STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

August 31, 2017

Addendum No. 1
RE: Contract # C204039
WBS # 34243.3.2
STATE FUNDED
Polk County (I-4729A)
I-26/US-74/NC-108 Interchange Modifications in the Town Of Columbus

September 19, 2017 Letting

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Roadway plans:

Sheet No.	Revisions
1A	Revised Index of Sheets to remove 2G-2 "Standard Embankment Monitoring Detail" and revise the number of" Drainage Summaries" sheets
2A-1, 2A-4 and 2A-5	Revised the Typical Sections for the change in mainline pavement widening design from ABC to Asphalt Base
3B-1	Revised 'Summary of Earthwork' to account for pavement widening design change
3D-1 thru 3D-4	Various drainage quantity changes as noted below
3G-1	Removed "Settlement Gauge Summary" and added note that Bridge Waiting Period only applies to Approach Slab construction
5	Revised to require Welded Steel Pipe by Trenchless method under the Interstate 26
X-1A thru X-87	Revised Cross-Sections to reflect the change in Earthwork due to the pavement design change

Please void the above listed sheets in your plans and staple the revised sheets thereto.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT
1591 MAIL SERVICE CENTER
RALEIGH, NC 27699-1591

Telephone: (919) 707-6900
Fax: (919) 250-4127
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DR.
RALEIGH, NC 27610

The following revisions have been made to the Structure plans:

Sheet No.	Revisions
S1-1.1, S1-2.1, S1-4.1, S1-15.1, S1-17.1, S1-18.1, S1-20.1, S1-21.1, S2-1.1, S2-2.1, S2-4.1, S2-8.1, S2-9.1, S2-20.1, S2-22.1, S2-25.1, S2-27.1, S2-28.1	Revised to reflect the change from HP 14X73 Steel Piles to HP 14X89 Steel Piles
W-3 and W-6	Revised to add note concerning pile sleeves

Please void the above listed sheets in your plans and staple the revised sheets thereto.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 1 Dated 08-31-2017".
R-4 thru R-7	The project special provision entitled "Embankment Settlement Gauges" has been deleted. The subsequent pages have been re-numbered.
GT-1.3	Revised the pile size
GT-5.9	Added a paragraph concerning pile sleeves
P-1 thru P-44	Added to include the 404 and 401 permits. Please void existing P-1 and Replace with New P-1 thru P-44

Please void the above listed pages in your proposal and staple the revised pages thereto.

On the item sheets the following pay items have been revised:

Item	Description	Old Quantity	New Quantity
006-0022000000-E-225	Unclassified Excavation	320,000 CY	318,000 CY
008-0127000000-N-SP	Embankment Settlement Gauges	12 EA	**DELETED**
015-0318000000-E-300	Foundation Conditioning Material, Minor Structures	450 TON	420 TON
016-0320000000-E-300	Foundation Conditioning Geotextile	1,420 SY	1,310 SY
029-0390000000-E-310	36" RC Pipe Culverts, Class III	84 LF	**DELETED**
032-0448400000-E-310	24" RC Pipe Culverts, Class IV	200 LF	68 LF

034-0448600000-E-310	36" RC Pipe Culverts, Class IV	176 LF	60 LF
045-1121000000-E-520	Aggregate Base Course	22,100 TON	14,600 TON
050-1491000000-E-610	Asphalt Concrete Base Course, B25.0C	8,090 TON	11,870 TON
055-1575000000-E-620	Asphalt Binder For Plant Mix	1,475 TON	1,640 TON
067-2275000000-E-SP	Flowable Fill	17 CY	36 CY
069-2308000000-E-840	Masonry Drainage Structures	41.7 LF	42.4 LF
232-8328200000-E-SP	Pile Driving Equipment Setup For (HP14X73) Steel Piles	40 EA	**DELETED**
232-8328200000-E-SP	Pile Driving Equipment Setup For (HP14X**89**) Steel Piles	**REVISED SIZE**	40 EA
233-8384000000-E-450	HP14X73 Steel Piles	2,430 LF	**DELETED**
233-8355000000-E-450	HP14X**89** Steel Piles	**REVISED SIZE**	2,430 LF
238-0973100000-E-330	24" Welded Steel Pipe, 0.25" Thick, Grade B In Soil	**NEW ITEM**	66 LF
239-0973100000-E-330	36" Welded Steel Pipe, 0.375" Thick, Grade B In Soil	**NEW ITEM**	96 LF
240-0973100000-E-330	24" Welded Steel Pipe, 0.25" Thick, Grade B Not In Soil	**NEW ITEM**	66 LF
241-0973100000-E-330	36" Welded Steel Pipe, 0.375" Thick, Grade B Not In Soil	**NEW ITEM**	96 LF

The Contractor's bid must be based on these revised pay items.

The Expedite File has been updated to reflect these revisions. Please download the Expedite Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

The contract will be prepared accordingly.

Sincerely,

DocuSigned by:
Ronald E. Davenport, Jr.
F81B6038A47A442...

Ronald. E. Davenport, Jr., PE
State Contract Officer

RED/jag
Attachments

cc: Mr. Lamar Sylvester, PE
Mr. Brian Burch, PE
Mr. Bobby Lewis, PE
Mr. Ken Kennedy, PE
Mr. Jon Weathersby, PE
Ms. Jaci Kincaid
Project File (2)
Mr. Ray Arnold, PE
Ms. Theresa Canales, PE
Mr. Brian Hanks, PE
Mr. Mike Gwyn
Ms. Penny Higgins
Mr. Mitchell Dixon
Ms. Lori Strickland

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH, N.C.

PROPOSAL

INCLUDES ADDENDUM No. 1 DATED 08-31-2017

DATE AND TIME OF BID OPENING: **SEPTEMBER 19, 2017 AT 2:00 PM**

CONTRACT ID	C204039
WBS	34243.3.2

FEDERAL-AID NO.	STATE FUNDED
COUNTY	POLK
T.I.P. NO.	I-4729A
MILES	0.679
ROUTE NO.	I 26
LOCATION	I-26/US-74/NC-108 INTERCHANGE MODIFICATION IN THE TOWN OF COLUMBUS.
TYPE OF WORK	GRADING, DRAINAGE, PAVING, SIGNING, AND STRUCTURES.

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS $30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A ROADWAY PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

contract unit price for *Unclassified Excavation*, *Borrow Excavation*, or *Shoulder Borrow*, depending on the source of the material.

Material generated from undercut excavation, unclassified excavation or clearing and grubbing operations that is placed directly on shoulders or slope areas, will not be measured separately for payment, as payment for the work requiring the excavation will be considered adequate compensation for depositing and grading the material on the shoulders or slopes.

When undercut excavation is performed at the direction of the Engineer and the material excavated is found to be suitable for use as shoulder and fill slope material, and there is no area on the project currently prepared to receive the material generated by the undercut operation, the Contractor may construct a stockpile for use as borrow at a later date. Payment for the material used from the stockpile will be made at the contract unit price for *Borrow Excavation* or *Shoulder Borrow*.

When shoulder material is obtained from borrow sources or from stockpiled material, payment for the work of shoulder construction will be made at the contract unit price per cubic yard for *Borrow Excavation* or *Shoulder Borrow* in accordance with the applicable provisions of Section 230 or Section 560 of the *2012 Standard Specifications*.

SELECT GRANULAR MATERIAL:
(3-16-10) (Rev. 1-17-12) 265 SP2 R80

Revise the *2012 Standard Specifications* as follows:

Page 2-28, Article 265-2 MATERIALS, add the following:

Use only Class III select material for select granular material.

Page 2-28, Article 265-4 MEASUREMENT AND PAYMENT, lines 13-30, replace all occurrences of *Select Granular Material* with *Select Granular Material, Class III.*

Page 2-28, Article 265-4 MEASUREMENT AND PAYMENT, after line 31, delete the pay item and replace with the following:

Payment will be made under:

Pay Item	Pay Unit
Select Granular Material, Class III	Cubic Yard

ROCK AND BROKEN PAVEMENT FILLS:
(2-16-16) 235 SP2 R85

Revise the *2012 Standard Specifications* as follows:

Page 2-22, Article 235-2 MATERIALS, add the following after line 19:

Item	Section
Geotextile for Rock and Broken Pavement Fills, Type 2	1056

Provide Type 2 geotextile for filtration geotextiles. Use rip rap and No. 57 stone from either a quarry or onsite material to fill voids in rock and broken pavement fills. Provide small and large size rip rap with stone sizes that meet Class A and B in accordance with Table 1042-1 and No. 57 stone with a gradation that meets Table 1005-1 or use similar size onsite material approved by the Engineer.

Page 2-23, Subarticle 235-3(B) Embankment Formation, lines 18-19, delete the third sentence in the seventh paragraph.

Page 2-23, Subarticle 235-3(B) Embankment Formation, lines 21-23, replace the eighth paragraph with the following:

Before placing embankment fill material or filtration geotextiles over rock and broken pavement, fill voids in the top of rock and broken pavement fill with rip rap and No. 57 stone. Place and compact larger rip rap first followed by smaller rip rap. Then, fill any remaining voids with No. 57 stone so geotextiles are not torn, ripped or otherwise damaged when installed and covered. Compact rip rap and No. 57 stone with tracked equipment or other approved methods. Install filtration geotextiles on top of rock, broken pavement, rip rap and No. 57 stone in accordance with Article 270-3 before placing remaining embankment fill material.

Remove any rocks, debris or pavement pieces from the roadbed larger than 2" within 12" of the subgrade or finished grade, whichever is lower.

Page 2-24, Article 235-5 MEASUREMENT AND PAYMENT, line 13, add the following to the end of the first paragraph:

Payment for rip rap, No. 57 stone and geotextiles to construct embankments with rock and broken pavement fills will be considered incidental to the work in Sections 225, 226, 230 and 240.

BLASTING:

(2-16-16) 220 SP2 R88B

Revise the *2012 Standard Specifications* as follows:

Page 2-8, Article 220-1 DESCRIPTION, line 22, delete "cushion, ".

Page 2-8, Article 220-1 DESCRIPTION, line 23, add the following after the third sentence:

Unless required otherwise in the contract, design blasts for the vibration and air overpressure limits in this section.

Page 2-9, Subarticle 220-3(A) Vibration and Air Overpressure Limits, line 18, add the following to the end of Subarticle 220-3(A):

Unless required otherwise in the contract or directed, design production and trench blasts in accordance with the following:

(1) Production Blasting

(a) For rock cut slopes steeper than 1.5:1 (H:V) without pre-splitting, do not use production blast holes more than 4" in diameter within 10 ft of finished slope faces or neat lines
(b) Do not drill production holes below bottom of adjacent pre-split blast holes
(c) Use delay blasting to detonate production blast holes towards a free face

(2) Trench Blasting

(a) Do not use trench blast holes more than 3" in diameter
(b) Do not use ANFO or other bulk loaded products
(c) Use cartridge explosives or other explosive types designed for trench blasting
(d) Use charges with a diameter of 1/2" to 3/4" less than the trench blast hole diameter

PIPE INSTALLATION:
(11-20-12) (Rev. 8-18-15) 300 SP3 R01

Revise the *2012 Standard Specifications* as follows:

Page 3-1, Article 300-2, Materials, line 15, in the materials table, replace "Flowable Fill" and "Geotextiles" with the following:

Item	Section
Flowable Fill, Excavatable	1000-6
Grout, Type 2	1003
Geotextiles, Type 4	1056

Page 3-1, Article 300-2, Materials, lines 23-24, replace sentence with the following:

Provide foundation conditioning geotextile and geotextile to wrap pipe joints in accordance with Section 1056 for Type 4 geotextile.

Page 3-3, Subarticle 300-6(A), Rigid Pipe, line 2, in the first paragraph, replace "an approved non-shrink grout." with "grout." and line 4, in the second paragraph, replace "filtration geotextile" with "geotextile".

Page 3-3, Article 300-7, Backfilling, lines 37-38, in the first and second sentences of the fifth paragraph, replace "Excavatable flowable fill" with "Flowable fill".

CURED-IN-PLACE PIPE:

Furnish and install pipe liner as shown at recommended locations on the plans. Pipe liner should be from NCDOT Approved Product Listing for drainage pipe liners at the following link or an approved equal:

https://connect.ncdot.gov/resources/Products/Pages/default.aspx

Pipe liner should maintain equivalent hydraulic conveyance as existing pipe. Pipe liner is subject to approval by the engineer.

___"*Cured-In-Place Pipe* will be measured and paid as the actual number of linear feet of pipe liner that has been incorporated into the completed and accepted work.

Pay Item	**Pay Unit**
___"Cured-In-Place Pipe	Linear Foot

FLOWABLE FILL:

(9-17-02) (Rev 1-17-12) 300, 340, 1000, 1530, 1540, 1550 SP3 R30

Description

This work consists of all work necessary to place flowable fill in accordance with these provisions, the plans, and as directed.

Materials

Refer to Division 10 of the *2012 Standard Specifications.*

Item	**Section**
Flowable Fill	1000-6

Construction Methods

Discharge flowable fill material directly from the truck into the space to be filled, or by other approved methods. The mix may be placed full depth or in lifts as site conditions dictate. The Contractor shall provide a method to plug the ends of the existing pipe in order to contain the flowable fill.

Measurement and Payment

At locations where flowable fill is called for on the plans and a pay item for flowable fill is included in the contract, *Flowable Fill* will be measured in cubic yards and paid as the actual number of cubic yards that have been satisfactorily placed and accepted. Such price and payment will be full compensation for all work covered by this provision including, but not limited to, the mix design, furnishing, hauling, placing and containing the flowable fill.

Payment will be made under:

Pay Item	**Pay Unit**
Flowable Fill	Cubic Yard

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I-4729A **GT-1.3** Polk County

Pay Item	**Pay Unit**
Pile Driving Equipment Setup for HP 14x89 Steel Piles	Each

NORTH CAROLINA PROFESSIONAL SEAL 031022 ENGINEER ANDREW A. NASH

8/22/2017

DocuSign Envelope ID: 9838DB71-EE62-4910-8347-5867FF2C1A03

4.0 CORROSION MONITORING

Corrosion monitoring is required for MSE walls with steel reinforcement. The Engineer will determine the number of monitoring locations and where to install the instrumentation. Contact M&T before beginning wall construction. M&T will provide the corrosion monitoring instrumentation kits and if necessary, assistance with installation.

5.0 SITE ASSISTANCE

Unless otherwise approved, an MSE Wall Vendor representative is required to assist and guide the MSE Wall Installer on-site for at least 8 hours when the first panels or SRW units and reinforcement layer are placed. If problems are encountered during construction, the Engineer may require the vendor representative to return to the site for a time period determined by the Engineer.

6.0 CONSTRUCTION METHODS

Control drainage during construction in the vicinity of MSE walls. Direct run off away from MSE walls, aggregate and backfill. Contain and maintain aggregate and backfill and protect material from erosion.

Excavate as necessary for MSE walls in accordance with the accepted submittals. If applicable and at the Contractor's option, use temporary shoring for wall construction instead of temporary slopes to construct MSE walls. Define "temporary shoring for wall construction" as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience.

Install pile sleeves located in the reinforced zone where noted in the plans before placing aggregate or reinforcement. Brace piles in the reinforced zone to maintain alignment when placing and compacting aggregate. Piles may be driven before wall construction or through the sleeves. The sleeves should be backfilled with sand prior to construction of the end bents.

Notify the Engineer when foundation excavation is complete. Do not place leveling pad concrete, aggregate or reinforcement until excavation dimensions and foundation material are approved.

Construct cast-in-place concrete leveling pads at elevations and with dimensions shown in the accepted submittals and in accordance with Section 420 of the *Standard Specifications*. Cure leveling pads at least 24 hours before placing panels.

Erect and support panels so the final wall position is as shown in the accepted submittals. Space bearing pads in horizontal panel joints as shown in the accepted submittals and cover all panel joints with filtration geotextiles as shown in the accepted submittals. Attach filtration geotextiles to back of panels with adhesives, tapes or other approved methods.

Construct MSE walls with the following tolerances:

A. Vertical joint widths are 3/4", ±1/4" for panels,

PROJECT SPECIAL PROVISION

(10-18-95) (Rev. 3-21-17) Z-1

PERMITS

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

PERMIT	AUTHORITY GRANTING THE PERMIT
Dredge and Fill and/or Work in Navigable Waters (404)	U. S. Army Corps of Engineers
Water Quality (401)	Division of Environmental Management, DEQ State of North Carolina

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the Department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-13 of the *2012 Standard Specifications* and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the restricted waters, wetlands or buffer zones, provided that activities outside those areas is done in such a manner as to not affect the restricted waters, wetlands or buffer zones.

DocuSigned by:
Contract Standards and Development
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8/23/2017 | 10:38 AM EDT

IN ADDENDUM 1

FOLDER

P-2

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action ID. **SAW-2017-01737** County: **Polk**

GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Property Owner / Authorized Agent: **North Carolina Department of Transportation**
Attn: Mr. Dave McHenry

Address: **253 Webster Road**
Sylva, North Carolina 28779

Telephone No.: **828-586-2141**

Size and location of property (water body, road name/number, town, etc.): **The project is located at the I-26/US 74 interchange in Columbus, Polk County, North Carolina.**

Description of project area and activity: **In order to improve the I-26/US 74 interchange – i.e., provide direct ramp connections from I-26 West Bound to US 74 East Bound - the permittee is authorized to impact waters of the U.S. as follows:**

Summary of Authorized Impacts and Required Mitigation

Impact ID #	NWP / GP #	Open Water (ac)		Wetland (ac)		Stream (lf)	
		Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
Site 1 (Horse Creek)	**RGP 198200031 (RGP 31)**						**6' (bank stabilization)**
Site 2 (Horse Creek)	**RGP 198200031 (RGP 31)**					**55' (dewater)**	**425' (culvert)** **795' (stream relocation)** **57' (bank stabilization/ benches)**
Impact Totals		0	0	0	0	55'	1,283'

Total Loss of waters of the U.S. (wetlands and/or open waters in ac)	0	Total Loss of waters of the U.S. (streams in lf)	**1,220'**
Required Wetland Mitigation (ac)	0	Required Stream Mitigation (lf)	**1,698**

Applicable Law: ☒ Section 404 (Clean Water Act, 33 USC 1344)
☐ Section 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: Regional General Permit Number: **RGP 198200031 (RGP 31)**
Nationwide Permit Number:

Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the attached conditions, your submitted plans, and the following special conditions:

Special Conditions

1. All work must be performed in strict compliance with the description of work and plans in the application dated July 22, 2017, and the relocation plans received on August 17, 2017. Any modification to the description of work and/or the permit plans must be approved by the USACE prior to implementation.

2. In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

3. The permittee shall fully implement the stream relocation monitoring plan titled, "I-4729A Stream Relocation Monitoring Plan, Horse Creek, Polk County, Version 1.2," dated August 17, 2017. All monitoring and reporting activities in accordance with the above referenced plan.

4. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this authorization letter in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this authorization letter, all conditions, and any authorized modifications. A copy of this authorization letter, all conditions, and any authorized modifications, shall be available at the project site during construction and maintenance of this project.

Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order, a Class I administrative penalty, and/or appropriate legal action.

This verification will remain valid until the expiration date identified below unless the nationwide authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide permit. If the nationwide permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide permit, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the nationwide permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Resources (telephone 828-296-4500) to determine Section 401 requirements.

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits.

If there are any questions regarding this verification, any of the conditions of the Permit, or the Corps of Engineers regulatory program, please contact Lori Beckwith at 828-271-7980.

Corps Regulatory Official: Lori Beckwith BECKWITH.LORETTA.ANN.1173452264 Digitally signed by BECKWITH.LORETTA.ANN.1173452264 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BECKWITH.LORETTA.ANN.1173452264 Date: 2017.08.17 17:36:43 -04'00'

Date: **August 17, 2017** Expiration Date of Verification: **April 30, 2020**

Determination of Jurisdiction:

A. ☒ There are waters on the above described project area that may be subject to Section 404 of the Clean Water Act (CWA) (33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). However, you may request an approved JD, which is an appealable action, by contacting the Corps district for further instruction. Please note, if work is authorized by either a general or nationwide permit, and you wish to request an appeal of an approved JD, the appeal must be received by the Corps and the appeal process concluded prior to the commencement of any work in waters of the United States and prior to any work that could alter the hydrology of waters of the United States.

B. ☐ There are Navigable Waters of the United States within the above described project area subject to the permit requirements of Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403) and Section 404 of the Clean Water Act (CWA) (33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

C. ☐ There are waters within the above described project area that are subject to the permit requirements of Section 404 of the Clean Water Act (CWA) (33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

D. ☐ The jurisdictional areas within the above described project area have been identified under a previous action. Please reference jurisdictional determination issued . Action ID: **SAW-** .

Basis For Determination: N/A for PJD.

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdiction determinations as indicated in B and C above).

This correspondence constitutes an approved jurisdiction determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of this NWP verification letter and the NAP.

It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: **Lori Beckwith** BECKWITH.LORETTA.ANN.1173452264

Digitally signed by BECKWITH.LORETTA.ANN.1173452264
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BECKWITH.LORETTA.ANN.1173452264
Date: 2017.08.17 17:37:07 -04'00'

Issue Date: **August 17, 2017**

Expiration Date: N/A for PJD

Action ID Number: SAW-2017-01737

County: Polk

Permittee: NCDOT, Mr. Dave McHenry

Project Name: NCDOT/TIP I-14729A/Div 14

Nationwide Permit: RGP 198200031 (RGP 31)

Date Verification Issued: August 17, 2017

Project Manager: Lori Beckwith

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT
Attn: Lori Beckwith
151 Patton Avenue
Room 208
Asheville, NC 28801-5006

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers representative. Failure to comply with any terms or conditions of this authorization may result in the Corps suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and condition of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____

Signature of Permittee Date

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mr. Dave McHenry	File Number: SAW-2017-01737	Date: August 17, 2017

Attached is:	See Section below
☐ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐ PERMIT DENIAL	C
☐ APPROVED JURISDICTIONAL DETERMINATION	D
☒ PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION

If you have questions regarding this decision and/or the appeal process you may contact: **District Engineer, Wilmington Regulatory Division, Attn: Lori Beckwith** 151 Patton Ave RM 208 Asheville, NC 28801 828-271-7980	If you only have questions regarding the appeal process you may also contact: Mr. Jason Steele, Administrative Appeal Review Officer CESAD-PDO U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 10M15 Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Lori Beckwith, Project Manager, 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and Approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801
Phone: (404) 562-5137

DEPARTMENT OF THE ARMY
Wilmington District, Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343
April 30, 2015

Regional General Permit No. 198200031
Name of Permittee: North Carolina Department of Transportation
Effective Date: April 30, 2015
Expiration Date: April 30, 2020

DEPARTMENT OF THE ARMY
REGIONAL GENERAL PERMIT

A regional general permit (RGP) to perform work in or affecting navigable waters of the United States and waters of the United States, upon recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344), is hereby modified and re-issued by authority of the Secretary of the Army by the

District Commander
U.S. Army Engineer District, Wilmington
Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343

TO AUTHORIZE THE DISCHARGE OF DREDGED OR FILL MATERIAL IN WATERS OF THE UNITED STATES (U.S.), INCLUDING WETLANDS, ASSOCIATED WITH MAINTENANCE, REPAIR, AND CONSTRUCTION PROJECTS CONDUCTED BY THE VARIOUS DIVISIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) INCLUDING THE NCDOT DIVISION OF HIGHWAYS, RAIL, BICYCLE/PEDESTRIAN, ECT.

Activities authorized are:

a. Construction, maintenance, and repair of bridges, to include work on the approaches, where permanent impacts resulting in a loss of waters of the U.S. will be less than or equal to 500 linear feet (lf) of stream and/or one (1) acre of wetland/non-tidal open water for each single and complete linear project*.

b. Best-fit widening projects that have undergone interagency review and completed the current interagency Merger Process, which merges the requirements of the National Environmental Policy Act (NEPA) with those found within Section 404 of the Clean Water Act (CWA).

While there is no impact threshold for these widening projects, the Corps has the discretion to require an individual permit if it determines that the proposed impacts will have more than a minimal impact on the aquatic environment or on other environmental factors, or if the project would normally require an Environmental Impact Statement (EIS) under current Federal Highway Administration (FHWA) guidelines. Best-fit projects may include a small amount of new location roadway for components such as interchanges or intersections, provided the new location portion has been concurred upon by the merger team.

c. Minor widening projects, such as paving and/or widening secondary roads, or interchange improvements, when permanent impacts which result in a loss of waters of the U.S. from installation and/or extension of culverts and/or pipes will be less than or equal to 500 lf of stream and/or one (1) acre of wetland/non-tidal open water for each single and complete linear project*.

d. Stream relocation(s) associated with projects identified in a-c above. Stream relocation lengths are to be evaluated independently and are not included within each respective maximum limit threshold for the authorized actions stated above.

**Single and complete linear project*: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the U.S. (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of this RGP. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Generally, off-site detours are preferred to avoid and minimize impacts to the human and natural environment. However, if an off-site detour is considered impracticable, then an on-site detour may be considered as a necessary component of the actions described above. Impacts from the detour may be considered temporary and may not require compensatory mitigation if the impacted area is restored to its pre-project condition after construction is complete. If the construction of a detour (on-site or off-site) includes standard undercutting methods, removal of all material and backfilling with suitable material is required.

1. Special Conditions.

a. The applicant must submit a pre-construction notification (PCN) with specified attachments to the District Engineer and receive written verification from the Corps that the proposed work complies with this RGP prior to commencing any activity authorized by this RGP.

b. If the project will not impact a designated "Area of Environmental Concern" (AEC) in the twenty (20) counties of North Carolina covered by the North Carolina Coastal Area Management Act (CAMA), then a consistency submission is not required. If the project will impact a designated AEC and meets the definition of "development", then the applicant must

obtain the required CAMA permit. Development activities may not commence until a copy of the approved CAMA permit is furnished to the appropriate Wilmington District Regulatory Field Office (Wilmington Field Office – 69 Darlington Avenue, Wilmington, NC 28403 or Washington Field Office – 2407 West 5th Street, Washington, NC 27889).

The twenty (20) CAMA counties in North Carolina include Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and Washington.

c. Discharges into Waters of the U.S. designated by either the North Carolina Division of Marine Fisheries (NCDMF) or the North Carolina Wildlife Resources Commission (NCWRC) as anadromous fish spawning areas are prohibited during the period between February 1 and June 30, without prior written approval from NCDMF, NCWRC, National Marine Fisheries Service (NMFS), and the Corps. Discharges into waters of the U.S. designated by NCDMF as primary nursery areas and discharges into waters of the U.S. designated by NCWRC as primary nursery areas in inland waters shall be coordinated with NCDCM (per existing agreement with NCDMF) and NCWRC prior to being authorized by this RGP. Coordination with NCDCM and NCWRC may result in a required construction moratorium during periods of significant biological productivity or critical life stages.

The applicant should contact:

NC Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
Telephone 252-726-7021
or 800-682-2632

North Carolina Wildlife Resources Commission
Habitat Conservation Program Manager
1721 Mail Service Center
Raleigh, NC 27699-1721
Telephone (919) 733-7638

d. This permit does not authorize the use of culverts in areas designated as anadromous fish spawning areas by the NCDMF or the NCWRC.

e. Waters of the U.S. designated as sturgeon spawning areas are excluded during the period between February 1 and June 30, without prior written approval from NMFS.

f. If the project is located within the twenty (20) counties of North Carolina designated as coastal counties by CAMA, then all pipe and culvert inverts will be buried at least one foot below normal bed elevation when they are placed within the Public Trust AEC and/or the Estuarine Waters AEC as designated by CAMA. If the project is not located within the twenty (20) counties of North Carolina designated as coastal counties by CAMA, then culvert inverts will be buried at least one foot below the bed of the stream for culverts greater than 48 inches in diameter. Culverts 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain the existing channel slope. The potential for destabilization of the channel and head cutting upstream should be considered in the placement of the culvert. A waiver from the depth specifications in this condition may be requested in writing. The waiver will only be issued if it can be demonstrated that the impacts of complying with this condition would result in more adverse impacts to the aquatic environment. Culverts placed in wetlands do not have to be buried.

g. No work shall be authorized by this RGP within the twenty coastal counties, as defined by the NCDCM, without prior consultation with NOAA Fisheries. For each activity reviewed by the Corps where it is determined that the activity may affect Essential Fish Habitat (EFH) for federally managed species, an EFH Assessment shall be prepared by the applicant and forwarded to the Corps and NOAA Fisheries for review and comment prior to authorization of work.

h. Discharges of dredged or fill material into waters of the U.S., including wetlands, must be minimized or avoided to the maximum extent practicable.

i. No activity may result in substantial permanent disruption of the movement of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. The dimension, pattern, and profile of the stream above and below a pipe or culvert should not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. It is acceptable to use rock vanes at culvert outlets to ensure, enhance, or maintain aquatic passage. Pre-formed scour holes are acceptable when designed for velocity reduction. The width, height, and gradient of a proposed opening should be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level. Where adjacent floodplain is available, flows exceeding bank-full should be accommodated by installing culverts at the floodplain elevation, if practicable. If multiple culverts are used, the construction of floodplain benches and/or sills to maintain base flow is required, if practicable.

j. Upon completion of any work authorized by this RGP, all temporary fills (to include culverts, etc.) will be completely removed from waters of the U.S. and the areas will be restored to preconstruction conditions, to include pre-project elevations and contours, restoring natural hydrology and stream corridors, and reestablishing native vegetation/riparian corridors. This work will be completed within 60 days of completion of project construction. If this timeframe occurs while a required moratorium of this permit is in effect, the temporary fill shall be removed in its entirety within 60 days of the moratorium end date. If vegetation cannot be planted due to the time of the year, all disturbed areas will be seeded with a native mix appropriate for the impacted area, and vegetation will be planted in the fall. A native seed mix may contain non-invasive small grain annuals (e.g. millet and rye grain) to ensure adequate cover while native vegetation becomes established. The PCN must include a restoration plan showing how all temporary fills and structures will be removed and how the area will be restored to pre-project conditions.

k. All activities authorized by this RGP shall, to the extent practicable, be conducted "in the dry", with barriers installed between work areas and aquatic habitat to protect that habitat from sediment, concrete, and other pollutants. Where concrete is utilized, measures will be taken to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with waters of the U.S. until the concrete has cured/hardened. All water in the work area that has been in contact with concrete shall only be returned to waters of the U.S. when it no longer poses a threat to aquatic organisms (concrete is set and cured).

l. In cases where new alignment approaches are to be constructed and the existing approach fill in waters of the U.S. is to be abandoned and no longer maintained as a roadway, the

abandoned fill shall be removed and the area will be restored to preexisting wetland/stream conditions and elevations, to include restoring natural hydrology and stream corridors, and reestablishing native vegetation/riparian corridors, to the extent practicable. This activity may qualify as compensatory mitigation credit for the project and will be assessed on a case-by-case basis in accordance with Special Conditions "q" and "r" below. A restoration plan detailing this activity will be required with the submittal of the PCN.

m. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

n. The project must be implemented and/or conducted so that all reasonable and practicable measures to ensure that equipment, structures, fill pads, and work associated with the project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, flooding, and/or shoreline/streambank erosion. During construction, the permittee shall routinely monitor for these effects, cease all work if/when detected, take initial corrective measures to correct actively eroding areas, and notify the Corps immediately. Permanent corrective measures may require additional authorization from the Corps.

o. All PCNs will describe sedimentation and erosion control structures and measures proposed for placement in waters of the U.S. To the extent practicable, structures and measures should be depicted on maps, surveys or drawings showing location and impacts to jurisdictional wetlands and streams. In addition, appropriate soil and erosion control measures must be established and maintained during construction. All fills, temporary and permanent, must be adequately stabilized at the earliest practicable date to prevent erosion of fill material into adjacent waters or wetlands.

p. Before discharging dredged or fill material into waters of the U.S. in the twenty-five (25) mountain counties of North Carolina, the applicant will submit a PCN to the NCWRC and the Corps concurrently. The PCN shall summarize alternatives to conducting work in mountain trout waters considered during the planning process, detail why alternatives were or were not selected, and contain a compensatory mitigation plan for all unavoidable adverse impacts to mountain trout waters. For proposals where a bridge is replaced with a culvert, the PCN must also include details of any on-site evaluations that were conducted to determine that installation of a culvert will not adversely affect passage of fish or other aquatic biota at the project site. This information must include factors such as the proposed slope of the culvert and determinations of how the slope will be expected to allow or impede passage, the necessity of baffles and/or sills to ensure passage, design considerations to ensure that expected baseflow will be maintained for passage and that post-construction velocities will not prevent passage, site conditions that will or will not allow proper burial of the culvert, existing structures (e.g., perched culverts, waterfalls, etc.) and/or stream patterns up and downstream of the culvert site that could affect passage and bank stability, and any other considerations regarding passage. The level of detail for this information should be based on site conditions (i.e., culverts on a slope over 3% will most likely

require more information than culverts on a slope that is less than 1%, etc.). Also, in order to evaluate potential impacts, describe bedforms that will be impacted by the proposed culvert – e.g., pools, glides, riffles, etc. The NCWRC will respond both to the proponent and directly to the Corps.

The twenty-five (25) designated trout counties of North Carolina include Alleghany, Caldwell, Watauga, Ashe, Mitchell, Wilkes, Avery, Burke, Stokes, Surry, Buncombe, Henderson, Polk, Cherokee, Jackson, Rutherford, Clay, Macon, Swain, Graham, Madison, Transylvania, Haywood, McDowell, and Yancey.

The applicant may contact NCWRC at:

North Carolina Wildlife Resources
Commission
Ms. Marla Chambers
Western NCDOT Permit Coordinator
206 Charter Street
Albemarle, NC 28001
Office: 704-982-9181

q. Compensatory mitigation will be required for permanent impacts resulting in a loss of waters of the U.S., including wetlands, from culverts/pipes and associated fill. Mitigation will also be required for stream relocation projects. The applicant will attach a proposed mitigation plan to the PCN. Mitigation proposals will be in accordance with currently approved Wilmington District and/or Corps-wide mitigation regulations and guidance. The Corps Project Manager will make the final determination concerning the appropriate amount and type of mitigation.

r. Stream relocation(s) associated with projects may be authorized under this RGP. As stated above, mitigation will be required for all relocation projects. If the stream relocation is conducted in accordance with the requirements stated below in 1-5, the relocated segment of stream may* be considered toward reducing the amount of compensatory mitigation required. A relocation plan must be submitted with the PCN that addresses all factors required within the current Wilmington District, Corps of Engineers Stream Mitigation Guidelines, which can include, but may not be limited to:

(1) The relocated stream has pattern, profile, and dimension based on natural channel design. If natural channel design construction is not possible due to site constraints, the relocated stream must have pattern, profile, and dimension similar to, or better than, the existing stream. Note that site constraints do not include those situations where NCDOT chooses not to acquire additional adjacent property that is available for purchase.

(2) The new stream meets the current buffer requirements as stated in current District stream mitigation guidance. If the required buffer widths cannot be obtained, a project-by-project decision will be completed to determine if additional compensatory mitigation is required.

(3) The new location allows the relocated stream to remain stable (e.g., in a

valley vs. on a slope, no bends that will impact stability, etc.).

(4) There is no loss of channel for any reason (e.g., old channel is 200' and new channel is 150' = 50' channel loss; part of the new channel is put in a culvert; the new channel (sides and bottom) is hardened with concrete, rip rap, etc.).

(5) The Corps will determine if monitoring and reporting will be required for a specific project and the parameters of any required monitoring and reporting. If monitoring is required, a monitoring plan must be included with the PCN and meet current requirements.

All relocation plans must clearly depict both the existing channel and the proposed (relocated) channel.

* Conducting stream relocation(s) in accordance with 1-5 above may not fully compensate for the impact and may require additional compensatory mitigation. The Corps Project Manager will determine if the proposed amount of mitigation is adequate on a project-by-project basis.

If stream relocation cannot be conducted in accordance with 1-5 above, mitigation at a 2:1 ratio will typically be required unless: (1) the applicant provides a Stream Quality Assessment Worksheet or NCSAM documentation (when available) that supports a different mitigation ratio; (2) the Corps Project Manager determines that the relocated stream, while not in full compliance with 1-5 above, warrants partial mitigation, or; (3) the Corps determines that the existing stream is an excellent quality stream, in which case a 3:1 mitigation ratio may be required. The Corps Project Manager will make the final determination concerning the appropriate amount and type of mitigation.

If the Corps determines that the proposed stream relocation is of such a magnitude that it cannot be authorized by this RGP, an Individual Permit will be required.

s. The applicant shall sign and return the compliance certificate that is attached to the RGP verification letter.

t. In the event that any Federal agency maintains an objection or any required State authorization is outstanding, no notice to proceed will be given until objections are resolved and State authorizations are issued.

u. The Corps may place additional special conditions, limitations, or restrictions on any verification of the use of RGP 31 on a project-by-project basis.

2. General Conditions.

a. Except as authorized by this RGP or any Corps approved modification to this RGP, no excavation, fill or mechanized land-clearing activities shall take place within waters or wetlands, at any time in the construction or maintenance of this project. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

b. Authorization under this RGP does not obviate the need to obtain other federal, state, or local authorizations.

c. All work authorized by this RGP must comply with the terms and conditions of the applicable CWA Section 401 Water Quality Certification for this RGP issued by the NCDWR.

d. The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

e. The activities authorized by this RGP must not interfere with the public's right to free navigation on all navigable waters of the U.S. No attempt will be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the authorized work for a reason other than safety.

f. The permittee understands and agrees that, if future operations by the U.S. require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

g. The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the U.S. and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the affected water of the U.S. to its former conditions.

h. The permittee will allow the Wilmington District Engineer or his representative to inspect the authorized activity at any time deemed necessary to assure that the activity is being performed or maintained in strict accordance with the Special and General Conditions of this permit.

i. This RGP does not grant any property rights or exclusive privileges.

j. This permit does not authorize any injury to the property or rights of others.

k. This RGP does not authorize the interference with any existing or proposed federal project.

l. In issuing this permit, the Federal Government does not assume any liability for the following:

(1) Damages to the permitted project or uses thereof as a result of other permitted

or unpermitted activities or from natural causes.

(2) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest.

(3) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

(4) Design or construction deficiencies associated with the permitted work.

(5) Damage claims associated with any future modification, suspension, or revocation of this permit.

m. Authorization provided by this RGP may be modified, suspended or revoked in whole or in part if the Wilmington District Engineer, acting for the Secretary of the Army, determines that such action is in the best public interest. The term of this RGP shall be five (5) years unless subject to modification, suspension or revocation. Any modification, suspension or revocation of this authorization will not be the basis for any claim for damages against the U.S. Government.

n. This RGP does not authorize any activity, which the District Engineer determines, after any necessary investigations, will adversely affect:

(1) Rivers named in Section 3 of the Wild and Scenic Rivers Act (15 U.S.C. 1273), those proposed for inclusion as provided by Sections 4 and 5 of the Act, and wild, scenic and recreational rivers established by state and local entities.

(2) Sites included in or determined eligible for listing in the National Registry of Natural Landmarks.

(3) NOAA designated marine sanctuaries, National Estuarine Research Reserves, and coral reefs.

(4) Submerged Aquatic Vegetation (SAV) as defined by the N.C. Division of Marine Fisheries at 15A NCAC 03I .0101(4)(i)).

o. Endangered Species.

(1) No activity is authorized under this RGP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under this RGP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(2) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees (and when FHWA is the lead federal agency) must provide the district engineer with the appropriate documentation to demonstrate compliance with

those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the RGP activity, or whether additional ESA consultation is necessary.

(3) Non-federal permittees must submit a PCN to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect federally-listed endangered or threatened species or designated critical habitat, the PCN must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-federal applicant of the Corps' determination within 45 days of receipt of a complete PCN notification. In cases where the non-federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(4) As a result of formal or informal consultation with the U.S. Fish and Wildlife Service (USFWS) or NMFS, the district engineer may add species-specific endangered species conditions to the RGP.

(5) Authorization of an activity by a RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, the ESA prohibits any person subject to the jurisdiction of the U.S. to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(6) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

p. The permittee is responsible for obtaining any "take" permits required under the USFWS's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity.

q. For proposed activities the sixteen counties listed below, applicants must provide a

copy of the PCN to the USFWS, 160 Zillicoa Street, Asheville, North Carolina 28801. This PCN must be sent concurrently to the USFWS and the Corps Project Manager for that specific county.

Counties with tributaries that drain to designated critical habitat that require notification to the Asheville USFWS: Avery, Cherokee, Forsyth, Graham, Haywood, Henderson, Jackson, Macon Mecklenburg, Mitchell, Stokes, Surry, Swain, Transylvania, Union and Yancey.

Applicants may contact the appropriate USFWS office listed below or the US Army Corps of Engineers:

US Fish and Wildlife Service
Asheville Field Office
160 Zillicoa Street
Asheville, NC 28801
Telephone: (828) 258-3939

Asheville USFWS Office counties: All counties west of and including Anson, Stanly, Davidson, Forsyth and Stokes Counties.

US Fish and Wildlife Service
Raleigh Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
Telephone: (919) 856-4520

Raleigh USFWS Office counties: all counties east of and including Richmond, Montgomery, Randolph, Guilford, and Rockingham Counties.

r. Permittees are advised that development activities in or near a floodway may be subject to the National Flood Insurance Program that prohibits any development, including fill, within a floodway that results in any increase in base flood elevations. This RGP does not authorize any activity prohibited by the National Flood Insurance Program.

s. The permittee must make every reasonable effort to perform the work authorized herein in a manner so as to minimize any adverse impact on fish, wildlife and natural environmental values.

t. All activities authorized by this RGP that involve the use of riprap material for bank stabilization, the following measures shall be applied:

(1) Filter cloth must be placed underneath the riprap as an additional requirement of its use in North Carolina waters.

(2) The placement of riprap shall be limited to the areas depicted on submitted work plan drawings and not be placed in a manner that prevents or impedes fish passage.

(3) The riprap material shall be clean and free from loose dirt or any pollutant

except in trace quantities that will not have an adverse environmental effect.

(4) It shall be of a size sufficient to prevent its movement from the authorized alignment by natural forces under normal conditions.

(5) The riprap material shall consist of clean rock or masonry material such as, but not limited to, granite, marl, or broken concrete.

(6) A waiver from the specifications in this general condition may be requested in writing. The waiver will only be issued if it can be demonstrated that the impacts of complying with this condition will result in greater adverse impacts to the aquatic environment.

u. The permittee must install and maintain, at his expense, any signal lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on authorized facilities. For further information, the permittee should contact the U.S. Coast Guard Marine Safety Office at (910) 772-2191.

v. The permittee must maintain any structure or work authorized by this permit in good condition and in conformance with the terms and conditions of this permit. The Permittee is not relieved of this requirement if the Permittee abandons the structure or work. Transfer in fee simple of the work authorized by this permit will automatically transfer this permit to the property's new owner, with all of the rights and responsibilities enumerated herein. The permittee must inform any subsequent owner of all activities undertaken under the authority of this permit and provide the subsequent owner with a copy of the terms and conditions of this permit.

w. At his sole discretion, any time during the processing cycle, the Wilmington District Engineer may determine that this RGP will not be applicable to a specific proposal. In such case, the procedures for processing an individual permit in accordance with 33 CFR 325 will be available.

x. The activity must comply with applicable FEMA approved state or local floodplain management requirements.

y. All fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.

z. All excavated material will be disposed of in approved upland disposal areas.

aa. Historic Properties.

(1) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places (NRHP), the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(2) Federal permittees (or when FHWA is the lead federal agency) should follow their own procedures for complying with the requirements of Section 106 of the NHPA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address Section 106 compliance for this RGP activity, or whether additional Section 106 consultation is necessary.

(3) Non-federal permittees must submit a PCN to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the NRHP, including previously unidentified properties. For such activities, the PCN must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), as appropriate, and the NRHP (see 33 CFR 330.4(g)). When reviewing PCNs, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the NHPA. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(4) The district engineer will notify the prospective permittee within 45 days of receipt of a complete PCN whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA Section 106 consultation is required and will occur, the district engineer will notify the non-federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(5) Prospective permittees should be aware that Section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit will relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the

undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

bb. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the NRHP.

cc. There will be no unreasonable interference with navigation or the right of the public to riparian access by the existence or use of activities authorized by this RGP.

dd. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

ee. This RGP will not be applicable to proposed construction when the Wilmington District Engineer determines that the proposed activity will significantly affect the quality of the human environment and determines that an EIS must be prepared.

ff. Activities which have commenced (i.e. are under construction) or are under contract to commence in reliance upon this general permit will remain authorized provided the activity is completed within twelve months of the date of the general permit's expiration, modification, or revocation. Activities completed under the authorization of this general permit which were in effect at the time the activity was completed continue to be authorized by the general permit.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

Kevin P. Landers Sr.
Colonel, U. S. Army
District Commander

Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

S. JAY ZIMMERMAN
Director

August 21, 2017
Polk County
NCDWR Project No. 2017-0899
I-26/US74 Interchange Improvements
TIP Project No. I-4729A

APPROVAL of 401 WATER QUALITY CERTIFICATION, with ADDITIONAL CONDITIONS

Mr. David McHenry, Environmental Officer
NCDOT, Division 14
253 Webster Road
Sylva, North Carolina 28779

Dear Mr. McHenry:

You have our approval, in accordance with the conditions listed below, for the following impacts for the purpose of highway interchange improvements in Polk County:

Stream Impacts in the Broad River Basin

Site	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	6		6	
2	1220		1220	1220
2	57		57	
2		55	55	
TOTAL	**1283**	**55**	**1338**	**1220**

Total Stream Impact for Project: 1,338 linear feet.

The project shall be constructed in accordance with your application dated July 22, 2017. After reviewing your application, we have decided that these impacts are covered by General Water Quality Certification Number 4088. This certification corresponds to the **General** Permit 31 issued by the Corps of Engineers. In addition, you should acquire any other federal, state or local permits before you proceed with your project including (but not limited to) Sediment and Erosion Control, Non-Discharge and Water Supply Watershed regulations. This approval will expire with the accompanying 404 permit.

This approval is valid solely for the purpose and design described in your application (unless modified below). Should your project change, you must notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If total wetland fills for this project (now or in the future) exceed one acre, or of total impacts to streams (now or in the future) exceed 150 linear feet, compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 2B. For this approval to remain valid, you must adhere to the conditions listed in the attached certification(s) and any additional conditions listed below.

Condition(s) of Certification:

Project Specific Conditions

1. Compensatory mitigation for 1,220 linear feet of impact to streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Division of Mitigation Service (DMS) (formerly NCEEP), and that the DMS has agreed to implement the mitigation for the project. The DMS has indicated in a letter dated July 11, 2017 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the DMS Mitigation Banking Instrument signed July 28, 2010.

General Conditions

1. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]

2. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. [15A NCAC 02B.0200]

3. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]

4. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]

5. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]

* 6. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]

8. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream: [15A NCAC 02H.0506(b)(3)]

9. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]

10. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification. [15A NCAC 02H.0506(b)(3)]

11. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]

12. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]

13. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]

14. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

15. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]

16. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

17. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]

* 18. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]

1. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0231(a)(6)]

2. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.[15A NCAC 02H.0506(b)(3) and (c)(3)]

19. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3]):

    a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual.*
    b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual.* The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.

c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

20. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. [15A NCAC 02H.0506(b)(3) and (c)(3)]

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.
The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919) 431-3000, Facsimile: (919) 431-3100

A copy of the petition must also be served on DEQ as follows:

Mr. Bill F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center

This letter completes the review of the Division of Water Resources under Section 401 of the Clean Water Act. If you have any questions, please contact Kevin Barnett at (828) 296-4657 or kevin.barnett@ncdenr.gov.

Sincerely,

S. Jay Zimmerman, Director
Division of Water Resources

Electronic copy only distribution:
Lori Beckwith, US Army Corps of Engineers, Asheville Field Office
Marla Chambers, NC Wildlife Resources Commission
Beth Harmon, Division of Mitigation Services
File Copy

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER RESOURCES

WATER QUALITY GENERAL CERTIFICATION NO. 4088

GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR US ARMY CORPS OF ENGINEERS

- **NATIONWIDE PERMIT NUMBER 14 (LINEAR TRANSPORTATION PROJECTS), AND**
- **REGIONAL GENERAL PERMIT 198200031 (NCDOT BRIDGES, WIDENING PROJECTS, INTERCHANGE IIMPROVEMENTS)**

Water Quality Certification Number 4088 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to surface waters and wetland areas as described in 33 CFR 330 Appendix A (B) (14) of the US Army Corps of Engineers regulations and Regional General Permit 198200031.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Effective date: March 19, 2017

Signed this day March 3, 2017

By

for S. Jay Zimmerman, P.G.
Director

Activities meeting any one (1) of the following thresholds or circumstances require *written approval* for a 401 Water Quality Certification from the Division of Water Resources (DWR):

a) If any of the conditions of this Certification (listed below) cannot be met; or
b) Any temporary or permanent impacts to wetlands, open waters and/or streams, except for construction of a driveway to a single family residential lot that are not determined to be part of a larger common plan of development as long as the driveway involves *less than 25 feet* of total stream impacts, including any in-stream stabilization needed for the crossing; or
c) Any stream relocation or stream restoration; or
d) Any high density project, as defined in 15A NCAC 02H .1003(2)(a) and by the density thresholds specified in 15A NCAC 02H .1017, which does not have a stormwater management plan reviewed and approved under a state stormwater program[1] or a state-approved local government stormwater program[2]. Projects that have vested rights, exemptions, or grandfathering from state or locally-implemented stormwater programs and projects that satisfy state or locally-implemented stormwater programs through use of community in-lieu programs **require written approval**; or
e) Any impacts to waters, or to wetlands adjacent to waters, designated as: ORW (including SAV), HQW (including PNA), SA, WS-I, WS-II, Trout, or North Carolina or National Wild and Scenic River; or
f) Any impacts to coastal wetlands [15A NCAC 07H .0205], or Unique Wetlands (UWL); or
g) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), NC Surface Water or Wetland Standards (15A NCAC 02B .0200), or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200); or
*h) Any impacts to subject water bodies and/or state regulated riparian buffers along subject water bodies in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman Lake, Jordan Lake or Goose Creek Watersheds (or any other basin or watershed with State Regulated Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless:*
    i) The activities are listed as "EXEMPT" from these rules; or
    ii) A Buffer Authorization Certificate is issued by the NC Division of Coastal Management (DCM); or
    iii) A Buffer Authorization Certificate or a Minor Variance is issued by a delegated or designated local government implementing a state riparian buffer program pursuant to 143-215.23

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval.

[1] e.g. Coastal Counties, HQW, ORW, or state-implemented Phase II NPDES
[2] e.g. Delegated Phase II NPDES, Water Supply Watershed, Nutrient-Sensitive Waters, or Universal Stormwater Management Program

I. ACTIVITY SPECIFIC CONDITIONS:

*1. If this Water Quality Certification is used to access residential, commercial or industrial building sites, then all parcels owned by the applicant that are part of the single and complete project authorized by this Certification must be buildable without additional impacts to streams or wetlands. If required in writing by DWR, the applicant shall provide evidence that the parcels are buildable without requiring additional impacts to wetlands, waters, or state regulated riparian buffers. [15A NCAC 02H .0506(b)(4) and (c)(4)]

2. For road and driveway construction purposes, this Certification shall only be utilized from natural high ground to natural high ground. [15A NCAC 02H .0506(b)(2) and (c)(2)]

*3. Deed notifications or similar mechanisms shall be placed on all lots with retained jurisdictional wetlands, waters, and state regulated riparian buffers within the project boundaries in order to assure compliance with NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), and/or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200). These mechanisms shall be put in place at the time of recording of the property or individual parcels, whichever is appropriate. [15A NCAC 02H .0506(b)(4) and (c)(4)]

4. For the North Carolina Department of Transportation, compliance with the NCDOT's individual NPDES permit NCS000250 shall serve to satisfy this condition. For all other projects that disturb one acre or more of land (including a project that disturbs less than one acre of land that is part of a larger common plan of development or sale); have permanent wetland, stream, or open water impacts; and are proposing new built-upon area shall comply with the following requirements: [15A NCAC 02H .0506(b)(5) and (c)(5)]

   a. Stormwater management shall be provided throughout the entire project area in accordance with 15A NCAC 02H .1003. For the purposes of 15A NCAC 02H .1003(2)(a), density thresholds shall be determined in accordance with 15A NCAC 02H .1017.

   b. Projects that have vested rights, exemptions, or grandfathering from state or locally-implemented stormwater programs do not satisfy this condition. Projects that satisfy state or locally-implemented stormwater programs through use of community in-lieu programs do not satisfy this condition.

   c. Projects that require written authorization from DWR shall submit the following with their application for review and approval:

      i. For projects that have a stormwater management plan (SMP) reviewed under a state stormwater program[1] or a state-approved local government stormwater program[2] shall submit plans that show the location and approximate size of all proposed stormwater measures;

[1] e.g. Coastal Counties, HQW, ORW, or state-implemented Phase II NPDES
[2] e.g. Delegated Phase II NPDES, Water Supply Watershed, Nutrient-Sensitive Waters, or Universal Stormwater Management Program

ii. All other low density projects not covered above shall submit a completed low density supplement form with all required items; and

iii. All other high density projects not covered above shall submit a completed SMP, including all appropriate stormwater control measure (SCM) supplemental forms and associated items, that complies with the high density development requirements of 15A NCAC 02H .1003.

d. Projects that do not require written approval from DWR shall obtain approval of the SMP, when required, before any impacts authorized by this Certification occur.

e. SMPs approved by DWR may be phased on a case-by-case basis. SMPs for each future phase must be approved before construction of that phase commences. Approved SMPs may not be modified without prior written authorization from DWR.

II. GENERAL CONDITIONS:

*1. When written authorization is required, the plans and specifications for the project are incorporated into the authorization by reference and are an enforceable part of the Certification. Any modifications to the project require notification to DWR and may require an application submittal to DWR with the appropriate fee. [15A NCAC 02H .0501 and .0502]

2. No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) as authorized in the written approval from DWR; or beyond the thresholds established for use of this Certification without written authorization. [15A NCAC 02H .0501 and .0502]

No removal of vegetation or other impacts of any kind shall occur to state regulated riparian buffers beyond the footprint of impacts approved in a Buffer Authorization or Variance or as listed as an exempt activity in the applicable riparian buffer rules. [15A NCAC 02B .0200]

*3. In accordance with 15A NCAC 02H .0506(h), compensatory mitigation may be required for losses of greater than 150 linear feet of streams and/or greater than one (1) acre of wetlands. Impacts to isolated and other non-404 jurisdictional wetlands shall not be combined with 404 jurisdictional wetlands for the purpose of determining when impact thresholds trigger a mitigation requirement. For linear publicly owned and maintained transportation projects that are not determined to be part of a larger common plan of development by the US Army Corps of Engineers, compensatory mitigation may be required for losses of greater than 150 linear feet per stream.

Compensatory stream and/or wetland mitigation shall be proposed and completed in compliance with G.S. 143-214.11. For applicants proposing to conduct mitigation within a project site, a complete mitigation proposal developed in accordance with the most recent guidance issued by the US Army Corps of Engineers Wilmington District shall be submitted for review and approval with the application for impacts.

4. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2 of Title 15A.

5. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0200]

   Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual*.

   All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

   For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

   If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

6. Sediment and erosion control measures shall not be placed in wetlands or waters except within the footprint of temporary or permanent impacts authorized under this Certification. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0501 and .0502]

7. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02B .0201]

8. An NPDES Construction Stormwater Permit (NCG010000) is required for construction projects that disturb one (1) or more acres of land. The NCG010000 Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If the project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. [15A NCAC 02H .0506(b)(5) and (c)(5)]

   The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit. [15A NCAC 02H .0506(b)(5) and (c)(5)]

9. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the *NC Sediment and Erosion Control Manual*, or the *NC DOT Construction and Maintenance Activities Manual*, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(3) and (c)(3)]

10. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities. [15A NCAC 02H .0506 (b)(2) and 15A NCAC 04B .0125]

    All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. A copy of the approval from the resource agency shall be forwarded to DWR.

    Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers), or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

11. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. [15A NCAC 02H .0506(b)(2) and (c)(2)]

Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

If multiple pipes or barrels are required, they shall be designed to mimic the existing stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel shall be avoided.

When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g. rock ladders, cross vanes, etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR 60 calendar days prior to the installation of the culvert.

When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as, a location map of the culvert, geotechnical reports, photographs, etc. shall be provided to DWR a minimum of 60 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application to and written approval from DWR.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

12. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means to the maximum extent practicable (e.g. grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(5)]

13. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters. [15A NCAC 02B .0200 and 15A NCAC 02B .0231]

14. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. [15A NCAC 02B .0200]

15. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, planform pattern, and longitudinal bed profile. For projects that receive written approval, no temporary impacts are allowed beyond those included in the application and authorization. All temporarily impacted sites shall be restored and stabilized with native vegetation. [15A NCAC 02H .0506(b)(2) and (c)(2)]

16. All proposed and approved temporary pipes/culverts/rip-rap pads etc. in streams shall be installed as outlined in the most recent edition of the *North Carolina Sediment and Erosion Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* or the *North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities* so as not to restrict stream flow or cause dis-equilibrium during use of this Certification. [15A NCAC 02H .0506(b)(2) and (c)(2)]

17. Any rip-rap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall be placed such that the original stream elevation and streambank contours are restored and maintained. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or in a manner that precludes aquatic life passage. [15A NCAC 02H .0506(b)(2)]

18. Any rip-rap used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures. [15A NCAC 02H .0506(b)(2)]

19. Applications for rip-rap groins proposed in accordance with 15A NCAC 07H .1401 (NC Division of Coastal Management General Permit for construction of Wooden and Rip-rap Groins in Estuarine and Public Trust Waters) shall meet all the specific conditions for design and construction specified in 15A NCAC 07H .1405.

20. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication and general equipment maintenance shall not take place within 50 feet of a waterbody or wetlands to prevent contamination by fuels and oils. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0211 (12)]

21. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance. [15A NCAC 02H .0506(b)(3) and (c)(3)]

22. In accordance with 143-215.85(b), the applicant shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.

* 23. If an environmental document is required under the State Environmental Policy Act (SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse. If an environmental document is required under the National Environmental Policy Act (NEPA), then this General Certification is not valid until a Categorical Exclusion, the Final Environmental Assessment, or Final Environmental Impact Statement is published by the lead agency. [15A NCAC 01C .0107(a)]

24. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.

25. The applicant and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If DWR determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then DWR may revoke or modify a written authorization associated with this General Water Quality Certification. [15A NCAC 02H .0507(d)]

*26. When written authorization is required for use of this Certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return a certificate of completion (available on the DWR website https://edocs.deq.nc.gov/Forms/Certificate-of-Completion). [15A NCAC 02H .0502(f)]

27. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards. [15A NCAC 02H .0507(c)]

28. If the property or project is sold or transferred, the new Permittee shall be given a copy of this Certification (and written authorization if applicable) and is responsible for complying with all conditions. [15A NCAC 02H .0501 and .0502]

III. GENERAL CERTIFICATION ADMINISTRATION:

*1. In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. An applicant for a CAMA permit under Article 7 of Chapter 113A of the General Statutes for which a Water Quality Certification is required shall only make one payment to satisfy both agencies; the fee shall be as established by the Secretary in accordance with 143-215.3D(e)(7).

2. This Certification neither grants nor affirms any property right, license, or privilege in any waters, or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. This Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.

3. This Certification grants permission to the Director, an authorized representative of the Director, or DWR staff, upon the presentation of proper credentials, to enter the property during normal business hours. [15A NCAC 02H .0502(e)]

4. This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide Permit and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification. This General Certification is rescinded when the US Army Corps of Engineers reauthorizes any of the corresponding Nationwide Permits and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Resources.

5. Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.

*6. The Director of the North Carolina Division of Water Resources may require submission of a formal application for Individual Certification for any project in this category of activity if it is determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the water or downstream waters are precluded.

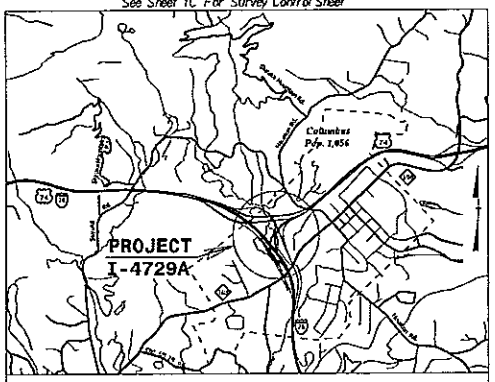
7. Public hearings may be held prior to a Certification decision if deemed in the public's best interest by the Director of the North Carolina Division of Water Resources.

History Note: Water Quality Certification (WQC) Number 4088 issued March 3, 2017 replaces WQC 3886 issued March 12, 2012; WQC Number 3820 issued April 6, 2010; WQC Number 3627 issued March 2007; WQC Number 3404 issued March 2003; WQC Number 3375 issued March 18, 2002; WQC Number 3289 issued June 1, 2000; WQC Number 3103 issued February 11, 1997; WQC Number 2732 issued May 1, 1992; WQC Number 2666 issued January 21, 1992; WQC Number 2177 issued November 5, 1987.

TIP PROJECT: I-4729A

CONTRACT: C204039

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C For Survey Control Sheet



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

POLK COUNTY

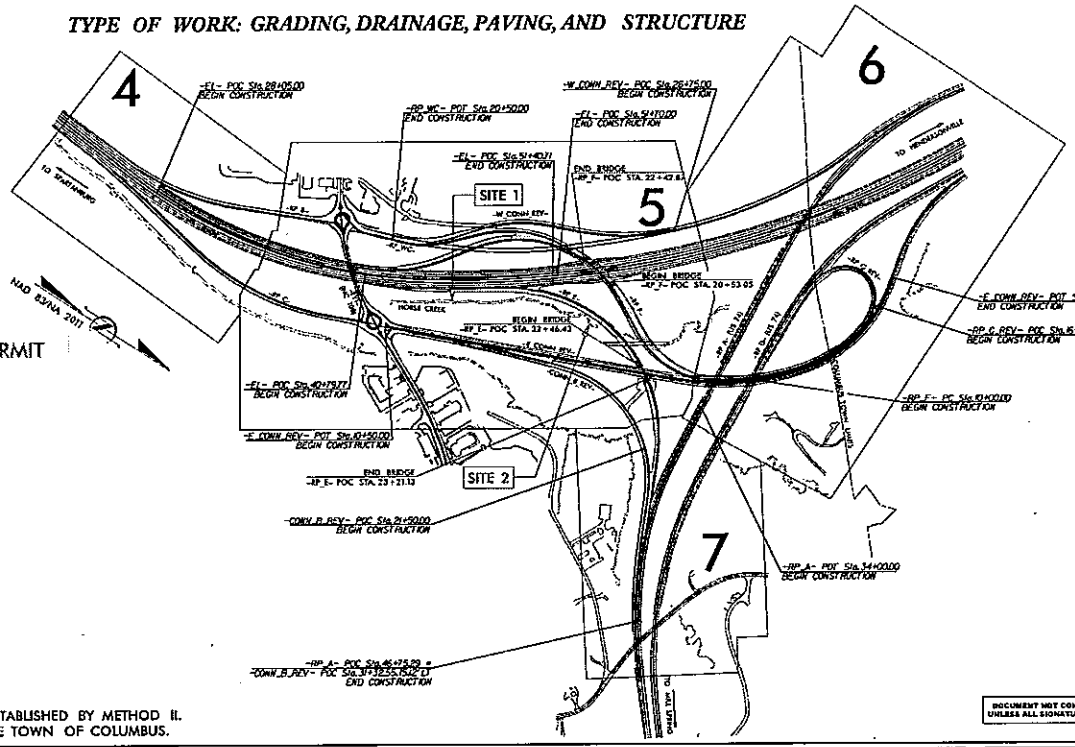
LOCATION: I-26 /US 74 INTERCHANGE MODIFICATION IN THE TOWN OF COLUMBUS

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

STATE	STATE PROJECT & FEDERAL NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4729A	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34343.1.4		PE
34343.2.4		ROW
34343.3.4		CONST

PERMIT DRAWING
SHEET 1 OF 6



WETLAND AND SURFACE WATER IMPACTS PERMIT

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS LOCATED WITHIN THE MUNICIPAL BOUNDRIES OF THE TOWN OF COLUMBUS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

	-EL-
ADT 2016 =	21,700
ADT 2040 =	30,500
K =	9 %
D =	55 %
T =	24 % *
V =	70 MPH

* TTST =21% DUAL=3%
FUNC CLASS = RURAL INTERSTATE

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT I-4729A = 0.448 MI.

TOTAL LENGTH OF TIP PROJECT I-4729A = 0.448 MI.

Prepared for the North Carolina Department of Transportation in the office of:
PARSONS BRINCKERHOFF
SUNGATE DESIGN GROUP, P.A.

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 14, 2017

LETTING DATE:
SEPTEMBER 19, 2017

DAVID L. WILVER, PE
PROJECT ENGINEER

J. MATTHEW PICKENS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE: P.E.

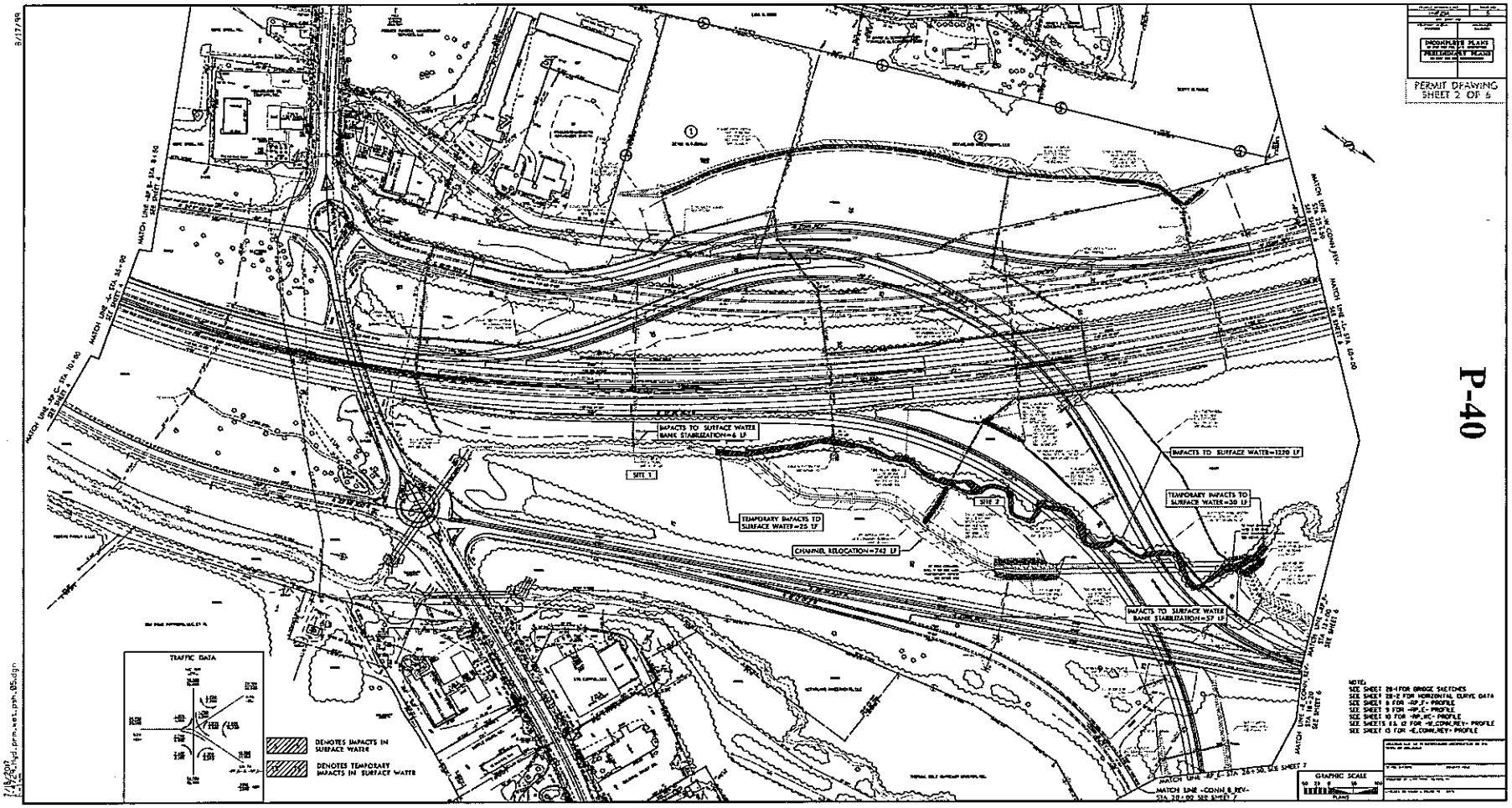
ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE: P.E.

