Trip Summary
Lake Alice Dam Demolition Project
Cumming, GA
June 30, 2014

At the request of the City of Cumming, GA. Planning and Zoning Department, EPA visited the project site to assist the City in assessing erosion and sedimentation control (ESC) measures. I met Mr. Everett Thompson, Chief Building Official, at approximately 9:35AM at City Hall. Mr. Thompson provided a brief history of the dam breach and the resulting damage downstream to Lake Lanier. In addition, Mr. Thompson indicated the City and the Mashburn Family Trust, the property owner of the dam, entered into a consent order with Georgia EPD, to assess the impact, develop a remediation plan, and to implement the plan after approval by Georgia EPD and the US Army Corps of Engineers.

The Mashburns hired NewFields as consultants to develop the remediation plan and proposed 2 phases. Phase One is to demolish remnants of the dam structure and to conduct soil borings. Phase Two is to design and construct a weir structure that would be anchored into bedrock.

I asked Mr. Thompson if the project has coverage under the Georgia general stormwater construction permit, given that the City of Cumming is the Local Issuing Authority (LIA). Although the City issued a land disturbing (grading) permit, it is the impression of Mr. Thompson that the project did not need coverage because of the consent order. I expressed my doubts on the explanation. Mr. Thompson expressed initial concerns also, and did not want to issue a City permit until ESC measures of the 2 phases of the remediation plan were properly reviewed and approved. However, Mr. Thompson indicated that the City did not want to appear to be delaying the progress and was told to issue a grading permit.

Mr. Thompson had indicated that he issued the contractor a stop work order recently after a rainfall event in which some of the ESC measures had failed and additional sediments were lost. Mr. Thompson showed me jpg pictures of hay bales downstream from the project site.

I asked Mr. Thompson why and what he envision EPA's role in this, given the stormwater program is delegated to the state and the City was approved as the LIA. He expressed his frustration because EPD and the Corps are giving the appearance of "hands off" and not giving support to the City. He would like EPA's oversight of the project because of the potential loss of additional sediment (he indicated that someone said, and he did not identified who, that the additional sediment loss from the project would make little difference since there were already sediments downstream due to the breach).

I asked for copies of all relevant documents from Mr. Thompson, and agreed to send via email. We then proceeded to the project site. The weather was cloudy and temperatures were in the mid 70's.

At approximately 10:45am, Mr. Thompson and I arrived on site, and met Mr. Nicolas DiLuzio with Newfields, Mr. Brink Miller and another individual (I did not get his name) with American Environmental & Construction Services. I showed my EPA inspection credentials and asked for a tour of the site and the

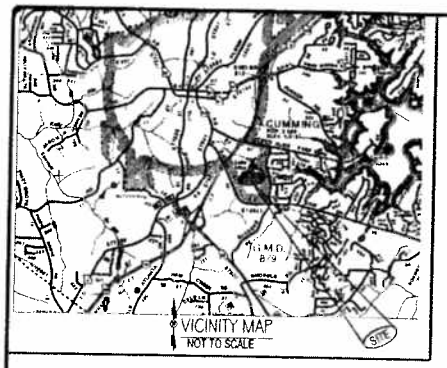
description of the ESC measures in place. Documentation of the site visit was videoed via Samsung Digital Camcorder SC-MX20R/XAA (the video files are on the OneDrive).

During the closing interview, I asked Mr. DiLuzio if I could get pdf versions of the ESC plans and he agreed.

In addition to the project site, Mr. Thompson showed me some of the stormwater ponds of the individual developments and then returned to his office.

I later met Mr. Scott Morgan, the Department Director and discussed much of the same concerns that Mr. Thompson had expressed. I left City Hall at 12:03PM.

Michael Hom



LAKE ALICE DAM BREACH
REMEDIATION PLAN
FOR
CITY OF CUMMING

LEGEND

Project Narrative:

Project Name: LAKE ALICE DAM BREACH REMEDIATION PLAN
Site Address / Location: AT SANDERS RD AT LAKE LANIER UPSTREAM TO MARKET PLACE BLVD
Tax Map Number: C29-012,C38-013,C39-001 District: 2nd Land Lot(s): 78 & 139

Item A: Property Owner: CITY OF CUMMING/MASHBURN
Address: 100 N. MAIN ST- CUMMING GA 300040
Phone Number: (678)773-1535

Item B: Persons to be contacted by county in case of development or construction problems:
Name: DANNY BENNETT Title PROJECT ENGINEER Phone # (678)773-1535 (24 HRS.)
Address: SAME AS ABOVE
Alternate Name: Title Phone #

Item C: Proposed Use of Land: N/A
Size of disturbed work area: 1.5 ACRES Total site area: N/A ACRES
Cubic Yards of Soil to be moved: N/A New location of excess soil: N/A

Item D: See Construction Schedule, this sht

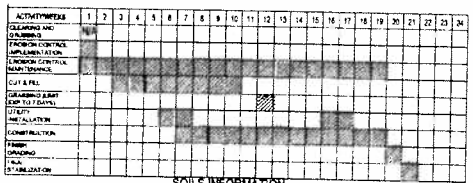
Item E: Zoning of Property: Ag/cbd Zoning of Adjoining Properties: Ag/CBD

NewFields

CONTACT INFO:
Brian Wellington, Ph.D., P.E.
NewFields Companies LLC
1349 W. Peachtree St. Suite 2000
Atlanta, GA 30309
Ph: (404)969-0987
Fax: (404)969-0988
www.newfields.com

CONTRACTING ENGINEERS INCORPORATED

CONTACT INFO:
D.M. Bennett, P.E.
Contracting Engineers Inc
6420 Jewell Bennett Rd
Dawsonville, GA 30534
Ph: (678)773-1535
Fax: (678)807-2698



SOILS INFORMATION

SOIL SYMBOL	NAME	SLOPE %	ERO FACTOR	LIMITATION	PERMEABILITY
N/A	CUT & FILL	10-20	N/A	N/A	N/A

CONTRACTING ENGINEERS INCORPORATED

SHEET INDEX

SHEET #	TITLE
1.0	COVER SHEET
2.1	OWNER INFORMATION
2.2	STATE WATERS PRE-BREACH
2.3	STATE WATERS POST BREACH
2.4	DAM TOPO PRE/POST BREACH
3.1	INITIAL PHASE
1-3	WEIR INSTALLATION/LAKE BED STABILIZATION(BY NEWFIELDS)
3.3	INTERMEDIATE PHASE-SANDERS RD STAGING
3.4	CONSTRUCTION PHASE-SANDERS RD STAGING
3.5	FINAL PHASE-SANDERS RD STAGING
4.1	EROSION DETAILS
4.2	ROCK DAM DETAILS
4.3	DOT TEMP DIVERSION DETAIL
4.4	DOUBLE 8' X 8' BOX CULVERT BARREL DETAIL
4.5	DOUBLE 8' X 8' BOX CULVERT WINGWALLS & PARAPET DETAIL

"I CERTIFY THAT A QUALIFIED PERSON FROM CONTRACTING ENGINEERS, EITHER THE PLAN PREPARER OR THE DESIGNEE, HAS VISITED THE SUBJECT SITE PRIOR TO THE CREATION OF THIS PLAN."

D.M. BENNETT, P.E. 19,305- LEVEL II CERTIFIED DESIGN PROFESSIONAL #28,293

MAINTENANCE SCHEDULE

FOR A PERIOD OF 18 MONTHS FROM DATE OF BEGINNING INITIAL PHASE

(1) MONITOR ON A QUARTERLY BASIS THE "LAKE BED CHANNELS" AND RESEED AND HANDWORK AREAS AS NECESSARY TO INSURE REVEGETATION.

(2) MONITOR ON A BI-QUARTERLY BASIS LITTLE RIDGE CREEK AND REMOVE (AS PER PERMIT DRAWINGS) ANY SEDIMENTS DEPOSITED AS A RESULT OF EROSION FROM THE "LAKE BED CHANNELS".

(3) MONITOR ON A QUARTERLY BASIS ALL DISTURBED AREAS CAUSED BY CONSTRUCTION AND RESEED AS NECESSARY TO INSURE PERMANENT VEGETATION.

*(4) AFTER ALL AREAS AFFECTED BY THE BREACH ARE PERMANENTLY STABILIZED, PROCEED TO SHEET 3.5 AND REMOVE ALL INSTALLED BMP'S EXCEPT AS NOTED. **IN THE EVENT ALL AREAS ARE NOT STABILIZED TO THE SATISFACTION OF ALL INVOLVED JURISDICTIONAL AUTHORITIES, THE PLANS SHALL BE MODIFIED AS NECESSARY TO ACHIEVE FINAL STABILIZATION AND RE-SUBMITTED FOR APPROVAL AND IMPLEMENTATION.***

IF YOU DIG GEORGIA CALL US FIRST! 1-800-282-7411 (770) 623-4344 (METRO ATLANTA ONLY) (TOLL FREE OUTSIDE ATLANTA) IT'S THE LAW

CAUTION
THE UTILITIES SHOWN ARE SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE PREPARER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

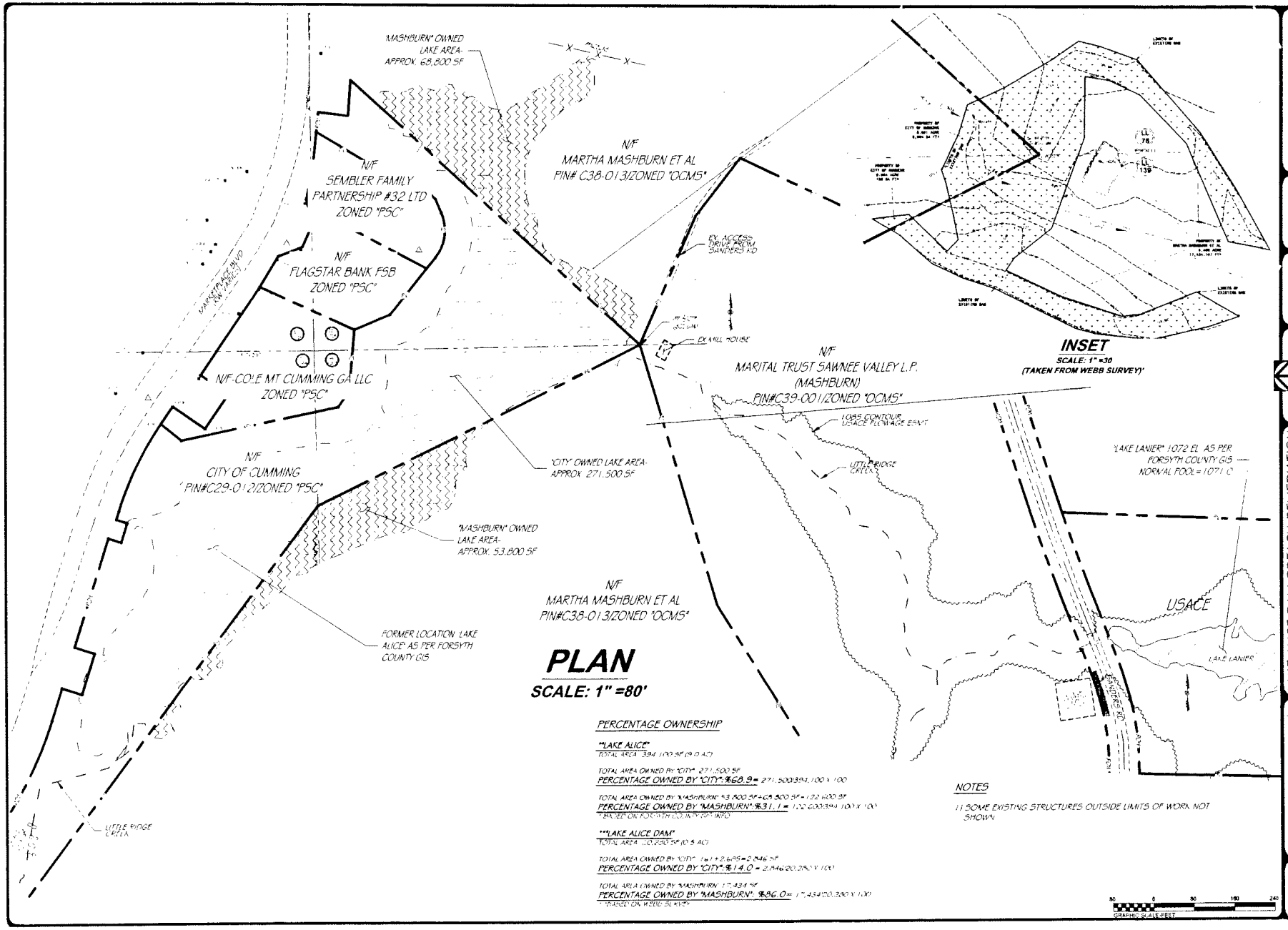
CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

