STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 21, 2007

U. S. Army Corps of Engineers
151 Patton Avenue
Room 208
Asheville, NC 28801-5006

ATTN: Mr. David Baker
NCDOT Coordinator

Subject: **Clean Water Act Nationwide Permit 33** application for replacement of Bridge No. 262 on SR 3452 (Upper Glady Fork Road) over South Hominy Creek, Federal Aid No. BRZ-3452(1), State Project No. 8.2844701, Buncombe County, Division 13, TIP No. B-4037. WBS Element No. 33403.1.1.

Dear Sir:

Please see the enclosed pre-construction notification, permit drawings, design plans and Rapanos jurisdictional determination form for the subject project. A Categorical Exclusion (February 2005) and Right of Way Consultation (August 2006) were completed for this project and distributed shortly thereafter. Additional copies are available upon request. The North Carolina Department of Transportation (NCDOT) proposes to replace the 82.3 foot, two span Bridge No. 262 with a single span steel plate girder replacement bridge of approximately 180 feet in length. The new structure will be built approximately 400 feet upstream of the existing bridge. During construction, traffic will be maintained on the existing bridge. There will be a total of 0.06 acres of temporary impact to the South Hominy Creek due to the use of construction causeways.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: There is one jurisdictional stream on the project site: South Hominy Creek. This water resource is located in the French Broad River Basin (subbasin 04-03-02, Hydrological Cataloguing Unit 06010106). The North Carolina Division of Water Quality (NCDWQ) index number for the South Hominy Creek is 6-76-5. South Hominy

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1500
FAX: 919-715-1501
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
2728 CAPITOL BOULEVARD
PARKER LINCOLN BUILDING, SUITE 168
RALEIGH NC 27699

Creek is classified by the Division of Water Quality as a **C-Tr** water body. South Hominy Creek is listed as a 303(d) stream for impaired biological integrity. There are no 303(d) streams due to sediment within one mile of the project. Neither High Quality Waters (HQW), Water Supplies (WS-I or WS-II) nor Outstanding Resource Waters (ORW) occur in the project area or within 1.0 mile downstream of waters in the project area. The average baseflow width of the South Hominy Creek is approximately 30 feet. Average depth is approximately 1-2 feet.

Permanent Impacts: There are no permanent impacts associated with this project

Temporary Impacts: The use of a causeway for the removal an interior bent from the existing bridge will result in 0.06 acres of temporary impact to South Hominy Creek. The causeway is designed so that no more than half of the stream will be blocked at any time.

Bridge Demolition: The superstructure of Bridge No. 262 consists of a timber floor on I-beams with an asphalt wearing surface and timber railing. The substructure of the bridge consists of reinforced concrete abutments, and one interior bent consisting of timber caps on timber piles with timber sills. The bridge has 2 equal spans that total 82 feet in length. A causeway will be used for the removal of the interior bent. Bridge No. 262, including it's interior bent will be removed without appreciable fill in "Waters of the United States".

Utility Impacts: There are no utilities attached to the existing structure, and there will be no impacts to jurisdictional waters due to utilities.

Schedule: The project schedule calls for a July 15, 2008 Let date with a date of availability on August 26, 2008. The review date for the project is May 27, 2008.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of May 10, 2007 the United States Fish and Wildlife Service (USFWS) list 13 species under federal protection for Buncombe County (Table 1). Surveys have determined that there is no suitable habitat for the listed species. The NC Natural Heritage database of rare species and unique habitats was reviewed in September 2007. There is no documentation of rare species or unique habitats occurring within 1 mile of the project area.

Table 1. Species Under Federal Protection in Buncombe County

Common Name	Scientific Name	Federal Status	Habitat	Biological Conclusion
Bog turtle	*Clemmys muhlenbuergii*	T (S/A)	No	Not required
Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	E	No	No Effect
Spotfin chub	*Hybopsis monacha*	T	No	No Effect
Gray bat	*Myotis grisescens*	E	No	No Effect
Eastern cougar	*Puma concolor couguar*	E	No	No Effect
Appalachian elktoe	*Alasmidonta raveneliana*	E	No	No Effect
Oyster mussel	*Epioblasma capsaeformis*	E	No	No Effect
Tan riffleshell	*Epioblasma florentina walkeri*	E	No	No Effect
Bunched arrowhead	*Sagittaria fasciculata*	E	No	No Effect
Mountain sweet pitcher plant	*Sarracenia jonesii*	E	No	No Effect
Spreading avens	*Geum radiatum*	E	No	No Effect
Virginia spiraea	*Spiraea virginiana*	T	No	No Effect
Rock gnome lichen	*Gymnoderma lineare*	E	No	No Effect

AVOIDANCE, MINIMIZATION AND MITIGATION

Avoidance and Minimization:

Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States". The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional stages; minimization measures were incorporated as part of the project design.

- Best Management Practices will be followed for this project as outlined in "NCDOT's Best Management Practices for Construction and Maintenance Activities".
- Best Management Practices will be used during demolition of the existing bridge.
- NCDOT will implement erosion and sedimentation control measures, as specified by NCDOT's "Design Standards in Sensitive Watersheds".
- Use of a single span structure.
- The current 82.3 foot bridge will be replaced with a bridge 180 feet in length allowing increased access to the floodplain.
- There will be no deck drains allowed to discharge directing into South Hominy Creek.
- Preformed scour holes will be used to treat stormwater from the bridge and adjacent road before entering the stream.
- Traffic will be maintained on the existing bridge during construction.
- There will be an in-stream and 25 foot buffer work moratorium from October 15 to April 15 for protection of trout.

Mitigation:

There are no permanent impacts associated with this project, therefore mitigation is not required.

REGULATORY APPROVALS

Section 404 Permit: It is anticipated that the construction of causeway will be authorized under Section 404 Nationwide Permit No. 33 (Temporary Construction Access and Dewatering). We are therefore requesting the issuance of a Nationwide Permit 33 authorizing the temporary dewatering of the South Hominy Creek.

Section 401 Permit: We anticipate 401 General Certification No. 3688 will apply to this project. All general WQC conditions will be adhered to during project construction. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their notification.

This project is located in a trout county, therefore comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

Thank you for your assistance with this project. If you have any questions or need additional information please contact Jason Dilday at jldilday@dot.state.nc.us or (919) 715-5535. The application will be posted at http://207.4.62.65/PDEA/PermApps/.

Sincerely,

E. R. Lupe

for Gregory J. Thorpe, Ph.D
Environmental Management Director, PDEA

cc:
W/attachment
- Mr. John Hennessy, NCDWQ (2 Copies)
- Ms. Marella Buncick, USFWS
- Ms. Marla Chambers, NCWRC
- Mr. Harold Draper, TVA

W/o attachment
- Dr. David Chang, P.E., Hydraulics
- Mr. Victor Barbour, P.E., Project Services Unit
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. Mark Staley, Roadside Environmental
- Mr. J.J. Swain, P.E. (Div. 13), Division Engineer
- Mr. Roger Bryan (Div. 13), DEO
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Majed Alghandour, P. E., Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Mr. Scott McLendon, USACE, Wilmington
- Mr. Joseph Miller, P.E., PDEA Project Planning Engineer

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☒ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: Nationwide 33

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☒

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: jldilday@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: _____
   Company Affiliation: _____
   Mailing Address: _____
   Telephone Number: _____ Fax Number: _____
   E-mail Address: _____

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Bridge No. 262 over South Hominy Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4037

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Buncombe Nearest Town: Enka, Asheville
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): SR3452 (Upper Glady Fork Road)

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 35'30'03' °N -82'42'26' °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: South Hominy Creek

8. River Basin: French Broad Basin
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Forested and residential communities

10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 262 replaced with a single span bridge on a new alignment approximately 400 feet upstream using standard bridge demolition and construction equipment.

11. Explain the purpose of the proposed work: Improve the safety of travelers along SR 3452 by replacing a structurally absolete structure and improve road alignment.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. N/A

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
N/A

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: 0.06 acres (98 sq ft) of temporary impact due to the use of a causeway for removal of an interior bent from the existing bridge.

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
No wetlands					
Total Wetland Impact (acres)					0

3. List the total acreage (estimated) of all existing wetlands on the property: 0

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Site 1	South Hominy Creek	Temporary	Perennial	30	100	0.06
Total Permanent Stream Impact (by length and acreage)					100	0.06

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
No Impacts				
Total Open Water Impact (acres)				0

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.06 (temporary)
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0.06 (temporary)
Total Stream Impact (linear feet):	100 (temporary)

7. Isolated Waters
   Do any isolated waters exist on the property? ☐ Yes ☒ No
   Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

   _____

   _____

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):_____
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):_____
   Current land use in the vicinity of the pond:_____
   Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. Traffic will be maintained on

the existing bridge during construction. The new bridge will be a spanning structure. No permanent impacts will occur with the project.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   There are no permanent impacts with this project. No mitigation is proposed.

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating

that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

Amount of stream mitigation requested (linear feet): 0
Amount of buffer mitigation requested (square feet): 0
Amount of Riparian wetland mitigation requested (acres): 0
Amount of Non-riparian wetland mitigation requested (acres): 0
Amount of Coastal wetland mitigation requested (acres): 0

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☐ No ☒

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3 (2 for Catawba)	

2		1.5	
Total			

* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. N/A

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Impervious surfaces will increase only slightly due to the new alignment of the road.

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.
N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

Is this an after-the-fact permit application? Yes ☐ No ☒

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:

XV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).

N/A

E. L. Lipk 12-21-07

Applicant/Agent's Signature **Date**

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: B-4037 (Bridge No. 262 on SR 3452 over South Hominy Creek)

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:NC County/parish/borough: Buncombe City: Enka/Asheville
Center coordinates of site (lat/long in degree decimal format): Lat. 35'30'03"° N, Long. 82'42'26° W.
Universal Transverse Mercator:
Name of nearest waterbody: South Hominy Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: South Hominy Creek
Name of watershed or Hydrologic Unit Code (HUC): 06010106
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Are *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☒ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: South Hominy Creek is used by recreational canoers.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Are *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☒ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 900 linear feet: 30 width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: Pick List
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: .

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: **South Hominy Creek.**

   Summarize rationale supporting determination: Favored route of recreational canoers.

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **square miles**
   Drainage area: **square miles**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☒ Tributary flows directly into TNW.
   ☐ Tributary flows through **10 (or more)** tributaries before entering TNW.

   Project waters are **30 (or more)** river miles from TNW.
   Project waters are **1 (or less)** river miles from RPW.
   Project waters are **30 (or more)** aerial (straight) miles from TNW.
   Project waters are **1 (or less)** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Vertical (1:1 or less).**

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Intermittent but not seasonal flow**
Estimate average number of flow events in review area/year: **20 (or greater)**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Discrete and confined.** Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☒ High Tide Line indicated by:	☒ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Intermittent flow**. Explain: .

Surface flow is: **Discrete and confined**
Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
- ☐ Discrete wetland hydrologic connection. Explain: .
- ☐ Ecological connection. Explain: .
- ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **30 (or more)** river miles from TNW.
Project waters are **30 (or more)** aerial (straight) miles from TNW.
Flow is from: **Wetland to/from navigable waters.**
Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **30 (or more)**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☒ TNWs: 900 linear feet 30 width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   - ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   - ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   - ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   - ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   - ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  - Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☐ Other: (explain, if not covered above): .

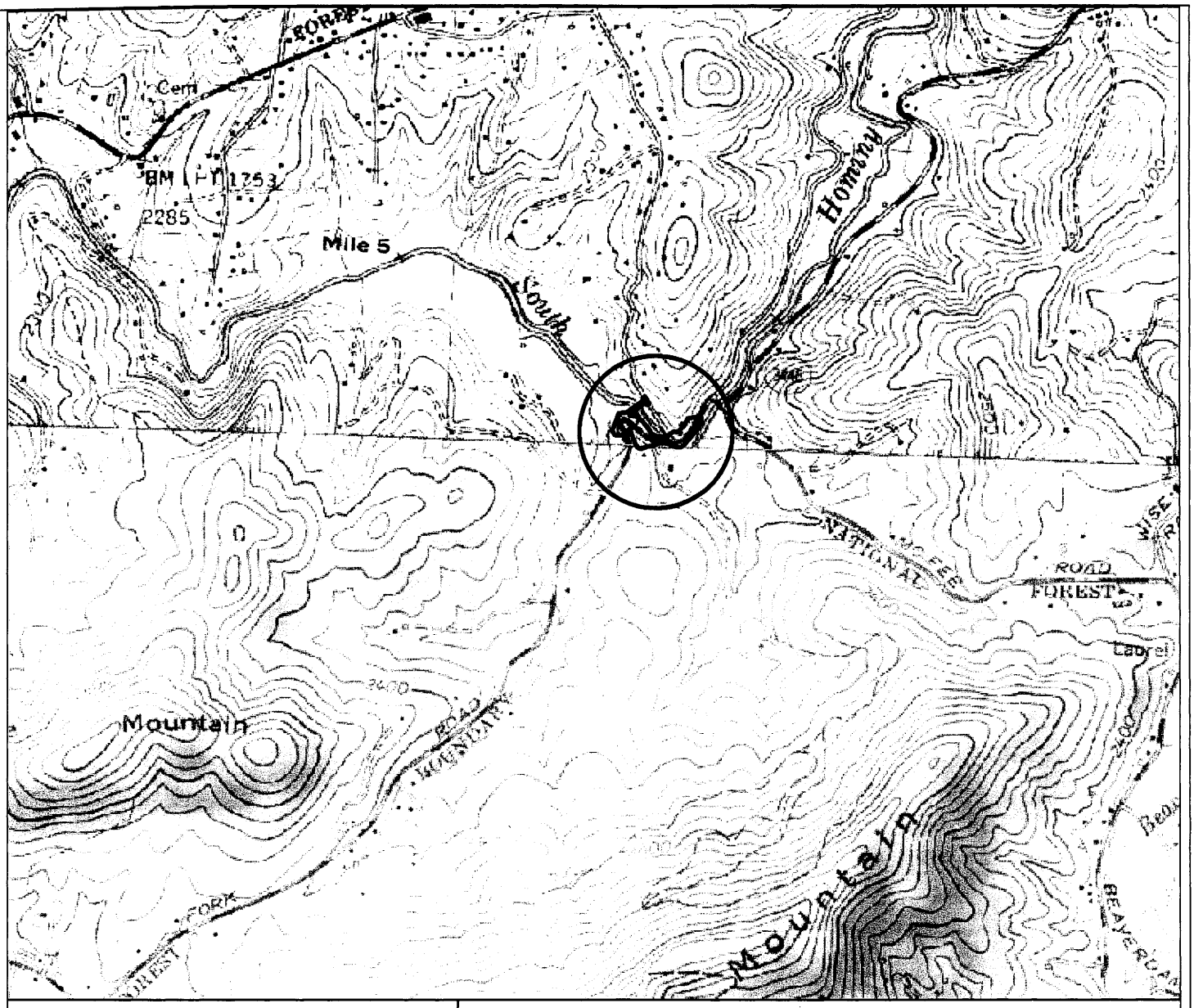
Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☐ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name: .
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): .
  - or ☐ Other (Name & Date): .
- ☐ Previous determination(s). File no. and date of response letter: .
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

