

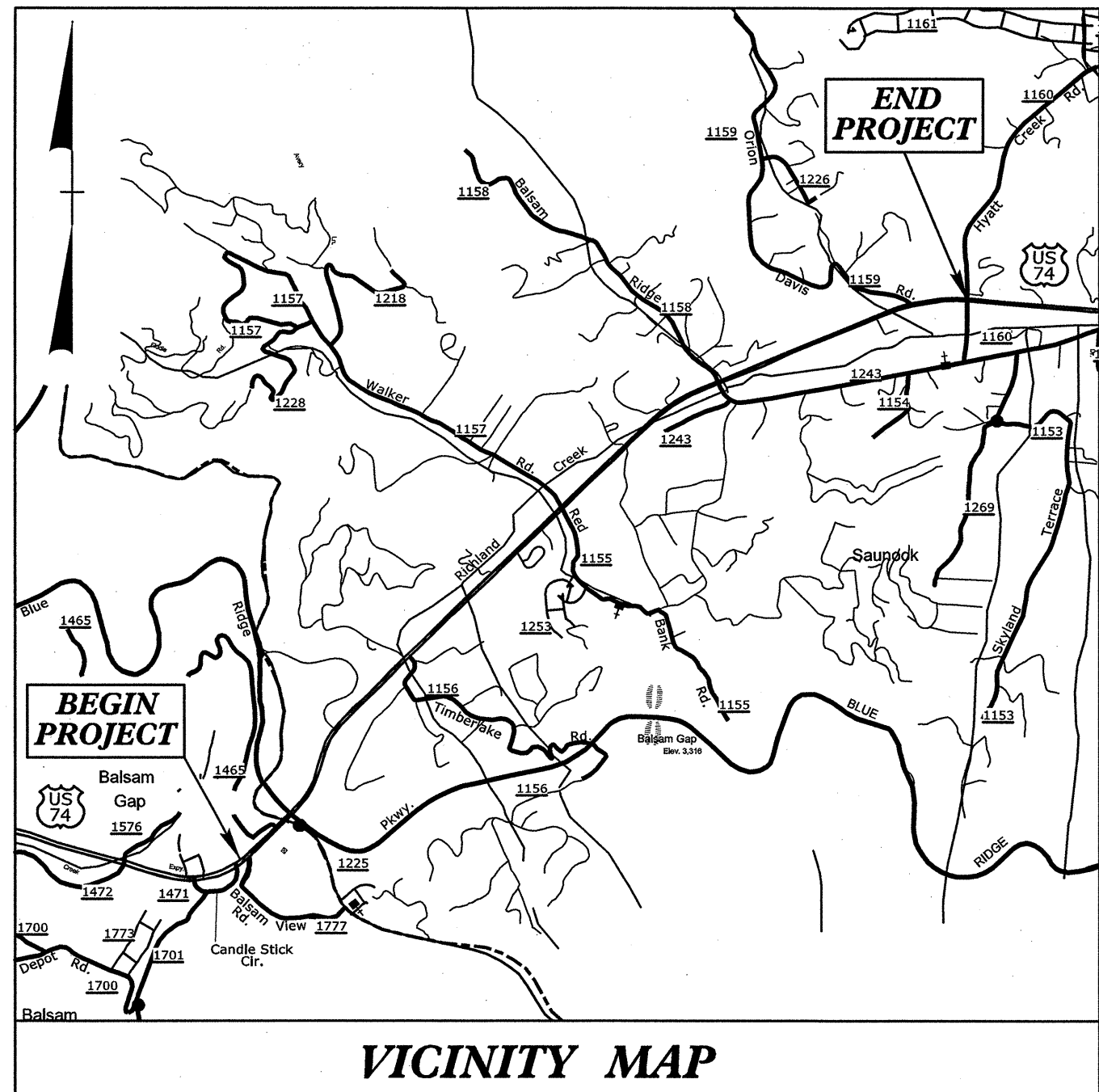
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

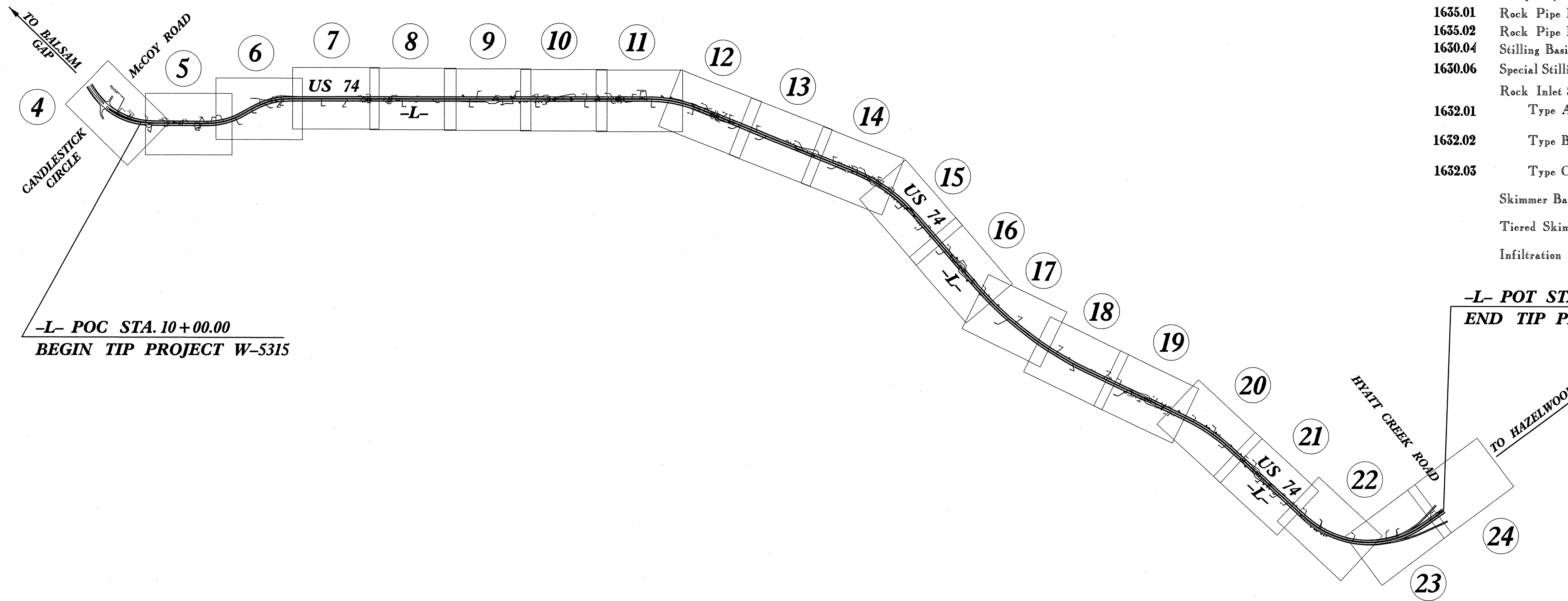
LOCATION: US 74 FROM EXIT 98 IN HAYWOOD COUNTY TO 0.1 MILES
WEST OF THE JACKSON-HAYWOOD COUNTY LINE
TYPE OF WORK: MEDIAN GUARDRAIL AND DRAINAGE
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5315	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46138.1.1		CONST.	



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

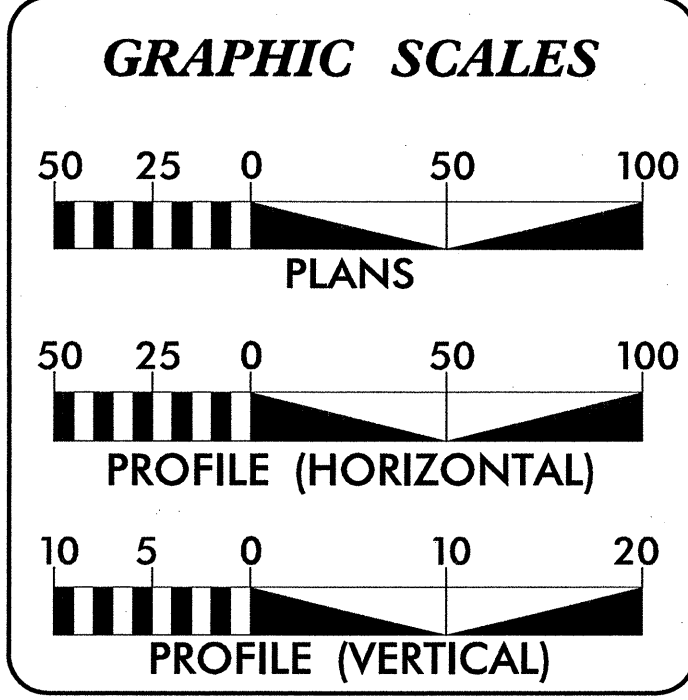


THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

TIP PROJECT: W-5315

CONTRACT:



DESIGN DATA
ADT 2015 = 29,538

Prepared in the Office of:

SUNGATE DESIGN GROUP, P.A.

915 JONES FRANKLIN ROAD
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ENG FROM LICENSE NO. C-890

JOSHUA G. DALTON
LEVEL IIIA NAME
307
LEVEL IIIA CERTIFICATION NO.

2012 STANDARD SPECIFICATIONS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>W-5315</i>	SHEET NO. <i>EC-2</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

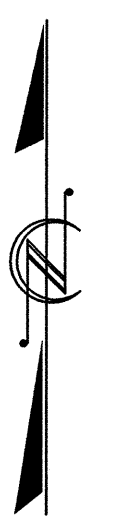
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

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ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-03/CONST.04
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	



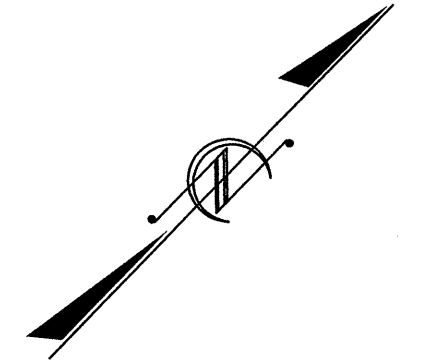
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

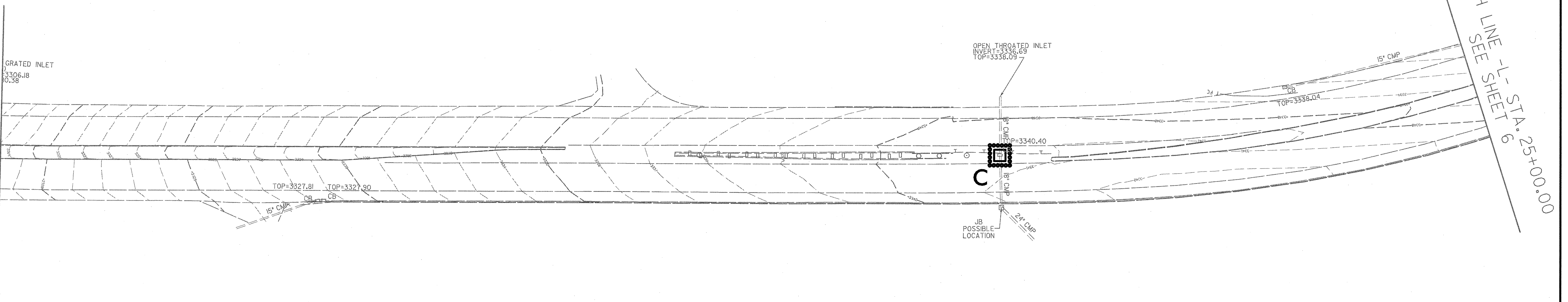
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PROJECT REFERENCE NO. W-5315	SHEET NO. EC-04/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 12+00.00
SEE SHEET 4



MATCH LINE -L- STA. 25+00.00
SEE SHEET 6

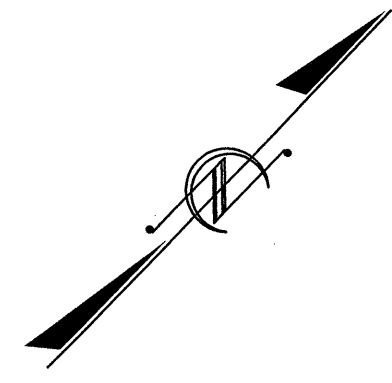
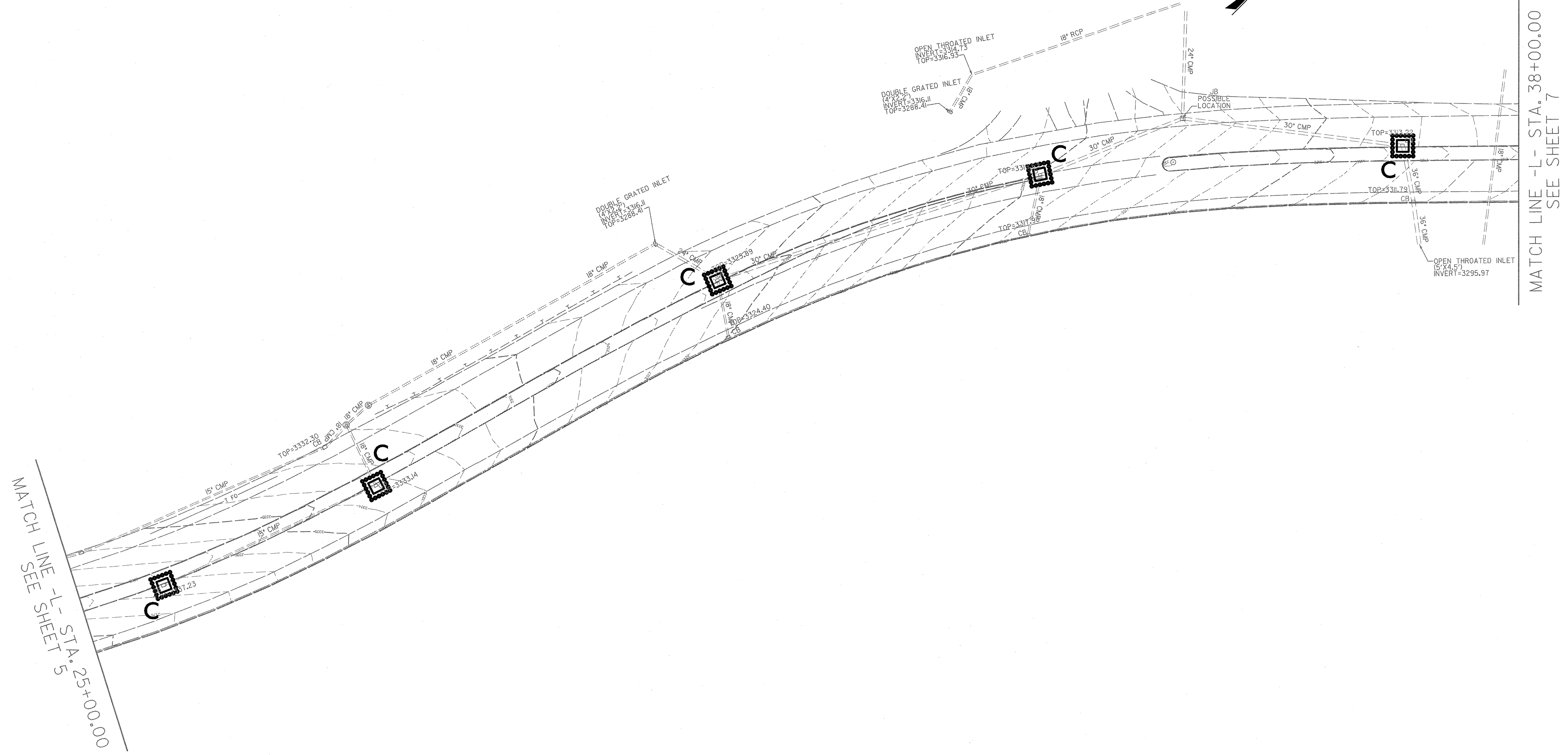
EROSION CONTROL PLAN

**CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 06**

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ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-05/CONST.06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 38+00.00
SEE SHEET 7

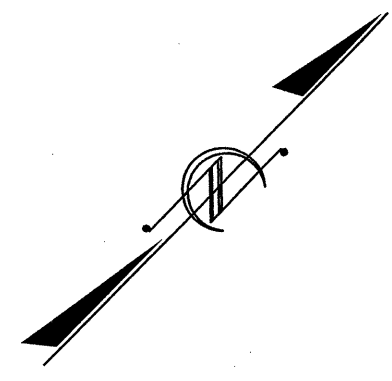
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 07