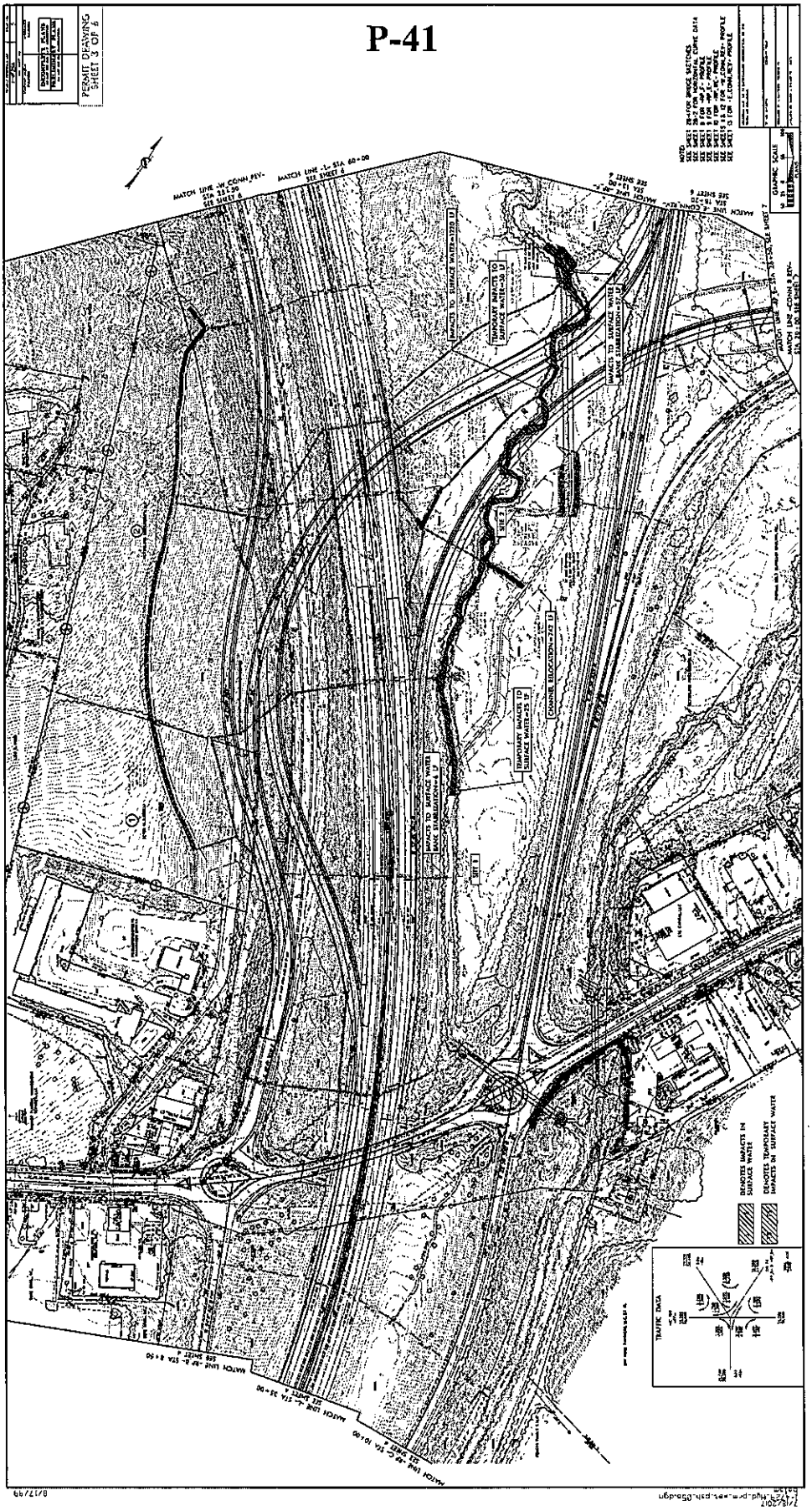
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

03/05/99
7/17/2017
I-4729_Hyd_prm_wet_psh_01.dgn
hwarley


PERMIT DRAWING
SHEET 2 OF 5
INCOMPLETE PLANS
PRELIMINARY PLANS
IMPACTS TO SURFACE WATER BANK STABILIZATION=4 LF
SITE 1
TEMPORARY IMPACTS TO SURFACE WATER=25 LF
CHANNEL RELOCATION=742 LF
SITE 2
IMPACTS TO SURFACE WATER=1230 LF
TEMPORARY IMPACTS TO SURFACE WATER=30 LF
IMPACTS TO SURFACE WATER BANK STABILIZATION=57 LF
TRAFFIC DATA
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
GRAPHIC SCALE
NOTES:
SEE SHEET 28-1 FOR BRIDGE SKETCHES
SEE SHEET 28-2 FOR HORIZONTAL CURVE DATA
SEE SHEET 8 FOR -SP_F- PROFILE
SEE SHEET 9 FOR -NP_E- PROFILE
SEE SHEET 10 FOR -NP_RC- PROFILE
SEE SHEETS 11, 12 FOR -W_CONN_REV- PROFILE
SEE SHEET 13 FOR -E_CONN_REV- PROFILE

P-40

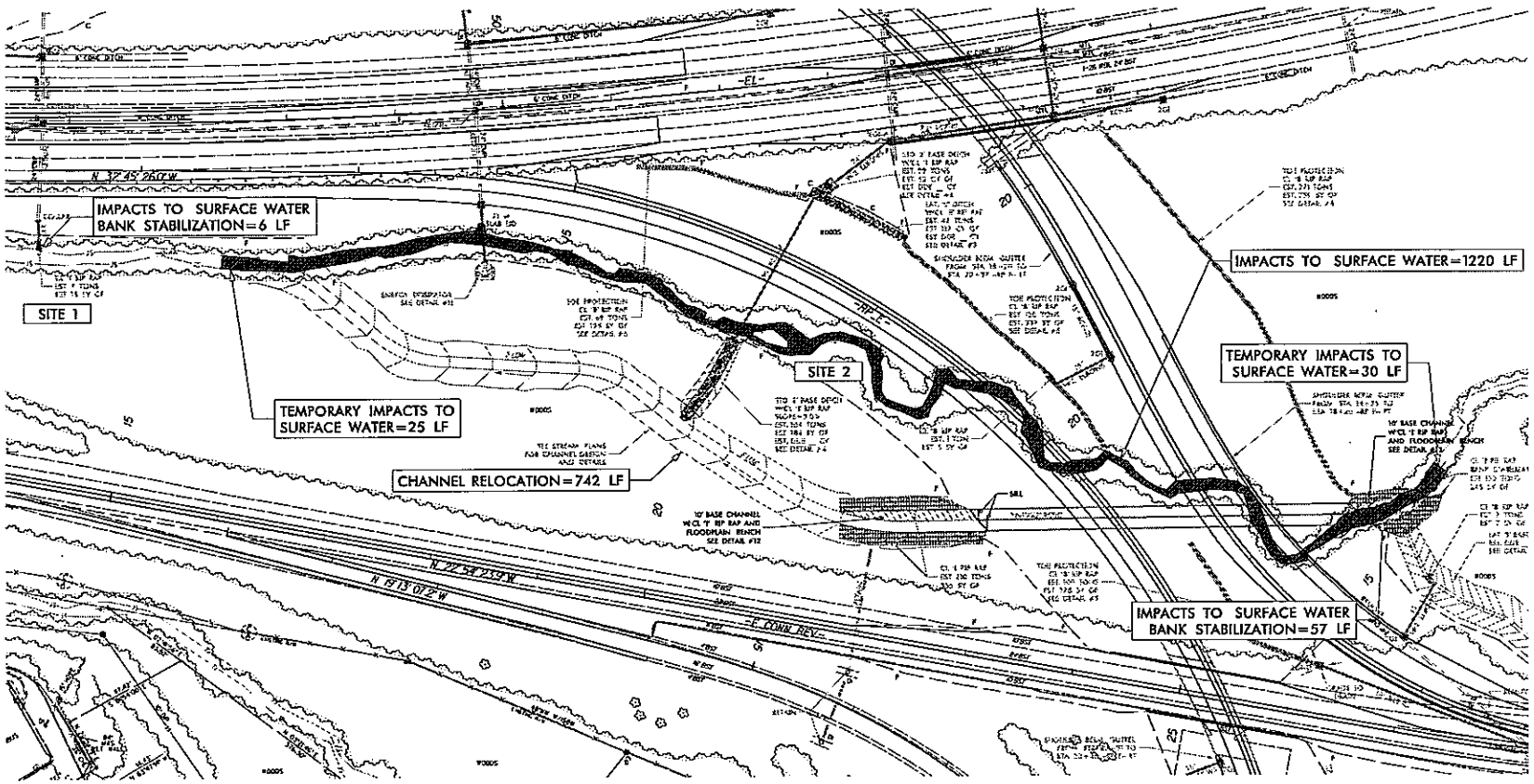
P-41


PERMIT DRAWING
SHEET 3 OF 6
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
TRAFFIC DATA
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
I-4729A	5B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 4 OF 6



DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

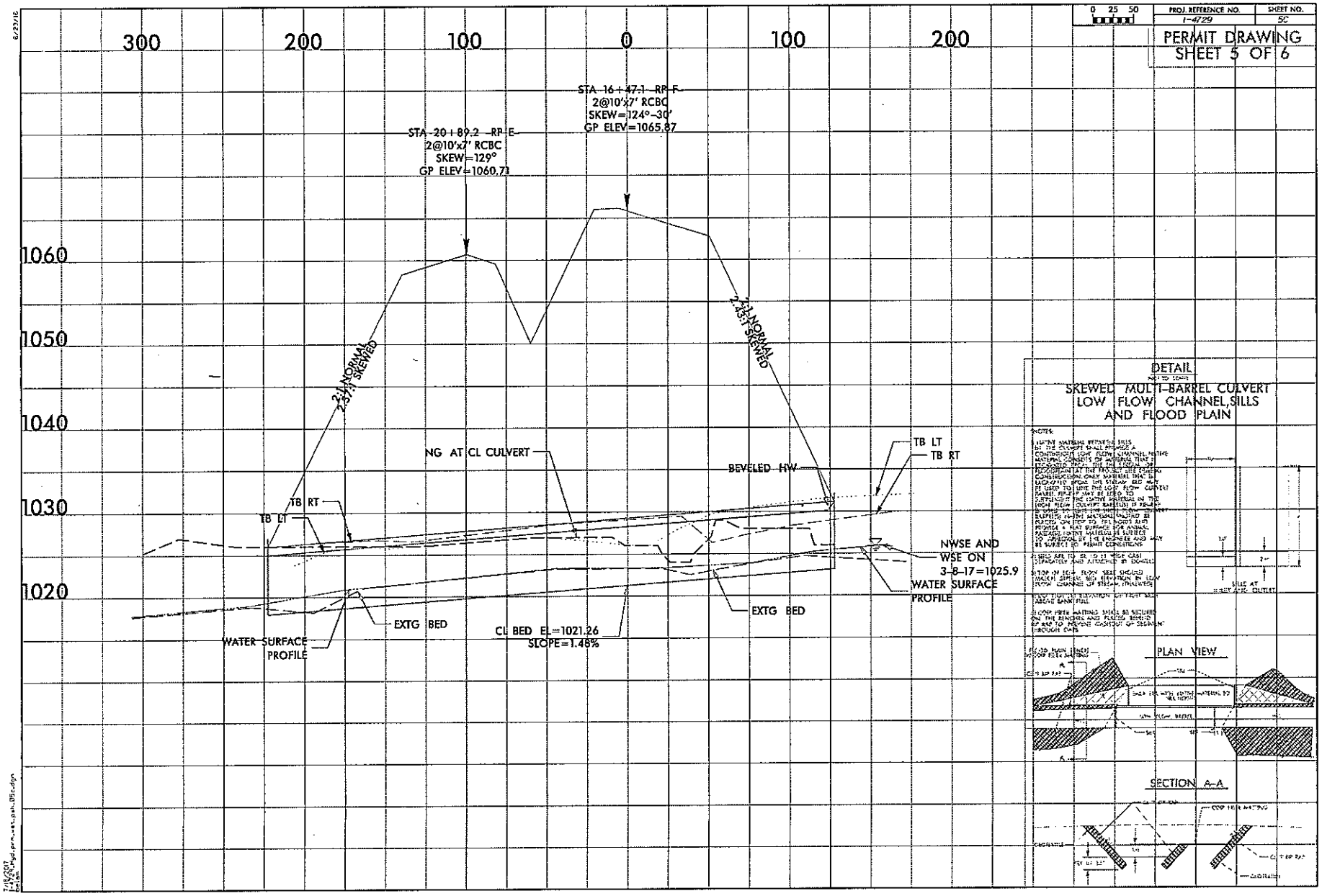
50' 25' 0 50' 100'
SCALE: 1"=100'

REVISIONS

8/17/99

7/18/2017
I-4729_rdgd_prm_wet_psh_05b.dgn

P-42


PROJ. REFERENCE NO.
1-4729
SHEET NO.
5C
PERMIT DRAWING
SHEET 5 OF 6
300
200
100
0
100
200
1060
1050
1040
1030
1020
STA 16+47.1 RP-F
2@10'x7' RCBC
SKEW=124°-30'
GP ELEV=1065.87
STA 20+89.2 RP-E
2@10'x7' RCBC
SKEW=129°
GP ELEV=1060.73
2:1 NORMAL
2.5:1 SKEWED
2:1 NORMAL
2.5:1 SKEWED
NG AT CL CULVERT
BEVELED HW
TB LT
TB RT
TB RT
TB LT
NWSE AND
WSE ON
3-8-17=1025.9
WATER SURFACE
PROFILE
EXTG BED
EXTG BED
CL BED EL=1021.26
SLOPE=1.46%
WATER SURFACE
PROFILE
DETAIL
SKEWED MULTI-BARREL CULVERT
LOW FLOW CHANNEL, SILLS
AND FLOOD PLAIN
PLAN VIEW
SECTION A-A

P-43

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	10+06 -RP_E- RT	BANK STABILIZATION						< 0.01		6		
2	15+09 to 29-66 -RP_F-	2@10'x7' RCBC / RDWY FILL						0.27		1220		
		BANK STABILIZATION						0.02		57		
		TEMPORARY DEWATERING							0.02		55	
		CHANNEL RELOCATION										742
TOTALS*:								0.29	0.02	1283	55	742

*Rounded totals are sum of actual impacts

NOTES:
Total Culvert Length (2@10'x7' RCBC) = 350 LF
Total Stream Channel Lost = 1220 - 742 = 478 LF

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
7-18-2017
POLK COUNTY
I-4729A
34343.3.4
SHEET 6 OF 6

Revised 2016 09 09

County : Polk

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0000700000-N	SP	FIELD OFFICE	Lump Sum	L.S.	
0004	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum	L.S.	
0005	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUBBING	2 ACR		
0006	0022000000-E	225	UNCLASSIFIED EXCAVATION	318,000 CY		
0007	0036000000-E	225	UNDERCUT EXCAVATION	2,100 CY		
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	1,560 CY		
0010	0141000000-E	240	BERM DITCH CONSTRUCTION	1,150 LF		
0011	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	14,600 SY		
0012	0194000000-E	SP	SELECT GRANULAR MATERIAL, CLASS III	850 CY		
0013	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	4,450 SY		
0014	0223000000-E	275	ROCK PLATING	4,200 SY		
0015	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	420 TON		
0016	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	1,310 SY		
0017	0342000000-E	310	**" SIDE DRAIN PIPE (36")	196 LF		
0018	0343000000-E	310	15" SIDE DRAIN PIPE	1,028 LF		
0019	0344000000-E	310	18" SIDE DRAIN PIPE	212 LF		
0020	0345000000-E	310	24" SIDE DRAIN PIPE	512 LF		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0021	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (15")	6 EA		
0022	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (18")	2 EA		
0023	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (24")	5 EA		
0024	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (36")	2 EA		
0025	0366000000-E	310	15" RC PIPE CULVERTS, CLASS III	288 LF		
0026	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	312 LF		
0027	0378000000-E	310	24" RC PIPE CULVERTS, CLASS III	624 LF		
0028	0384000000-E	310	30" RC PIPE CULVERTS, CLASS III	156 LF		
0030	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	164 LF		
0031	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	132 LF		
0032	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	68 LF		
0033	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	152 LF		
0034	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	60 LF		
0035	0986000000-E	SP	GENERIC PIPE ITEM 15" CURED-IN-PLACE PIPE	534 LF		
0036	0986000000-E	SP	GENERIC PIPE ITEM 18" CURED-IN-PLACE PIPE	1,501 LF		
0037	0986000000-E	SP	GENERIC PIPE ITEM 24" CURED-IN-PLACE PIPE	963 LF		
0038	0986000000-E	SP	GENERIC PIPE ITEM 30" CURED-IN-PLACE PIPE	564 LF		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0039	0986000000-E	SP	GENERIC PIPE ITEM 36" CURED-IN-PLACE PIPE	146 LF		
0040	0995000000-E	340	PIPE REMOVAL	1,210 LF		
0041	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0042	1077000000-E	SP	#57 STONE	20 TON		
0043	1099500000-E	505	SHALLOW UNDERCUT	500 CY		
0044	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	1,200 TON		
0045	1121000000-E	520	AGGREGATE BASE COURSE	14,600 TON		
0046	1220000000-E	545	INCIDENTAL STONE BASE	500 TON		
0047	1231000000-E	560	SHOULDER BORROW	6,880 CY		
0048	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (2-1/4")	53,710 SY		
0049	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (3")	15,300 SY		
0050	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	11,870 TON		
0051	1498000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	2,620 TON		
0052	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	6,090 TON		
0053	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1,290 TON		
0054	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	10,490 TON		
0055	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	1,640 TON		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0056	1577000000-E	620	POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX	195 TON		
0057	1662000000-E	650	OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MODIFIED	3,130 TON		
0058	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	200 TON		
0059	1840000000-E	665	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)	19,600 LF		
0060	2022000000-E	815	SUBDRAIN EXCAVATION	672 CY		
0061	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	2,000 SY		
0062	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	336 CY		
0063	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	2,000 LF		
0064	2070000000-N	815	SUBDRAIN PIPE OUTLET	4 EA		
0065	2077000000-E	815	6" OUTLET PIPE	24 LF		
0066	2253000000-E	840	PIPE COLLARS	0.952 CY		
0067	2275000000-E	SP	FLOWABLE FILL	36 CY		
0068	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	51 EA		
0069	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	42.4 LF		
0070	2354000000-N	840	FRAME WITH GRATE, STD 840.22	1 EA		
0071	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	2 EA		
0072	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	22 EA		
0073	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	21 EA		
0074	2396000000-N	840	FRAME WITH COVER, STD 840.54	5 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0075	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	90 LF		
0076	2556000000-E	846	SHOULDER BERM GUTTER	1,865 LF		
0077	2577000000-E	846	CONCRETE EXPRESSWAY GUTTER	210 LF		
0078	2619000000-E	850	4" CONCRETE PAVED DITCH	270 SY		
0079	2703000000-E	854	CONCRETE BARRIER, TYPE ******* (T)	882 LF		
0080	2717000000-E	854	VARIABLE HEIGHT CONCRETE BARRIER, TYPE ********** (T-1)	132 LF		
0081	2717000000-E	854	VARIABLE HEIGHT CONCRETE BARRIER, TYPE ********** (T-2)	71 LF		
0082	2724000000-E	857	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED	1,930 LF		
0083	2815000000-N	858	ADJUSTMENT OF DROP INLETS	1 EA		
0084	2905000000-N	859	CONVERT EXISTING DROP INLET TO JUNCTION BOX	2 EA		
0085	3030000000-E	862	STEEL BM GUARDRAIL	7,437.5 LF		
0086	3060000000-E	862	STEEL BM GUARDRAIL, DOUBLE FACED	262.5 LF		
0087	3105000000-N	862	STEEL BM GUARDRAIL TERMINAL SECTIONS	2 EA		
0088	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	20 EA		
0089	3210000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE CAT-1	6 EA		
0090	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	9 EA		
0091	3317000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE B-77	19 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0092	3345000000-E	864	REMOVE & RESET EXISTING GUARD-RAIL	500 LF		
0093	3360000000-E	863	REMOVE EXISTING GUARDRAIL	5,220 LF		
0094	3380000000-E	862	TEMPORARY STEEL BM GUARDRAIL	450 LF		
0095	3435000000-N	SP	GENERIC GUARDRAIL ITEM IMPACT ATTENUATOR UNITS, TYPE TL-3 (EXTENDED LIFE)	3 EA		
0096	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	1,770 LF		
0097	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	106 EA		
0098	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	37 EA		
0099	3628000000-E	876	RIP RAP, CLASS I	1,410 TON		
0100	3635000000-E	876	RIP RAP, CLASS II	5 TON		
0101	3642000000-E	876	RIP RAP, CLASS A	20 TON		
0102	3649000000-E	876	RIP RAP, CLASS B	1,525 TON		
0103	3651000000-E	SP	BOULDERS	70 TON		
0104	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	8,205 SY		
0105	4048000000-E	902	REINFORCED CONCRETE SIGN FOUN-DATIONS (E)	2 CY		
0106	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDA-TIONS	2 CY		
0107	4057000000-E	SP	OVERHEAD FOOTING	59 CY		
0108	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	3,221 LB		
0109	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	237 LB		
0110	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	1,000 LF		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0111	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (10+00 RP G REV)	Lump Sum	L.S.	
0112	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (11+00 RP E)	Lump Sum	L.S.	
0113	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (19+00 RP F)	Lump Sum	L.S.	
0114	4096000000-N	904	SIGN ERECTION, TYPE D	1 EA		
0115	4102000000-N	904	SIGN ERECTION, TYPE E	42 EA		
0116	4108000000-N	904	SIGN ERECTION, TYPE F	4 EA		
0117	4109000000-N	904	SIGN ERECTION, TYPE *** (OVERHEAD) (A)	2 EA		
0118	4109000000-N	904	SIGN ERECTION, TYPE *** (OVERHEAD) (B)	2 EA		
0119	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	9 EA		
0120	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	8 EA		
0121	4116100000-N	904	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (A)	3 EA		
0122	4138000000-N	907	DISPOSAL OF SUPPORT, STEEL BEAM	3 EA		
0123	4149000000-N	907	DISPOSAL OF SIGN SYSTEM, OVERHEAD	1 EA		
0124	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	6 EA		
0125	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	40 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0126	4234000000-N	907	DISPOSAL OF SIGN, A OR B (OVERHEAD)	2 EA		
0127	4236000000-N	907	DISPOSAL OF SIGN, A, B OR C (GROUND MOUNTED)	5 EA		
0128	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	834 SF		
0129	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	288 SF		
0130	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	64 SF		
0131	4415000000-N	1115	FLASHING ARROW BOARD	2 EA		
0132	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	2 EA		
0133	4422000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	30 DAY		
0134	4430000000-N	1130	DRUMS	600 EA		
0135	4445000000-E	1145	BARRICADES (TYPE III)	64 LF		
0136	4455000000-N	1150	FLAGGER	120 DAY		
0137	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	6 EA		
0138	4470000000-N	1160	RESET TEMPORARY CRASH CUSHION	1 EA		
0139	4480000000-N	1165	TMA	1 EA		
0140	4485000000-E	1170	PORTABLE CONCRETE BARRIER	10,060 LF		
0141	4500000000-E	1170	RESET PORTABLE CONCRETE BARRIER	1,400 LF		
0142	4510000000-N	SP	LAW ENFORCEMENT	552 HR		
0143	4516000000-N	1180	SKINNY DRUM	60 EA		
0144	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM SEQUENTIAL FLASHING WARNING LIGHTS	42 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0145	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM WORK ZONE DIGITAL SPEED LIMIT SIGNS	10 EA		
0146	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM WORK ZONE PRESENCE LIGHTING	30 EA		
0147	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	610 EA		
0148	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	8,900 LF		
0149	4686000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	638 LF		
0150	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	38,650 LF		
0151	4690000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)	3,213 LF		
0152	4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	300 LF		
0153	4697000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)	200 LF		
0154	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	6,850 LF		
0155	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	15 EA		
0156	4815000000-E	1205	PAINT PAVEMENT MARKING LINES (6")	137,700 LF		
0157	4825000000-E	1205	PAINT PAVEMENT MARKING LINES (12")	13,200 LF		
0158	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	20 EA		
0159	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	4,000 LF		
0160	4855000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (6")	26,945 LF		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0161	4865000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (12")	3,600 LF		
0162	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	3 EA		
0163	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	820 EA		
0164	4935000000-N	1267	FLEXIBLE DELINEATORS (CRYSTAL)	135 EA		
0165	4940000000-N	1267	FLEXIBLE DELINEATORS (YELLOW)	48 EA		
0166	4945000000-N	1267	FLEXIBLE DELINEATORS (CRYSTAL & RED)	10 EA		
0167	4950000000-N	1267	FLEXIBLE DELINEATORS (YELLOW & RED)	10 EA		
0168	5255000000-N	1413	PORTABLE LIGHTING	Lump Sum	L.S.	
0169	6000000000-E	1605	TEMPORARY SILT FENCE	18,475 LF		
0170	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	630 TON		
0171	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	3,580 TON		
0172	6012000000-E	1610	SEDIMENT CONTROL STONE	7,650 TON		
0173	6015000000-E	1615	TEMPORARY MULCHING	25.5 ACR		
0174	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	1,500 LB		
0175	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEED-ING	8 TON		
0176	6024000000-E	1622	TEMPORARY SLOPE DRAINS	2,565 LF		
0177	6029000000-E	SP	SAFETY FENCE	1,400 LF		
0178	6030000000-E	1630	SILT EXCAVATION	12,930 CY		
0179	6036000000-E	1631	MATTING FOR EROSION CONTROL	95,500 SY		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0180	6037000000-E	SP	COIR FIBER MAT	3,620 SY		
0181	6042000000-E	1632	1/4" HARDWARE CLOTH	3,695 LF		
0182	6046000000-E	1636	TEMPORARY PIPE FOR STREAM CROSSING	100 LF		
0183	6071012000-E	SP	COIR FIBER WATTLE	1,630 LF		
0184	6071020000-E	SP	POLYACRYLAMIDE (PAM)	1,245 LB		
0185	6071030000-E	1640	COIR FIBER BAFFLE	2,450 LF		
0186	6071050000-E	SP	**" SKIMMER (1-1/2")	2 EA		
0187	6071050000-E	SP	**" SKIMMER (2")	7 EA		
0188	6071050000-E	SP	**" SKIMMER (2-1/2")	2 EA		
0189	6084000000-E	1660	SEEDING & MULCHING	21 ACR		
0190	6087000000-E	1660	MOWING	18 ACR		
0191	6090000000-E	1661	SEED FOR REPAIR SEEDING	300 LB		
0192	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.75 TON		
0193	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	475 LB		
0194	6108000000-E	1665	FERTILIZER TOPDRESSING	13.75 TON		
0195	6111000000-E	SP	IMPERVIOUS DIKE	165 LF		
0196	6114500000-N	1667	SPECIALIZED HAND MOWING	25 MHR		
0197	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	75 EA		
0198	6120000000-E	SP	CULVERT DIVERSION CHANNEL	444 CY		
0199	6123000000-E	1670	REFORESTATION	2 ACR		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0200	6126000000-E	SP	STREAMBANK REFORESTATION	1.4 ACR		
0201	6132000000-N	SP	GENERIC EROSION CONTROL ITEM CONCRETE WASHOUT STRUCTURE	4 EA		
0202	6132000000-N	SP	GENERIC EROSION CONTROL ITEM LOG	8 EA		
0203	6138000000-E	SP	GENERIC EROSION CONTROL ITEM IMPERVIOUS SELECT MATERIAL	170 CY		
0238	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (24", 0.250")	66 LF		
0239	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (36", 0.375")	96 LF		
0240	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (24", 0.250")	66 LF		
0241	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (36", 0.375")	96 LF		

CULVERT ITEMS

0204	8126000000-N	414	CULVERT EXCAVATION, STA ****** (20+89.16-RPE-)	Lump Sum	L.S.	
0205	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	656 TON		
0206	8196000000-E	420	CLASS A CONCRETE (CULVERT)	1,613.3 CY		
0207	8245000000-E	425	REINFORCING STEEL (CULVERT)	153,914 LB		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			WALL ITEMS			
0208	8801000000-E	SP	MSE RETAINING WALL NO **** (1)	2,930 SF		
0209	8801000000-E	SP	MSE RETAINING WALL NO **** (2)	2,210 SF		
0210	8801000000-E	SP	MSE RETAINING WALL NO **** (3)	4,060 SF		
0211	8801000000-E	SP	MSE RETAINING WALL NO **** (4)	4,240 SF		
0212	8801000000-E	SP	MSE RETAINING WALL NO **** (5A)	1,000 SF		
0213	8801000000-E	SP	MSE RETAINING WALL NO **** (7)	3,990 SF		
0214	8802010000-E	SP	SOIL NAIL RETAINING WALLS	8,840 SF		
0215	8802015100-N	SP	SOIL NAIL VERIFICATION TESTS	7 EA		
0216	8802015110-N	SP	SOIL NAIL PROOF TESTS	29 EA		
0217	8839000000-E	SP	GENERIC RETAINING WALL ITEM CONCRETE BARRIER RAIL WITH MOMENT SLAB	570 LF		
			STRUCTURE ITEMS			
0218	8105560000-E	411	4'-0" DIA DRILLED PIERS IN SOIL	107.5 LF		
0219	8105660000-E	411	4'-0" DIA DRILLED PIERS NOT IN SOIL	30 LF		
0220	8112730000-N	450	PDA TESTING	2 EA		
0221	8113000000-N	411	SID INSPECTIONS	1 EA		
0222	8115000000-N	411	CSL TESTING	1 EA		
0223	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	11,637 SF		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0224	8161000000-E	420	GROOVING BRIDGE FLOORS	13,051 SF		
0225	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	304.2 CY		
0226	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (21+44.22-RPF-)	Lump Sum	L.S.	
0227	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (22+87.20-RPE-)	Lump Sum	L.S.	
0228	8217000000-E	425	REINFORCING STEEL (BRIDGE)	61,681 LB		
0229	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	5,006 LB		
0230	8262000000-E	430	45" PRESTRESSED CONCRETE GIRDERS	288 LF		
0231	8265000000-E	430	54" PRESTRESSED CONCRETE GIRDERS	1,123.7 LF		
0232	8328200000-E	SP	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP14X89)	40 EA		
0233	8355000000-E	450	HP ***X*** STEEL PILES (HP14X89)	2,430 LF		
0234	8503000000-E	460	CONCRETE BARRIER RAIL	530.8 LF		
0235	8531000000-E	462	4" SLOPE PROTECTION	82 SY		
0236	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0237	8692000000-N	SP	FOAM JOINT SEALS	Lump Sum	L.S.	

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8/17/99

PLANS PREPARED BY : PARSONS RALEIGH, NORTH CAROLINA, (919) 854-1345 NC LICENSE NO. F-0246 FOR NORTH CAROLINA DEPT. OF TRANSPORTATION	PROJECT REFERENCE NO.	SHEET NO.
	I-4729A	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31950 ENGINEER JASON M. VIRGILIO DocuSigned by: 8/21/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 & 1C-2	SURVEY CONTROL SHEETS
1D-1 & 1D-2	CENTERLINE COORDINATE LIST
2A-1 THRU 2A-5	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	BRIDGE SKETCHES
2B-2	HORIZONTAL CURVE DATA
2B-3	SHEAR POINT DIAGRAM
2B-4	RESURFACING OVERVIEW MAP
2C-1 THRU 2C-14	GUARDRAIL DETAILS
2C-15	METHOD OF SHOULDER CONSTRUCTION DETAIL
2C-16	DETAIL TO CONVERT EXISTING DROP INLET TO JUNCTION BOX
2D-1	DRAINAGE DETAILS
2G-1	STANDARD ROCK PLATING DETAIL
3B-1	ROADWAY SUMMARIES
3D-1 THRU 3D-4	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 7	PLAN SHEETS
8 THRU 17	PROFILE SHEETS
RW-1 & RW-4	MODIFIED R/W PLAN SHEET
TMP-1 THRU TMP-29	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-8	PAVEMENT MARKING PLANS
EC-1 THRU EC-11	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION DETAIL SHEET
STRM 01 THRU STRM 09	STREAM RELOCATION PLANS
SIGN-1A THRU SIGN-6D	SIGNING PLANS
X-1A THRU X-1B	CROSS-SECTION TITLE & SUMMARY SHEETS
X-1 THRU X-87	CROSS-SECTIONS
S1-1 THRU S1-24	STRUCTURE PLANS (-RP_E- SITE 1)
S2-1 THRU S2-31	STRUCTURE PLANS (-RP_F- SITE 2)
C-1 THRU C-6	CULVERT PLANS
W-1 THRU W-20	RETAINING WALL PLANS

2G-2 removed

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 01-24-2017

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. 225.04 AND STD. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. 560.02 AND DETAILS INCLUDED IN THE PLANS.

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

ROCK

ROCK IS ANTICIPATED BETWEEN -RP_F- STA. 29+25 TO 31+25. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

EFF. 01-17-2012
REV. 05-24-2017

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable. See Sheet 2C-15)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
850.11	Guide for Berm Drainage Outlet - 24" and 30" Pipe
854.02	Double Faced Concrete Barrier - Types 'T', 'T1' and 'T2'

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-4729A	2A-1

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER — DOCUSIGNED BY: 8/16/2017

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 03022 ENGINEER — DOCUSIGNED BY: 8/16/2017

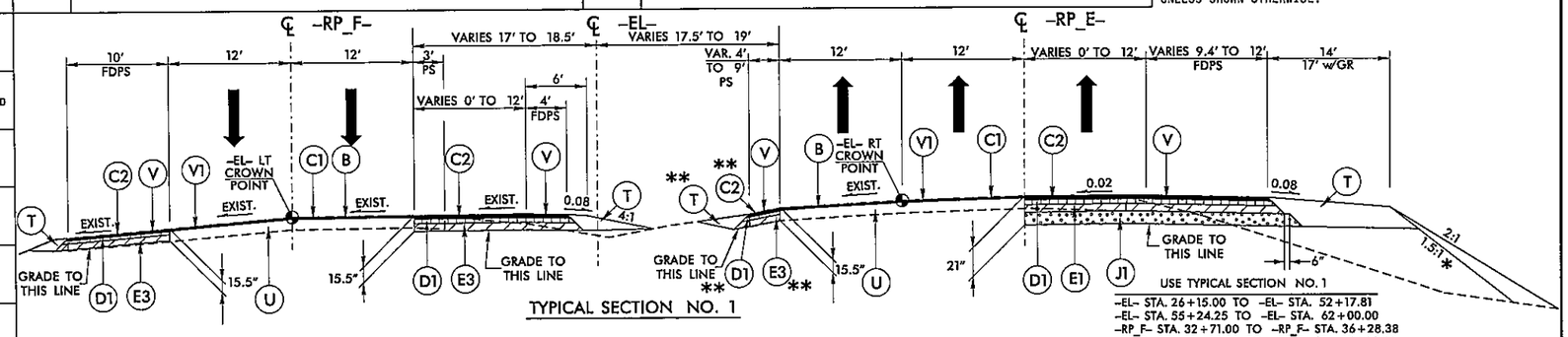
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

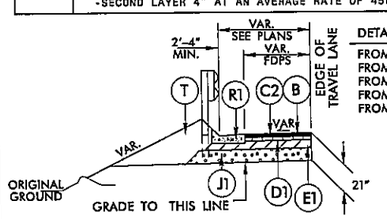
FINAL PAVEMENT SCHEDULE

B	PROP. OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MOD, AT AN AVERAGE RATES OF 70 LBS. PER SQ. YD.	J1	PROP. 11" AGGREGATE BASE COURSE	V	MILLED RUMBLE STRIPS
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	SHOULDER BERM GUTTER.	V1	MILLING ASPHALT PAVEMENT, 2¼" DEPTH
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	EXPRESSWAY GUTTER.	V2	MILLING ASPHALT PAVEMENT, 3" DEPTH
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R3	2'-6" CURB & GUTTER	U	EXISTING PAVEMENT.
C4	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	T	EARTH MATERIAL.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING)
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.				
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.				
D3	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.				
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.				
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.				
E3	PROP. APPROX. 9½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, TO BE PLACED IN TWO LAYERS: -FIRST LAYER 5½" AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD. -SECOND LAYER 4" AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.				

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

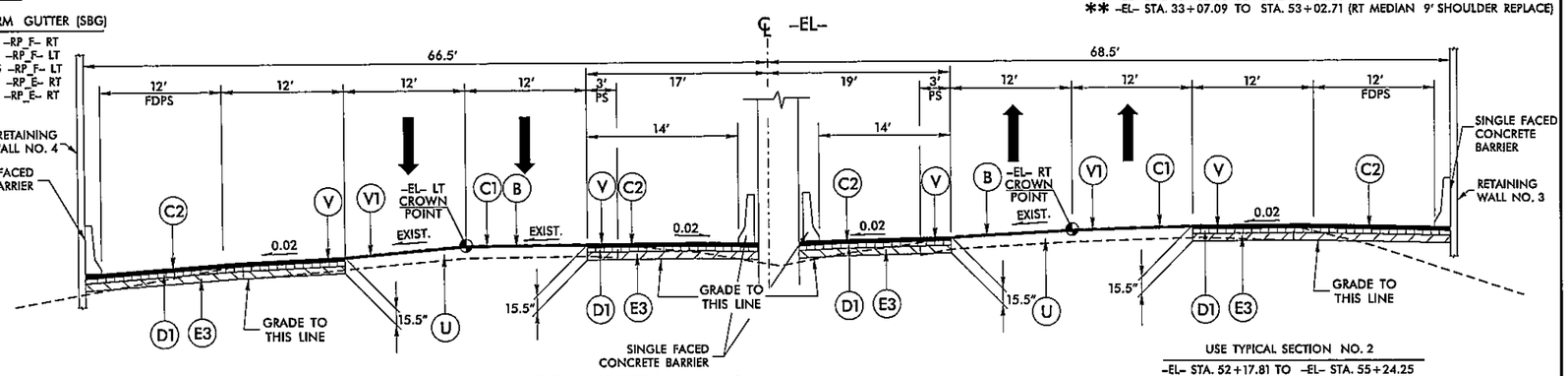


TYPICAL SECTION NO. 1



DETAIL SHOWING SHOULDER BERM GUTTER (SBG)

FROM STA. 14+35 TO STA. 18+20 -RP_F- RT
FROM STA. 18+20 TO STA. 20+37 -RP_F- LT
FROM STA. 22+88 TO STA. 23+75 -RP_F- LT
FROM STA. 13+00 TO STA. 22+03 -RP_E- RT
FROM STA. 23+31 TO STA. 26+00 -RP_E- RT



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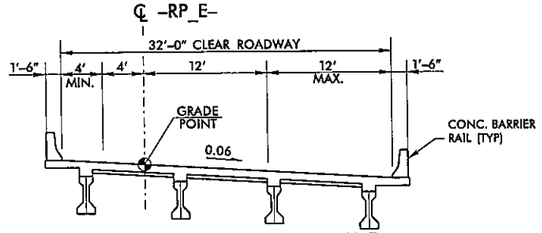
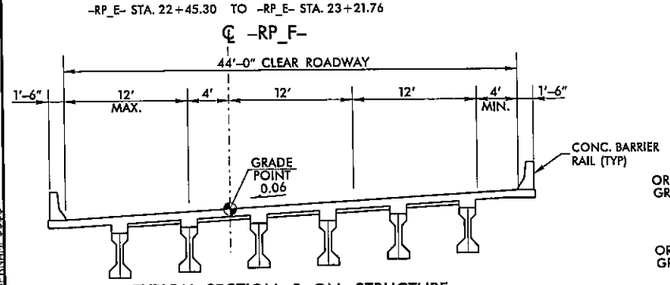


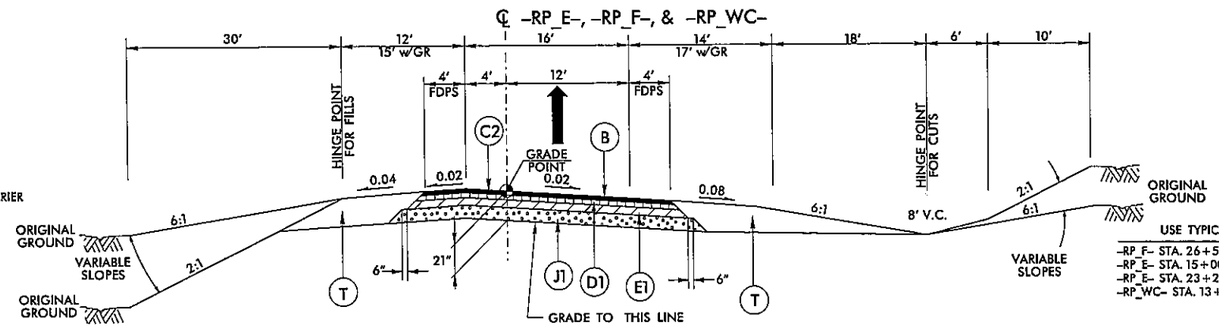
TYPICAL SECTION 2 ON STRUCTURE

-RP_E- STA. 22+45.30 TO -RP_E- STA. 23+21.76



TYPICAL SECTION 3 ON STRUCTURE

-RP_F- STA. 20+52.09 TO -RP_F- STA. 22+46.75



TYPICAL SECTION NO. 3

NOTE: SEE PLANS FOR GUARDRAIL LOCATIONS

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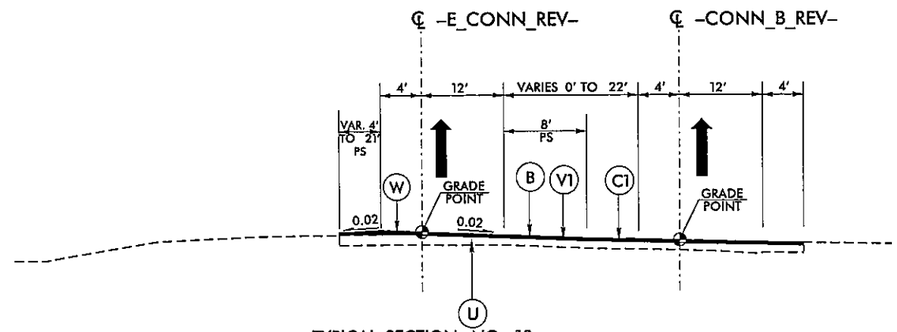
PAVEMENT SCHEDULE	
B	OGFC TYPE FC-1 MOD
C2	3" A.C.S.C. TYPE S9.5C
D1	3" A.C.I.C. TYPE I 19.0C
E3	9.5" A.C.B.C. TYPE B25.0C
R3	2'-6" CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	2.25" MILLING
W	WEDGING

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
I-4729A	2A-4

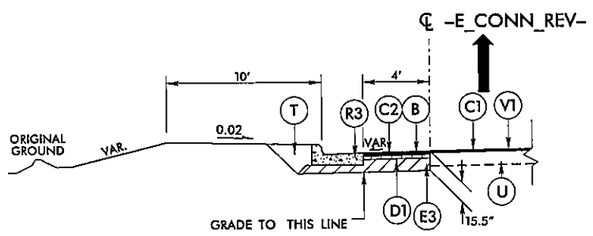
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER 8/16/2017	NORTH CAROLINA PROFESSIONAL SEAL 03022 ENGINEER 8/16/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

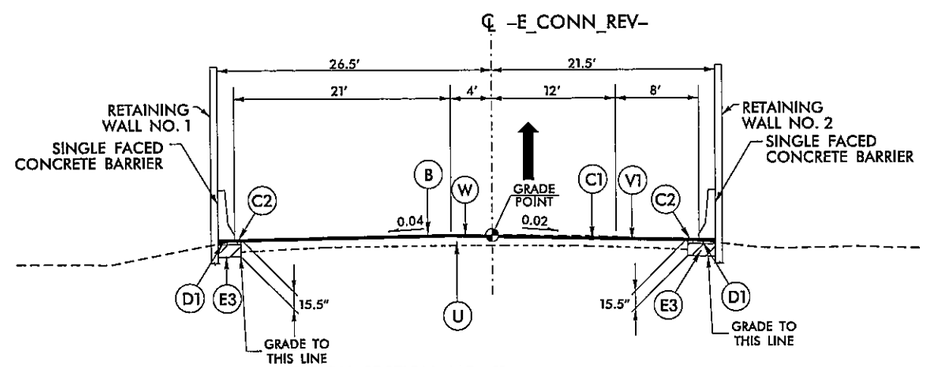


TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
-E_CONN_REV- STA. 10+42.46 TO -E_CONN_REV- STA. 24+31.20
-CONN_B_REV- STA. 10+00.00 TO -CONN_B_REV- STA. 14+03.82

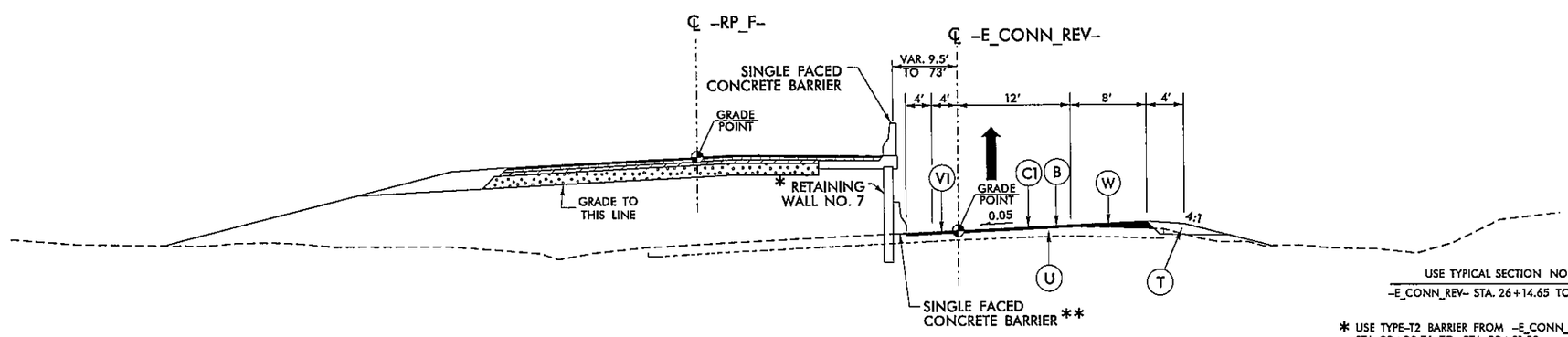


DETAIL SHOWING 2'-6" CURB & GUTTER
FROM STA. 10+42.46 TO STA. 10+84.19 -E_CONN_REV- LT



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
-E_CONN_REV- STA. 24+31.20 TO -E_CONN_REV- STA. 26+14.65



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
-E_CONN_REV- STA. 26+14.65 TO -E_CONN_REV- STA. 31+23.70

* USE TYPE-T2 BARRIER FROM -E_CONN_REV- STA. 29+20.76 TO STA. 29+91.80
USE TYPE-T1 BARRIER FROM -E_CONN_REV- STA. 29+91.80 TO STA. 31+23.70

** FROM -E_CONN_REV- STA. 28+63.48 TO STA. 29+20.76

NOTE: SEE PLANS FOR GUARDRAIL LOCATIONS

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PAVEMENT SCHEDULE	
B	OGFC TYPE FC-1 MOD
C2	3" A.C.S.C. TYPE S9.5C
C4	1.5" A.C.S.C. TYPE S9.5B
D1	3" A.C.I.C. TYPE I 19.0C
D3	3" A.C.I.C. TYPE I 19.0B
E1	4" A.C.B.C. TYPE B25.0C
E3	9.5" A.C.B.C. TYPE B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	2.25" MILLING
V2	3" MILLING

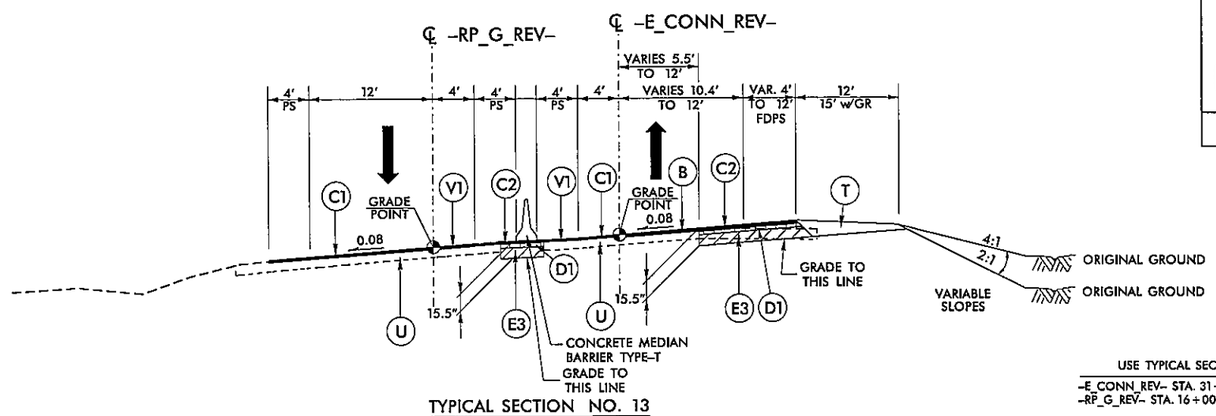
PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
I-4729A	2A-5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER
DOCUSIGNED BY: JOHN W. PAYNE
8/16/2017

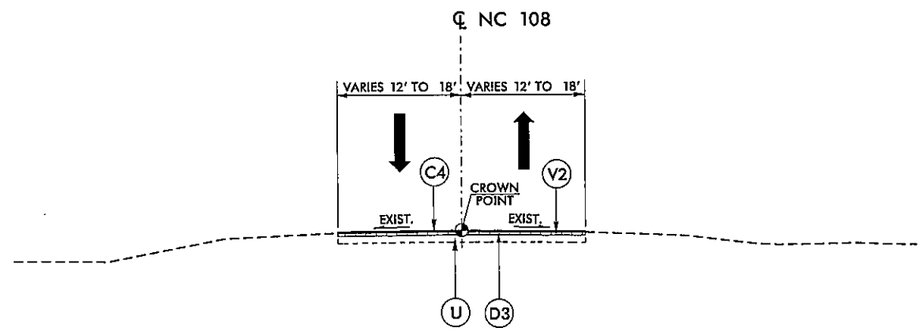
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030022 ENGINEER
DOCUSIGNED BY: [illegible]
8/16/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



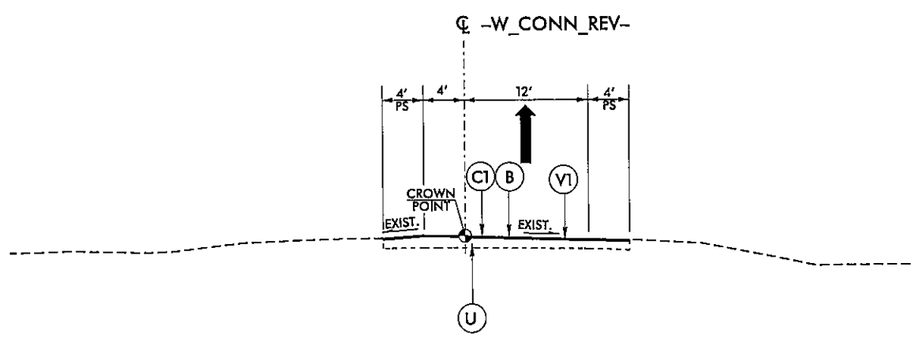
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
-E_CONN_REV- STA. 31+23.70 TO -E_CONN_REV- STA. 42+00.00
-RP_G_REV- STA. 16+00.00 TO -RP_G_REV- STA. 24+66.95



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
NC 108 FROM OGLE ST. TO US 74 WB RAMP
(SEE RESURFACING OVERVIEW MAP ON SHEET 2B-4)



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15
-W_CONN_REV- STA. 16+25.00 TO -W_CONN_REV- STA. 26+75.00

NOTE: SEE PLANS FOR GUARDRAIL LOCATIONS

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COMPUTED BY: JMP DATE: 8-2017
CHECKED BY: DLW DATE: 8-2017

PLANS PREPARED BY: PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
I-4729A	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK.	BORROW	WASTE
CHAN CONST 10+00.00	CHAN CONST 17+10.00	4,766		139		4,627
-W_CONN_REV- 26+75.00	-W_CONN_REV- 40+85.47	262,570	650	63		263,157
-RP_WC- 18+41.74	-RP_WC- 20+50.00	673		394		279
-RP_E- 15+00.00	-RP_E- 22+45 (BEGIN BRIDGE)	11		83,132	83,121	
-RP_E- 23+32 (END BRIDGE)	-RP_E- 33+59.80	197		21,913	21,716	
-RP_F- 10+00.00	-RP_F- 20+52 (BEGIN BRIDGE)	307		121,446	121,139	
-RP_F- 22+47 (END BRIDGE)	-RP_F- 32+50.00	44,881		2,108		42,773
SUBTOTAL PHASE 1		313,405	650	229,195	225,976	310,836
-CONN_B_REV- 21+50.00	-CONN_B_REV- 31+32.55	96		174	78	
-E_CONN_REV- 22+50.00	-E_CONN_REV- 42+00.00	332		3,770	3,438	
-EL- 28+50.00	-EL- 56+00.00	3,844		15,988	12,144	
SUBTOTAL PHASE 2		4,272		19,932	15,660	
PROJECT TOTALS:		317,677	650	249,127	241,636	310,836
LOSS DUE TO CLEARING & GRUBBING (PER GEOTECH REPORT)		-200				-200
ADDITIONAL UNDERCUT			1,450	1,668	1,668	1,450
ROCK WASTE TO REPLACE BORROW					-892	-892
ADJUST FOR ROCK WASTE				-134	-134	
WASTE IN LIEU OF BORROW					-242,278	-242,278
PROJECT TOTAL		317,477	2,100	250,661		68,916
GRAND TOTALS:		317,477	2,100	250,661		68,916
SAY:		318,000				

UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE IN THE TOP 3' OF EMBANKMENT OR BACKFILL
-W_CONN_REV- 28+75 TO 31+25 (21,500 CY) PER GEOTECH
-W_CONN_REV- 32+75 TO 36+25 (53,500 CY) PER GEOTECH

EST. DDE = 1,560 CY

EST. SHOULDER BORROW = 6,880 CY

CLASS IV SUBGRADE STABILIZATION PER GEOTECH RECS: 1,200 TONS

GEOTEXTILE FOR SOIL STABILIZATION: 4,450 SY

SELECT GRANULAR MATERIAL, CLASS III PER GEOTECH RECS: 850 CY

SHALLOW UNDERCUT PER GEOTECH RECS: 500 CY

WOVEN WIRE FENCE, 47" FABRIC

SURVEY LINE	STATION	STATION	LOCATION LT/RT	FABRIC LF	END BRACE	CORNER BRACE	LINE BRACE	4" POSTS	5" POSTS
-W_CONN_REV-	26+04	40+12	RT	1,761.00	2	5	6	106	37
			TOTAL:	1,761.00				106	37
			SAY:	1,770				106	37

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-W_CONN_REV-	28+50	40+85	LT	3221.57
-W_CONN_REV-	36+91	40+00	RT	661.33
-E_CONN_REV-	10+50	23+04	LT	2398.29
-E_CONN_REV-	25+89	29+21	LT	716.36
-E_CONN_REV-	39+36	40+43	LT	99.91
-E_CONN_REV-	25+09	26+10	RT	1051.16
-RP_A-	34+00	40+09	RT	863.23
-EL-	26+15	62+00	LT	4055.81
-EL-	33+07	53+87	RT MED	465.56
-EL-	40+80	51+41	RT	1066.67
			TOTAL:	14,599.89
			SAY:	14,600

CONCRETE BARRIER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	BARRIER TYPE	LF
-E_CONN_REV-	29+20.76	29+91.80	LT	T2	71
-E_CONN_REV-	29+91.80	31+23.70	LT	T1	132
-E_CONN_REV-	31+23.70	40+15.00	LT	T	882

"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

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE TL-3		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMOVE & RESET EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TES	XI	GREU, TL-3	M-350	XIII	CAT-1	VI MOD	B-77	III	G	NG					
-EL-	38+44.73	39+74.06	LT MED	131.25				39+74.06	4	6										1		1					131			
-EL-	39+74.06	40+34.70	LT MED						4	6																61				
-EL-	40+34.70	44+06.16	LT MED	93.75		256.25			4	6												1					386		50	TIE TO EXIST. DOUBLE FACE GUARDRAIL
-EL-	40+79.77	45+66.84	RT	500					14	17																	495		50	TIE TO EXIST. GUARDRAIL
-EL-	51+44.19	55+24.25	RT	206.25			53+48.25		14	17	50		1				1					1				178	1057			
-EL-	51+98.58	56+10.31	RT MED	331.25					4	6												2				80	416		50	TIE TO EXIST. DOUBLE FACE GUARDRAIL
-EL-	51+94.92	56+11.55	LT MED	337.5					4	6												2				80			50	TIE TO EXIST. DOUBLE FACE GUARDRAIL
-EL-	52+17.81	54+65.21	LT				54+43.97		14	17															1	225				
-RP_E-	10+00.00	22+26.00	RT	1200.00			22+27.16		14	17												1								
-RP_E-	15+28.87	22+51.42	LT	731.25			22+51.42		12	15	50		1				1					1								
-RP_E-	23+05.90	26+03.22	RT	287.50				25+00.00	14	17										1		1								
-RP_E-	23+26.80	26+41.16	LT	325.00				25+50.00	12	15										1		1								
-RP_F-	10+49.22	12+59.32	RT	206.25			11+37.99		10	13	50		1				1			1										
-RP_F-	13+78.36	20+36.97	RT	643.75					14	17	50		1				1					1								
-RP_F-	15+00.00	20+61.53	LT	562.50					12	15												2								
-RP_F-	22+65.52	23+87.87	LT	125				22+87.00	12	15										1		1								
-RP_F-	26+40.04	32+71.00	RT	43.75			27+00.00		12	15												1			1	572				
-RP_F-	33+68.19	34+19.25	RT	50.00					14	17	50		1				1										49		50	TIE TO EXIST. GUARDRAIL
-RP_WC-	13+52.84	20+50.00	LT	700					12	15																			50	TIE TO EXIST. GUARDRAIL
-RP_WC-	18+41.77	20+50.00	RT						12	15																197				
-W_CONN_REV-	26+75.00	30+02.33	LT	331.25				29+00.00	12	15										1							1614		50	TIE TO EXIST. GUARDRAIL
-W_CONN_REV-	38+78.85	40+85.47	RT				39+00.00		12	15															1	179				
-E_CONN_REV-	23+31.20	25+89.20	LT	100			24+31.20		21	24	50		1				1					1				158				
-E_CONN_REV-	23+73.65	26+14.65	RT	100			24+73.65		8	11	50		1				1					1				141				
-E_CONN_REV-	26+68.52	29+20.75	LT	193.75			27+76.90		4	7	50		1				1					1				57				
-E_CONN_REV-	36+01.60	42+00.00	RT	612.50			38+00.00		14	17	50		1				1										628		50	TIE TO EXIST. GUARDRAIL
-CONN_B_REV-	22+00.00	26+51.34	RT	443.75					14	17																	443		100	TIE TO EXIST. GUARDRAIL
-W_CONN_REV-	39+81.47		RT	18.75											2															
TOTAL				8275.00		256.25																								
	LESS ANCHOR DEDUCTIONS																													
	GREU, TL-3	9 @ 50.00'	=	450																										
	CAT-1	6 @ 6.25'	=	37.5																										
	B-77	19 @ 18.75'	=	356.25																										
		TOTAL DEDUCTIONS		843.75																										
TOTAL				7431.25		256.25									2		9			6		19			3	1928	5219		500	
			SAY	7437.5		262.5		Additional Guardrail Posts: 20 EA							2		9			6		19			3	1930	5220		500	
TEMPORARY GUARDRAIL																														
-EL-	41+50.00	46+00.00	MED	450																										
			SAY	450																										

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COMPUTED BY: BNE DATE: 8/9/2017

CHECKED BY: JGD DATE: 7/7/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4729A	3D-1

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
EL 32+26	0	CL	0401		1021.7													
RP_B 4+25	44	LT	0402															
RP_B 5+00	28	RT	0403															
EL 32+25	30	LT	0404															
RP_C 7+15	0	CL	0405															
RP_E 25+00	60	LT	0501		1029.0													
			0501	0502		1029.0	1026.0											
RP_E 25+10	70	RT	0502		1030.0													
W_CONN_REV 25+6	64	RT	0503															
W_CONN_REV 26+8	33	RT	0504															
E_CONN_REV 26+22	48	LT	0505		1031.5													
			0505	0609		1029.3	1028.7											
RP_F 14+40	33	RT	0506		1049.8													
			0506	0507		1047.1	1027.2	0.3	56					X				
RP_F 19+00	15	LT	0508		1078.7													
			0508	0509		1075.9	1073.2											
RP_F 18+25	15	LT	0509		1075.9													
			0509	0510		1073.2	1050.0		56					X				
RP_F 23+70	15	LT	0511		1075.0													
			0511	0512		1072.3	1070.4		36									
W_CONN_REV 28+0	111	RT	0513															
			0513	0514		1124.5	1085.5	0.7		58				X				
W_CONN_REV 28+0	44	RT	0514		1087.6													
			0514	0515		1085.5	1085.4	0.3		16								
W_CONN_REV 27+97	27	RT	0515		1090.5													
W_CONN_REV 32+0	171	RT	0516															
			0516	0517		1146.5	1070.6	0.4		128				X				
W_CONN_REV 32+0	44	RT	0517		1073.6													
			0517	0518		1070.1	1069.8											
W_CONN_REV 32+0	26	LT	0518		1075.6													
			0518	0519		1069.8	1051.3				212							
EL 55+00	70	LT	0519		1056.0													
			0519	0520		1051.3	1050.9											
EL 55+00	0	CL	0520		1057.0													
			0520	0522		1050.9	1050.6											
EL 56+00	65	RT	0521		1060.0													
			0521	0522		1057.3	1051.3											
EL 55+00	63	RT	0522		1059.0													
			0522	0523		1050.6	1049.3	0.4										
EL 53+50	65	RT	0523		1054.0													
			0523	0524		1049.3	1027.5	1.7			64			X				
W_CONN_REV 38+5	133	RT	0525															
			0525	0527		1105.0	1051.9	0.4			88			X				
W_CONN_REV 39+02	23	RT	0526		1060.7													
			0526	0527		1057.9	1052.7		52									
W_CONN_REV 38+5	45	RT	0527		1056.7													
			0527	0528		1051.9	1051.0											
W_CONN_REV 38+5	44	RT	0528		1059.8													
			0528	0530		1051.0	1050.7	0.3										
W_CONN_REV 35+0	21	LT	0529		1065.3													
SHEET TOTALS									200	212	364							

FROM	TO	R.C. PIPE CLASS III 15	18	24	30	36	42	R.C. PIPE CLASS IV 12	15	18	24	30	36	42	24" WELDED STEEL PIPE 0.25" THICK, GRADE B	36" WELDED STEEL PIPE 0.375" THICK, GRADE B	15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	36" CURED-IN-PLACE PIPE
0401																				102	
0402																		19			
0403																				171	
0404																				60	
0405																					146
0501	0502									132											
0502																		130			
0503																		61			
0504																		225			
0505	0609		208																		
0508	0509	72																			
0515																			121		
0517	0518										68										
0519	0520														68						
0520	0522														64						
0521	0522	100																			
0522	0523			152																	
0527	0528			204																	
0528	0530			60																	
SHEET TOTALS		172	208	416						132	68				132			435	121	333	146

FROM	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. FRAME AND COVER STD. 840.54
0502		1									1															
0505		1															1				1					
0506		1														1			1							
0508		1														1			1							
0509		1														1			1							
0511		1														1			1							
0514		1															1				1					
0515		1	0.1																			1				1
0517		1														1					1					
0518		1	0.8												1						1					
0519		1													1						1					
0520		1	1.1													1					1					
0521		1														1					1					
0522		1	3.4																			1				1
0523		1													1				1							
0526		1														1			1							
0527		1													1					1	1					
0528		1	3.8												1						1					
0529		1														1					1					
SHEET TOTALS		19	9.2								1				5	9	2		6	1	10	2				2

FROM	TO	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0401						1											
0506	0507						2										
0509	0510						2										
0513											1						
0513	0514							1									Remove Extg. 24" CMP
0516											1						
0516	0517							1									
0518	0519								2								
0523	0524								2								
0525												1					
0525	0527								1								
SHEET TOTALS						1	4	2	5		2	1					

ABBREVIATIONS
- C.A.A. CORRUGATED ALUMINIUM ALLOY
- C.B. CATCH BASIN
- C.S. CORRUGATED STEEL
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- H.D.P.E. HIGH DENSITY POLYETHYLENE
- J.B. JUNCTION BOX
- M.H. MANHOLE
- N.S. NARROW SLOT
- P.V.C. POLYVINYL CHLORIDE
- R.C. REINFORCED CONCRETE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX
- W.S. WIDE SLOT

OK
NO
CHANGE

EXVKM72

COMPUTED BY: BNE DATE: 8/9/2017

CHECKED BY: JGD DATE: 7/7/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4729A	3D-2

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	R. C. PIPE CLASS III 15	18	24	30	36	42	R. C. PIPE CLASS IV 12	15	18	24	30	36	42
			0529	0530		1062.6	1058.0		144																						
W_CONN_REV 36+6	15	LT	0530		1060.8																										
			0530	0531		1050.7	1050.0	0.4													136										
RP_F 26+35	34	LT	0531		1055.7																										
			0531	0533		1050.0	1036.8	0.7			128																				
EL 52+20	54	LT	0532		1047.6																										
			0532	0533		1044.9	1037.0		244																						
EL 49+71	61	LT	0533		1039.8																										
			0534	0535		1019.5	1018.0	1.1													52										
			0535																												
RP_E 14+16	24	RT	0534		1024.0																										
RP_F 32+69	27	RT	0537		1035.7																										
			0537	0538		1032.5	1027.8	0.5	4																						
RP_F 32+69	23	RT	0538		1030.5																										
			0538	0544		1027.8	1022.4		200																						
RP_WC 20+30	35	RT	0539		1059.5																										
			0539	0541		1056.8	1055.0																			16					
RP_WC 20+47	39	RT	0540		1061.0																										
			0540	0541		1056.0	1055.0																			4					
RP_WC 20+47	35	RT	0541		1059.4																										
			0541	0542		1055.0	1052.3		88																						
RP_WC 21+38	41	RT	0542		1056.3																										
			0542	0543		1050.5	1050.2	0.3																						60	
RP_WC 21+38	20	LT	0543		1057.7																										
			0543	0544		1050.2	1020.6	1.5					128																		
RP_F 34+80	46	RT	0544		1025.1																										
			0544	0545		1020.6	1019.9	0.5																							
EL 41+52	6	RT	0545		1030.2																										
			0545	0546		1019.9	1019.0	0.5																							
EL 37+00	7	RT	0547		1025.9																										
			0547	0548		1023.2	1023.0		24																						
EL 37+25	0	CL	0548		1027.8																										
RP_E 17+00	0	CL	0549			1026.5	1020.0																						152		
RP_F 31+50	30	LT	0550		1031.2																										
			0550	0551		1029.3	1029.0												108												
EL 45+74	62	LT	0551		1032.2																										
EL 45+50	6	RT	0552		1033.4																										
			0552	0553		1030.7	1030.5		24																						
EL 45+76	0	CL	0553		1034.5																										
RP_E 10+05	46	RT	0554		1015.4																										
			0554	0555		1015.4	1013.0	0.5			20																				
RP_E 13+05	25	RT	0556		1040.9																										
			0556	0558		1038.1	1037.7																			92					
RP_E 14+40	25	RT	0557		1042.4																										
			0557	0558		1039.6	1037.7																			36					
RP_E 14+00	25	RT	0558		1041.9																										
			0558	0559		1037.7	1018.0	1.2	56					X																	
EL 49+75	43	RT	0560																												
EL 59+75	25	LT	0561																												
EL 59+75	25	RT	0562																												
SHEET TOTALS									784		148		128						108		188						148			152	60

LINE & STATION	FROM	TO	24" WELDED STEEL PIPE 0.25" THICK, GRADE B	36" WELDED STEEL PIPE 0.375" THICK, GRADE B	15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	36" CURED-IN-PLACE PIPE	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	TEMP STEEL PLATE COVER MASONRY DRAINAGE
	0529	0530																																
W_CONN_REV 36+6	0530										1	5.0	0.1												1					1				
	0530	0531																																
RP_F 26+35	0531										1	0.7													1					1				
	0531	0533																																
EL 52+20	0532										1														1			1						
	0532	0533																																
EL 49+71	0533						60				1														1					1				
	0534	0535																																
	0535																																	
RP_E 14+16	0534										1																				1			
RP_F 32+69	0537										1											1	1											
	0537	0538																																
RP_F 32+69	0538										1														1			1						
	0538	0544																																
RP_WC 20+30	0539										1														1			1						
	0539	0541																																
RP_WC 20+47	0540										1											1	1											
	0540	0541																																
RP_WC 20+47	0541										1														1			1						
	0541	0542																																
RP_WC 21+38	0542										1	0.8												1						1				
	0542	0543																																
RP_WC 21+38	0543										1	2.5													1					1				
	0543	0544																																
RP_F 34+80	0544										1														1					1				
	0544	0545		86																														
EL 41+52	0545										1	5.0	0.3												1			1						
	0545	0546		104																														
EL 37+00	0547										1														1					1				
	0547	0548																																
EL 37+25	0548						130																											
RP_E 17+00	0549																																	
RP_F 31+50	0550										1															1				1				
	0550	0551																																
EL 45+74	0551						60				1															1				1				
EL 45+50	0552										1														1					1				
	0552	0553																																
EL 45+76	0553						88																											
RP_E 10+05	0554																																	
	0554	0555																																
RP_E 13+05	0556										1														1			1						
	0556	0558																																
RP_E 14+40	0557										1														1			1						
	0557	0558																																
RP_E 14+00	0558										1														1			1						
	0558	0559																																
EL 49+75	0560						83																											
EL 59+75	0561						60																											
EL 59+75	0562						78																											
SHEET TOTALS				192			559				21	14.0	0.4									2	2	1	15	2		8		10	1			

LINE & STATION	FROM	TO	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
	0531	0533																	Remove Exig. 24" CMP
	0542	0543																	Remove Exig. 24" CMP
	0543	0544										2							Remove Exig. 24" CMP
EL 45+76	0553		1		1														
RP_E 10+05	0554															0.5526			
	0558	0559							2										
SHEET TOTALS			1		1				2			2				0.5526			

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: BNE DATE: 8/9/2017

CHECKED BY: JGD DATE: 7/7/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-4729A	3D-3

Note: Invert Elevations Indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
RP_B 10+34	0	CL	0563															
EL 37+25	32	LT	0564															
RP_C 12+00	0	CL	0565															
E_CONN_REV 37+07	2	LT	0601		1059.1													
			0601	0602		1051.2	1051.0											
E_CONN_REV 37+06	9	LT	0602		1051.0													
E_CONN_REV 32+80	9	LT	0603		1043.4													
RP_F 10+39	26	RT	0604		1035.0													
			0604	0605		1030.3	1029.6	0.6										
RP_F 10+60	20	RT	0605		1036.6													
			0605	0606		1029.6	1029.5											
RP_F 11+02	20	RT	0606		1036.3													
			0606	0608		1029.5	1029.4											
E_CONN_REV 29+99	30	RT	0607		1036.5													
RP_F 11+20	16	RT	0608		1036.7													
			0608	0611		1029.4	1028.4											
E_CONN_REV 28+28	6	LT	0609		1035.8													
			0609	0610		1028.7	1028.5											
E_CONN_REV 29+00	6	LT	0610		1036.1													
			0610	0611		1028.5	1028.4											
RP_F 12+25	20	RT	0611		1038.4													
			0611	0612		1028.4	1028.0						68					
RP_G REV 19+20	95	RT	0613															
RP_G REV 19+00	224	RT	0614															
E_CONN_REV 32+00	0	CL	0615															
RP_F 10+15	56	RT	0616															
RP_D 28+32	0	CL	0617															
E_CONN_REV 30+00	60	RT	0618															
E_CONN_REV 28+50	58	RT	0619															
E_CONN_REV 28+28	0	CL	0620															
RP_E 25+75	25	RT	0701		1044.1													
			0701	0702		1041.4	1041.1											
RP_E 25+95	25	RT	0702		1043.8													
			0702	0703		1041.1	1032.8	0.3	44					X				
RP_E 27+28	12	LT	0704		1032.9													
RP_D 38+50	0	CL	0705															
CONN_B_REV 28+27			0706															
EL 41+26	30	LT																
EL 41+60	43	RT																
EL 53+55	30	LT																
EL 53+55	45	RT																
RP_F 14+58	34	RT																
RP_E 23+90	73	RT																
RP_E 24+79	44	RT																
RP_F 10+80	21	RT																
RP_F 12+07	4	RT																
RP_F 13+21	4	LT																
W_CONN_REV 31+79	4	LT																
SHEET TOTALS									44				68					

LINE & STATION	FROM	TO	R. C. PIPE CLASS III 15	18	24	30	36	42	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	24" WELDED STEEL PIPE 0.25" THICK, GRADE B	36" WELDED STEEL PIPE 0.375" THICK, GRADE B	15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	36" CURED-IN-PLACE PIPE
RP_B 10+34	0563																			223		
EL 37+25	0564																			60		
RP_C 12+00	0565																				231	
	0601	0602	8																			
E_CONN_REV 37+06	0602																	17				
E_CONN_REV 32+80	0603																	41				
	0604	0605			20																	
	0605	0606				40																
	0606	0608				16																
E_CONN_REV 29+99	0607																		54			
	0608	0611				100																
	0609	0610		72																		
	0610	0611		32																		
RP_G REV 19+20	0613																	171				
RP_G REV 19+00	0614																		112			
E_CONN_REV 32+00	0615																		200			
RP_F 10+15	0616																		72			
RP_D 28+32	0617																	137				
E_CONN_REV 30+00	0618																	58				
E_CONN_REV 28+50	0619																	74				
E_CONN_REV 28+28	0620																	36				
	0701	0702								16												
RP_E 27+28	0704																		249			
RP_D 38+50	0705																		123			
CONN_B_REV 28+27	0706																		246			
SHEET TOTALS			8	104	20	156				16								534	1066	283	231	

LINE & STATION	FROM	TO	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. FRAME AND COVER STD. 840.54
E_CONN_REV 37+07	0601			1	2.9															1					1		
E_CONN_REV 32+80	0603			1																1					1		
RP_F 10+39	0604			1												1						1					
RP_F 10+60	0605			1	1.9											1				1							
RP_F 11+02	0606			1	1.8											1				1							
RP_F 11+20	0608			1	2.3																			1			1
E_CONN_REV 28+28	0609			1	2.1																			1			1
E_CONN_REV 29+00	0610			1	2.6															1					1		
RP_F 12+25	0611			1	5.0											1				1							
RP_E 25+75	0701			1													1			1							
RP_E 25+95	0702			1													1			1							
SHEET TOTALS				11	18.6											4	2			8		1		2	3		2

LINE & STATION	OFFSET	STRUCTURE NO.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
E_CONN_REV 37+06	9 LT	0602													0.3990			
RP_E 27+28	12 LT	0704		1														
EL 41+26	30 LT													7				
EL 41+60	43 RT													12				
EL 53+55	30 LT													7				
EL 53+55	45 RT													10				
RP_F 14+58	34 RT																203	
RP_E 23+90	73 RT																30	
RP_E 24+79	44 RT																73	
RP_F 10+80	21 RT																78	
RP_F 12+07	4 RT																173	
RP_F 13+21	4 LT																66	
W_CONN_REV 31+79	4 LT																74	
SHEET TOTALS				1										36	0.3990		697	

ABBREVIATIONS

- C.A.A. CORRUGATED ALUMINUM ALLOY
- C.B. CATCH BASIN
- C.S. CORRUGATED STEEL
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- H.D.P.E. HIGH DENSITY POLYETHYLENE
- J.B. JUNCTION BOX
- M.H. MANHOLE
- N.S. NARROW SLOT
- P.V.C. POLYVINYL CHLORIDE
- R.C. REINFORCED CONCRETE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX
- W.S. WIDE SLOT

6XVKM72

COMPUTED BY: BNE DATE: 8/9/2017

CHECKED BY: JGD DATE: 7/7/2017

PROJECT NO.	SHEET NO.
I-4729A	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
RP_F 22+55	57	RT																
RP_F 26+91	23	RT																
RP_F 30+21	2	RT																
RP_F 26+36	24	LT																
SHEET TOTALS																		
PROJECT TOTALS									1028	212	512		196					

LINE & STATION	R. C. PIPE CLASS III 15	18	24	30	36	42		R. C. PIPE CLASS IV 12	15	18	24	30	36	42	24" WELDED STEEL PIPE 0.25" THICK, GRADE B	36" WELDED STEEL PIPE 0.375" THICK, GRADE B	15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	36" CURED-IN-PLACE PIPE		DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
RP_F 22+55																															
RP_F 26+91																															
RP_F 30+21																															
RP_F 26+36																															
SHEET TOTALS																															
PROJECT TOTALS	288	312	624	156					164	132	68	152	60		132	192	534	1501	963	564	146			51	42.4						

LINE & STATION	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	TEMP STEEL PLATE COVER MASONRY DRAINAGE		M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.		15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW		BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)			FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
RP_F 22+55																																							120	
RP_F 26+91																																							222	
RP_F 30+21																																							151	
RP_F 26+36																																							20	
SHEET TOTALS																																							513	
PROJECT TOTALS			1		2	2	10	26	4		22	1	21	3	2	3			5			2			1		6	2	5	2		2	1			36	0.9516		1210	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: A. F. RIGGS, JR. DATE: AUGUST 2017
CHECKED BY: A. A. NASH DATE: AUGUST 2017

(2-16-16)

PROJECT NO.	SHEET NO.
I-4729A	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	2000
				TOTAL LF:	2000

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	12	500	1000	1500	0	0
			TOTAL CY/TONS/SY:		500	1000	1500**	0	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization
**Total square yards of "Geotextile for Soil Stabilization" is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-EL-	2:1	43+00	2:1	48+65	RT	2	*	4200
							TOTAL SY:	4200

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
BRIDGE ON -RP_E- OVER -E_CONN_REV- AT 22+87.20 -RP_E-	1 & 2	1
BRIDGE ON -RP_F- OVER -EL- AT 21+44.22 -RP_F-	1 & 2	1

*For Approach Slab Construction Only

Settlement Gauge Summary removed

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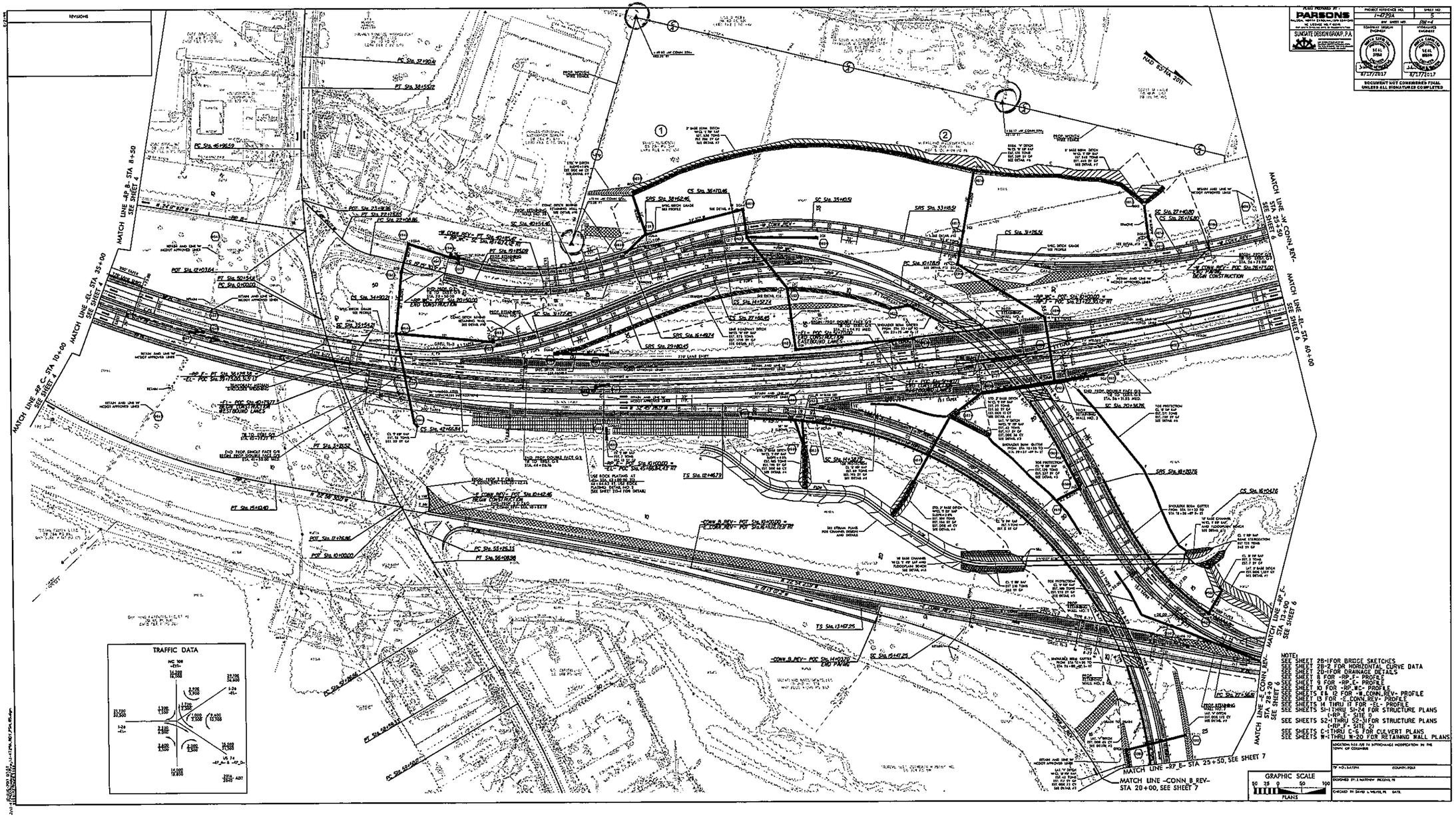

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4729A	X-1A	89

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS - SECTIONS

SECTIONS	SHEET NO's.
CROSS-SECTION TITLE SHEET	X-1A
CROSS-SECTION SUMMARY	X-1B
STA. 28+00.00 -EL- TO STA. 56+00.00 -EL-	X-1 THRU X-16
STA. 34+00.00 -RP_A- TO STA. 38+00.00 RP_A-	X-17 THRU X-18
STA. 15+00.00 -RP_E- TO STA. 33+59.80 RP_E-	X-19 THRU X-31
STA. 10+00.00 -RP_F- TO STA. 24+00.00 -RP_F-	X-32 THRU X-43
STA. 28+50.00 -RP_F- TO STA. 32+50.00 -RP_F-	X-44 THRU X-46
STA. 26+75.00 -W_CONN_REV- TO STA. 40+85.47 -W_CONN_REV-	X-47 THRU X-67
STA. 18+41.74 -RP_WC- TO STA. 20+50.00 -RP_WC-	X-68 THRU X-69
STA. 21+50.00 -CONN_B_REV- TO STA. 22+50.00 -CONN_B_REV-	X-70
STA. 28+00.00 -CONN_B_REV- TO STA. 31+32.55 -CONN_B_REV-	X-71 THRU X-73
STA. 10+50.00 -E_CONN_REV- TO STA. 27+00.00 -E_CONN_REV-	X-74 THRU X-80
STA. 31+23.70 -E_CONN_REV- TO STA. 42+00.00 -E_CONN_REV-	X-81 THRU X-87

TIP PROJECT: I-4729A

CONTRACT: C204039

14-AUG-2017 08:16
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-4729A	X-1B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