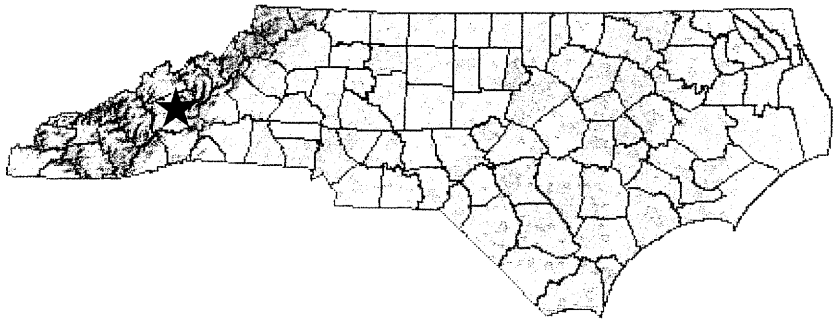


Legend

Project Study Area

N
W E
S

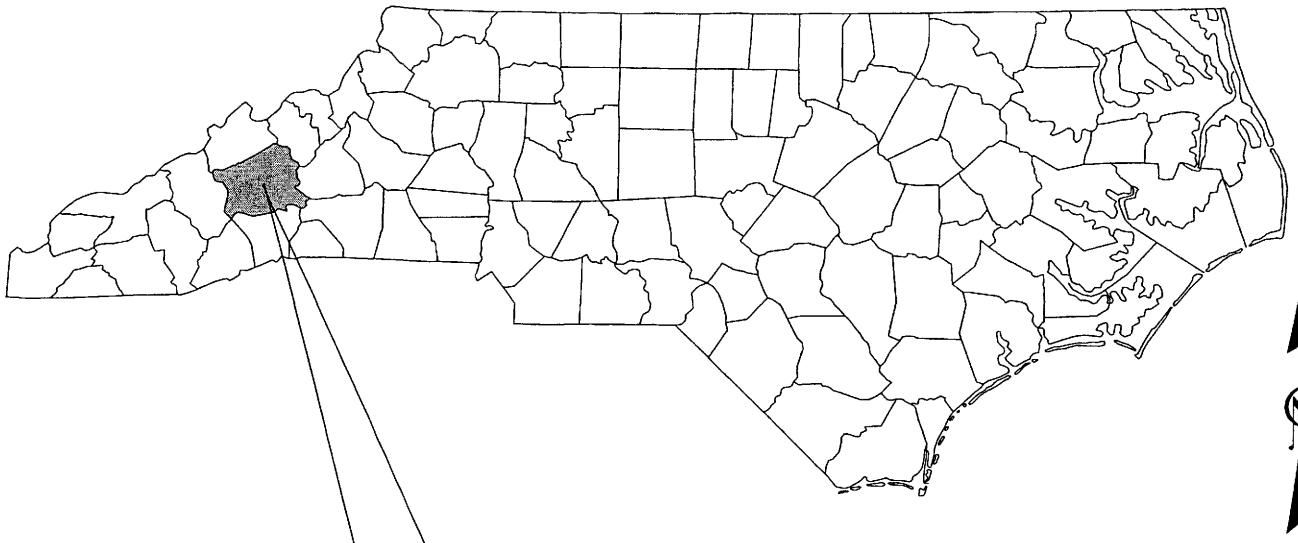
0 2,000 4,000
Feet

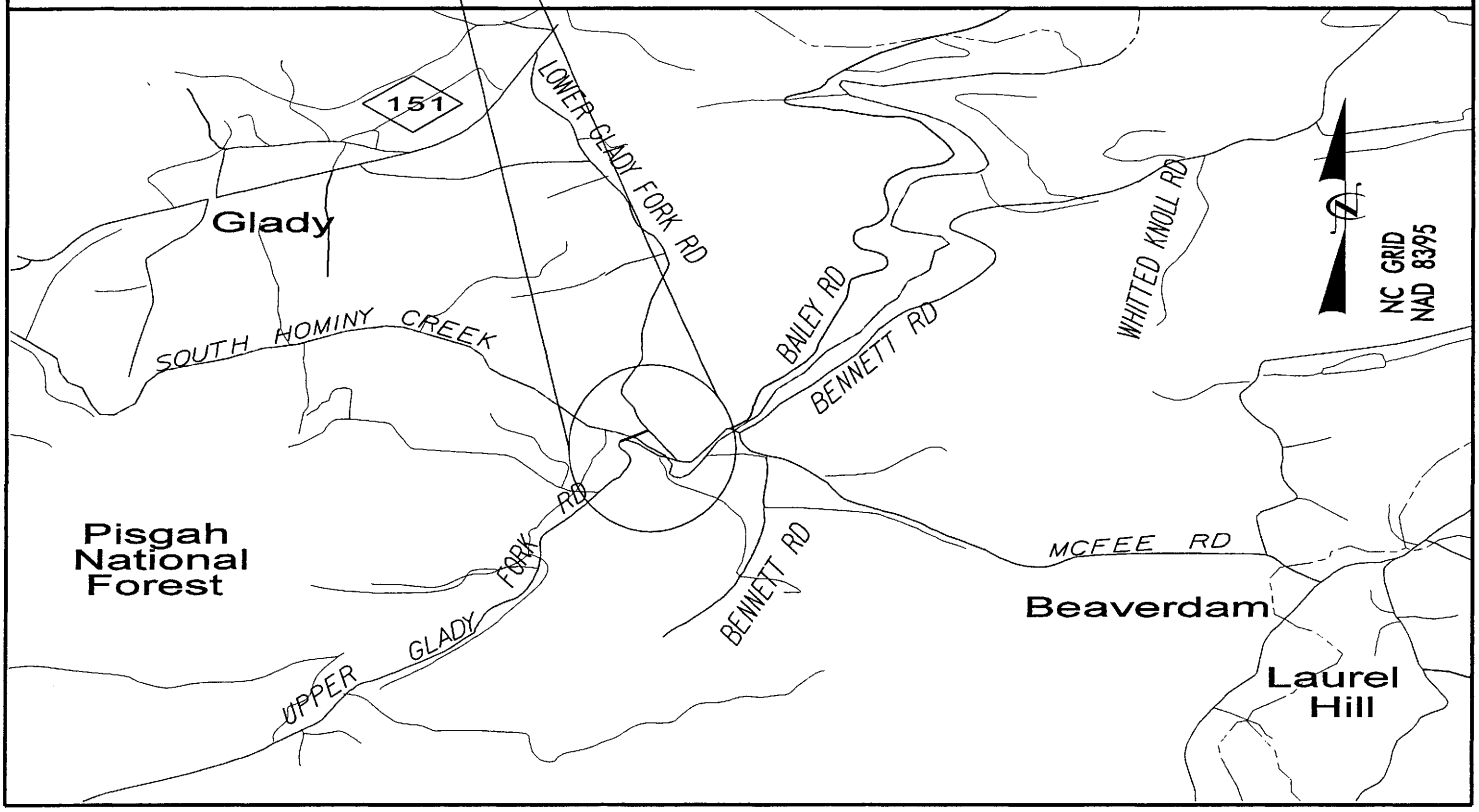


Title	Vicinity Map (USGS Quad Enka, North Carolina 1990)
Project	B-4037 – Replacement of Bridge No. 262 at SR 3452 over South Hominy Creek Buncombe County, North Carolina

Date	TIP #	Figure
9/16/04	B-4037	1

NORTH CAROLINA





WETLAND PERMIT DRAWING
VICINITY MAP
B–4037

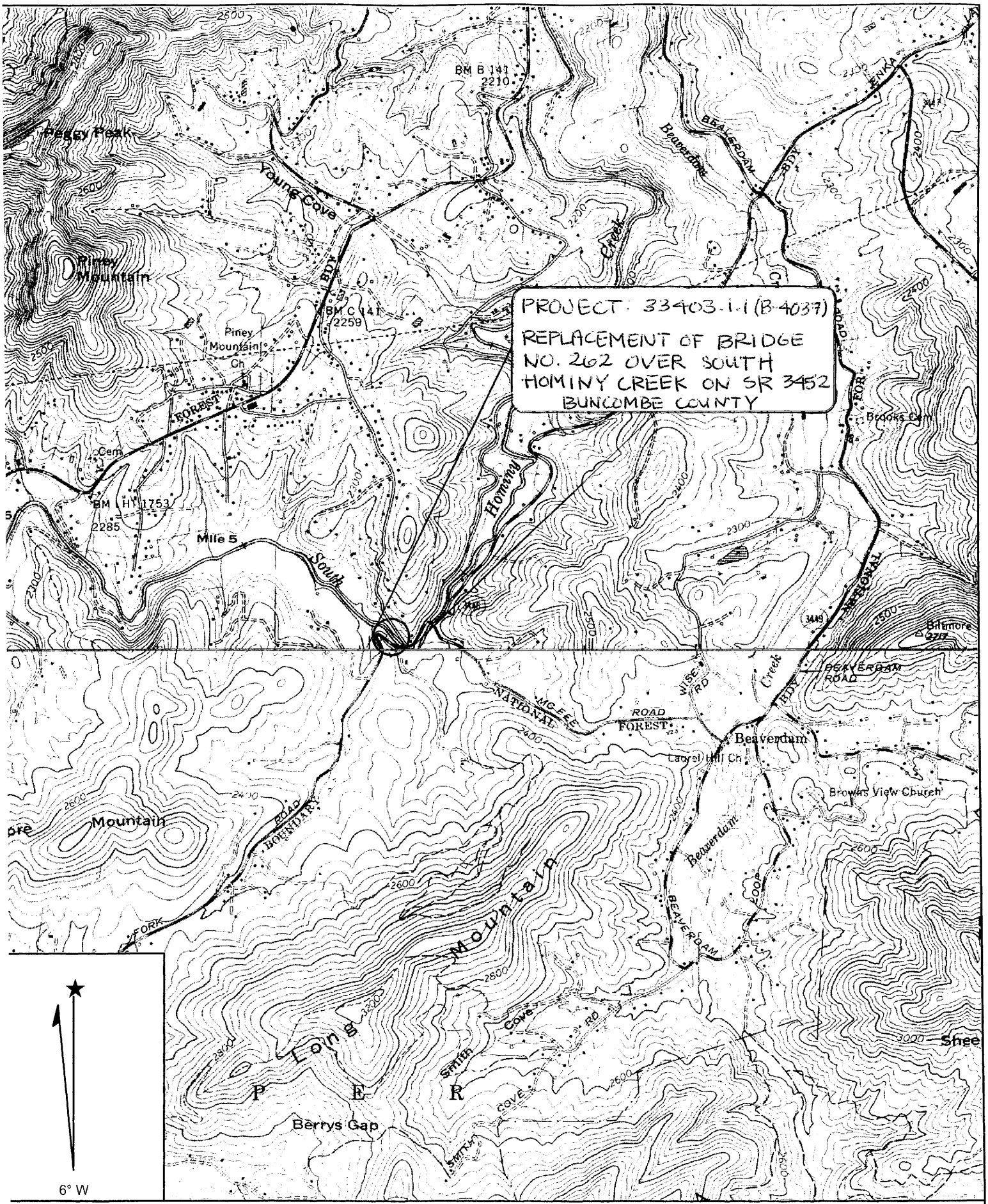
Permit Drawing
Sheet 1 of 10

DIVISION OF HIGHWAYS
BUNCOMBE COUNTY

PROJECT: 33403.1.1 (B–4037)
REPLACEMENT OF BRIDGE NO.262
OVER SOUTH HOMINY CREEK
ON SR 3452

9/4/2007

9/4/2007 R:\0\0036\20\Permits\VB_Wetland vicinity map.dgn



Name: ENKA
Date: 8/8/2006
Scale: 1 inch equals 2000 feet

Permit Drawing
Sheet 2 of 10

Location: 035° 30' 07.4" N 082° 42' 08.4" W
Caption: Project: 33403.1.1 (B-4037)
Replacement of Bridge No. 262
Over S. Hominy Cr. on SR3452
Sheet 2

	OWNER'S NAME	ADDRESS
(1)	Moses, Paul D. & Martha P.	435 Upper Glady Fork Rd. Candler, NC 28715
(2)	Cordell, Michael L.	PO Box 2572 Candler, NC 28715-2572
(5)	Hominy Valley Wildlife and Sportsman's Club, Inc.	PO Box 291 Enka, NC 28728

Permit Drawing
Sheet 3 of 10

PROPERTY OWNER NAME AND ADDRESS

DIVISION OF HIGHWAYS
BUNCOMBE COUNTY

PROJECT: 33403.1.1 (B-4037)
REPLACEMENT OF BRIDGE NO. 262 OVER SOUTH HOMINY CREEK ON SR 3452

8/16/2007

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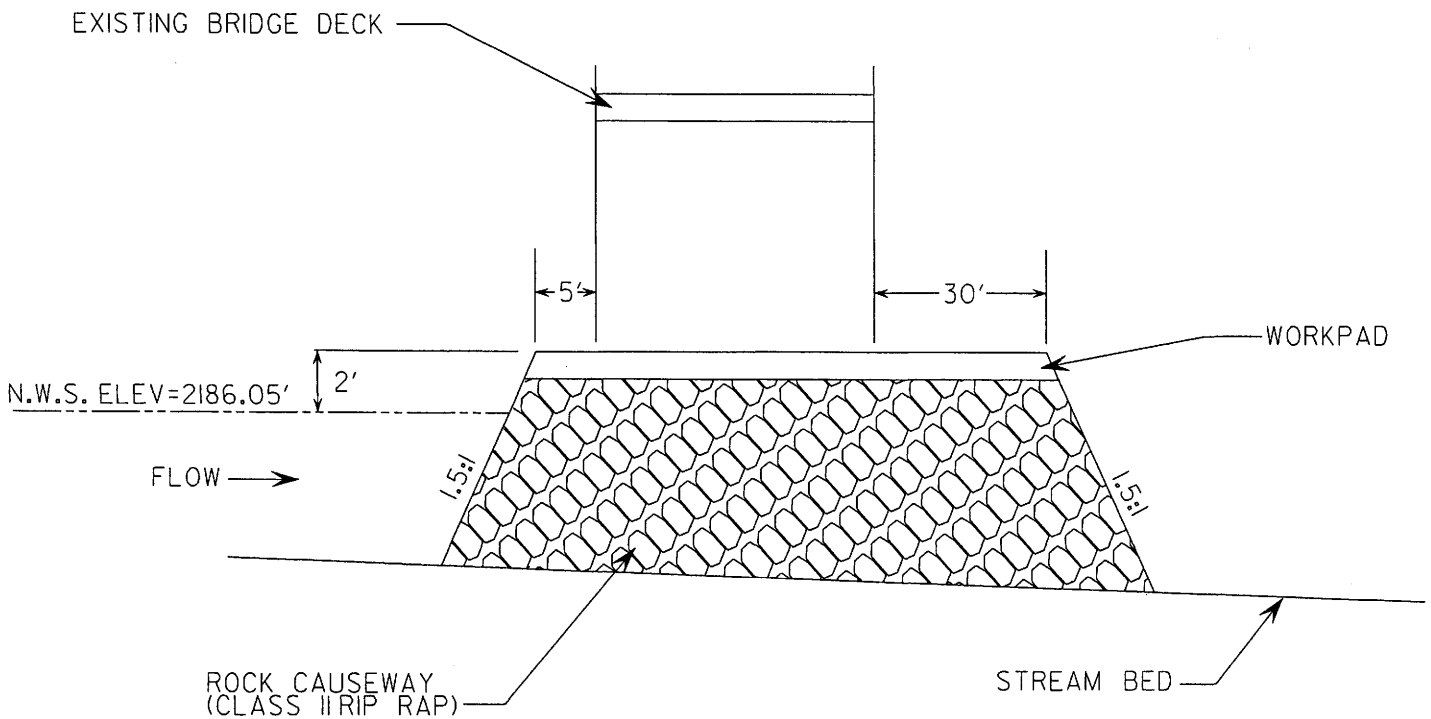
8/16/2007

CAUSEWAY DETAIL
(NOT TO SCALE)



QUANTITIES OF ESTIMATES: CAUSEWAY I

VOLUME OF CLASS II RIP RAP= 275 yds^3
AREA OF CLASS II RIP RAP= 0.06 acres
Estimate 400 Tons Class II Rip Rap

Permit Drawing
Sheet ____ of 10

NCDOT
DIVISION OF HIGHWAYS
BUNCOMBE COUNTY
PROJECT: 33403.1.1 (B-4037)
REPLACEMENT OF BRIDGE NO.262
OVER SOUTH HOMINY CREEK
ON SR 3452

8 / 13 / 2007

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	-EL- 23+00	Causeway							0.06		98.0	
TOTALS:									0.06		98	

Permit Drawing
Sheet ____ of 10

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY
PROJECT: 33403.1.1 (B-4037)

8/16/2007

ATN Revised 3/31/05

PROJECT REFERENCE NO.	SHEET NO.
B-4037	4

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

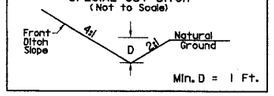
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT-OF-WAY REV.

CONST. REV.

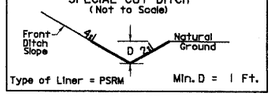
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



-L- STA 12+00 TO 13+00 (RT)
-Y1- STA 15+00 TO 15+58 (LT)
-Y1- STA 15+58 TO 16+50 (LT)

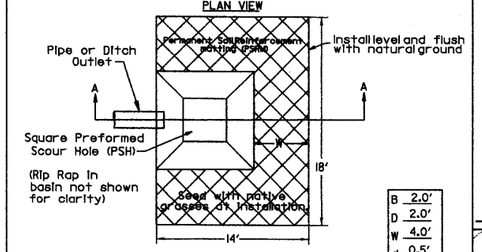
DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)



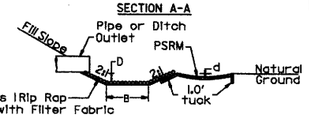
-L- STA 13+00 TO 13+50 (RT)
-Y1- STA 14+68 TO 15+00 (LT)

DETAIL 3
PREFORMED SCOUR HOLE
(Not to Scale)

PLAN VIEW



SECTION A-A



-Y1- STA 15+69 (RT)

Permit Drawing Sheet ____ of 10

NC GRID NAD 83/95

-L- PI Sta. 13+93.51

-L- PCSta. 12+40.81

-L- PTSta. 11+45.12

-L- PCSta. 10+00.00

-Y1- POT Sta. 10+00.00

-Y1- PCSta. 12+53.31

-Y1- PTSta. 13+01.04

-Y1- POT Sta. 19+37.00

-Y1- PCSta. 15+32.83

-Y1- PCCSta. 15+85.16

-Y1- PCCSta. 17+26.57

-Y1- PTSta. 17+85.57

N 59° 23' 34" E

S 30° 08' 46" E -Y1-

N 29° 05' 39" W -L-

S 29° 14' 02" E -Y1-

N 29° 01' 05" E -Y1-

BEGIN SHOULDER BERM GUTTER -L- STA 15+92 RT

END SHOULDER BERM GUTTER -Y1- STA 11+80 RT

RETAIN EXISTING 18" CMP AND TIE INTO PROPOSED TBDI WITH ANGLED VANE GRATE

18" CMP

TDE

OUTLET PROTECTION CLASS 'I' RIP RAP EST 2 TONS EST 8 SY FF

TIE PROPOSED DITCH INTO EXISTING AND GRADE TO DRAIN

SPECIAL CUT DITCH / PERM SOIL REINFORCEMENT MATTING (PSRM) SEE DETAIL 2

SPECIAL CUT DITCH (SEE DETAIL 1)

SPECIAL CUT DITCH PERM SOIL REINFORCEMENT MATTING (PSRM) SEE DETAIL 2

SPECIAL CUT DITCH (SEE DETAIL 1)

REMOVE

15" CMP W/ROCK HDWL

SOUTH HOMINY CREEK

SITE 1

TOP OF CAUSEWAY

TEMPORARY CAUSEWAY FOR BENT REMOVAL

TOE OF CAUSEWAY

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'I' RIP RAP
EST 8 TONS
EST 15 SY FF
EST 35 SY PSRM
SEE DETAIL 3

MICHAEL L. CORDELL
DEED BOOK 3286 PAGE 18

RALPH EARL & KAROL H. BLACK
DEED BOOK 1324 PAGE 526

JAMES E. & MARY JO MOSES
DEED BOOK 1070 PAGE 407

PAUL D. & MARTHA P MOSES
DEED BOOK 822 PAGE 416

PAUL D. & MARTHA P MOSES
DEED BOOK 822 PAGE 416

HOMINY VALLEY WILDLIFE AND SPORTSMEN'S CLUB, INC.
DEED BOOK 949 PAGE 158
DEED BOOK 948 PAGE 556

TEMPORARY SURFACE WATER IMPACTS TS TS

50 0 100

-L-

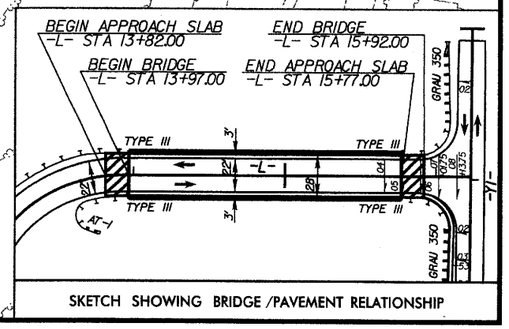
PI Sta 10+75.31	PI Sta 13+36.52
Δ = 37° 47' 38.7" (LT)	Δ = 87° 29' 14.0" (RT)
D = 26° 02' 36.7"	D = 57° 17' 44.8"
L = 145.12'	L = 152.69'
T = 75.31'	T = 95.71'
R = 220.00'	*R = 100.00'
SE = EXISTING	SE = 0.04
RO = EXISTING	RO = 48'

