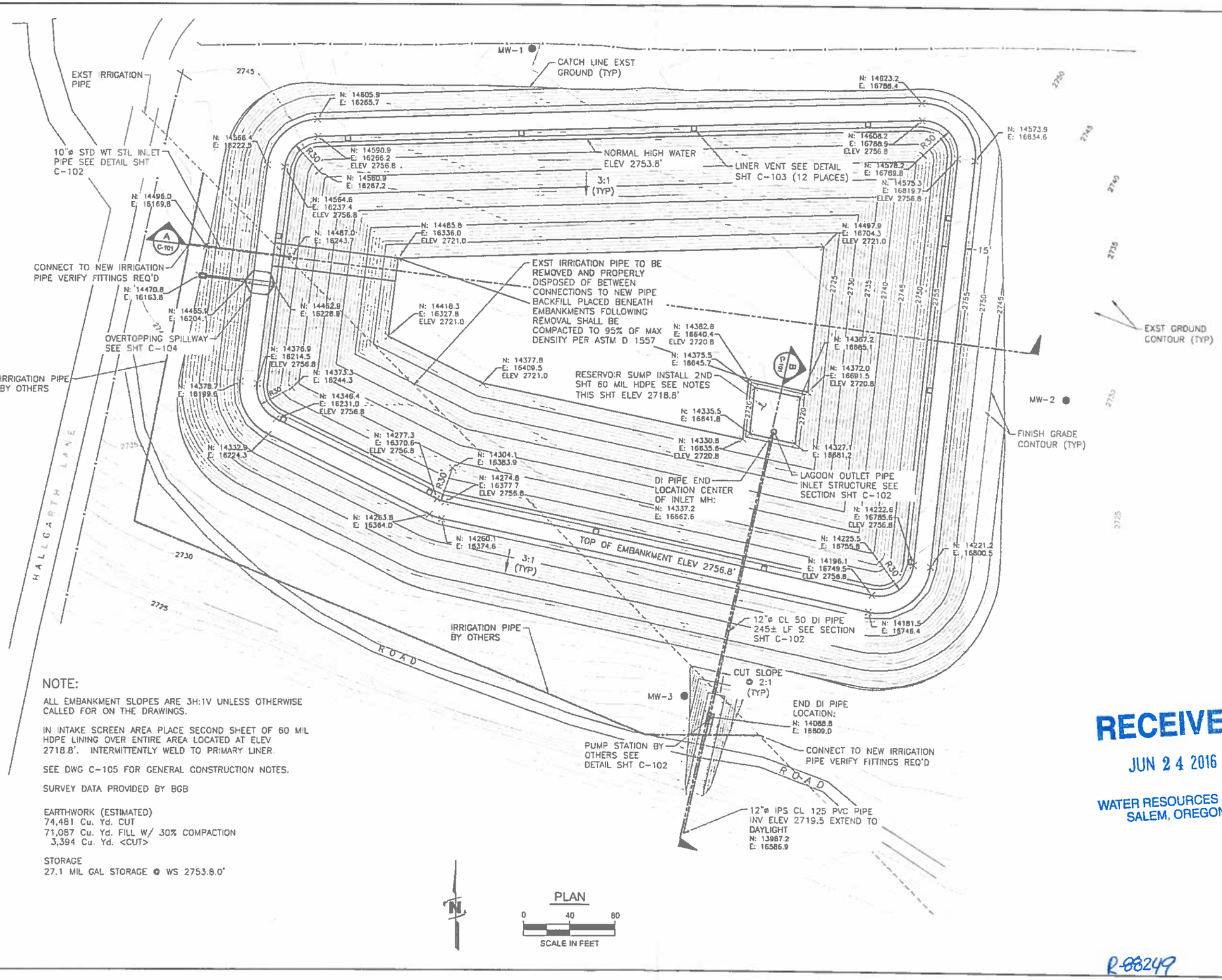

NOTE:

ALL EMBANKMENT SLOPES ARE 3H:1V UNLESS OTHERWISE CALLED FOR ON THE DRAWINGS.

IN INTAKE SCREEN AREA PLACE SECOND SHEET OF 60 MIL HDPE LINING OVER ENTIRE AREA LOCATED AT ELEV 2718.8'. INTERMITTENTLY WELD TO PRIMARY LINER.

SEE DWG C-105 FOR GENERAL CONSTRUCTION NOTES.

SURVEY DATA PROVIDED BY BGB

EARTHWORK (ESTIMATED)
74,481 Cu. Yd. CUT
71,087 Cu. Yd. FILL W/ 30% COMPACTION
3,394 Cu. Yd. <CUT>

STORAGE
27.1 MIL GAL STORAGE @ WS 2753.8.0'

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R-88249

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REGISTERED PROFESSIONAL ENGINEER
OREGON
GARY J. WEATHERLY
EXPIRES: 6/30/16

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NO.	DESCRIPTION	BY	APP	DATE

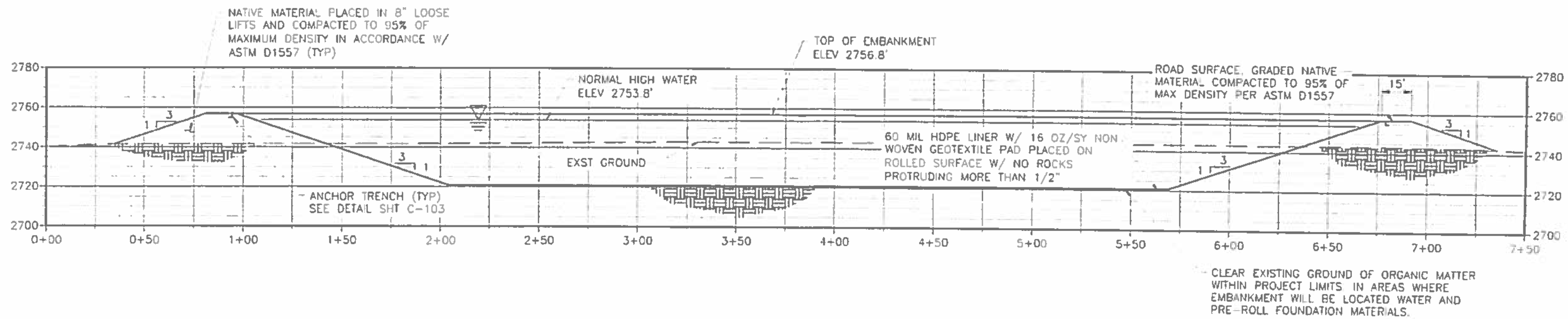
BOISE CASCADE
WASTEWATER LAGOON

PLAN

FILE: 33 16 004 C 100
J-U-B PROJ. # 33 16 004
DRAWN BY: GWW
DESIGN BY: GJW
CHECKED BY: GJW

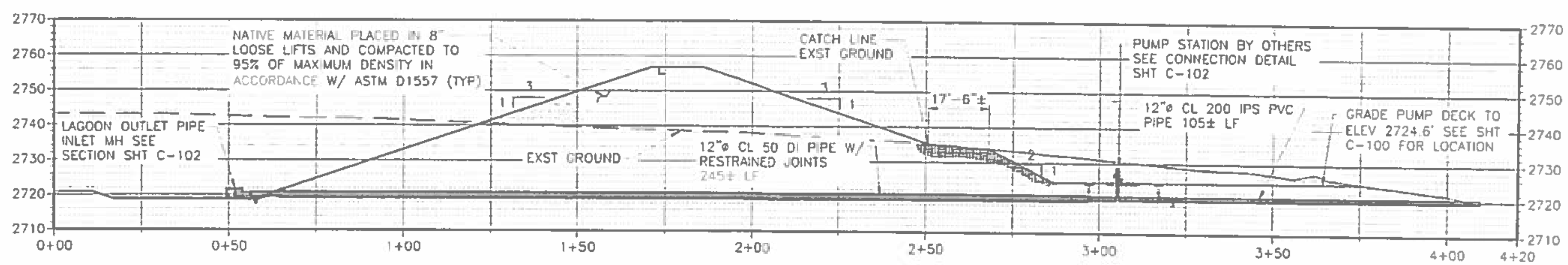
LAST UPDATED 3/17/2016

SHEET NUMBER:
C-100



A SECTION

0 30 60
SCALE IN FEET



B SECTION

0 20 40
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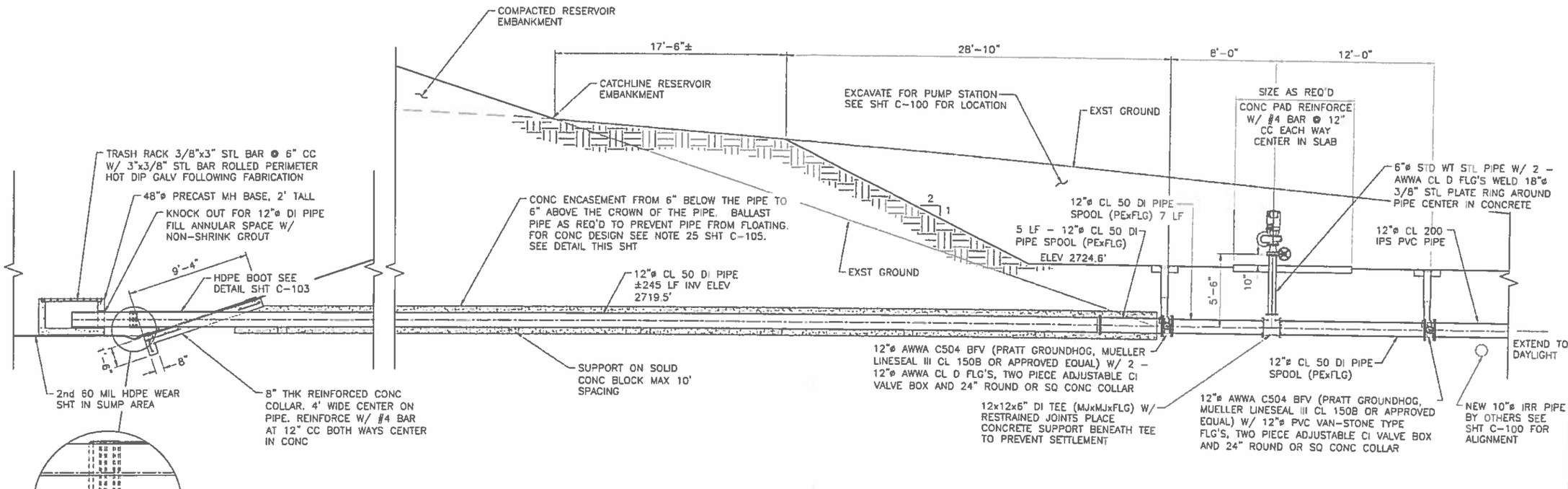
BOISE CASCADE WASTEWATER LAGOON

SECTIONS

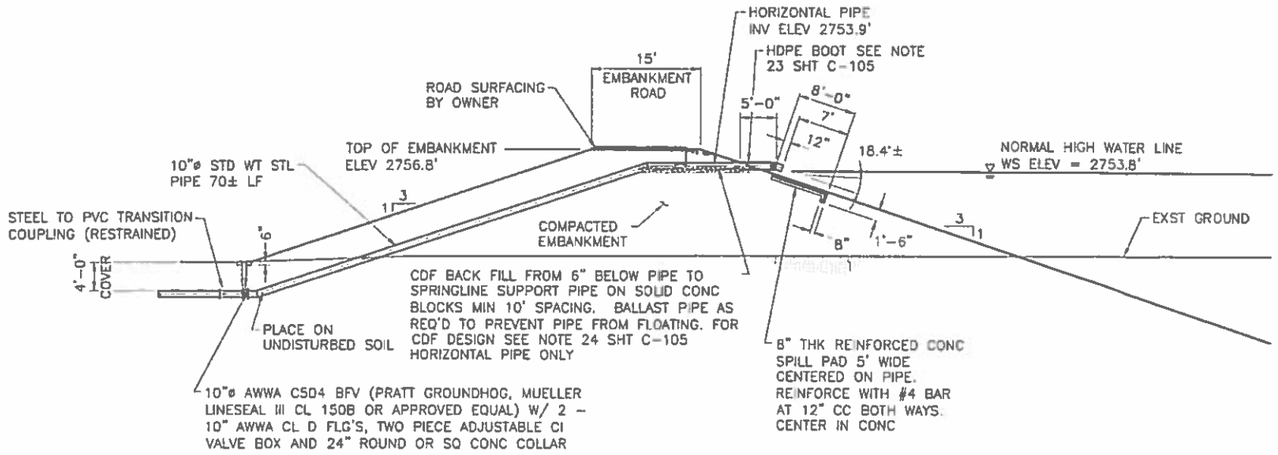
SHEET NUMBER:
C-101



LAGOON OUTLET PIPE DETAIL

0 4 8

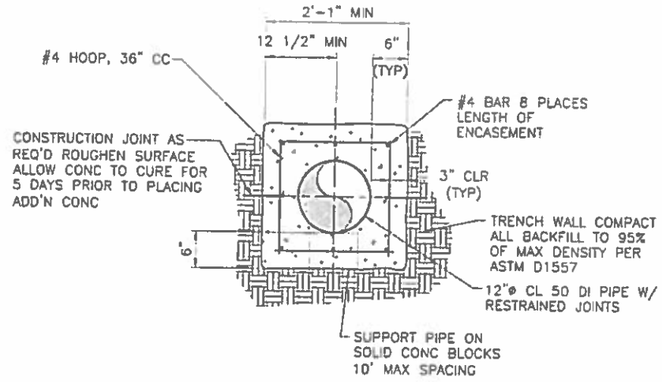
SCALE IN FEET



LAGOON INLET PIPE DETAIL

0 10 20

SCALE IN FEET



NOTE: PLACE CONC AROUND PIPE AGAINST UNDISTURBED EARTH OR BACKFILL MATERIAL COMPACTED TO 95% OF MAX DENSITY PER ASTM D1557