NOTE: EMBANKMENT DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station -RP_F-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00	0	0
10+50.00	100	1
11+00.00	90	4
11+50.00	55	24
12+00.00	20	65
12+50.00	12	173
13+00.00	13	395
13+50.00	7	770
14+00.00	5	1222
14+50.00	5	1666
15+00.00	0	2270
15+50.00	0	4210
16+00.00	0	6448
16+50.00	0	7573
17+00.00	0	8495
17+50.00	0	9417
18+00.00	0	10386
18+50.00	0	11188
19+00.00	0	11446
19+50.00	0	11164
20+00.00	0	10332
20+50.00	0	8094
20+52.08	0	262
Skip Station Range 20+52.09 To 22+46.75		
22+46.76	0	0
22+50.00	0	110
23+00.00	10	1381
23+50.00	84	549
24+00.00	496	6
28+50.00	23342	42
29+00.00	4213	0
29+50.00	3972	0
30+00.00	3655	0
30+50.00	3213	0
31+00.00	2610	0
31+50.00	1815	0
32+00.00	1038	8
32+50.00	433	12

Station -RP_E-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
15+00.00	0	0
15+50.00	0	2288
16+00.00	0	3408
16+50.00	0	3899
17+00.00	0	4094
17+50.00	0	4190
18+00.00	0	4473
18+50.00	0	5081
19+00.00	0	5801
19+50.00	0	6223
20+00.00	0	6334
20+50.00	0	6400
21+00.00	0	6245
21+50.00	0	5895
22+00.00	6	5234
22+45.00	5	2724
Skip Station Range 22+45.30 To 23+21.76		
23+22.00	0	0
23+50.00	1	1525
24+00.00	0	2920
24+50.00	0	2660
25+00.00	0	2278
25+50.00	0	1859
26+00.00	0	1527
26+50.00	0	1316
27+00.00	0	1203
27+50.00	0	1020
28+00.00	11	693
28+50.00	79	397
29+00.00	70	223
29+50.00	4	151
30+00.00	5	264
30+50.00	6	347
31+00.00	3	279
31+50.00	2	183
32+00.00	9	122
32+50.00	7	69
33+00.00	0	11
33+50.00	0	7
33+59.80	0	1

Station -CONN_B_REV-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
21+50.00	0	0
22+00.00	50	27
22+50.00	46	66
28+00.00	0	0
28+50.00	0	10
29+00.00	0	13
29+50.00	0	13
30+00.00	0	8
30+50.00	0	6
31+00.00	0	6
31+32.55	0	2

Station -RP_WC-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
18+41.74	0	0
18+50.00	33	2
19+00.00	170	31
19+50.00	165	103
20+00.00	163	120
20+50.00	142	87

Station -E_CONN_REV-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
22+50.00	0	0
23+00.00	8	0
23+50.00	9	4
24+00.00	9	6
24+50.00	10	3
25+00.00	10	319
25+50.00	9	549
26+00.00	7	345
26+50.00	6	116
27+00.00	3	4
31+23.70	0	0
31+50.00	5	2
32+00.00	11	6
32+50.00	11	7
33+00.00	15	6
33+50.00	19	4
34+00.00	19	3
34+50.00	19	3
35+00.00	21	2
35+50.00	17	10
36+00.00	11	22
36+50.00	22	19
37+00.00	24	13
37+50.00	13	53
38+00.00	11	136
38+50.00	12	218
39+00.00	13	246
39+50.00	12	319
40+00.00	6	335
40+50.00	0	221
41+00.00	0	192
41+50.00	0	109
42+00.00	0	6

Station -W_CONN_REV-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
26+75.00	0	0
27+00.00	704	2
27+50.00	2439	7
28+00.00	1926	6
28+50.00	2372	2
29+00.00	3589	0
29+50.00	4618	0
30+00.00	5737	0
30+50.00	6990	6
31+00.00	8241	14
31+50.00	9151	7
32+00.00	9710	0
32+50.00	11095	0
33+00.00	12768	0
33+50.00	14421	0
34+00.00	16187	0
34+50.00	17212	0
35+00.00	17677	0
35+50.00	17721	0
36+00.00	17545	0
36+50.00	16991	0
37+00.00	15906	0
37+50.00	14969	0
38+00.00	14265	0
38+50.00	10780	0
39+00.00	5145	0
39+50.00	2190	0
40+00.00	1350	2
40+50.00	655	3
40+85.47	216	6

Station -EL-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
28+50.00	0	0
29+00.00	13	0
29+50.00	13	1
30+00.00	12	4
30+50.00	13	6
31+00.00	14	6
31+50.00	13	8
32+00.00	13	14
32+50.00	13	19
33+00.00	16	19
33+50.00	18	18
34+00.00	16	19
34+50.00	15	19
35+00.00	14	19
35+50.00	14	19
36+00.00	15	20
36+50.00	15	20
37+00.00	15	19

Station -EL-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
37+50.00	14	22
38+00.00	13	25
38+50.00	13	25
39+00.00	13	24
39+50.00	13	23
40+00.00	54	22
40+50.00	94	24
41+00.00	106	22
41+50.00	119	32
42+00.00	122	81
42+50.00	259	171
43+00.00	763	303
43+50.00	755	420
44+00.00	209	440
44+50.00	44	370
45+00.00	45	323
45+50.00	45	381
46+00.00	44	456
46+50.00	44	456
47+00.00	40	515
47+50.00	35	577
48+00.00	41	589
48+50.00	44	638
49+00.00	38	978
49+50.00	28	1366
50+00.00	32	1581
50+50.00	44	2001
51+00.00	54	1139
51+50.00	44	6
52+00.00	23	18
52+50.00	32	56
53+00.00	58	237
53+50.00	69	206
54+00.00	67	41
54+50.00	74	42
55+00.00	65	30
55+50.00	32	22
56+00.00	13	11

8/17/99
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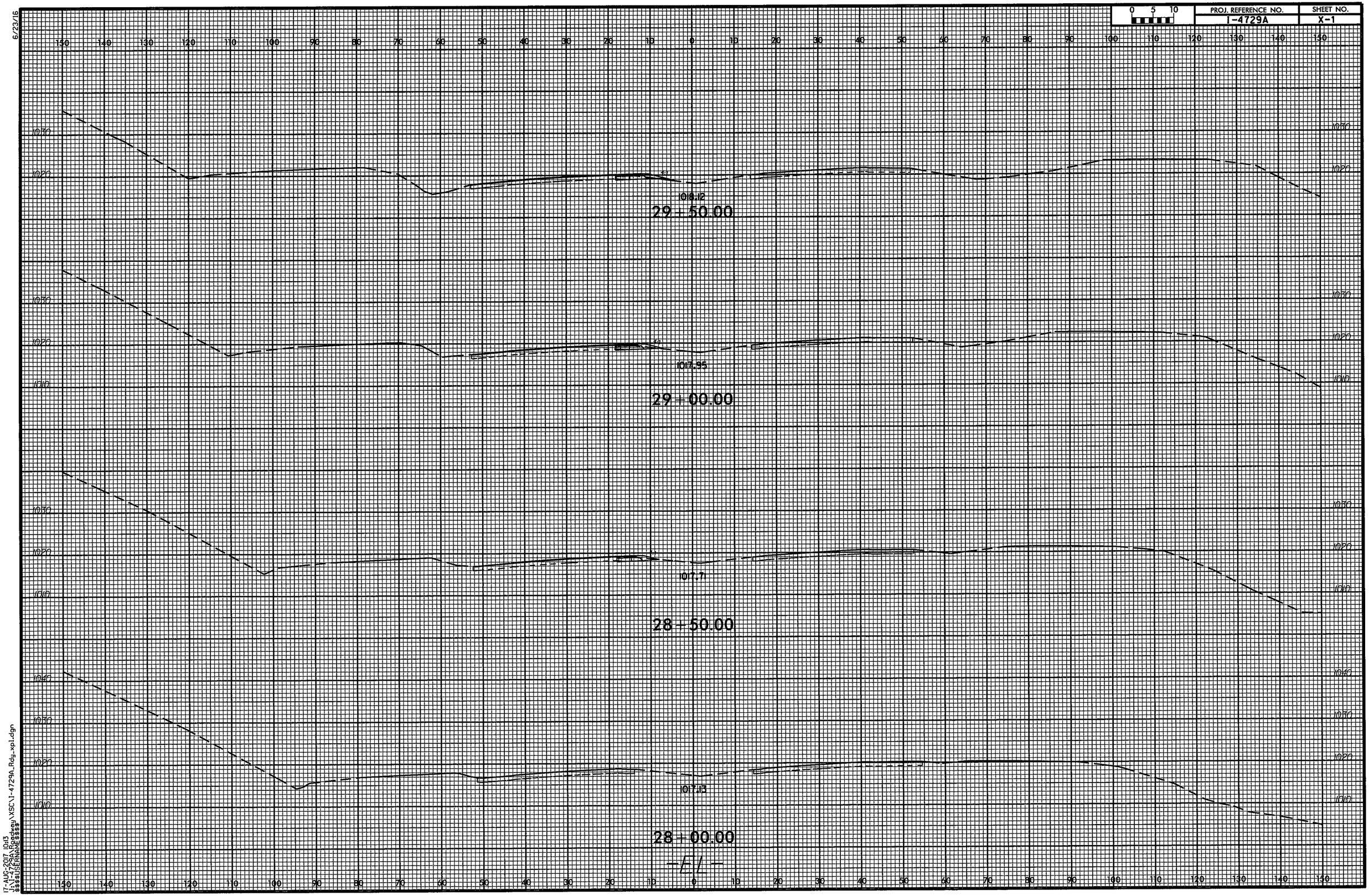

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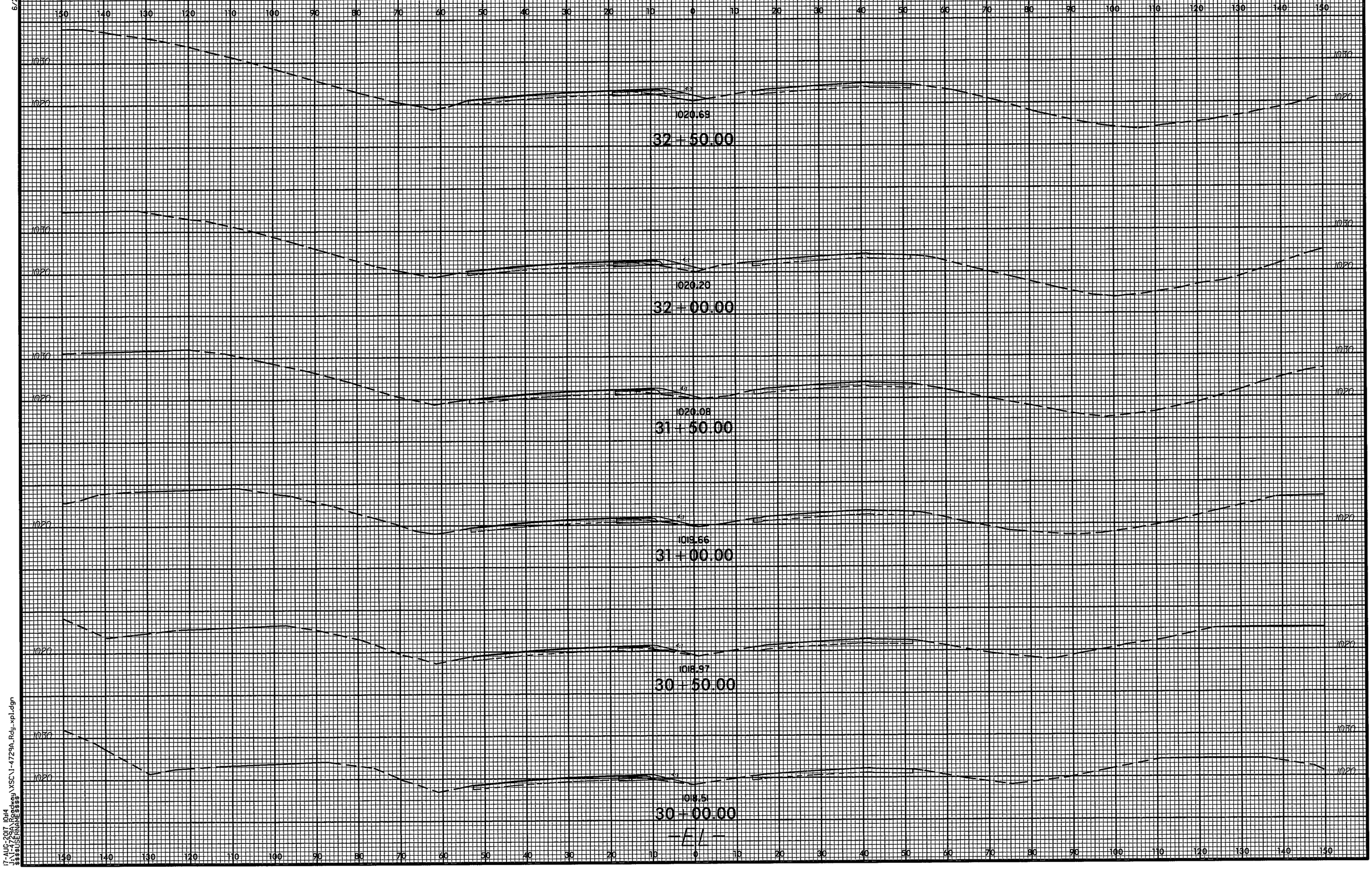

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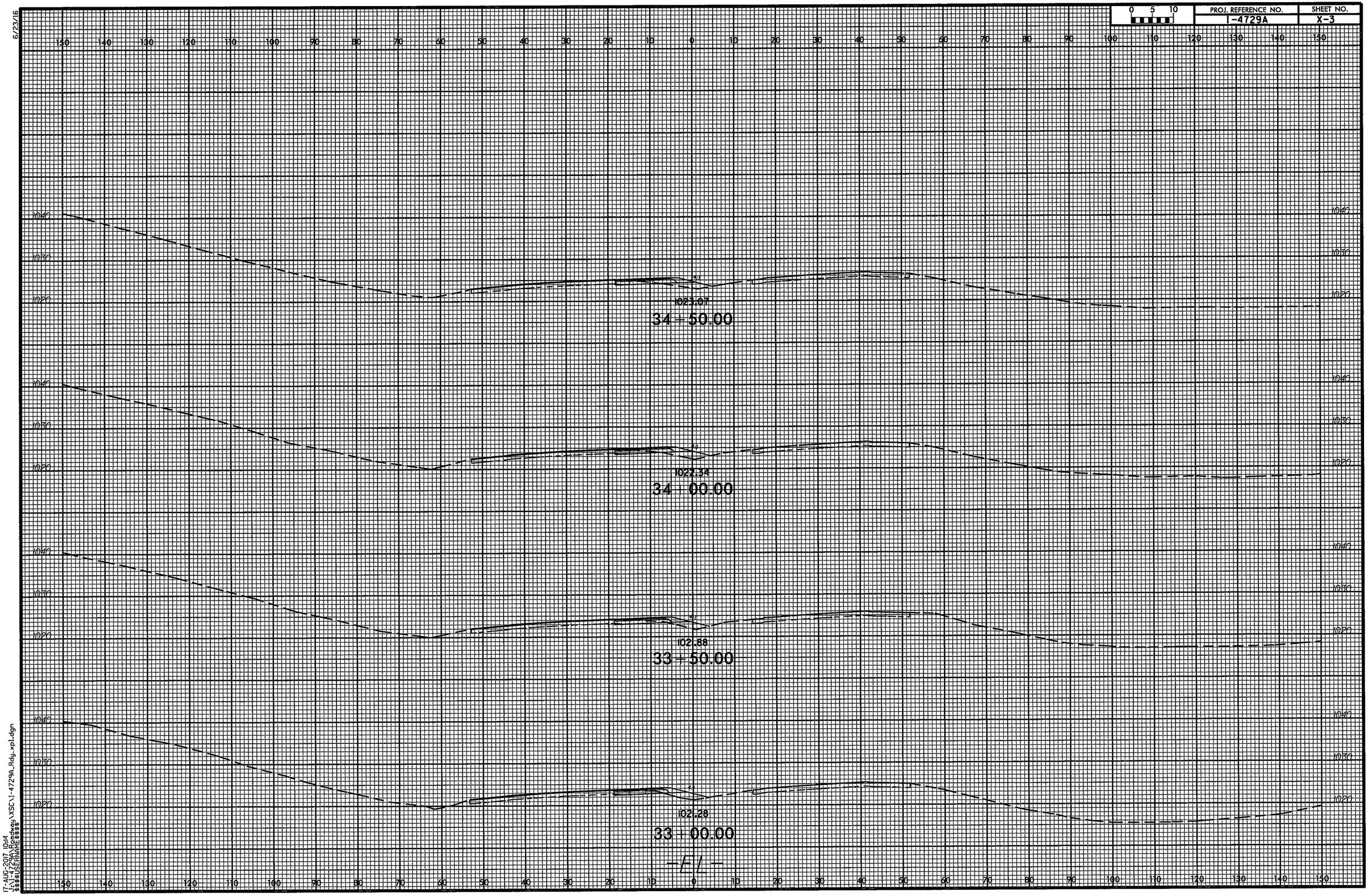

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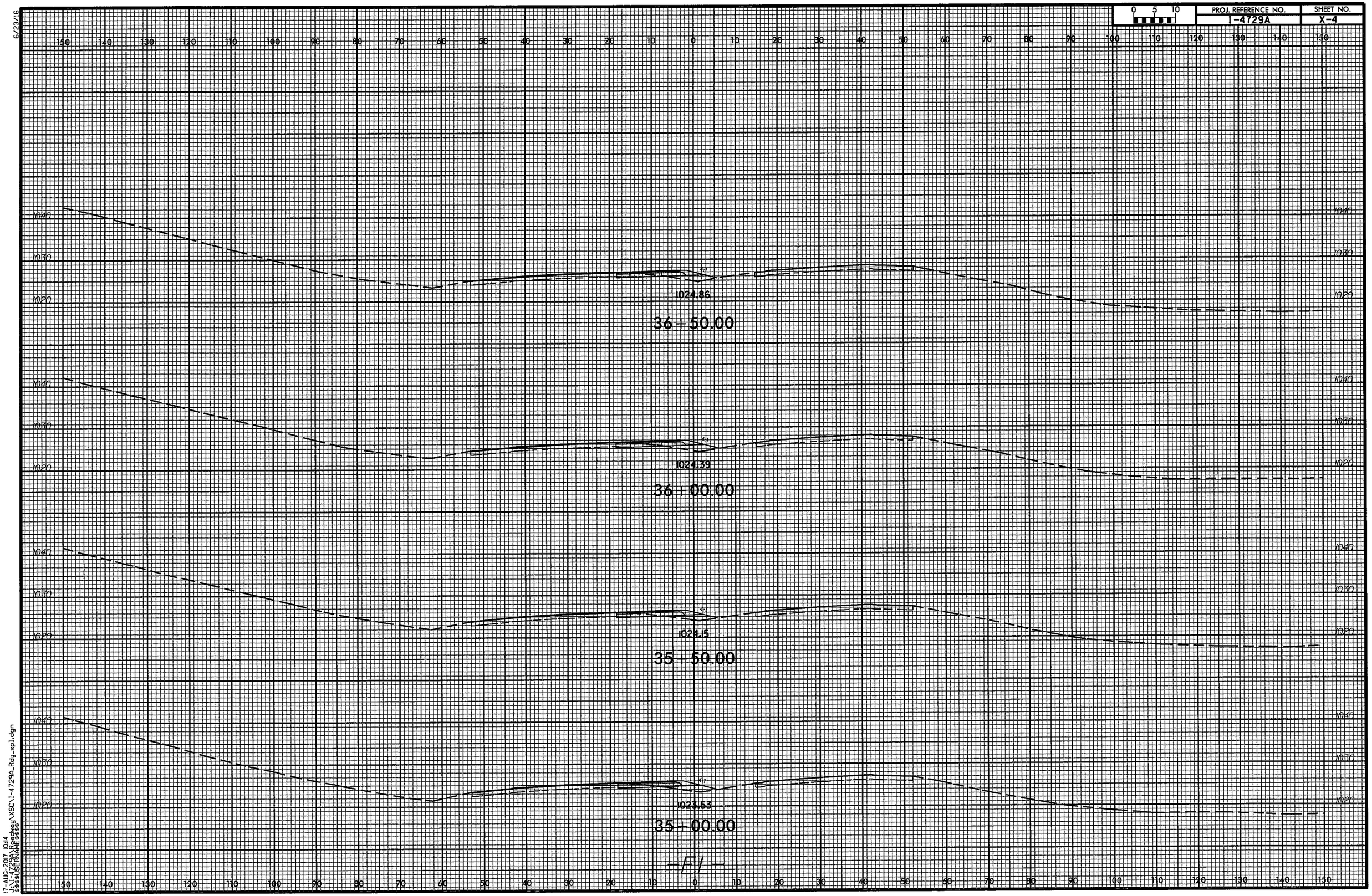

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SHEET NO.
X-4
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1024.39
36+00.00
1024.5
35+50.00
1023.53
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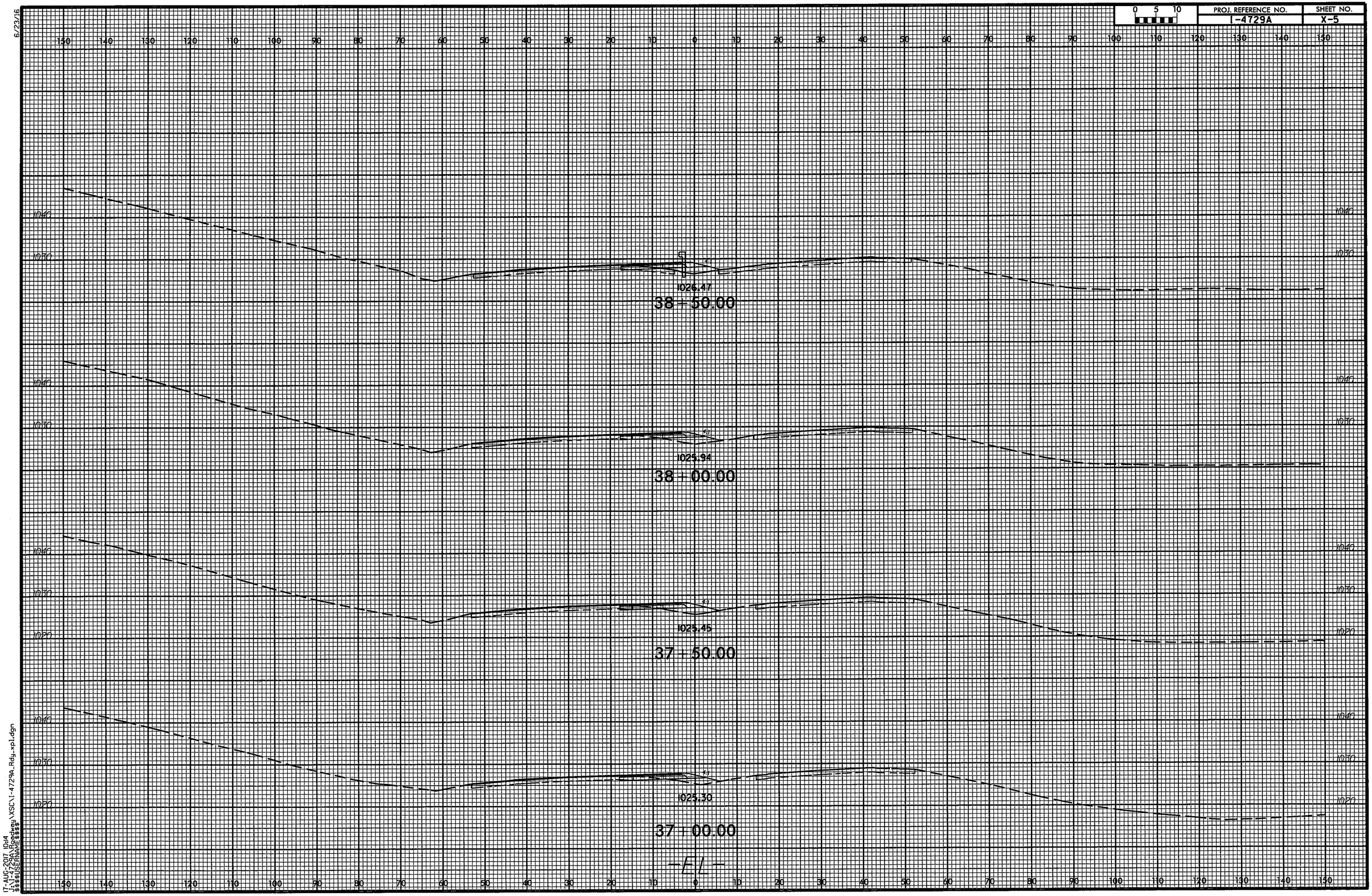

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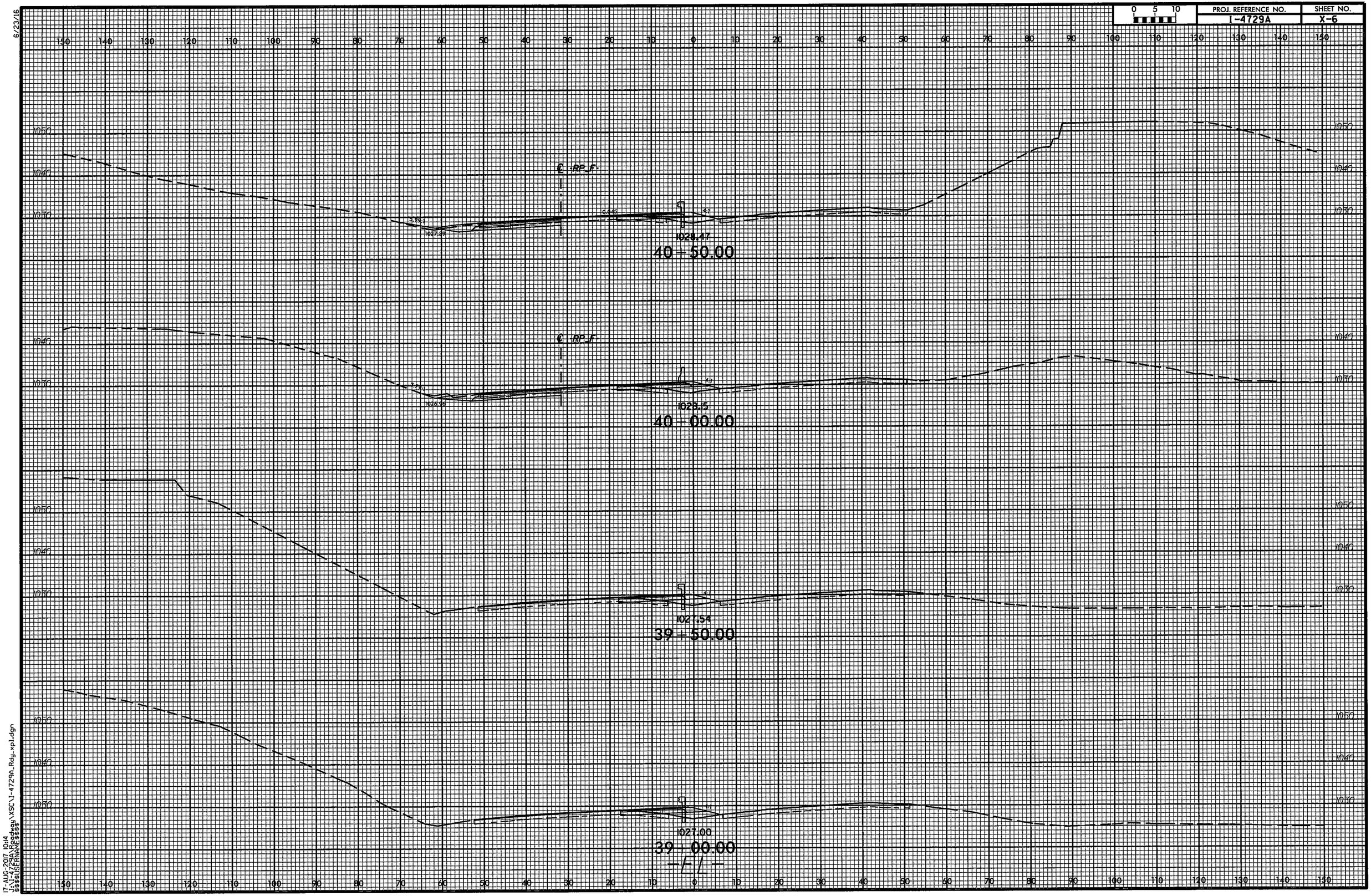

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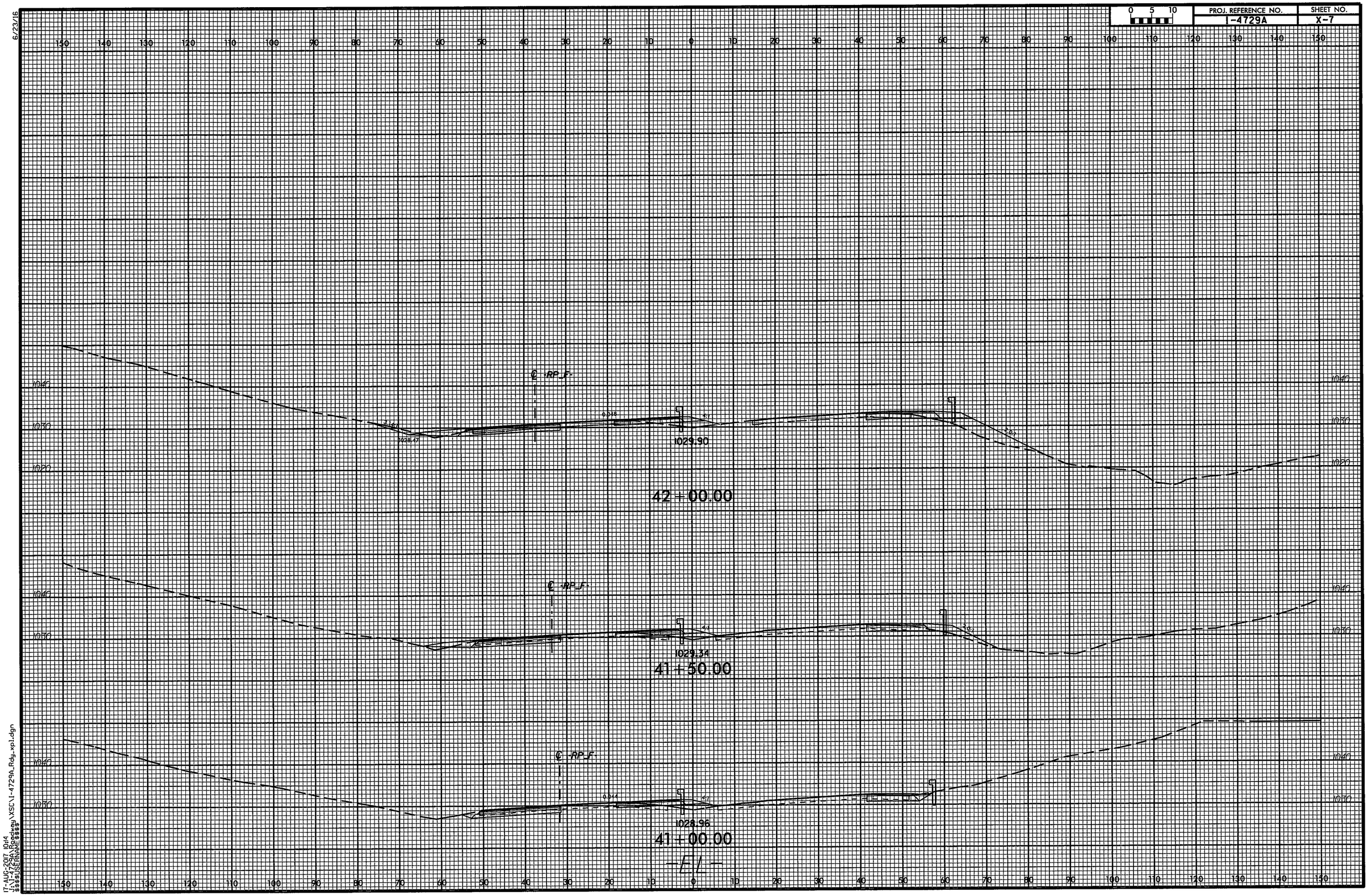

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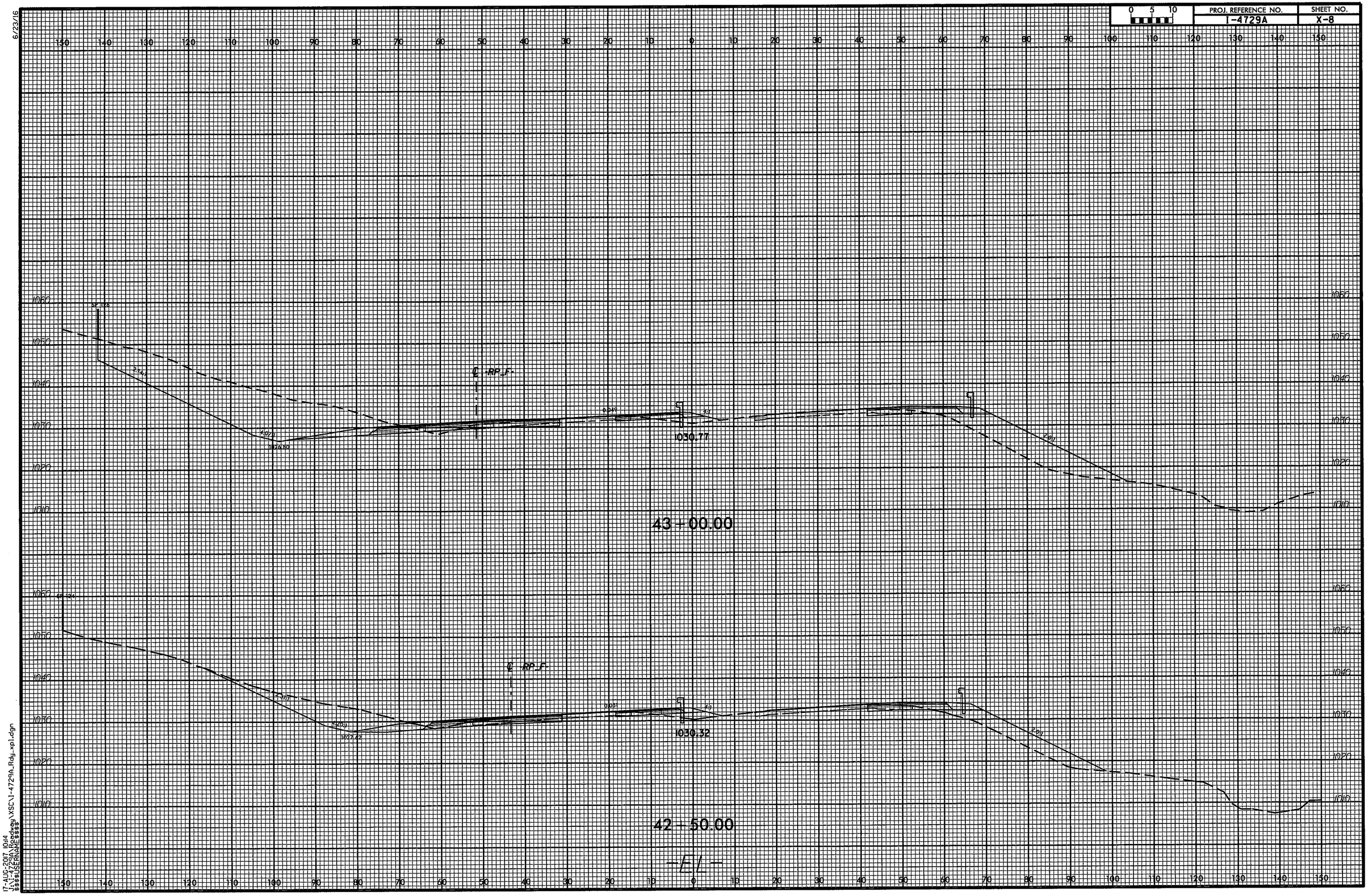

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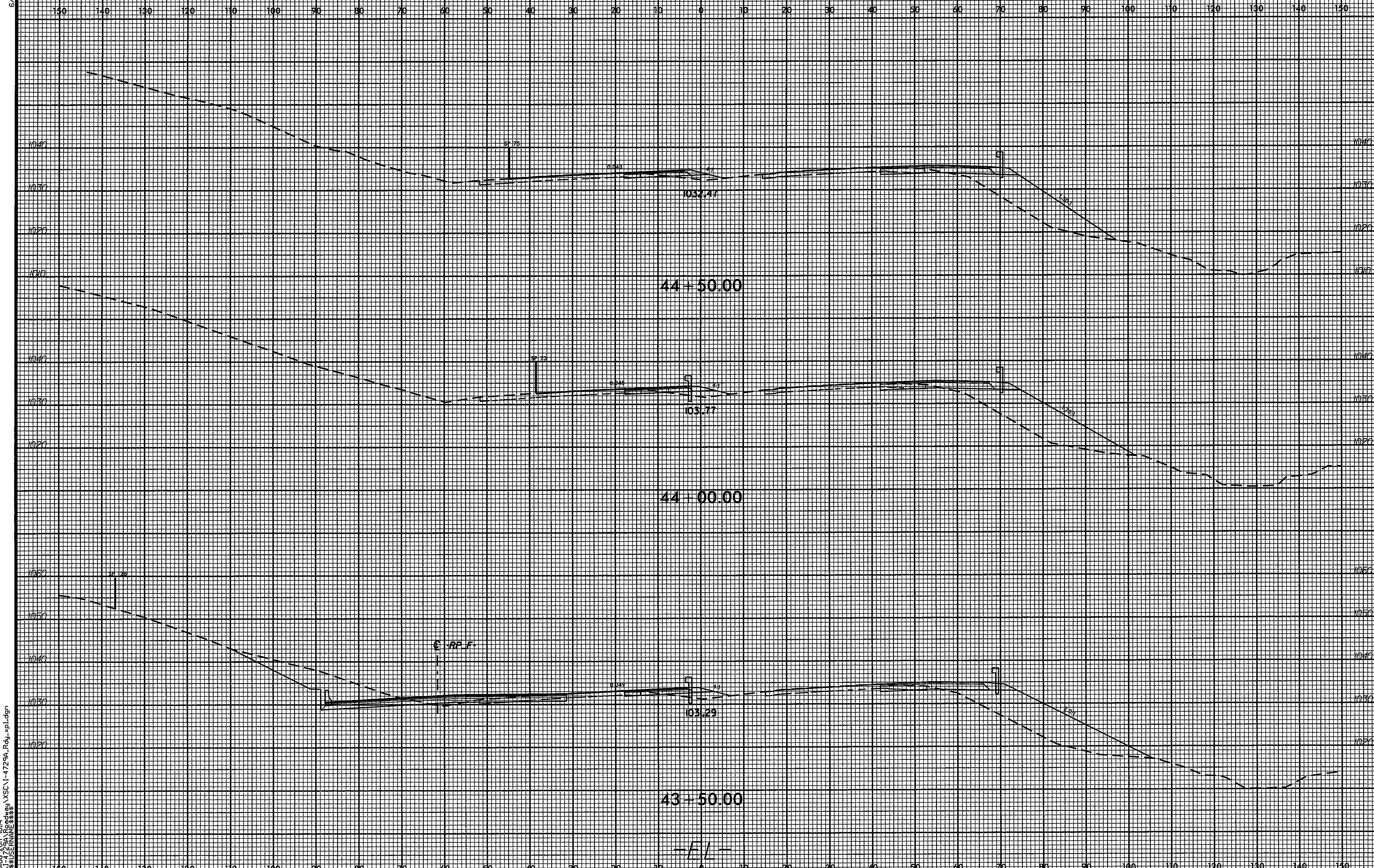

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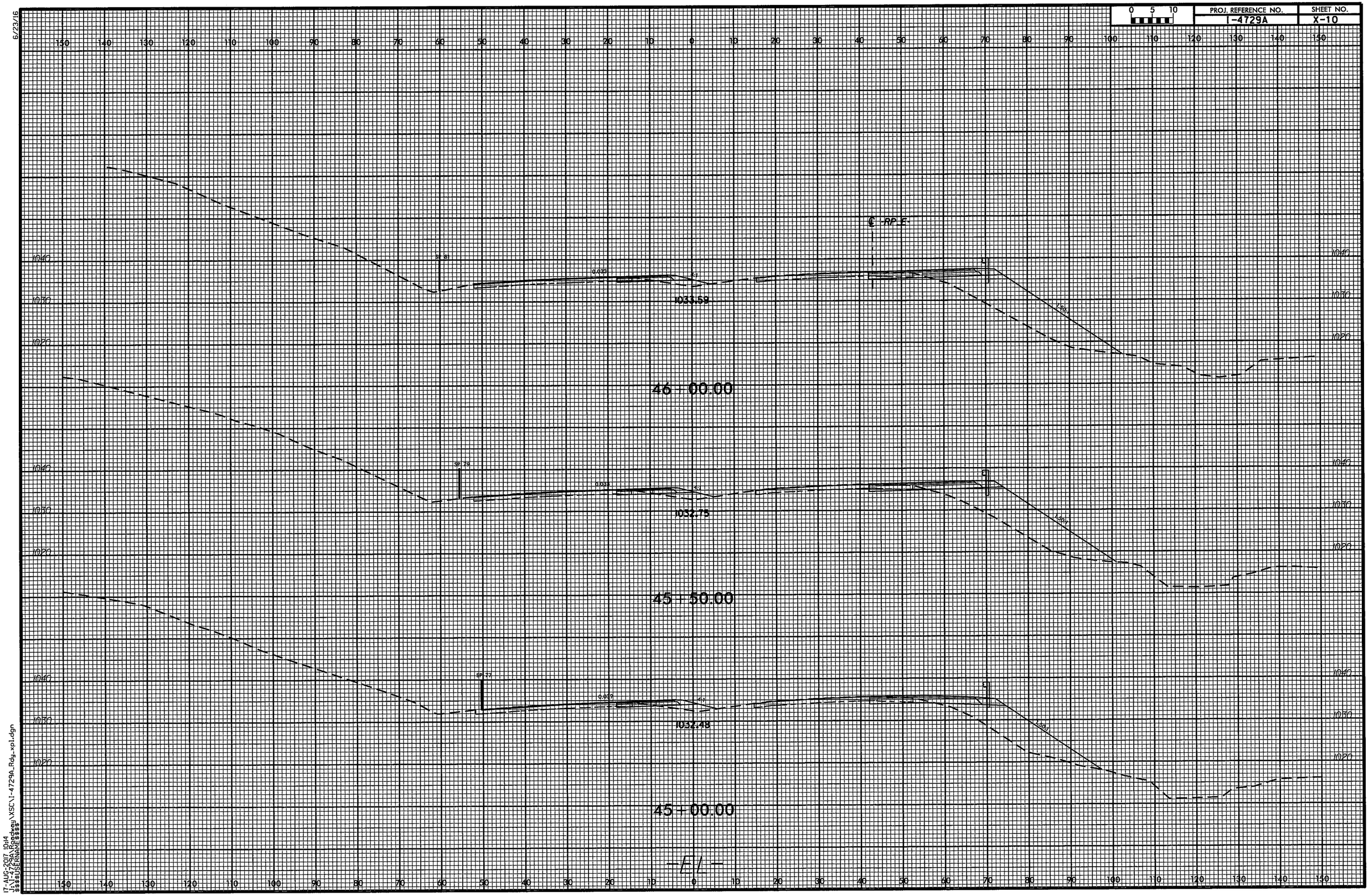

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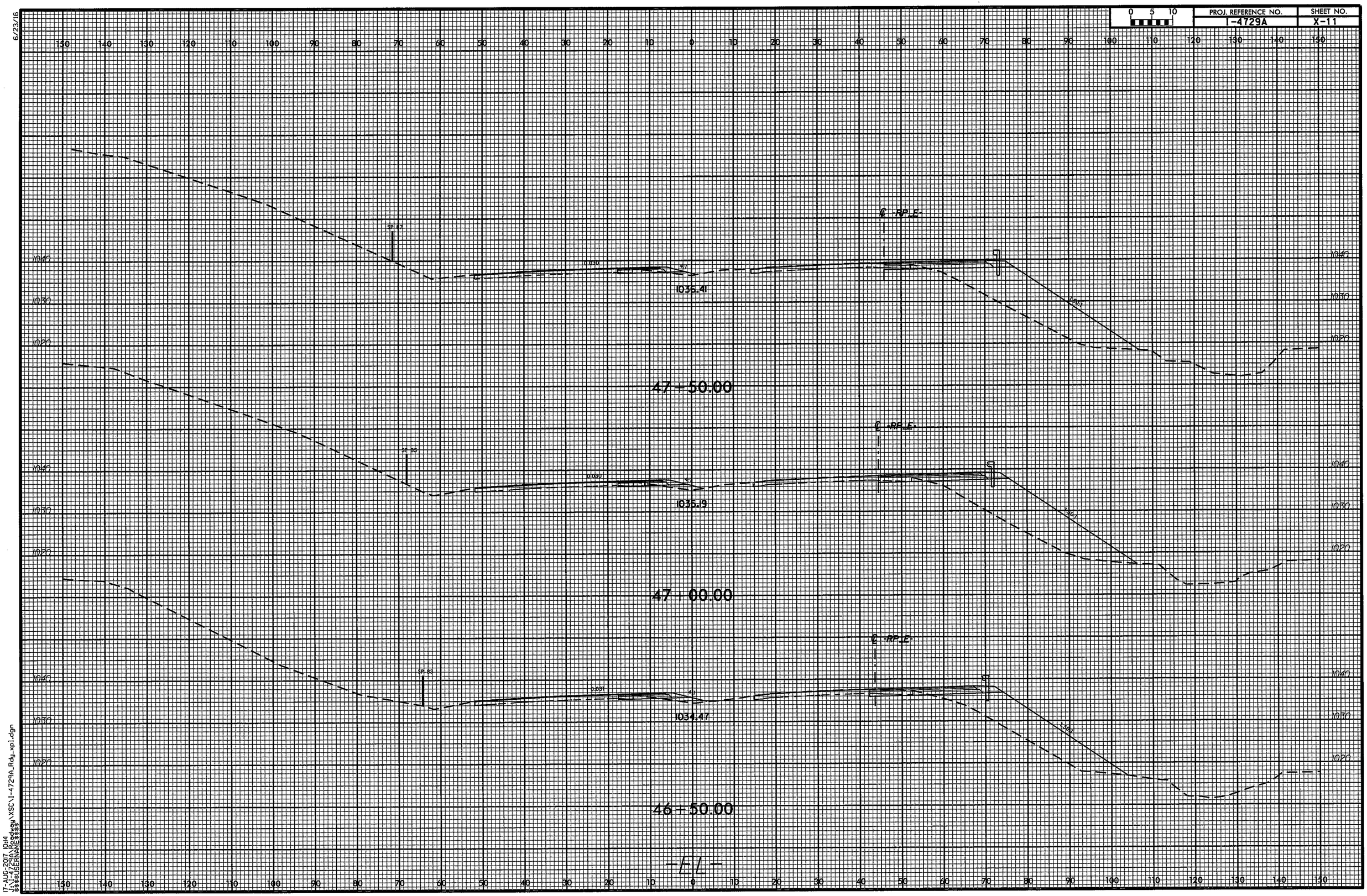

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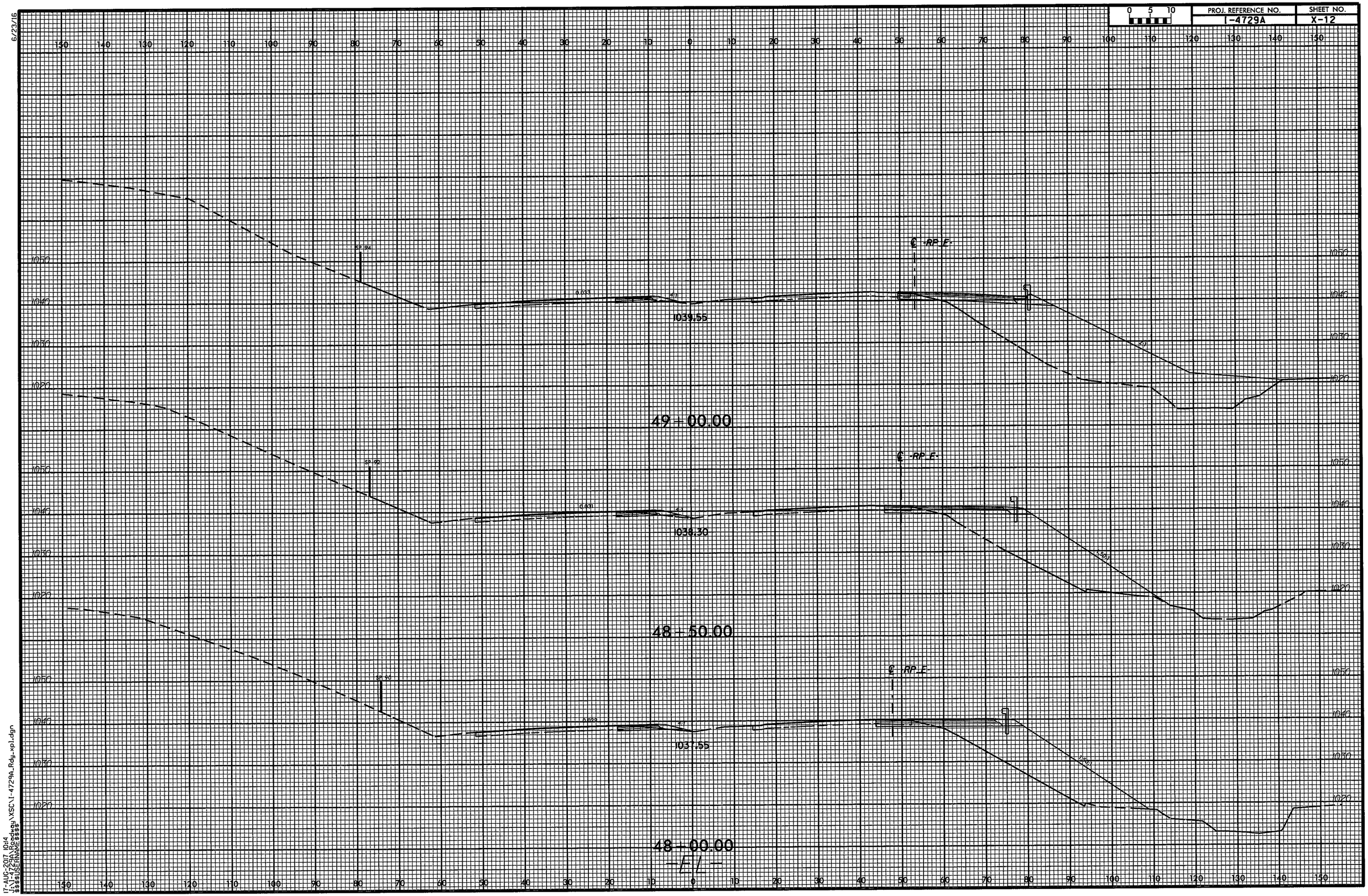

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X-12
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℄ RP E
49+00.00
SP 92
0.031
4:1
1038.30
℄ RP E
48+50.00
SP 96
0.029
4:1
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℄ RP E
48+00.00
-EL-
1050
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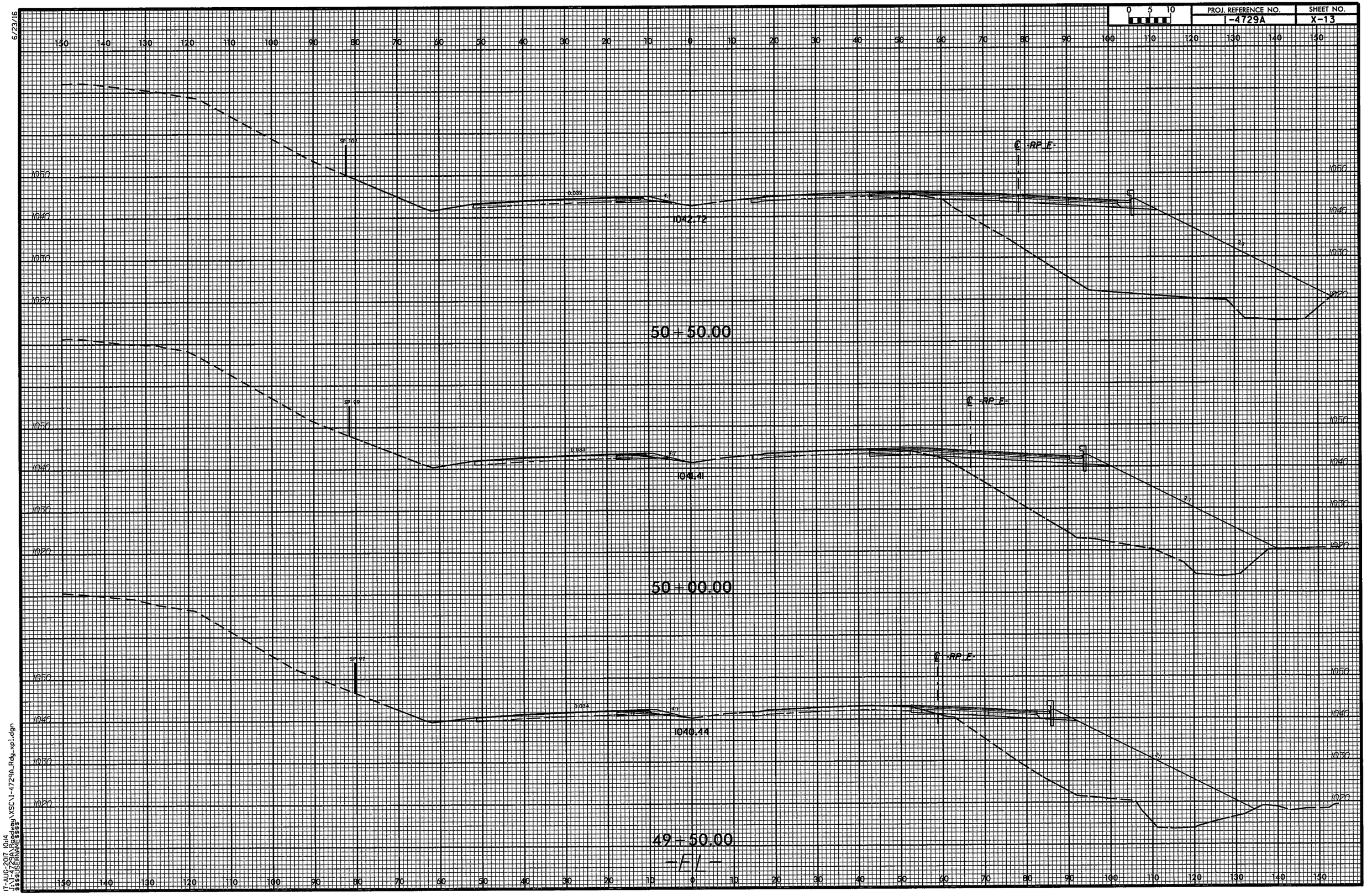

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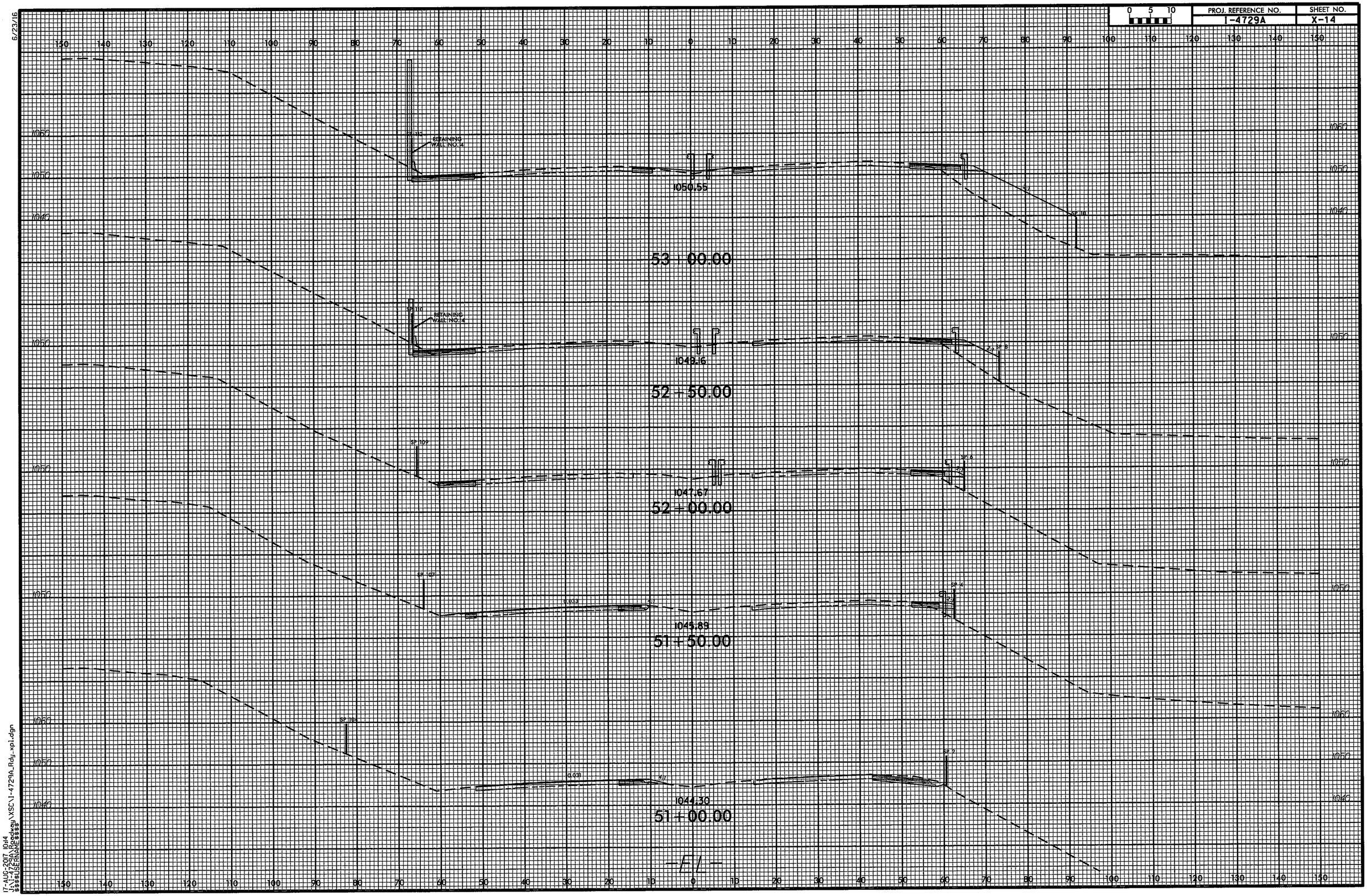

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PROJ. REFERENCE NO.
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SHEET NO.
X-14
6/23/16
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53+00.00
1048.16
52+50.00
1047.67
52+00.00
1045.89
51+50.00
1044.30
51+00.00
-EL-
17-AUG-2017 10:14
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6/23/16

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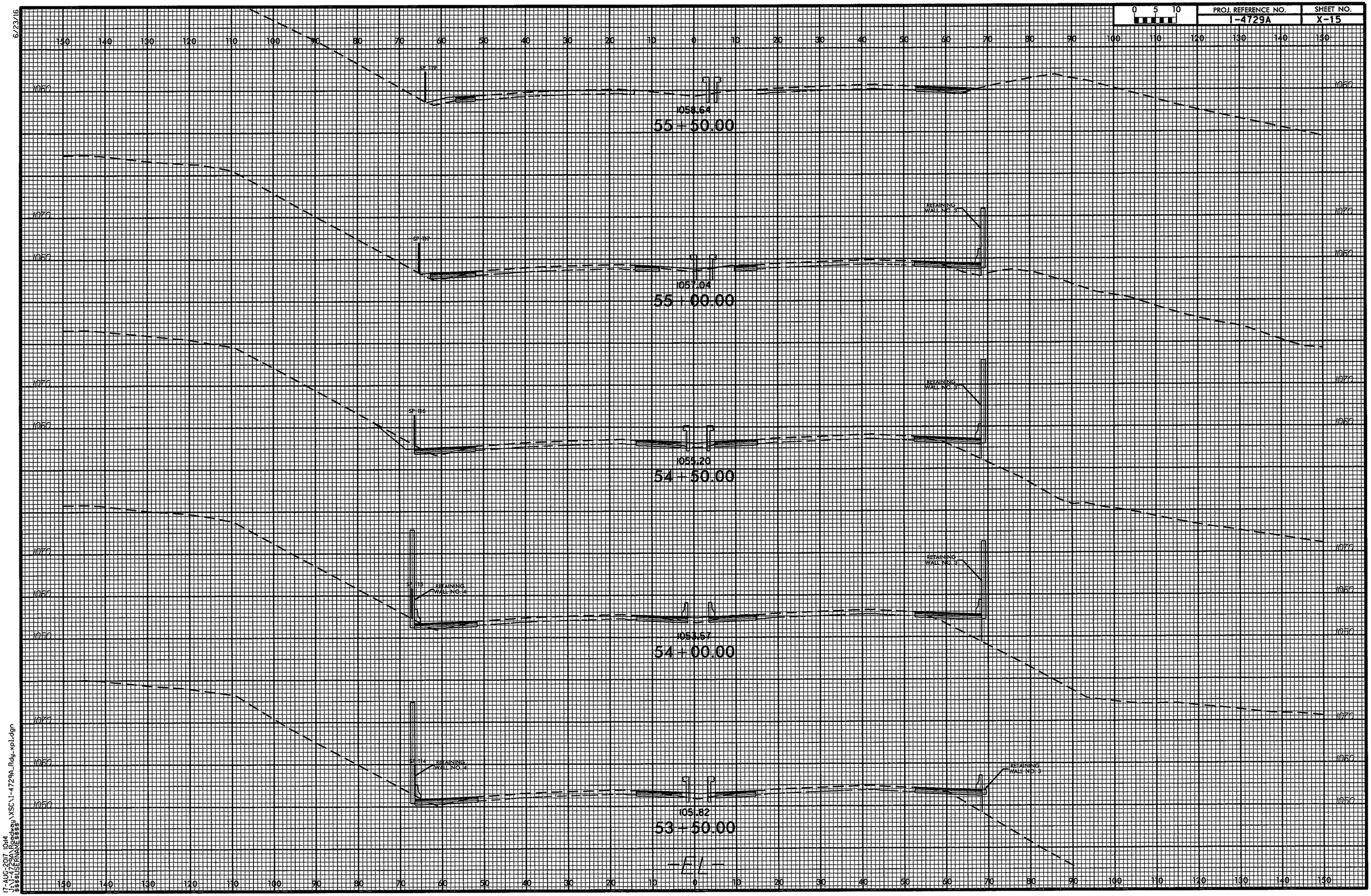

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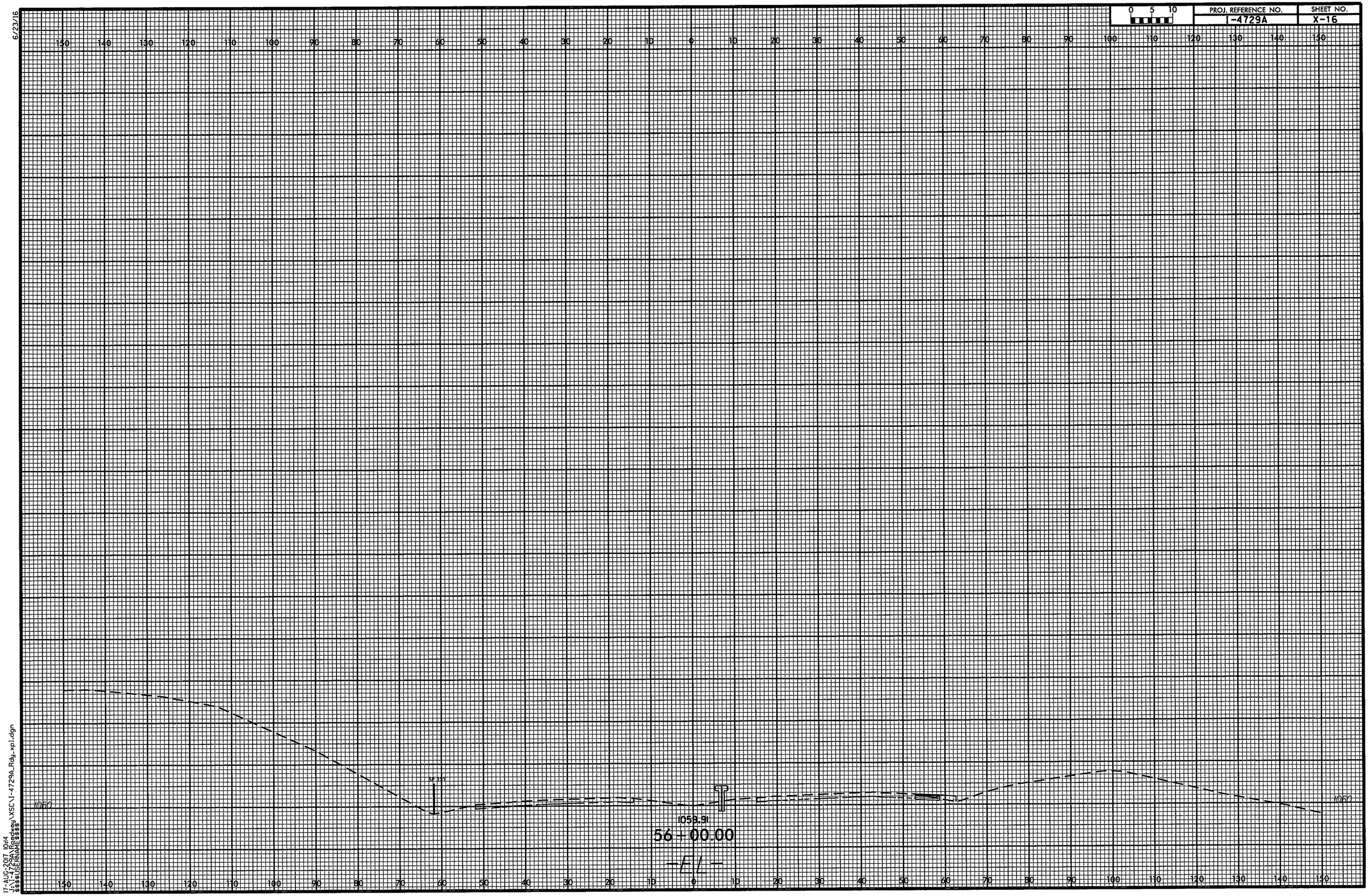

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X-16
6/23/16
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17-AUG-2017 10:14
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6/23/16

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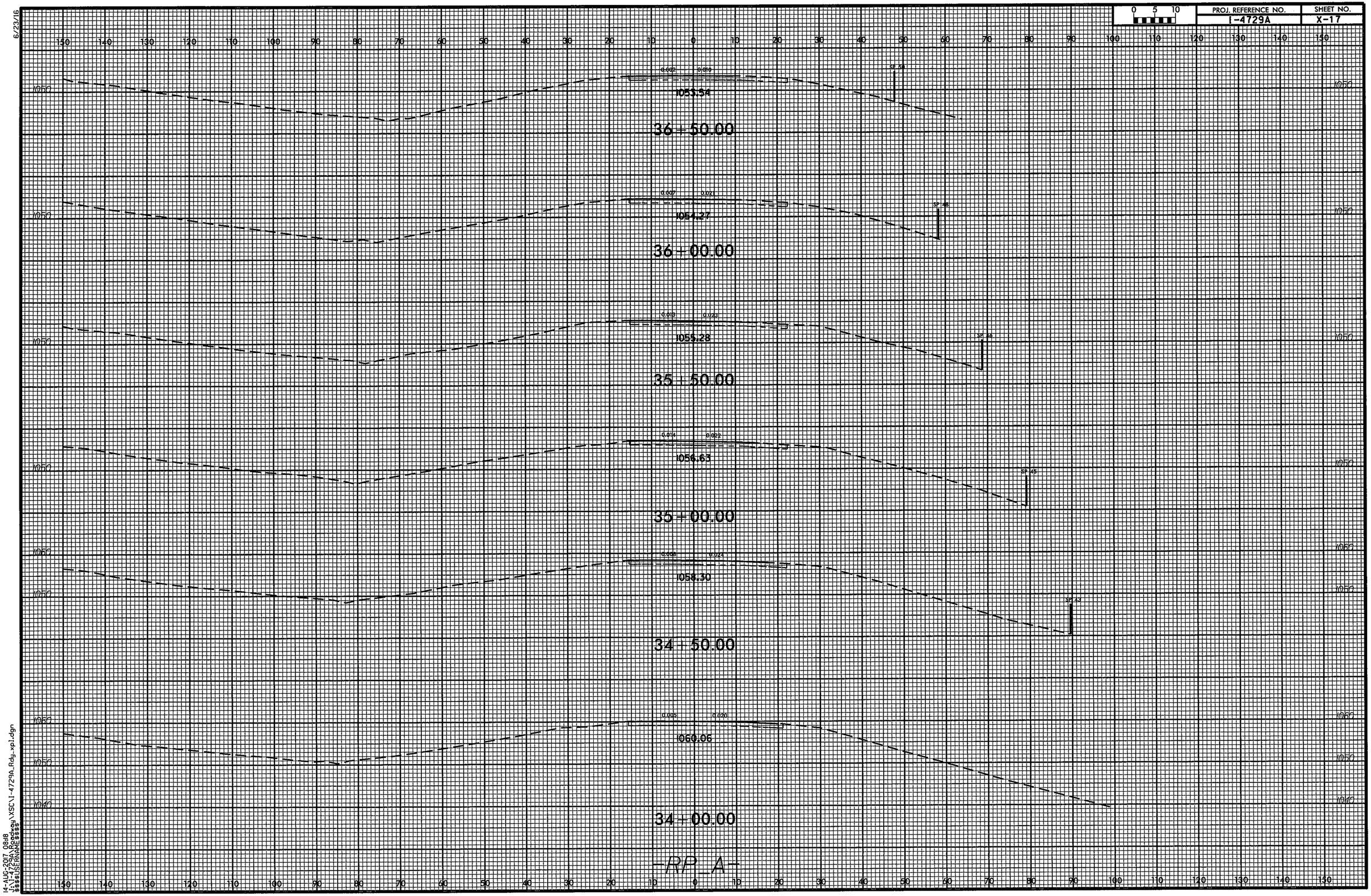

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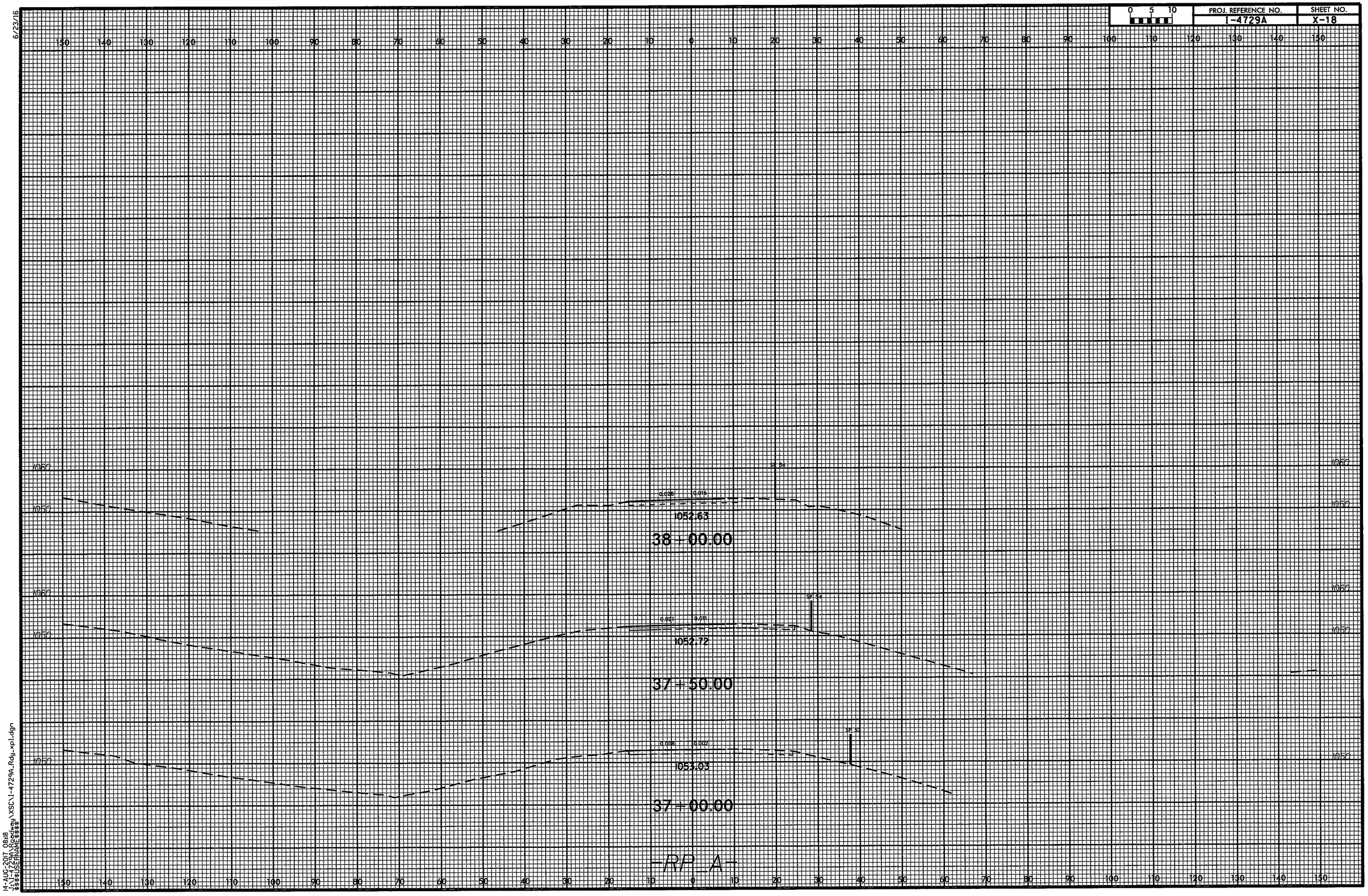

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PROJ. REFERENCE NO.
I-4729A
SHEET NO.
X-18
6/23/16
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SP 56
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0.016
1052.63
38+00.00
SP 54
0.021
0.011
1052.72
37+50.00
SP 52
0.008
0.002
1053.03
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14-AUG-2017 08:18
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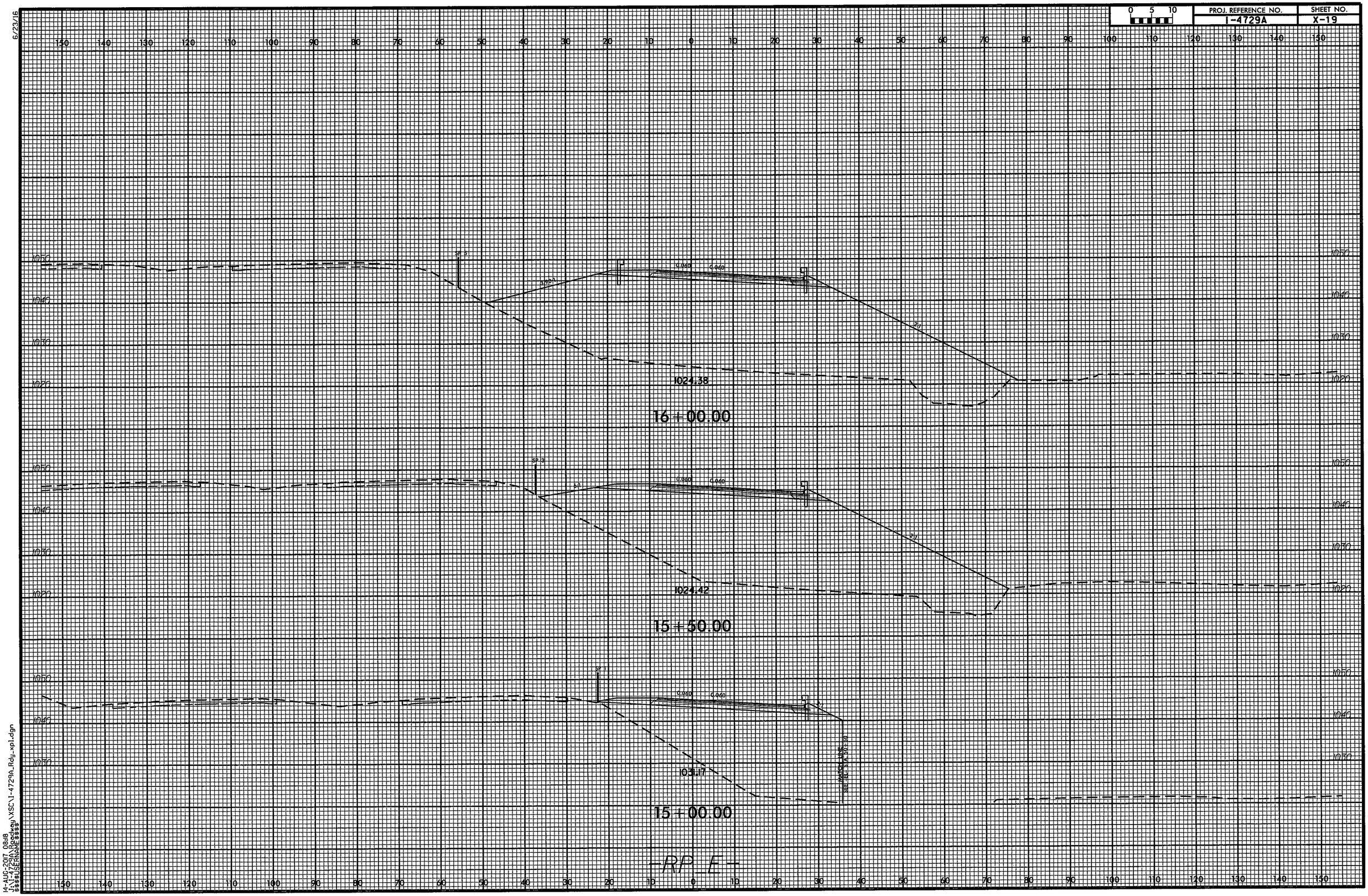

