

JOINT
PUBLIC NOTICE

CHARLESTON DISTRICT, CORPS OF ENGINEERS
69A Hagood Avenue
Charleston, South Carolina 29403-5107
and
THE S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
Office of Environmental Quality Control
Water Quality Certification and Wetlands Programs Section
2600 Bull Street
Columbia, South Carolina 29201

REGULATORY DIVISION

Refer to: P/N # 2008-00071-2T (Modified)

5 September 2013

Pursuant to Sections 401 and 404 of the Clean Water Act (33 U.S.C. 1344), an application has been submitted to the Department of the Army and the S.C. Department of Health and Environmental Control by

HOLCIM INC.
C/O
SYNTERRA
148 RIVER STREET, SUITE 220
GREENVILLE, SOUTH CAROLINA 29601

for a permit modification to construct a new stream channel and reroute water flow from an existing diversion canal to the new stream channel in

HOME BRANCH

at a location described as being within the Holcim Inc. facility on SC Highway 453 North in Holly Hill, Orangeburg County, South Carolina (33.29221 Latitude/ 80.42532 Longitude)

In order to give all interested parties an opportunity to express their views

NOTICE

is hereby given that written statements regarding the proposed work will be received by the **Corps** until

15 Days from the Date of this Notice,

and **SCDHEC** will receive written statements regarding the proposed work until

30 Days from the Date of this Notice

from those interested in the activity and whose interests may be affected by the proposed work.

The proposed project is a modification to permit SAC-2008-00071-2T that was issued on October 5, 2010. The original permitted work consisted of the placement of fill material in waters of the U.S. for the construction of an embankment to re-route the water flow of Home Branch from the existing 15,000 linear foot diversion canal to a newly constructed 5,800 linear foot stream channel above the quarry. The total permitted impacts were 10 linear feet and 200 square feet of waters. The remainder of the permitted project involved the construction of a new stream channel in uplands within the quarry and the construction of a temporary embankment, and temporary sediment trap within the new channel. The proposed permit modification involves only changes to the location and design of the new channel which will be constructed in uplands through the quarry.

The project purpose remains the same as originally permitted, which is to re-direct flow of Home Branch from the existing diversion canal to a new stream channel in order to 1) Minimize the current safety hazards associated with the potential collapse of the existing diversion canal and resulting flooding of the quarry; 2) Reduce energy consumption, air emissions, and operating costs of cement manufacturing as moisture content has increased as mining activities have approached the canal; and 3) Improve the overall environmental quality of Home Branch. Impacts associated with the proposed permit modification will also remain the same as originally permitted, which is 200 square feet and 10 linear feet of waters of the U.S. No additional impacts to waters of the U.S. will occur as a result of the proposed permit modification. The original permit also includes permit conditions that require the permittee to monitor the constructed channel and inspect the structural fill. These permit conditions will still apply to the proposed modified permit.

The proposed permit modification consists of relocating the proposed new channel towards the middle of the quarry to a location that is in close proximity to the original Home Branch before it was diverted around the quarry in the late 1970s or early 1980s. The diversion canal around the perimeter of the quarry is approximately 15,000 feet in length and was excavated to maintain flow of Home Branch from Holy Hill north of Holcim to Four Hole Swamp south of Holcim. The proposed modified route of the new channel was not an optional alternative when the original permit was issued due to quarry operations at that time. Significant changes in quarry operations and the active area being mined provide the opportunity to locate the new channel in the proposed modified location. Refer to the attached **Figure 1-2** for the permitted location, the proposed modified location, and the original location of Home Branch.

The proposed modified channel would begin near the processing facility, where the diversion canal currently intercepts Home Branch at Three-way Junction. The channel would flow southeast to an earthen structure, across the quarry, and to a new discharge point at Four Hole Swamp. The proposed modified route avoids many of the Holcim plant areas such as coal piles and RCRA Solid Waste Management Units (SWMU) that are located near the permitted channel route.

The proposed modified channel will be 6,912 feet long and was designed to resemble a natural representative stream, especially along the upstream portion where sinuosity and floodplains were incorporated into the design. The proposed modified channel was designed according to Rosgen's type C stream criteria using a combination of hydrology and hydraulic analyses, hydraulic modeling, and geotechnical considerations. Fundamentals of the stream design focused on channel pattern and dimensions. Design details encompass a temporary berm, an inlet control structure, an emergency spillway, the earthen structure and quarry wall abutments, a temporary sediment trap, as well as incorporating structures such as a vehicle bridge and conveyor overpass. The detailed design of the entire length of the channel was modeled using HEC-RAS hydraulic software. Wherever possible, a more natural stream channel was created by designing an inner channel with associated floodplains. The inner channel was designed so that the floodplains would receive water once the flow rate exceeds 99 cfs. Thus the inner channel would be 25 feet at the base, with an average depth of 2.5 feet. The width of the floodplains depend on available space and will range from approximately 15 feet to 85 feet.

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The proposed modified channel can adequately convey 100-year storm flows of 1,025 cfs. However, as a precaution to avoid flooding of the production plant area, an emergency spillway will be installed to receive flows greater than 25-year storm events. Refer to Figures 7-4 and 7-9. The spillway will provide flow relief if large debris becomes lodged within the channel. Any water lost from the channel via the spillway would collect in the active quarry sump and be returned to Four Hole Swamp via the quarry dewatering system. With current design, the spillway would discharge approximately 64 cfs and 680 cfs during 50-year and 100-year storm event, respectively.

The upstream portion of the new channel from Three-Way Junction to the overhead conveyor will be constructed by excavating uplands. The remainder of channel will be constructed from backfill to create an earthen structure that will be elevated approximately 65 feet above the existing quarry floor. The following are specific design features that will be incorporated into the earthen structure: 1) Clay soils removed from the quarry as overburden are suitable for construction of the earthen structure. Soils would be compacted to 95 percent of Standard Proctor density within two percent of the optimum moisture content; 2) Outboard slopes of the structure would be 3: 1 (horizontal to vertical); 3) Berms at the top of the structure would be 22 feet wide on the west side to accommodate vehicles and 8 feet on the east side; 4) Prior to placement of fill material the ground surface will be scraped to rock; 5) A keyway would be constructed beneath the clay backfill and a blanket drain installed at the toe of the slope; 6) Perforated pipes (24 inch) would be installed at both the north and south abutments of the earthen structure; and 7) The quarry wall would be benched and lined with geosynthetic clay liner (GCL) at each end of the structure. Details of these features are illustrated in Figures 7-12A, 7-12B, 7-12C and 7-12D. Drainage pipes (36 inch) will be installed at the base of the structure to serve to equilibrate water levels on either side if the structure as the quarry floods after mining operations cease. The approximate location of these drainage pipes are shown on Figures 7-5 through 7-8.

The proposed modified channel was designed to more closely resemble a natural representative stream, especially along the upstream portion where floodplains and depressional wetlands were incorporated into the design. This upstream or northern portion of the stream would be excavated from existing grade. A riparian buffer of indigenous vegetation would be established along the excavated channel length. The downstream or southern portion of the proposed stream would be constructed as an elevated earthen structure, which will be vegetated in a different manner than the northern portion of the channel. Given that it will take time to establish a good vegetation cover, precautionary erosion control measures will be implemented in specific sections of the proposed channel. In an effort to restore a representative channel, vegetative erosion control measures would be utilized wherever possible. However, bioengineering, which blends structural and vegetative stabilization methods, will be used where flow velocities, shear stress, and bank stability preclude stabilization by vegetation alone. Hard armoring could not be avoided at the vehicle bridge and conveyor overpass because of potential high velocities, shear stress, and shading. Goals of the vegetation plan include: establishment of a riparian buffer of indigenous vegetation; stabilization of channel banks and slopes; minimization of surface erosion, sedimentation, and associated off-site impacts; enhancement of terrestrial, riparian, and aquatic habitat; and conditions that will be self-sustainable and require minimal remedial work or maintenance.

The District Engineer has concluded that the discharges associated with this project, both direct and indirect, should be reviewed by the South Carolina Department of Health and Environmental Control in accordance with provisions of Section 401 of the Clean Water Act. As such, this notice constitutes a request, on behalf of the applicant, for certification that this project will comply with applicable effluent limitations and water quality standards. The work shown on this application must also be certified as consistent with applicable provisions of the South Carolina Coastal Zone Management Act (15 CFR 930). The District Engineer will not process this application to a conclusion until such certifications are received. The applicant is hereby advised that supplemental information may be required by the State to facilitate the review. Persons wishing to comment or object to State certification must submit all comments in writing to the S.C. Department of Health and Environmental Control at the above address within thirty (30) days of the date of this notice.

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5 September 2013

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Implementation of the proposed project would not impact waters of the U.S. Our initial determination is that the proposed action would not have a substantial individual or cumulative adverse impact on EFH or fisheries managed by the South Atlantic Fishery Management Council and the National Marine Fisheries Service (NMFS). Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the NMFS.

The District Engineer has consulted the most recently available information and has determined that the project will have no effect on any Federally endangered, threatened, or proposed species and will not result in the destruction or adverse modification of designated or proposed critical habitat. This public notice serves as a request to the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for any additional information they may have on whether any listed or proposed endangered or threatened species or designated or proposed critical habitat may be present in the area which would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1973 (as amended).

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), this public notice also constitutes a request to Indian Tribes to notify the District Engineer of any historic properties of religious and cultural significance to them that may be affected by the proposed undertaking.

In accordance with the NHPA, the District Engineer has also consulted the latest published version of the National Register of Historic Places for the presence or absence of registered properties, or properties listed as being eligible for inclusion therein, and this worksite is not included as a registered property or property listed as being eligible for inclusion in the Register. To insure that other cultural resources that the District Engineer is not aware of are not overlooked, this public notice also serves as a request to the State Historic Preservation Office to provide any information it may have with regard to historic and cultural resources.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for a public hearing shall state, with particularity, the reasons for holding a public hearing.

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the activity on the public interest and will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency (EPA), under authority of Section 404(b) of the Clean Water Act and, as appropriate, the criteria established under authority of Section 102 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the project must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the project will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production and, in general, the needs and welfare of the people. A permit will be granted unless the District Engineer determines that it would be contrary to the public interest. In cases of conflicting property rights, the Corps of Engineers cannot undertake to adjudicate rival claims.

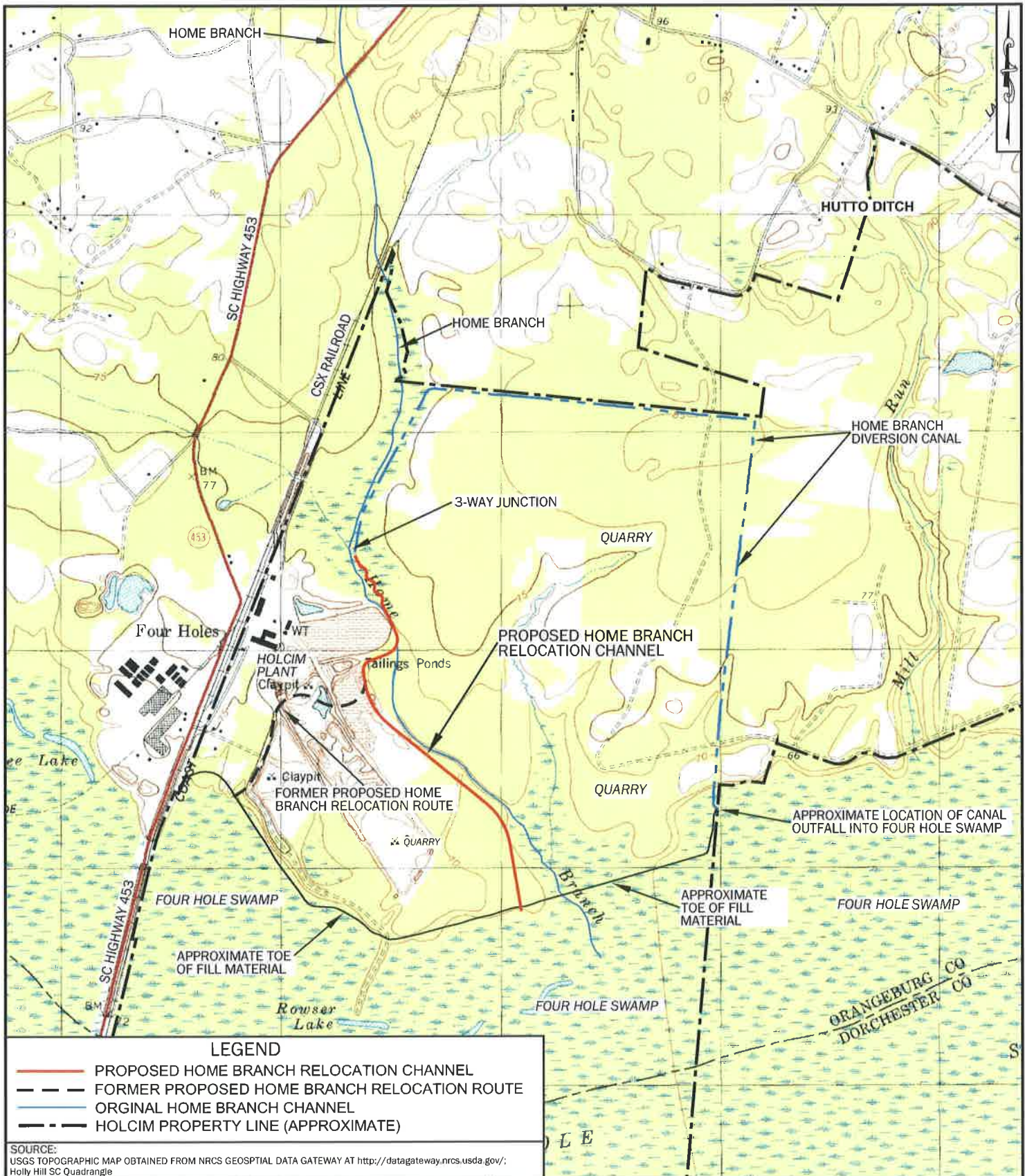
REGULATORY DIVISION

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The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this project. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the activity.

If there are any questions concerning this public notice, please contact **Tracy Dotolo Sanders** at 843-329-8044 or toll free at 1-866-329-8187.



