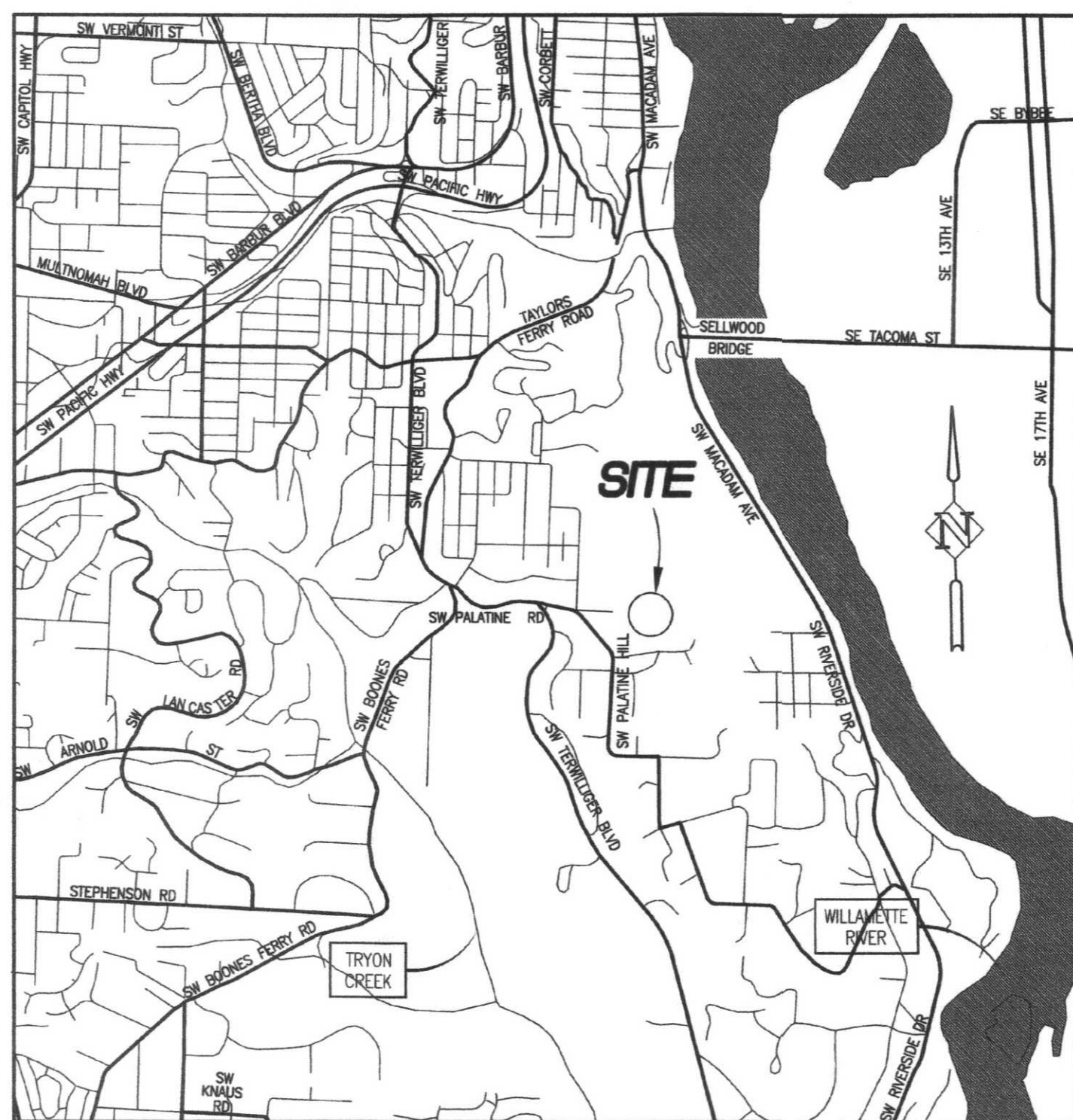
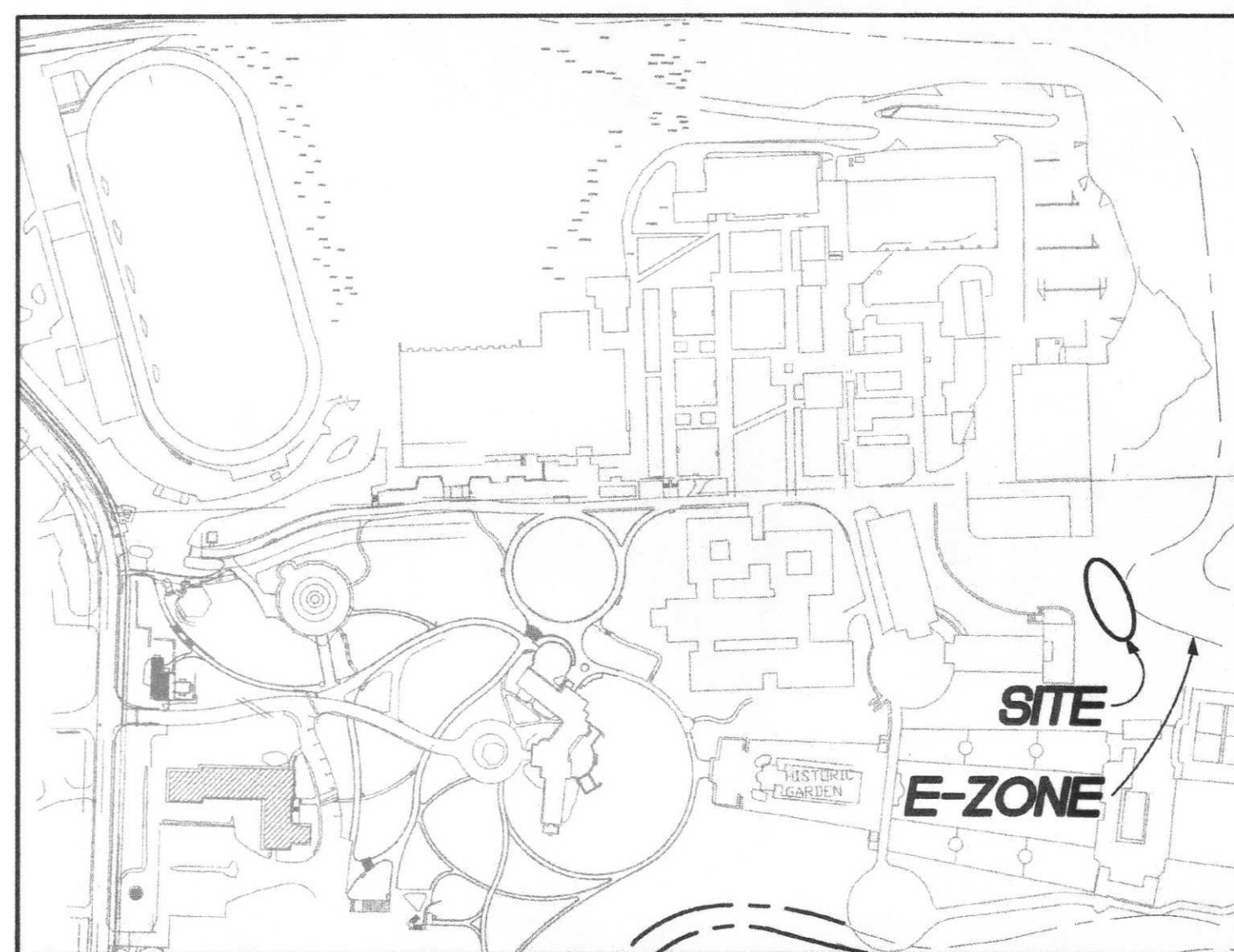


LEWIS & CLARK COLLEGE - OUTFALL 10 REPAIR

PORTLAND, OREGON



VICINITY MAP
1" = 600'



SITE MAP
1" = 200'

OWNER

LEWIS AND CLARK COLLEGE
0615 SW PALATINE HILL RD
PORTLAND, OREGON 97219-7899
CONTACT: CLARK IDE, PE
503-768-7978

PROJECT LOCATION

LEWIS AND CLARK COLLEGE
0615 SW PALATINE HILL RD
PORTLAND, OREGON 97219-7899
MULTNOMAH COUNTY
LATITUDE = 45° 27' 3.3"
LONGITUDE = 122° 40' 2.5"

TAX LOT NUMBER: T100
LOCATED IN SECTION 27, TOWNSHIP 1
SOUTH, RANGE 1 EAST, WILLAMETTE
MERIDIAN, MULTNOMAH COUNTY, OREGON

ENGINEER & LANDSCAPE

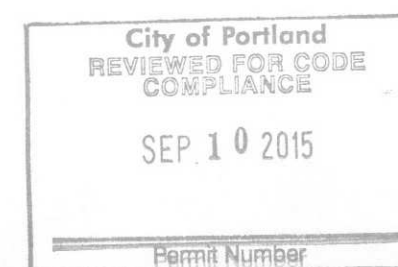
HARPER HOUF PETERSON RIGHELLIS INC.
205 SE SPOKANE ST.
SUITE 200
PORTLAND, OREGON 97202
(503) 221-1131
CONTACT: RON PETERSON, PE
SCOTT BANKER, RLA

GEOTECHNICAL ENGINEER

GEODESIGN, INC.
15575 SW SEQUOIA PARKWAY
PORTLAND, OREGON 97224
503-968-8787
CONTACT: ERIC STALEY, PE, CEG

DRAWING INDEX

SHEET NO.	TITLE
C1	COVER SHEET
C2	EXISTING CONDITIONS PLAN
C3	CHANNEL RESTORATION PLAN & PROFILE
C4	CONSTRUCTION DETAILS
L1	PLANTING PLAN
L2	PLANTING DETAILS
S1	STRUCTURAL PLAN AND DETAILS



GENERAL NOTES

THE CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL CONSTRUCTION WITH OWNER AND OWNER'S FACILITIES DEPARTMENT. CONTRACTOR TO PROVIDE OWNER WITH AN ACCESS PLAN THAT FACILITATES 24 HOUR EMERGENCY, VEHICLE, AND PEDESTRIAN ACCESS TO THE CAMPUS.

WORK SHALL CONFORM WITH THE CITY OF PORTLAND STANDARDS, THE INTERNATIONAL BUILDING CODE (IBC), AND THE UNIFORM PLUMBING CODE (UPC). IT IS CONTRACTOR'S RESPONSIBILITY TO ENSURE THE WORK AND PLANS ARE IN COMPLIANCE WITH LOCAL CODE AND REGULATIONS.

THE CONTRACTOR SHALL PROVIDE ALL WORK ILLUSTRATED ON THE DRAWINGS AND ALL INCIDENTAL WORK CONSIDERED NECESSARY TO COMPLETE THE PROJECT IN A MANNER ACCEPTABLE TO THE OWNER INCLUDING MITIGATING CONFLICTS WITH EXISTING UTILITIES, CONNECTING EXISTING UTILITIES TO PROPOSED FACILITIES, AND FIELD VERIFYING EXISTING UTILITIES PRIOR TO PROJECT COMPLETION.

THE CONTRACTOR SHALL KEEP AN APPROVED AND UPDATED SET OF DRAWINGS ON THE PROJECT SITE AT ALL TIMES. THE CONTRACTOR SHALL KEEP A SET OF PLANS MARKED UP WITH AS-BUILT CONDITIONS AND CHANGES FOR FUTURE AS-BUILT RECORD DRAWINGS.