BALLAST PIPE AS REQ'D TO PREVENT PIPE FROM FLOATING

CONCRETE ENCASEMENT - DETAIL

0 1 2

SCALE IN FEET

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 31, 2005
GARY J. WEATHERLY
EXPIRES: 6/30/16

NO	DESCRIPTION	BY	DATE

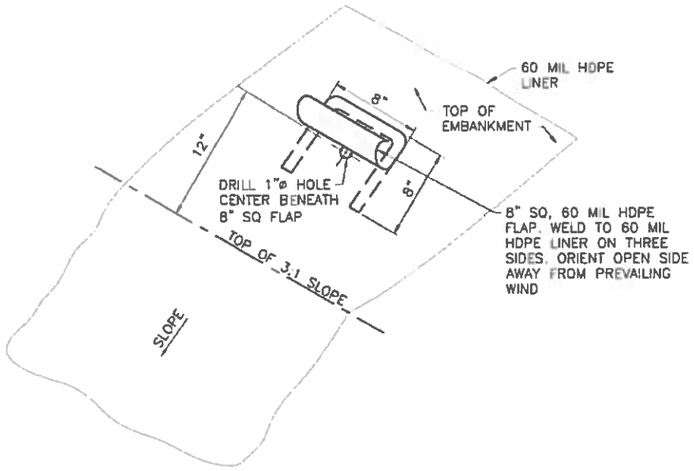
BOISE CASCADE WASTEWATER LAGOON

PIPE SECTIONS

FILE	33 16 004 C 102
J-U-B PROJ #	33 16 004
DRAWN BY	GWM
DESIGN BY	GJW
CHECKED BY	GJW
LAST UPDATED	3/16/2016

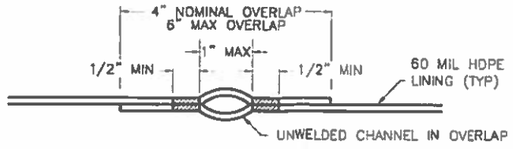
SHEET NUMBER:
C-102

Plot Date: 3/16/2016 11:48 AM Plotted By: Gary J. Weatherly
Date Created: 2/16/2016 W:\projects\33\16\004 - BOISE CASCADE WASTEWATER IMPROVEMENTS\DESIGN\CAD\33 16 004 C 102.DWG



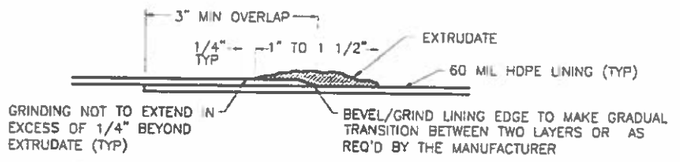
NOTE:
INSTALL VENTS @ 150± FT SPACING AROUND LINER PERIMETER (12 PLACES) SEE SHT C-100

LINER VENT - DETAIL
SCALE: NTS



NOTE:
AIR PRESSURE TESTING IS THE PRIMARY METHOD FOR TESTING FUSION WELDING

FUSION WELD - DETAIL
SCALE: NTS

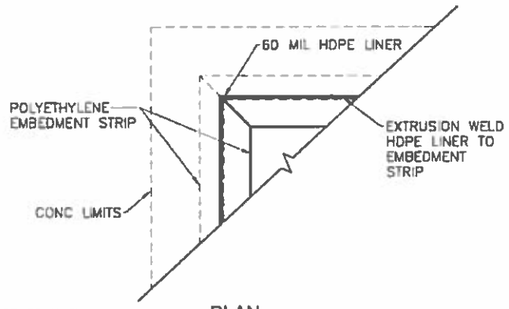


NOTE:
LINER SHEETS TO BE TACK WELDED TOGETHER AT OVERLAP TO FORM TEMPORARY BOND PRIOR TO WELDING

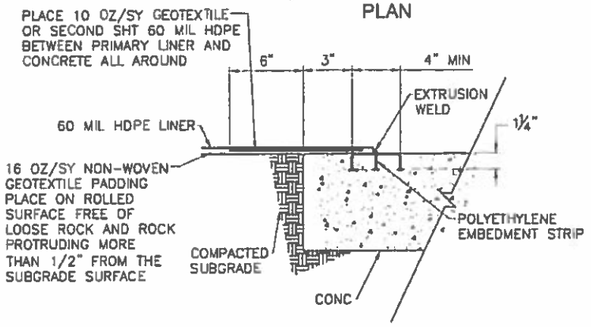
GRINDING NOT TO EXCEED 1/4" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE MUST BE TAKEN TO ENSURE TOO MUCH MATERIAL IS NOT REMOVED DURING GRINDING

VACUUM TESTING WILL BE THE NON-DESTRUCTIVE TEST METHOD FOR EXTRUSION WELDS

EXTRUSION WELD - DETAIL
SCALE: NTS



PLAN

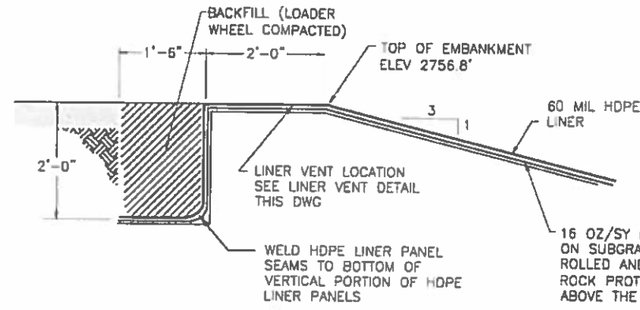


SECTION
CONCRETE CONNECTION

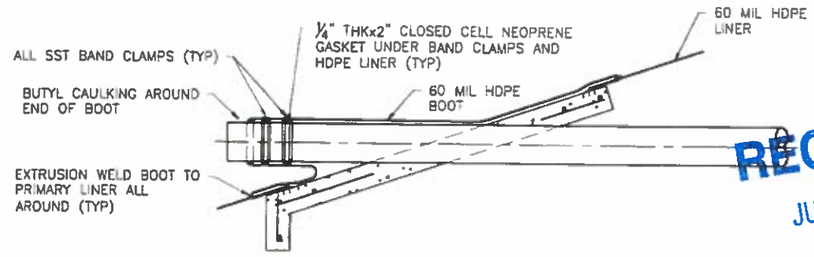
NOTE:
EMBEDMENT STRIPS TO BE FULLY WELDED AT ALL JOINTS AND CORNERS PRIOR TO EMBEDDING IN CONCRETE.

EMBEDMENT STRIPS SHALL BE MIN 4" IN WIDTH W/ THREE 1.25" MIN EMBEDS AND POLYETHYLENE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

HDPE LINER TO CONCRETE ATTACHMENT - DETAIL
SCALE: NTS



ANCHOR TRENCH - DETAIL
SCALE: NTS



NOTE: SEE NOTE 21 SHT C-105

HDPE BOOT - DETAIL
SCALE: NTS

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 31, 2001
MARK J. WEATHERLY
EXPIRES 6/30/16