LEGEND

- PROPOSED HOME BRANCH RELOCATION CHANNEL
- - - FORMER PROPOSED HOME BRANCH RELOCATION ROUTE
- - - ORIGINAL HOME BRANCH CHANNEL
- - - HOLCIM PROPERTY LINE (APPROXIMATE)

SOURCE: USGS TOPOGRAPHIC MAP OBTAINED FROM NRCS GEOSPATIAL DATA GATEWAY AT <http://datagateway.nrcs.usda.gov/>; Holly Hill SC Quadrangle



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GREENVILLE, SOUTH CAROLINA
PHONE 864-421-9999
www.synterracorp.com



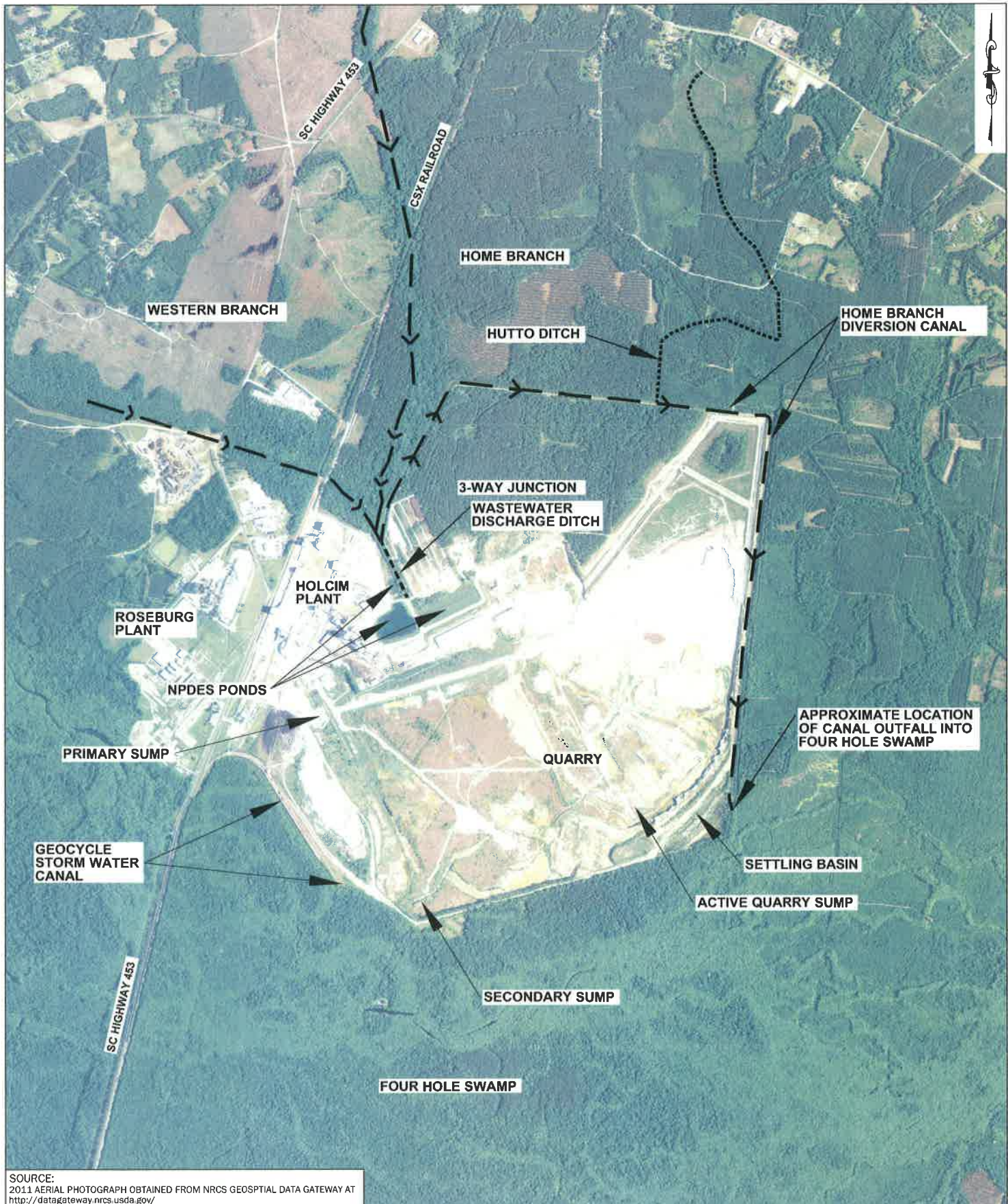
**FIGURE 1-2
USGS TOPOGRAPHIC MAP
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA**

DRAWN BY: C. NEWELL
PROJECT MANAGER: MARK TAYLOR
LAYOUT: FIG 1.2 (USGS MAP)

DATE: 07/18/2013
CONTOUR INTERVAL: 5 FEET
MAP DATE: -



P:\VOLCIM_16704_ASS535\33_Revamp Channel Route\REVISED SECTION 404 PERMIT\DWG_1670433-USGS.dwg



SOURCE:
 2011 AERIAL PHOTOGRAPH OBTAINED FROM NRCS GEOSPATIAL DATA GATEWAY AT
<http://datagateway.nrcs.usda.gov/>

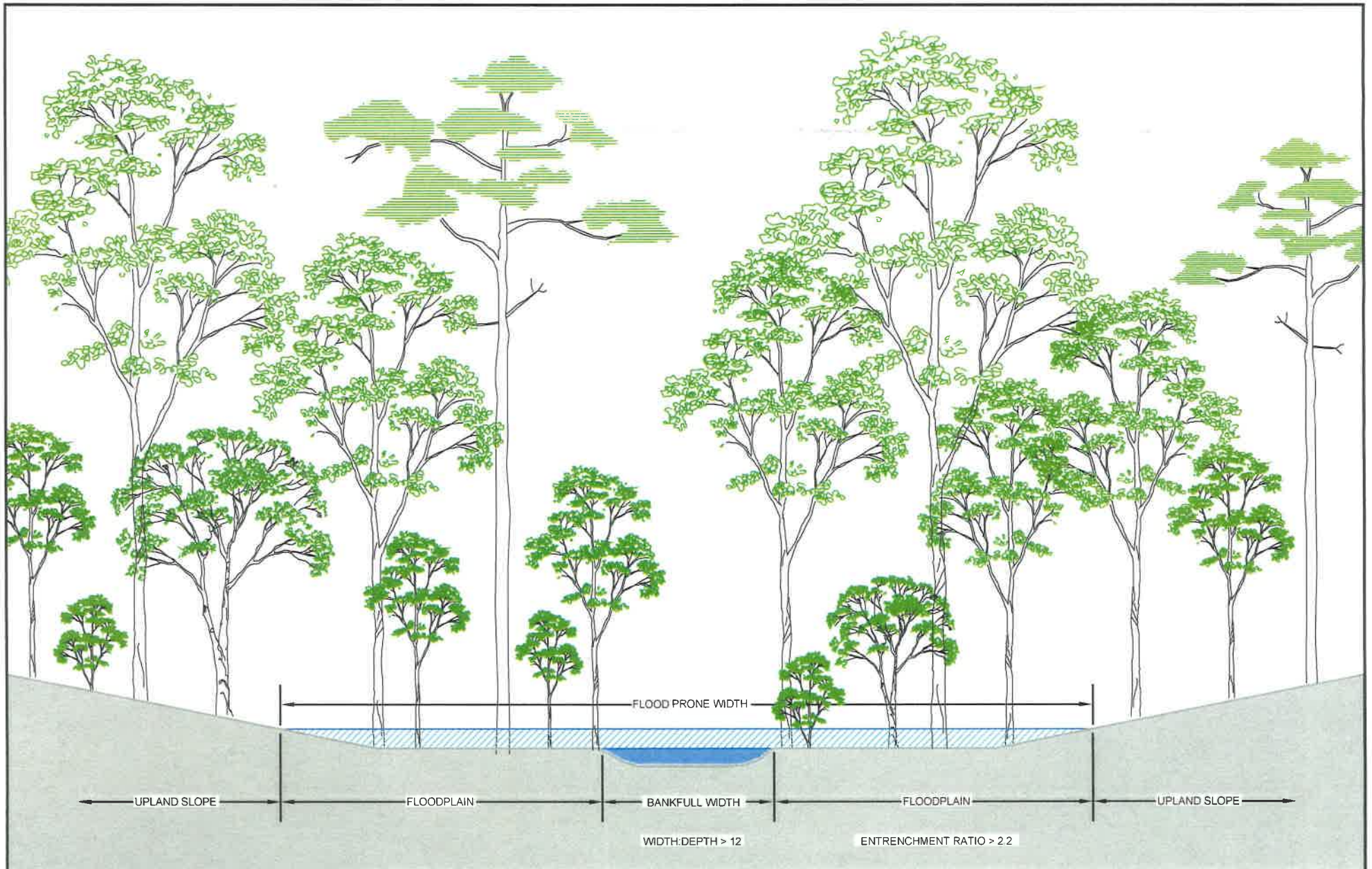


GRAPHIC SCALE
 1000 0 1000 2000
 IN FEET

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DRAWN BY: C. NEWELL DATE: 07/18/2013
 PROJECT MANAGER: MARK TAYLOR
 LAYOUT: FIG 1-3 EXIST CONDITIONS

FIGURE 1-3
EXISTING SITE CONDITIONS
2011 NRCS AERIAL PHOTOGRAPH
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA

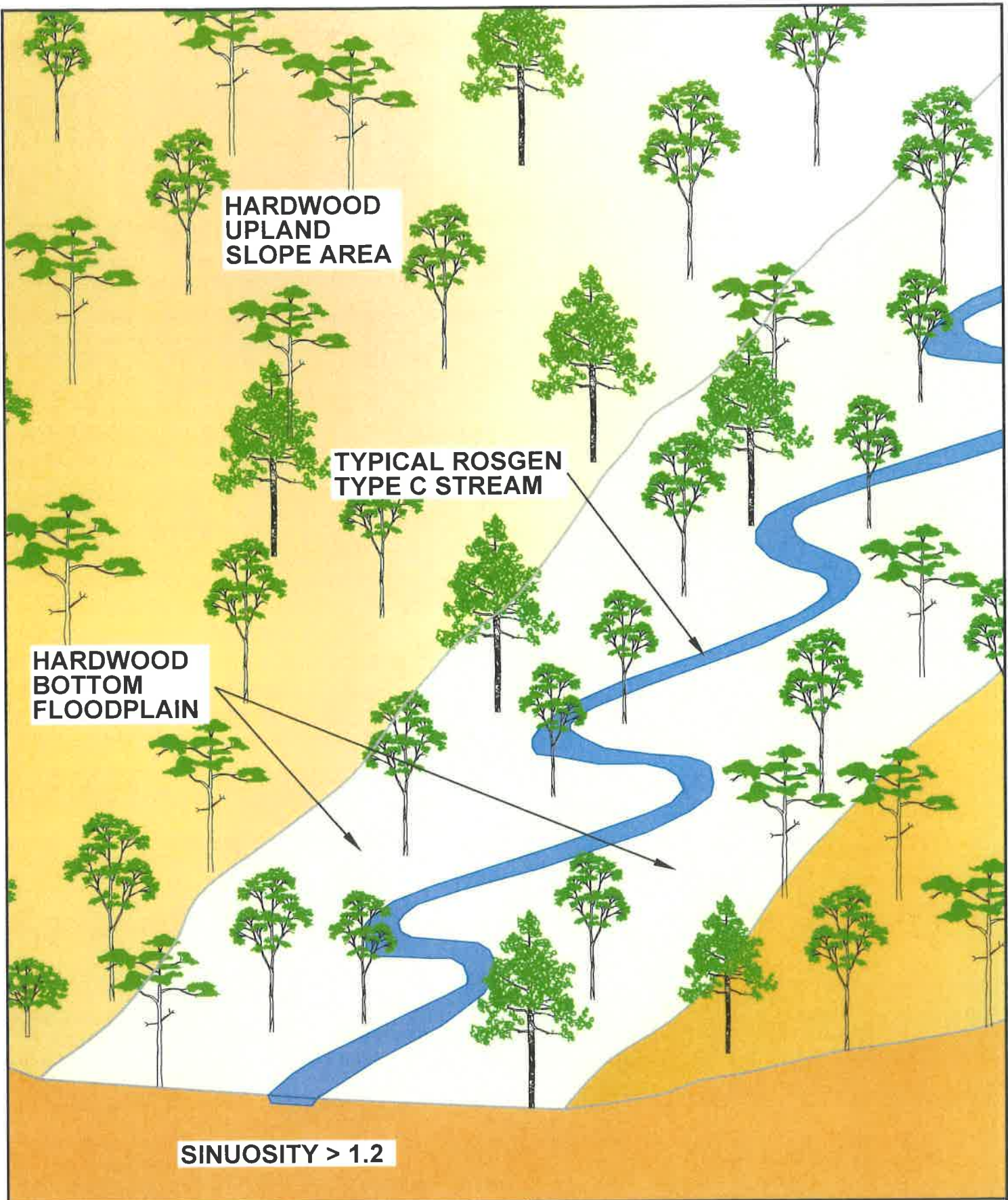


NOT TO SCALE

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DRAWN BY J CHASTAIN DATE 07/18/2013
 PROJECT MANAGER MARK TAYLOR
 LAYOUT 7-1 ROSGEN X-SECT

**FIGURE 7-1
 TYPICAL CROSS-SECTION
 OF ROSGEN TYPE C STREAM
 HOME BRANCH RELOCATION
 HOLCIM (US) INC.
 HOLLY HILL, SOUTH CAROLINA**