-Y1-

PI Sta 12+77.18	PI Sta 15+59.76
Δ = 0° 54' 41.9" (RT)	Δ = 33° 18' 51.8" (LT)
D = 1° 54' 35.5"	D = 63° 39' 43.1"
L = 47.73'	L = 52.33'
T = 23.87'	T = 26.93'
R = 3,000.00'	R = 90.00'
SE = EXISTING	SE = EXISTING
RO = EXISTING	RO = EXISTING
PI Sta 16+68.93	PI Sta 17+56.17
Δ = 77° 09' 58.0" (LT)	Δ = 11° 16' 02.2" (LT)
D = 54° 34' 02.7"	D = 19° 05' 54.9"
L = 141.41'	L = 59.00'
T = 83.77'	T = 29.59'
R = 105.00'	R = 300.00'
SE = EXISTING	SE = EXISTING
RO = EXISTING	RO = EXISTING

*HORIZONTAL CURVE DESIGN EXCEPTION

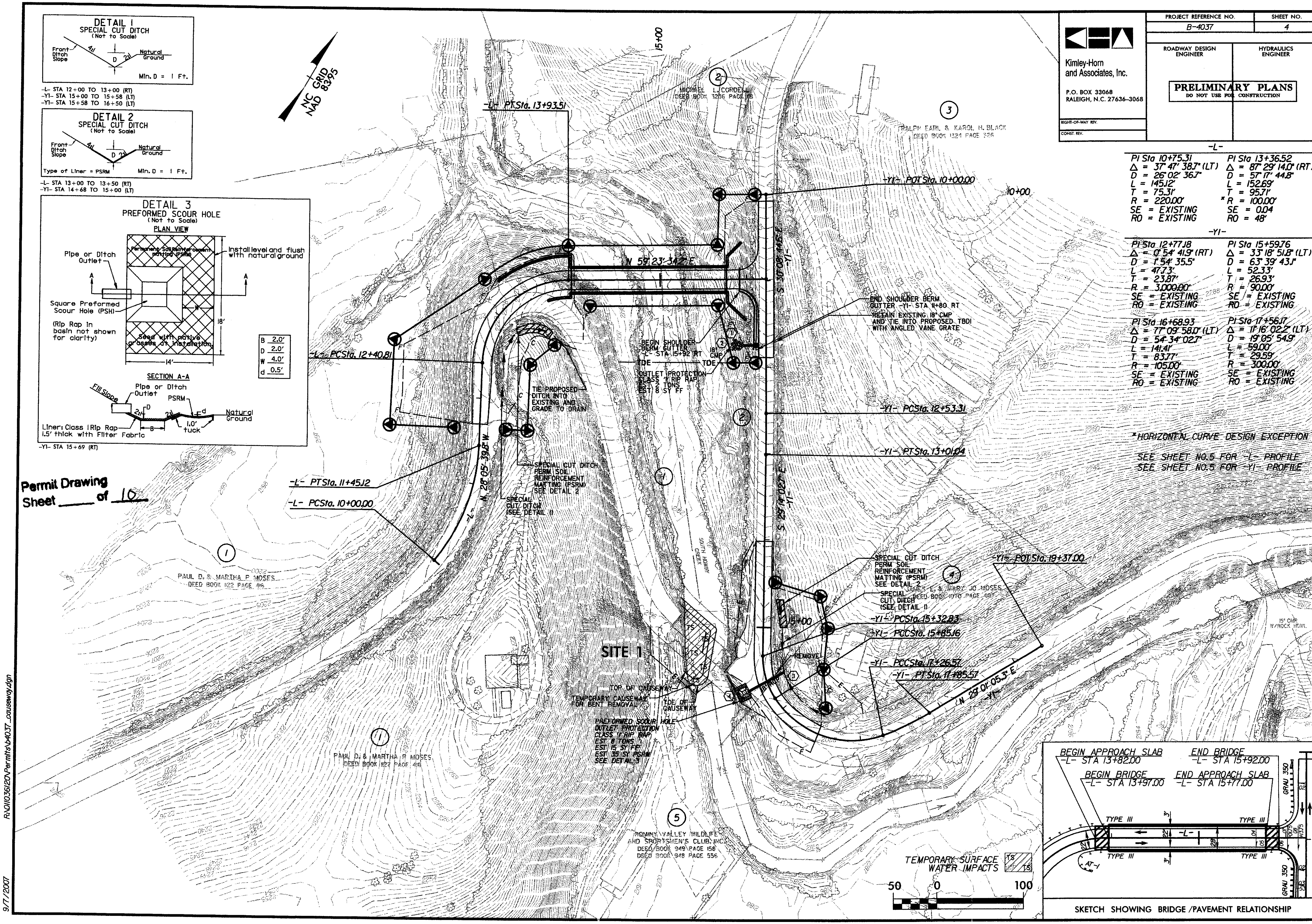
SEE SHEET NO.5 FOR -L- PROFILE
SEE SHEET NO.5 FOR -Y1- PROFILE



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

R:\04036120\Permits\B4037_causeway.dgn

9/7/2007


PROJECT REFERENCE NO. B-4037
SHEET NO. 4
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
RIGHT-OF-WAY REV.
CONST. REV.
-L-
PI Sta 10+75.31
Δ = 37° 47' 38.7" (LT)
D = 26° 02' 36.7"
L = 145.12'
T = 75.31'
R = 220.00'
SE = EXISTING
RO = EXISTING
PI Sta 13+36.52
Δ = 87° 29' 14.0" (RT)
D = 57° 17' 44.8"
L = 152.69'
T = 95.71'
*R = 100.00'
SE = 0.04
RO = 48'
-Y1-
PI Sta 12+77.18
Δ = 0° 54' 41.9" (RT)
D = 1° 54' 35.5"
L = 47.73'
T = 23.87'
R = 3,000.00'
SE = EXISTING
RO = EXISTING
PI Sta 15+59.76
Δ = 33° 18' 51.8" (LT)
D = 63° 39' 43.1"
L = 52.33'
T = 26.93'
R = 90.00'
SE = EXISTING
RO = EXISTING
PI Sta 16+68.93
Δ = 77° 09' 58.0" (LT)
D = 54° 34' 02.7"
L = 141.41'
T = 83.77'
R = 105.00'
SE = EXISTING
RO = EXISTING
PI Sta 17+56.17
Δ = 11° 16' 02.2" (LT)
D = 19° 05' 54.9"
L = 59.00'
T = 29.59'
R = 300.00'
SE = EXISTING
RO = EXISTING
*HORIZONTAL CURVE DESIGN EXCEPTION
SEE SHEET NO.5 FOR -L- PROFILE
SEE SHEET NO.5 FOR -Y1- PROFILE
DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)
Front Ditch Slope
Natural Ground
Min. D = 1 Ft.
-L- STA 12+00 TO 13+00 (RT)
-Y1- STA 15+00 TO 15+58 (LT)
-Y1- STA 15+58 TO 16+50 (LT)
DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)
Type of Liner = PSRM
Min. D = 1 Ft.
-L- STA 13+00 TO 13+50 (RT)
-Y1- STA 14+68 TO 15+00 (LT)
DETAIL 3
PREFORMED SCOUR HOLE
(Not to Scale)
PLAN VIEW
Pipe or Ditch Outlet
Install level and flush with natural ground
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed with native grasses at installation
B 2.0'
D 2.0'
W 4.0'
d 0.5'
SECTION A-A
Fill Slope
Pipe or Ditch Outlet
PSRM
Natural Ground
Liner: Class I Rip Rap 1.5' thick with Filter Fabric
1.0' tuck
-Y1- STA 15+69 (RT)
NC GRID NAD 83/95
Permit Drawing Sheet ___ of 10
-L- PT Sta. 13+93.51
-L- PC Sta. 12+40.81
-L- PT Sta. 11+45.12
-L- PC Sta. 10+00.00
N 59° 23' 34.2" E
N 28° 05' 39.8" W
-Y1- POT Sta. 10+00.00
-Y1- PC Sta. 12+53.31
-Y1- PT Sta. 13+01.04
-Y1- POT Sta. 19+37.00
-Y1- PC Sta. 15+32.83
-Y1- PCC Sta. 15+85.16
-Y1- PCC Sta. 17+26.57
-Y1- PT Sta. 11+85.57
N 29° 01' 05.3" E
END SHOULDER BERM GUTTER -Y1- STA 11+80 RT
RETAIN EXISTING 18" CMP AND TIE INTO PROPOSED TBDI WITH ANGLED VANE GRATE
BEGIN SHOULDER BERM GUTTER -L- STA 13+92 RT
OUTLET PROTECTION CLASS 'I' RIP RAP EST. 2 TONS EST. 8 SY FF
TIE PROPOSED DITCH INTO EXISTING AND GRADE TO DRAIN
SPECIAL CUT DITCH PERM SOIL REINFORCEMENT MATTING (PSRM) SEE DETAIL 2
SPECIAL CUT DITCH (SEE DETAIL 1)
MICHAEL L. CORDELL DEED BOOK 3256 PAGE 195
RALPH EARL & KAROL H. BLACK DEED BOOK 1321 PAGE 326
PAUL D. & MARTHA P. MOSES DEED BOOK 1122 PAGE 416
HOMINY VALLEY WILDLIFE AND SPORTSMEN'S CLUB, INC. DEED BOOK 949 PAGE 158 DEED BOOK 948 PAGE 556
SITE 1
TOP OF CAUSEWAY
TEMPORARY CAUSEWAY FOR BENT REMOVAL
TOE OF CAUSEWAY
PREFORMED SCOUR HOLE OUTLET PROTECTION CLASS 'I' RIP RAP EST. 8 TONS EST. 15 SY FF EST. 35 SY PSRM SEE DETAIL 3
SOUTH HOMINY CREEK
REMOVE
15" CMP W/ROCK HDWL.
TEMPORARY SURFACE WATER IMPACTS
50 0 100
BEGIN APPROACH SLAB -L- STA 13+82.00
END BRIDGE -L- STA 15+92.00
BEGIN BRIDGE -L- STA 13+97.00
END APPROACH SLAB -L- STA 15+77.00
TYPE III
GRAU 350
SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP
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9/7/2007

11+00 12+00 13+00 14+00 15+00 16+00

SCALE
1" = 50' H
1" = 10' V

2,240
2,230
2,220
2,210
2,200
2,190
2,180
2,170

PROPOSED LOWSTEEL

CL STA 14+87 -L-
1 @ 180'
STEEL PLATE GIRDER
CL ELEV = 2230.8'
90° SKEW

END GRADE
-L- STA 16+13.75 =
-Y1- STA 10+98.00 (9' RT)
ELEV 2230.06'

-L- STA 16+22.75 =
-Y1- STA 10+98.00
ELEV 2230.24'

℄ LOW POINT

NATURAL GROUND
@ ℄ BRIDGE

BEGIN GRADE
MILL NOTCH TO KEY-IN SF9.5A
-L- STA 11+70.00 ELEV 2233.90'
TIE PROPOSED PAVEMENT TO EXISTING

NATURAL GROUND
DOWNSTREAM

HIGH WATER MARK
W.S.E.L.= 2197.0'
(1977)

NATURAL GROUND
UPSTREAM

Permit Drawing
Sheet ___ of 10

Q100 W.S.E.L.= 2196.1'

Q50 W.S.E.L.= 2195.3'

NORMAL W.S.E.L. =2135.5'
(NOVEMBER 30, 2005)

500-YR TOTAL THEORETICAL SCOUR

WETLAND PERMIT DRAWING
BSR PROFILE
B-4037

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NCDOT
DIVISION OF HIGHWAYS
BUNCOMBE COUNTY
PROJECT: 33403.1.1 (B-4037)

REPLACEMENT OF BRIDGE NO.262
OVER SOUTH HOMINY CREEK
ON SR 3452

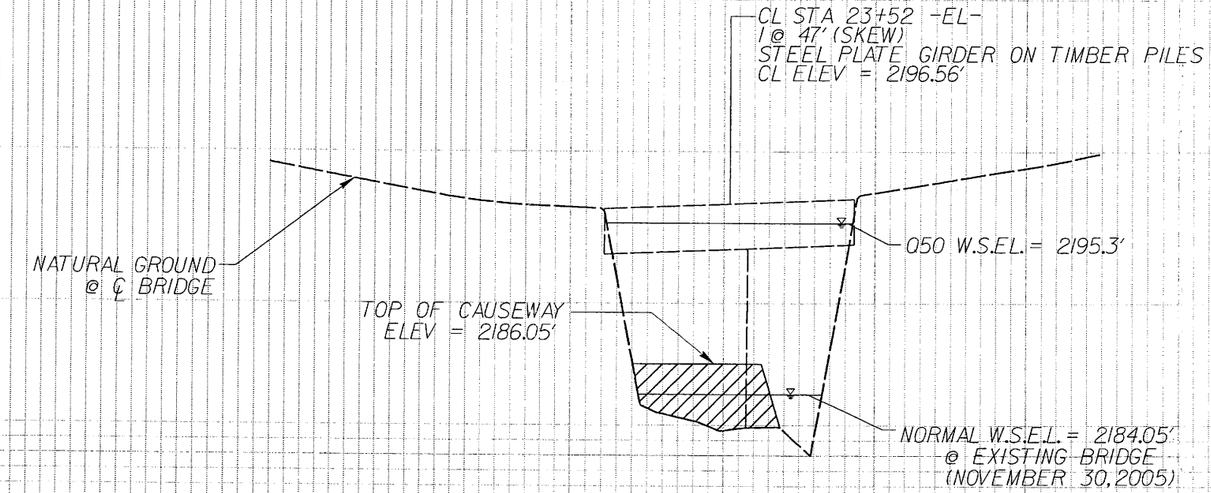
8/13/2007

20+00 21+00 22+00 23+00 24+00 25+00

SCALE
1" = 50' H
1" = 10' V

2,220
2,210
2,200
2,190
2,180
2,170
2,160

Permit Drawing
Sheet ____ of 10



WETLAND PERMIT DRAWING
EXISTING BRIDGE PROFILE
B-4037

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NCDOT
DIVISION OF HIGHWAYS
BUNCOMBE COUNTY
PROJECT: 33403.1.1 (B-4037)
REPLACEMENT OF BRIDGE NO.262
OVER SOUTH HOMINY CREEK
ON SR 3452

8/13/2007

Permit Drawing Set
Sheet 9 of 10

BM#2
SPIKE NAIL IN 32" POPLAR
-L- STA 11+23.88 (197.13' RT)
ELEV 2199.23'

BEGIN GRADE
-L- STA 11+70.00 ELEV 2233.90'
TIE PROPOSED PAVEMENT TO EXISTING

PI = 12+55.00
EL = 2,231.86'
VC = 170'
*K = 90
V = 45 MPH

BEGIN BRIDGE
-L- STA 13+97.00
ELEV 2231.15'

CL STA 14+87.00 -L-
1 @ 180'
STEEL PLATE GIRDER
CL ELEV = 2230.70'

END BRIDGE
-L- STA 15+77.00
ELEV 2230.25'

END GRADE
-L- STA 16+13.75 =
-Y1- STA 10+98.00 (9' RT)
ELEV 2230.06'

-L- STA 16+22.75 =
-Y1- STA 10+98.00
ELEV 2230.24'

BEGIN SPECIAL
DITCH GRADE RT
-L- STA 12+00.00
ELEV = 2231.05

END SPECIAL
DITCH GRADE RT
-L- STA 13+50.00
ELEV = 2220.12

PI = 13+00.00
ELEV = 2228.07'

(-)12.4000%
(-) 3.0%
(-)10.5017%
(-)16.0%
(-)10.5017%
(+)2.0%

NORMAL W.S.E.L. = 2185.5'
(11/30/05)

-L- UPPER GLADY FORK ROAD (SR 3452)

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	5000 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	2195.3 FT
BASE DISCHARGE	=	5900 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	2196.1 FT
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING ELEVATION	=	N/A
DATE OF SURVEY	=	11/30/2005
W.S. ELEVATION AT DATE OF SURVEY	=	2185.5' FT

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
B-4037	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

*SAG VERTICAL CURVE K DESIGN EXCEPTION
SEE SHEET NO.4 FOR -L- PLAN

BM#3
SPIKE NAIL IN 13" BLACK WALNUT
-Y1- STA 12+99.94 (19.34' RT)
ELEV 2213.37'

BM#4
SPIKE NAIL IN 11" BLACK WALNUT
-Y1- STA 18+12.93 (20.34' RT)
ELEV 2192.16'

BEGIN GRADE
-Y1- STA 10+08.00 ELEV 2237.72'
TIE PROPOSED PAVEMENT TO EXISTING

PI = 10+68.00
EL = 2,232.55'
VC = 120'
K = 146
V = 60 MPH

END GRADE
-Y1- STA 11+89.00 ELEV 2223.12'
TIE PROPOSED PAVEMENT TO EXISTING

BEGIN SPECIAL
DITCH GRADE LT
-Y1- STA 14+68.00
ELEV = 2198.58

PI = 15+00.00
ELEV = 2196.12

PI = 15+58.00
ELEV = 2195.10

PI = 16+25.00
ELEV = 2197.38

END SPECIAL
DITCH GRADE LT
-Y1- STA 16+50.00
ELEV = 2199.00

(-)18.5167%
(-)17.7934%
(-)7.7%
(-)17.75%
0
(+) 3.4%
(+) 6.5%
18" RCP

PIPE HYDRAULIC DATA
18" RCP

DRAINAGE AREA	=	4.2 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	61 CFS
DESIGN HW ELEVATION	=	2196.55 FT
100 YEAR DISCHARGE	=	76 CFS
100 YEAR HW ELEVATION	=	2196.76 FT
OVERTOPPING FREQUENCY	=	- YRS
OVERTOPPING DISCHARGE	=	- CFS
OVERTOPPING ELEVATION	=	- FT