NO	DESCRIPTION	BY	DATE
1	REVISION		

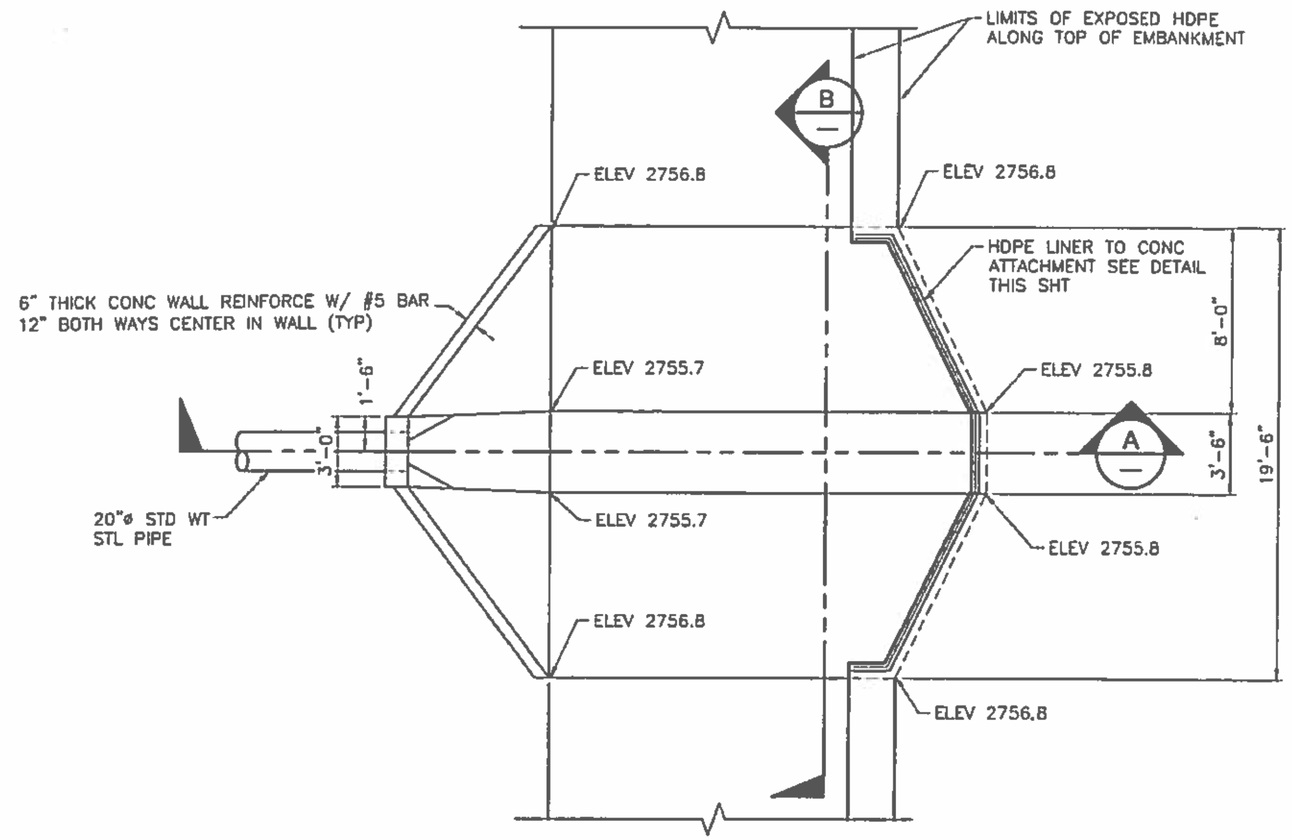
BOISE CASCADE WASTEWATER LAGOON

DETAILS

J&B PROJ # 33 16 084 C 102 REV
DRAWN BY CWM
DESIGN BY CLW
CHECKED BY CLW

LAST UPDATED 3/16/2016

SHEET NUMBER:
C-103

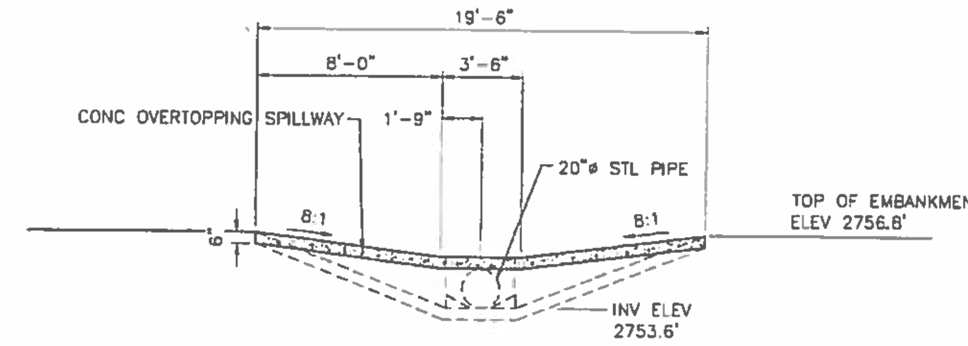


NOTE: SEE SHT C-100 FOR LOCATION

PLAN

OVERTOPPING SPILLWAY - PLAN

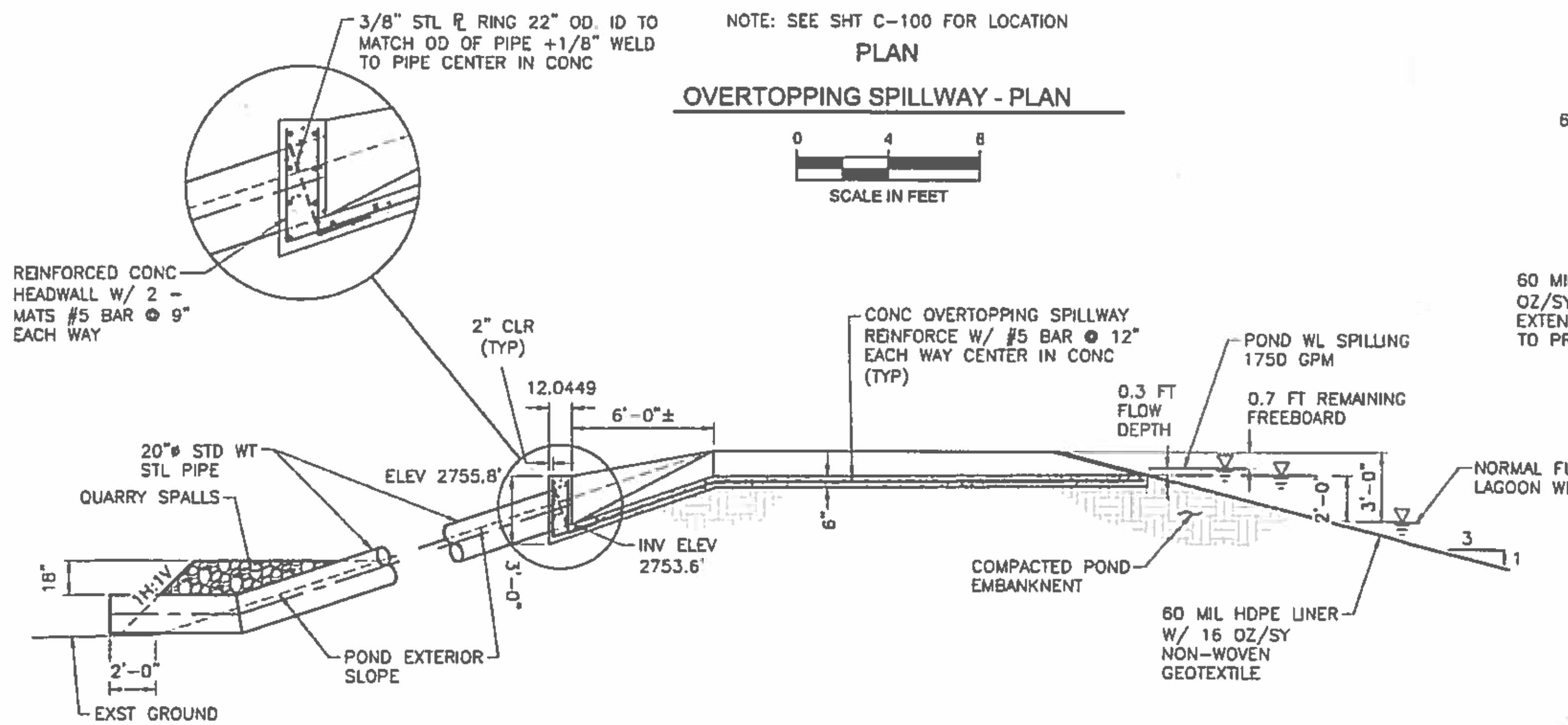
0 4 8
SCALE IN FEET



NOTE: SHOWN WITHOUT REINFORCING FOR CLARITY

B SECTION

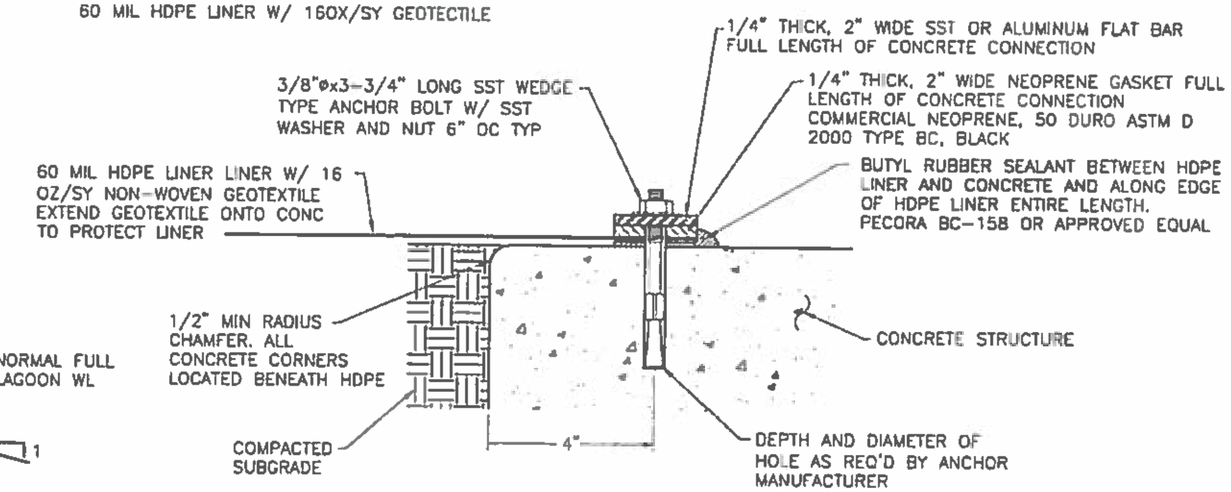
0 4 8
SCALE IN FEET



A SECTION

0 4 8
SCALE IN FEET

60 MIL HDPE LINER W/ 16OX/SY GEOTECTILE



NOTE:
CLEAN, BLOW-OUT AND DUST CONCRETE WASTE FROM HOLE PRIOR TO INSERTING WEDGE TYPE ANCHOR BOLTS

CONCRETE SURFACES AT ATTACHMENT LOCATIONS TO BE STEEL TROWEL FINISHED OR GROUND SMOOTH PRIOR TO FASTENING HDPE LINER

SST - STAINLESS STEEL TYPE 304L

HDPE LINER TO CONCRETE ATTACHMENT - DETAIL

SCALE: NTS

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DRAFT

BOISE CASCADE
WASTEWATER LAGOON

OVERTOPPING SPILLWAY
SECTIONS
AND DETAILS

DRAWN BY: GWM
DESIGN BY: GJW
CHECKED BY: GJW
LAST UPDATED: 3/18/2016
SHEET NUMBER:
C-104

GENERAL NOTES:

1. THE ENTIRE RESERVOIR SITE SHALL BE PRE-WETTED TO OPTIMUM MOISTURE (FOR COMPACTION) PRIOR TO BEGINNING EARTHWORK. PRE-WETTING SHALL BE ACCOMPLISHED USING SPRINKLERS OR WATER TRUCKS AND SHALL BEGIN AHEAD OF EXCAVATING EMBANKMENT MATERIAL A SUFFICIENT PERIOD OF TIME TO ENSURE THE MATERIAL HAS REACHED OPTIMUM MOISTURE. PRE-WETTING SHALL CONTINUE DURING EXCAVATION OF EMBANKMENT MATERIALS TO ENSURE ALL EXCAVATED MATERIAL IS AS CLOSE TO OPTIMUM MOISTURE AS PRACTICAL.

2. THE ENTIRE RESERVOIR SITE SHALL BE CLEARED AND GRUBBED OF ALL ORGANIC MATERIAL, BRUSH, SOD AND OTHER DELETERIOUS MATERIAL BEFORE BEGINNING EARTHWORK. THE PREPARED SURFACE SHALL BE APPROVED BY THE ENGINEER. ANY MATERIAL NOT MEETING THE ENGINEERS APPROVAL SHALL BE REMOVED AND REPLACE WITH STRUCTURAL FILL MATERIAL AS DIRECTED BY THE ENGINEER.

3. ALL FILL AND EMBANKMENT MATERIAL PLACED ON THE PROJECT SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT, PLUS OR MINUS 3% IN ACCORDANCE WITH ASTM D 1557 UNLESS OTHERWISE NOTED. COMPACTION SHALL BE ACCOMPLISHED USING A HEAVY STEEL-DRUM VIBRATORY ROLLER WEIGHING A MINIMUM OF 5 TONS AND EXERTING NOT LESS THAN 20,000 POUNDS AT A FREQUENCY OF NOT LESS THAN 1000 TIME PER MINUTE. THE ROLLER SHALL BE OPERATED AT SPEEDS LESS THAN 2 MPH DURING COMPACTION. THE USE OF OTHER CONSTRUCTION EQUIPMENT, INCLUDING, BUT NOT LIMITED TO, LOADERS, SCRAPERS AND DUMP TRUCKS AS COMPACTION EQUIPMENT IS NOT ACCEPTABLE.

4. NOT USED

5. THE FOUNDATION FOR THE EARTH EMBANKMENT SHALL BE PREPARED BY LEVELING, MOISTENING, AND ROLLING SO THE SURFACE MATERIAL OF THE FOUNDATION WILL BE COMPACT, FIRM AND UNYIELDING AND WILL PROVIDE A SATISFACTORY BONDING SURFACE WITH THE FIRST LAYER OF FILL. IMMEDIATELY PRIOR TO PLACING THE FIRST LAYER OF FILL ALL SURFACES UPON OR AGAINST WHICH THE EARTH FILL PORTIONS OF THE EMBANKMENT ARE TO BE PLACED SHALL BE CLEANED OF ALL LOOSE AND OBJECTIONABLE MATERIALS. THE FOUNDATION SURFACE SHALL HAVE ALL WATER REMOVED FROM DEPRESSIONS. THE SUITABILITY OF EACH PART OF THE FOUNDATION FOR PLACING EMBANKMENT MATERIAL THEREON WILL BE DETERMINED BY THE ENGINEER. SUBGRADE MATERIALS NOT MEETING THESE REQUIREMENTS, AS DETERMINED BY THE ENGINEER, SHALL BE REMOVED AND REPLACED WITH SUITABLE BACKFILL MATERIAL. PRIOR TO PLACEMENT OF ANY EMBANKMENT MATERIALS THE FOUNDATION SHALL BE APPROVED BY THE ENGINEER.

6. EMBANKMENT MATERIAL/STRUCTURAL FILL WILL COME FROM THE ON-SITE SOILS EXCAVATED FOR CONSTRUCTION OF THE RESERVOIR. THE SUITABILITY OF THE EMBANKMENT MATERIAL SHALL BE DETERMINED BY THE ENGINEER. NO BRUSH, ROOTS, SOD OR OTHER ORGANIC OR DELETERIOUS MATERIALS SHALL BE PLACED IN THE EMBANKMENT. MAXIMUM PARTICLE SIZE FOR EMBANKMENT MATERIALS SHALL BE 6 INCHES IN MAXIMUM DIMENSION. NO EMBANKMENT MATERIALS SHALL BE PLACED WHEN EITHER THE MATERIAL OR THE FOUNDATION IS FROZEN.

7. EMBANKMENT SLOPES SHALL BE OVER BUILT AND THEN TRIMMED TO FINAL DIMENSION TO ENSURE THEY ARE FULLY COMPACTED. PLACEMENT AND COMPACTION OF FILL MATERIAL ON EMBANKMENT SLOPES TO REACH THE REQUIRED DIMENSIONS WILL NOT BE ACCEPTABLE. DURING EXCAVATION OF EMBANKMENT MATERIALS DO NOT OVER CUT THE EXISTING MATERIAL.

8. AS FAR AS PRACTICAL ALL EARTH FILL MATERIAL SHALL BE BROUGHT TO PROPER MOISTURE CONTENT, PLUS OR MINUS 3%, BEFORE EXCAVATION. SUPPLEMENTARY WATER, IF REQUIRED, SHALL BE ADDED TO THE MATERIAL BY SPRINKLING AND EACH LAYER OF EARTH FILL SHALL BE CONDITIONED SO THAT THE MOISTURE IS UNIFORM THROUGHOUT THE LAYER. THE MOISTURE CONTENT OF THE EMBANKMENT MATERIAL SHALL BE MAINTAINED AT OPTIMUM, PLUS OR MINUS 3%.

9. THE EMBANKMENT MATERIAL SHALL BE PLACED IN UNIFORM HORIZONTAL LIFTS NO THICKER THAN EIGHT INCHES IN LOOSE THICKNESS. EACH EMBANKMENT LAYER SHALL BE CONSTRUCTED CONTINUOUSLY FOR ITS ENTIRE LENGTH. EACH LIFT SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 AT OPTIMUM MOISTURE CONTENT PLUS OR MINUS 3%. THE EMBANKMENT SHALL BE COMPACTED WITH SMOOTH OR SHEEP-FOOT TYPE ROLLERS, FREE VIBRATORY STEEL DRUM COMPACTION EQUIPMENT. REQUIREMENTS FOR THE ROLLER ARE OUTLINED IN NOTE 3.

10. MATERIALS NOT MEETING THE SPECIFIED MOISTURE CONTENT AND MAXIMUM DRY DENSITY REQUIREMENTS SHALL BE REMOVED, REWORKED AND REINSTALLED AS DIRECTED BY THE ENGINEER.