**HARDWOOD
BOTTOM
FLOODPLAIN**

**HARDWOOD
UPLAND
SLOPE AREA**

**TYPICAL ROSGEN
TYPE C STREAM**

SINUOSITY > 1.2

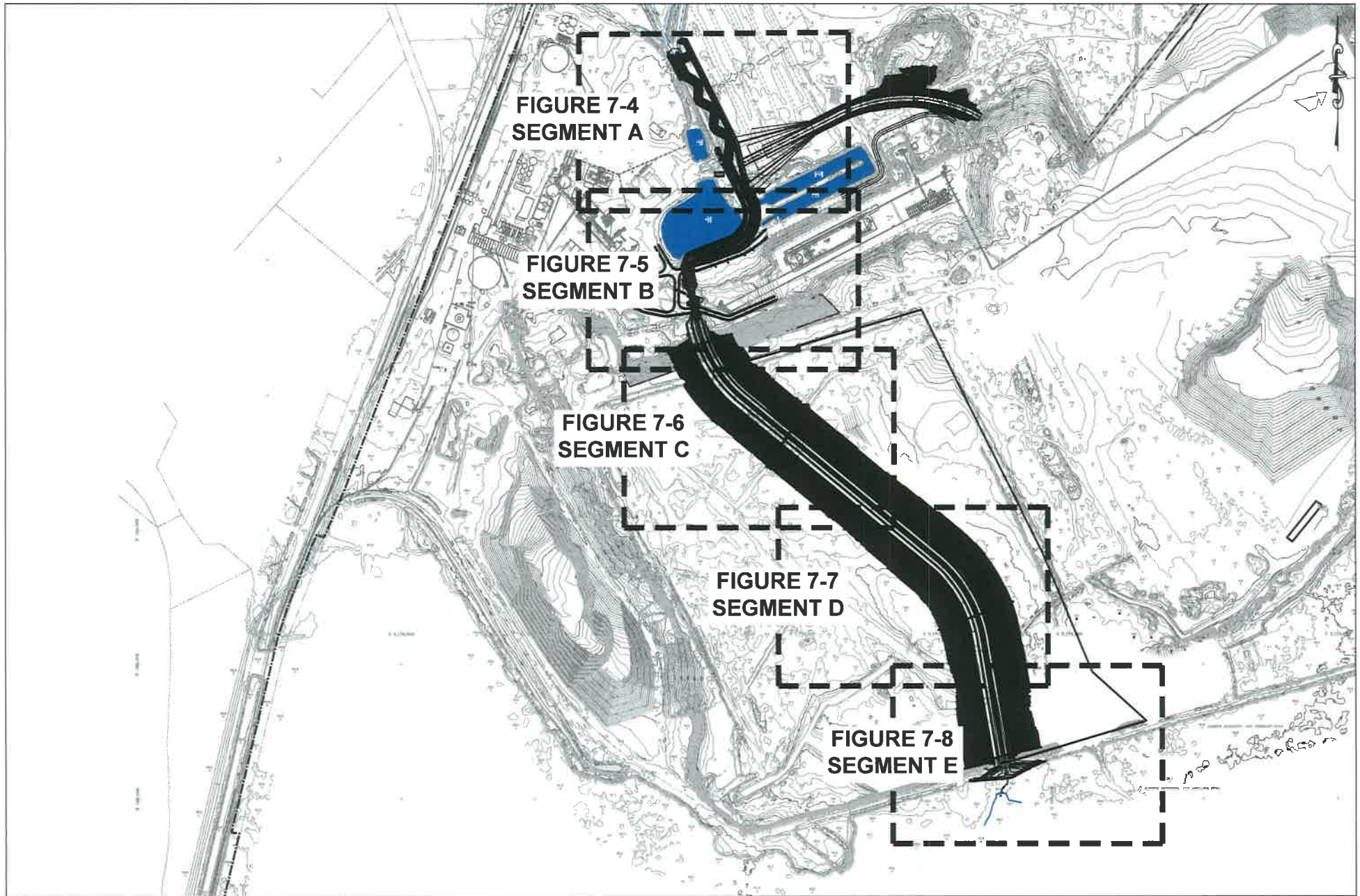
**FIGURE 7-2
TYPICAL PLAN-VIEW OF ROSGEN TYPE C STREAM
HOME BRANCH RELOCAITON
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA**



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DRAWN BY JOHN CHASTAIN DATE 07/18/2013
PROJECT MANAGER M TAYLOR
LAYOUT 7-2 ROSGEN PLAN VIEW

07/26/2013 10:38 AM P:\HOLCIM 367\04 ABSESS\33 Revised Channel Route\REVISED SECTION 404 PERM\DWG\3670433-ROSGEN C.dwg



**FIGURE 7-4
SEGMENT A**

**FIGURE 7-5
SEGMENT B**

**FIGURE 7-6
SEGMENT C**

**FIGURE 7-7
SEGMENT D**

**FIGURE 7-8
SEGMENT E**

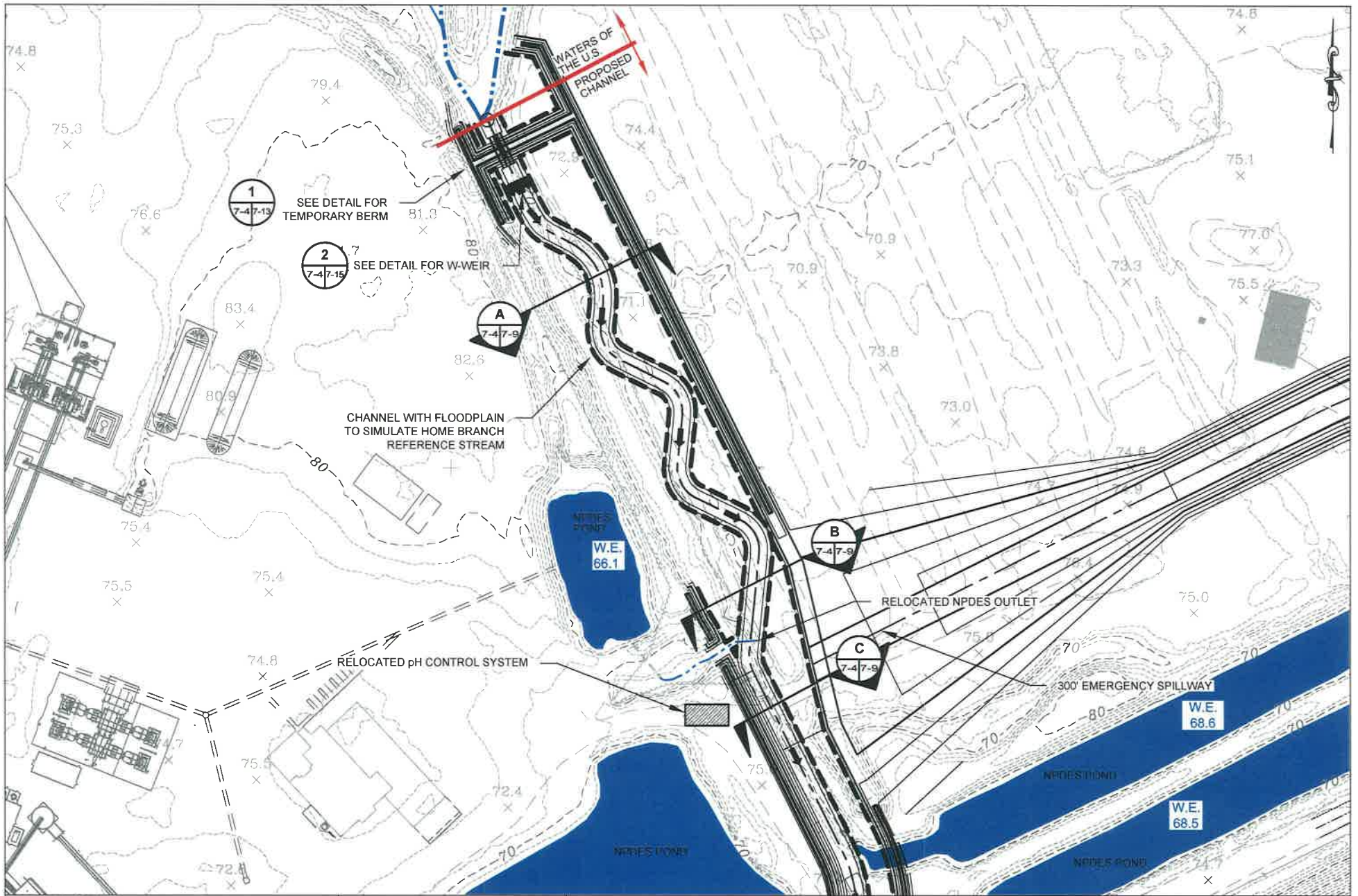
NOTES:
 1) BASE TOPOGRAPHY PROVIDED BY:
 LANDAIR MAPPING
 PEACHTREE CITY, GEORGIA
 DATE OF PHOTOGRAPHY: JUNE 16, 2005
 AND EXISTING QUARRY PILE SURVEYED BY:
 SYNTERRA
 GREENVILLE, SOUTH CAROLINA
 DATE OF SURVEY: JULY 17, 2010
 AND NEW QUARRY PILES SURVEYED BY:
 SYNTERRA
 GREENVILLE, SOUTH CAROLINA
 DATE OF SURVEY: APRIL 30, 2013



GRAPHIC SCALE
 500 0 500 1000
 SCALE: 1" = 1000'
 148 RIVER STREET, SUITE 220
 GREENVILLE, SOUTH CAROLINA 29601
 PHONE 864-421-9999
 www.synterracorp.com
 DRAWN BY: S ARLEDGE
 PROJECT MANAGER M TAYLOR
 LAYOUT 8X11H-FIG 7-3
 ORIGINAL DATE 11/21/2007
 REVISED DATE 08/14/2013
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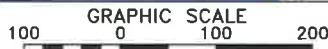
**FIGURE 7-3
 PLAN VIEW OF PROPOSED STREAM
 HOME BRANCH RELOCATION
 HOLCIM (US) INC.
 HOLLY HILL, SOUTH CAROLINA
 REVISED AUGUST 2013**

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ABBREVIATIONS:

- EL. = ELEVATION
- INV. EL. = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- W.E. = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
- TYP. = TYPICAL
- TEMP. = TEMPORARY
- RCP = REINFORCED CONCRETE PIPE



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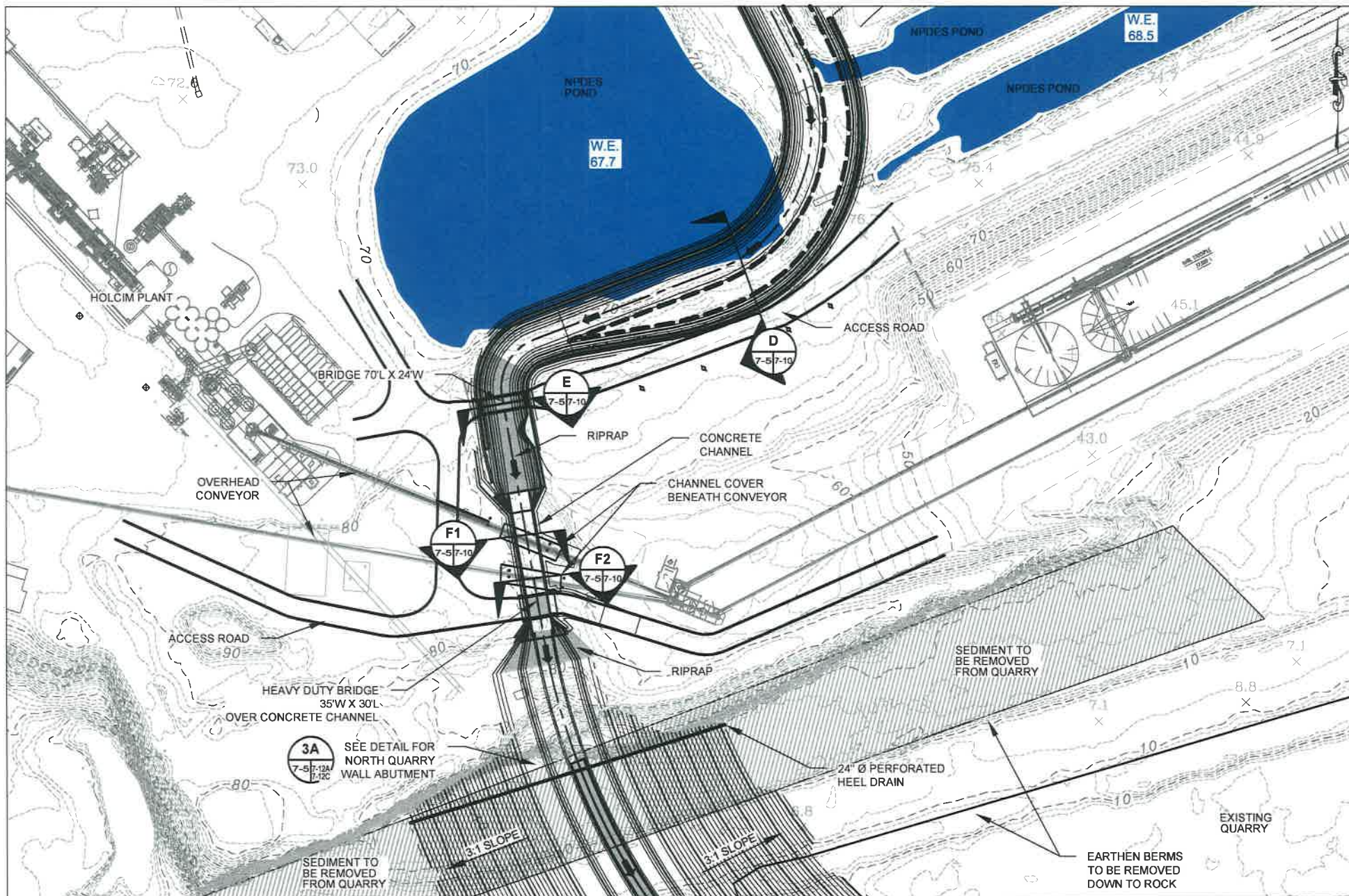
DRAWN BY S ARLEDGE
 PROJECT MANAGER M TAYLOR
 LAYOUT BX11H-FIG 7-4

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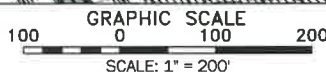
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FIGURE 7-4
PROPOSED STREAM DESIGN - SEGMENT A
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