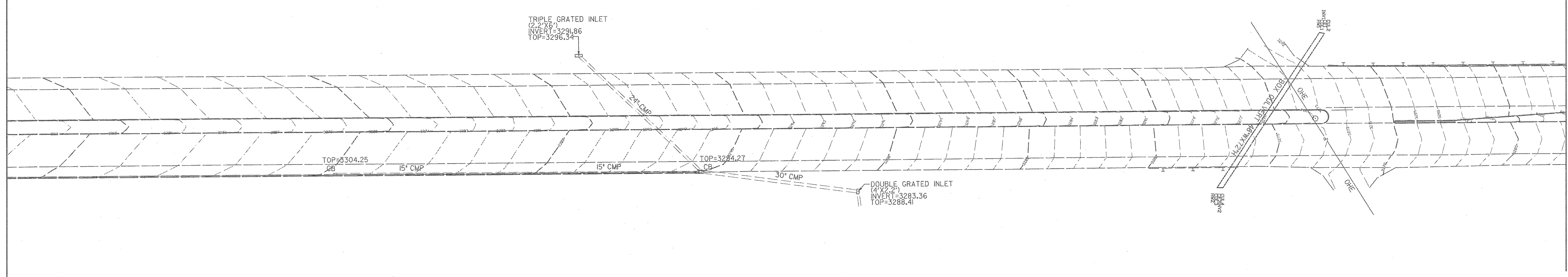
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ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO. <i>W-5315</i>	SHEET NO. <i>EC-06/CONST.07</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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MATCH LINE - L- STA. 51+00.00
SEE SHEET 8

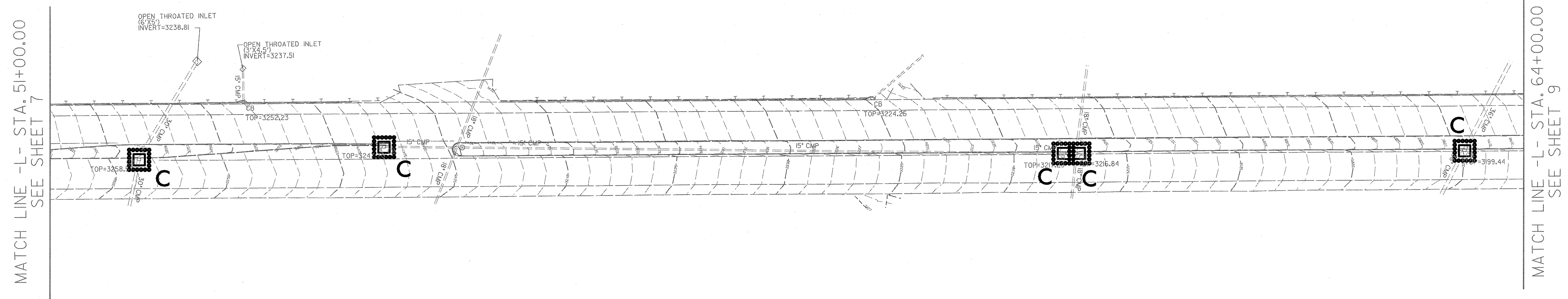
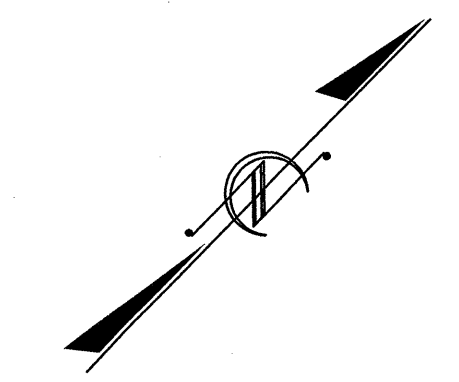
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 08

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ENG. FIRM LICENSE NO. 1-499

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-07/CONST.08
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	



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SEE SHEET 7

MATCH LINE - L- STA. 64+00.00
SEE SHEET 9

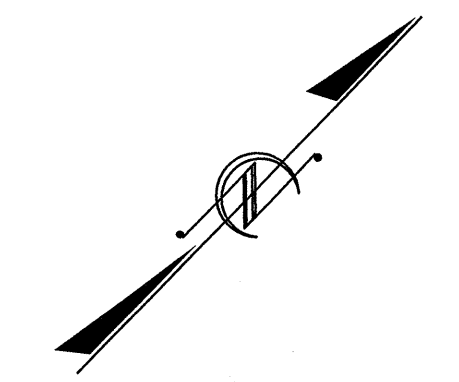
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 09

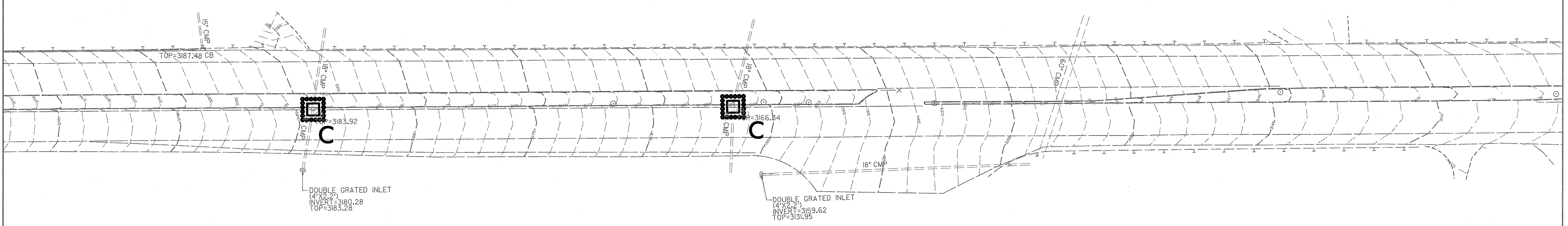
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 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-08/CONST.09
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 64+00.00
SEE SHEET 8



MATCH LINE -L- STA. 77+00.00
SEE SHEET 10

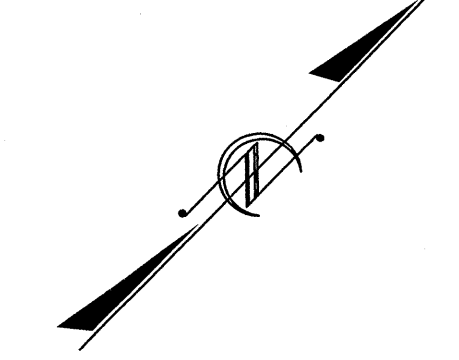
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 10

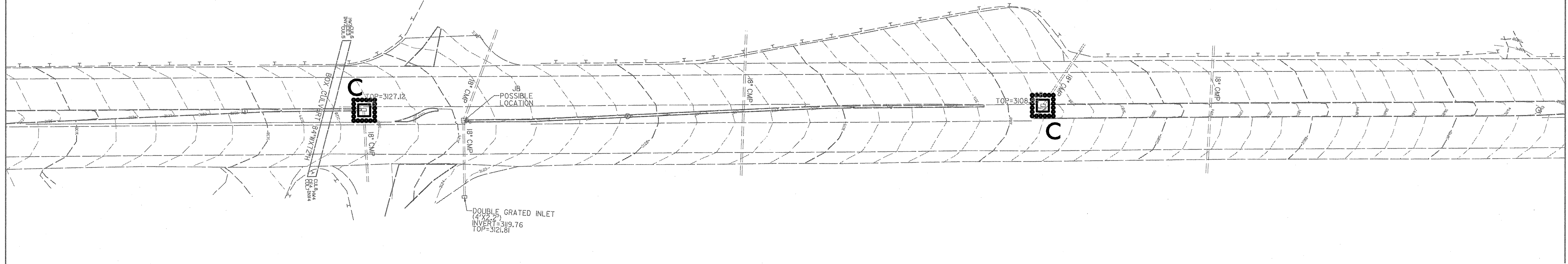
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ENG. FIRM LICENSE NO. C-480

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-09/CONST-10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 77+00.00
SEE SHEET 9



MATCH LINE -L- STA. 90+00.00
SEE SHEET 11

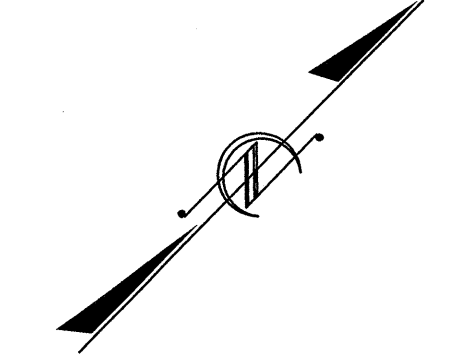
EROSION CONTROL PLAN

**CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 11**

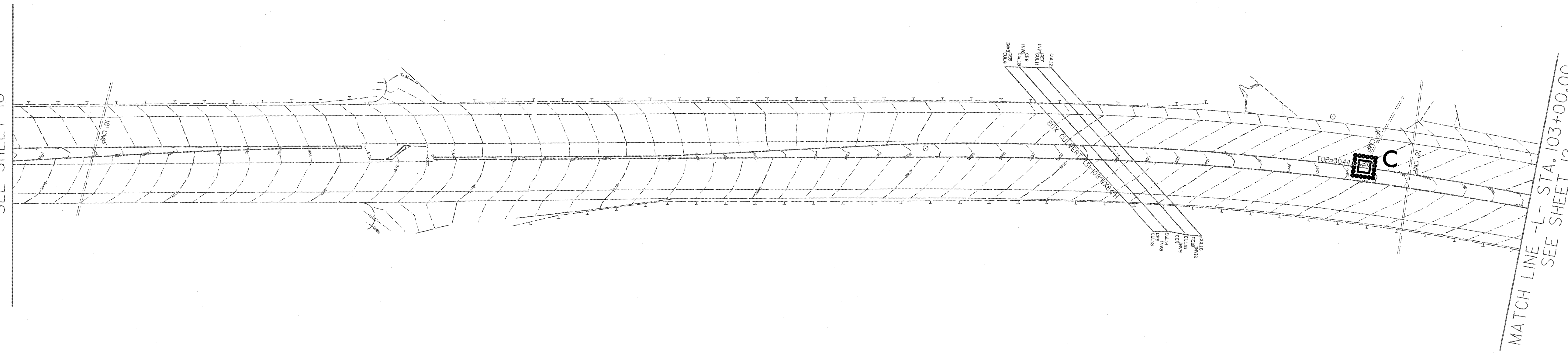
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ENG. FIRM LICENSE NO. C-280

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-10/CONST-11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 90+00.00
SEE SHEET 10



MATCH LINE -L- STA. 103+00.00
SEE SHEET 12

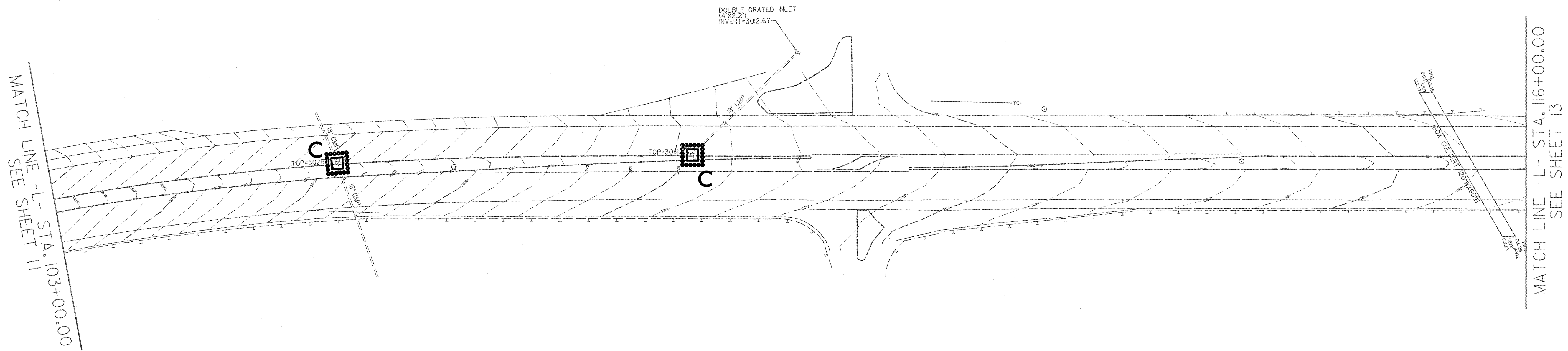
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 12

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ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-11/CONST 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



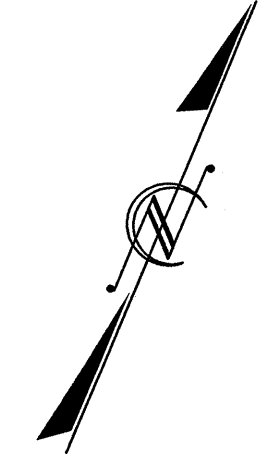
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 13

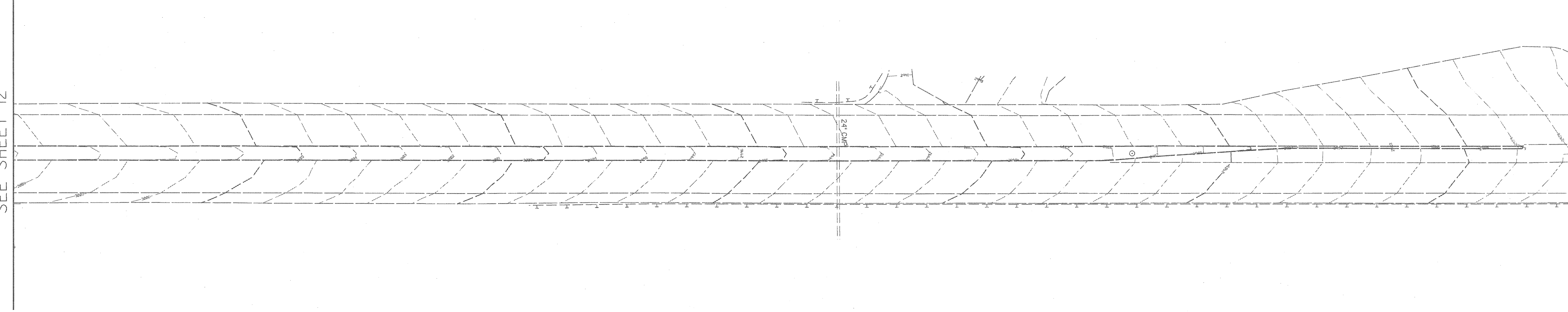
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ENG FIRM LICENSE NO. C-850

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-12/CONST.13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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SEE SHEET 12



MATCH LINE -L- STA. 129+00.00
SEE SHEET 14

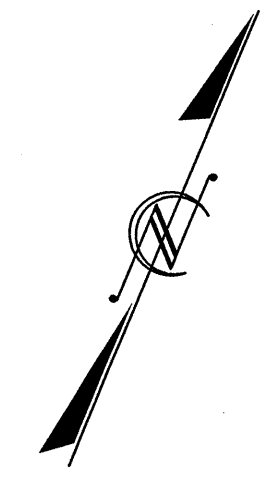
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 14

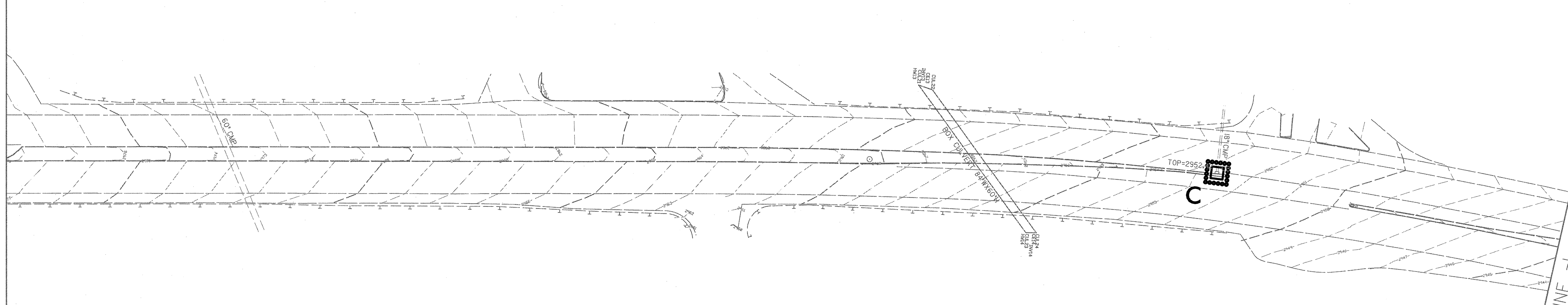
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ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-13/CONST J4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 129+00.00
SEE SHEET 13