THE LOCATION AND DESCRIPTIONS OF EXISTING UTILITIES SHOWN ARE COMPILED FROM AVAILABLE RECORDS AND /OR FIELD SURVEYS. THE ENGINEER, CITY, AND UTILITY COMPANIES DO NOT GUARANTEE THE ACCURACY NOR THE COMPLETENESS OF SUCH RECORDS. EXISTING TOPOGRAPHIC INFORMATION SHOWN IS BASED ON SURVEY PERFORMED BY HHPR. THE ENGINEER MAKES NO GUARANTEE, OR WARRANTY, THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, WHETHER ACTIVE OR ABANDONED. THE CONTRACTOR IS RESPONSIBLE TO POT-HOLE AND VERIFY CRITICAL UTILITY CROSSINGS AND CONFLICTS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER IN A TIMELY MANNER IF CONFLICTS ARISE. CONTRACTOR ASSUMES ALL RISK AND SCHEDULE DELAYS IF THE CONTRACTOR DOES NOT POT-HOLE PRIOR TO CONSTRUCTION AND COORDINATE WITH ENGINEER.

THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OR ORS 757.541 TO 757.571. THE CONTRACTOR SHALL NOTIFY EACH UNDERGROUND UTILITY AT LEAST 48 BUSINESS-DAY HOURS PRIOR TO EXCAVATING, BORING, OR POT-HOLING. ALL UTILITY CROSSINGS SHALL BE POT-HOLED AS NECESSARY PRIOR TO EXCAVATING OR BORING TO ALLOW THE CONTRACTOR TO PREVENT GRADE OF ALIGNMENT CONFLICTS.

THE CONTRACTOR SHALL EXPOSE AND VERIFY BOTH THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES. THE CONTRACTOR SHALL CONNECT AND/OR MATCH EXISTING UTILITIES AND PROPOSED IMPROVEMENTS IN CONFORMANCE WITH THE INTENT OF THESE PLANS TO PROVIDE COMPLETE AND FULLY OPERATIONAL SYSTEMS. PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO KEEP ALL EXISTING UTILITIES IN SERVICE AND PROTECT THEM DURING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN OR NOT ON THESE DRAWINGS, SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE AS INCIDENTAL TO THE CONTRACT. EXISTING UTILITIES ARE LIKELY TO REQUIRE CONNECTION TO THE PROPOSED IMPROVEMENTS. COORDINATE WITH OWNERS FACILITIES DEPARTMENT.

GENERAL SITE PREPARATION:

ALL EARTHWORK, EXCAVATION, BACKFILL TO FOLLOW REQUIREMENTS OUTLINED IN CURRENT PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

PRIOR TO BEGINNING CONSTRUCTION, ALL AREAS OF THE SITE THAT WILL RECEIVE RIPRAP TOE BUTRESS AND CHANNEL SHOULD BE STRIPPED OF TOP SOIL, ROOTS, UNSUITABLE FILLS, I.E. EXCAVATED TO NON-ORGANIC, NATIVE UNDISTURBED SOIL OR COMPACTED STRUCTURAL FILL.

COMPACTION REQUIREMENTS:

ON-SITE FILL = 95% MIN. (ASTM D 698) MAX. LIFT 8"
GRANULAR FILL = 95% MIN. (ASTM D 698) MAX. LIFT 12"
TRENCH BACKFILL = 95% MIN. (ASTM D 698)
TOP 8" OF PAVEMENT SUBGRADE = 98% MIN. (ASTM D 698)
ASPHALT CONCRETE = 95% MIN. (ASTM D 2041)

ALL EXCESS MATERIAL INCLUDING BOULDERS SHALL BE HAULED OFF SITE UNLESS AGREED TO BY OWNER AND COORDINATED WITH FACILITIES STAFF. CONTRACTOR SHALL BE RESPONSIBLE TO HAUL OFF TO LEGAL DUMP SITE AND OBTAIN ALL NECESSARY PERMITS.

EROSION CONTROL NOTES

TEMPORARY EROSION CONTROL:

THE CONSTRUCTION NOTES AND DETAILS SHOWN REFLECT RECOMMENDED PROCEDURES AS PER THE CITY OF PORTLAND EROSION CONTROL MANUAL, LATEST VERSION.

IT IS THE INTENT OF THESE PLANS TO SHOW POSSIBLE APPLICATIONS OF RECOMMENDED PROCEDURES IN THE EVENT THAT EROSION CONTROL IS NEEDED. ALL RECOMMENDED PROCEDURES ARE DEPENDENT ON CONSTRUCTION METHODS, STAGING, SITE CONDITIONS, WEATHER, AND SCHEDULING. THE PROCEDURES SHOWN ON THE PLANS ARE NOT INTENDED TO BE INCLUSIVE OF ALL THE PROTECTION REQUIRED IN AN AREA AT A PARTICULAR INSTANT. THEY SHOULD BE USED AS A GUIDELINE ONLY.

ALTERNATIVE METHODS OF EROSION CONTROL MAY BE USED IF THEY ARE APPROVED BY THE ENGINEER AND MEET THE S.C.S. UNIVERSAL SOIL LOSS EQUATION CRITERIA.

THE CONTRACTOR IS RESPONSIBLE FOR CONTROL OF SEDIMENT TRANSPORT WITHIN PROJECT LIMITS DURING CONSTRUCTION. IF AN INSTALLED EROSION CONTROL SYSTEM DOES NOT ADEQUATELY CONTAIN SEDIMENT ON SITE, THEN THE EROSION CONTROL MEASURES MUST BE FIELD ADJUSTED BY THE CONTRACTOR AS NECESSARY.

PERMANENT EROSION CONTROL:

TEMPORARY EROSION CONTROL METHODS MUST REMAIN AND BE MAINTAINED UNTIL PERMANENT EROSION CONTROL METHODS ARE IN PLACE AND OPERATIONAL. VEGETATION ON ALL EMBANKMENTS AND DISTURBED AREAS SHOULD BE REESTABLISHED AS SOON AS CONSTRUCTION IS COMPLETED.

ADDITIONAL INTERIM MEASURES WILL INCLUDE, AT A MINIMUM, INSTALLATION OF STRAW WATTLES OR SILT FENCES AS PER PLAN AND DETAIL SHEET. THESE MEASURES WILL BE INSTALLED ALONG ALL EXPOSED EMBANKMENT AND CUT SLOPES TO PREVENT SEDIMENT TRANSPORT.

EFFECTIVE EROSION CONTROL IS REQUIRED. EROSION CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED. THE COUNTY MAY AT ANY TIME ORDER CORRECTIVE ACTION AND STOPPAGE OF WORK TO ACCOMPLISH EFFECTIVE EROSION CONTROL.

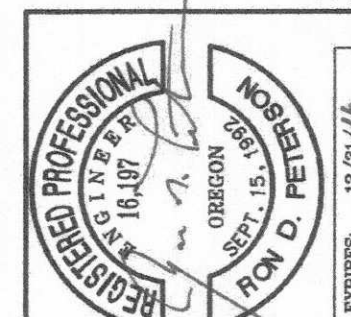
ALL PROVISIONS FOR EROSION CONTROL SHALL BE INSTALLED, INSPECTED, AND APPROVED PRIOR TO PRIMARY EXCAVATION OCCURRING. CONTACT CITY OF PORTLAND, BUREAU PLANNING AND DEVELOPMENT SERVICES AT (503) 823-7000 FOR INSPECTIONS. FINAL INSPECTION IS REQUIRED AND MUST BE SCHEDULED BY THE CONTRACTOR.

COVER SHEET

LEWIS & CLARK COLLEGE OUTFALL 10
PORTLAND, OREGON

Harper Houf Peterson
Righellis Inc.

ENGINEERS & PLANNERS
LANDSCAPE ARCHITECTS & SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
Phone: 503.221.1131 www.hhpr.com fax: 503.221.1171



DESIGNED:	DRWN:	CHECKED:	DATE:
ROP	TDF	ROP	JUNE 5, 2015
DESCRIPTION	NO.	DATE	REVISIONS

SHEET NO.
C1
JOB NO.
LAC-31

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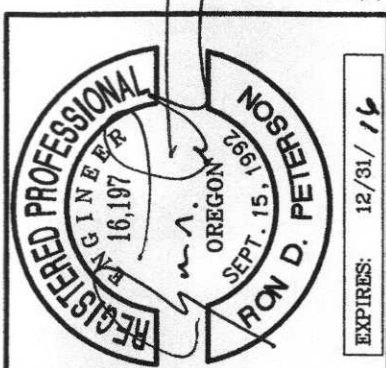


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HHPR Harper Houf Peterson
ENGINEERS, PLANNERS
LANDSCAPE ARCHITECTS & SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
Phone: 503.221.1131 www.hhpr.com fax: 503.221.1171