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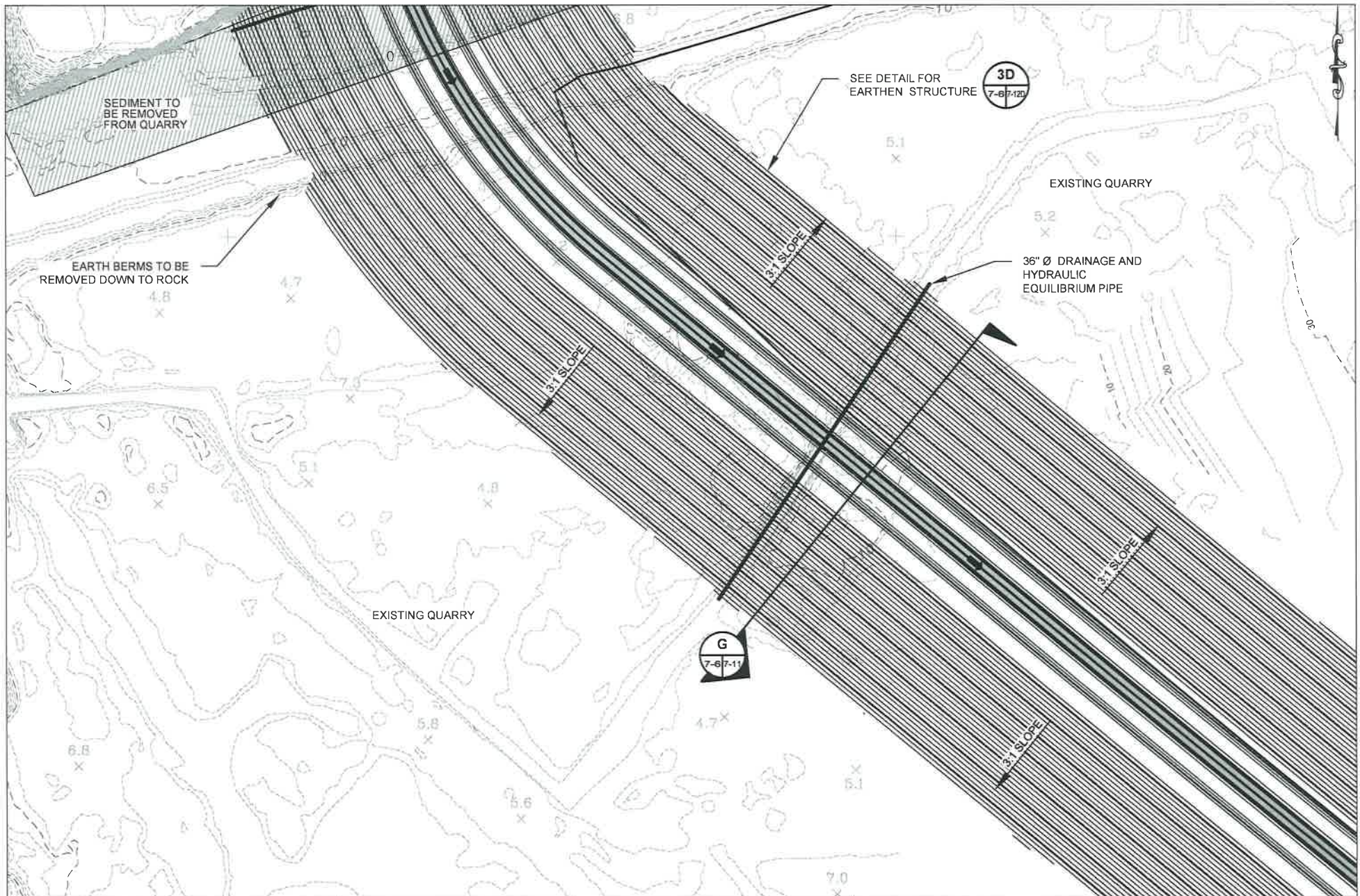
148 RIVER STREET, SUITE 220
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 PHONE 864-421-9999
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DRAWN BY: S ARLEDGE
 PROJECT MANAGER: M TAYLOR
 LAYOUT: 8X11H-FIG 7-5
 ORIGINAL DATE: 11/21/2007
 REVISED DATE: 08/14/2013
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FIGURE 7-5
PROPOSED STREAM DESIGN - SEGMENT B
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



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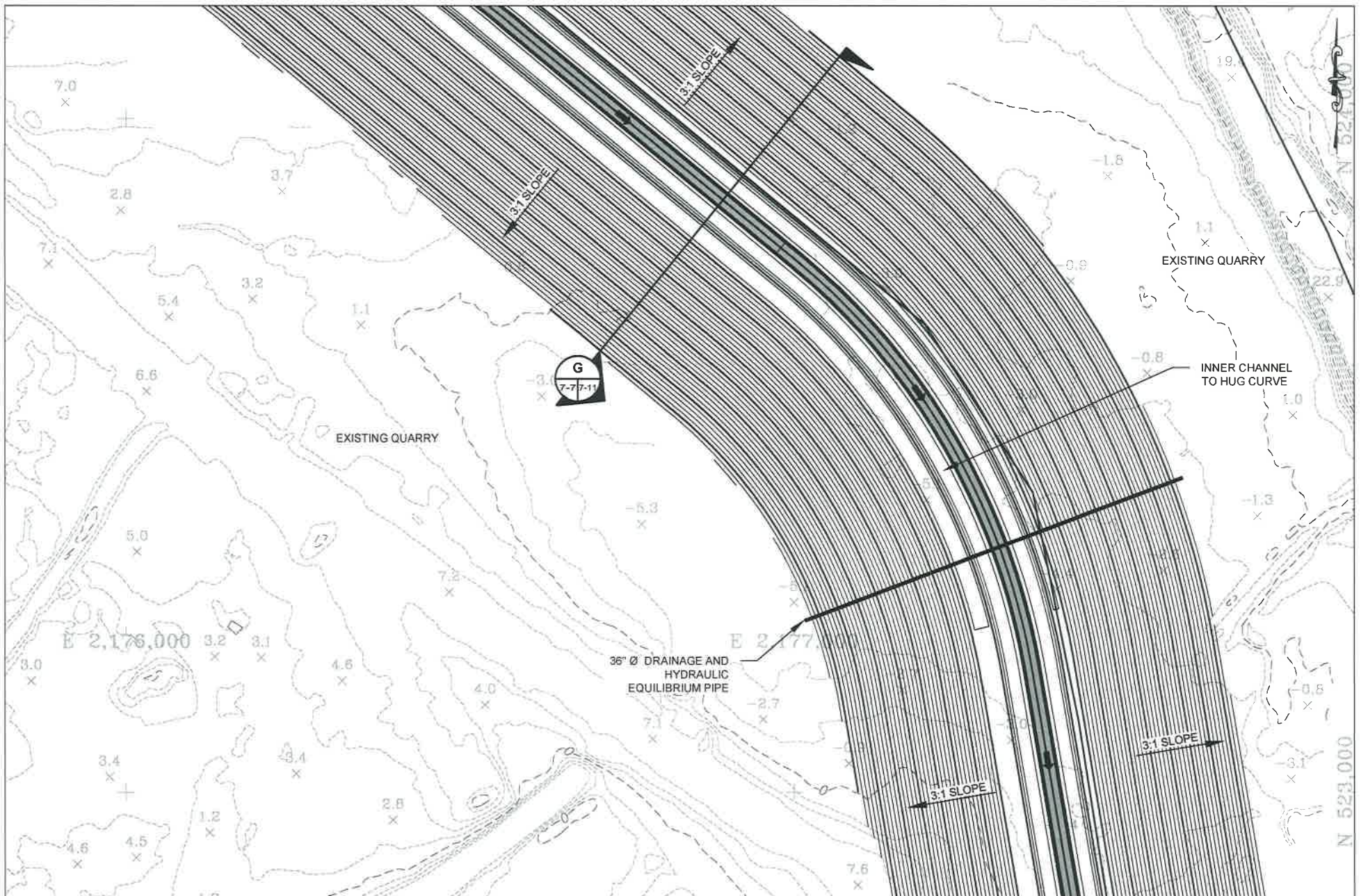
DRAWN BY S ARLEDGE
 PROJECT MANAGER M TAYLOR
 LAYOUT 8X11H-FIG 7-6

ORIGINAL DATE 11/21/2007
 REVISED DATE 08/14/2013
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FIGURE 7-6
PROPOSED STREAM DESIGN - SEGMENT C
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



ABBREVIATIONS:

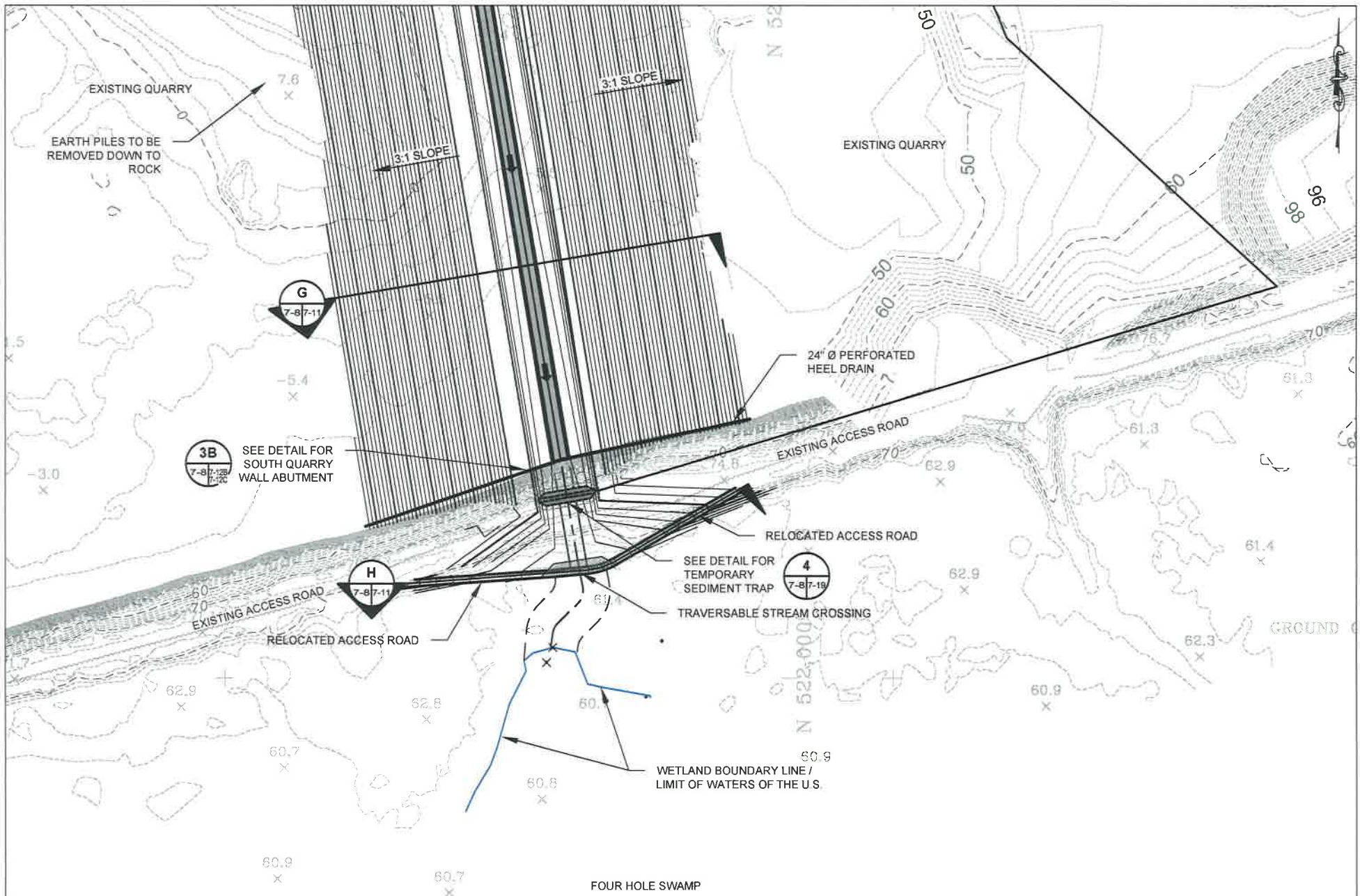
- EL. = ELEVATION
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DRAWN BY: S ARLEDGE
 PROJECT MANAGER: M TAYLOR
 LAYOUT: 8X11H-FIG 7-7
 ORIGINAL DATE: 11/21/2007
 REVISED DATE: 08/19/2013
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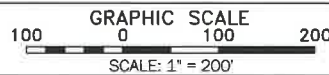
FIGURE 7-7
PROPOSED STREAM DESIGN - SEGMENT D
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



FOUR HOLE SWAMP

ABBREVIATIONS:

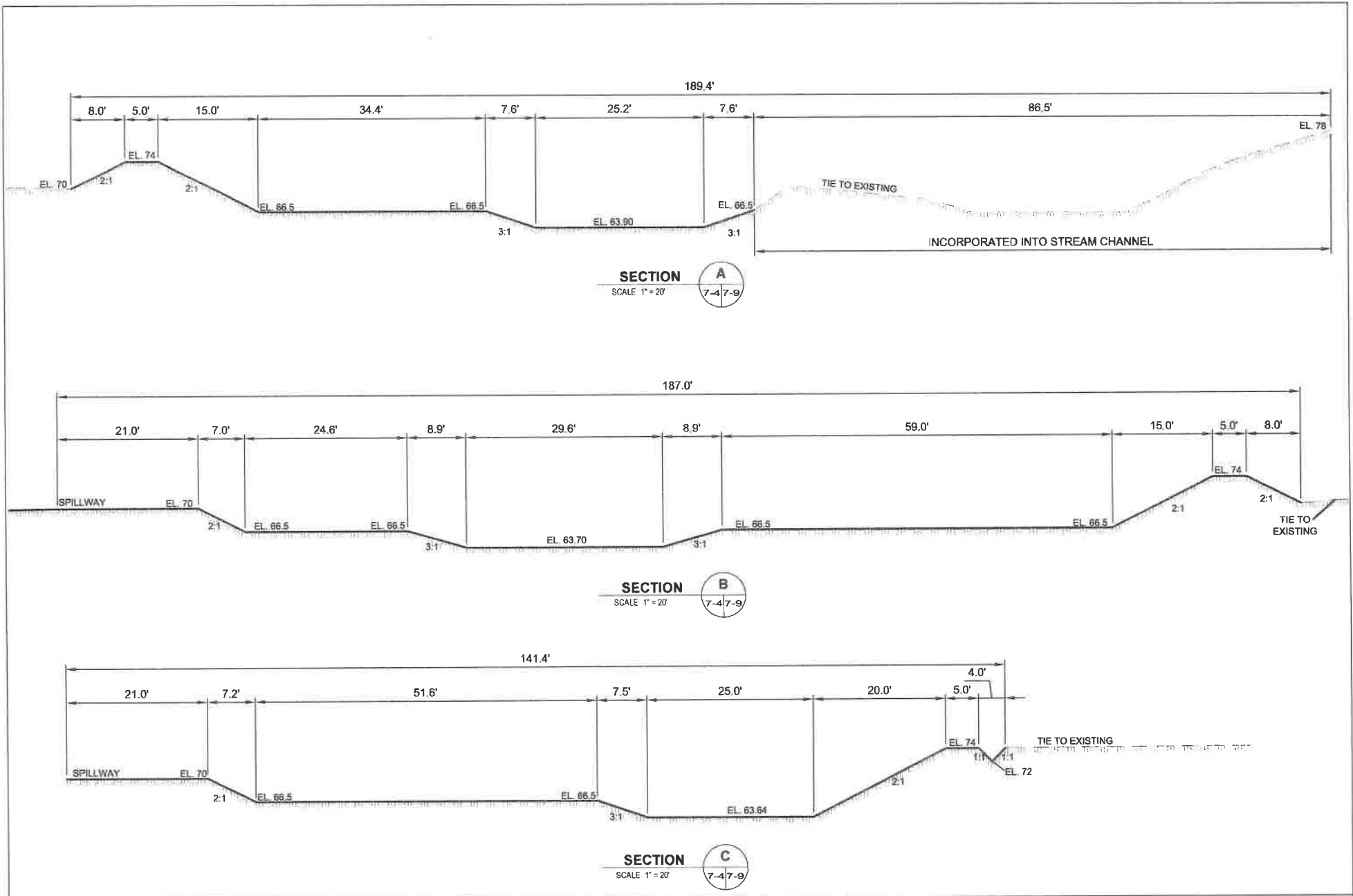
- EL = ELEVATION
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 GREENVILLE, SOUTH CAROLINA 29601
 PHONE 864-421-9999
 www.synterracorp.com

