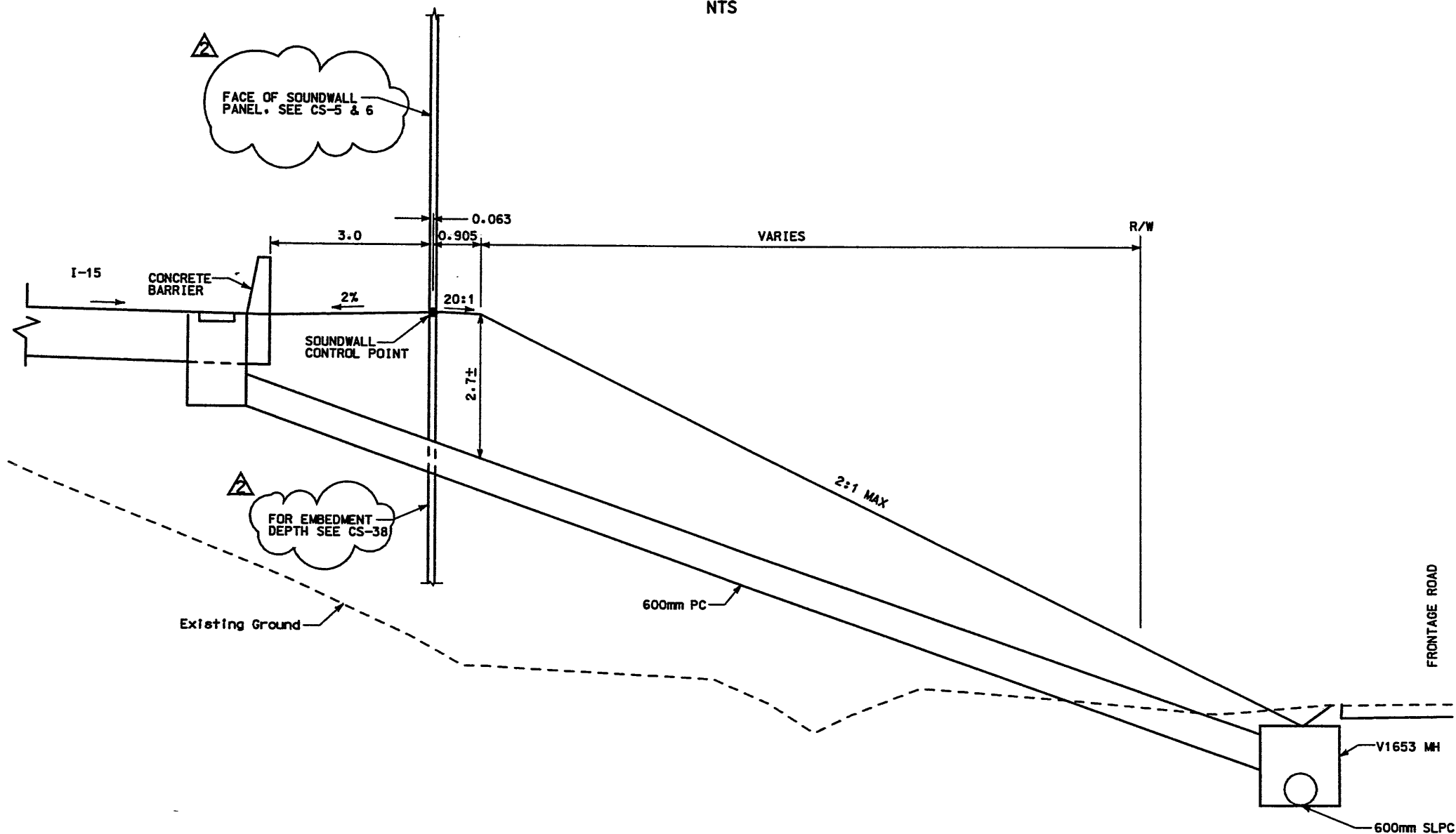


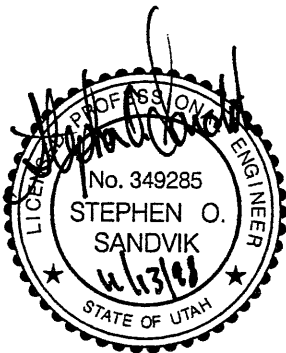
### SOUNDWALL DETAIL SECTION 2.1 WALL S-345-1 NTS



#### DETAIL A

STA 10+000 TO 10+063  
DRAINAGE CROSSING AT STA 10+002.08

NOTE: FOR INFORMATION ON DRAINAGE SYSTEM SEE DRAINAGE PLANS.



WASATCH CONSTRUCTORS

NOV 19 1998

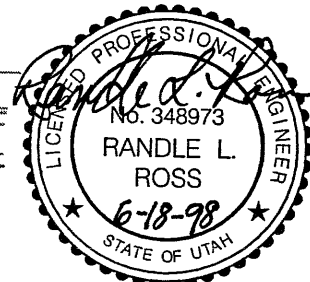
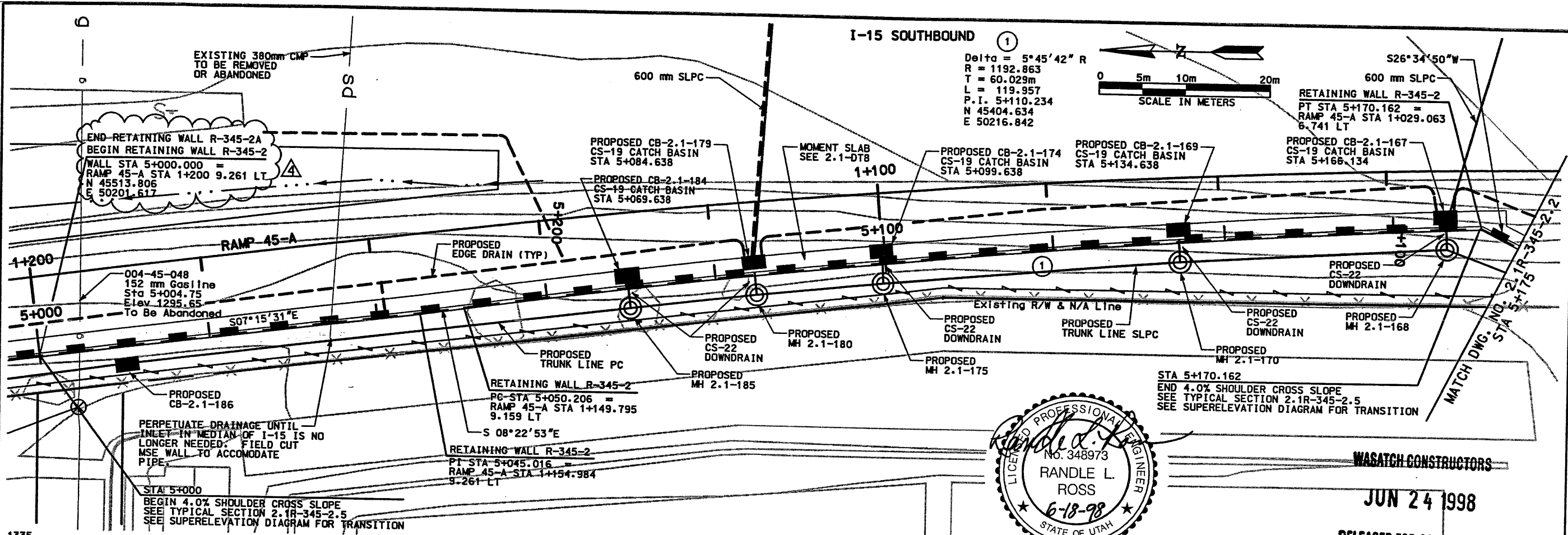
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	3/26/98	△	11/12/98
ORIGINAL ISSUE		REVISED SOUND WALL CALLOUT	
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		WBS NO. 2212401	
APPROVAL DATE	DESIGN DATE	CHECK DATE	BAR DATE
2/23/98	2/16/98	2/16/98	2/23/98
Stephen O. Sandvik PROJECT DESIGN ENGINEER	Stephen O. Sandvik DESIGN	Randle L. Robb CHECK	Randle L. Robb BAR
APPROVED	DATE	QUANT.	CHECK
2/23/98	2/23/98		
PROJECT NUMBER #SP-15-7(135)296		PROJECT MANAGER Randle L. Robb	
1-15 CORRIDOR RECONSTRUCTION WALL DETAIL S-345-1		SECTION 2.1	
SALT LAKE COUNTY		DWG. NO. 2.15-345-1.2	
SHT. 2 OF 2		REF.	

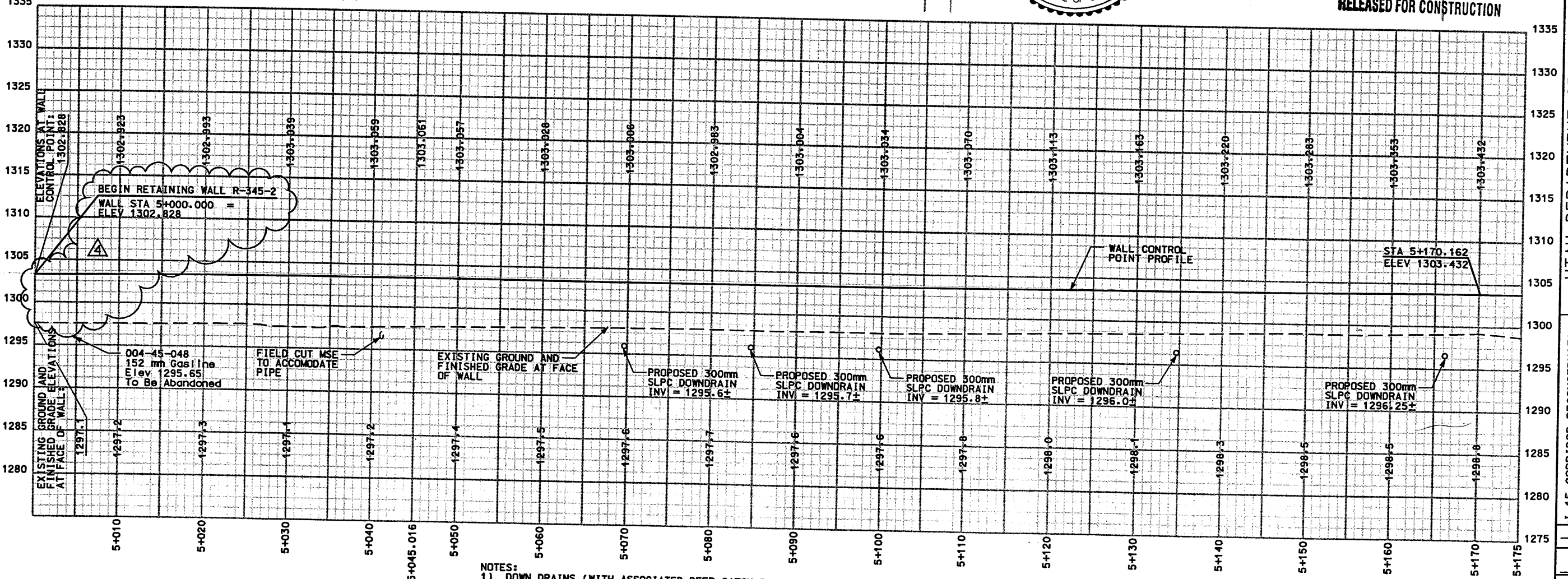
Username: frilesedc

Date: 18-JUN-98 Time: 09:33

Filename: s:\dgn\15\_cadd\45\_97\_revision\_files\wall\45wall-02\_01.dgn



**WASATCH CONSTRUCTORS**  
 JUN 24 1998  
 RELEASED FOR CONSTRUCTION



NOTES:  
 1) DOWN DRAINS (WITH ASSOCIATED DEEP CATCH BASINS) ARE TO BE CONSTRUCTED WITH WALL R-345-2; ALL OTHER STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY, AND CONSTRUCTION WILL NOT OCCUR WITH WALL R-345-2.

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	ORIGINAL ISSUE	ADD DETAIL
1	10/09/97		
2	11/12/97		
3	3/15/98		98 EARLY FINN
4	6/18/98		REVISED BEGINNING OF RETAINING WALL FOR R-345-2A EXTENSION

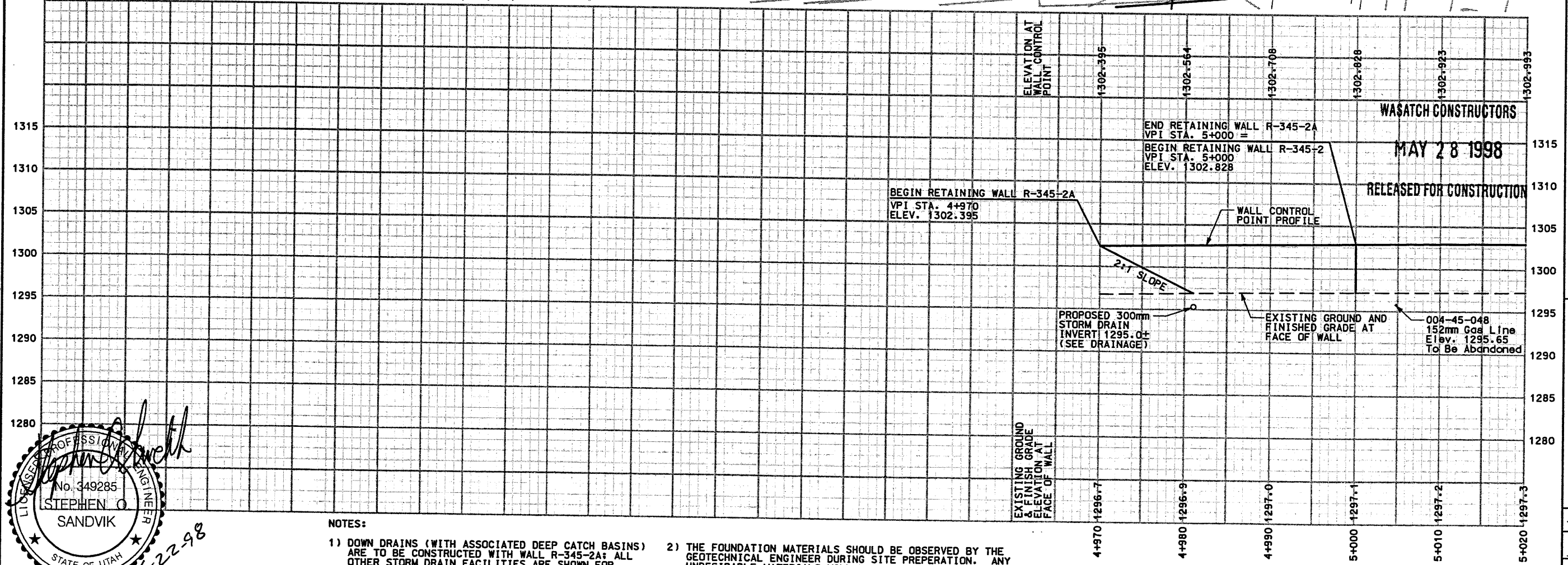
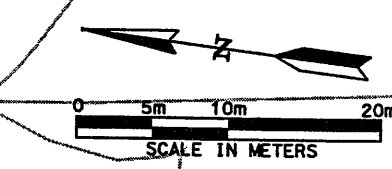
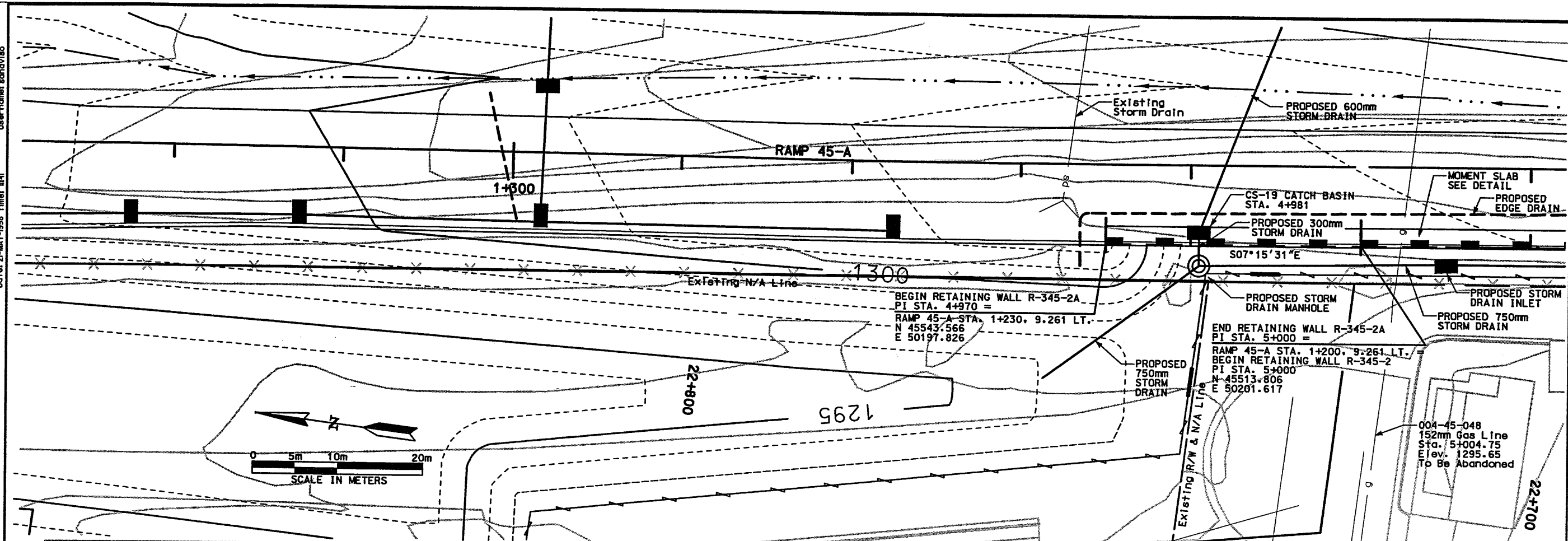
  

UTAH DEPARTMENT OF TRANSPORTATION			
M.K. CENTENNIAL			
SVERDRUP/DE LEUW			
APPROVAL RECORD	DESIGN	CHECK	CHECK
3/15/98	Bret A. Reynolds	3/09/98	3/15/98
DATE	PROJECT DESIGN ENGINEER	DATE	PROJECT MANAGER
3/15/98	Randle L. Ross	3/15/98	3/15/98
DATE	PROJECT MANAGER	DATE	PROJECT MANAGER
I-15 CORRIDOR RECONSTRUCTION			
SITUATION & LAYOUT R-345-2			
SECTION 2.1			
PROJECT NUMBER #SP-15-7(135)296			
SALT LAKE COUNTY			
DWG. NO. 2.1R-345-2.1			
SHT. 1 OF 29			
REF.			

Users: sandvik

Date: 2-MAY-1998 Time: 11:41

Filename: o:\dgn\15\_cadd\15\_37\prc\1m\_files\wall\15\_wall-02\_01a.dgn



No. 349285  
 STEPHEN O. SANDVIK  
 STATE OF UTAH  
 3-22-98

**NOTES:**  
 1) DOWN DRAINS (WITH ASSOCIATED DEEP CATCH BASINS) ARE TO BE CONSTRUCTED WITH WALL R-345-2A; ALL OTHER STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY AND CONSTRUCTION WILL NOT OCCUR WITH WALL R-345-2A.

2) THE FOUNDATION MATERIALS SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.

ELEVATION VIEW - FACE OF WALL

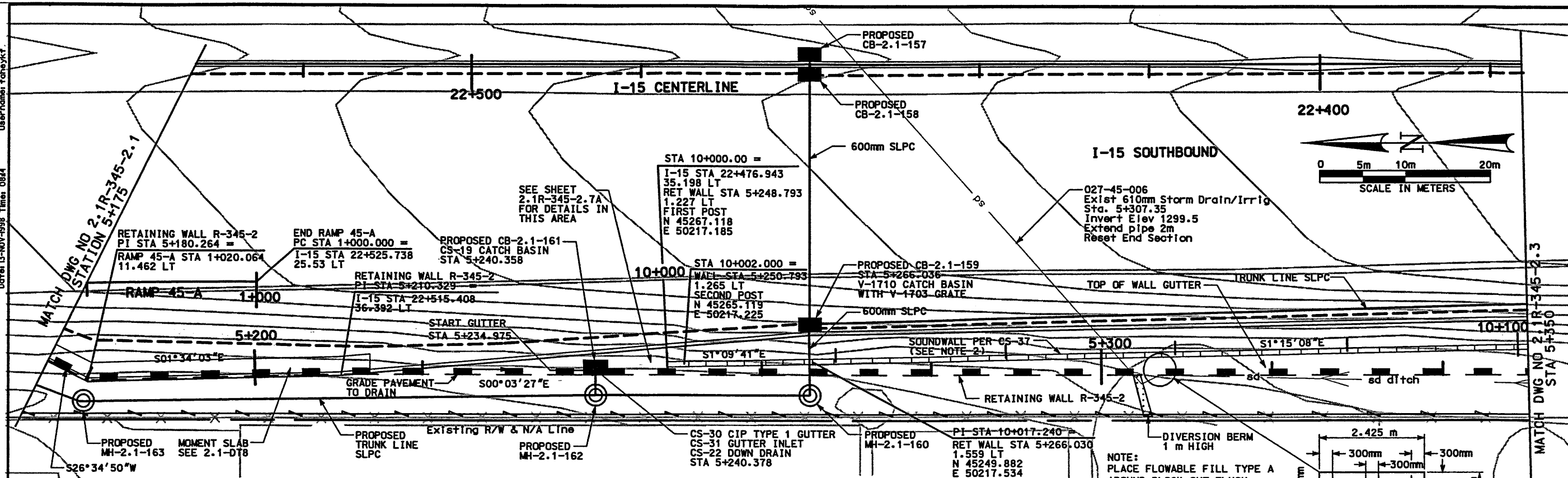
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
1	5/20/98	1	5/20/98
2		2	
3		3	
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112402	
MK CENTENNIAL		SVERDRUP/DE LEUW	
APPROVAL RECORD:	DESIGN DAF / 98	CHECK BAR / 98	CHECK BAR / 98
DATE	5/28/98	DESIGNER	STEPHEN O. SANDVIK
APPROVED	5/28/98	PROJECT DESIGN ENGINEER	STEPHEN O. SANDVIK
DATE	5/28/98	DRAWN	RAJINDLE L. ROSS
		PROJECT MANAGER	RAJINDLE L. ROSS
I-15 CORRIDOR RECONSTRUCTION		PROJECT NUMBER #SP-15-7(135)296	
SITUATION & LAYOUT R-345-2A		SECTION 2.1	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-2.1A	
SHT. 2 OF 29		REF.	

WASATCH CONSTRUCTORS  
 MAY 28 1998  
 RELEASED FOR CONSTRUCTION

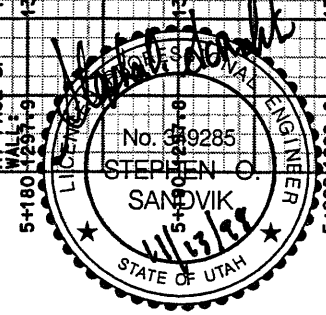
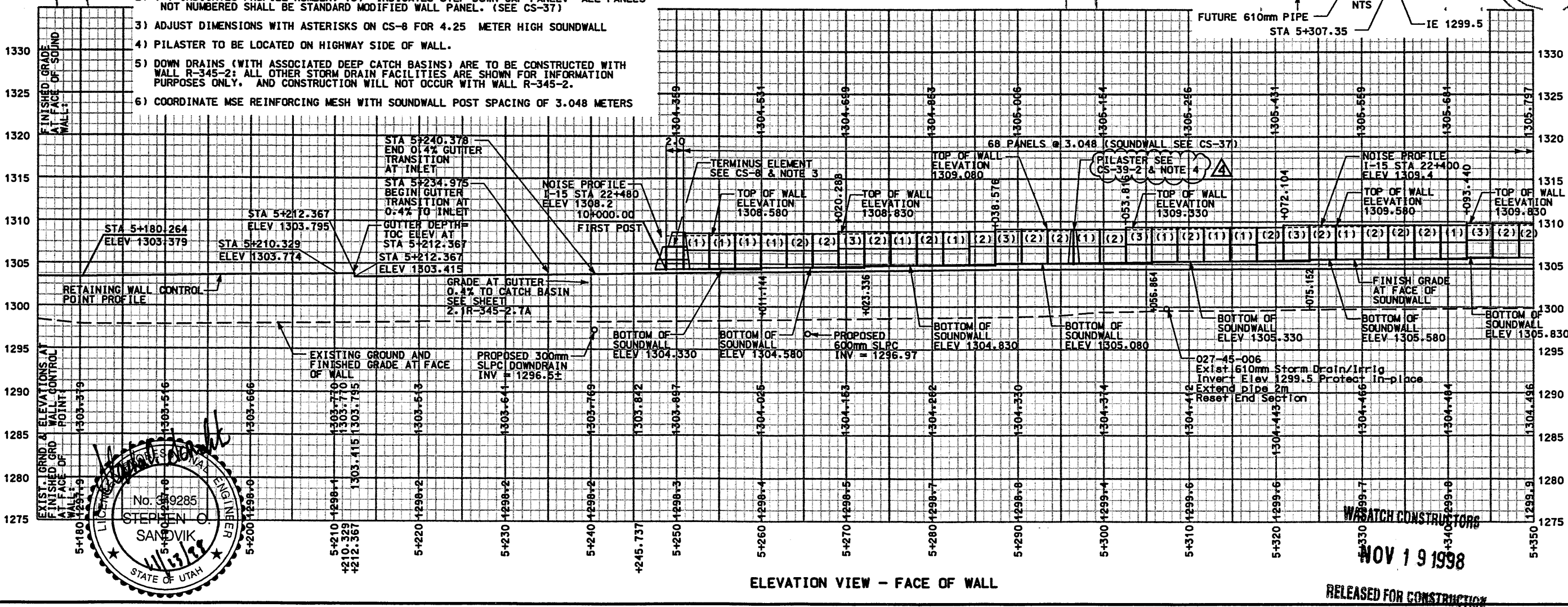


Users: rname: fcheyk

File: c:\p1\115\115.dwg\45-97\sheet\_files\115\_rstwall-02.dwg



- NOTES:
- 1) FOR AESTHETIC TREATMENT OF PANELS AND POSTS SEE CS-37 AND CS-6)
  - 2) (+) INDICATES PROFILE NUMBER, (3) INDICATES STEP DOWN CAP PANEL. ALL PANELS NOT NUMBERED SHALL BE STANDARD MODIFIED WALL PANEL. (SEE CS-37)
  - 3) ADJUST DIMENSIONS WITH ASTERISKS ON CS-8 FOR 4.25 METER HIGH SOUNDWALL
  - 4) PILASTER TO BE LOCATED ON HIGHWAY SIDE OF WALL.
  - 5) DOWN DRAINS (WITH ASSOCIATED DEEP CATCH BASINS) ARE TO BE CONSTRUCTED WITH WALL R-345-2; ALL OTHER STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY, AND CONSTRUCTION WILL NOT OCCUR WITH WALL R-345-2.
  - 6) COORDINATE MSE REINFORCING MESH WITH SOUNDWALL POST SPACING OF 3.048 METERS



NOV 19 1998

RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	10/09/97	ORIGINAL ISSUE
2	3/15/98	98 EARLY FINAL
3	6/18/98	RELEASED FOR SOUNDWALL
4	11/12/98	REVISED PILASTER CALLOUT

WBS NO. 2112402

UTAH DEPARTMENT OF TRANSPORTATION  
MK CENTENNIAL  
SVERDRUP/DE LEUW

DESIGN: Stephen O. Sandvik  
DRAWN: DAF  
CHECKED: JMB  
DATE: 3/15/98

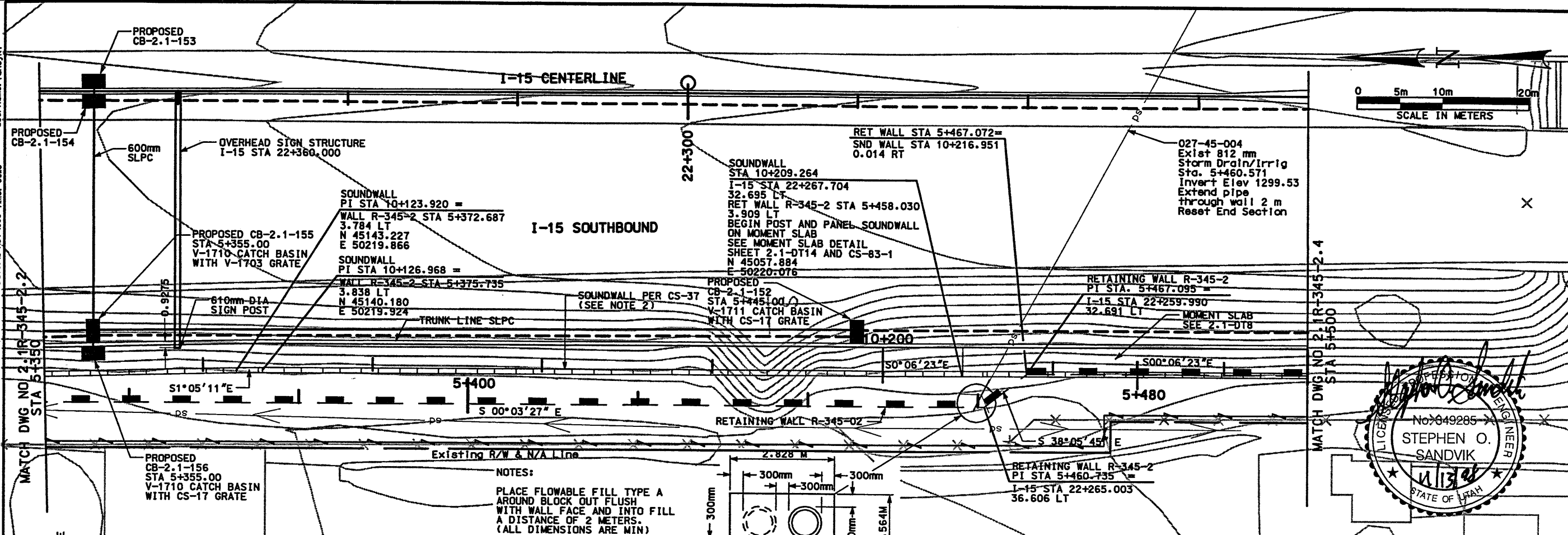
PROJECT: #SP-15-7(135)296

SALT LAKE COUNTY  
DWG. NO. 2.1R-345-2.2

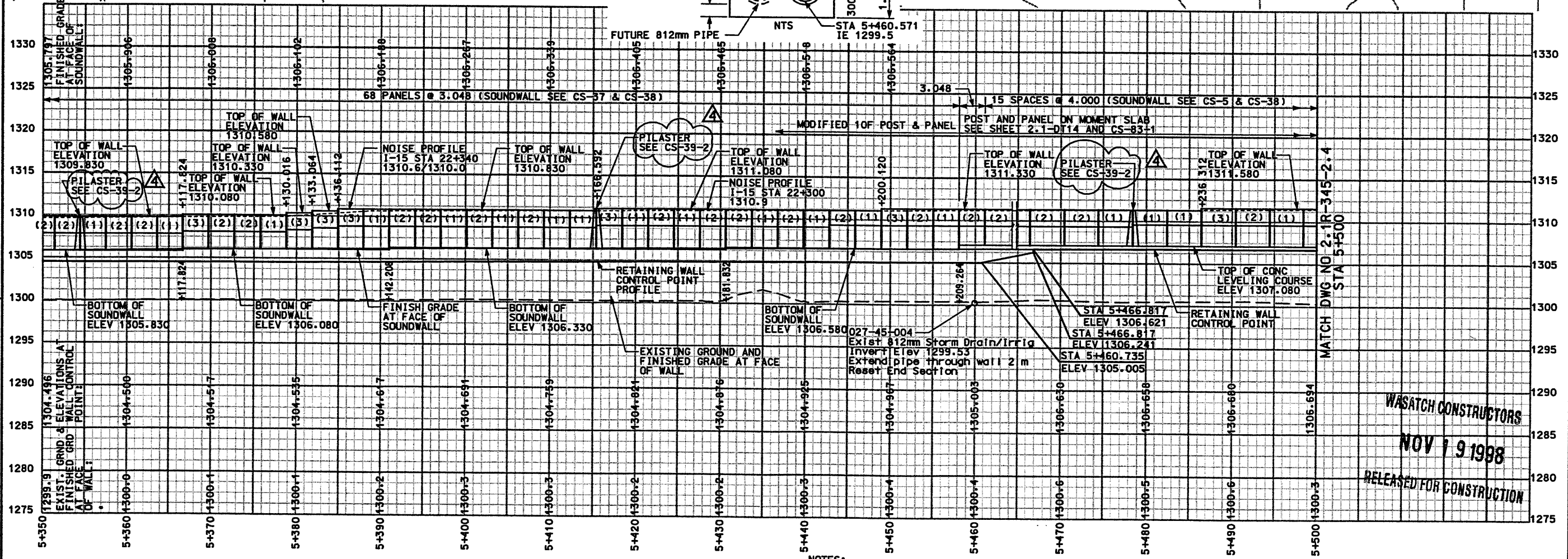
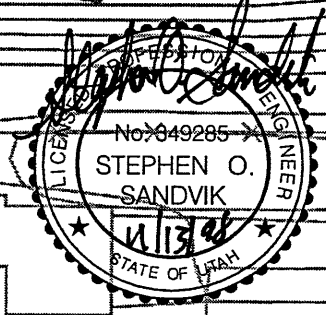
SHT. 3 OF 29



Username: fahaykt  
Date: 15-NOV-1998 Time: 08:46



**NOTES:**  
PLACE FLOWABLE FILL TYPE A AROUND BLOCK OUT FLUSH WITH WALL FACE AND INTO FILL A DISTANCE OF 2 METERS. (ALL DIMENSIONS ARE MIN)



**NOTES:**  
1) DOWN DRAINS (WITH ASSOCIATED DEEP CATCH BASINS) ARE TO BE CONSTRUCTED WITH WALL R-345-2; ALL OTHER STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY. AND CONSTRUCTION WILL NOT OCCUR WITH WALL R-345-2.  
2) COORDINATE MSE REINFORCING MESH WITH SOUNDWALL POST SPACING OF 3.048 METERS

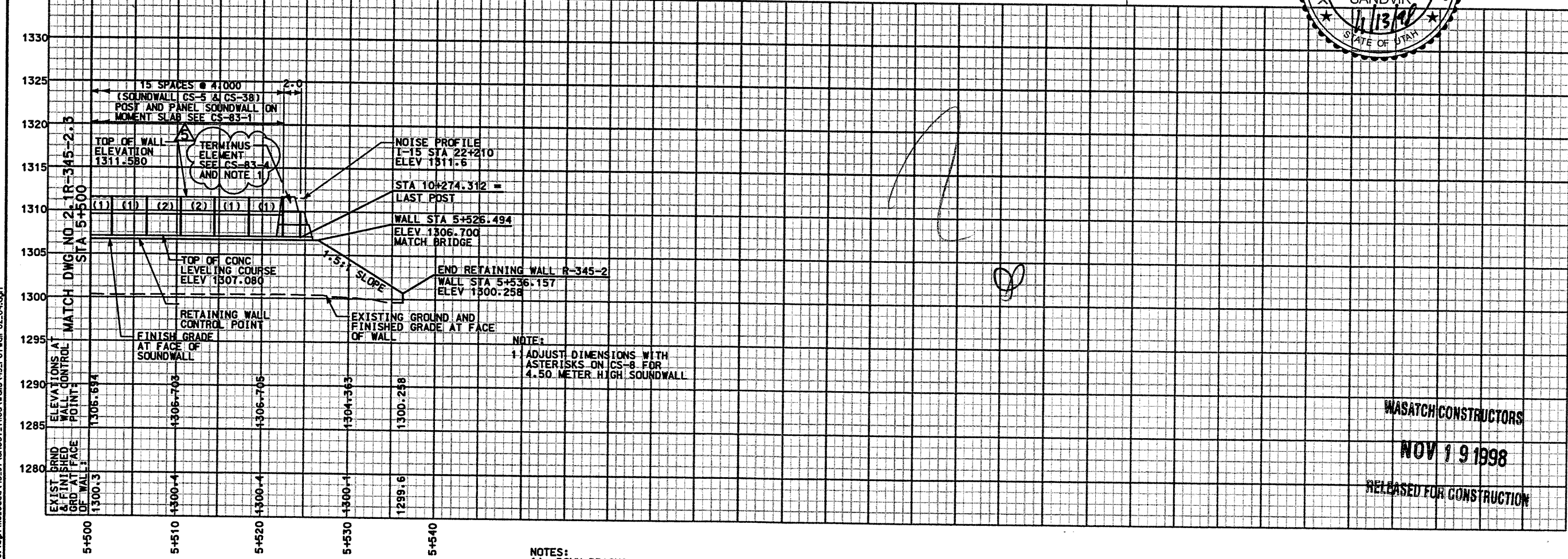
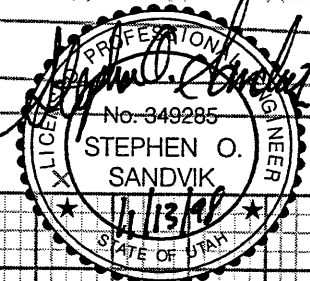
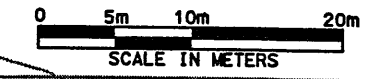
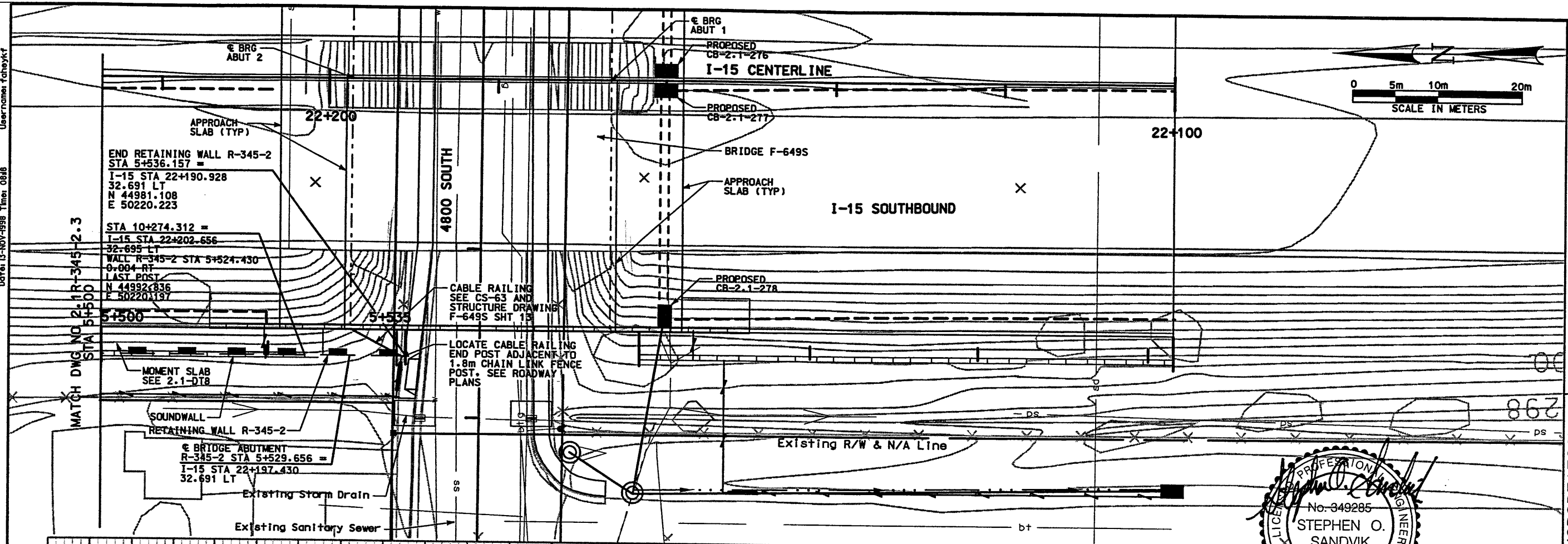
APPROVED FOR CONSTRUCTION	
NO.	DATE
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2	3/15/98
3	6/18/98
4	11/12/98
DESCRIPTION	
1	ORIGINAL ISSUE
2	98 EARLY FINAL
3	RELEASED FOR SOUNDWALL
4	REVISED PILEASTER CALLOUT
UTAH DEPARTMENT OF TRANSPORTATION MIX CENTENNIAL SVERDRUP/DE LEUW	
APPROVAL DATE	3/15/98
DESIGN DATE	3/09/98
CHECK DATE	3/15/98
DESIGNER	Stephen O. Sandvik
CHECKER	DAF
DATE	3/15/98
PROJECT NUMBER	#SP-15-711351296
PROJECT MANAGER	Randle L. Ross
DATE	3/15/98
WBS NO.	2112402
SECTION	SECTION 2.1
SHEET	4 OF 29
PROJECT	I-15 CORRIDOR RECONSTRUCTION SITUATION & LAYOUT R-345-2
DWG. NO.	2.1R-345-2.3
COUNTY	SALT LAKE

WASATCH CONSTRUCTORS  
NOV 19 1998  
RELEASED FOR CONSTRUCTION

Username: fahayk

Date: 13-NOV-1998 Time: 08:48

Filename: g:\dgn\115\_cadd\45\_97\_sheet\_files\wall\45\_retwall-02.dwg



NOTES:  
 1) DOWN DRAINS (WITH ASSOCIATED DEEP CATCH BASINS) ARE TO BE CONSTRUCTED WITH WALL R-345-2; ALL OTHER STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY. AND CONSTRUCTION WILL NOT OCCUR WITH WALL R-345-2.