11. BACKFILL AROUND 26"ø PUMP STATION INLET PIPE, 10" RESERVOIR INLET PIPE AND 12" EMERGENCY SPILLWAY PIPE SHALL BE CONCRETE AS SHOWN AND CALLED FOR ON THIS SHT AND SHT C-102. THE PIPES SHALL BE BACKFILLED FROM THE TRENCH BOTTOM TO 6" ABOVE PIPE CROWN W/ CONCRETE THE FULL WIDTH OF THE TRENCH WHERE THEY ARE LOCATED BENEATH THE EMBANKMENT. CONCRETE SHALL MEET THE REQUIREMENTS OUTLINED IN THESE NOTES.

12. THE CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING PIPES DO NOT FLOAT DURING PLACEMENT OF CONCRETE BACKFILL. PIPES SHALL BE BALLASTED BY FILLING THEM WITH WATER AS NECESSARY. CONCRETE SHALL BE PLACE IN LIFTS AS REQ'D TO PREVENT THE PIPES FROM FLOATING. THE PIPES SHALL BE SUPPORTED 6" ABOVE THE TRENCH BOTTOM ON SOLID CONCRETE BLOCKS. PLACEMENT OF FILL ABOVE THE CONCRETE SHALL PROCEED ONLY AFTER THE CONCRETE HAS CURED A MINIMUM OF 5 DAYS. THE TRENCH SHALL BE FREE OF ALL LOOSE OR OTHER DELETERIOUS MATERIAL PRIOR TO PLACING CONCRETE.

13. THE HDPE LINER USED FOR THIS PROJECT SHALL BE A 60 MIL HIGH DENSITY POLYETHYLENE MEMBRANE CONSISTING OF A SINGLE PLY OF SHEETING UNLESS OTHERWISE NOTED ON THE DWG'S. THE HDPE LINING MATERIAL SHALL BE MANUFACTURED SPECIFICALLY FOR THIS TYPE OF APPLICATION AND SO THAT IT CAN BE INSTALLED WITH A MINIMUM NUMBER OF FIELD SEAMS. ALL FIELD SEAMS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. A MANUFACTURER'S REPRESENTATIVE WILL BE REQUIRED TO BE ON-SITE DURING INSTALLATION OF THE LINER. THE MANUFACTURER'S REPRESENTATIVE WILL BE REQUIRED TO PROVIDE WRITTEN APPROVAL OF THE LINING SUBGRADE AND OVER SEE INSTALLATION OF THE LINING MATERIAL. FIELD SEAMS OF LINING PANELS SHALL BE MADE USING FUSION WELDS COMPLETED USING A HOT WEDGE WELDER. WELDS SHALL BE COMPLETED AS SHOWN ON SHT C-103. THE WEDGE WELDER USED SHALL HAVE AUTOMATIC TEMPERATURE, TRAVEL SPEED AND PRESSURE ADJUSTMENTS. HOT WEDGE WELDERS SHALL BE DUAL (SPLIT) TRACK TYPE AND THE WELDS SHALL BE TESTED IN ACCORDANCE W/ GRI TEST METHOD GM6. FAILED SEAMS SHALL BE TESTED USING THE VACUUM TEST METHOD IN ACCORDANCE WITH ASTM D5641. THE LINER SHALL BE WARRANTED, ON A PRO-RATA BASIS, AGAINST MANUFACTURER'S DEFECTS FOR A PERIOD OF 5 YEARS. INSTALLATION SHALL BE WARRANTED AGAINST DEFECTS IN WORKMANSHIP FOR A PERIOD OF 1 YEAR. THE ENGINEER WILL FURNISH THE LINING INSTALLER ADDITIONAL DETAILED MATERIAL SPECIFICATIONS, SUBMITTAL REQUIREMENTS, INSTALLATION REQUIREMENTS AND TESTING REQUIREMENTS PRIOR TO THE INSTALLATION WORK BEGINNING.

14. THE SUBGRADE WHEN COMPLETED SHALL BE FREE OF ALL FOREIGN MATERIALS. ALL SHARP OBJECTS, SUCH AS STICKS, ROCK AND STONES SHALL BE REMOVED. NO ANGULAR ROCK OR ANY ROCK LARGER THAN 1/2" SHALL BE PRESENT ON THE SUBGRADE SURFACE. WHERE EMBANKMENT MATERIALS DO NOT MEET THIS REQUIREMENT PLACE A MIN 6" COMPACTED LAYER OF BEDDING MATERIAL. COMPACT TO 90% OF MAX DENSITY PER ASTM D1557. BEDDING SHALL BE NATIVE OR IMPORTED MATERIAL FREE OF ALL ROCK, AND APPROVED BY THE ENGINEER. WHERE ROCK 1 INCH OR SMALLER IS PRESENT ON THE SUBGRADE SURFACE OR PROTRUDING 1 INCH OR LESS FROM THE SUBGRADE THE BEDDING MAY BE REPLACED WITH A 16 OZ/SY NON-WOVEN GEOTEXTILE IF APPROVED BY THE ENGINEER. ROCK AND PROTRUSIONS MUST BE ISOLATED AND NOT CONTINUOUS ACROSS THE SURFACE TO USE GEOTEXTILE.

15. PRIOR TO PLACING THE HDPE LINER, ALL PIPE PENETRATIONS AND CONCRETE STRUCTURES SHALL BE INSTALLED AT THE LOCATIONS SHOWN.

16. ALL CONCRETE STRUCTURES AND PIPE ENCASEMENTS SHALL BE CONSTRUCTED USING A STANDARD 3000 PSI CONCRETE MIX DESIGN PROVIDED BY A LOCAL READY-MIX CONCRETE SUPPLIER. THE CONCRETE SHALL BE MANUFACTURED USING 3/4-INCH MAX SIZE AGGREGATE, 0.50 MAX WATER CEMENT RATIO, 5 PERCENT PLUS OR MINUS 1 PERCENT AIR CONTENT, AND HAVE A 4-INCH MAXIMUM SLUMP AT TIME OF PLACEMENT.

17. PRIOR TO PLACING ANY CONCRETE THE FORMS AND REINFORCING SHALL HAVE BEEN INSPECTED AND APPROVED BY THE ENGINEER. ALL REBAR SHALL BE SUPPORTED ON DOBIES, CHAIRS OR OTHER APPROVED REBAR SUPPORTS. BACKFILL PLACED WITHIN FIVE (5) FEET OF CONCRETE STRUCTURES SHALL BE COMPACTED USING VIBRATORY PLATE OR PNEUMATIC JUMPING JACK TYPE EQUIPMENT APPROVED BY THE ENGINEER. VIBRATORY PLATE COMPACTORS SHALL HAVE A MINIMUM STATIC WEIGHT OF 270 POUNDS AND A MINIMUM DYNAMIC FORCE OF 1,000 LBS. EACH LIFT SHALL BE COMPACTED TO A MINIMUM 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 AT OPTIMUM MOISTURE CONTENT PLUS OR MINUS 3%.

18. THE MINIMUM CLEARANCE FROM ANY CONCRETE SURFACE, EXPOSED TO GROUND OR TO THE WEATHER, TO METAL REINFORCEMENT WILL NOT BE LESS THAN 3" OF CONCRETE.

19. CONCRETE EDGES ADJACENT TO THE HDPE LINER SHALL BE ROUNDED USING A STANDARD EDGING TOOL. ANY REMAINING ROUGH OR ANGULAR EDGES SHALL BE GROUND SMOOTH. ALL CONCRETE SURFACES IN CONTACT WITH THE HDPE LINER SHALL HAVE A SMOOTH STEEL TROWEL FINISH. A SECOND SHEET OF HDPE LINER OR MINIMUM 10 OZ/SY NON-WOVEN GEOTEXTILE SHALL BE PLACED BETWEEN ALL CONCRETE AND THE PRIMARY HDPE LINER.

20. THE LINER WILL BE CONNECTED TO THE PIPE PENETRATIONS W/ CONCRETE COLLARS AND CONCRETE STRUCTURES USING CONTINUOUSLY WELDED POLYETHYLENE EMBEDMENT STRIPS AS DETAILED ON THE DRAWINGS. THE LINER MANUFACTURER MUST APPROVE ALL CONNECTIONS AND TERMINATIONS. WHERE CONCRETE AND SCREEN SUPPORTS ARE POURED OR PLACED DIRECTLY ON THE HDPE LINER A SECOND SHEET OF HDPE LINER SHALL BE INSTALLED AS CALLED OUT ON THE DRAWING SHT'S. HDPE PIPE BOOTS SHALL BE USED ON PIPE PENETRATIONS. THE PRIMARY LINER SHALL BE WELDED TO THE EMBEDMENT STRIPS. PIPE BOOTS SHALL BE WELDED TO THE PRIMARY LINER BEYOND THE EMBEDMENT STRIPS.

21. ALL FIELD SEAMS OF THE HDPE LINING AND CONNECTIONS OF THE HDPE LINING TO PIPE PROTRUSIONS AND CONCRETE STRUCTURES SHALL BE WATERTIGHT AND MUST BE BOTH INSPECTED BY THE ENGINEER AND TESTED AS SPECIFIED IN THE HDPE QA/QC MANUAL.

22. IF THE WORK TAKES PLACE WHEN FREEZING WEATHER MAY BE ENCOUNTERED. CONCRETE PLACED OR CURING WHEN THE AMBIENT TEMPERATURE IS BELOW 32° F SHALL BE PROTECTED FROM FREEZING WITH PLASTIC, STRAW, EARTH, BLANKETS OR OTHER SUITABLE INSULATING MATERIAL. NO FROZEN MATERIAL SHALL BE INCORPORATED INTO THE RESERVOIR EMBANKMENTS. IF WORK TAKES PLACE DURING FREEZING WEATHER ALL FROZEN MATERIALS SHALL BE REMOVED FROM THE SITE WHERE FILL IS TO BE PLACED AND THOSE AREAS WHERE FILL MATERIAL WILL BE EXCAVATED PRIOR TO UNDERTAKING ANY WORK. HDPE LINING SHALL BE PLACED ONLY WHEN THE AMBIENT TEMPERATURE IS ABOVE 32° F. THE LINER SHALL NOT BE INSTALLED ON A FROZEN SUBGRADE. FIELD SEAMING OF THE LINER SHALL TAKE PLACE ONLY WHEN THE AMBIENT TEMPERATURE IS ABOVE 50° F. IF THE TEMPERATURE REQUIREMENTS FOR LINER INSTALLATION AND FIELD SEAMING CANNOT BE MET THE INSTALLER SHALL SUBMIT A COLD WEATHER INSTALLATION AND SEAMING PLAN FOR APPROVAL BY THE ENGINEER.

23. BOOTS SHALL BE SEALED TO PIPE USING AN APPROVED ADHESIVE AND GASKET MATERIAL BENEATH EACH OF THE TWO BAND CLAMPS. BAND CLAMPS SHALL BE STAINLESS STEEL.

24. CDF DESIGN:
CDF USED AS PIPE BACKFILL ON THE PROJECT SHALL HAVE THE FOLLOWING MIX
- PORTLAND CEMENT TYPE I TO II – 282 LBS PER CY
- FLY ASH – 188 LBS PER CY
- AGGREGATE 3/8" TO #8 – 460 LBS PER CY
- SAND – 2598 LBS PER CY
- WATER – 350 LBS PER CY

SLUMP SHALL NOT EXCEED 7 INCHES. SAND USED IN THE CDF SHALL BE FINE SAND THE CDF MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

25. CONCRETE DESIGN:
CONCRETE USED AS PIPE BACKFILL ON THE PROJECT SHALL HAVE A MIN 28 DAY COMPRESSIVE STRENGTH OF 6000 PSI AND MEET THE FOLLOWING MIX DESIGN REQ'MNTS UNLESS OTHERWISE APPROVED BY THE ENGINEER:
- PORTLAND CEMENT TYPE I TO II – 705 LBS PER CY
- AGGREGATE 3/4" TO #4 – 1900 LBS PER CY
- FINE AGGREGATE – 1095 LBS PER CY
- WATER – 250 LBS PER CY
- AIR – 5%, ±1.5%
- SHRINKAGE REDUCER – MASTERBUILDERS – MASTERLIFE SRA 20 – 18.2 OZ/CWT

SLUMP SHALL NOT EXCEED 4 INCHES. WATER/CEMENT RATIO SHALL NOT EXCEED 0.4 CONCRETE MIX DESIGN SHALL BE APPROVED BY THE ENGINEER