DRAWN BY: S ARLEDGE
 PROJECT MANAGER: M TAYLOR
 LAYOUT: 8X11H-FIG 7-8
 ORIGINAL DATE: 11/21/2007
 REVISED DATE: 08/19/2013
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FIGURE 7-8
PROPOSED STREAM DESIGN - SEGMENT E
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



NOTES:
ALL SECTIONS ARE CUT LOOKING DOWNSTREAM. (FROM NORTH TO SOUTH)

ABBREVIATIONS:
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 TYP = TYPICAL
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GRAPHIC SCALE
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 SCALE: 1" = 20'

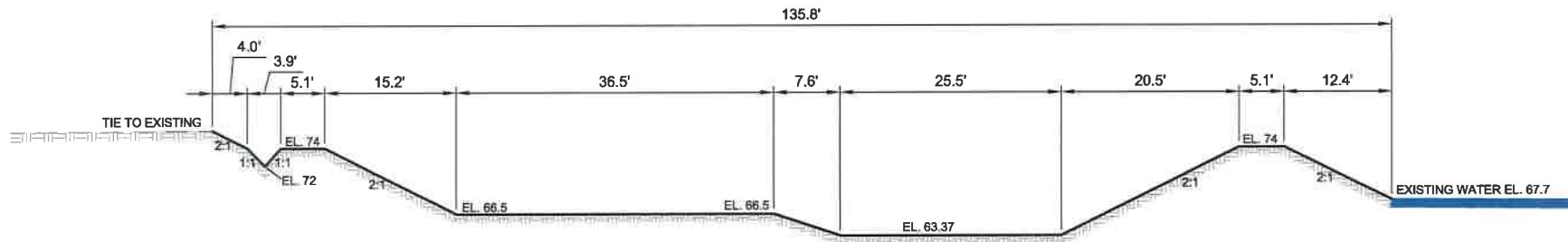
148 RIVER STREET, SUITE 220
 GREENVILLE, SOUTH CAROLINA 29601
 PHONE 864-421-9999
 www.synterracorp.com

DRAWN BY S ARLEDGE
 PROJECT MANAGER M TAYLOR
 LAYOUT 8X11H-FIG 7-9

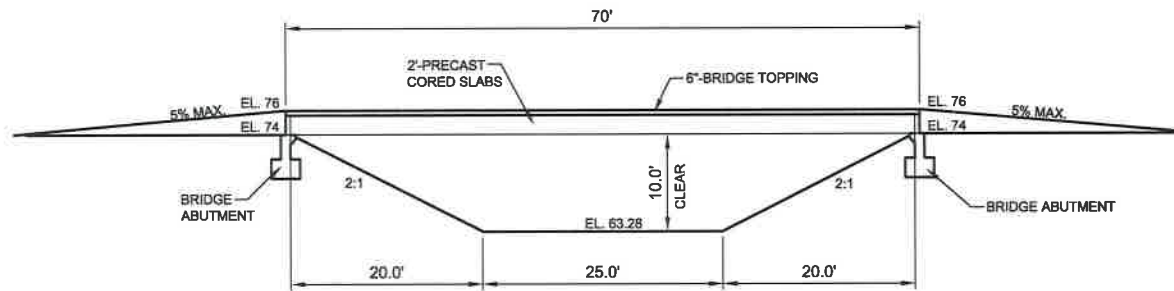
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 REVISED DATE 08/14/2013
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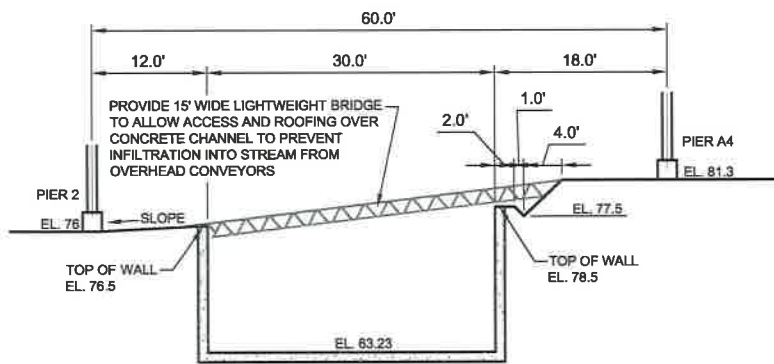
FIGURE 7-9
PROPOSED CROSS-SECTIONS A THROUGH C
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



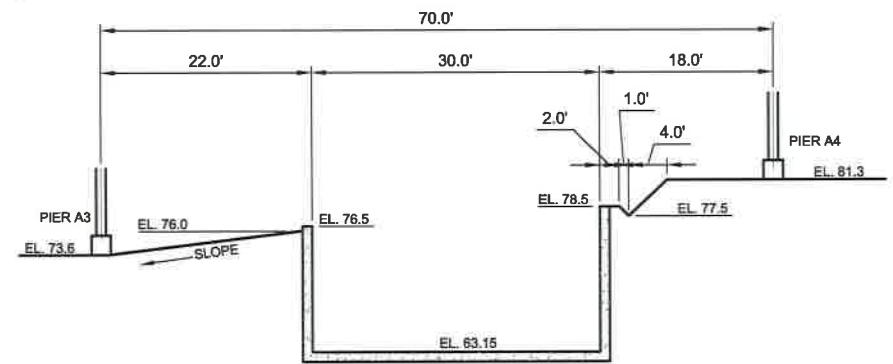
SECTION D
SCALE: 1" = 20'
7-5/7-10



SECTION E
SCALE: 1" = 20'
7-5/7-10



SECTION F1
SCALE: 1" = 20'
7-5/7-10



SECTION F2
SCALE: 1" = 20'
7-5/7-10

NOTES:
ALL SECTIONS ARE CUT LOOKING DOWNSTREAM. (FROM NORTH TO SOUTH)

- ABBREVIATIONS:**
- EL. = ELEVATION
 - INV. EL. = INVERT ELEVATION
 - Ø = DIAMETER
 - GKD = CEMENT KILN DUST
 - W.E. = WATER ELEVATION
 - NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
 - MW TYP. = MONITORING WELL = TYPICAL
 - TEMP. = TEMPORARY
 - RCP = REINFORCED CONCRETE PIPE



GRAPHIC SCALE
10 0 10 20
SCALE: 1" = 20'

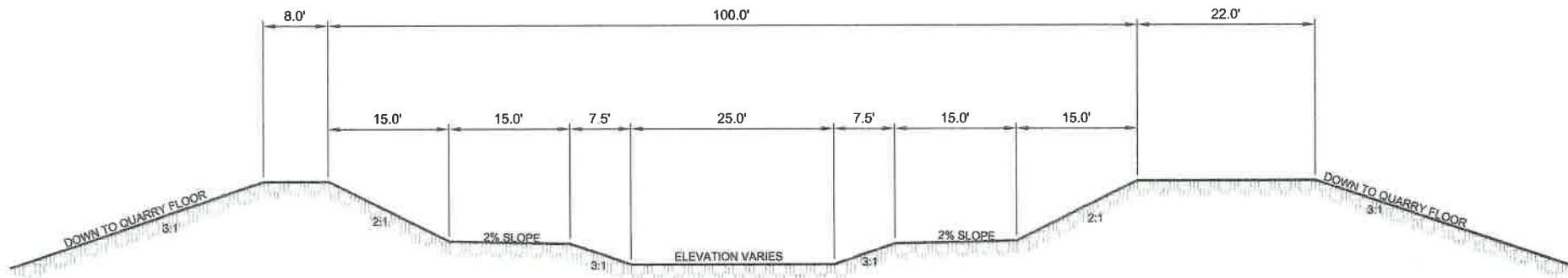
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DRAWN BY: S. ARLEDGE
PROJECT MANAGER: M. TAYLOR
LAYOUT: 8X11H-FIG 7-10
REV. C

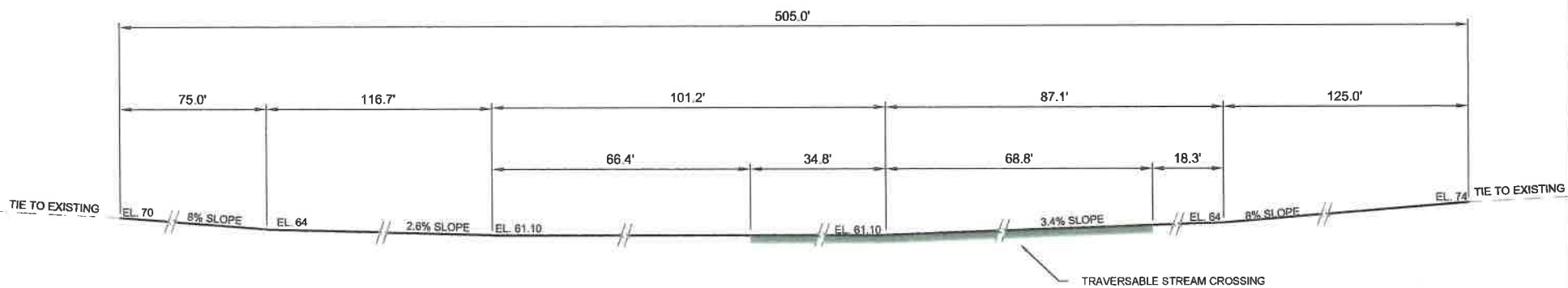
ORIGINAL DATE: 11/21/2007
REVISED DATE: 08/14/2013

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FIGURE 7-10
PROPOSED CROSS-SECTIONS D THROUGH F2
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



SECTION G
SCALE 1" = 20'

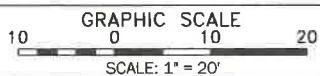


SECTION H
SCALE 1" = 20'



NOTES:
ALL SECTIONS ARE CUT LOOKING DOWNSTREAM. (FROM NORTH TO SOUTH)

- ABBREVIATIONS:**
- EL = ELEVATION
 - INV. EL = INVERT ELEVATION
 - Ø = DIAMETER
 - CKD = CEMENT KILN DUST
 - WE = WATER ELEVATION
 - NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
 - MW = MONITORING WELL
 - TYP = TYPICAL
 - TEMP = TEMPORARY
 - RCP = REINFORCED CONCRETE PIPE



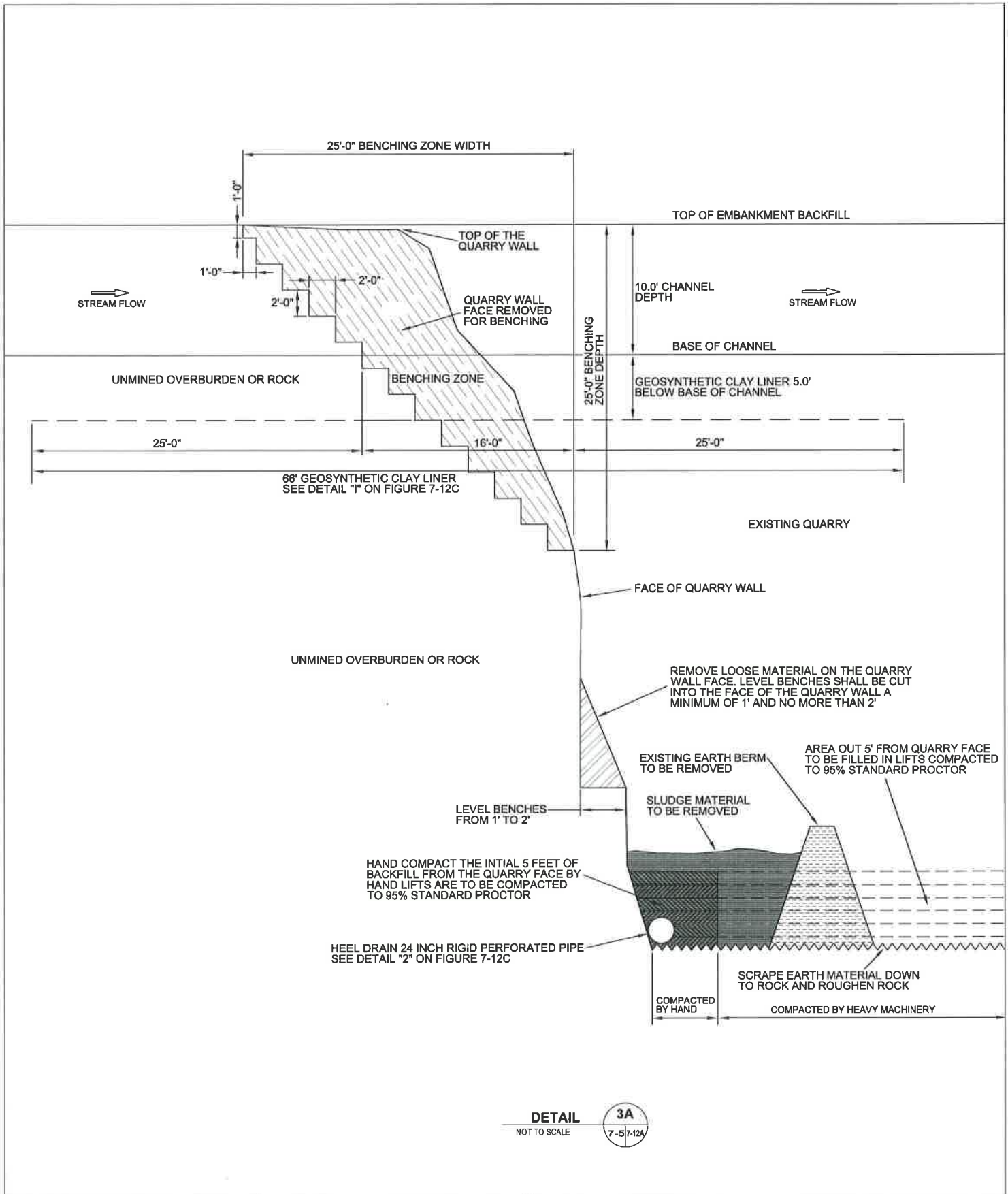
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PROJECT MANAGER M TAYLOR REVISED DATE 08/14/2013
LAYOUT 8X11H FIG 7.11 REV C