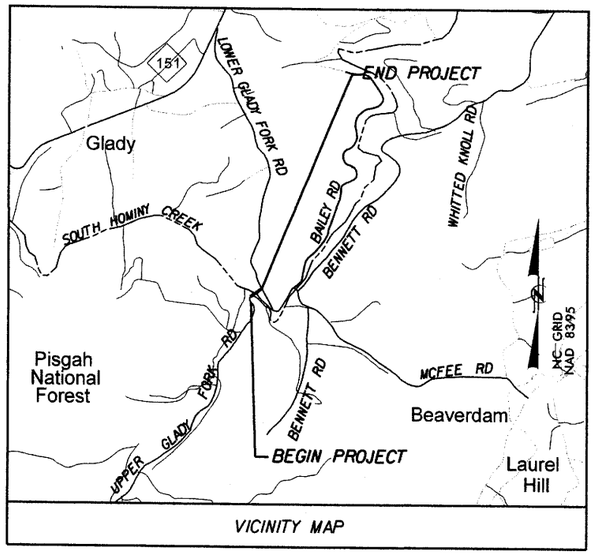
-Y1- LOWER GLADY FORK ROAD (SR 3454)

SEE SHEET NO.4 FOR -Y1- PLAN

$FILE$
8/13/2007

TIP PROJECT: B-4037

SEE SHEET 1-A FOR INDEX OF SHEETS
SEE SHEET 1-B FOR CONVENTIONAL PLAN SHEET SYMBOLS



VICINITY MAP

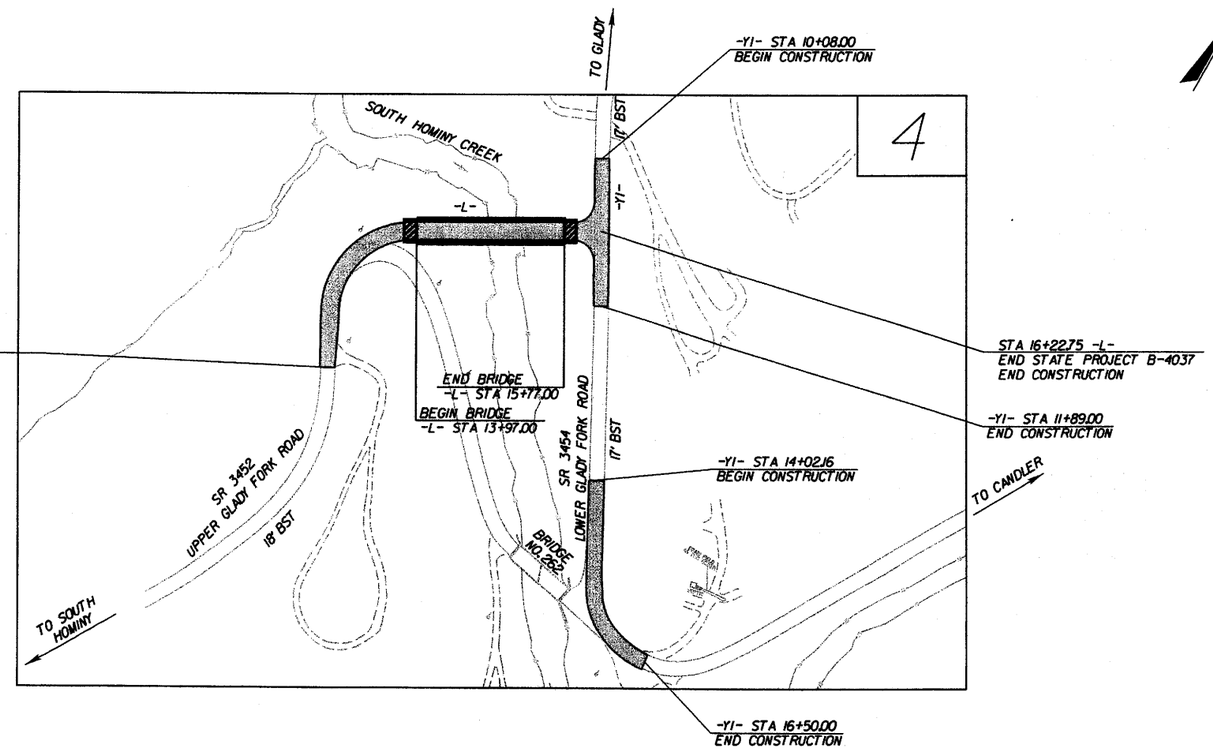
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BUNCOMBE COUNTY

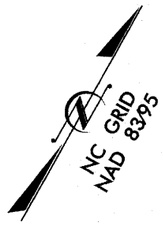
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4037	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33403.1.1	BRZ-3452(1)	P.E.
33403.2.1	BRZ-3452(1)	RIGHT-OF-WAY
33403.2.1	BRZ-3452(1)	UTILITIES

LOCATION: BRIDGE NO. 262 ON SR 3452 OVER SOUTH HOMINY CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE





PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

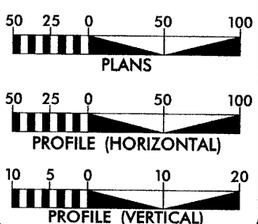
NCDOT CONTACT: B.D. TAYLOR, P.E.
PROJECT ENGINEER
ROADWAY DESIGN UNIT

CONTRACT:

R:\DII\36\20\Roadway\Proj\b4037_rdy_tshdgn

9/7/2007

GRAPHIC SCALES



DESIGN DATA

ADT 2008 = 750 VPD
ADT 2030 = 1,100 VPD
DHV = 10%
D = 60%
T = 3% *
V = 50 mph

DESIGN EXCEPTION:
HORIZONTAL RADIUS
VERTICAL CURVE K
FUNCTIONAL CLASSIFICATION:
LOCAL RURAL

* (TTST 1% + DUAL 2%)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4037 = 0.052 MILE

LENGTH OF STRUCTURE TIP PROJECT B-4037 = 0.034 MILE

TOTAL LENGTH OF TIP PROJECT B-4037 = 0.086 MILE

PLANS PREPARED FOR THE NCDOT BY:

Kimley-Horn and Associates, Inc.

Post Office Box 33068
Raleigh, North Carolina 27636

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 2, 2007

LETTING DATE:
JULY 15, 2008

JEFFREY W. MOORE, PE
PROJECT ENGINEER

J. JASON PACE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
B-4037	1-B

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Note: Not to Scale

S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

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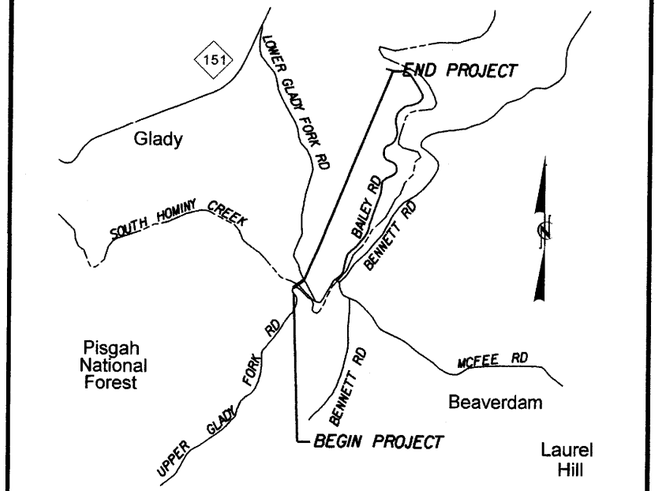
9/7/2007

PROJECT REFERENCE NO.	SHEET NO.
B-4037	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-4037



VICINITY MAP

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	657072.5242	896570.7502	2222.76	OUTSIDE PROJECT LIMITS	
2	BL-2	657507.6015	896795.2308	2235.74	10+09.07	12.57 RT
3	BL-3	657824.2905	896695.8087	2226.97	13+35.36	18.00 LT
4	BL-4	657746.5435	897064.6506	2208.61	16+06.57	256.11 RT
GPS1	B4037-1	657503.0354	897258.7632	2201.39	10+26.39	475.05 RT

****
BM1 ELEVATION = 2235.29
N 657341 E 896748
L STATION 10+00
S 11° 54' 54.2" W DIST 162.52
NAIL IN BASE OF 13 IN. POPLAR
****

****
BM2 ELEVATION = 2199.23
N 657697 E 896950
L STATION 11+24 197 RIGHT
NAIL IN BASE OF 32 IN. POPLAR
****

****
BM3 ELEVATION = 2213.37
N 657791 E 897032
Y1 STATION 13+00 19 RIGHT
NAIL IN BASE OF 13 IN. BLACK WALNUT
****

****
BM4 ELEVATION = 2192.16
N 657649 E 897393
Y1 STATION 18+13 20 RIGHT
NAIL IN BASE OF 11 IN. BLACK WALNUT
****

NC GRID
NAD 83/95

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4037-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 657503.0354(ft) EASTING: 897258.7632(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999776694 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4037-1" TO -L- STATION 10+00.00 IS S 89°39'51" W 477.35' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

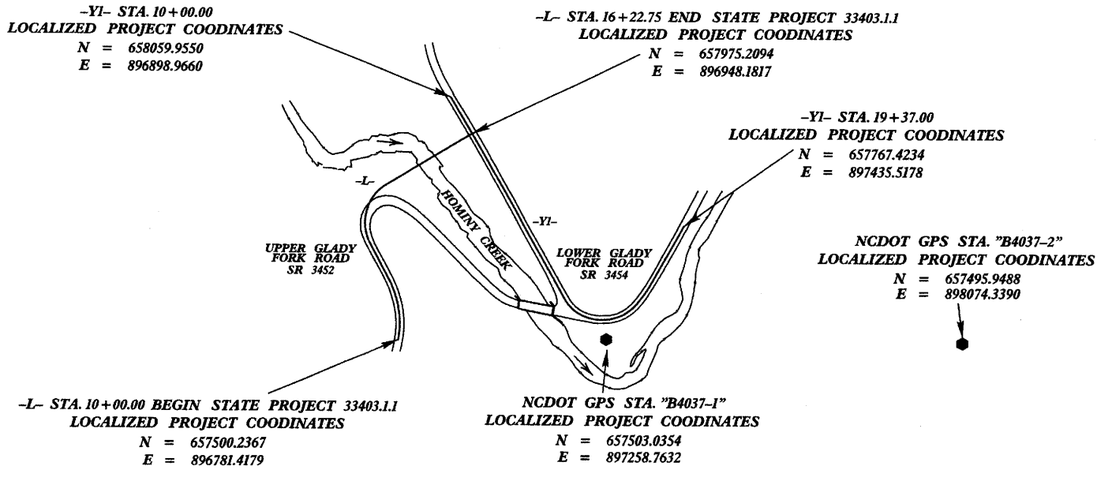
NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4037_LS_CONTROL_060621.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬢ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)



NOTE: DRAWING NOT TO SCALE

9/7/2007
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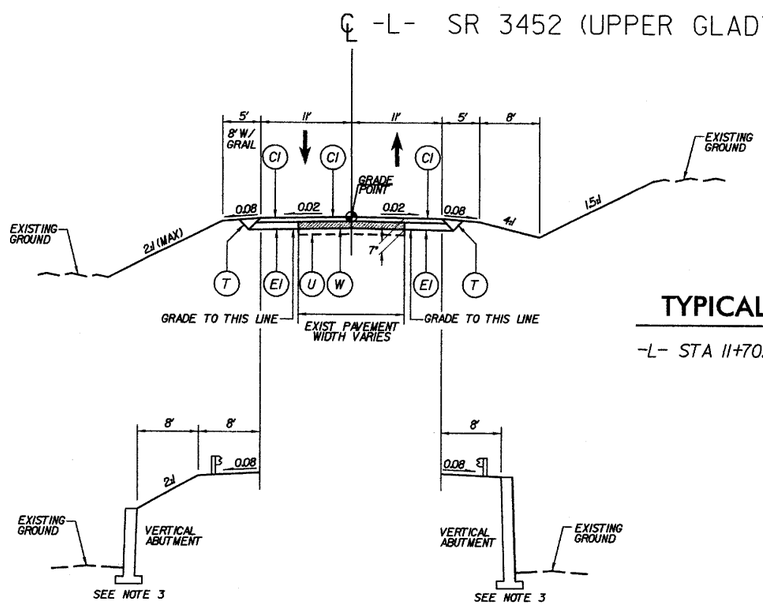
Kimley-Horn
and Associates, Inc.

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
B-4037	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 1

-L- STA 11+70.00 TO STA 12+50.00

TYPICAL SECTION NO. 1A

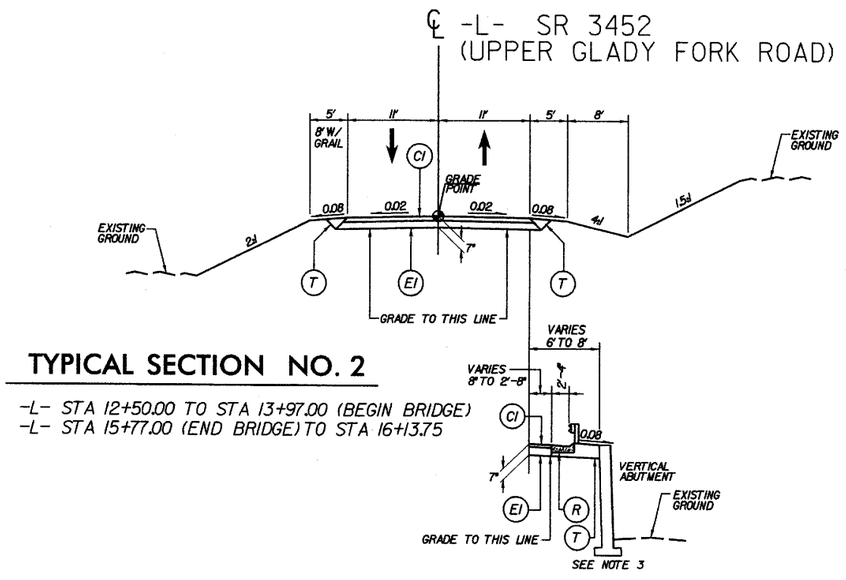
-L- STA 13+24.25 TO STA 13+97.00 (LT)

TYPICAL SECTION NO. 1B

-L- STA 13+62.70 TO STA 13+97.00 (RT)

PAVEMENT SCHEDULE

CI	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.
DI	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2½" OR GREATER THAN 4" DEPTH.
EI	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5½" DEPTH.
R	PROPOSED SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)



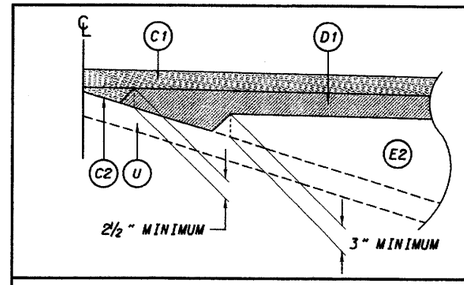
TYPICAL SECTION NO. 2

-L- STA 12+50.00 TO STA 13+97.00 (BEGIN BRIDGE)
-L- STA 15+77.00 (END BRIDGE) TO STA 16+13.75

TYPICAL SECTION NO. 2A

-L- STA 15+92.00 TO STA 16+13.75 (RT)
-Y1- STA 11+34.28 TO STA 11+80.00 (RT)

NOTES:
1: SAWCUT AND REMOVE EXISTING ASPHALT PAVEMENT AND PROVIDE 1' MINIMUM WIDTH FULL DEPTH PAVEMENT
2: SEE PLANS FOR VERTICAL ABUTMENT LOCATIONS
3: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED



DETAIL SHOWING METHOD OF WEDGING

R:\011036\20\Roadway\Proj\B4037_rdy_typ.dgn
9/7/2007

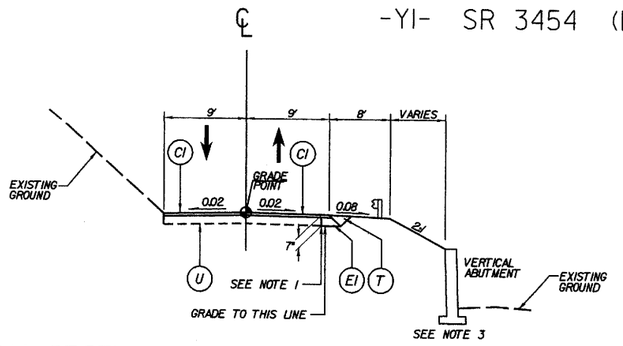
Kimley-Horn
and Associates, Inc.

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
B-4037	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

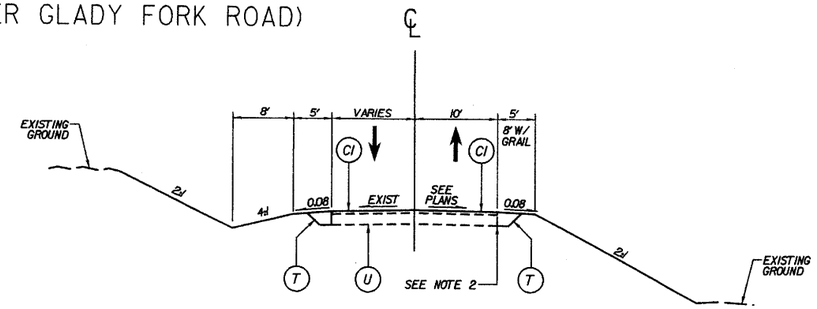
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y1- SR 3454 (LOWER GLADY FORK ROAD)



TYPICAL SECTION NO. 3

-Y1- STA 10+08.00 TO STA 11+89.00



TYPICAL SECTION NO. 4

-Y1- STA 14+02.16 TO STA 16+50.00

PAVEMENT SCHEDULE	
CI	3" SF9.5A
EI	4" B25.0B
T	EARTH MATERIAL
U	EXISTING PAVEMENT

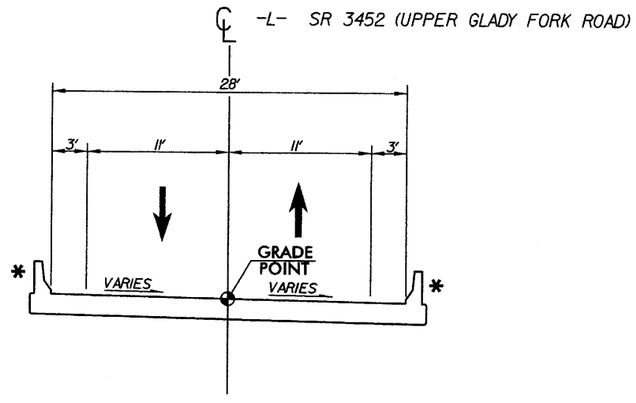
NOTES:
1. SAWCUT AND REMOVE EXISTING ASPHALT PAVEMENT AND PROVIDE 1' MINIMUM WIDTH FULL DEPTH PAVEMENT
2. SAWCUT AND REMOVE EXISTING ASPHALT PAVEMENT
3. SEE PLANS FOR VERTICAL ABUTMENT LOCATIONS
4. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED

DESIGN DATA

ADT 2008 = 750 VPD
ADT 2030 = 1,100 VPD
DHV = 10%
D = 60%
TTST = 1%
DUAL = 2%
V = 50 mph

FUNCTIONAL CLASSIFICATION:
LOCAL RURAL

* BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT



BRIDGE TYPICAL SECTION NO. 1

COMPUTED BY:	TG	DATE:	5/23/2007
CHECKED BY:	LDR	DATE:	5/23/2007

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4037	3-A

Kimley-Horn
and Associates, Inc.