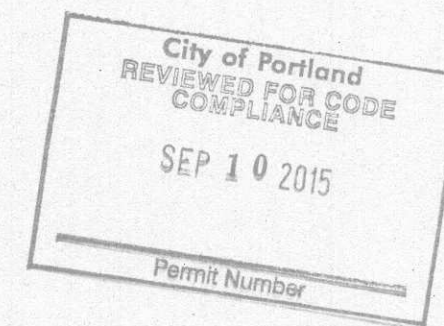
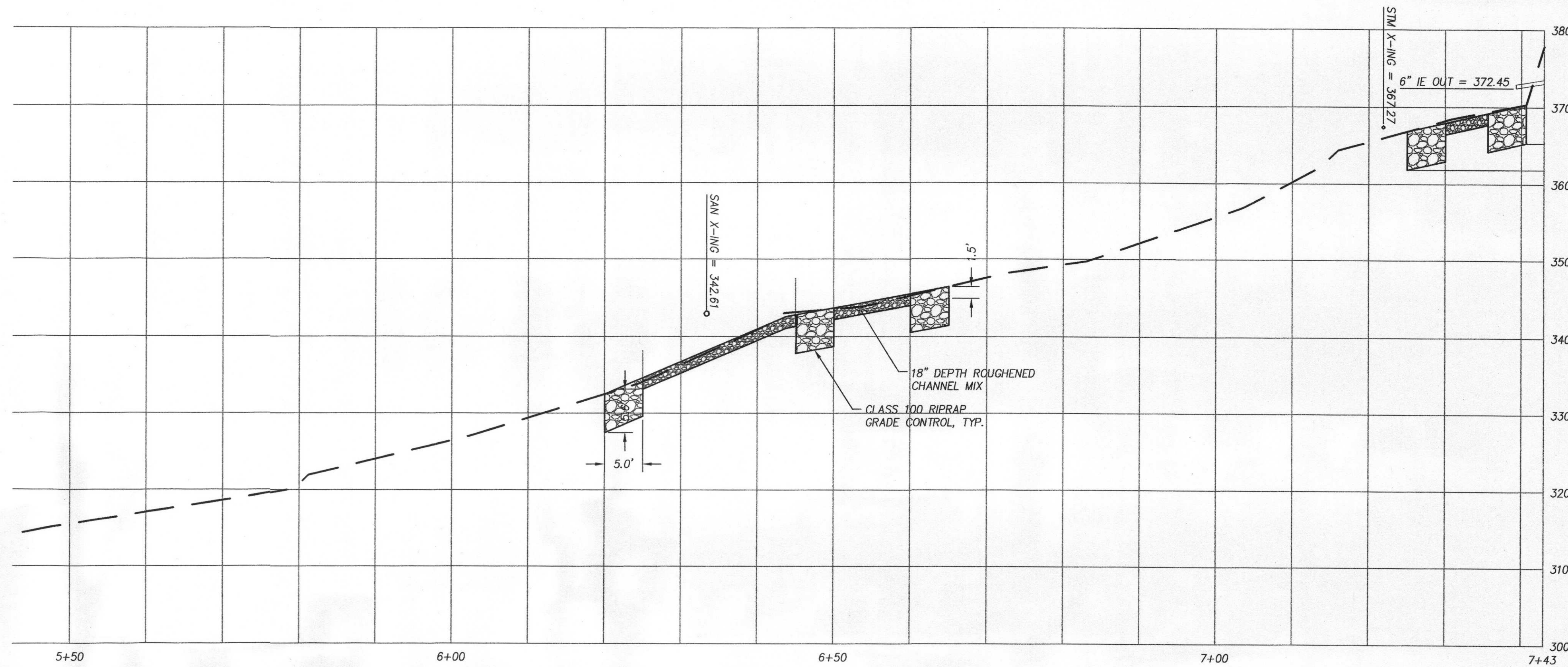
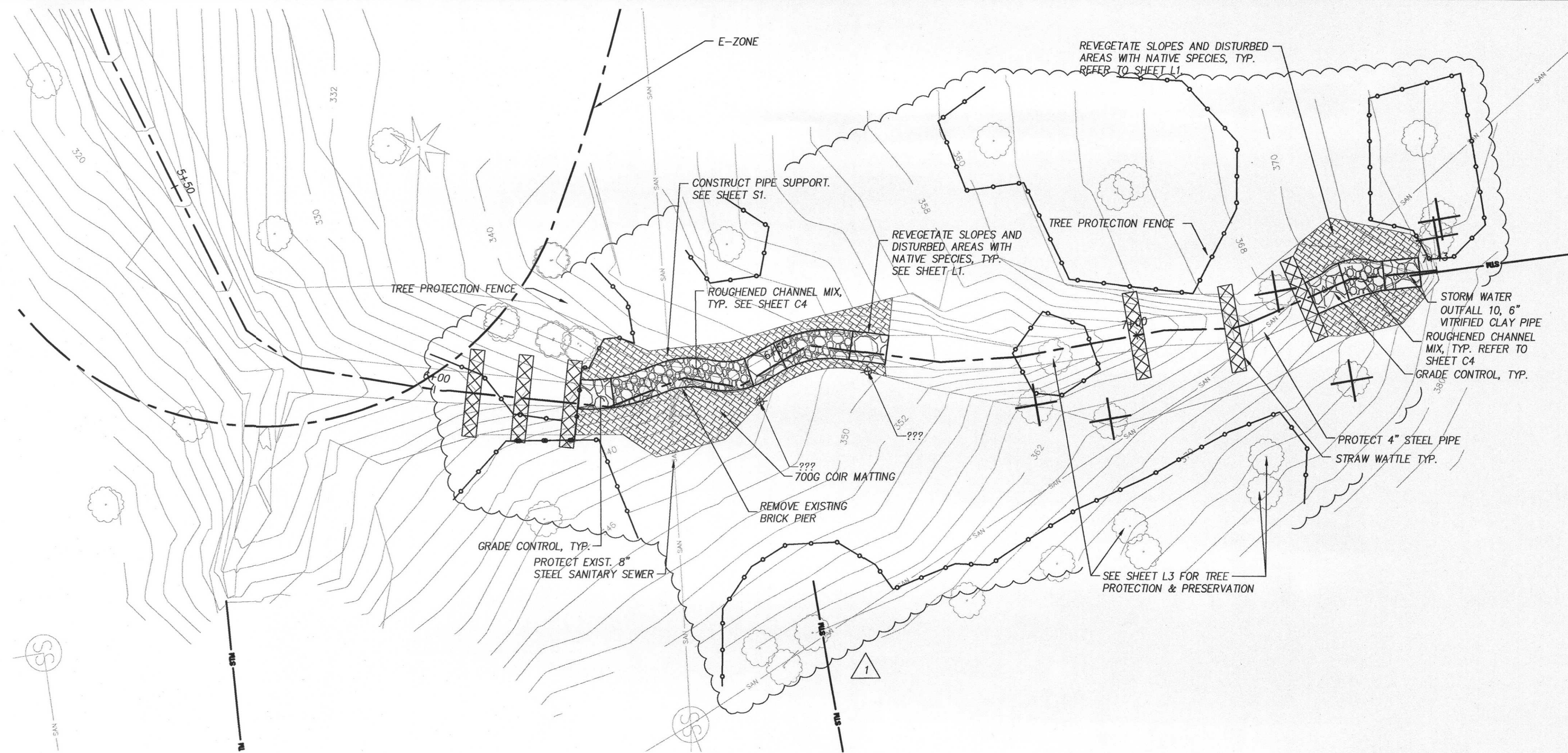
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DATE:	JUNE 5, 2015

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		DESCRIPTION				
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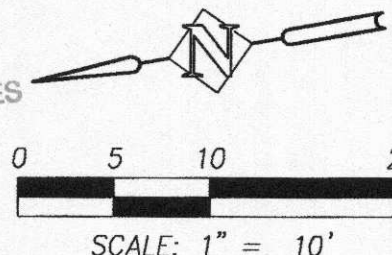
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C2
JOB NO.
LAC-31