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FIGURE 7-11
PROPOSED CROSS-SECTIONS G AND H
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013

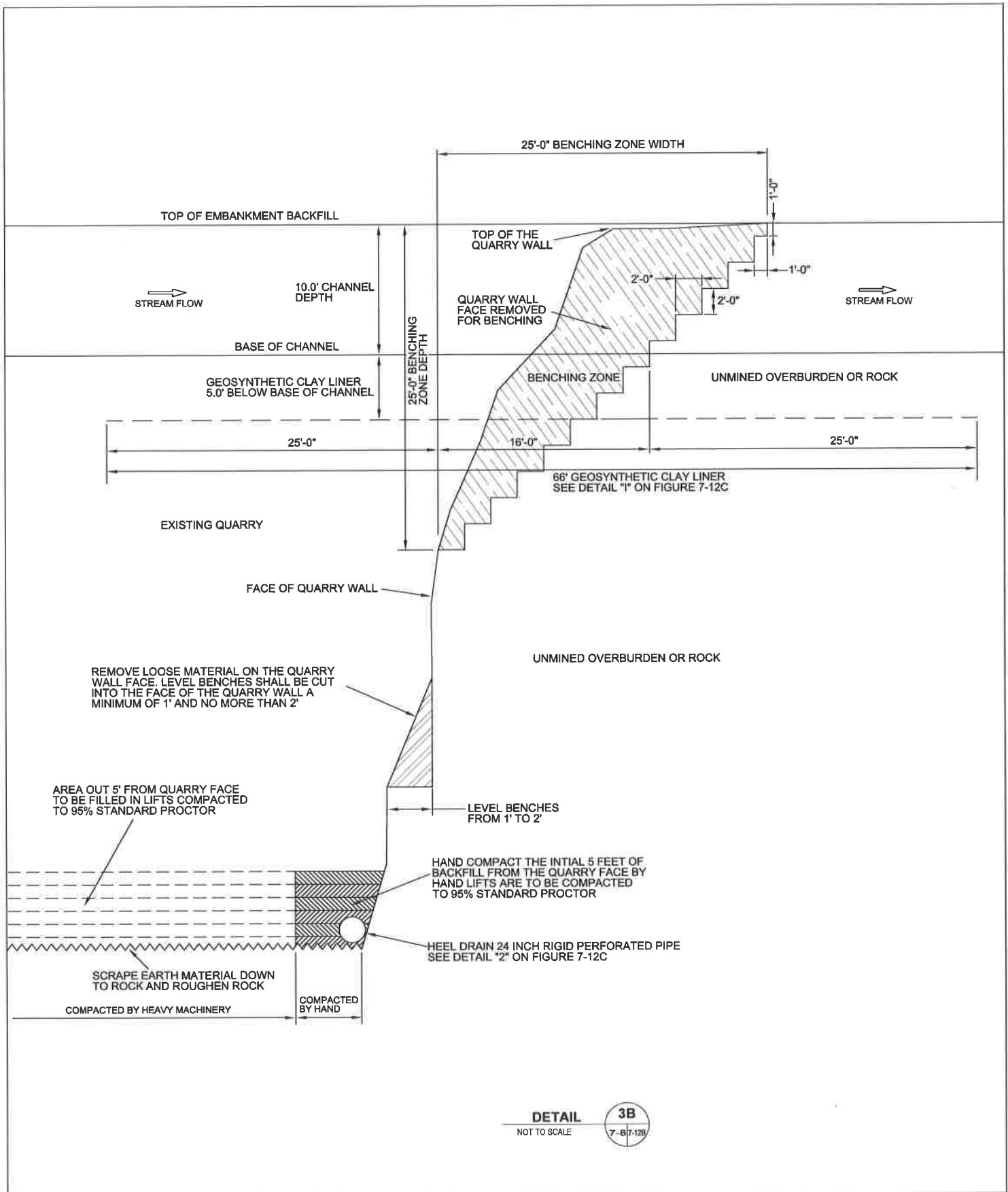


NOT TO SCALE

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DRAWN BY: J CHASTAIN DATE: 08/14/2013
PROJECT MANAGER: M. TAYLOR
LAYOUT: FIGURE 7-12A

FIGURE 7-12A
NORTH QUARRY WALL ABUTMENT DETAIL
HOME BRANCH EMBANKMENT
HOLCIM (US) INC.
HOLLYHILL, SOUTH CAROLINA
REVISED AUGUST 2013

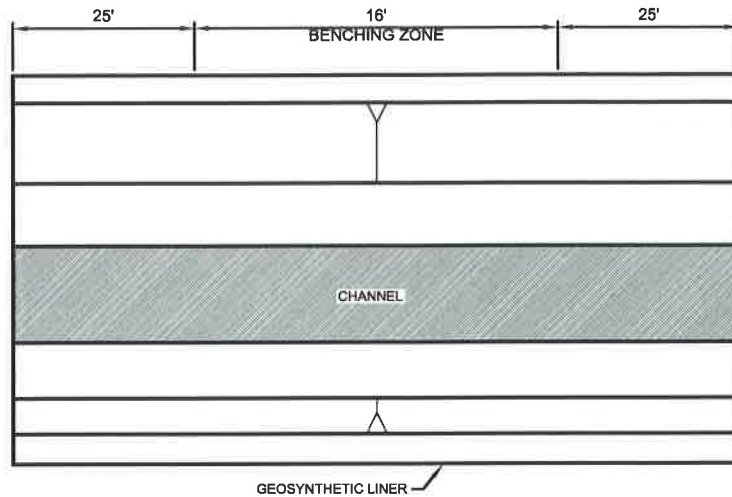


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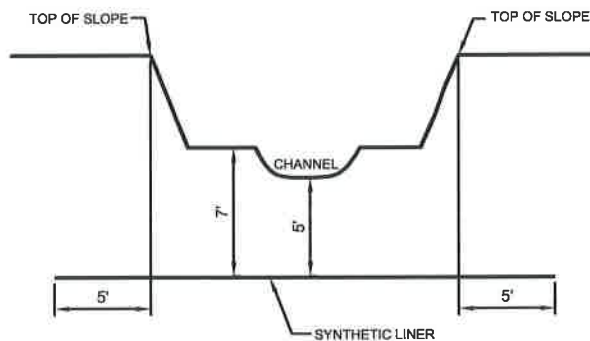
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DRAWN BY: J CHASTAIN DATE: 08/14/2013
 PROJECT MANAGER: M TAYLOR
 LAYOUT: FIGURE 7-12B

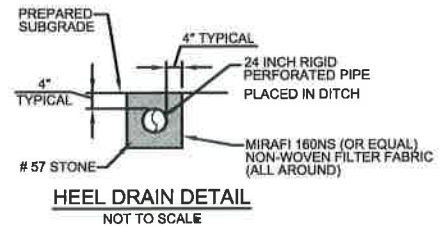
FIGURE 7-12B
SOUTH QUARRY WALL ABUTMENT DETAIL
HOME BRANCH EMBANKMENT
HOLCIM (US) INC.
HOLLYHILL, SOUTH CAROLINA
REVISED AUGUST 2013



PLAN VIEW
GEOSYNTHETIC LINER DETAIL
 NOT TO SCALE



SECTION VIEW
GEOSYNTHETIC LINER DETAIL
 NOT TO SCALE



HEEL DRAIN DETAIL
 NOT TO SCALE

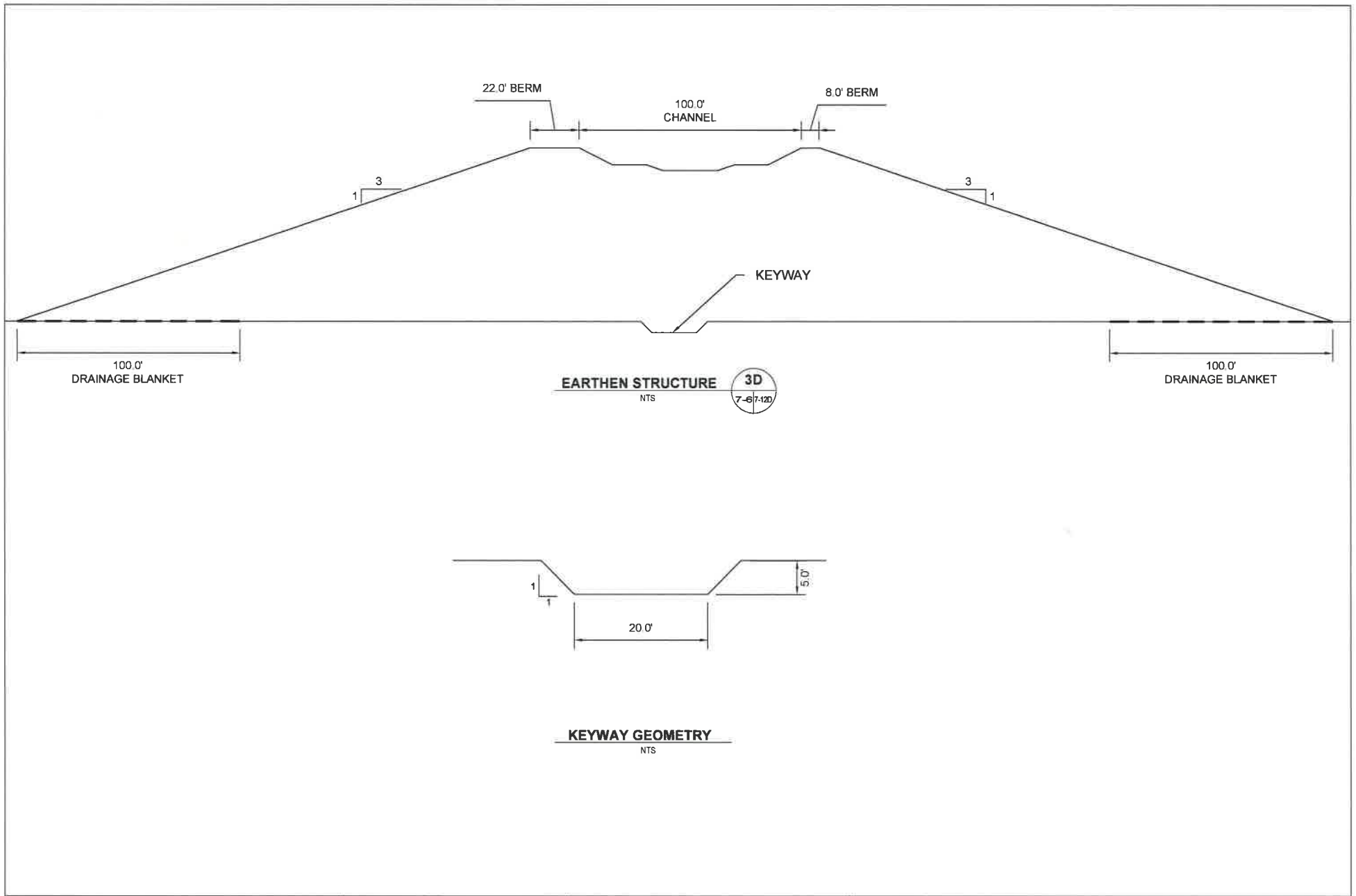


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DRAWN BY J CHASTAIN DATE 08/14/2013
 PROJECT MANAGER M TAYLOR
 LAYOUT FIGURE 7-12C

FIGURE 7-12C
QUARRY WALL ABUTMENT LINER & PIPE DETAILS
HOME BRANCH EMBANKMENT
HOLCIM (US) INC.
HOLLYHILL, SOUTH CAROLINA
REVISED AUGUST 2013



NOTES:
ALL SECTIONS ARE CUT LOOKING DOWNSTREAM. (FROM NORTH TO SOUTH)

ABBREVIATIONS:

- EL. = ELEVATION
- INV. EL. = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- W.E. = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
- TYP. = TYPICAL
- TEMP. = TEMPORARY
- RCP = REINFORCED CONCRETE PIPE



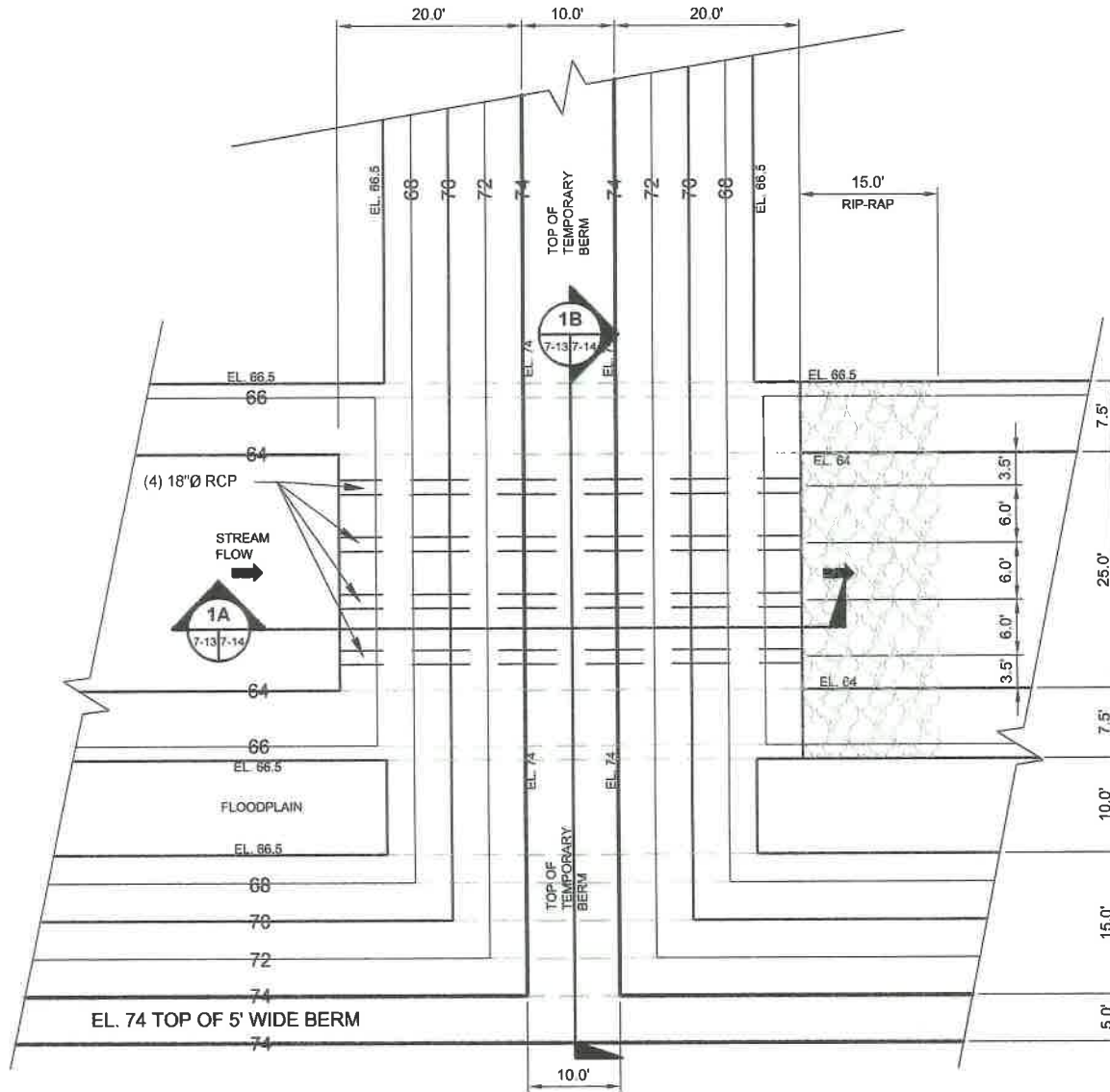
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DRAWN BY: S ARLEDGE
 PROJECT MANAGER: M TAYLOR
 LAYOUT: 8X11H-FIG 7-12D