P.O. Box 33068
Raleigh, N.C. 27636-3068

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT IN ELEVATION	INVERT OUT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)								BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)													15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS		QUANTITIES FOR DRAINAGE STRUCTURES	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT.		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE		
SIZE		FROM	TO					12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"		30"		36"		42"		48"					R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	A	B		E	F	G
THICKNESS OR GAUGE																.064	.064	.064	.064		.079		.079		.109		.109								5.0' THRU 10.0'	10.0' AND ABOVE				
11+75 -Y1-	RT	1		2223.62	2218.62																													1						
11+75 -Y1-	RT	1	2		2218.62	2216.00	0.220											12																						
15+65 -Y1-	CL	3	4		2195.10	2194.62	0.010			48																														
SHEET TOTALS										48								12																1						

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	ADJUSTMENT OF CATCH BASINS	CONVERT EXIST CB TO TBJB	CONVERT EXIST CB TO DI	TBJB STD. 840.35	M.H. FRAME AND COVER STD. 840.54	J.B. STD. 840.31 OR 840.33	MANHOLE STD. 840.52	M.H. STD. 840.51 OR 840.54	800.00 STD. 850.10	CPES STD. 310.03	T.B.D.I. STD. 840.35	ANGLED VANE FRAME WITH TWO GRATES STD 840.33					CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
11+75 -Y1-																				1	1									Tie to Existing 18" CMP
11+75 -Y1-																														
15+65 -Y1-																													52	
SHEET TOTALS																				1	1								52	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I.(N.S.)	MEDIAN DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: J. PACE	DATE: 5/24/07
CHECKED BY: J. MOORE	DATE: 5/25/07

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4037	3-B

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS TYPE 350	ANCHORS AT-1	ANCHORS TYPE III	IMPACT ATTENUATOR TYPE 350 NO.	PERMITTED G	PERMITTED NG	REMARKS
-L-	12+28.25	13+97.00	LT	168.75				13+97.00	5	8		50		1	1		1				
-L-	13+57.00	13+97.00	RT	31.25	28		13+97.00		3	8	6.25		1			1	1				
-Y1-	10+08.00	-L- 15+77.00	RT	68.75	26		15+77.00		5	8	50		1		1		1				
-L-	15+77.00	-Y1- 11+89.00	RT	68.75	26			15+77.00	5	8		50		1	1		1				
-Y1-	14+94.25	16+13.00	RT	118.75	80.00		14+94.25		5	8	50		1		2						
			SUBTOTAL	456.25																	
	LESS ANCHOR	DEDUCTIONS																			
	GRAU 350	5 @ 50.00'	=	-250.00'																	
	AT-1	1 @ 6.25'	=	-6.25'																	
	TYPE III	4 @ 18.75'	=	-75.00'																	
			TOTAL	125.00	80.00																
															5	1	4				
			SAY	125																	
	ADDITIONAL	GUARDRAIL POSTS	= 5 EA																		

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- STA 11+70.00 TO STA 13+97.00	15		3991	3976	
-Y1- STA 10+08.00 TO STA 11+89.00	5		730	725	
-L- STA 15+77.00 TO STA 16+13.75	0		935	935	
-Y1- STA 14+02.16 TO STA 16+50.00	1930		5		1925
TOTALS	1950		5660	5636	1925
EST LOSS DUE TO CLEARING AND GRUBBING	-50				
EARTH WASTE TO REPLACE BORROW				-1935	-1935
PROJECT TOTALS	1900		5660	3751	0
EST. FOR REPLACING TOPSOIL ON BORROW PITS				188	
GRAND TOTALS	1900		5660	3939	
SAY	1900		5700	4000	
ESTIMATED UNDERCUT = 10 CY					
PAVEMENT STRUCTURE VOLUME = CY					

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	STATION TO STATION	LOCATION	SQ. YDS.
-L-	13+50 TO EXISTING BRIDGE	RT	415
-Y1-	14+68 TO 16+03	RT	150
TOTAL			565
SAY			600

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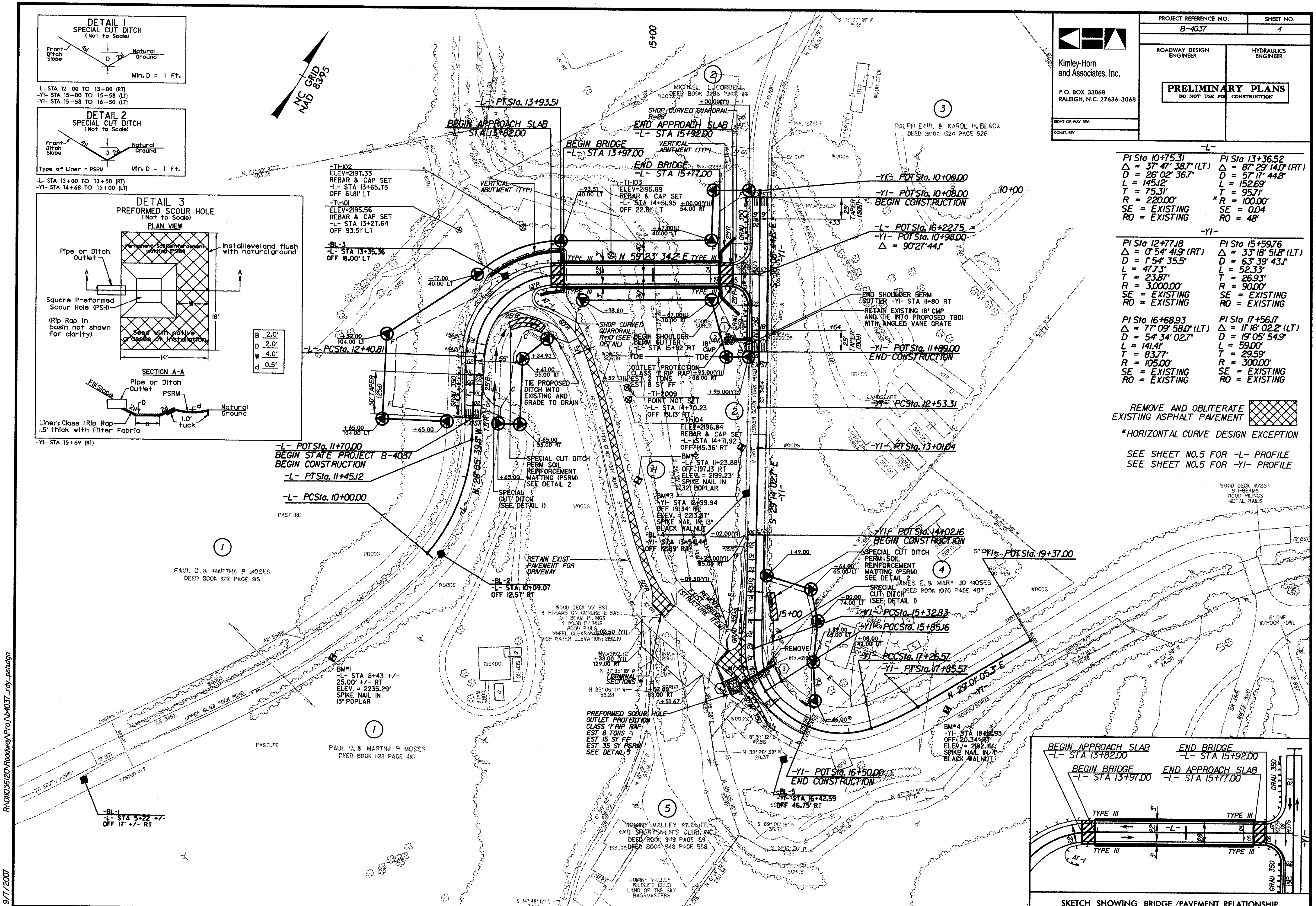
9/7/2007


PROJECT REFERENCE NO. B-4037
SHEET NO. 4
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PI Sta 10+75.31
Δ = 37° 47' 38.7" (LT)
D = 26° 02' 36.7"
L = 145.12'
T = 75.31'
R = 220.00'
SE = EXISTING
RO = EXISTING
PI Sta 13+36.52
Δ = 87° 29' 14.0" (RT)
D = 57° 17' 44.8"
L = 152.69'
T = 95.71'
*R = 100.00'
SE = 0.04
RO = 48'
-Y1-
PI Sta 12+77.18
Δ = 0° 54' 41.9" (RT)
D = 1° 54' 35.5"
L = 47.73'
T = 23.87'
R = 3,000.00'
SE = EXISTING
RO = EXISTING
PI Sta 15+59.76
Δ = 33° 18' 51.8" (LT)
D = 63° 39' 43.1"
L = 52.33'
T = 26.93'
R = 90.00'
SE = EXISTING
RO = EXISTING
PI Sta 16+68.93
Δ = 77° 09' 58.0" (LT)
D = 54° 34' 02.7"
L = 141.41'
T = 83.77'
R = 105.00'
SE = EXISTING
RO = EXISTING
PI Sta 17+56.17
Δ = 11° 16' 02.2" (LT)
D = 19° 05' 54.9"
L = 59.00'
T = 29.59'
R = 300.00'
SE = EXISTING
RO = EXISTING
REMOVE AND OBLITERATE EXISTING ASPHALT PAVEMENT
*HORIZONTAL CURVE DESIGN EXCEPTION
SEE SHEET NO.5 FOR -L- PROFILE
SEE SHEET NO.5 FOR -Y1- PROFILE
DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1 Ft.
-L- STA 12+00 TO 13+00 (RT)
-Y1- STA 15+00 TO 15+58 (LT)
-Y1- STA 15+58 TO 16+50 (LT)
DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)
Type of Liner = PSRM
Min. D = 1 Ft.
-L- STA 13+00 TO 13+50 (RT)
-Y1- STA 14+68 TO 15+00 (LT)
DETAIL 3
PREFORMED SCOUR HOLE
(Not to Scale)
PLAN VIEW
SECTION A-A
Liner: Class I Rip Rap
1.5' thick with Filter Fabric
-Y1- STA 15+69 (RT)
NC GRID NAD 83/95
-L- PT Sta. 13+93.51
BEGIN APPROACH SLAB -L- STA 13+82.00
BEGIN BRIDGE -L- STA 13+97.00
END APPROACH SLAB -L- STA 15+92.00
END BRIDGE -L- STA 15+77.00
-Y1- POT Sta. 10+00.00
-Y1- POT Sta. 10+08.00 BEGIN CONSTRUCTION
-L- POT Sta. 16+22.75
-Y1- POT Sta. 10+98.00
Δ = 90° 27' 44.1"
-Y1- POT Sta. 11+89.00 END CONSTRUCTION
-Y1- PC Sta. 12+53.31
-Y1- PT Sta. 13+01.04
-Y1- POT Sta. 14+02.16 BEGIN CONSTRUCTION
-Y1- POT Sta. 19+37.00
-Y1- PC Sta. 15+32.83
-Y1- PCC Sta. 15+85.16
-Y1- PCC Sta. 17+26.57
-Y1- PT Sta. 17+85.57
-Y1- POT Sta. 16+50.00 END CONSTRUCTION
-L- PC Sta. 12+40.81
-L- POT Sta. 11+70.00
BEGIN STATE PROJECT B-4037
BEGIN CONSTRUCTION
-L- PT Sta. 11+45.12
-L- PC Sta. 10+00.00
MICHAEL L. CORDELL DEED BOOK 3236 PAGE 16
RALPH EARL & KAROL H. BLACK DEED BOOK 1324 PAGE 526
PAUL D. & MARTHA P. MOSES DEED BOOK 122 PAGE 416
JAMES E. & MARY JO MOSES DEED BOOK 1070 PAGE 407
HOMINY VALLEY WILDLIFE AND SPORTSMEN'S CLUB, INC. DEED BOOK 249 PAGE 158 DEED BOOK 948 PAGE 556
SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP
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9/7/2007

BM#2
SPIKE NAIL IN 32" POPLAR
-L- STA 11+23.88 (197.13' RT)
ELEV 2199.23'

BEGIN GRADE
-L- STA 11+70.00 ELEV 2233.90'
TIE PROPOSED PAVEMENT TO EXISTING

END BRIDGE
-L- STA 15+17.00
ELEV 2230.25'

END GRADE
-L- STA 16+15.75 =
-Y1- STA 10+98.00 (9' RT)
ELEV 2230.06'

CL STA 14+87.00 -L-
1 @ 180'
STEEL PLATE GIRDER
CL ELEV = 2230.70'

-L- STA 16+32.75 =
-Y1- STA 10+98.00
ELEV 2230.24'

PI = 12+55.00
EL = 2231.86'
VC = 170'
*K = 90
V = 45 MPH

BEGIN BRIDGE
-L- STA 13+19.00
ELEV 2231.15'

(-)12.00%
(-)3.0%
(-)10.50%
(-)10.50%
(+)12.0%
(-)16.0%

BEGIN SPECIAL
DITCH GRADE RT
-L- STA 12+00.00
ELEV = 2231.05

PI = 13+00.00
ELEV = 2228.80'

END SPECIAL
DITCH GRADE RT
-L- STA 13+50.00
ELEV = 2220.12

NORMAL W.S.E.L. = 2185.5'
(11/30/05)

-L- UPPER GLADY FORK ROAD (SR 3452)

*SAG VERTICAL CURVE K DESIGN EXCEPTION
SEE SHEET NO.4 FOR -L- PLAN

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5000 CFS
DESIGN FREQUENCY	= 50 YR.
DESIGN HW ELEVATION	= 2195.3 FT
BASE DISCHARGE	= 5900 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 2196.1 FT
OVERTOPPING DISCHARGE	= N/A
OVERTOPPING FREQUENCY	= N/A
OVERTOPPING ELEVATION	= N/A
DATE OF SURVEY	= 11/30/2005
W.S.ELEVATION AT DATE OF SURVEY	= 2185.5 FT

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
B-4037	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM#3
SPIKE NAIL IN 13" BLACK WALNUT
-Y1- STA 12+99.94 (19.34' RT)
ELEV 2213.37'

BM#4
SPIKE NAIL IN 1" BLACK WALNUT
-Y1- STA 18+12.93 (20.34' RT)
ELEV 2192.16'

BEGIN GRADE
-Y1- STA 10+08.00 ELEV 2237.72'
TIE PROPOSED PAVEMENT TO EXISTING

PI = 10+69.00
EL = 2232.55'
VC = 120'
K = 146
V = 60 MPH

END GRADE
-Y1- STA 11+89.00 ELEV 2223.12'
TIE PROPOSED PAVEMENT TO EXISTING

(-)18.667%
(-)17.733%

BEGIN SPECIAL
DITCH GRADE LT
-Y1- STA 14+68.00
ELEV = 2198.58

PI = 15+00.00
ELEV = 2196.12

PI = 15+58.00
ELEV = 2195.10

PI = 16+25.00
ELEV = 2197.38

END SPECIAL
DITCH GRADE LT
-Y1- STA 16+50.00
ELEV = 2199.00

(-)1.75%
(-)1.75%
0
(+)3.4%
(+)6.5%
18" RCP

PIPE HYDRAULIC DATA
18" RCP

DRAINAGE AREA	= 1.2 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 6.1 CFS
DESIGN HW ELEVATION	= 2196.55 FT
100 YEAR DISCHARGE	= 7.6 CFS
100 YEAR HW ELEVATION	= 2196.76 FT
OVERTOPPING FREQUENCY	= - YRS
OVERTOPPING DISCHARGE	= - CFS
OVERTOPPING ELEVATION	= - FT

-Y1- LOWER GLADY FORK ROAD (SR 3454)

SEE SHEET NO.4 FOR -Y1- PLAN

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9/7/2007

PROJ. REFERENCE NO.	SHEET NO.
B-4037	X-1A

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

CROSS-SECTION SUMMARY

STATION	UNCLASSIFIED EXCAVATION AREAS (SQ. FT.)	EMBANKMENT AREAS (SQ. FT.)	UNCLASSIFIED EXCAVATION VOLUMES (CU. YARDS)	EMBANKMENT VOLUMES (CU. YARDS)	STATION	UNCLASSIFIED EXCAVATION AREAS (SQ. FT.)	EMBANKMENT AREAS (SQ. FT.)	UNCLASSIFIED EXCAVATION VOLUMES (CU. YARDS)	EMBANKMENT VOLUMES (CU. YARDS)	STATION	UNCLASSIFIED EXCAVATION AREAS (SQ. FT.)	EMBANKMENT AREAS (SQ. FT.)	UNCLASSIFIED EXCAVATION VOLUMES (CU. YARDS)	EMBANKMENT VOLUMES (CU. YARDS)
-L-														
11+70	0.01	0.01	0	0										
11+80	2.39	501.85	0	93										
12+00	71.57	508.18	27	374										
12+50	177.93	441.40	231	879										
13+00	83.08	102.27	242	503										
13+50	0.00	348.33	77	417										
13+97	0.00	963.30	0	1142										
15+77	0.00	1085.37	0	0										
16+00	0.00	497.89	0	674										
16+13.75	0.10	1.12	0	127										
-Y1-														
10+08	0.00	0.00	0	0										
10+25	1.52	70.49	0	22										
10+55.87	0.41	45.91	1	67										
10+72	0.34	287.58	0	100										
10+87	0.16	0.00	0	80										
11+09	0.01	0.08	0	0										
11+24.37	0.00	425.30	0	121										
11+45.33	0.02	67.38	0	191										
11+89	0.00	0.00	0	54										
14+68	0.00	0.30	0	0										
15+00	8.38	0.16	5	0										
15+35	93.77	0.00	66	0										
15+50	143.51	0.00	66	0										
16+00	0.02	2.09	133	2										
16+03	0.00	0.00	0	0										