• COVER

REVISIONS

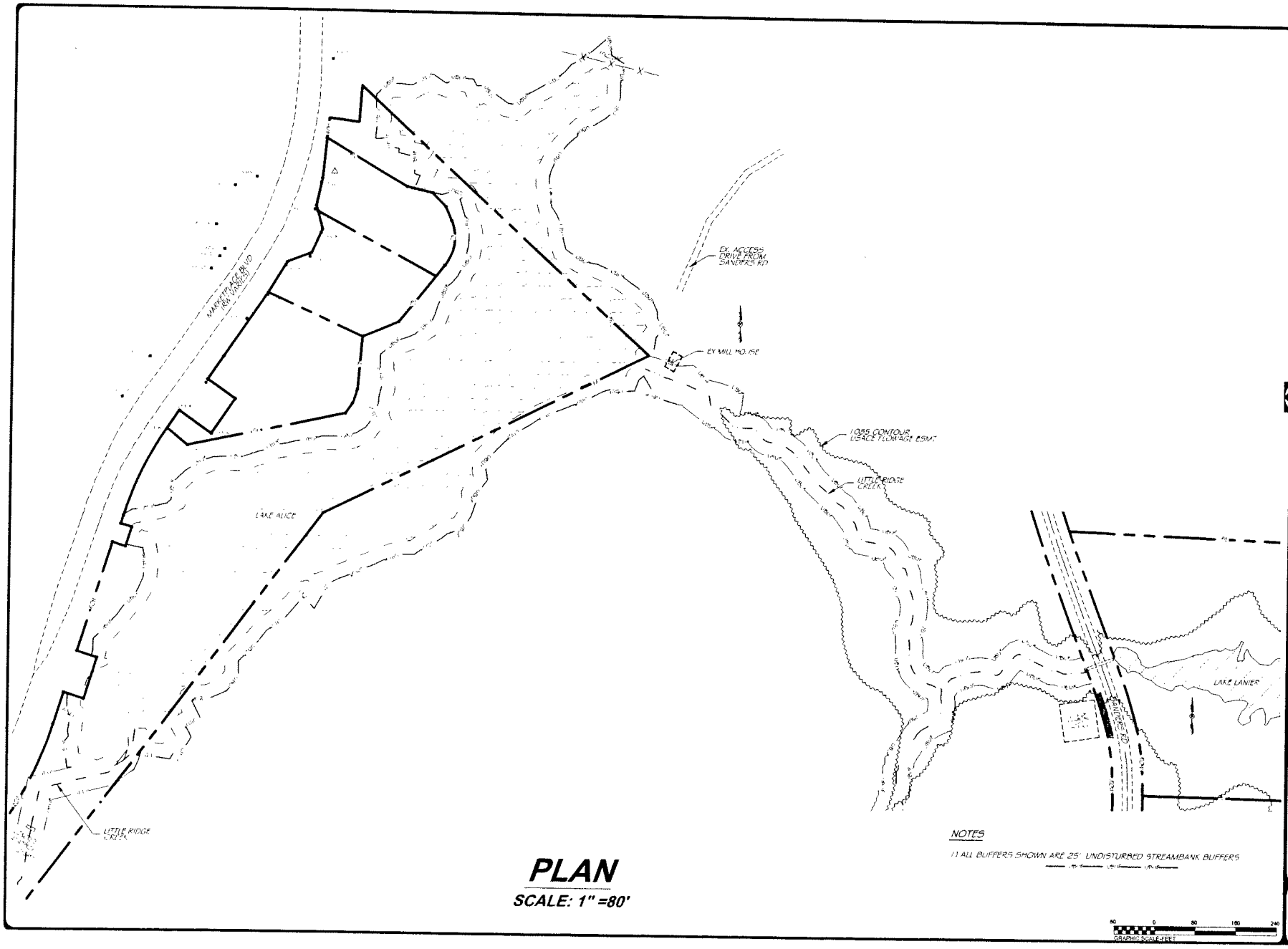
Date: AUG 28, 2012
Scale: N/A
Job No.: NEWFIELDS/CUMMING
Sheet 1 of 16 Sheets



CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

* PROPERTY OWNER INFORMATION



PLAN

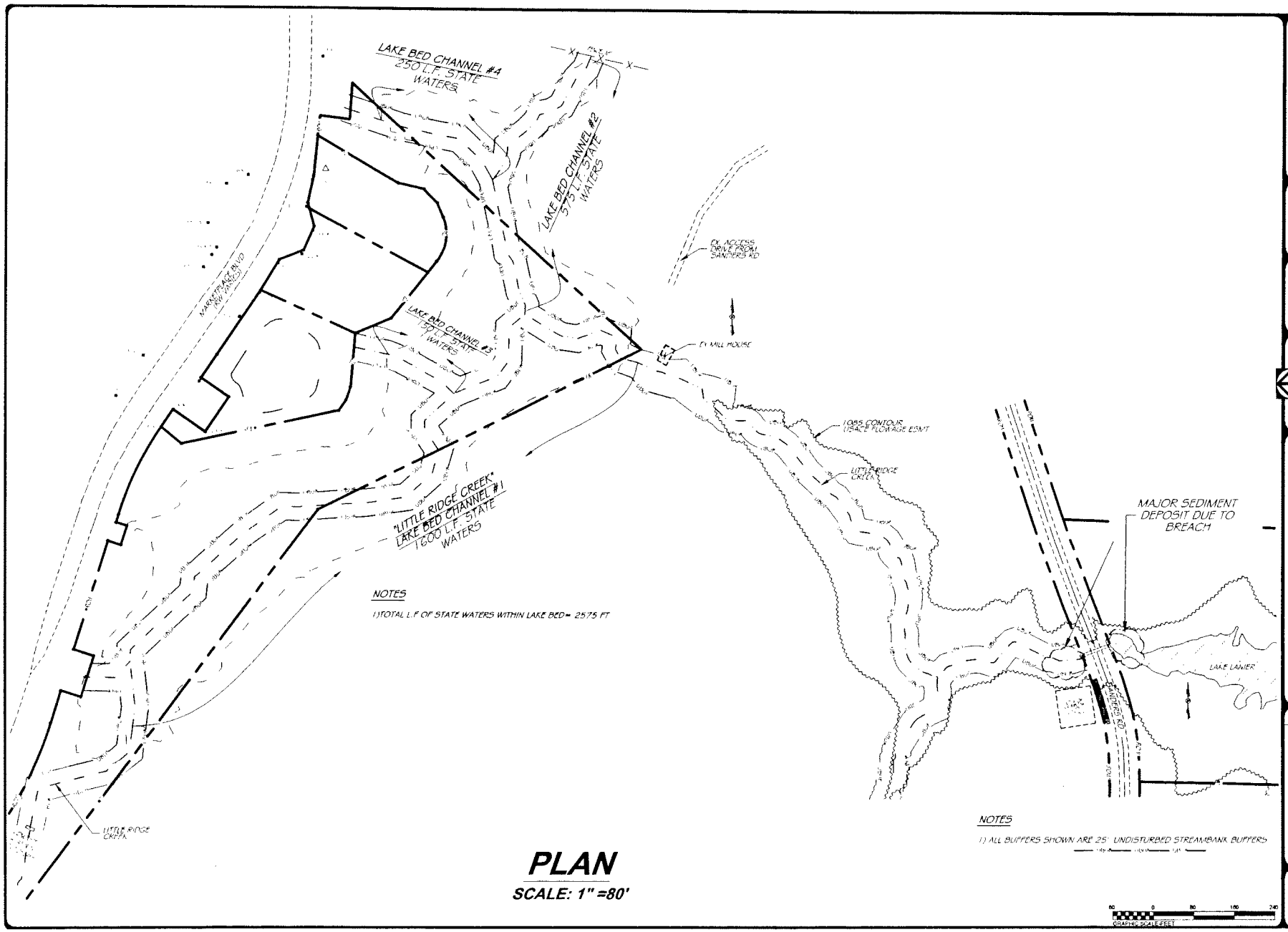
SCALE: 1" =80'

CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

STATE WATERS
PRE BREACH

REVISION NO.



PLAN

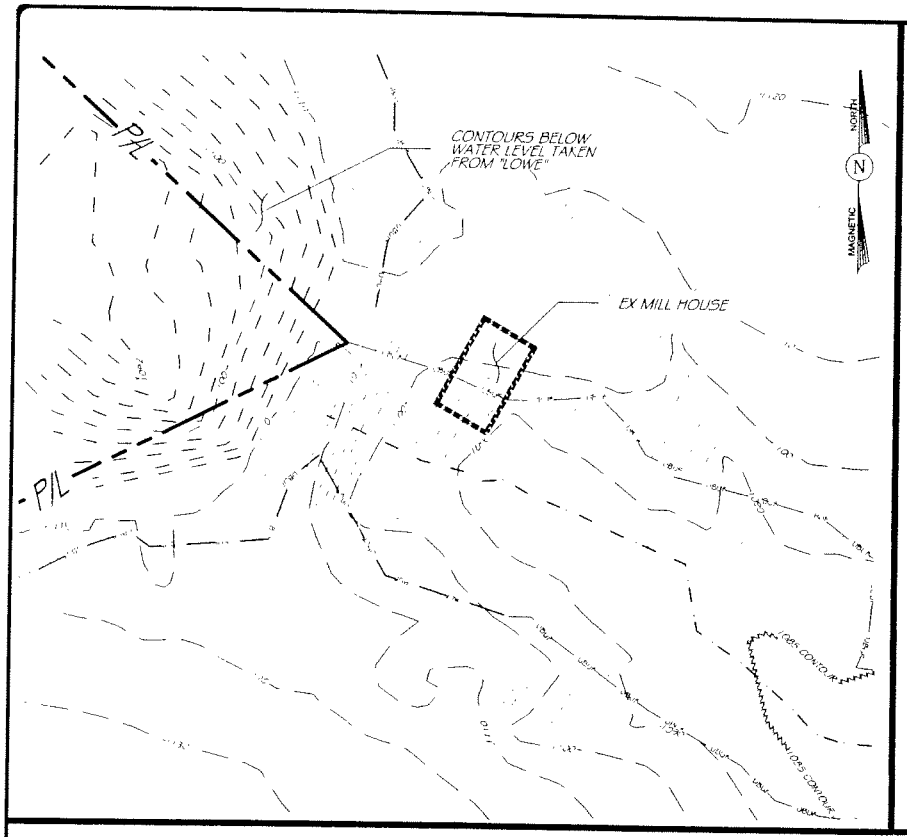
SCALE: 1" =80'

CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

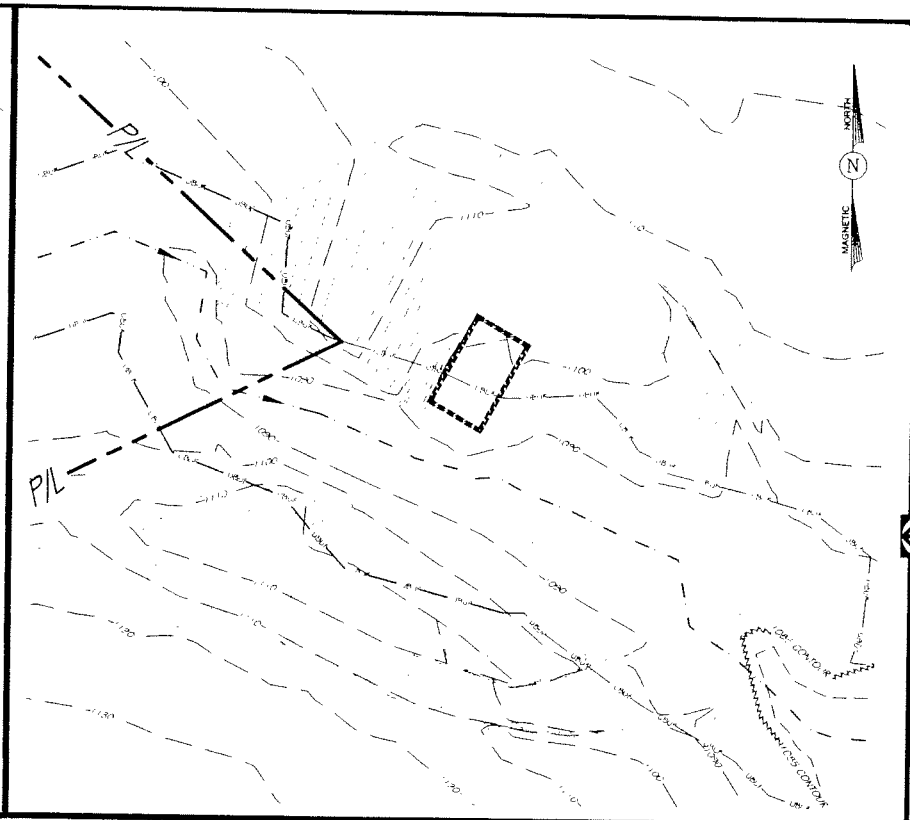
• STATE WATERS POST BREACH

REVISIONS



TOPO:PRE-DAM BREACH

SCALE: 1" =20'



TOPO:POST-DAM BREACH

SCALE: 1" =20'

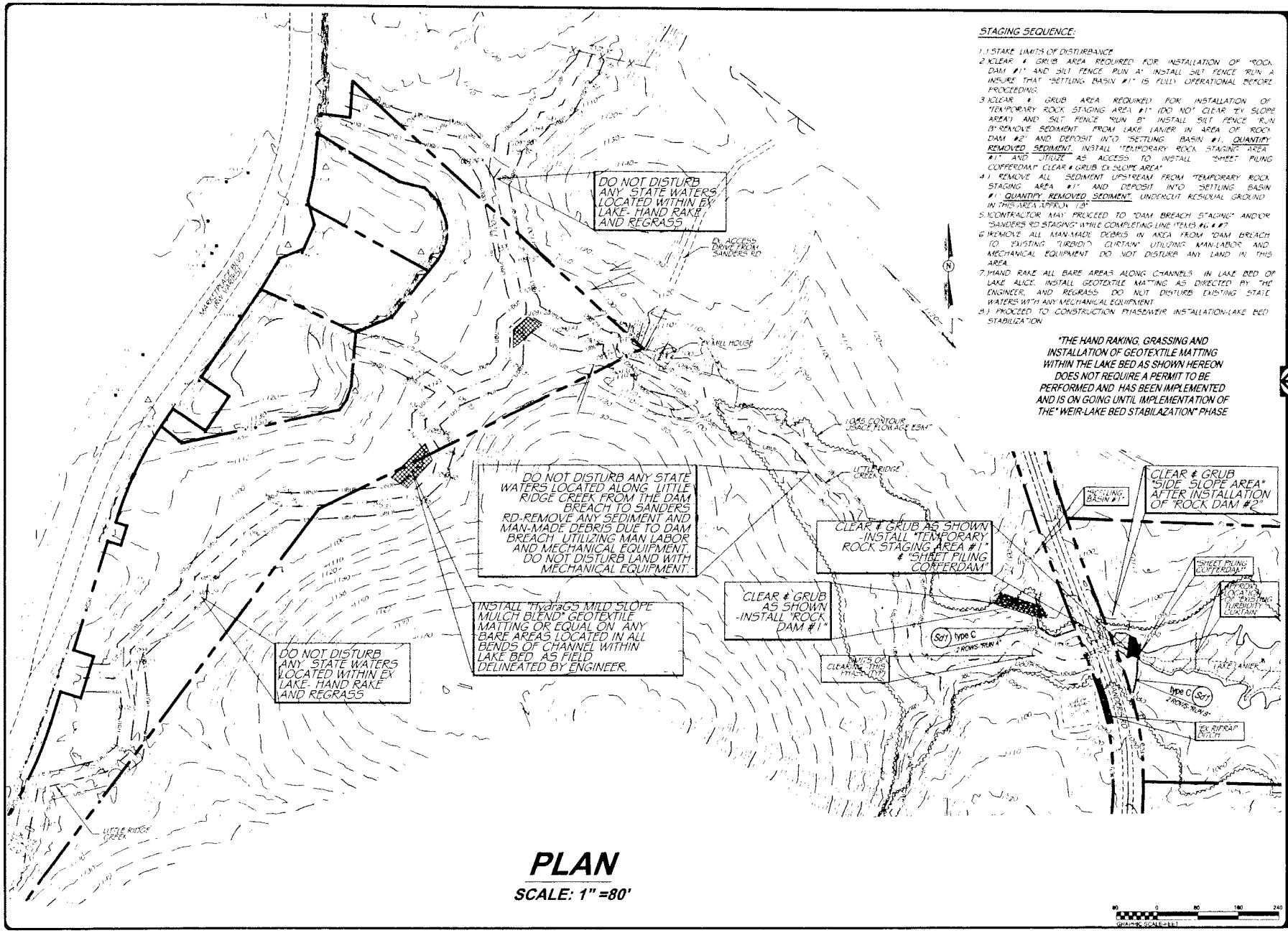
20 0 20 40 80
GRAPHIC SCALE/FEET

CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

- DAM TOPO
  PRE/POST BREACH
- SEDIMENT LOSS/GAIN CALCS

REVISION No.



PLAN

SCALE: 1" =80'

STAGING SEQUENCE:

1.) STAKE LIMITS OF DISTURBANCE
2.) CLEAR & GRUB AREA REQUIRED FOR INSTALLATION OF "ROCK DAM #1" AND SILT FENCE "RUN A". INSTALL SILT FENCE "RUN A" INSURE THAT "SETTLING BASIN #1" IS FULLY OPERATIONAL BEFORE PROCEEDING.
3.) CLEAR & GRUB AREA REQUIRED FOR INSTALLATION OF "TEMPORARY ROCK STAGING AREA #1" (DO NOT CLEAR "EX SLOPE AREA") AND SILT FENCE "RUN B". INSTALL SILT FENCE "RUN B" REMOVE SEDIMENT FROM LAKE LANIER IN AREA OF ROCK DAM #2 AND DEPOSIT INTO "SETTLING BASIN #1". QUANTIFY REMOVED SEDIMENT. INSTALL "TEMPORARY ROCK STAGING AREA #1" AND UTILIZE AS ACCESS TO INSTALL "SHEET PILING COFFERDAM". CLEAR & GRUB "EX SLOPE AREA"
4.) REMOVE ALL SEDIMENT UPSTREAM FROM "TEMPORARY ROCK STAGING AREA #1" AND DEPOSIT INTO "SETTLING BASIN #1". QUANTIFY REMOVED SEDIMENT. UNDERCUT RESIDUAL GROUND IN THIS AREA APPROX. 1.9'
5.) CONTRACTOR MAY PROCEED TO "DAM BREACH STAGING" AND/OR "SANDERS RD STAGING" WHILE COMPLETING LINE ITEMS #6 & #7
6.) REMOVE ALL MAN-MADE DEBRIS IN AREA FROM "DAM BREACH TO "EXISTING TURBIDITY CURTAIN" UTILIZING MAN-LABOR AND MECHANICAL EQUIPMENT. DO NOT DISTURB ANY LAND IN THIS AREA.
7.) HAND RAKE ALL BARE AREAS ALONG CHANNELS IN LAKE BED OF LAKE ALICE. INSTALL GEOTEXTILE MATTING AS DIRECTED BY "THE ENGINEER", AND REGRASS. DO NOT DISTURB EXISTING STATE WATERS WITH ANY MECHANICAL EQUIPMENT.
8.) PROCEED TO CONSTRUCTION PHASE-WEIR INSTALLATION-LAKE BED STABILIZATION

"THE HAND RAKING, GRASSING AND INSTALLATION OF GEOTEXTILE MATTING WITHIN THE LAKE BED AS SHOWN HEREON DOES NOT REQUIRE A PERMIT TO BE PERFORMED AND HAS BEEN IMPLEMENTED AND IS ON GOING UNTIL IMPLEMENTATION OF THE" WEIR-LAKE BED STABILAZATION" PHASE

CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

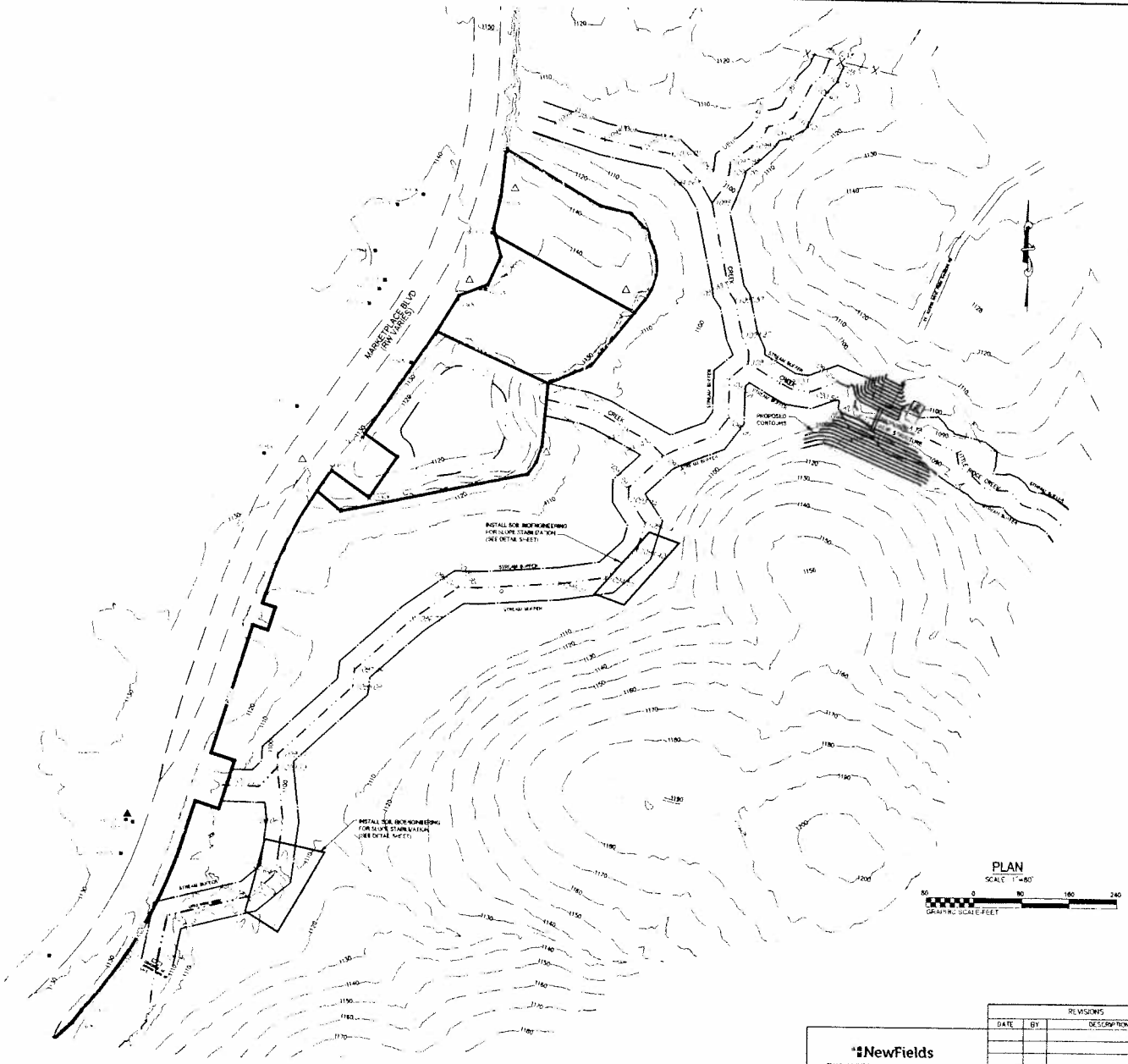
* INITIAL PHASE

REVISIONS:

DATE: APRIL 8, 2013

SCALE: 1" = 80'

JOB NO: 2012-SANDERS-DAM-BR



NOTES

1. THE DESIGN OF THE WEIR WILL BE PRECEDED BY FIELD INVESTIGATIONS TO IDENTIFY THE DEPTH BEDROCK ALONG THE LONGITUDINAL AXIS OF THE DAM, AND CHARACTERIZE THE ENGINEERING PROPERTIES OF THE OVERBURDEN SOILS AND UNDERLYING ROCK.

2. VARIOUS WEIR TYPES WILL BE CONSIDERED FOR THE SITE INCLUDING COMBINATION SHEET PILE WALL, GROUTED ROCK FILL EMBANKMENT, GABIONS, AND CONCRETE. THE FINAL SELECTION OF WEIR TYPE AND ITS SIZE WILL BE BASED ON THE RESULTS OF THE FIELD INVESTIGATIONS AND HYDROLOGIC REQUIREMENTS.

3. STREAM BANKS SUSCEPTIBLE TO EROSION WILL BE STABILIZED USING APPROPRIATE SOIL BIOENGINEERING METHODS (SEE DETAIL SHEET). THE FINAL METHOD SELECTION WILL BE BASED ON EXPECTED FUTURE HYDROLOGIC CONDITIONS.

NewFields
TWO MIDTOWN PLAZA, SUITE 2000
1349 WEST PEACHTREE STREET
ATLANTA, GEORGIA 30308

REVISIONS		
DATE	BY	DESCRIPTION

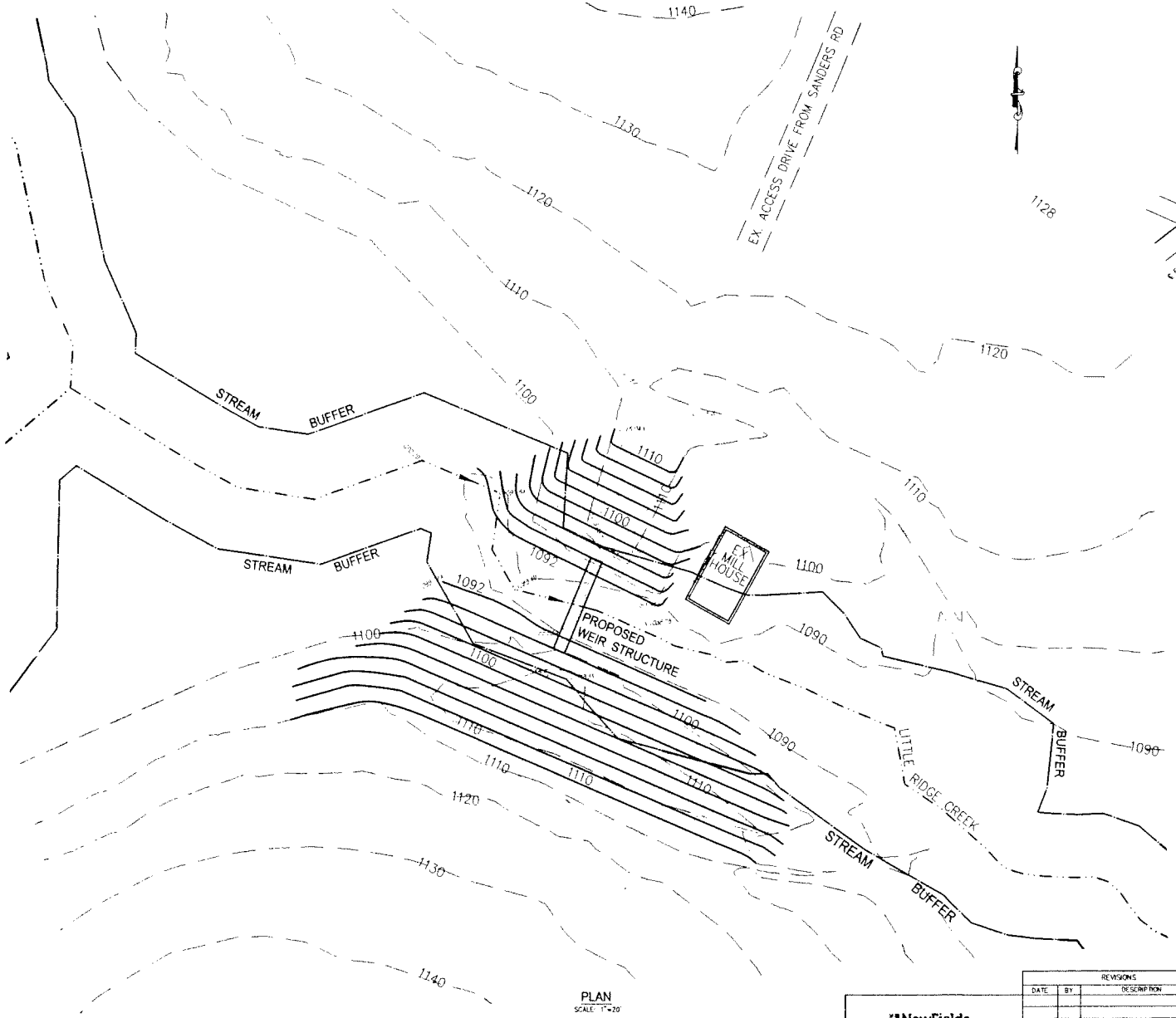
SCALE: AS SHOWN
DESIGN BY: BW
DRAWN BY: LCH
CHECKED BY: BW
CAD FILE: LakeAlice\LakeAlice13.dwg
12/19/13

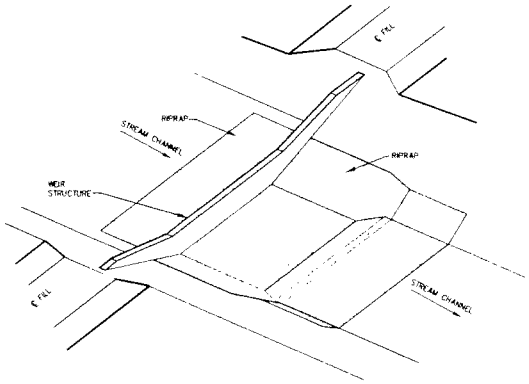
LAKE ALICE DAM BREACH REMEDIATION

PHASE 1
WEIR INSTALLATION AND LAKE BED STABILIZATION

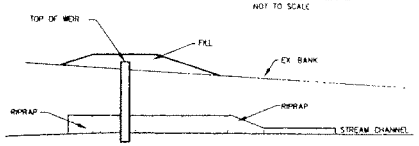
SITE PLAN

PROJECT NO.
DATE: DECEMBER 2013
DRAWING NO.: 1
SHEET 1 OF 3





WEIR - ISOMETRIC VIEW
NOT TO SCALE



WEIR - SECTION
NOT TO SCALE

NOTES

1. THE DESIGN OF THE WEIR WILL BE PRECEDED BY FIELD INVESTIGATIONS TO IDENTIFY THE DEPTH TO BEDROCK ALONG THE LONGITUDINAL AXIS OF THE DAM, AND CHARACTERIZE THE ENGINEERING PROPERTIES OF THE OVERBURDEN SOILS AND UNDERLYING ROCK.

2. VARIOUS WEIR TYPES WILL BE CONSIDERED FOR THE SITE INCLUDING COMBINATION SHEET PILE WALL, GROUTED ROCK FILL EMBANKMENT, GABIONS, AND CONCRETE. THE FINAL SELECTION OF WEIR TYPE AND ITS SIZE WILL BE BASED ON THE RESULTS OF THE FIELD INVESTIGATIONS AND HYDROLOGIC REQUIREMENTS.

3. STREAM BANKS SUSCEPTIBLE TO EROSION WILL BE STABILIZED USING APPROPRIATE SOIL BIOENGINEERING METHODS (SEE DETAIL SHEET). THE FINAL METHOD SELECTION WILL BE BASED ON EXPECTED FUTURE HYDROLOGIC CONDITIONS.

PLAN
SCALE: 1"=20'

20 0 20 40 60
GRAPHIC SCALE-FEET

NewFields
TWO MIDTOWN PLAZA, SUITE 2000
1349 WEST PEACHTREE STREET
ATLANTA, GEORGIA 30308

REVISIONS		
DATE	BY	DESCRIPTION

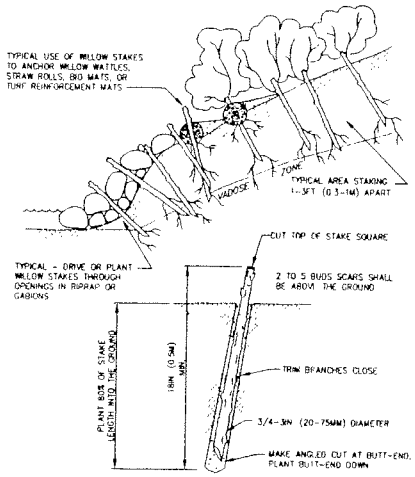
SCALE AS SHOWN
DESIGN BY BRW
DRAWN BY LCH
CHECKED BY BRW
CAD FILE LakeAlice\LakeAlice13.dwg
12/19/13

LAKE ALICE DAM BREACH REMEDIATION

PHASE 1
WEIR INSTALLATION AND LAKE BED STABILIZATION

DETAILED SITE PLAN AND DETAILS

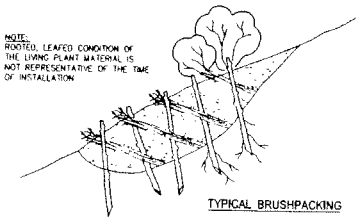
PROJECT NO
DATE DECEMBER 2013
DRAWING NO 2
SHEET 2 OF 3