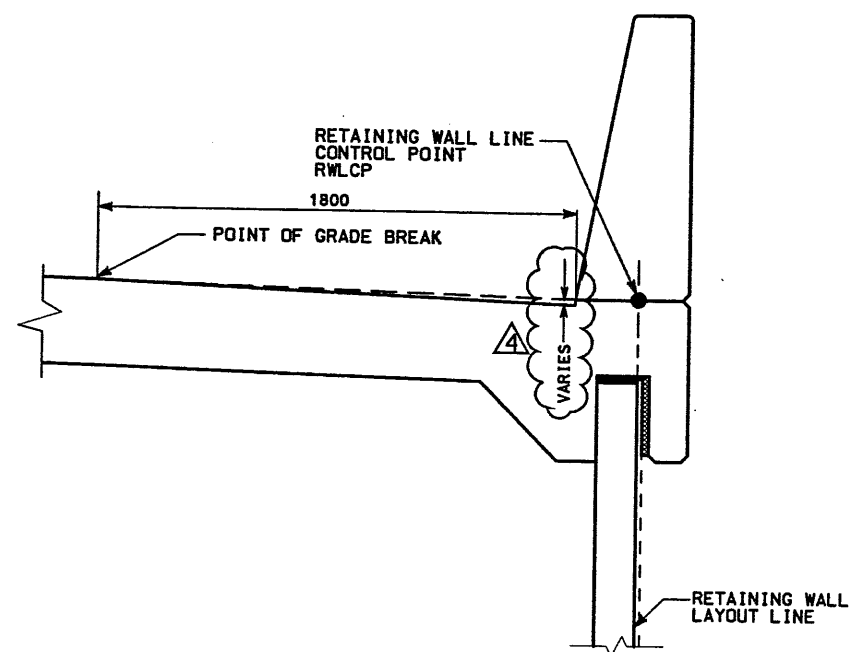
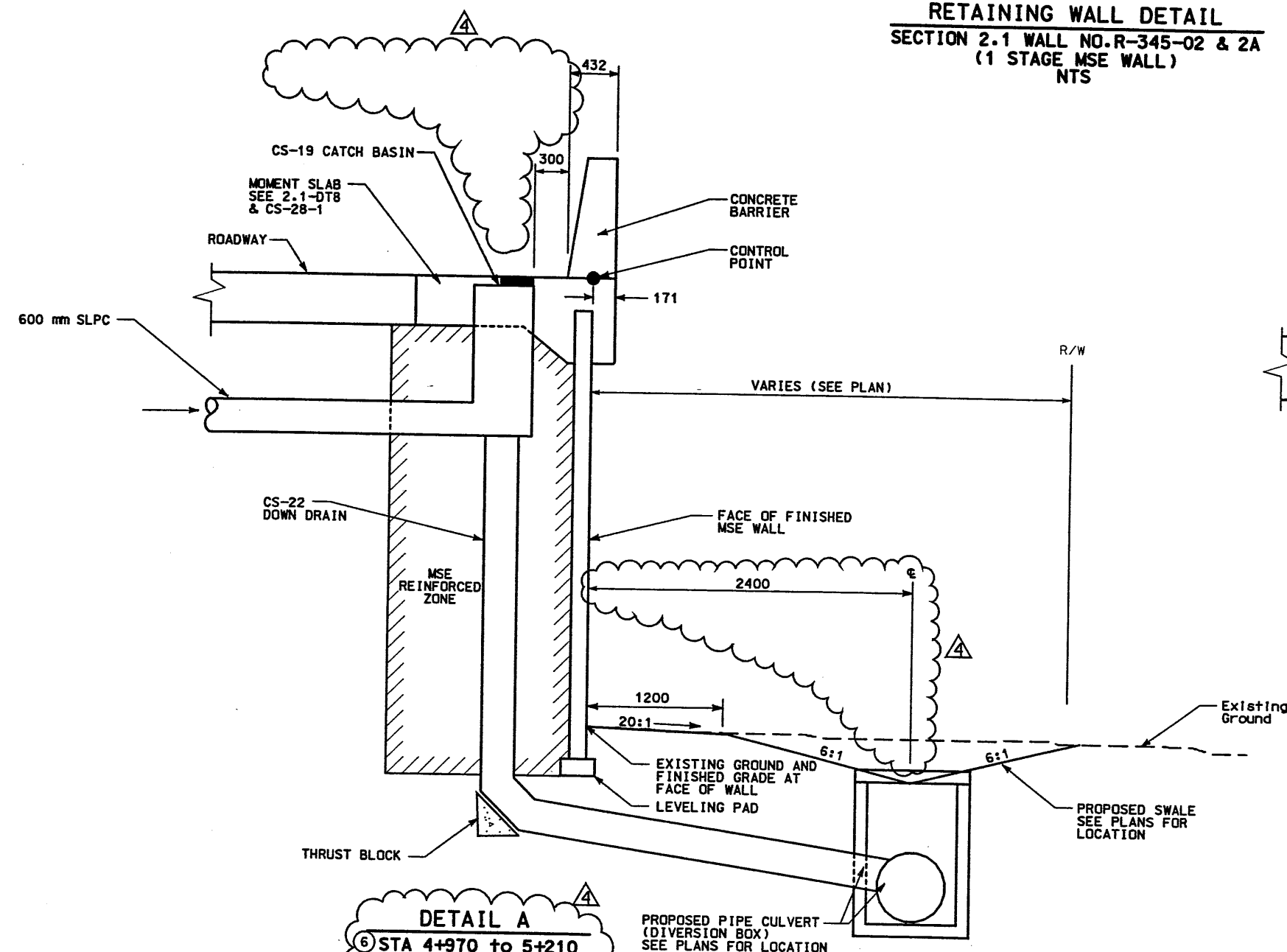
ELEVATION VIEW - FACE OF WALL

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	REVISION	TERMINUS CALLOUT
1	11/12/98		
2			
3			
4			
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		WBS NO. 2112402	
I-15 CORRIDOR RECONSTRUCTION SITUATION & LAYOUT R-345-2 SECTION 2.1		PROJECT NUMBER #SP-15-7(135)296	
SALT LAKE COUNTY DWG. NO. 2.1-R-345-2.4		DATE NOV 19 1998	
SHT. 5 OF 29		PROJECT MANAGER Randle L. Ross	
REF.		CHECK BAR 5/19/98 CHECK BDM 3/15/98 CHECK GCM 5/19/98 CHECK JAB 5/19/98	

WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

User: ncomet: r1resedo Date: 26-MAY-1998 Time: 09:46

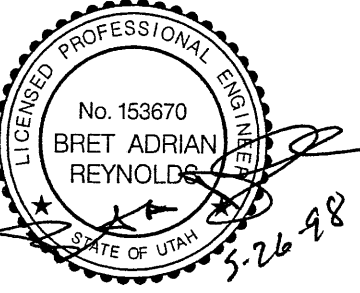
### RETAINING WALL DETAIL SECTION 2.1 WALL NO. R-345-02 & 2A (1 STAGE MSE WALL) NTS



**TYPICAL SECTION WITH DEPRESSION**  
STA 5+075.794 TO STA. 5+170  
(SEE PAVEMENT STAKING DETAIL)

**DETAIL A**  
④ STA 4+970 to 5+210  
CATCH BASIN AND DOWN  
DRAIN LOCATED AT:  
STA 4+981.000  
STA 5+069.658  
STA 5+084.638  
STA 5+099.638  
STA 5+134.638  
STA 5+166.134

Wall Number	Station Limits	Reference Station (5)	Wall Settlement (Front Face of Wall)	Top of Wall Rotation (3)	Lateral Displacement at Bottom of Wall
R-345-2	22+196 to 22+280	22+240	80 to 100 mm	12 mm	(4)
R-345-2	22+280 to 22+520	22+300	80 to 100 mm	80 mm	(4)
R-345-2	22+520 to 22+730	22+540	60 to 80 mm	76 mm	(4)



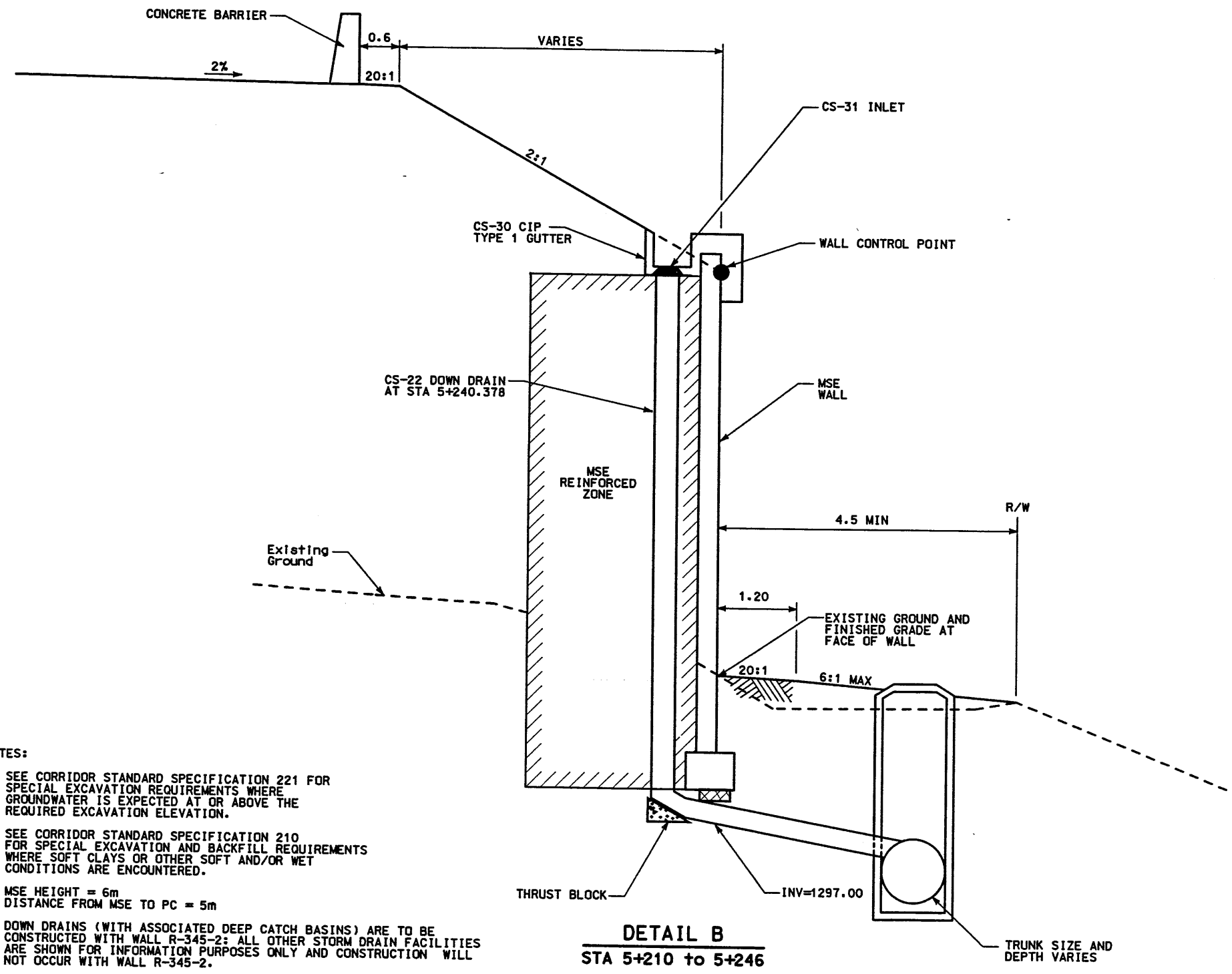
WASATCH CONSTRUCTORS  
MAY 28 1998  
RELEASED FOR CONSTRUCTION

- NOTES:
- SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION ELEVATION.
  - SEE CORRIDOR STANDARD SPECIFICATION 210 FOR SPECIAL EXCAVATION AND BACKFILL REQUIREMENTS WHERE SOFT CLAYS OR OTHER SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED.
  - VALUES GIVEN ARE ESTIMATES BASED ON AVAILABLE SOIL INFORMATION. CONTRACTOR SHOULD USE THIS INFORMATION AS A GUIDE TO ACCOUNT FOR SETTLEMENT/WALL ROTATION DURING WALL CONSTRUCTION. THE ACTUAL SETTLEMENT/ROTATION VALUES SHOULD BE MONITORED DURING WALL CONSTRUCTION AND ADJUSTMENTS MADE AS REQUIRED IN CONSULTATION WITH FIELD GEOTECHNICAL ENGINEER.
  - LATERAL DISPLACEMENT AT BOTTOM OF WALL ESTIMATED TO BE LESS THAN ONE-HALF OF THE SETTLEMENT AT FRONT FACE OF WALL.
  - VALUES CALCULATED AT REFERENCE STATION; VALUES AT OTHER STATIONS CAN BE IN PROPORTION TO WALL HEIGHT.
  - CONSTRUCT WALL EXTENSION FROM STATION 4+970 TO 5+000 AFTER SETTLEMENT AND APPROVAL OF THE FIELD GEOTECHNICAL ENGINEER.

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DESCRIPTION
Δ	10/09/97	Δ	ORIGINAL ISSUE
Δ	11/12/97	Δ	ADD DETAIL
Δ	3/15/98	Δ	98 EARLY FINAL
Δ	5/20/98	Δ	REVISE STATIONING AND DIMENSIONS
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112402	
MK CENTENNIAL		DESIGN DMC 3/09/98	
SYVERDRUP/DE LEUW		CHECK CJD 3/15/98	
Bret A. Reynolds		DRAWN MVM 3/15/98	
DATE 3/15/98		CHECK CJD 3/15/98	
PROJECT DESIGN ENGINEER		CHECK JAB 3/15/98	
Randle L. Ross		QUANT. GCN 3/15/98	
DATE		CHECK JAB 3/15/98	
PROJECT MANAGER			
I-15 CORRIDOR RECONSTRUCTION		WALL DETAIL R-345-2 & 2A	
SECTION 2.1		PROJECT NUMBER #SP-15-7(135)296	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-2.5	
SHT. 6 OF 29		REF.	



### RETAINING WALL DETAIL SECTION 2.1 WALL R-345-2 (1 STAGE MSE WALL) NTS



- NOTES:
- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION ELEVATION.
  - 2) SEE CORRIDOR STANDARD SPECIFICATION 210 FOR SPECIAL EXCAVATION AND BACKFILL REQUIREMENTS WHERE SOFT CLAYS OR OTHER SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED.
  - 3) MSE HEIGHT = 6m  
DISTANCE FROM MSE TO PC = 5m
  - 4) DOWN DRAINS (WITH ASSOCIATED DEEP CATCH BASINS) ARE TO BE CONSTRUCTED WITH WALL R-345-2; ALL OTHER STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY AND CONSTRUCTION WILL NOT OCCUR WITH WALL R-345-2.



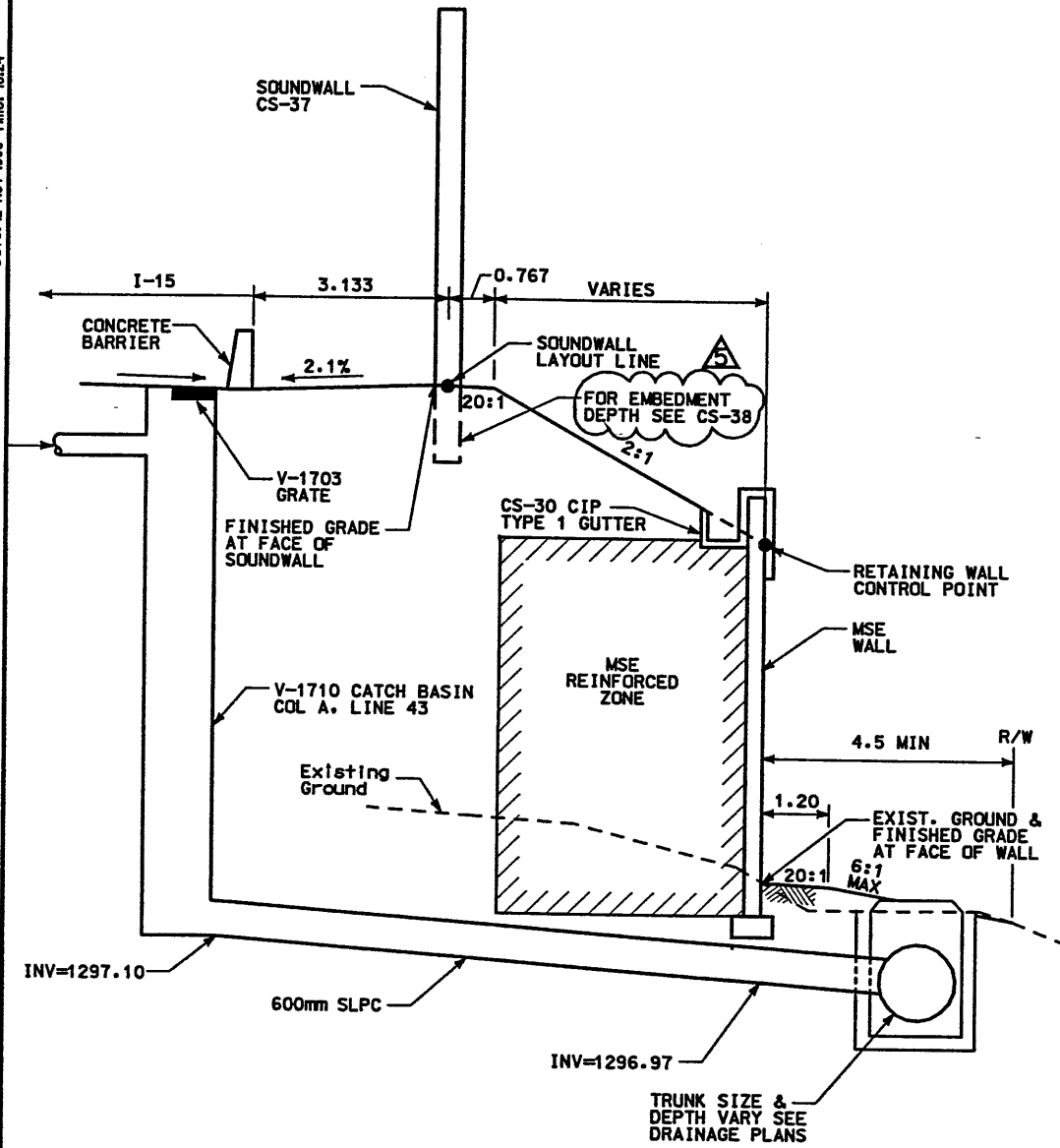
3-15-98

DETAIL B  
STA 5+210 to 5+246

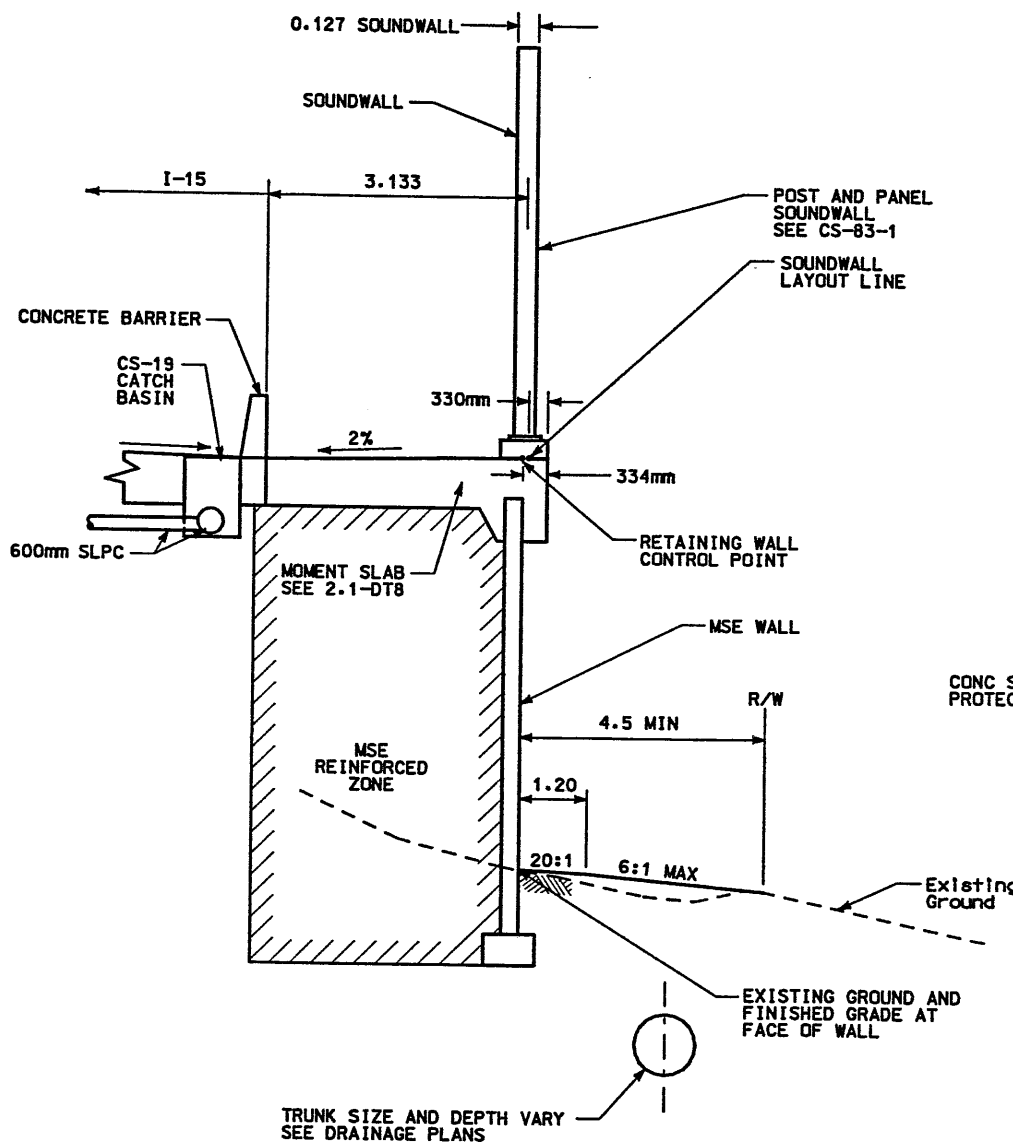
**WASATCH CONSTRUCTORS**  
MAR 20 1998  
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	ORIGINAL ISSUE	98 EARLY FINAL
△	10/09/97	△	3/15/98
△	3/15/98	△	///
△	///	△	///
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112600	
MK CENTENNIAL		DESIGN DMC	3/09/98
SVERDRUP/DE LEUW		CHECK CJO	3/15/98
Bret A. Reynolds		DESIGN DMC	3/09/98
PROJECT DESIGN ENGINEER		CHECK CJO	3/15/98
DATE 3/15/98		DRAWN MVM	3/15/98
PROJECT MANAGER		CHECK CJO	3/15/98
Randle L. Ropp		QUANT. GCM	3/15/98
DATE 3/15/98		CHECK JAB	3/15/98
PROJECT NUMBER #SP-15-7(135)296			
I-15 CORRIDOR RECONSTRUCTION		SALT LAKE COUNTY	
WALL DETAIL R-345-2		DWG. NO. 2.1R-345-2.6	
SECTION 2.1		SHT. 7 OF 29	
REF.			

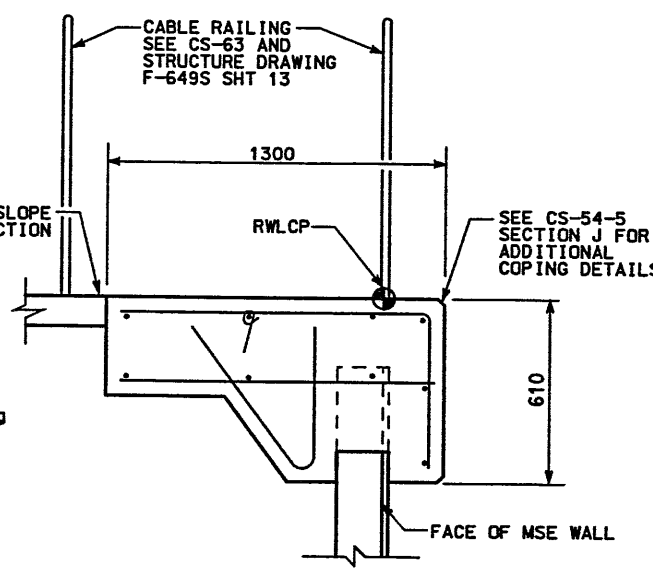
**RETAINING WALL DETAIL**  
 SECTION 2.1 WALL R-345-2  
 (1 STAGE MSE WALL)  
 NTS



**DETAIL C**  
 RETAINING WALL STA 5+248.793 TO 5+458.030  
 SOUNDWALL STA 10+000 TO 10+209.264  
 CATCH BASIN AND DOWN DRAIN  
 LOCATED AT STA 5+266.036  
 (TRANSITION FROM DETAIL C TO DETAIL D,  
 SEE MOMENT SLAB DETAIL, SHEET 2.1-DT14)



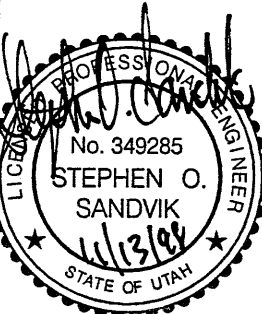
**DETAIL D**  
 RETAINING WALL STA 5+458.030 TO 5+526.494  
 SOUNDWALL STA 10+209.264 TO 10+275.812  
 TRANSITION FROM DETAIL C TO DETAIL D,  
 SEE MOMENT SLAB DETAIL, SHEET 2.1-DT14)



**DETAIL E**  
 STA 5+526.494 TO 5+536.157  
 COPING ONLY  
 STA 5+461.776 TO 5+466.772  
 NOT TO SCALE

- NOTES:**
- SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION ELEVATION.
  - SEE CORRIDOR STANDARD SPECIFICATION 210 FOR SPECIAL EXCAVATION AND BACKFILL REQUIREMENTS WHERE SOFT CLAYS OR OTHER SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED.
  - DOWN DRAINS (WITH ASSOCIATED DEEP CATCH BASINS) ARE TO BE CONSTRUCTED WITH WALL R-345-2; ALL OTHER STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY, AND CONSTRUCTION WILL NOT OCCUR WITH WALL R-345-2.

Date: 12-NOV-1998 Time: 10:24 User: rromer sandvika  
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APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
1	11/12/98	1	11/12/98
2	11/12/98	2	11/12/98
3	11/12/98	3	11/12/98
4	11/12/98	4	11/12/98
ADDED EMBEDMENT DEPTH NOTE			

UTAH DEPARTMENT OF TRANSPORTATION M.K. CENTENNIAL SVERDRUP/DE LEUW		WBS NO. 2112402
APPROVAL RECOMM.	DATE	CHECK C/O
3/15/98 Stephen O. Sandvik	3/09/98	3/15/98
PROJECT DESIGN ENGINEER	DATE	CHECK C/O
3/15/98	3/15/98	3/15/98
PROJECT MANAGER	DATE	CHECK JAB
Randle L. Ross	3/15/98	3/15/98

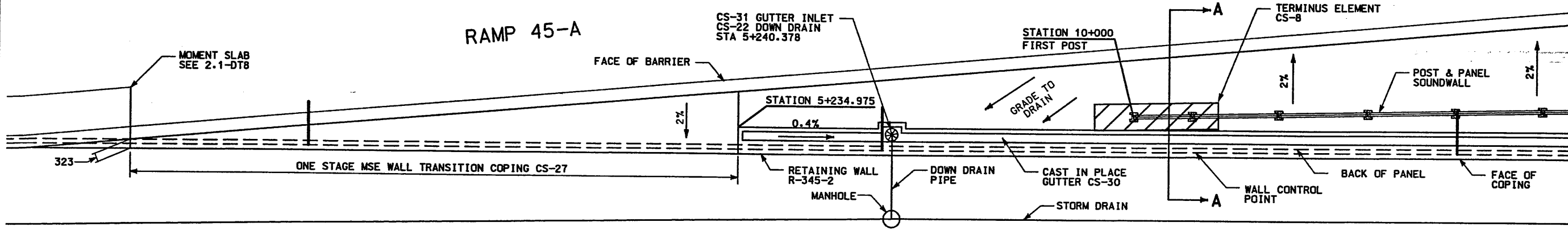
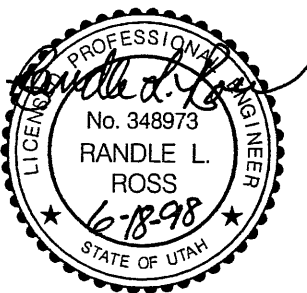
  

I-15 CORRIDOR RECONSTRUCTION WALL DETAIL R-345-2 SECTION 2.1	PROJECT NUMBER #SP-15-7(135)296
SALT LAKE COUNTY DWG. NO. 2.1R-345-2.7	SHT. 8 OF 29

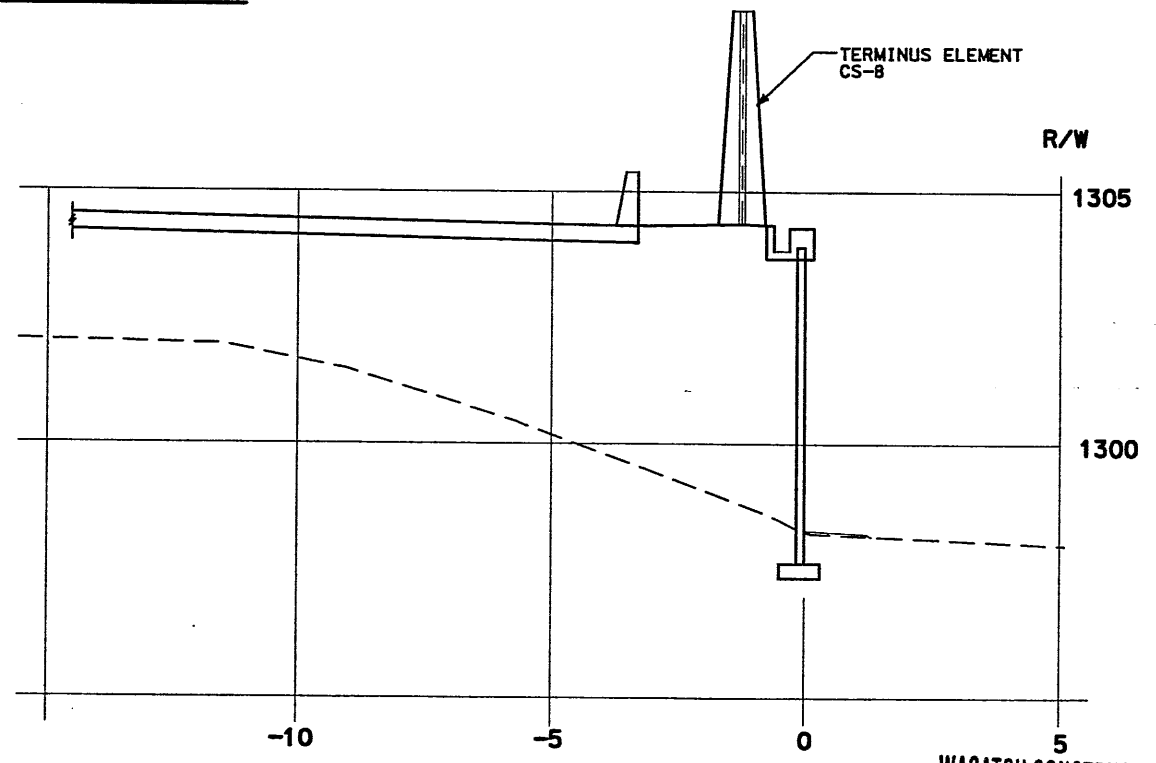
WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

Users: rname: rfrisead

Filename: c:\p115\_oad45\_37\prelim\_files\wall\_files\45\_w\_01-02\_07.dgn



**RETAINING WALL TRANSITION COPING  
DETAIL  
N.T.S.**



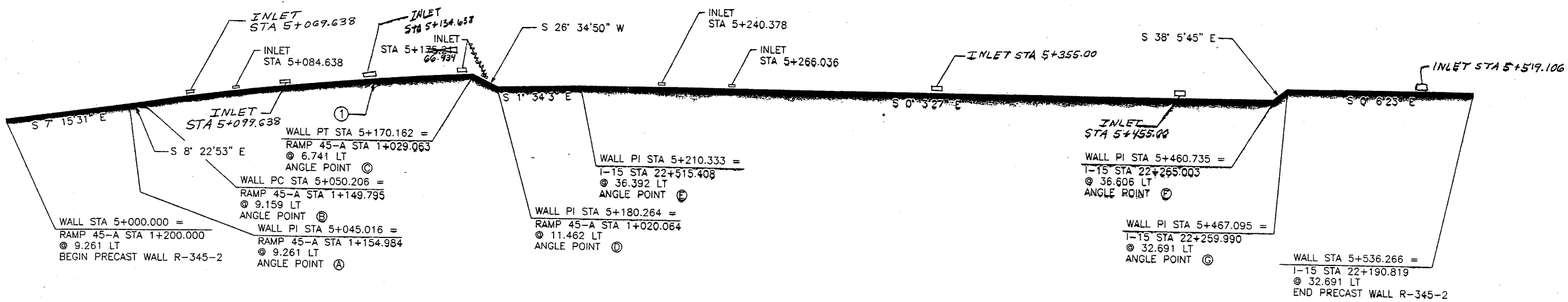
**SECTION A-A**

WASATCH CONSTRUCTORS  
JUN 24 1998  
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	6/18/98	Δ	/ /
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112402	
MK CENTENNIAL SVEDRUP/DE LEUW		CHECK BAR 5/20/98	
DESIGN DAF 5/07/98	CHECK BAR 5/20/98	DESIGN DAF 5/07/98	CHECK BAR 5/20/98
PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER
Randle L. Ross	Randle L. Ross	Randle L. Ross	Randle L. Ross
PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER
PROJECT NUMBER #SP-15-7(135)296	PROJECT NUMBER	PROJECT NUMBER	PROJECT NUMBER
I-15 CORRIDOR RECONSTRUCTION	WALL DETAIL R-345-2	SECTION 2.1	PROJECT NUMBER
SALT LAKE COUNTY	DWG. NO. 2.1R-345-2.7A	SHT. 9 OF 29	REF.



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION



GENERAL NOTES

- ALL WALLS ARE SHOWN FRONT FACE. NOTE STATIONING.
- PANEL TYPE IS DESIGNATED ON EACH PANEL. CONNECTOR LABELS INDICATE NUMBER OF CONNECTORS PER ROW.  
EXAMPLE: 5B2-10 IS A "B2-10" PANEL WITH FIVE (5) CONNECTORS PER ROW.  
IF NO CONNECTORS ARE SHOWN, FOUR (4) CONNECTOR PANELS SHALL BE USED:
- SOIL REINFORCING MESH TYPE IS DESIGNATED ON EACH PANEL. MESH LABELS INDICATE WIRE SIZE AND SPACING. LONGITUDINAL WIRE AND CROSSBAR SIZES ARE THE SAME UNLESS NOTED OTHERWISE.  
EXAMPLE: 4W11-6 MESH HAS FOUR (4) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 5W11-12 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 5W15-18 MESH HAS FIVE (5) W15 LONGITUDINAL WIRES WITH W15 CROSSBARS AT 18" CENTERS.
- SEE RETAINED EARTH INSTALLATION MANUAL FOR PROPER WALL ERECTION PROCEDURES AND GUIDELINES.
- CONSTRUCTION PROCEDURES SHALL PREVENT BACKFILL SATURATION AND PONDING.
- HEAVY EQUIPMENT SHALL NOT BE USED WITHIN ONE METER OF THE BACK OF THE RETAINED EARTH PANELS. HAND COMPACTORS SHALL BE USED IN THIS AREA.
- CARE SHALL BE TAKEN TO PREVENT DAMAGE TO GALVANIZING. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.
- BEARING PADS AND FILTER FABRIC ARE NOT REQUIRED BETWEEN THE LEVELING PAD AND THE FIRST ROW OF PANELS. TEMPORARY WEDGES MAY BE USED TO PROVIDE PROPER ALIGNMENT.
- VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.
- ALL PANELS SHALL HAVE AN ARCHITECTURAL FINISH, SEE SHEET RE-3 FOR DETAIL.

PLAN VIEW WALL "R-345-2"

SCALE: 1=800 (FULL SIZE)  
SCALE: 1=1600 (HALF SIZE)

CURVE DATA				
No.	RADIUS	LENGTH	TANGENT	△
①	1192.863	119.957	60.029	5'45"42" R

All Dimensions Are in Meters Unless Noted Otherwise

DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT)	= 34°
ANGLE OF INTERNAL FRICTION (BASE)	= 30°
ANGLE OF INTERNAL FRICTION (RANDOM)	= 34°
UNIT WEIGHT BACKFILL	= 135 PCF (21.2 kN/m <sup>3</sup> )
TRAFFIC SURCHARGE	= 250 PSF
SEISMIC ACCELERATION COEFF.	= 0.25g (TYP)
DESIGN CRITERIA	
SAFETY FACTOR (OVERTURNING)	= 2.0
SAFETY FACTOR (SLIDING)	= 1.5
SAFETY FACTOR (PULLOUT)	= 1.5
DESIGN LIFE	= 75 YEARS

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-2, NOTES & DESIGN CRITERIA
RE-2	TYPICAL DETAILS
RE-3	TYPICAL DETAILS
RE-4	TYPICAL CROSS SECTION
RE-5	TYPICAL CROSS SECTION
RE-6	TYPICAL CROSS SECTION
RE-7	TYPICAL CROSS SECTION
RE-8	SPECIAL DETAILS
RE-9	ELEVATION PRECAST WALL "R-345-2"
RE-10	ELEVATION PRECAST WALL "R-345-2"
RE-11	ELEVATION PRECAST WALL "R-345-2"
RE-12	ELEVATION PRECAST WALL "R-345-2"
RE-13	ELEVATION PRECAST WALL "R-345-2"
RE-14	SPECIAL PANEL DETAILS
RE-15	SPECIAL PANEL DETAILS

WASATCH CONSTRUCTORS  
OCT 10 1997  
RELEASED FOR CONSTRUCTION

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RETAINED EARTH™ WALLS  
PLAN VIEW PRECAST WALL "R-345-2"  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

METRIC  
10 OF 29

SCALE:  
2.1R-345-2.8

JOB NO:  
239-0007

RE-1

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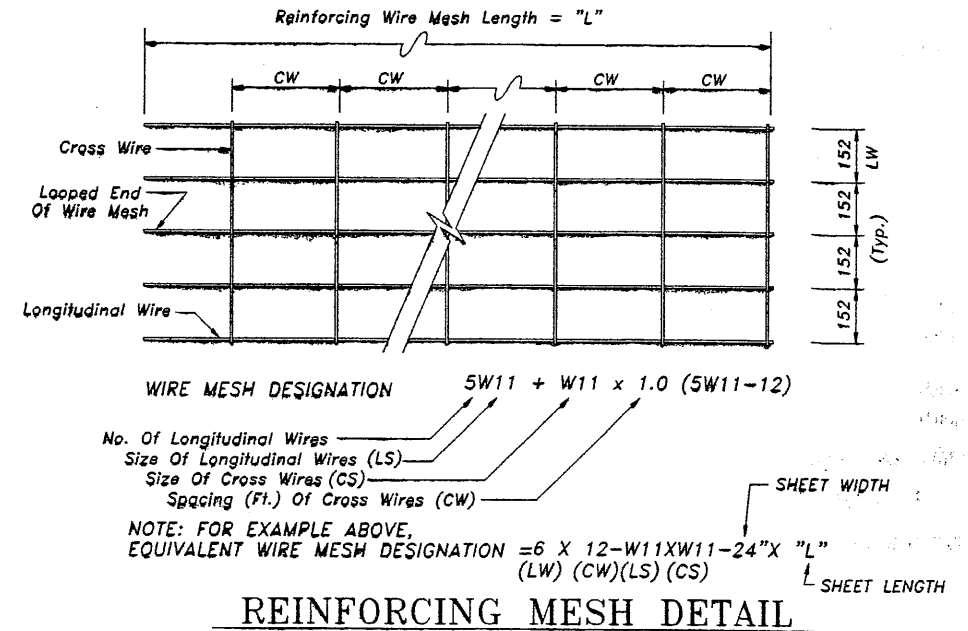
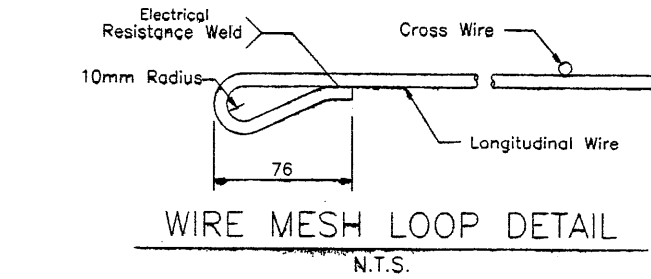
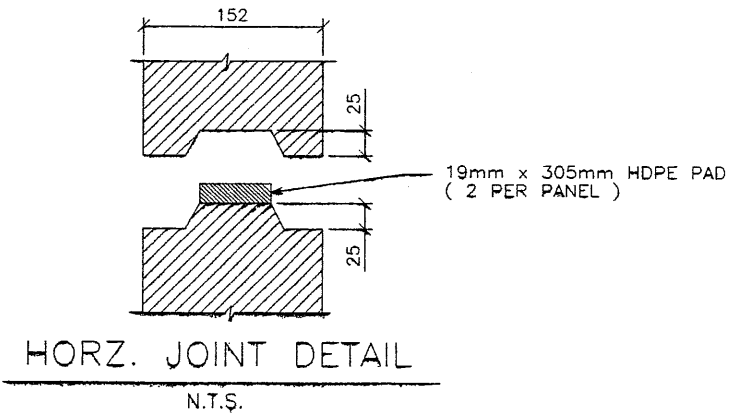
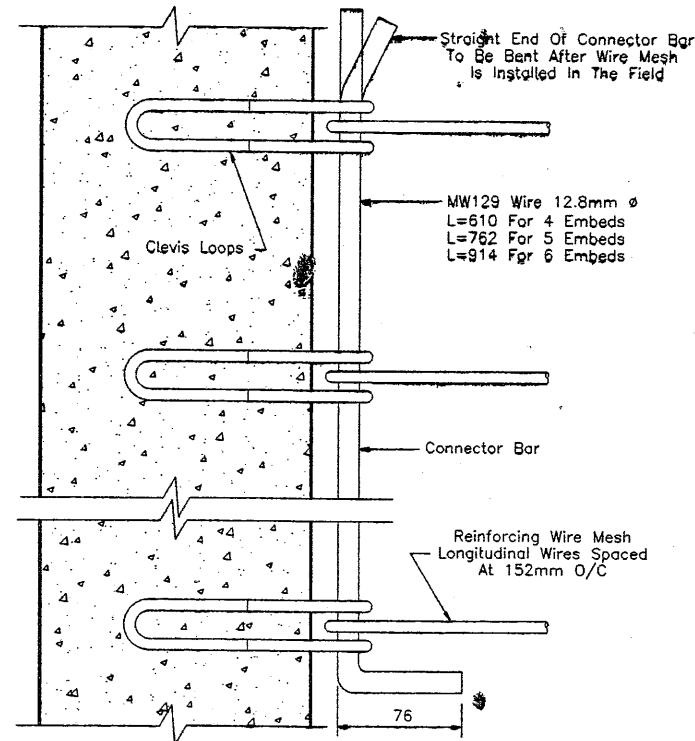
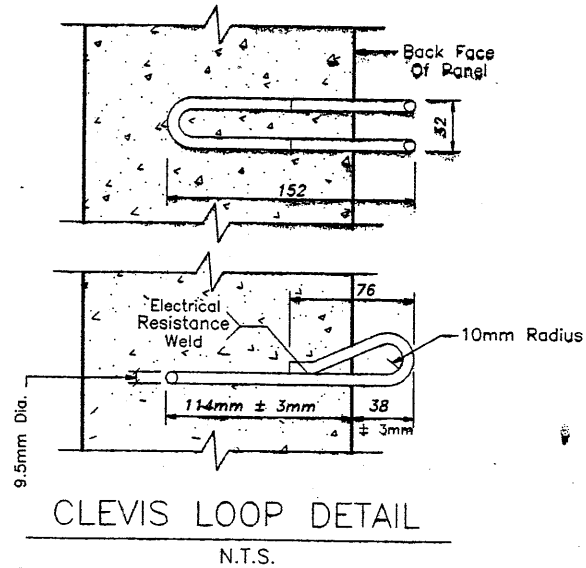
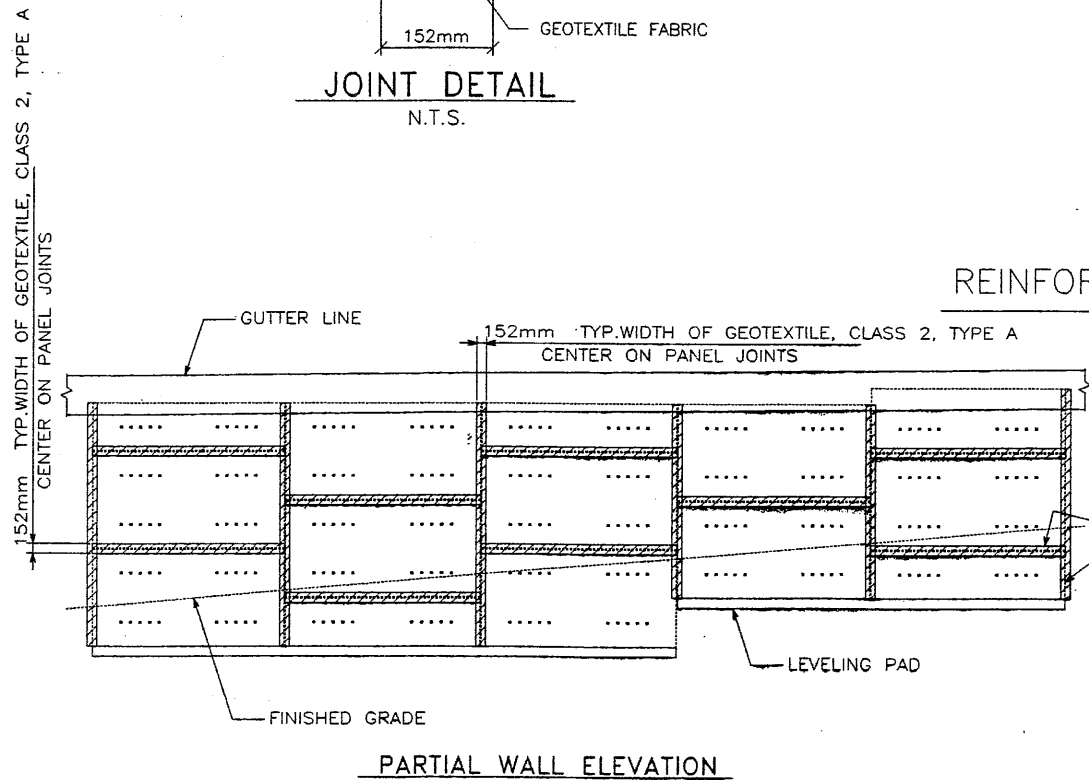
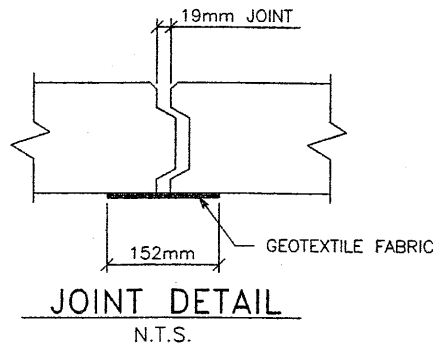
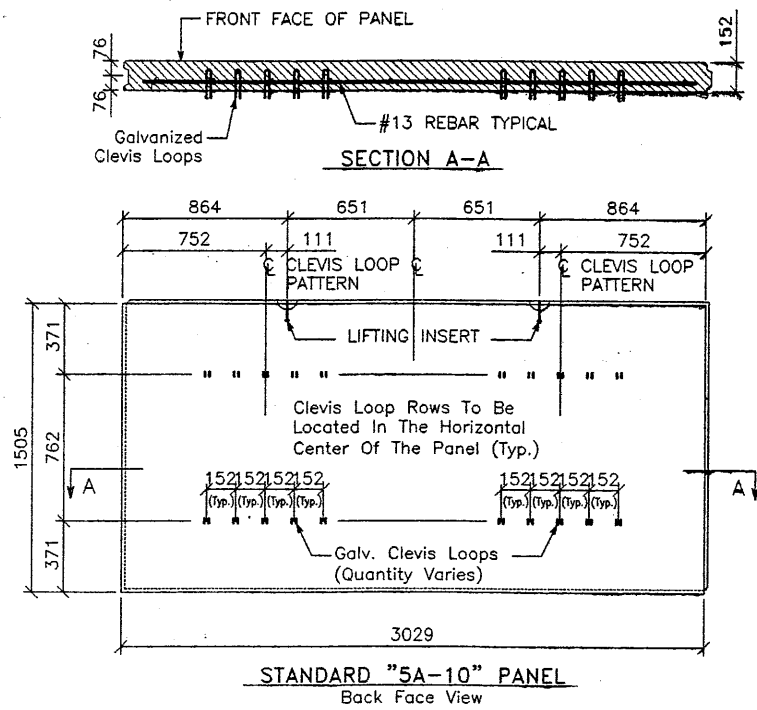
DES.	MM	DRN.	DDO	CHK.	MM	RETAINED EARTH™
09-18-97		09-18-97		09-18-97		

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-8272  
Fax: (919) 781-4969

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E:\PROJECT\239-0007\45SERIES\45-02\

FINAL F 0-03-97



NOTE: W11 (71 sq mm) And W20 (129 sq mm) Steel Wire Material And Welding Of Cross Wires And Loops Shall Conform To ASTM A82 And ASTM 185, Fy = 448 MPa. Mesh Shall Be Galvanized To ASTM A-123 To A Minimum Effective Thickness Of 0.086 mm.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION

**WATCH CONSTRUCTORS**  
OCT 10 1997  
RELEASED FOR CONSTRUCTION

METRIC  
11 of 29  
PROFESSIONAL ENGINEER  
JOHN A. NICHOLSON, JR.  
10/8/97  
STATE OF UTAH

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DES. 09-18-97 MM  
DRN. 09-18-97 DDO  
CHK. 09-18-97 MM

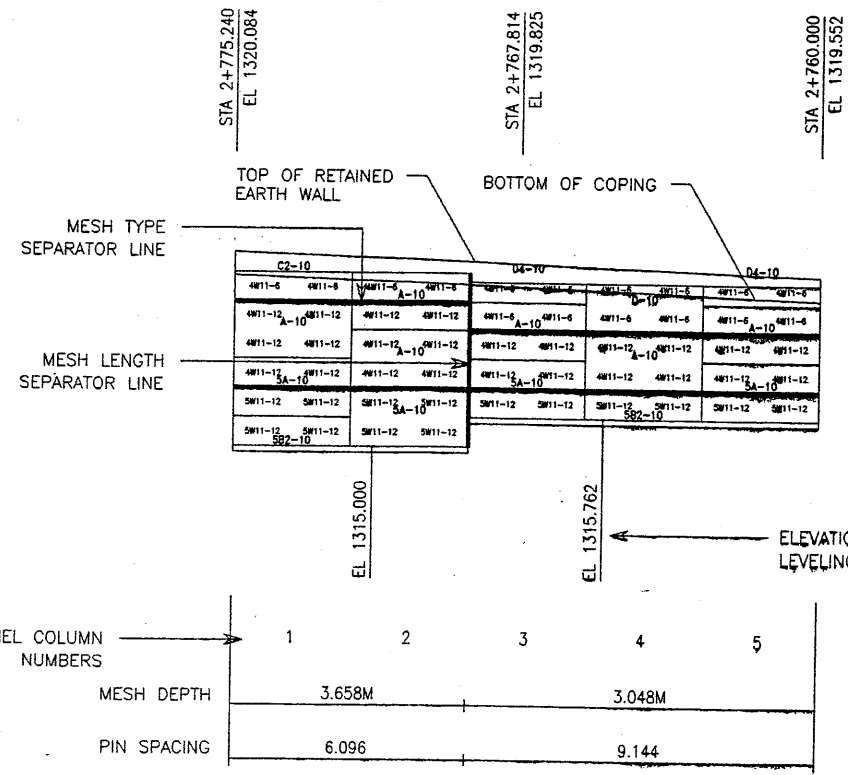
VSL CORPORATION  
2840 Plaza Place, Suite 200  
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UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

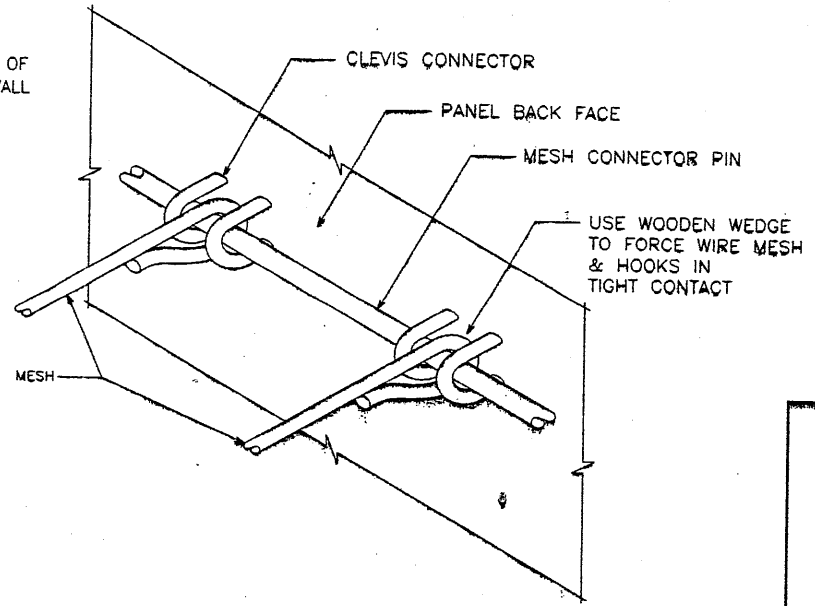
SCALE:  
2.1R-345-2.9  
JOB NO:  
239-0007  
RE-2

FINAL PLAN 03-97 PROJECT 239-0007 45SERIES 45-02 RE-3

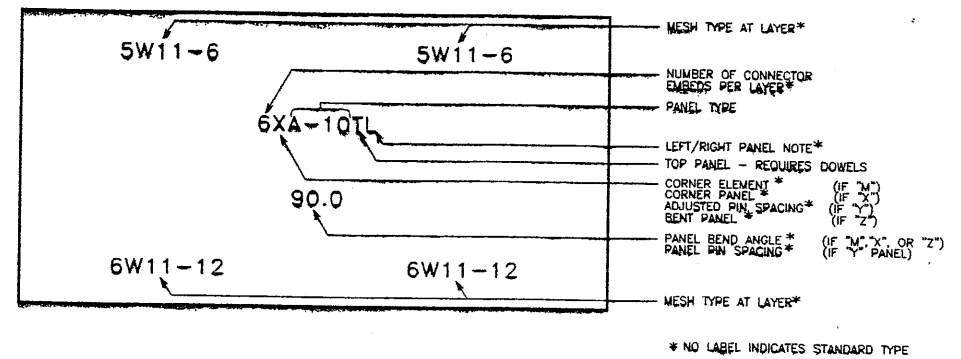
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NO.	DATE	DESCRIPTION
▲	10-03-97	RELEASE FOR CONSTRUCTION



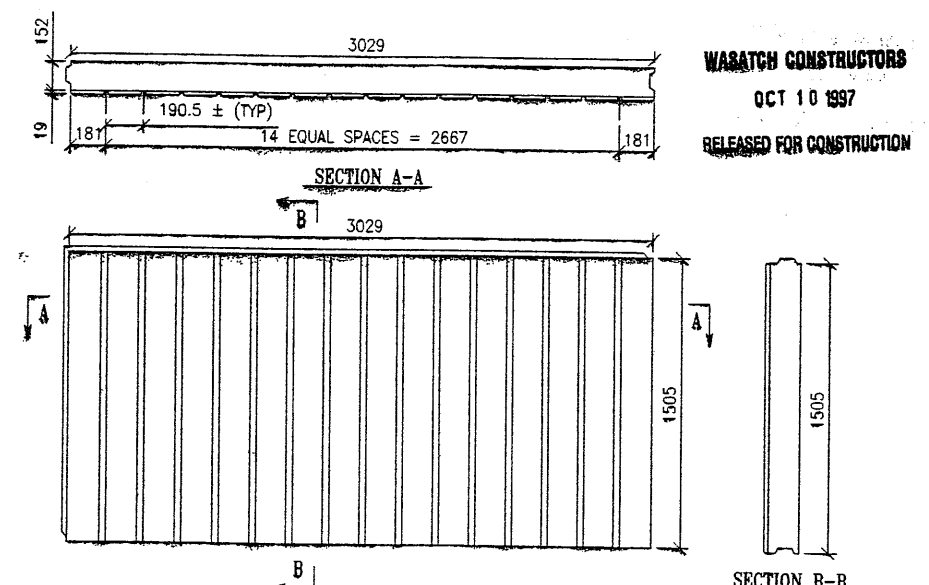
**1 WALL ELEVATION KEY**  
(FRONT FACE SHOWN)



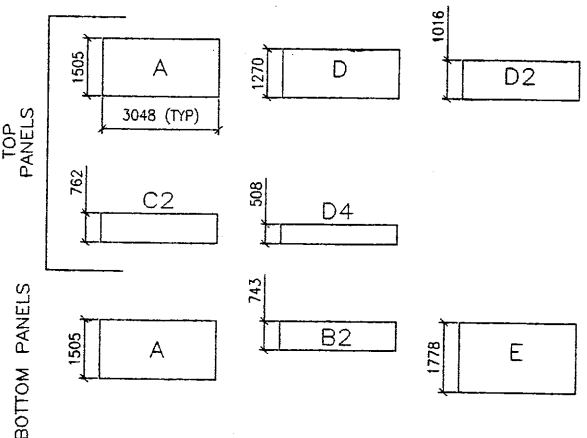
**2 MESH CLEVIS CONNECTOR**  
VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.