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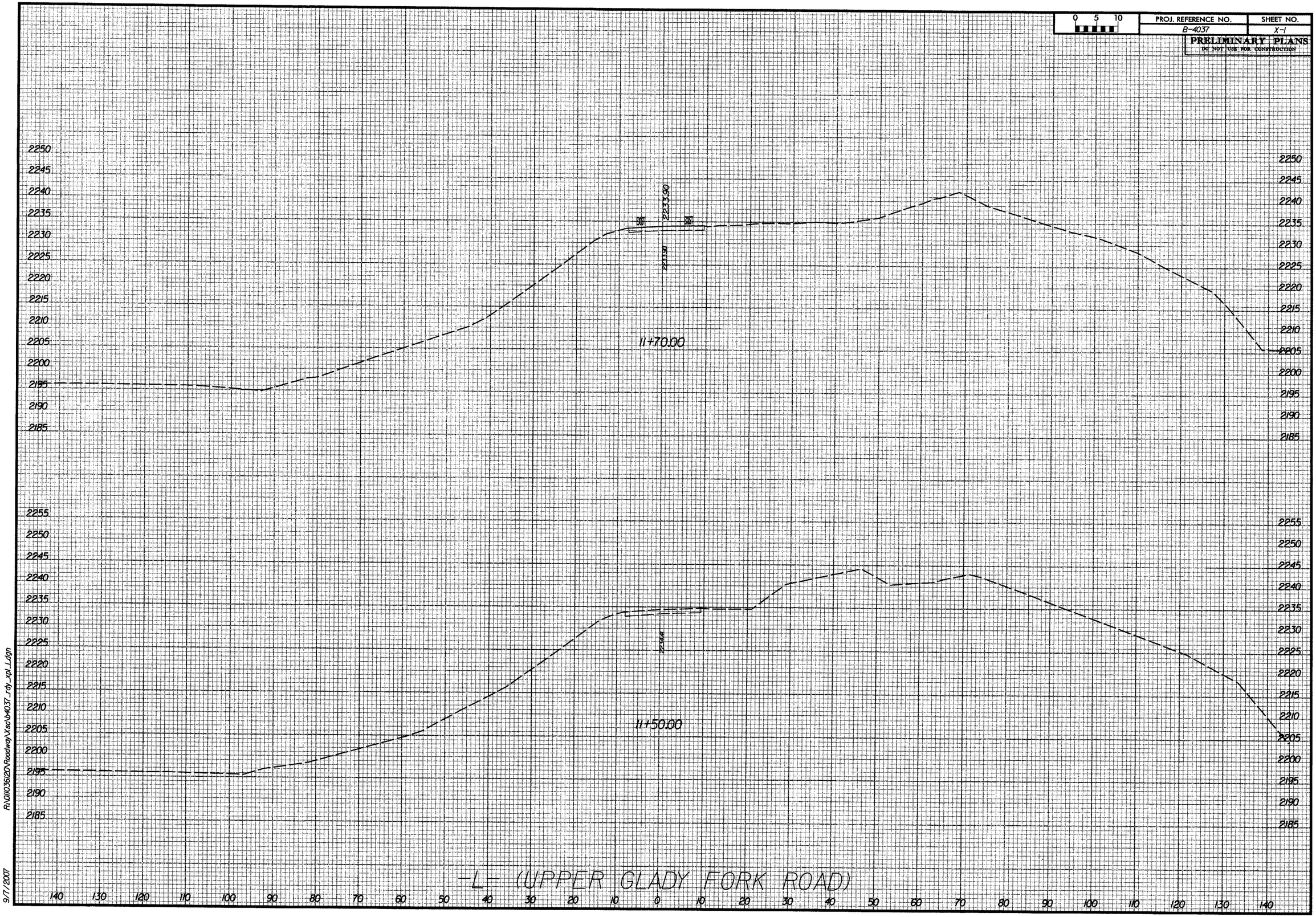
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-1

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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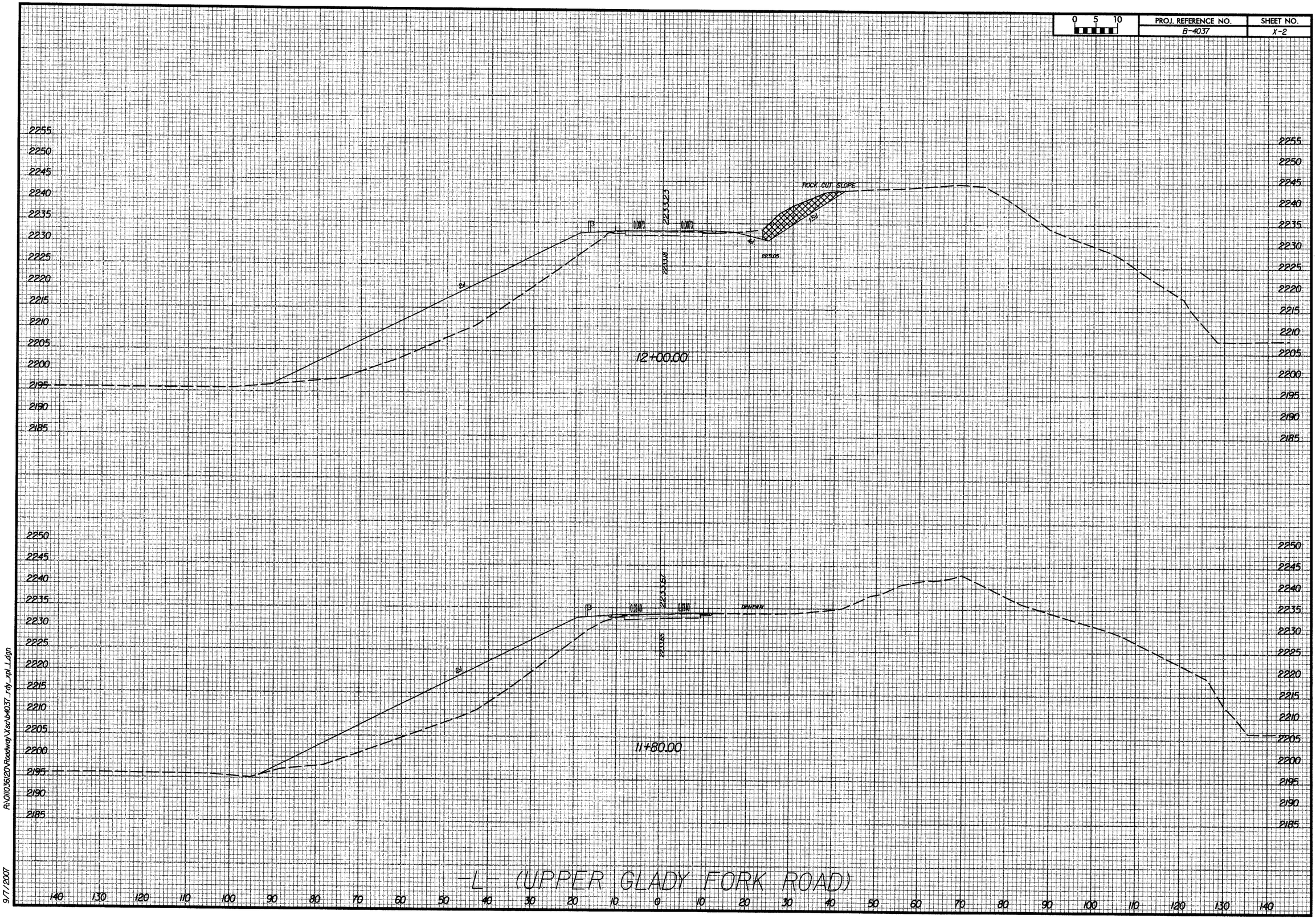
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-2



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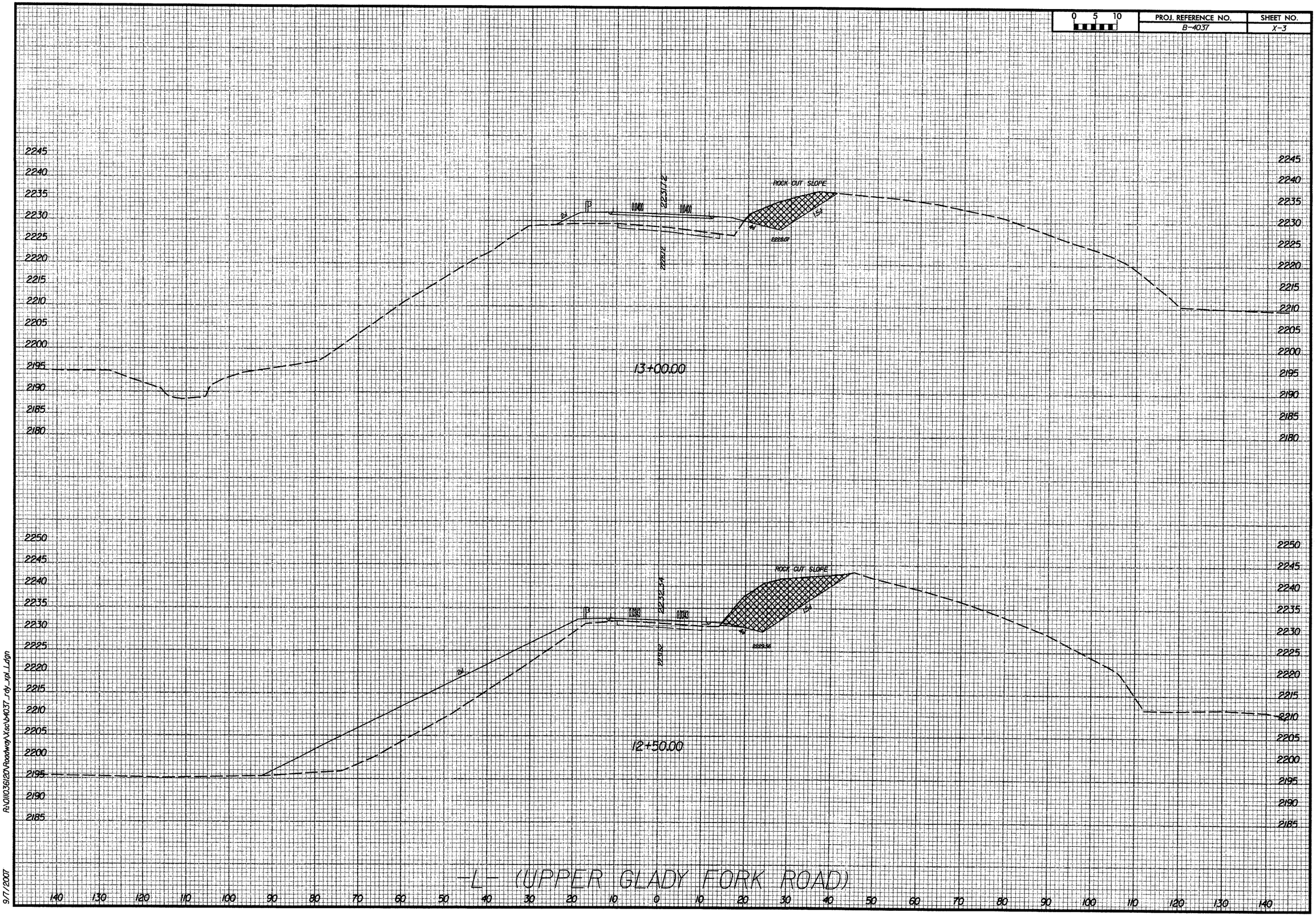
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-3



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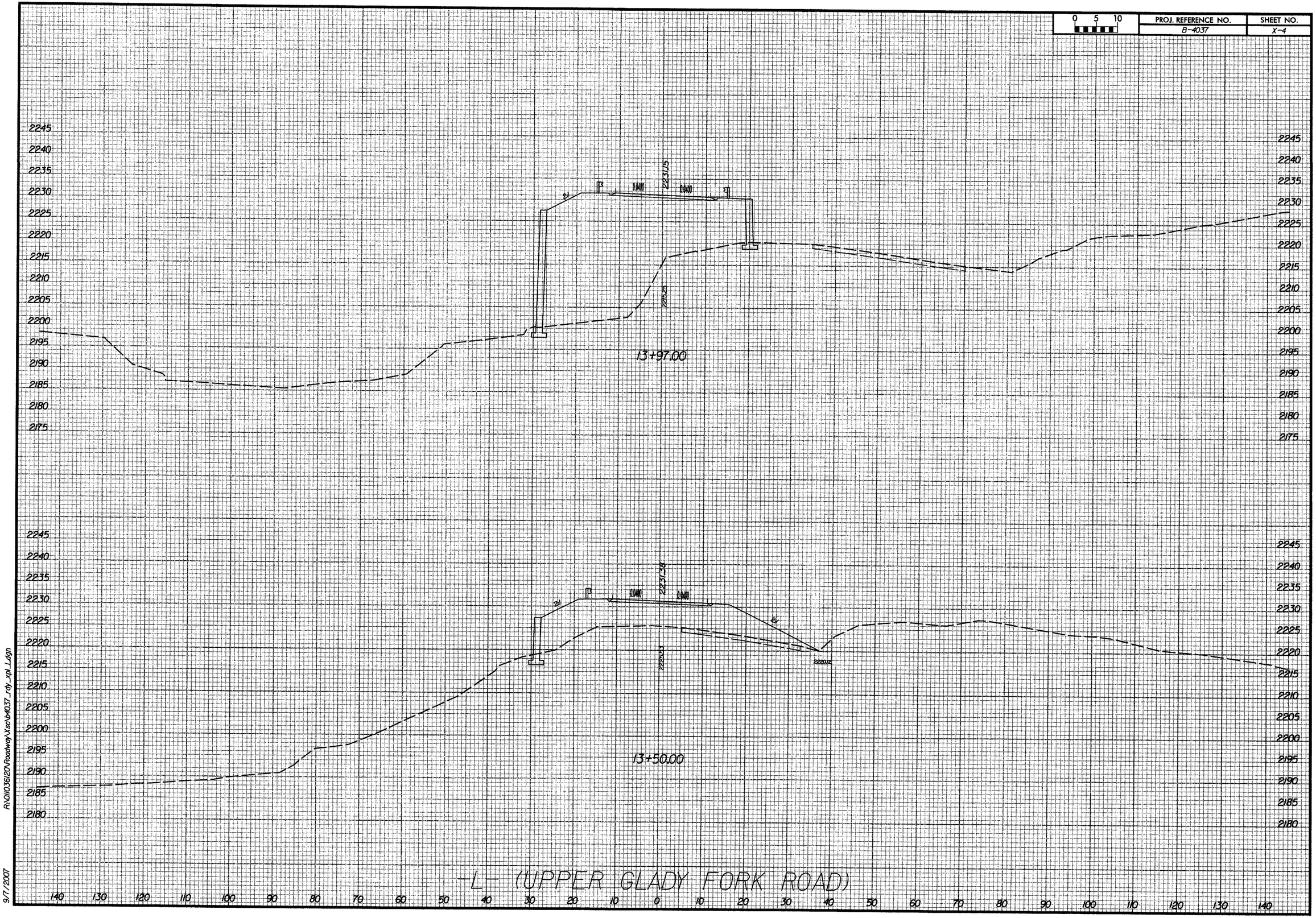
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-4



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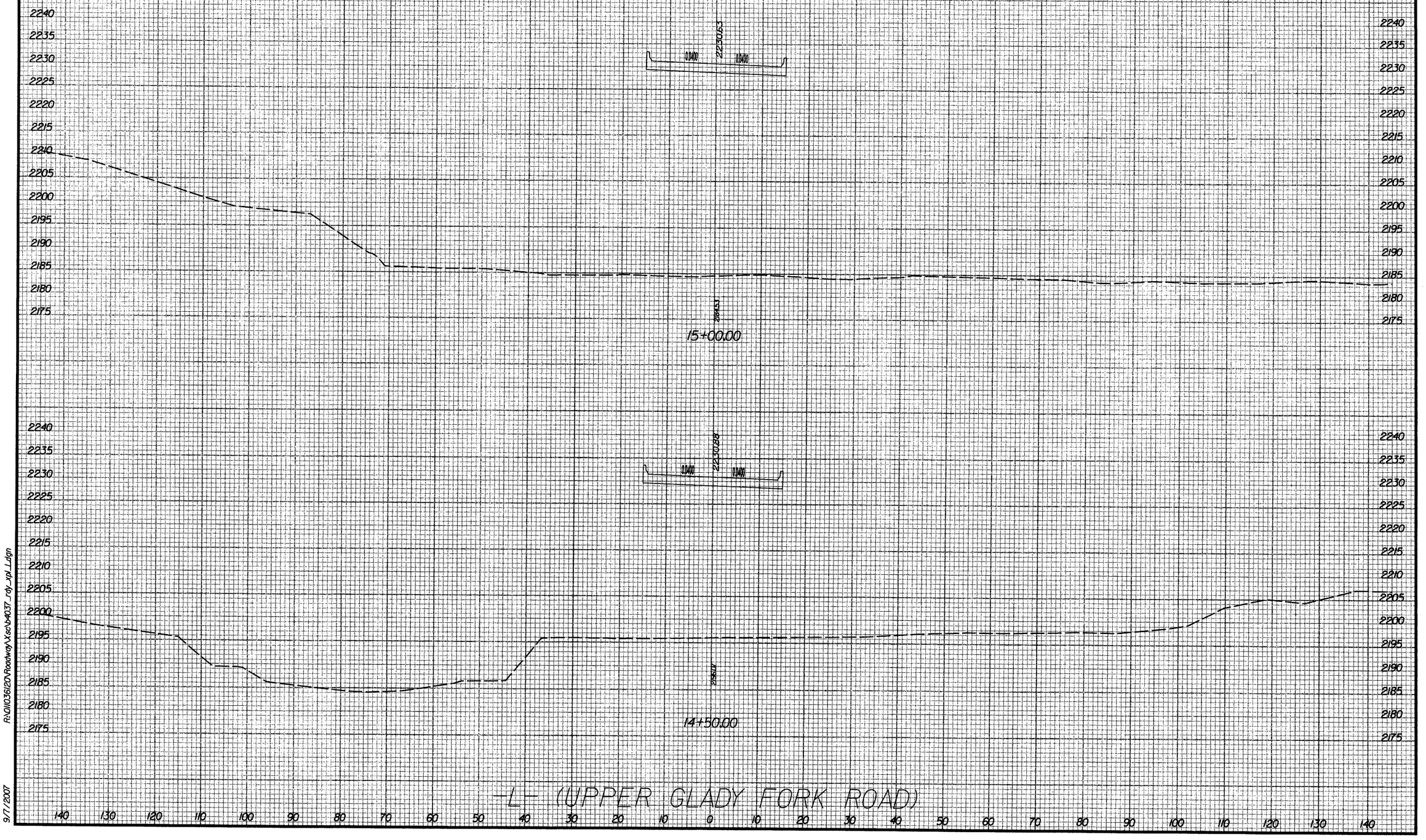
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-5