MATCH LINE -L- STA. 142+00.00
SEE SHEET 15

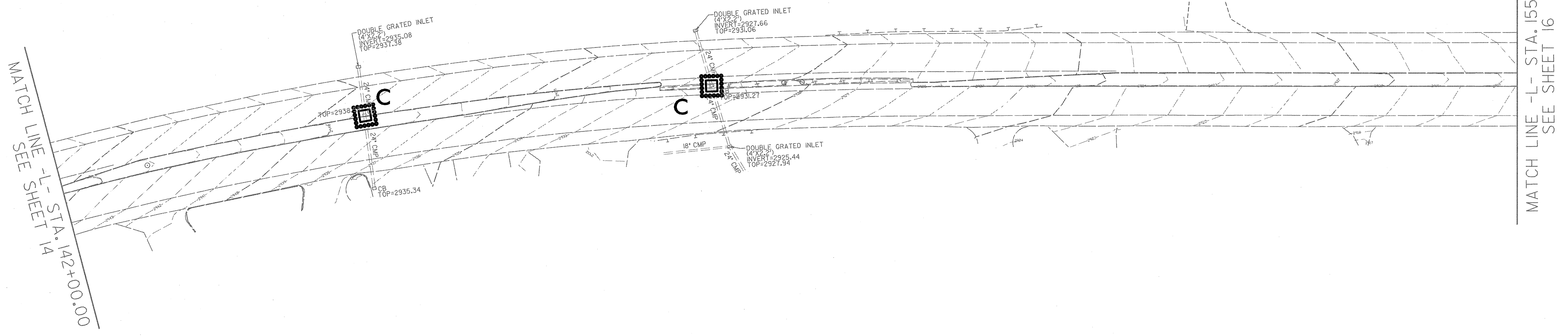
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 15

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ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-14/CONST.15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



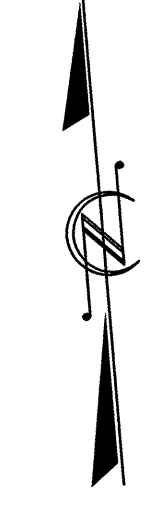
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 16

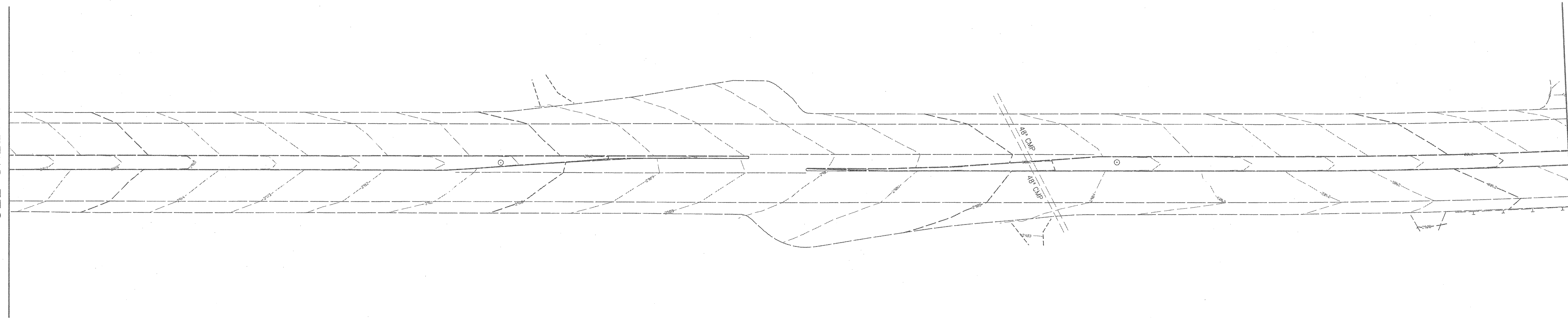
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ENG FIRM LICENSE NO. C-300

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-15/CONST 16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 155+00.00
SEE SHEET 15



MATCH LINE -L- STA. 168+00.00
SEE SHEET 17

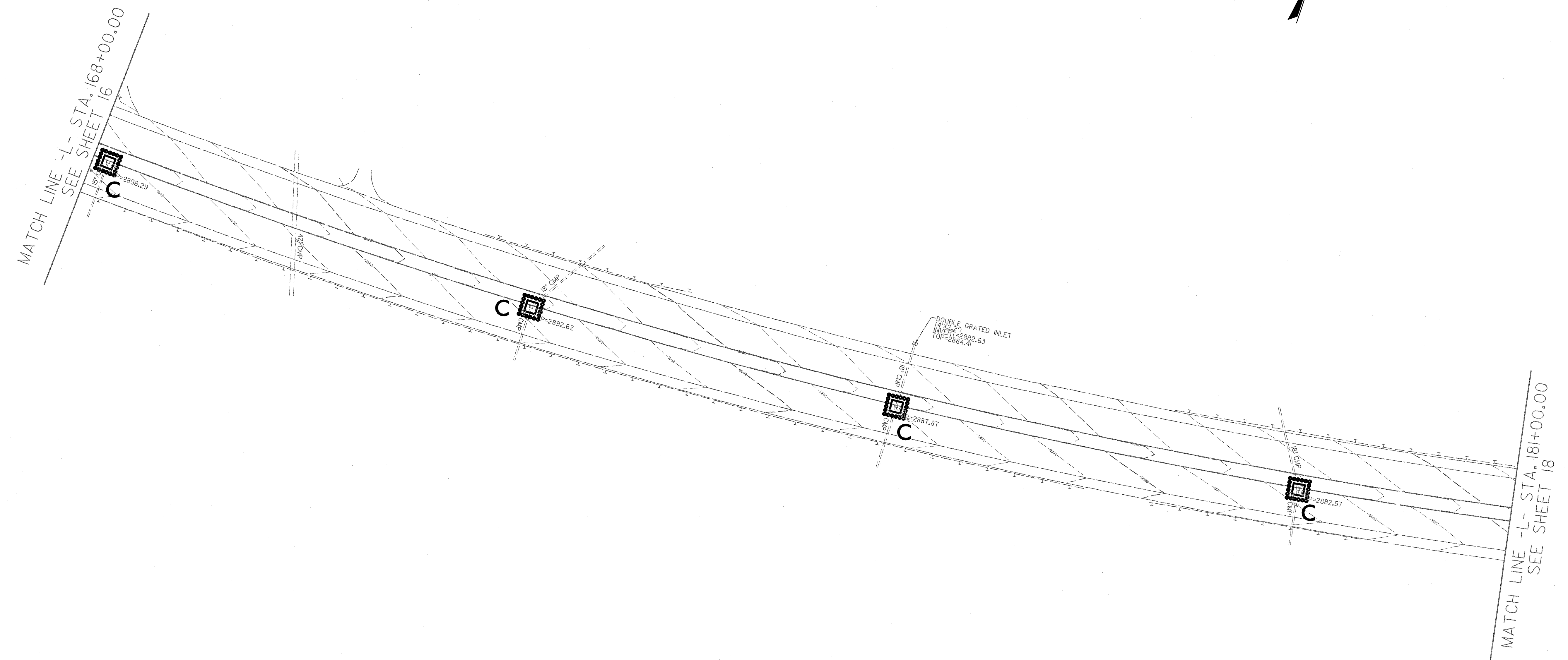
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 17

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ENG. FIRM LICENSE NO. C-490

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-16/CONST J7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



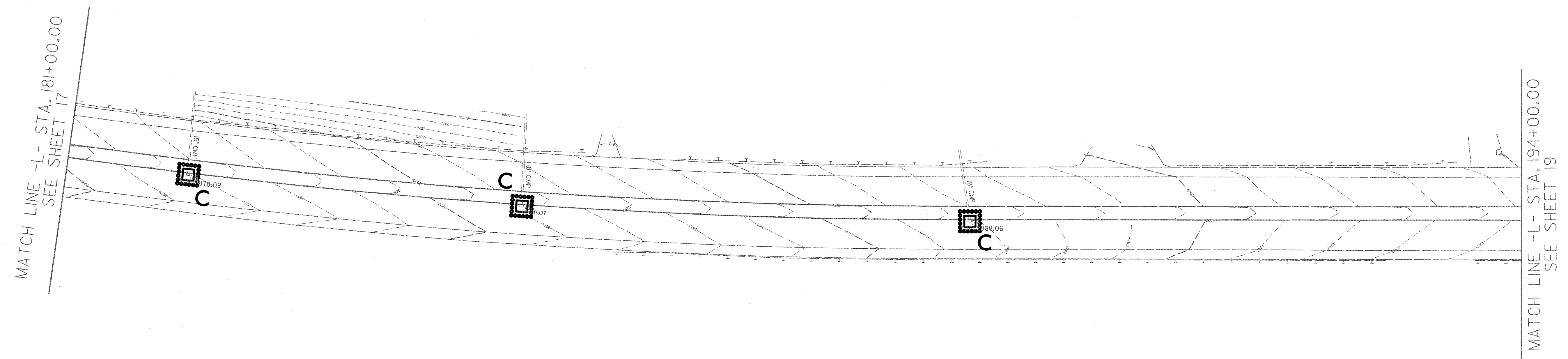
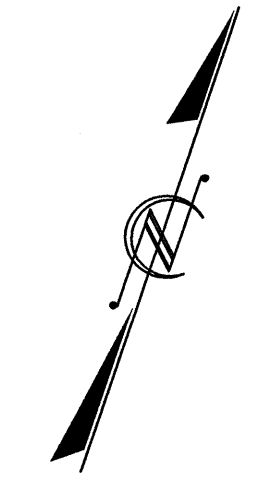
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 18

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ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-17/CONST.18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



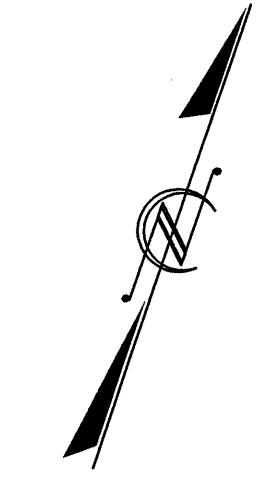
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 19

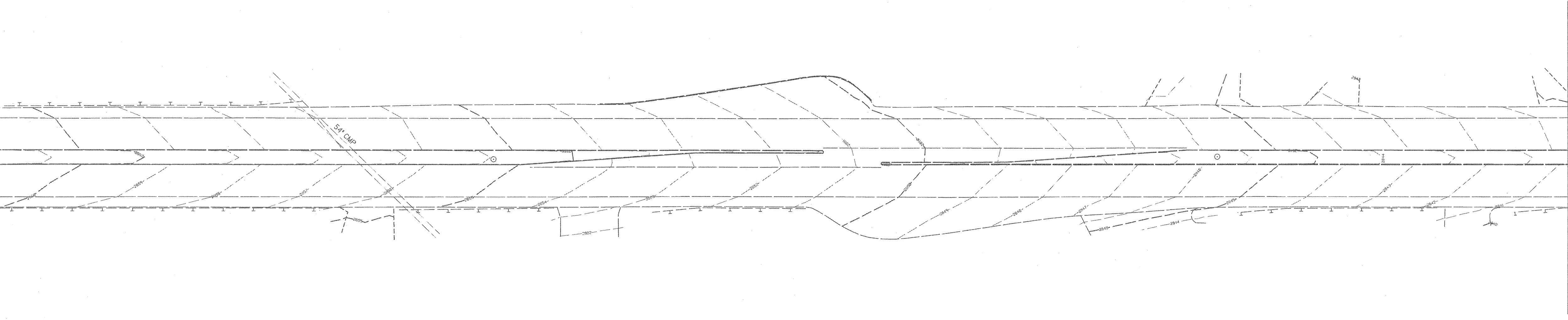
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Raleigh, NC 27607-5073
Tel: 919/854-1262 Fax: 919/854-5448 NC License No. C-1869

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-2243 FAX: (919) 859-4258
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-18/CONST 19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 194+00.00
SEE SHEET 18



MATCH LINE -L- STA. 207+00.00
SEE SHEET 20

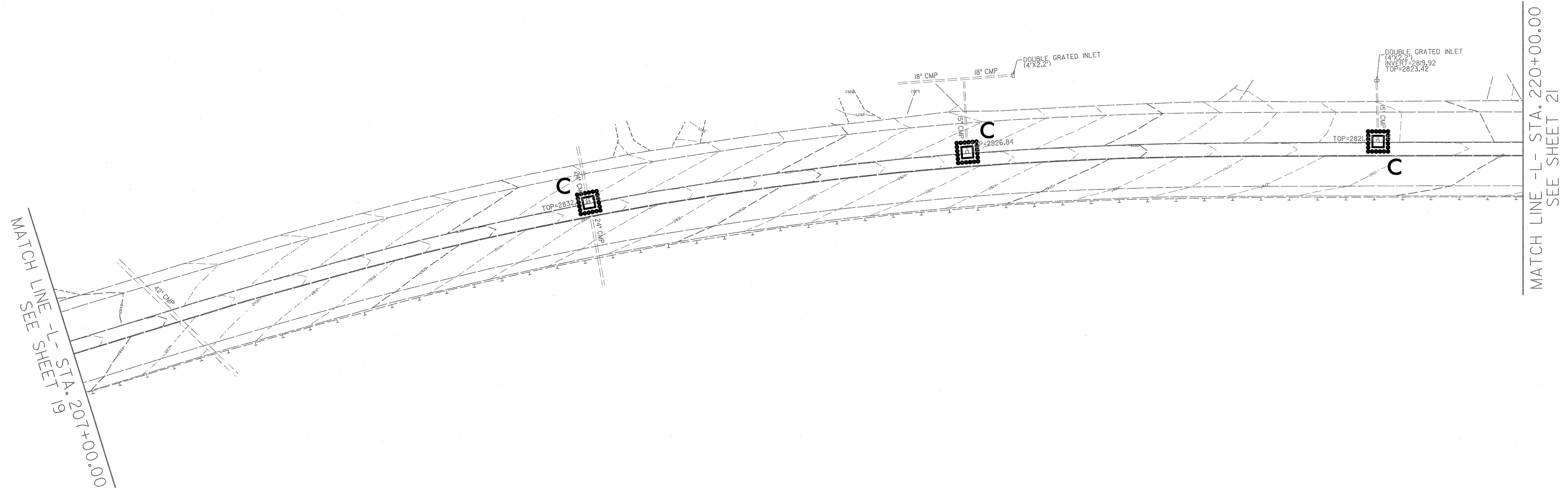
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 20

ARCADIS
6 & M of North Carolina, Inc.
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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-2243 FAX: (919) 859-4255
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-19/CONST.20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 207+00.00
SEE SHEET 19

MATCH LINE -L- STA. 220+00.00
SEE SHEET 21

EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 21

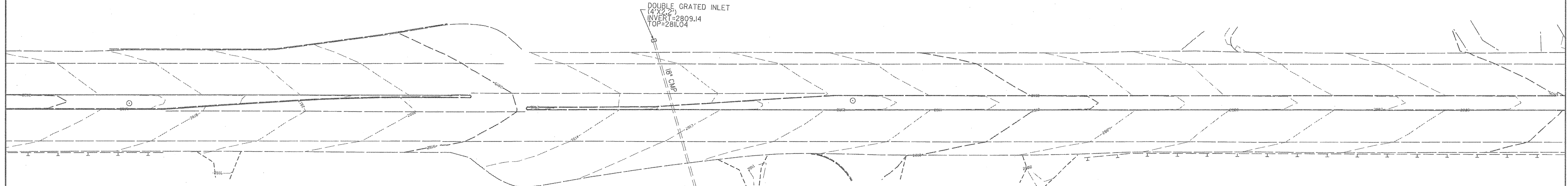
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6 & M of North Carolina, Inc.
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80 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-0262 Fax: 919/854-5448 NC License No. C-1869

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-2245 FAX: (919) 859-4256
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-20/CONST-21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER




MATCH LINE -L- STA. 220+00.00
SEE SHEET 20




MATCH LINE -L- STA. 233+00.00
SEE SHEET 22

EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 22

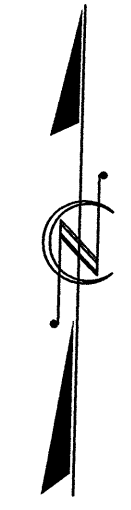


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801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448 N.C. License No. C-1869