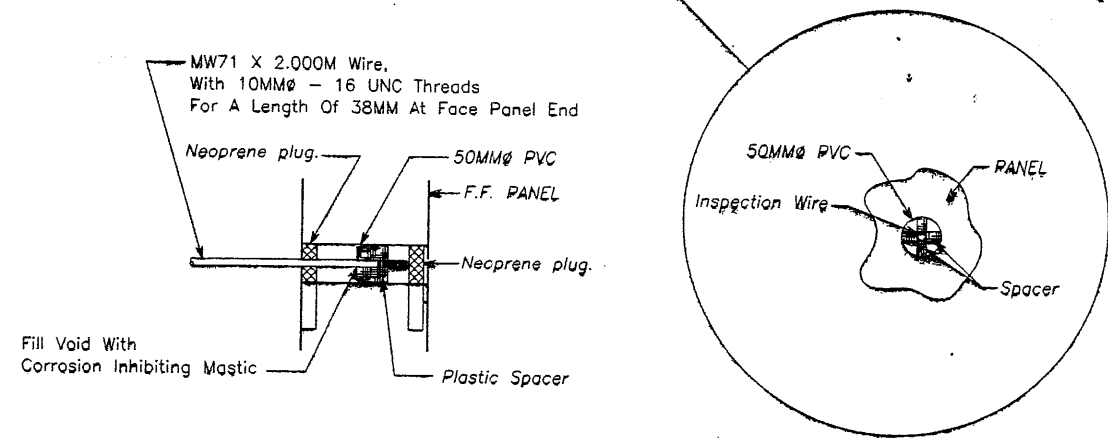
**3 PANEL LABELS**



**4 ARCHITECTURAL PANEL FINISH**  
(PANEL FRONT FACE SHOWN)



**5 PANEL TYPES**  
ALL DIMENSIONS ARE IN MILLIMETERS



**6 INSPECTION WIRE DETAIL**  
(PANEL FRONT FACE SHOWN)

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METRIC  
12 OF 29

SCALE:  
2.1R-345-2.10  
JOB NO:  
239-0007  
RE-3

RETAINED EARTH™ WALLS  
PRECAST WALL™ R-345-2™  
TYPICAL DETAILS  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSPORTATION

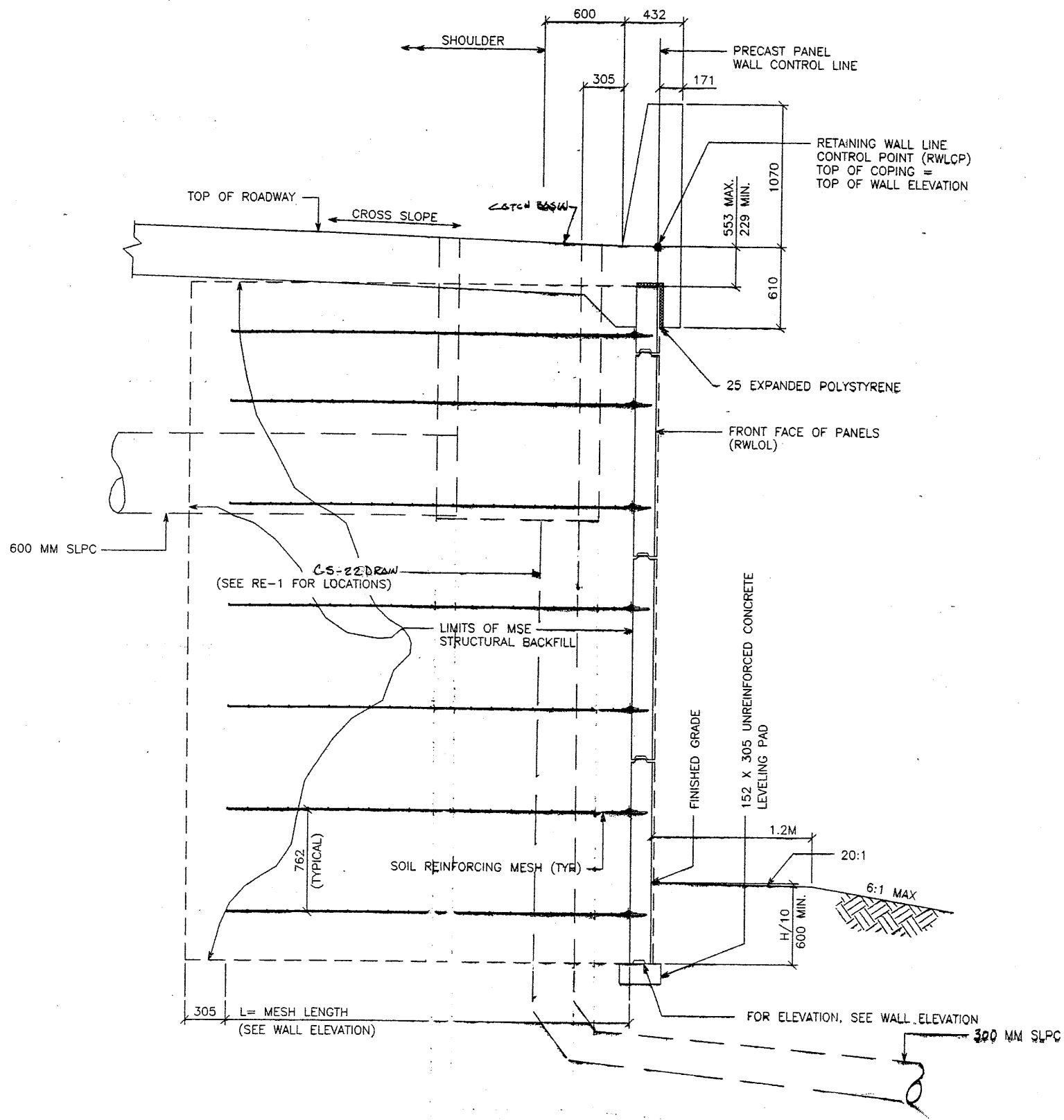
VSL CORPORATION  
2800 Plaza Place, Suite 200  
Boulder, CO 80501-7818  
Tel. (303) 440-6272  
Fax. (303) 440-6665

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DES. 09-18-97  
DRN. 09-18-97  
CHK. 09-18-97

NO. DATE  
BY  
REVISION





TYPICAL CROSS SECTION - STA 5+000.000 TO 5+210.000

(SEE DWG. NO. 2.1R-345-2.5 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)

SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION

DES.	MM	DDO	MM	NO.	DATE	REVISION
DES. 09-18-97						
DRN. 09-18-97						
CHK. 09-18-97						

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27617  
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WASATCH CONSTRUCTORS  
OCT 10 1997  
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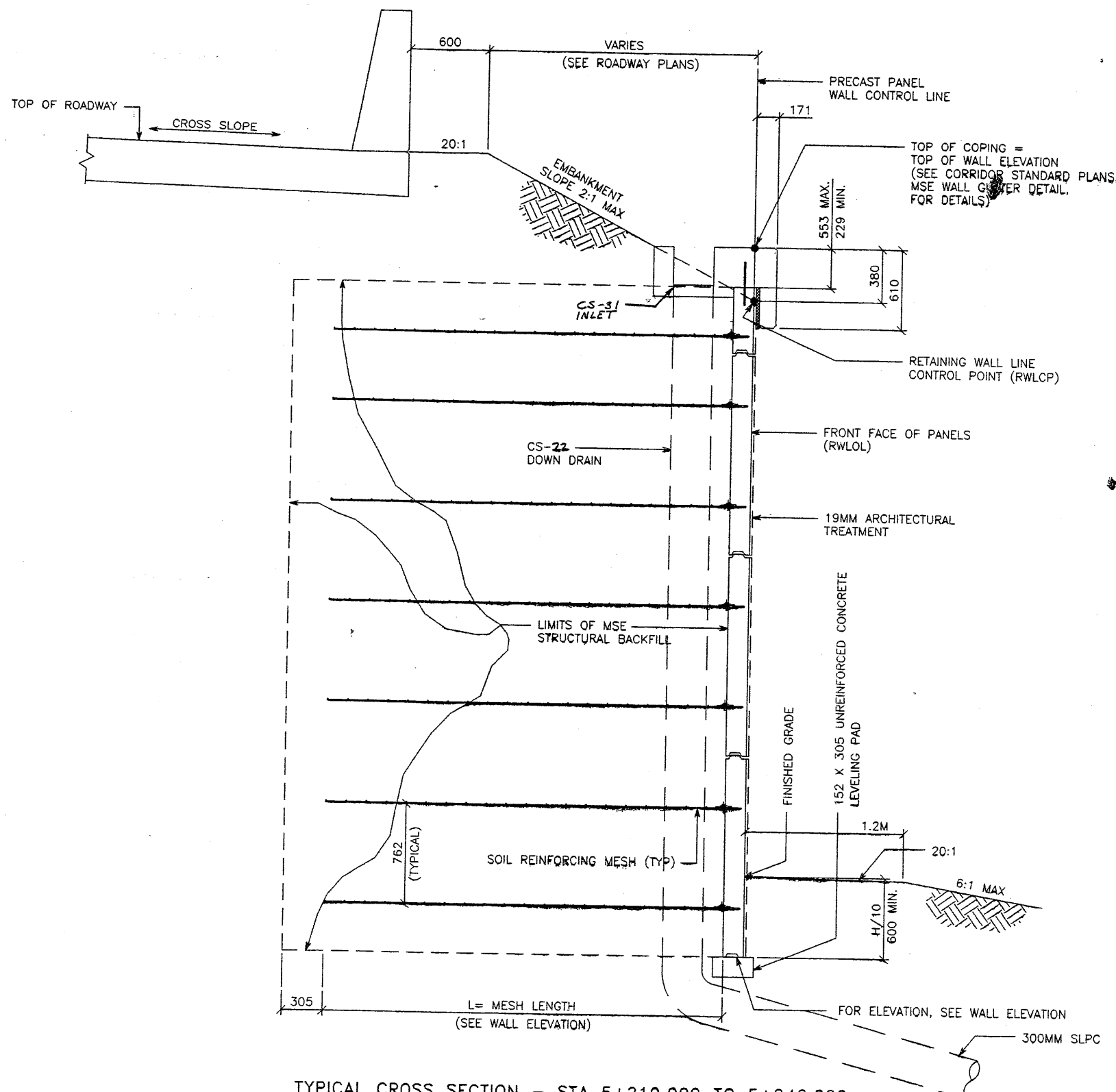
RETAINED EARTH™ WALLS  
WIRE FACED WALL "R-345-2"  
TYPICAL CROSS SECTION  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

METRIC  
13 of 29

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SCALE:	2.1R-345-2.11
JOB NO.:	239-0007
	RE-4

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TYPICAL CROSS SECTION - STA 5+210.000 TO 5+246.000  
(SEE DWG. NO. 2.1R-345-2.6 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)  
SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY	CHK
09-18-97	09-18-97	09-18-97					

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2840 Rupp Road, Suite 200  
Raleigh, NC 27607  
Telephone: (919) 791-8272  
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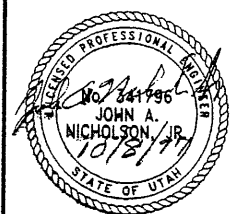
**WASATCH CONSTRUCTORS**  
OCT 10 1997  
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RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-2"  
TYPICAL CROSS SECTION  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSPORTATION

METRIC  
14 OF 29



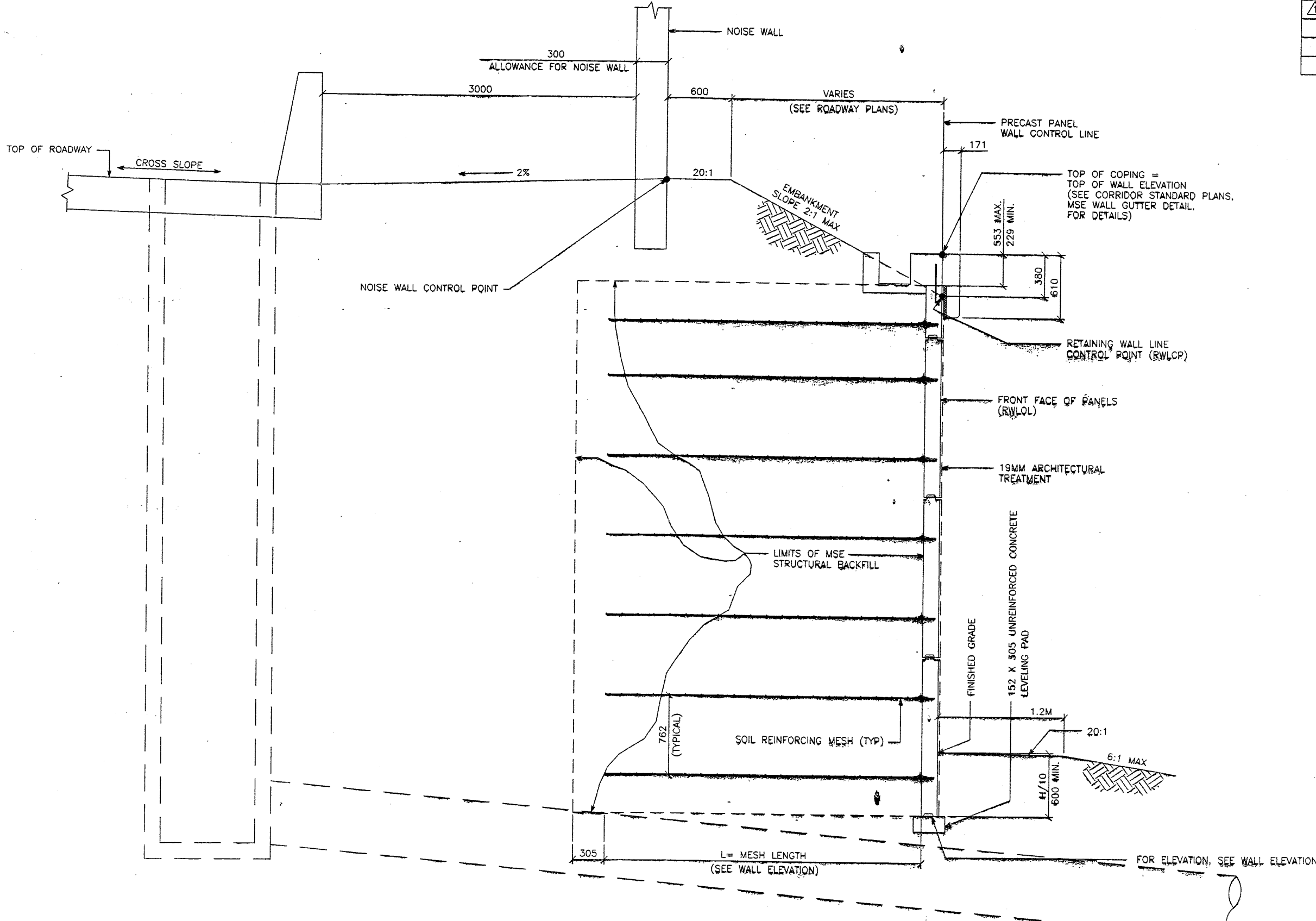
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SCALE:	2.1R-345-2.12
JOB NO:	239-0007
	RE-5

1-03-97

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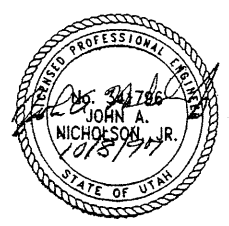
FINAL F



**TYPICAL CROSS SECTION - STA 5+246.000 TO 5+467.000**  
 (SEE DWG. NO. 2.1R-345-2.7 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

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NO.	DATE	DESCRIPTION
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DES.	MM	DRN.	DDO	CHK.	MM	NO.	DATE
	09-18-97						

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**WASATCH CONSTRUCTORS**  
 OCT 10 1997  
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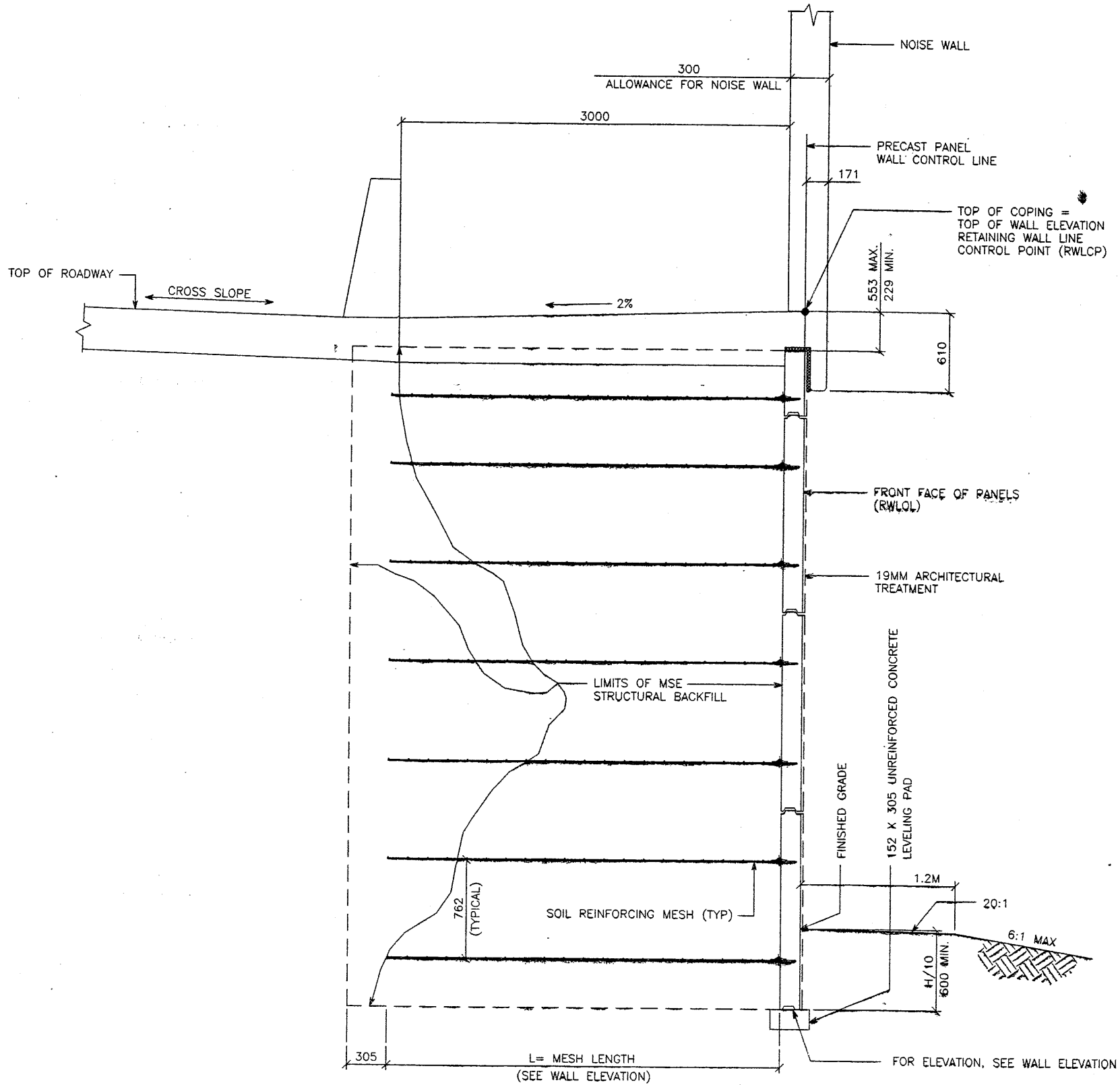
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RETAINED EARTH™ WALLS PRECAST WALL "R-345-2" TYPICAL CROSS SECTION	UTAH I-15 INTERCHANGE SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSPORTATION
SCALE: 2.1R-345-2.13	JOB NO: 239-0007
	RE-6



FINAL F 10-03-97

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TYPICAL CROSS SECTION - STA 5+467.000 TO 5+537.000

(SEE DWG. NO. 2.1R-345-2.7 FOR ADDITIONAL INFORMATION)

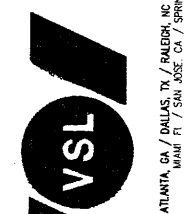
SCALE: 1:20 (FULL SIZE)

SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION

DES. 09-18-97 MM  
 DRN. 09-18-97 DDO  
 CHK. 09-18-97 MM



**WASATCH CONSTRUCTORS**  
 OCT 10 1997  
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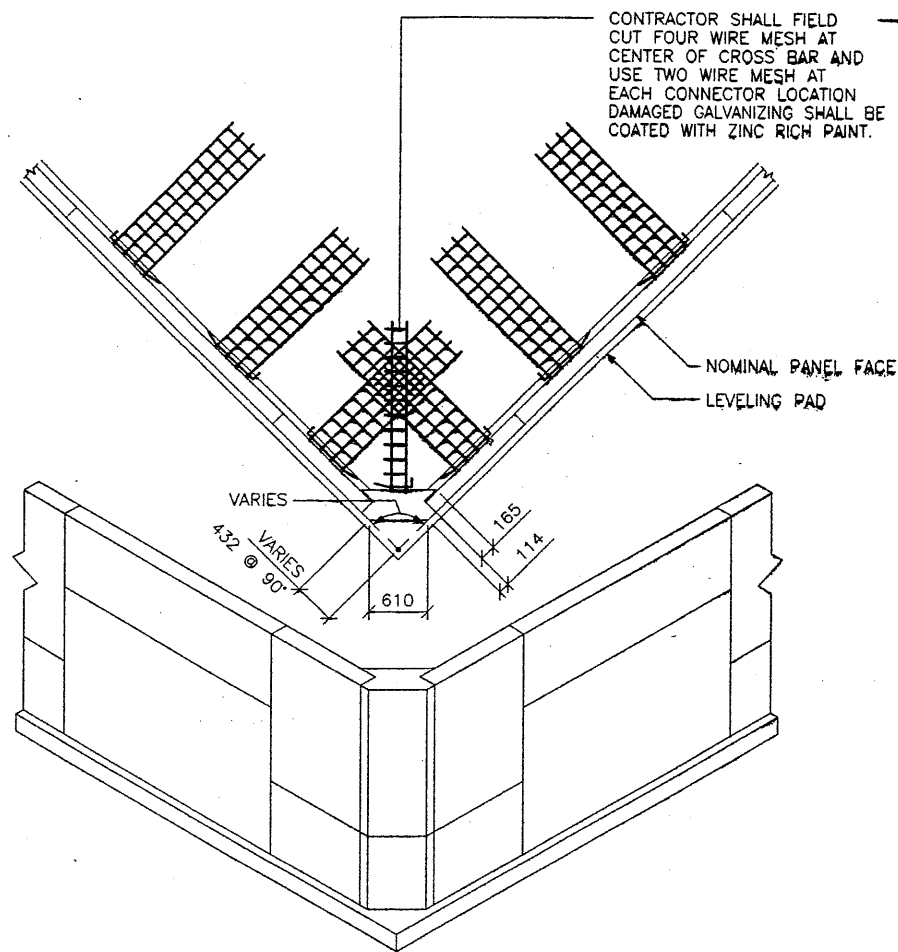
METRIC  
 16 OF 29

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-2"  
 TYPICAL CROSS SECTION  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSPORTATION

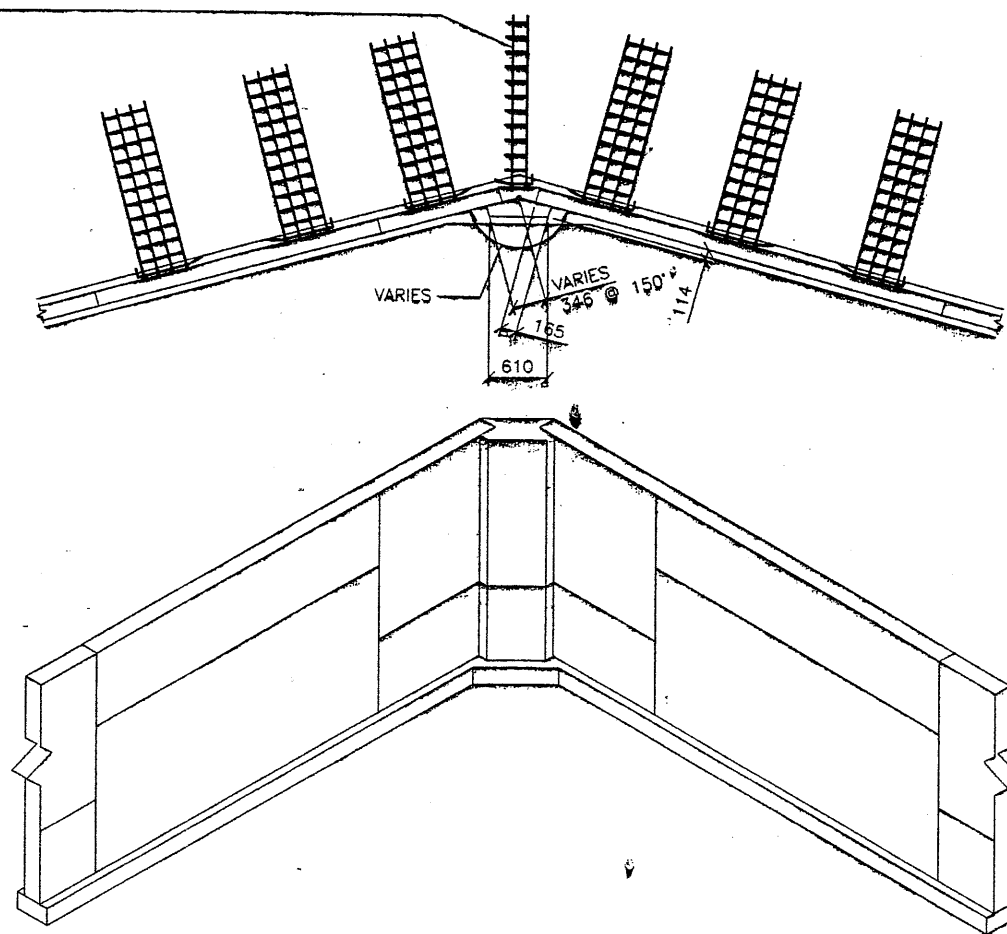
SCALE:	2.1R-345-2.14
JOB NO.:	239-0007
	RE-7

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FINAL PL -03-97 E:\PROJECT\239-0007\45SERIES\45-02\R

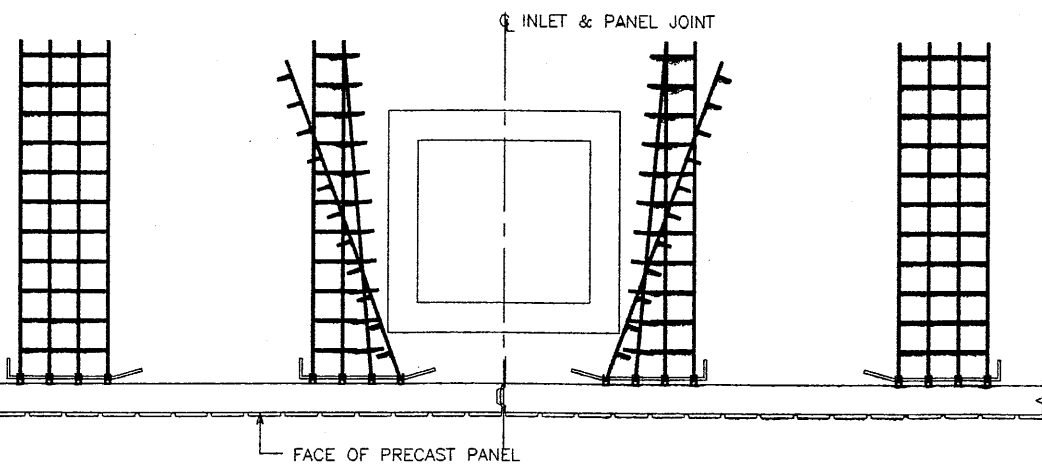


**80** OUTSIDE CORNER ELEMENT  
PLAN VIEW / ISOMETRIC



**80** INSIDE CORNER ELEMENT  
PLAN VIEW / ISOMETRIC

INLET/MANHOLE SHALL BE CENTERED ON CENTERLINE OF CLOSEST OBSTRUCTED PANEL JOINT.  
SEE WALL ELEVATIONS FOR LOCATION.  
FIELD CUT & SKEW SOIL REINFORCING TO AVOID INLET. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.



**100** INLET OBSTRUCTION DETAIL

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION

DES.	MM	NO.	DATE
09-18-97	MM <td> </td> <td> </td>		
09-18-97	DDO <td> </td> <td> </td>		
09-18-97	MM <td> </td> <td> </td>		

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**VSL**

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MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

**WASATCH CONSTRUCTORS**  
OCT 10 1997  
RELEASED FOR CONSTRUCTION

RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-2"  
SPECIAL DETAILS

UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

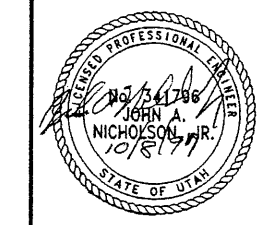
METRIC  
170679

SCALE:  
2.1R-345-2.15

JOB NO:  
239-0007

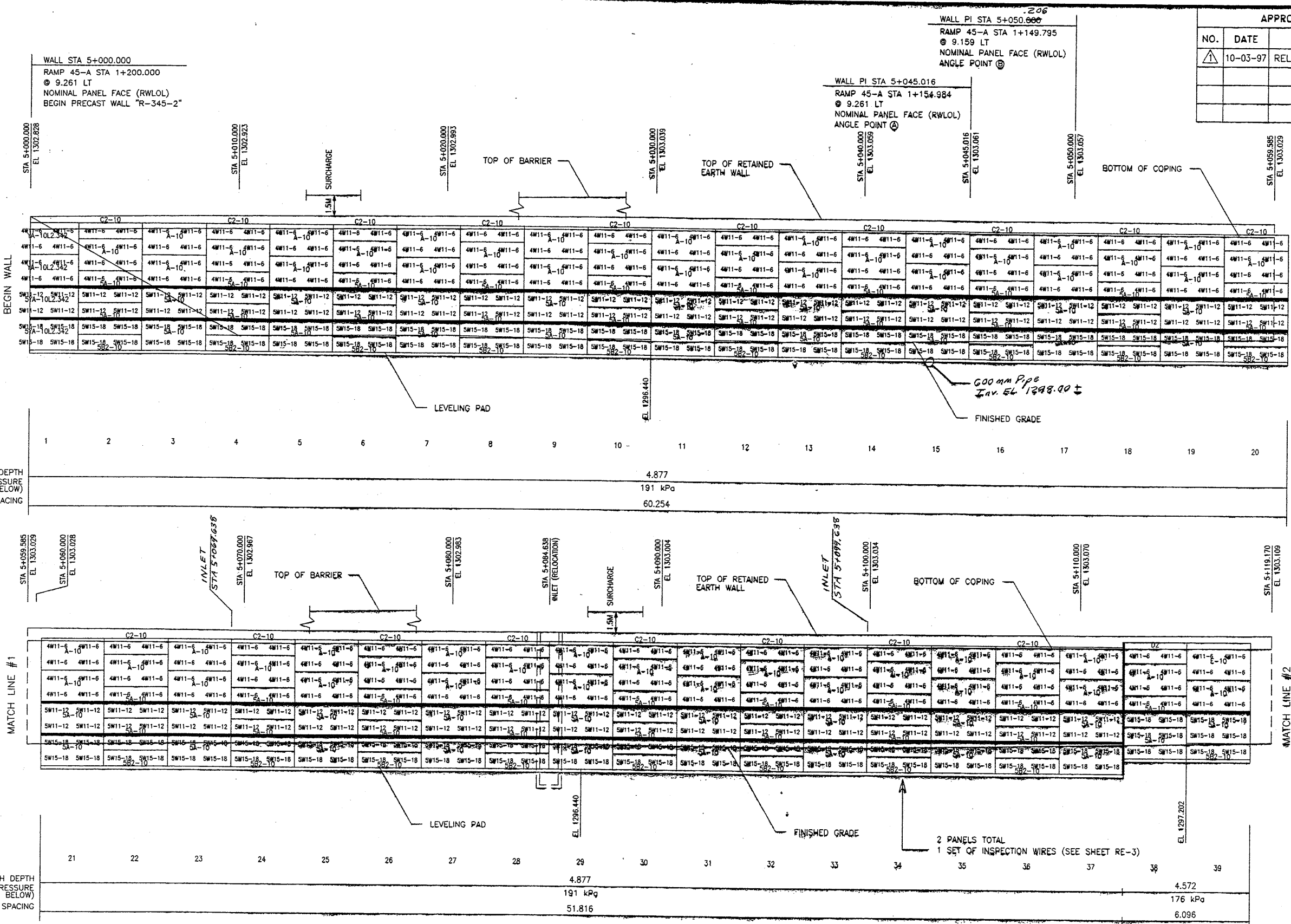
RE-8

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.



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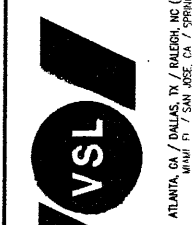
FINAL PL J-03-97



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	10-03-97	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	REV.	DATE
09-19-97	09-19-97	09-19-97		

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-6272  
 Fax: (919) 781-4669

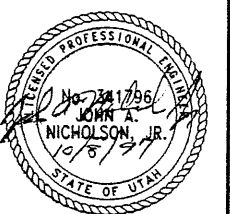


WASATCH CONSTRUCTORS  
 OCT 10 1997  
 RELEASED FOR CONSTRUCTION

VSL Corporation (VSL) hereby certifies that the design, calculations and construction details shown on this sheet, the use of which is intended to be for the construction of the structure shown, are the responsibility of the engineer of record and are not to be used for any other purpose without the written consent of VSL Corporation.

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-2"  
 I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

METRIC  
 18 OF 29



CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

ELEVATION PRECAST WALL "R-345-2"  
 (FRONT FACE SHOWN)  
 SCALE 1:100 (FULL SIZE)  
 SCALE 1:200 (HALF SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 3,204.22 SM)

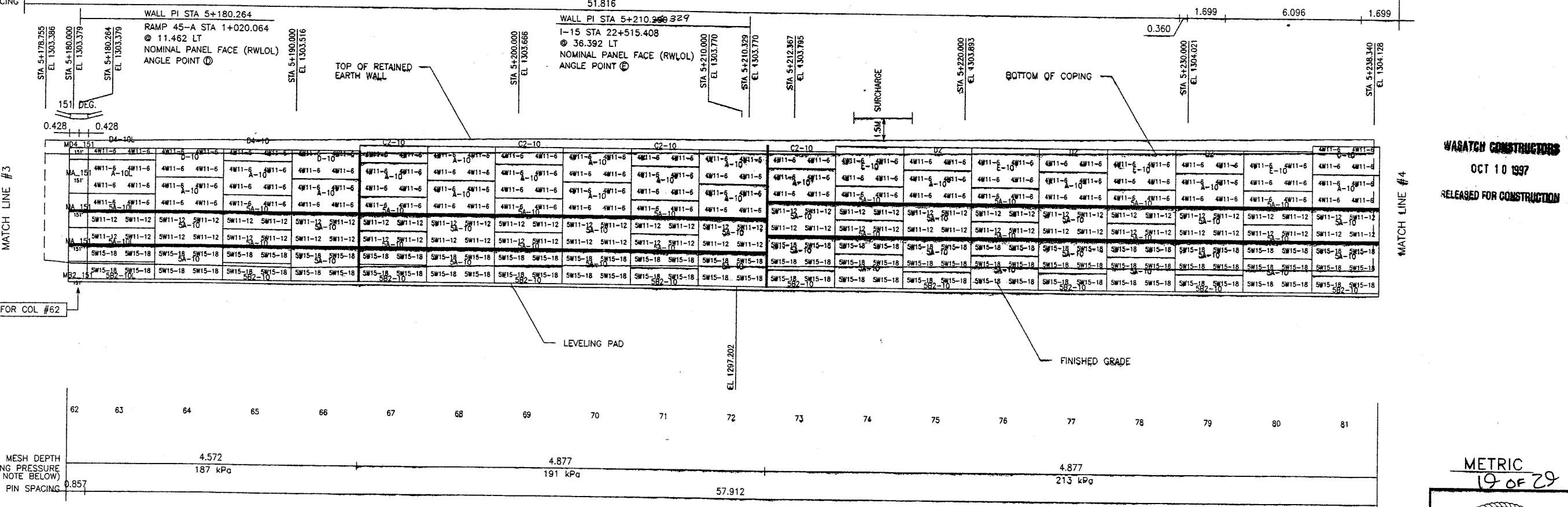
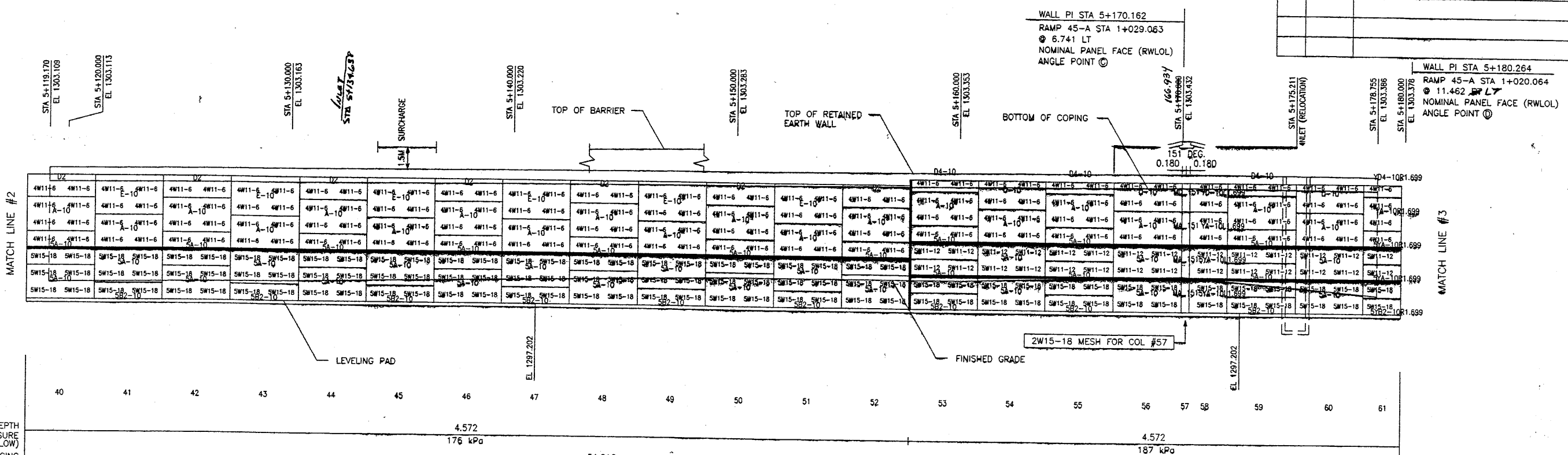
APPROVER NOTE:  
 MAXIMUM UNFACTORED BEARING PRESSURES ARE INDICATED BELOW "MESH DEPTH LINE". REVIEWER TO VERIFY MAXIMUM BEARING CAPACITY OF FOUNDATION.