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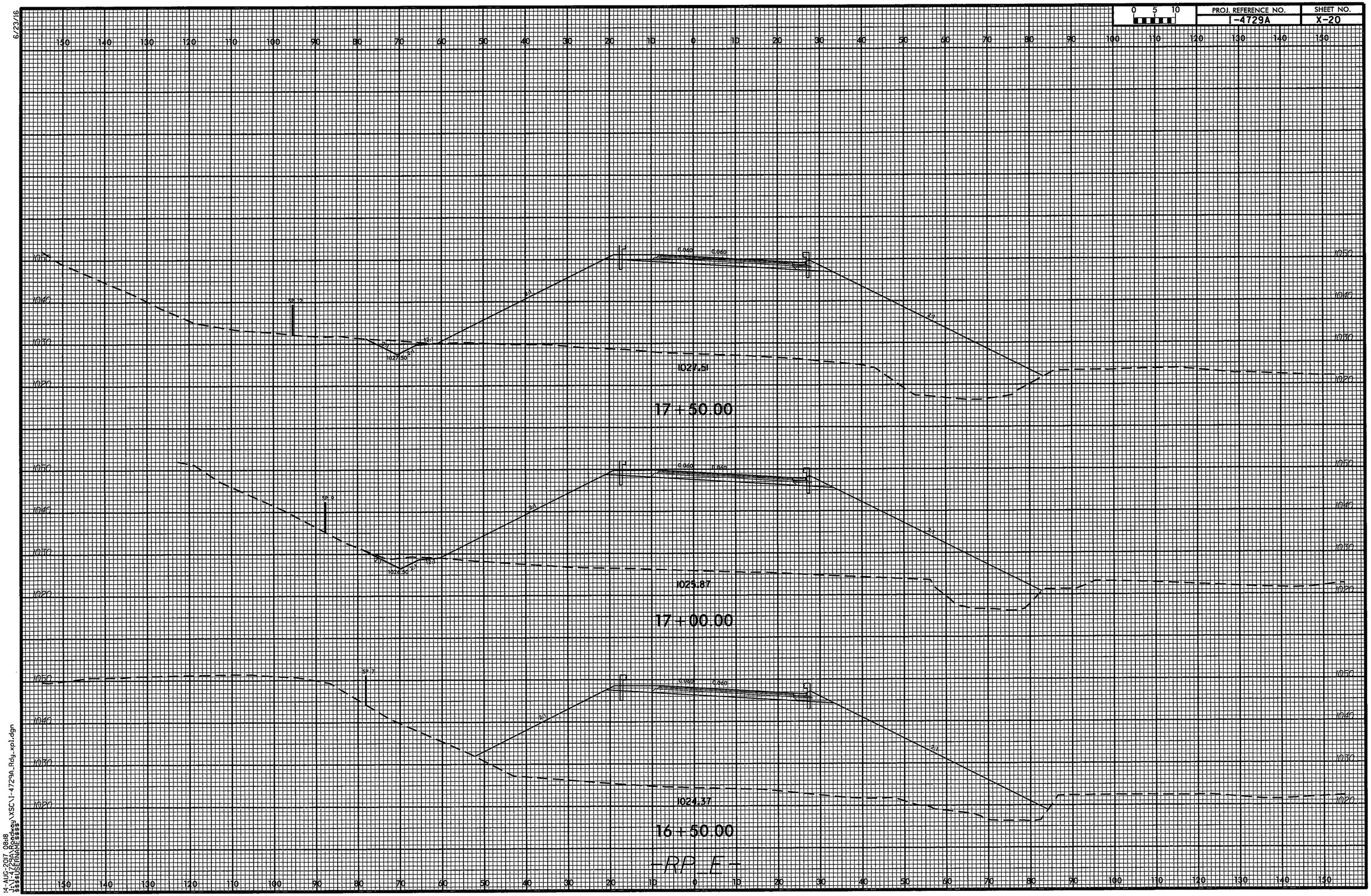

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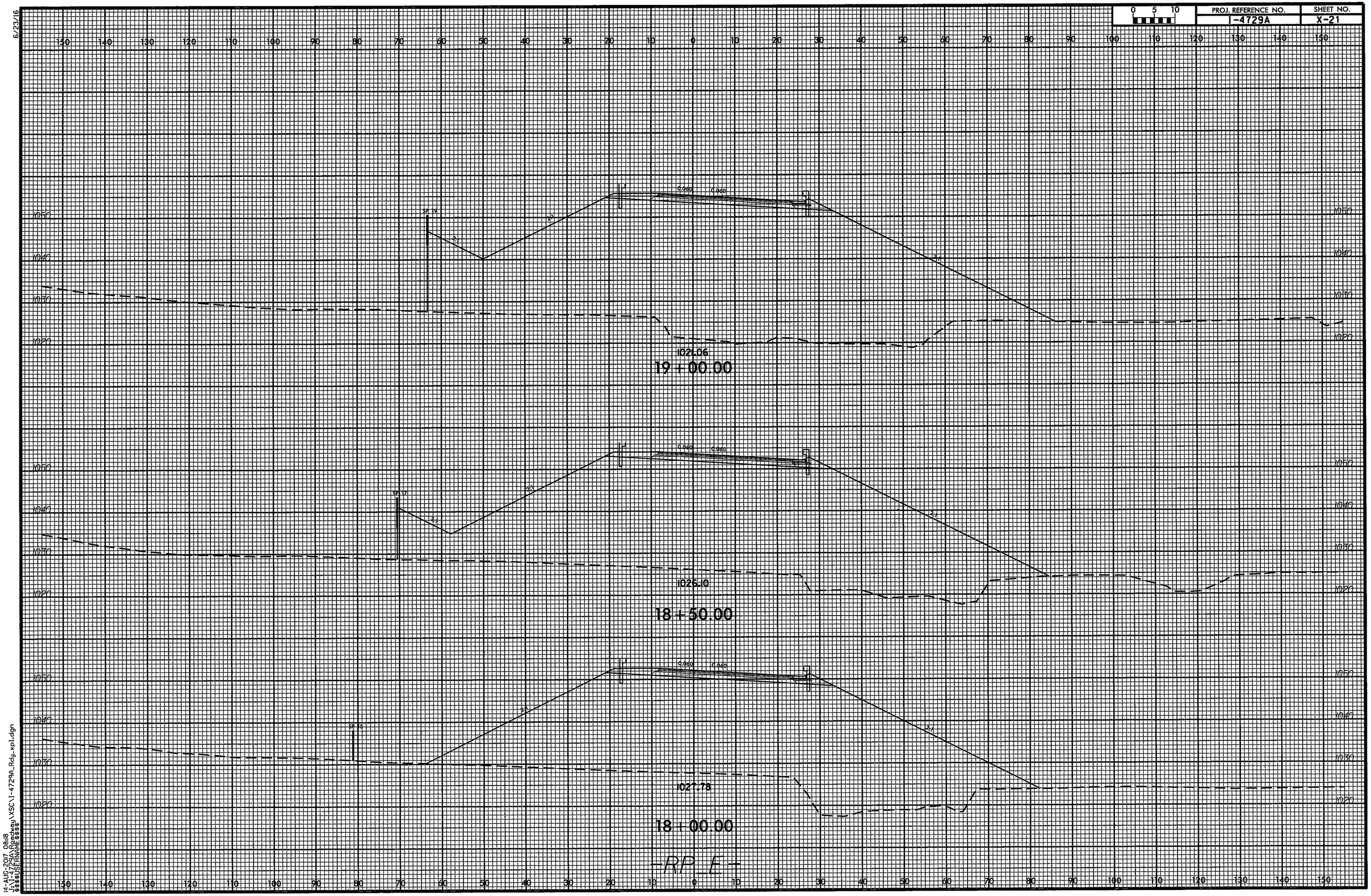

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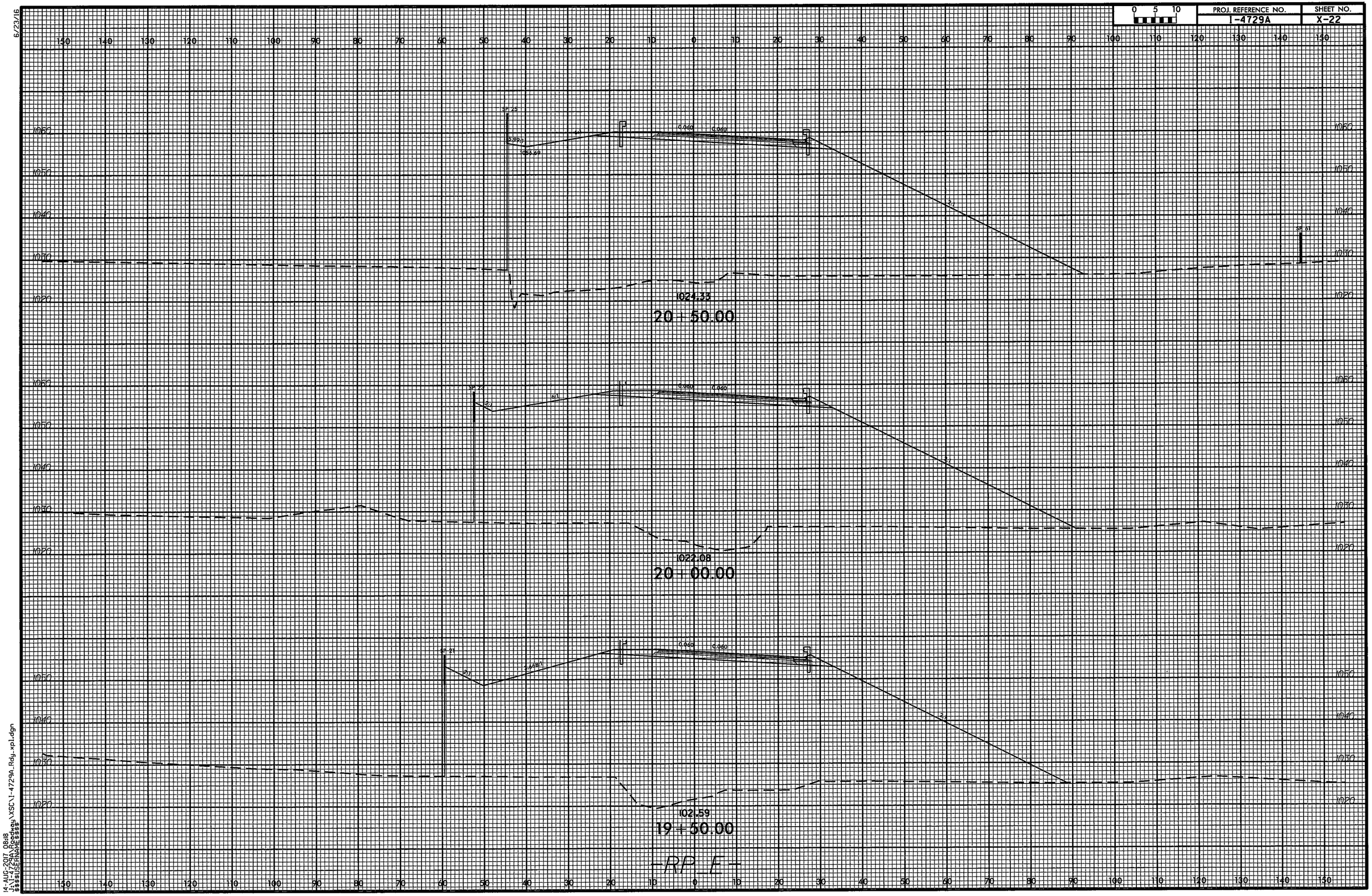

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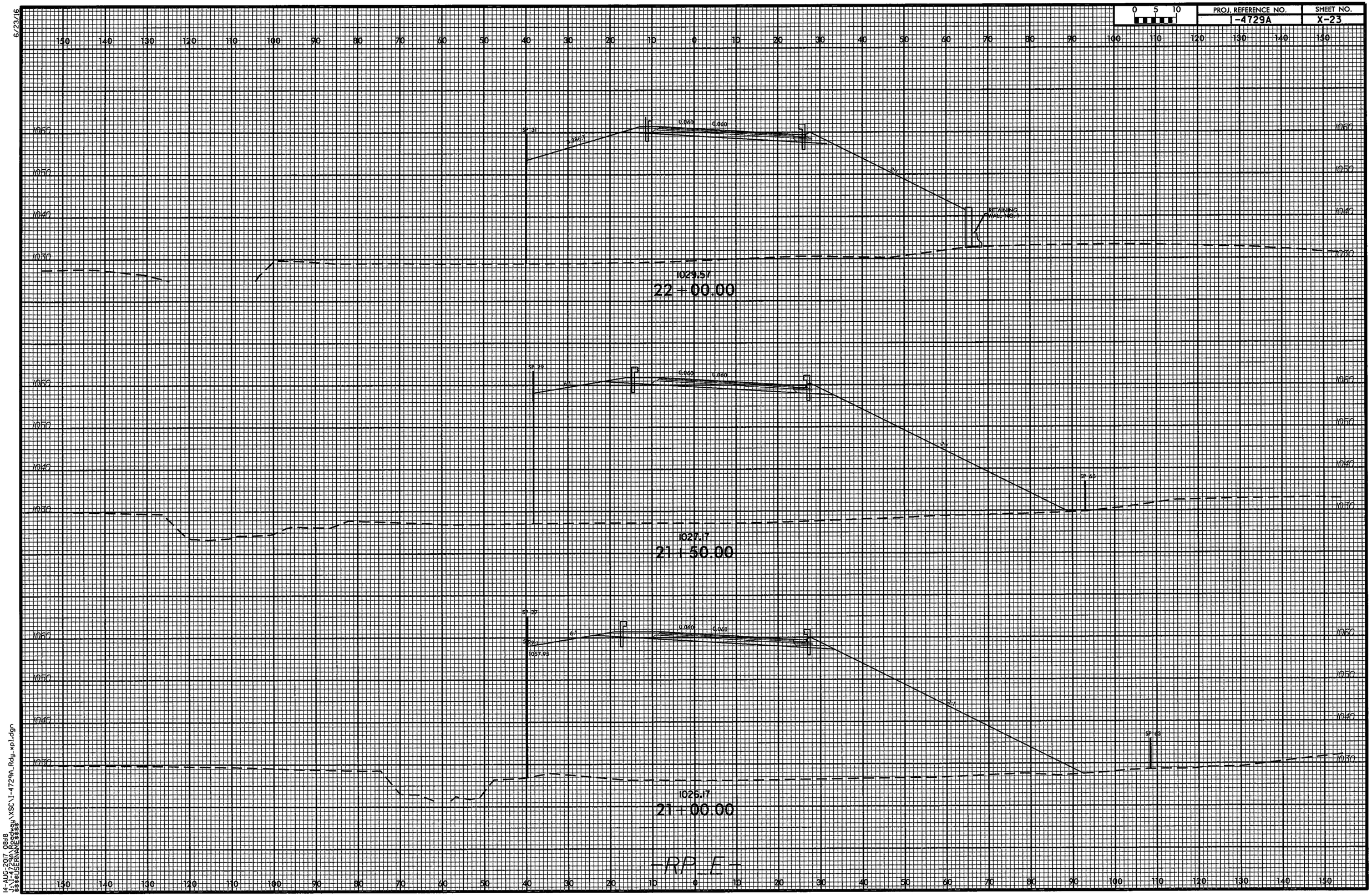

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6/23/16

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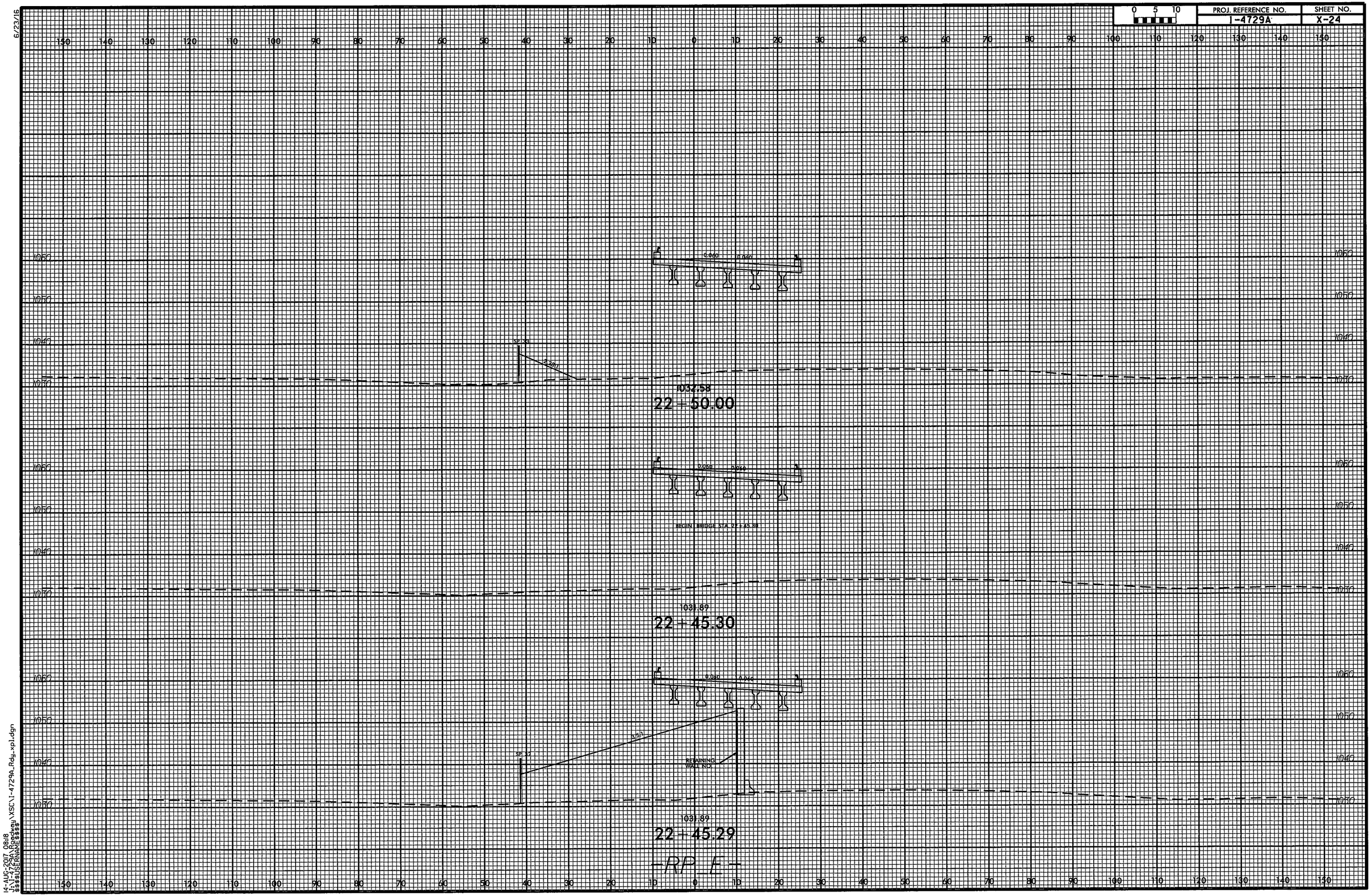

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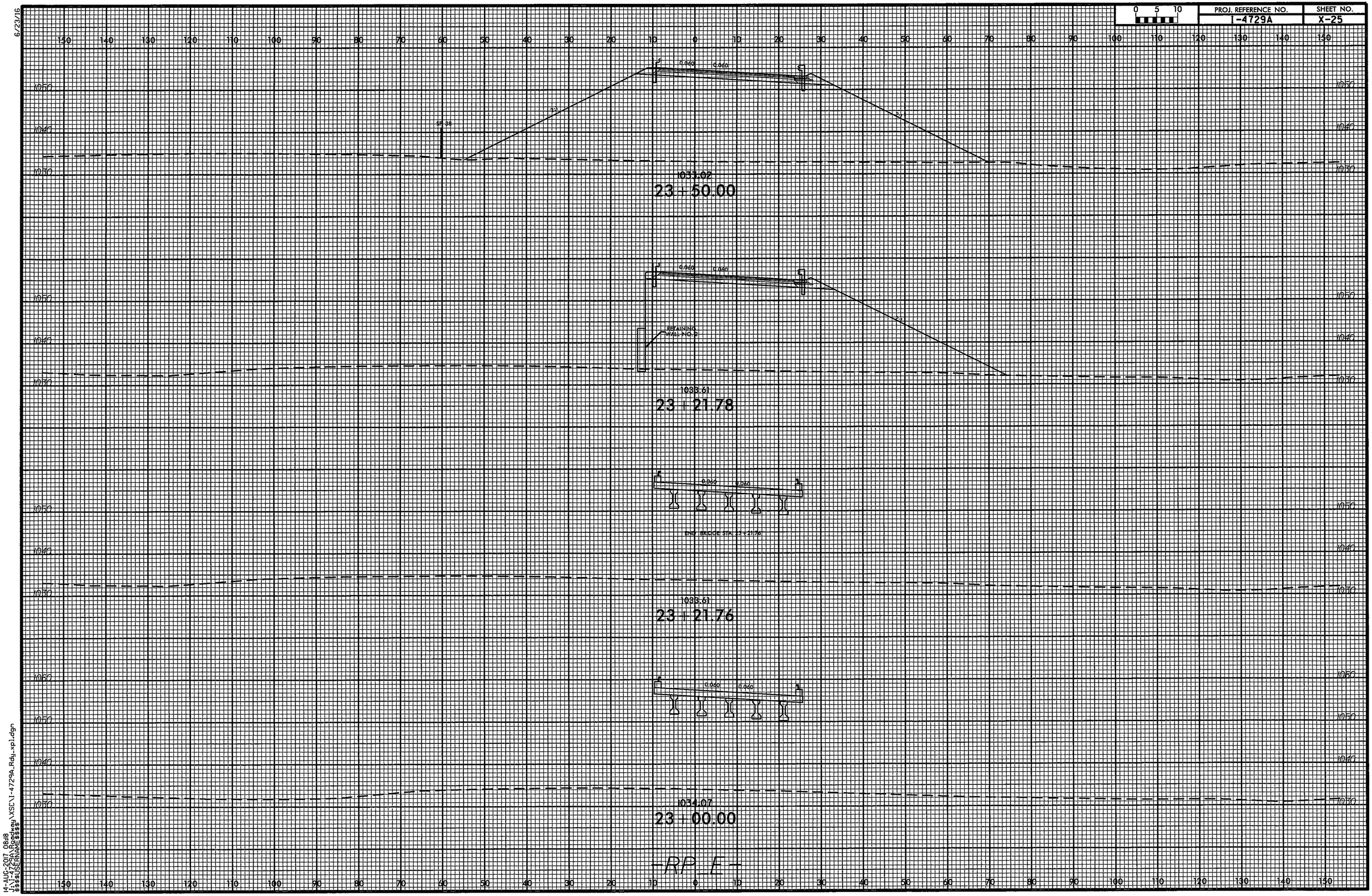

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SHEET NO.
X-25
6/23/16
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0.060
SP-38
1033.02
23 + 50.00
RETAINING WALL NO. 2
1033.61
23 + 21.78
END BRIDGE STA. 23+21.76
1033.61
23 + 21.76
1034.07
23 + 00.00
-RP_E-
14-AUG-2017 08:18
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6/23/16

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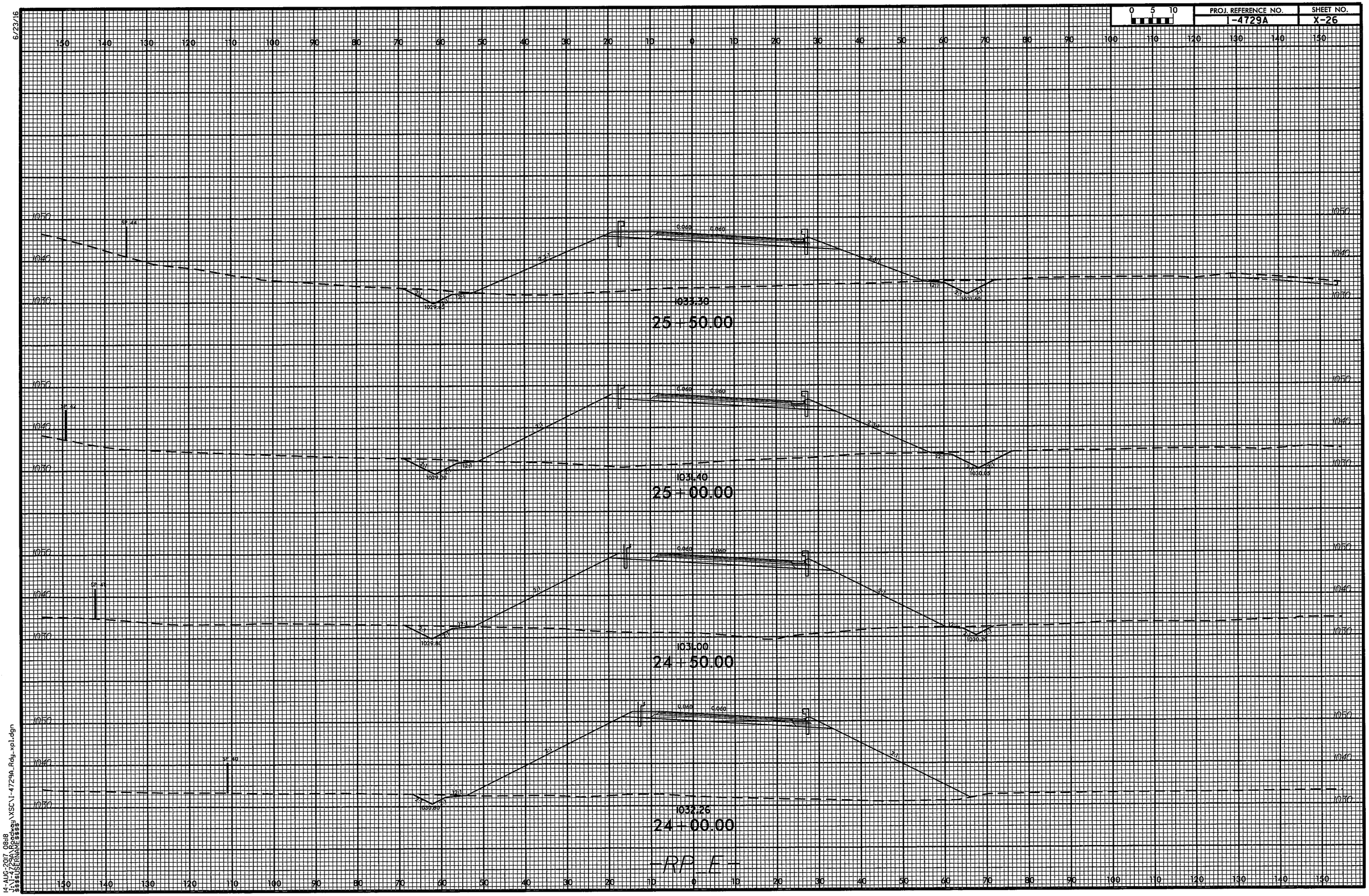

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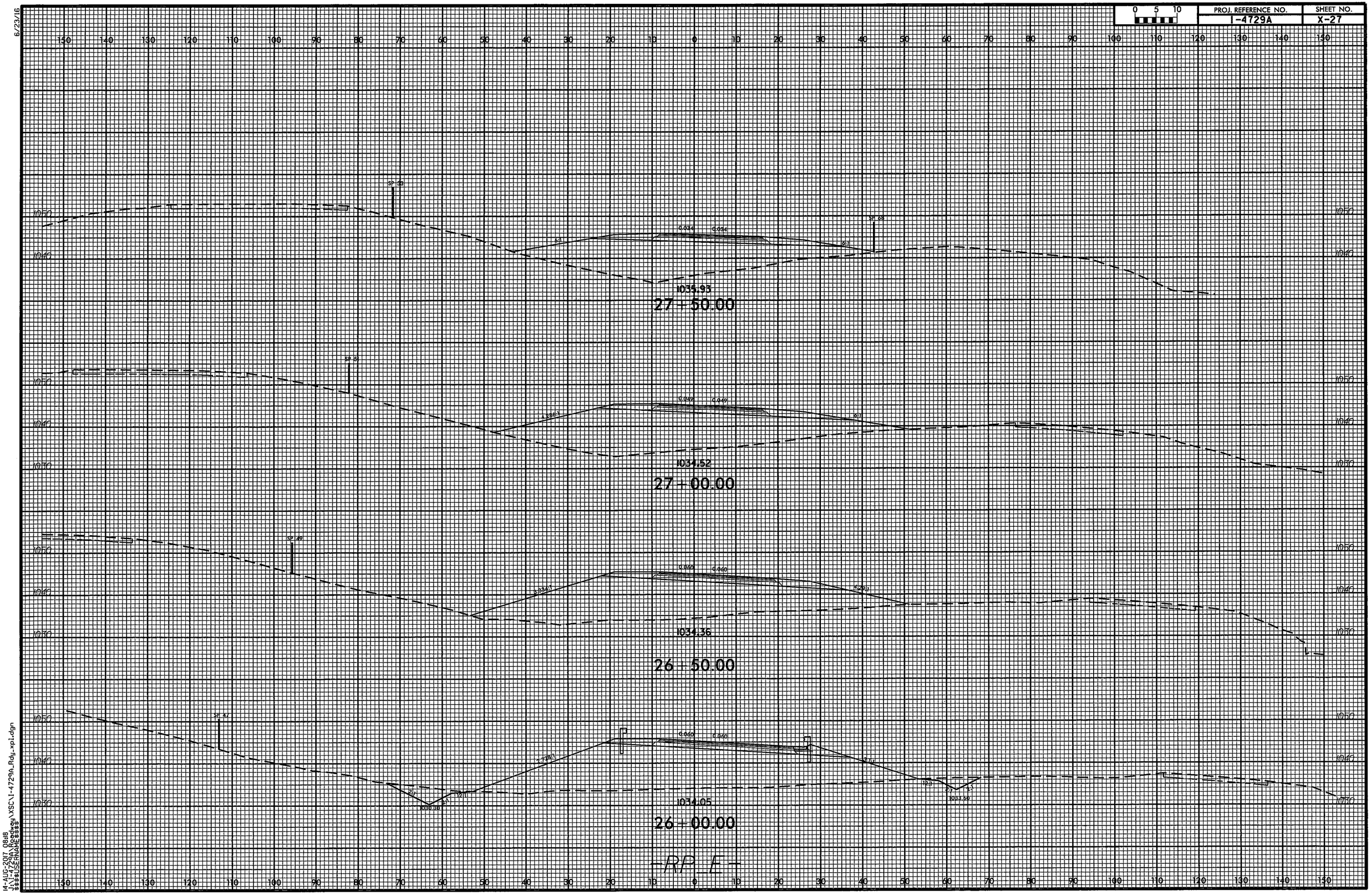

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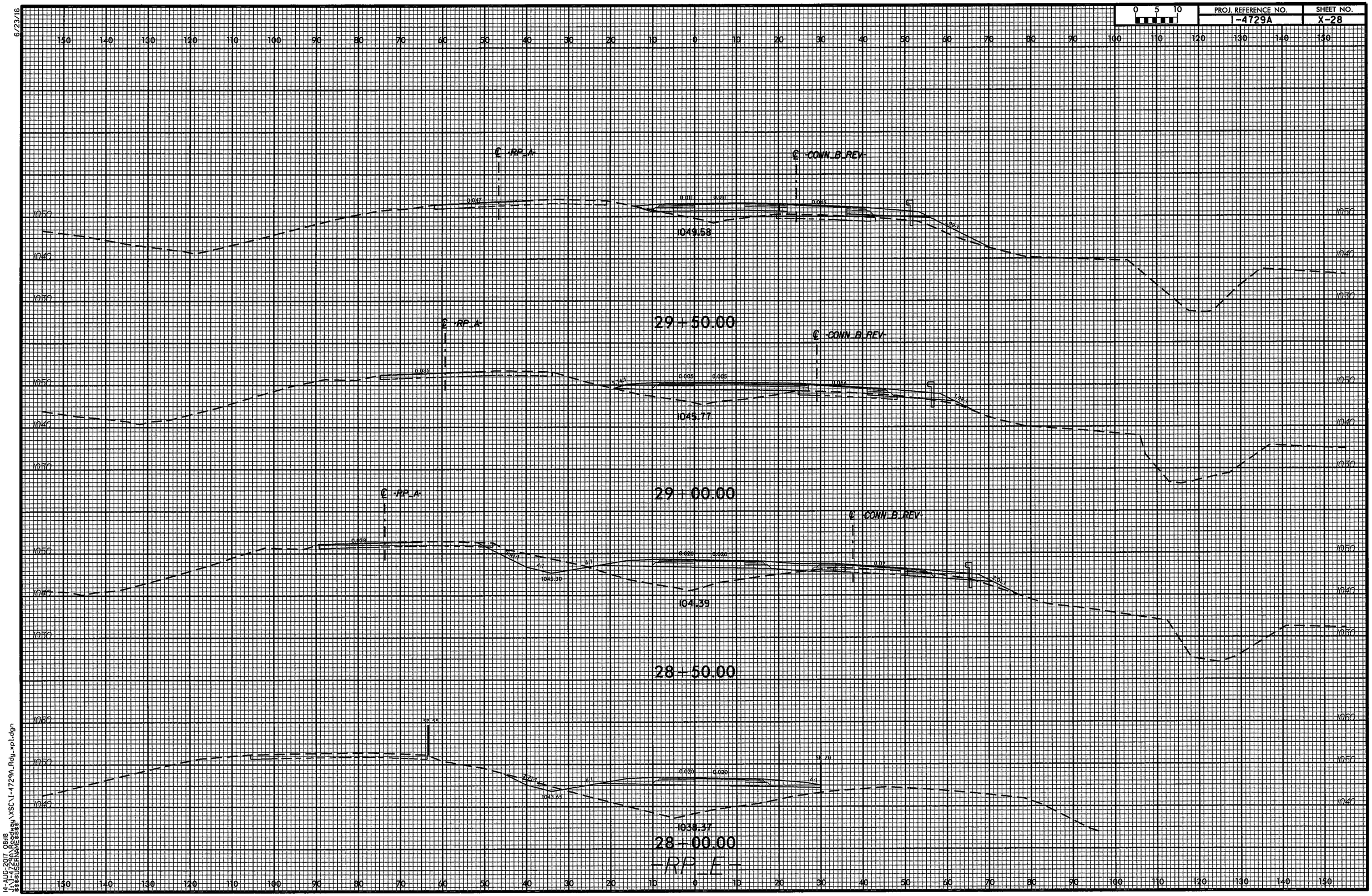

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6/23/16

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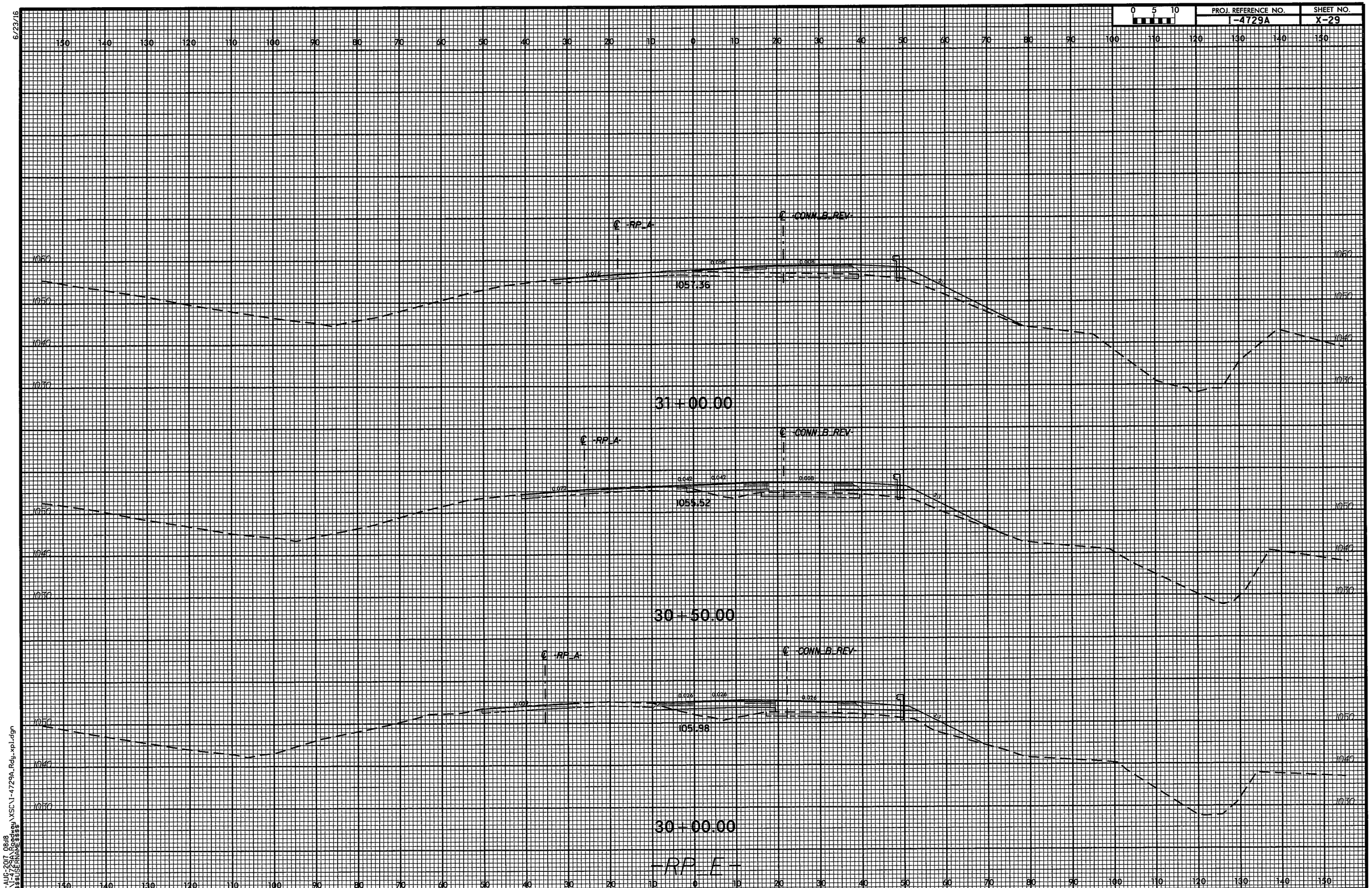

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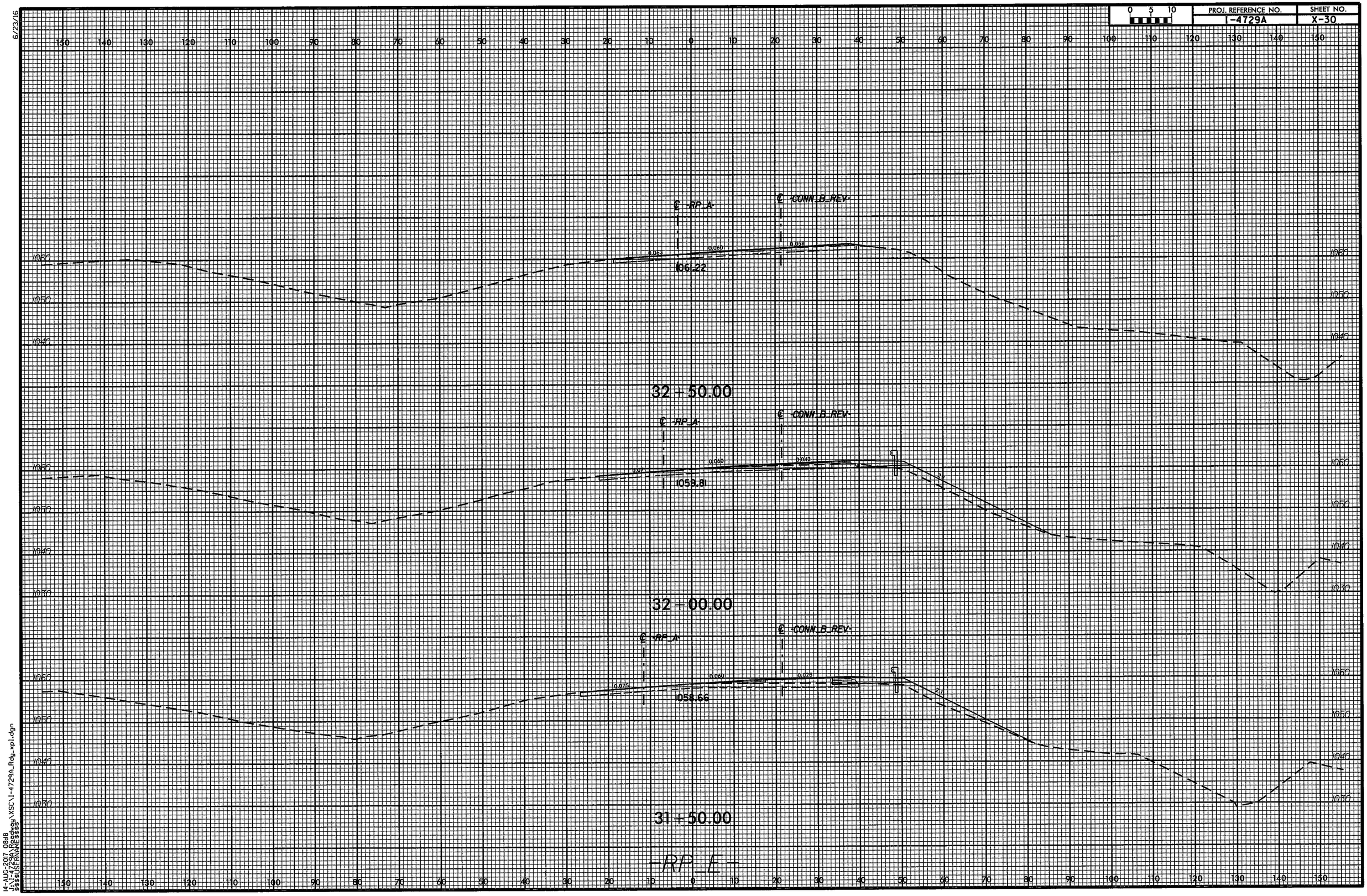

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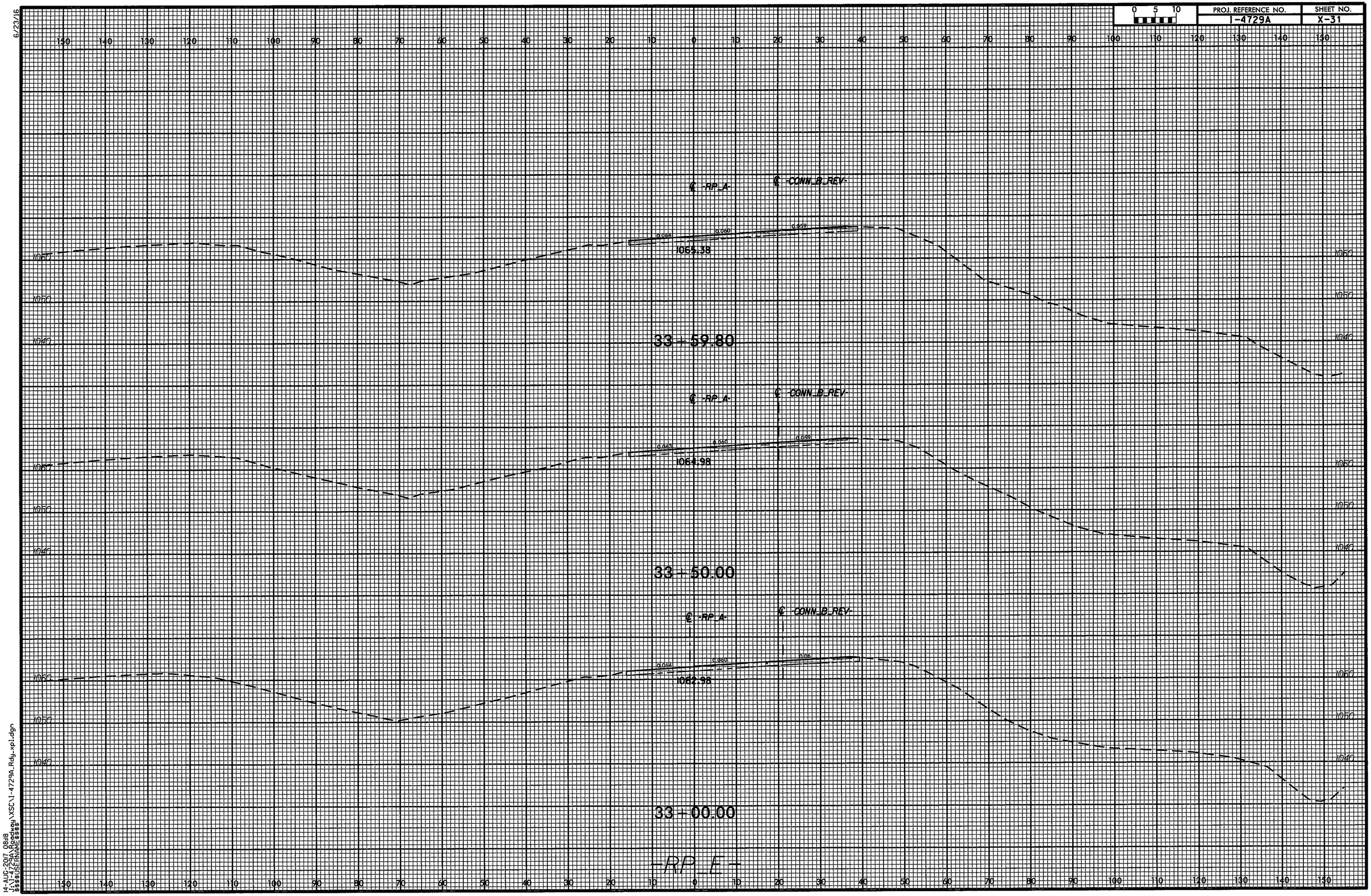

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SHEET NO.
X-31
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℄ -CONN_B_REV-
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0.060
0.059
1065.38
33+59.80
1064.98
33+50.00
0.06
1062.98
33+00.00
-RP_E-
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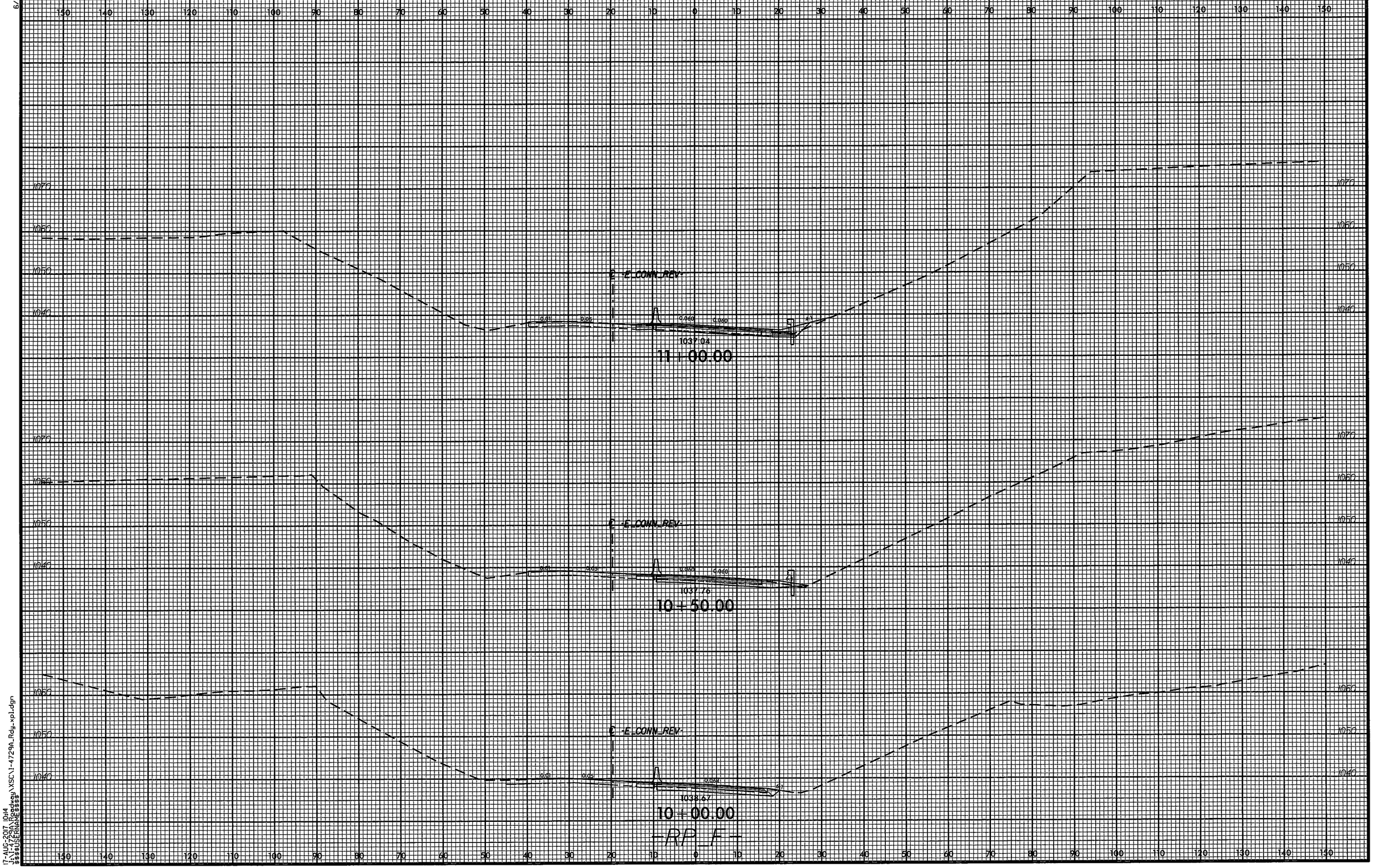

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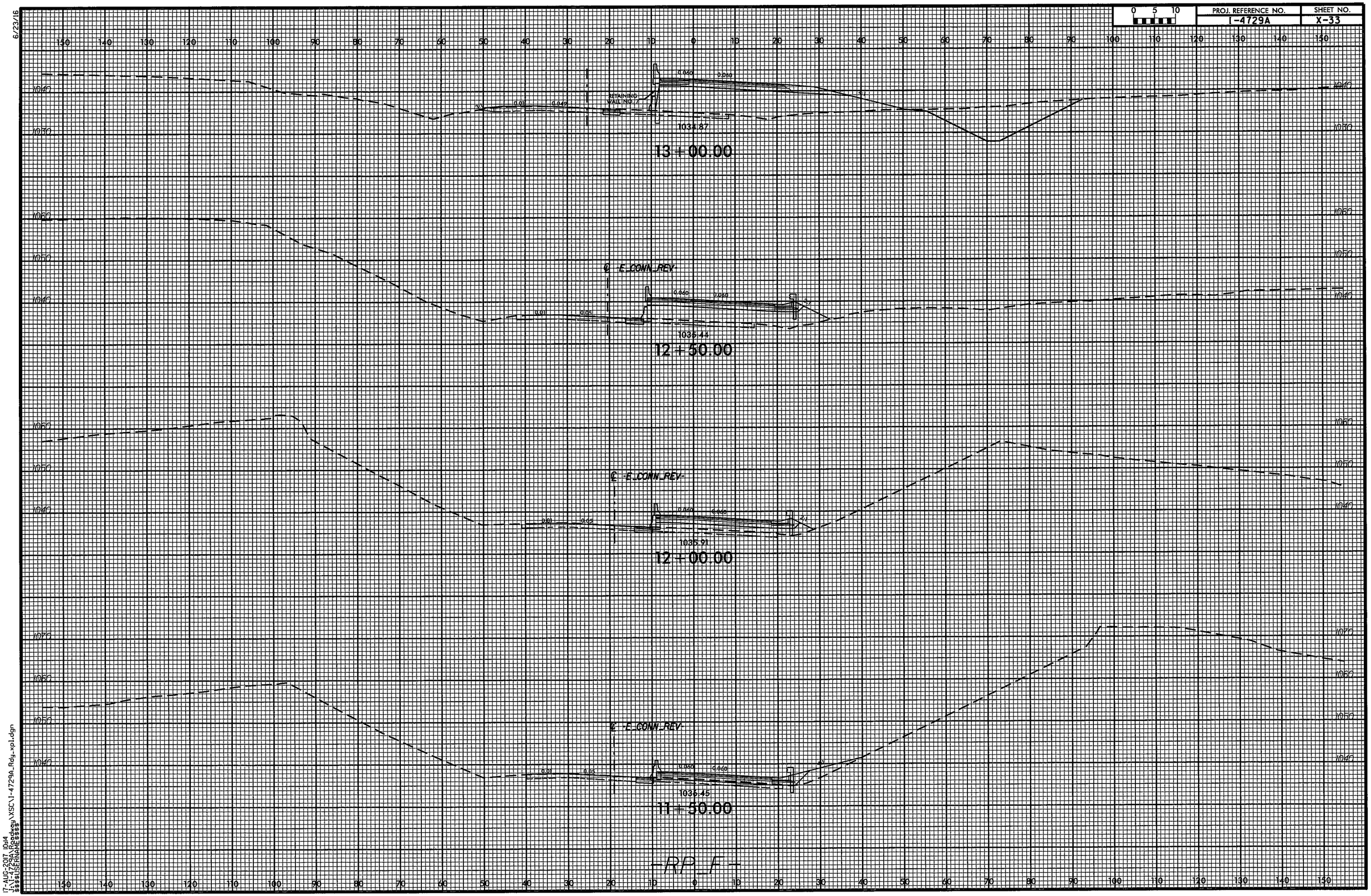

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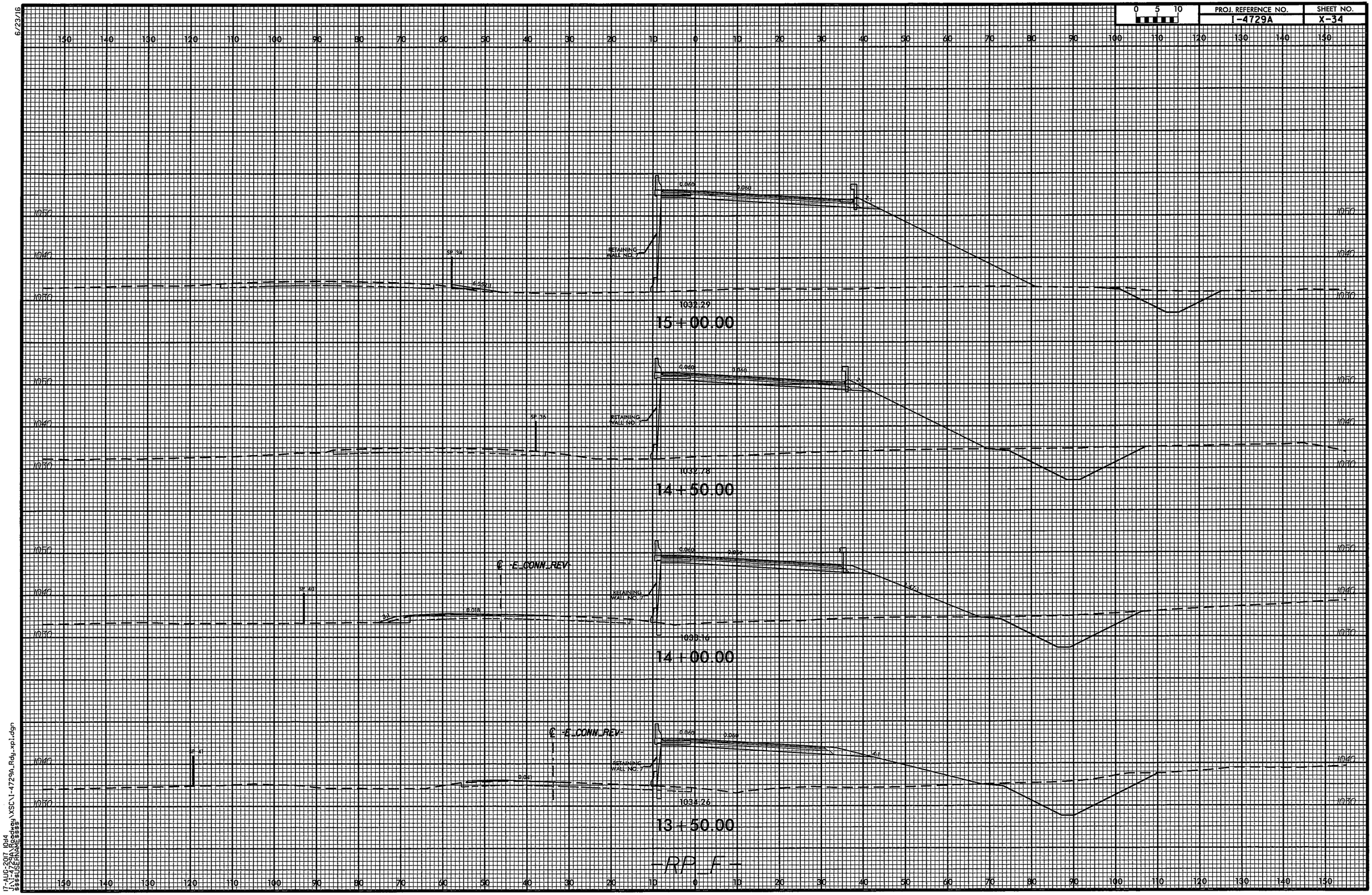

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SHEET NO.
X-34
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1050
1040
1030
SP 34
RETAINING WALL NO. 7
0.060
1032.29
15+00.00
SP 35
1032.78
14+50.00
℄ -E_CONN_REV-
SP 40
0.018
1033.16
14+00.00
SP 41
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13+50.00
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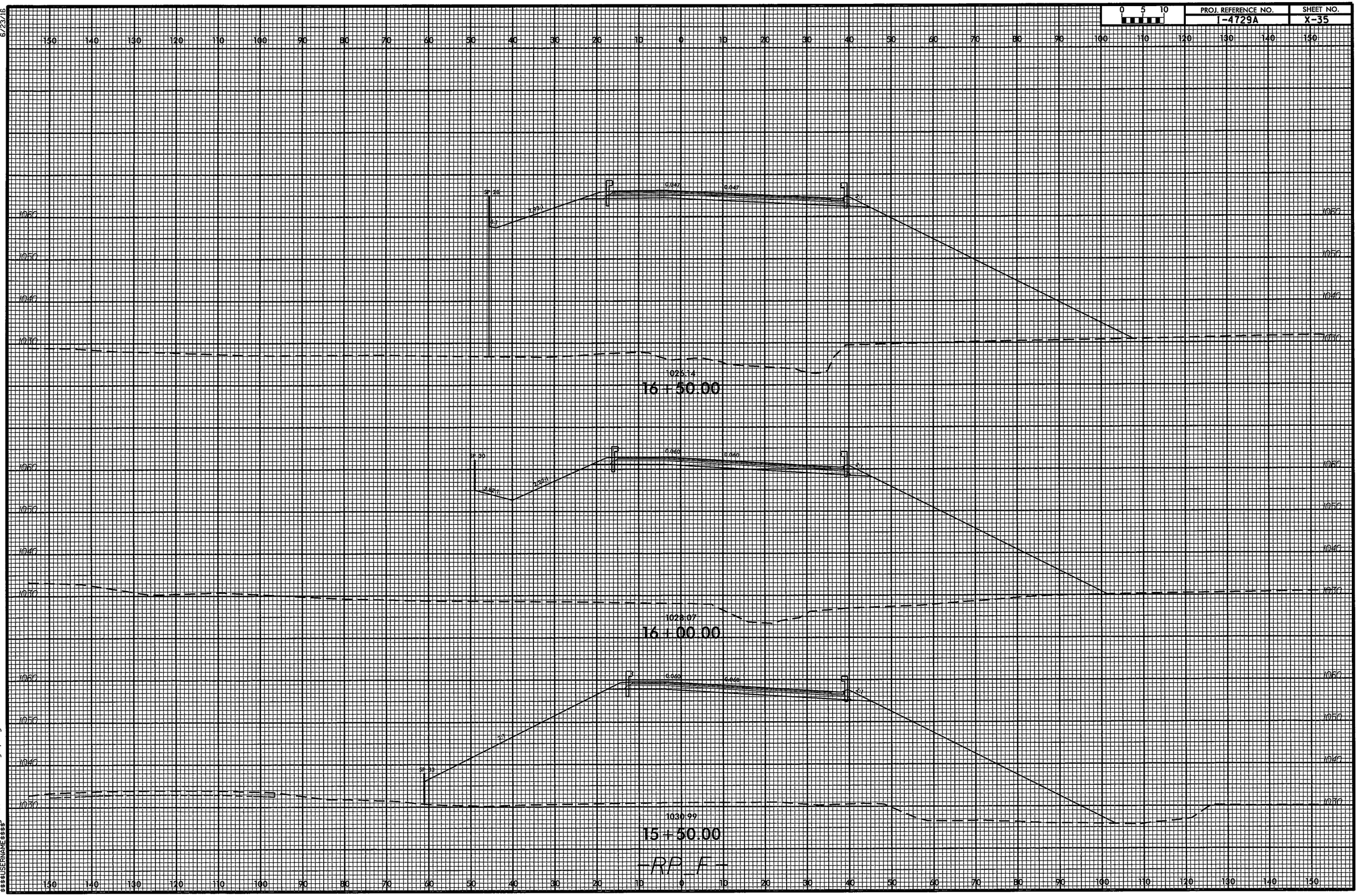

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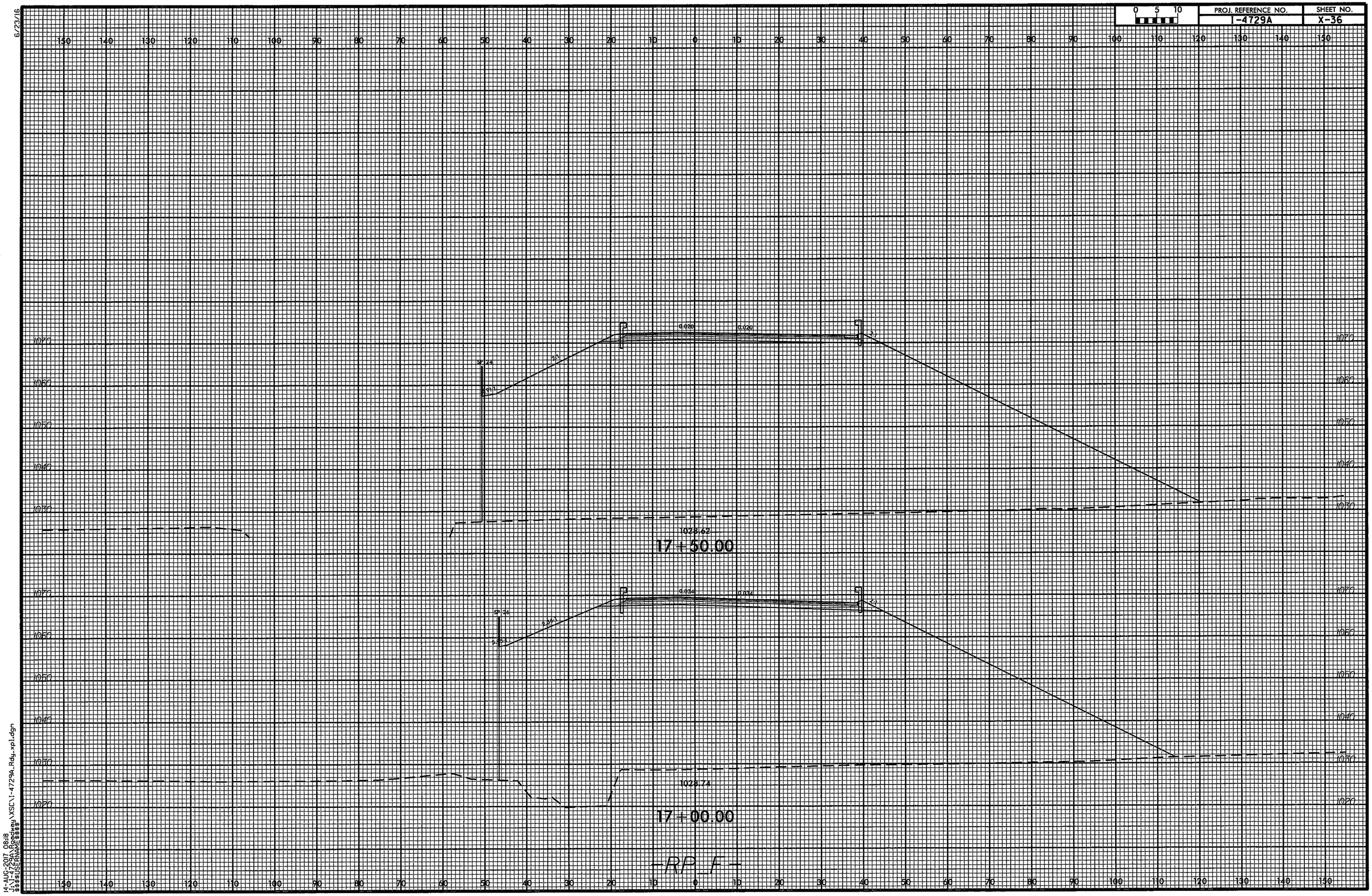

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SP 26
0.034
0.034
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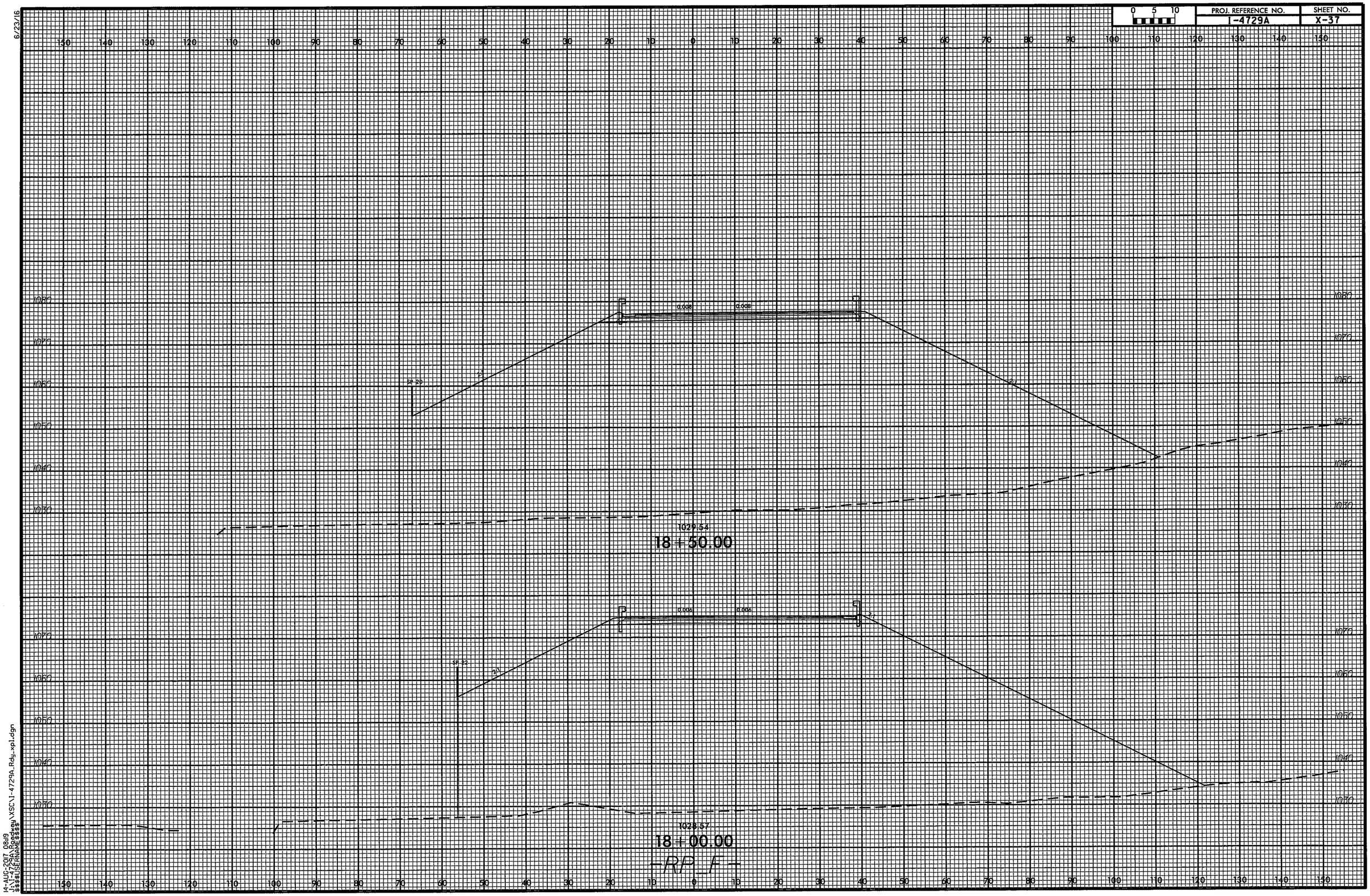

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0.008
SP-20
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0.006
0.006
SP-22
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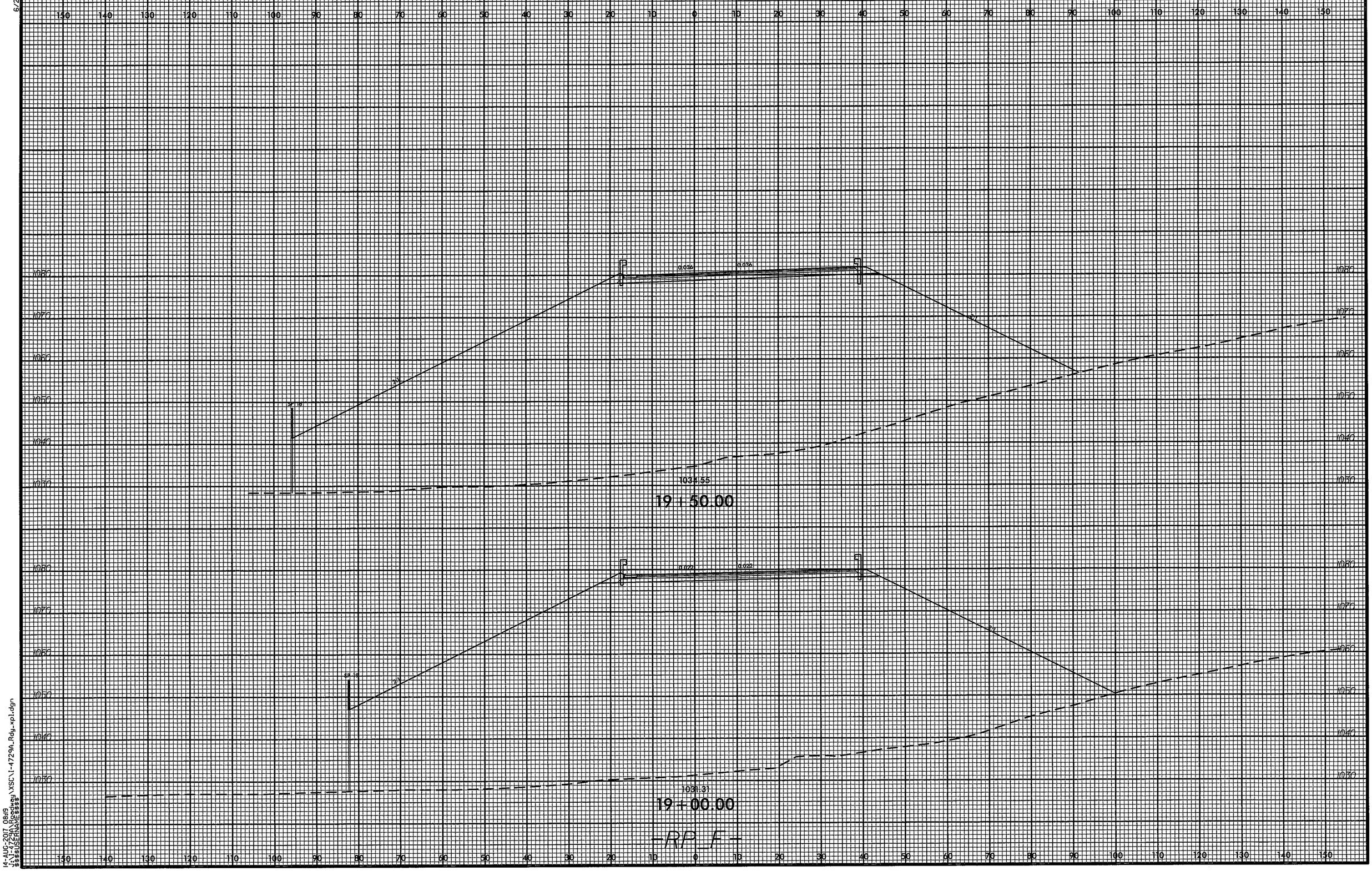

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1060
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1030
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1034.55
19+50.00
0.022
0.022
1031.31
19+00.00
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6/23/16

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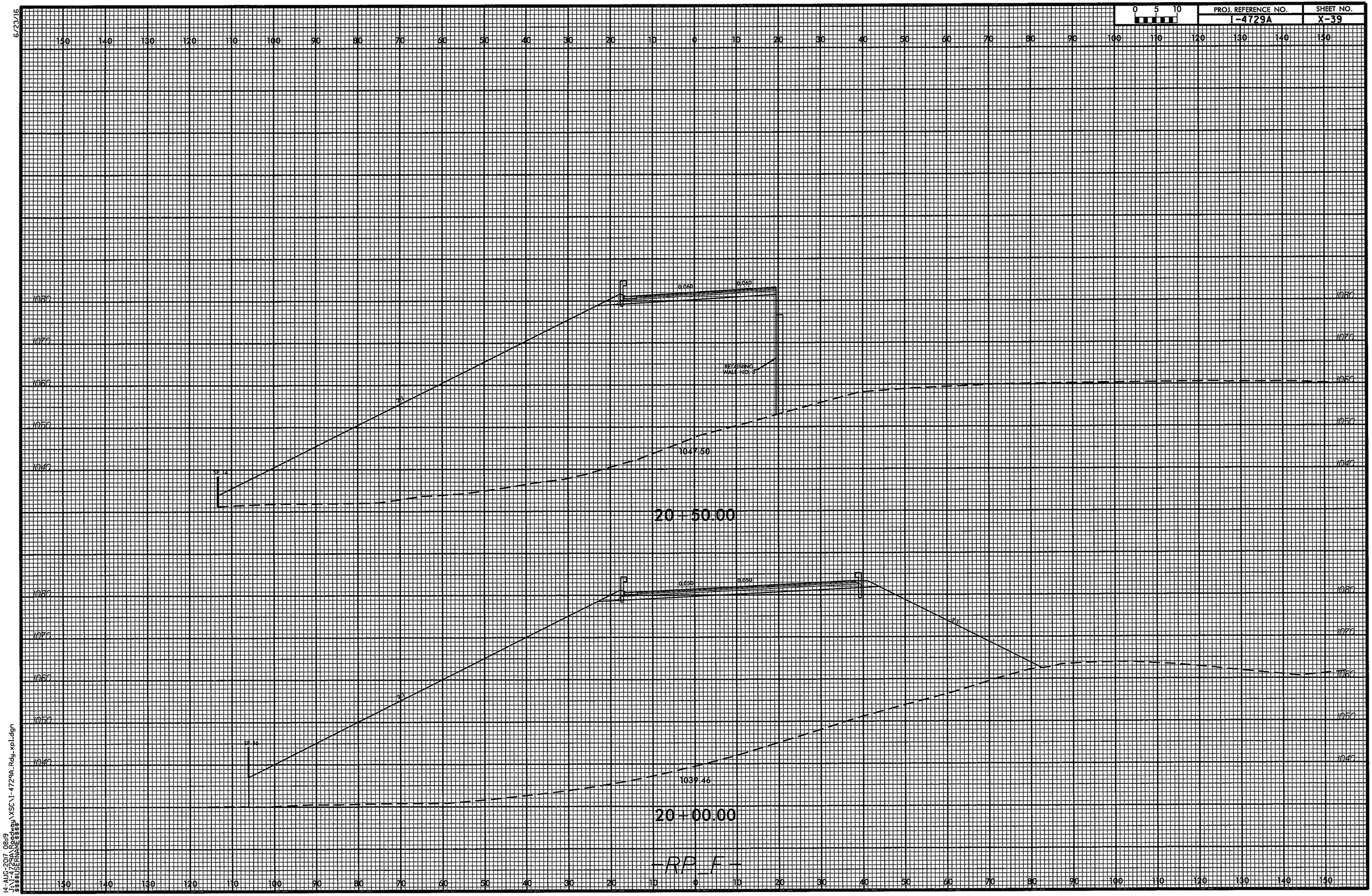