ORIGINAL DATE: 11/21/2007
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 REV: C

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FIGURE 7-12D
EARTHEN STRUCTURE
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013



DETAIL
SCALE 1" = 20'
1
7-4-13

ABBREVIATIONS

- EL = ELEVATION
- INV EL = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- WE = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
- TYP = TYPICAL
- TEMP = TEMPORARY
- RCP = REINFORCED CONCRETE PIPE

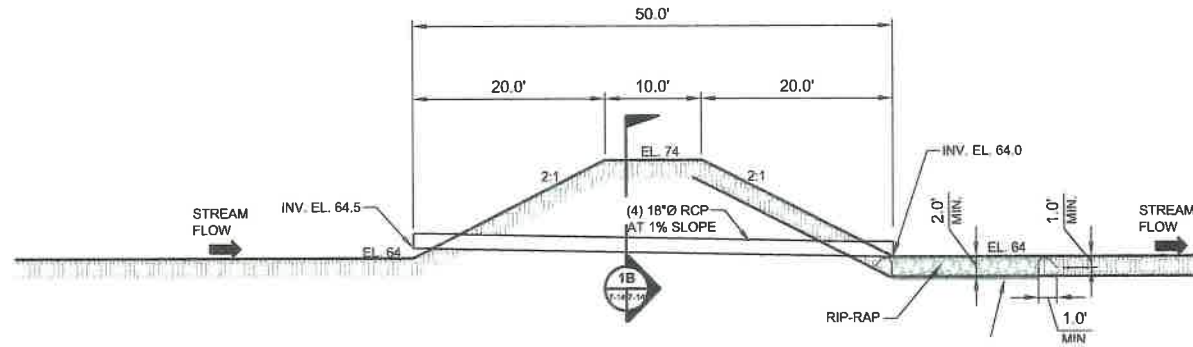


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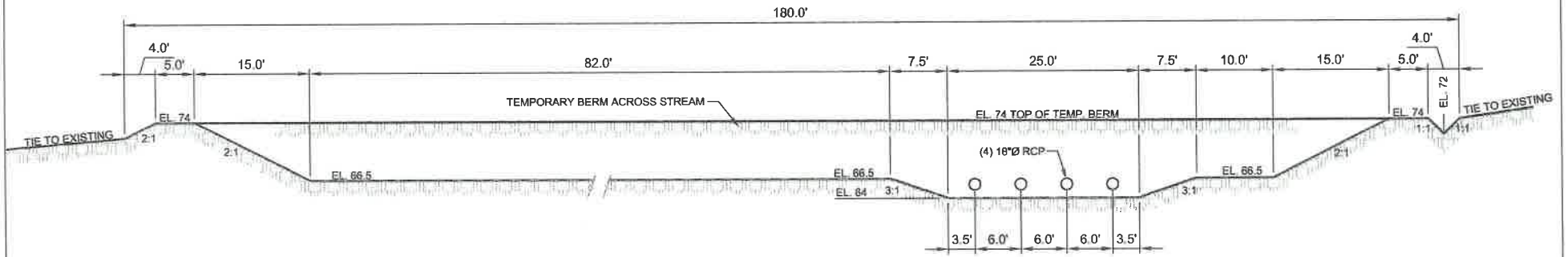
DRAWN BY S ARLEDGE
PROJECT MANAGER M TAYLOR
LAYOUT 8X11H FIG 7-13
08/14/2013 3:36 PM

ORIGINAL DATE 11/21/2007
REVISED DATE 08/14/2013
REV C

FIGURE 7-13
TEMPORARY BERM DETAIL
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA



SECTION 1A
SCALE 1" = 20'
7-13/7-14



SECTION 1B
SCALE 1" = 20'
7-13/7-14

ABBREVIATIONS

- EL = ELEVATION
- INV EL = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- WE = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
- TYP = TYPICAL
- TEMP = TEMPORARY
- RCP = REINFORCED CONCRETE PIPE

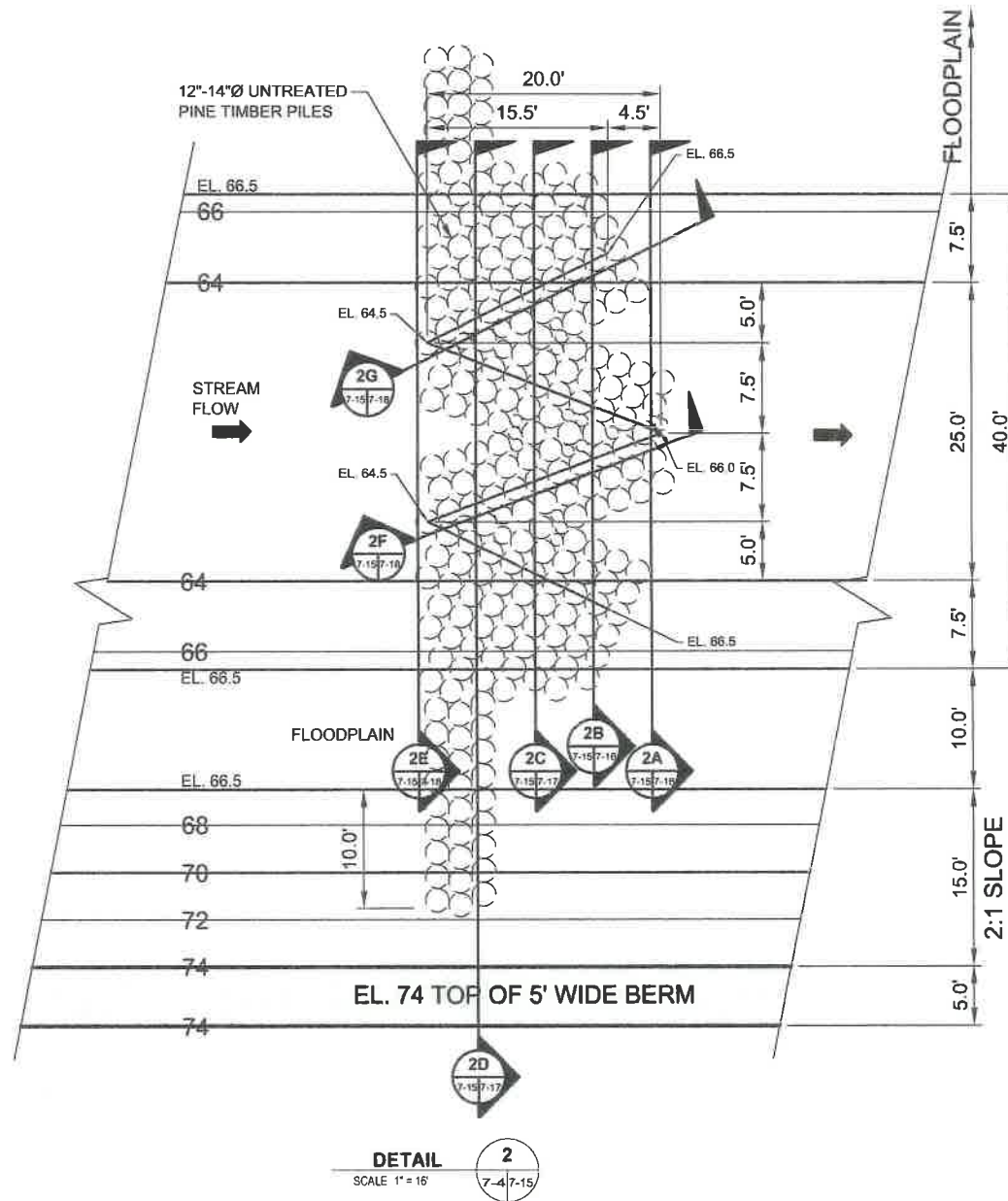


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PROJECT MANAGER M TAYLOR
LAYOUT 8X11H-FIG 7-14

ORIGINAL DATE 11/21/2007
REVISED DATE 08/14/2013
REV C

FIGURE 7-14
TEMPORARY BERM SECTIONS
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA



ABBREVIATIONS:

- EL = ELEVATION
- INV EL = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- WE = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
- TYP = TYPICAL
- TEMP = TEMPORARY
- RCP = REINFORCED CONCRETE PIPE



GRAPHIC SCALE

8 0 8 16

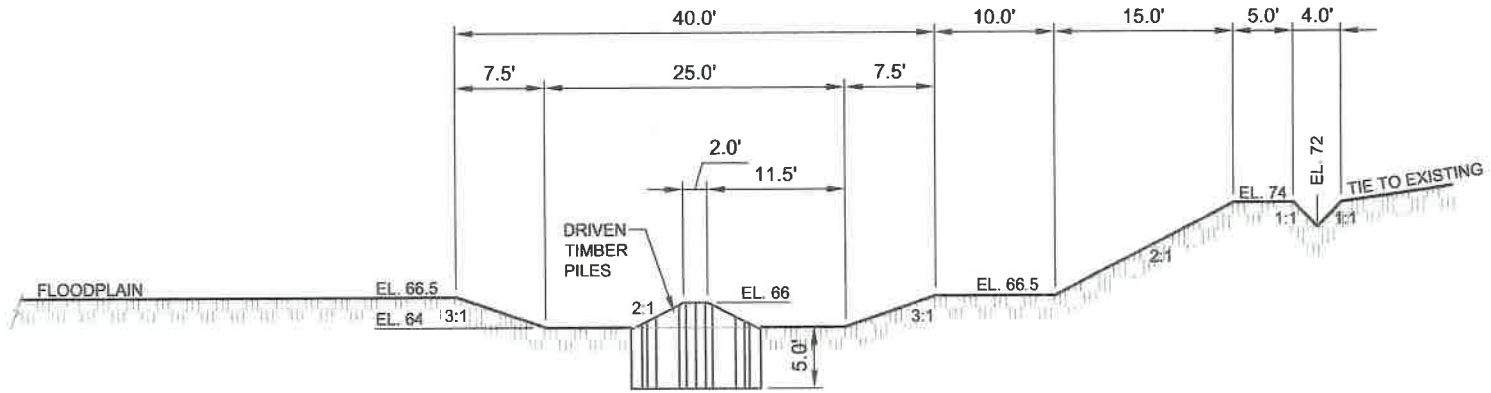
SCALE: 1" = 16'

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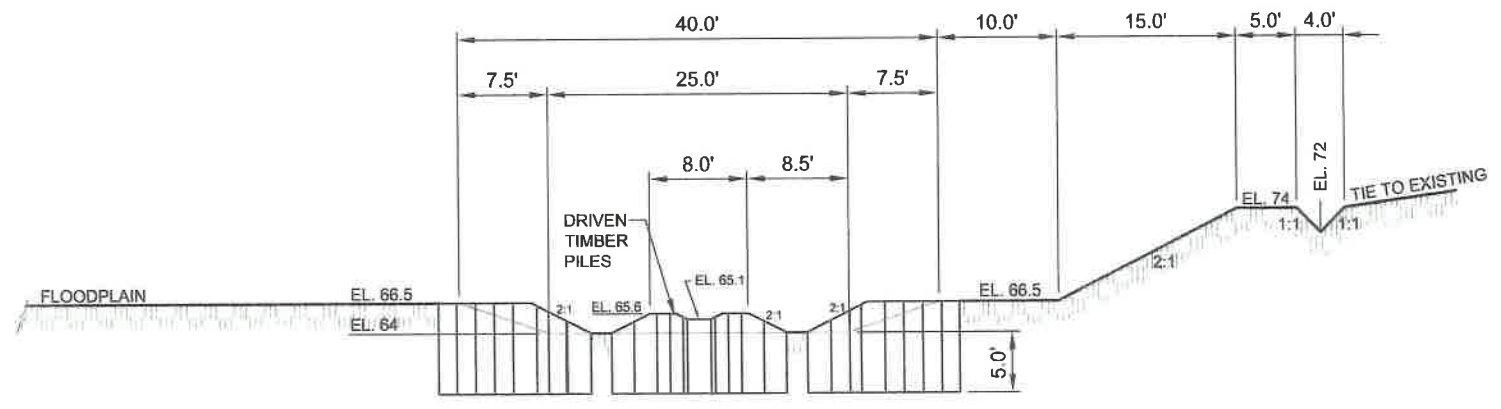
DRAWN BY S ARLEDGE PROJECT MANAGER M TAYLOR LAYOUT 8X11H-FIG 7-15 ORIGINAL DATE 11/21/2007 REVISED DATE 08/14/2013 REV C

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**FIGURE 7-15
W-WEIR DETAIL
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA**



SECTION 2A
SCALE 1" = 16'
7-157-16



SECTION 2B
SCALE 1" = 16'
7-157-16

ABBREVIATIONS

EL	= ELEVATION
INV EL	= INVERT ELEVATION
Ø	= DIAMETER
CKD	= CEMENT KILN DUST
WE	= WATER ELEVATION
NPDES	= NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
MW	= MONITORING WELL
TYP	= TYPICAL
TEMP	= TEMPORARY
RCP	= REINFORCED CONCRETE PIPE



GRAPHIC SCALE
8 0 8 16
SCALE: 1" = 16'