MESH DEPTH  
 MAXIMUM BEARING PRESSURE  
 (SEE NOTE BELOW)  
 PIN SPACING

MESH DEPTH  
 MAXIMUM BEARING PRESSURE  
 (SEE NOTE BELOW)  
 PIN SPACING

SCALE:	2.1R-345-2.16
JOB NO.:	239-0007
	RE-9

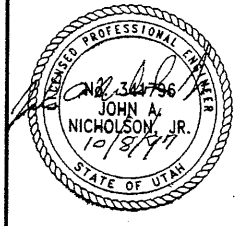
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
10-03-97		RELEASE FOR CONSTRUCTION



**ELEVATION PRECAST WALL "R-345-2"**  
 (FRONT FACE SHOWN)  
 (TOTAL SURFACE AREA OF PANELS = 3,204.22 SM)  
 SCALE 1:100 (FULL SIZE)  
 SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
 MAXIMUM UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
 EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
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 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

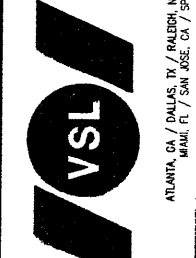


RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-2"  
 I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

SCALE:  
 2.1R-345-2.17  
 JOB NO:  
 239-0007  
 RE-10

RELEASED FOR CONSTRUCTION  
 OCT 10 1997  
 WASATCH CONSTRUCTORS

VSL CORPORATION  
 2640 Plaza Place, Suite 200  
 Raleigh, NC 27612, Tel: 919-872-4272  
 Fax: 919-872-4889



ATLANTA, GA / DALLAS, TX / RALPHO, NC (CORPORATE OFFICE)  
 MAUI, HI / SAN JOSE, CA / SPRINGFIELD, VA

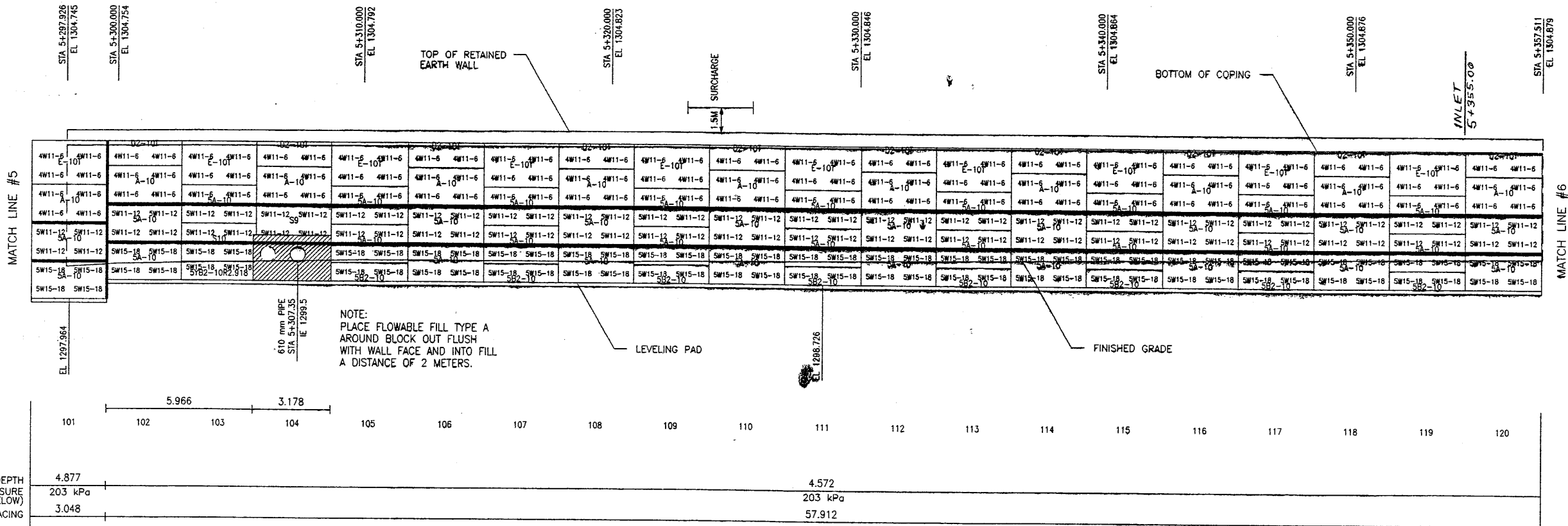
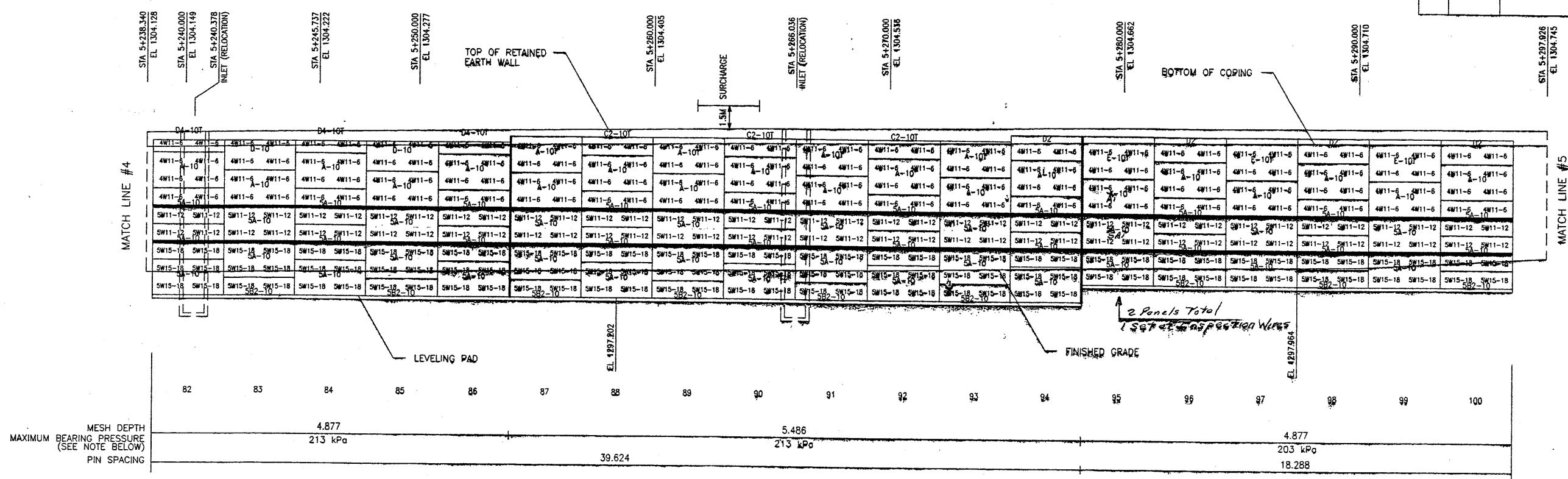
NO.	DATE	REVISION	CHK
09-19-97	MM		
09-19-97	JPS		
09-19-97	MM		



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FINAL PL 3-03-97

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION



**ELEVATION PRECAST WALL "R-345-2"**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 3,204.22 SM) SCALE 1:200 (HALF SIZE)

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

METRIC  
700679

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-2"  
 I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

SCALE: 2.1R-345-2.18  
 JOB NO: 239-0007  
 RE-11

VSL CORPORATION  
 2800 Plaza Place, Suite 200  
 Raleigh, NC 27615 (919) 791-6272  
 Fax: (919) 791-6688

ATLANTA, GA / DALLAS, TX / BALDWIN, NC (CORPORATE OFFICE)  
 VSL INC. / VSL INT'L / VSL EUROPE

DES. 09-19-97 MM  
 DRN. 09-19-97 JPS  
 CHK. 09-19-97 MM

WASATCH CONSTRUCTORS  
 OCT 10 1997  
 RELEASED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION

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APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION

NO.	DATE	DESCRIPTION

VSL CORPORATION  
 2640 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 761-6772  
 Fax: (919) 761-4869

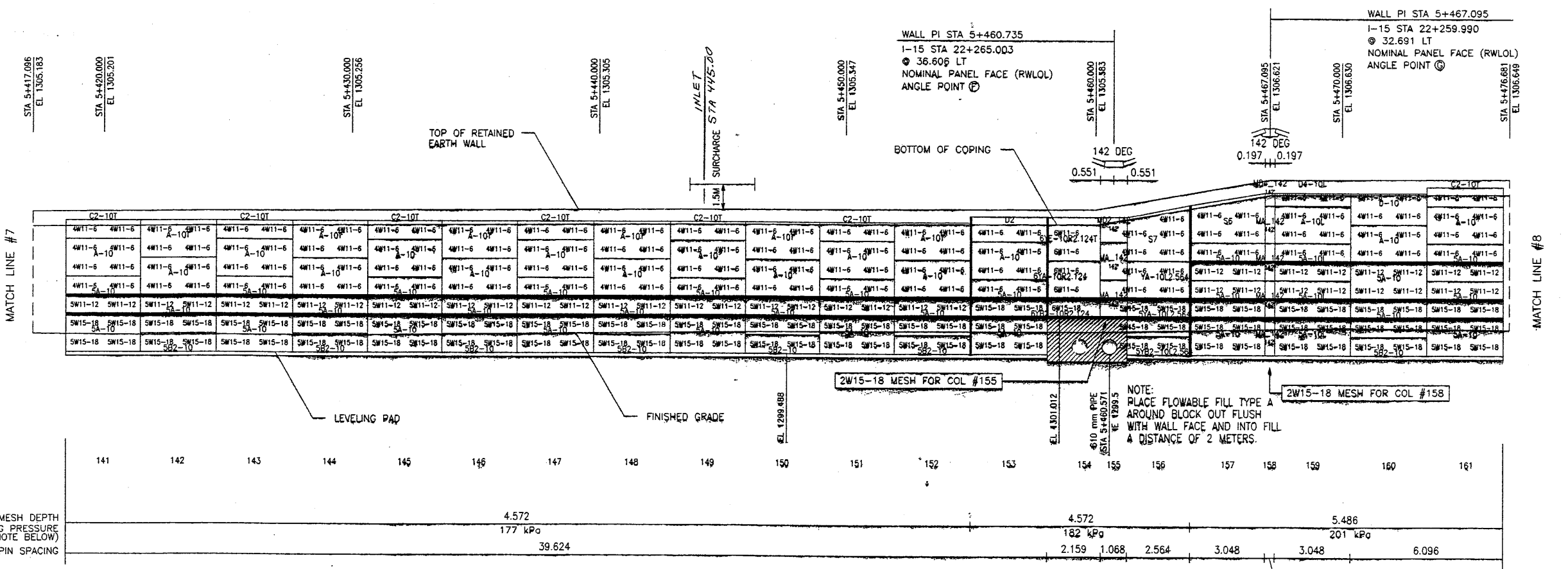
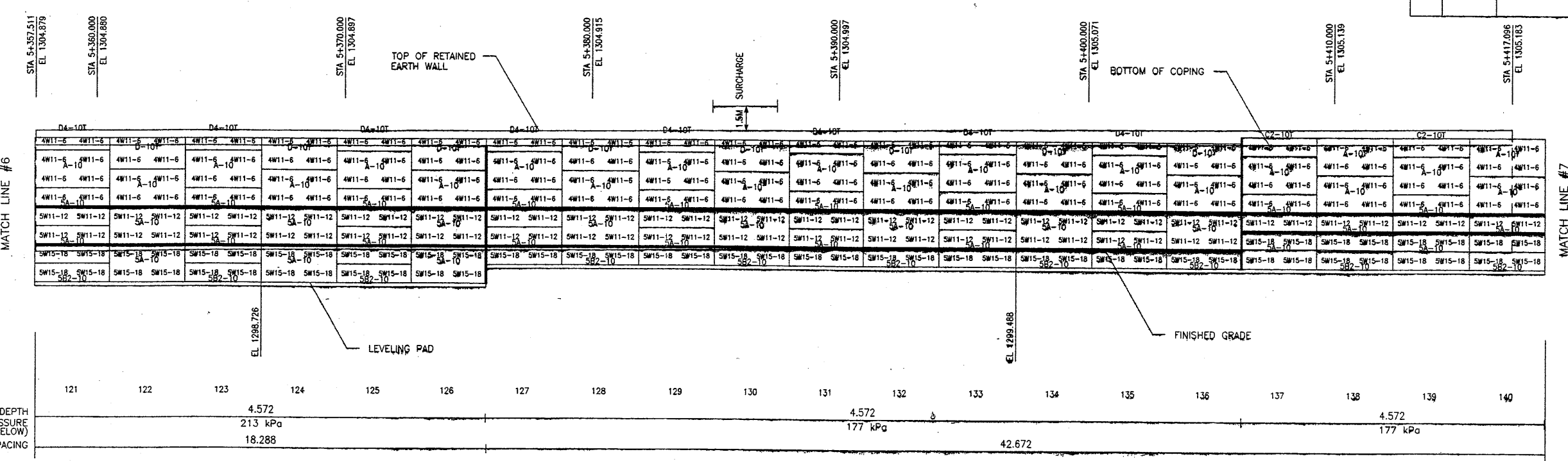
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 1000 P. O. Box 997777, Charlotte, NC 28209

DES: 09-19-97  
 DRN: 09-19-97  
 CHK: 09-19-97

RETAINED EARTH™

**RETAINED EARTH™ WALLS**  
**PRECAST WALL "R-345-2"**  
**I-15 INTERCHANGE**  
**SALT LAKE COUNTY, UTAH**  
**UTAH DEPARTMENT OF TRANSP.**

SCALE: 2.1R-345-2.19  
 JOB NO: 239-0007  
 RE-12



**ELEVATION PRECAST WALL "R-345-2"**  
 (FRONT FACE SHOWN)  
 (TOTAL SURFACE AREA OF PANELS = 3,204.22 SM)

SCALE 1:100 (FULL SIZE)  
 SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
 MAXIMUM UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

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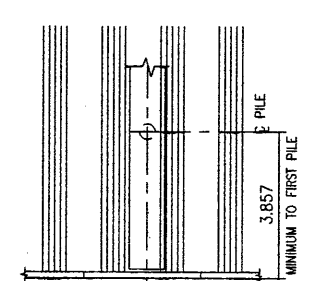
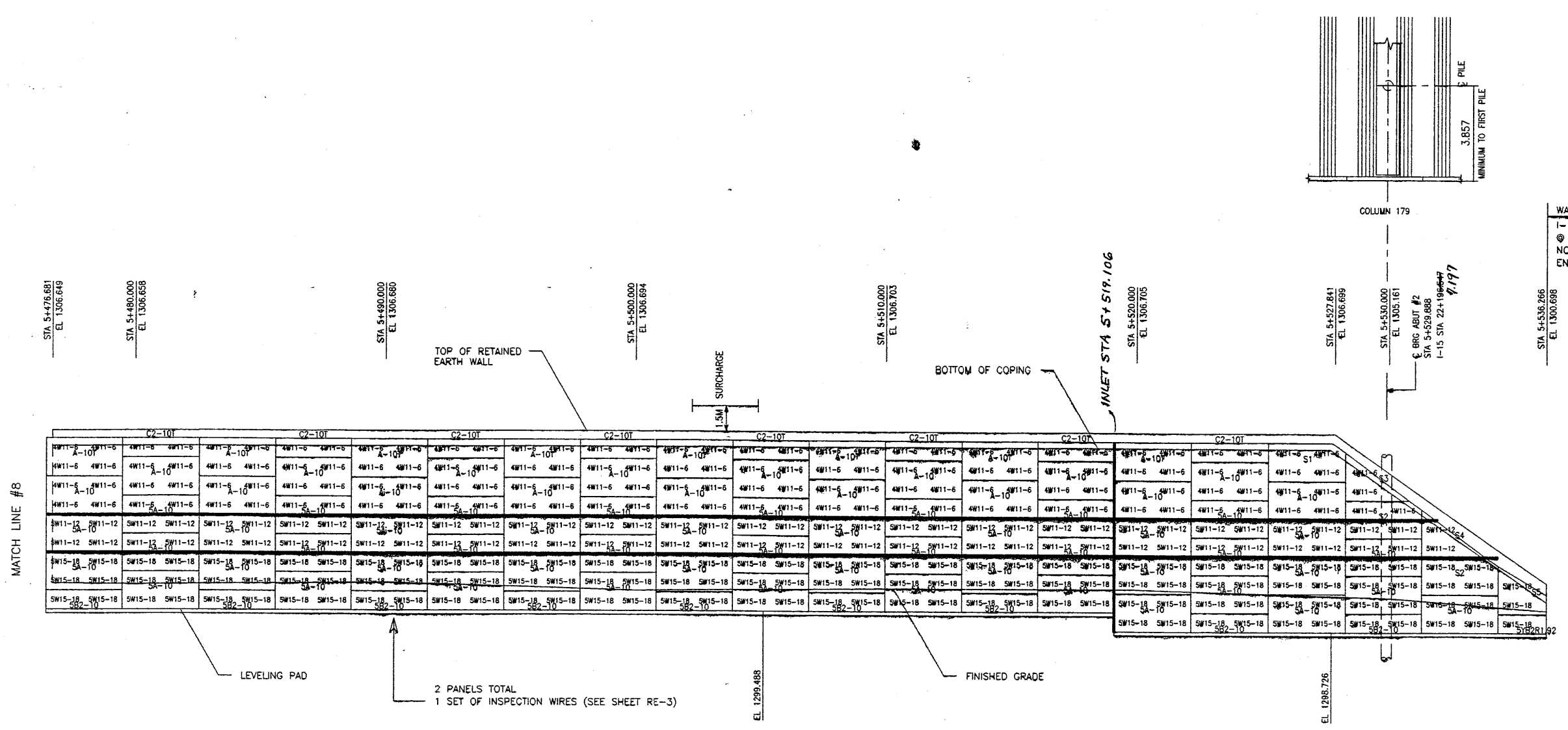
METRIC  
 21 OF 29

PROFESSIONAL ENGINEER  
 JOHN K. NICHOLSON, JR.  
 10/2/97  
 STATE OF UTAH

E:\PROJECT\239-0007\45SERIES\45-02\W45-02

FINAL PL 10-03-97

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION



WALL STA 5+536.266  
 1-15 STA 22+190.819  
 @ 32.691 LT  
 NOMINAL PANEL FACE (RWL0L)  
 END PRECAST WALL R-345-2

	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181		
MESH DEPTH							5.486														6.401	
MAXIMUM BEARING PRESSURE (SEE NOTE BELOW)							200 kPa															215 kPa
PIN SPACING							42.672															17.160

**ELEVATION PRECAST WALL "R-345-2"**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 3,204.22 SM) SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
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METRIC  
 22 OF 29

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-2"  
 I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSPORTATION

SCALE: 2.1R-345-2.20  
 JOB NO: 239-0007  
 RE-13

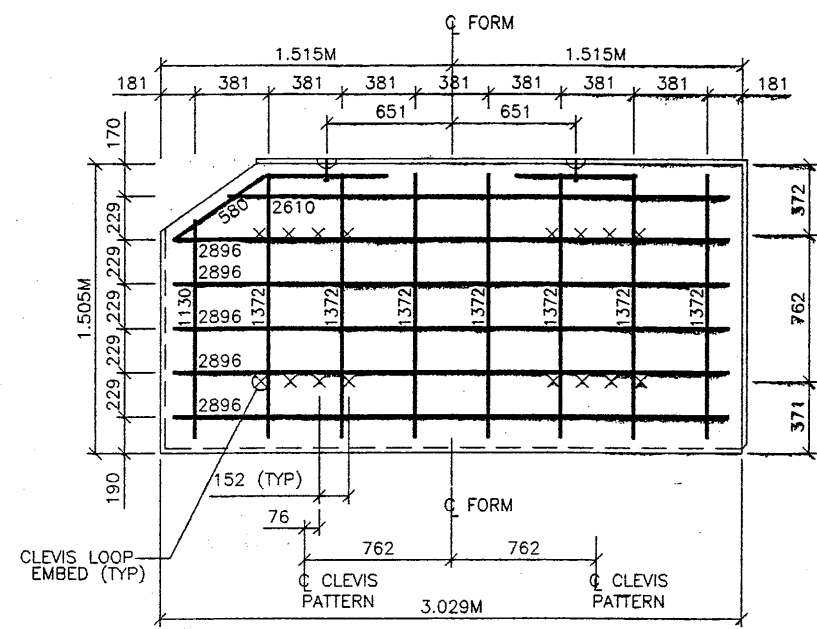
DES. 09-19-97 MM  
 DRN. 09-19-97 JPS  
 CHK. 09-19-97 MM

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-6272  
 Fax: (919) 781-6969

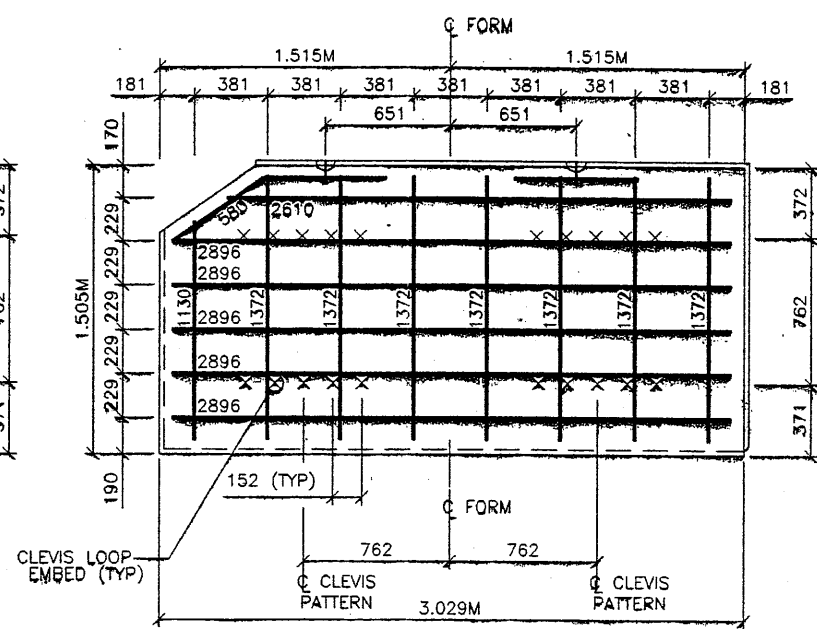
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

REVISION  
 NO. DATE

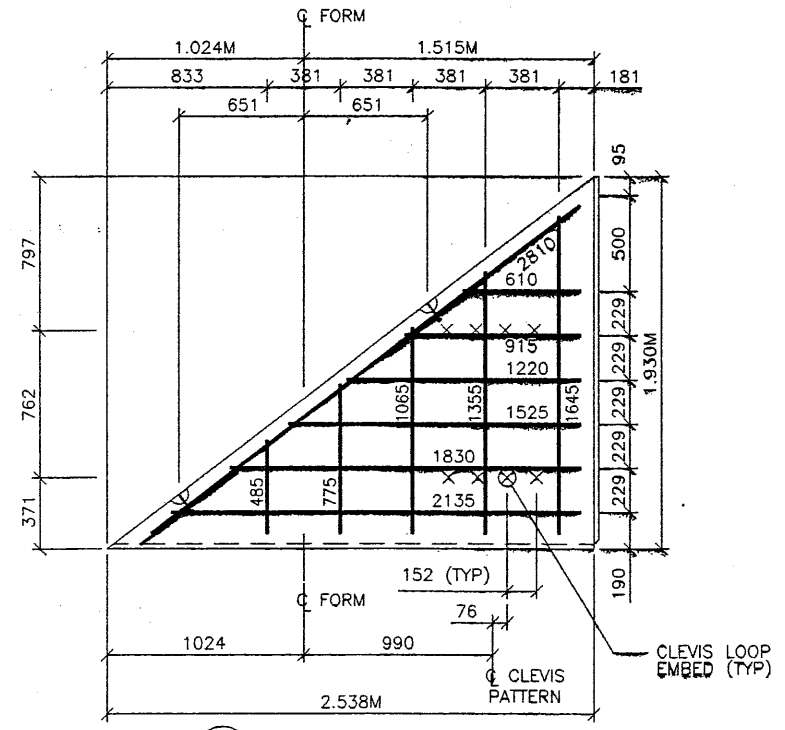
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-03-97	RELEASE FOR CONSTRUCTION



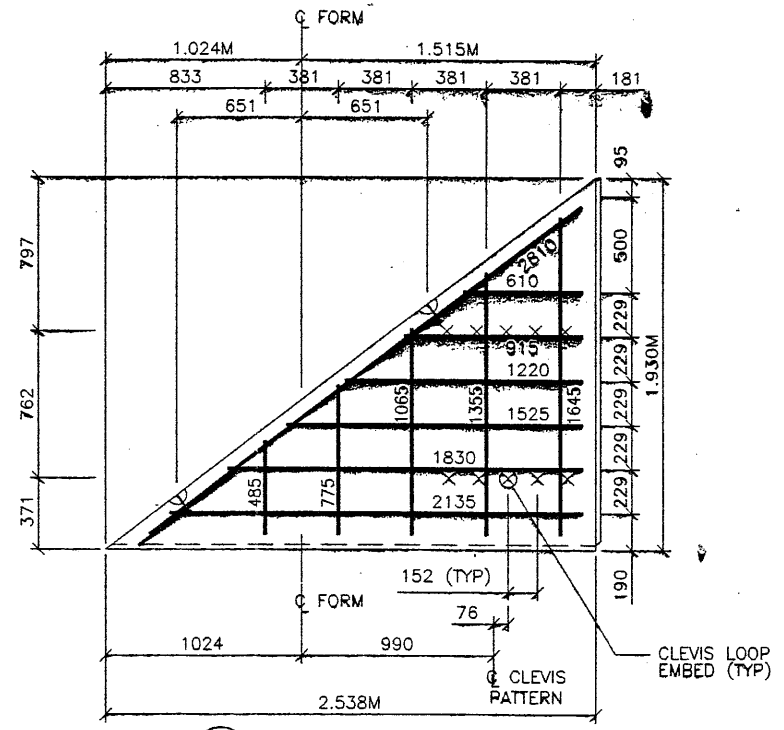
**S1 TYPE S1 REBAR**  
(AREA = 4.56 SQ.M)



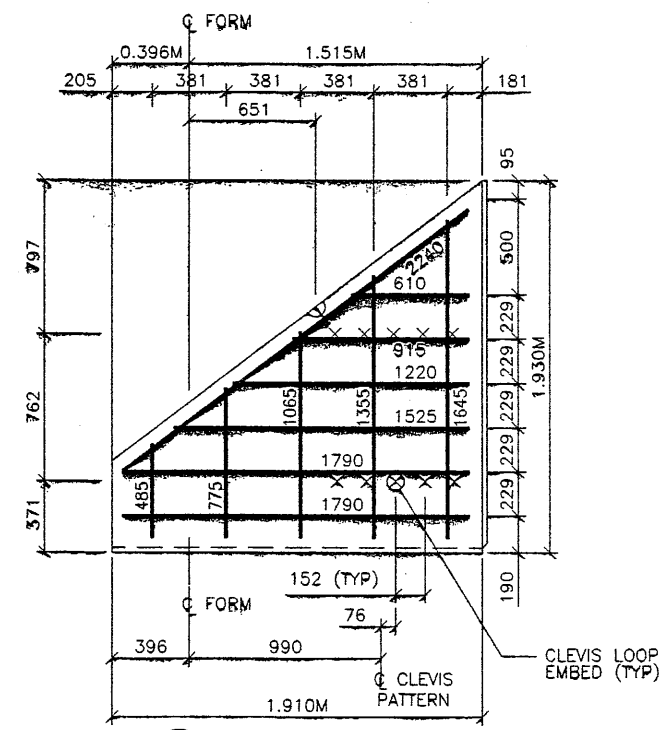
**S2 TYPE S2 REBAR**  
(AREA = 4.56 SQ.M)



**S3 TYPE S3 REBAR**  
(AREA = 2.46 SQ.M)



**S4 TYPE S4 REBAR**  
(AREA = 2.46 SQ.M)

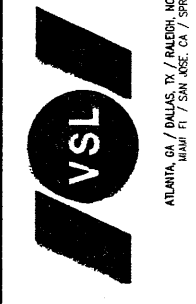


**S5 TYPE S5 REBAR**  
(AREA = 2.58 SQ.M)

- PANEL REINFORCEMENT NOTES:
1. PANELS ARE SHOWN BACK FACE.
  2. HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  3. ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  4. ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH.
  5. PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  6. ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS I.
  7. CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  8. EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  9. ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  10. VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.

DES.	DRN.	CHK.	NO.	DATE	REVISION

VSL CORPORATION  
2810 Plaza Place, Suite 200  
Raleigh, NC 27607-7818-6272  
Tel: (919) 781-4868  
Fax: (919) 781-4869



ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

**WASATCH CONSTRUCTORS**  
OCT 10 1997  
RELEASED FOR CONSTRUCTION

RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-2"  
SPECIAL PANEL REINFORCEMENT  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

METRIC  
23 OF 29

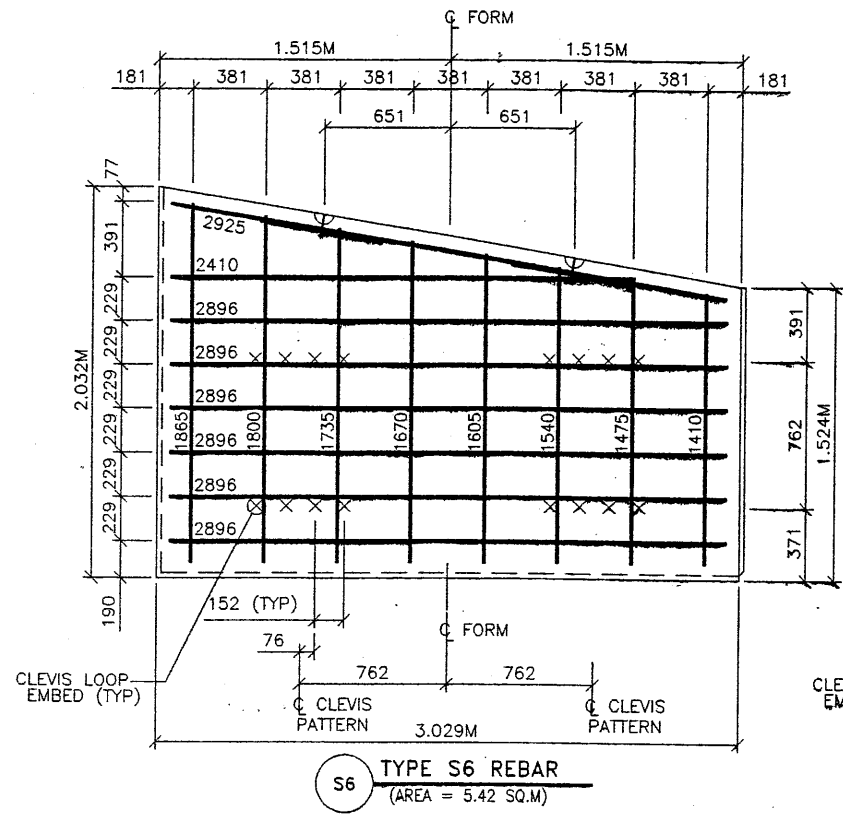
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

SCALE: 2.1R-345-2.21

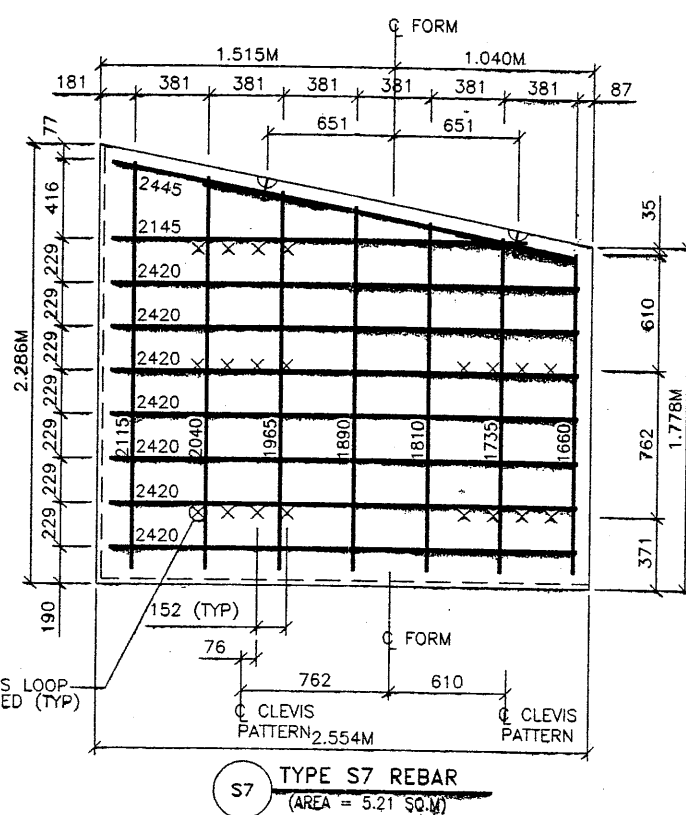
JOB NO: 239-0007

RE-14

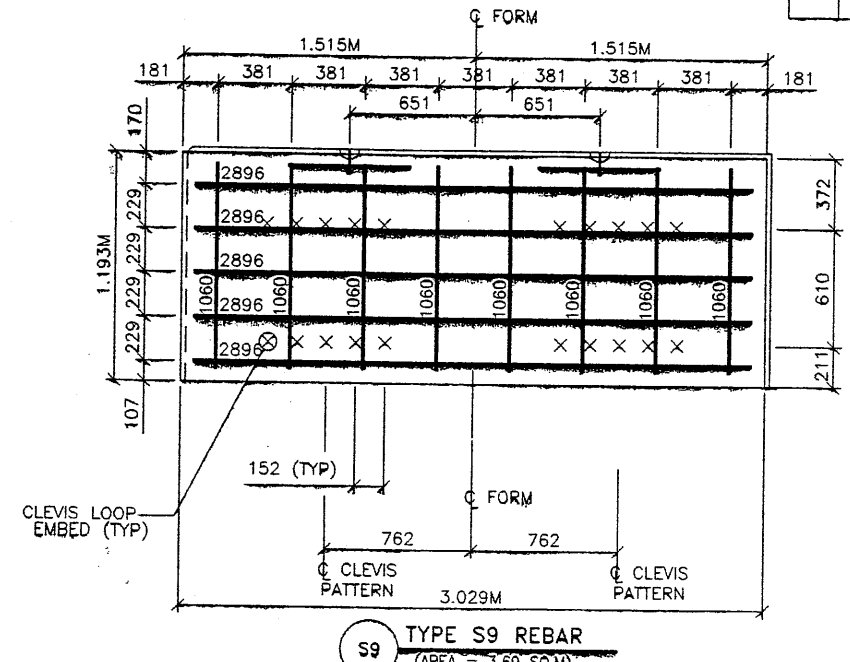




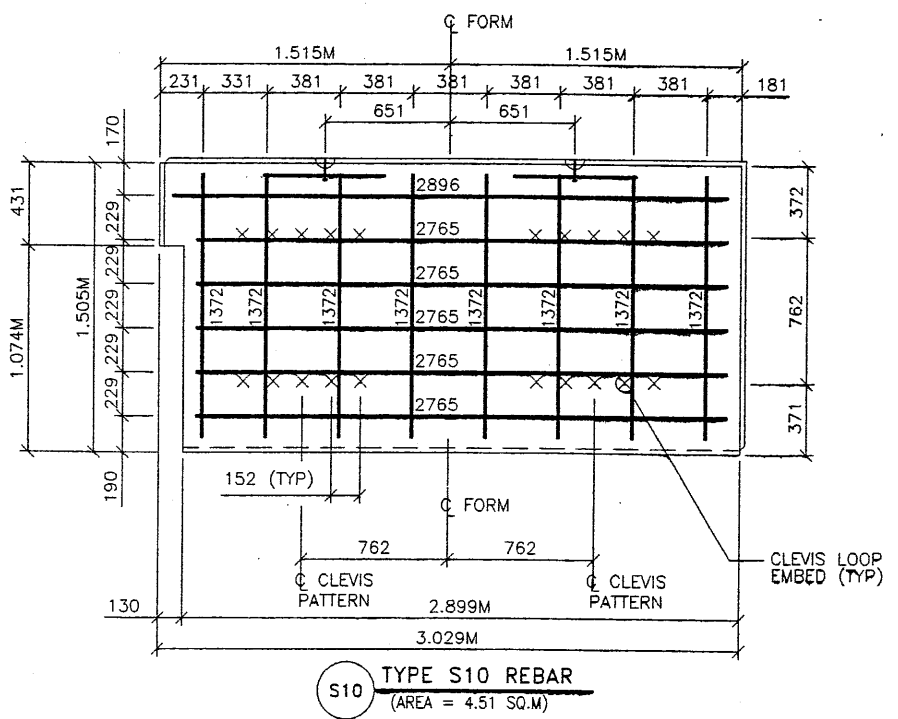
**S6 TYPE S6 REBAR**  
(AREA = 5.42 SQ.M)



**S7 TYPE S7 REBAR**  
(AREA = 5.21 SQ.M)



**S9 TYPE S9 REBAR**  
(AREA = 3.69 SQ.M)

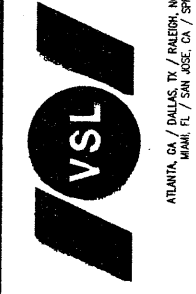


**S10 TYPE S10 REBAR**  
(AREA = 4.51 SQ.M)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	10-03-97	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	RETAINED EARTH™	NO.	DATE	BY
10-03-97	10-03-97	10-03-97	VSL			

VSL CORPORATION  
2640 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6772  
Fax: (919) 781-6669



- PANEL REINFORCEMENT NOTES:**
- PANELS ARE SHOWN BACK FACE.
  - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS 1.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.

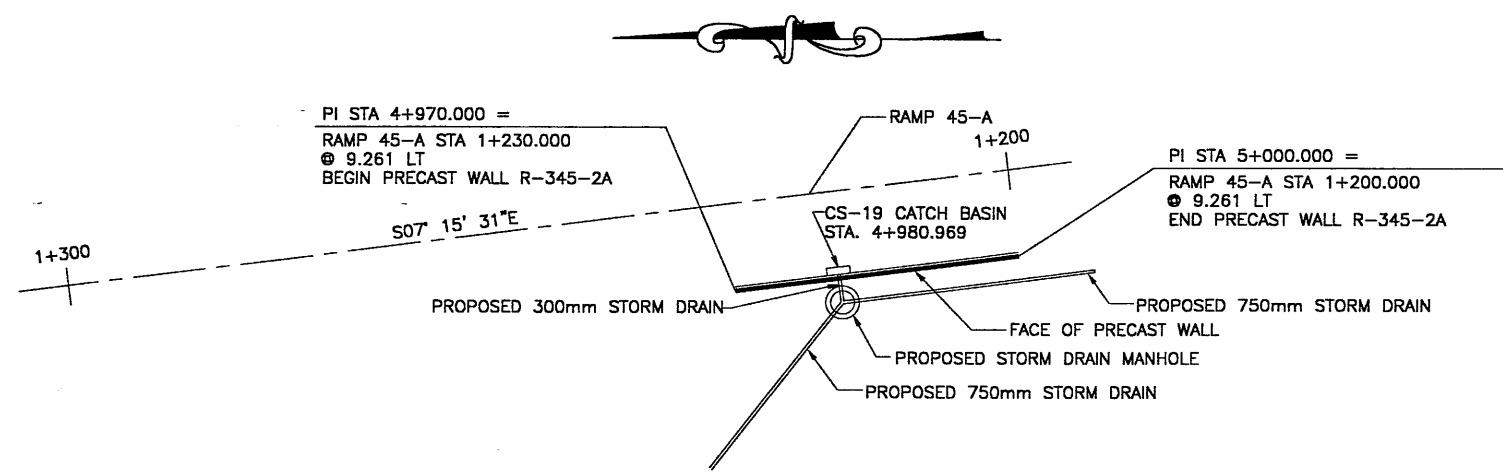
**WASATCH CONSTRUCTORS**  
OCT 10 1997  
RELEASED FOR CONSTRUCTION

METRIC  
24 OF 29

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

RETAINED EARTH™ WALLS PRECAST WALL "R-345-2" SPECIAL PANEL REINFORCEMENT UTAH I-15 INTERCHANGE SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
SCALE: 2.1R-345-2.22
JOB NO: 239-0007
RE-15

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	5-12-98	RELEASE FOR CONSTRUCTION



**PLAN VIEW WALL "R-345-2A"**

SCALE: 1=400 (FULL SIZE)  
SCALE: 1=800 (HALF SIZE)

DESIGN PARAMETERS
ANGLE OF INTERNAL FRICTION (SELECT) = 34°
ANGLE OF INTERNAL FRICTION (BASE) = 30°
ANGLE OF INTERNAL FRICTION (RANDOM) = 34°
UNIT WEIGHT BACKFILL = 135 PCF = 21.20 KN/M <sup>3</sup>
TRAFFIC SURCHARGE = 250 PSF = 12 KPa
SEISMIC ACCELERATION COFF. = 0.13g (TYP.)

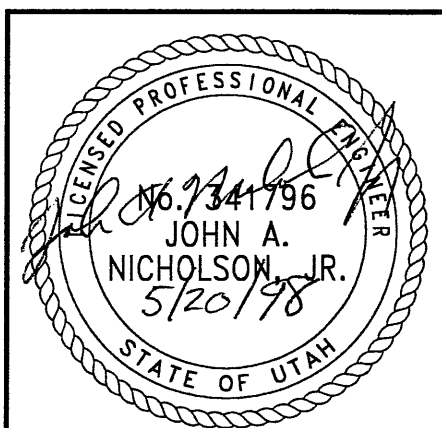
  

DESIGN CRITERIA
SAFETY FACTOR (OVERTURNING) = 2.0
SAFETY FACTOR (SLIDING) = 1.5
SAFETY FACTOR (PULLOUT) = 1.5
DESIGN LIFE = 75 YEARS

RETAINED EARTH INDEX
RE-16 PLAN PRECAST FACE WALL R-345-2A, NOTES & DESIGN CRITERIA
RE-17 TYPICAL CROSS SECTIONS
RE-18 TYPICAL CROSS SECTIONS
RE-19 ELEVATION PRECAST WALL "R-345-2A"
RE-20 SPECIAL PANEL DETAILS

- GENERAL NOTES**
- ALL WALLS ARE SHOWN FRONT FACE. NOTE STATIONING.
  - PANEL TYPE IS DESIGNATED ON EACH PANEL. CONNECTOR LABELS INDICATE NUMBER OF CONNECTORS PER ROW.  
EXAMPLE: 5B2-10 IS A "B2-10" PANEL WITH FIVE (5) CONNECTORS PER ROW. IF NO CONNECTORS ARE SHOWN, FOUR (4) CONNECTOR PANELS SHALL BE USED.
  - SOIL REINFORCING MESH TYPE IS DESIGNATED ON EACH PANEL. MESH LABELS INDICATE WIRE SIZE AND SPACING. LONGITUDINAL WIRE AND CROSSBAR SIZES ARE THE SAME UNLESS NOTED OTHERWISE.  
EXAMPLE: 4W11-6 MESH HAS FOUR (4) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 5W11-12 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 5W15-18 MESH HAS FIVE (5) W15 LONGITUDINAL WIRES WITH W15 CROSSBARS AT 18" CENTERS.
  - SEE RETAINED EARTH INSTALLATION MANUAL FOR PROPER WALL ERECTION PROCEDURES AND GUIDELINES.
  - CONSTRUCTION PROCEDURES SHALL PREVENT BACKFILL SATURATION AND PONDING.
  - HEAVY EQUIPMENT SHALL NOT BE USED WITHIN ONE METER OF THE BACK OF THE RETAINED EARTH PANELS. HAND COMPACTORS SHALL BE USED IN THIS AREA.
  - CARE SHALL BE TAKEN TO PREVENT DAMAGE TO GALVANIZING. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.
  - BEARING PADS AND FILTER FABRIC ARE NOT REQUIRED BETWEEN THE LEVELING PAD AND THE FIRST ROW OF PANELS. TEMPORARY WEDGES MAY BE USED TO PROVIDE PROPER ALIGNMENT.
  - VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.
  - ALL PANELS SHALL HAVE AN ARCHITECTURAL FINISH, SEE VSL STANDARD SHEET STD-7 FOR DETAIL.