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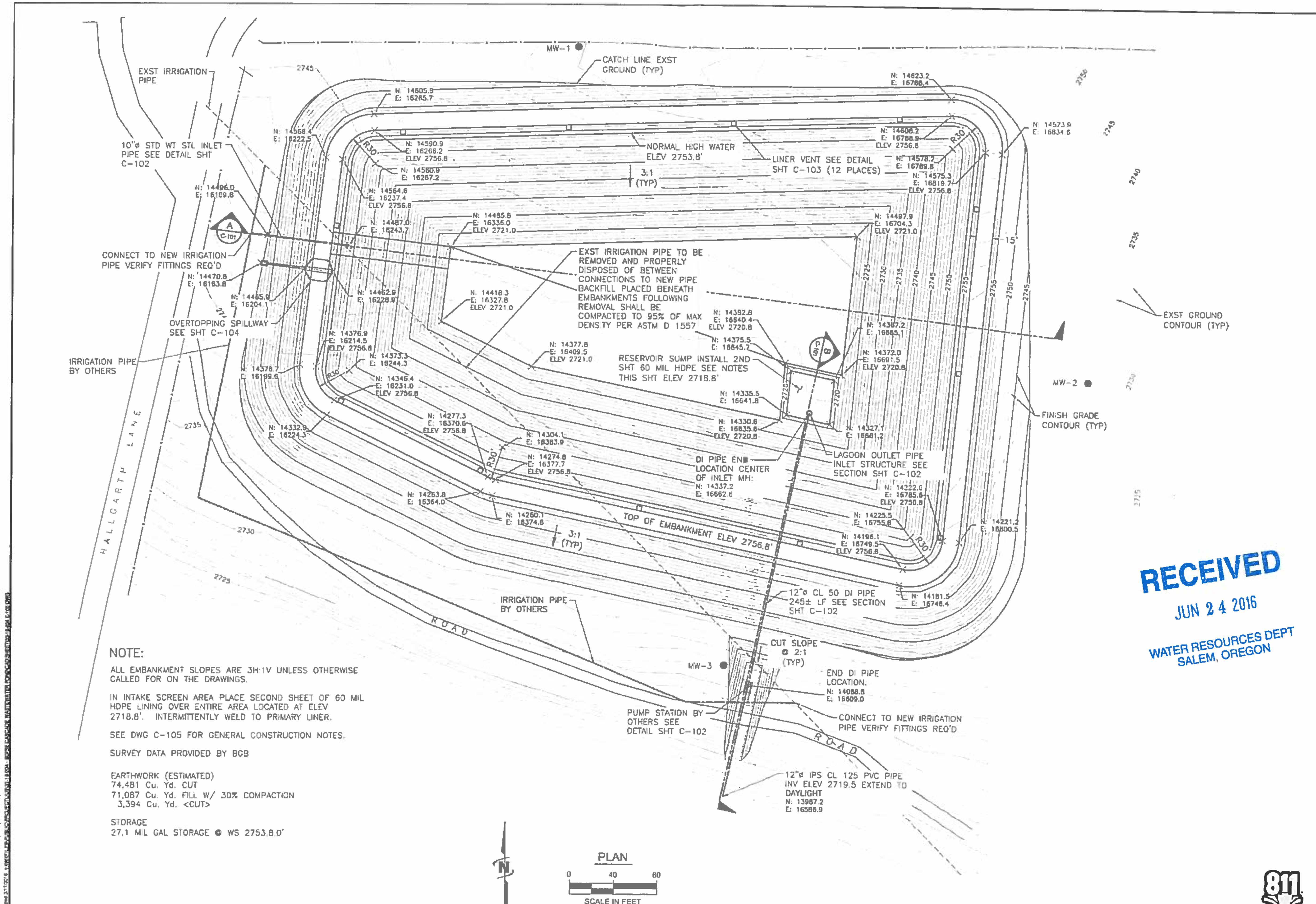
EXPIRES 6/30/16

BOISE CASCADE
WASTEWATER LAGOON

CONSTRUCTION NOTES

Know what's below. Call before you dig. 811

SHEET NUMBER:
C-105



NOTE:

ALL EMBANKMENT SLOPES ARE 3H:1V UNLESS OTHERWISE CALLED FOR ON THE DRAWINGS.

IN INTAKE SCREEN AREA PLACE SECOND SHEET OF 60 MIL HDPE LINING OVER ENTIRE AREA LOCATED AT ELEV 2718.8'. INTERMITTENTLY WELD TO PRIMARY LINER.

SEE DWG C-105 FOR GENERAL CONSTRUCTION NOTES.

SURVEY DATA PROVIDED BY BGB

EARTHWORK (ESTIMATED)
74,481 Cu. Yd. CUT
71,087 Cu. Yd. FILL W/ 30% COMPACTION
3,394 Cu. Yd. <CUT>

STORAGE
27.1 MIL GAL STORAGE @ WS 2753.8 0'

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WATER RESOURCES DEPT
SALEM, OREGON

R-88249

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EXPIRES 6/30/16

BOISE CASCADE
WASTEWATER LAGOON

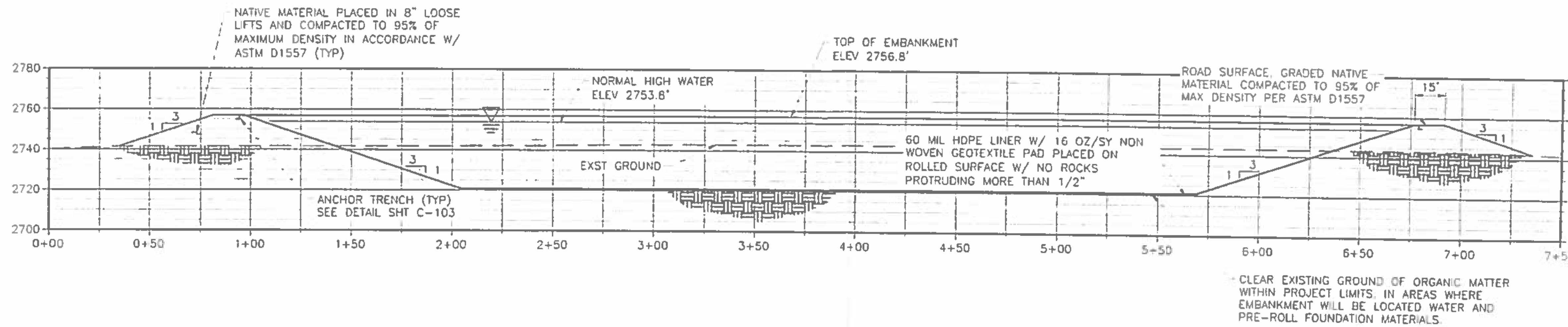
PLAN

FILE 33-16-004 C-100
JUB PROJ # 33-16-004
DRAWN BY GWM
DESIGN BY GJW
CHECKED BY GJW

LAST UPDATED 3/17/2016

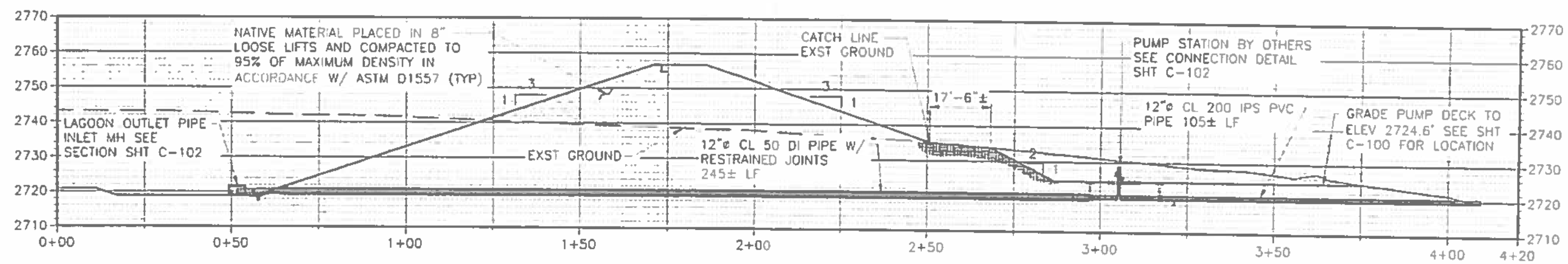
SHEET NUMBER:
C-100

811 Know what's below. Call before you dig.



(A) SECTION

0 30 60
SCALE IN FEET



(B) SECTION

0 20 40
SCALE IN FEET

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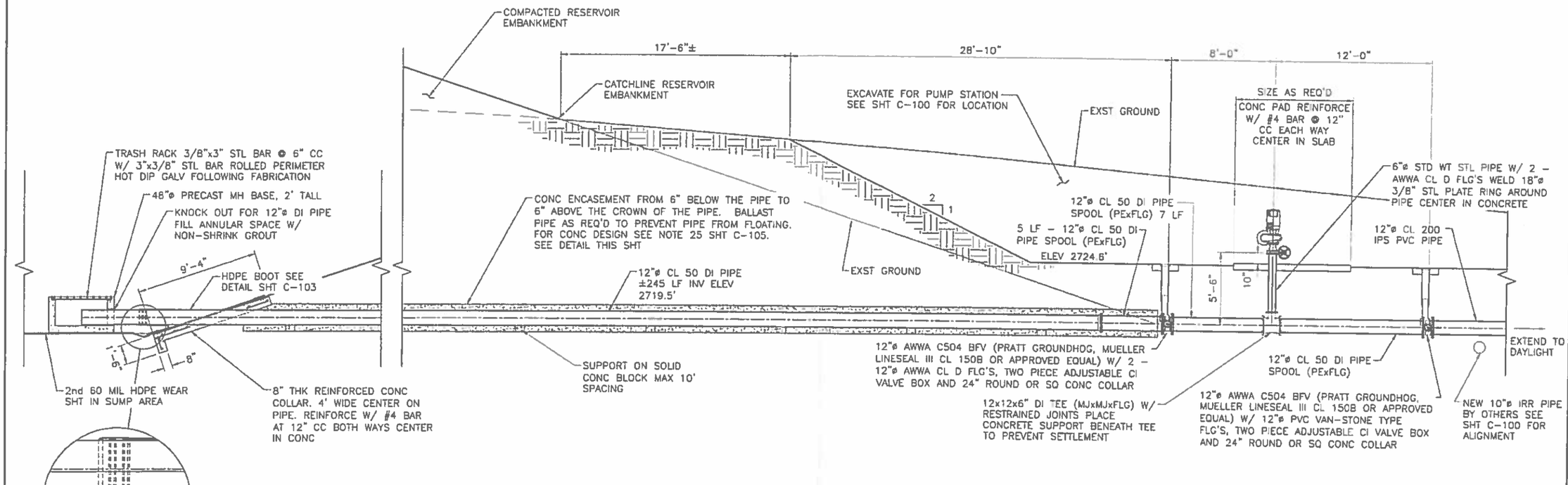
EXPIRES 6/30/16

BOISE CASCADE WASTEWATER LAGOON

SECTIONS

SHEET NUMBER
C-101

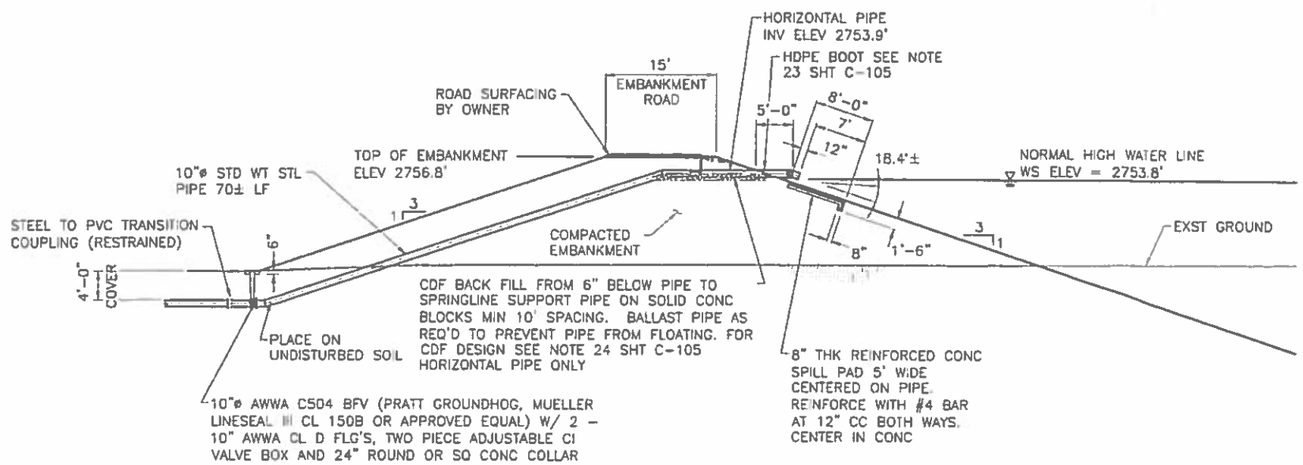
Know what's below. Call before you dig.