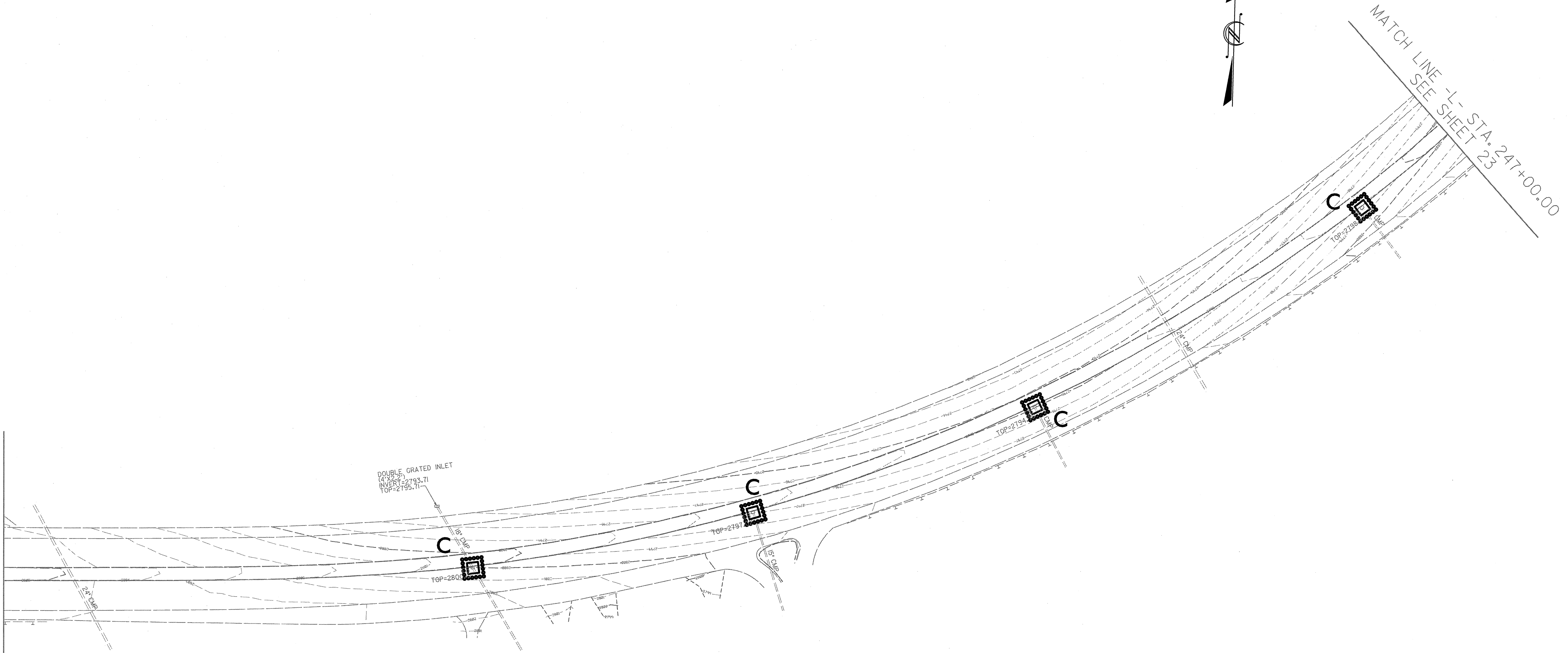


SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-2293 FAX: (919) 859-6298
ENG. FROM LICENSE NO. C-280

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-21/CONST.22
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 233+00.00
SEE SHEET 21



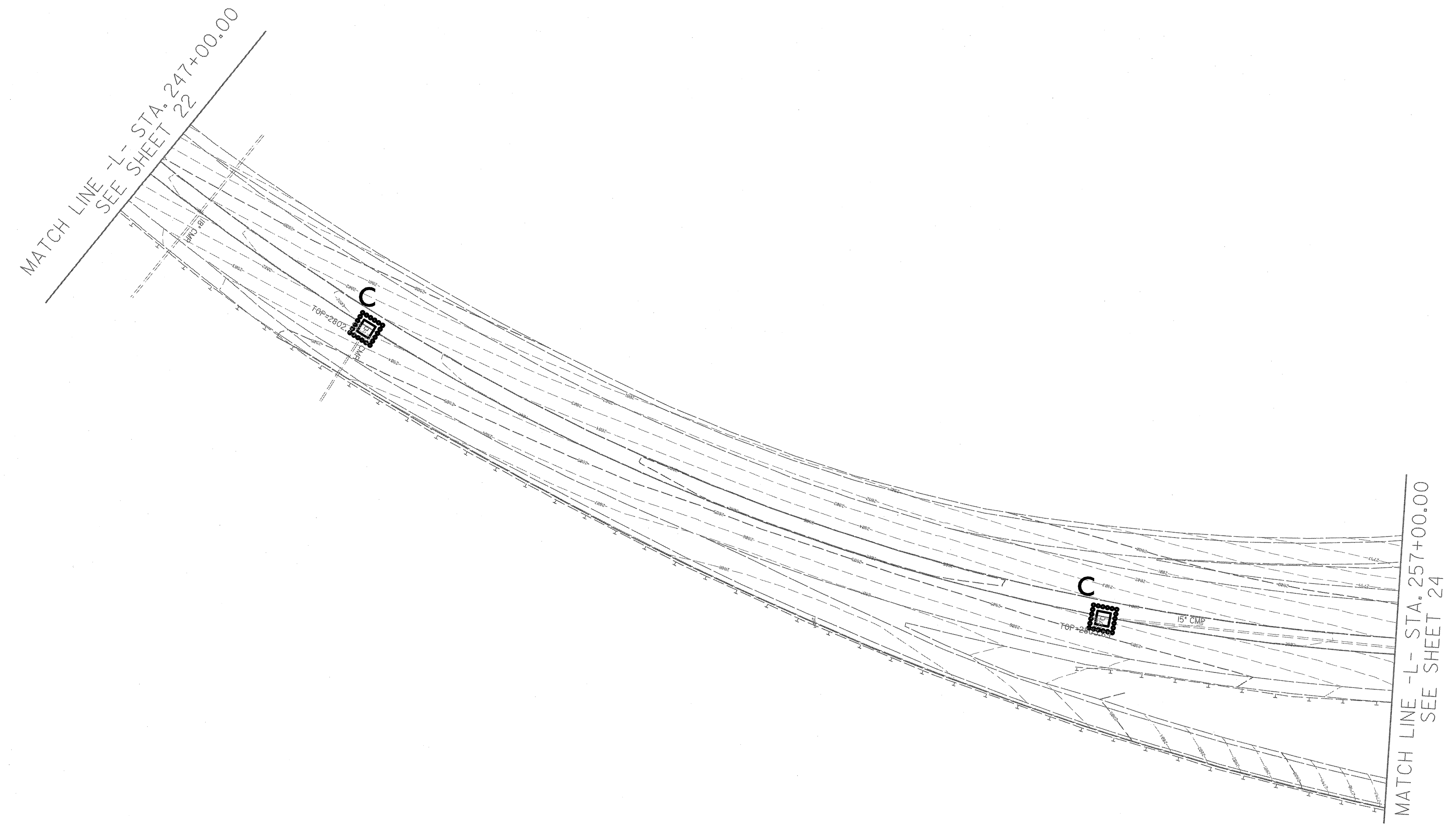
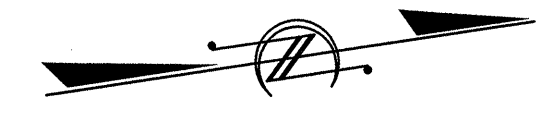
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 23

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
601 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1262 Fax: 919/854-5448 N.C. License No. C-1863

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-2243 FAX: (919) 859-6258
ENG. FIRM LICENSE NO. C-299

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-22/CONST.23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



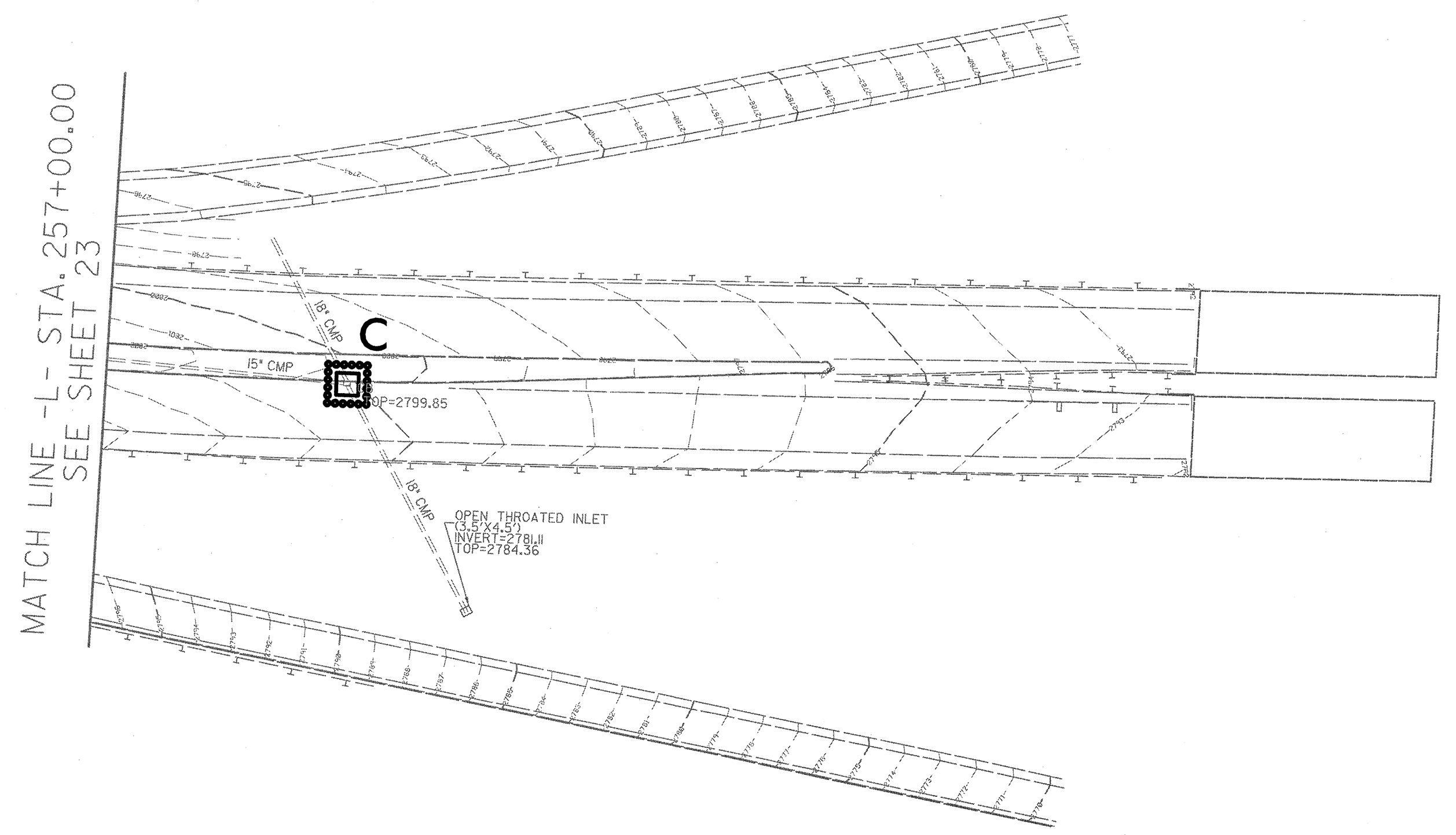
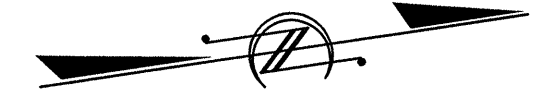
EROSION CONTROL PLAN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 24

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5075
Tel: 919/254-1262 Fax: 919/254-5448 NC License No. C-1869

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL: (919) 859-2243 FAX: (919) 859-4258
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-23/CONST 24
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



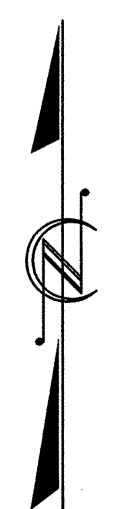
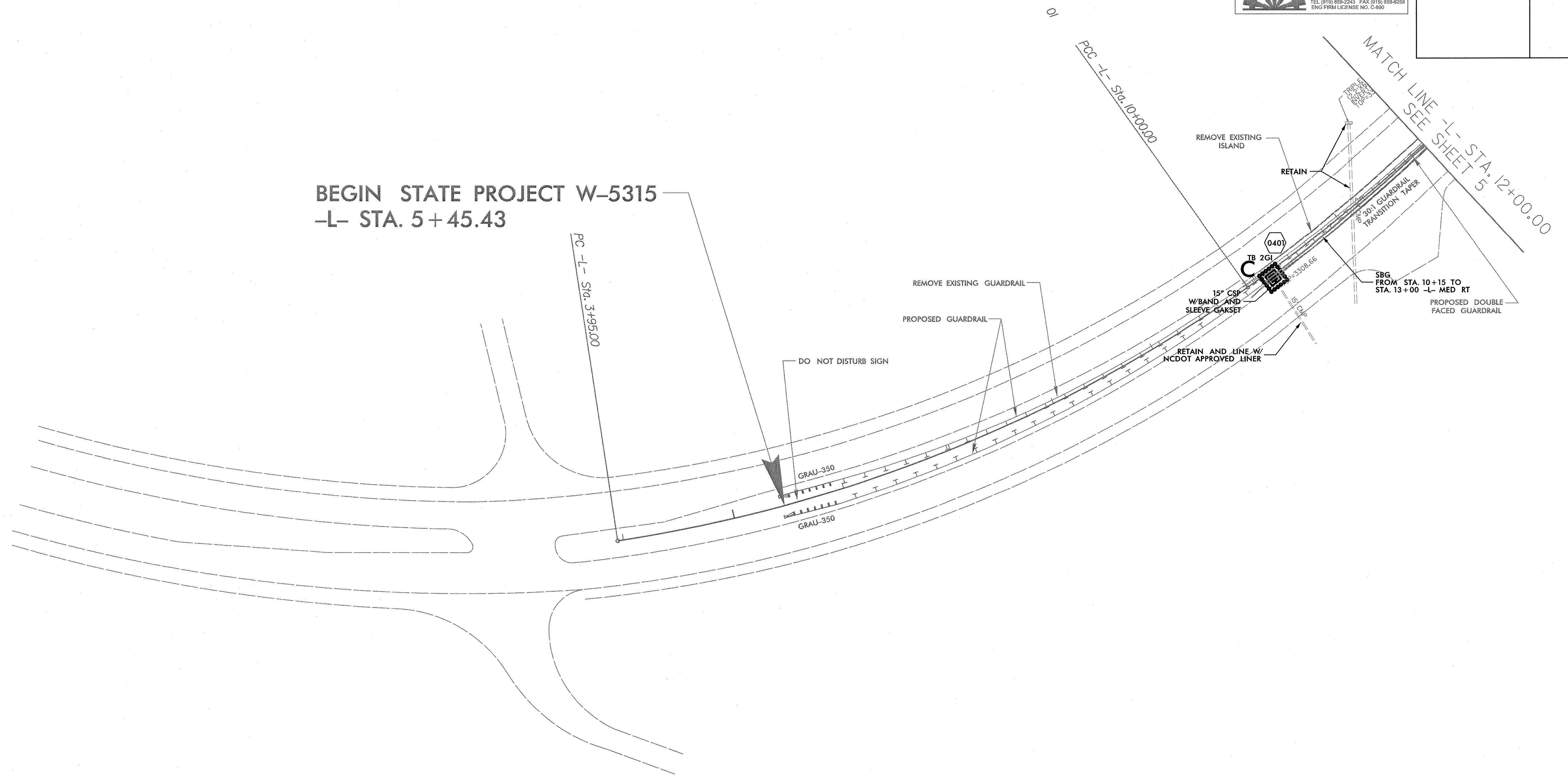
**EROSION CONTROL PLAN
FINAL GRADE**

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G & M of North Carolina, Inc.
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 80 Corporate Center Drive, Suite 300
 Raleigh, NC 27607-5073
 Tel: 919/854-1282 Fax: 919/854-5448 NC License No. C-1869

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL: (919) 859-2243 FAX: (919) 859-2258
 ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-24/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**BEGIN STATE PROJECT W-5315
-L- STA. 5+45.43**