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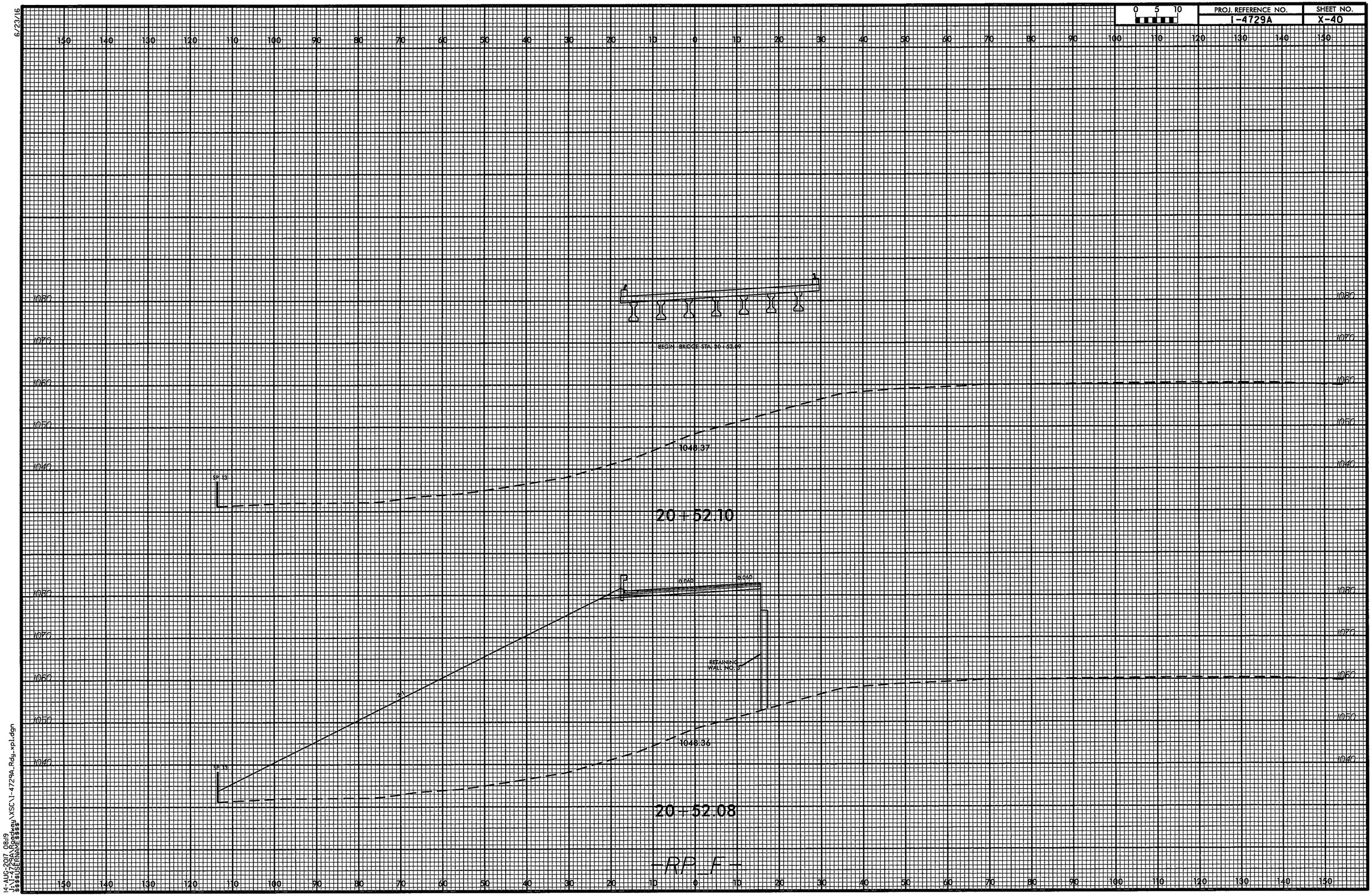

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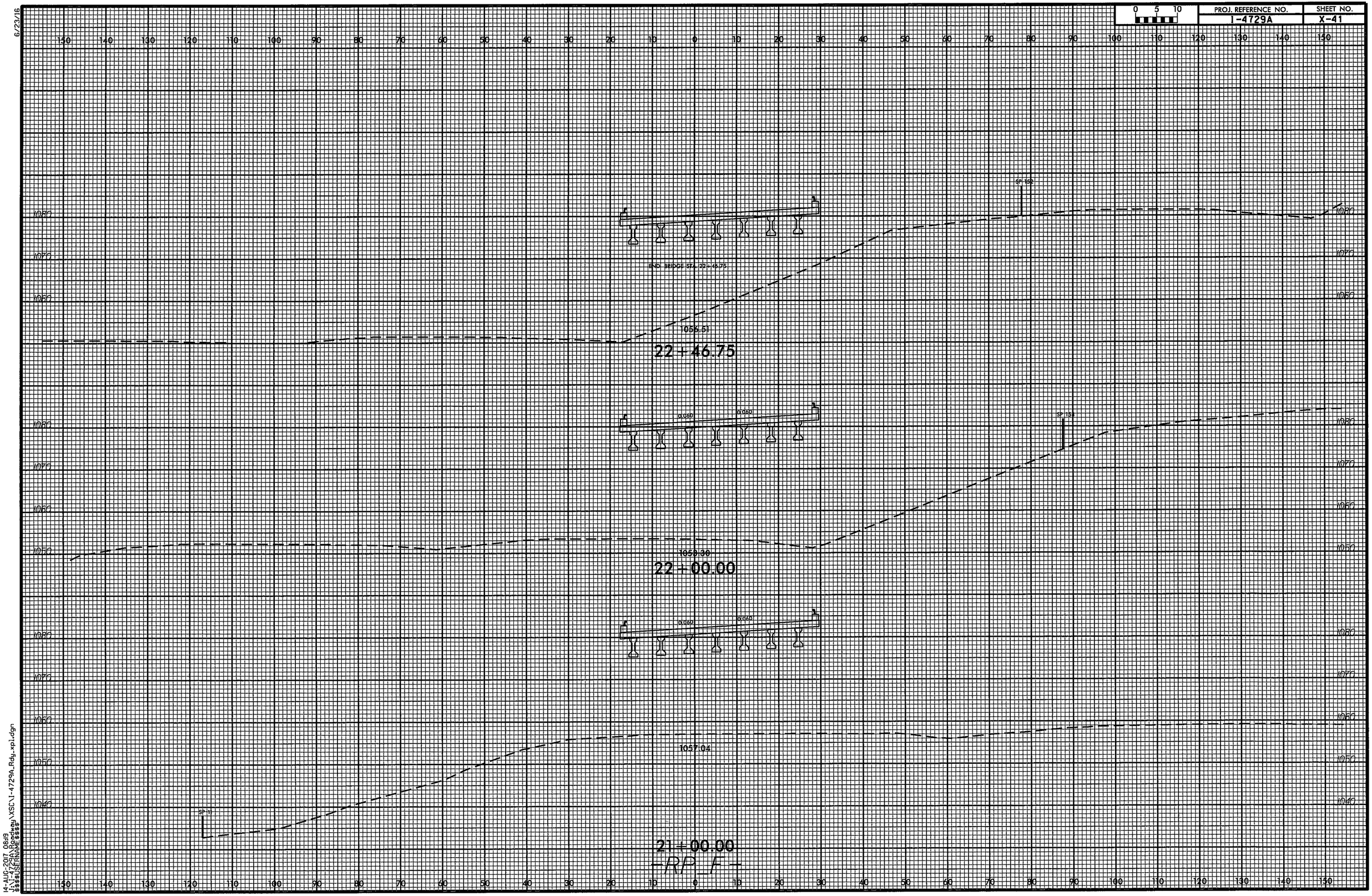

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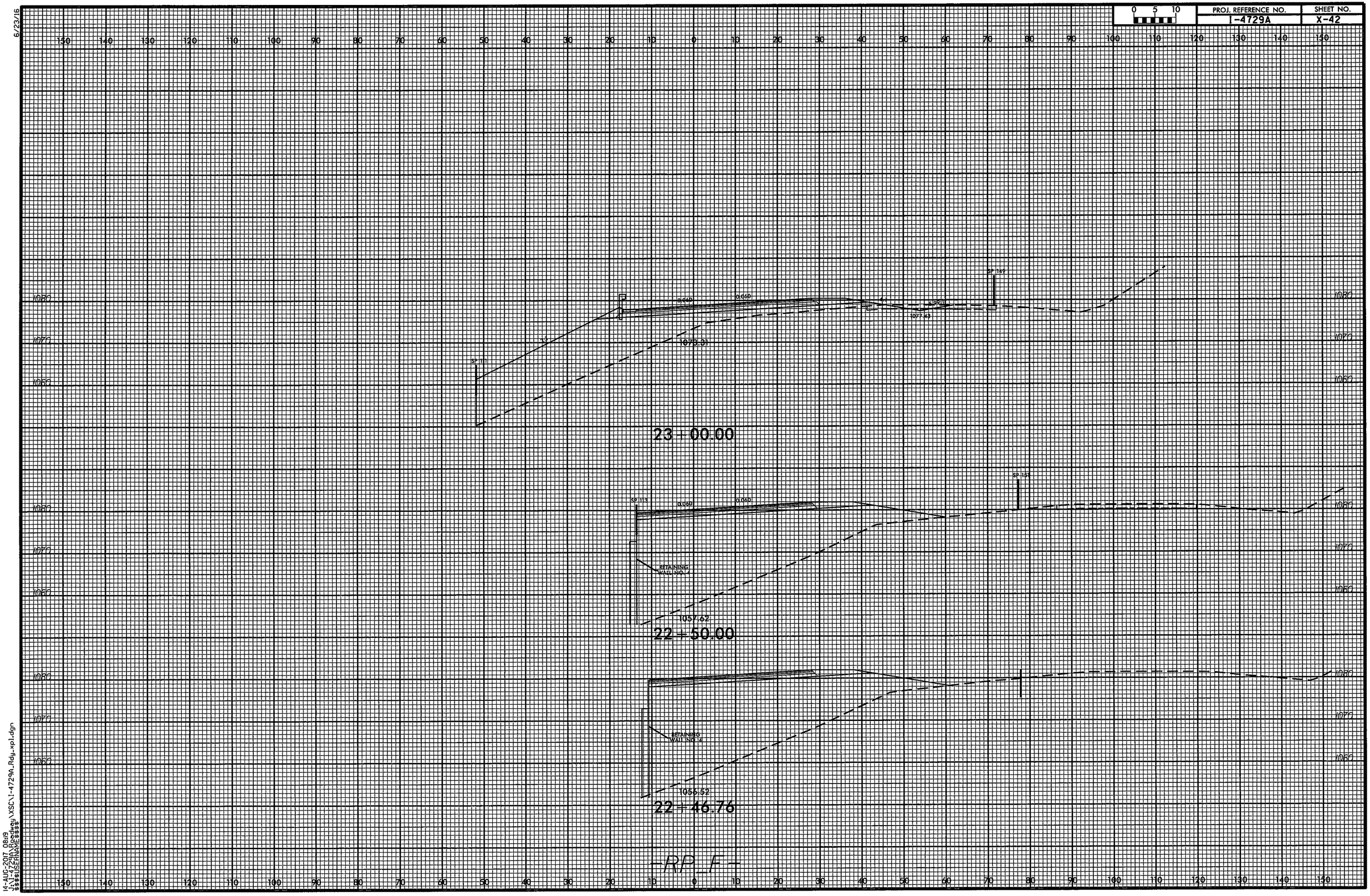

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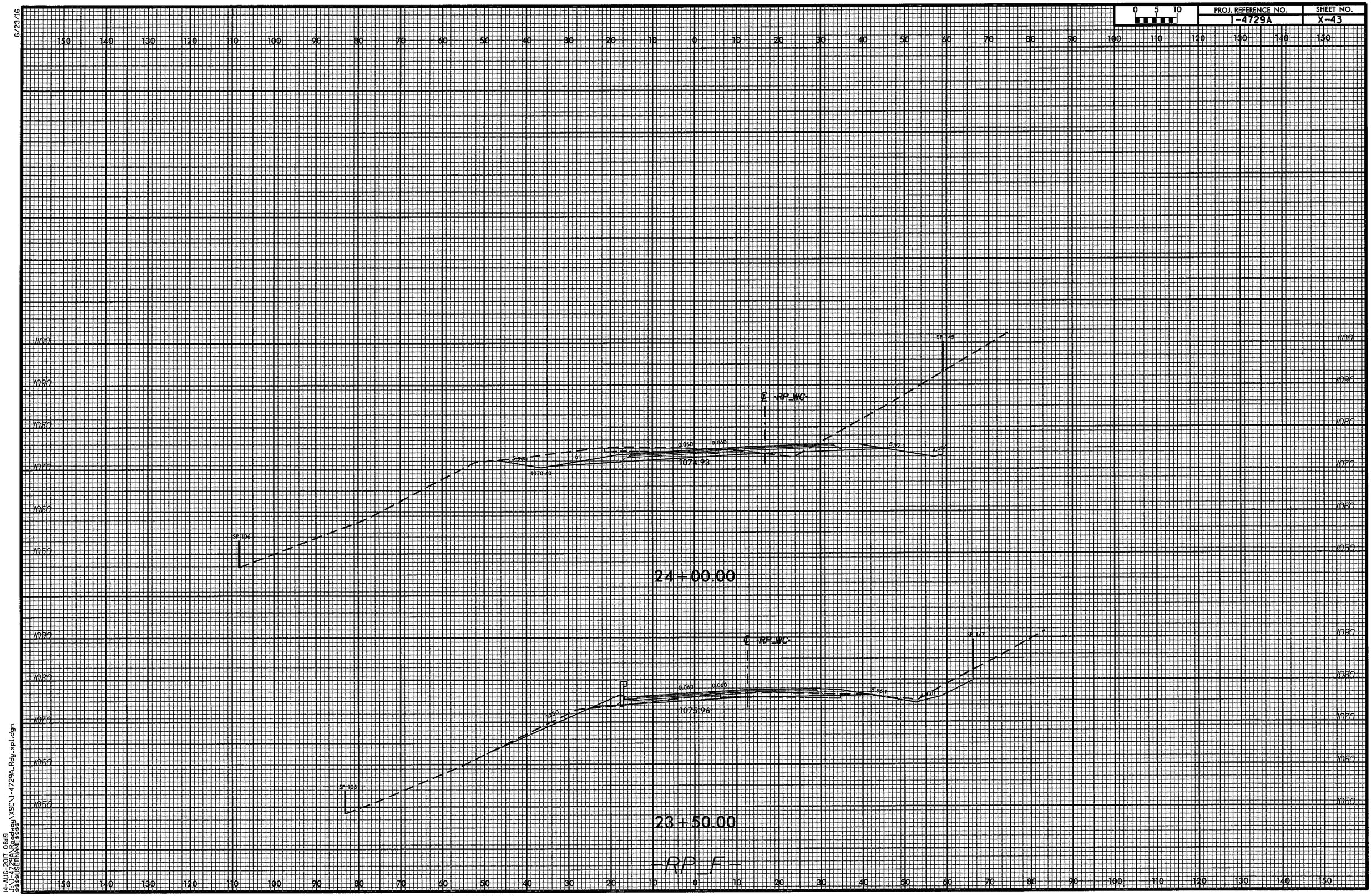

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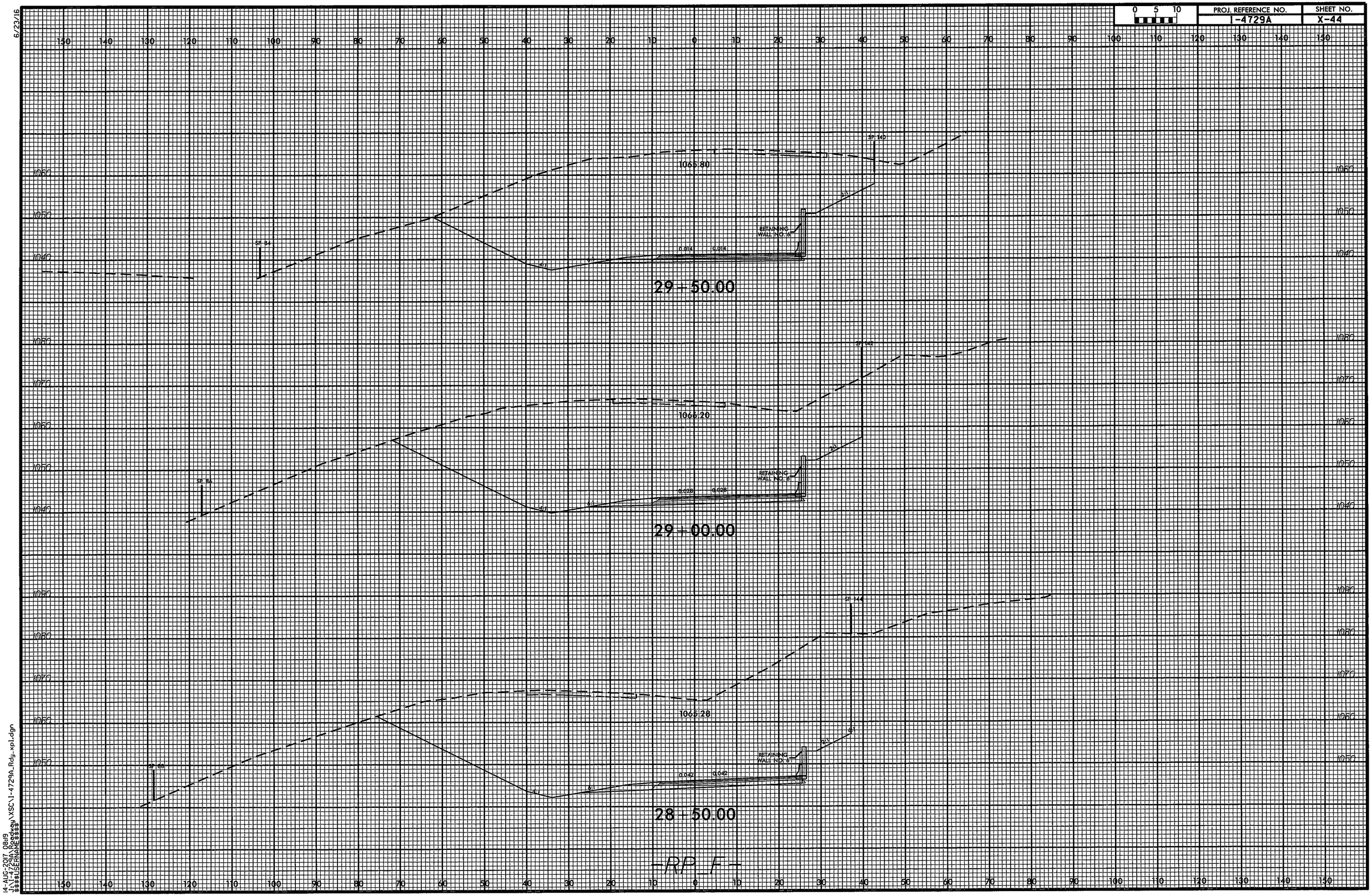

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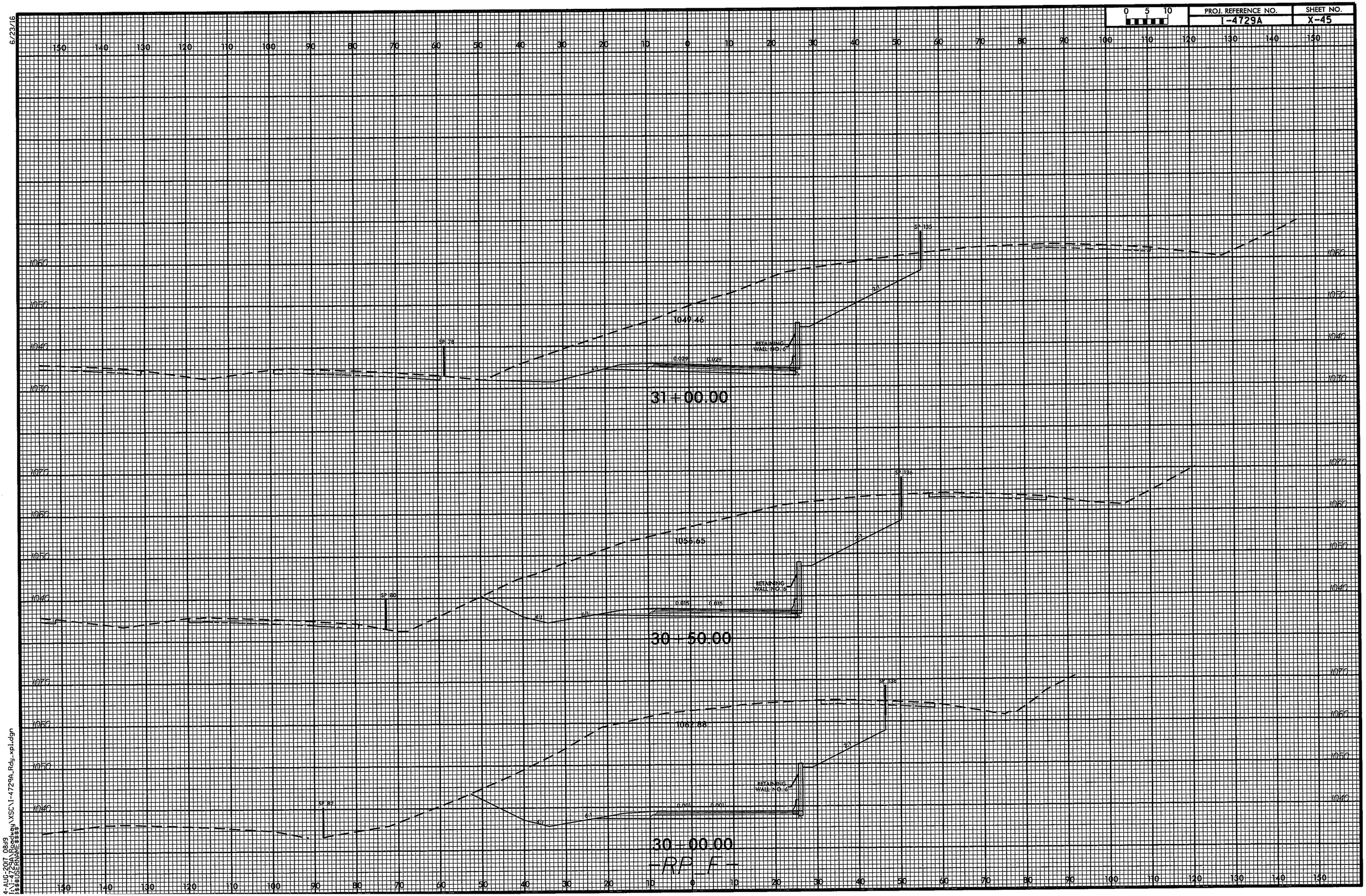

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SP 135
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0.029
0.029
31+00.00
SP 80
SP 136
1056.65
RETAINING WALL NO. 6
0.015
0.015
30+50.00
SP 82
SP 138
1062.88
RETAINING WALL NO. 6
0.001
0.001
30+00.00
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4-AUG-2017 08:19
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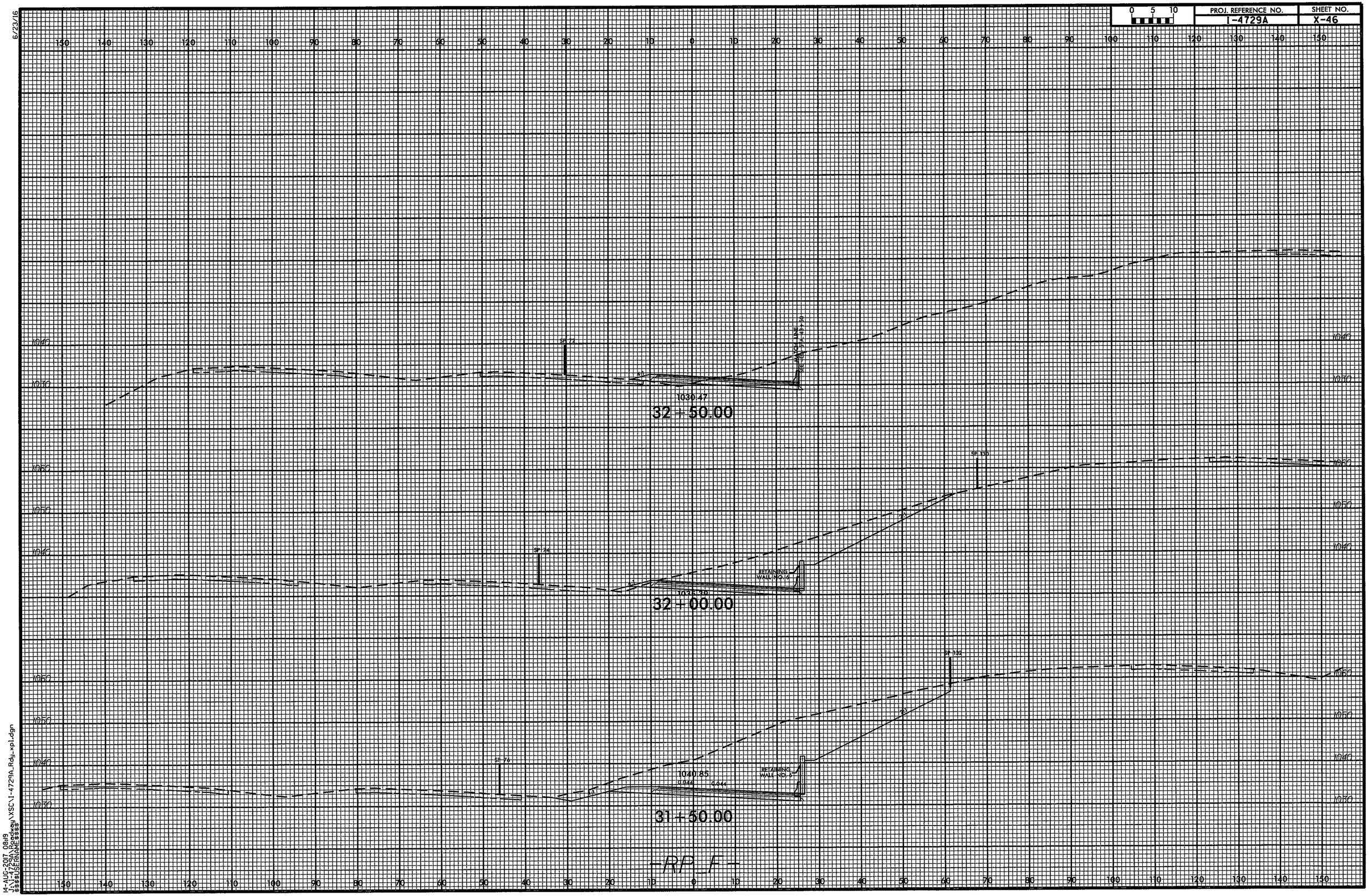

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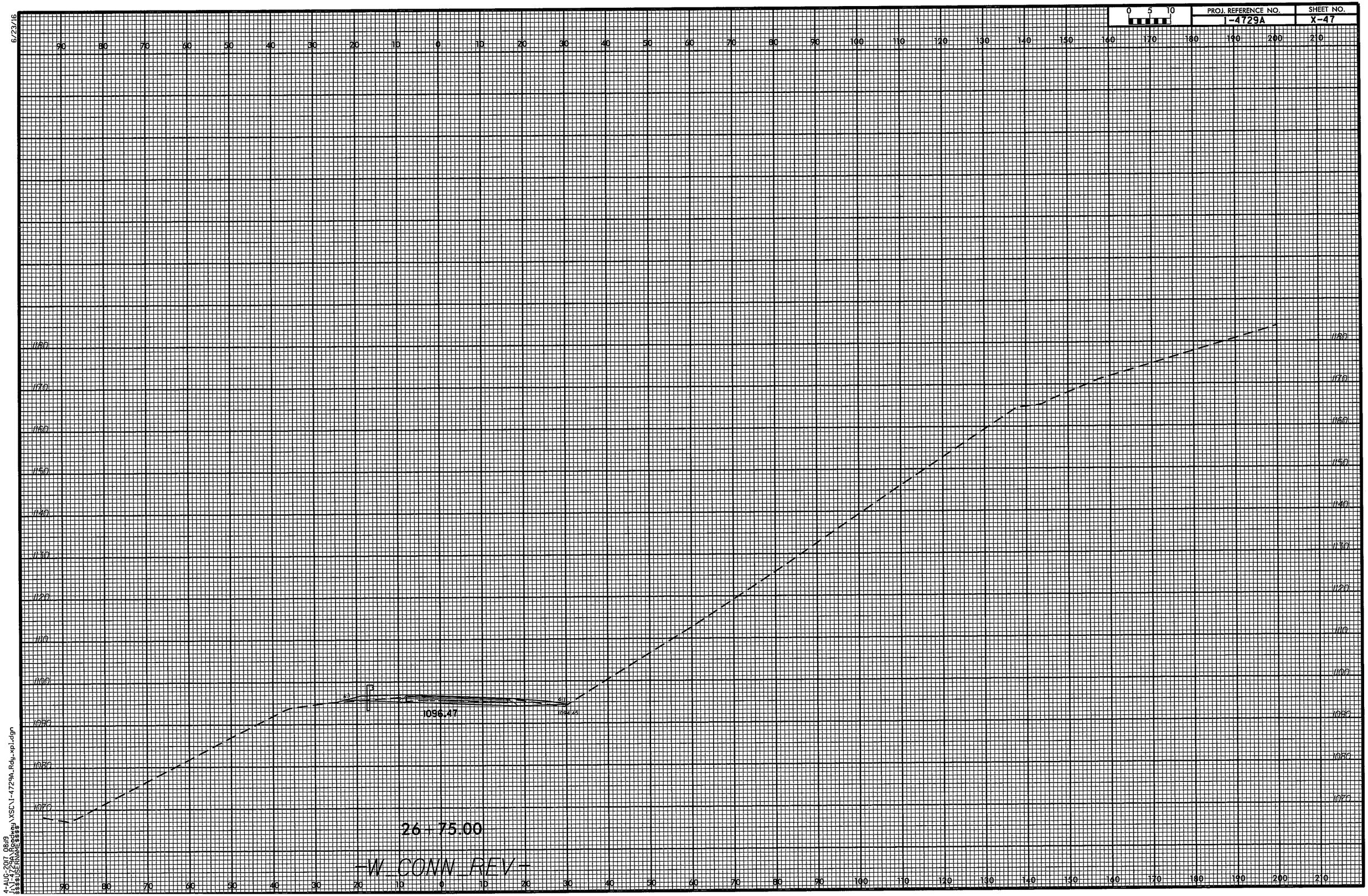

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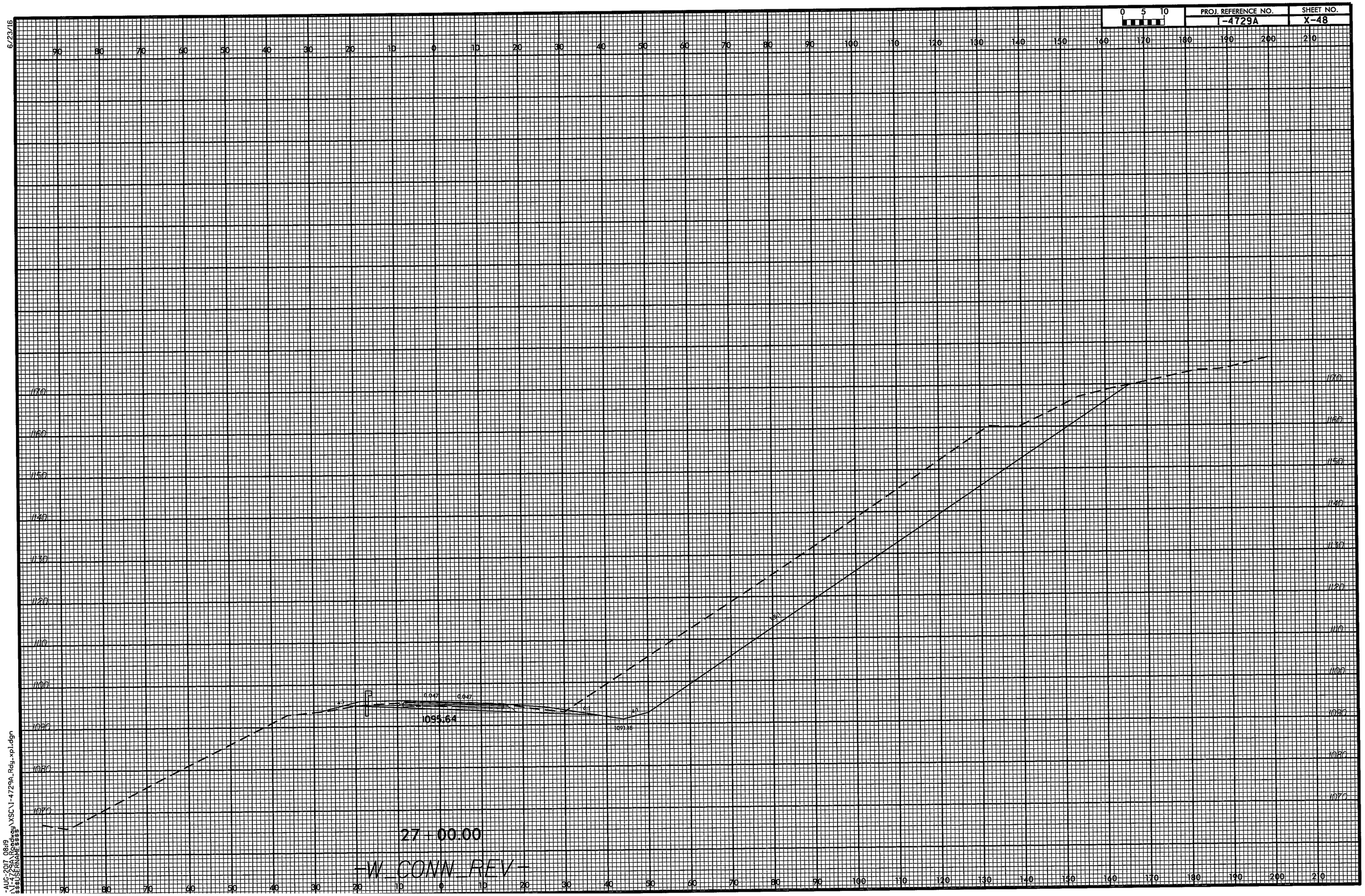

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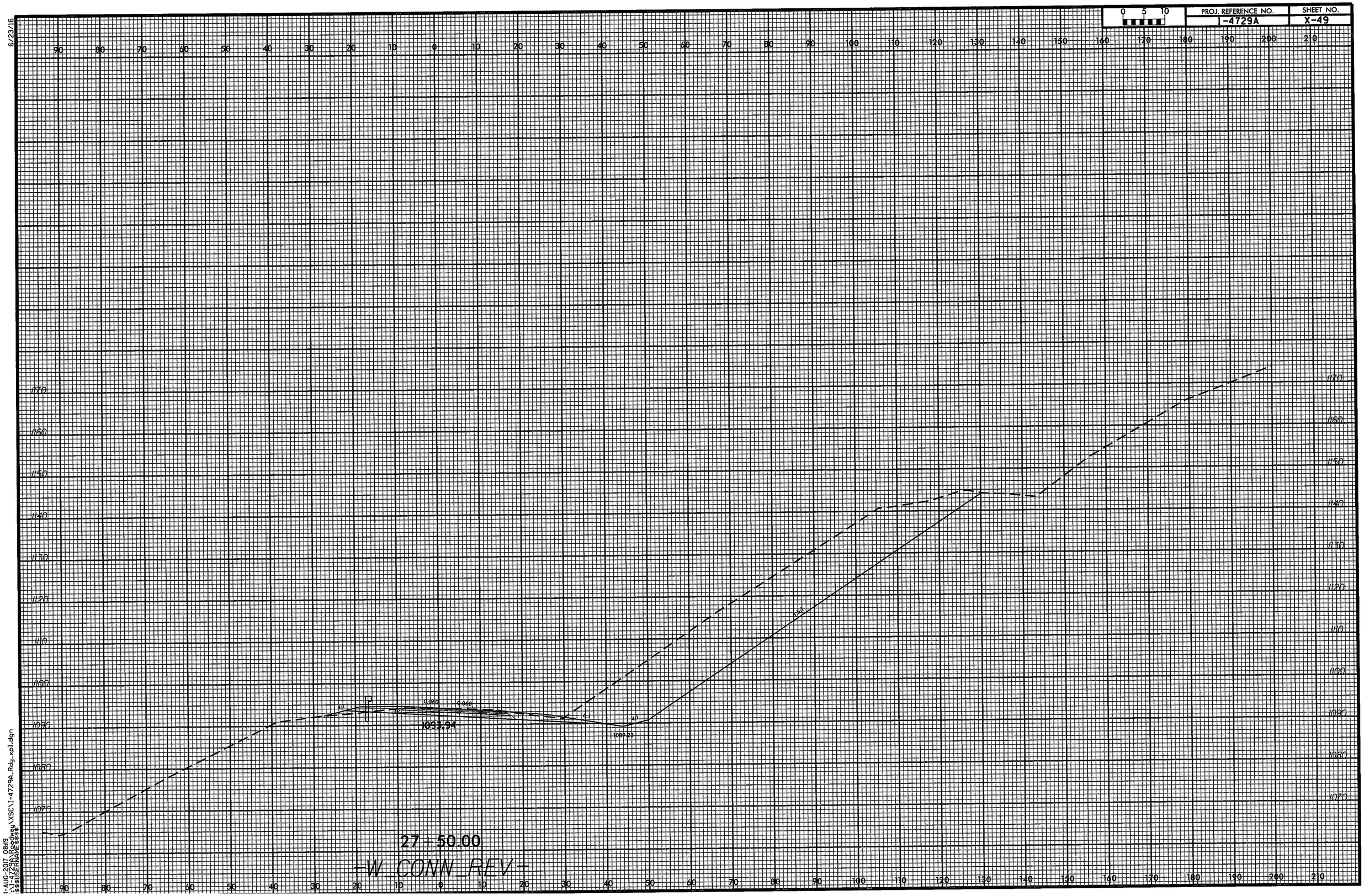

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SHEET NO.
X-49
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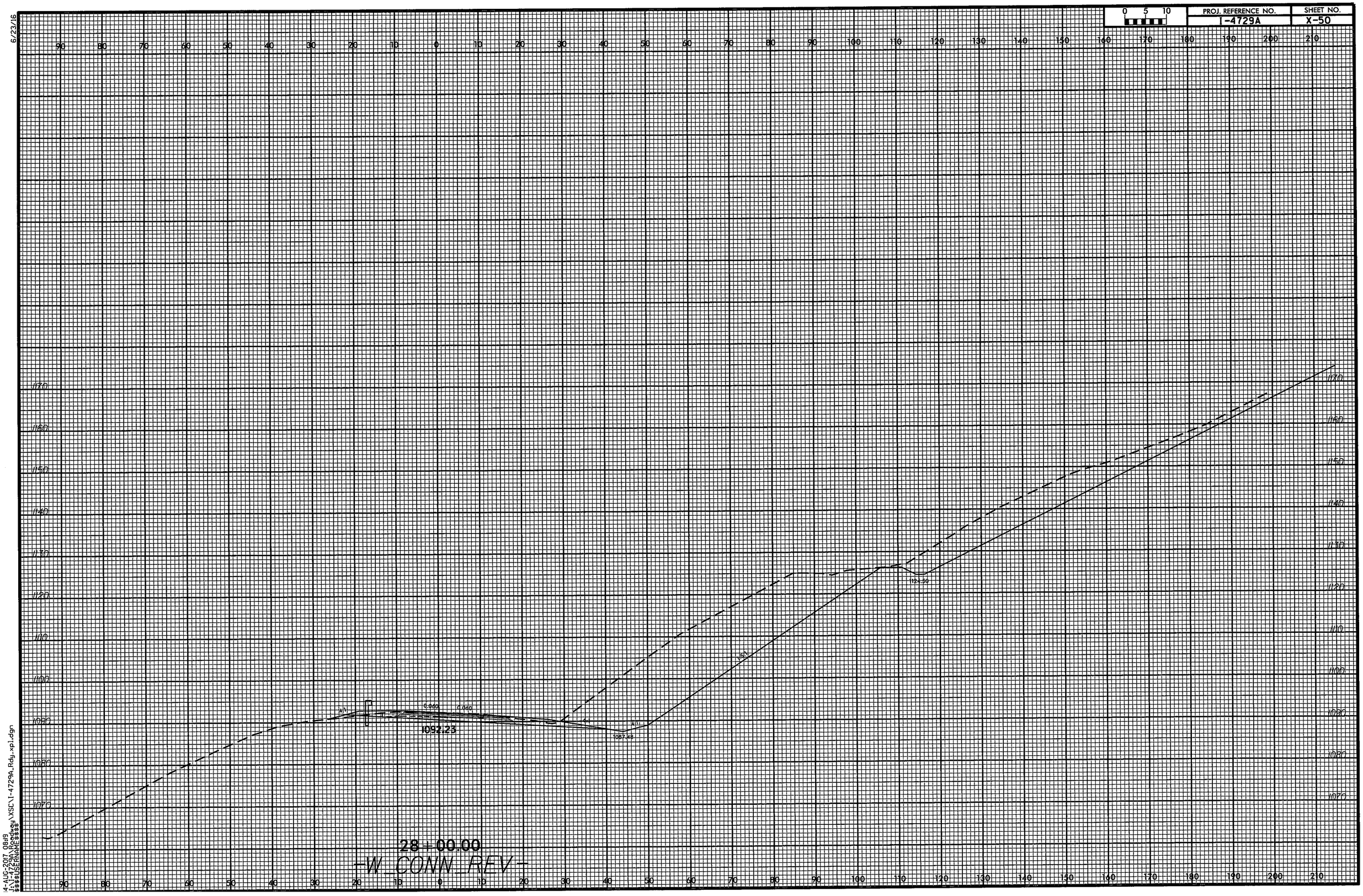

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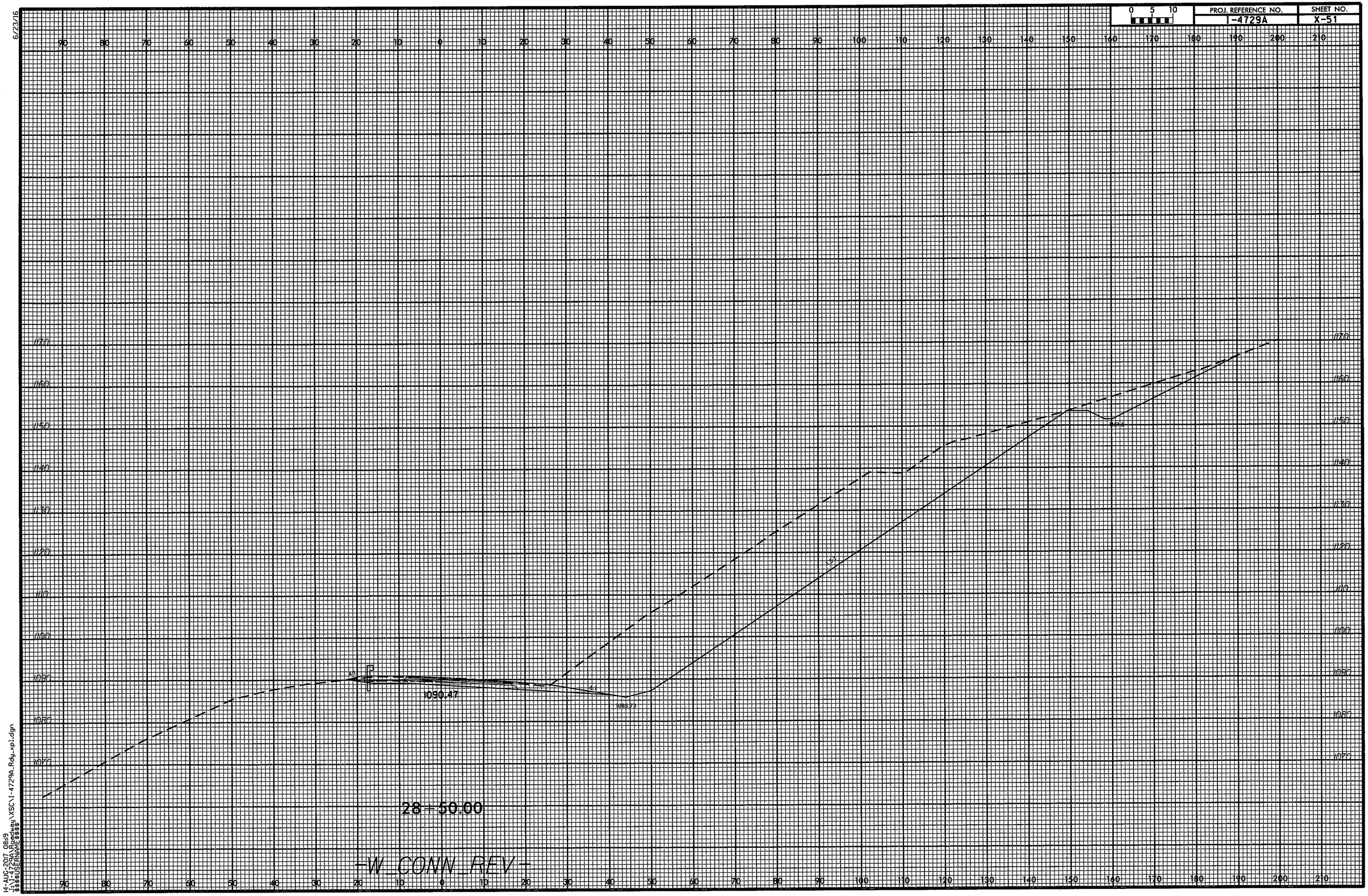

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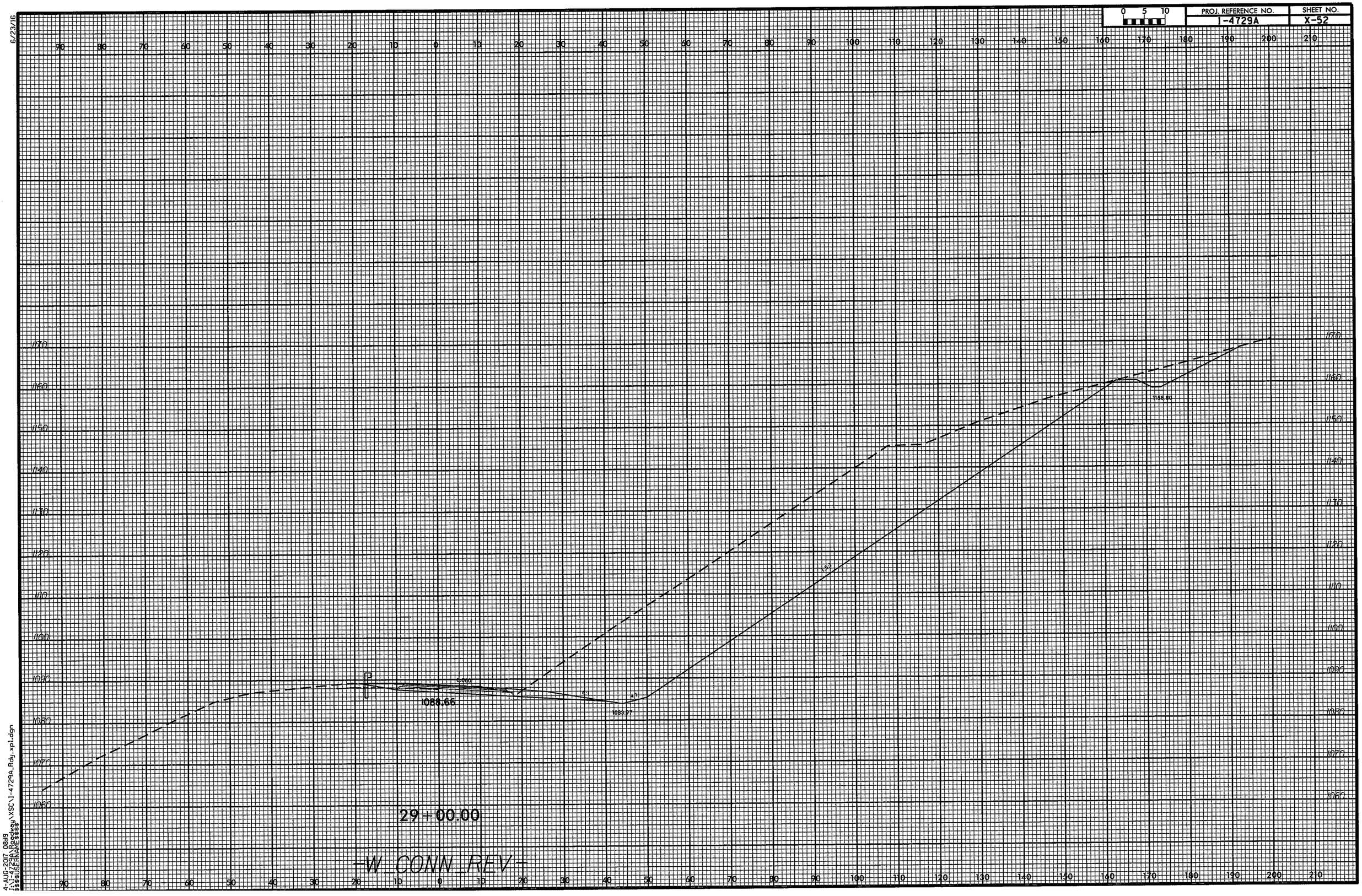

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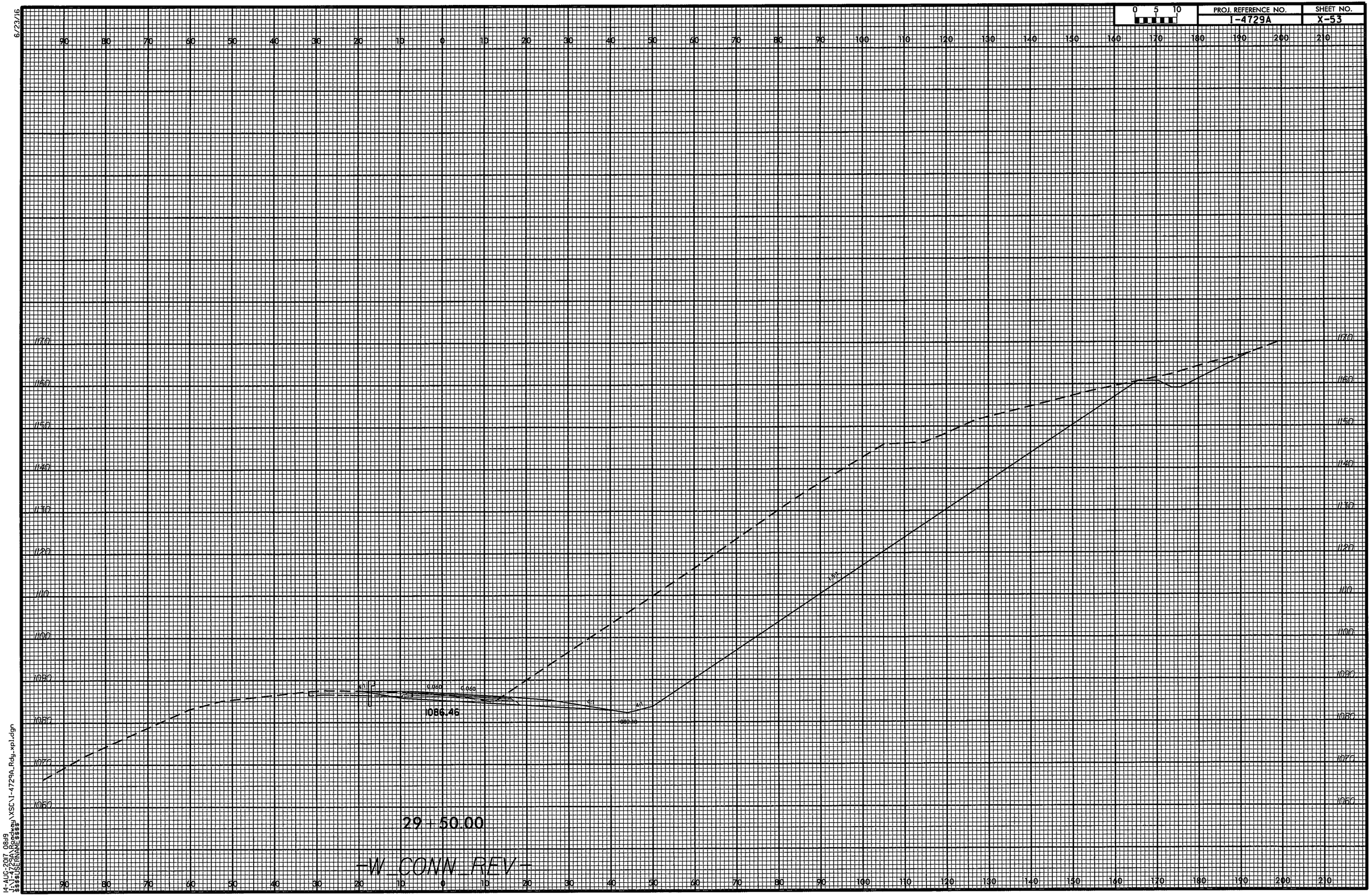

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6/23/16

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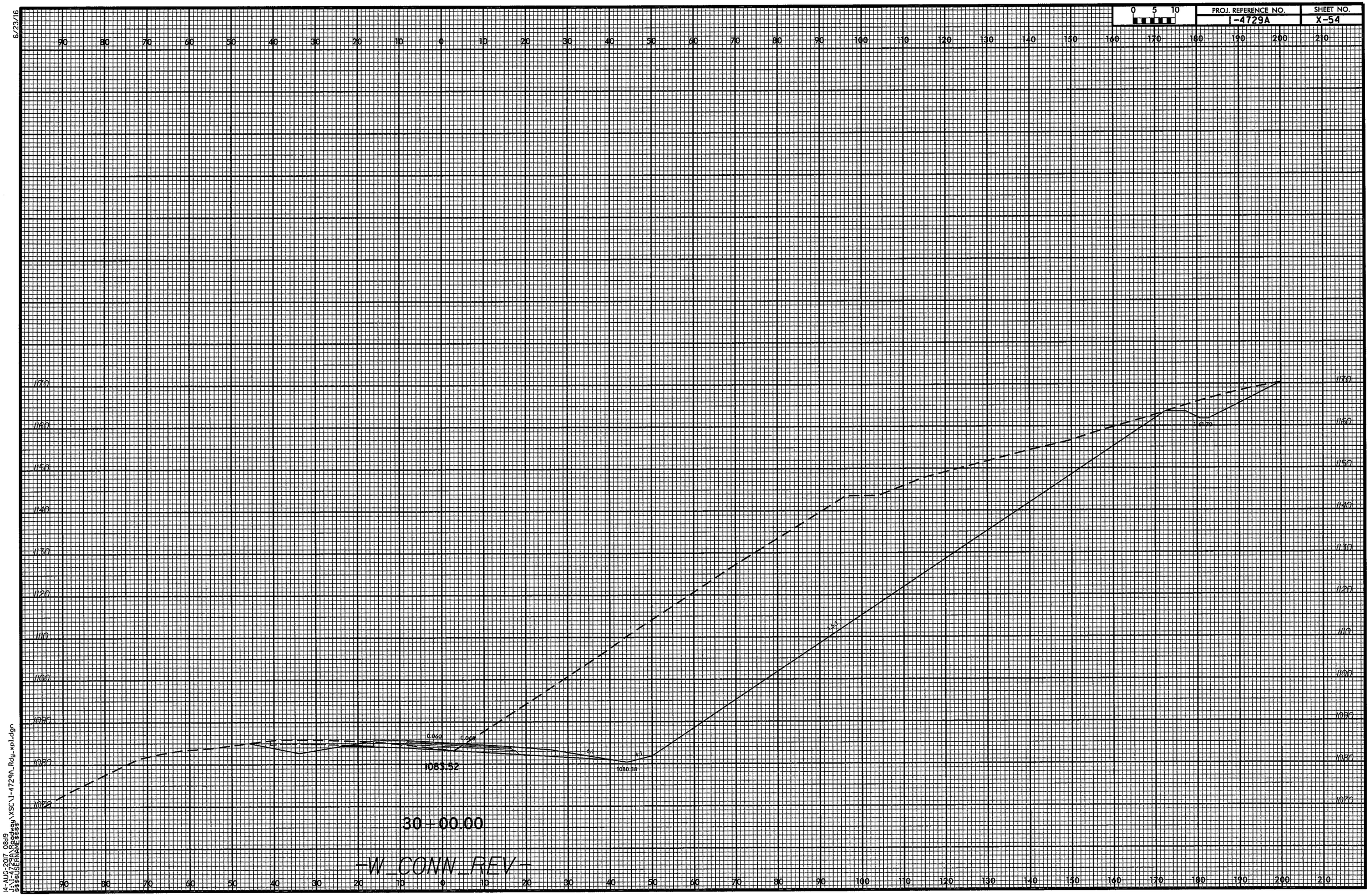

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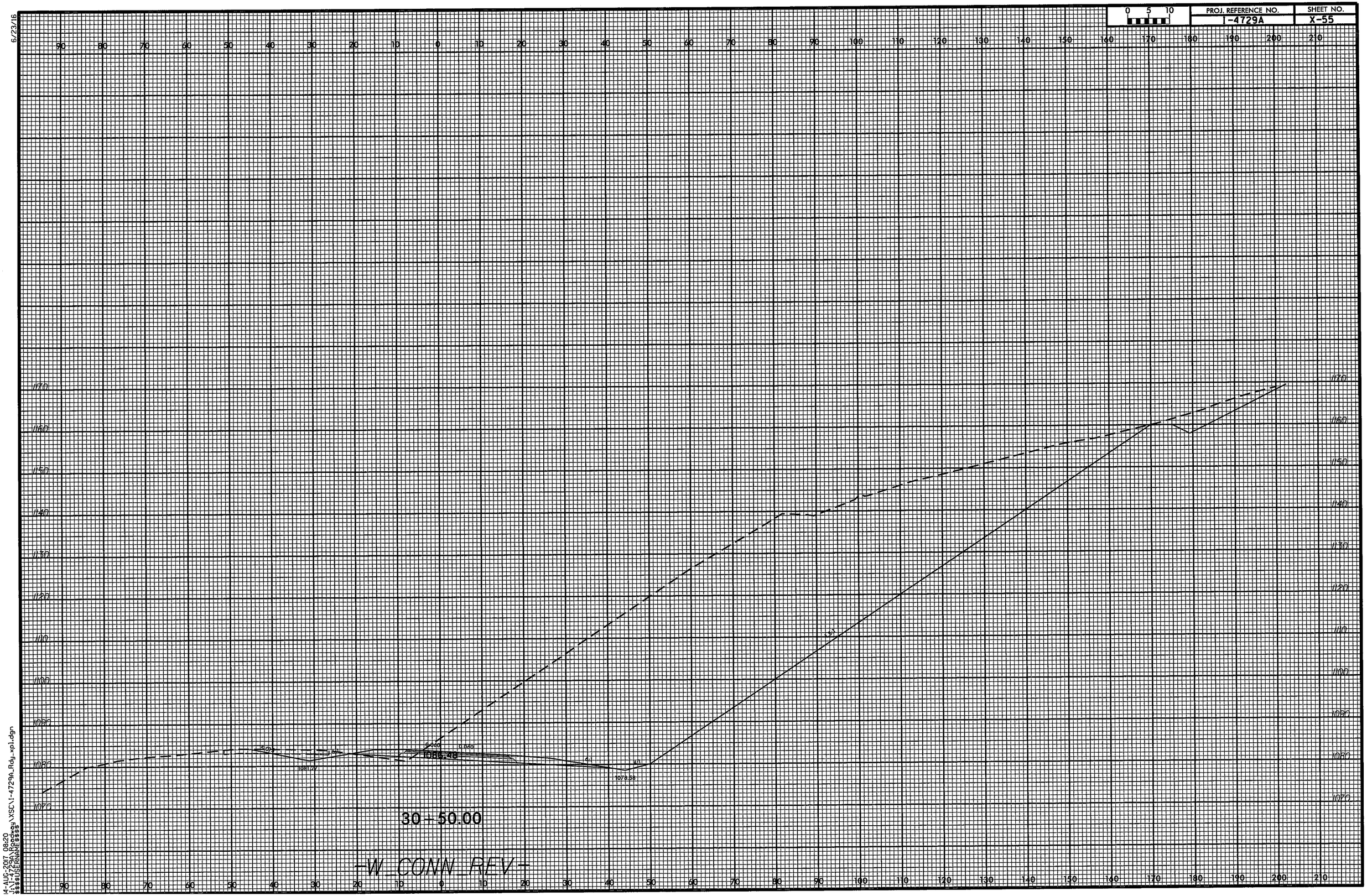

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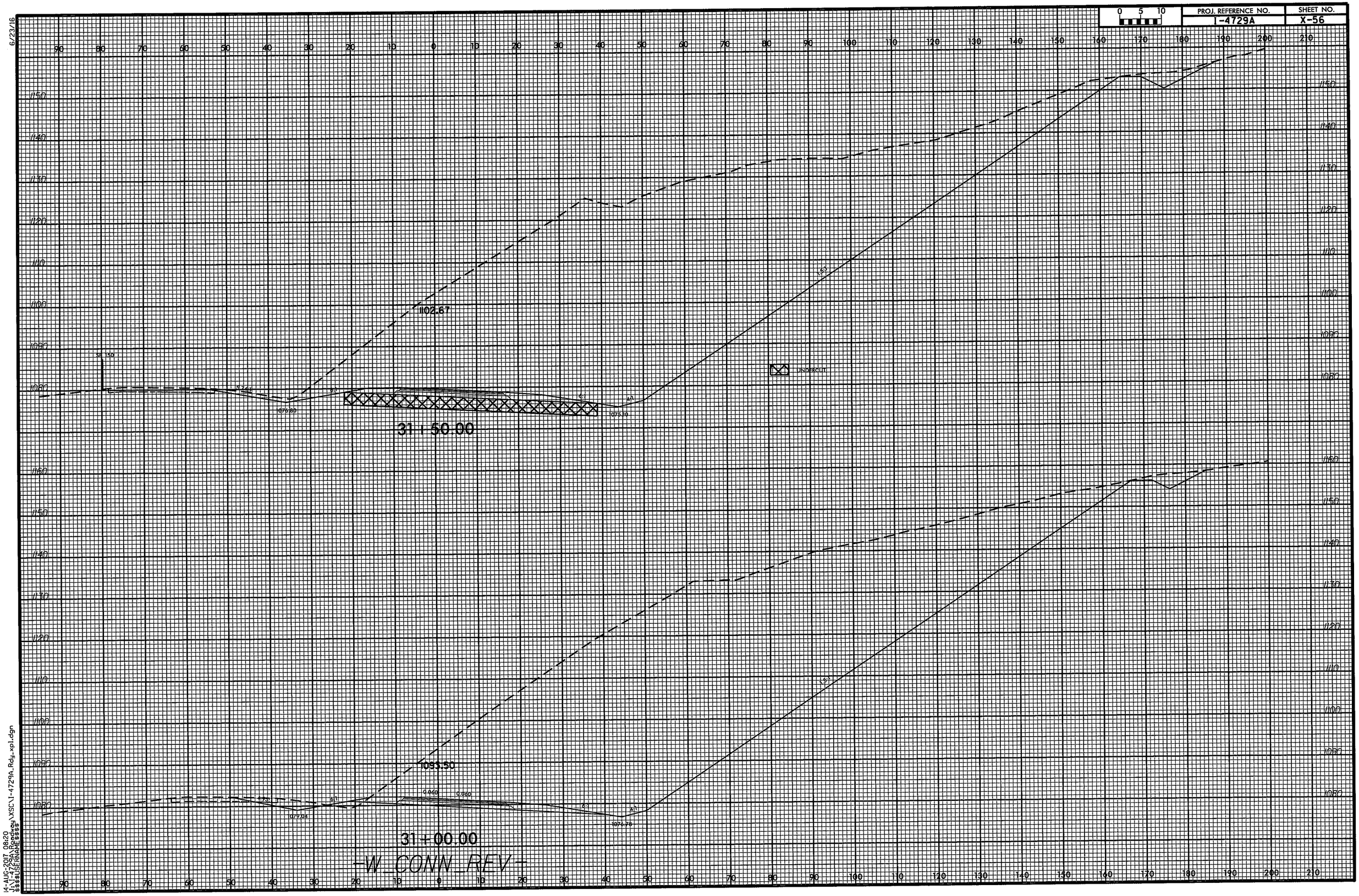

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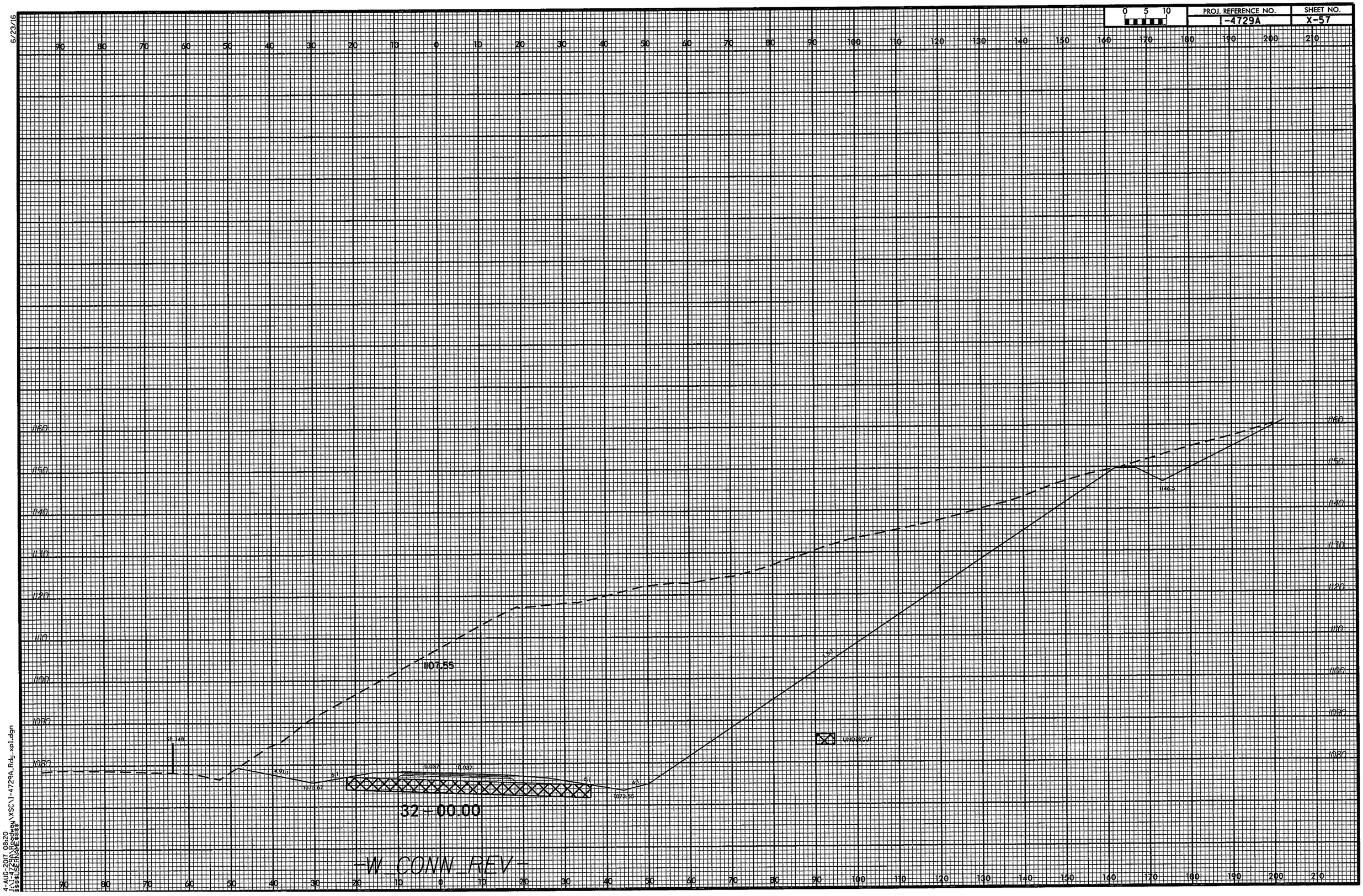

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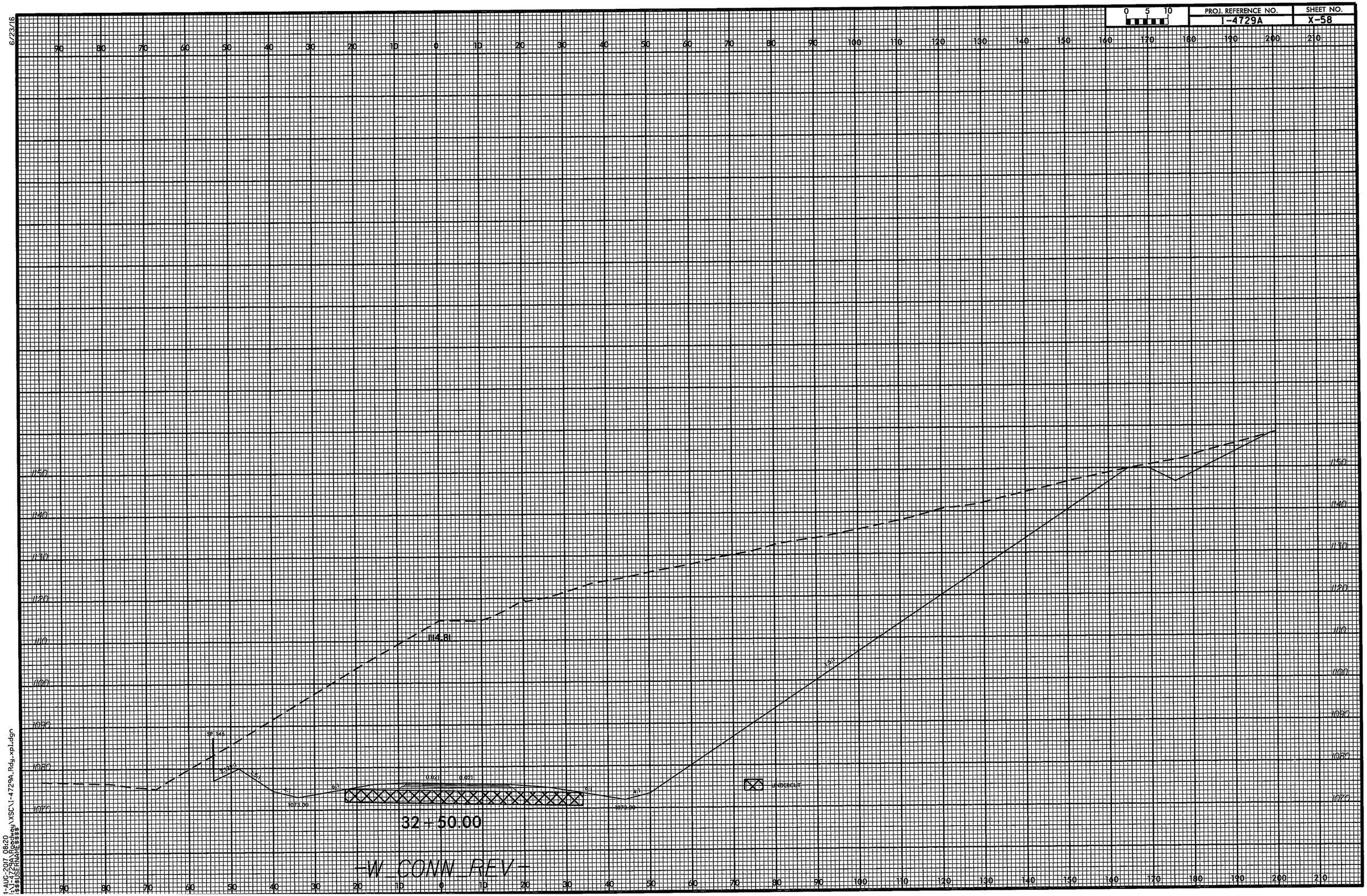

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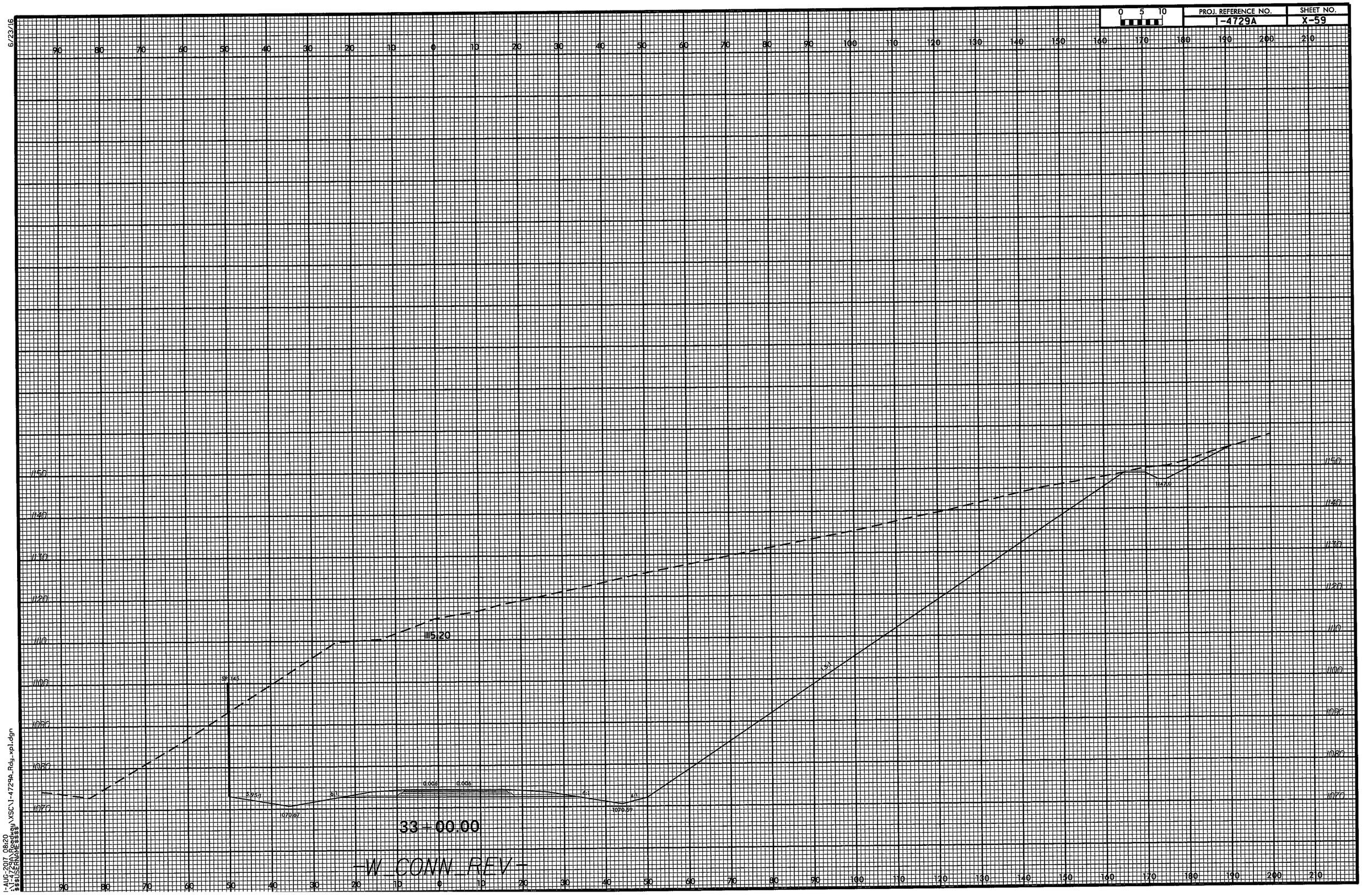