LAGOON OUTLET PIPE DETAIL

0 4 8

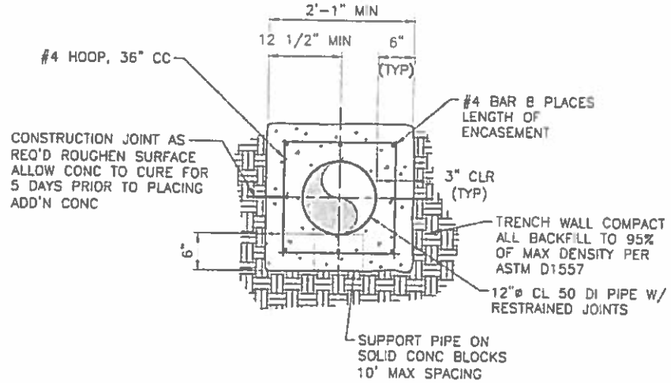
SCALE IN FEET



LAGOON INLET PIPE DETAIL

0 10 20

SCALE IN FEET



NOTE: PLACE CONC AROUND PIPE AGAINST UNDISTURBED EARTH OR BACKFILL MATERIAL COMPACTED TO 95% OF MAX DENSITY PER ASTM D1557

BALLAST PIPE AS REQ'D TO PREVENT PIPE FROM FLOATING

CONCRETE ENCASEMENT - DETAIL

0 1 2

SCALE IN FEET

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REGISTERED PROFESSIONAL ENGINEER
OREGON
GARY J. WESTPHAL
EXPIRES: 6/30/16

NO	DESCRIPTION	BY	DATE
	REVISION		

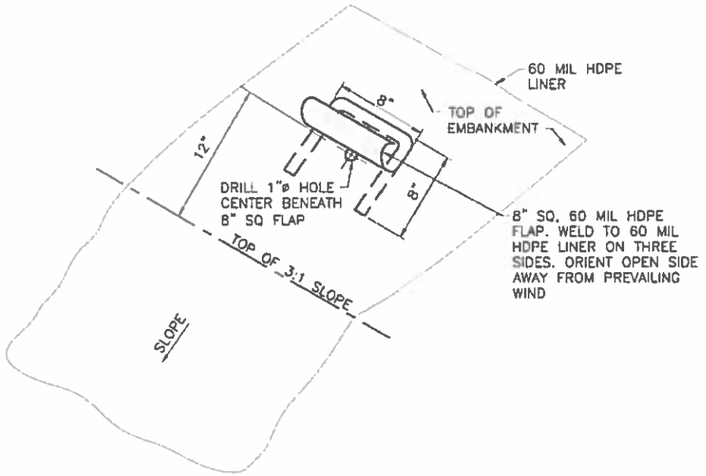
BOISE CASCADE WASTEWATER LAGOON

PIPE SECTIONS

FILE	33 16 004 C 102
JUB PROJ #	33 16 004
DRAWN BY	GWM
DESIGN BY	GJW
CHECKED BY	GJW
LAST UPDATED	3/18/2016

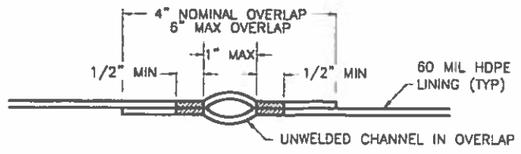
SHEET NUMBER:
C-102

Plot Date: 6/23/2016 11:49 AM Plotted By: Gary J. Westphal
Date Created: 3/18/2016 N:\WATER\BOISE CASCADE WASTEWATER LAGOON\33 16 004 - BOISE CASCADE WASTEWATER LAGOON\CAD\C-102.DWG



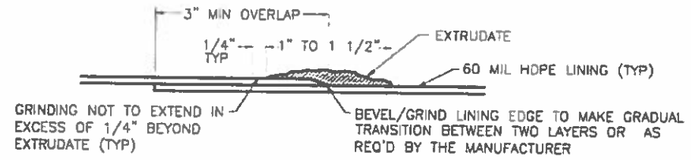
NOTE:
INSTALL VENTS @ 150± FT SPACING AROUND LINER PERIMETER (12 PLACES) SEE SHT C-100

LINER VENT - DETAIL
SCALE: NTS



NOTE:
AIR PRESSURE TESTING IS THE PRIMARY METHOD FOR TESTING FUSION WELDING

FUSION WELD - DETAIL
SCALE: NTS

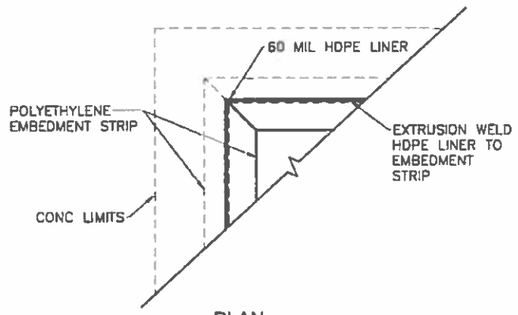


NOTE:
LINER SHEETS TO BE TACK WELDED TOGETHER AT OVERLAP TO FORM TEMPORARY BOND PRIOR TO WELDING

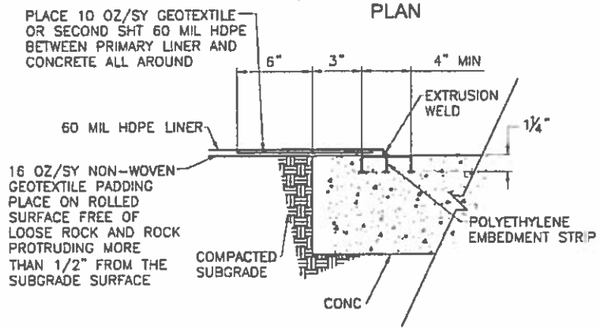
GRINDING NOT TO EXCEED 1/4" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE MUST BE TAKEN TO ENSURE TOO MUCH MATERIAL IS NOT REMOVED DURING GRINDING

VACUUM TESTING WILL BE THE NON-DESTRUCTIVE TEST METHOD FOR EXTRUSION WELDS

EXTRUSION WELD - DETAIL
SCALE: NTS



PLAN

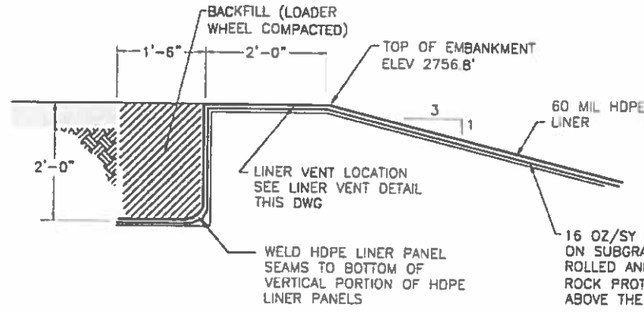


SECTION
CONCRETE CONNECTION

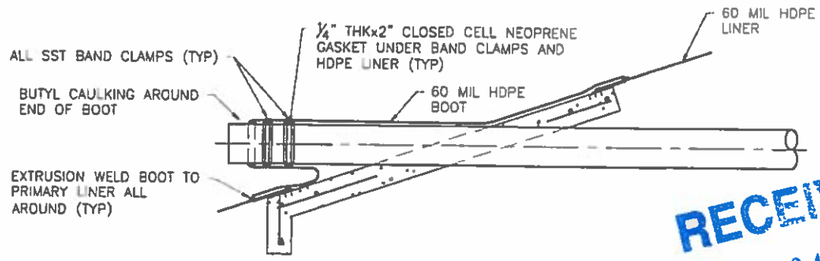
NOTE:
EMBEDMENT STRIPS TO BE FULLY WELDED AT ALL JOINTS AND CORNERS PRIOR TO EMBEDDING IN CONCRETE.

EMBEDMENT STRIPS SHALL BE MIN 4" IN WIDTH W/ THREE 1.25" MIN EMBEDS AND POLYETHYLENE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

HDPE LINER TO CONCRETE ATTACHMENT - DETAIL
SCALE: NTS



ANCHOR TRENCH - DETAIL
SCALE: NTS



NOTE: SEE NOTE 21 SHT C-105

HDPE BOOT - DETAIL
SCALE: NTS

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2005
GARY J. WEATHERLY
EXPIRES: 6/30/16

NO	DESCRIPTION	REVISION	BY	DATE

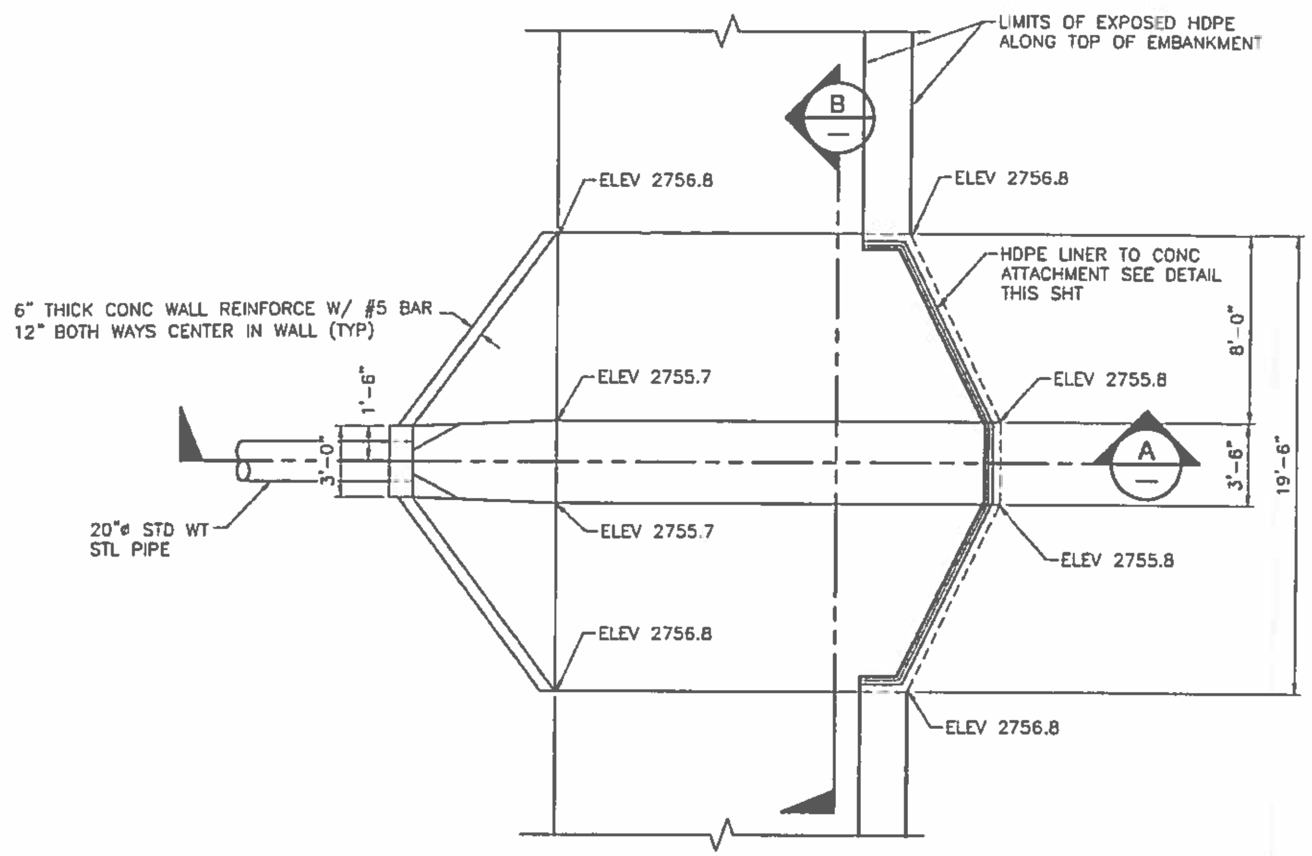
BOISE CASCADE
WASTEWATER LAGOON

DETAILS

FILE	33 18 004 C 103 REV
JUB PROJ #	33 18 004
DRAWN BY	DWM
DESIGN BY	CLW
CHECKED BY	CLW
LAST UPDATED	3/16/2016

SHEET NUMBER
C-103

Plot Date: 3/16/2016 11:03 AM Plotted By: Gary J. Weatherly
Date Created: 3/18/2016 \\grfiles1\projects\BOISE CASCADE\WASTEWATER\33 18 004 - BOISE CASCADE WASTEWATER\DESIGN\CAD\33 18 004 C 103 REV.DWG