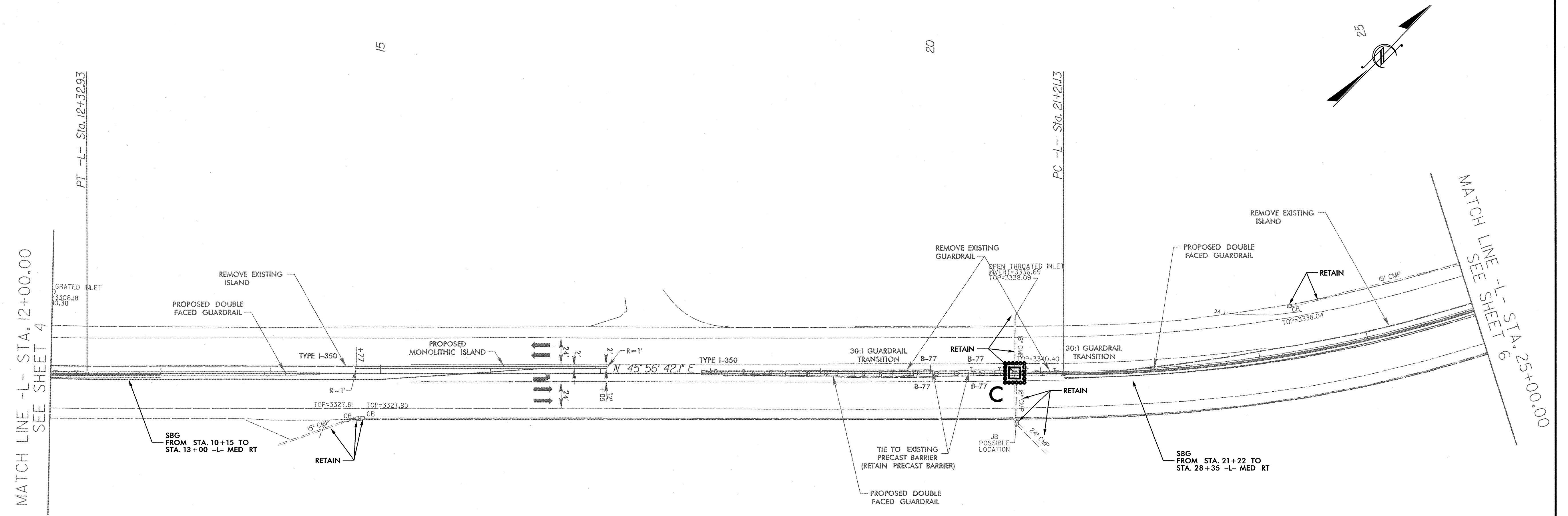
<u>-L- CURVE DATA</u>	<u>-L- CURVE DATA</u>
PI Sta 7+03.08	PI Sta 11+16.69
Δ = 26° 39' 52.5" (LT)	Δ = 8° 43' 52.7" (LT)
D = 4' 24" 26.5"	D = 3' 44" 54.3"
L = 605.00'	L = 232.93'
T = 308.08'	T = 116.69'
R = 1,300.00'	R = 1,528.54'

**EROSION CONTROL PLAN
FINAL GRADE**

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Tel: 919/854-0282 Fax: 919/854-5448 NC License No. C-8659

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL: (919) 859-2243 FAX: (919) 859-4258
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-25/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



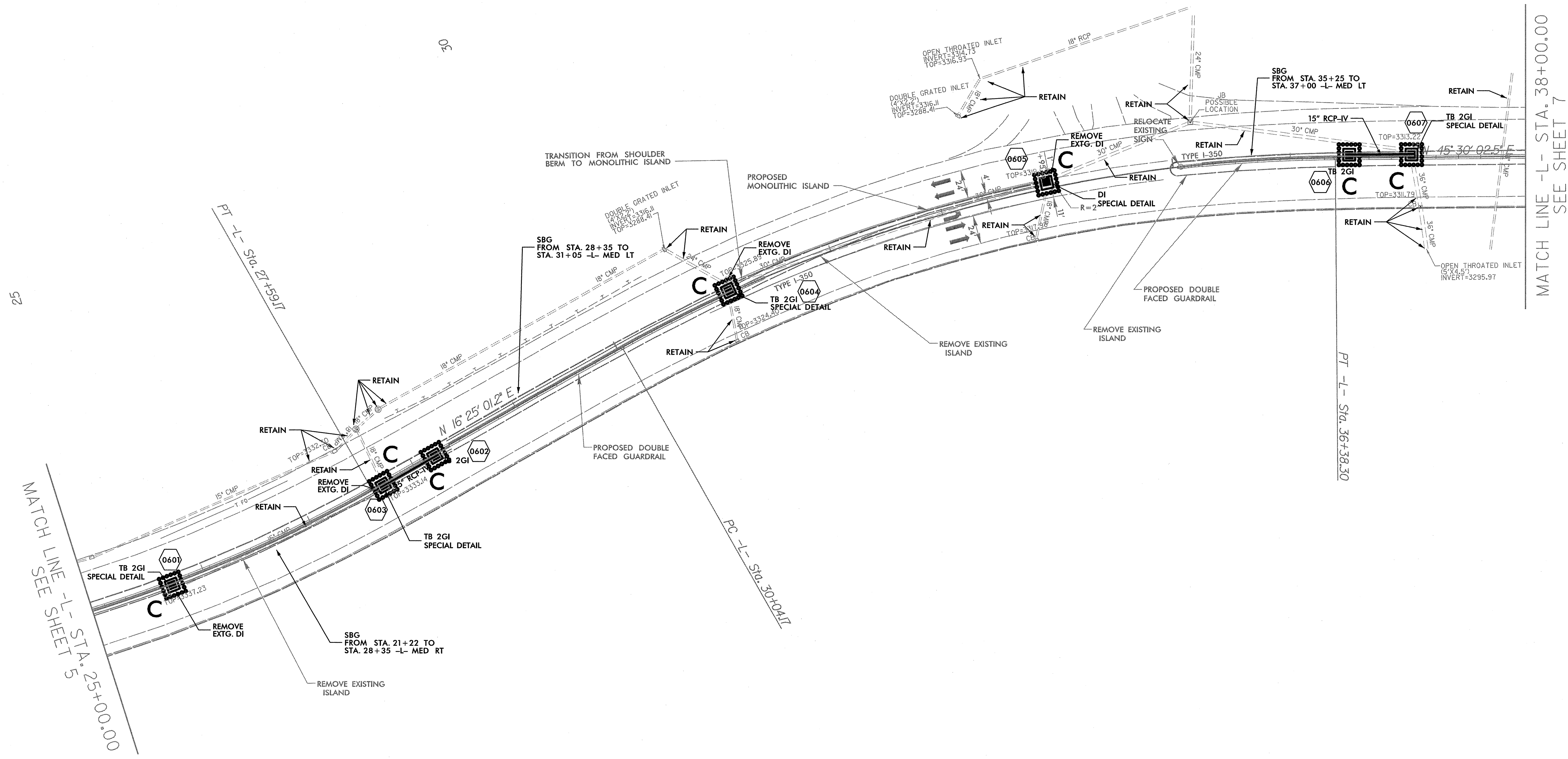
-L- CURVE DATA
 PI Sta 24+47.40
 $\Delta = 29^{\circ} 31' 40.9''$ (LT)
 D = 4' 37' 40.4"
 L = 638.05'
 T = 326.28'
 R = 1,238.05'

**EROSION CONTROL PLAN
FINAL GRADE**

ARCADIS
6 S. M. of North Carolina, Inc.
 801 Corporate Center Drive, Suite 300
 Raleigh, NC 27607-5073
 Tel: 919/889-0240 Fax: 919/889-0258
 WWW.ARCADIS-US.COM
 NC License No. C-8859

SUNGATE DESIGN GROUP, P.A.
815 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL: 919/889-0240 FAX: 919/889-0258
 ENG FIRM LICENSE NO. C-886

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-26/CONST.06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 25+00.00
SEE SHEET 5

MATCH LINE -L- STA. 38+00.00
SEE SHEET 7

-L- CURVE DATA

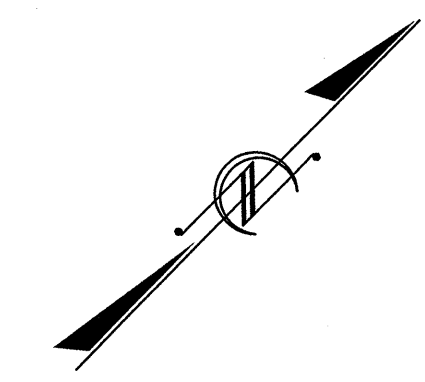
PI Sta 24+47.40	PI Sta 33+28.22
$\Delta = 29^\circ 31' 40.9" (LT)$	$\Delta = 29^\circ 05' 01.3" (RT)$
D = 4' 37' 40.4"	D = 4' 35' 11.1"
L = 638.05'	L = 634.12'
T = 326.28'	T = 324.05'
R = 1,238.05'	R = 1,249.25'

**EROSION CONTROL PLAN
FINAL GRADE**

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 G & M of North Carolina, Inc.
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 Raleigh, NC 27607-5073
 Tel: 919/954-0282 Fax: 919/954-5448 NC License No. C-1869

SUNGATE DESIGN GROUP, P.A.
 916 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27608
 TEL: (919) 898-0245 FAX: (919) 898-0258
 ENG. FIRM LICENSE NO. C-390

PROJECT REFERENCE NO. <i>W-5315</i>		SHEET NO. <i>EC-27/CONST.07</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

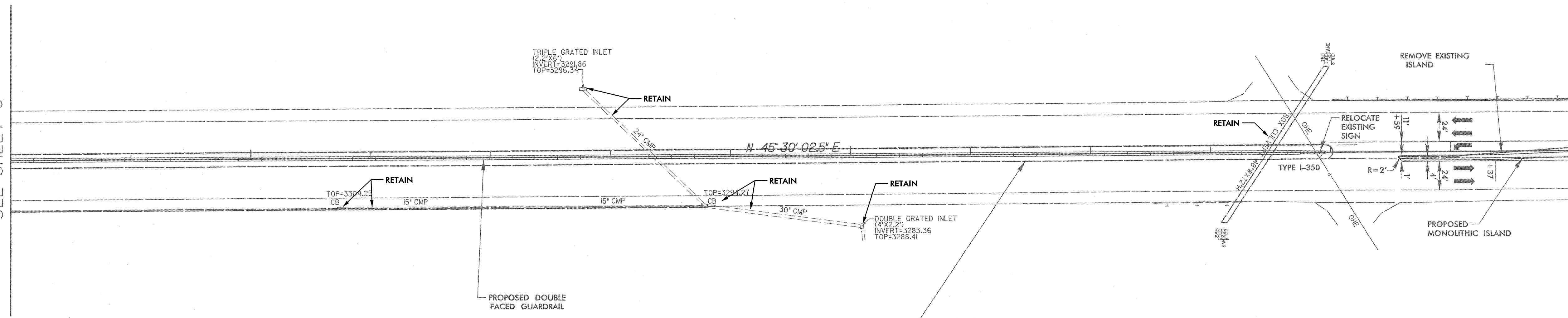


40

45

50

MATCH LINE - L- STA. 38+00.00
SEE SHEET 6



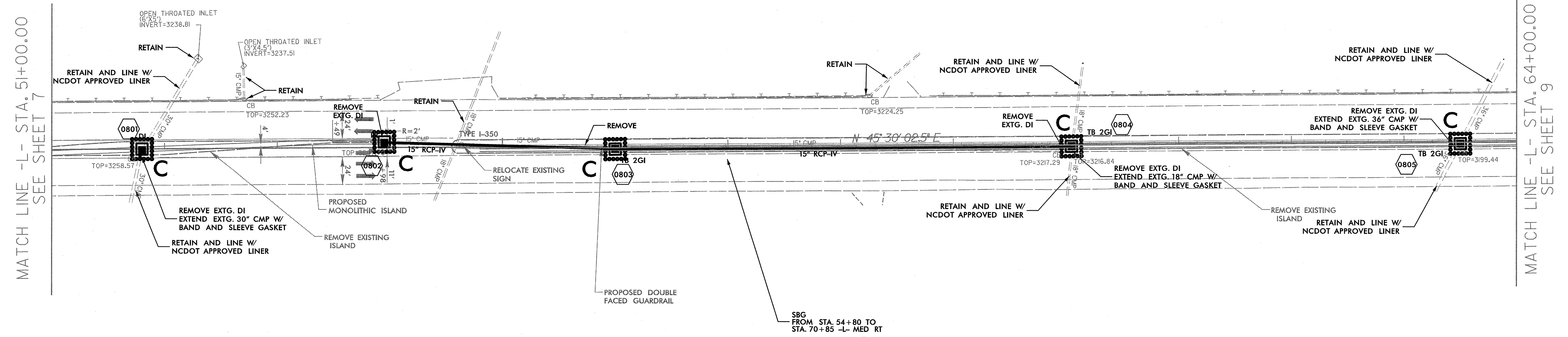
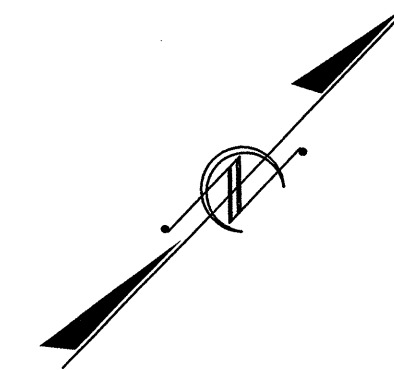
MATCH LINE - L- STA. 51+00.00
SEE SHEET 8

EROSION CONTROL PLAN FINAL GRADE

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 915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL: (919) 959-2245 FAX: (919) 959-4258
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-28/CONST.08
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 51+00.00
SEE SHEET 7

MATCH LINE -L- STA. 64+00.00
SEE SHEET 9

55

60

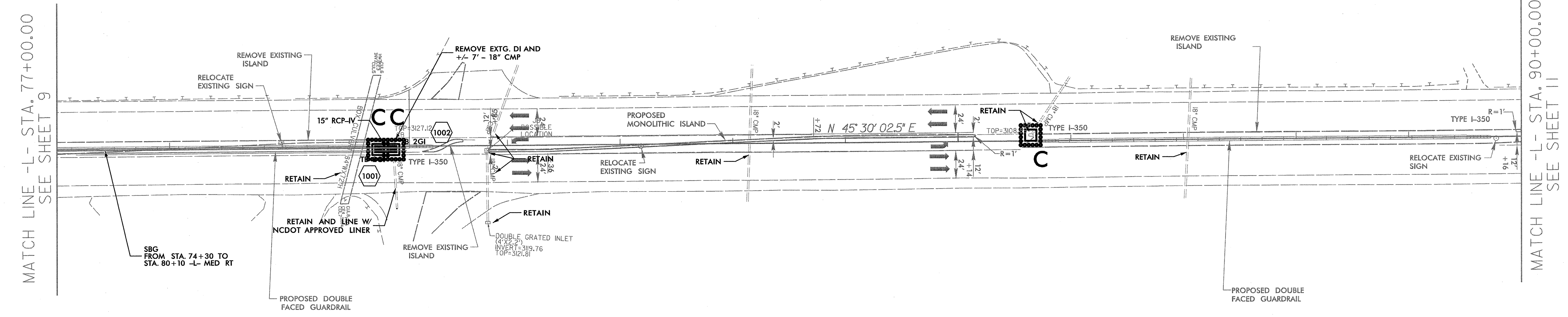
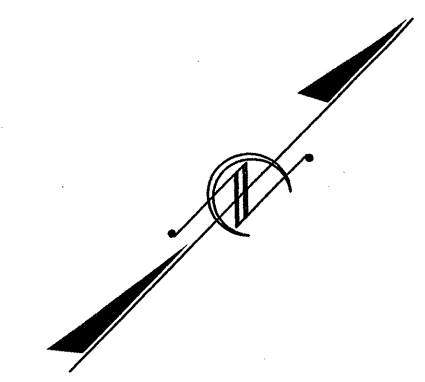
SBG
FROM STA. 54+80 TO
STA. 70+85 -L- MED RT

EROSION CONTROL PLAN FINAL GRADE

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 Raleigh, NC 27607-9073
 Tel: 919/854-1292 Fax: 919/854-5448 NC License No. C-1869

SUNGATE DESIGN GROUP, P.A.
815 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27608
 TEL: (919) 899-2245 FAX: (919) 899-0288
 ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO. <i>W-5315</i>		SHEET NO. <i>EC-30/CONST.10</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	



