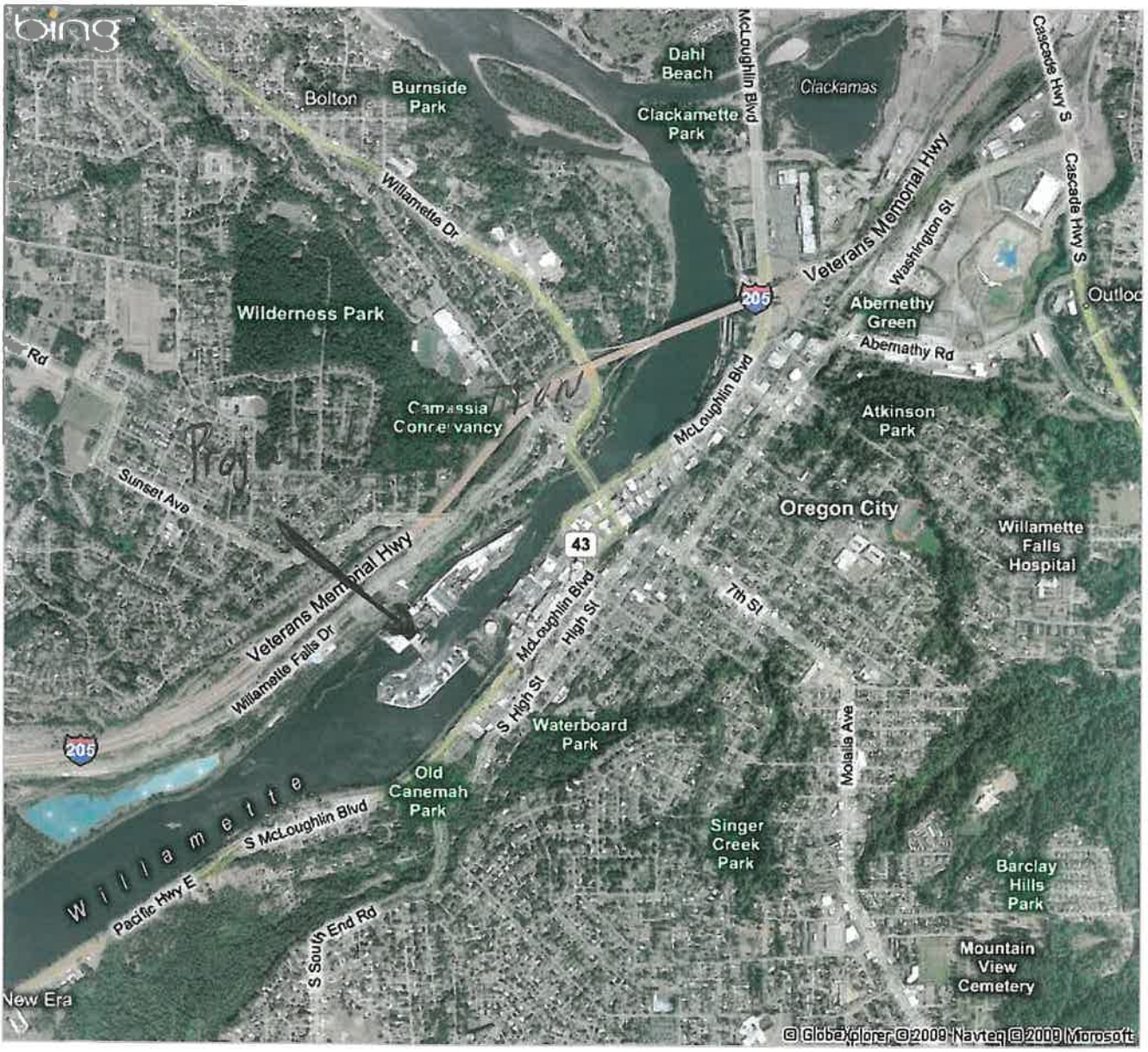

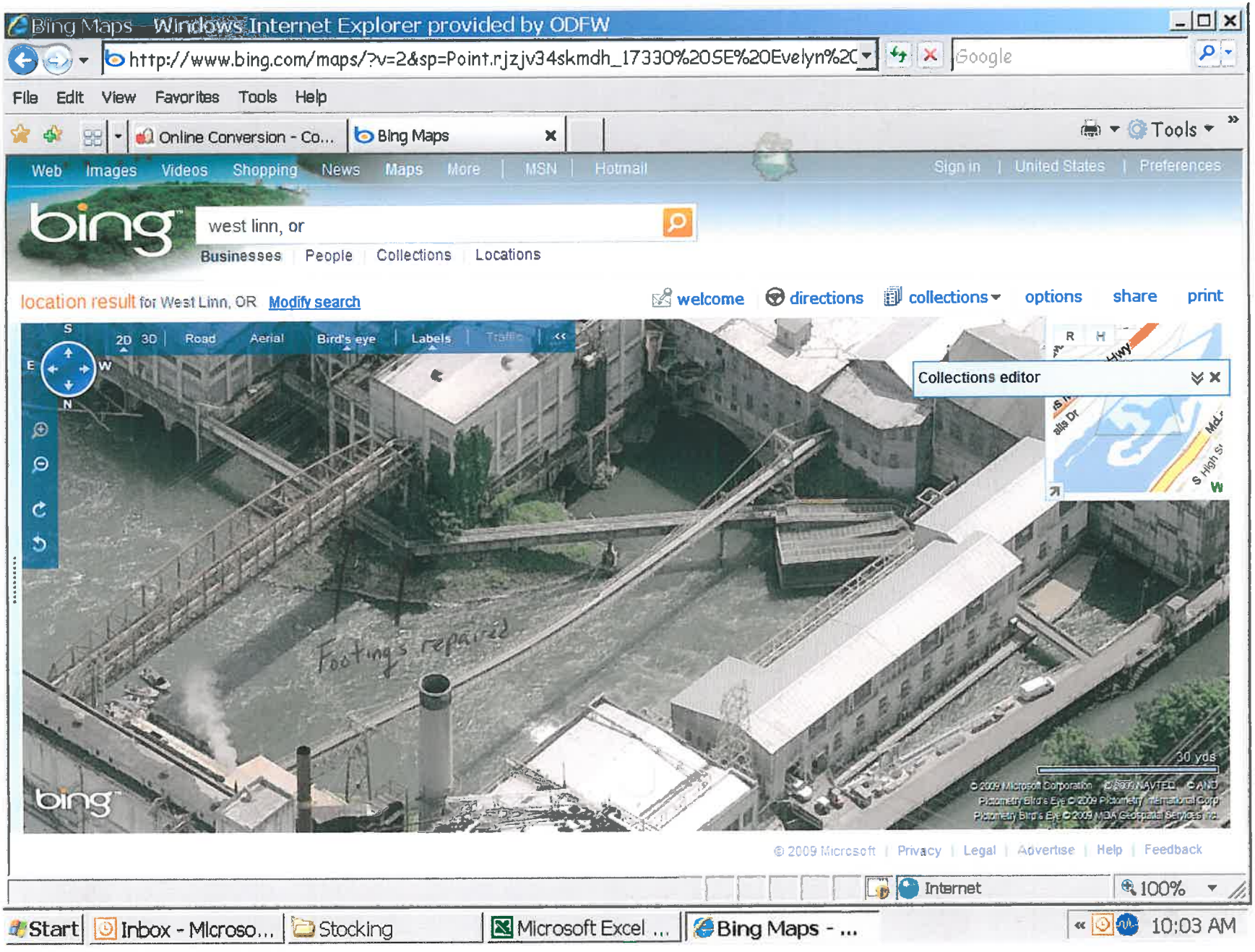
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Photograph #23 – Compression Spalling at Joint #6

Photograph #24 – Joint 6/7 Foundation Undermining and Slope Loss

Photograph #25 – Joint 6/7 Foundation Undermining and Slope Loss

Photograph #26 – Joint 6/7 Foundation Undermining and Slope Loss

Photograph #27 – Joint #8 Slope Loss Around Foundation

Photograph #28 – Joint #8 Slope Loss Around Foundation