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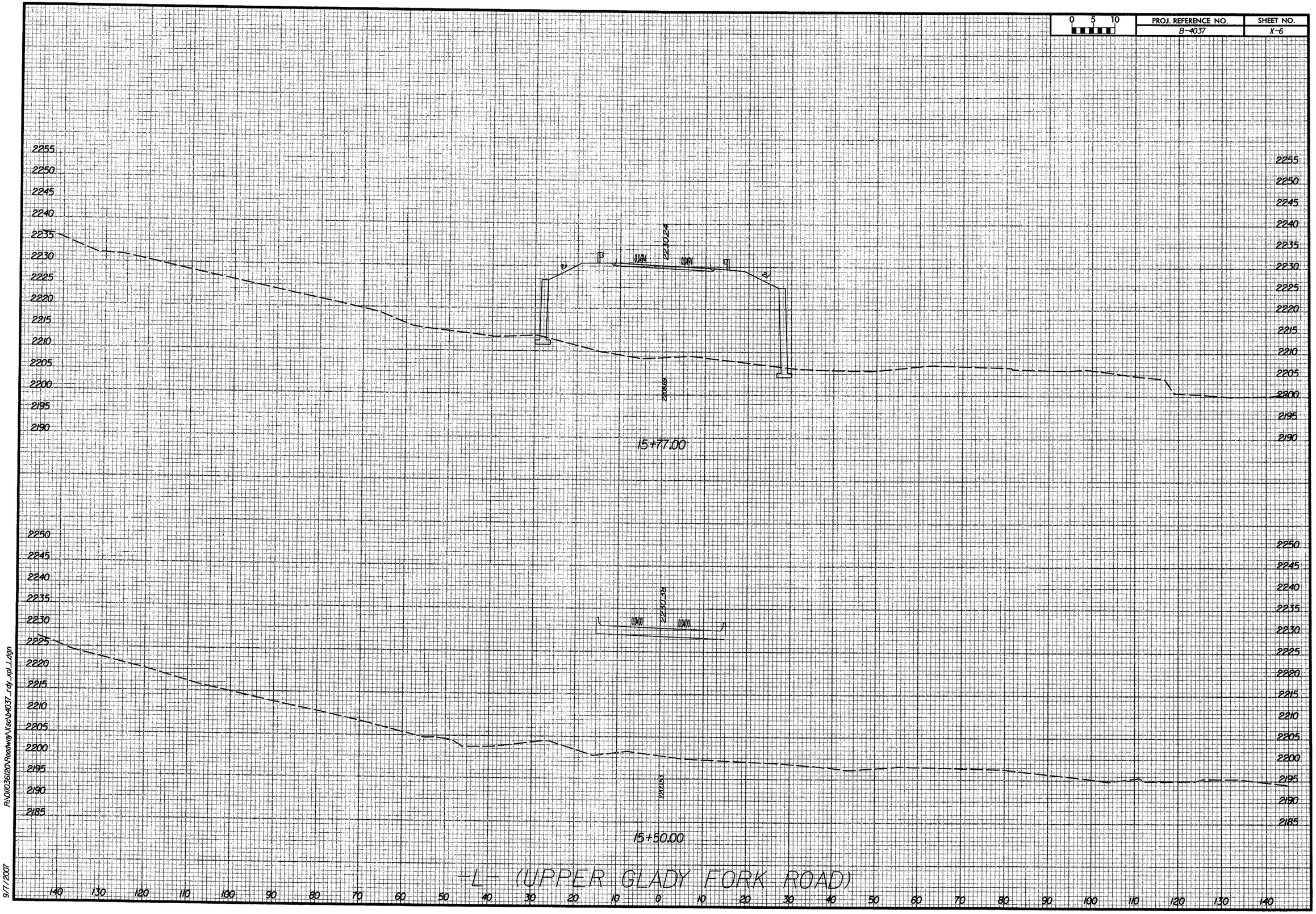
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-6



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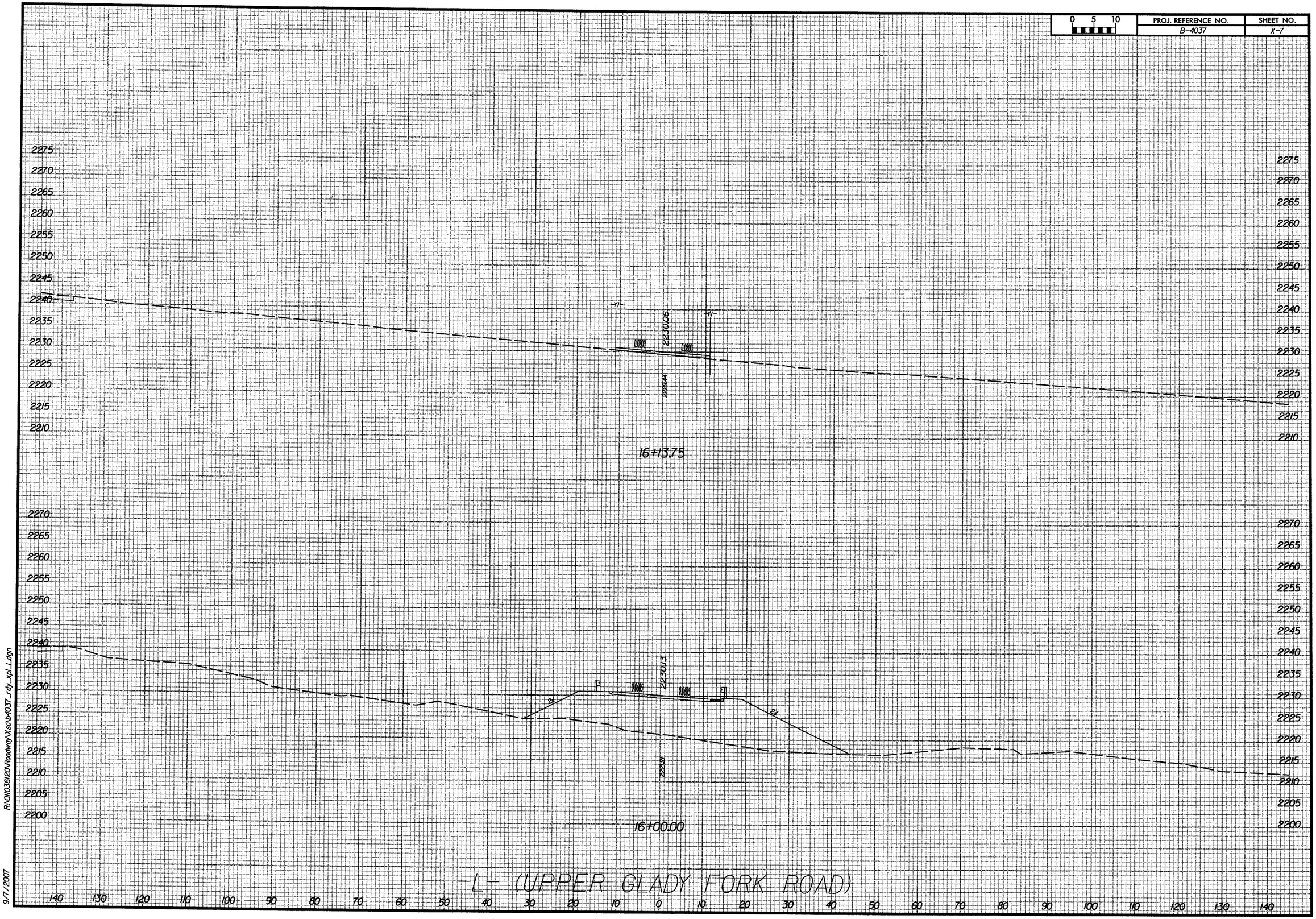
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-7



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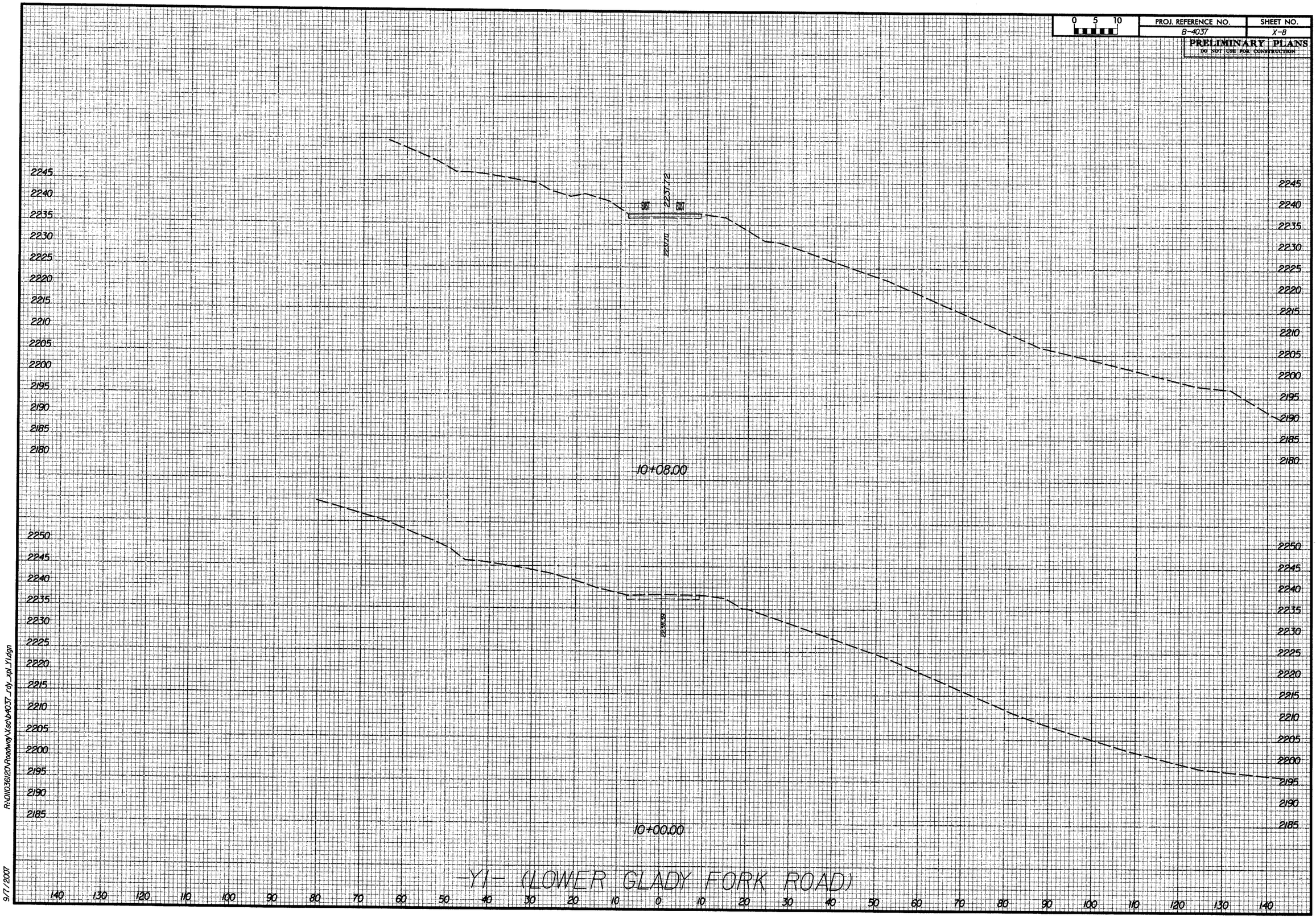
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-8

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-9

10+55.87

10+25.00

-Y1- (LOWER GLADY FORK ROAD)

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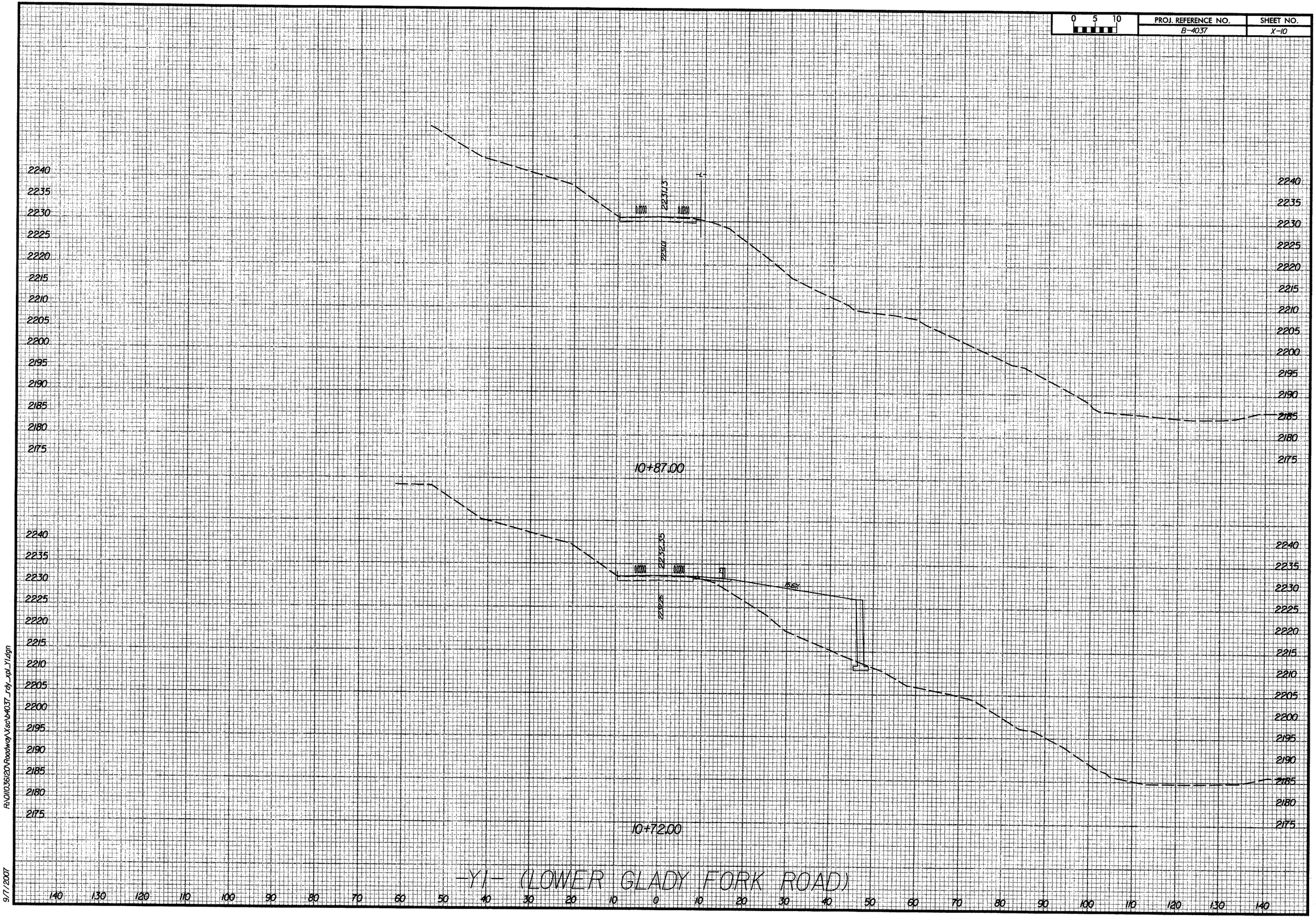
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-10



-Y1- (LOWER GLADY FORK ROAD)