EXISTING CONDITIONS PLAN
LEWIS & CLARK COLLEGE OUTFALL 10
PORTLAND, OREGON

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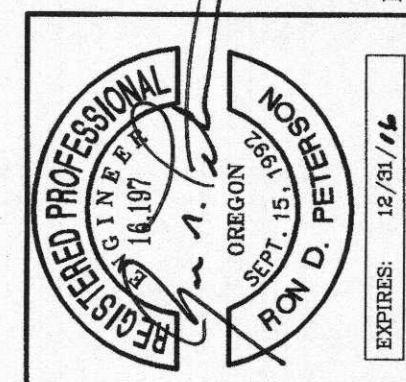
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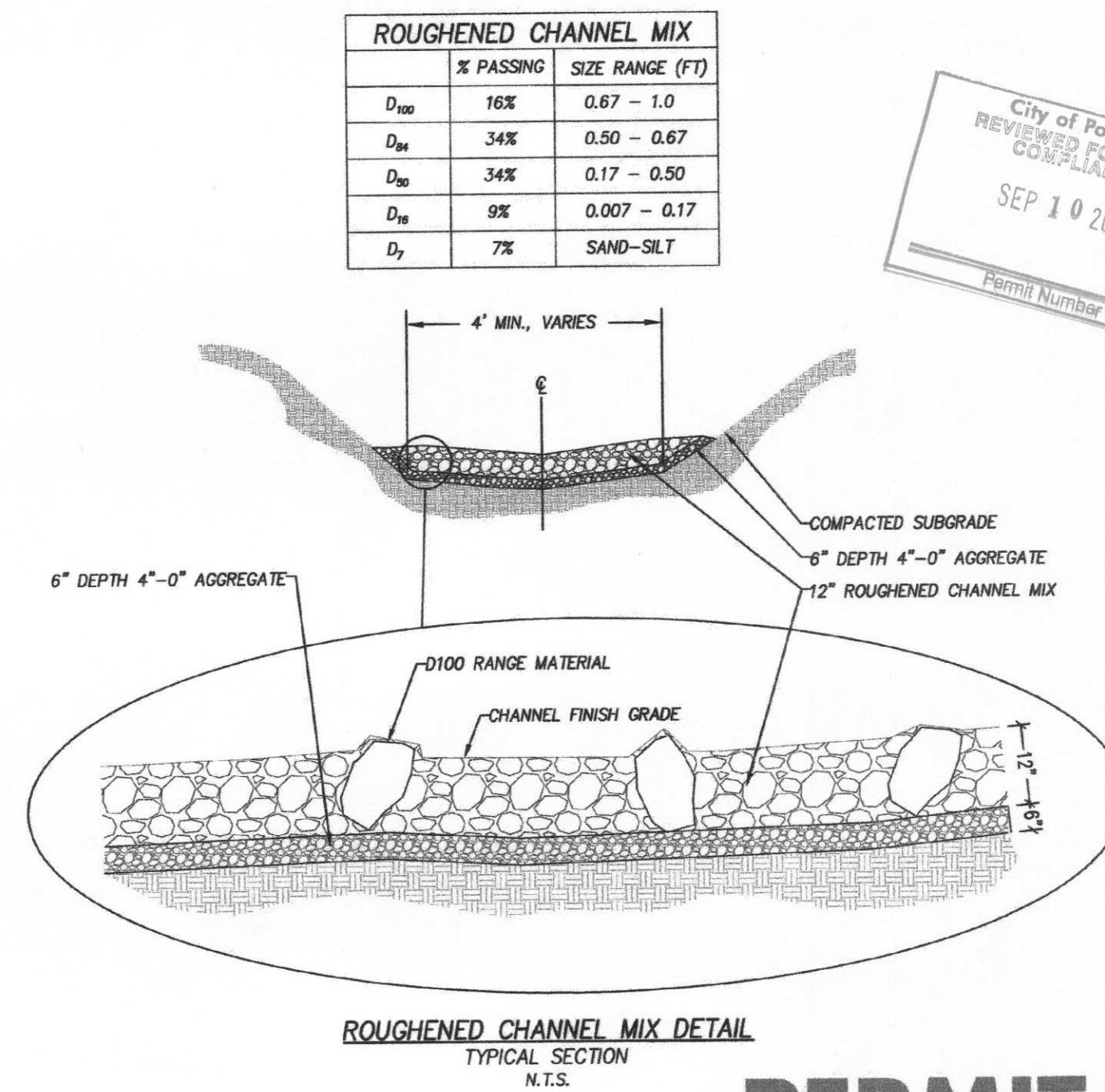
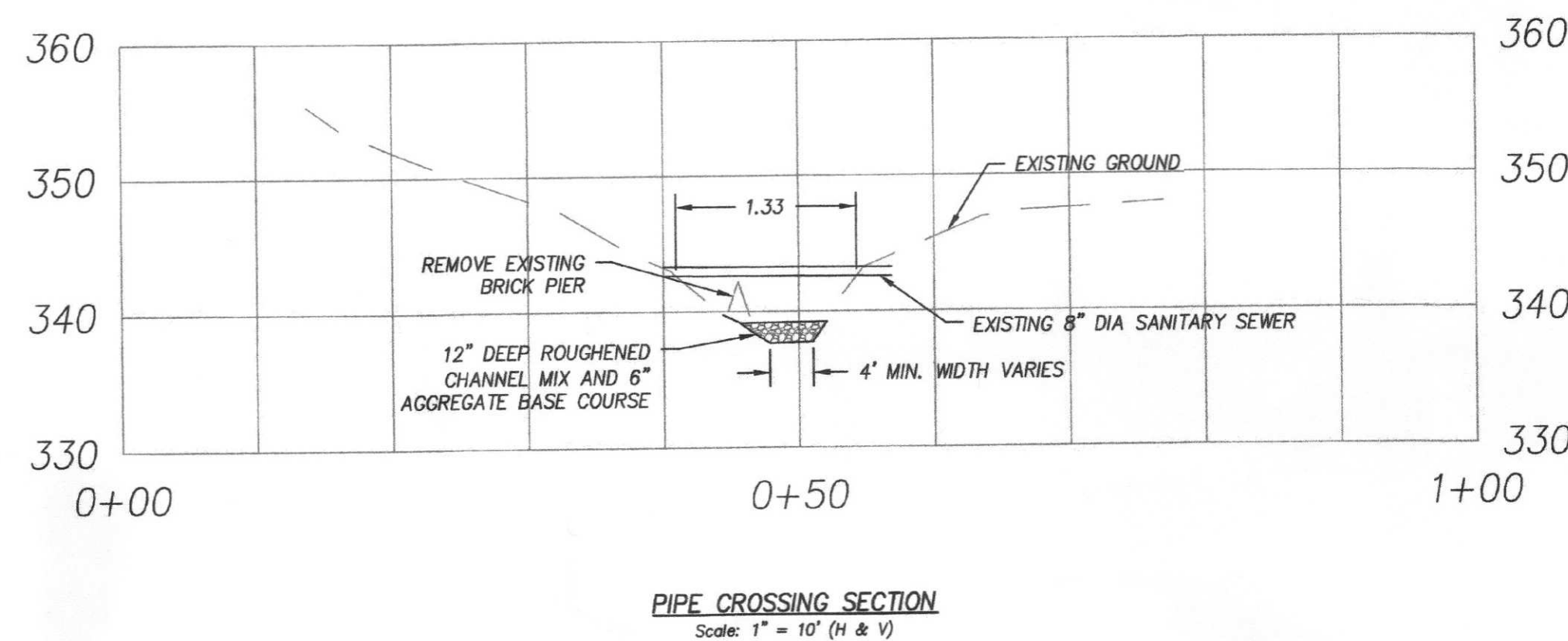
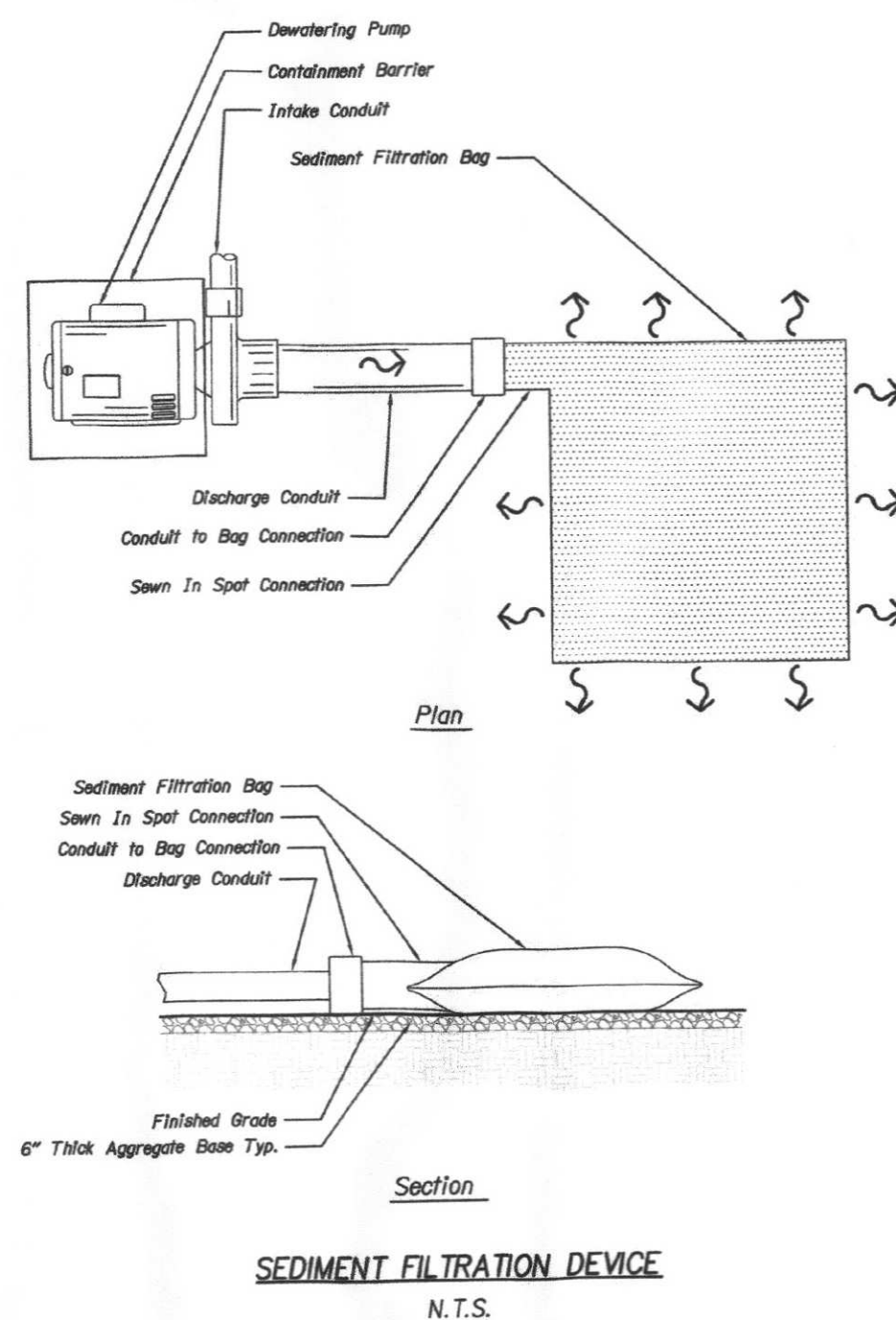
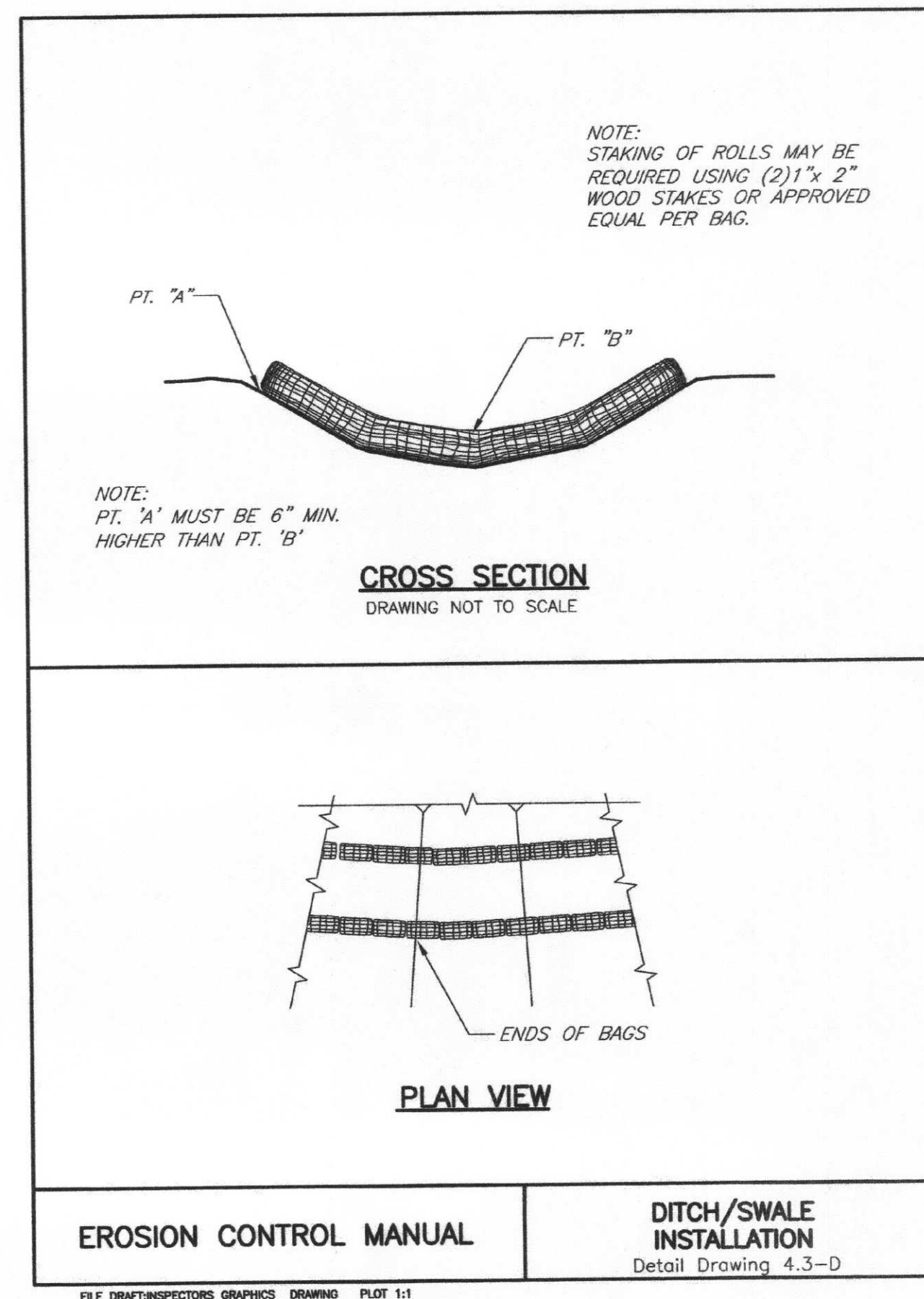
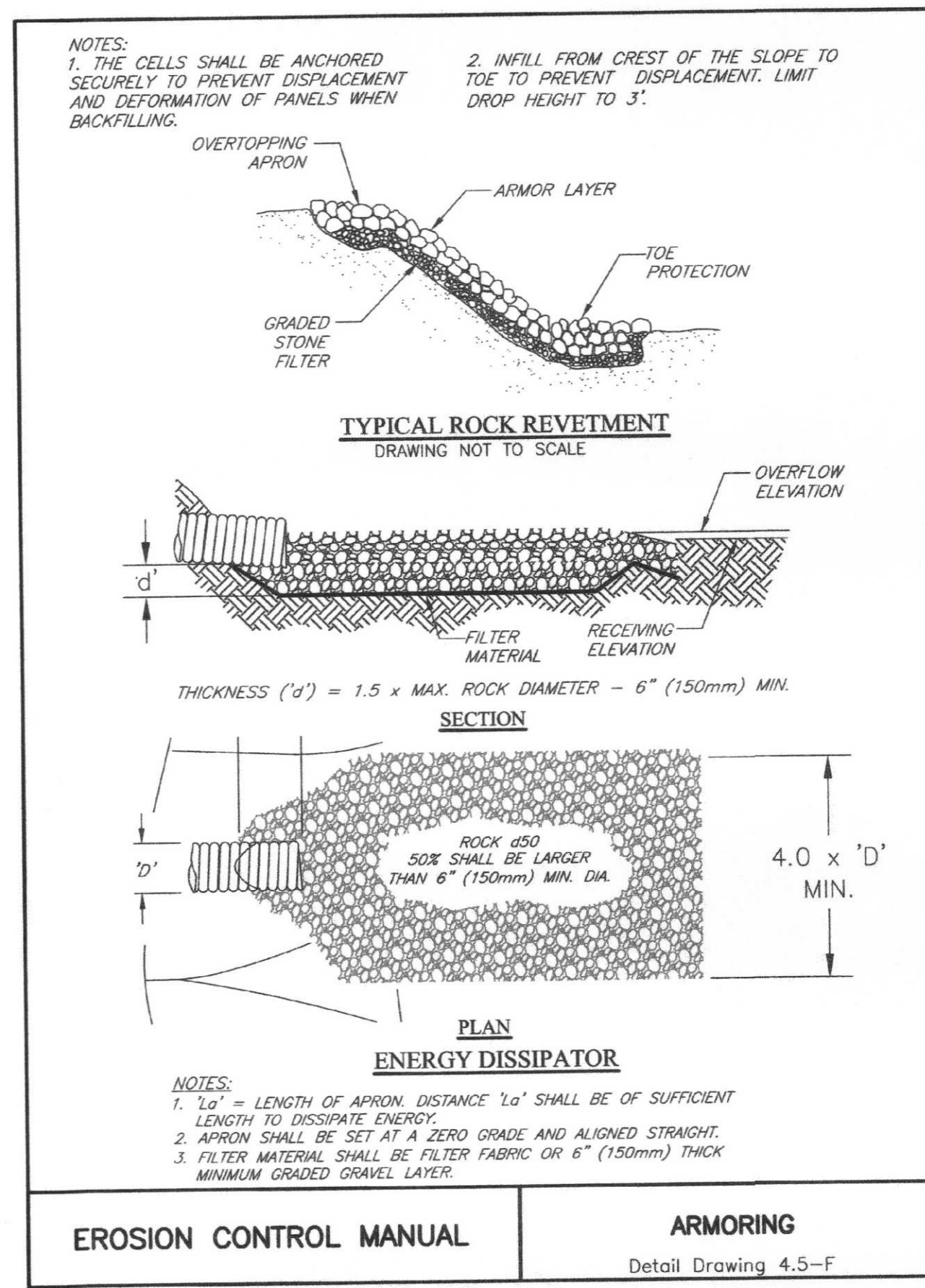
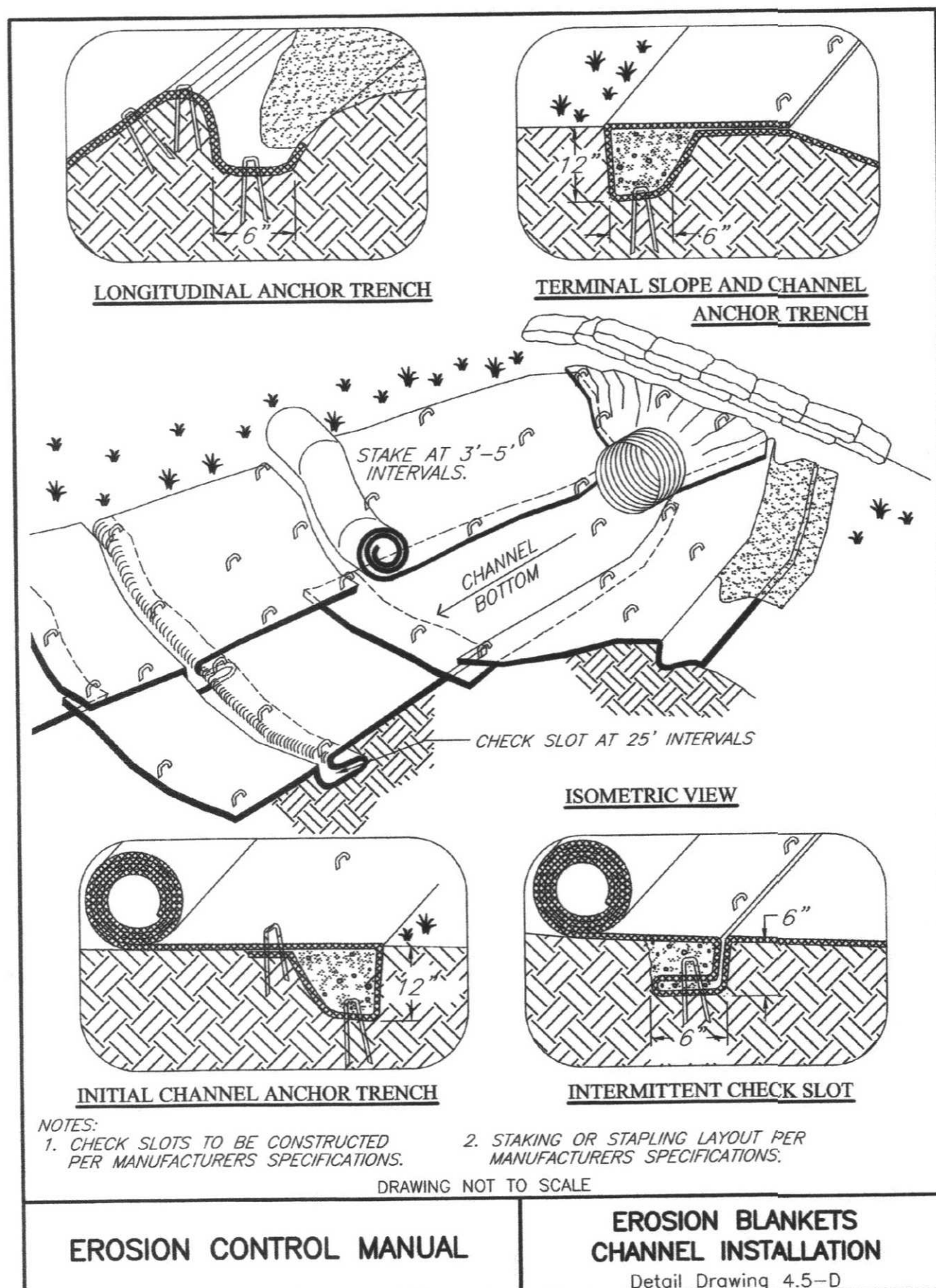
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CHANNEL RESTORATION PLAN & PROFILE
LEWIS & CLARK COLLEGE OUTFALL 10
PORTLAND, OREGON

Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171



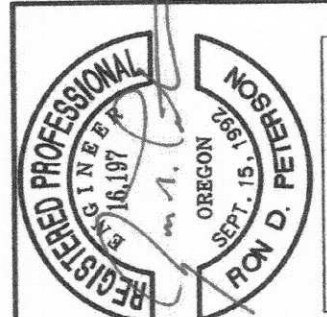
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JOB NO.					
LAC-31					



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CONSTRUCTION DETAILS
LEWIS & CLARK COLLEGE OUTFALL 10
PORTLAND, OREGON

Harper Houf Peterson
Righellis Inc.
ENGINEERS+PLANNERS
LANDSCAPE ARCHITECTS+SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
Phone: 503.221.1131 www.hhp.com Fax: 503.221.1171



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JOB NO. LAC-31			

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MATERIAL SCHEDULE
TREES


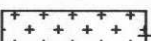


9	ALNUS RUBRA - RED ALDER
1 GAL.	CONT, WELL BRANCHED, SPACE AS SHOWN
5	PSEUDTSUGA MENZIESII - DOUGLAS FIR
1 GAL.	CONT, WELL BRANCHED, SPACE AS SHOWN
6	THUJA PLICATA - WESTERN RED CEDAR
1 GAL.	CONT, WELL BRANCHED, SPACE AS SHOWN

SEEDING

PERMANENT SEEDING (APPROX. 6,000 SF)	LBS OF PLS / 1000 SF
AGROSTIS EXERATA / SPIKE BENTGRASS	0.008
FESTUCA RUBRA / RED FESCUE	0.914
TOTAL	0.922

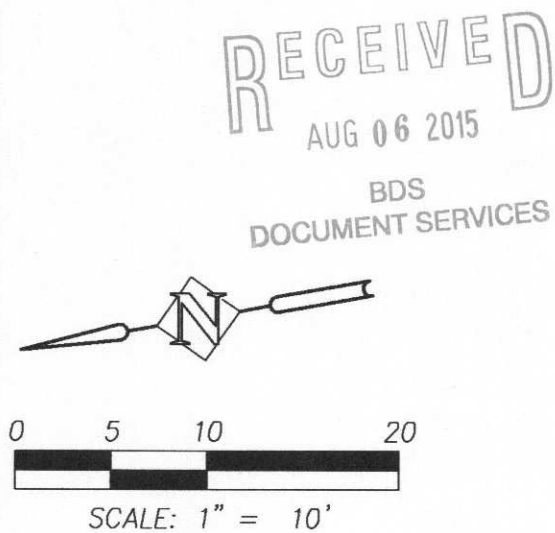
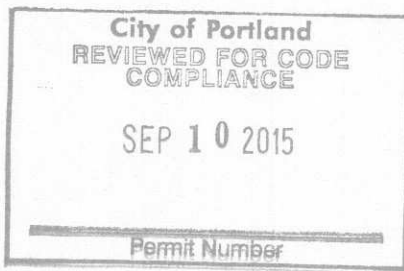
NOTE:
SEED ALL DISTURBED AREAS.

SHRUBS

	
	
	75 LIVE STAKES 3' O.C., 1/2-1" DIA, 2.5-3'L 45 CORNUS SERICEA 30 SALIX LUCIDA VAR. LASIANDRA
	4 1 GAL.
	OEMLERIA CERASIFORMIS - INDIAN PLUM CONT, WELL BRANCHED, SPACE AS SHOWN
	9 1 GAL.
	SAMBUCUS RACEMOSA - RED ELDERBERRY CONT, WELL BRANCHED, SPACE AS SHOWN

GROUND COVER

34	GAULTHERIA SHALLON - SALAL
1 GAL.	CONT, WELL BRANCHED, SPACE 48" O.C.
17	POLYSTICHUM MUNITUM - SWORD FERN
1 GAL.	CONT, WELL BRANCHED, SPACE AS SHOWN



PERMIT SET

PLANTING PLAN

LEWIS & CLARK COLLEGE OUTFALL 10

PORTLAND, OREGON

Harper Houf Peterson

HHP

Righellis Inc.

ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

REGISTERED
672
Scott W. Banker
OREGON
06/19/08
LANDSCAPE

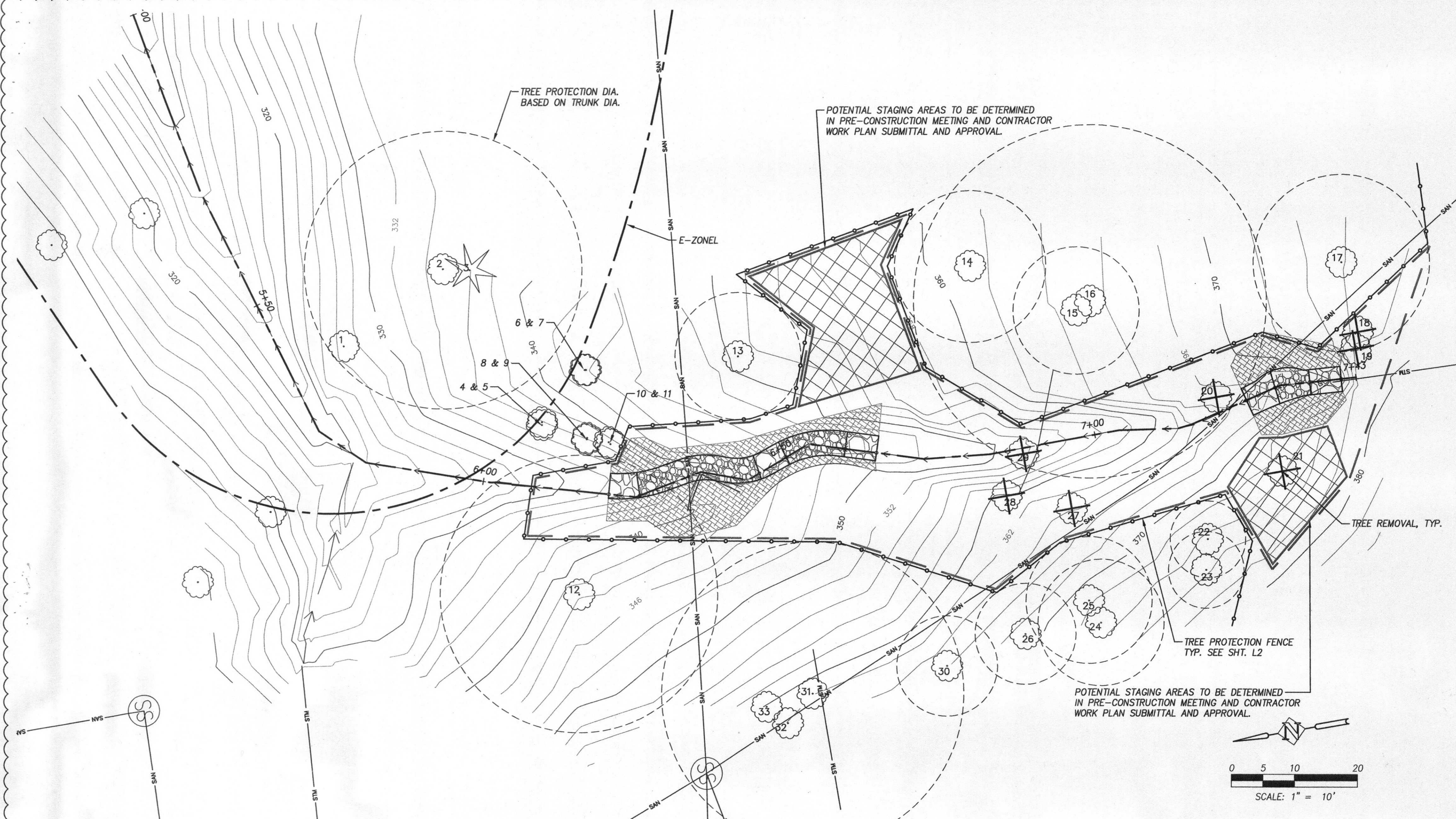
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SHEET NO.