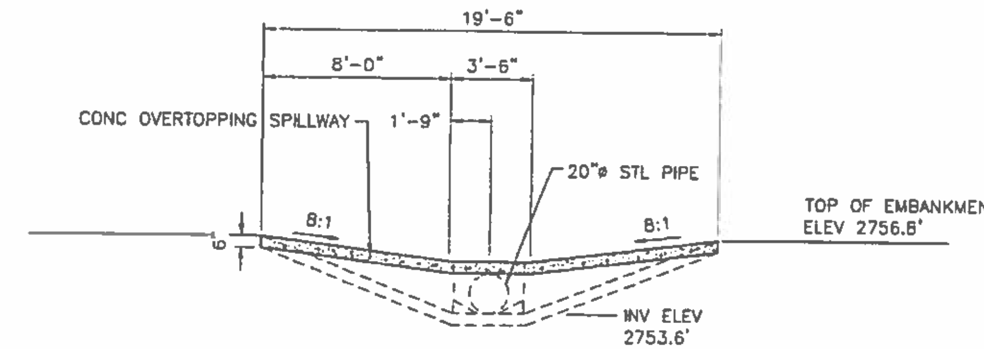


NOTE: SEE SHT C-100 FOR LOCATION

PLAN

OVERTOPPING SPILLWAY - PLAN

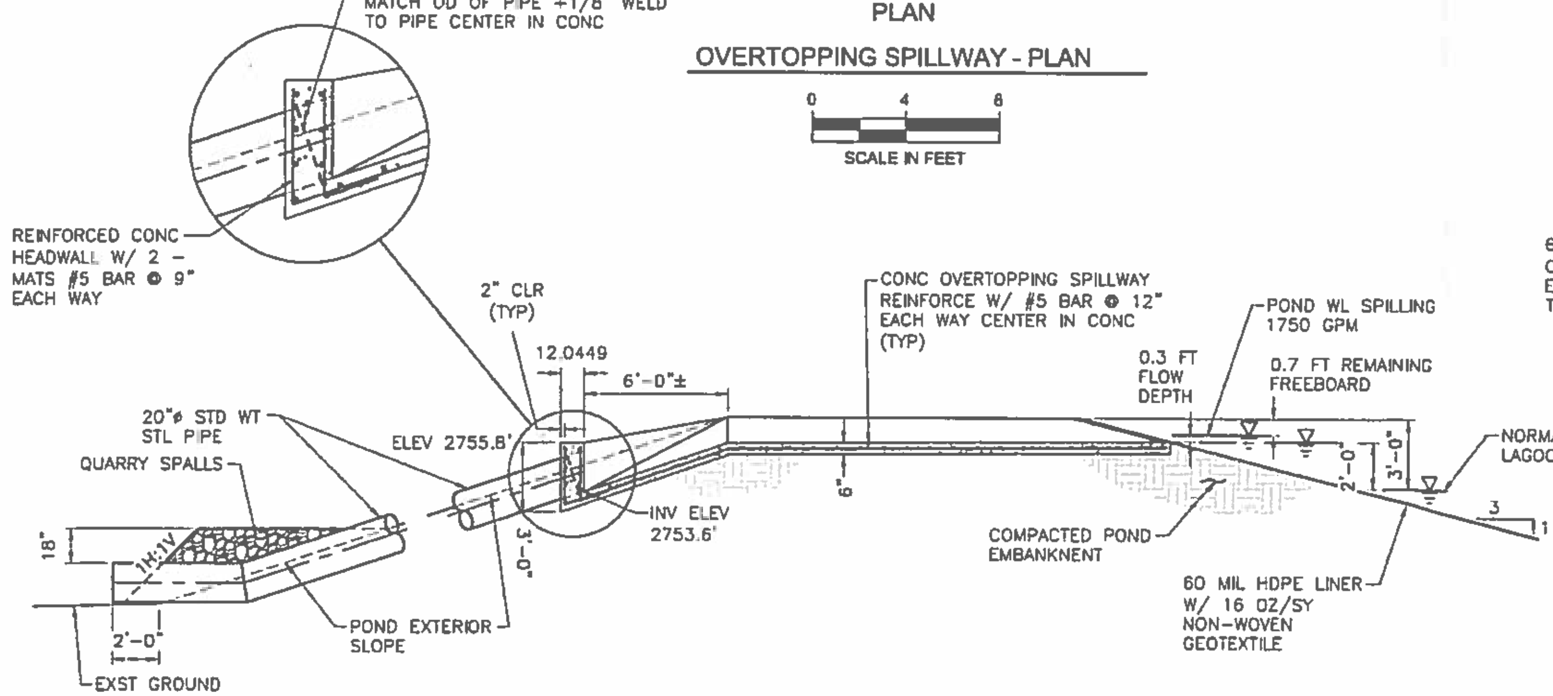
0 4 8
SCALE IN FEET



NOTE: SHOWN WITHOUT REINFORCING FOR CLAIRTY

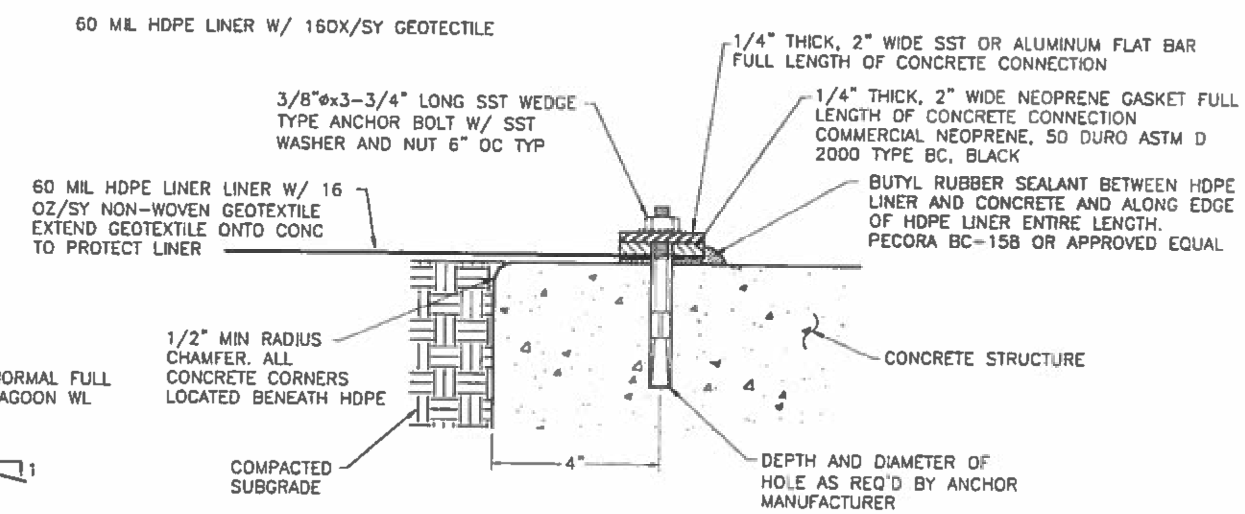
B SECTION

0 4 8
SCALE IN FEET



A SECTION

0 4 8
SCALE IN FEET



NOTE:
CLEAN, BLOW-OUT AND DUST CONCRETE WASTE FROM HOLE PRIOR TO INSERTING WEDGE TYPE ANCHOR BOLTS

CONCRETE SURFACES AT ATTACHMENT LOCATIONS TO BE STEEL TROWEL FINISHED OR GROUND SMOOTH PRIOR TO FASTENING HDPE LINER

SST - STAINLESS STEEL TYPE 304L

HDPE LINER TO CONCRETE ATTACHMENT - DETAIL

SCALE: NTS

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DRAFT

BOISE CASCADE WASTEWATER LAGOON

OVERTOPPING SPILLWAY SECTIONS AND DETAILS

SHEET NUMBER: C-104

GENERAL NOTES:

1. THE ENTIRE RESERVOIR SITE SHALL BE PRE-WETTED TO OPTIMUM MOISTURE (FOR COMPACTION) PRIOR TO BEGINNING EARTHWORK. PRE-WETTING SHALL BE ACCOMPLISHED USING SPRINKLERS OR WATER TRUCKS AND SHALL BEGIN AHEAD OF EXCAVATING EMBANKMENT MATERIAL A SUFFICIENT PERIOD OF TIME TO ENSURE THE MATERIAL HAS REACHED OPTIMUM MOISTURE. PRE-WETTING SHALL CONTINUE DURING EXCAVATION OF EMBANKMENT MATERIALS TO ENSURE ALL EXCAVATED MATERIAL IS AS CLOSE TO OPTIMUM MOISTURE AS PRACTICAL.

2. THE ENTIRE RESERVOIR SITE SHALL BE CLEARED AND GRUBBED OF ALL ORGANIC MATERIAL, BRUSH, SOD AND OTHER DELETERIOUS MATERIAL BEFORE BEGINNING EARTHWORK. THE PREPARED SURFACE SHALL BE APPROVED BY THE ENGINEER. ANY MATERIAL NOT MEETING THE ENGINEERS APPROVAL SHALL BE REMOVED AND REPLACE WITH STRUCTURAL FILL MATERIAL AS DIRECTED BY THE ENGINEER.

3. ALL FILL AND EMBANKMENT MATERIAL PLACED ON THE PROJECT SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT, PLUS OR MINUS 3% IN ACCORDANCE WITH ASTM D 1557 UNLESS OTHERWISE NOTED. COMPACTION SHALL BE ACCOMPLISHED USING A HEAVY STEEL-DRUM VIBRATORY ROLLER WEIGHING A MINIMUM OF 5 TONS AND EXERTING NOT LESS THAN 20,000 POUNDS AT A FREQUENCY OF NOT LESS THAN 1000 TIME PER MINUTE. THE ROLLER SHALL BE OPERATED AT SPEEDS LESS THAN 2 MPH DURING COMPACTION. THE USE OF OTHER CONSTRUCTION EQUIPMENT, INCLUDING, BUT NOT LIMITED TO, LOADERS, SCRAPERS AND DUMP TRUCKS AS COMPACTION EQUIPMENT IS NOT ACCEPTABLE.

4. NOT USED

5. THE FOUNDATION FOR THE EARTH EMBANKMENT SHALL BE PREPARED BY LEVELING, MOISTENING, AND ROLLING SO THE SURFACE MATERIAL OF THE FOUNDATION WILL BE COMPACT, FIRM AND UNYIELDING AND WILL PROVIDE A SATISFACTORY BONDING SURFACE WITH THE FIRST LAYER OF FILL. IMMEDIATELY PRIOR TO PLACING THE FIRST LAYER OF FILL ALL SURFACES UPON OR AGAINST WHICH THE EARTH FILL PORTIONS OF THE EMBANKMENT ARE TO BE PLACED SHALL BE CLEANED OF ALL LOOSE AND OBJECTIONABLE MATERIALS. THE FOUNDATION SURFACE SHALL HAVE ALL WATER REMOVED FROM DEPRESSIONS. THE SUITABILITY OF EACH PART OF THE FOUNDATION FOR PLACING EMBANKMENT MATERIAL THEREON WILL BE DETERMINED BY THE ENGINEER. SUBGRADE MATERIALS NOT MEETING THESE REQUIREMENTS, AS DETERMINED BY THE ENGINEER, SHALL BE REMOVED AND REPLACED WITH SUITABLE BACKFILL MATERIAL. PRIOR TO PLACEMENT OF ANY EMBANKMENT MATERIALS THE FOUNDATION SHALL BE APPROVED BY THE ENGINEER.

6. EMBANKMENT MATERIAL/STRUCTURAL FILL WILL COME FROM THE ON-SITE SOILS EXCAVATED FOR CONSTRUCTION OF THE RESERVOIR. THE SUITABILITY OF THE EMBANKMENT MATERIAL SHALL BE DETERMINED BY THE ENGINEER. NO BRUSH, ROOTS, SOD OR OTHER ORGANIC OR DELETERIOUS MATERIALS SHALL BE PLACED IN THE EMBANKMENT. MAXIMUM PARTICLE SIZE FOR EMBANKMENT MATERIALS SHALL BE 6 INCHES IN MAXIMUM DIMENSION. NO EMBANKMENT MATERIALS SHALL BE PLACED WHEN EITHER THE MATERIAL OR THE FOUNDATION IS FROZEN.

7. EMBANKMENT SLOPES SHALL BE OVER BUILT AND THEN TRIMMED TO FINAL DIMENSION TO ENSURE THEY ARE FULLY COMPACTED. PLACEMENT AND COMPACTION OF FILL MATERIAL ON EMBANKMENT SLOPES TO REACH THE REQUIRED DIMENSIONS WILL NOT BE ACCEPTABLE. DURING EXCAVATION OF EMBANKMENT MATERIALS DO NOT OVER CUT THE EXISTING MATERIAL.

8. AS FAR AS PRACTICAL ALL EARTH FILL MATERIAL SHALL BE BROUGHT TO PROPER MOISTURE CONTENT, PLUS OR MINUS 3%, BEFORE EXCAVATION. SUPPLEMENTARY WATER, IF REQUIRED, SHALL BE ADDED TO THE MATERIAL BY SPRINKLING AND EACH LAYER OF EARTH FILL SHALL BE CONDITIONED SO THAT THE MOISTURE IS UNIFORM THROUGHOUT THE LAYER. THE MOISTURE CONTENT OF THE EMBANKMENT MATERIAL SHALL BE MAINTAINED AT OPTIMUM, PLUS OR MINUS 3%.

9. THE EMBANKMENT MATERIAL SHALL BE PLACED IN UNIFORM HORIZONTAL LIFTS NO THICKER THAN EIGHT INCHES IN LOOSE THICKNESS. EACH EMBANKMENT LAYER SHALL BE CONSTRUCTED CONTINUOUSLY FOR ITS ENTIRE LENGTH. EACH LIFT SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 AT OPTIMUM MOISTURE CONTENT PLUS OR MINUS 3%. THE EMBANKMENT SHALL BE COMPACTED WITH SMOOTH OR SHEEP-FOOT TYPE ROLLERS, FREE VIBRATORY STEEL DRUM COMPACTION EQUIPMENT. REQUIREMENTS FOR THE ROLLER ARE OUTLINED IN NOTE 3.