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SHEET NO.
X-59
6/23/16
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SP 145
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6:1
0.006
0.006
4:1
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1070.59
1.5:1
1147.0
33+00.00
-W_CONN_REV-
I-AUG-2017 08:20
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6/23/16

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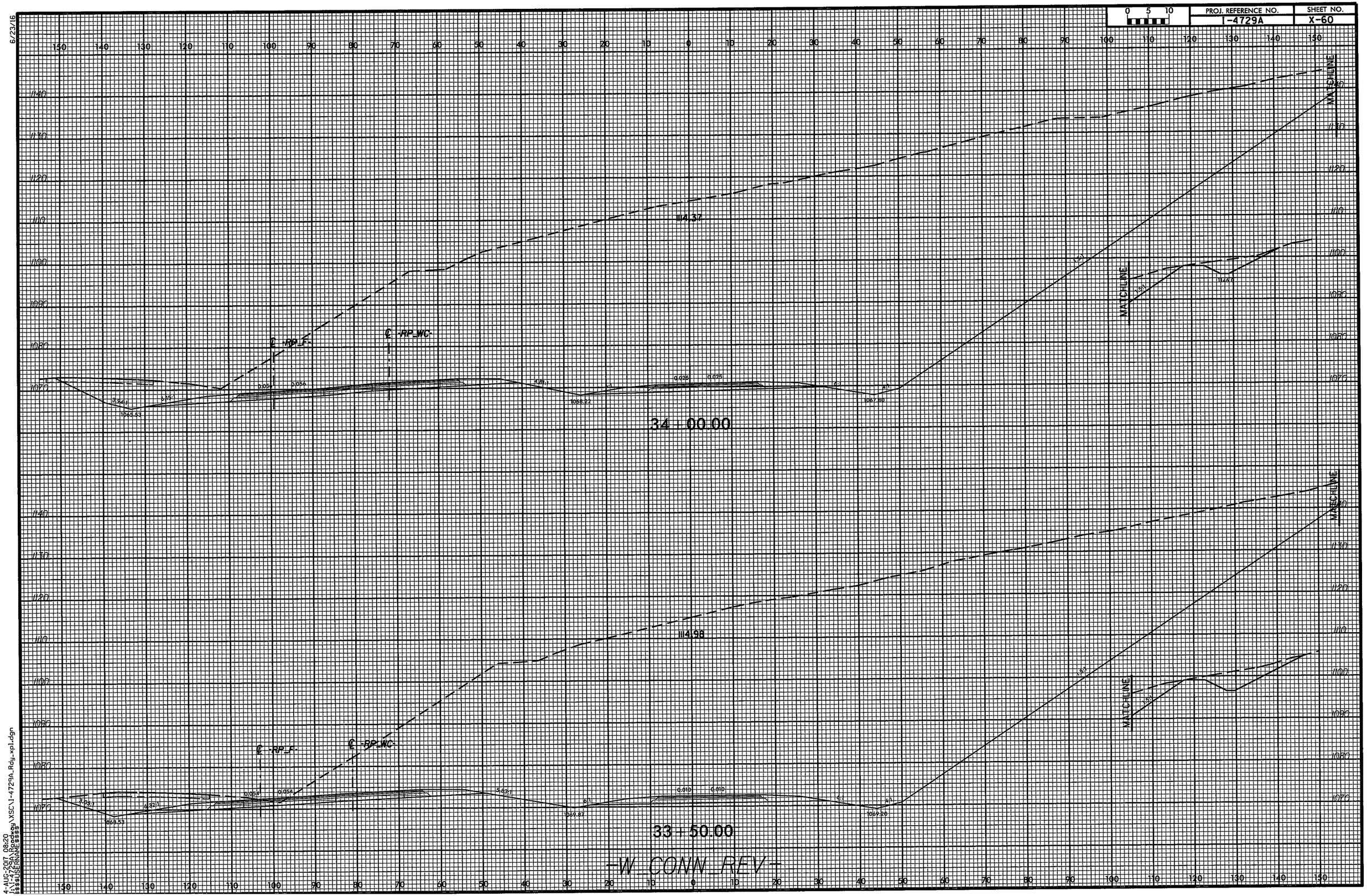

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6/23/16

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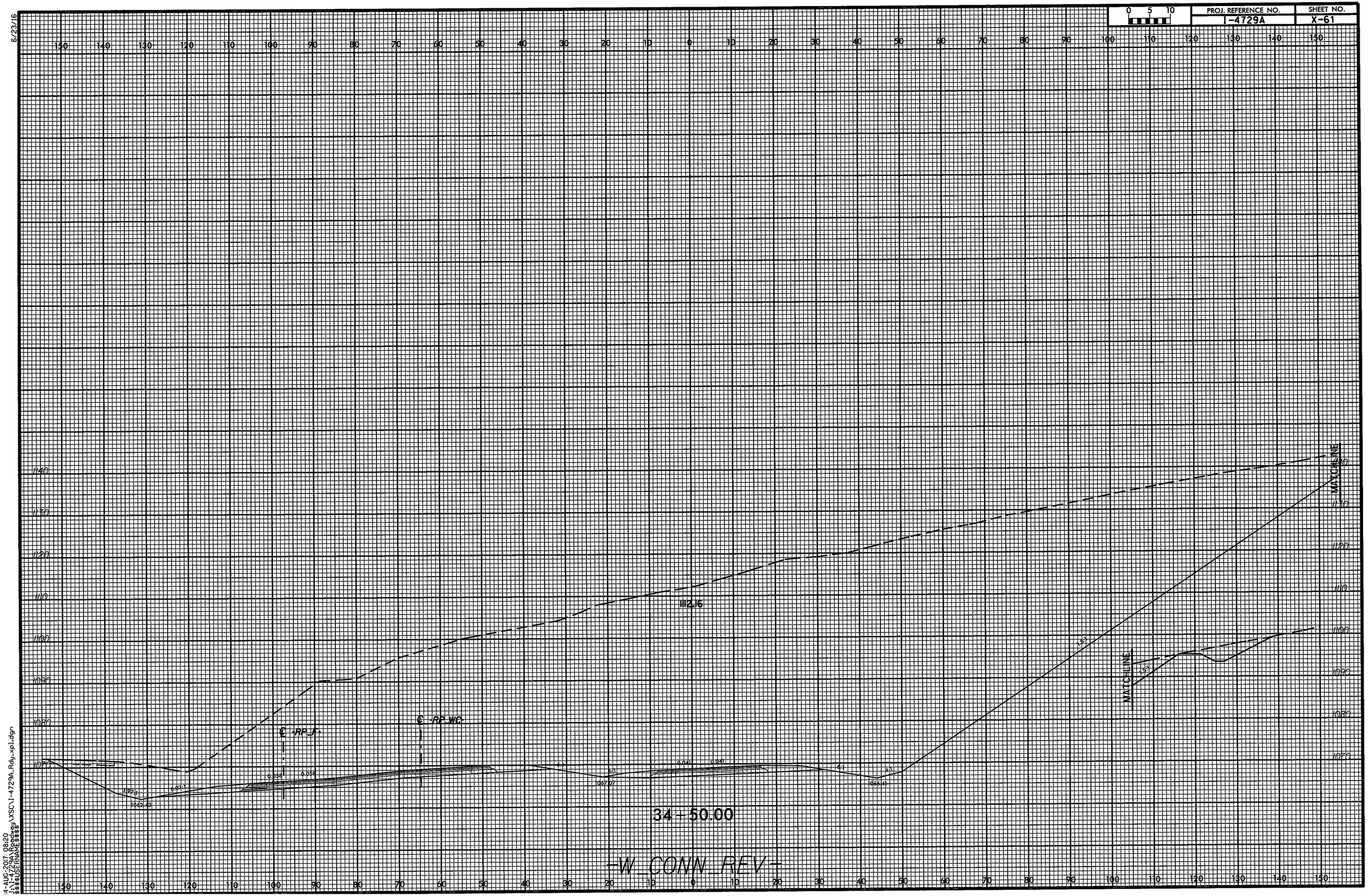

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6/23/16

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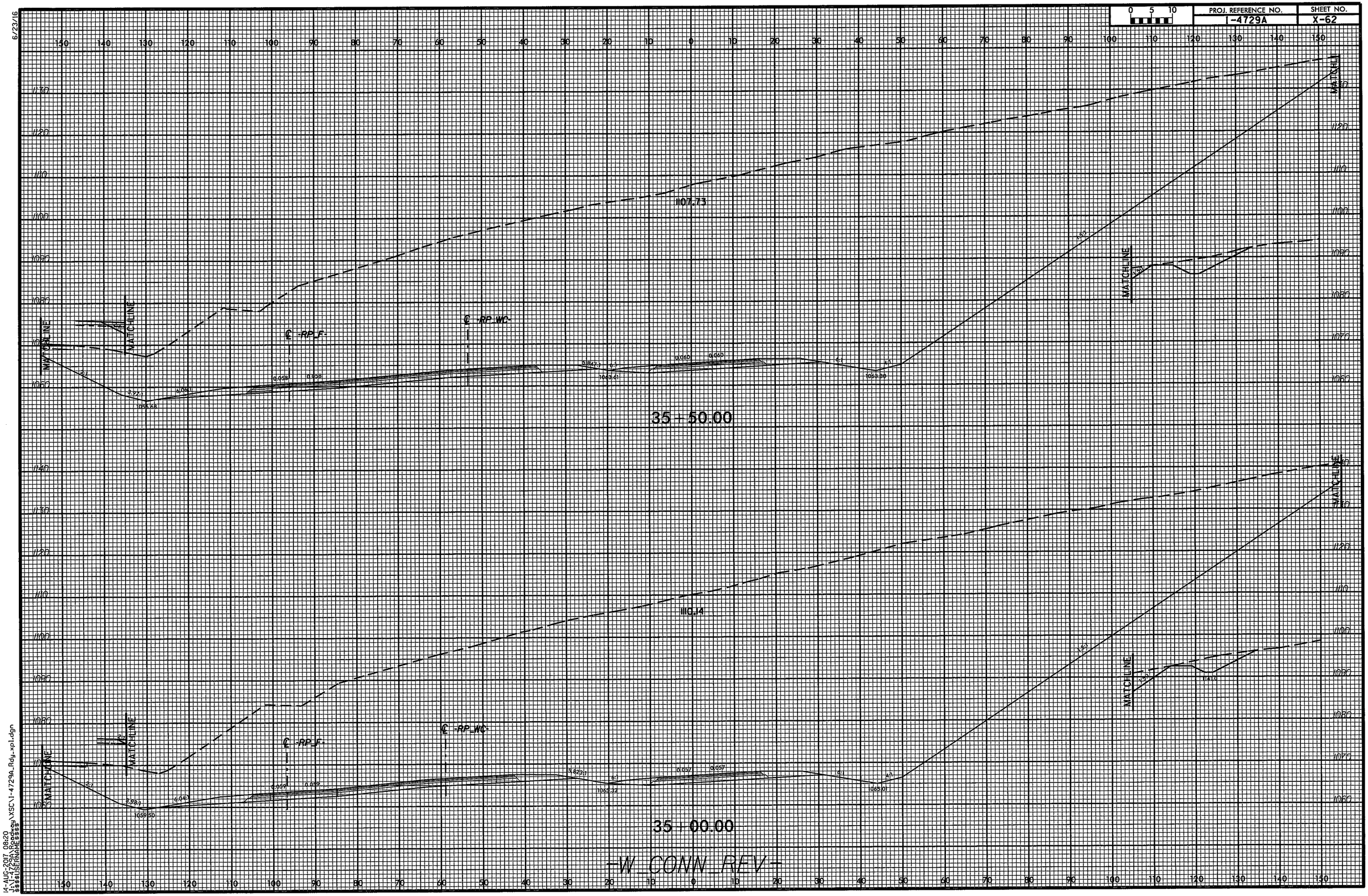

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6/23/16

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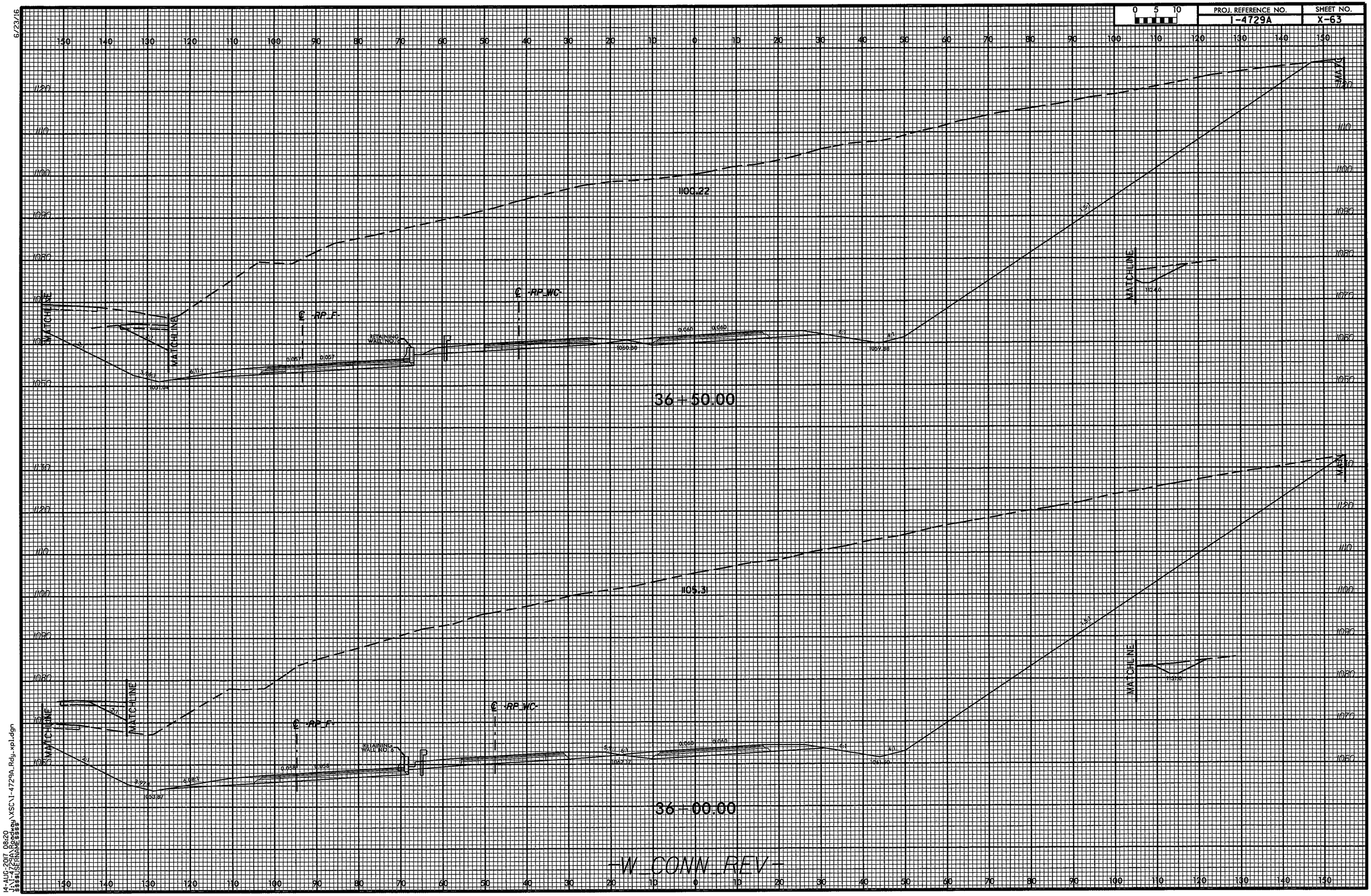

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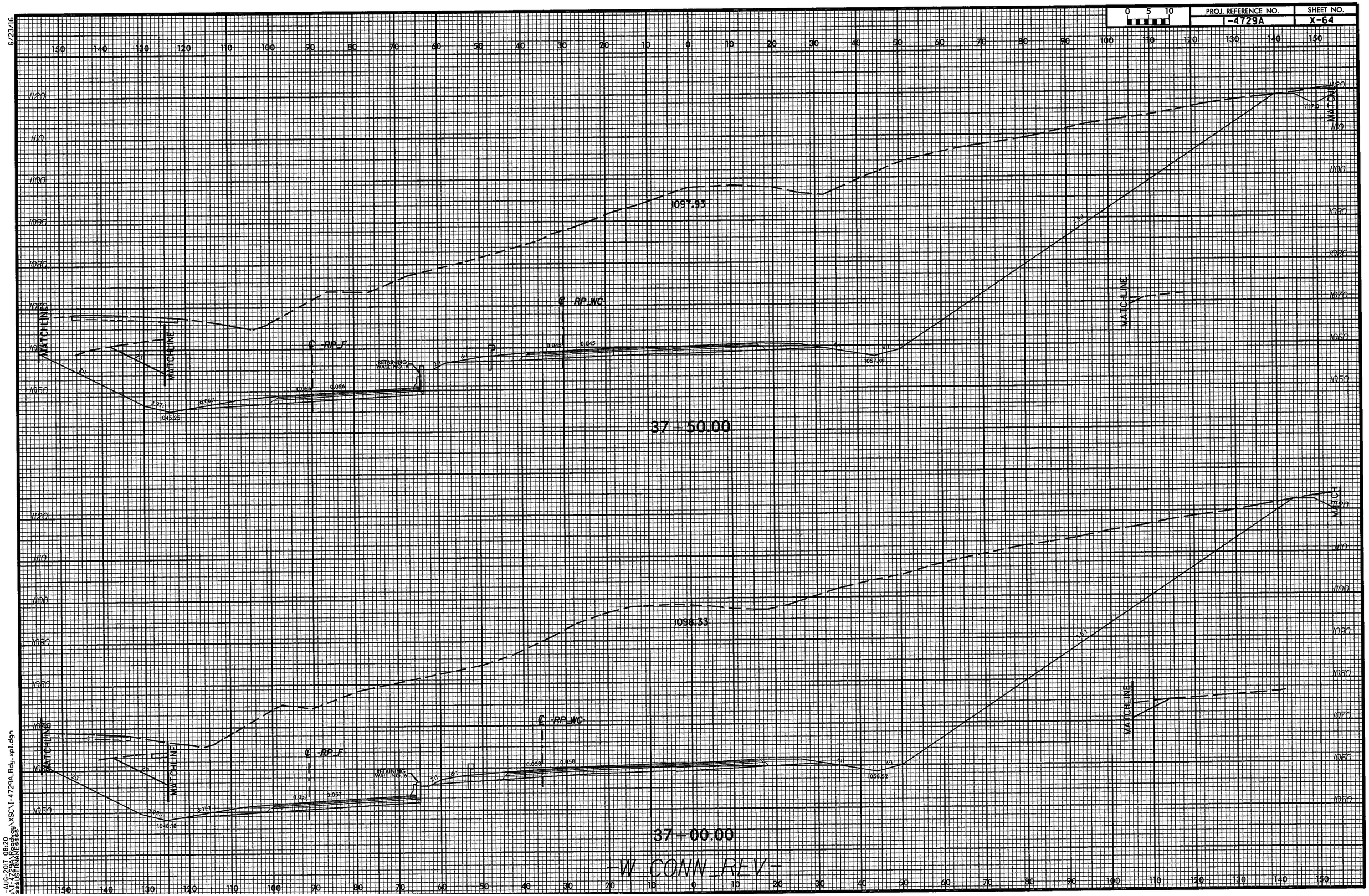

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X-64
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℄ RP_F
MATCHLINE
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1098.33
37+00.00
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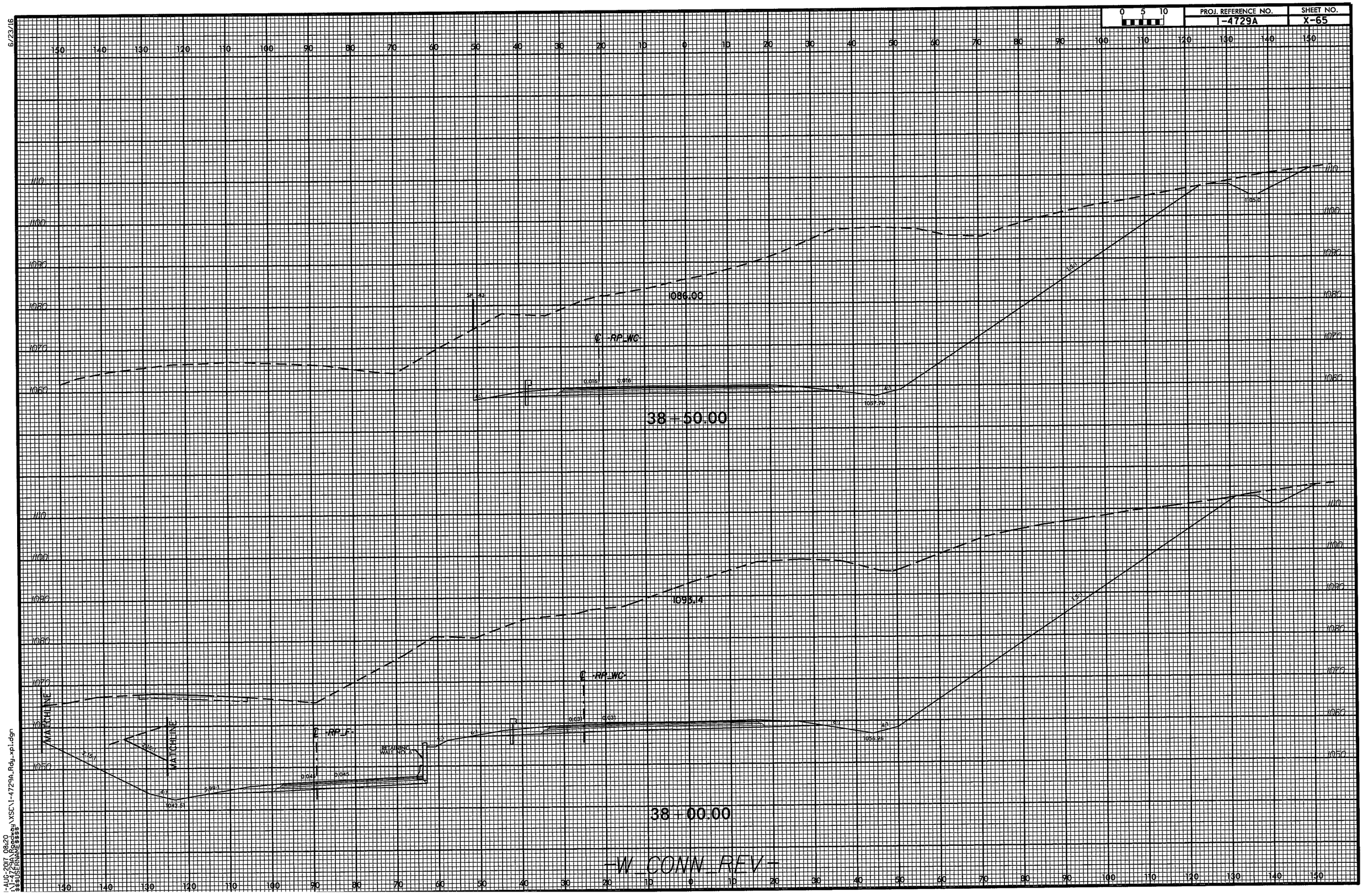

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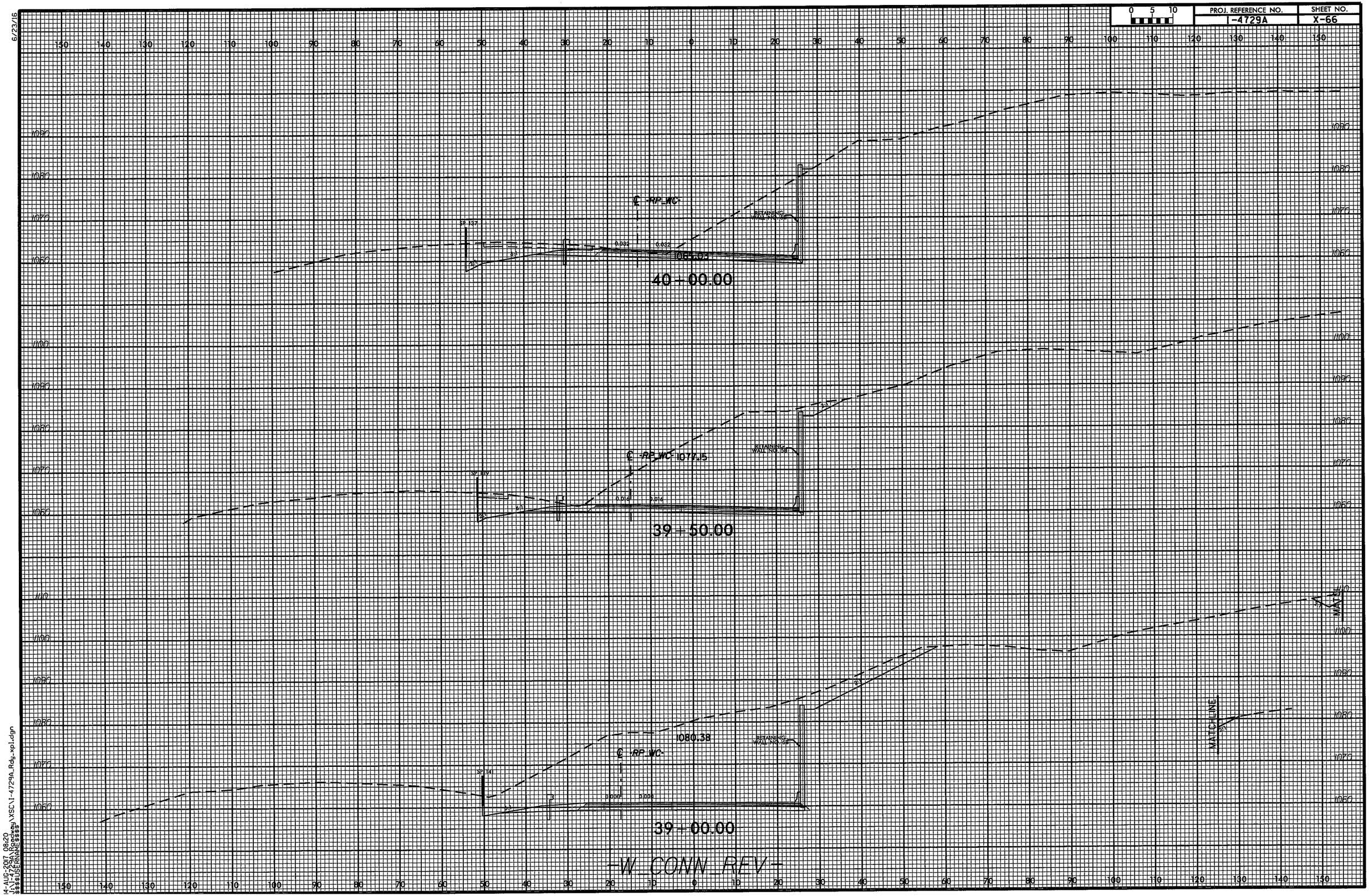

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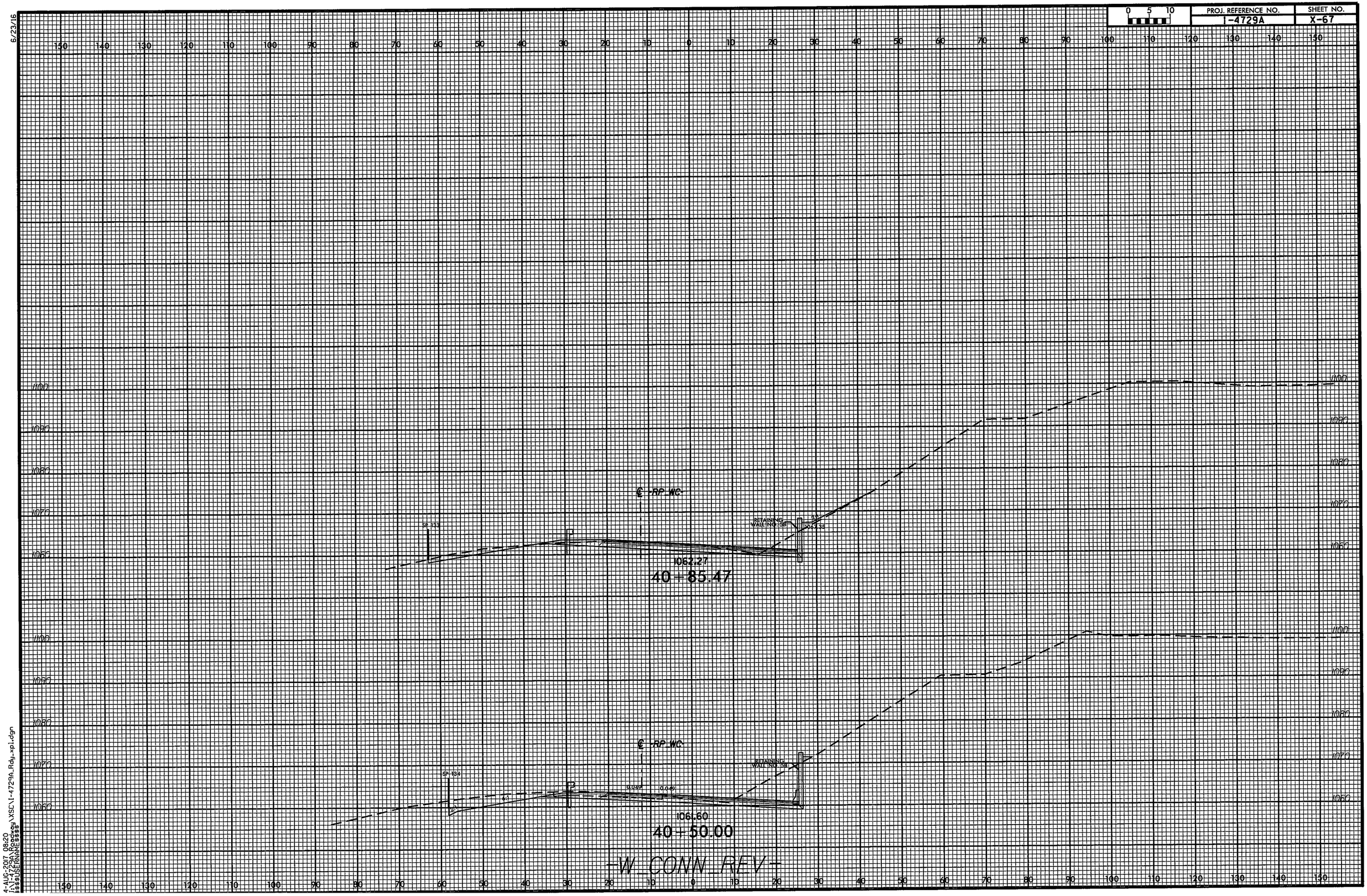

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X-67
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℄ -RP-WC-
SP 134
RETAINING WALL NO. 58
0.049
0.049
1061.60
40+50.00
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4-AUG-2017 08:20
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6/23/16

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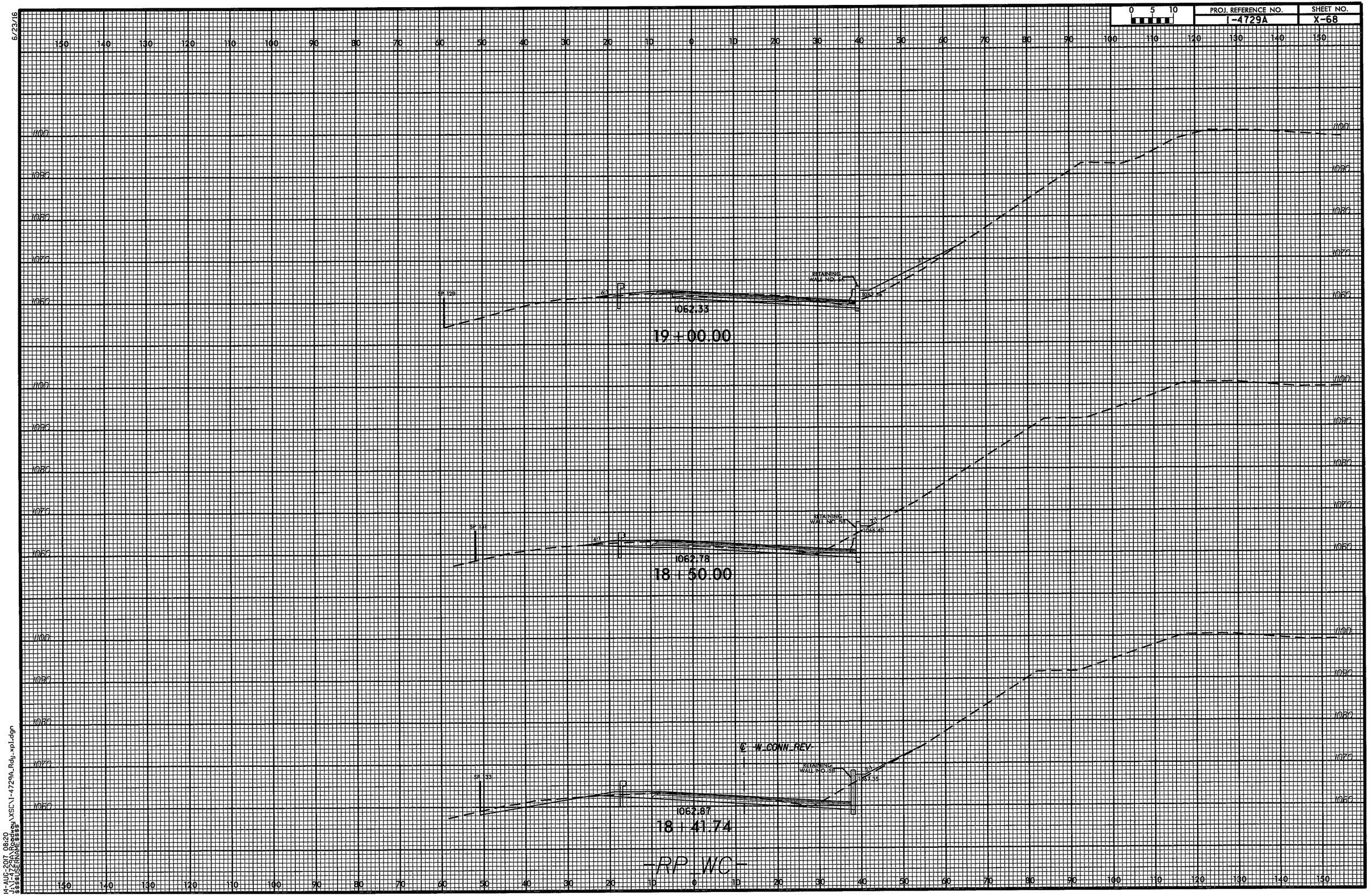

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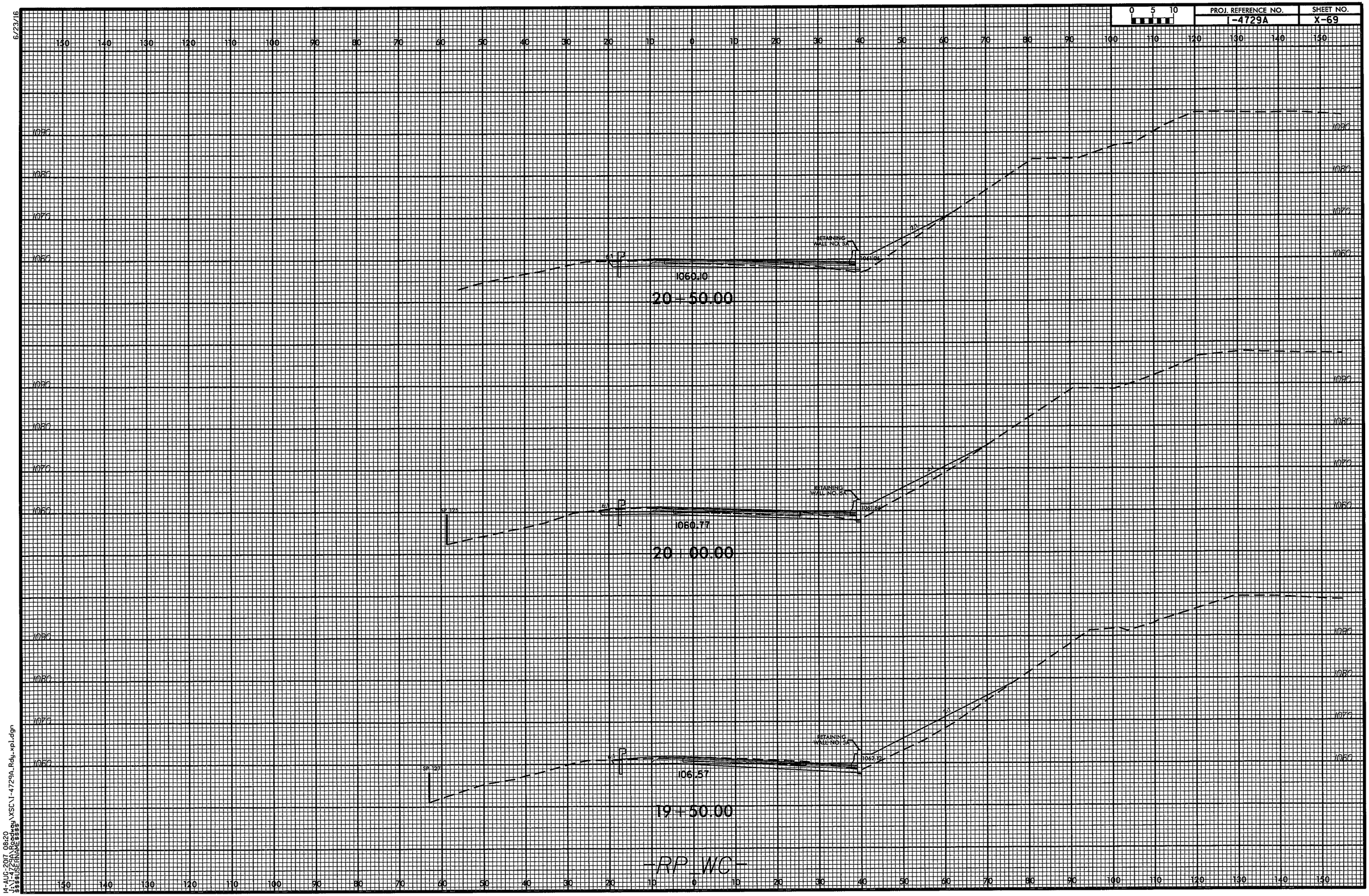

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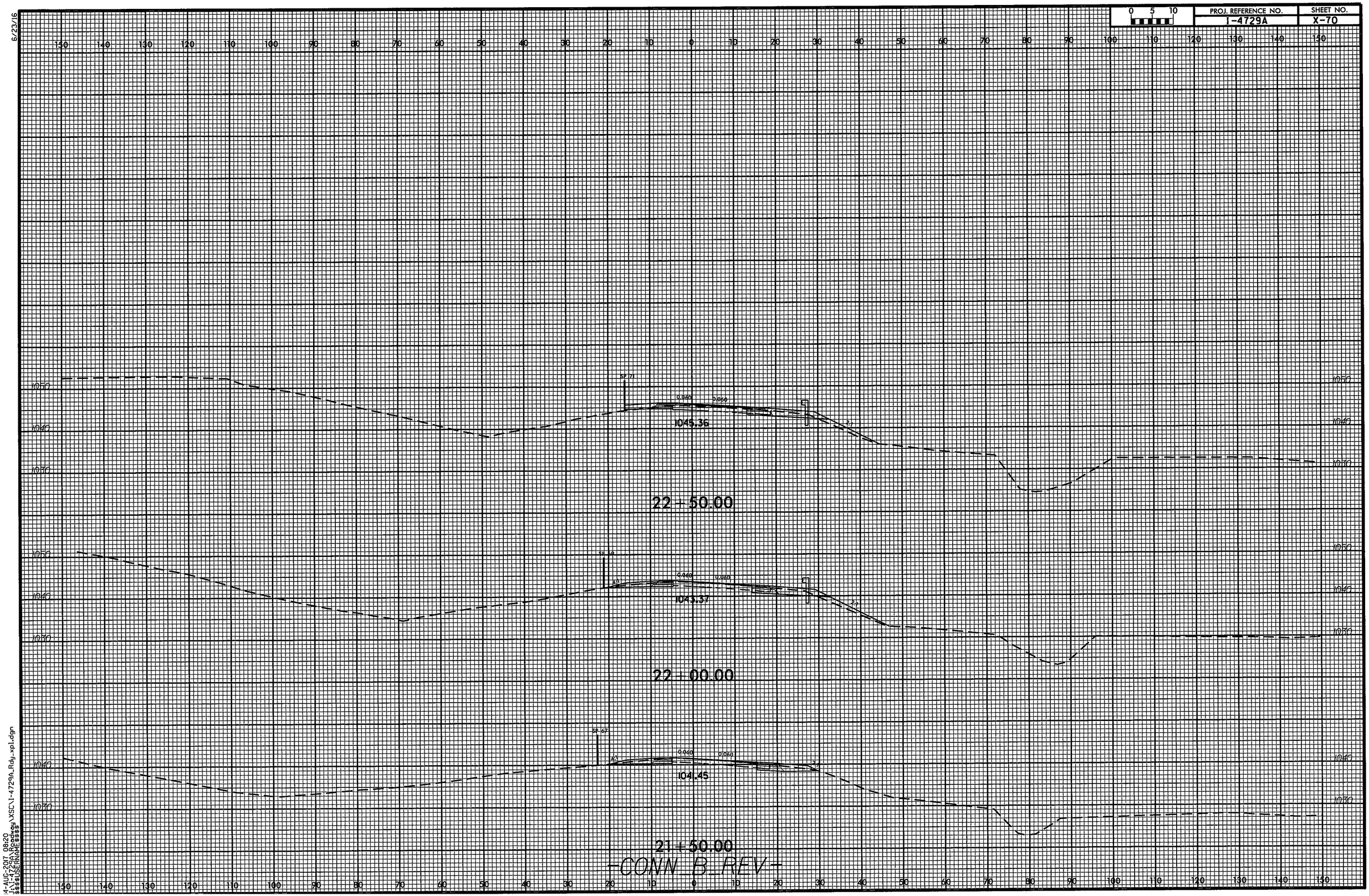

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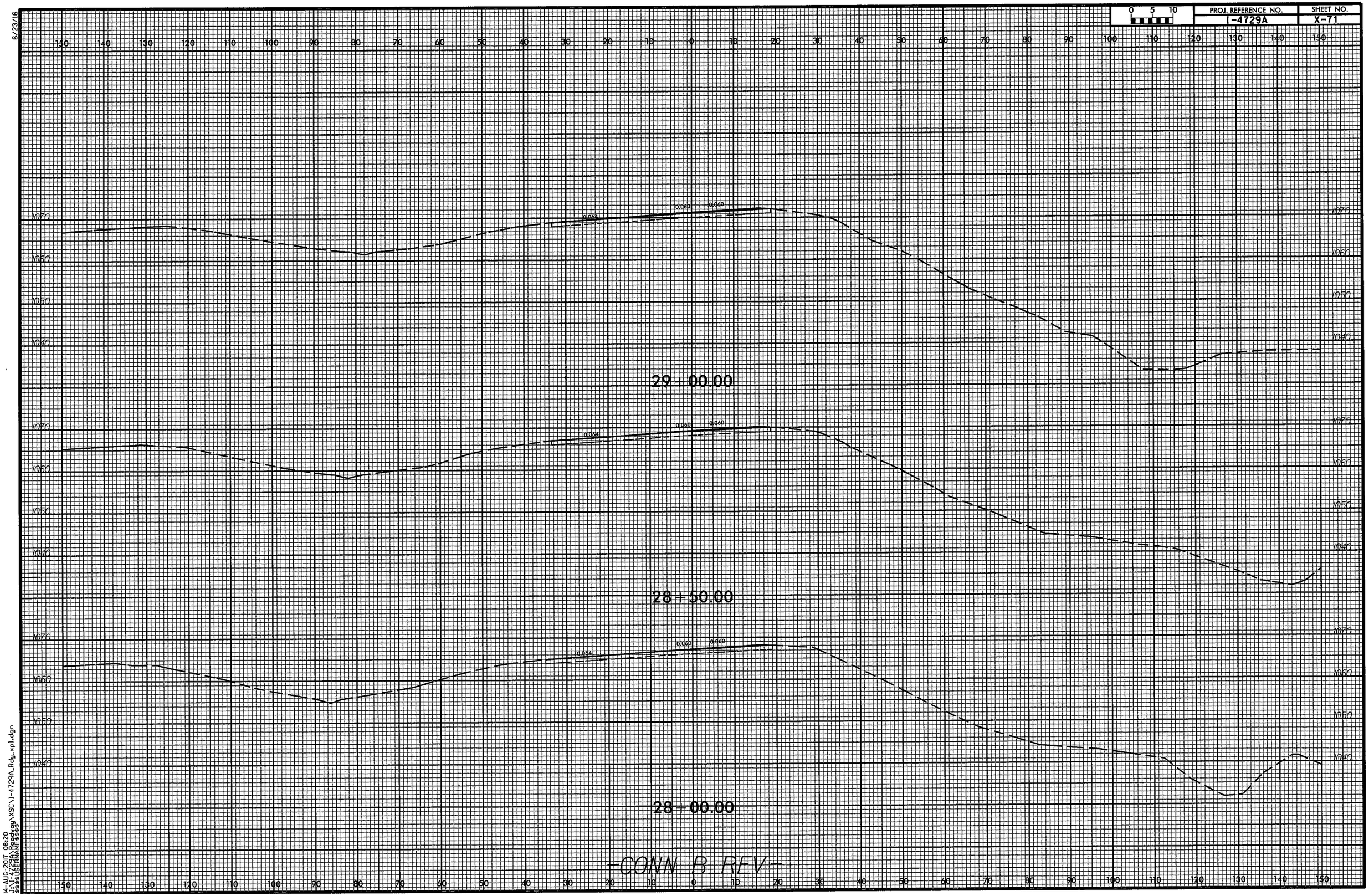

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6/23/16

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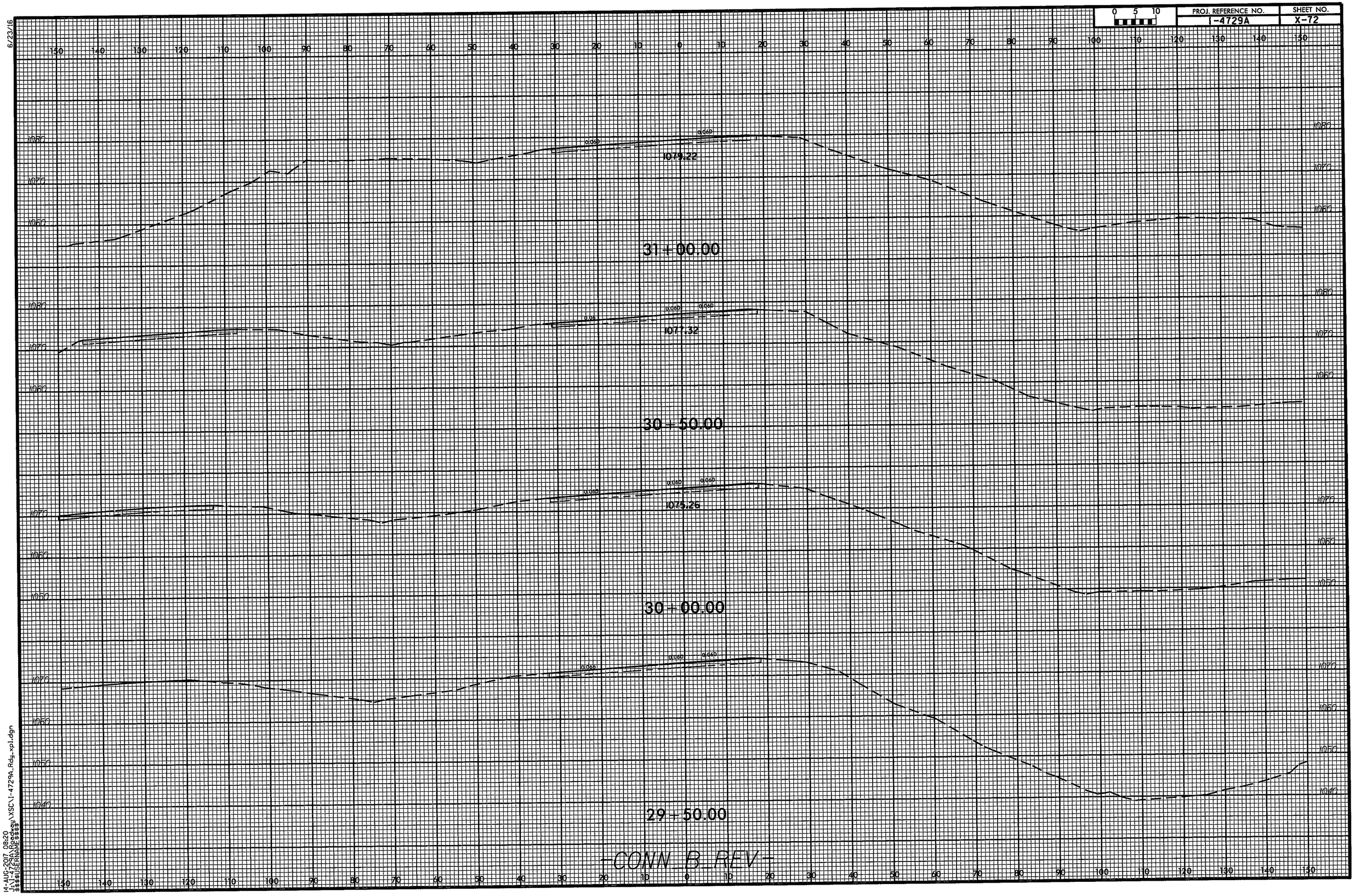

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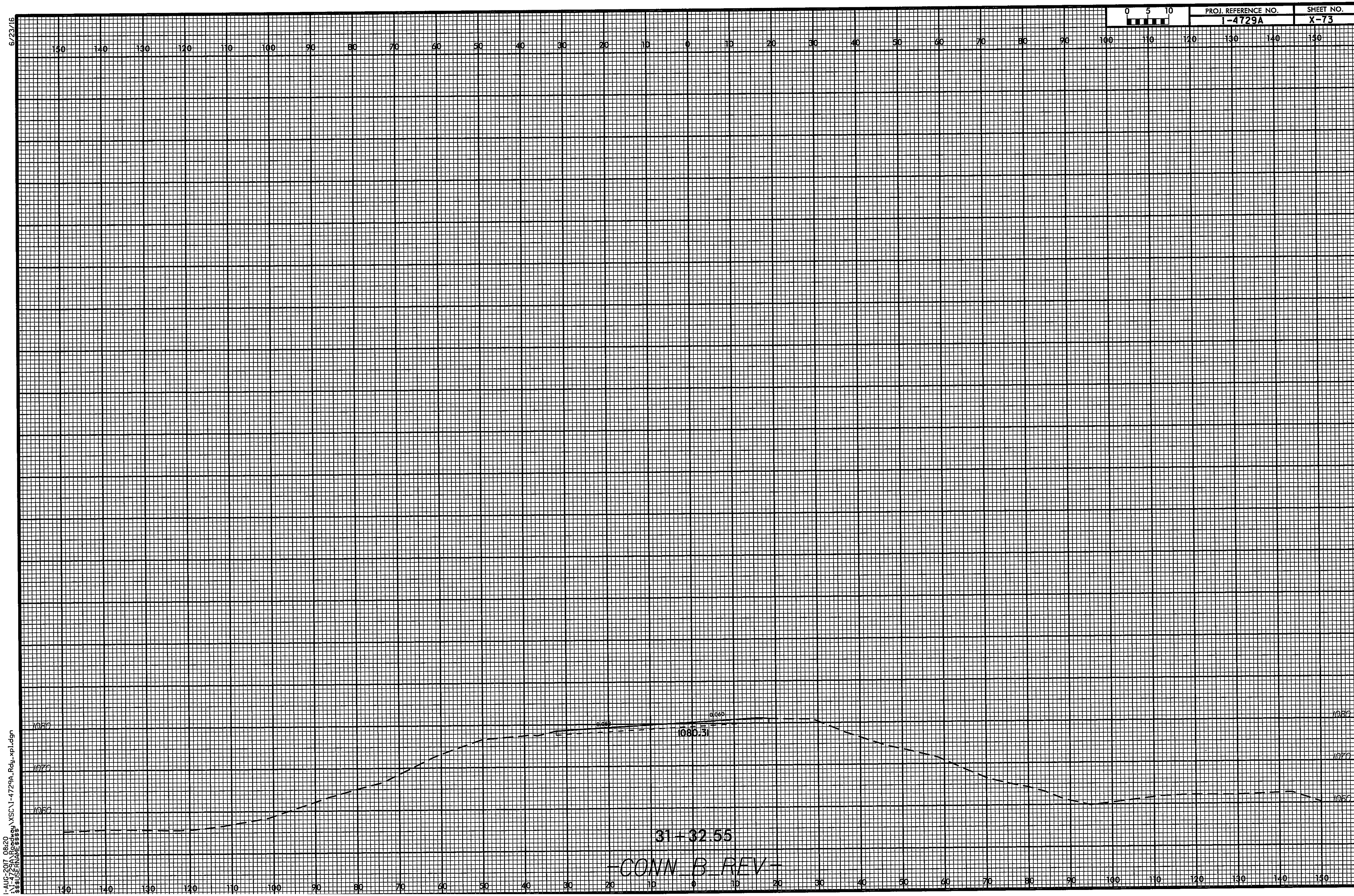
6/23/16



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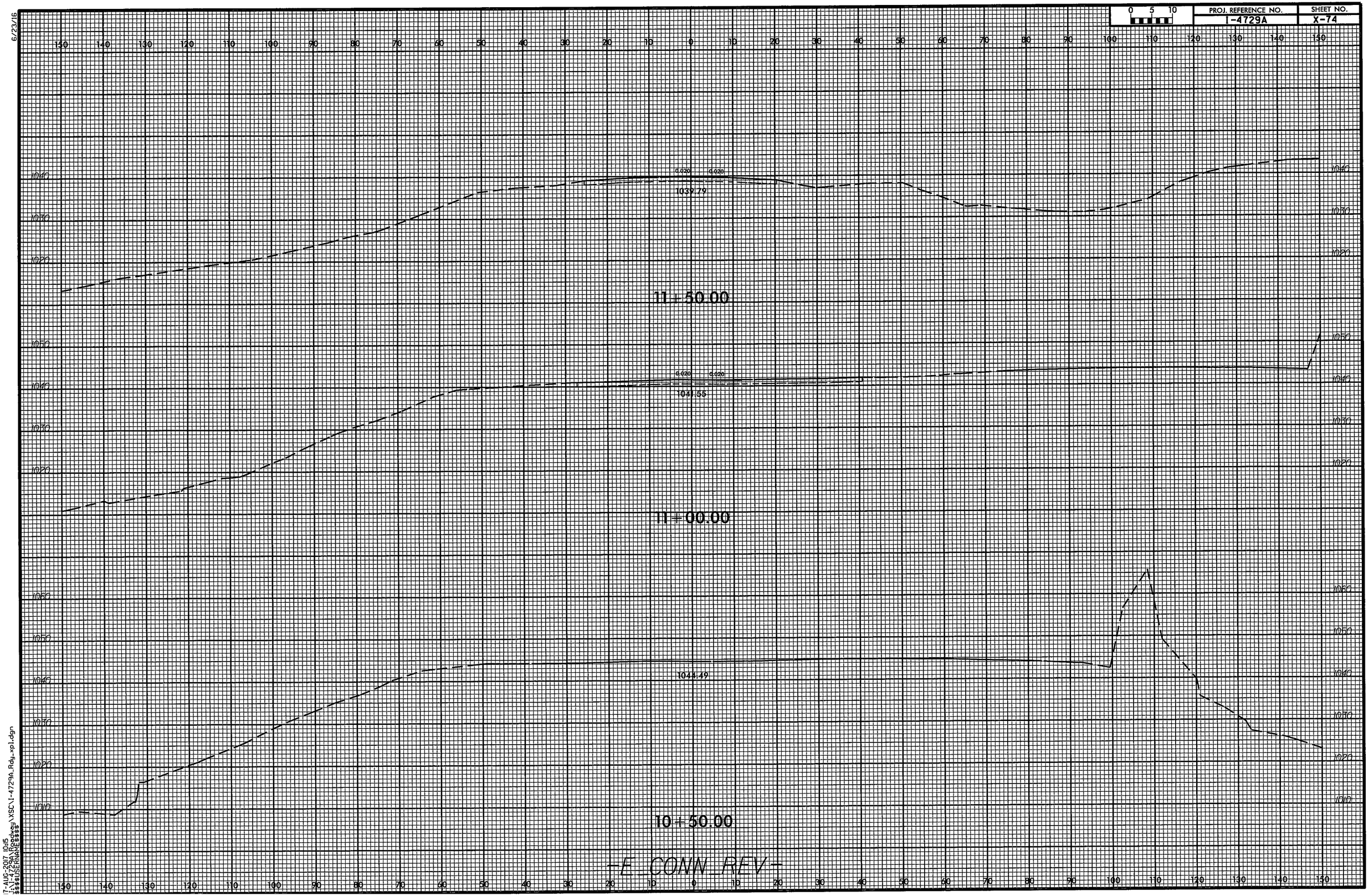
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6/23/16

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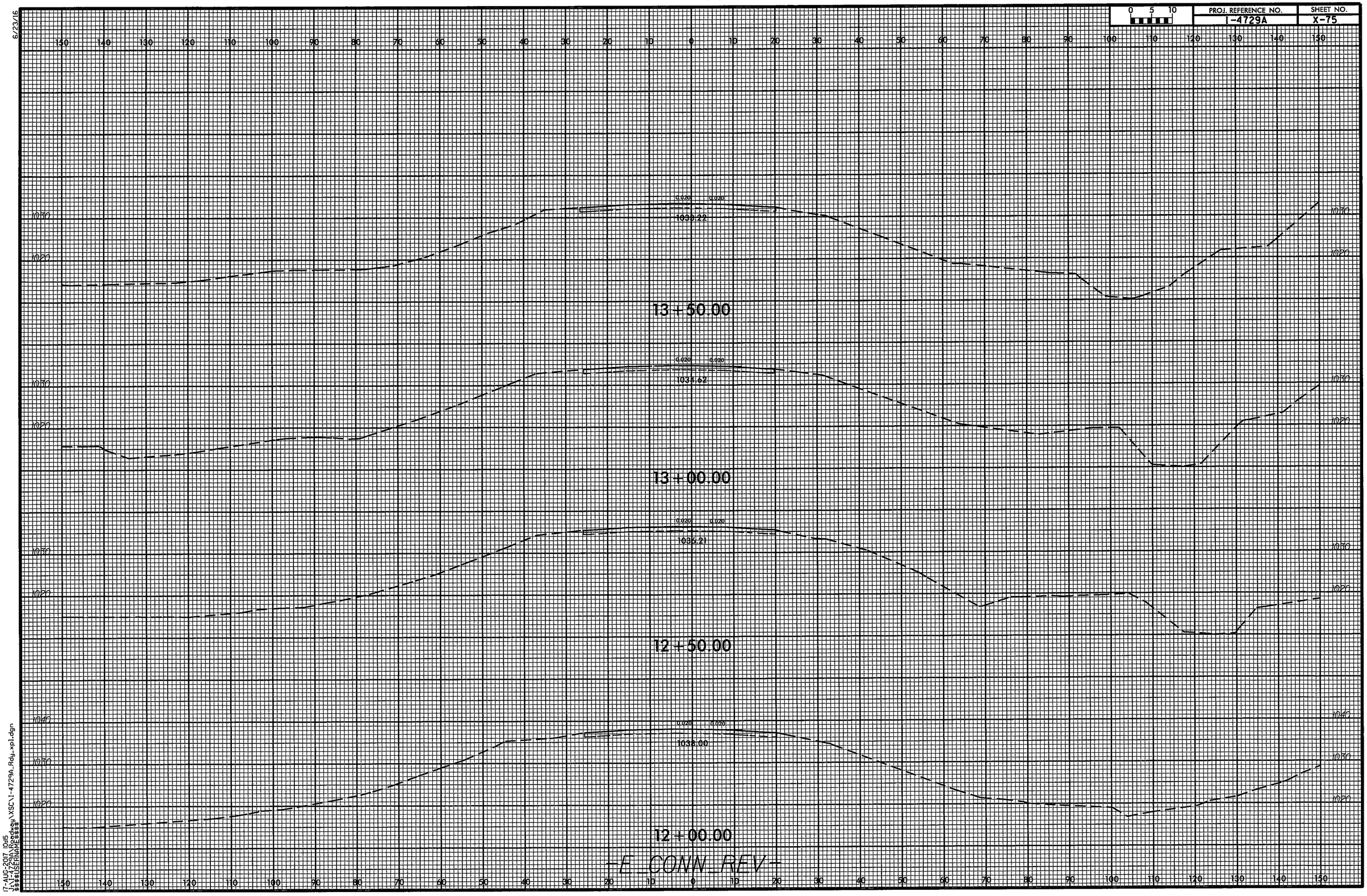

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6/23/16

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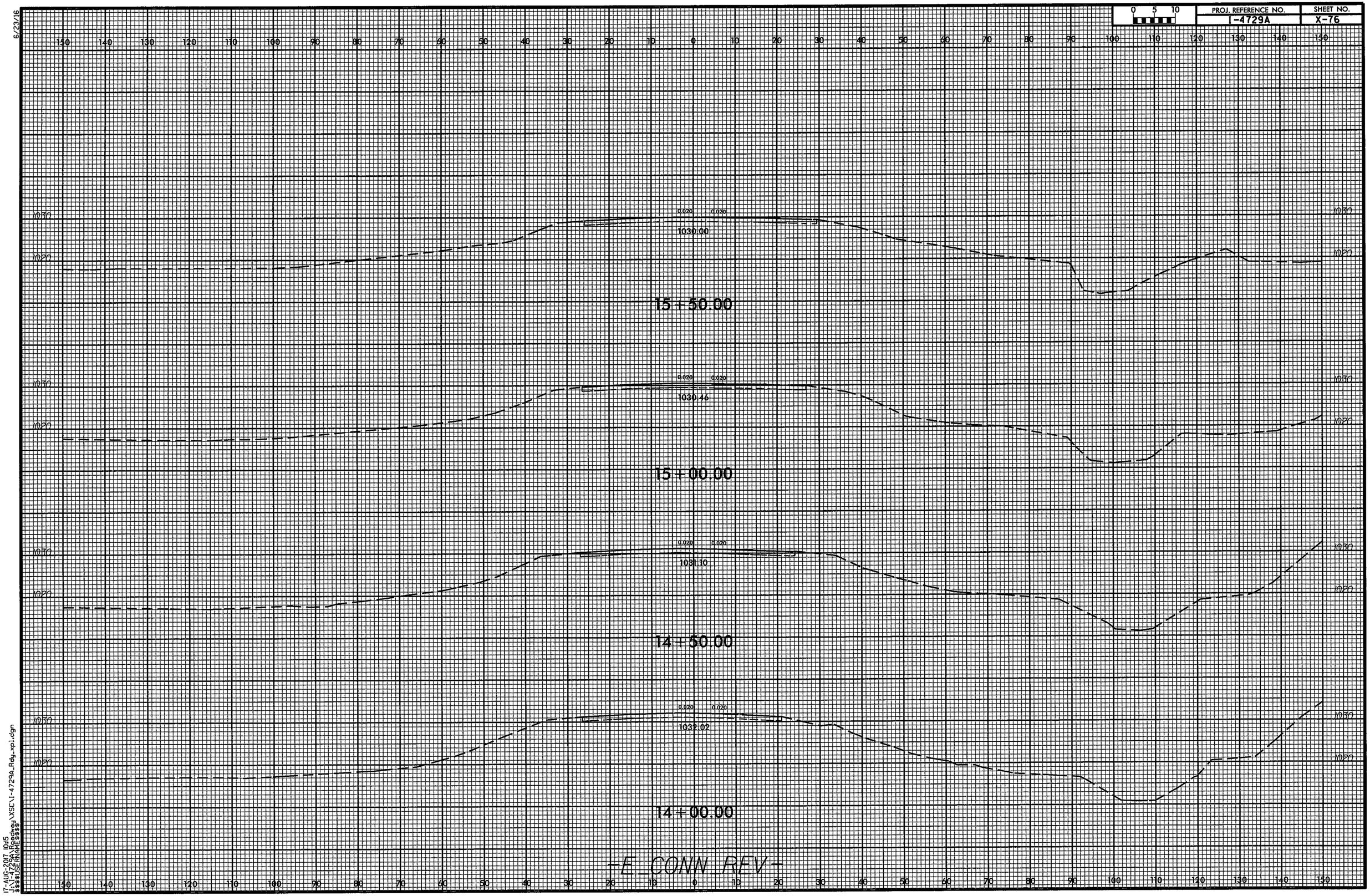

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6/23/16

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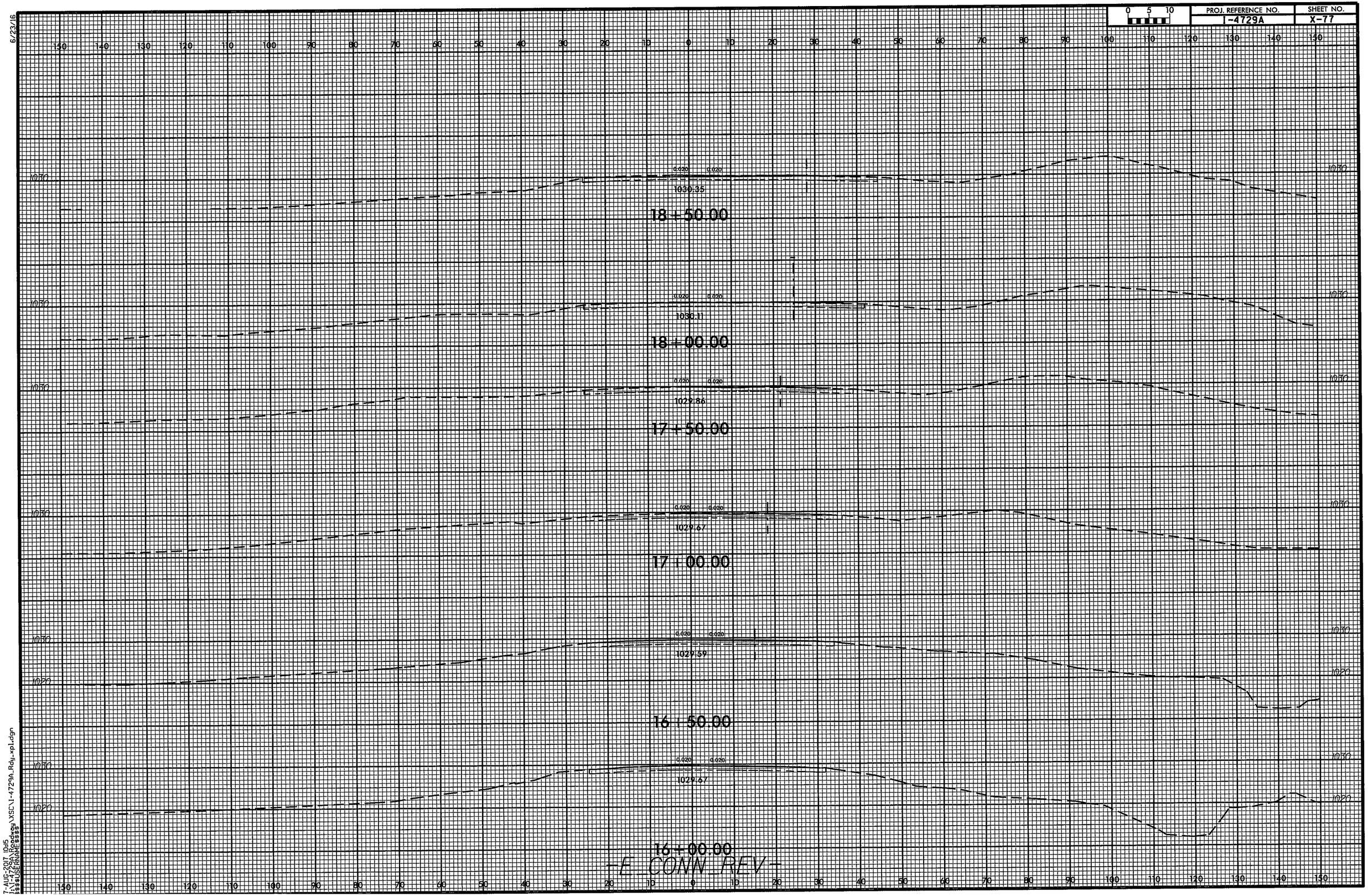

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6/23/16

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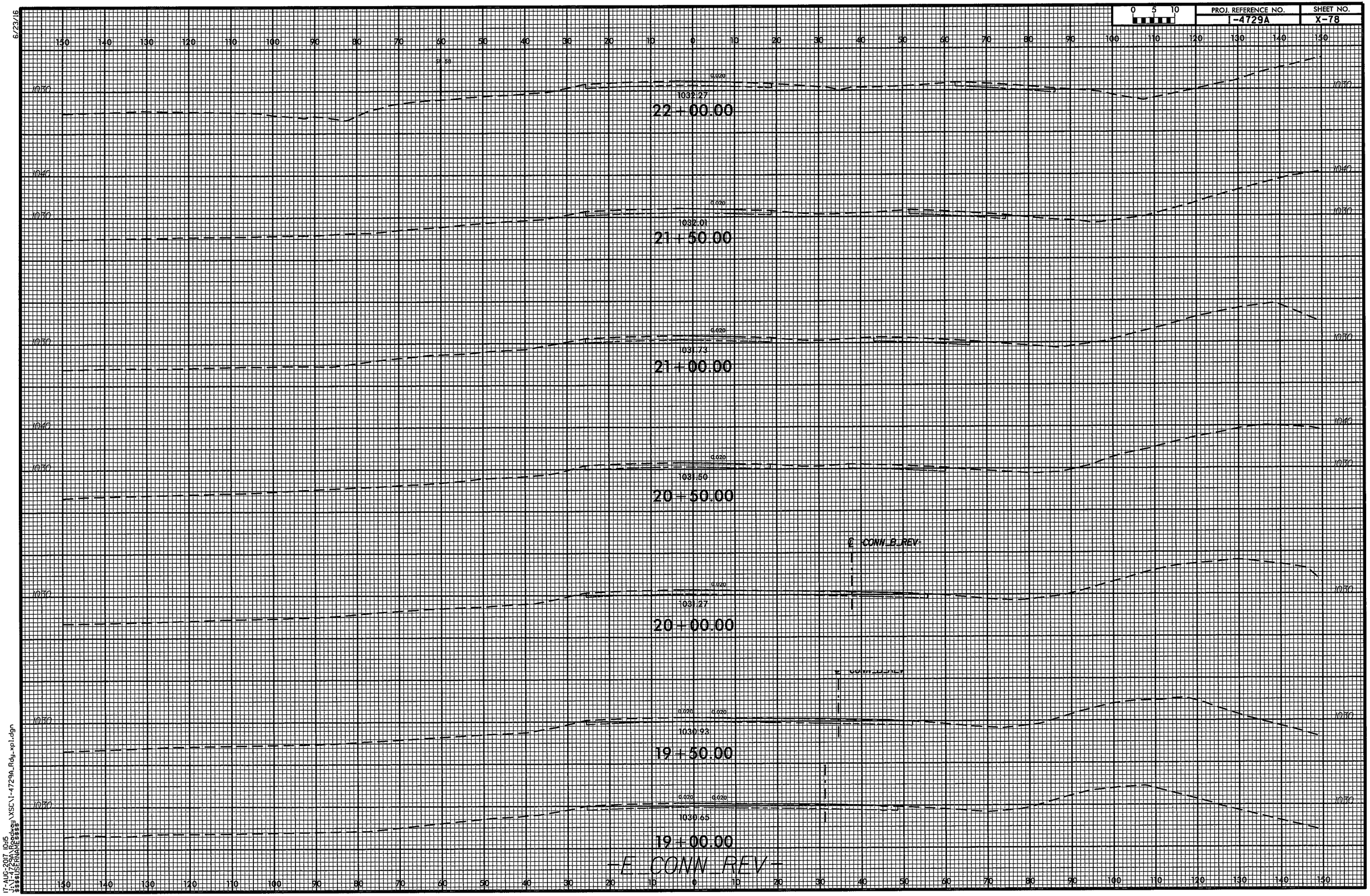

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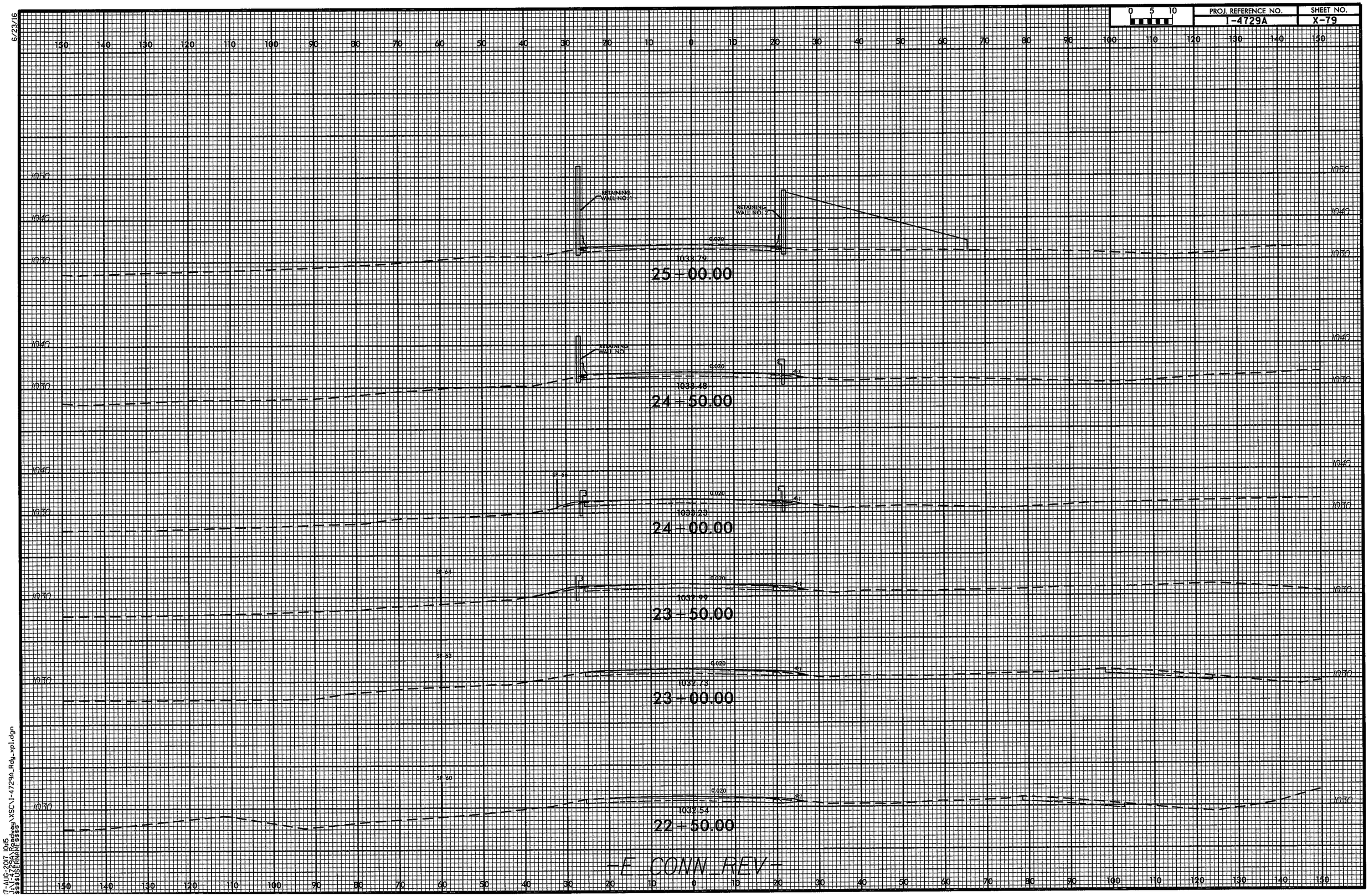