**WASATCH CONSTRUCTORS**  
**MAY 28 1998**  
**RELEASED FOR CONSTRUCTION**



CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

METRIC

NO.	DATE	DESCRIPTION	BY	CHK

DES.	05-12-98	JL
DRN.	05-12-98	JHU
CHK.	05-12-98	JL

RETAINED EARTH™

VSL CORPORATION  
2840 Peach Place, Suite 200  
Raleigh, NC 27617  
Telephone: (919) 791-8072  
Fax: (919) 791-8869

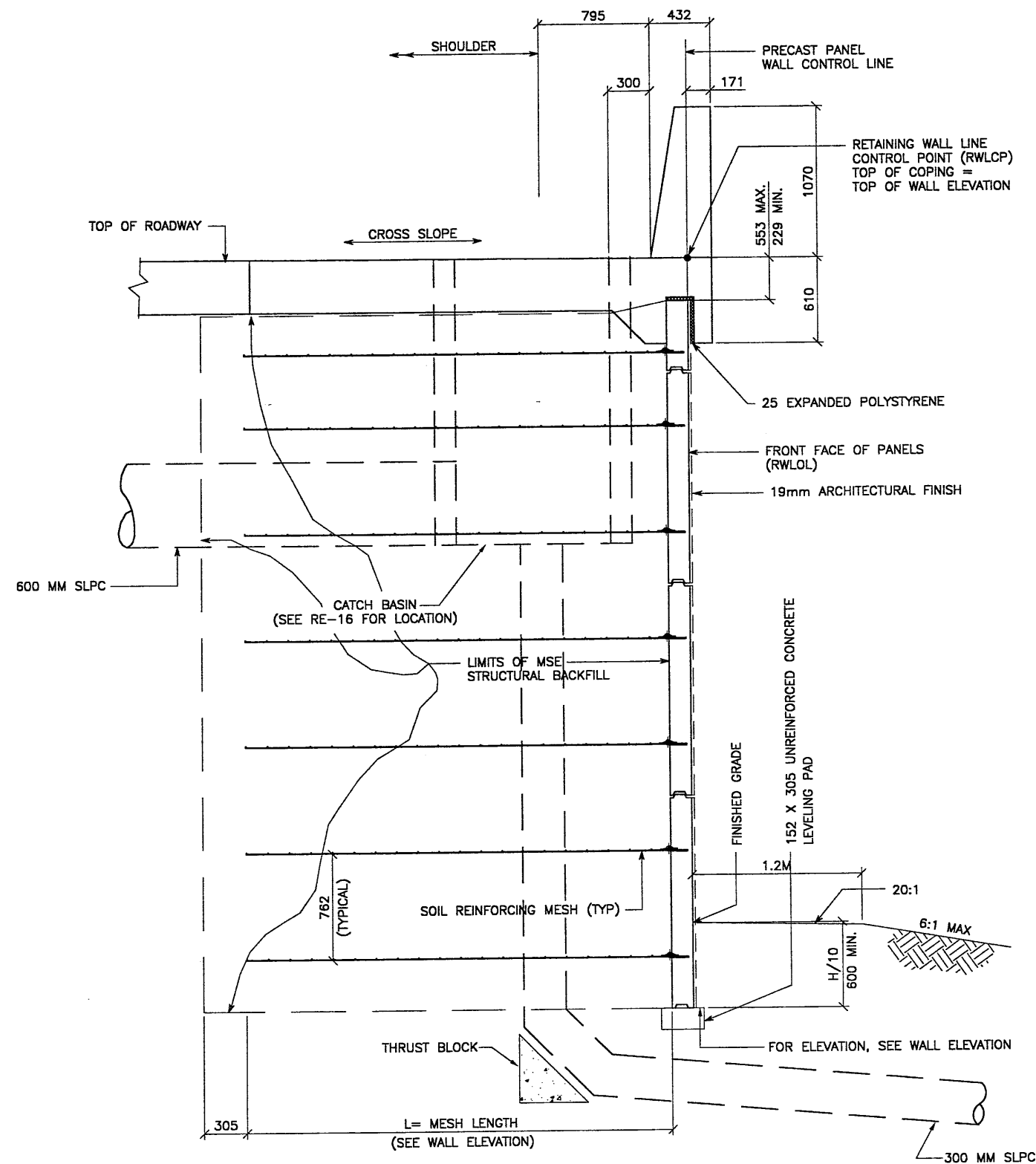
ATLANTA, GA / DALLAS, TX / FREDERICK, MD (CORPORATE OFFICE)  
MINNAPOLIS, MN / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™ WALLS  
PLAN VIEW PRECAST WALL "R-345-2A"  
UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.  
2.1R-345-2.23

JOB NO.  
239-0007

SHT. NO.  
RE-16



TYPICAL CROSS SECTION - STA 4+980.969

(SEE DWG. NO. 2.1R-345-2.5 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)

SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	5-12-98	RELEASE FOR CONSTRUCTION

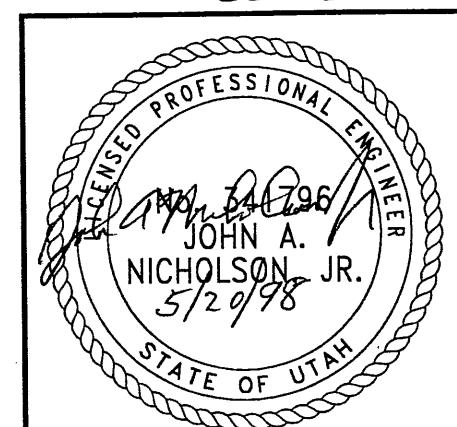
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JL	JHU	JL	<input checked="" type="checkbox"/>				
5-12-98	5-12-98	5-12-98					

**VSL CORPORATION**  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4885

**VSL**  
 ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
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WASATCH CONSTRUCTORS  
 MAY 28 1998  
 RELEASED FOR CONSTRUCTION



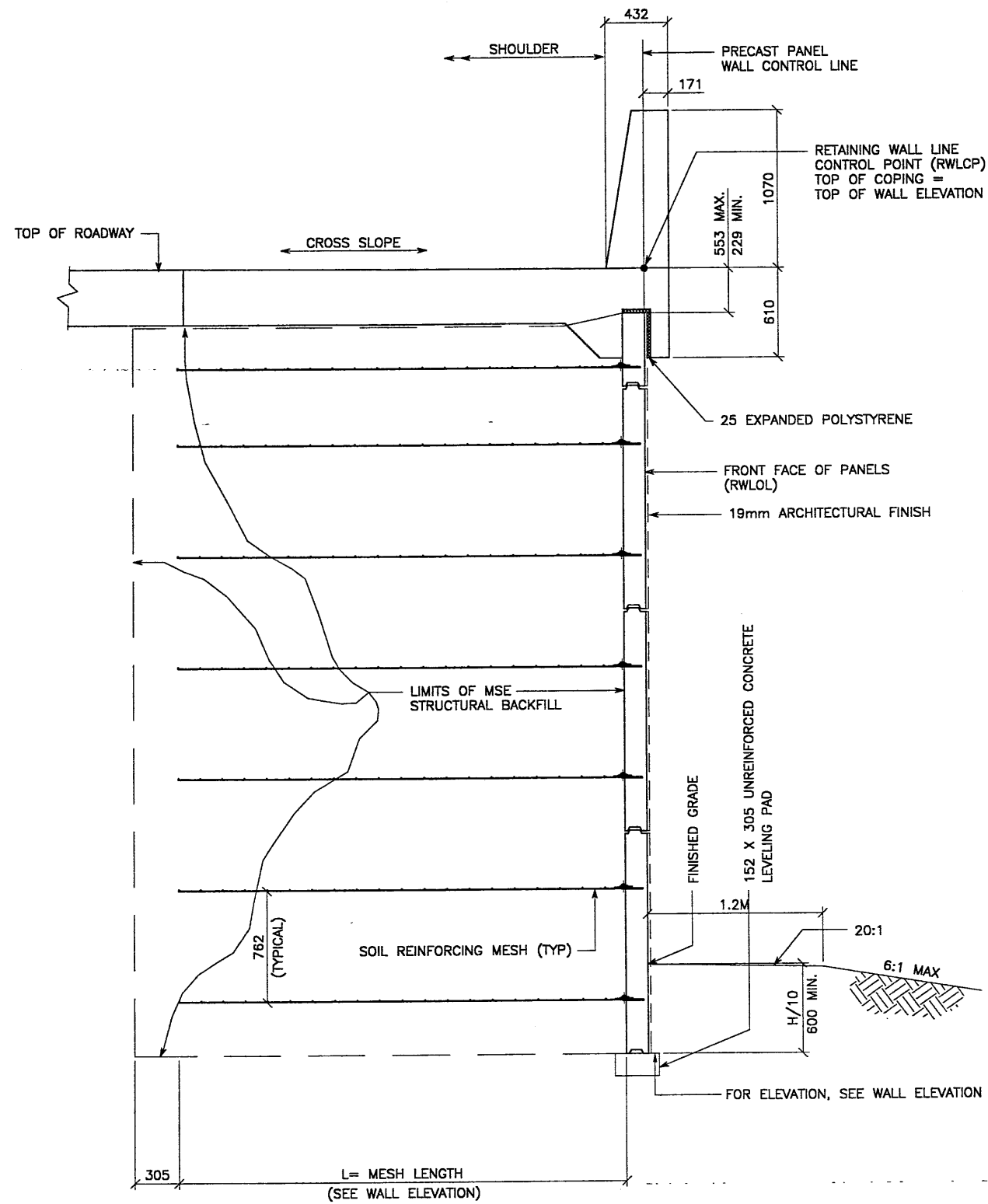
RETAINED EARTH™ WALLS  
 PRECAST WALL R-345-2A  
 TYPICAL CROSS SECTION

UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-2.24
JOB NO.	239-0007
SHT. NO.	RE-17

METRIC

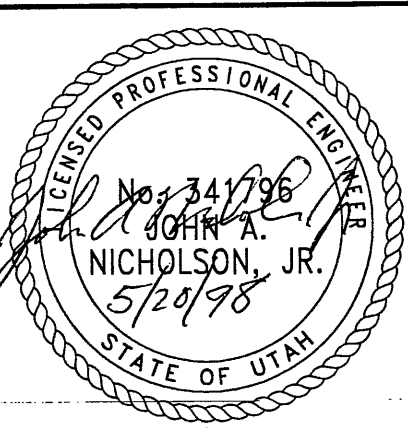
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.



**TYPICAL CROSS SECTION - STA 4+970.000 TO STA 5+000.000**  
 (SEE DWG. NO. 2.1R-345-2.5 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

METRIC



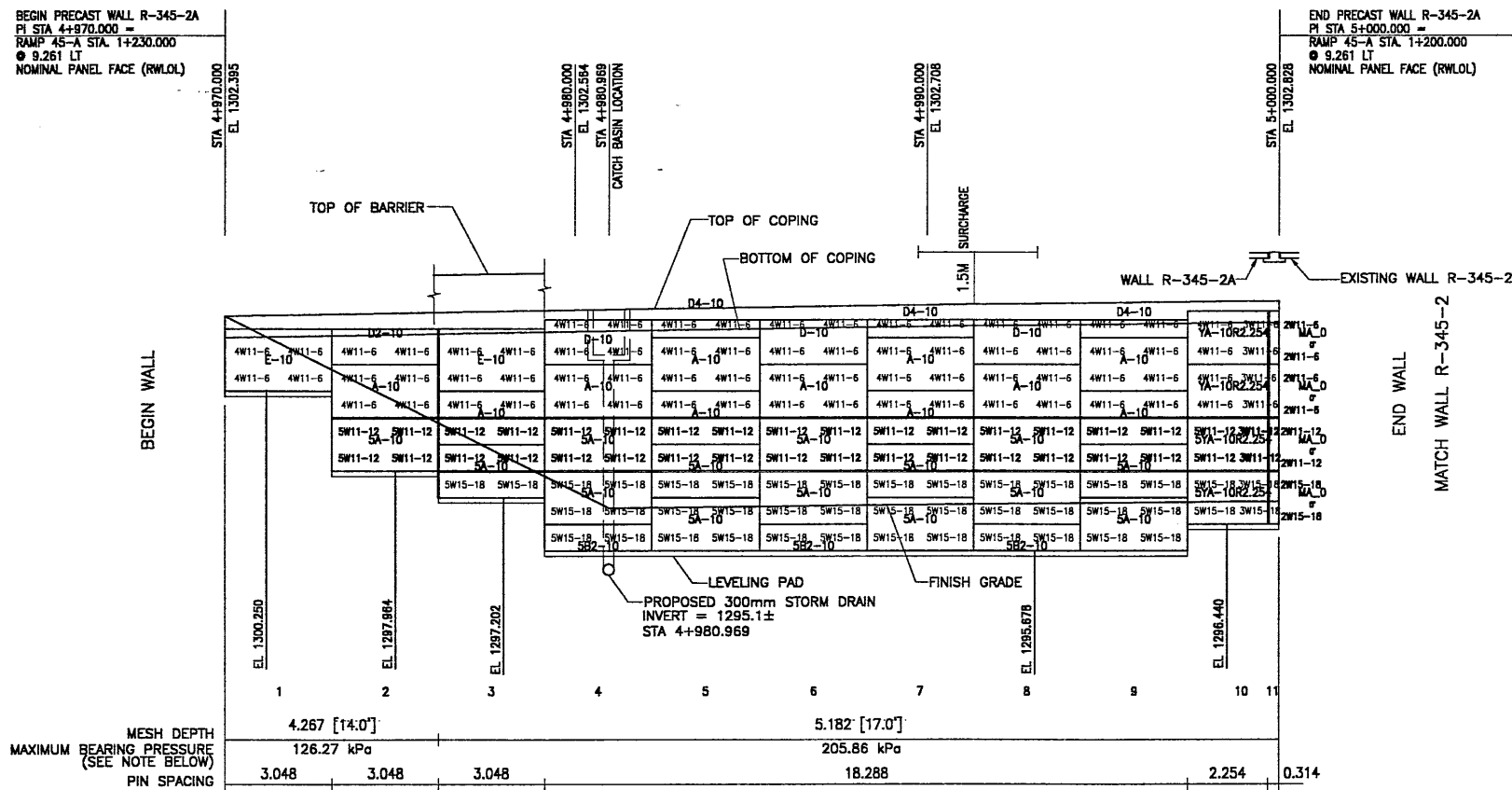
WASATCH CONSTRUCTORS  
 MAY 28 1998  
 RELEASED FOR CONSTRUCTION

27 of 29

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	5-12-98	RELEASE FOR CONSTRUCTION

DES.	5-12-98	JL	RETAINED EARTH™
DRN.	5-12-98	JHJ	
CHK.	5-12-98	JL	
<p>VSL CORPORATION          2840 Peach Plaza, Suite 200          Raleigh, NC 27612          Telephone: (919) 781-8272          Fax: (919) 781-4859</p> <p>ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)          MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA</p>			
<p>RETAINED EARTH™ WALLS          PRECAST WALL "R-345-2A"          TYPICAL CROSS SECTION</p> <p>UTAH 1-15 RECONSTRUCTION          SALT LAKE COUNTY, UTAH          UTAH DEPARTMENT OF TRANSP.</p>			
<p>DWG. NO. 2.1R-345-2.25</p>			
<p>JOB NO. 239-0007</p>			
<p>SHT. NO. RE-18</p>			





ELEVATION PRECAST WALL R-345-2A

(FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
(TOTAL SURFACE AREA OF PANELS = 172.28 SM) SCALE 1:200 (HALF SIZE)

NOTE:  
THE INDICATED MAXIMUM BEARING PRESSURE AT FINAL STAGE FOR STATIC LOAD CONDITION.

METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	5-12-98	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY
JL	JHJ	JL				
5-12-98	5-12-98	5-12-98				

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-8272  
Fax: (919) 781-4999

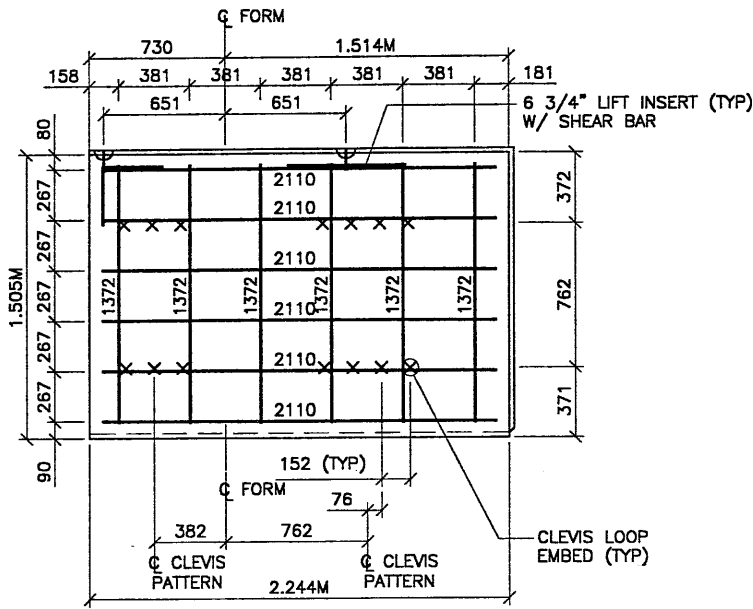
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

VSL Corporation (VSL) is a steel property... (small text describing VSL's role and liability)

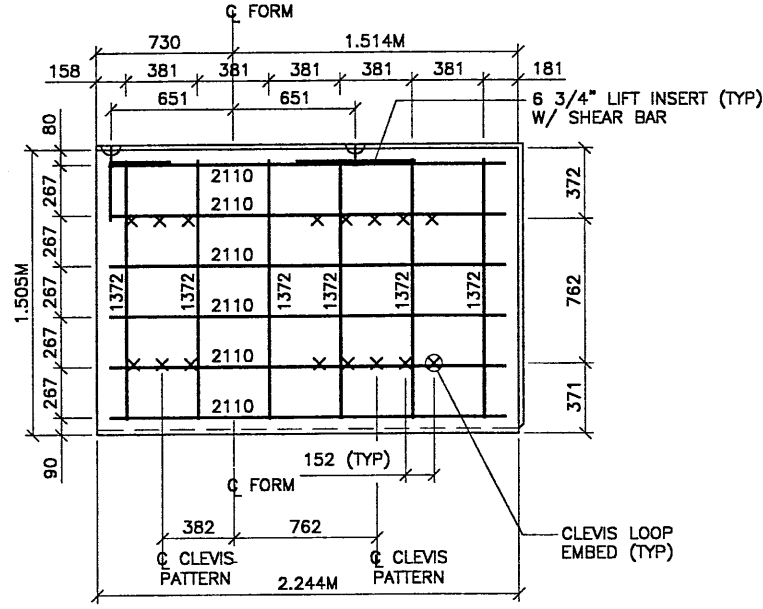
WASATCH CONSTRUCTORS  
MAY 28 1998  
RELEASED FOR CONSTRUCTION

28 OF 29

RETAINED EARTH™ WALLS ELEVATION PRECAST WALL "R-345-2A" UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1R-345-2.26
JOB NO. 239-0007
SHT. NO. RE-19



**YA-10R2.254** TYPE YA-10R2.254 REBAR  
(AREA = 3.44 SQ.M)



**5YA-10R2.254** TYPE 5YA-10R2.254 REBAR  
(AREA = 3.44 SQ.M)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	5-12-98	RELEASE FOR CONSTRUCTION

- PANEL REINFORCEMENT NOTES:
- PANELS ARE SHOWN BACK FACE.
  - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS I.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mm $\phi$  CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.
  - LIFT INSERTS ARE 6 3/4" LONG IN ALL PANELS LESS THAN 1.524M TALL. PANELS TALLER THAN 1.524M SHALL HAVE 11" LONG LIFT ANCHORS.

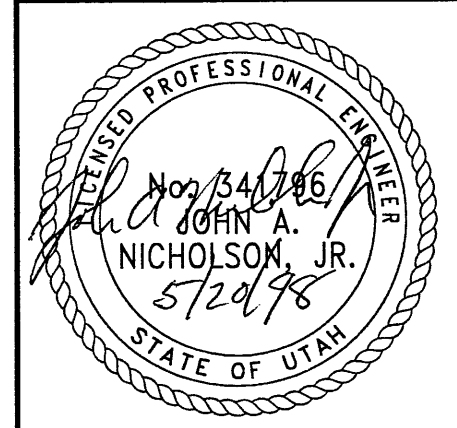
NO.	DATE	DESCRIPTION

VSL CORPORATION  
2940 Plaza Place, Suite 200  
Raleigh, NC 27617-7611  
Tel: (919) 781-6772  
Fax: (919) 781-6689

ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS  
MAY 28 1998  
RELEASED FOR CONSTRUCTION

29 OF 29



METRIC

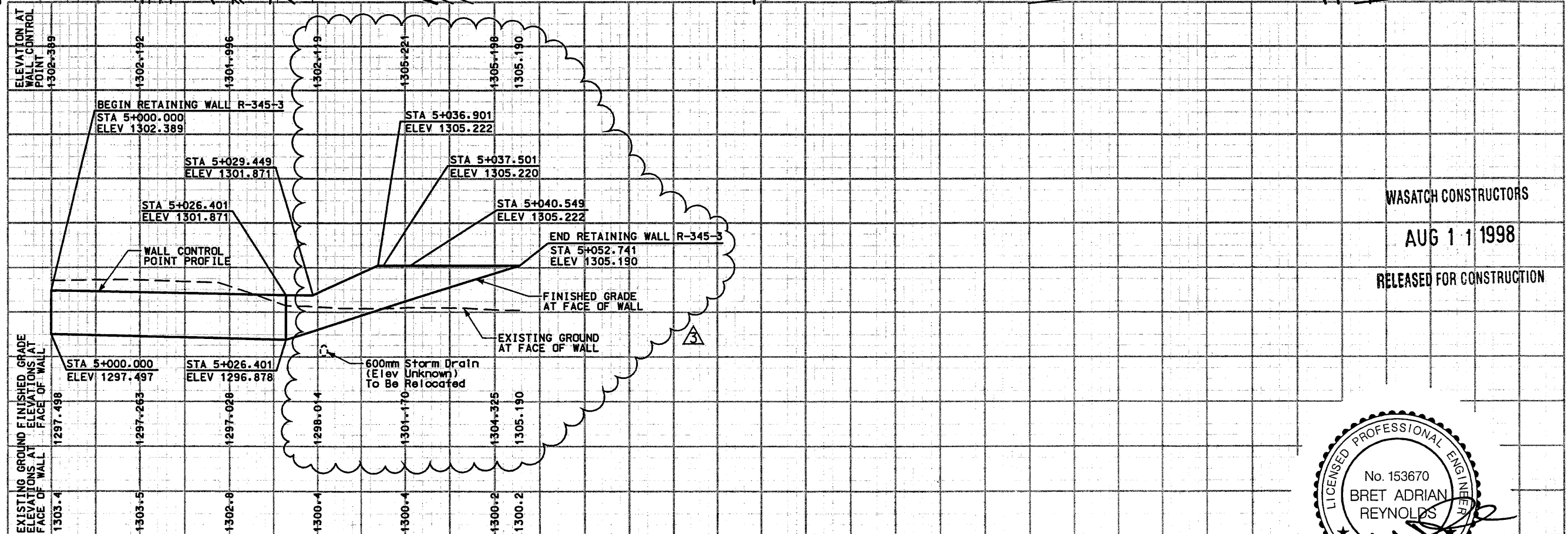
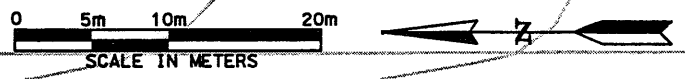
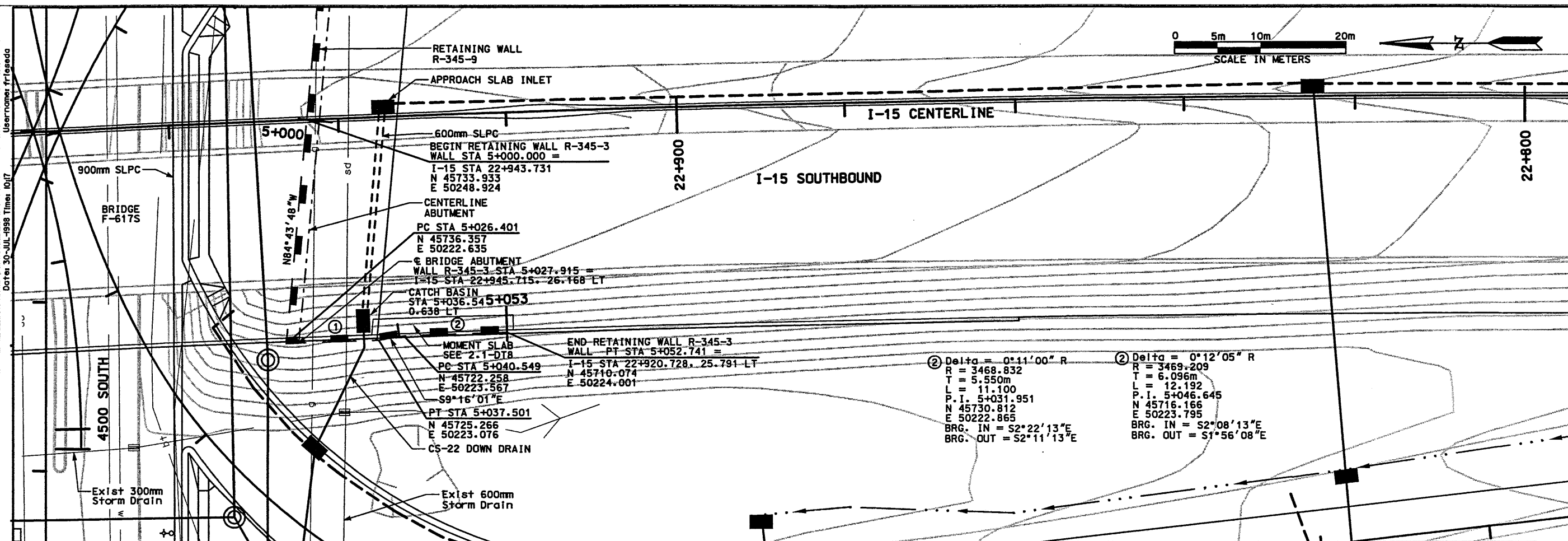
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

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RETAINED EARTH™ WALLS PRECAST WALL "R-345-2A" SPECIAL PANEL DETAILS
UTAH 1-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1R-345-2.27
JOB NO. 239-0007
SHT. NO. RE-20

Users: mprasad  
Date: 30-Jul-1998 Time: 10:17

Filename: c:\dgn\15\_cadd\15\_97\vision\_files\wall\cfswall-03.dgn



NOTES:  
 1) STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL NOT BE CONSTRUCTED WITH WALL R-345-3.  
 2) CS-22 DOWN DRAIN TO BE CONSTRUCTED WITH WALL R-345-3; ALL OTHER DRAINAGE FACILITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.

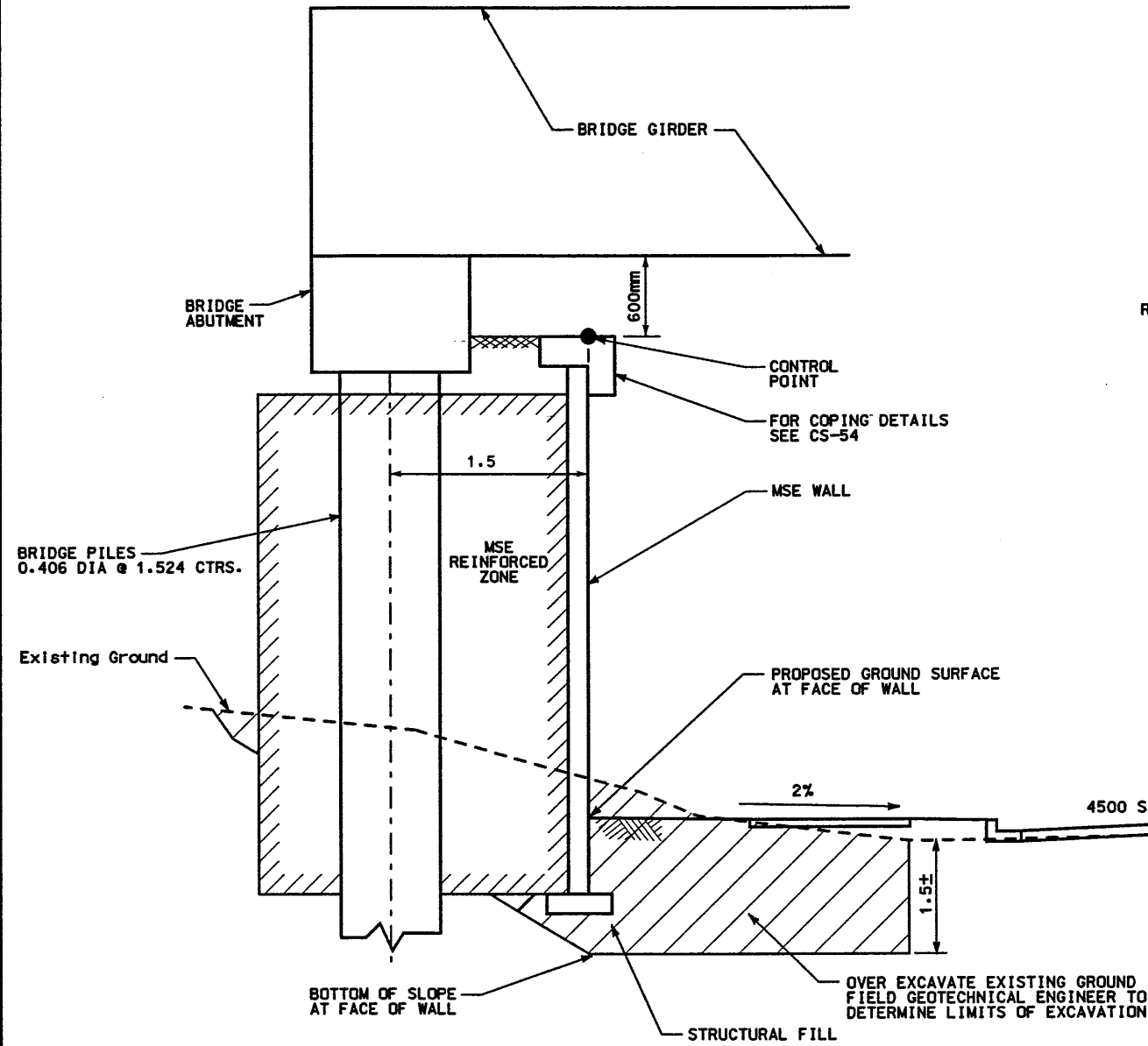
ELEVATION VIEW - FACE OF WALL



WASATCH CONSTRUCTORS  
 AUG 11 1998  
 RELEASED FOR CONSTRUCTION

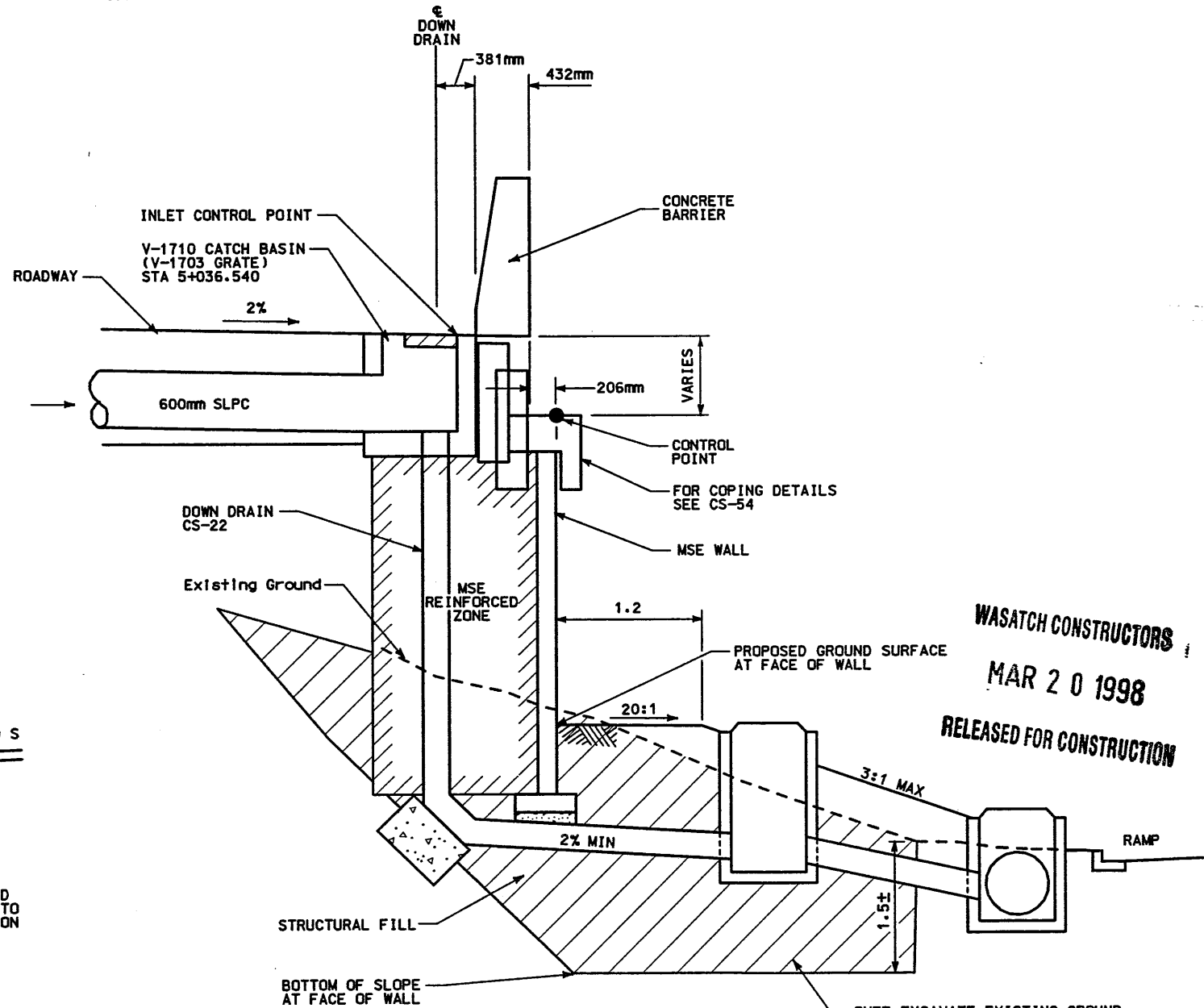
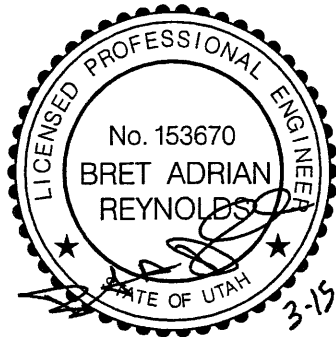
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	ORIGINAL ISSUE	REVISED ELEVATIONS
1	10/13/97	98 EARLY FINAL	
2	3/15/98		
3	7/30/98		
UTAH DEPARTMENT OF TRANSPORTATION			
MK CENTENNIAL SVERRUP/DE LEUW			
APPROVAL RECOMM.	DATE	DESIGN DMC	CHECK C/D
3/15/98	Bret A. Reynolds	3/09/98	3/15/98
APPROVED	DATE	DRAWN	CHECK
3/15/98	3/15/98	RD	3/15/98
PROJECT NUMBER		WBS NO.	
#SP-15-7(135)296		2112600	
SHT. 1 OF 12		REF.	

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-3**  
**(1 STAGE MSE WALL)**  
**NTS**



**DETAIL A**  
**STA 5+000.000 TO 5+026.401**

Wall Number	Station Limits	Reference Station (6)	Wall Settlement (Front Face of Wall)	Top of Wall Rotation (4)	Lateral Displacement at Bottom of Wall
R-345-3	22+910 to 22+940	22+920	50 to 70 mm	94 mm	(5)



**DETAIL B**  
**STA 5+026.401 TO 5+037.501**

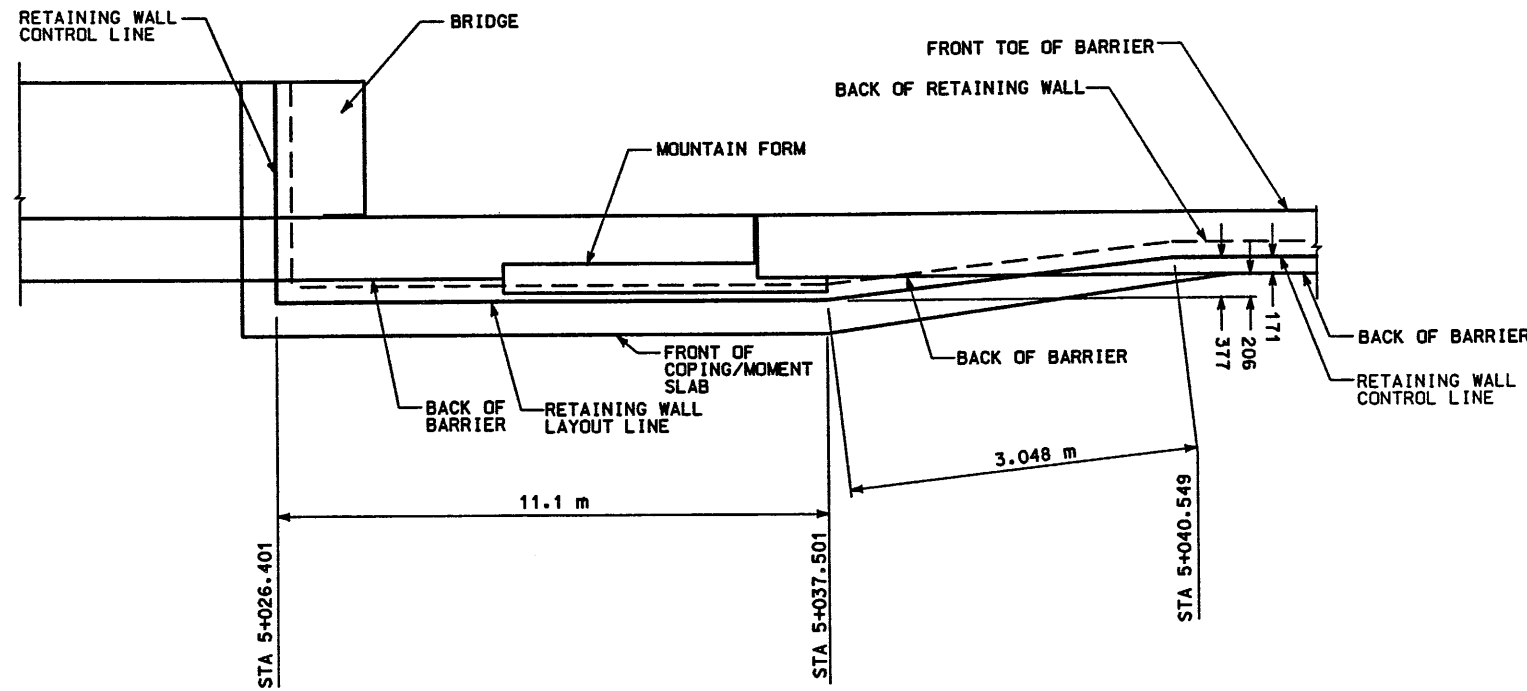
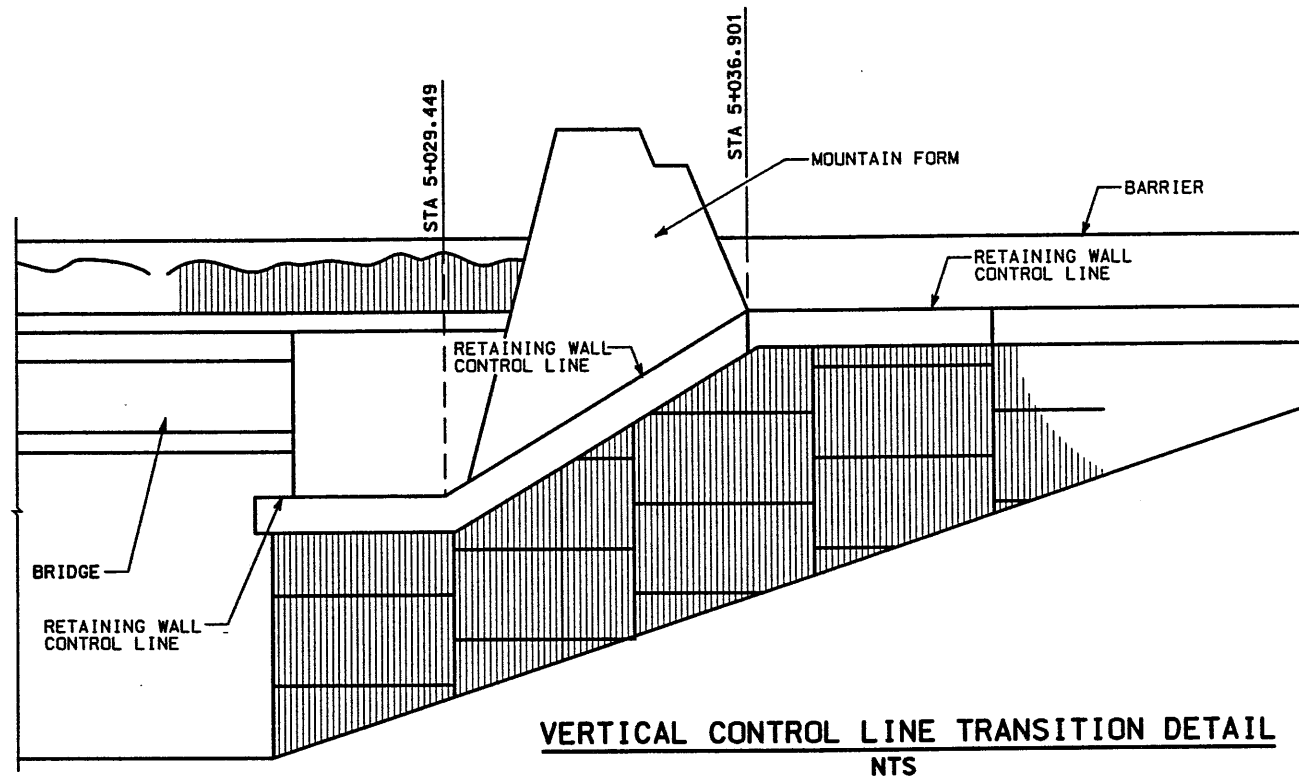
**NOTES:**

- SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION ELEVATION.
- SEE CORRIDOR STANDARD SPECIFICATION 210 FOR SPECIAL EXCAVATION AND BACKFILL REQUIREMENTS WHERE SOFT CLAYS OR OTHER SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED.
- STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL NOT BE CONSTRUCTED WITH WALL R-345-3.
- VALUES GIVEN ARE ESTIMATES BASED ON AVAILABLE SOIL INFORMATION. CONTRACTOR SHOULD USE THIS INFORMATION AS A GUIDE TO ACCOUNT FOR SETTLEMENT/WALL ROTATION DURING WALL CONSTRUCTION. THE ACTUAL SETTLEMENT/ROTATION VALUES SHOULD BE MONITORED DURING WALL CONSTRUCTION AND ADJUSTMENTS MADE AS REQUIRED IN CONSULTATION WITH THE FIELD GEOTECHNICAL ENGINEER.
- LATERAL DISPLACEMENT AT BOTTOM OF WALL ESTIMATED TO BE LESS THAN ONE-HALF OF THE SETTLEMENT AT FRONT FACE OF WALL.
- VALUES CALCULATED AT REFERENCED STATION; VALUES AT OTHER STATIONS CAN BE ESTIMATED IN PROPORTION TO WALL HEIGHT.
- CS-22 DOWN DRAIN TO BE CONSTRUCTED WITH WALL R-345-3; ALL OTHER DRAINAGE FACILITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
- STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY AND WILL NOT BE CONSTRUCTED WITH WALL R-345-3.

**WASATCH CONSTRUCTORS**  
**MAR 20 1998**  
**RELEASED FOR CONSTRUCTION**

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	10/13/97	△	10/13/97
△	3/15/98	△	3/15/98
△	3/15/98	△	3/15/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112800	
MK CENTENNIAL SVERDRUP/DE LEUW		DESIGN DMC	3/09/98
		CHECK CJO	3/15/98
		DRAWN BDM	3/15/98
		CHECK CJO	3/15/98
		QUANT. GCM	3/15/98
		CHECK JAB	3/15/98
1-15 CORRIDOR RECONSTRUCTION		PROJECT NUMBER #SP-15-7(135)296	
WALL DETAIL R-345-3		SECTION 2.1	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-3.2	
REF.		SHT. 2 OF 12	





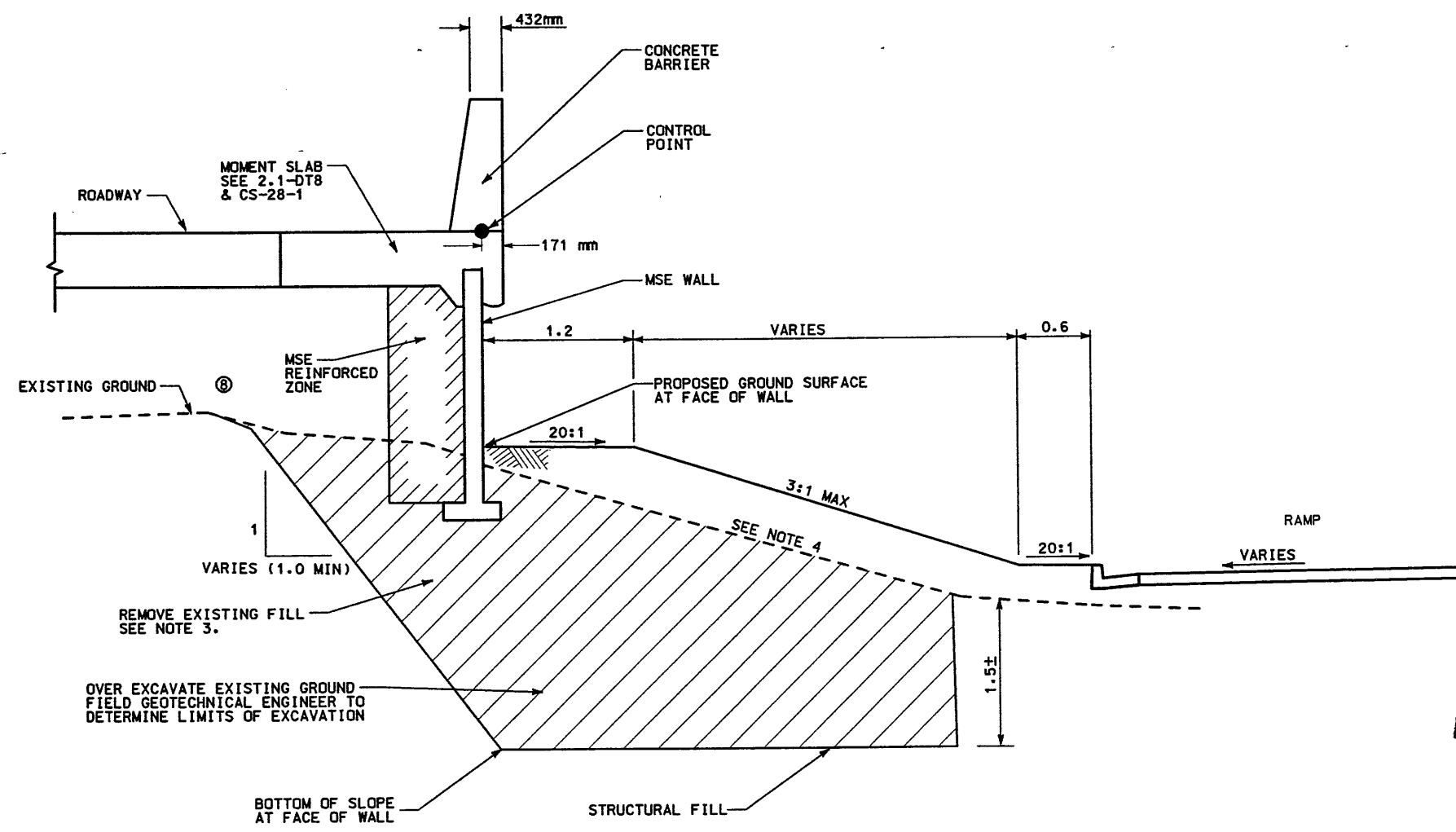
WASATCH CONSTRUCTORS  
 MAR 20 1998  
 RELEASED FOR CONSTRUCTION



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	10/13/97	△	10/13/97
△	3/15/98	△	3/15/98
△	3/15/98	△	3/15/98
△	3/15/98	△	3/15/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112600	
MK CENTENNIAL		DESIGN DMC 3/09/98 CHECK CJO 3/15/98	
SVERRUP/DE LEUW		DRAWN BDM 3/15/98 CHECK CJO 3/15/98	
PROJECT DESIGN ENGINEER		QUANT. GCM 3/15/98 CHECK JAB 3/15/98	
Bret A. Reynolds		PROJECT MANAGER	
DATE 3/15/98		DATE 3/15/98	
APPROVED 3/15/98		DATE 3/15/98	
Randle L. Ropp		PROJECT NUMBER	
I-15 CORRIDOR RECONSTRUCTION		#SP-15-(135)296	
WALL DETAIL R-345-3		SALT LAKE COUNTY	
SECTION 2.1		DWC NO.	
2.1R-345-3.3		SHT. 3 OF 12	
REF.			

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

### RETAINING WALL DETAIL SECTION 2.1 WALL NO. R-345-3 (1 STAGE MSE WALL) NTS



**DETAIL C**  
STA 5+040.549 TO 5+052.741

- NOTES:
- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION ELEVATION.
  - 2) SEE CORRIDOR STANDARD SPECIFICATION 210 FOR SPECIAL EXCAVATION AND BACKFILL REQUIREMENTS WHERE SOFT CLAYS OR OTHER SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED.
  - 3) BACKFILL EXCAVATION WITH GRANULAR MATERIAL COMPACTED TO THE REQUIREMENTS OF CORRIDOR STANDARD SPECIFICATION 220 FOR GRANULAR BORROW.
  - 4) STORM DRAIN FACILITIES ARE SHOWN FOR INFORMATION PURPOSE ONLY AND WILL NOT BE CONSTRUCTED WITH WALL R-345-3.