10. MATERIALS NOT MEETING THE SPECIFIED MOISTURE CONTENT AND MAXIMUM DRY DENSITY REQUIREMENTS SHALL BE REMOVED, REWORKED AND REINSTALLED AS DIRECTED BY THE ENGINEER.

11. BACKFILL AROUND 26"ø PUMP STATION INLET PIPE, 10" RESERVOIR INLET PIPE AND 12" EMERGENCY SPILLWAY PIPE SHALL BE CONCRETE AS SHOWN AND CALLED FOR ON THIS SHT AND SHT C-102. THE PIPES SHALL BE BACKFILLED FROM THE TRENCH BOTTOM TO 6" ABOVE PIPE CROWN W/ CONCRETE THE FULL WIDTH OF THE TRENCH WHERE THEY ARE LOCATED BENEATH THE EMBANKMENT. CONCRETE SHALL MEET THE REQUIREMENTS OUTLINED IN THESE NOTES.

12. THE CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING PIPES DO NOT FLOAT DURING PLACEMENT OF CONCRETE BACKFILL. PIPES SHALL BE BALLASTED BY FILLING THEM WITH WATER AS NECESSARY. CONCRETE SHALL BE PLACE IN LIFTS AS REQ'D TO PREVENT THE PIPES FROM FLOATING. THE PIPES SHALL BE SUPPORTED 6" ABOVE THE TRENCH BOTTOM ON SOLID CONCRETE BLOCKS. PLACEMENT OF FILL ABOVE THE CONCRETE SHALL PROCEED ONLY AFTER THE CONCRETE HAS CURED A MINIMUM OF 5 DAYS. THE TRENCH SHALL BE FREE OF ALL LOOSE OR OTHER DELETERIOUS MATERIAL PRIOR TO PLACING CONCRETE.

13. THE HDPE LINER USED FOR THIS PROJECT SHALL BE A 60 MIL HIGH DENSITY POLYETHYLENE MEMBRANE CONSISTING OF A SINGLE PLY OF SHEETING UNLESS OTHERWISE NOTED ON THE DWG'S. THE HDPE LINING MATERIAL SHALL BE MANUFACTURED SPECIFICALLY FOR THIS TYPE OF APPLICATION AND SO THAT IT CAN BE INSTALLED WITH A MINIMUM NUMBER OF FIELD SEAMS. ALL FIELD SEAMS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. A MANUFACTURER'S REPRESENTATIVE WILL BE REQUIRED TO BE ON-SITE DURING INSTALLATION OF THE LINER. THE MANUFACTURER'S REPRESENTATIVE WILL BE REQUIRED TO PROVIDE WRITTEN APPROVAL OF THE LINING SUBGRADE AND OVER SEE INSTALLATION OF THE LINING MATERIAL. FIELD SEAMS OF LINING PANELS SHALL BE MADE USING FUSION WELDS COMPLETED USING A HOT WEDGE WELDER. WELDS SHALL BE COMPLETED AS SHOWN ON SHT C-103. THE WEDGE WELDER USED SHALL HAVE AUTOMATIC TEMPERATURE, TRAVEL SPEED AND PRESSURE ADJUSTMENTS. HOT WEDGE WELDERS SHALL BE DUAL (SPLIT) TRACK TYPE AND THE WELDS SHALL BE TESTED IN ACCORDANCE W/ GRI TEST METHOD GM6. FAILED SEAMS SHALL BE TESTED USING THE VACUUM TEST METHOD IN ACCORDANCE WITH ASTM D5641. THE LINER SHALL BE WARRANTED, ON A PRO-RATA BASIS, AGAINST MANUFACTURER'S DEFECTS FOR A PERIOD OF 5 YEARS. INSTALLATION SHALL BE WARRANTED AGAINST DEFECTS IN WORKMANSHIP FOR A PERIOD OF 1 YEAR. THE ENGINEER WILL FURNISH THE LINING INSTALLER ADDITIONAL DETAILED MATERIAL SPECIFICATIONS, SUBMITTAL REQUIREMENTS, INSTALLATION REQUIREMENTS AND TESTING REQUIREMENTS PRIOR TO THE INSTALLATION WORK BEGINNING.

14. THE SUBGRADE WHEN COMPLETED SHALL BE FREE OF ALL FOREIGN MATERIALS. ALL SHARP OBJECTS, SUCH AS STICKS, ROCK AND STONES SHALL BE REMOVED. NO ANGULAR ROCK OR ANY ROCK LARGER THAN 1/2" SHALL BE PRESENT ON THE SUBGRADE SURFACE. WHERE EMBANKMENT MATERIALS DO NOT MEET THIS REQUIREMENT PLACE A MIN 6" COMPACTED LAYER OF BEDDING MATERIAL. COMPACT TO 90% OF MAX DENSITY PER ASTM D1557. BEDDING SHALL BE NATIVE OR IMPORTED MATERIAL FREE OF ALL ROCK, AND APPROVED BY THE ENGINEER. WHERE ROCK 1 INCH OR SMALLER IS PRESENT ON THE SUBGRADE SURFACE OR PROTRUDING 1 INCH OR LESS FROM THE SUBGRADE THE BEDDING MAY BE REPLACED WITH A 16 OZ/SY NON-WOVEN GEOTEXTILE IF APPROVED BY THE ENGINEER. ROCK AND PROTRUSIONS MUST BE ISOLATED AND NOT CONTINUOUS ACROSS THE SURFACE TO USE GEOTEXTILE.

15. PRIOR TO PLACING THE HDPE LINER, ALL PIPE PENETRATIONS AND CONCRETE STRUCTURES SHALL BE INSTALLED AT THE LOCATIONS SHOWN.

16. ALL CONCRETE STRUCTURES AND PIPE ENCASEMENTS SHALL BE CONSTRUCTED USING A STANDARD 3000 PSI CONCRETE MIX DESIGN PROVIDED BY A LOCAL READY-MIX CONCRETE SUPPLIER. THE CONCRETE SHALL BE MANUFACTURED USING 3/4-INCH MAX SIZE AGGREGATE, 0.50 MAX WATER CEMENT RATIO, 5 PERCENT PLUS OR MINUS 1 PERCENT AIR CONTENT, AND HAVE A 4-INCH MAXIMUM SLUMP AT TIME OF PLACEMENT.

17. PRIOR TO PLACING ANY CONCRETE THE FORMS AND REINFORCING SHALL HAVE BEEN INSPECTED AND APPROVED BY THE ENGINEER. ALL REBAR SHALL BE SUPPORTED ON DOBIES, CHAIRS OR OTHER APPROVED REBAR SUPPORTS. BACKFILL PLACED WITHIN FIVE (5) FEET OF CONCRETE STRUCTURES SHALL BE COMPACTED USING VIBRATORY PLATE OR PNEUMATIC JUMPING JACK TYPE EQUIPMENT APPROVED BY THE ENGINEER. VIBRATORY PLATE COMPACTORS SHALL HAVE A MINIMUM STATIC WEIGHT OF 270 POUNDS AND A MINIMUM DYNAMIC FORCE OF 1,000 LBS. EACH LIFT SHALL BE COMPACTED TO A MINIMUM 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 AT OPTIMUM MOISTURE CONTENT PLUS OR MINUS 3%.

18. THE MINIMUM CLEARANCE FROM ANY CONCRETE SURFACE, EXPOSED TO GROUND OR TO THE WEATHER, TO METAL REINFORCEMENT WILL NOT BE LESS THAN 3" OF CONCRETE.

19. CONCRETE EDGES ADJACENT TO THE HDPE LINER SHALL BE ROUNDED USING A STANDARD EDGING TOOL. ANY REMAINING ROUGH OR ANGULAR EDGES SHALL BE GROUND SMOOTH. ALL CONCRETE SURFACES IN CONTACT WITH THE HDPE LINER SHALL HAVE A SMOOTH STEEL TROWEL FINISH. A SECOND SHEET OF HDPE LINER OR MINIMUM 10 OZ/SY NON-WOVEN GEOTEXTILE SHALL BE PLACED BETWEEN ALL CONCRETE AND THE PRIMARY HDPE LINER.

20. THE LINER WILL BE CONNECTED TO THE PIPE PENETRATIONS W/ CONCRETE COLLARS AND CONCRETE STRUCTURES USING CONTINUOUSLY WELDED POLYETHYLENE EMBEDMENT STRIPS AS DETAILED ON THE DRAWINGS. THE LINER MANUFACTURER MUST APPROVE ALL CONNECTIONS AND TERMINATIONS. WHERE CONCRETE AND SCREEN SUPPORTS ARE POURED OR PLACED DIRECTLY ON THE HDPE LINER A SECOND SHEET OF HDPE LINER SHALL BE INSTALLED AS CALLED OUT ON THE DRAWING SHT'S. HDPE PIPE BOOTS SHALL BE USED ON PIPE PENETRATIONS. THE PRIMARY LINER SHALL BE WELDED TO THE EMBEDMENT STRIPS. PIPE BOOTS SHALL BE WELDED TO THE PRIMARY LINER BEYOND THE EMBEDMENT STRIPS.

21. ALL FIELD SEAMS OF THE HDPE LINING AND CONNECTIONS OF THE HDPE LINING TO PIPE PROTRUSIONS AND CONCRETE STRUCTURES SHALL BE WATERTIGHT AND MUST BE BOTH INSPECTED BY THE ENGINEER AND TESTED AS SPECIFIED IN THE HDPE QA/QC MANUAL.

22. IF THE WORK TAKES PLACE WHEN FREEZING WEATHER MAY BE ENCOUNTERED. CONCRETE PLACED OR CURING WHEN THE AMBIENT TEMPERATURE IS BELOW 32° F SHALL BE PROTECTED FROM FREEZING WITH PLASTIC, STRAW, EARTH, BLANKETS OR OTHER SUITABLE INSULATING MATERIAL. NO FROZEN MATERIAL SHALL BE INCORPORATED INTO THE RESERVOIR EMBANKMENTS. IF WORK TAKES PLACE DURING FREEZING WEATHER ALL FROZEN MATERIALS SHALL BE REMOVED FROM THE SITE WHERE FILL IS TO BE PLACED AND THOSE AREAS WHERE FILL MATERIAL WILL BE EXCAVATED PRIOR TO UNDERTAKING ANY WORK. HDPE LINING SHALL BE PLACED ONLY WHEN THE AMBIENT TEMPERATURE IS ABOVE 32° F. THE LINER SHALL NOT BE INSTALLED ON A FROZEN SUBGRADE. FIELD SEAMING OF THE LINER SHALL TAKE PLACE ONLY WHEN THE AMBIENT TEMPERATURE IS ABOVE 50° F. IF THE TEMPERATURE REQUIREMENTS FOR LINER INSTALLATION AND FIELD SEAMING CANNOT BE MET THE INSTALLER SHALL SUBMIT A COLD WEATHER INSTALLATION AND SEAMING PLAN FOR APPROVAL BY THE ENGINEER.

23. BOOTS SHALL BE SEALED TO PIPE USING AN APPROVED ADHESIVE AND GASKET MATERIAL BENEATH EACH OF THE TWO BAND CLAMPS. BAND CLAMPS SHALL BE STAINLESS STEEL.

24. CDF DESIGN:
CDF USED AS PIPE BACKFILL ON THE PROJECT SHALL HAVE THE FOLLOWING MIX
- PORTLAND CEMENT TYPE I TO II – 282 LBS PER CY
- FLY ASH – 188 LBS PER CY
- AGGREGATE 3/8" TO #8 – 460 LBS PER CY
- SAND – 2598 LBS PER CY
- WATER – 350 LBS PER CY

SLUMP SHALL NOT EXCEED 7 INCHES. SAND USED IN THE CDF SHALL BE FINE SAND THE CDF MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

25. CONCRETE DESIGN:
CONCRETE USED AS PIPE BACKFILL ON THE PROJECT SHALL HAVE A MIN 28 DAY COMPRESSIVE STRENGTH OF 6000 PSI AND MEET THE FOLLOWING MIX DESIGN REQ'MNTS UNLESS OTHERWISE APPROVED BY THE ENGINEER:
- PORTLAND CEMENT TYPE I TO II – 705 LBS PER CY
- AGGREGATE 3/4" TO #4 – 1900 LBS PER CY
- FINE AGGREGATE – 1095 LBS PER CY
- WATER – 250 LBS PER CY
- AIR – 5%, ±1.5%
- SHRINKAGE REDUCER – MASTERBUILDERS – MASTERLIFE SRA 20 – 18.2 OZ/CWT

SLUMP SHALL NOT EXCEED 4 INCHES. WATER/CEMENT RATIO SHALL NOT EXCEED 0.4 CONCRETE MIX DESIGN SHALL BE APPROVED BY THE ENGINEER

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OREGON
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EXPIRES 6/30/16

REVISION				
NO.	DESCRIPTION	BY	APR	DATE

BOISE CASCADE
WASTEWATER LAGOON

CONSTRUCTION NOTES

FILE: 33-16-004 C 100
JUB PROJ #: 33-16-004
DRAWN BY: GWM
DESIGN BY: GJW
CHECKED BY: GJW

LAST UPDATED: 3/18/2016

SHEET NUMBER:
C-105

811
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