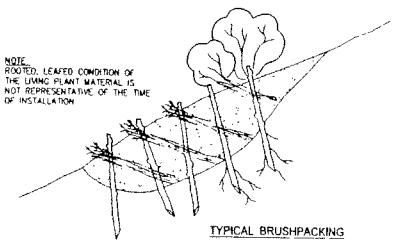
NOTES:
1. HARVEST AND PLANT STAKES DURING THE DORMANT SEASON.
2. USE HEALTHY, STRAIGHT AND LIVE WOOD AT LEAST 1 YEAR OLD.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT ENDS DURING INSTALLATION. USE A PILOT BAR IN FIRM SOILS.
4. SOAK CUTTINGS FOR 24 HOURS (MIN.) PRIOR TO INSTALLATION.
5. TAMP THE SOIL AROUND THE STAKE

LIVE STAKING AND JOINT PLANTING

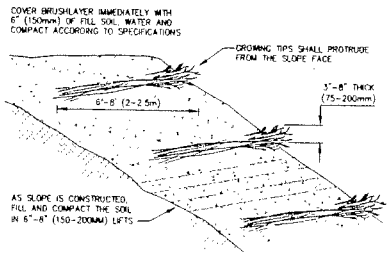
NOT TO SCALE



TYPICAL BRUSHPACKING

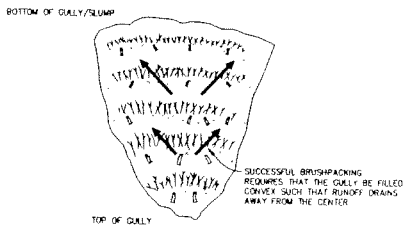


TYPICAL BRUSHPACKING



TYPICAL BRUSHLAYERING WITH SLOPE CONSTRUCTION

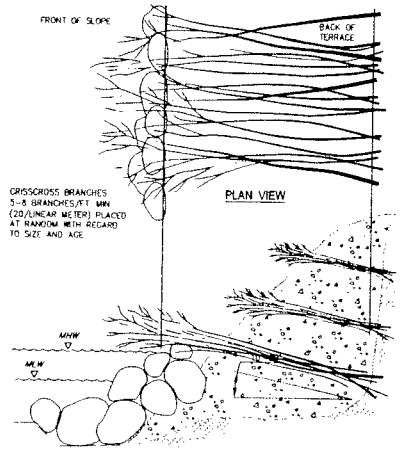
NOT TO SCALE



PLAN VIEW

BRUSHPACKING FOR SLUMP / GULLY REPAIR

NOT TO SCALE



NOTES:
1. TILT BRANCHES DOWN INTO THE SLOPE 10°-20° MIN.
2. BRUSHLAYERING MAY BE CONSTRUCTED WITH NON-COMPACTED OR COMPACTED BACKFILL WITHOUT DAMAGE TO THE BRUSH LAYER.
3. BRANCHES IRRESPECTIVE OF LENGTH SHOULD PROTRUDE 8-18IN (0.20-0.50 METERS) BEYOND THE FACE OF THE SLOPE.

BRUSHLAYERING WITH ROCK TOE PROTECTION

NOT TO SCALE

REVISIONS		
DATE	BY	DESCRIPTION

NewFields
TWO MIDTOWN PLAZA, SUITE 2000
1349 WEST PEACHTREE STREET
ATLANTA, GEORGIA 30308

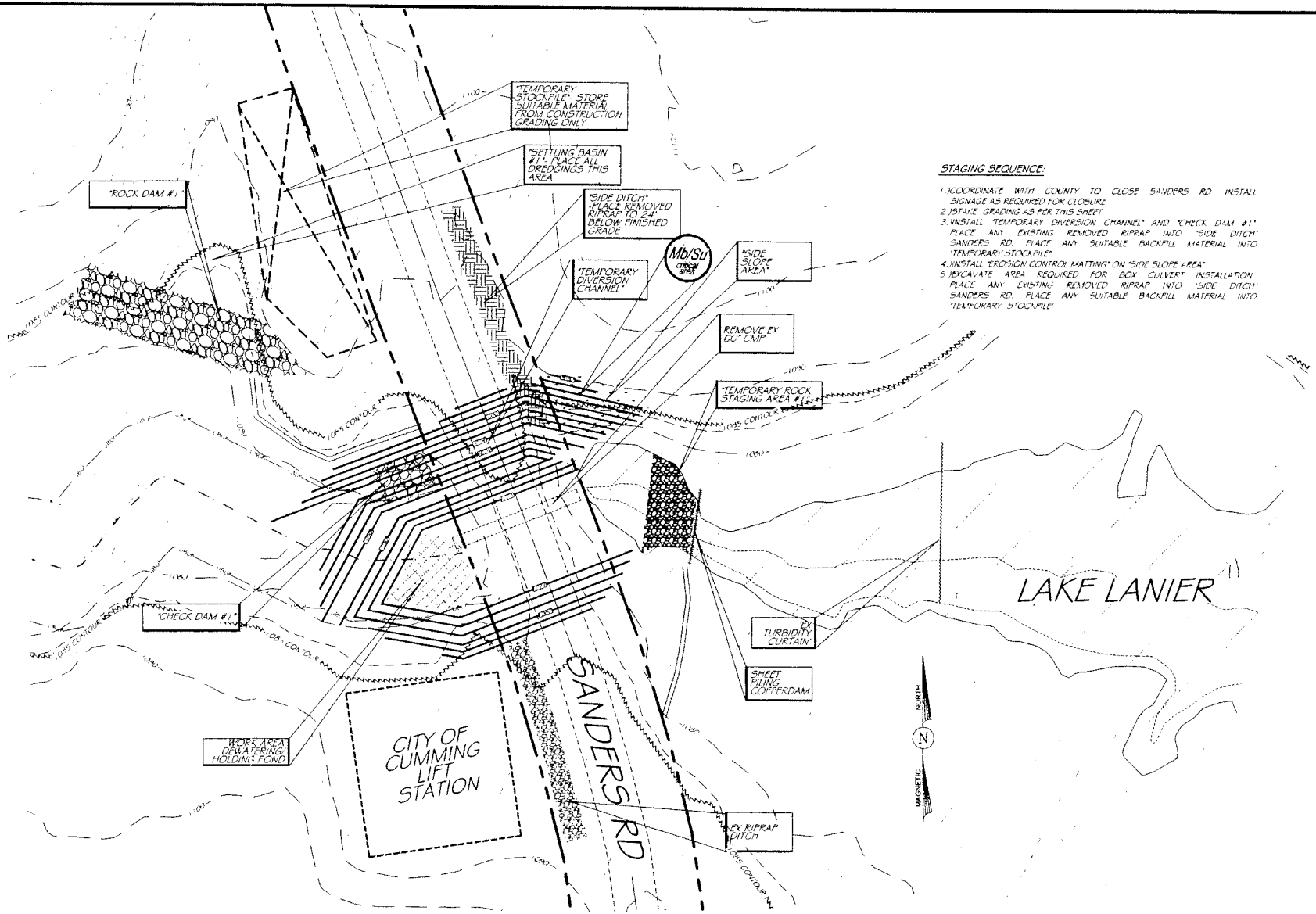
SCALE AS SHOWN
DESIGN BY BRW
DRAWN BY LCH
CHECKED BY BRW
CAD FILE NewFields\LakeAliceDis13R.dwg\ 12/20/13

LAKE ALICE DAM BREACH REMEDIATION

PHASE I
WEIR INSTALLATION AND LAKE BED STABILIZATION

DETAILS

PROJECT NO
DATE DECEMBER 2013
DRAWING NO 3
SHEET 3 OF 3



STAGING SEQUENCE:

1. COORDINATE WITH COUNTY TO CLOSE SANDERS RD. INSTALL SIGNAGE AS REQUIRED FOR CLOSURE
2. STAKE GRADING AS PER THIS SHEET
3. INSTALL "TEMPORARY DIVERSION CHANNEL" AND "CHECK DAM #1". PLACE ANY EXISTING REMOVED RIPRAP INTO "SIDE DITCH" SANDERS RD. PLACE ANY SUITABLE BACKFILL MATERIAL INTO "TEMPORARY STOCKPILE".
4. INSTALL "EROSION CONTROL MATTING" ON "SIDE SLOPE AREA"
5. EXCAVATE AREA REQUIRED FOR BOX CULVERT INSTALLATION. PLACE ANY EXISTING REMOVED RIPRAP INTO "SIDE DITCH" SANDERS RD. PLACE ANY SUITABLE BACKFILL MATERIAL INTO "TEMPORARY STOCKPILE"

PLAN

SCALE: 1" =20'

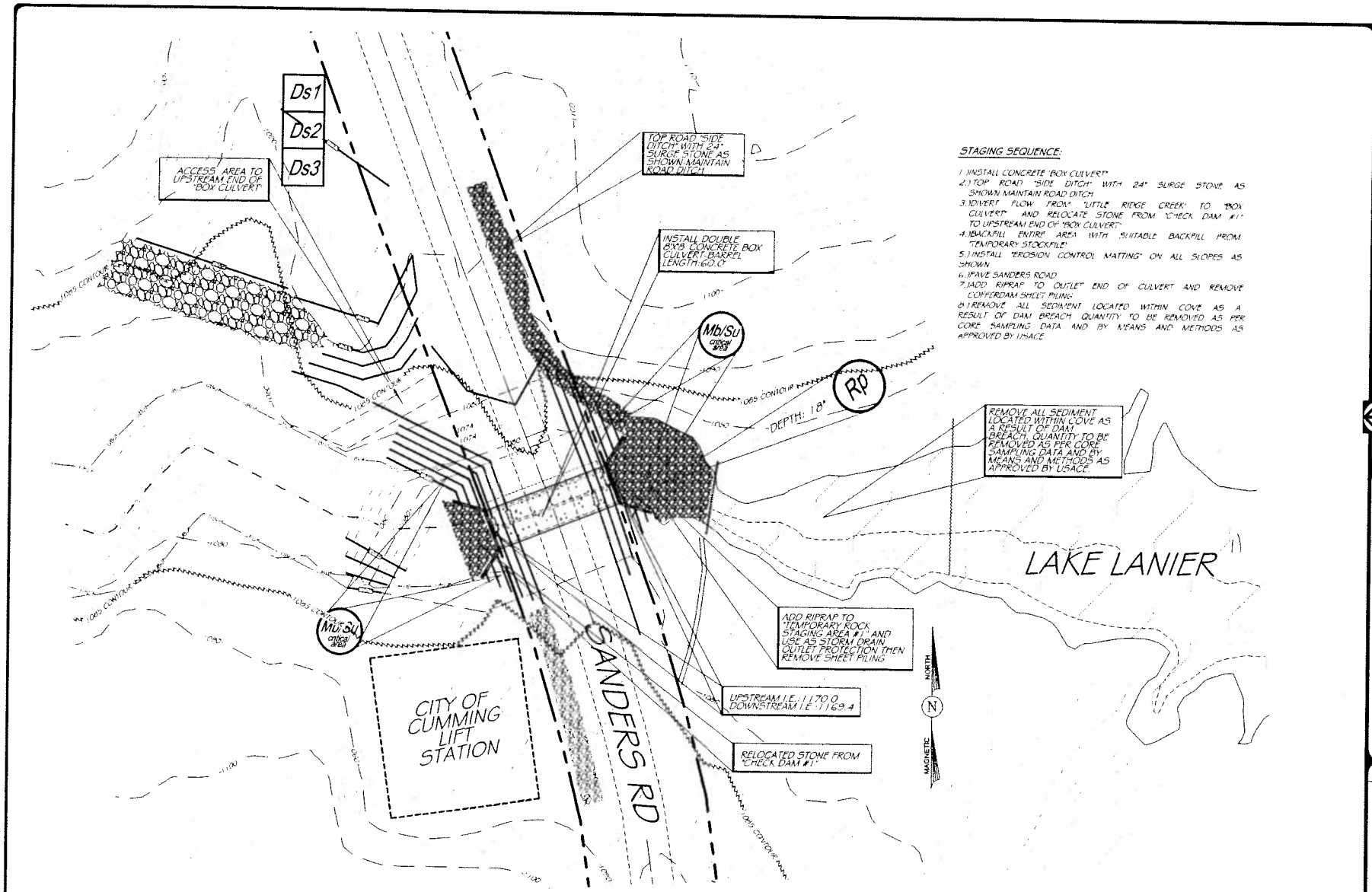
GEORGIA REGISTERED PROFESSIONAL ENGINEER

CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

INTERMEDIATE PHASE
SANDERS ROAD STAGING

REVISION No.