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I-4729A
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RETAINING WALL NO.
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1038.23
24+00.00
1032.99
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SP-60
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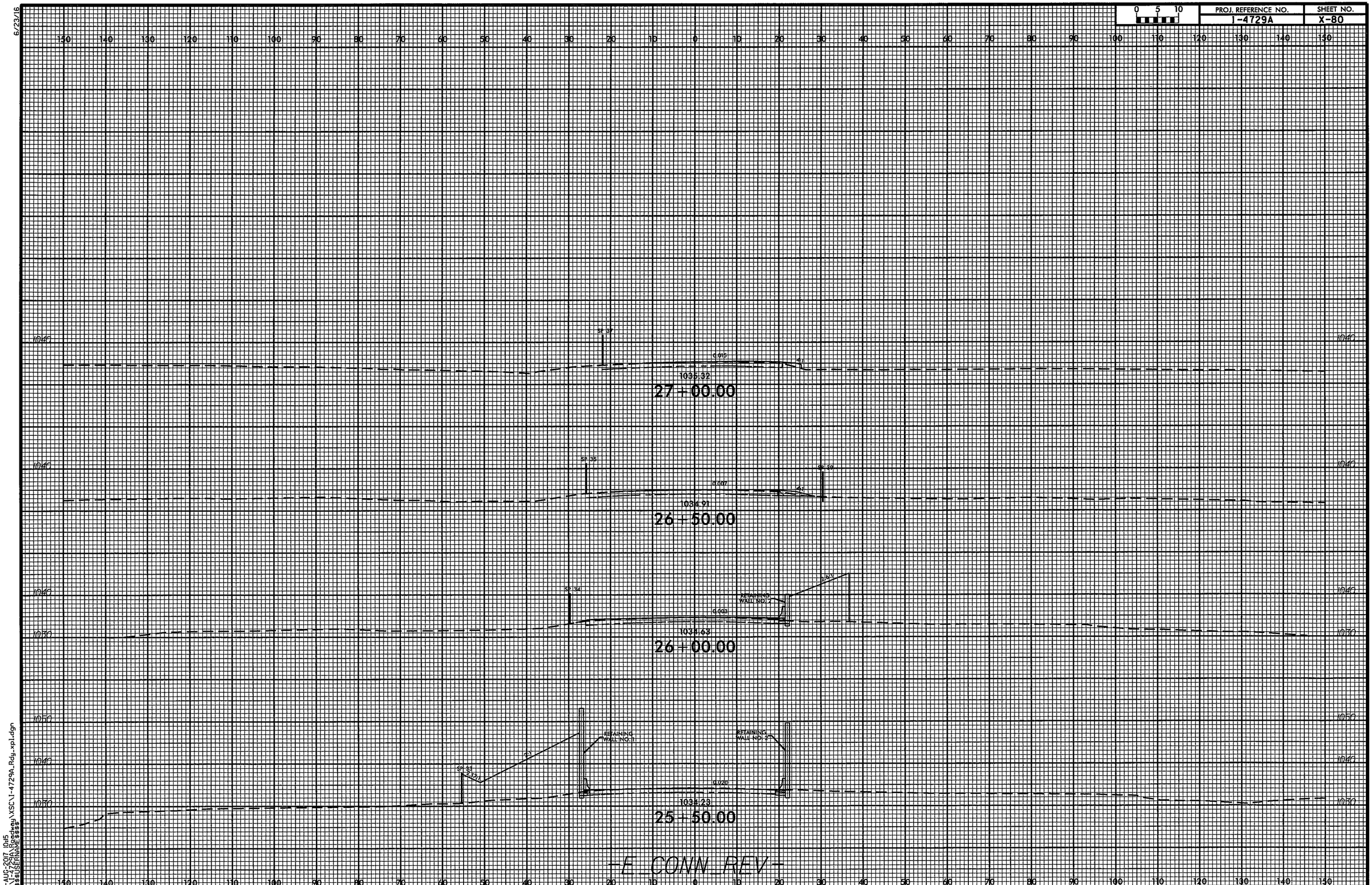

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6/23/16

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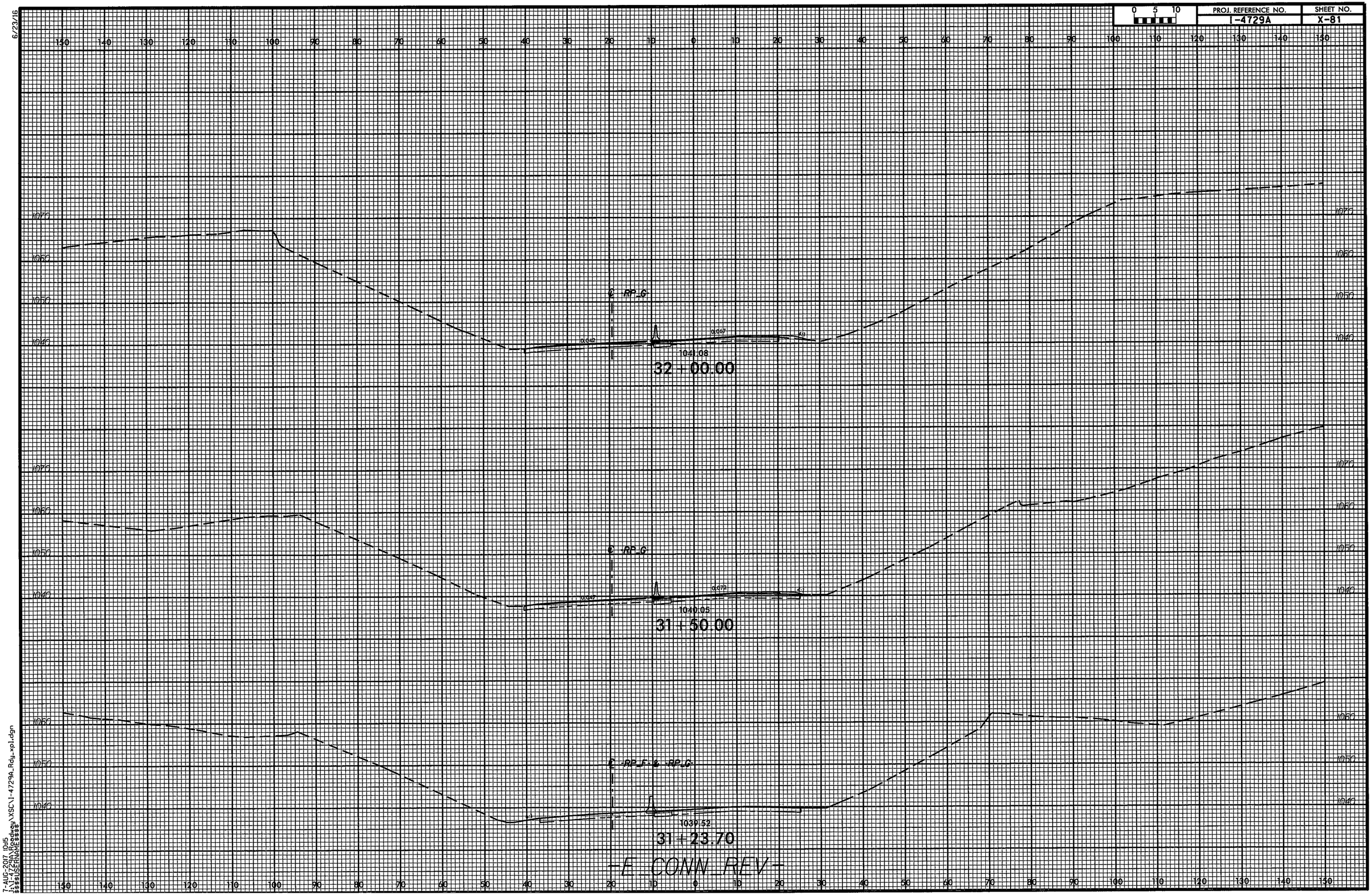

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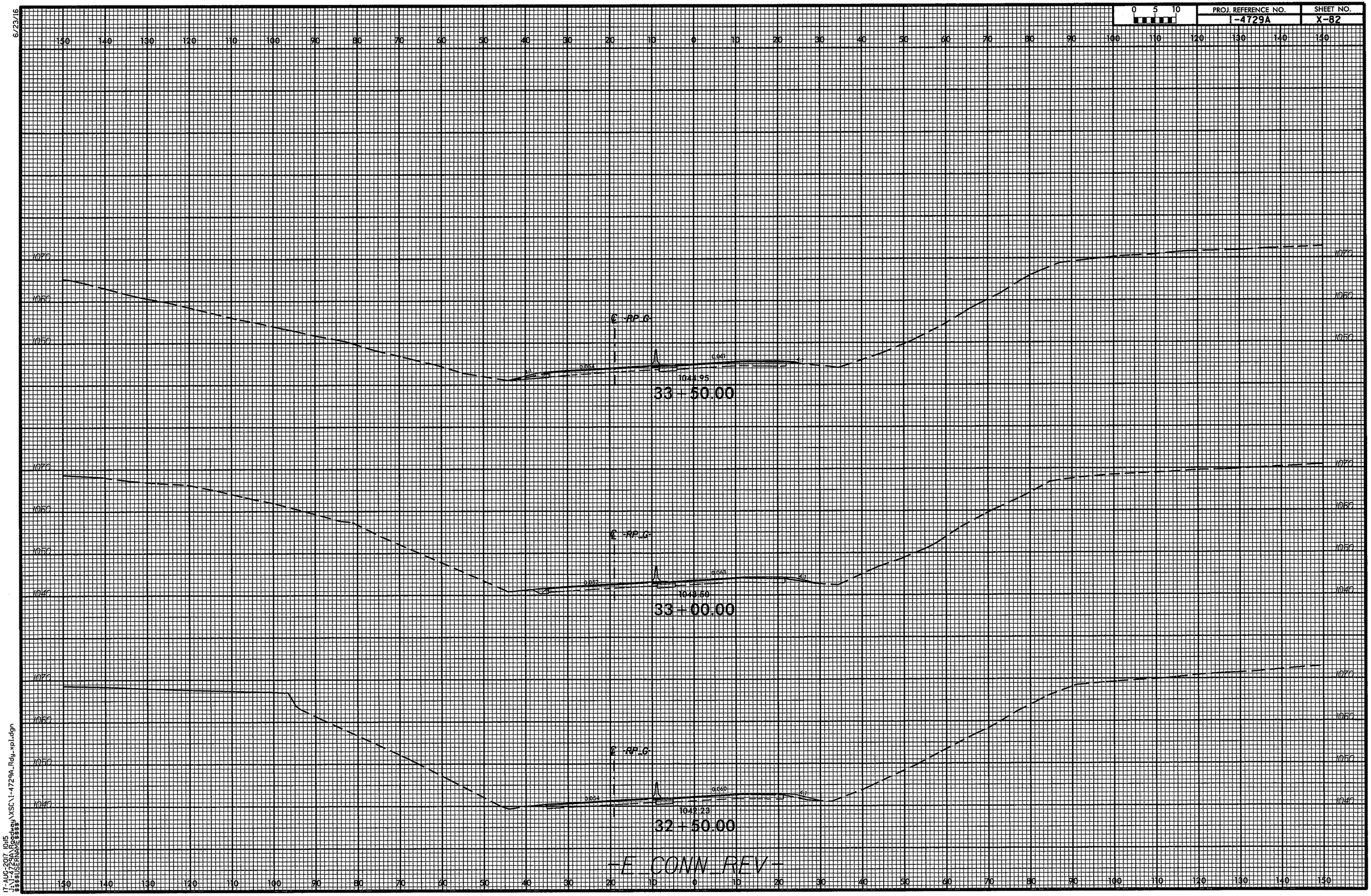

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6/23/16

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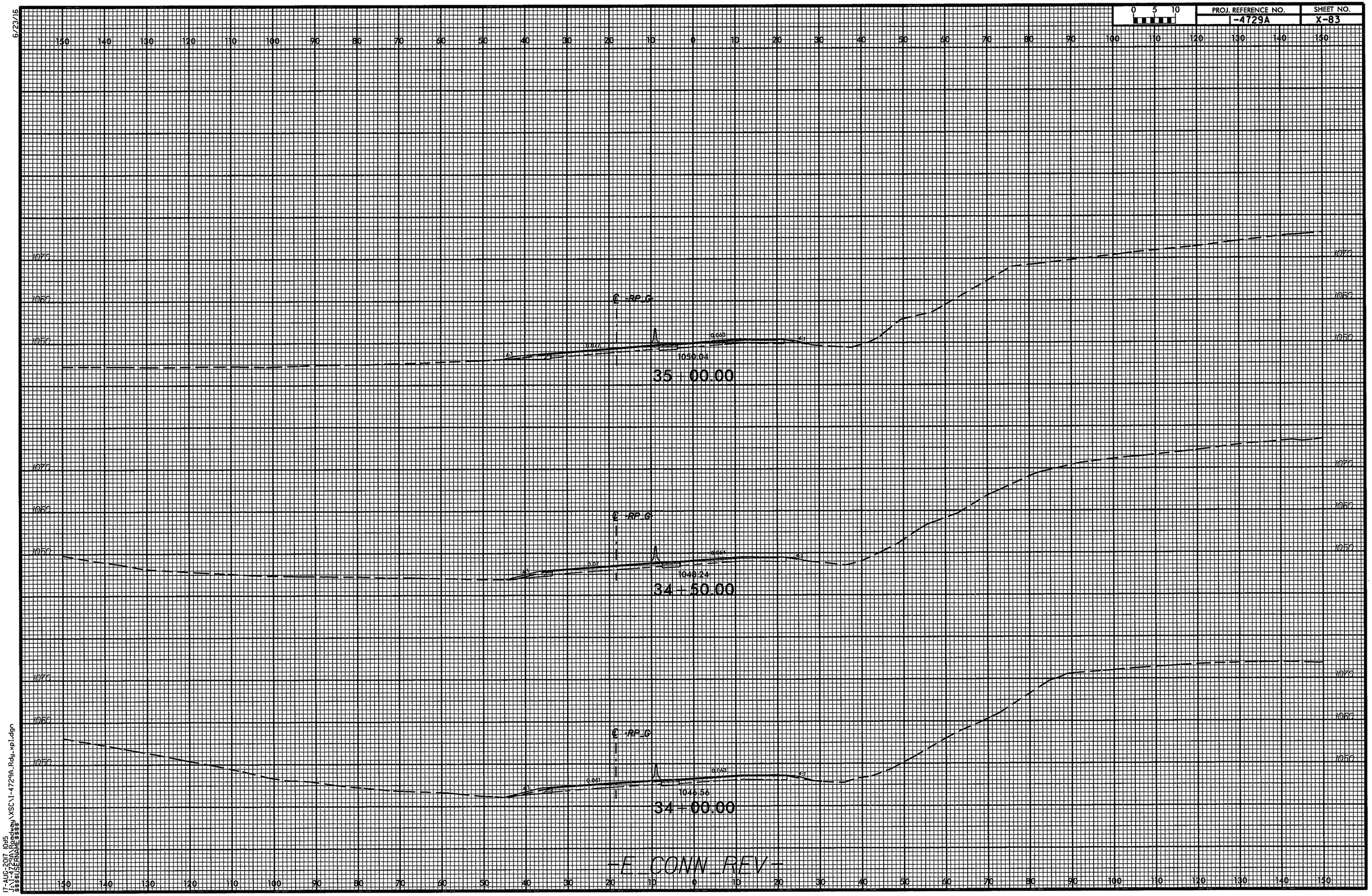

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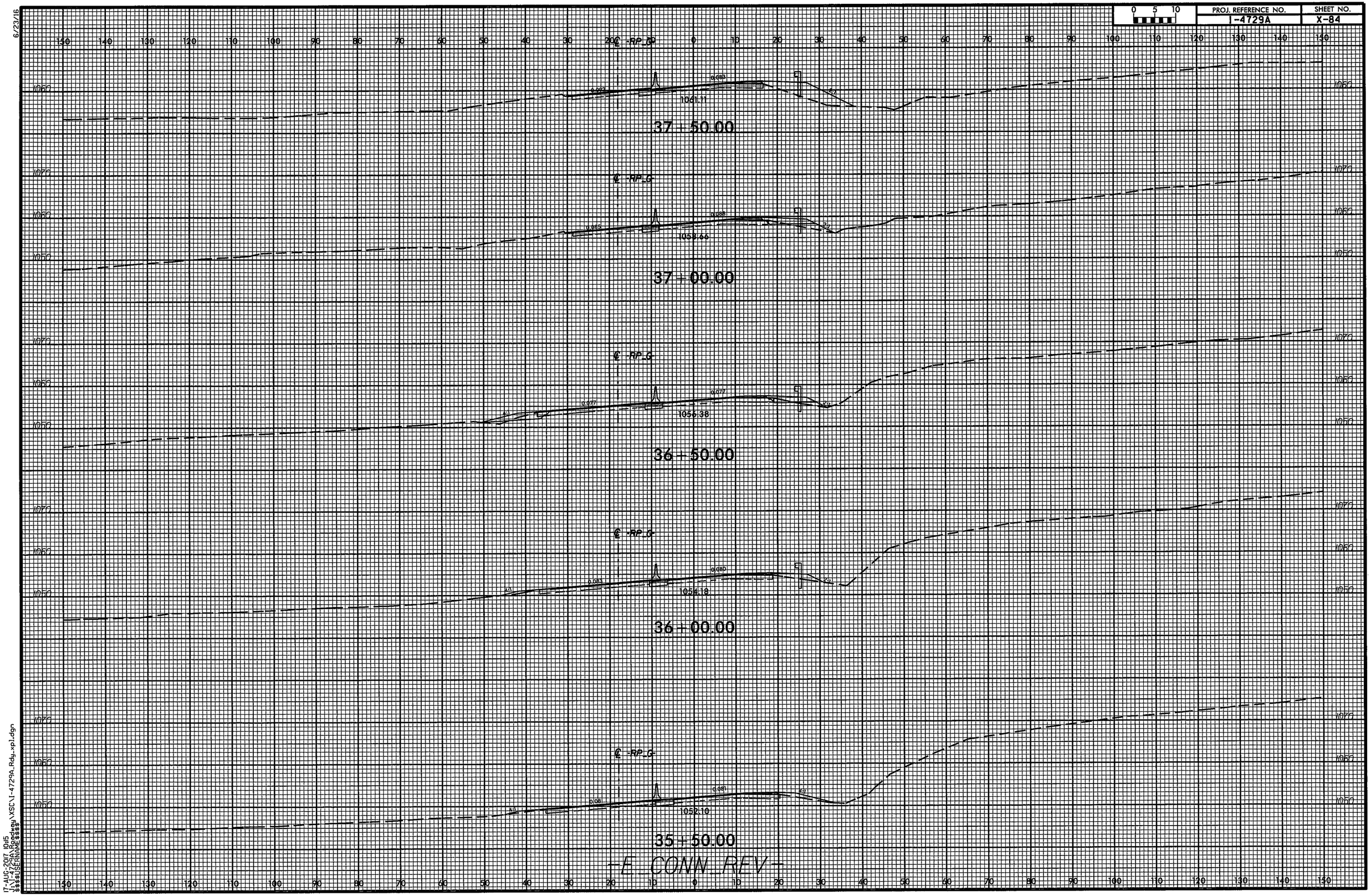

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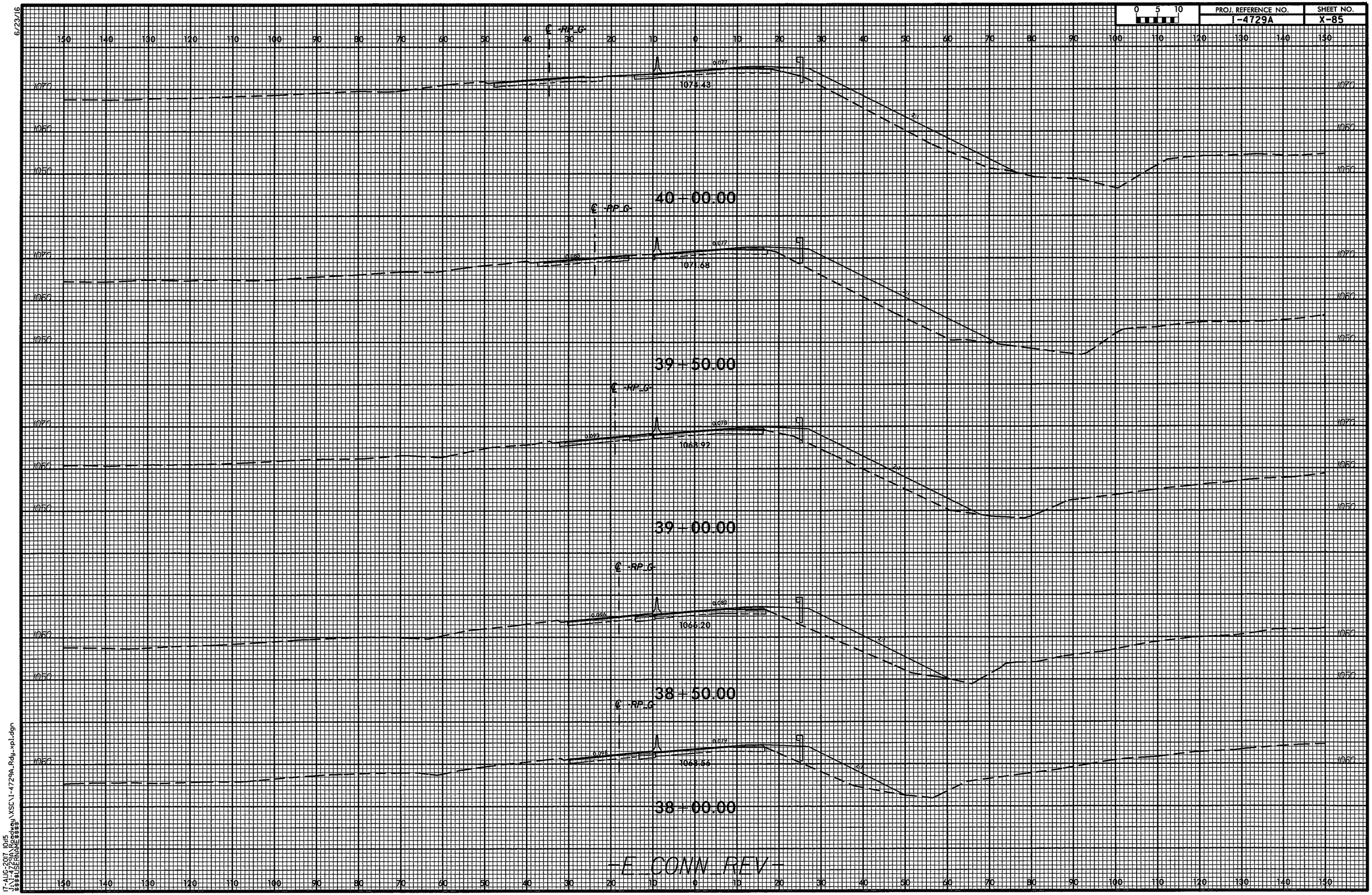

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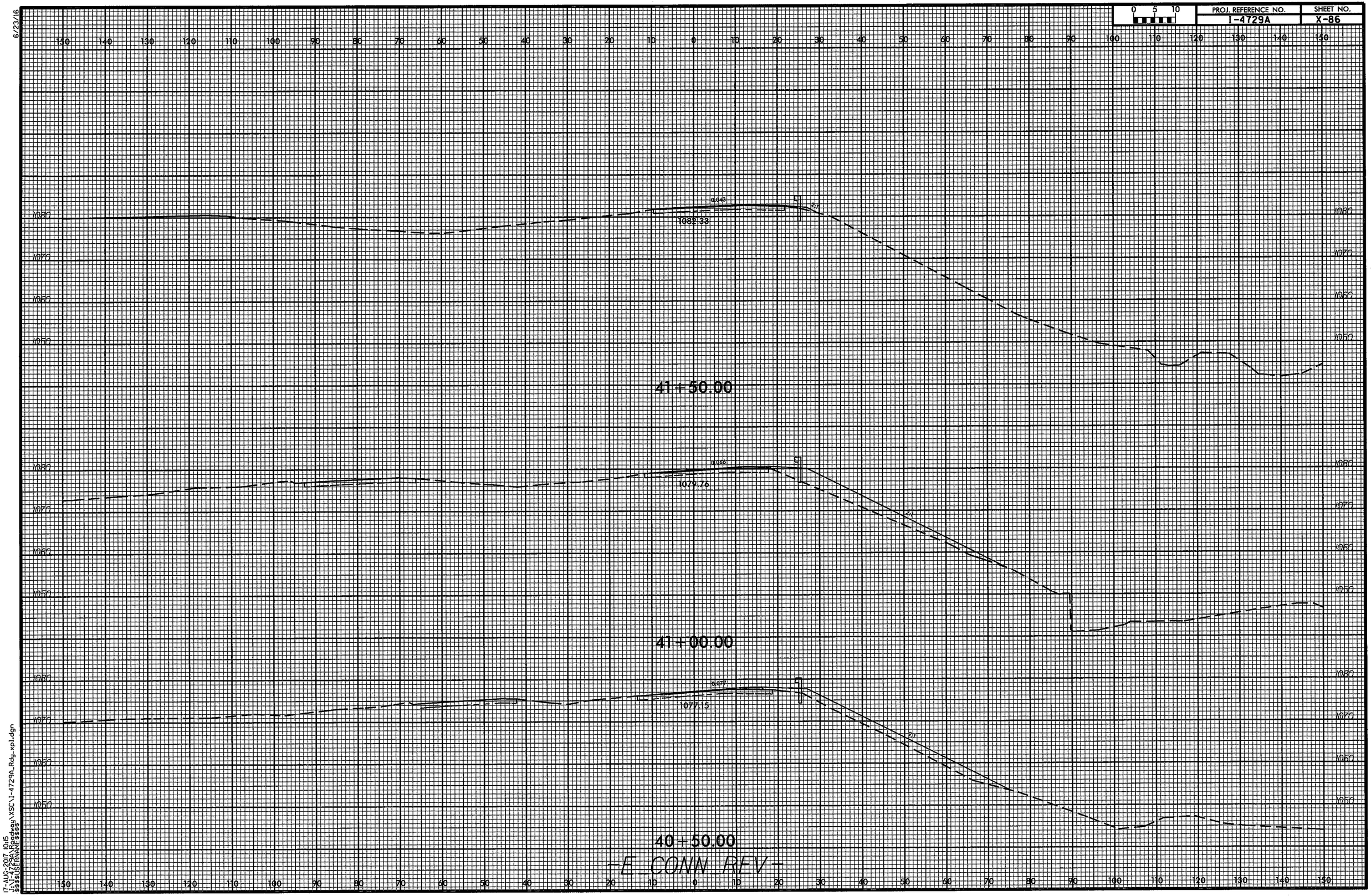

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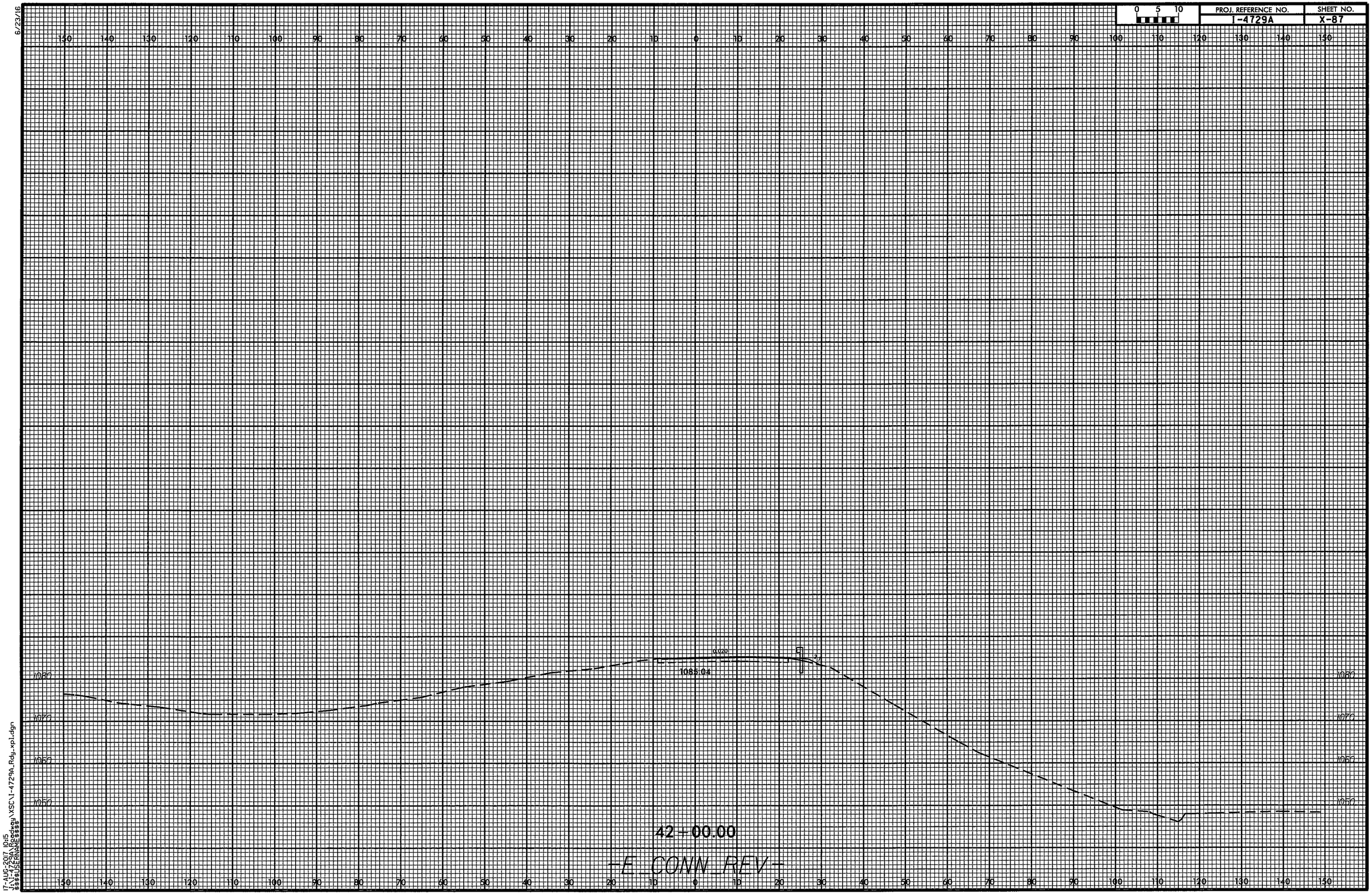

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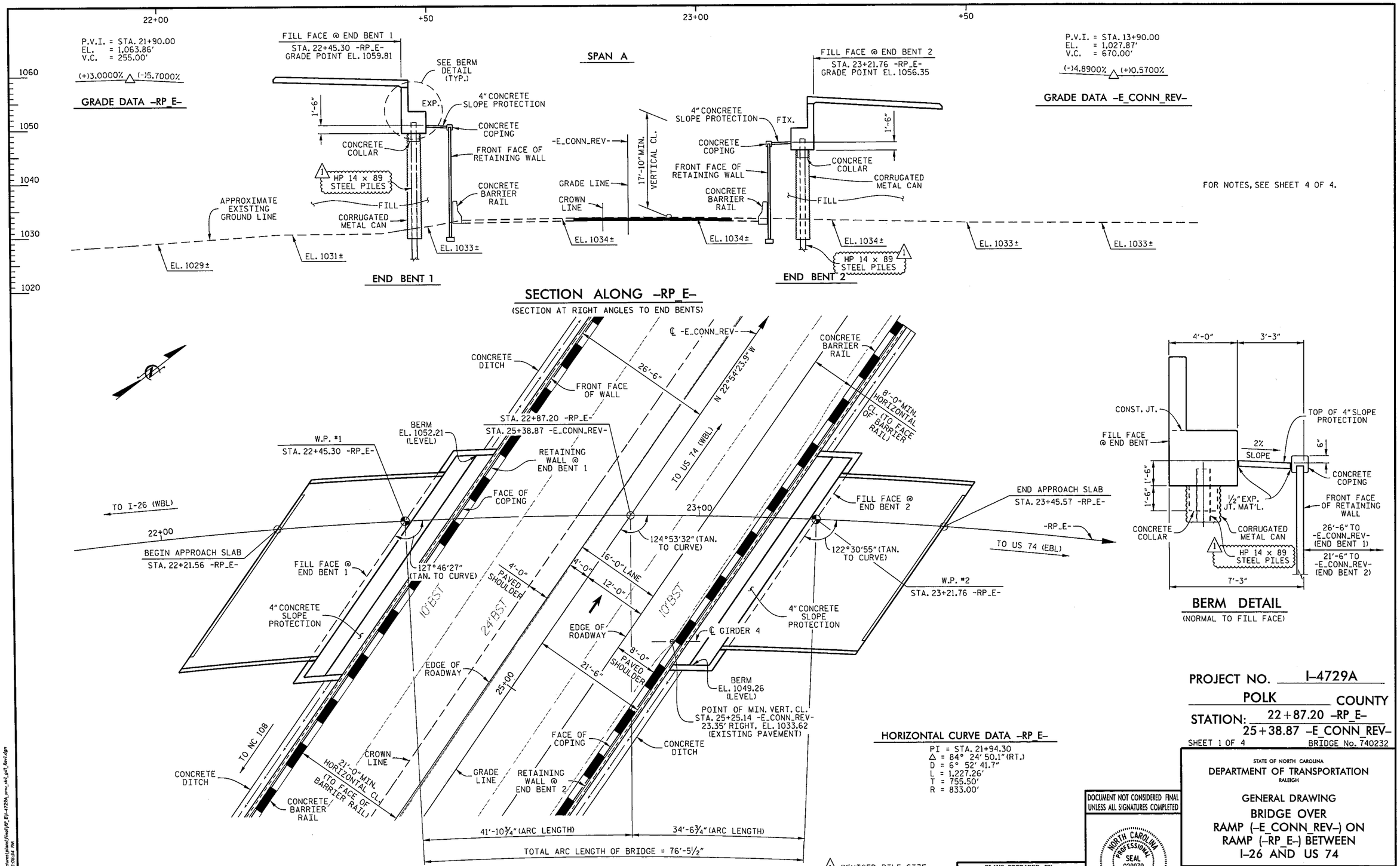

1 REVISED PILE SIZE.

HORIZONTAL CURVE DATA -RP_E-

PI = STA. 21+94.30
Δ = 84° 24' 50.1" (RT.)
D = 6° 52' 41.7"
L = 1,227.26'
T = 755.50'
R = 833.00'

PROJECT NO. I-4729A
POLK COUNTY
STATION: 22+87.20 -RP_E-
25+38.87 -E_CONN_REV-
SHEET 1 OF 4 BRIDGE No. 740232

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER
RAMP (-E_CONN_REV-) ON
RAMP (-RP_E-) BETWEEN
I-26 AND US 74

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ANUPAM D. SHAH
8/25/2017

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-1.1
1	LOFTON	8-25-17	3			TOTAL SHEETS
2			4			24

STR. #1

DRAWN BY :	K. E. LOFTON	DATE :	5-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	A. D. SHAH	DATE :	8-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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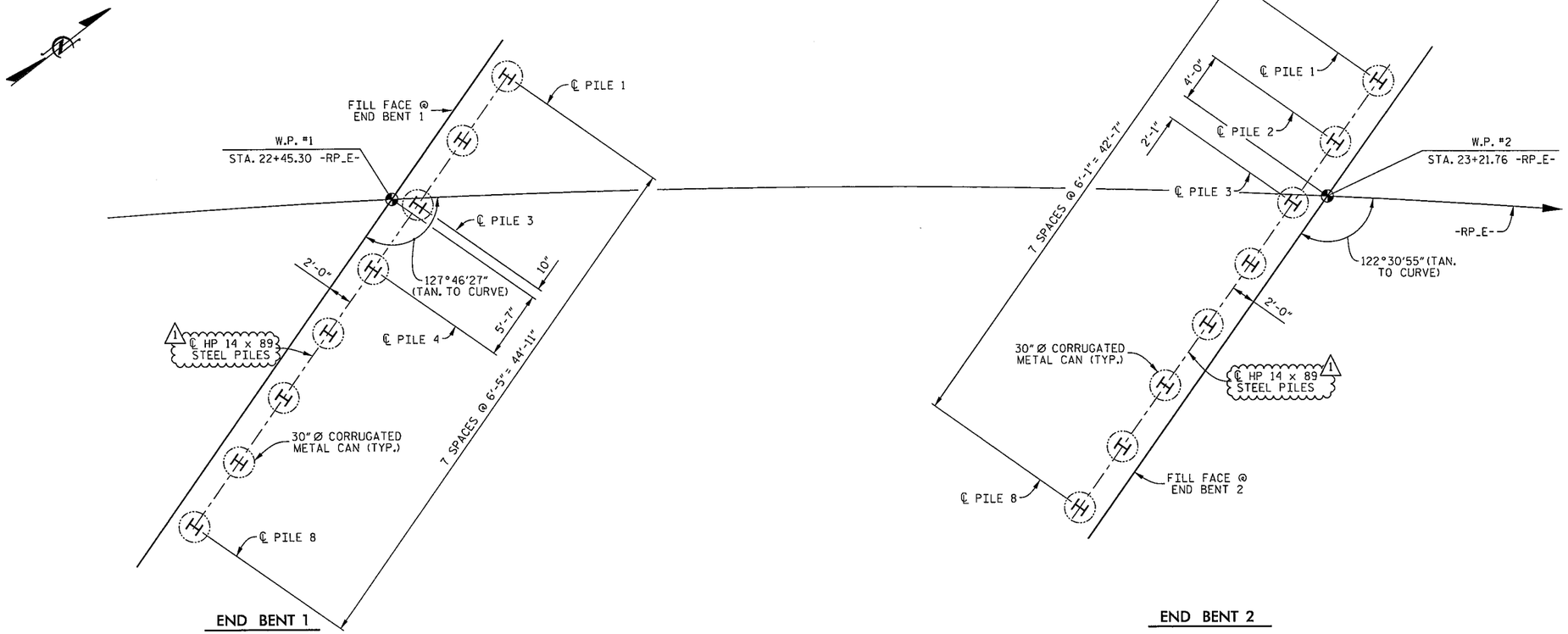

FOUNDATION LAYOUT

NOTES

1. ALL END BENT PILES ARE VERTICAL HP 14 x 89 STEEL PILES.

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINES AT THE BOTTOM OF THE END BENT CAPS.

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

1. DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 270 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWN DRAG.

DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 310 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWN DRAG.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45,000 TO 60,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1 AND END BENT 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE TO BE DRIVEN AFTER CONSTRUCTION AND RELEASE OF THE MSE WALLS PENDING THE SETTLEMENT MONITORING PROGRAM.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CORRUGATED METAL CANS AT END BENT 1 AND END BENT 2 ARE TO BE PLACED DURING CONSTRUCTION IN THE REINFORCED BACKFILL OF THE MSE WALLS. SEE MSE WALL PLANS.

INSTALLATION OF CORRUGATED METAL CANS FROM THE BOTTOM OF THE PILE CAP TO THE LEVELING PAD ELEVATION IS REQUIRED FOR PILES AT END BENT 1 AND END BENT 2. THE CANS SHALL BE DESIGNED TO WITHSTAND THE PRESSURES FROM COMPACTION OPERATIONS ON ADJACENT FILLS WITHOUT DISTORTION. AT A MINIMUM, CORRUGATED METAL CANS SHALL BE 16-GAUGE WITH A WALL THICKNESS OF 0.064".

LOOSELY BACKFILL CORRUGATED METAL CANS USING SAME MATERIAL AS MSE REINFORCEMENT ZONE PRIOR TO CONSTRUCTION OF THE END BENT PILE CAP. DO NOT COMPACT MATERIAL WITHIN THE CAN.

1. OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE MSE WALLS AND END BENTS BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT 1 AND END BENT 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

FOR SURCHARGES AND WAITING PERIODS, SEE SECTION 235 OF THE STANDARD SPECIFICATIONS AND THE SURCHARGES AND WAITING PERIODS PROVISION.

1 REVISED PILE SIZE AND NOTES.

DRAWN BY :	K. E. LOFTON	DATE :	5-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	A. D. SHAH	DATE :	8-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ASHISH D. SHAH
DocuSigned by: 9054D2B8C6B0484...
8/25/2017

PROJECT NO. I-4729A
POLK COUNTY
STATION: 22+87.20 -RP_E-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER
RAMP (-E_CONN_REV-) ON
RAMP (-RP_E-) BETWEEN
I-26 AND US 74

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-2.1
1	LOFTON	8-25-17	3			TOTAL SHEETS
2			4			24

STR. #1

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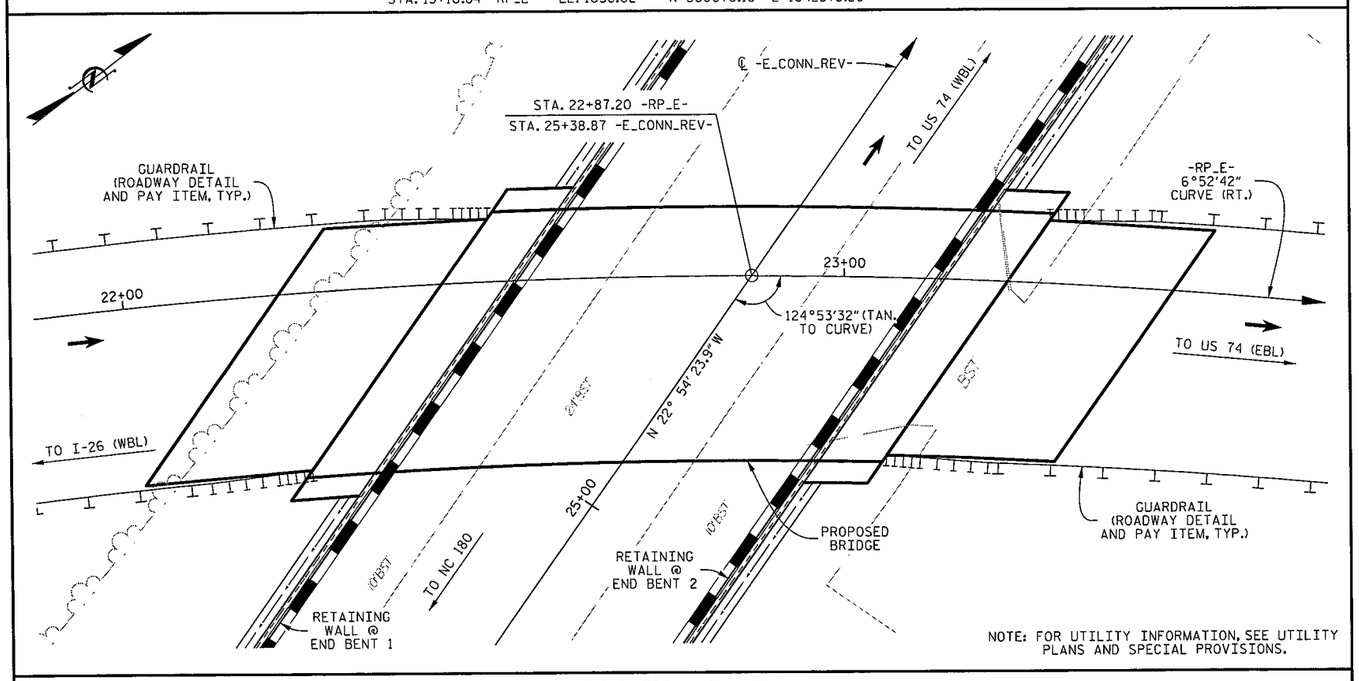
BENCHMARK: #5 - BRIDGE SPIKE IN BASE OF 12" BEECH 15.08' LEFT OF STA. 15+10.84 -RP_E- EL. 1038.02 N 560676.18 E 1042573.29



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE "STANDARD NOTES" SHEET.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

1 A WAITING PERIOD IS NOT REQUIRED PRIOR TO THE CONSTRUCTION OF END BENTS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOR SURVEY CONTROL SHEET, SEE ROADWAY PLANS.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINT OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE AT STA. 22+87.20 -RP_E-, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS		HP 14 x 89 STEEL PILES 1		CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 89 STEEL PILES 1
	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	No.	LIN. FT.	LIN. FT.	SQ. YD.	LUMP SUM	LUMP SUM	EACH
SUPERSTRUCTURE		2,618	3,470		LUMP SUM		4	288.0			148.4		LUMP SUM	LUMP SUM	
END BENT 1				39.9		5,829			8	560		19			8
END BENT 2				38.6		5,522			8	580		18			8
TOTAL	1	2,618	3,470	78.5	LUMP SUM	11,351	4	288.0	16	1,140	148.4	37	LUMP SUM	LUMP SUM	16

1 REVISED PILE SIZE AND NOTES.

PROJECT NO. I-4729A
POLK COUNTY
STATION: 22+87.20 -RP_E-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER
RAMP (-E_CONN_REV-) ON
RAMP (-RP_E-) BETWEEN
I-26 AND US 74

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ANUPAM D. SHAH
8/25/2017

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	6-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	A. D. SHAH	DATE :	8-17

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-4.1
1	LOFTON	8-25-17	3			TOTAL SHEETS
2			4			24

STR. #1

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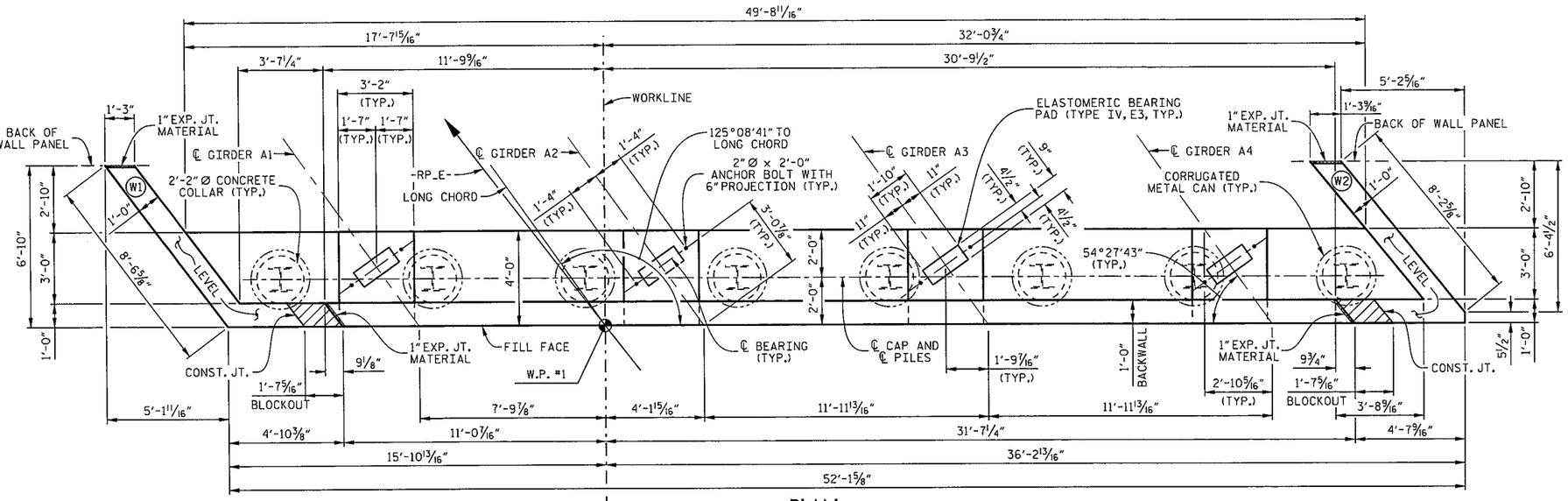
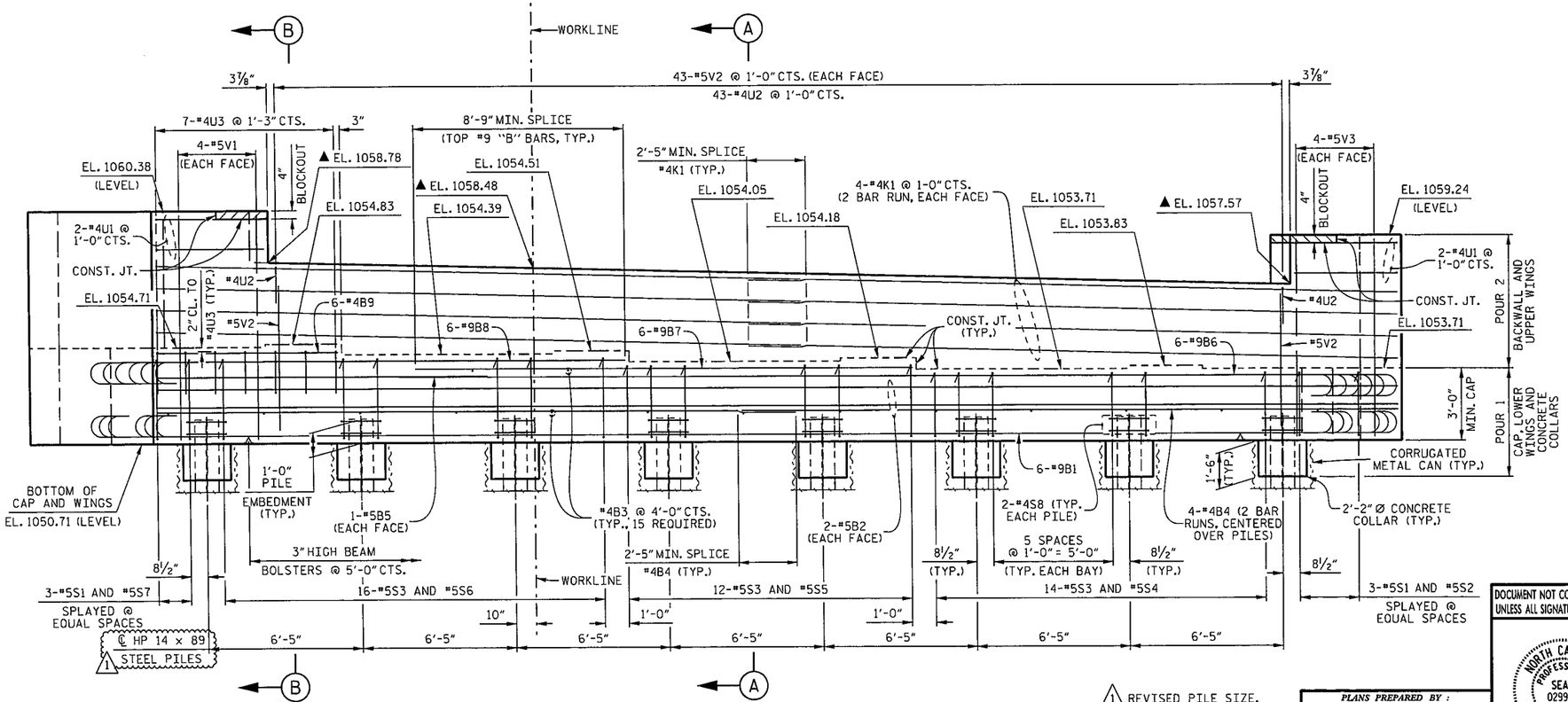


PLAN



ELEVATION

1 REVISED PILE SIZE.

NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE TOP SURFACE AREA OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

▲ THIS ELEVATION IS TAKEN AT FILL FACE OF BACKWALL.

FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION VIEWS ON SHEET 3 OF 3.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR TEMPORARY DRAINAGE AT END BENT DETAIL, SEE SHEET 3 OF 3.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE COST TO FURNISH AND INSTALL THE 30" Ø CORRUGATED METAL CANS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR MSE RETAINING WALL.

WING (W1) AND WING (W2) DETAILS ARE BASED ON A 5 1/2" WALL PANEL THICKNESS AND USING DOWELS FOR THE COPING. CONTRACTOR MAY ADJUST WINGS SLIGHTLY AS NECESSARY, BASED ON APPROVED MSE WALL SHOP DRAWINGS.

PROJECT NO. I-4729A
POLK COUNTY
STATION: 22+87.20 -RP_E-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER A. D. SHAH
8/25/2017

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : M. CLAREY, K. E. LOFTON DATE : 6-17
CHECKED BY : D. PRETORIUS DATE : 7-17
DESIGN ENGINEER : A. D. SHAH DATE : 8-17

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-15.1
1	LOFTON	8-25-17	3			TOTAL SHEETS
2			4			24

STR. #1

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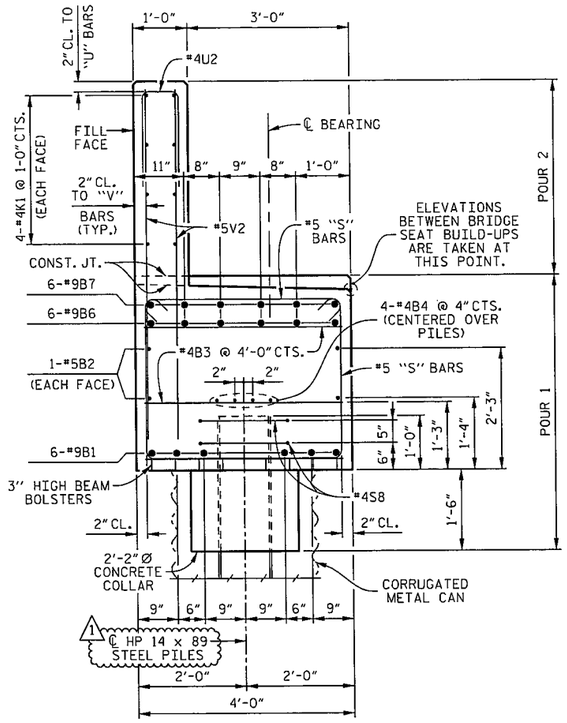
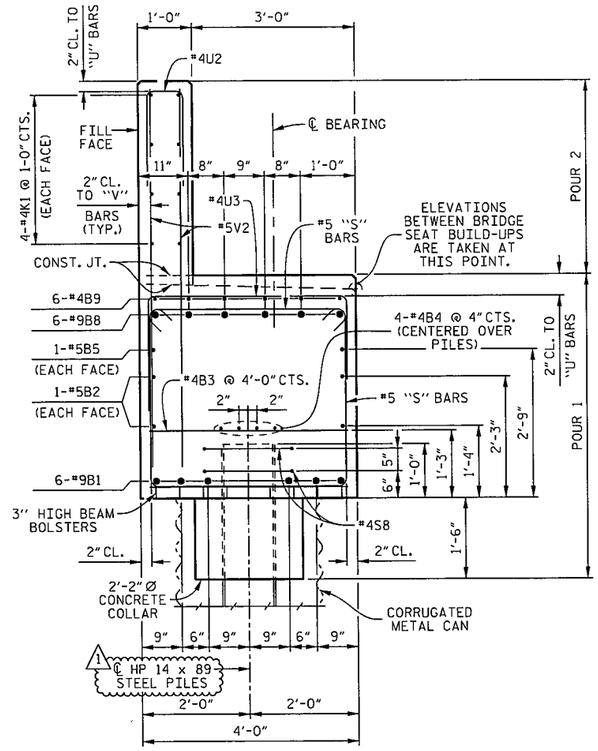


SECTION A–A



SECTION B–B

BILL OF MATERIAL

END BENT 1

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	2	54'- 4"	1,108
B2	4	#5	STR	51'-10"	216
B3	15	#4	STR	3'- 8"	37
B4	8	#4	STR	27'- 2"	145
B5	2	#5	STR	18'- 0"	38
B6	6	#9	9	30'- 4"	619
B7	6	#9	STR	22'- 0"	449
B8	6	#9	9	22'- 4"	456
B9	6	#4	STR	8'- 0"	32
H1	8	#5	STR	8'- 1"	67
H2	12	#5	6	8'- 9"	110
H3	6	#5	STR	8'- 3"	52
H4	12	#5	7	8'-11"	112
K1	16	#4	STR	27'- 6"	294
S1	6	#5	4	4'- 9"	30
S2	3	#5	8	10'- 0"	31
S3	42	#5	4	4'- 7"	201
S4	14	#5	8	9'-10"	144
S5	12	#5	8	10'- 6"	131
S6	16	#5	8	11'- 2"	186
S7	3	#5	8	11'- 4"	35
S8	16	#4	1	7'- 7"	81
U1	4	#4	5	9'- 5"	25
U2	43	#4	3	4'- 2"	120
U3	7	#4	3	6'- 8"	31
V1	28	#5	STR	9'- 4"	273
V2	86	#5	STR	6'- 4"	568
V3	28	#5	STR	8'- 2"	238

REINFORCING STEEL 5,829 LBS.

CLASS "A" CONCRETE

POUR 1 COLLARS, CAP AND LOWER WINGS 29.3 CU. YDS.

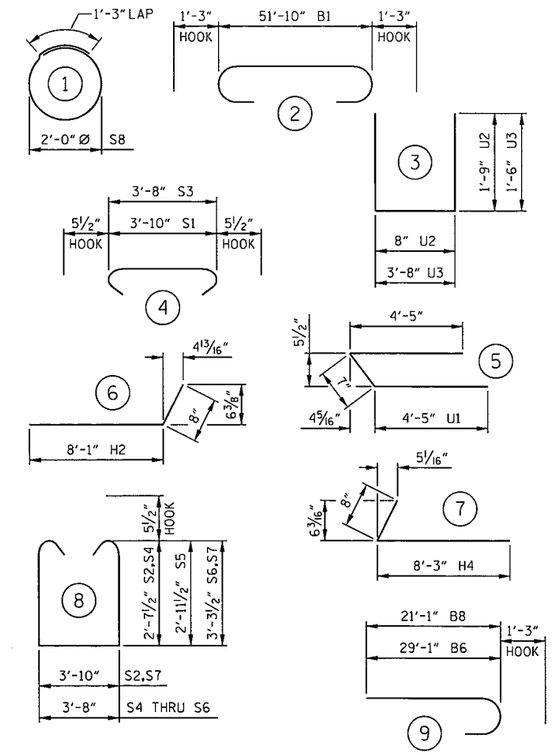
POUR 2 BACKWALL AND UPPER WINGS 10.6 CU. YDS.

TOTAL 39.9 CU. YDS.

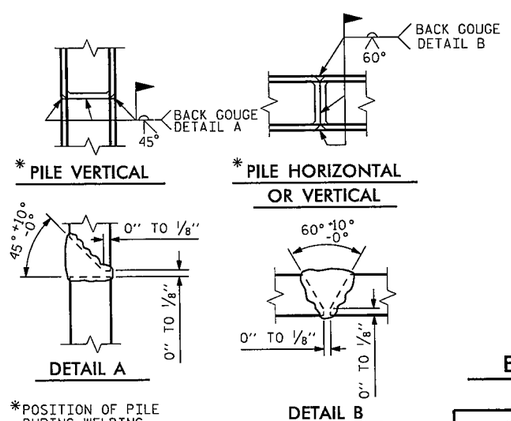
HP 14 x 89 STEEL PILES (1)
8 REQUIRED 560.0 LIN. FT.

PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 89 STEEL PILES 8 EACH

BAR TYPES

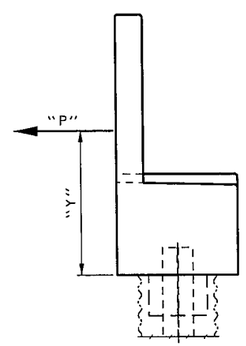


ALL BAR DIMENSIONS ARE OUT TO OUT.



*POSITION OF PILE DURING WELDING.

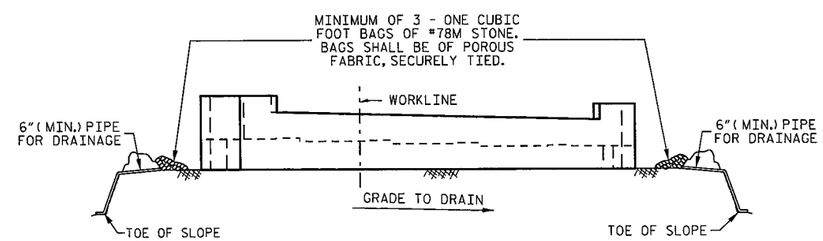
PILE SPLICE DETAILS



END BENT TIEBACK FORCE

COMPONENT	"P" (K /FT.)	"Y" (FT.)
WIND ON STRUCTURE (WS)	0.10	3.625
WIND ON LIVE LOAD (WL)	0.05	3.625
BRAKING FORCE (BR)	0.37	3.625
THERMAL FORCE (TU)	0.13	3.625
EARTH FORCE (EH)	1.26	2.500
LIVE LOAD SURCHARGE (LS)	1.26	3.750

NOTE:
"P" IS UNFACTORED SERVICE LOAD NORMAL TO FILL FACE.



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

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TEMPORARY DRAINAGE AT END BENT

(1) REVISED PILE SIZE.

DRAWN BY : K. E. LOFTON DATE : 6-17
CHECKED BY : D. PRETORIUS DATE : 7-17
DESIGN ENGINEER : A. D. SHAH DATE : 8-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ANUPAM D. SHAH
8/25/2017

PROJECT NO. I-4729A
POLK COUNTY
STATION: 22+87.20 -RP_E-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

REVISIONS							
No.	BY:	DATE:	No.	BY:	DATE:	SHEET No.	S1-17.1
1	LOFTON	8-25-17	3			TOTAL SHEETS	24
2			4				

STR. #1

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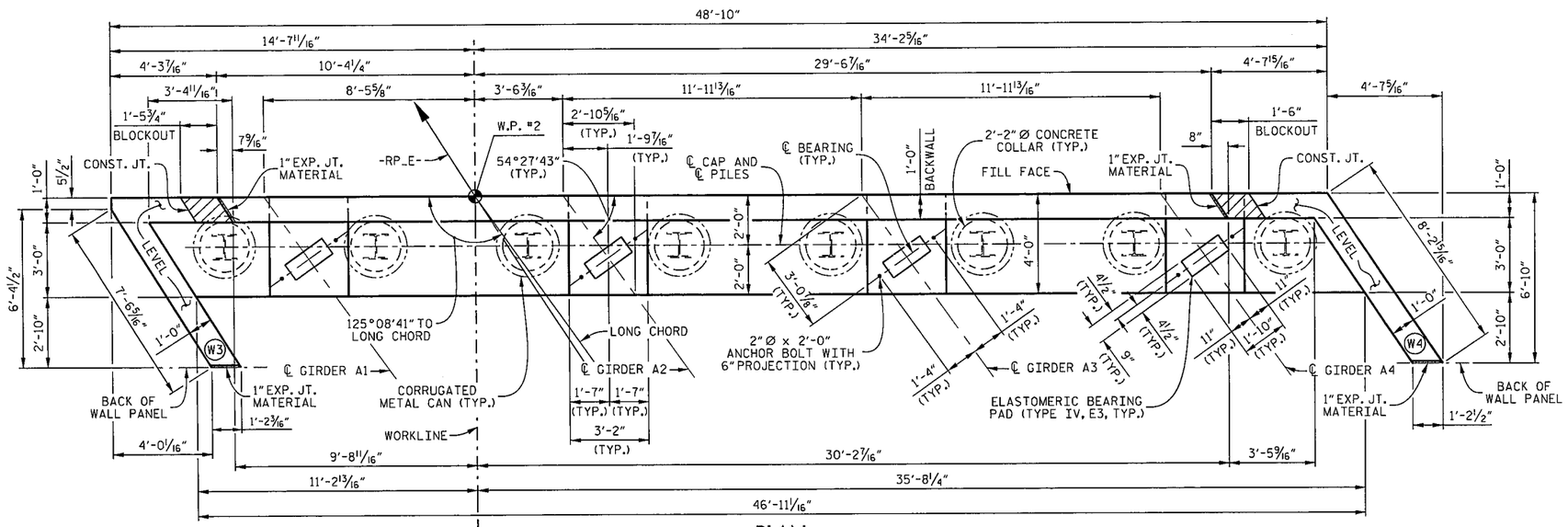
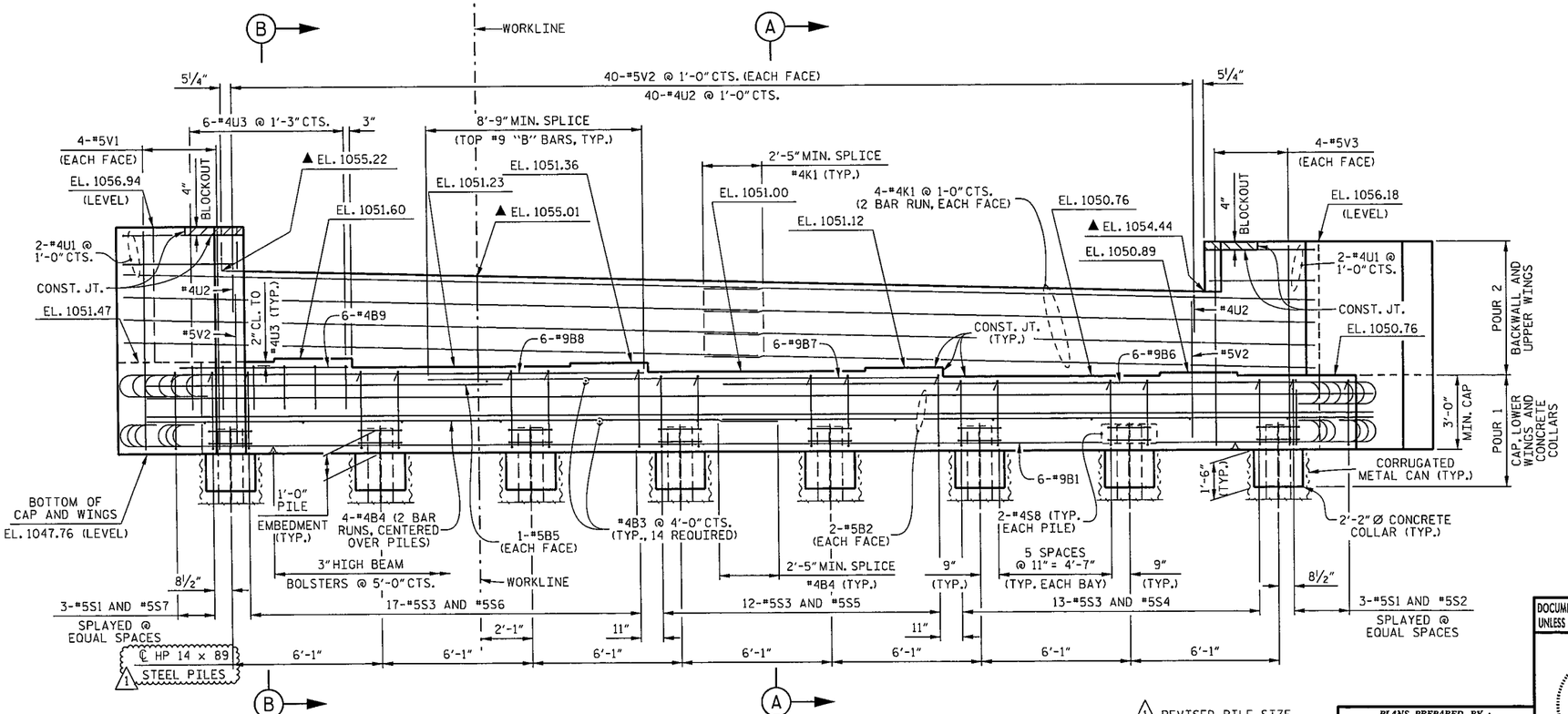


PLAN



ELEVATION

1 REVISED PILE SIZE.

NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE TOP SURFACE AREA OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

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BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

▲ THIS ELEVATION IS TAKEN AT FILL FACE OF BACKWALL.

FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION VIEWS ON SHEET 3 OF 3.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

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THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE COST TO FURNISH AND INSTALL THE 30" Ø CORRUGATED METAL CANS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR MSE RETAINING WALL.

WING (W3) AND WING (W4) DETAILS ARE BASED ON A 5 1/2" WALL PANEL THICKNESS AND USING DOWELS FOR THE COPING. CONTRACTOR MAY ADJUST WINGS SLIGHTLY AS NECESSARY, BASED ON APPROVED MSE WALL SHOP DRAWINGS.

PROJECT NO. I-4729A
POLK COUNTY
STATION: 22+87.20 -RP_E-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER A. D. SHAH
8/25/2017

REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1	LOFTON	8-25-17	3		
2			4		

SHEET No. S1-18.1
TOTAL SHEETS 24

STR. #1

DRAWN BY : K. E. LOFTON DATE : 6-17
CHECKED BY : D. PRETORIUS DATE : 7-17
DESIGN ENGINEER : A. D. SHAH DATE : 8-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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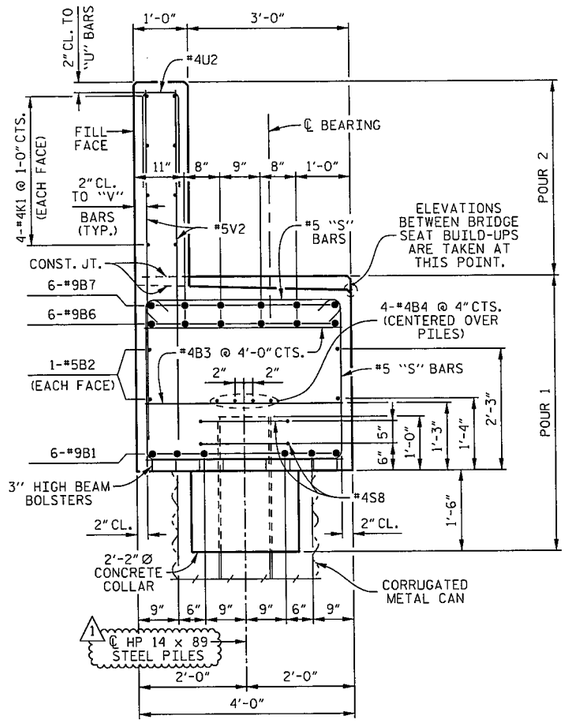
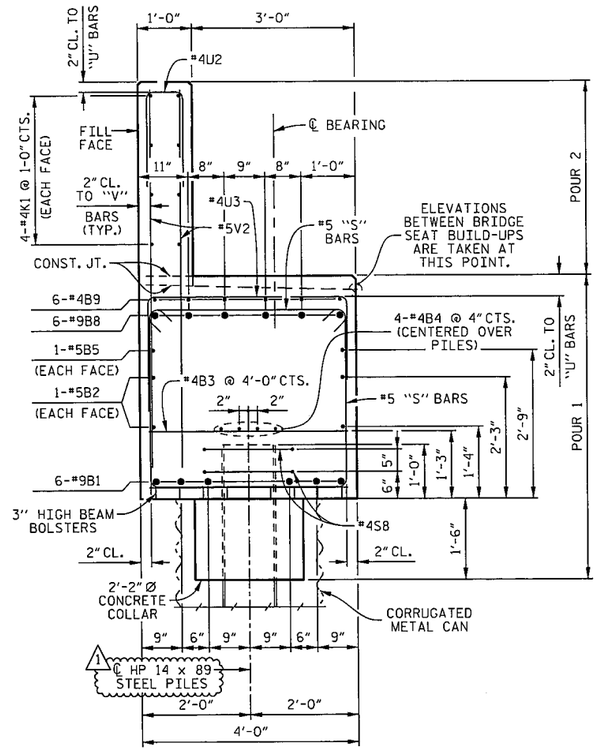


SECTION A–A



SECTION B–B

BILL OF MATERIAL

END BENT 2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	2	51'- 0"	1,040
B2	4	#5	STR	48'- 6"	202
B3	14	#4	STR	3'- 8"	34
B4	8	#4	STR	25'- 6"	136
B5	2	#5	STR	17'- 6"	37
B6	6	#9	9	28'- 1"	573
B7	6	#9	STR	22'- 0"	449
B8	6	#9	9	22'- 7"	461
B9	6	#4	STR	7'- 0"	28
H1	8	#5	STR	7'- 8"	64
H2	12	#5	7	8'- 4"	104
H3	6	#5	STR	7'-10"	49
H4	12	#5	6	8'- 6"	106
K1	16	#4	STR	25'- 6"	273
S1	6	#5	4	4'- 9"	30
S2	3	#5	8	10'- 0"	31
S3	42	#5	4	4'- 7"	201
S4	13	#5	8	9'-10"	133
S5	12	#5	8	10'- 4"	129
S6	17	#5	8	10'- 9"	191
S7	3	#5	8	10'-11"	34
S8	16	#4	1	7'- 7"	81
U1	4	#4	5	9'- 1"	24
U2	40	#4	3	4'- 2"	111
U3	6	#4	3	6'-10"	27
V1	26	#5	STR	8'-10"	240
V2	80	#5	STR	6'- 2"	515
V3	26	#5	STR	8'- 1"	219

REINFORCING STEEL 5,522 LBS.

CLASS "A" CONCRETE

POUR 1 COLLARS, CAP AND LOWER WINGS 27.5 CU. YDS.

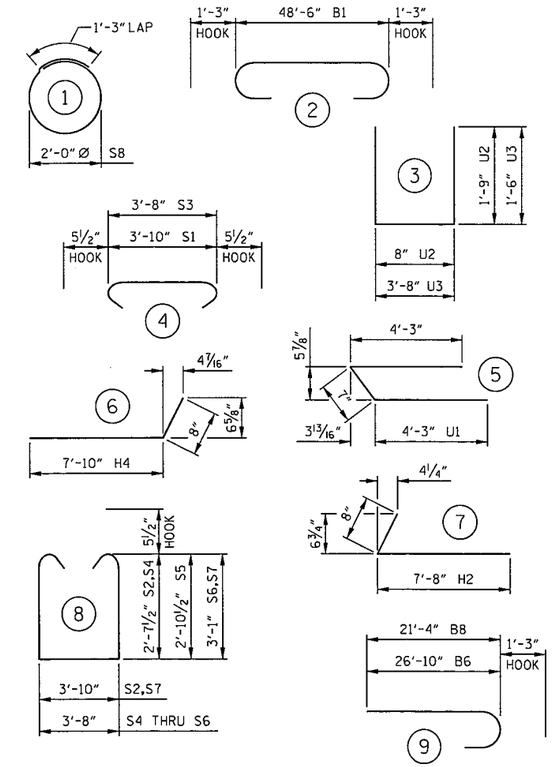
POUR 2 BACKWALL AND UPPER WINGS 11.1 CU. YDS.

TOTAL 38.6 CU. YDS.

1 HP 14 x 89 STEEL PILES
8 REQUIRED 580.0 LIN. FT.

1 PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 89 STEEL PILES 8 EACH

BAR TYPES



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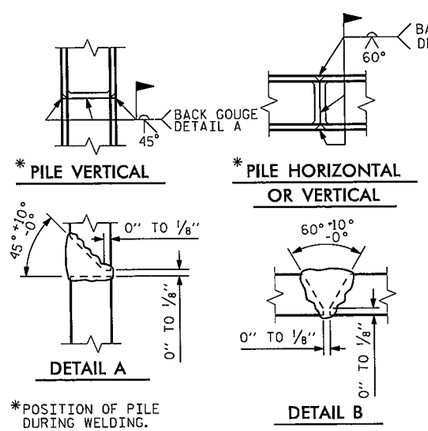
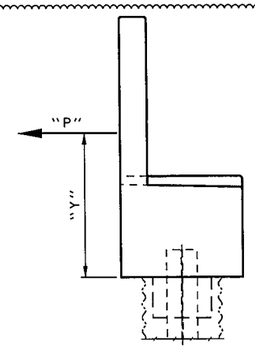


*POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

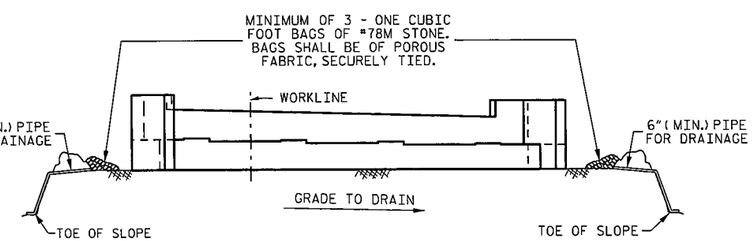


END BENT TIEBACK FORCE

COMPONENT		"P" (K /FT.)	"Y" (FT.)
WIND ON STRUCTURE	(WS)	0.11	3.625
WIND ON LIVE LOAD	(WL)	0.05	3.625
BRAKING FORCE	(BR)	0.42	3.625
THERMAL FORCE	(TU)	0.14	3.625
EARTH FORCE	(EH)	1.26	2.500
LIVE LOAD SURCHARGE	(LS)	1.26	3.750

NOTE:

"P" IS UNFACTORED SERVICE LOAD NORMAL TO FILL FACE.