MATCH LINE -L- STA. 77+00.00
SEE SHEET 9

MATCH LINE -L- STA. 90+00.00
SEE SHEET 11

80

85

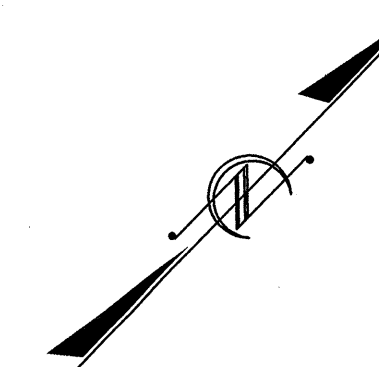
90

**EROSION CONTROL PLAN
FINAL GRADE**

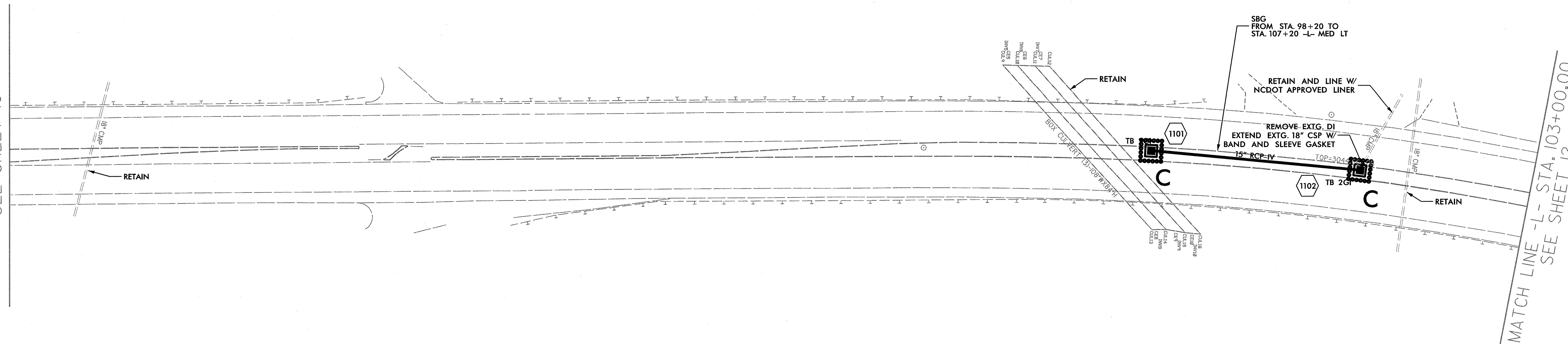
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G & M of North Carolina, Inc.
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 Tel: 919/854-1925 Fax: 919/854-5448 NC License No. C-865

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915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL: (919) 855-2245 FAX: (919) 856-6258
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. <i>W-5315</i>	SHEET NO. <i>EC-31/CONST/II</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 90+00.00
SEE SHEET 10



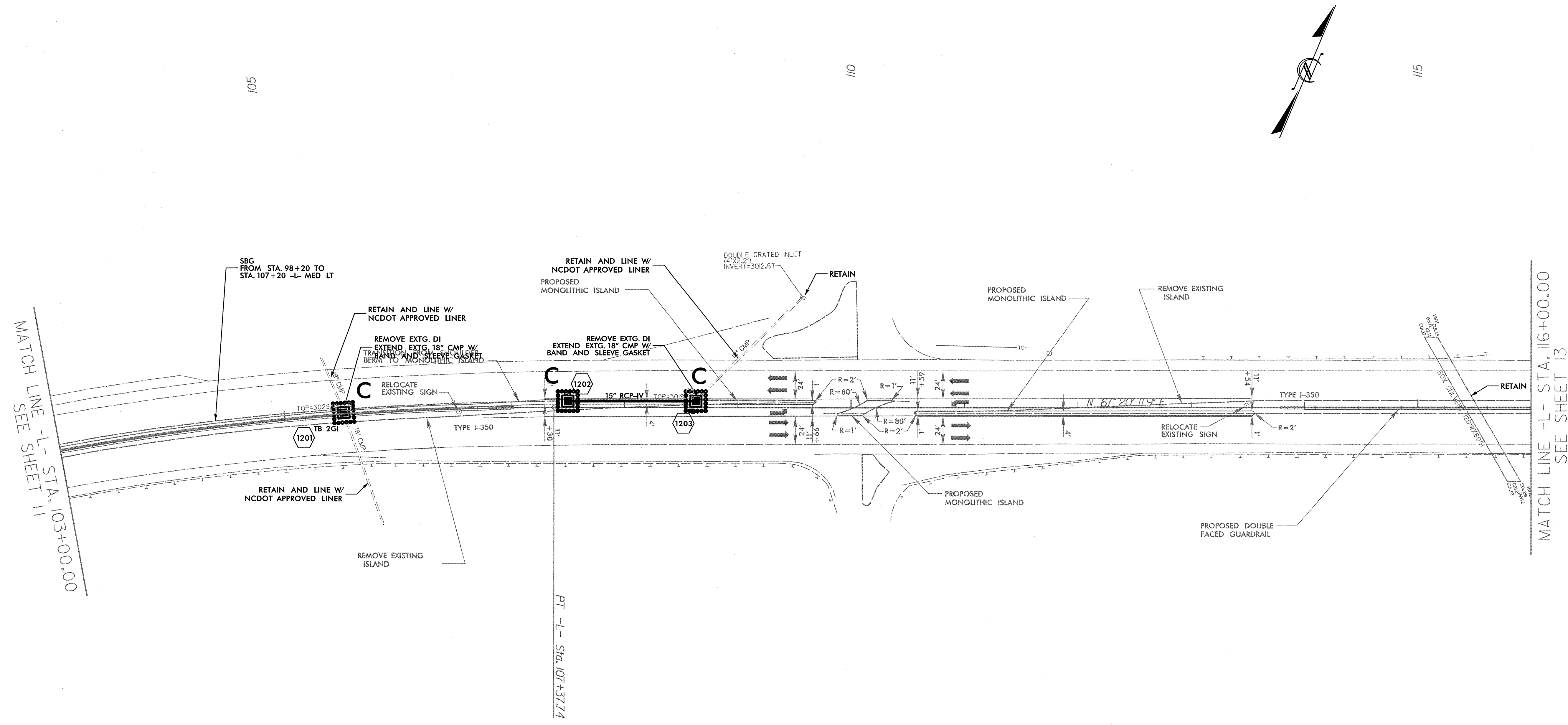
MATCH LINE -L- STA. 103+00.00
SEE SHEET 12

EROSION CONTROL PLAN FINAL GRADE

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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27609
 TEL: 919/859-2240 FAX: 919/859-6238
 ENG FIRM LICENSE NO. C-860

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-32/CONST.12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-L- CURVE DATA
 PI Sta 102+83.86
 Δ = 21° 50' 09.4" (RT)
 D = 2' 22' 33.4"
 L = 919.04'
 T = 465.17'
 R = 2,411.50'

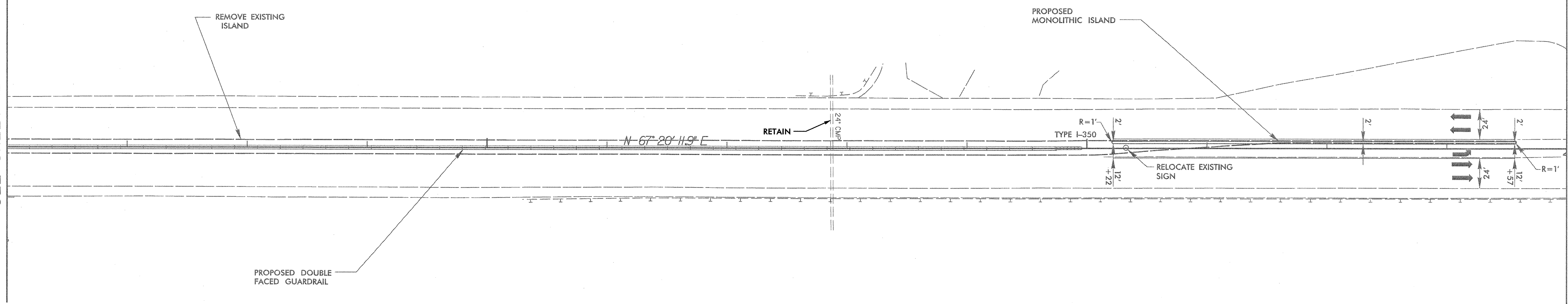
**EROSION CONTROL PLAN
FINAL GRADE**

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SUNGATE DESIGN GROUP, P.A.
 915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL (919) 889-2243 FAX (919) 899-6289
 ENG FROM LICENSE NO. C-990

PROJECT REFERENCE NO. W-5315		SHEET NO. EC-33/CONST13	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

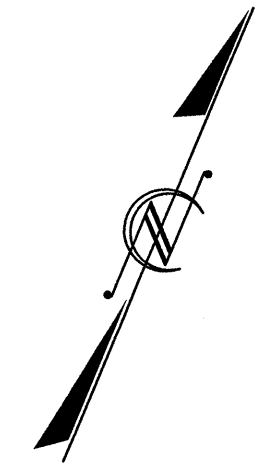
MATCH LINE - L - STA. 116+00.00
SEE SHEET 12



MATCH LINE - L - STA. 129+00.00
SEE SHEET 14

120

125

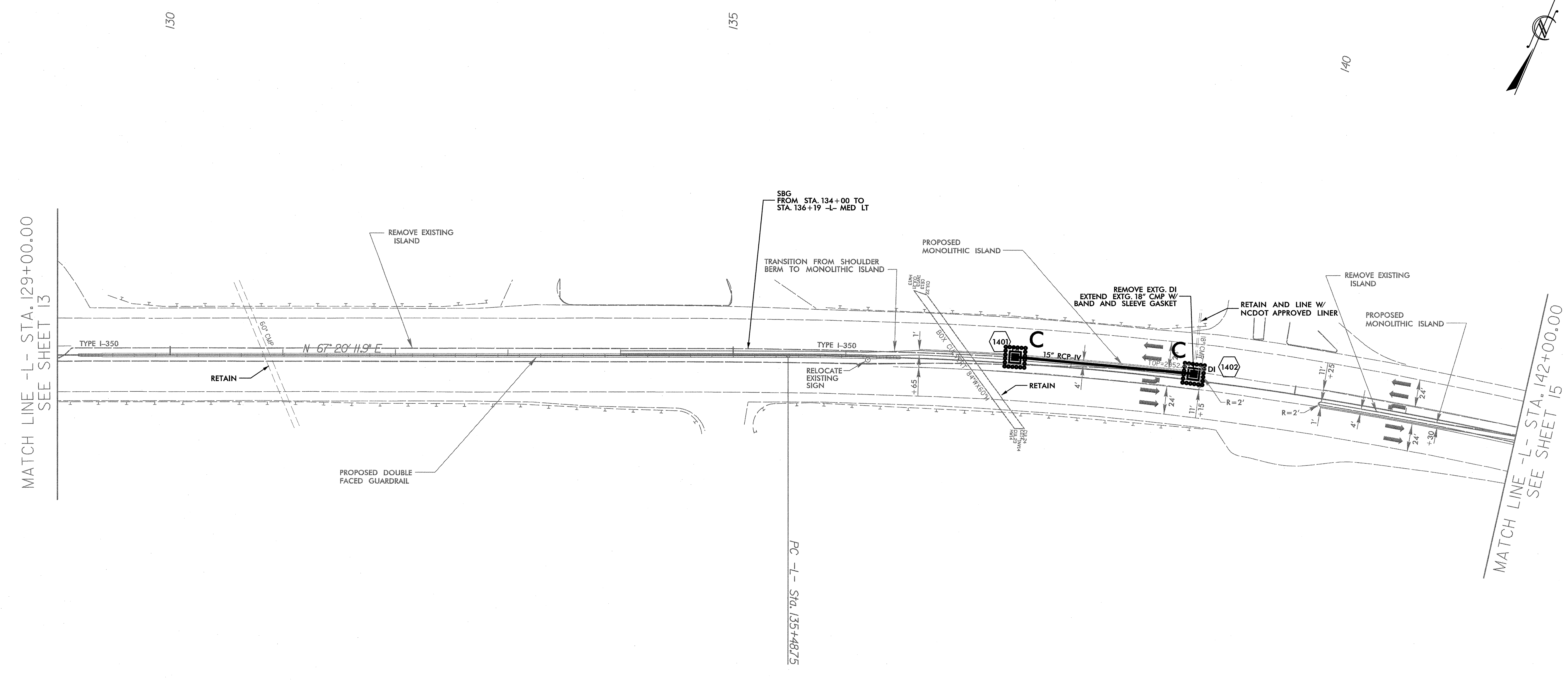
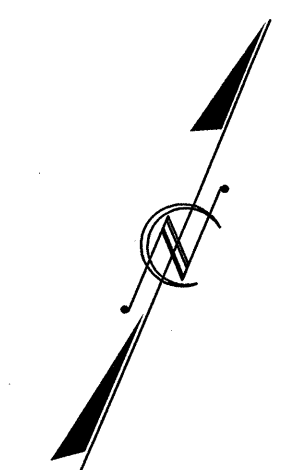


EROSION CONTROL PLAN FINAL GRADE

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 Tel: 919/854-1182 Fax: 919/854-5448 NC License No. C-1869

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27608
 TEL: (919) 859-2245 FAX: (919) 859-4258
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-34/CONST-14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



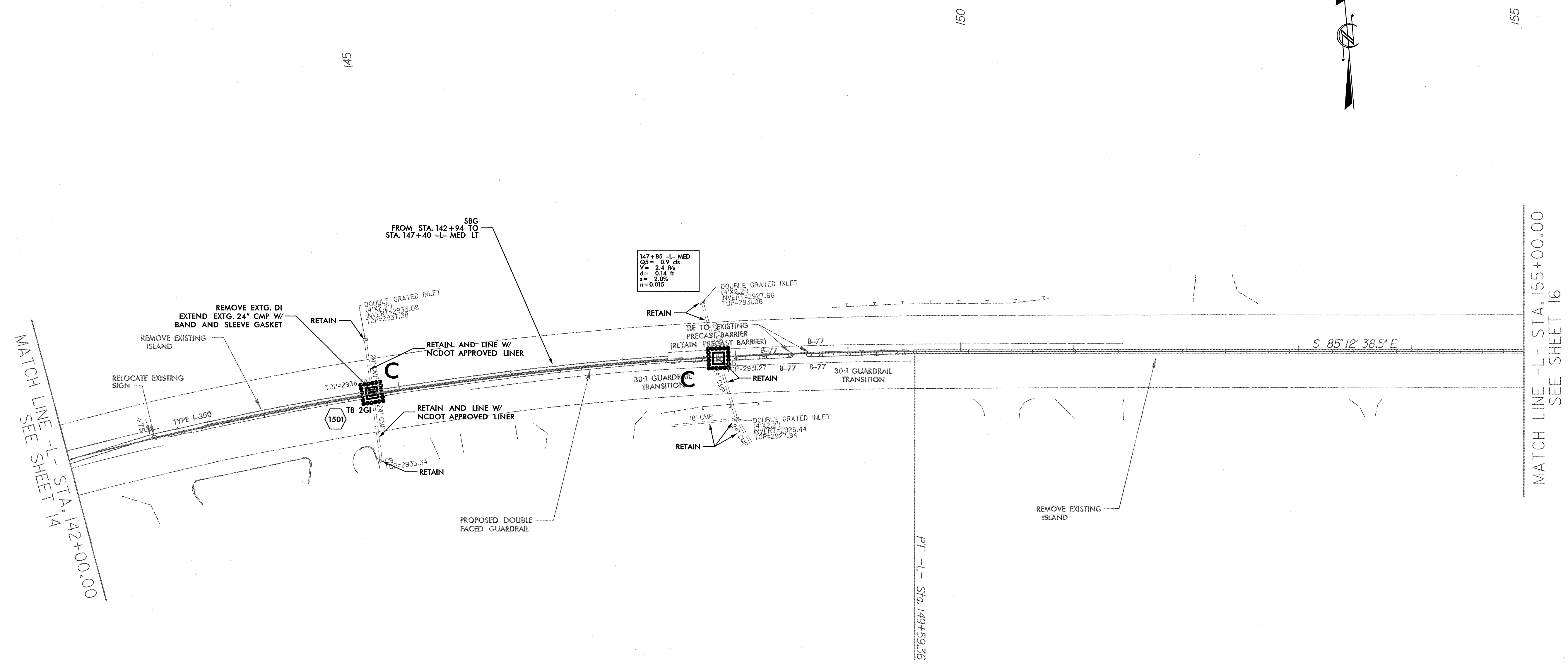
-L- CURVE DATA
 PI Sta 142+67.86
 Δ = 27° 27' 09.6" (RT)
 D = 1° 56' 46.2"
 L = 1,410.61'
 T = 719.12'
 R = 2,944.05'