WASATCH CONSTRUCTORS  
MAR 20 1998  
RELEASED FOR CONSTRUCTION

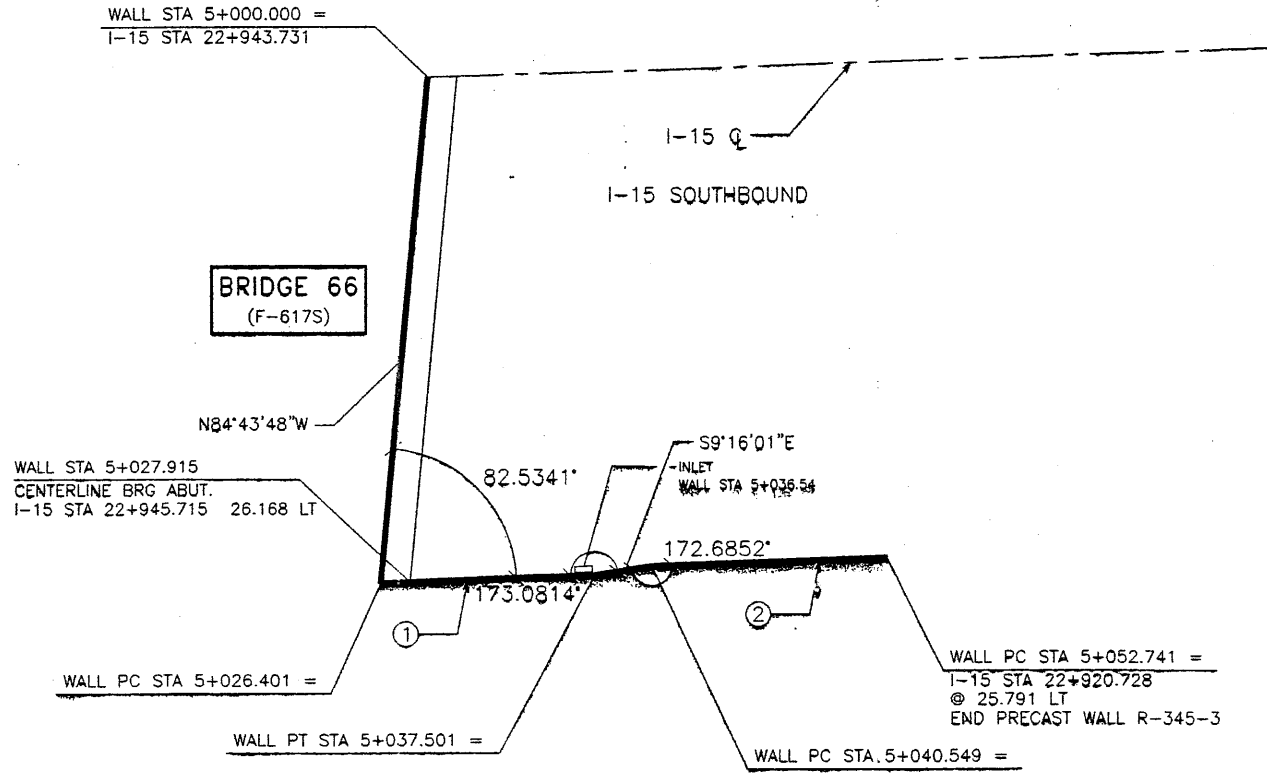
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
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△	3/15/98	△	3/15/98
△	3/15/98	△	3/15/98
△	3/15/98	△	3/15/98
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		WBS NO. 2112800	
DESIGN DMC	3/09/98	CHECK CJD	3/15/98
DRAWN BDM	3/15/98	CHECK CJD	3/15/98
QUANT. GCN	3/15/98	CHECK JAB	3/15/98
APPROVAL DATE	3/15/98	PROJECT DESIGN ENGINEER	Bret A. Reynolds
APPROVED DATE	3/15/98	PROJECT MANAGER	Randle L. Roff
I-15 CORRIDOR RECONSTRUCTION		WALL DETAIL	
SECTION 2.1		#SP-15-7(135)296	
SALT LAKE COUNTY		DWG. NO.	
3.1R-345-3.4		SHT. 4 OF 12	
REF.			

FINAL P 1-09-97 E:\PROJECT\239-0007\45SERIES\45-03\RF

CURVE DATA				
No.	RADIUS	LENGTH	TANGENT	Δ
①	3468.832	11.100	5.550	0°11'00" R
②	3489.209	12.192	6.096	0°12'05" R

All Dimensions Are In Meters Unless Noted Otherwise

DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT) = 34°	
ANGLE OF INTERNAL FRICTION (BASE) = 30°	
ANGLE OF INTERNAL FRICTION (RANDOM) = 34°	
UNIT WEIGHT BACKFILL = 135 PCF (21.2 kN/m <sup>3</sup> )	
TRAFFIC SURCHARGE = 250 PSF	
SEISMIC ACCELERATION COFF. = 0.13g (TYP)	
SEISMIC ACCELERATION COFF. = 0.32g (AT BRIDGE ABUTMENTS)	
DESIGN CRITERIA	
SAFETY FACTOR (OVERTURNING) = 2.0	
SAFETY FACTOR (SLIDING) = 1.5	
SAFETY FACTOR (PULLOUT) = 1.5	
DESIGN LIFE = 75 YEARS	



**PLAN VIEW WALL "R-345-3"**

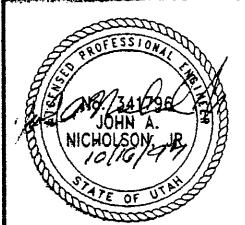
SCALE: 1=200 (FULL SIZE)  
SCALE: 1=400 (HALF SIZE)

**GENERAL NOTES**

- ALL WALLS ARE SHOWN FRONT FACE. NOTE STATIONING.
- PANEL TYPE IS DESIGNATED ON EACH PANEL. CONNECTOR LABELS INDICATE NUMBER OF CONNECTORS PER ROW.  
EXAMPLE: 5B2-10 IS A "B2-10" PANEL WITH FIVE (5) CONNECTORS PER ROW.  
IF NO CONNECTORS ARE SHOWN, FOUR (4) CONNECTOR PANELS SHALL BE USED:
- SOIL REINFORCING MESH TYPE IS DESIGNATED ON EACH PANEL. MESH LABELS INDICATE WIRE SIZE AND SPACING. LONGITUDINAL WIRE AND CROSSBAR SIZES ARE THE SAME UNLESS NOTED OTHERWISE.  
EXAMPLE: SW11-6 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 4W20-12 MESH HAS FOUR (4) W20 LONGITUDINAL WIRES WITH W20 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 5W20-24 MESH HAS FIVE (4) W20 LONGITUDINAL WIRES WITH W20 CROSSBARS AT 24" CENTERS.
- SEE RETAINED EARTH INSTALLATION MANUAL FOR PROPER WALL ERECTION PROCEDURES AND GUIDELINES.
- CONSTRUCTION PROCEDURES SHALL PREVENT BACKFILL SATURATION AND PONDING.
- HEAVY EQUIPMENT SHALL NOT BE USED WITHIN ONE METER OF THE BACK OF THE RETAINED EARTH PANELS. HAND COMPACTORS SHALL BE USED IN THIS AREA.
- CARE SHALL BE TAKEN TO PREVENT DAMAGE TO GALVANIZING. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.
- BEARING PADS AND FILTER FABRIC ARE NOT REQUIRED BETWEEN THE LEVELING PAD AND THE FIRST ROW OF PANELS. TEMPORARY WEDGES MAY BE USED TO PROVIDE PROPER ALIGNMENT.
- VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.
- ALL PANELS SHALL HAVE AN ARCHITECTURAL FINISH. SEE SHEET RE-3 FOR DETAIL.

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-3, NOTES & DESIGN CRITERIA
RE-2	TYPICAL DETAILS
RE-3	TYPICAL DETAILS
RE-4	TYPICAL CROSS SECTIONS
RE-5	SPECIAL DETAILS
RE-6	ELEVATION PRECAST WALL "R-345-3"
RE-7	SPECIAL PANEL DETAILS
RE-8	SPECIAL PANEL DETAILS

METRIC  
50/F12



CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-09-97	RELEASE FOR CONSTRUCTION

**WASATCH CONSTRUCTORS**  
OCT 20 1997  
RELEASED FOR CONSTRUCTION

RETAINED EARTH™ WALLS  
PLAN VIEW PRECAST WALL "R-345-3"  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSPORTATION

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Durham, NC (919) 781-6772  
Tel: (919) 781-4868

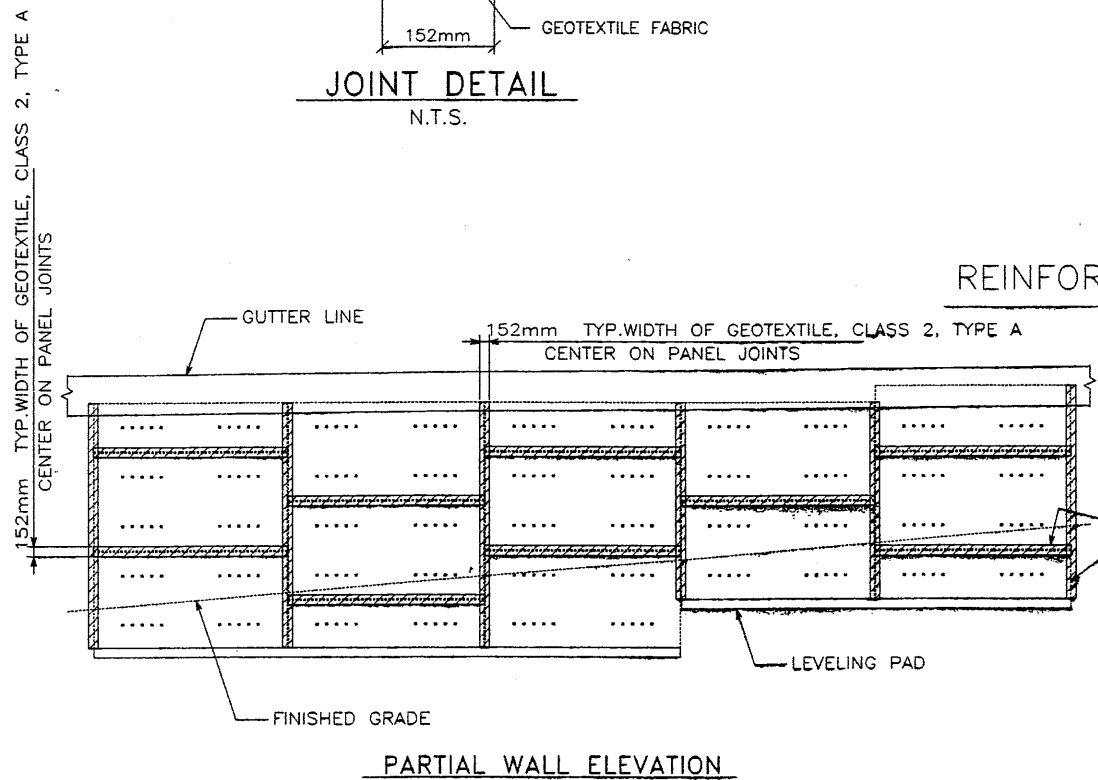
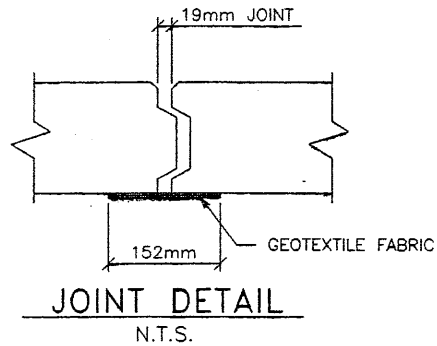
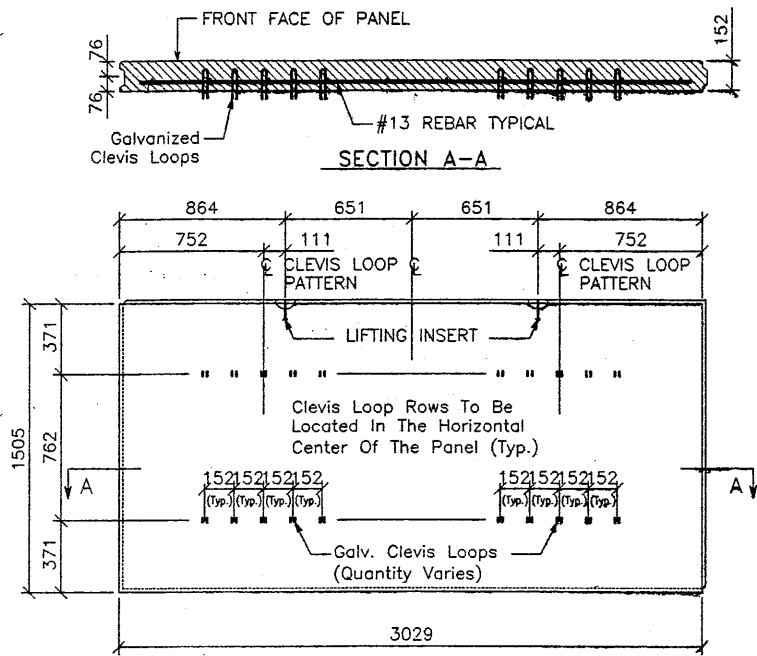
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

DES. 10-09-97  
DRN. 10-09-97  
CHK. 10-09-97

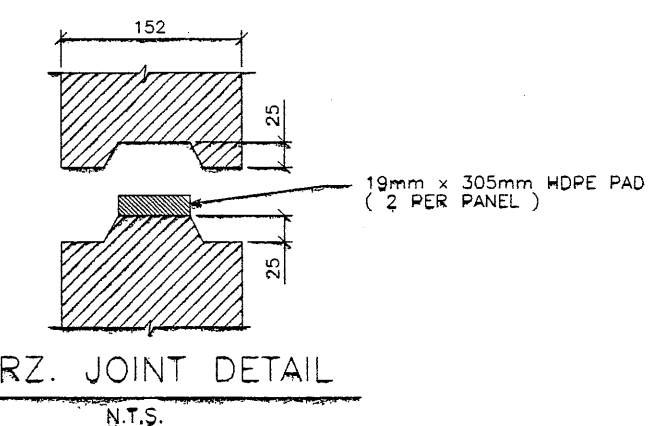
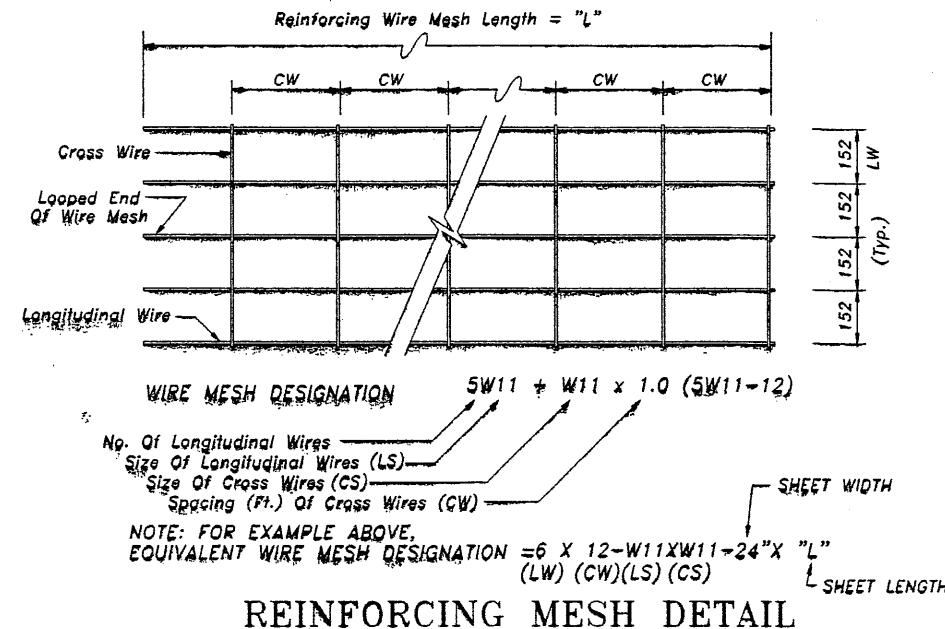
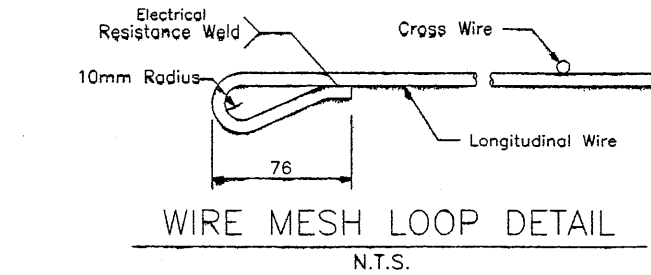
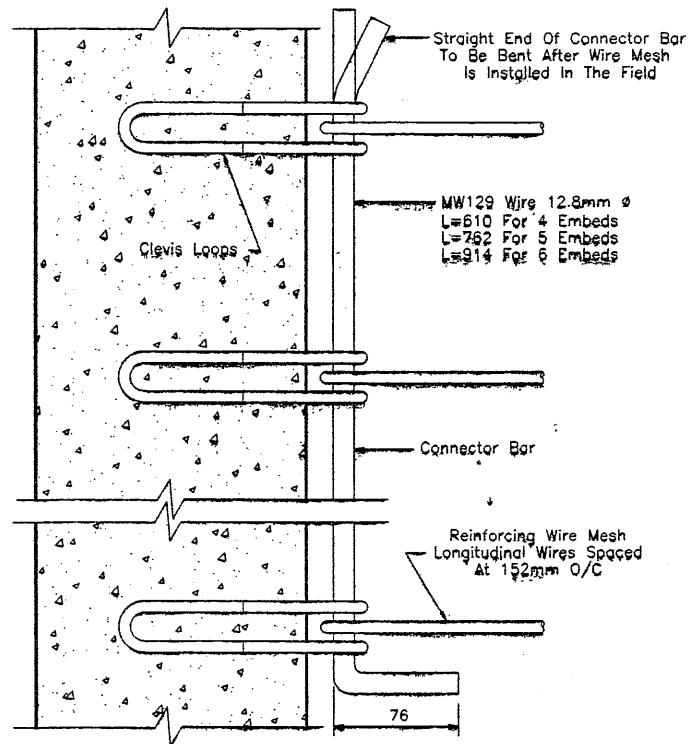
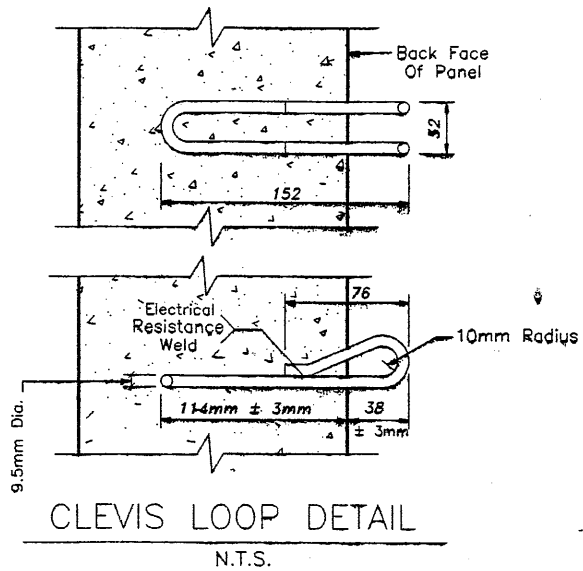
NO. DATE  
BY CHK

REVISION

SCALE: 2.1R-345-3.5  
JOB NO: 239-0007  
RE-1



APPLY ADHESIVE COATING TO PANELS ONLY. DO NOT APPLY ADHESIVE TO GEOTEXTILE OR WITHIN 51mm OF JOINT (TYP.)



CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-09-97	RELEASE FOR CONSTRUCTION

WASATCH CONSTRUCTORS  
OCT 20 1997  
RELEASED FOR CONSTRUCTION

DES.	DRN.	CHK.	RETAINED EARTH™	NO.	DATE	BY
10-09-97	10-09-97	10-09-97	VSL			CHK

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6272  
Fax: (919) 781-6669

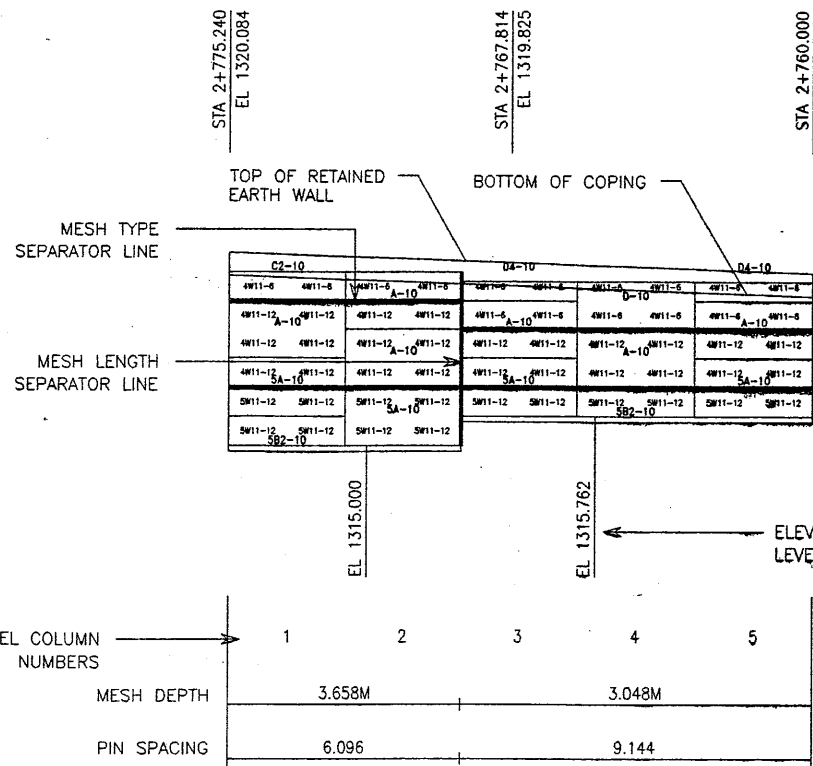
ATLANTA, GA / DALLAS, TX / HOUSTON, TX (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

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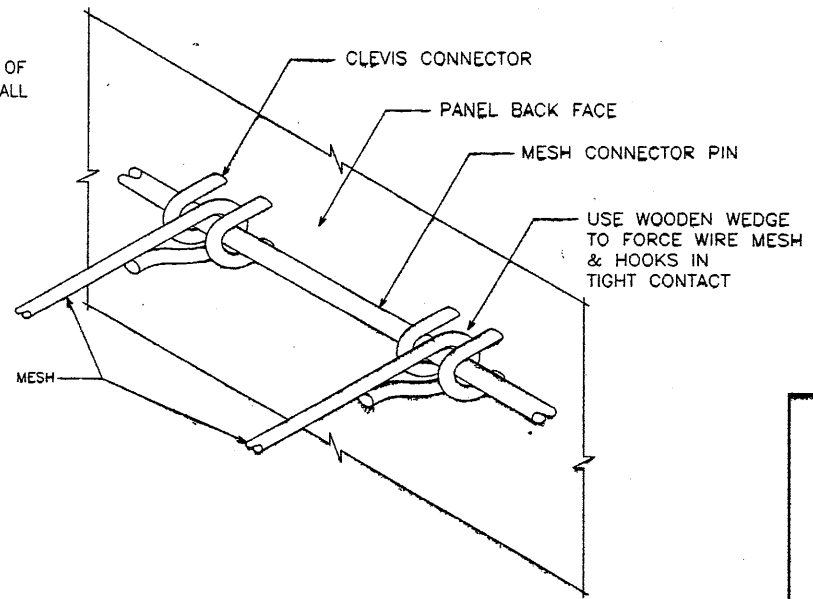
RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-3"  
TYPICAL DETAILS  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSPORTATION

METRIC  
60F12

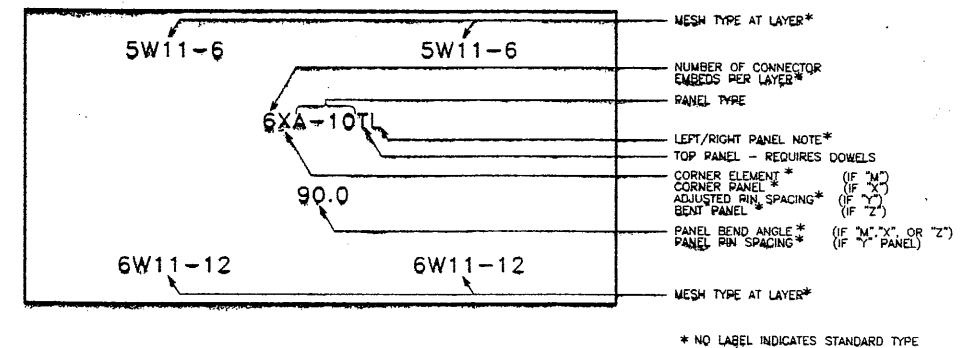
SCALE:	2.1R-345-3.6
JOB NO:	239-0007
	RE-2



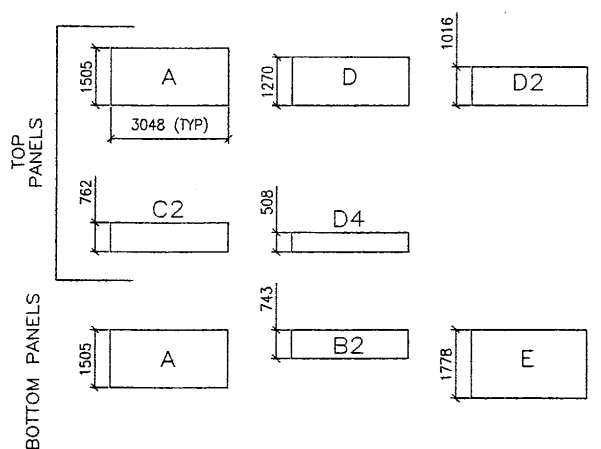
1 WALL ELEVATION KEY  
(FRONT FACE SHOWN)



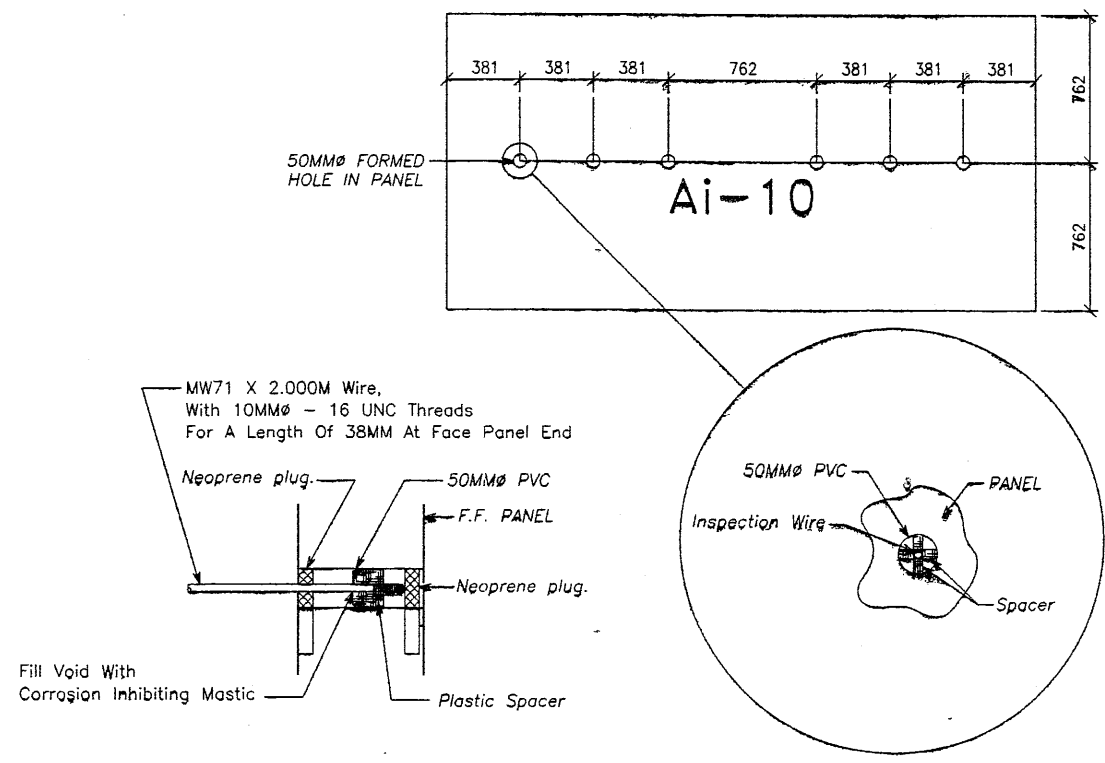
2 MESH CLEVIS CONNECTOR  
VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.



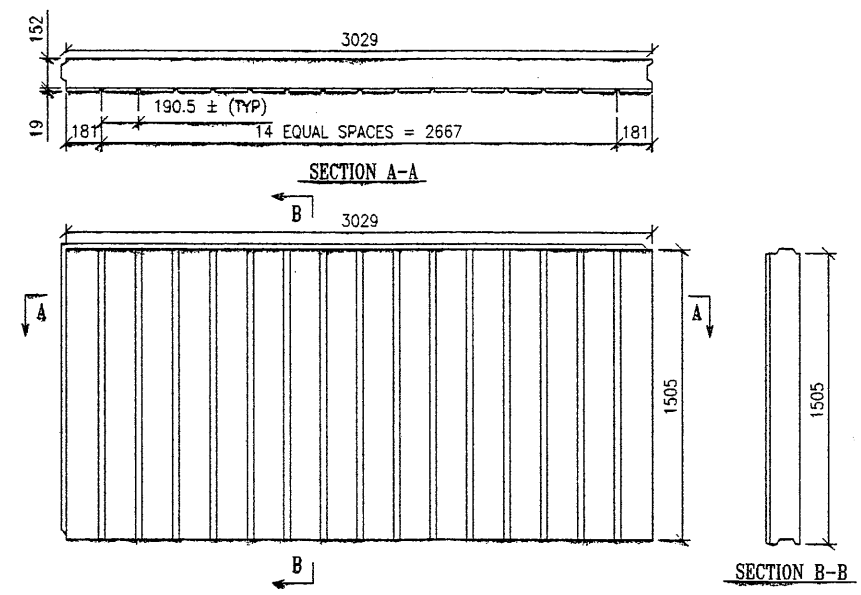
3 PANEL LABELS



4 PANEL TYPES  
ALL DIMENSIONS ARE IN MILLIMETERS



5 INSPECTION WIRE DETAIL  
(PANEL FRONT FACE SHOWN)



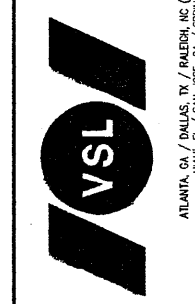
6 ARCHITECTURAL PANEL FINISH  
(PANEL FRONT FACE SHOWN)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-09-97	RELEASE FOR CONSTRUCTION

WASATCH CONSTRUCTORS  
OCT 20 1997  
RELEASED FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	REV.
10-09-97	10-09-97	10-09-97		

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 761-6272  
Fax: (919) 761-4869



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RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-3"  
TYPICAL DETAILS  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

METRIC  
7 OF 12  
PROFESSIONAL ENGINEER  
JOHN A. NICHOLSON, JR.  
10/16/97  
STATE OF UTAH

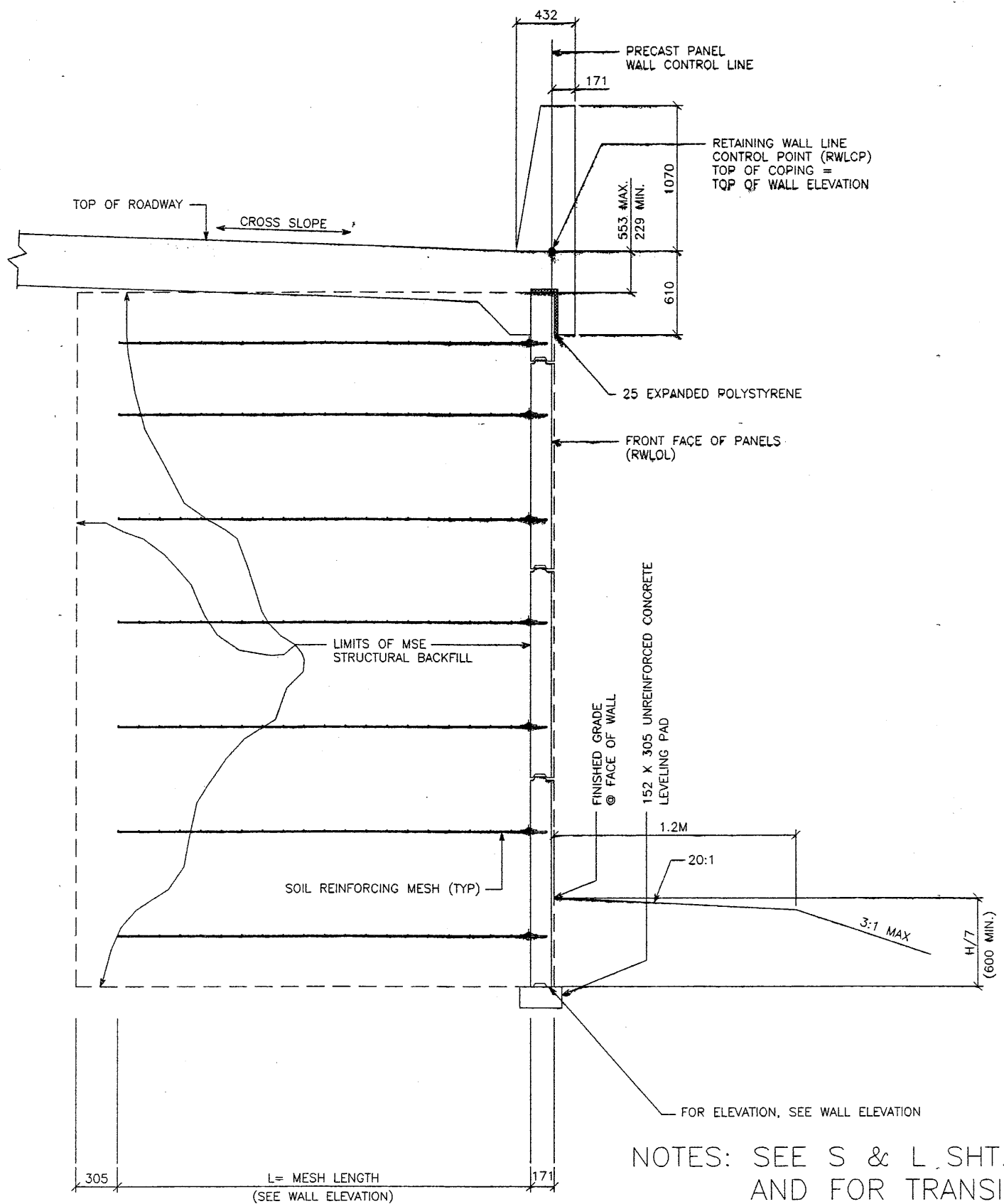
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

SCALE:
2.1R-345-3.7
JOB NO:
239-0007
RE-3



E:\PROJECT\239-0007\45SERIES\45-03\R

FINAL P 09-97



NOTES: SEE S & L SHT. 2.1R-345-3.3 FOR LIMITS OF OVER-EXCAVATION AND FOR TRANSITION DETAIL

TYPICAL CROSS SECTION - STA 5+040.000 TO 5+052.741624

(SEE DWG. NO. 2.1R-345-3.4 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)  
SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
△	10-09-97	RELEASE FOR CONSTRUCTION <i>dl</i>

**WASATCH CONSTRUCTORS**  
OCT 20 1997  
RELEASED FOR CONSTRUCTION

DES.	MM	DRN.	LOP	CHK.	DATE	BY	DESCRIPTION

VSL CORPORATION  
2540 Pease Place, Suite 200  
Raleigh, NC 27607-761-6772  
Fax: (919) 781-6869

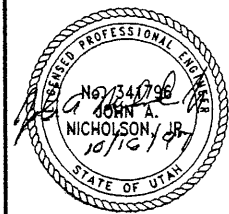


ATLANTA, GA / DALLAS, TX / BALDWIN, NC (CORPORATE OFFICE)

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RETAINED EARTH™ WALLS  
WIRE FACED WALL "R-345-3"  
TYPICAL CROSS SECTION  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

METRIC  
80F12



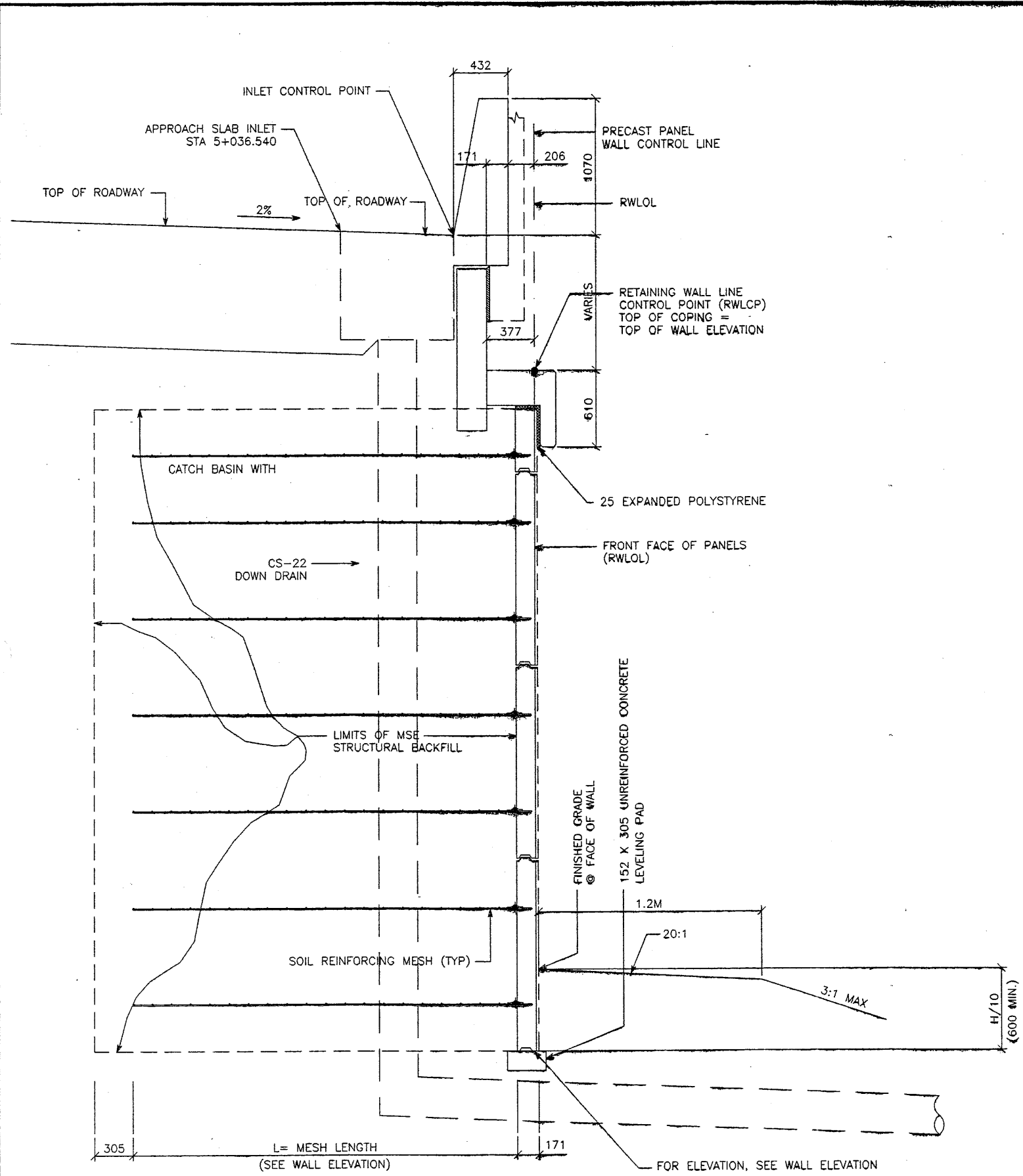
SCALE: 2.1R-345-3.8  
JOB NO: 239-0007  
RE-4

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

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-09-97

FINAL PL

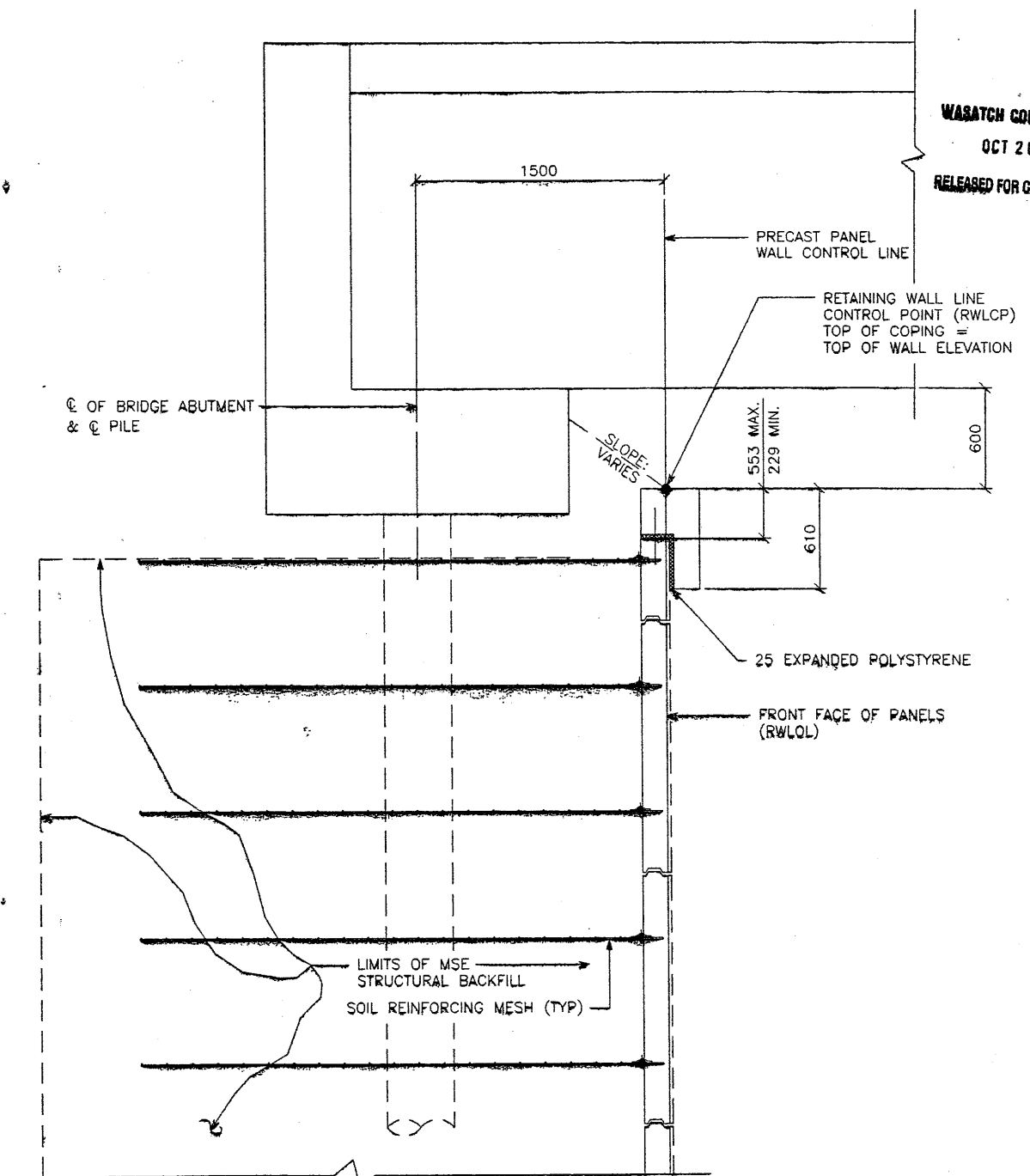


TYPICAL CROSS SECTION - STA 5+000.000 TO 5+026.401

(SEE DWG. NO. 2.1R-345-3.3 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)

SCALE: 1:40 (HALF SIZE)



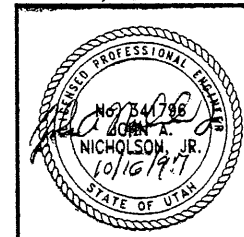
TYPICAL CROSS SECTION - STA 5+026.401 TO 5+037.501

(SEE DWG. NO. 2.1R-345-3.3 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)

SCALE: 1:40 (HALF SIZE)

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APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-09-97	RELEASE FOR CONSTRUCTION <i>oll</i>

WASATCH CONSTRUCTORS  
OCT 20 1997  
RELEASED FOR CONSTRUCTION

DES.	DRN.	CHK.	BY
09-18-97	09-18-97	09-18-97	MM

VSL CORPORATION  
2840 Pine Plaza, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6272  
Fax: (919) 781-4969



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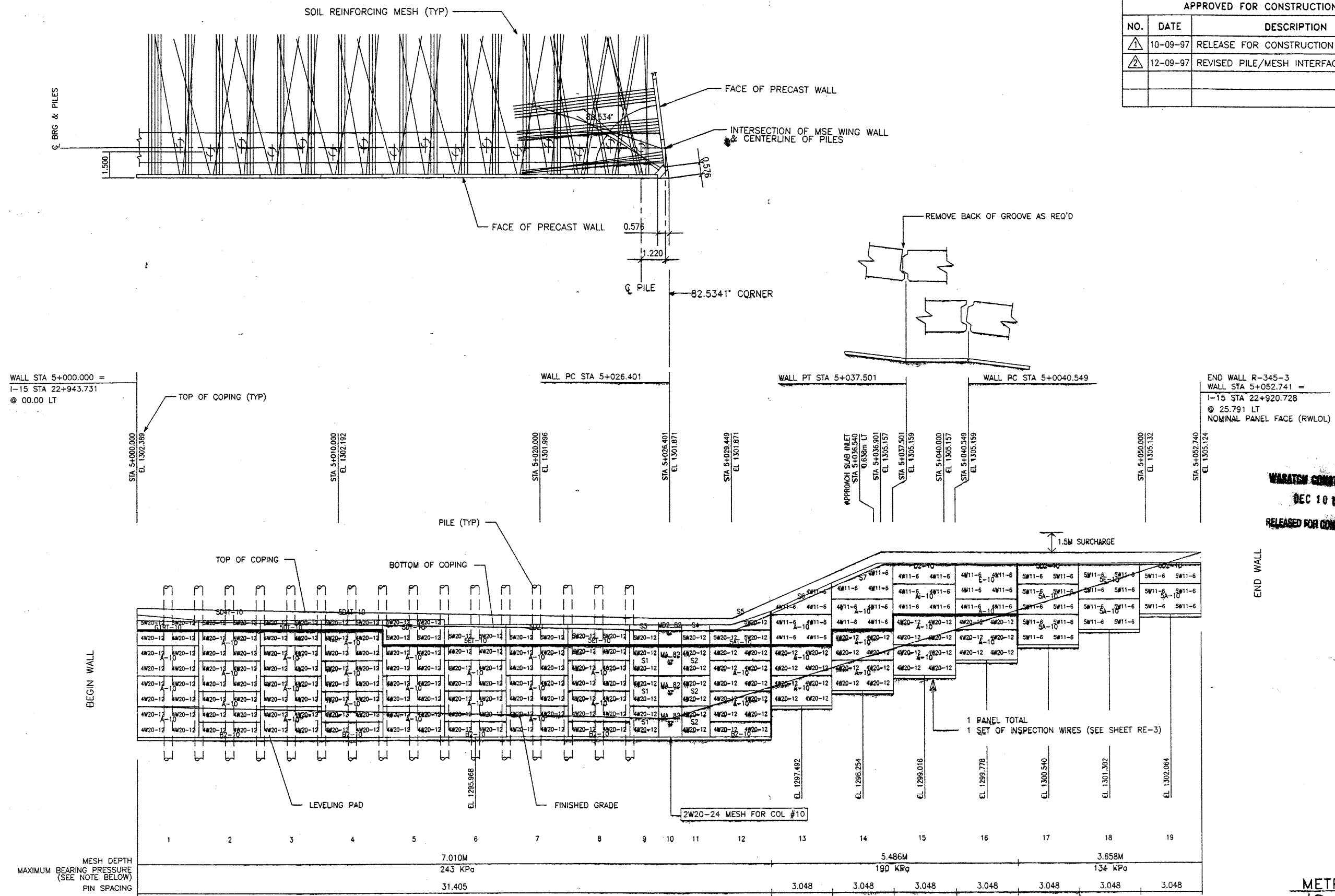
RETAINED EARTH™ WALLS  
WIRE FACED WALL "R-345-3"  
TYPICAL CROSS SECTION  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