L1

JOB NO.

LAC-31



City of Portland
Bureau of
Development Services

By A. Gulizig Date 8/31/15

Approved by
Planning and Zoning Review

TREE PROTECTION REQUIRED
REQUIRED SIGN & TREE PROTECTION FENCING MUST BE
INSPECTED BEFORE ANY GROUND DISTURBANCE. SEE ATTACHED
SHEET FOR MORE INFORMATION ON REGULATIONS.

ROOT PROTECTION ZONE: ☐ PERFORMANCE ☒ PRESCRIPTIVE

City of Portland
REVIEWED FOR CODE
COMPLIANCE
SEP 10 2015
Permit Number

LEGEND

CONSTRUCTION LIMITS OF IMPACTS

STAGING AREA

EXISTING TREE TO BE REMOVED

TREE PROTECTION FENCING
SEE DETAIL SHT. L2

#	TYPE	QUANTITY	SIZE	CONDITION
1	DECIDUOUS	1	14"	PRESERVE
2	DECIDUOUS	1	22"	PRESERVE
3	EVERGREEN	1	48"	PRESERVE
4	DECIDUOUS	1	16"	PRESERVE
5	DECIDUOUS	1	16"	PRESERVE
6	DECIDUOUS	1	20"	PRESERVE
7	DECIDUOUS	1	22"	PRESERVE
8	DECIDUOUS	1	20"	PRESERVE
9	DECIDUOUS	1	22"	PRESERVE
10	DECIDUOUS	1	12"	PRESERVE
11	DECIDUOUS	1	10"	PRESERVE
12	DECIDUOUS	1	22"	PRESERVE
13	DECIDUOUS	1	10"	PRESERVE
14	DECIDUOUS	1	12"	PRESERVE
15	DECIDUOUS	1	10"	PRESERVE
16	DECIDUOUS	1	28"	PRESERVE
17	DECIDUOUS	1	14"	PRESERVE
18	DECIDUOUS	1	10"	REMOVE
19	DECIDUOUS	1	16"	REMOVE
20	DECIDUOUS	1	12"	REMOVE
21	DECIDUOUS	1	10"	REMOVE
22	DECIDUOUS	1	6"	PRESERVE
23	DECIDUOUS	1	6"	PRESERVE
24	DECIDUOUS	1	10"	PRESERVE
25	DECIDUOUS	1	10"	PRESERVE
26	DECIDUOUS	1	8"	PRESERVE
27	DECIDUOUS	1	8"	REMOVE
28	DECIDUOUS	1	14"	REMOVE
29	DECIDUOUS	1	8"	REMOVE
30	DECIDUOUS	1	24"	PRESERVE
31	DECIDUOUS	1	24"	PRESERVE
32	DECIDUOUS	1	16"	PRESERVE
33	DECIDUOUS	3	10"	PRESERVE

NOTE:
 1) 20 TREES 12" DIA+
 2) 3 TREES 12" DIA+ TO BE REMOVED, 6 TOTAL TREES
 3) $\frac{1}{3}$ OF 20 TREES = 6.7 TREES, MUST BE PROTECTED.

GENERAL NOTES

1. ALL TREES 6" IN DIAMETER AND LARGER IN THE CONSTRUCTION ZONE HAVE BEEN SURVEYED AND SHOWN IN TOPOGRAPHIC MAPPING.
2. CONTRACTOR IS RESPONSIBLE TO PROTECT TREES AS SHOWN AND AS NEEDED BASED ON SITE CONDITIONS, WITH TREE PROTECTION FENCE AS SHOWN THROUGHOUT CONSTRUCTION. SEE DETAIL SHEET L2.
3. TREE PROTECTION FENCE SHALL LOCATED THE SAME NUMBER OF FEET FROM THE TRUNK AS TRUNK DIAMETER IN INCHES MINIMUM, OR AT THE DRIP LINE, WHICHEVER IS LARGER.
4. CONSTRUCTION STAGING TO TAKE PLACE IN AREA AS SHOWN AND OUTSIDE THE DRIP ZONE OF EXISTING TREES IF ADDITIONAL SPACE IS REQUIRED. NO MATERIALS, EQUIPMENT, FUELS, OR FLUIDS SHALL BE STORED INSIDE THE DRIP ZONE OF EXISTING TREES.
5. ANY TREE BRANCHES DAMAGED DURING CONSTRUCTION SHALL BE CUT OFF CLEANLY BEHIND THE DAMAGED AREA AND LEFT ON THE GROUND IN THE WORK ZONE AFTER CONSTRUCTION IS COMPLETED.

TREE PROTECTION & STAGING PLAN
 LEWIS & CLARK COLLEGE OUTFALL 10
 PORTLAND, OREGON

Harper Houf Peterson Righellis Inc.

ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS

Suite 200, Portland, OR 97202
503-238-1171

REGISTERED
672
Scott W. Banker
Scott W. Banker
OREGON
06/19/08
LANDSCAPE ARCHITECT

[illegible]

SHEET NO.

L3

JOB NO.

LAC-31

PERMIT SET

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GENERAL:

- THESE STRUCTURAL NOTES SUPPLEMENT THE SPECIFICATIONS. ANY DISCREPANCY FOUND AMONG THE DRAWINGS, SPECIFICATIONS, THESE NOTES, AND ANY SITE CONDITIONS SHALL BE REPORTED IN A TIMELY MANNER TO THE ENGINEER DESIGN TEAM, WHO SHALL RESPOND TO ANY DISCREPANCY IN WRITING. ANY WORK DONE BY THE CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE CONTRACTOR'S OWN RISK. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL DEMOLITION AND CONSTRUCTION METHODS, TECHNIQUES, SEQUENCING, AND SAFETY REQUIRED FOR THE WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ALL ERECTION BRACING, FORM WORK, AND TEMPORARY SHORING REQUIRED FOR THE WORK.
- THESE NOTES SET MINIMUM STANDARDS FOR CONSTRUCTION. THE DRAWINGS GOVERN OVER THE STRUCTURAL NOTES TO THE EXTENT SHOWN.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS ON DRAWINGS AND IN THE FIELD. COORDINATE LOCATIONS OF OPENINGS THROUGH FLOOR, ROOFS AND WALLS WITH ARCHITECTURAL PLANS. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
- DETAILS SHOWN ON THE DRAWINGS ARE INTENDED TO APPLY AT ALL SIMILAR CONDITIONS AND LOCATIONS.
- DO NOT SCALE INFORMATION FROM STRUCTURAL DRAWINGS.
- ALL PRODUCTS AND MATERIALS USED BY THE CONTRACTOR SHALL BE APPLIED, PLACED, ERECTED, OR INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

DESIGN CODE:

- 2014 OREGON STRUCTURAL SPECIALTY CODE
- ALL REFERENCE TO OTHER CODES AND STANDARDS (ACI, ASTM, ETC...) SHALL BE PER THE LATEST OR MOST CURRENT EDITION AVAILABLE.
- DESIGN LOADS:
SEISMIC DESIGN CATEGORY D, SITE CLASS D, $S_{ds} = 0.728$, $I = 1.5$

FOUNDATIONS:

- CONTRACTOR SHALL CONFORM TO ALL RECOMMENDATIONS & REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT PROVIDED BY GEODESIGN INC. DATED APRIL 22, 2015, GEODESIGN PROJECT: LCCOLLEGE-2-07
- FOOTINGS SHALL BE FOUNDED ON FIRM, UNDISTURBED SOIL OR ON APPROVED STRUCTURAL FILL.
- ALL SOIL ANCHORS SHALL BE REVIEWED AND APPROVED BY THE EOR & GEODESIGN PRIOR TO ANY FABRICATION OR INSTALLATION

CONCRETE (CAST IN PLACE):

- ALL CONCRETE SHALL BE NORMAL WEIGHT AND SHALL DEVELOP A MINIMUM 28 DAY LABORATORY CURED COMPRESSIVE- CYLINDER STRENGTH OF 4,000 PSI.
- CONCRETE FORMS, MIXING, PLACING, AND CURING SHALL CONFORM TO ACI MANUAL OF CONCRETE PRACTICE, LATEST EDITION AND SPECIFICATIONS.
- CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 4 INCHES.
- CONCRETE SHALL BE PLACED IN ONE CONTINUOUS OPERATION.
- ALL BOLTS IN CONCRETE SHALL CONFORM TO ASTM SPECIFICATION A307 AND SHALL BE OF THE SIZE INDICATED ON THE DRAWINGS.
- CONCRETE WATER CEMENT RATIO SHALL NOT EXCEED 0.50.
- CONCRETE EXPOSED TO WEATHER SHALL HAVE 6% +/- 1% ENTRAINED AIR.

REINFORCING STEEL:

- REINFORCING BARS SHALL BE NEW BILLET STEEL AND SHALL CONFORM TO:
ASTM A615 GRADE 60 FOR ALL REINFORCEMENT.
- ALL WELDED REINFORCING STEEL, METAL INSERTS AND CONNECTIONS SHALL CONFORM TO OSSC STANDARDS.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
- REINFORCEMENT SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI CODE 318 AND ACI MANUAL 315, UNLESS OTHERWISE NOTED. ALL REINFORCEMENT SHALL BE FREE OF LOOSE MILL AND RUST SCALE, OIL, DIRT AND COATINGS OF ANY MANNER THAT WILL REDUCE BOND. ALL REINFORCEMENT SHALL BE CONTINUOUS WITH ADEQUATE LAPS.
- REINFORCEMENT SHALL BE SECURED IN FORMS WITH SUITABLE TIES AND ANCHORAGE TO PREVENT DISPLACEMENT. BARS ADJACENT TO EARTH SHALL BE SUPPORTED BY CEMENT MORTAR CUBES.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:
A) CONCRETE CAST AGAINST EARTH = 3"
B) CONCRETE EXPOSED TO EARTH OR WEATHER
#5 AND SMALLER = 1 1/2"
C) CONCRETE NOT EXPOSED TO EARTH OR WEATHER
SLABS, #11 BARS AND SMALLER = 3/4"
BEAMS AND COLUMNS = 1 1/2" #6 AND LARGER = 2"

STRUCTURAL SUBMITTALS:

- SUBMITTAL PROCEDURE:
A. DELIVER TO THE ENGINEER OF RECORD A MINIMUM OF (4) COPIES OF EACH SUBMITTAL ITEM
- FOR EACH SUBMITTAL ITEM ALLOW (15) DAYS EXCLUDING DELIVERY TIME TO AND FROM THE CONTRACTOR.
- SCHEDULE OF SUBMITTAL ITEMS:
A. CONCRETE MIX DESIGN
B. SHOP DRAWINGS:
B1.1 REINFORCING STEEL
C. PRODUCT DATA
D. SAMPLES OR ADDITIONAL PRODUCT DATA MAY BE REQUESTED

SPECIAL INSPECTION:

INSPECTOR IS TO BE CONTRACTED BY OWNER, ENGINEER OR ARCHITECT PER IBC CODE REQUIREMENTS, AND LOCAL ORDINANCES. A PRE-CONSTRUCTION MEETING SHALL TAKE PLACE PRIOR TO FOUNDATION INSTALLATION. THE CONTRACTOR, ARCHITECT, ENGINEER AND INSPECTOR SHALL ATTEND. SPECIAL INSPECTIONS SHALL BE PERFORMED ON THE FOLLOWING WORK:

- SUBGRADE:
A. OBSERVATION OF SOIL ANCHOR INSTALLATION, SOIL ANCHOR TESTING, SITE PREPARATION, GRADING PLACEMENT AND COMPACTION OF OPERATIONS BY GEOTECHNICAL ENGINEER.
- CONCRETE:
A. PLACEMENT OF CONCRETE FOUNDATIONS - CONTINUOUS
B. TAKING OF TEST SPECIMENS-AIR, STRENGTH AND SLUMP - CONTINUOUS
C. POST INSTALLED CONCRETE ANCHORS - PERIODIC

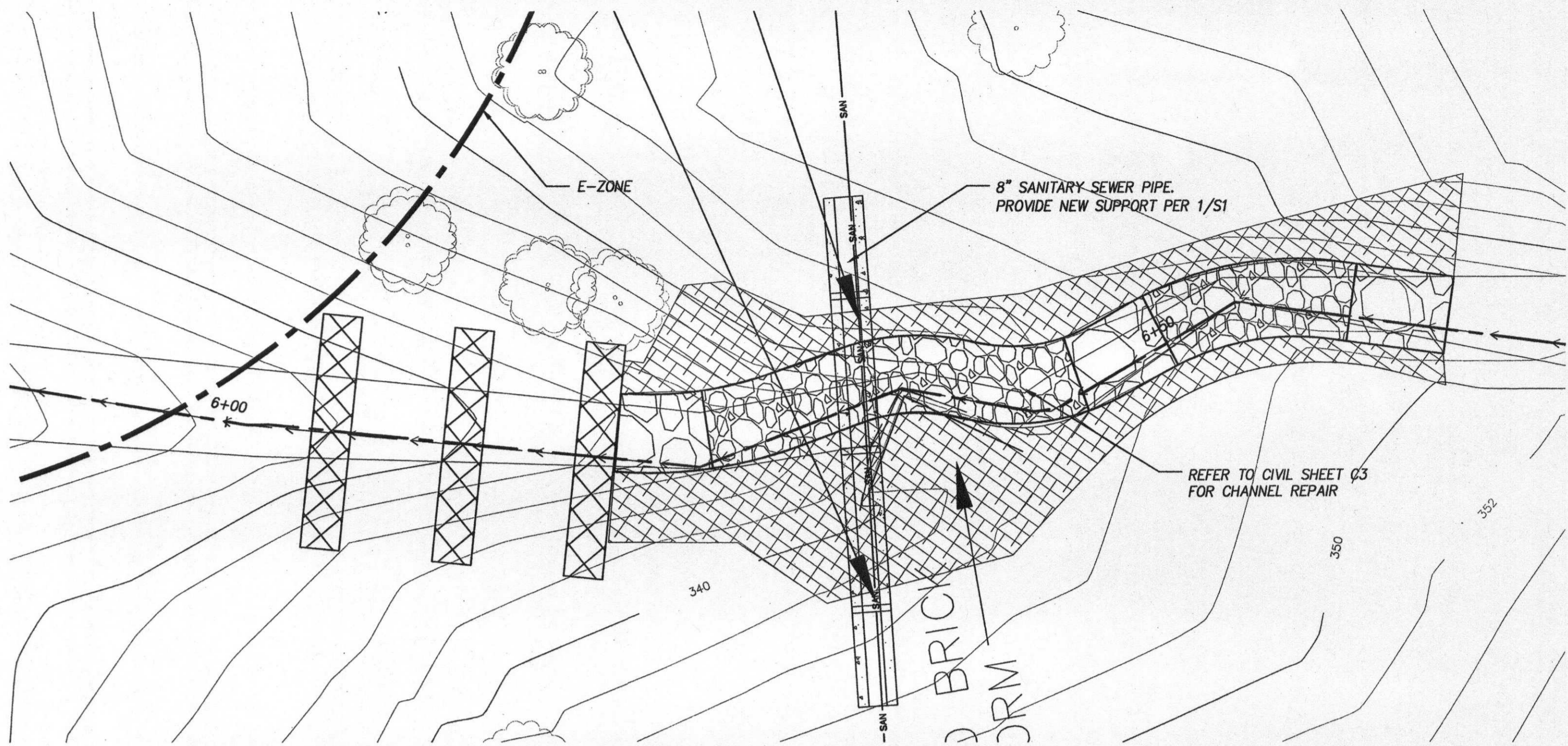
IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT THE INSPECTOR, (48 HR. MINIMUM NOTICE), FOR INSPECTION SERVICES. THE INSPECTOR SHALL BE PRESENT AT THE PRE-CONSTRUCTION MEETING TO COORDINATE WORK WITH THE CONTRACTOR, ENGINEER AND OWNER. ALL INSPECTORS SHALL BE CERTIFIED TO PERFORM NECESSARY INSPECTION PER IBC, ACI, AWS OR OTHER APPROVED GOVERNING INSTITUTION.

STRUCTURAL OBSERVATION:

- STRUCTURAL OBSERVATION SHALL BE PERFORMED ON THE PROJECT. OBSERVATION WILL BE REQUIRED AT THE FOLLOWING STAGES:
A. PRIOR TO FOUNDATION POUR
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD AT LEAST FOUR (4) DAYS IN ADVANCE OF COMPLETION REQUIRING SITE OBSERVATION.