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TEMPORARY DRAINAGE AT END BENT

1 REVISED PILE SIZE AND ADDED DETAIL.

DRAWN BY : K. E. LOFTON DATE : 6-17
CHECKED BY : D. PRETORIUS DATE : 7-17
DESIGN ENGINEER : A. D. SHAH DATE : 8-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ANUPAM D. SHAH
8/25/2017

PROJECT NO. I-4729A
POLK COUNTY
STATION: 22+87.20 -RP_E-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

REVISIONS								SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:			S1-20.1
1	LOFTON	8-25-17	3					TOTAL SHEETS
2			4					24

STR. #1

FILE: I-4729a(structures)(sw)(final)P_E1-4729A_sma_sht1_sht2_Bent-dgn
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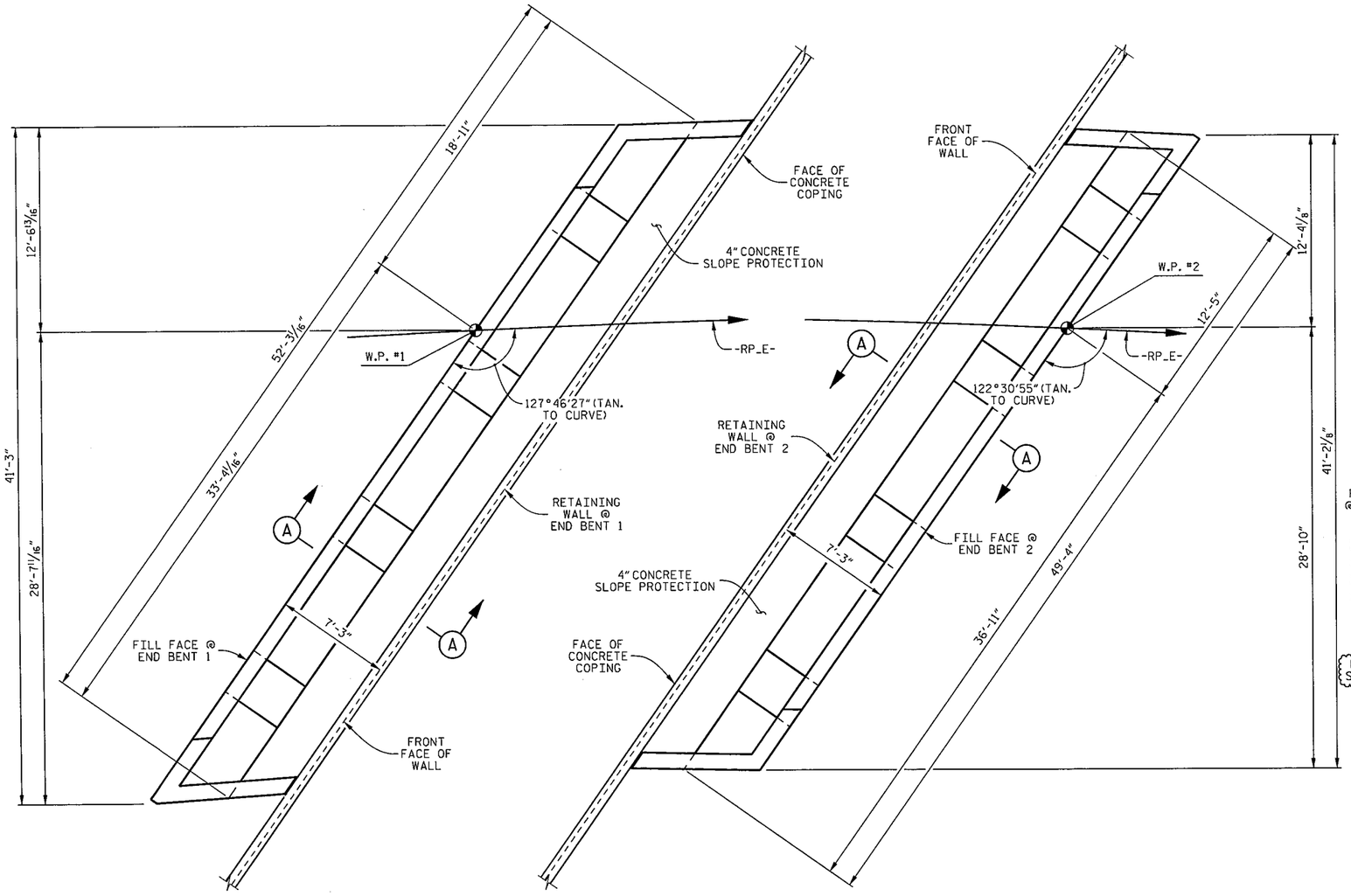
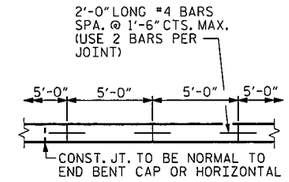


END BENT 1

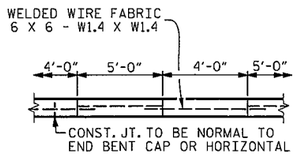
END BENT 2

PLAN

APPROACH SLABS AND CONCRETE DITCHES NOT SHOWN

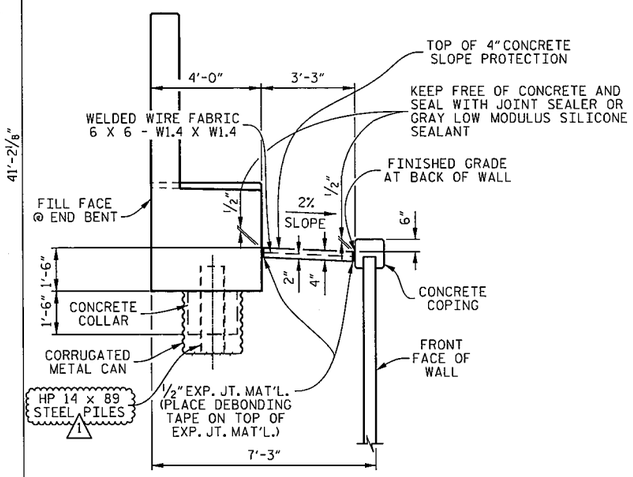


POURING DETAIL



POUR A 4'-0" STRIP FIRST.

OPTIONAL POURING DETAIL



SECTION A-A

BRIDGE AT STA. 22+87.20 -RP_E-	4" SLOPE PROTECTION	WELDED WIRE FABRIC
	SQUARE YARDS	APPROX. LINEAR FEET
END BENT 1	19	34
END BENT 2	18	32

PROJECT NO. I-4729A

POLK COUNTY

STATION: 22+87.20 -RP_E-

GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS.

STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT.

MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 x 6 - W1.4 x W1.4. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

1 REVISED PILE SIZE.

ASSEMBLED BY : K. E. LOFTON		DATE :	5-17
CHECKED BY : A. D. SHAH		DATE :	7-17
DRAWN BY : ELR	5/92	REV. 10/1/11	MAA/GM
CHECKED BY : GRP	6/92	REV. 12/21/11	MAA/GM
		REV. 1 /16	MAA/TMG

DRAWN BY :	K. E. LOFTON	DATE :	5-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	A. D. SHAH	DATE :	8-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ANIRUDH D. SHAH
8/25/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

REVISIONS						
No.	BY:	DATE:	No.	BY:	DATE:	
1	LOFTON	8-25-17	3			
2			4			

SHEET No. S1-21.1

TOTAL SHEETS 24

STD. No. SP1

STR. #1

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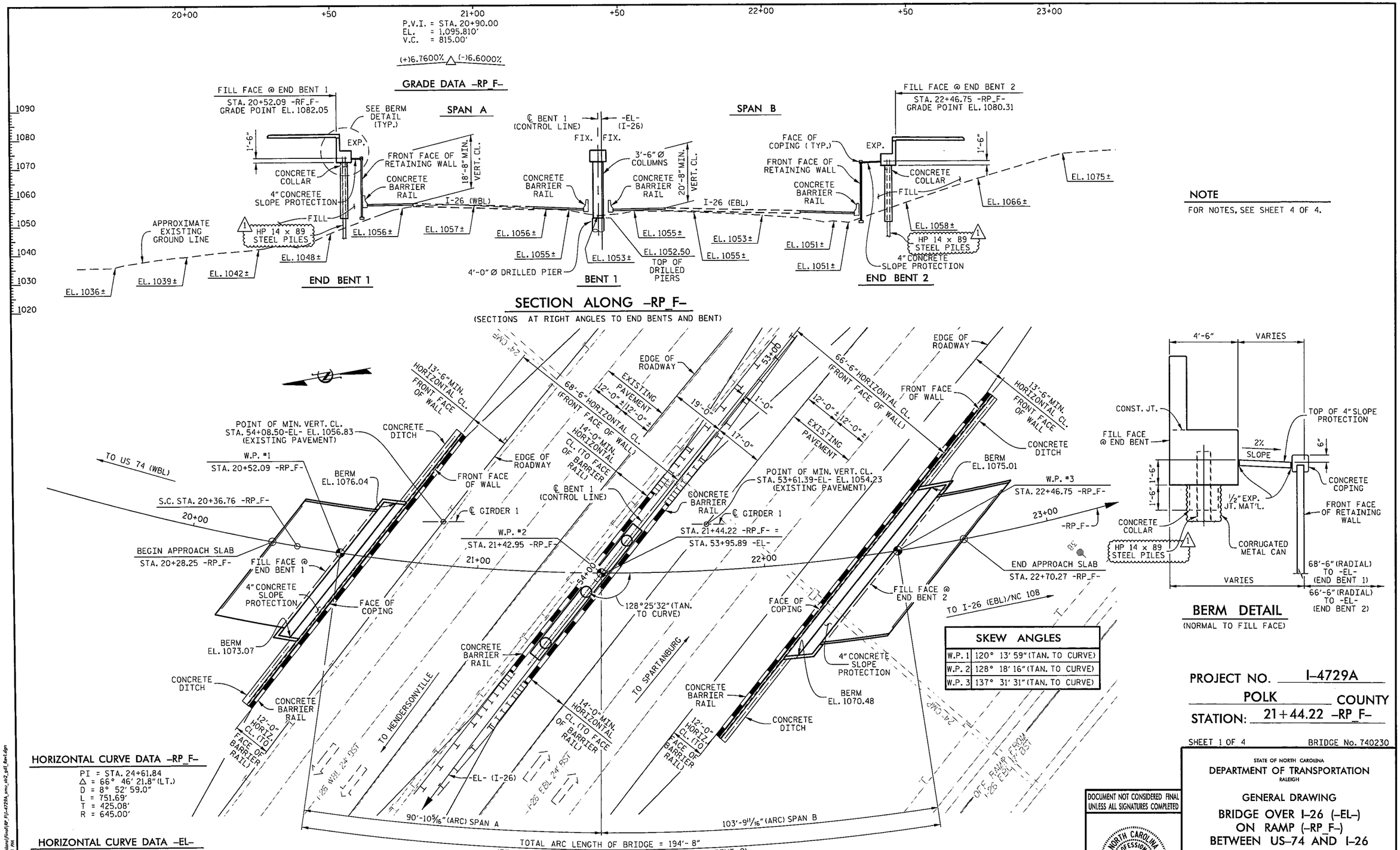

NOTE

FOR NOTES, SEE SHEET 4 OF 4.

BERM DETAIL

(NORMAL TO FILL FACE)

SKEW ANGLES	
W.P. 1	120° 13' 59" (TAN. TO CURVE)
W.P. 2	128° 18' 16" (TAN. TO CURVE)
W.P. 3	137° 31' 31" (TAN. TO CURVE)

HORIZONTAL CURVE DATA -RP_F-

PI = STA. 24+61.84
Δ = 66° 46' 21.8" (LT.)
D = 8° 52' 59.0"
L = 751.69'
T = 425.08'
R = 645.00'

HORIZONTAL CURVE DATA -EL-

PI = STA. 61+13.99
Δ = 30° 13' 20.1" (LT.)
D = 1° 00' 00.0"
L = 3,022.23'
T = 1,547.15'
R = 5,729.58'

PLAN

METAL CANS AND PILES NOT SHOWN IN PLAN VIEW.

1 REVISED PILE SIZE.

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

SHEET 1 OF 4 BRIDGE No. 740230

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER I-26 (-EL-)
ON RAMP (-RP_F-)
BETWEEN US-74 AND I-26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER MINAPARA D. SHAH
8/25/2017

DRAWN BY : K. E. LOFTON DATE : 7-17
CHECKED BY : A. D. SHAH DATE : 7-17
DESIGN ENGINEER : S. PHAN DATE : 7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS							
No.	BY:	DATE:	No.	BY:	DATE:	SHEET No.	S2-1.1
1	LOFTON	8-25-17	3			TOTAL SHEETS	31
2			4				

STR. #2

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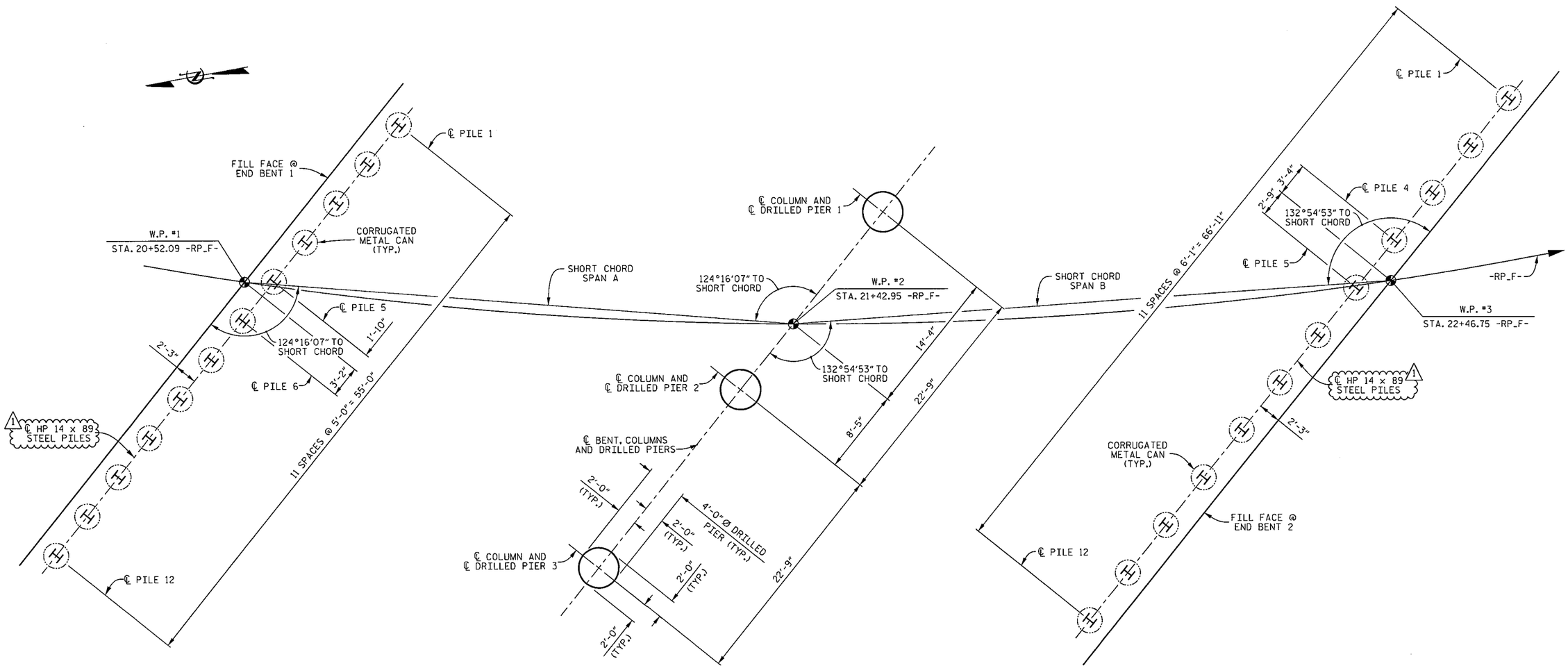

FOUNDATION LAYOUT

NOTES

1 ALL END BENT PILES ARE VERTICAL HP 14 x 89 STEEL PILES.

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINES AT THE BOTTOM OF THE END BENT CAPS.

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

1 DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 255 TONS PER PILE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45,000 TO 60,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1 AND END BENT 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE TO BE DRIVEN AFTER CONSTRUCTION AND RELEASE OF THE MSE WALLS PENDING THE SETTLEMENT MONITORING PROGRAM.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 570 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 50 TSF.

INSTALL DRILLED PIERS AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN 1002.5 FEET (FOR LEFT TO CENTER) AND 1015.0 FEET (FOR RIGHT) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 10 FEET INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CORRUGATED METAL CANS AT END BENT 1 AND END BENT 2 ARE TO BE PLACED DURING CONSTRUCTION IN THE REINFORCED BACKFILL OF THE MSE WALLS. SEE MSE WALL PLANS.

INSTALLATION OF CORRUGATED METAL CANS FROM THE BOTTOM OF THE PILE CAP TO THE LEVELING PAD ELEVATION IS REQUIRED FOR PILES AT END BENT 1 AND END BENT 2. THE CANS SHALL BE DESIGNED TO WITHSTAND THE PRESSURES FROM COMPACTION OPERATIONS ON ADJACENT FILLS WITHOUT DISTORTION. AT A MINIMUM, CORRUGATED METAL CANS SHALL BE 16-GAUGE WITH A WALL THICKNESS OF 0.064".

LOOSELY BACKFILL CORRUGATED METAL CANS USING SAME MATERIAL AS MSE REINFORCEMENT ZONE PRIOR TO CONSTRUCTION OF THE END BENT PILE CAP. DO NOT COMPACT MATERIAL WITHIN THE CAN.

1 OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE MSE WALLS AND END BENTS BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT 1 AND END BENT 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

FOR SURCHARGES AND WAITING PERIODS, SEE SECTION 235 OF THE STANDARD SPECIFICATIONS AND THE SURCHARGES AND WAITING PERIODS PROVISION.

1 REVISED PILE SIZE AND NOTES.

DRAWN BY :	K. E. LOFTON	DATE :	7-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	S. PHAN	DATE :	7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ANKUR D. SHAH
DocuSigned by: Ankur D. Shah
5554D2B6C3554AA...
8/25/2017

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER I-26 (-EL-)
ON RAMP (-RP_F-)
BETWEEN US-74 AND I-26

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S2-2.1
1	LOFTON	8-25-17	3			TOTAL SHEETS
2			4			31

STR. #2

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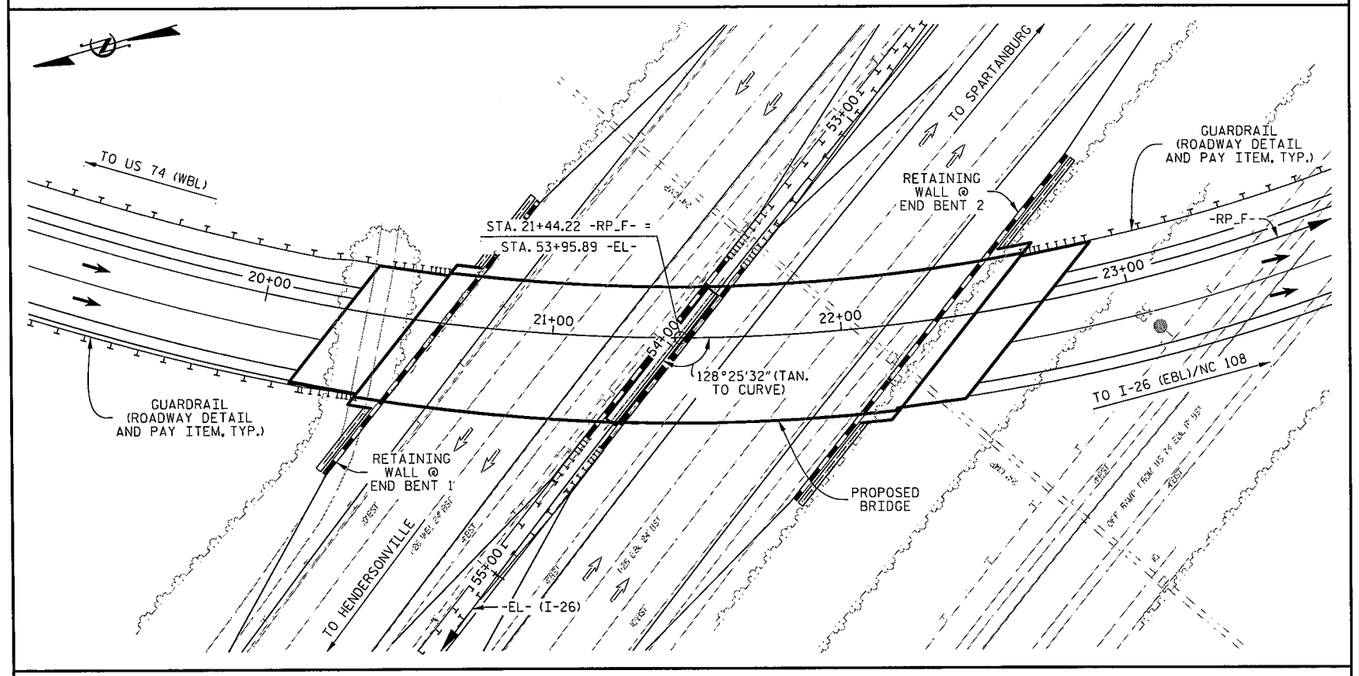
BENCHMARK: #6 - RAILROAD SPIKE IN BASE 20" WHITE OAK 577.68' RIGHT OF STA. 18+44.38 -RP_F- EL. 1080.99 N 561443.04 E 1041924.09



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE "STANDARD NOTES" SHEET.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

ALL REINFORCING STEEL SHALL BE GRADE 60.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE AT STA. 21+44.22 -RP_F-, SEE SPECIAL PROVISIONS.

1 A WAITING PERIOD IS NOT REQUIRED PRIOR TO THE CONSTRUCTION OF END BENTS.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINT OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

TOTAL BILL OF MATERIAL

	4'-0" Ø DRILLED PIERS IN SOIL	4'-0" Ø DRILLED PIERS NOT IN SOIL	PDA TESTING	SID INSPECTIONS	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		HP 14 x 89 STEEL PILES 1		CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 89 STEEL PILES 1
	LIN. FT.	LIN. FT.	EACH	EACH	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	No.	LIN. FT.	No.	LIN. FT.	LIN. FT.	SQ. YD.	LUMP SUM	LUMP SUM	EACH
SUPERSTRUCTURE						9,019	9,581		LUMP SUM			12	1,123.7			382.4		LUMP SUM	LUMP SUM	
END BENT 1								71.5		7,755				12	630.0		19			12
BENT 1	107.5	30.0		1	1			66.6		33,245	5,006									
END BENT 2								87.6		9,330				12	660.0		26			12
TOTAL	107.5	30.0	1	1	1	9,019	9,581	225.7	LUMP SUM	50,330	5,006	12	1,123.7	24	1,290.0	382.4	45	LUMP SUM	LUMP SUM	24

1 REVISED PILE SIZE AND NOTE.

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER I-26 (-EL-)
ON RAMP (-RP_F-)
BETWEEN US-74 AND I-26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ADITYA D. SHAH
DocuSigned by: 8/25/2017

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	7-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	S. PHAN	DATE :	7-17

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S2-4.1
1	LOFTON	8-25-17	3			TOTAL SHEETS
2			4			31

STR. #2

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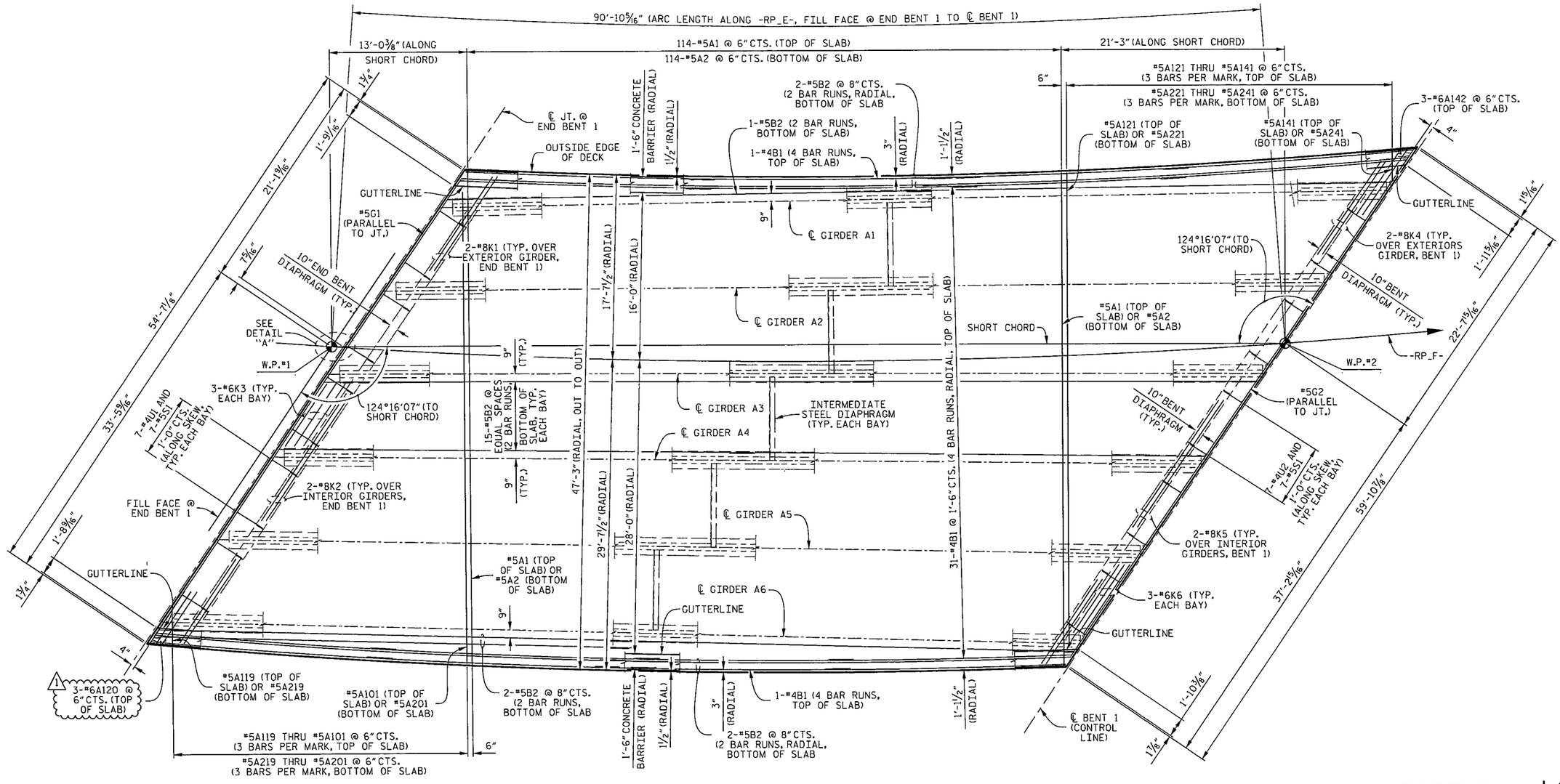
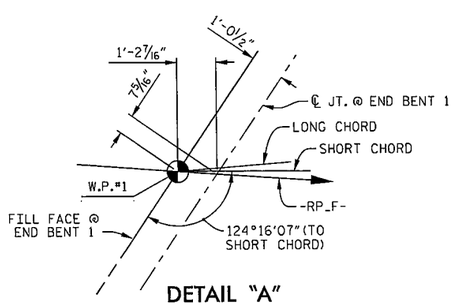


PLAN OF SPAN A



DETAIL "A"

NOTES

#5 "A" BARS SHALL BE PLACED PERPENDICULAR TO SHORT CHORD WITH A 2" MINIMUM CLEARANCE ON EACH END.

SPACING FOR "B" BARS IN TOP OF SLAB IS RADIAL TO -RP_F-.

FOR BARRIER RAIL REINFORCING STEEL LOCATION, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR ARC OFFSETS, SEE "TYPICAL SECTION" SHEET 2 OF 2.

1 REVISED CALLOUT

DRAWN BY :	K. E. LOFTON	DATE :	7-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	S. PHAN	DATE :	7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ANUPAM D. SHAH
8/25/2017

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A

REVISIONS						
No.	BY:	DATE:	No.	BY:	DATE:	
1	LOFTON	8-25-17	3			
2			4			

SHEET No. S2-8.1
TOTAL SHEETS 31
STR. #2

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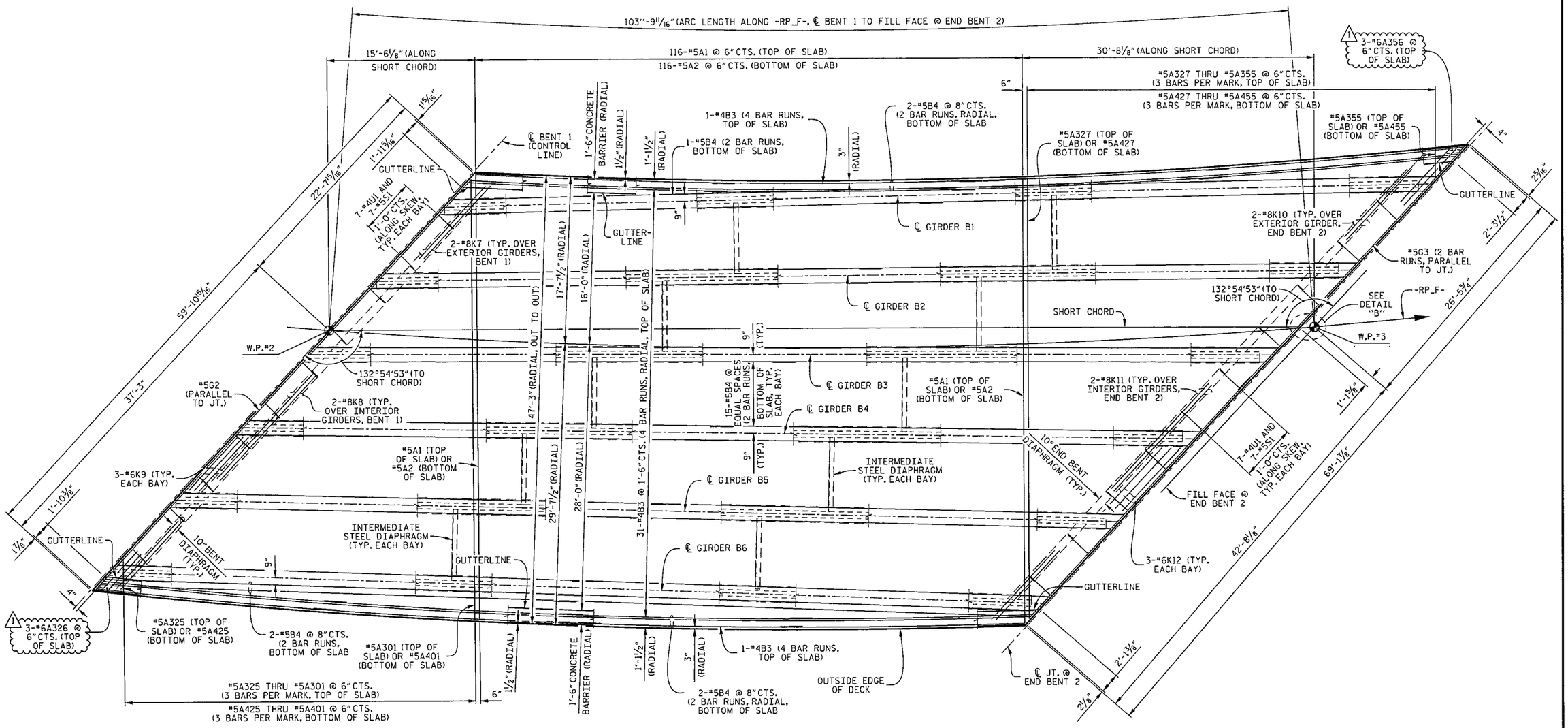
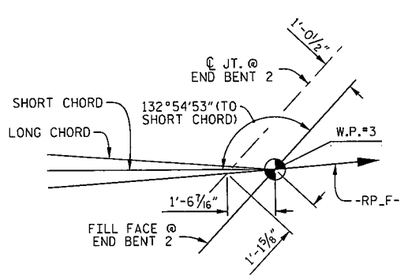


PLAN OF SPAN B



DETAIL "B"

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

NOTES

#5 "A" BARS SHALL BE PLACED PERPENDICULAR TO SHORT CHORD WITH A 2" MINIMUM CLEARANCE ON EACH END.

SPACING FOR "B" BARS IN TOP OF SLAB IS RADIAL TO -RP_F-.

FOR BARRIER RAIL REINFORCING STEEL LOCATION, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR ARC OFFSETS, SEE "TYPICAL SECTION" SHEET 2 OF 2.

1 REVISED CALLOUT.

DRAWN BY :	K. E. LOFTON	DATE :	7-17
CHECKED BY :	A. D. SHAH	DATE :	7-17
DESIGN ENGINEER :	S. PHAN	DATE :	7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER ASHIRAM D. SHAH
8/25/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B

REVISIONS							
No.	BY:	DATE:	No.	BY:	DATE:		
1	LOFTON	8-25-17	3				
2			4				

SHEET No. S2-9.1
TOTAL SHEETS 31
STR. #2

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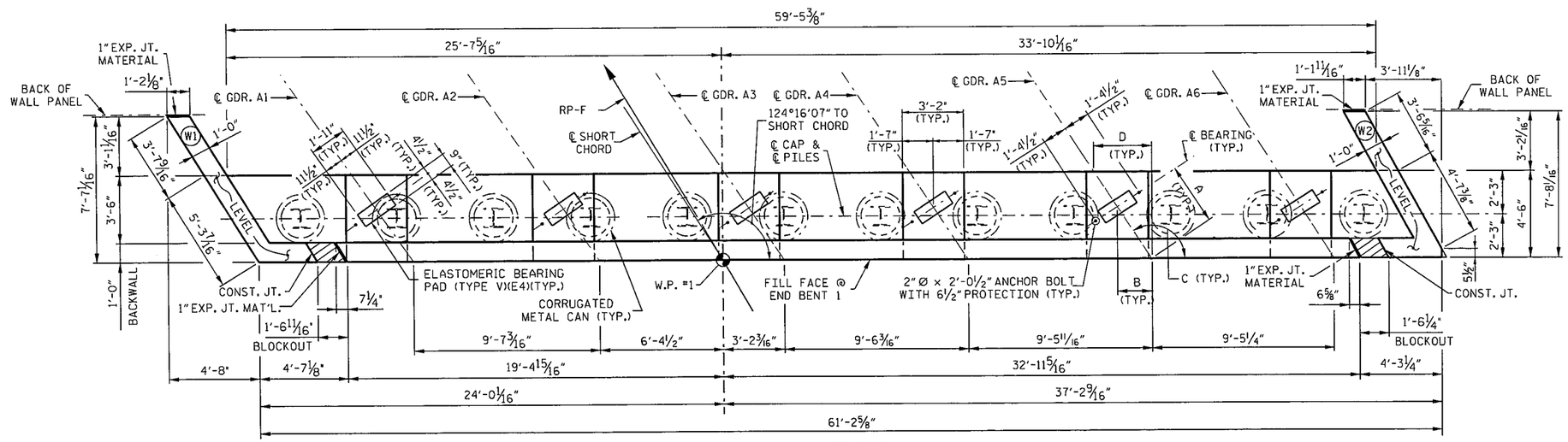
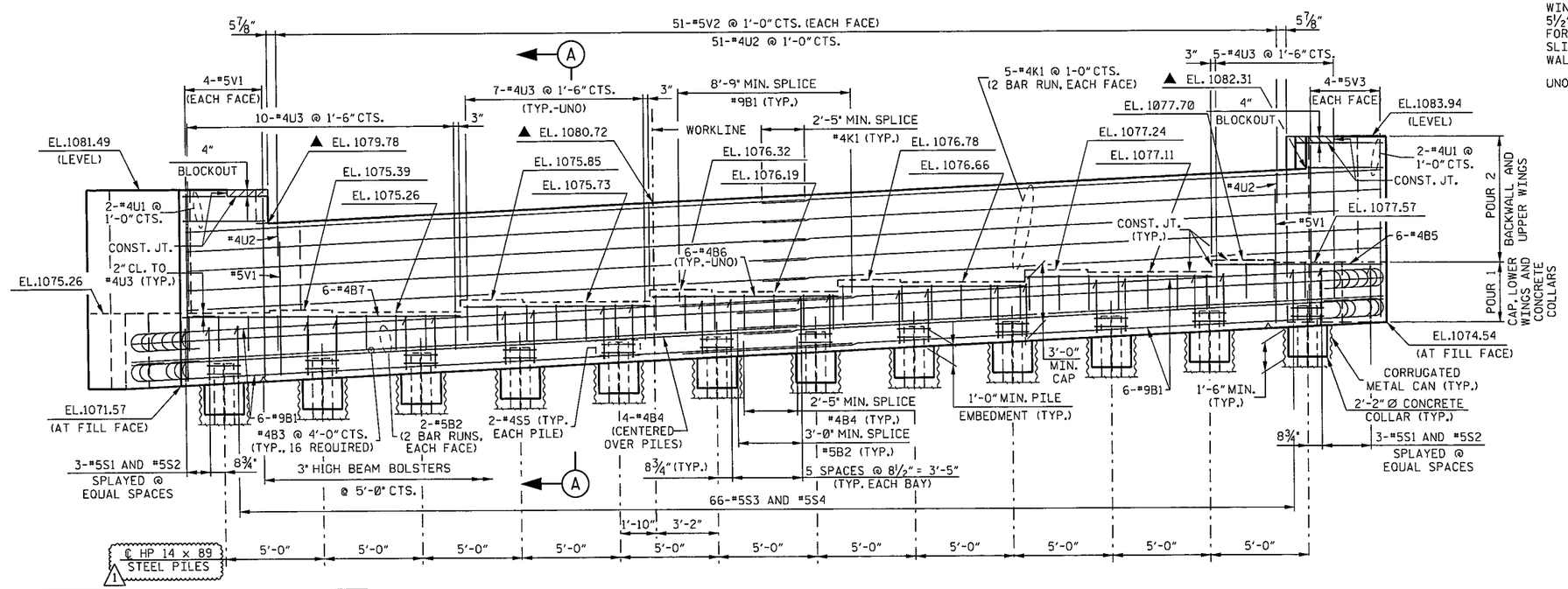


PLAN



ELEVATION

TABLE OF GIRDER VARIABLES				
END BENT 1	A (FT.)	B (FT.)	C (DEG.)	D (FT.)
GIRDER A1	3'-3 7/16"	1'-10 11/16"	125°07'48"	3'-2"
GIRDER A2	3'-3 3/16"	1'-10 1/4"	124°36'28"	3'-1 1/4"
GIRDER A3	3'-2 15/16"	1'-9 3/16"	124°06'07"	3'-0 9/16"
GIRDER A4	3'-2 3/4"	1'-9 7/16"	123°36'44"	2'-11 7/8"
GIRDER A5	3'-2 1/2"	1'-9 1/16"	123°08'14"	2'-11 1/4"
GIRDER A6	3'-2 5/16"	1'-8 11/16"	122°40'36"	2'-10 5/8"

1 REVISED PILE SIZE.

NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE TOP SURFACE AREA OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

▲ THIS ELEVATION IS TAKEN AT FILL FACE OF BACKWALL.

FOR SECTION A-A, SEE SHEET 3 OF 3.

FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION VIEWS ON SHEET 3 OF 3.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR TEMPORARY DRAINAGE AT END BENT DETAIL, SEE SHEET 3 OF 3.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE COST TO FURNISH AND INSTALL THE 30"Ø CORRUGATED METAL CANS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR MSE RETAINING WALL.

WING (W1) AND WING (W2) DETAILS ARE BASED ON A 5 1/2" WALL PANEL THICKNESS AND USING DOWELS FOR THE COPING. CONTRACTOR MAY ADJUST WINGS SLIGHTLY AS NECESSARY, BASED ON APPROVED MSE WALL SHOP DRAWINGS.

UNO = UNLESS NOTED OTHERWISE

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER
A. MICHAEL B. SHAH
DocuSigned by: 8/25/2017

DRAWN BY : M. CLAREY / T. DETMERS DATE : 7-17
CHECKED BY : D. PRETORIUS DATE : 7-17
DESIGN ENGINEER : D. PRETORIUS DATE : 7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS						
No.	BY:	DATE:	No.	BY:	DATE:	
1	LOFTON	8-25-17	3			
2			4			

SHEET No. S2-20.1
TOTAL SHEETS 31

STR. #2

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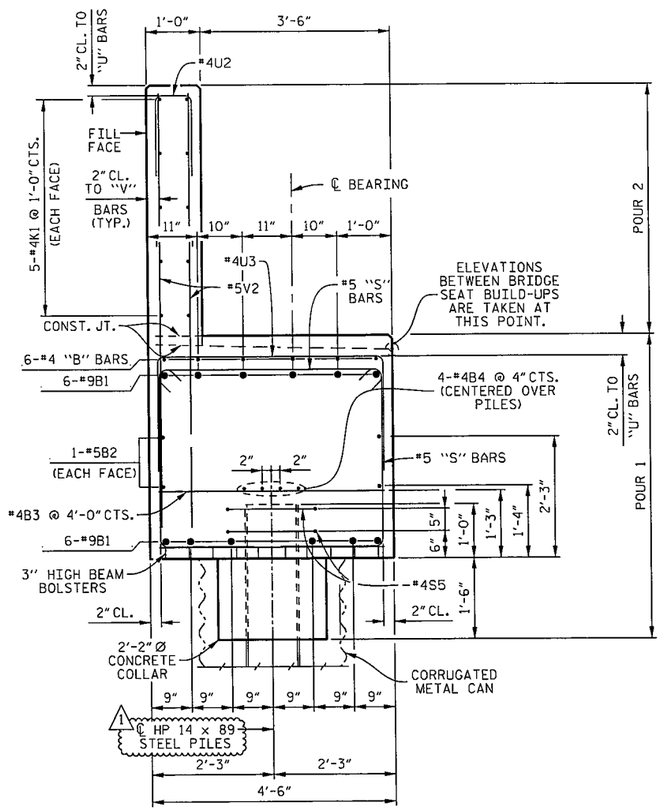
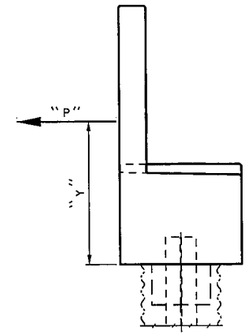


SECTION A-A



END BENT TIEBACK FORCE

COMPONENT		"P" (K /FT.)	"Y" (FT.)
WIND ON STRUCTURE	(WS)	0.10	3.514
WIND ON LIVE LOAD	(WL)	0.05	3.514
BRAKING FORCE	(BR)	0.57	3.514
THERMAL FORCE	(TU)	0.21	3.514
EARTH FORCE	(EH)	1.28	2.684
LIVE LOAD SURCHARGE	(LS)	1.27	4.025

NOTE:
"P" IS UNFACTORED SERVICE LOAD NORMAL TO FILL FACE.

BILL OF MATERIAL

END BENT 1

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	24	#9	2	40'- 8"	3,318
B2	8	#5	STR	33'- 8"	281
B3	16	#4	STR	4'- 2"	45
B4	8	#4	STR	33'- 2"	177
B5	6	#4	STR	6'- 0"	24
B6	24	#4	STR	9'- 6"	152
B7	6	#4	STR	13'- 6"	54
H1	8	#5	STR	8'- 7"	72
H2	14	#5	6	9'- 6"	139
H3	6	#5	STR	7'- 9"	48
H4	14	#5	7	8'- 9"	128
K1	20	#4	STR	31'- 8"	423
S1	6	#5	4	5'- 3"	33
S2	6	#5	8	10'- 6"	66
S3	66	#5	4	5'- 1"	350
S4	66	#5	8	10'- 4"	711
S5	24	#4	1	7'- 7"	122
U1	4	#4	5	9'- 6"	25
U2	51	#4	3	4'- 2"	142
U3	43	#4	3	7'- 2"	206
V1	28	#5	STR	9'- 6"	277
V2	102	#5	STR	7'- 9"	824
V3	28	#5	STR	8'-11"	260

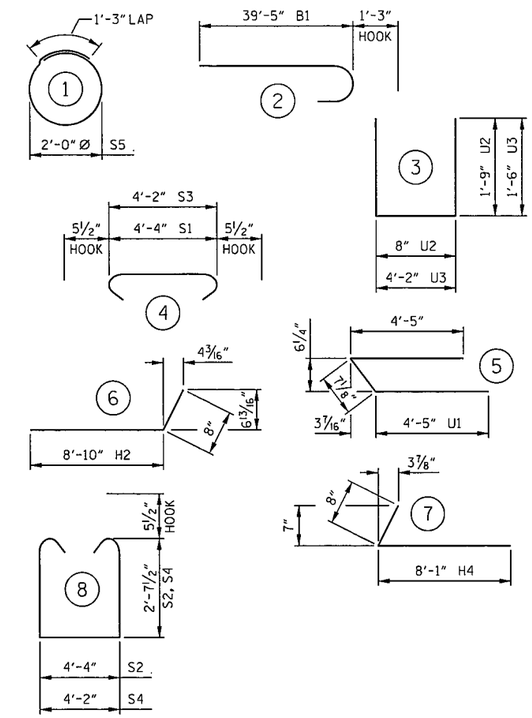
REINFORCING STEEL 7,755 LBS.

CLASS "A" CONCRETE
POUR 1 COLLARS, CAP AND LOWER WINGS 57.0 CU. YDS.
POUR 2 BACKWALL AND UPPER WINGS 14.5 CU. YDS.
TOTAL 71.5 CU. YDS.

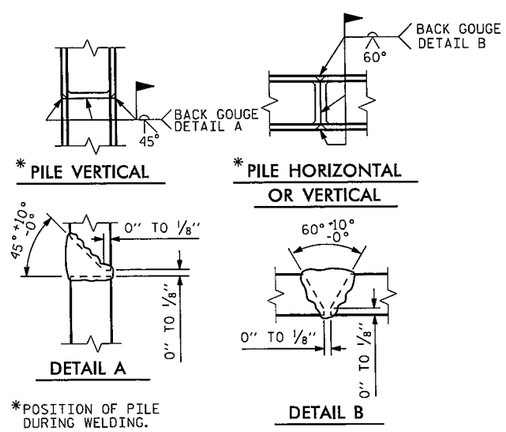
1 HP 14 x 89 STEEL PILES
12 REQUIRED 630.0 LIN. FT.

1 PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 89 STEEL PILES 12 EACH

BAR TYPES

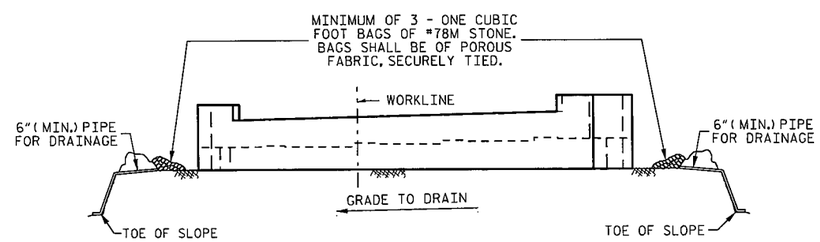


ALL BAR DIMENSIONS ARE OUT TO OUT.



*POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

1 REVISED PILE SIZE.

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER
DOCUSIGNED BY: DAVID D. SHAW
8/25/2017

DRAWN BY :	M. CLAREY / T. DETMERS	DATE : 7-17
CHECKED BY :	D. PRETORIUS	DATE : 7-17
DESIGN ENGINEER :	D. PRETORIUS	DATE : 7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS

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1	LOFTON	8-25-17	3		
2			4		

SHEET No. S2-22.1
TOTAL SHEETS 31

STR. #2

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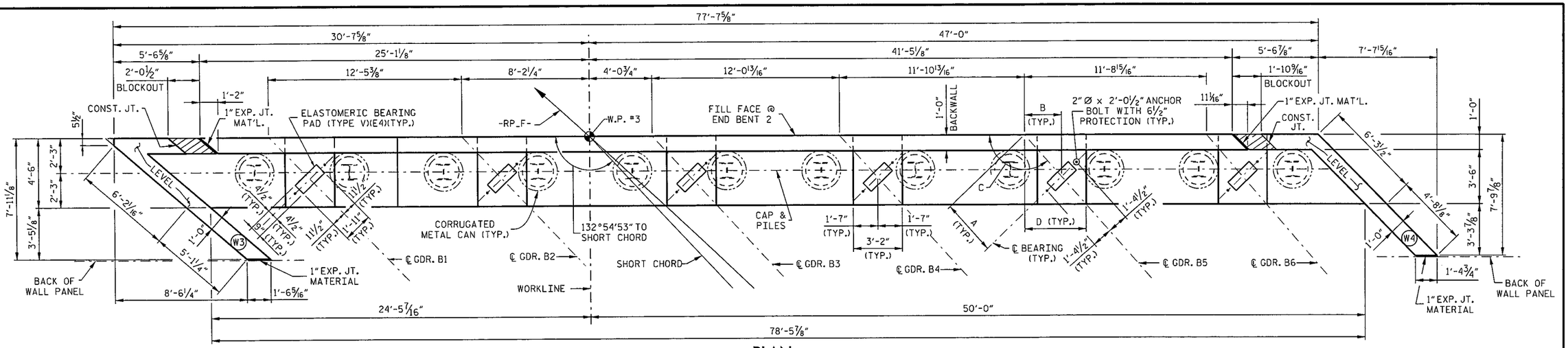

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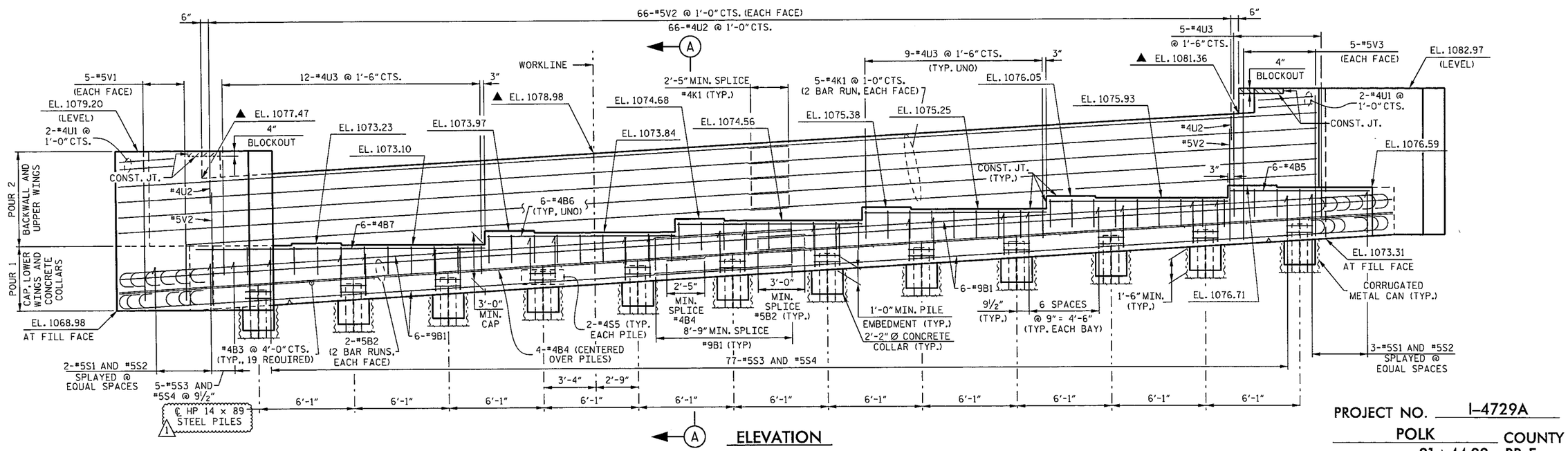

ELEVATION

PROJECT NO. I-4729A

POLK COUNTY

STATION: 21+44.22 -RP_F-

SHEET 1 OF 3

TABLE OF GIRDER VARIABLES				
END BENT 2	A (FT.)	B (FT.)	C (DEG.)	D (FT.)
GIRDER B1	3'-8¹⁵⁄₁₆"	2'-7¼"	134°06'07"	4'-4⁵⁄₁₆"
GIRDER B2	3'-8⅜"	2'-6½"	133°22'50"	4'-3"
GIRDER B3	3'-7⅞"	2'-5¾"	132°41'11"	4'-1¹³⁄₁₆"
GIRDER B4	3'-7⁷⁄₁₆"	2'-5¹⁄₁₆"	132°01'04"	4'-0⁵⁄₈"
GIRDER B5	3'-7"	2'-4⅜"	131°22'23"	3'-11⁹⁄₁₆"
GIRDER B6	3'-6⁹⁄₁₆"	2'-3¹³⁄₁₆"	130°45'02"	3'-10½"

NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE TOP SURFACE AREA OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

▲ THIS ELEVATION IS TAKEN AT FILL FACE OF BACKWALL.

FOR SECTION A-A, SEE SHEET 3 OF 3.

FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION VIEWS ON SHEET 3 OF 3.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR TEMPORARY DRAINAGE AT END BENT DETAIL, SEE SHEET 3 OF 3.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE COST TO FURNISH AND INSTALL THE 30" Ø CORRUGATED METAL CANS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR MSE RETAINING WALL.

WING (W3) AND WING (W4) DETAILS ARE BASED ON A 5½" WALL PANEL THICKNESS AND USING DOWELS FOR THE COPING. CONTRACTOR MAY ADJUST WINGS SLIGHTLY AS NECESSARY, BASED ON APPROVED MSE WALL SHOP DRAWINGS.

UNO = UNLESS NOTED OTHERWISE

1 REVISED PILE SIZE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER JONATHAN D. SHAW
DOCUSIGNED BY:
8/25/2017

DRAWN BY : M. CLAREY / DETTMERS DATE : 7-17
CHECKED BY : D. PRETORIUS DATE : 7-17
DESIGN ENGINEER : D. PRETORIUS DATE : 7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

REVISIONS						
No.	BY:	DATE:	No.	BY:	DATE:	
1	LOFTON	8-25-17	3			
2			4			

SHEET No. S2-25.1

TOTAL SHEETS 31

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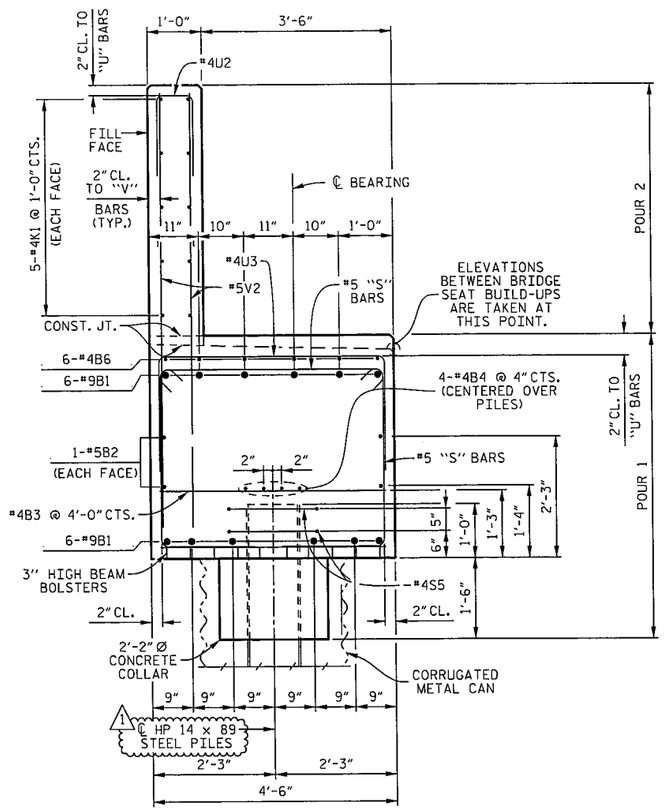
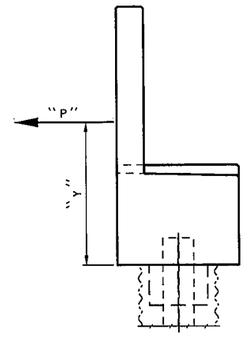


SECTION A-A



END BENT TIEBACK FORCE

COMPONENT		"P" (K /FT.)	"Y" (FT.)
WIND ON STRUCTURE	(WS)	0.11	3.514
WIND ON LIVE LOAD	(WL)	0.05	3.514
BRAKING FORCE	(BR)	0.33	3.514
THERMAL FORCE	(TU)	0.16	3.514
EARTH FORCE	(EH)	1.28	2.684
LIVE LOAD SURCHARGE	(LS)	1.27	4.025

NOTE:
"P" IS UNFACTORED SERVICE LOAD NORMAL TO FILL FACE.

BILL OF MATERIAL

END BENT 2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	24	#9	2	44'- 6"	3,631
B2	8	#5	STR	40'- 2"	349
B3	18	#4	STR	4'- 2"	50
B4	8	#4	STR	40'- 0"	214
B5	6	#4	STR	7'- 3"	29
B6	24	#4	STR	11'- 6"	184
B7	6	#4	STR	23'- 5"	94
H1	8	#5	STR	11'- 0"	92
H2	12	#5	7	11'- 8"	146
H3	8	#5	STR	10'- 8"	89
H4	14	#5	6	11'- 6"	168
K1	20	#4	STR	40'- 0"	534
S1	5	#5	4	5'- 7"	29
S2	5	#5	8	10'-10"	56
S3	82	#5	4	5'- 1"	435
S4	82	#5	8	10'- 4"	884
S5	24	#4	1	7'- 7"	122
U1	4	#4	5	9'- 7"	26
U2	66	#4	3	4'- 2"	184
U3	53	#4	3	7'- 2"	254
V1	36	#5	STR	9'- 9"	366
V2	132	#5	STR	7'-10"	1,078
V3	34	#5	STR	8'- 11"	316

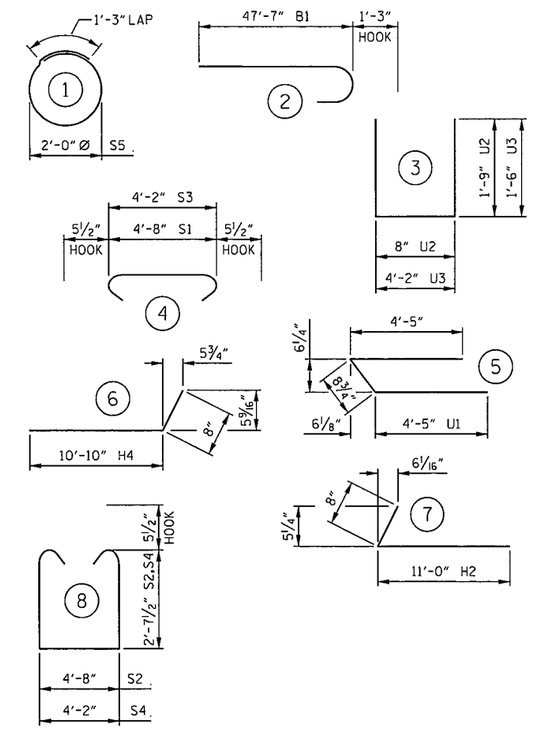
REINFORCING STEEL 9,330 LBS.

CLASS "A" CONCRETE
POUR 1 COLLARS, CAP AND LOWER WINGS 68.3 CU. YDS.
POUR 2 BACKWALL AND UPPER WINGS 19.3 CU. YDS.
TOTAL 87.6 CU. YDS.

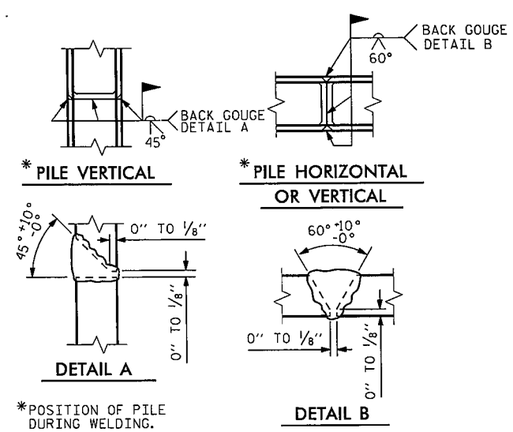
1 HP 14 x 89 STEEL PILES
12 REQUIRED 660.0 LIN. FT.

1 PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 89 STEEL PILES 12 EACH

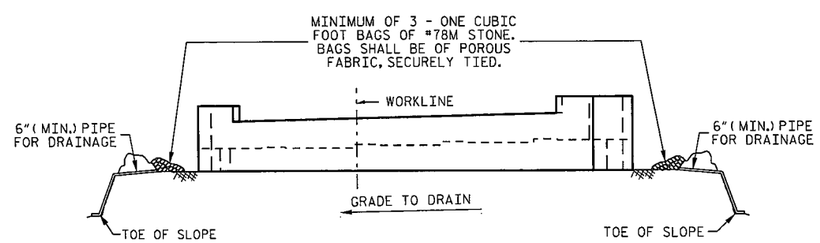
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



PILE SPLICE DETAILS



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

1 REVISED PILE SIZE.

PROJECT NO. I-4729A
POLK COUNTY
STATION: 21+44.22 -RP_F-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER
8/25/2017

DRAWN BY :	M. CLAREY / T. DETMERS	DATE : 7-17
CHECKED BY :	D. PRETORIUS	DATE : 7-17
DESIGN ENGINEER :	D. PRETORIUS	DATE : 7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS							
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1	LOFTON	8-25-17	3			TOTAL SHEETS	31
2			4				

STR. #2

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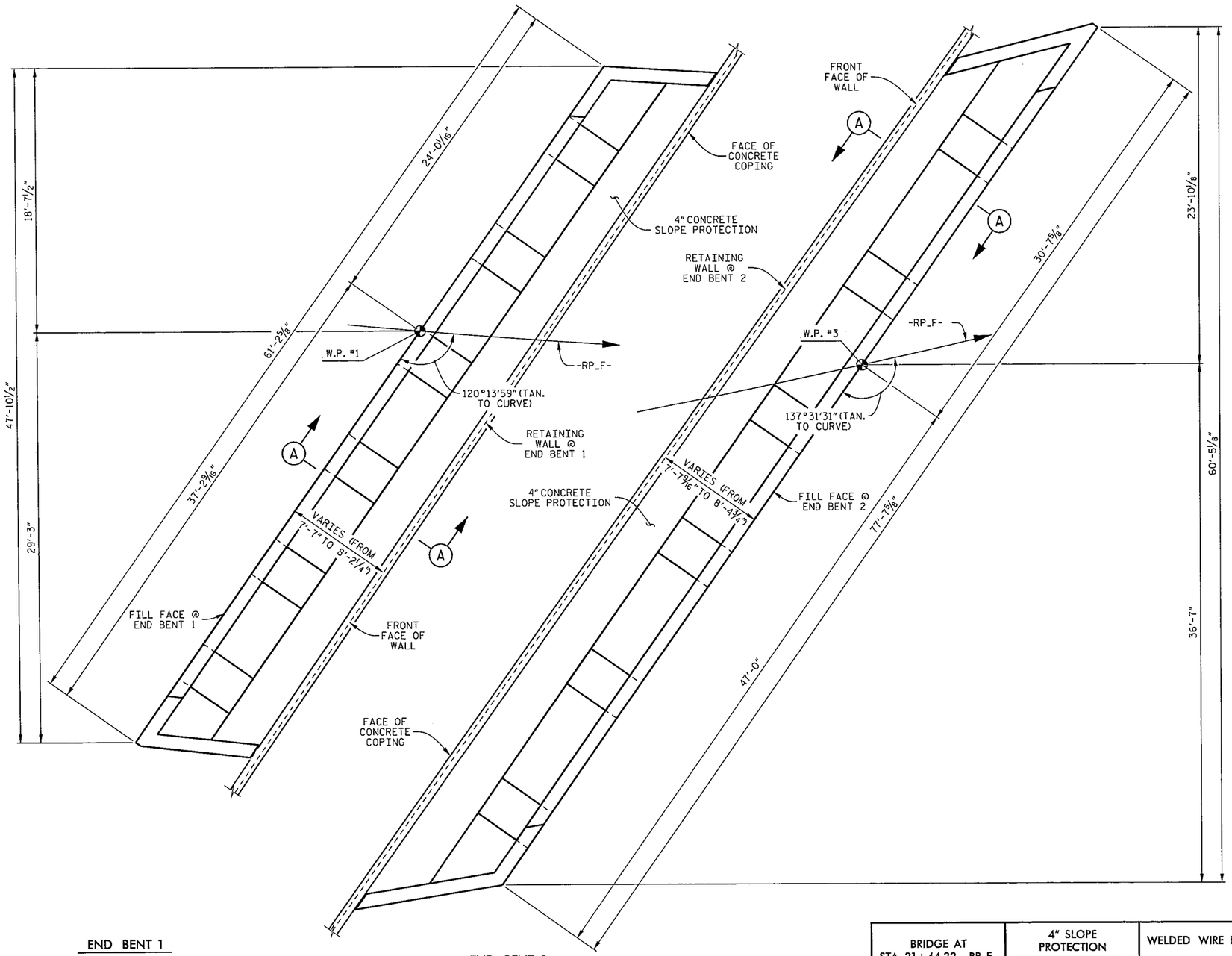
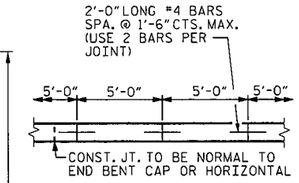


END BENT 1

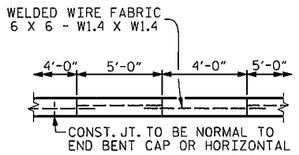
END BENT 2

PLAN

APPROACH SLABS AND CONCRETE DITCHES NOT SHOWN

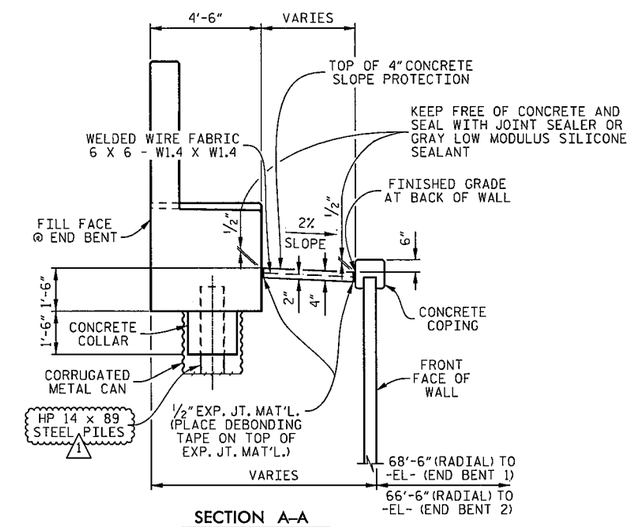


POURING DETAIL



POUR A 4'-0" STRIP FIRST.

OPTIONAL POURING DETAIL



SECTION A-A

GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS.

STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT.

MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 x 6 - W1.4 x W1.4. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

PROJECT NO. I-4729A

POLK COUNTY

STATION: 21+44.22 -RP_F-

BRIDGE AT STA. 21+44.22 -RP_F-	4" SLOPE PROTECTION	WELDED WIRE FABRIC
	SQUARE YARDS	APPROX. LINEAR FEET
END BENT 1	19	34
END BENT 2	26	48

1 REVISED PILE SIZE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 029979 ENGINEER A. DOUGLAS SHAH
DOCUSIGNED BY:
8/25/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

ASSEMBLED BY : K. E. LOFTON	DATE : 7-17
CHECKED BY : D. PRETORIUS	DATE : 7-17

DRAWN BY : ELR	5/92	REV. 10/1/11	MAA/GM
CHECKED BY : GRP	6/92	REV. 12/21/11	MAA/GM
		REV. 1 /16	MAA/TMG

DRAWN BY :	K. E. LOFTON	DATE : 9-17
CHECKED BY :	A. D. SHAH	DATE : 7-17
DESIGN ENGINEER :	S. PHAN	DATE : 7-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS						
No.	BY:	DATE:	No.	BY:	DATE:	
1	LOFTON	8-25-17	3			
2			4			

SHEET No. S2-28.1

TOTAL SHEETS 31

STD. No. SP1 STR. #2

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GEOTECHNICAL ENGINEER	ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040231 ENGINEER MATTHEW J. ALEXANDER	
DocuSigned by: Matt Alexander 8/23/2017	
SIGNATURE DATE	SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALLS NO. 1 AND NO. 2.

WALL CONTRACTOR SHALL VERIFY THAT AN ARCHITECTURAL FINISH IS OR IS NOT REQUIRED FOR PRECAST CONCRETE PANELS.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALLS NO. 1 AND NO. 2.

A DRAIN IS NOT REQUIRED FOR RETAINING WALLS NO. 1 AND NO. 2.

1 PILE SLEEVES ARE REQUIRED AROUND THE HP 14X89 PILES FOR END BENT NO. 1 OF THE BRIDGE ON -RP_E- OVER -E_CONN_REV- LOCATED AT STATION 22+45.30 -RP_E-.

PILE SLEEVES ARE REQUIRED AROUND THE HP 14X89 PILES FOR END BENT NO. 2 OF THE BRIDGE ON -RP_E- OVER -E_CONN_REV- LOCATED AT STATION 23+21.76 -RP_E-.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALLS NO. 1 AND NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
DESIGN RETAINING WALLS NO. 1 AND NO. 2 FOR THE FOLLOWING:
1) H = DESIGN HEIGHT + EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 6,050 LB/SF
4) MINIMUM REINFORCEMENT LENGTH (L) = 0.95H OR 6 FT, WHICHEVER IS LONGER
5) MINIMUM EMBEDMENT DEPTH BELOW FINSIHED GRADE AT FRONT FACE OF WALL = 2 FT
6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	115	34	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	110	29	0

DESIGN RETAINING WALLS NO. 1 AND NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

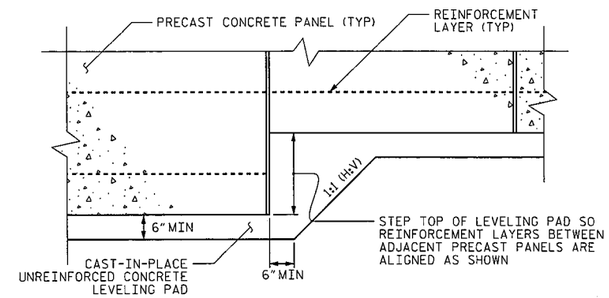
DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT STATION 22+45.30 -RP_E- AND END BENT NO. 2 LOCATED AT STATION 23+21.76 -RP_E-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 1 AND NO. 2.

FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 22+45.30 -RP_E- AND END BENT NO. 2 LOCATED AT STATION 23+21.76 -RP_F- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 1 AND 2, RESPECTIVELY. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

1 INSTALL PILE SLEEVES FOR END BENT NO. 1 LOCATED AT STATION 22+45.30 -RP_E- AND END BENT NO. 2 LOCATED AT STATION 23+21.76 -RP_E- WHILE CONSTRUCTING RETAINING WALLS NO. 1 AND NO. 2, RESPECTIVELY. FILL PILE SLEEVES WITH LOOSE UNCOMPACTED SAND BEFORE CONSTRUCTING END BENT CAPS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALLS NO. 1 AND NO. 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



PRECAST PANELS
LEVELING PAD STEP DETAIL

PROJECT NO.: 34243.1.4 (I-4729A)
POLK COUNTY
STATION: 22+87.20 -RP_E- /
25+38.87 -E_CONN_REV-
SHEET 3 OF 8

Terracon
Consulting Engineers & Scientists
2401 BRENTWOOD ROAD, SUITE 107
RALEIGH, NORTH CAROLINA 27604
PHONE: (919) 873-2211 FAX: (919) 873-9555
NC REGISTERED FIRM: F-0869

MSE RETAINING WALLS
NO. 1 AND NO. 2 NOTES

REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	SHEET NO.
1	MJA	8/22/17	3			W-3
2			4			

PREPARED BY: M. J. ALEXANDER	DATE: 8/4/2017
REVIEWED BY: A. F. RIGGS	DATE: 8/4/2017

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GEOTECHNICAL ENGINEER	ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040231 ENGINEER MATTHEW J. ALEXANDER	
DocuSigned by: Matt Alexander 8/23/2017	
SIGNATURE DATE	SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALLS NO. 3 AND NO. 4.

WALL CONTRACTOR SHALL VERIFY THAT AN ARCHITECTURAL FINISH IS OR IS NOT REQUIRED FOR PRECAST CONCRETE PANELS.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALLS NO. 3 AND NO. 4.

A DRAIN IS NOT REQUIRED FOR RETAINING WALLS NO. 3 AND NO. 4.

1 PILE SLEEVES ARE REQUIRED AROUND THE HP 14X89 PILES FOR END BENT NO. 1 OF THE BRIDGE ON -RP_F- OVER -EL- LOCATED AT STATION 20+52.09 -RP_E-.

PILE SLEEVES ARE REQUIRED AROUND THE HP 14X89 PILES FOR END BENT NO. 2 OF THE BRIDGE ON -RP_F- OVER -EL- LOCATED AT STATION 22+46.75 -RP_F-.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALLS NO. 3 AND NO. 4, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALLS NO. 3 AND NO. 4 FOR THE FOLLOWING:
1) H = DESIGN HEIGHT + EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 6,550 LB/SF
4) MINIMUM REINFORCEMENT LENGTH (L) = 1.1H OR 6 FT, WHICHEVER IS LONGER
5) MINIMUM EMBEDMENT DEPTH BELOW FINISHED GRADE AT FRONT FACE OF WALL = 2 FT
6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	115	34	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	115	0	2,000

DESIGN RETAINING WALLS NO. 3 AND NO. 4 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

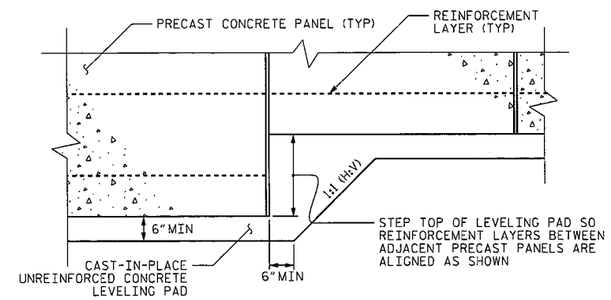
DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT STATION 20+52.09 -RP_F- AND END BENT NO. 2 LOCATED AT STATION 22+46.75 -RP_F-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 3 AND NO. 4.

FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 20+52.09 -RP_F- AND END BENT NO. 2 LOCATED AT STATION 22+46.75 -RP_F- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 3 AND 4, RESPECTIVELY. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

1 INSTALL PILE SLEEVES FOR END BENT NO. 1 LOCATED AT STATION 20+52.09 -RP_F- AND END BENT NO. 2 LOCATED AT STATION 22+46.75 -RP_F- WHILE CONSTRUCTING RETAINING WALLS NO. 3 AND NO. 4, RESPECTIVELY. FILL PILE SLEEVES WITH LOOSE UNCOMPACTED SAND BEFORE CONSTRUCTING END BENT CAPS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALLS NO. 3 AND NO. 4 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



PRECAST PANELS
LEVELING PAD STEP DETAIL

PROJECT NO.: 34243.1.4 (I-4729A)
POLK COUNTY
STATION: 21+44.22 -RP_F- / 53+95.89 -EL-
SHEET 6 OF 8

Terracon
Consulting Engineers & Scientists
2401 BRENTWOOD ROAD, SUITE 107
RALEIGH, NORTH CAROLINA 27604
PHONE: (919) 873-2211 FAX: (919) 873-9555
NC REGISTERED FIRM: F-0869

MSE RETAINING WALLS
NO. 3 AND NO. 4 NOTES

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		
1	MJA	8/22/17	3				W-6
2			4				

PREPARED BY: M. J. ALEXANDER	DATE: 8/4/2017
REVIEWED BY: A. F. RIGGS	DATE: 8/4/2017