SCALE:	2.1R-345-3.9
JOB NO.:	239-0007
	RE-5

E:\PROJECT\239-0007\45SERIES\45-03\W45-03

09-97

FINAL PLC



WALL STA 5+000.000 =  
 I-15 STA 22+943.731  
 @ 00.00 LT

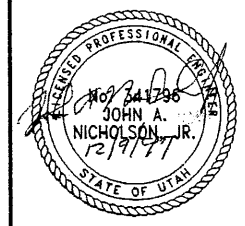
MESH DEPTH 7.010M  
 MAXIMUM BEARING PRESSURE (SEE NOTE BELOW) 243 KPa  
 PIN SPACING 31.405

**ELEVATION PRECAST WALL R-345-3**  
 (FRONT FACE SHOWN)  
 (TOTAL SURFACE AREA OF PANELS = 275.61 SM)  
 SCALE 1:100 (FULL SIZE)  
 SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
 EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
 ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

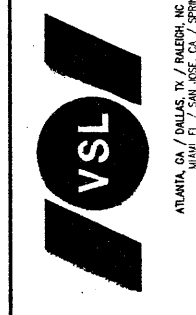
METRIC  
 10 OF 12



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-09-97	RELEASE FOR CONSTRUCTION
△	12-09-97	REVISED PILE/MESH INTERFACE

DES.	DRN.	CHK.	MM	LOP	MM	NO.	DATE	BY	CHK

VSL CORPORATION  
 2840 Pima Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 791-6272  
 Fax: (919) 791-4989

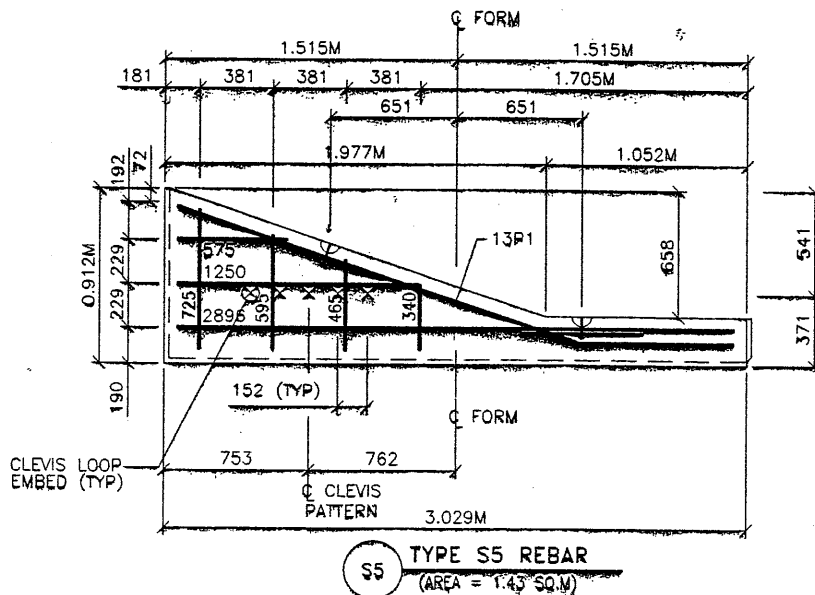
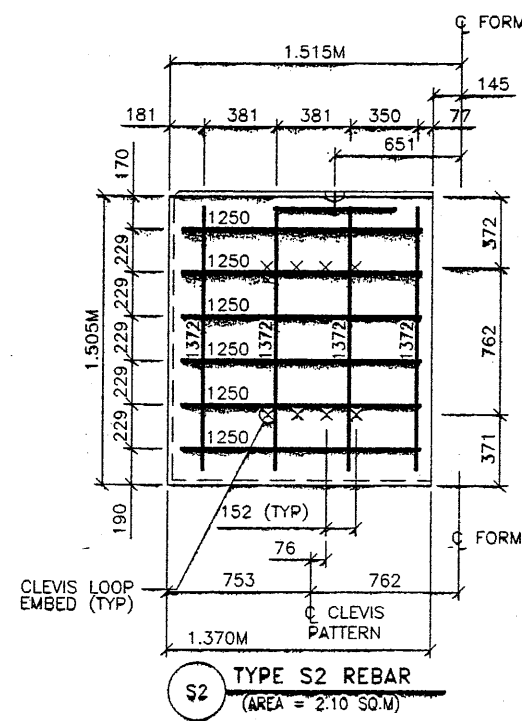
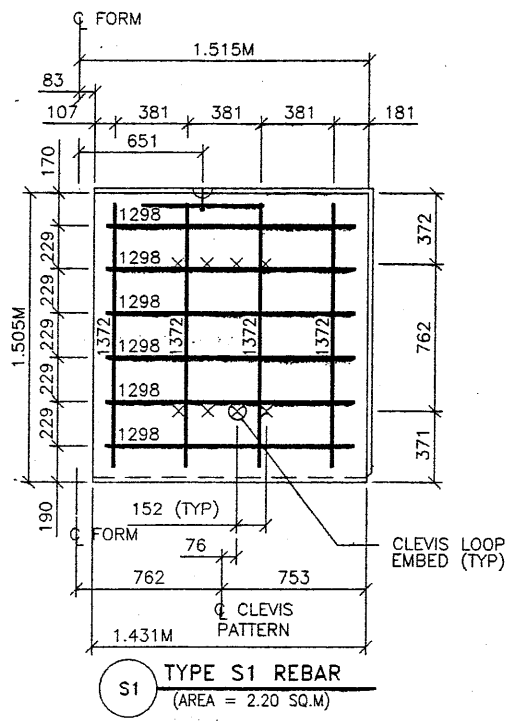


ATLANTA, GA / DALLAS, TX / DENVER, CO (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

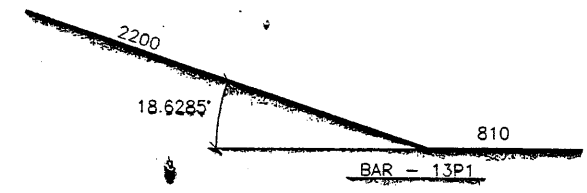
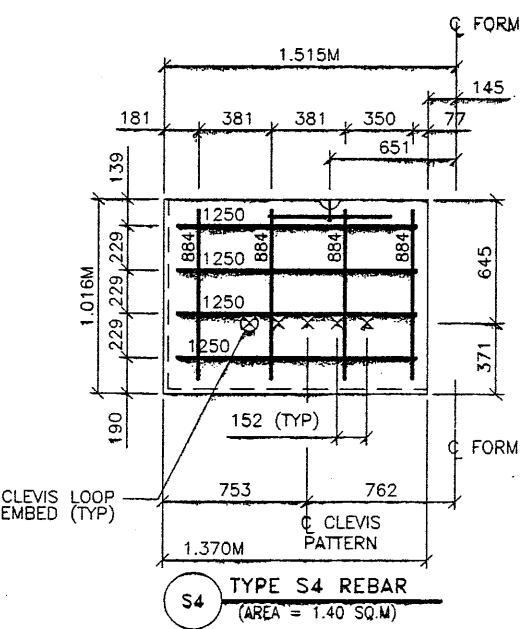
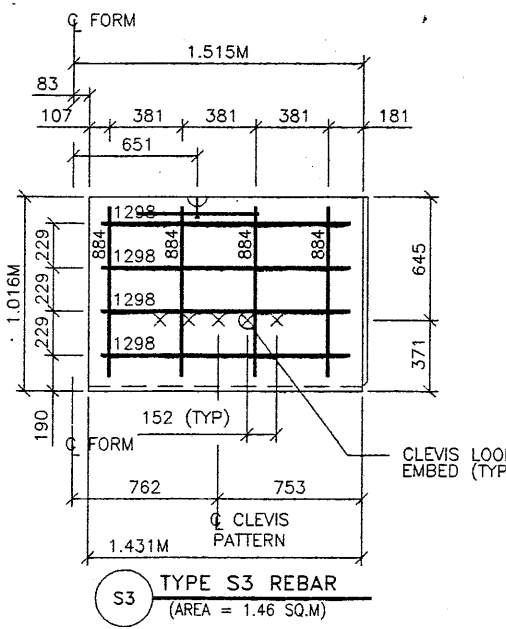
RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-3"  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

SCALE:  
 2.1R-345-3.10  
 JOB NO:  
 239-0007  
 RE-6

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-09-97	RELEASE FOR CONSTRUCTION <i>OK</i>



- PANEL REINFORCEMENT NOTES:
- PANELS ARE SHOWN BACK FACE.
  - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS I.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.



**WABATCH CONSTRUCTORS**  
**OCT 20 1997**  
**RELEASED FOR CONSTRUCTION**

APPROVED FOR CONSTRUCTION			NO.	DATE	DESCRIPTION	BY
△	10-09-97	RELEASE FOR CONSTRUCTION <i>OK</i>				

DES. 10-09-97 JUN  
 DRN. 10-09-97 DDO  
 CHK. 10-09-97 JUN

VSL CORPORATION  
 2840 Plaza Piece, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 791-8272  
 Fax: (919) 791-4689

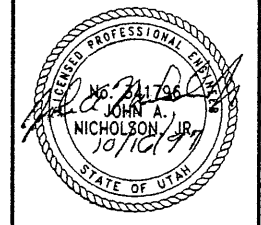
ATLANTA, GA / DALLAS, TX / PALERMO, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

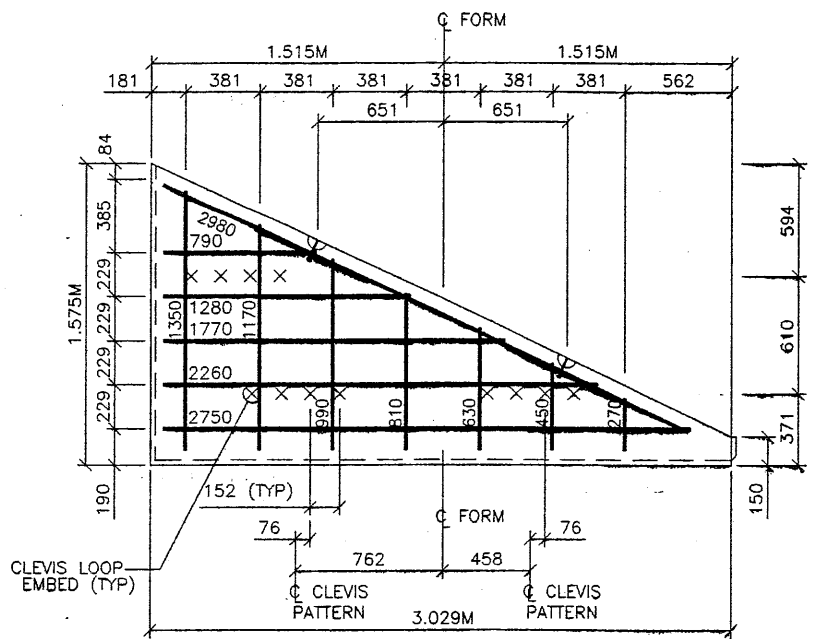
**VSL**

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-3"  
 SPECIAL PANEL REINFORCEMENT  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

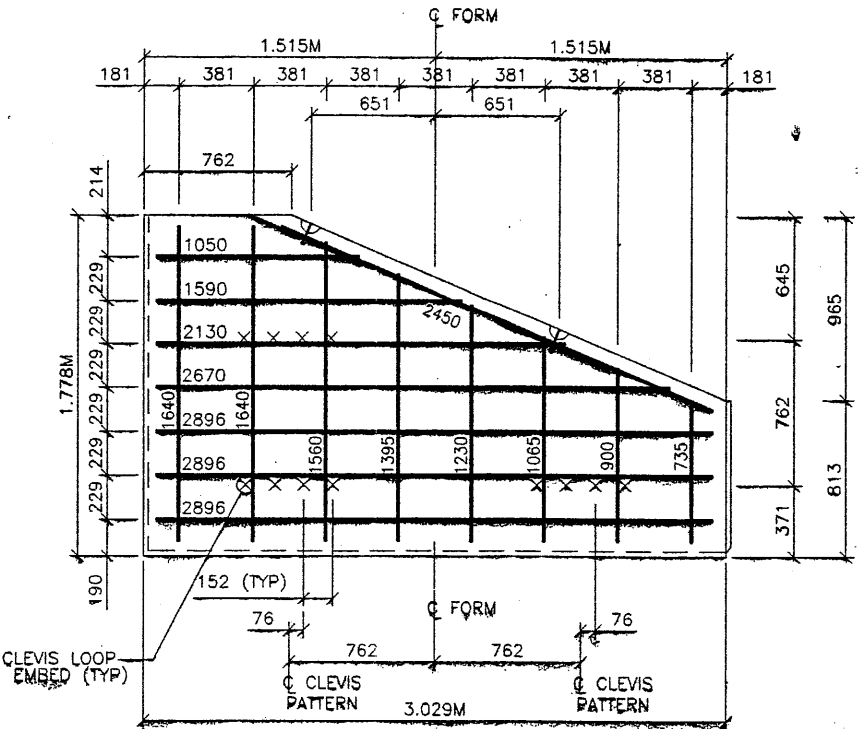
SCALE:  
 2.1R-345-3.11  
 JOB NO:  
 239-0007  
 RE-7

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.





**S6 TYPE S6 REBAR**  
(AREA = 2.63 SQ.M)



**S7 TYPE S7 REBAR**  
(AREA = 4.32 SQ.M)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	10-09-97	RELEASE FOR CONSTRUCTION <i>[Signature]</i>

- PANEL REINFORCEMENT NOTES:
- PANELS ARE SHOWN BACK FACE.
  - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS 1.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4.725.170.

**WASATCH CONSTRUCTORS**  
OCT 20 1997  
RELEASED FOR CONSTRUCTION

DES.	CHK.	DATE	BY
JUN	DDO	10-09-97	DDO
JUN	JUN	10-09-97	JUN

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone (919) 781-6272  
Fax (919) 781-4969



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RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-3"  
SPECIAL PANEL REINFORCEMENT  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

METRIC  
17 OF 12

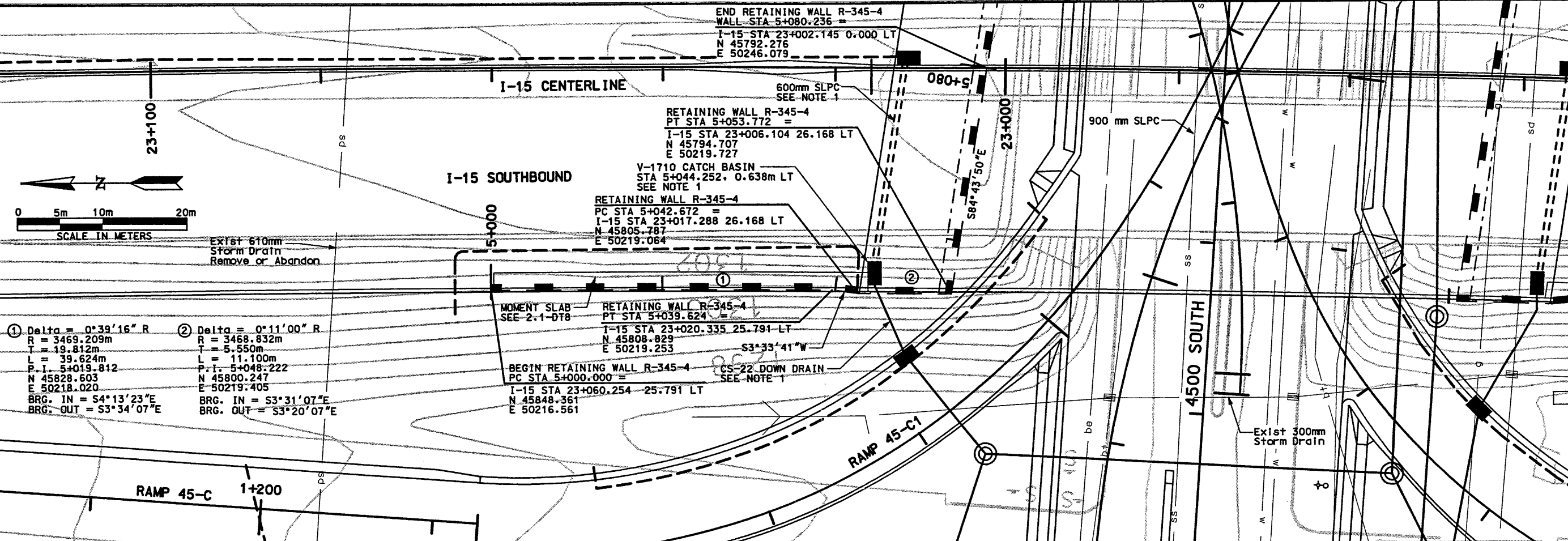
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

SCALE: 2.1R-345-3.12  
JOB NO: 239-0007  
RE-8



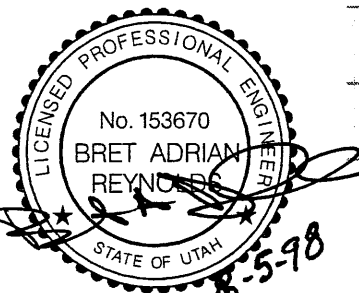
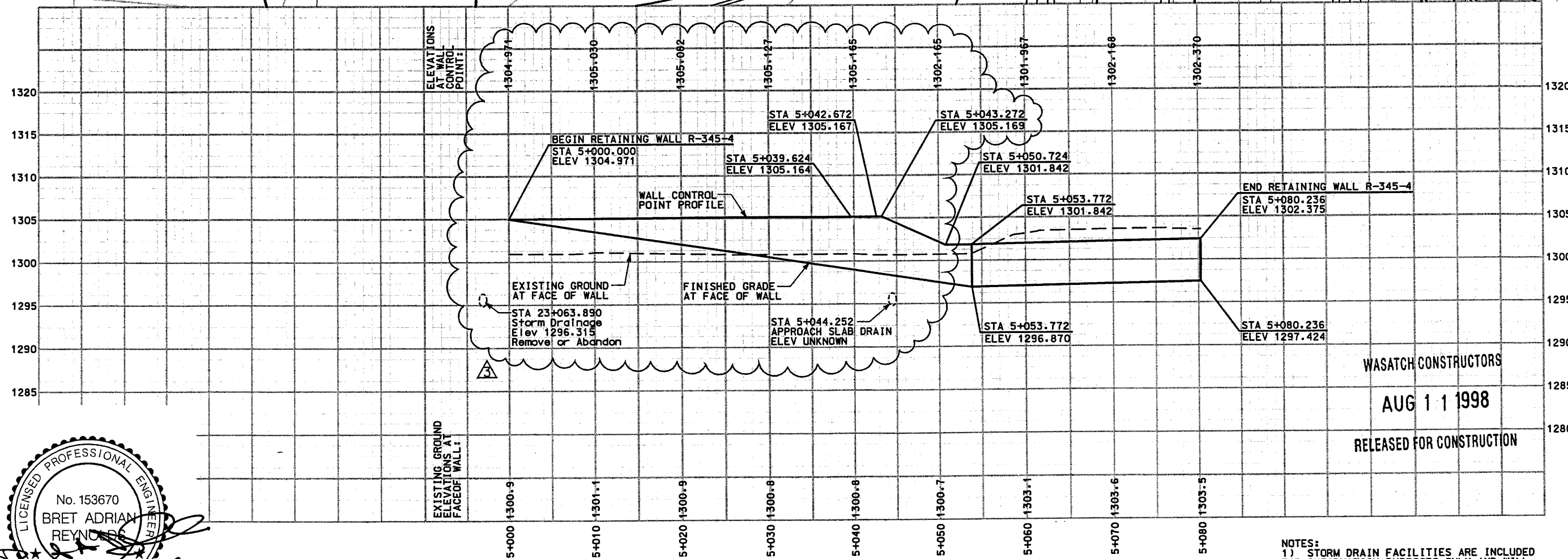
Users: mtr, f, resaca  
 Date: 30-Jul-1998 Times: 14:11

Filename: c:\p1\115\_cadd\115\_97\revision\files\wall\of5wall-04.dgn



① Delta = 0°39'16" R  
 R = 3469.209m  
 T = 19.812m  
 L = 39.624m  
 P.I. = 5+019.812  
 N 45828.603  
 E 50218.020  
 BRG. IN = S4°13'23"E  
 BRG. OUT = S3°34'07"E

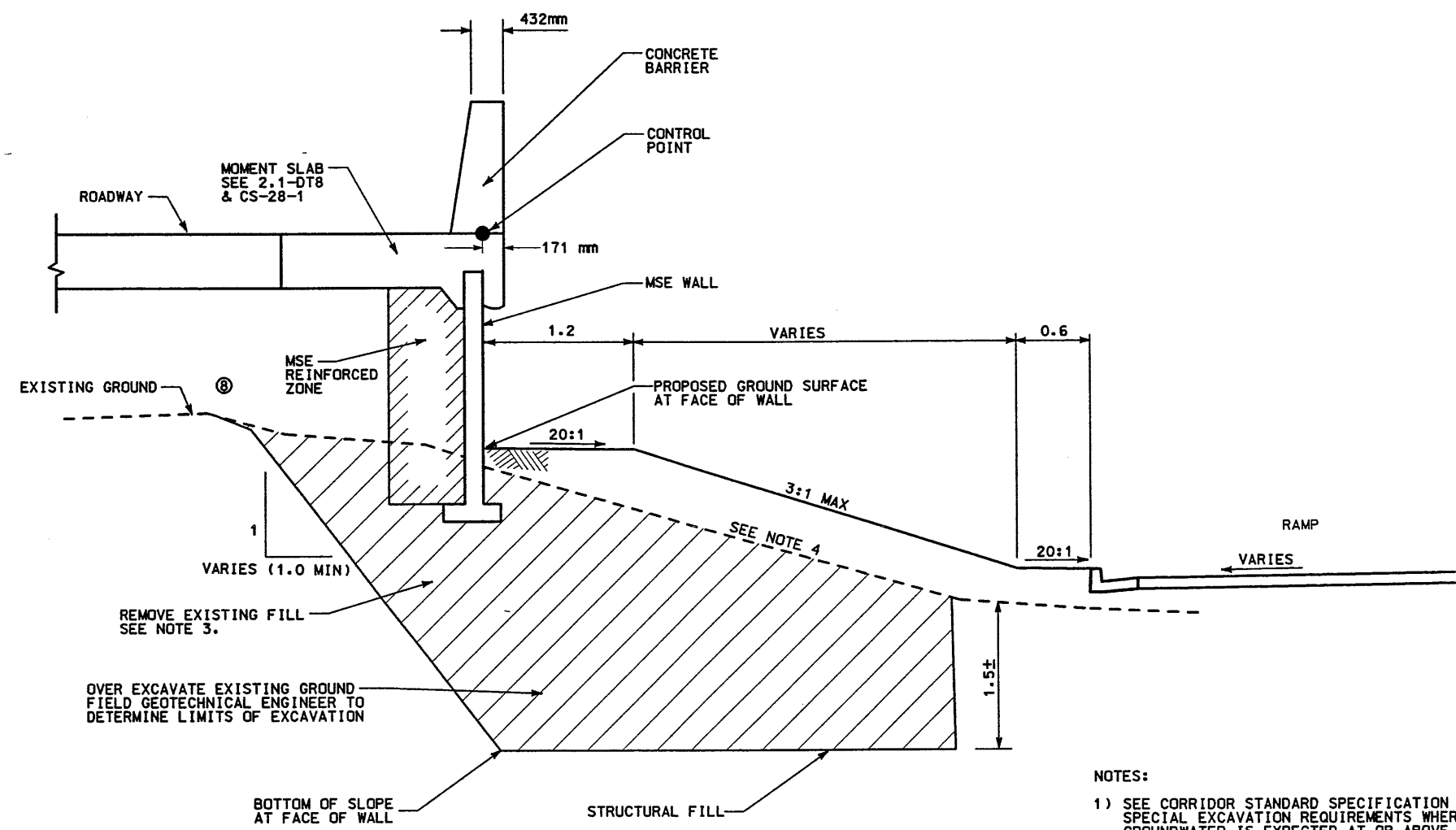
② Delta = 0°11'00" R  
 R = 3468.832m  
 T = 5.550m  
 L = 11.100m  
 P.I. = 5+048.222  
 N 45800.247  
 E 50219.405  
 BRG. IN = S3°31'07"E  
 BRG. OUT = S3°20'07"E



NOTES:  
 1) STORM DRAIN FACILITIES ARE INCLUDED FOR INFORMATION PURPOSES ONLY AND WILL NOT BE CONSTRUCTED WITH WALL R-345-4.

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	DATE	DESCRIPTION
1	10/13/97		ORIGINAL ISSUE
2	3/15/98		98 EARLY FINAL
3	7/30/98		REVISED ELEVATIONS
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		DESIGN DMC	3/15/98
		CHECK CJD	3/15/98
		DESIGN	3/15/98
		CHECK BDM	3/15/98
		QUANT. GCM	3/15/98
		CHECK JAB	3/15/98
PERSONAL RECORD		DATE	PROJECT DESIGN ENGINEER
3/15/98		3/15/98	Bret A. Reynolds
APPROVED		DATE	PROJECT MANAGER
3/15/98		3/15/98	Randle L. Ross
I-15 CORRIDOR RECONSTRUCTION SITUATION & LAYOUT R-345-4 SECTION 2.J		WBS NO.	2112600
PROJECT NUMBER		#SP-15-7(135)296	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-4.1	
SHT. 1 OF 13		REF.	

### RETAINING WALL DETAIL SECTION 2.1 WALL NO. R-345-4 (1 STAGE MSE WALL)



**DETAIL A**  
STA 5+000.000 TO STA 5+039.624

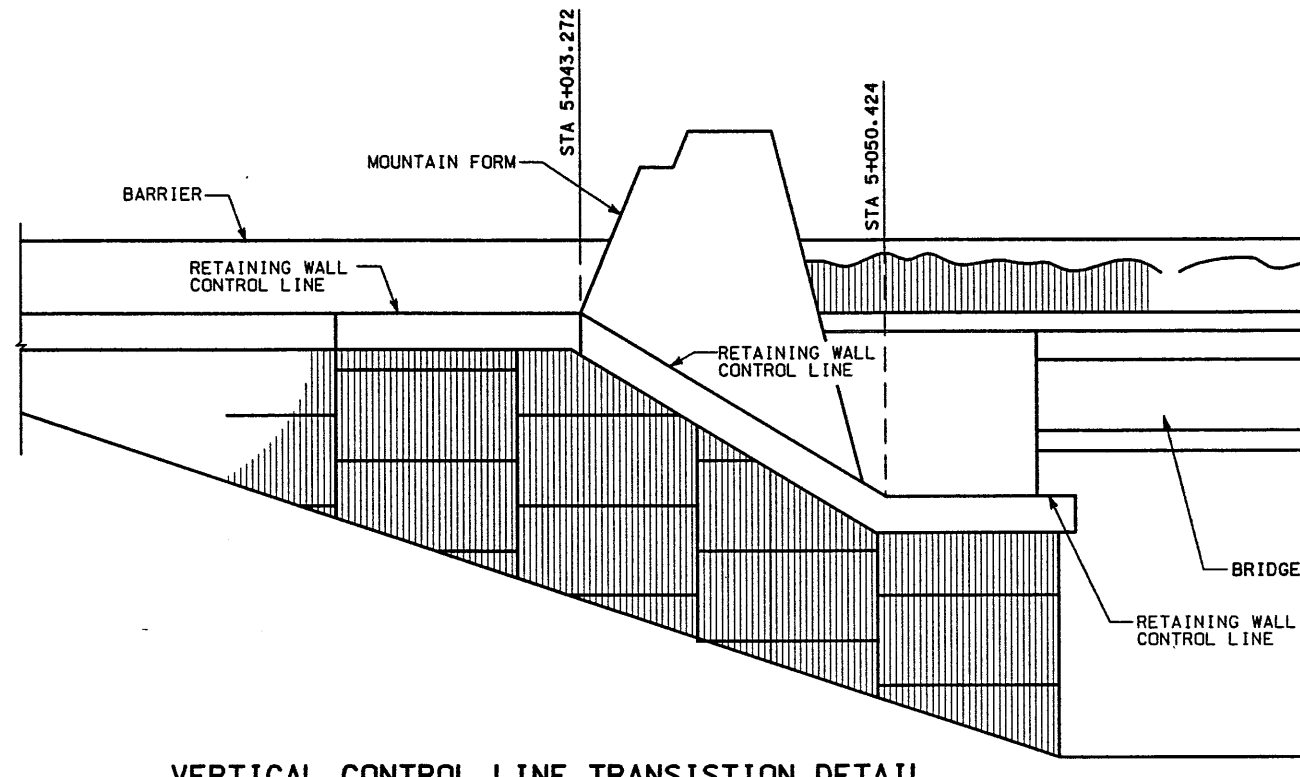
Wall Number	Station Limits	Reference Station (7)	Wall Settlement (Front Face of Wall)	Top of Wall Rotation (5)	Lateral Displacement at Bottom of Wall
R-345-4	23+009 to 23+060	23+020	20 to 40 mm	40 mm	SEE NOTE (6)

- NOTES:**
- SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION ELEVATION.
  - SEE CORRIDOR STANDARD SPECIFICATION 210 FOR SPECIAL EXCAVATION AND BACKFILL REQUIREMENTS WHERE SOFT CLAYS OR OTHER SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED.
  - BACKFILL EXCAVATION WITH STRUCTURAL FILL COMPACTED TO THE REQUIREMENTS OF CORRIDOR STANDARD SPECIFICATION 220.2.2.1 GRANULAR BORROW.
  - SEE DRAINAGE SHEETS FOR GRADES ALONG DITCH.
  - VALUES GIVEN ARE ESTIMATES BASED ON AVAILABLE SOIL INFORMATION. CONTRACTOR SHOULD USE THIS INFORMATION AS A GUIDE TO ACCOUNT FOR SETTLEMENT/WALL ROTATION DURING WALL CONSTRUCTION. THE ACTUAL SETTLEMENT/ROTATION VALUES SHOULD BE MONITORED DURING WALL CONSTRUCTION AND ADJUSTMENTS MADE AS REQUIRED IN CONSULTATION WITH THE FIELD GEOTECHNICAL ENGINEER.
  - LATERAL DISPLACEMENT AT BOTTOM OF WALL ESTIMATED TO BE LESS THAN ONE-HALF OF THE SETTLEMENT AT FRONT FACE OF WALL.
  - VALUES CALCULATED AT REFERENCED STATION; VALUES AT OTHER STATIONS CAN BE ESTIMATED IN PROPORTION TO WALL HEIGHT.

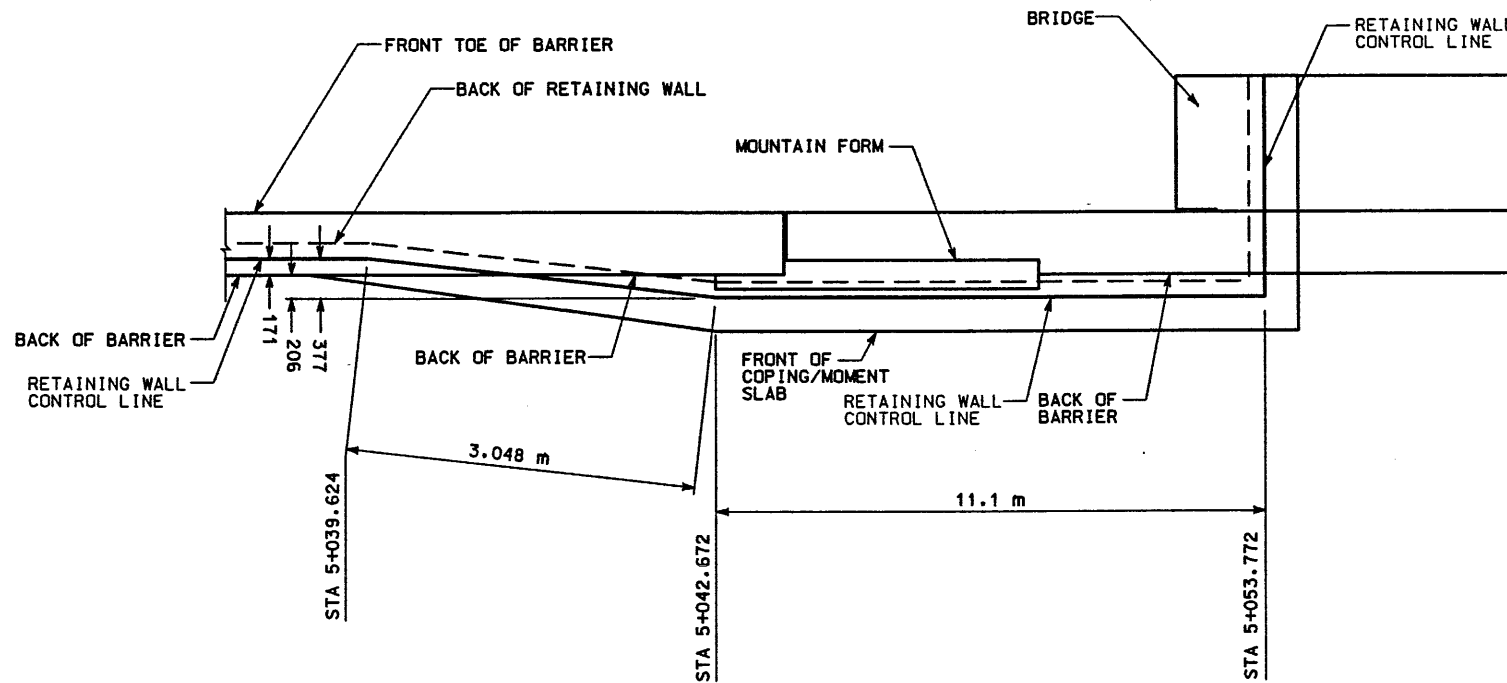


**WASATCH CONSTRUCTORS**  
**MAR 20 1998**  
**RELEASED FOR CONSTRUCTION**

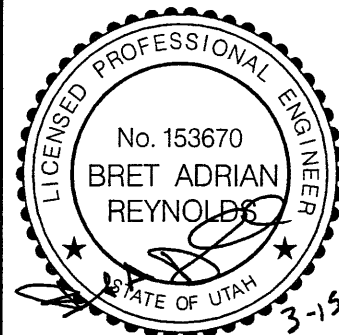
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△	/ /	△	/ /
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112600	
MK CENTENNIAL		DESIGN DMC 3/09/98 CHECK CJO 3/15/98	
SVERRUP/DE LEUW		DRAWN BDM 3/15/98 CHECK CJO 3/15/98	
DATE 3/15/98		QUANT. GCM 3/15/98 CHECK JAB 3/15/98	
PROJECT DESIGN ENGINEER		PROJECT MANAGER	
Bret A. Reynolds		Randle L. Ropp	
DATE 3/15/98		DATE 3/15/98	
APPROVAL RECORD		PROJECT NUMBER	
3/15/98		#SP-15-7(135)296	
APPROVED 3/15/98		COUNTY	
DATE		SALT LAKE	
DATE		DWG. NO.	
DATE		2-1R-345-4.2	
DATE		SHT 2 OF 13	
DATE		REF.	



**VERTICAL CONTROL LINE TRANSITION DETAIL**  
NTS



**HORIZONTAL CONTROL LINE TRANSITION DETAIL**  
STA 5+039.624 TO 5+042.199  
NTS

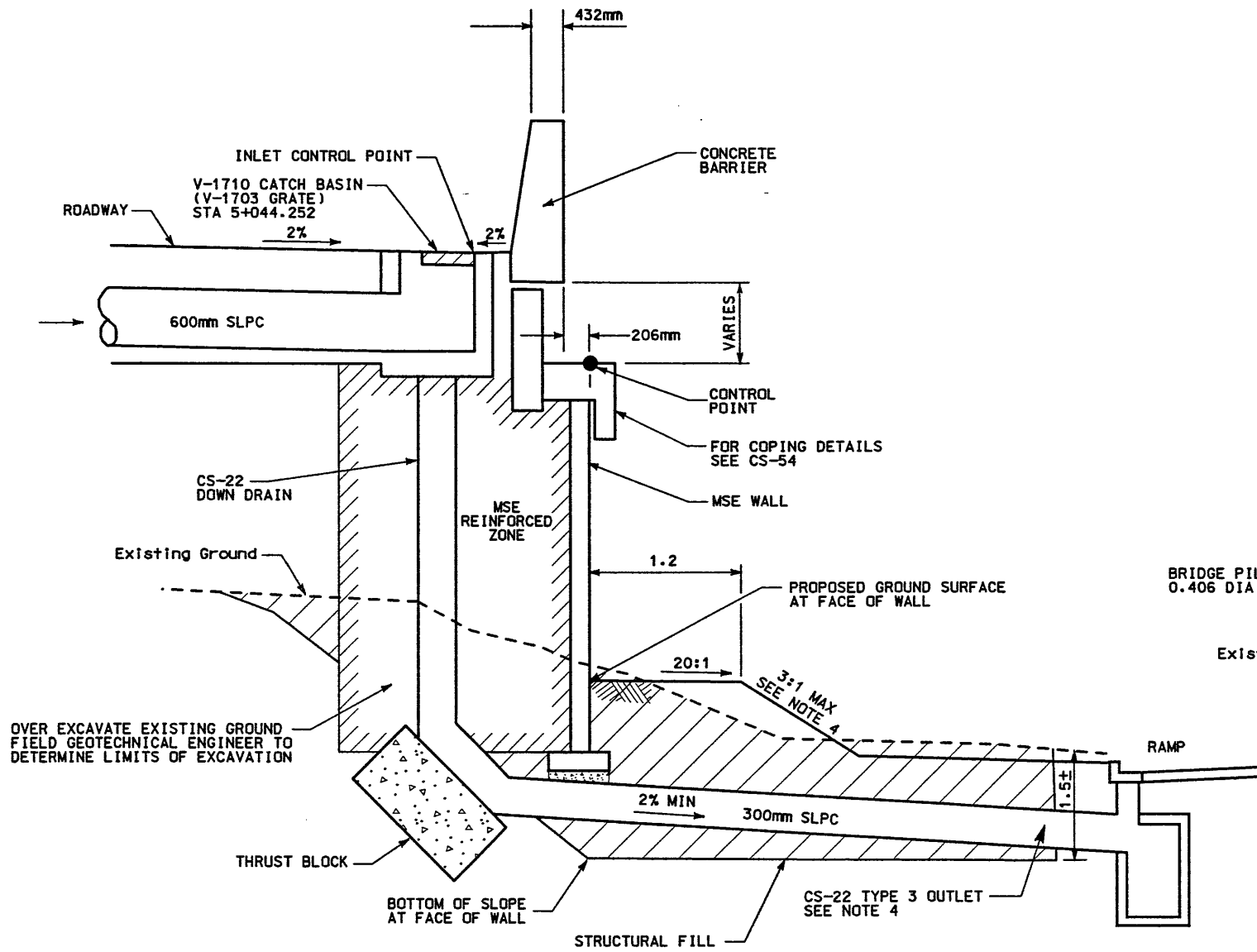


**WASATCH CONSTRUCTORS**  
**MAR 20 1998**  
RELEASED FOR CONSTRUCTION

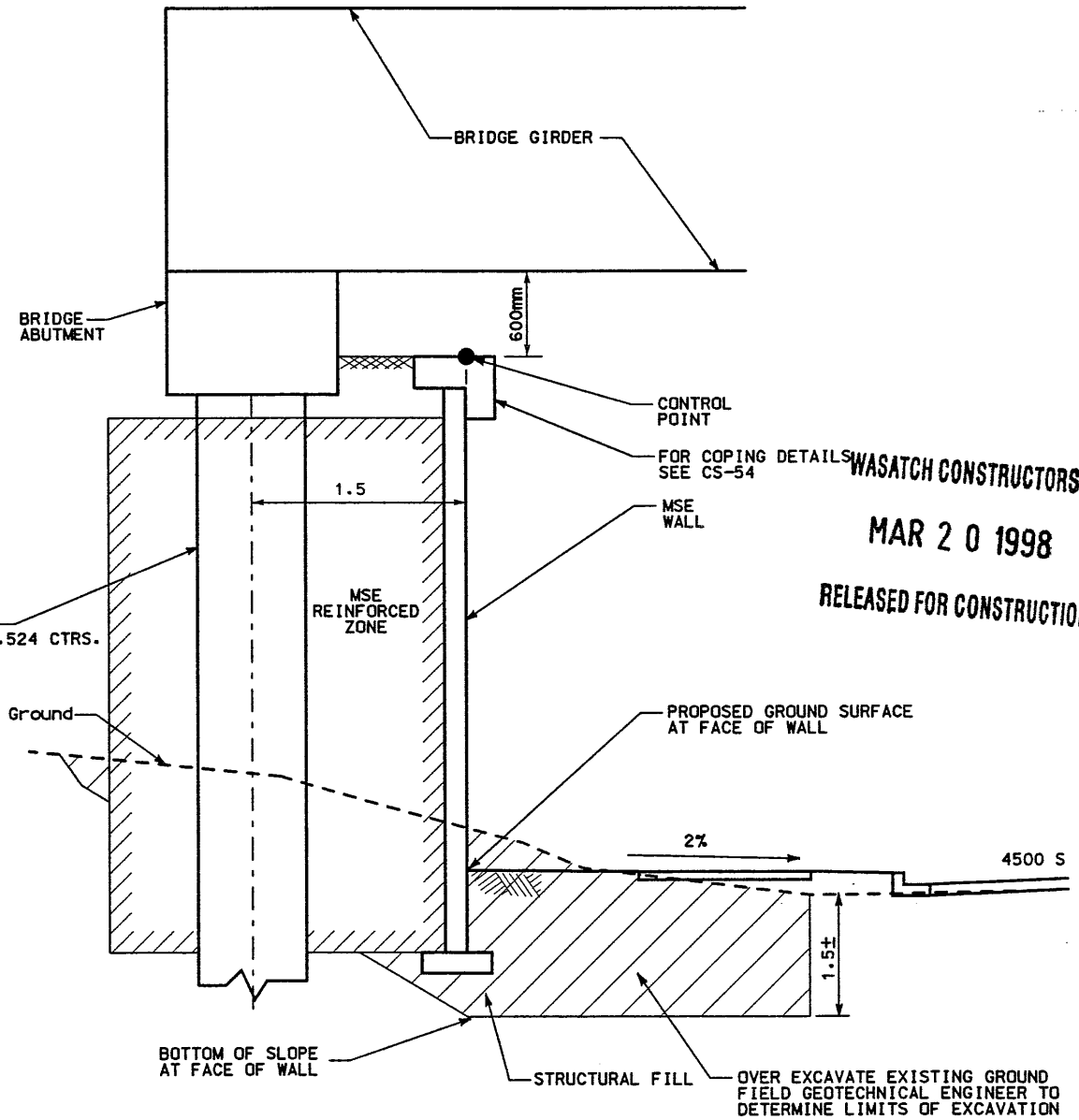
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	ORIGINAL ISSUE	
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△	3/15/98	98 EARLY FINAL	
△	/ /		
△	/ /		
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		DESIGN DMC	3/15/98
DESIGN CJO		CHECK CJO	3/15/98
DRAWN BDM		CHECK CJO	3/15/98
QUANT. GCM		CHECK JAB	3/15/98
PROJECT MANAGER		PROJECT NO.	2112600
DATE 3/15/98		DESIGNER	Bret A. Reynolds
DATE 3/15/98		PROJECT DESIGN ENGINEER	Bret A. Reynolds
DATE 3/15/98		PROJECT MANAGER	Randle L. Roff
DATE 3/15/98		PROJECT MANAGER	Randle L. Roff
I-15 CORRIDOR RECONSTRUCTION		SECTION	2-J
WALL DETAIL R-345-4		PROJECT NUMBER	*SP-15-7(135)296
SALT LAKE COUNTY		DWG. NO.	2.1R-345-4.3
SHT. 3 OF 13		REF.	

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-4**  
**(1 STAGE MSE WALL)**  
 NTS



**DETAIL B**  
 STA 5+042.199 TO 5+053.772



**DETAIL C**  
 STA 5+053.772 TO 5+080.236

**NOTES:**

- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION ELEVATION.
- 2) SEE CORRIDOR STANDARD SPECIFICATION 210 FOR SPECIAL EXCAVATION AND BACKFILL REQUIREMENTS WHERE SOFT CLAYS OR OTHER SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED.
- 3) STORM DRAIN FACILITIES ARE INCLUDED FOR INFORMATION PURPOSES ONLY AND WILL NOT BE CONSTRUCTED WITH WALL R-345-4.
- 4) SEE DRAINAGE SHEETS FOR FINISH GRADES ALONG DITCH.
- 5) BACKFILL EXCAVATION WITH STRUCTURAL FILL COMPACTED TO THE REQUIREMENTS OF CORRIDOR STANDARD SPECIFICATION 220.2.2.1 GRANULAR BORROW.



**WASATCH CONSTRUCTORS**  
**MAR 20 1998**  
 RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	10/13/97	△	3/15/98
△	3/15/98	△	3/15/98
△	3/15/98	△	3/15/98
△	3/15/98	△	3/15/98
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MK CENTENNIAL SVERDRUP/DE LEUW		DESIGN DMC	3/09/98
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		DESIGN MTM	3/15/98
		CHECK CJO	3/15/98
		QUANT. GCH	3/15/98
		CHECK JAB	3/15/98
APPROVAL DATE 3/15/98		PROJECT DESIGN ENGINEER	
RECOMM. DATE 3/15/98		Bret A. Reynolds	
APPROVED DATE 3/15/98		PROJECT MANAGER	
		Randie L. Roff	
I-15 CORRIDOR RECONSTRUCTION		PROJECT NUMBER #SP-15-7(135)296	
WALL DETAIL R-345-4		SALT LAKE COUNTY	
SECTION 2.1		DWG. NO. 2.1R-345-4.4	
		SHT. 4 OF 13	
		REF.	