PLAN

SCALE: 1" =20'

STAGING SEQUENCE:

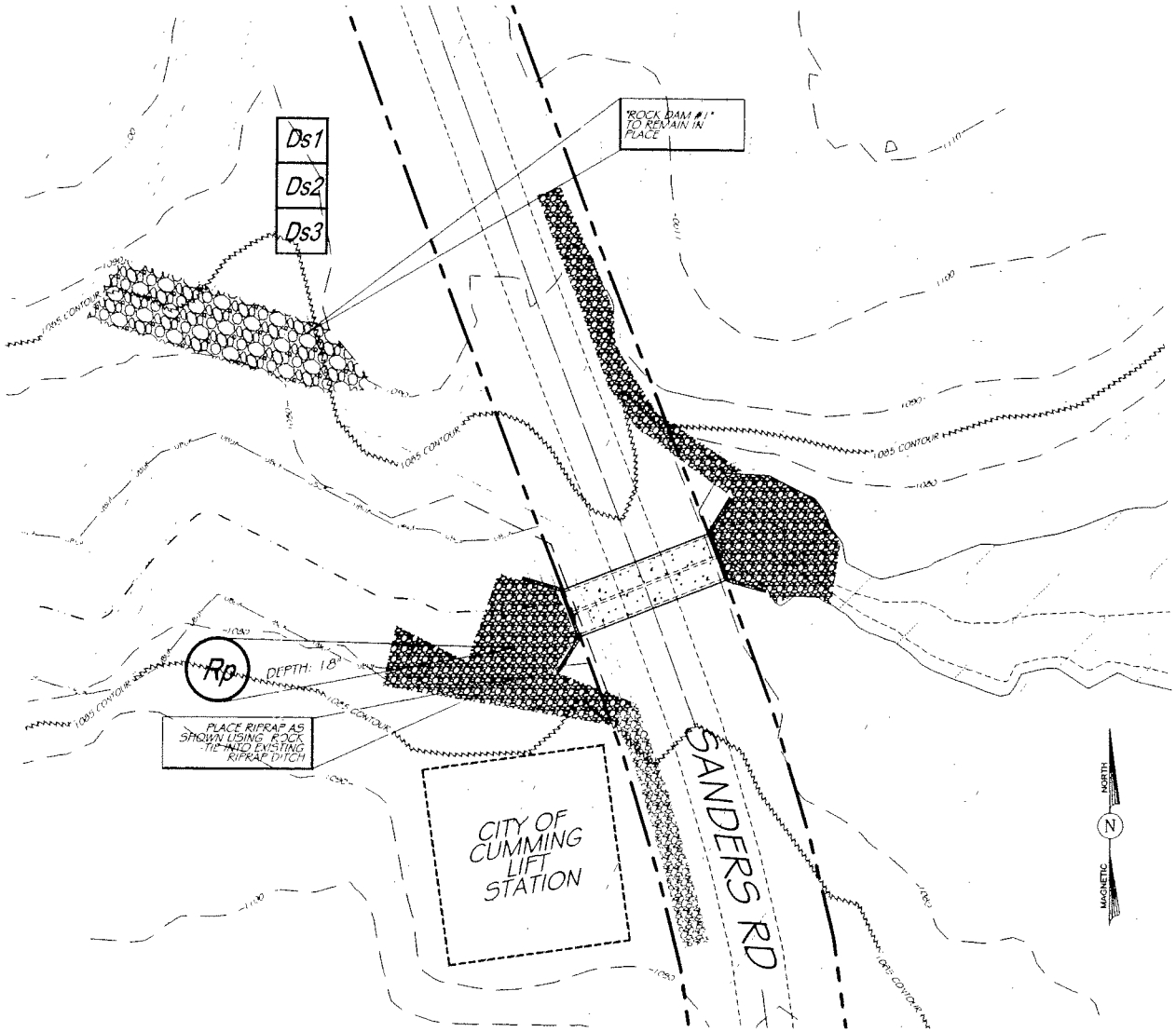
1.) INSTALL CONCRETE "BOX CULVERT"
2.) TOP ROAD "SIDE DITCH" WITH 24" SURGE STONE AS SHOWN MAINTAIN ROAD DITCH
3.) DIVERT FLOW FROM "LITTLE RIDGE CREEK" TO "BOX CULVERT" AND RELOCATE STONE FROM "CHECK DAM #1" TO UPSTREAM END OF "BOX CULVERT"
4.) BACKFILL ENTIRE AREA WITH SUITABLE BACKFILL FROM "TEMPORARY STOCKPILE"
5.) INSTALL "EROSION CONTROL MATTING" ON ALL SLOPES AS SHOWN
6.) PAVE SANDERS ROAD
7.) ADD RIPRAP TO OUTLET END OF CULVERT AND REMOVE COFFERDAM SHEET PILING
8.) REMOVE ALL SEDIMENT LOCATED WITHIN COVE AS A RESULT OF DAM BREACH QUANTITY TO BE REMOVED AS PER CORE SAMPLING DATA AND BY MEANS AND METHODS AS APPROVED BY USACE

CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

CONSTRUCTION PHASE
SANDERS ROAD STAGING

REVISION NO.



PLAN

SCALE: 1" =20'

STAGING SEQUENCE:

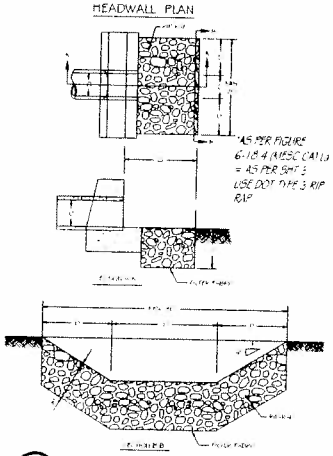
1.) PERMANENTLY GRASS "SETTLING POND #1"
2.) INSTALL ADDITIONAL RIPRAP AS SHOWN
3.) REMOVE "RUN A" AND "RUN B" SILT FENCE AND THE EXISTING "TURBIDITY CURTAIN"

LAKE ALICE DAM BREACH REMEDIATION

* FINAL PHASE
SANDERS ROAD STAGING

CONTRACTING ENGINEERS INCORPORATED

REVISIONS



St Outlet Protection

Rp Rip Rap

SOIL CONDITIONS

Due to grading and construction, the soils to be seeded are mixed, topsoil and subsoil. Partially or wholly the physical characteristics of the removed soils are unsuitable for all but the most hardy plants.

TREATMENT SPECIFICATIONS

A.) **Hydraulic Seeding Equipment (Hydroseeding)** When hydraulic seeding and tackifying equipment is used, the seed and fertilizer shall be applied in separate loads. The fertilizer, seed and tackifier are then mixed in the tank with water and applied as a slurry. All slurry application must be continuous to form a homogeneous mixture. The tackifier industry name the ATS, is used about 35%.

B.) **Conventional Seeding Equipment (Hand seeding)** Grade, shape and smooth all areas sufficiently to permit normal operation of seeding. Take action to eliminate depressions. The seedbed fertilizer, lime, seed and mulch shall be applied uniformly over the area immediately after proper seedbed preparation. A seedbed will be done with cultipacker or other roller, rake, drag, harrow or other implement. A hard, smooth seedbed is undesirable; instead, a firm, fine-textured seedbed is desirable. Within 24 hours after seeding, stake or tie mulch with the spread with hand-type or PLAT equipment. Apply seed and fertilizer uniformly, after harrow. Anchor with the Jute Net stapled or a special mulch anchoring equipment. Install the mulch on the slope.

PREPARATION APPLICATION RATES

Agricultural Limestone	4000 lbs/acre
Fertilizer 5-10-15	1500 lbs/acre
Mulch (Straw or hay)	5000 lbs/acre
Fiber mulch 15	1000 lbs/acre

*Install jute net if mulch is needed.

SEED SPECIES OPTIONS

	APPLICATION	PLANTING DATES
Tall Fescue (Turf Grade)	10 lbs/acre	9/1-10/15
Fescue	50 lbs/acre	9/1-10/31
Fescue, Rye Grass	10 lbs/acre	10/1-2/28
Rye, Wheat, Oats, Barley	5000 lbs/acre	10/1-3/31

FERTILIZING

Note: Without soil tests use 2 to 4 times the Fertilizer Requirement Rate - 33.5% 1400 lbs/acre

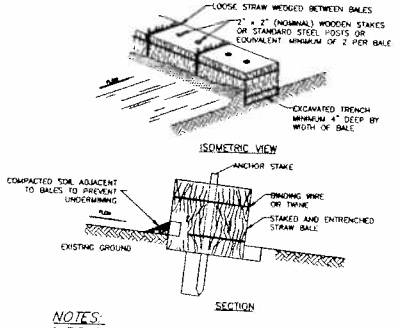
HOLLAND YEAR FERTILIZER

0-20-20 (1/4 EQUIVALENT) 500 lbs/acre
5-10-15 or equivalent 500 lbs/acre

*Optional mid application

Disturbed Area Stabilization

Ds1	(With Permanent Vegetation)
Ds2	(With Temporary Vegetation) 10/1-2/28
Ds1	(With Mulch) 9/1-3/31

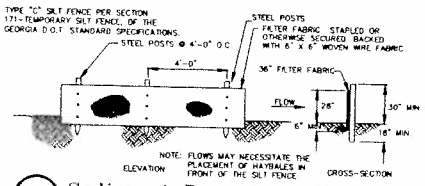


NOTES:

1. TURN THE ENDS OF THE STRAW BALE SEDIMENT TRAP UPSLOPE 1 TO 2 FEET IN ELEVATION TO PREVENT FLANKING
2. THE STRAW BALES SHALL BE BUTTED TOGETHER AS TIGHTLY AS POSSIBLE
3. THE FIRST ANCHOR STAKE SHALL BE DRIVEN TOWARD THE PREVIOUSLY ANCHORED BALE TO HELP CREATE A TIGHT FIT

Sd1 Sediment Barrier -HAYBALES

N.T.S.



Sd1 Sediment Barrier -TYPE "C"

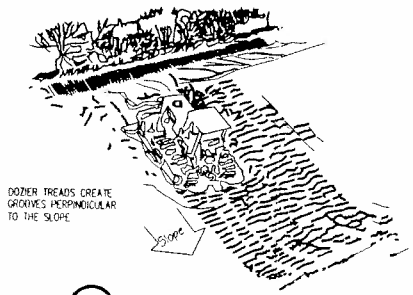
N.T.S.