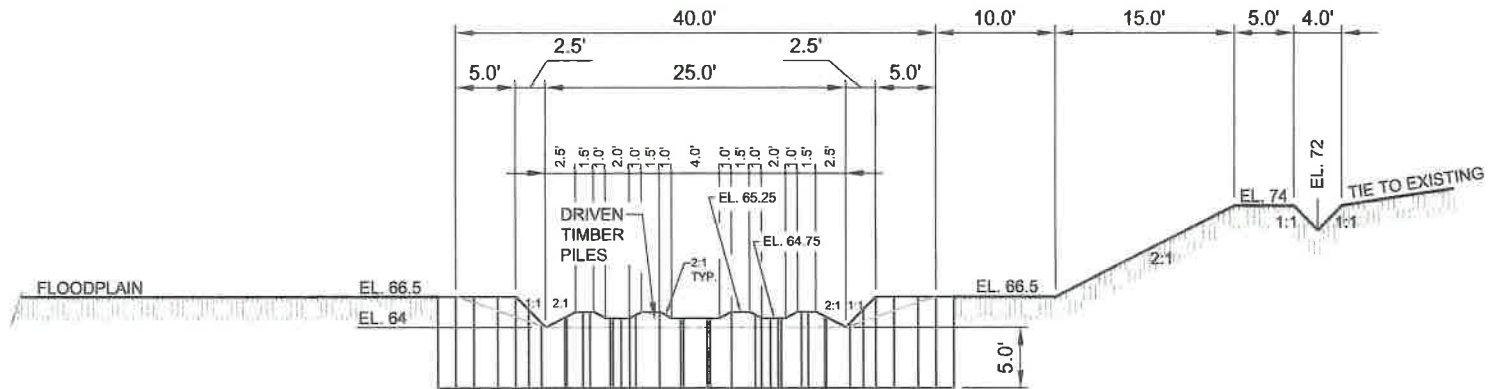
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PROJECT MANAGER M TAYLOR
LAYOUT 8X11H FIG 7-16

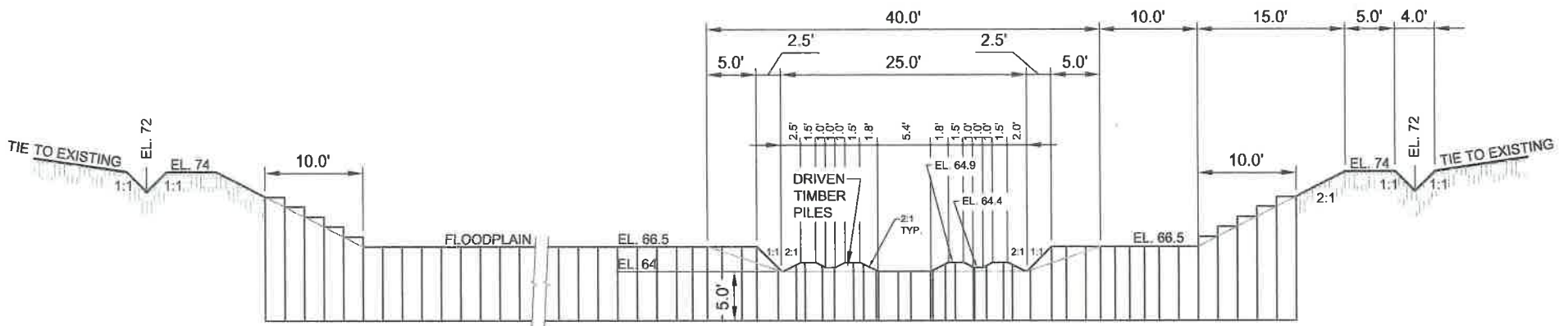
ORIGINAL DATE 11/21/2007
REVISED DATE 08/14/2013
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FIGURE 7-16
W-WEIR SECTIONS 2A AND 2B
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA



SECTION 2C
SCALE 1" = 16'
7-15/7-17



SECTION 2D
SCALE 1" = 16'
7-15/7-17

ABBREVIATIONS

- EL = ELEVATION
- INV EL = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- WE = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
- TYP = TYPICAL
- TEMP = TEMPORARY
- RCP = REINFORCED CONCRETE PIPE



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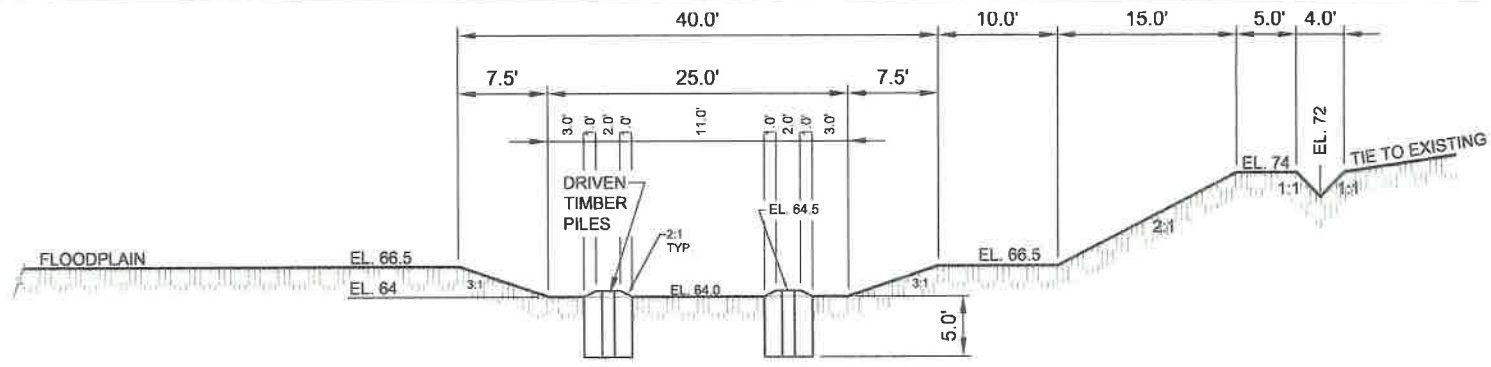
DRAWN BY S ARLEDGE
PROJECT MANAGER M TAYLOR
LAYOUT BX11H-FIG 7-17

ORIGINAL DATE 11/21/2007
REVISED DATE 08/14/2013
REV C

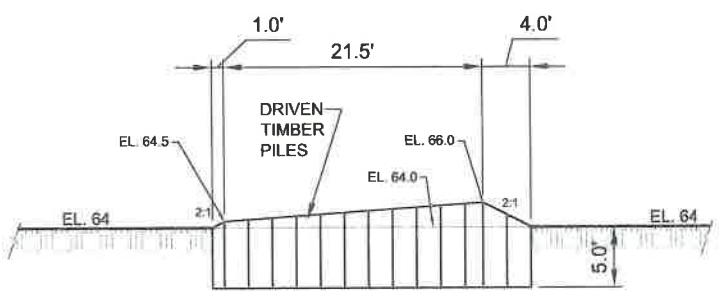
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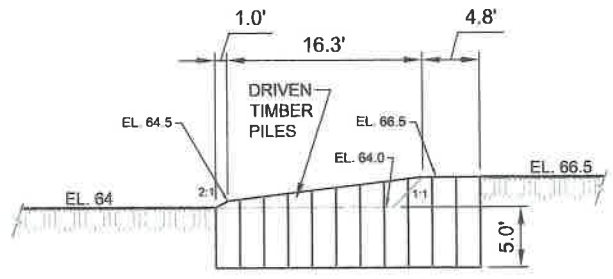
FIGURE 7-17
W-WEIR SECTIONS 2C AND 2D
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA



SECTION 2E
SCALE 1" = 16'
7-157-18



SECTION 2F
SCALE 1" = 16'
7-157-18



SECTION 2G
SCALE 1" = 16'
7-157-18

ABBREVIATIONS:

- EL = ELEVATION
- INV EL = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- WE = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
- TYP = TYPICAL
- TEMP = TEMPORARY
- RCP = REINFORCED CONCRETE PIPE



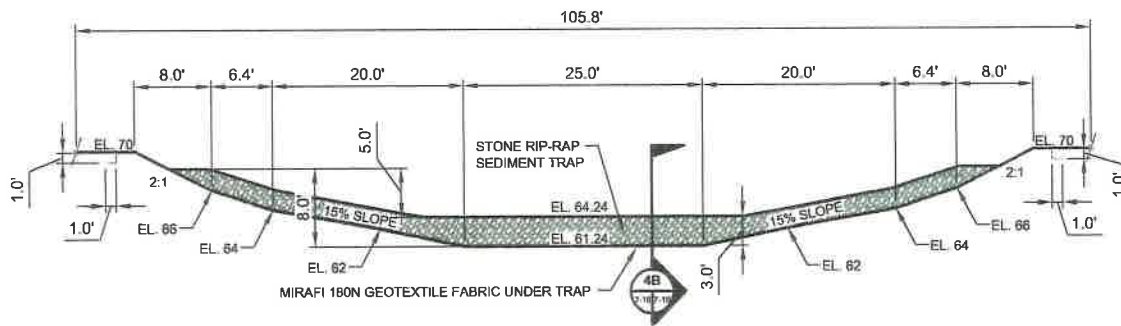
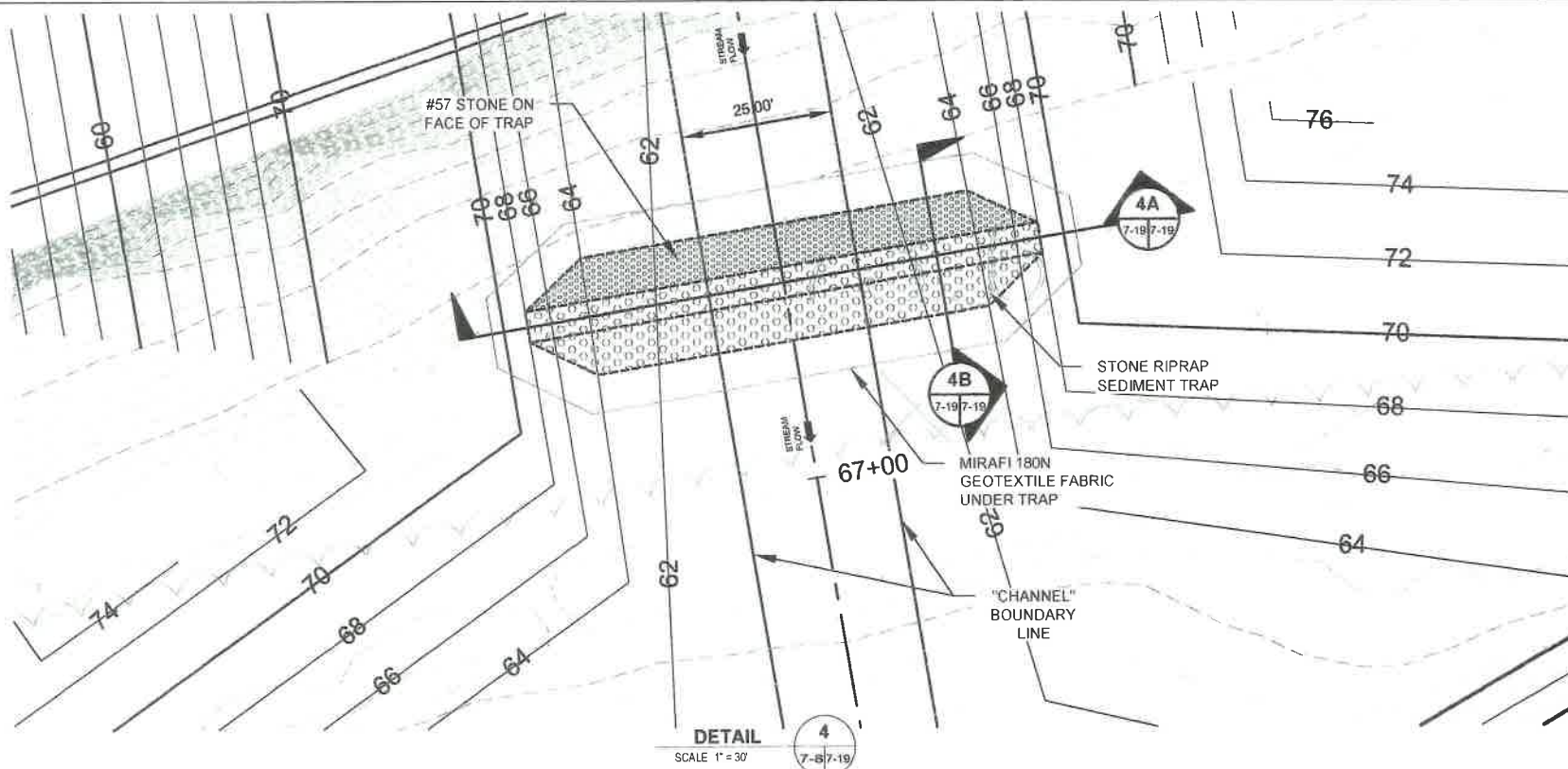
GRAPHIC SCALE
8 0 8 16
SCALE: 1" = 16'

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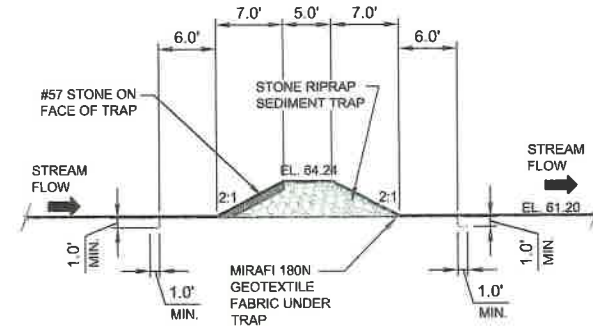
DRAWN BY S ARLEGE ORIGINAL DATE 1.1/21/2007
PROJECT MANAGER M TAYLOR REVISED DATE 08/14/2013
LAYOUT 8X11H-FIG 7-18 REV C

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FIGURE 7-18
W-WEIR SECTIONS 2E THROUGH 2G
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA



SECTION 4A
SCALE 1" = 20'
7-19/7-19



SECTION 4B
SCALE 1" = 20'
7-19/7-19

ABBREVIATIONS

- EL = ELEVATION
- INV. EL = INVERT ELEVATION
- Ø = DIAMETER
- CKD = CEMENT KILN DUST
- WE = WATER ELEVATION
- NPDES = NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
- MW = MONITORING WELL
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- RCP = REINFORCED CONCRETE PIPE



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PROJECT MANAGER M. TAYLOR
LAYOUT 8X11H-FIG 7-19
08/14/2013 3:38 PM

ORIGINAL DATE 11/21/2007
REVISED DATE 08/14/2013
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FIGURE 7-19
TEMPORARY SEDIMENT TRAP DETAILS
HOME BRANCH RELOCATION
HOLCIM (US) INC.
HOLLY HILL, SOUTH CAROLINA
REVISED AUGUST 2013