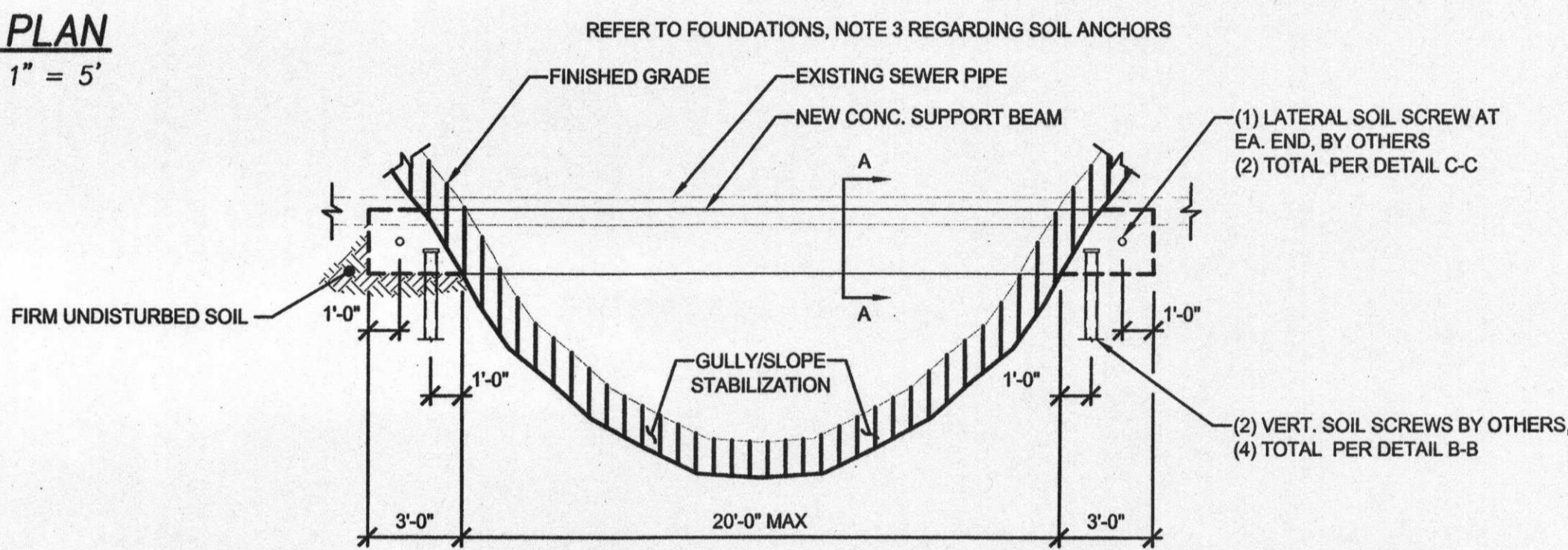
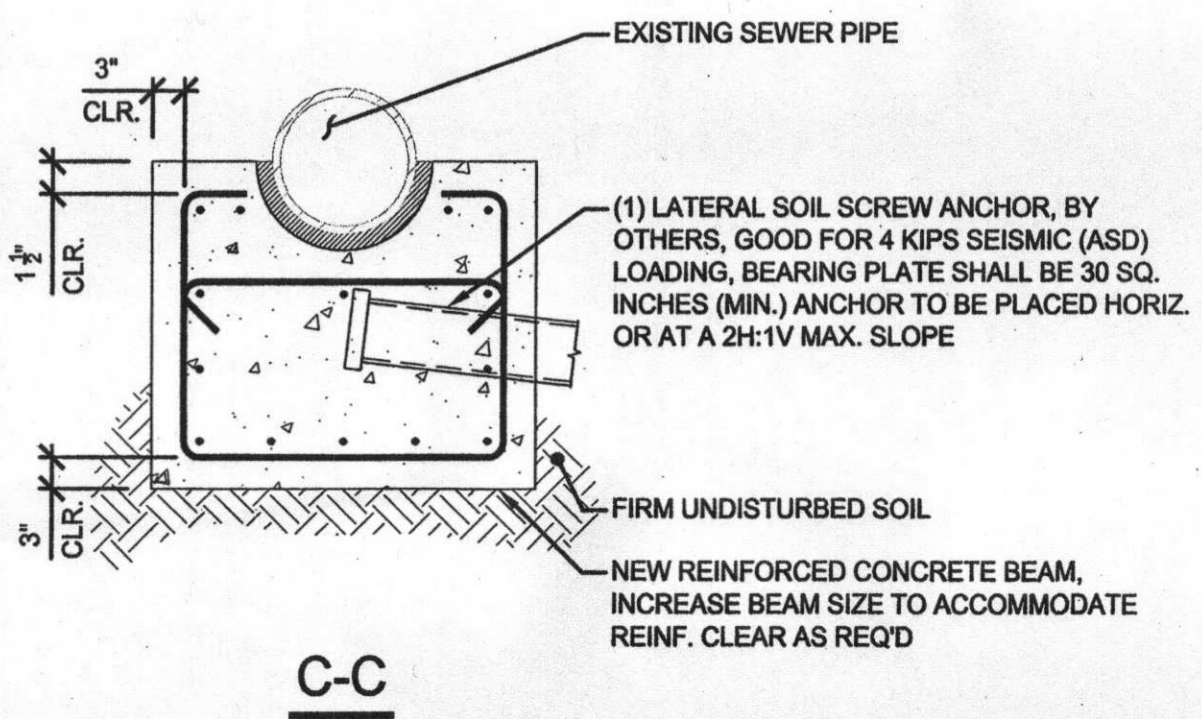
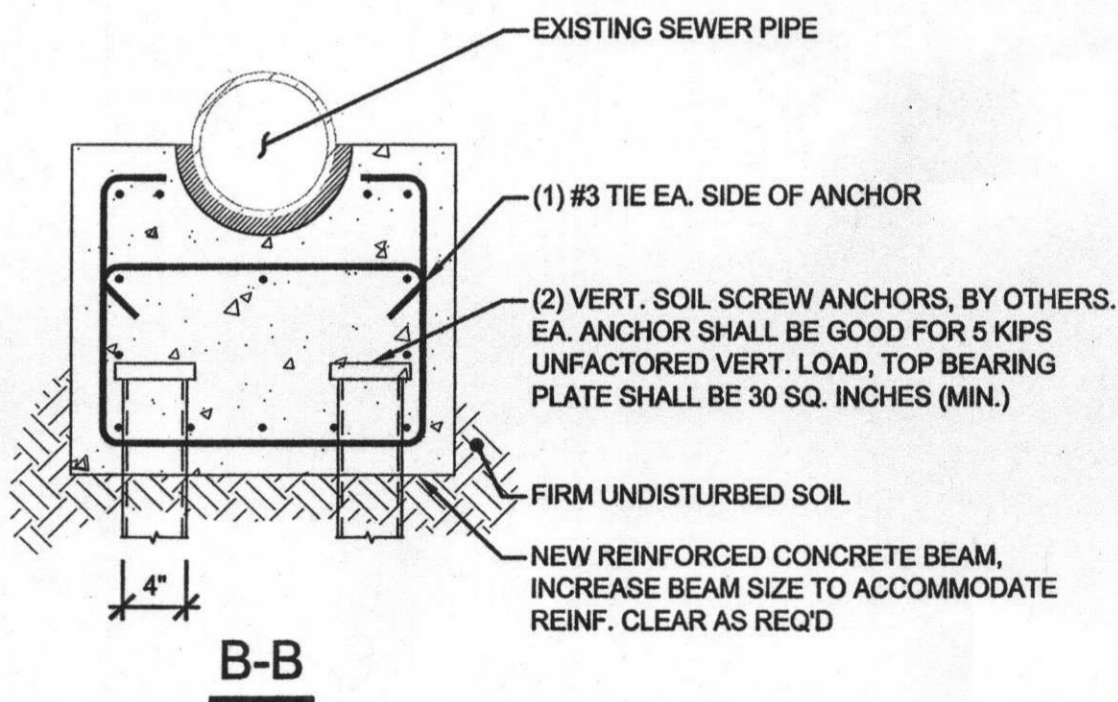
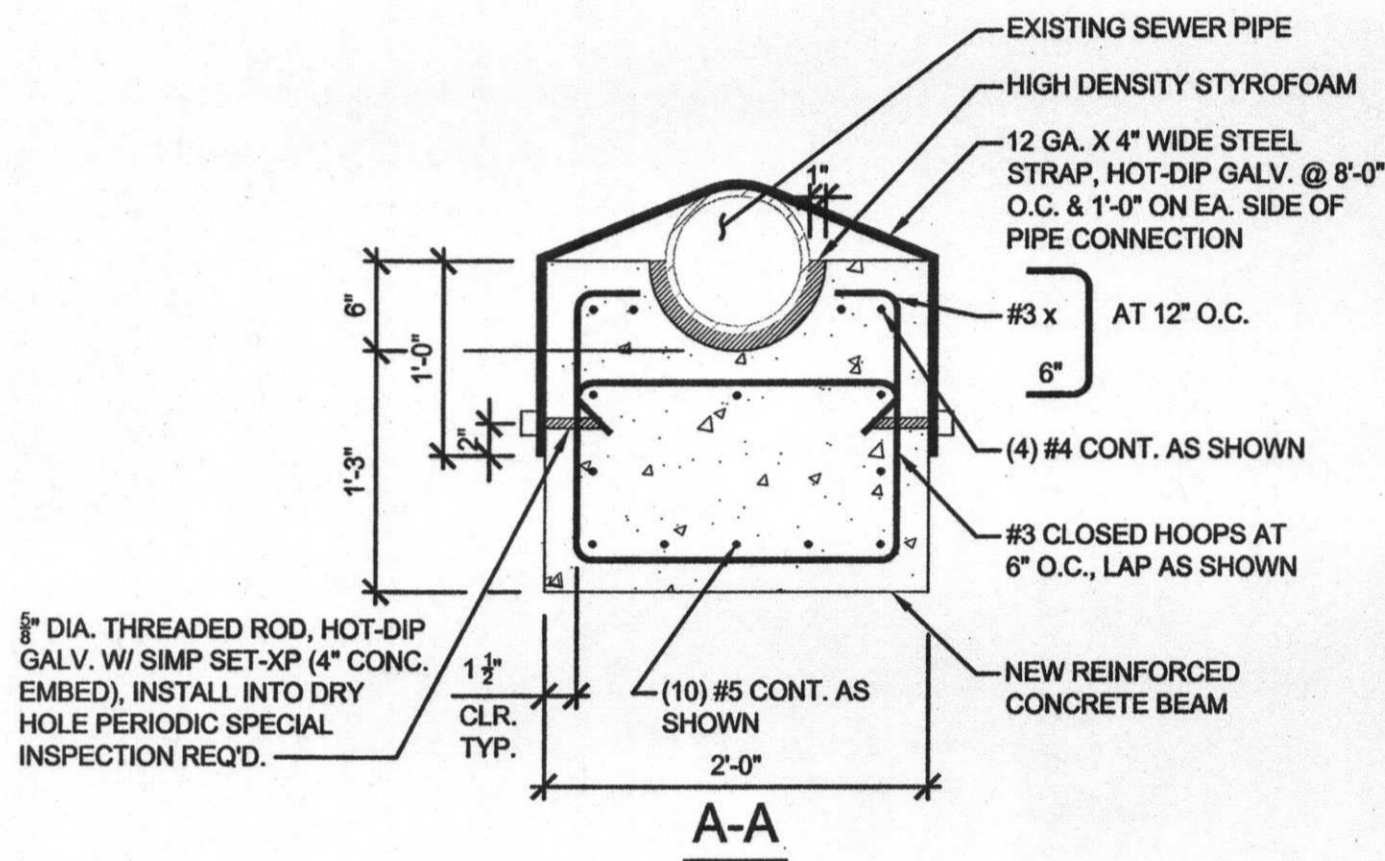
SITE PLAN

- All foundation piers shall be installed to a length of at least 10'-0".
- Foundation piers shall be installed continuously from the ground surface using equipment capable of measuring installation torque, which can be correlated to ultimate capacity.
- At least one vertical anchor and one lateral anchor shall be proof tested to 200 percent of the design loaded noted.
- Lateral anchors shall be tested in tension per ASTM D 1143.
- Vertical anchors shall be tested in compression or tension in accordance with ASTM D 1143 or ASTM D 3689.



SITE PLAN

SCALE: 1" = 5'

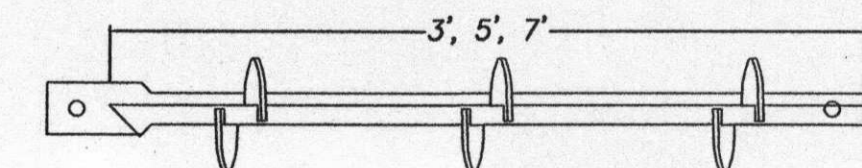


STRUCTURAL PIPE SUPPORT - ELEVATION

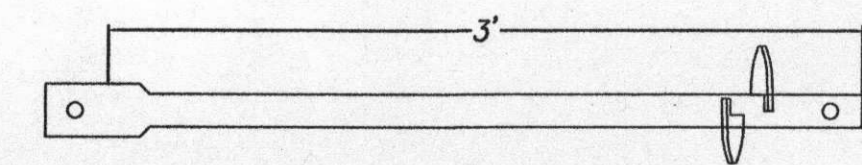
SCALE: 1/4" = 1'-0"

NOTE: HELICAL PIER TO HAVE A SQUARE BAR WITH A MINIMUM DIA. OF 1 1/2" THE HELICES SHALL BE A MINIMUM OF 6" DIA. UP TO 10" IN DIA. AND SPACED APPROXIMATELY 3-HELIX DIA. THE HELIX PIERS SHALL BE INSTALLED TO A MINIMUM LENGTH OF 10'. INSTALLED CONTINUOUSLY FROM THE GROUND SURFACE WITH EQUIPMENT CAPABLE OF MEASURING TORQUE AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND PROJECT GEOTECHNICAL ENGINEERING DESIGN REQUIREMENTS.

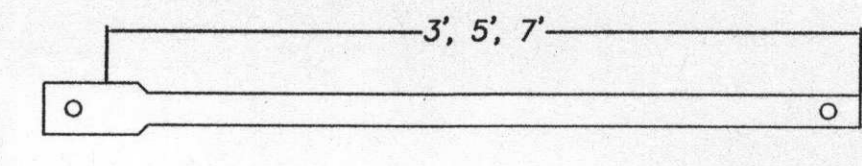
CONTRACTOR SHALL SUBMIT ANCHOR DOCUMENTATION AND INSTALLATION APPROACH TO GEOTECHNICAL ENGINEER AND EOR FOR APPROVAL PRIOR TO ANY INSTALLATION. GEOTECHNICAL ENGINEER SHALL FIELD INSPECT AND TEST INSTALLATION OF VERTICAL AND LATERAL HELICAL PIERS.



LEAD SECTION
SINGLE OR MULTIPLE HELIX



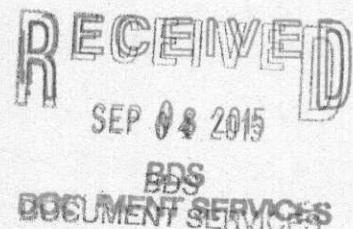
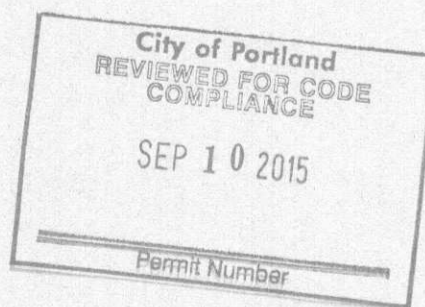
HELIX EXTENSION



PLAIN EXTENSION

HELICAL PIER DETAIL

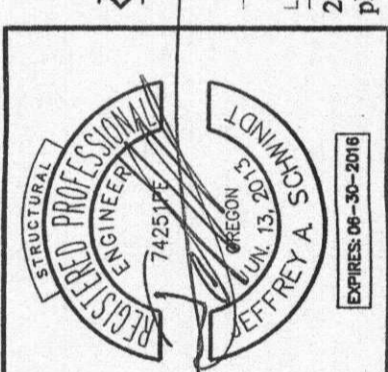
SCALE: 1/4" = 1'-0"



PERMIT SET

STRUCTURAL PLAN AND DETAILS
LEWIS & CLARK COLLEGE OUTFALL 10
PORTLAND, OREGON

Harper
Houf Peterson
Righellis Inc.



DESIGNED: JAS
DRAWN: TDF
CHECKED: RDP
DATE: JUNE 5, 2015

NO.	DESCRIPTION
1	FOUNDATION PIER
2	FOUNDATION PIER
3	FOUNDATION PIER
4	FOUNDATION PIER
5	FOUNDATION PIER
6	FOUNDATION PIER
7	FOUNDATION PIER
8	FOUNDATION PIER
9	FOUNDATION PIER
10	FOUNDATION PIER

SHEET NO.

S1

JOB NO.

LAC-31