EROSION CONTROL PLAN FINAL GRADE

ARCADIS
G. S. M. of North Carolina, Inc.
 WWW.ARCADIS-US.COM
 80 Corporate Center Drive, Suite 300
 Raleigh, NC 27607-9073
 Tel: 919/654-2282 Fax: 919/654-5448 NC License No. C-3865

SUNGATE DESIGN GROUP, P.A.
815 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL: (919) 859-2245 FAX: (919) 859-4258
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-35/CONST15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



147+85 -L- MED
 Q5 = 0.9 cfs
 V = 2.4 fps
 d = 0.14 ft
 s = 2.0%
 n = 0.015

-L- CURVE DATA
 PI Sta 142+67.86
 $\Delta = 27^\circ 27' 09.6''$ (RT)
 D = 1' 56' 46.2"
 L = 1,410.6'
 T = 719.12'
 R = 2,944.05'

MATCH LINE -L- STA. 142+00.00
SEE SHEET 14

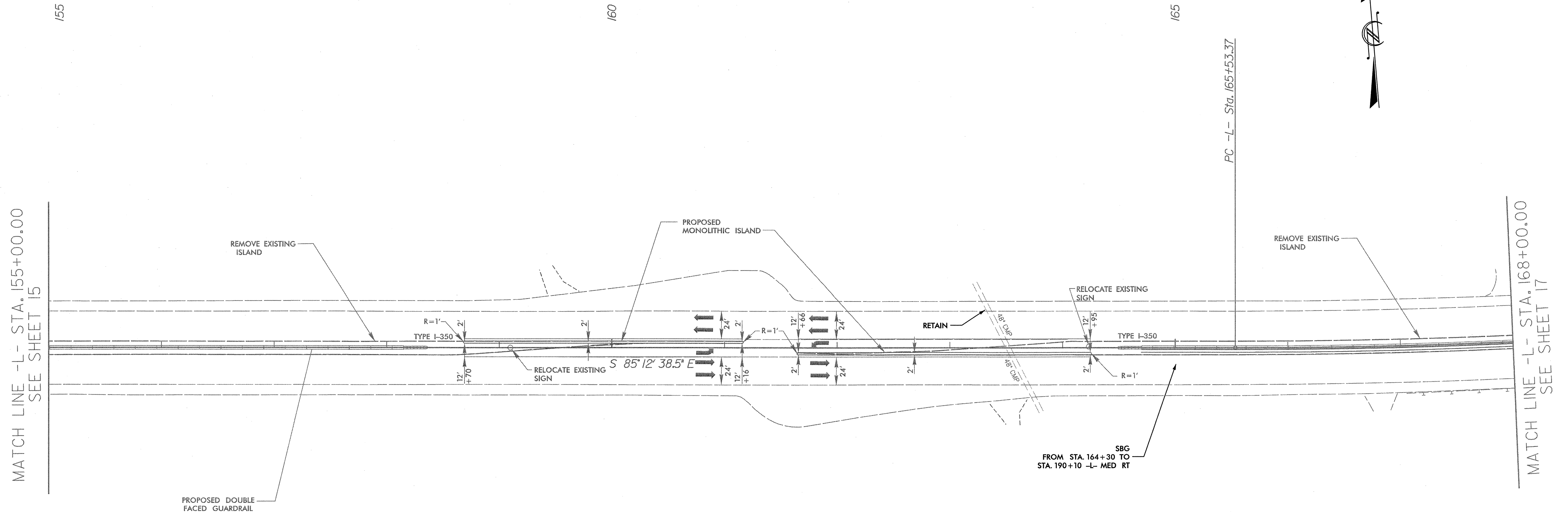
MATCH LINE -L- STA. 155+00.00
SEE SHEET 16

**EROSION CONTROL PLAN
FINAL GRADE**

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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL: 919/859-2240 FAX: 919/859-4258
ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. <i>W-5315</i>	SHEET NO. <i>EC-36/CONST.16</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



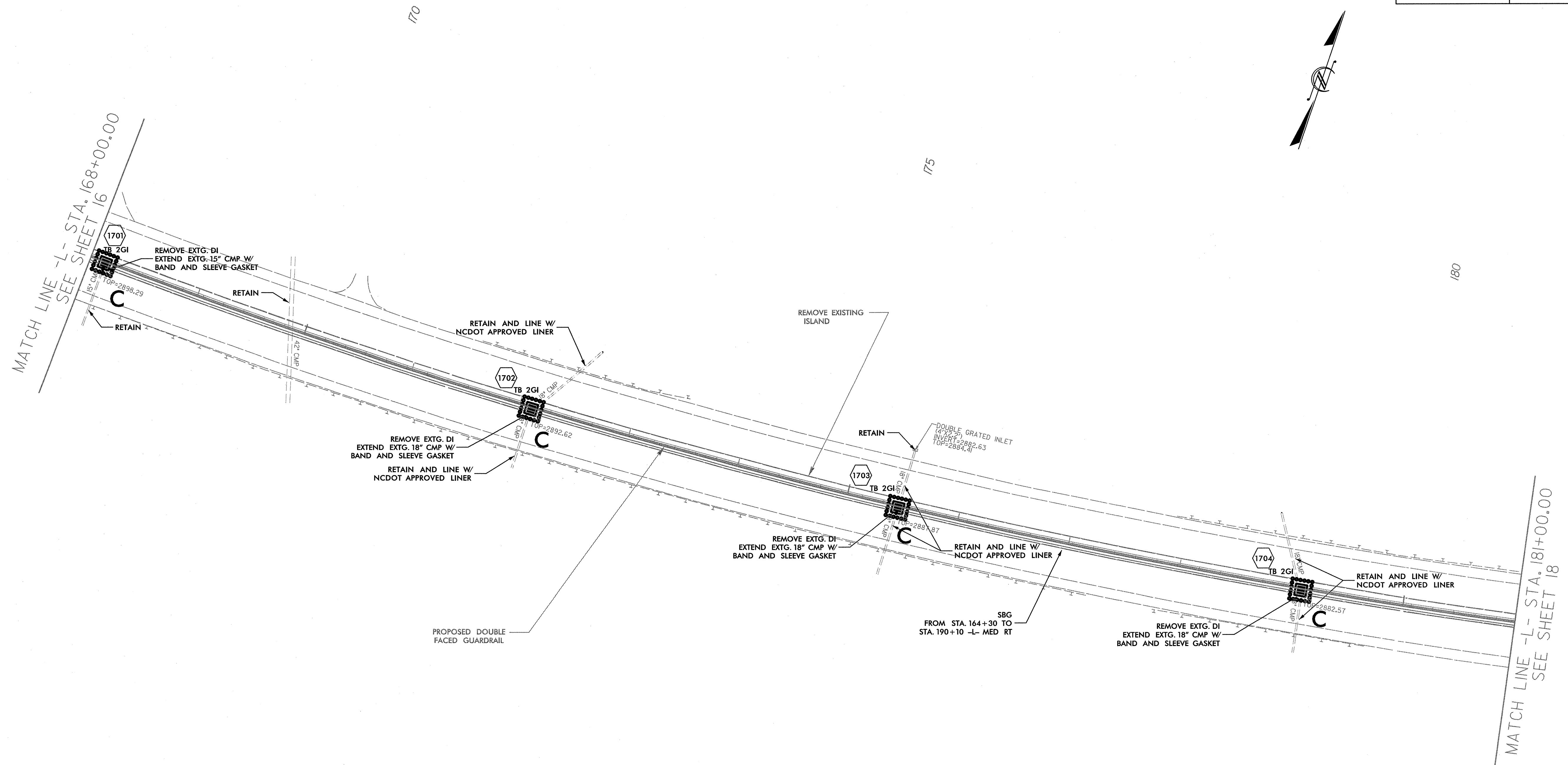
-L- CURVE DATA
 PI Sta. 177+39.19
 $\Delta = 23^\circ 26' 23.5" (LT)$
 $D = 1^\circ 00' 08.5"$
 $L = 2,338.47'$
 $T = 1,185.82'$
 $R = 5,716.10'$

**EROSION CONTROL PLAN
FINAL GRADE**

ARCADIS
 G & M of North Carolina, Inc.
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 801 Corporate Center Drive, Suite 300
 Raleigh, NC 27607-5073
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SUNGATE DESIGN GROUP, P.A.
 915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27605
 TEL: (919) 858-2240 FAX: (919) 858-4258
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-37/CONST.17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



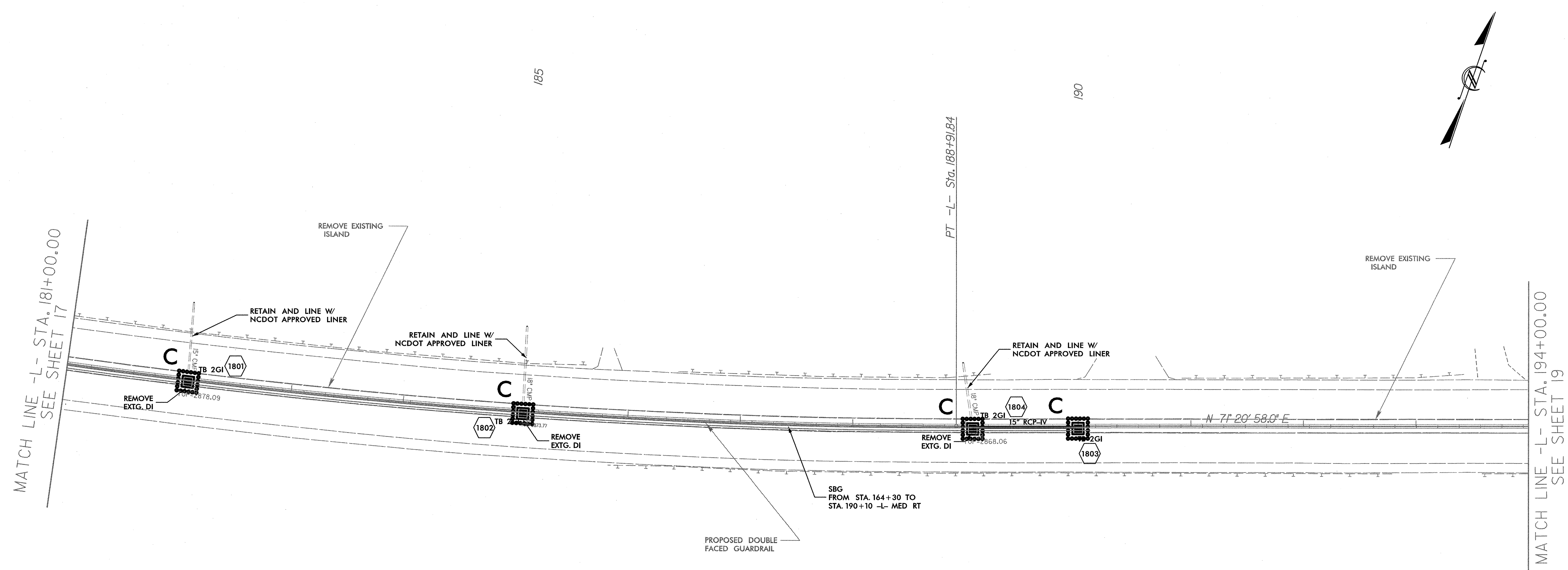
-L- CURVE DATA
 PI Sta 177+39.19
 $\Delta = 23^\circ 26' 23.5" (LT)$
 $D = 1' 00" 08.5"$
 $L = 2,338.47'$
 $T = 1,185.82'$
 $R = 5,716.10'$

**EROSION CONTROL PLAN
FINAL GRADE**

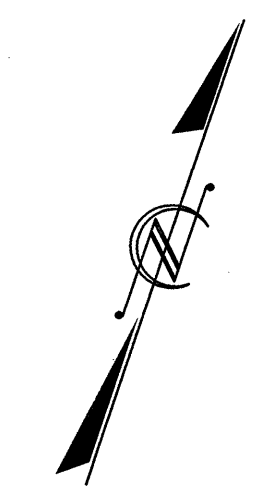
ARCADIS
C & M of North Carolina, Inc.
 801 Corporate Center Drive, Suite 300
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916 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27608
 TEL: (919) 859-2240 FAX: (919) 859-6238
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. <i>W-5315</i>	SHEET NO. <i>EC-38/CONST.18</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-L- CURVE DATA
 PI Sta 177+39.19
 $\Delta = 23^\circ 26' 23.5" (LT)$
 $D = 1' 00" 08.5"$
 $L = 2,338.47'$
 $T = 1,185.82'$
 $R = 5,716.10'$

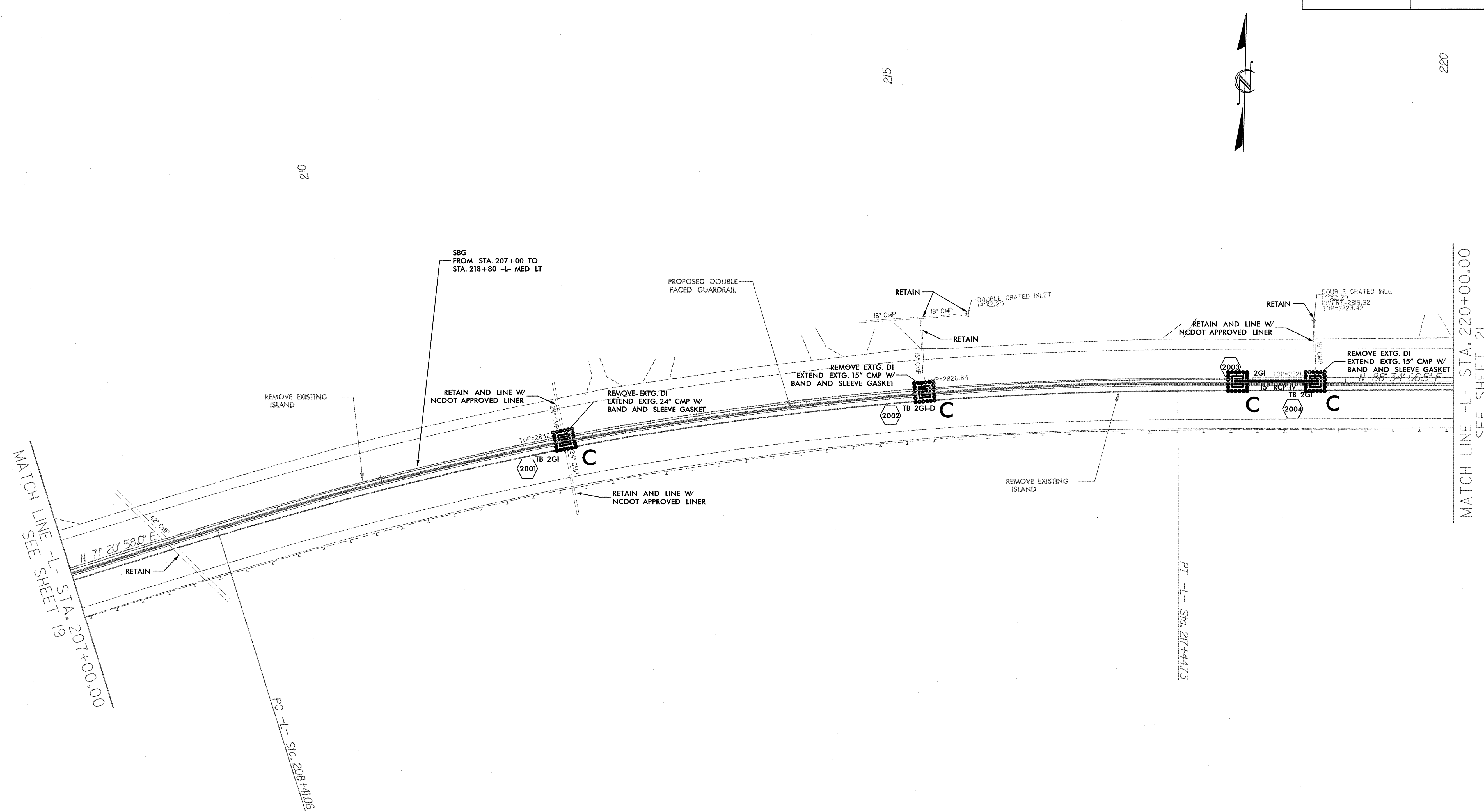


**EROSION CONTROL PLAN
FINAL GRADE**

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SUNGATE DESIGN GROUP, P.A.
 915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL: (919) 899-2240 FAX: (919) 899-4258
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. <i>W-5315</i>	SHEET NO. <i>EC-40/CONST.20</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