NOTES:

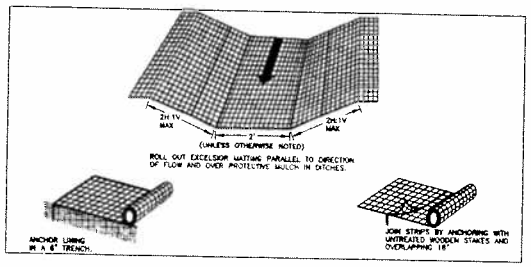
1.) FLOWS MAY NECESSITATE THE PLACEMENT OF HAYBALES IN FRONT OF THE SILT FENCE

2.) TYPE "C" SILT FENCE PER SECTION 171-TEMPORARY SILT FENCE, OF THE GEORGIA D.O.T. STANDARD SPECIFICATIONS

3.) SILT FENCE SHALL BE CLEANED OUT WHEN 1/3 OF THE SILT FENCE FACE IS COVERED WITH SEDIMENT



Su Surface Roughening



Mb Erosion Control Matting

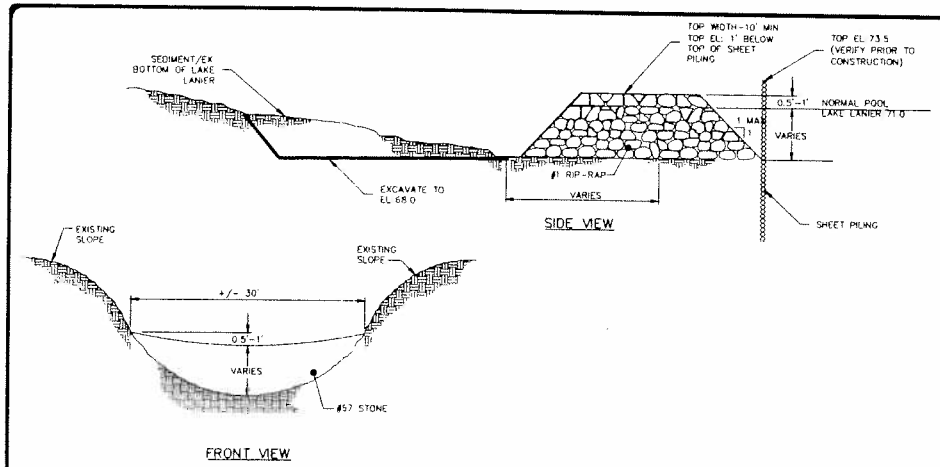
NOTE: INSTALL ON ALL SLOPES STEEPER THAN 3:1

LAKE ALICE DAM BREACH REMEDIATION

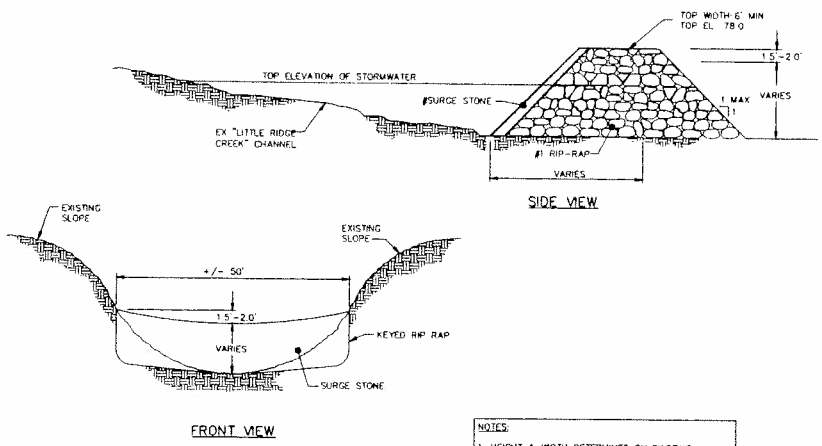
• EROSION DETAILS

CONTRACTING ENGINEERS INCORPORATED

REVISIONS



Temporary Rock Staging Area #1



NOTES:

1. HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED
2. KEY RIP RAP INTO THE DAM FOR STABILIZATION

Check Dam #1

NOTES:

INSTALLATION

DIVERT RUNOFF FROM UNDISTURBED AREAS AWAY FROM THE BASIN (REFERENCE DETAIL 04000.09 "STANDARD DIVERSION BERM") DELAY CLEANING POND AREA UNTIL DAM IS IN PLACE.
EXCAVATE FOUNDATION FOR APRON AND USE IT AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION OF DAM.
CLEAR AND GRUB AREA UNDER DAM, REMOVING ALL ROOT MATTER AND OTHER OBJECTIONABLE MATERIAL. GRADE EARTH ABUTMENTS NO STEEPER THAN 1:1. DISPOSE OF MATERIAL IN APPROVED LOCATION.
IF CUTOFF TRENCH IS REQUIRED, EXCAVATE AT CENTER LINE OF DAM EXTENDING ALL THE WAY UP EARTH ABUTMENTS.

PROTECTION FROM PIPING

THE ENTIRE FOUNDATION INCLUDING BOTH EARTH ABUTMENTS MUST BE COVERED BY FILTER FABRIC, OVERLAP 1 FT AT ALL JOINTS, UPSTREAM STRIPS OVER DOWNSTREAM STRIP (SEE CROSS SECTION)

SMOOTH THE FOUNDATION AREA BEFORE PLACING FILTER FABRIC. BE CAREFUL PLACING ROCK ON FABRIC. IT MAY BE HELPFUL TO PLACE A 4-INCH LAYER OF SAND OVER FABRIC BEFORE PLACING ROCK.

EMBANKMENT AND POOL

CONSTRUCT EMBANKMENT TO DIMENSIONS SHOWN ON PLANS. USE WELL GRADED HARD, ANGULAR, WEATHER-RESISTANT ROCK. ABUTMENTS MUST BE AT LEAST 2 FT HIGHER THAN THE SPILLWAY CREST AND AT LEAST 1 FT HIGHER THAN THE DOWNSTREAM FACE OF DAM AT ALL POINTS. (SEE PLAN)

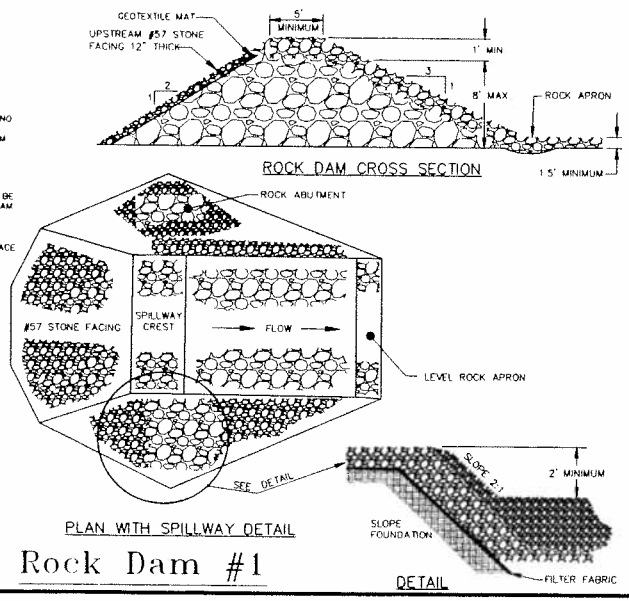
DIVERT SEDIMENT-LADEN FLOW TO UPPER END OF BASIN.

SET MARKER STAKE TO INDICATE CLEAN OUT ELEVATION WHERE SEDIMENT POOL IS 50% FULL.

STABILIZE ALL DISTURBED AREAS EXCEPT THE LOWER ONE-HALF OF SEDIMENT POOL AS SHOWN IN THE VEGETATION PLAN.

SAFETY

SEDIMENT BASINS THAT IMPOUND WATER ARE HAZARDOUS. BASINS SHOULD BE DEWATERED BETWEEN STORMS. AVOID STEEP SLOPES. FENCES WITH WARNING SIGNS MAY BE NECESSARY IF TRESPASSING IS LIKELY. STATE AND LOCAL REQUIREMENTS MUST BE FOLLOWED.



Rock Dam #1

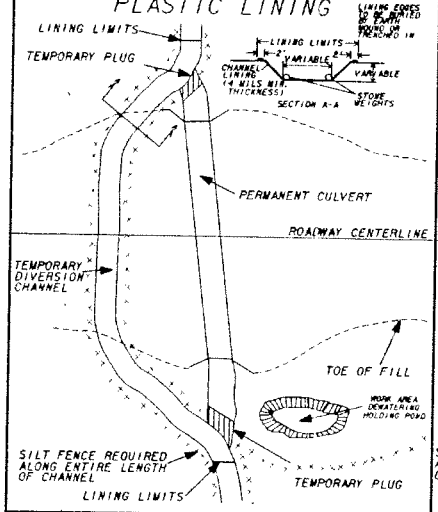
LAKE ALICE DAM BREACH REMEDIATION

• ROCK/CHECK DAM DETAILS

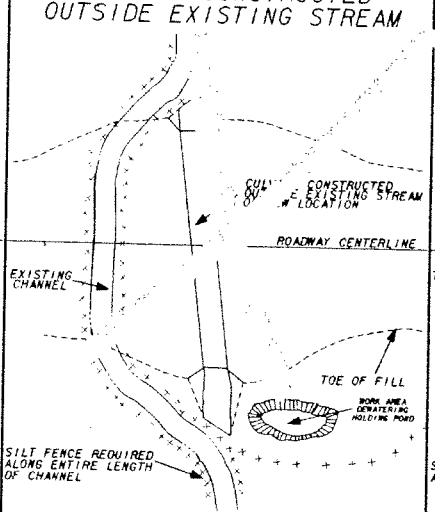
CONTRACTING ENGINEERS INCORPORATED

REVISION:

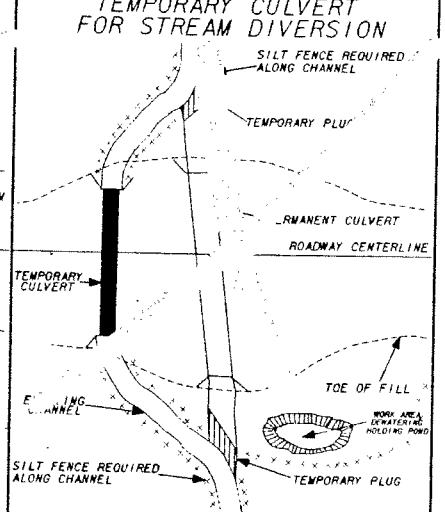
TEMPORARY DIVERSION CHANNEL PLASTIC LINING



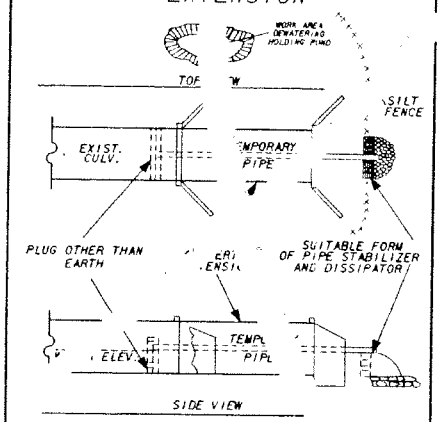
CULVERT CONSTRUCTED OUTSIDE EXISTING STREAM



TEMPORARY CULVERT FOR STREAM DIVERSION



PIPE OR BOX CULVERT EXTENSION



STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

1. THESE DETAILS ARE NOT CONSTRUCTION DRAWINGS. THEY ARE ROUGH SKETCHES OF IDEAS. ALTERNATES MAY BE SUBMITTED BY THE CONTRACTOR IN THE EROSION CONTROL PLAN.
2. DIVERSION CHANNELS TO BE INCLUDED IN THE COST OF CULVERT, WHEN REQUIRED.
3. THE PLASTIC LINING SHALL BE PVC OR PE MATERIAL WITH A MINIMUM THICKNESS OF 6 MILS.
4. THE LAP OF THE SHEETS OF PLASTIC LINING SHALL BE A MINIMUM OF 2 FEET.
5. THE DIVERSION CHANNEL SHOULD BE THE SAME WIDTH AND DEPTH AS THE EXISTING CHANNEL.