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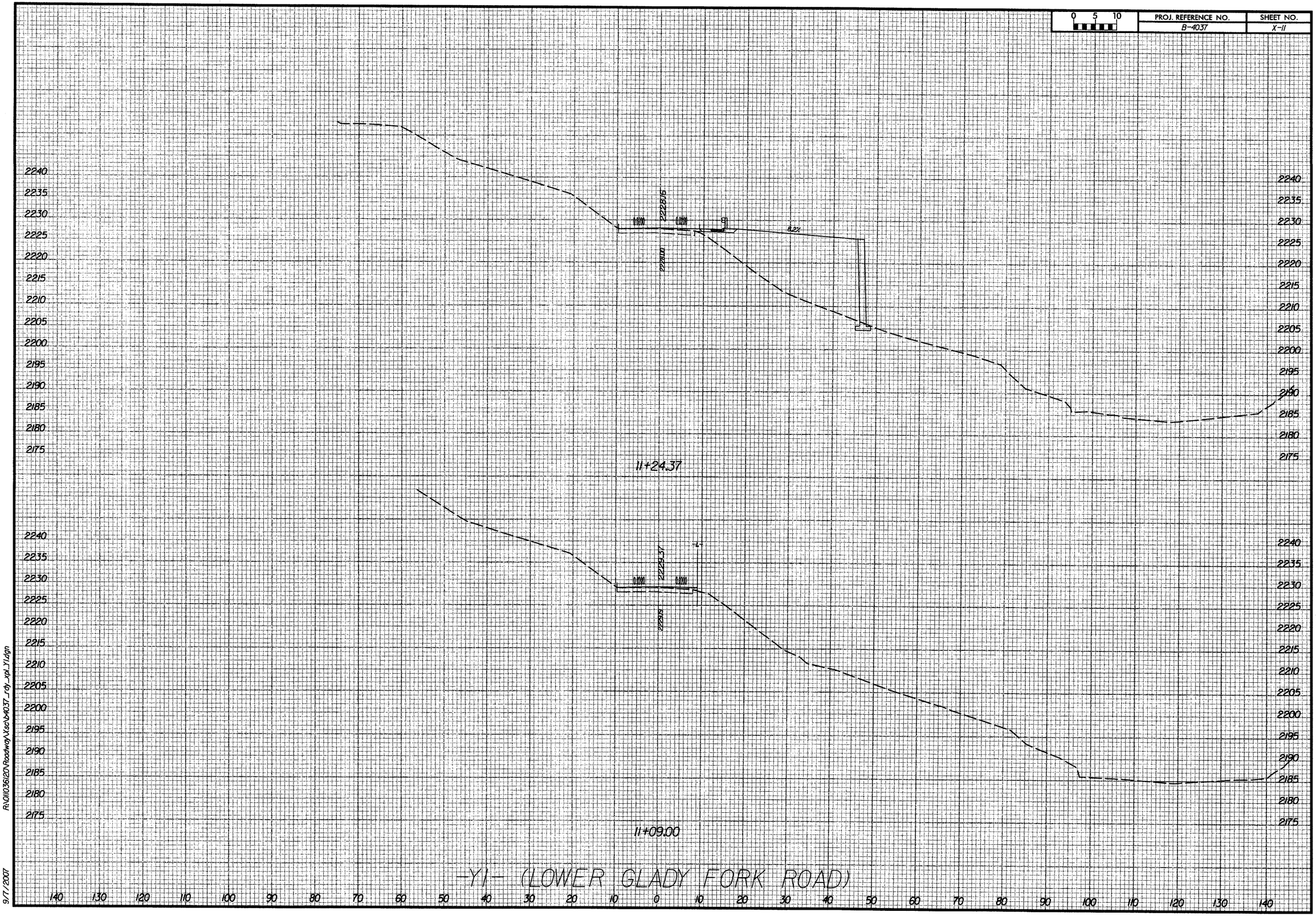
9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-11



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9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-12

11+89.00

11+45.33

-Y1- (LOWER GLADY FORK ROAD)

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9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-13

2240
2235
2230
2225
2220
2215
2210
2205
2200
2195
2190
2185
2180
2175

2265.98

13+50.00

2222.22

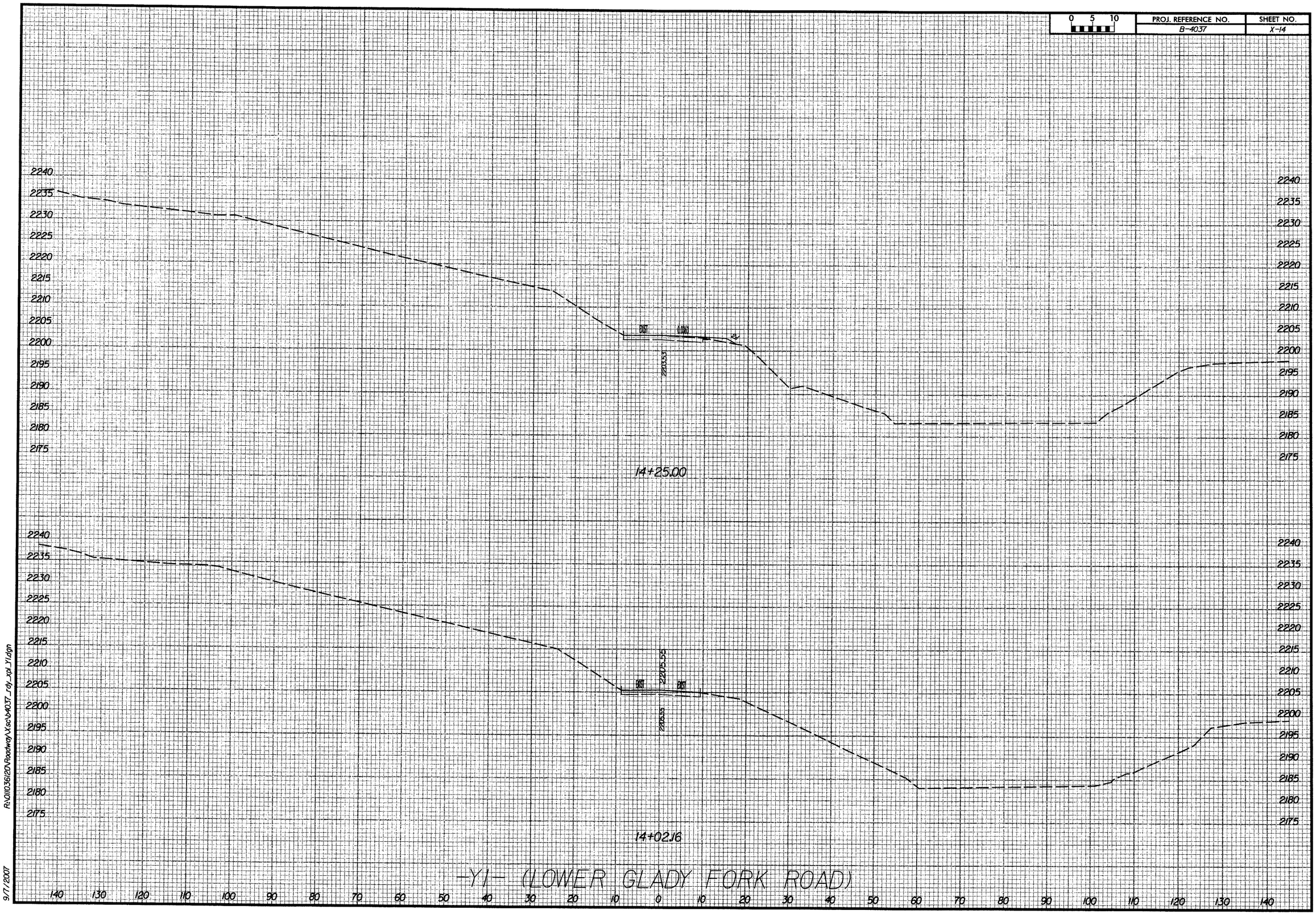
12+00.00

-Y1- (LOWER GLADY FORK ROAD)

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

9/7/2007 R:\DII\036120\Roadway\Xsec\b4037_rdy_xpl_Y1.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-14

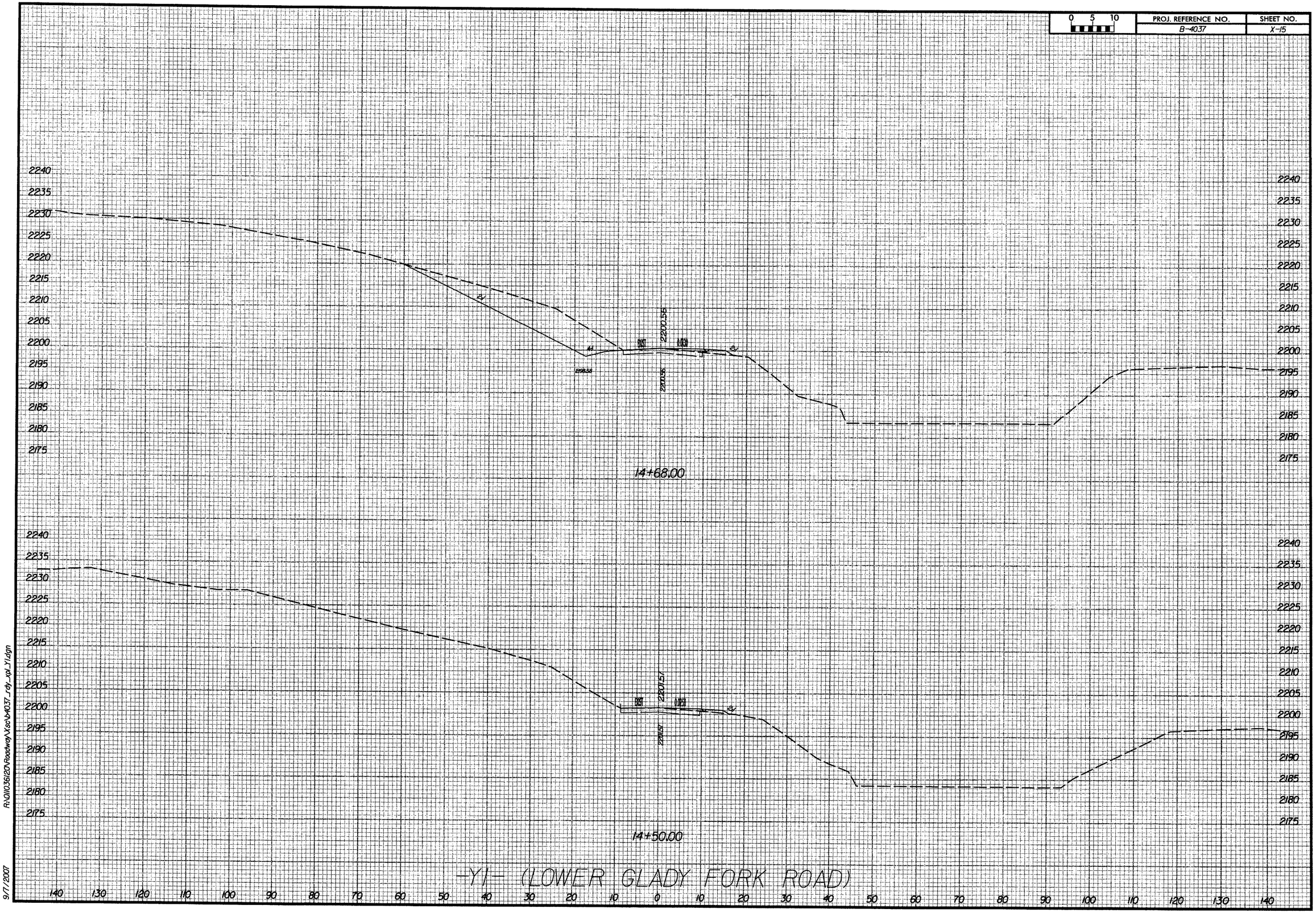


-Y1- (LOWER GLADY FORK ROAD)

R:\01103612\0\Roadway\Xsc\B4037_rdy_xpl_Y1.dgn

9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-15



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9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-16

15+35.00

15+00.00

-Y1- (LOWER GLADY FORK ROAD)

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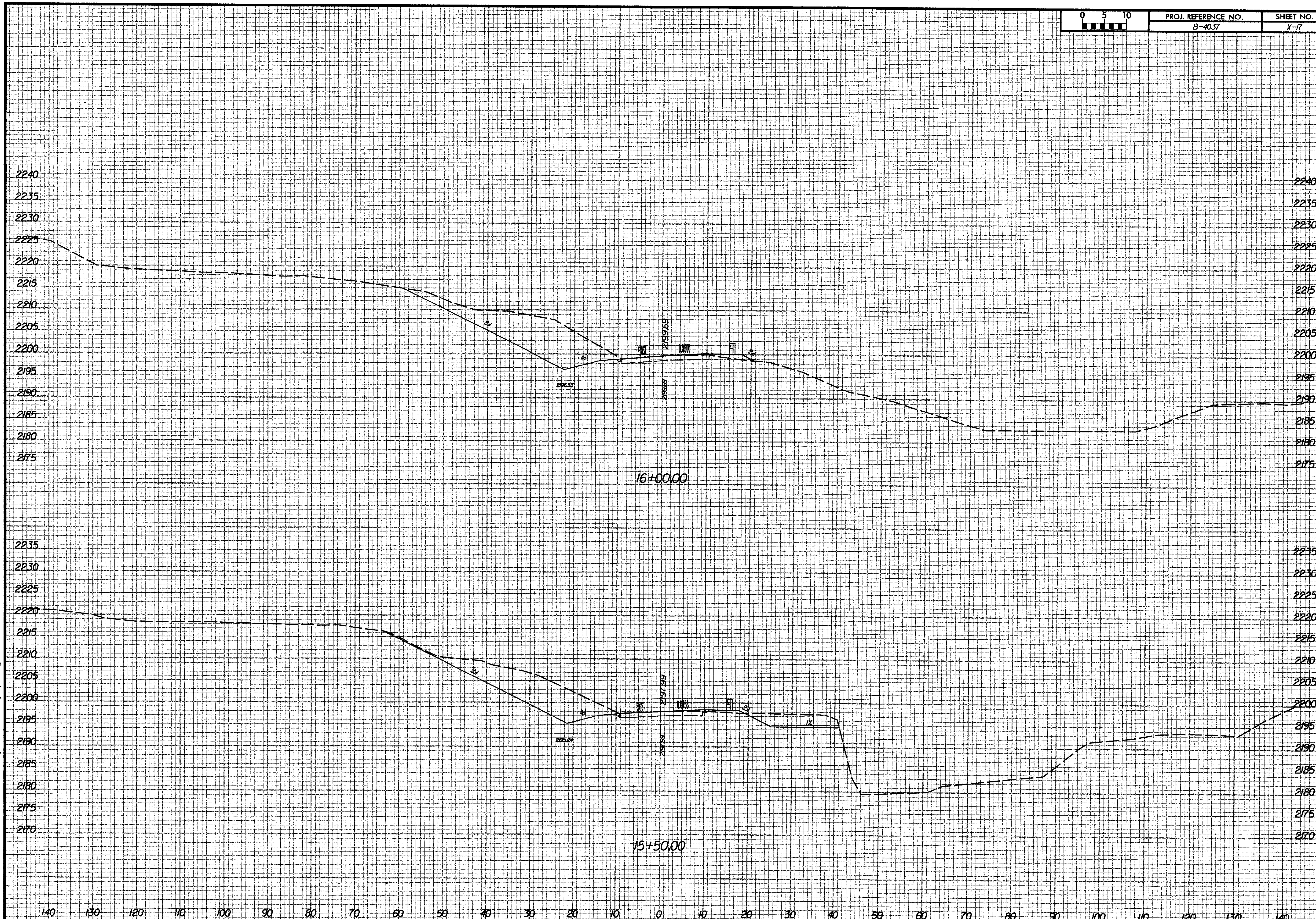
9/7/2007



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9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-18

16+50.00

16+25.00

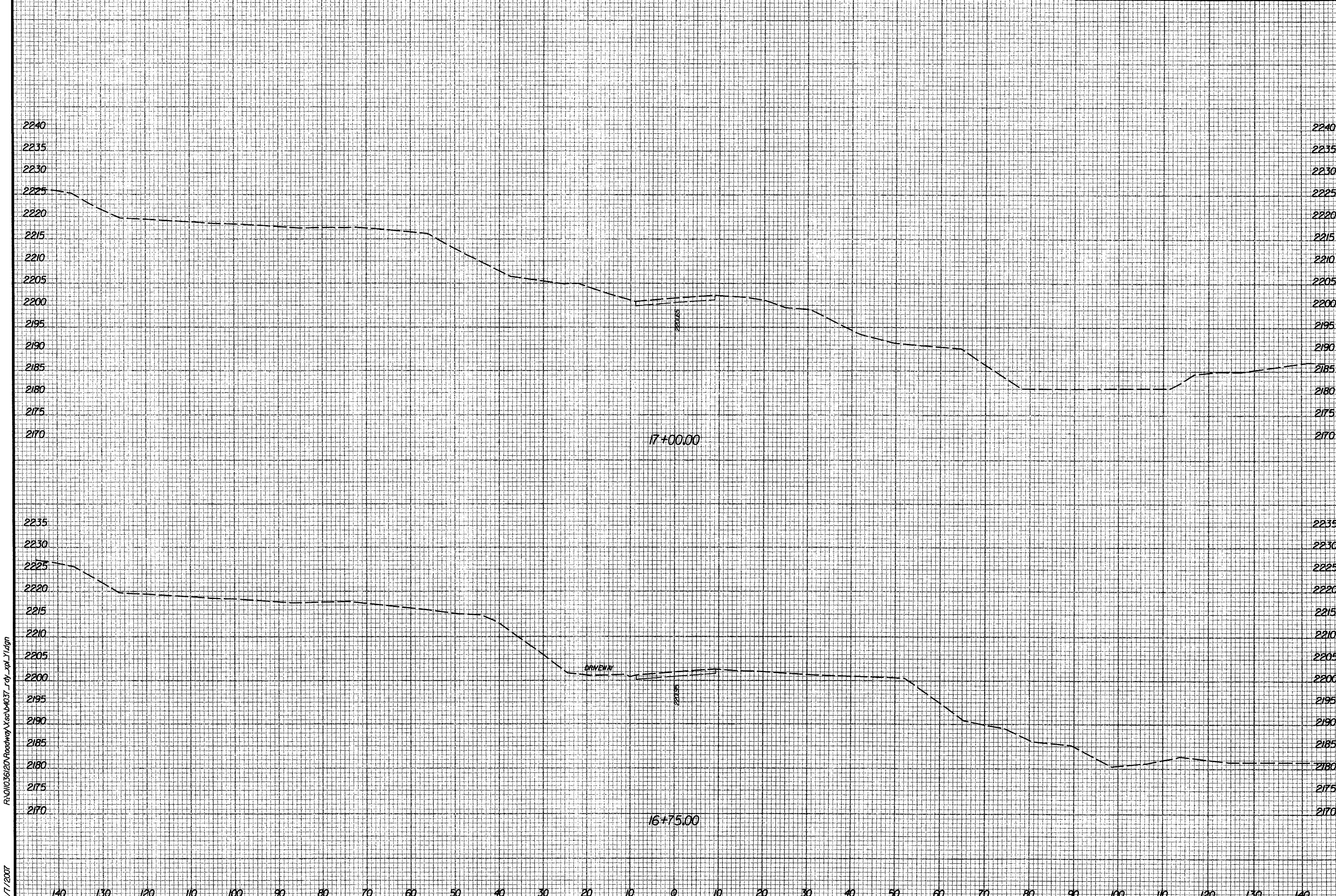
2240
2235
2230
2225
2220
2215
2210
2205
2200
2195
2190
2185
2180
2175
2170

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

R:\01103612\0\Roadway\Xsol\B4037_rdy_xpl_Y1.dgn

9/7/2007

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4037	X-19



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9/7/2007