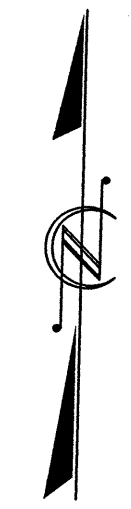
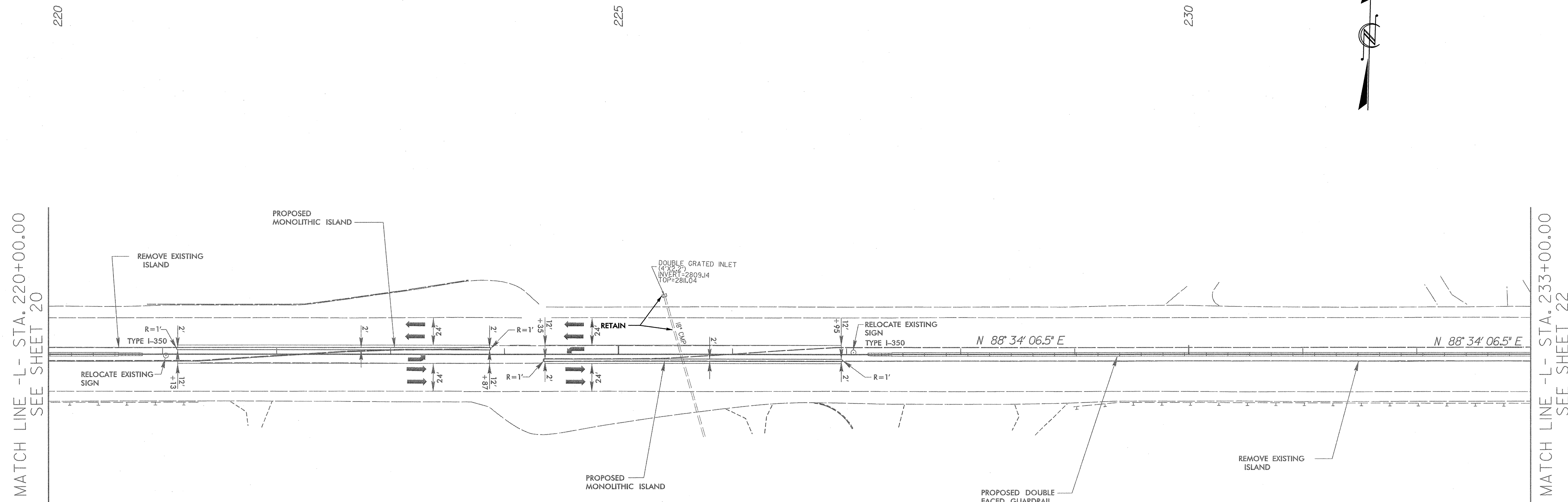
-L- CURVE DATA
 PI Sta 212+96.32
 $\Delta = 17^{\circ} 13' 08.6" (RT)$
 $D = 1^{\circ} 54' 19.7"$
 $L = 903.67'$
 $T = 455.26'$
 $R = 3,006.92'$

**EROSION CONTROL PLAN
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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27608
 TEL: 919/859-5240 FAX: 919/859-6526
 ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. <i>W-5315</i>		SHEET NO. <i>EC-41/CONST.21</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

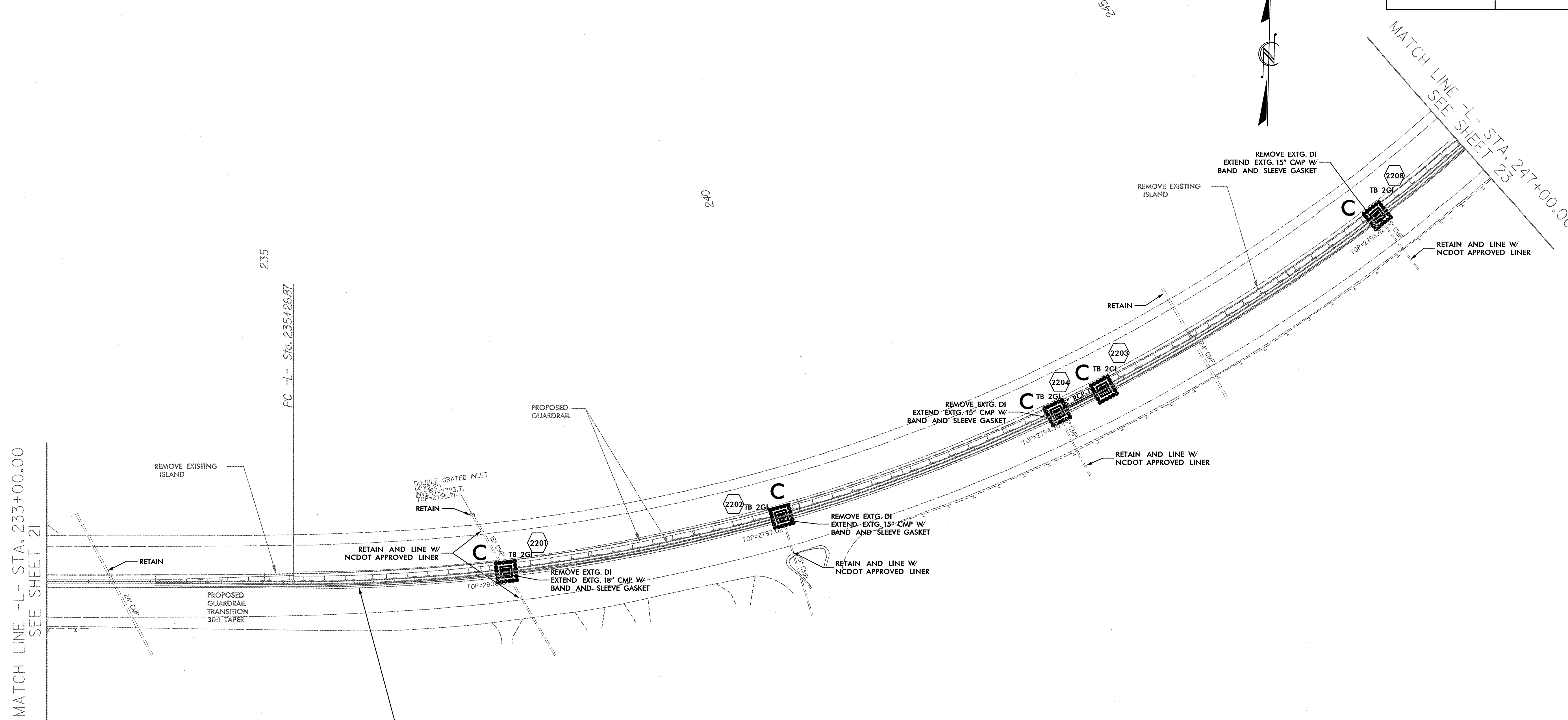
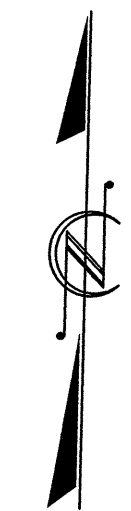


**EROSION CONTROL PLAN
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Raleigh, NC 27607-5073
Tel: 919/454-0322 Fax: 919/454-5468 NC License No. C-1885

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-5245 FAX: (919) 859-4258
ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-42/CONST.22
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 233+00.00
SEE SHEET 21

PC -L- Sta. 235+26.87

MATCH LINE -L- STA. 247+00.00
SEE SHEET 23

SBG FROM STA. 234+00 TO STA. 258+80 -L- MED RT

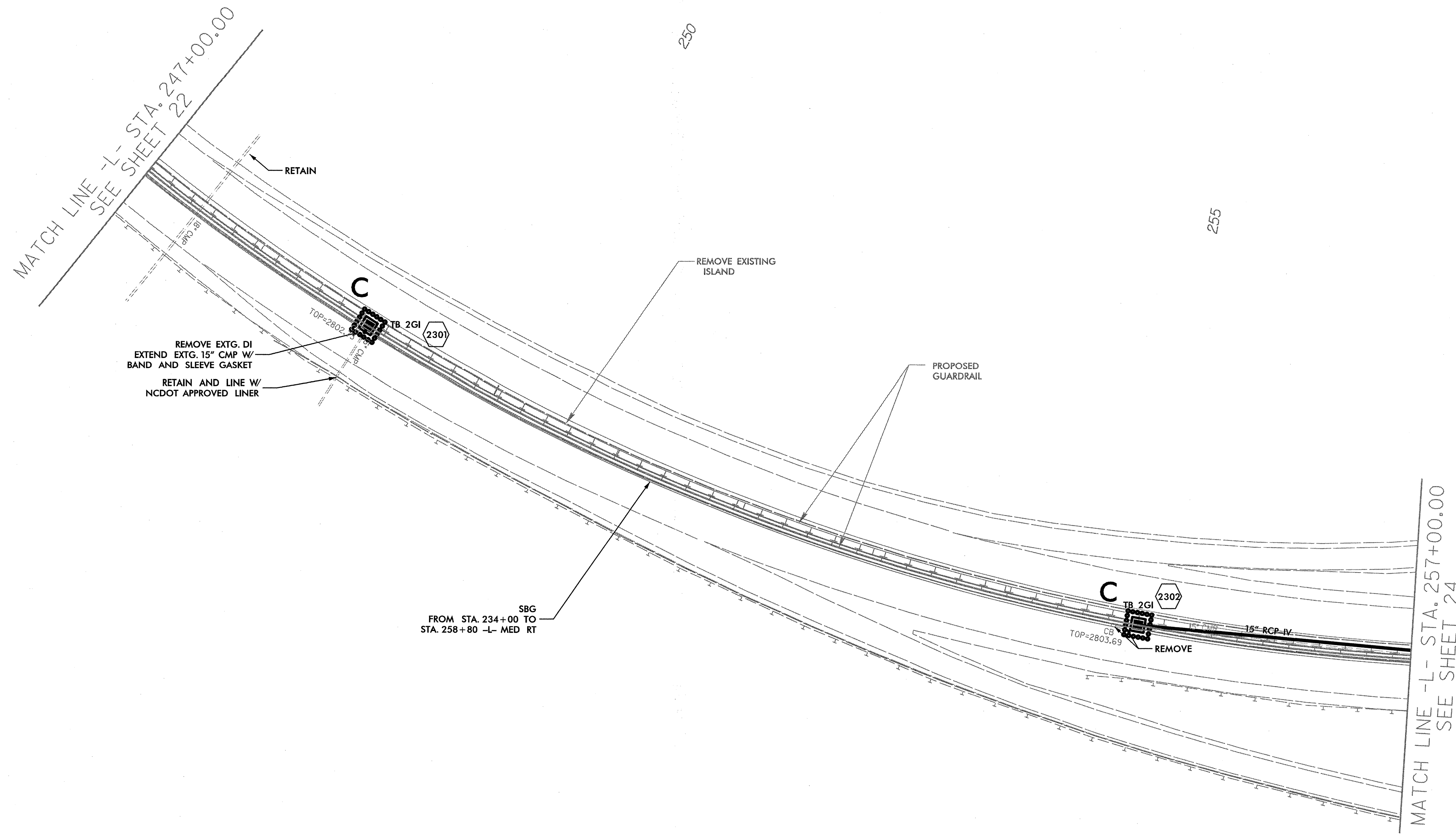
-L- CURVE DATA
PI Sta 248+69.26
 $\Delta = 79^{\circ} 00' 30.2''$ (LT)
 $D = 3' 31'' 08.3''$
 $L = 2,245.22'$
 $T = 1,342.39'$
 $R = 1,628.20'$

**EROSION CONTROL PLAN
FINAL GRADE**

ARCADIS
G & M of North Carolina, Inc.
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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-2245 FAX: (919) 859-8258
ENG FIRM LICENSE NO. C-880

PROJECT REFERENCE NO. W-5315	SHEET NO. EC-43/CONST-23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SBG
FROM STA. 234+00 TO
STA. 258+80 -L- MED RT

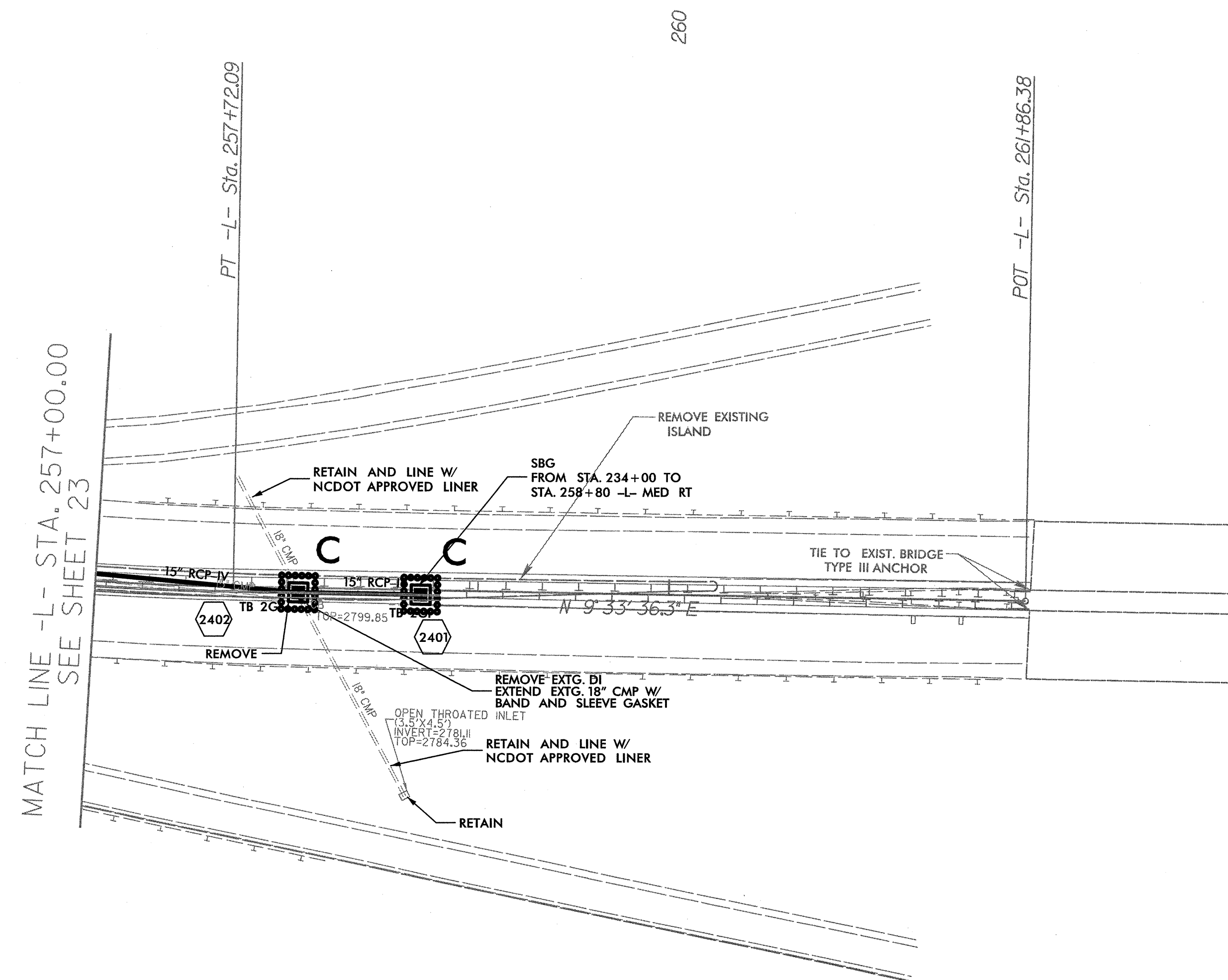
-L- CURVE DATA
PI Sta 248+69.26
 $\Delta = 79^{\circ} 00' 30.2''$ (LT)
D = 3' 31' 08.3"
L = 2,245.22'
T = 1,342.39'
R = 1,628.20'

**EROSION CONTROL PLAN
FINAL GRADE**

ARCADIS
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 RALEIGH, NORTH CAROLINA 27608
 TEL: (919) 859-2240 FAX: (919) 859-6238
 ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5315	EC-44/CONST.24
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATCH LINE -L- STA. 257+00.00
SEE SHEET 23

-L- CURVE DATA
 PI Sta 248+69.26
 $\Delta = 79^{\circ} 00' 30.2''$ (LT)
 D = 3' 31' 08.3"
 L = 2,245.22'
 T = 1,342.39'
 R = 1,628.20'