M.W.	JUNE 28, 1993
M.W.	MAY 14, 1993
M.W.	OCTOBER 23, 1992
M.W.	JUNE 28, 1989

GEORGIA DEPARTMENT OF TRANSPORTATION

EXAMPLES OF DIVERSION CHANNELS

D-3

CONTRACTING ENGINEERS INCORPORATED

LAKE ALICE DAM BREACH REMEDIATION

* TEMPORARY DIVERSION DETAIL

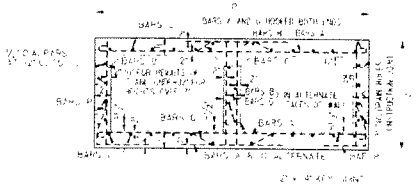
REVISIONS

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

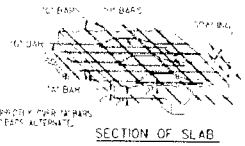
REINFORCING STEEL - BARRELS

BARREL DESIGN NO. 1 (FOR 2' TO 10.0' DEPTH OF FILL OVER BOX CULVERT)	BARREL DESIGN NO. 2 (FOR 2' TO 20.0' DEPTH OF FILL)	DIMENSIONS	QUANTITIES

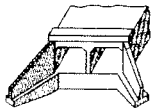
CLEAR SPAN	CLEAR HEIGHT	BARREL DESIGN NO. 1 (FOR 2' TO 10.0' DEPTH OF FILL OVER BOX CULVERT)	BARREL DESIGN NO. 2 (FOR 2' TO 20.0' DEPTH OF FILL)	DIMENSIONS	QUANTITIES	CLEAR HEIGHT	CLEAR SPAN
DOUBLE							DOUBLE
7'	4'					4'	7'
	5'					5'	
8'	4'					4'	8'
	5'					5'	
	6'					6'	
9'	4'					4'	9'
	5'					5'	
	6'					6'	
	7'					7'	
TRIPLE							TRIPLE
7'	4'					4'	7'
	5'					5'	
8'	4'					4'	8'
	5'					5'	
	6'					6'	
9'	4'					4'	9'
	5'					5'	
	6'					6'	
	7'					7'	

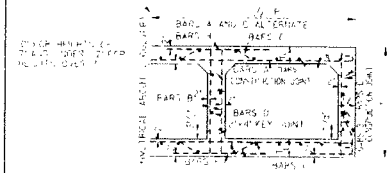


SECTION OF BARREL

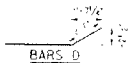


SECTION OF SLAB SHOWING REINFORCING





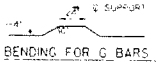
HALF SECTION OF BARREL



BARS D

BARS E

TOP BARS C BOTTOM



BENDING FOR G BARS

GENERAL NOTES

1. CHAMFER-CHAMFER ALL EXPOSED EDGES, 3/4".

2. APRON WALLS MAY BE OMITTED IF ENGINEER APPROVES. ENGINEER MAY ALSO REQUIRE BOTTOM SLAB TO EXTEND TO END OF WINGS AND APRON PLACED AT THE WINGS.

3. QUANTITIES FOR STEEL SHOWN ARE COMPUTED CONSERVATIVELY AND INCLUDE BARS AS PART OF BARREL QUANTITIES. STEEL PER LINEAR FT. IS AN AVERAGE VALUE FOR A CULVERT OF 40' LENGTH ALLOWING ONE LAP IN LONGITUDINAL BARS.

4. SIZE OF CULVERT - IN DETERMINING SIZE OF CULVERT, STATE CLEAR SPAN FIRST, E.G. 2-4' X 4' CULVERT HAS A 9' CLEAR SPAN AND A 5' CLEAR HEIGHT.

5. COVER CONCRETE TO HAVE MINIMUM OF 1.5 BELOW BOTTOM OF BASE OF CONCRETE PAVEMENT.

BOX CULVERT REQUIREMENTS:

MAXIMUM FILL HEIGHT FROM TOP OF CULVERT TO BOTTOM OF SUBSTRUCTURE OF PAVEMENT SHALL BE 20' NO FILL.

MAXIMUM POUR LENGTH SHALL NOT EXCEED 40 FEET ALONG THE LENGTH OF THE CULVERT.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE PLACED IN THE BARREL NORMAL TO THE CENTERLINE OF CULVERT AT THE OUTSIDE SHOULDER BREAK POINTS. LONGITUDINAL BARREL REINFORCING STEEL SHALL NOT BE CONTINUOUS THROUGH THESE JOINTS PROVIDED THAT THE JOINTS ARE MORE THAN 15 FEET FROM THE BARREL ENDS.

*** TRANSVERSE CONSTRUCTION JOINTS OCCUR WITHIN 15 FEET OF THE BARREL ENDS OR WITHIN THE LIMITS OF THE PAVEMENT, THE LONGITUDINAL BARREL REINFORCING SHALL THEN BE CONTINUOUS THROUGH SUCH JOINTS. THE MINIMUM LENGTH OF LAP SPLICE FOR LONGITUDINAL REINFORCING SHALL BE 24 INCHES.

TRANSVERSE CONSTRUCTION JOINTS PLACED AT ANY OTHER LOCATION NOT SPECIFIED ABOVE SHALL BE FORMED WITH NO LONGITUDINAL REINFORCING STEEL PASSING THROUGH THE JOINTS.

	STATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA
	TITLE	STANDARD REINFORCED CONCRETE BOX CULVERTS DOUBLE 7' X 4' TO TRIPLE 9' X 10' FOR DEPTHS OF FILL UP TO 20 FEET
	SCALE	NO SCALE — REVISED NOVEMBER, 2002
	DRAWN / CHECKED / TRACED / CHECKED	SUBMITTED: STATE BRIDGE DESIGN ENGINEER APPROVED: CHIEF ENGINEER
	NUMBER	2326
	SHEET	OF 7

LAKE ALICE DAM BREACH REMEDIATION

• DOUBLE 8X8 BOX CULVERT BARREL DETAIL

CONTRACTING ENGINEERS INCORPORATED

REVISION NO.

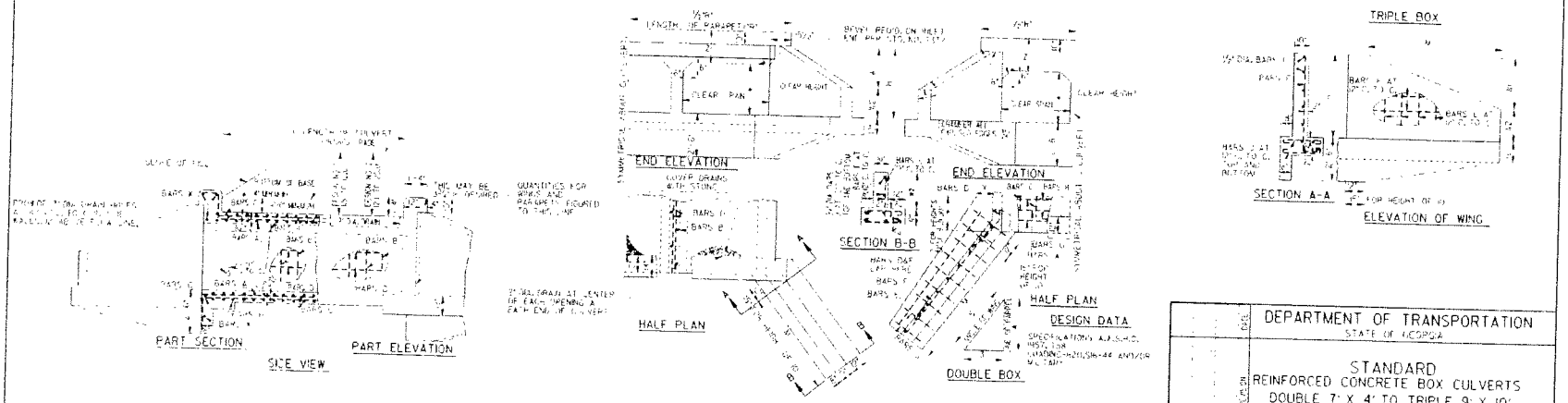
WINGWALLS AND PARAPETS

DIMENSIONS

CLEAR SPAN	CLEAR HEIGHT	FOR 4' WIDE		FOR 6' WIDE		FOR ALL WIDTHS				
		H	*	I	*	K	U	P (STEEL)	P (CONCRETE)	V
7'	4'	2'-4"	2'-4½"	3'-1"	3'-3½"	1'-10½"	3'-6"	17'-4"	24'-1"	0
	5'	2'-11"	3'-10½"	4'-0½"	5'-10½"	1'-10½"	4'-6"	19'-4"	26'-1"	0
	6'	3'-7"	4'-8½"	5'-0"	7'-4½"	1'-10½"	5'-6"	21'-4"	28'-1"	0
	7'	4'-3½"	5'-6½"	5'-11½"	8'-10½"	1'-10½"	6'-6"	23'-4"	30'-1"	0
8'	4'	2'-4"	2'-10½"	3'-1"	3'-9½"	1'-10½"	3'-6"	18'-0"	27'-0"	0
	5'	2'-11"	3'-10½"	4'-0½"	5'-10½"	1'-10½"	4'-6"	20'-4"	28'-1"	0
	6'	3'-7"	4'-8½"	5'-0"	7'-4½"	1'-10½"	5'-6"	22'-4"	29'-1"	0
	7'	4'-3½"	5'-6½"	5'-11½"	8'-10½"	1'-10½"	6'-6"	24'-4"	30'-1"	0
9'	4'	2'-4"	2'-10½"	3'-1"	3'-9½"	1'-10½"	3'-6"	19'-0"	30'-0"	0
	5'	2'-11"	3'-10½"	4'-0½"	5'-10½"	1'-10½"	4'-6"	21'-4"	31'-1"	0
	6'	3'-7"	4'-8½"	5'-0"	7'-4½"	1'-10½"	5'-6"	23'-4"	32'-1"	0
	7'	4'-3½"	5'-6½"	5'-11½"	8'-10½"	1'-10½"	6'-6"	25'-4"	33'-1"	0
10'	4'	2'-4"	2'-10½"	3'-1"	3'-9½"	1'-10½"	3'-6"	20'-0"	33'-0"	0
	5'	2'-11"	3'-10½"	4'-0½"	5'-10½"	1'-10½"	4'-6"	22'-4"	34'-1"	0
	6'	3'-7"	4'-8½"	5'-0"	7'-4½"	1'-10½"	5'-6"	24'-4"	35'-1"	0
	7'	4'-3½"	5'-6½"	5'-11½"	8'-10½"	1'-10½"	6'-6"	26'-4"	36'-1"	0

REINFORCING STEEL FOR 4 WINGWALLS & 2 PARAPETS

CLEAR HEIGHT	CLEAR SPAN	5/8" DIA. DOUBLE	5/8" DIA. TRIPLE
4'	7'	16'-8"	24'-1"
5'		17'-8"	25'-1"
6'		18'-8"	26'-1"
7'		19'-8"	27'-1"
4'	8'	17'-0"	27'-0"
5'		18'-4"	28'-1"
6'		19'-8"	29'-1"
7'		21'-0"	30'-1"
4'	9'	18'-0"	30'-0"
5'		19'-4"	31'-1"
6'		20'-8"	32'-1"
7'		22'-0"	33'-1"
4'	10'	19'-0"	33'-0"
5'		20'-4"	34'-1"
6'		21'-8"	35'-1"
7'		23'-0"	36'-1"



DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD
REINFORCED CONCRETE BOX CULVERTS
DOUBLE 7' X 4' TO TRIPLE 9' X 10'
FOR DEPTHS OF FILL UP TO 20 FEET

NUMBER 2326

LAKE ALICE DAM BREACH REMEDIATION

* DOUBLE 8X8 BOX CULVERT WINGWALLS & PARAPET DETAIL

CONTRACTING ENGINEERS INCORPORATED