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-08-97	RELEASE FOR CONSTRUCTION

CURVE DATA				
No.	RADIUS	LENGTH	TANGENT	△
①	3469.209	39.624	19.812	0°39'16" R
②	3468.832	11.100	5.550	0°11'00" R

All Dimensions Are In Meters Unless Noted Otherwise

DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT) = 34°	
ANGLE OF INTERNAL FRICTION (BASE) = 30°	
ANGLE OF INTERNAL FRICTION (RANDOM) = 34°	
UNIT WEIGHT BACKFILL = 135 PCF (21.2 kN/m <sup>3</sup> )	
TRAFFIC SURCHARGE = 250 PSF	
SEISMIC ACCELERATION COFF. = 0.13g (TYP)	
SEISMIC ACCELERATION COFF. = 0.32g (AT BRIDGE ABUTMENTS)	
DESIGN CRITERIA	
SAFETY FACTOR (OVERTURNING) = 2.0	
SAFETY FACTOR (SLIDING) = 1.5	
SAFETY FACTOR (PULLOUT) = 1.5	
DESIGN LIFE = 75 YEARS	

GENERAL NOTES

- ALL WALLS ARE SHOWN FRONT FACE. NOTE STATIONING.
- PANEL TYPE IS DESIGNATED ON EACH PANEL. CONNECTOR LABELS INDICATE NUMBER OF CONNECTORS PER ROW.  
EXAMPLE: 5B2-10 IS A "B2-10" PANEL WITH FIVE (5) CONNECTORS PER ROW.  
IF NO CONNECTORS ARE SHOWN, FOUR (4) CONNECTOR PANELS SHALL BE USED:
- SOIL REINFORCING MESH TYPE IS DESIGNATED ON EACH PANEL. MESH LABELS INDICATE WIRE SIZE AND SPACING. LONGITUDINAL WIRE AND CROSSBAR SIZES ARE THE SAME UNLESS NOTED OTHERWISE:  
EXAMPLE: 4W11-6 MESH HAS FOUR (4) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 4W20-12 MESH HAS FOUR (4) W20 LONGITUDINAL WIRES WITH W20 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 4W20-24 MESH HAS FOUR (4) W20 LONGITUDINAL WIRES WITH W20 CROSSBARS AT 24" CENTERS.  
EXAMPLE: 5W11-6 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 5W11-12 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 6W11-12 MESH HAS SIX (6) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 12" CENTERS.
- SEE RETAINED EARTH INSTALLATION MANUAL FOR PROPER WALL ERECTION PROCEDURES AND GUIDELINES.
- CONSTRUCTION PROCEDURES SHALL PREVENT BACKFILL SATURATION AND PONDING.
- HEAVY EQUIPMENT SHALL NOT BE USED WITHIN ONE METER OF THE BACK OF THE RETAINED EARTH PANELS. HAND COMPACTORS SHALL BE USED IN THIS AREA.
- CARE SHALL BE TAKEN TO PREVENT DAMAGE TO GALVANIZING. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.
- BEARING PADS AND FILTER FABRIC ARE NOT REQUIRED BETWEEN THE LEVELING PAD AND THE FIRST ROW OF PANELS. TEMPORARY WEDGES MAY BE USED TO PROVIDE PROPER ALIGNMENT.
- VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.
- ALL PANELS SHALL HAVE AN ARCHITECTURAL FINISH, SEE SHEET RE-3 FOR DETAIL.

PC WALL STA 5+000.000  
I-15 STA 23+060.254  
@ 25.791 LT  
BEGIN PRECAST WALL R-345-4  
BEARING IN S4° 13' 23" E  
BEARING OUT S3° 34' 07" E

PT WALL STA 5+039.624 =  
I-15 STA 23+020.335  
@ 25.791 LT

S03° '33 41" W

PC WALL STA 5+042.672 =  
I-15 STA 23+017.288  
@ 26.168 LT

PT WALL STA 5+053.772 =  
I-15 STA 23+006.104  
@ 26.168 LT

WALL STA 5+080.236 =  
I-15 STA 23+002.145  
@ 0.000 LT  
END PRECAST WALL R-345-4

PLAN VIEW WALL "R-345-4"

SCALE: 1=200 (FULL SIZE)  
SCALE: 1=400 (HALF SIZE)

I-15 SOUTHBOUND

INLET  
STA 5+045.720 (0.638 LT)  
**BRIDGE 66**  
(F-617S)

S 84° 43' 50" E

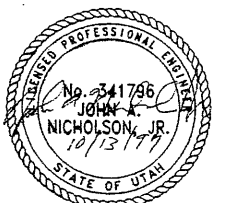
RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-4, NOTES & DESIGN CRITERIA
RE-2	TYPICAL DETAILS
RE-3	TYPICAL DETAILS
RE-4	TYPICAL CROSS SECTIONS
RE-5	TYPICAL CROSS SECTIONS
RE-6	TYPICAL CROSS SECTION & DETAILS
RE-7	ELEVATION PRECAST WALL "R-345-4"
RE-8	ELEVATION PRECAST WALL "R-345-4"
RE-9	SPECIAL PANEL DETAILS

WATCH CONSTRUCTORS  
OCT 15 1997  
RELEASED FOR CONSTRUCTION

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RETAINED EARTH™ WALLS  
PLAN VIEW PRECAST WALL "R-345-4"  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

METRIC  
50/F13

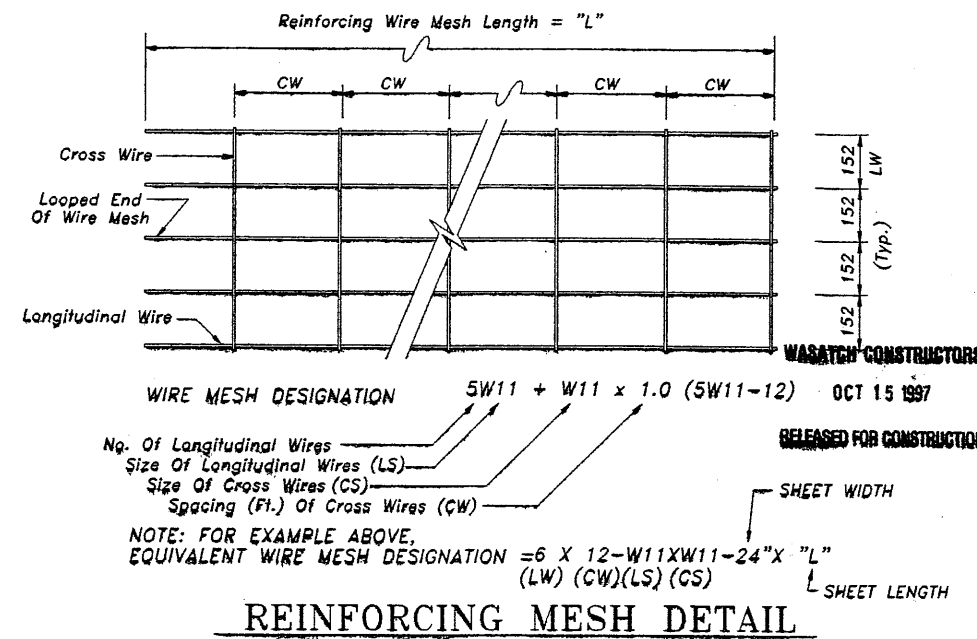
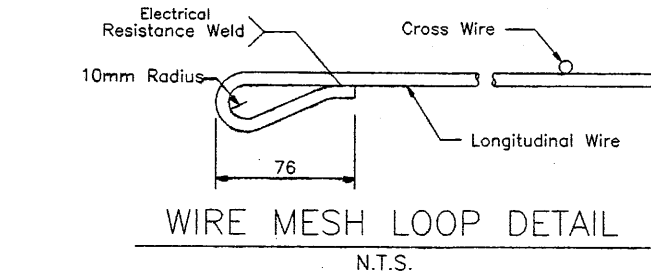
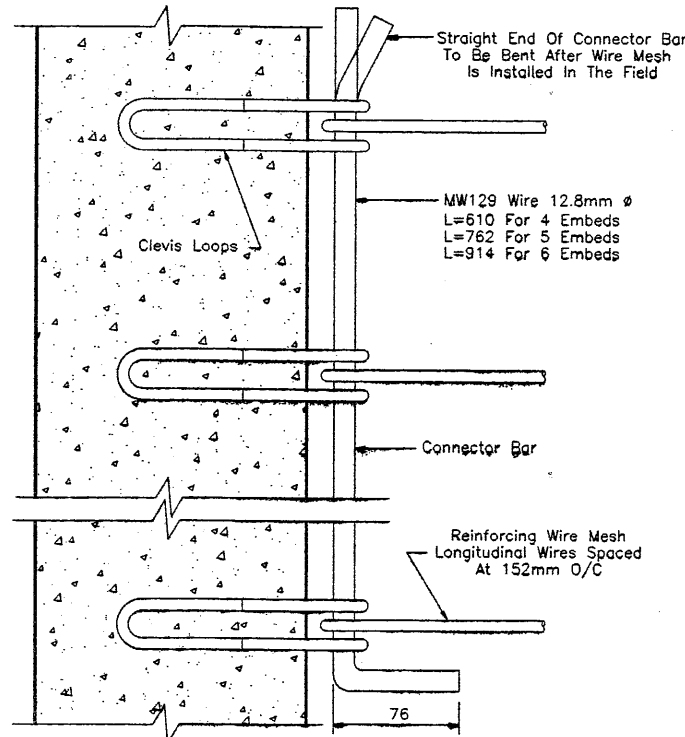
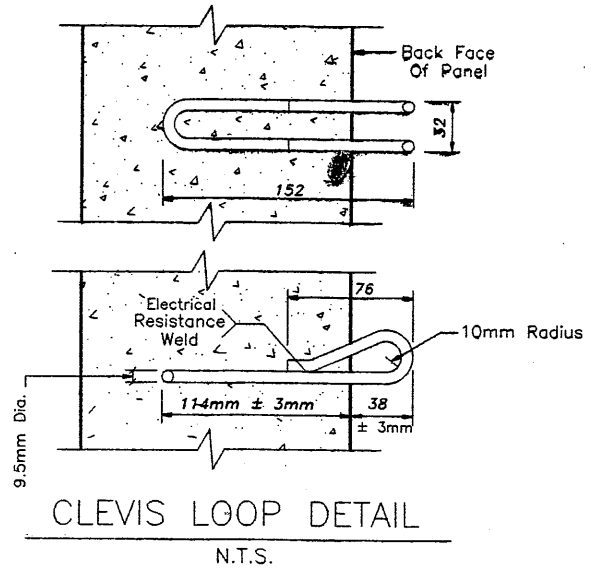
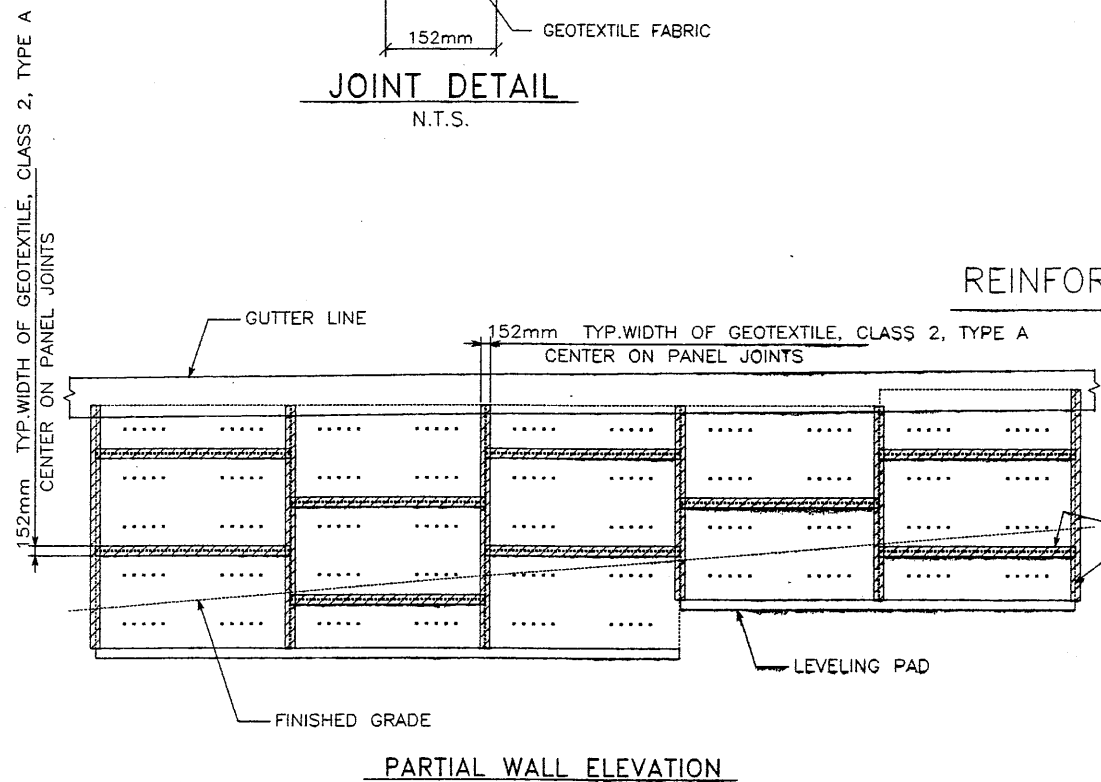
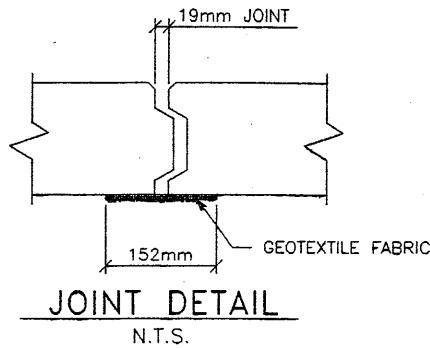
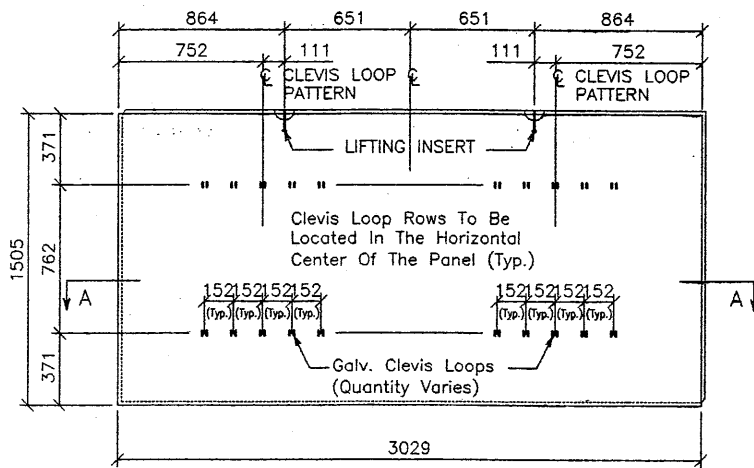
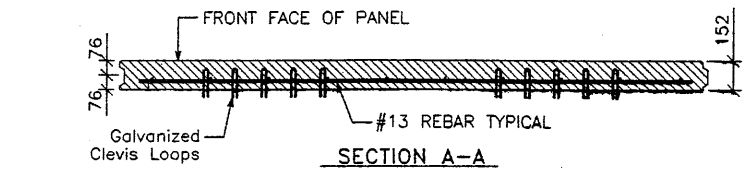


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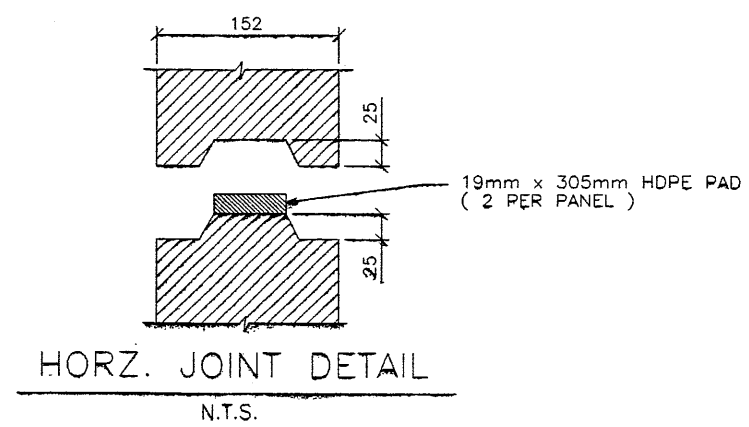
SCALE:	2.1R-345-4.5
JOB NO.:	239-0007
	RE-1

E:\PROJECT\239-0007\45SERIES\45-04\FINAL P 10-08-97





NOTE: W11 (71 sq mm) And W20 (129 sq mm) Steel Wire Material And Welding Of Cross Wires And Loops Shall Conform To ASTM A82 And ASTM 185, Fy = 448 MPa. Mesh Shall Be Galvanized To ASTM A-123 To A Minimum Effective Thickness Of 0.086 mm.



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	10-08-97	RELEASE FOR CONSTRUCTION

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-8272  
Fax: (919) 781-0669

DES. 09-23-97 MM  
DRN. 09-23-97 DDO  
CHK. 09-23-97 MM

RETAINED EARTH™  
ALANTA, GA. / DALLAS, TX. / RALEIGH, NC (CORPORATE OFFICE)

WASATCH CONSTRUCTORS  
OCT 15 1997  
RELEASED FOR CONSTRUCTION

METRIC  
6 OF 13

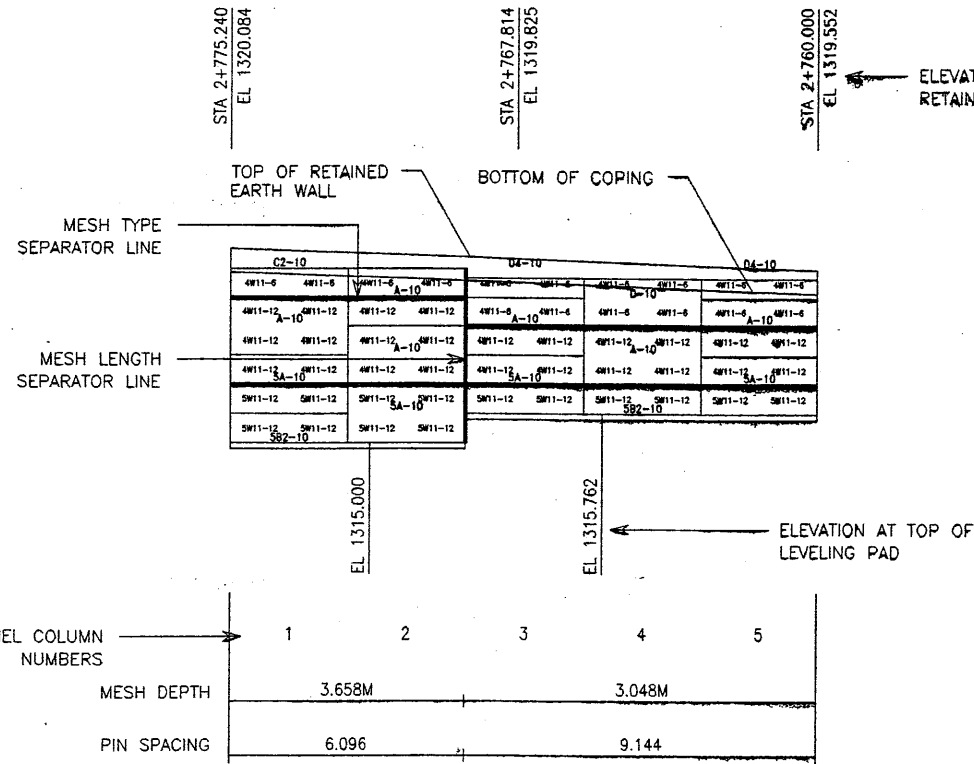
PROFESSIONAL ENGINEER  
No. 9341786  
JOHN A. NICHOLSON, JR.  
10/13/97  
STATE OF UTAH

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

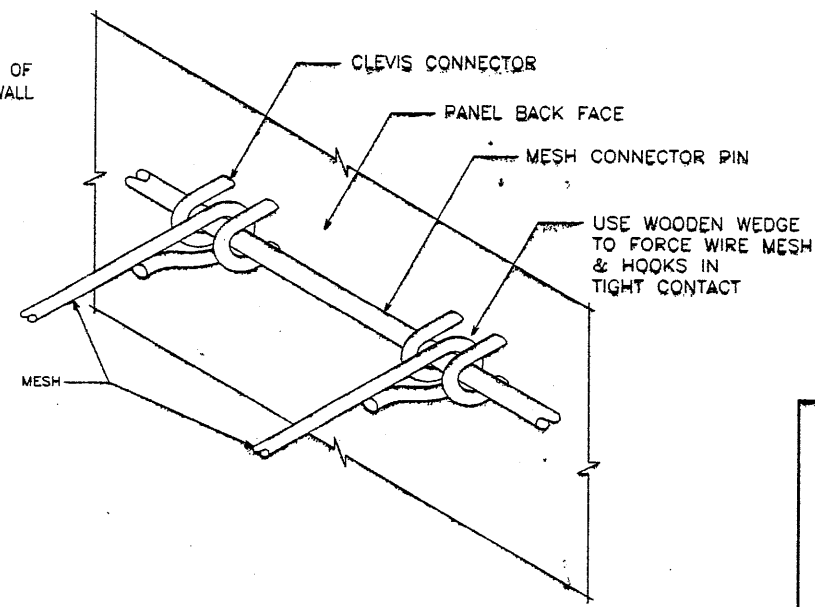
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JOB NO: 239-0007  
RE-2

RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-4"  
TYPICAL DETAILS  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

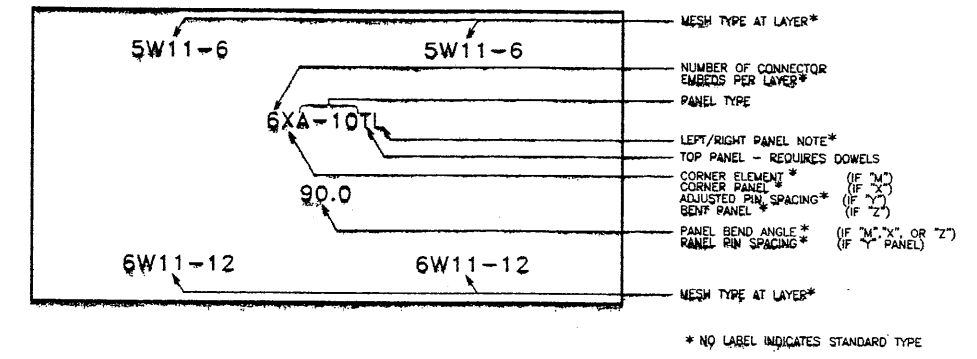
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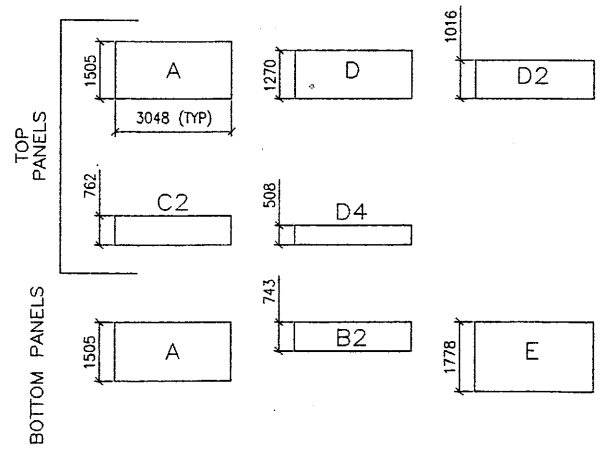
**1 WALL ELEVATION KEY**  
(FRONT FACE SHOWN)



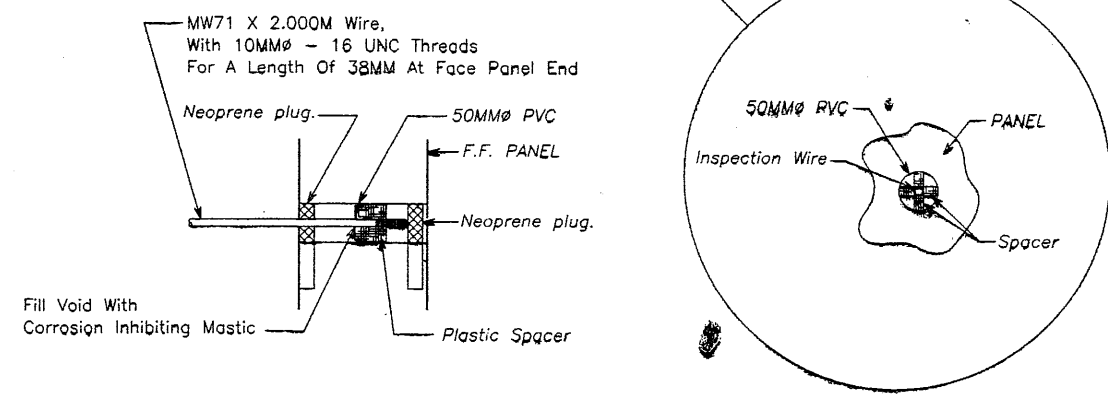
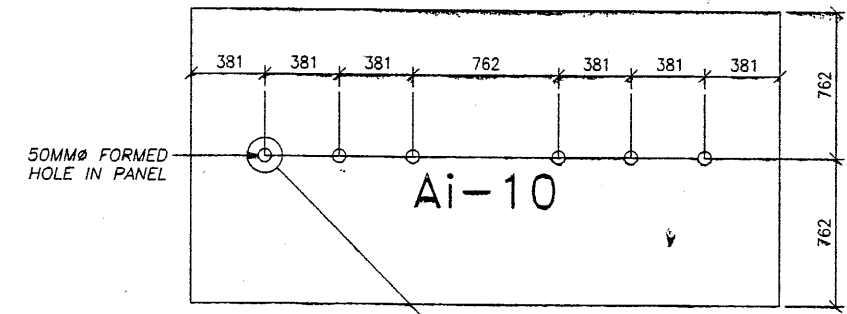
**2 MESH CLEVIS CONNECTOR**  
 VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT #,725,170



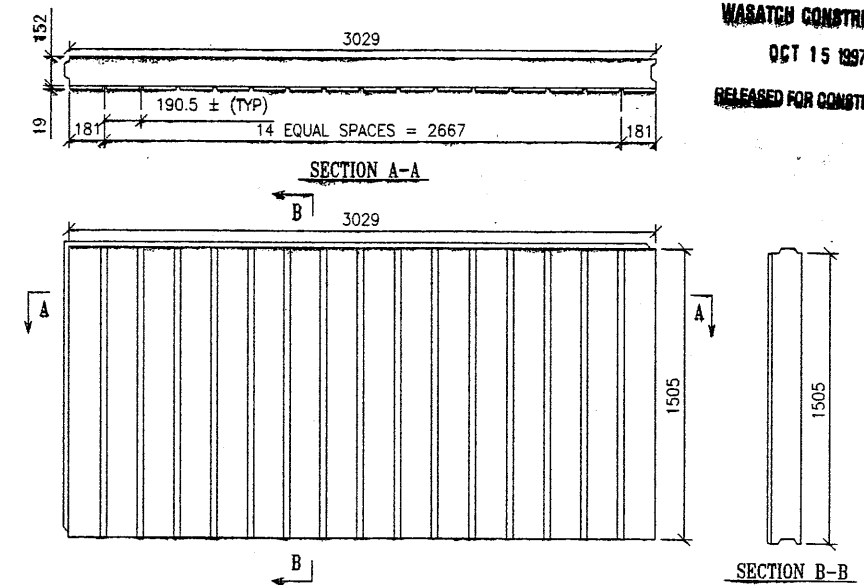
**3 PANEL LABELS**



**4 PANEL TYPES**  
 ALL DIMENSIONS ARE IN MILLIMETERS



**5 INSPECTION WIRE DETAIL**  
(PANEL FRONT FACE SHOWN)



**6 ARCHITECTURAL PANEL FINISH**  
(PANEL FRONT FACE SHOWN)

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METRIC 70 F13  
 REGISTERED PROFESSIONAL ENGINEER  
 No. 241796  
 JOHN A. NICHOLSON, JR.  
 10/13/97  
 STATE OF UTAH

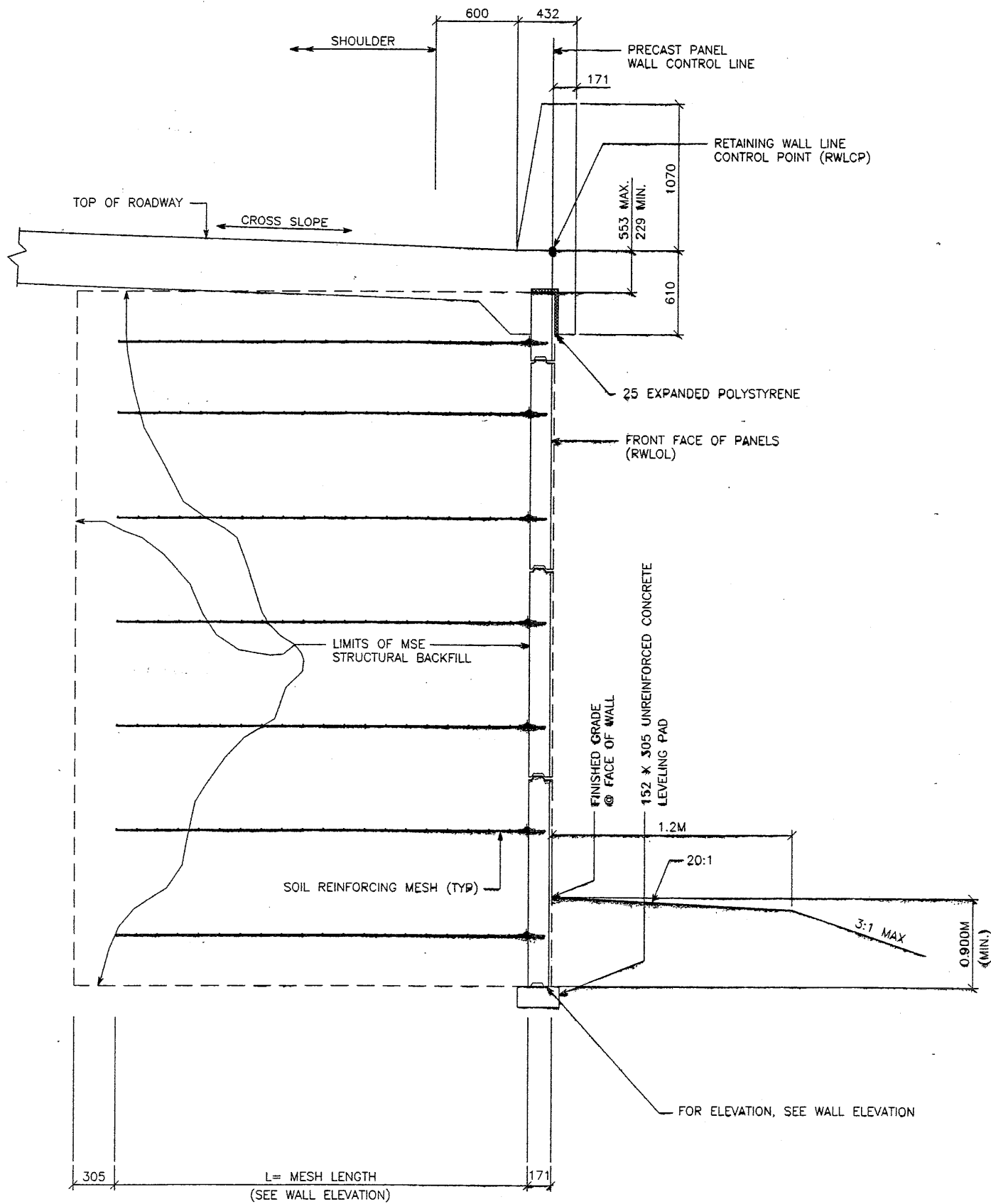
APPROVED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	10-08-97	RELEASE FOR CONSTRUCTION

DES. 09-23-97 MM  
 DRN. 09-23-97 DDO  
 CHK. 09-23-97 MM  
 VSL CORPORATION  
 2840 Plaza Pkwy, Suite 200  
 Raleigh, NC 27617  
 Telephone: (919) 761-6772  
 Fax: (919) 761-6889  
 VSL  
 ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 RETAINED EARTH™  
 RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-4"  
 TYPICAL DETAILS  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSPORTATION  
 SCALE: 2.1R-345-4.7  
 JOB NO: 239-0007  
 RE-3

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FINAL P 0-08-97



**TYPICAL CROSS SECTION - STA 5+000.000 TO 5+039.624**

(SEE DWG. NO. 2.1R-345-4.2 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)

SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-08-97	RELEASE FOR CONSTRUCTION <i>OK</i>

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY
MM	DDO	MM				

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Dallas, TX 75241  
 Telephone: (919) 781-6272  
 Fax: (919) 781-4869



ATLANTA, GA / DALLAS, TX / BALDWIN, NC (CORPORATE OFFICE)  
 MAUI, HI / SAN JOSE, CA / SPRINGFIELD, VA

**WATCH CONSTRUCTORS**  
 OCT 15 1997  
 RELEASED FOR CONSTRUCTION

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RETAINED EARTH™ WALLS  
 WIRE FACED WALL "R-345-4"  
 TYPICAL CROSS SECTION  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

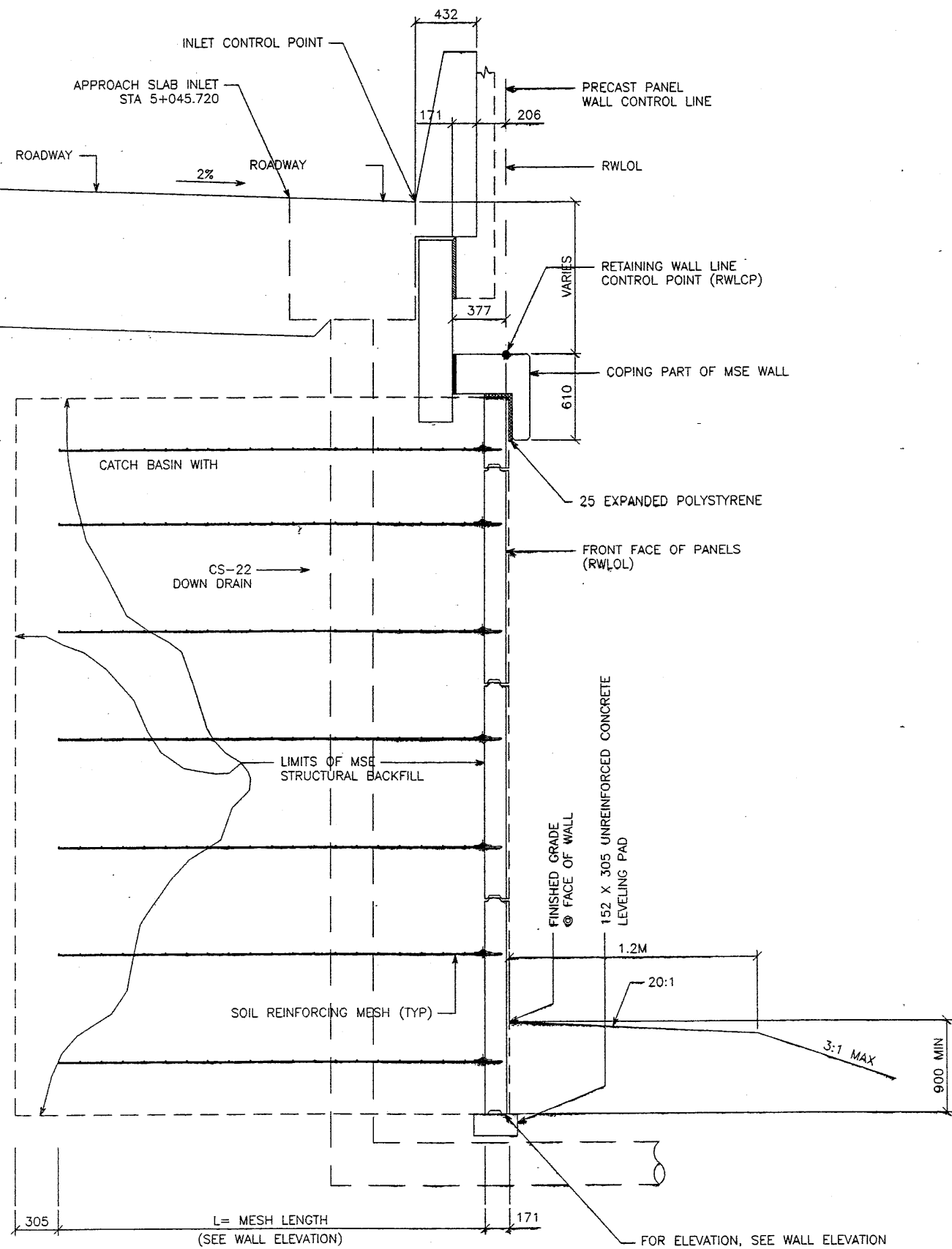
METRIC  
 8 OF 13

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

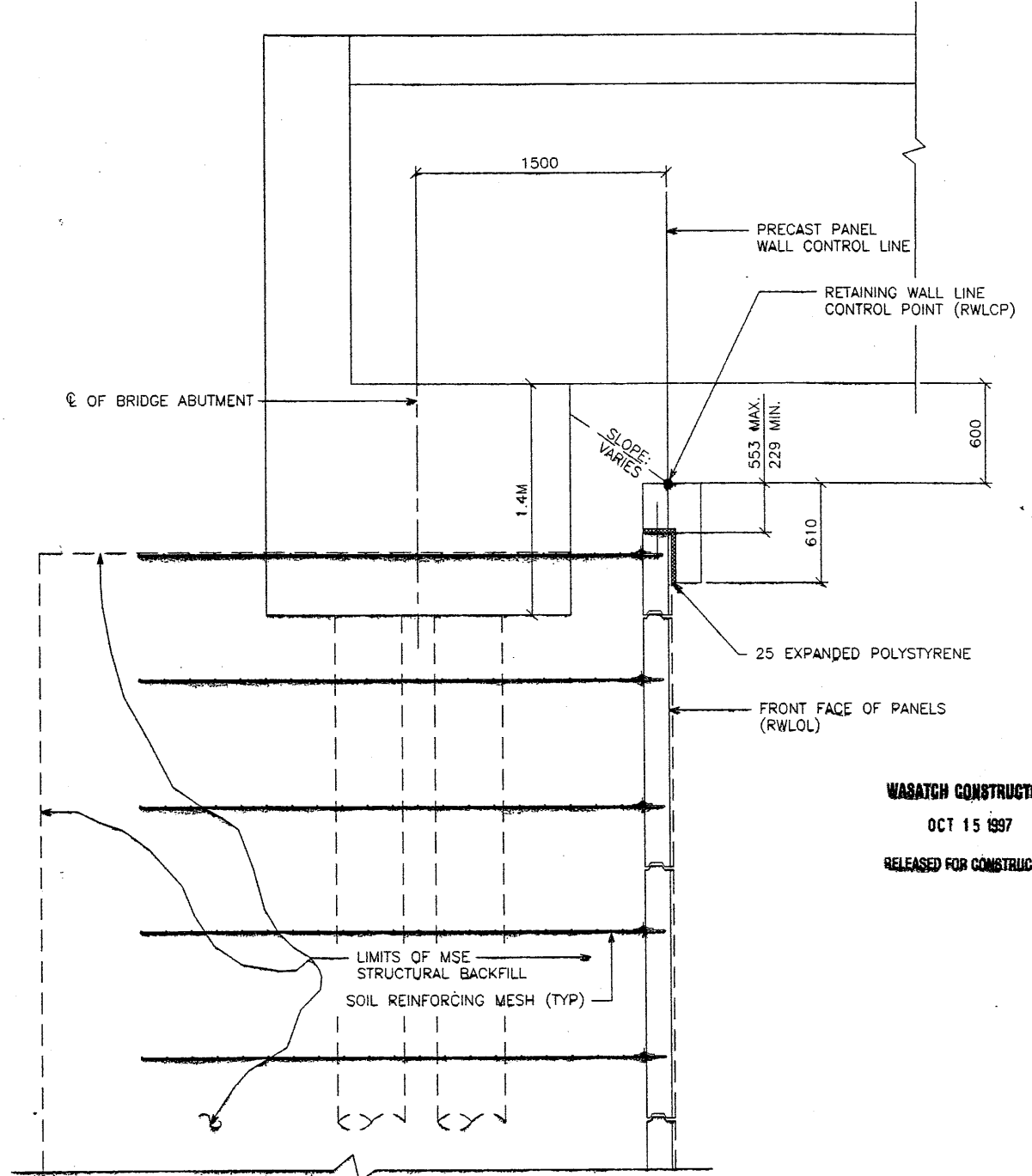
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JOB NO:	239-0007
	RE-4

E:\PROJECT\239-0007\45SERIES\45-04\RL  
FINAL PL 10-08-97

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-08-97	RELEASE FOR CONSTRUCTION



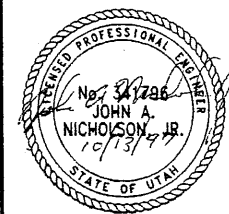
**TYPICAL CROSS SECTION - STA 5+042.672 TO 5+053.772**  
(SEE DWG. NO. 2.1R-345-4.4 FOR ADDITIONAL INFORMATION)  
SCALE: 1:20 (FULL SIZE)  
SCALE: 1:40 (HALF SIZE)



**TYPICAL CROSS SECTION - STA 5+053.772 TO 5+080.236**  
(SEE DWG. NO. 2.1R-345-4.4 FOR ADDITIONAL INFORMATION)  
SCALE: 1:20 (FULL SIZE)  
SCALE: 1:40 (HALF SIZE)

**WASATCH CONSTRUCTORS**  
OCT 15 1997  
RELEASED FOR CONSTRUCTION

METRIC  
9 OF 13



CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

NO.	DATE	DESCRIPTION	BY

DES.	09-23-97	MM
DRN.	09-23-97	DDO
CHK.	09-23-97	MM

RETAINED EARTH™

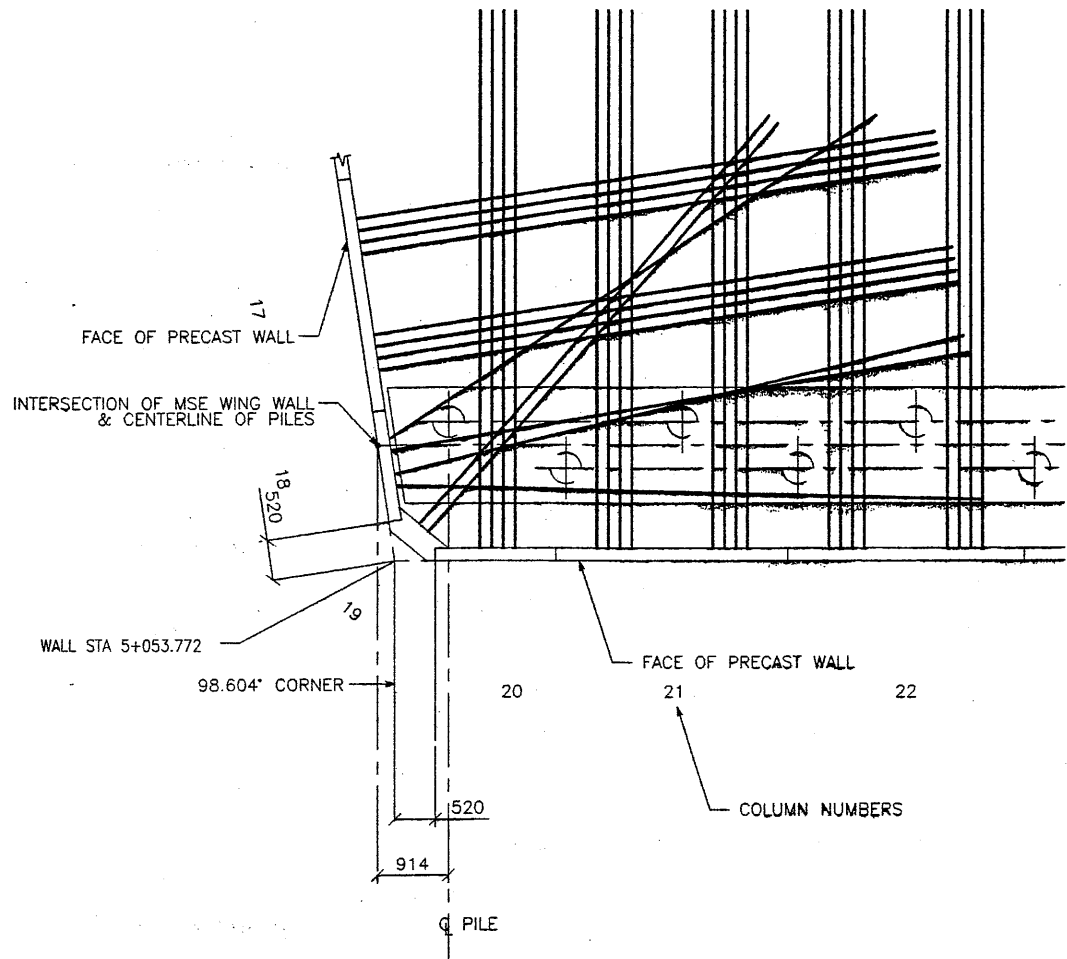
VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6272  
Fax: (919) 781-4863

ATLANTA, GA / DALLAS, TX / FALCON, NC (CORPORATE OFFICE)  
10000 Peachtree Dunwoody Rd., Suite 1000, Atlanta, GA 30338

**RETAINED EARTH™ WALLS**  
WIRE FACED WALL "R-345-4"  
TYPICAL CROSS SECTION

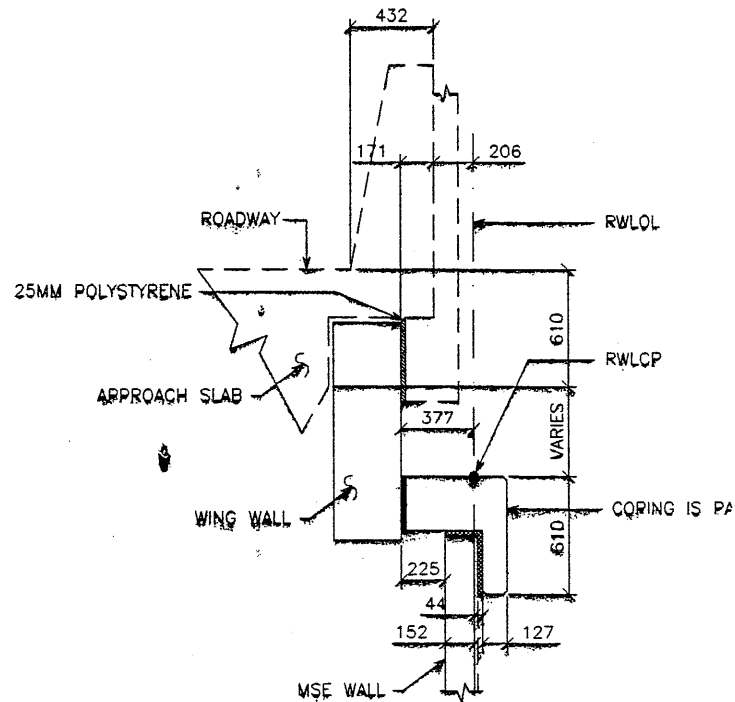
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

SCALE:  
2.1R-345-4.9  
JOB NO:  
239-0007  
RE-5



ENLARGED DETAIL AT WALL CORNER

SCALE: 1:50 (FULL SIZE)  
SCALE: 1:100 (HALF SIZE)



TYPICAL SECTION - STA 5+053.772 TO 5+080.236

SCALE: 1:20 (FULL SIZE)  
SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-08-97	RELEASE FOR CONSTRUCTION

DES.	MM	DDO	MM	NO.	DATE	REVISION
09-23-97	09-23-97	09-23-97	09-23-97			

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27617 781-6272  
 Telephone: (919) 781-6272  
 Fax: (919) 781-6869



ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 TAMPA, FL / SAN JOSE, CA / SPRINGFIELD, VA

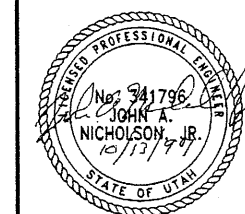
WARATCH CONSTRUCTORS

OCT 15 1997

RELEASED FOR CONSTRUCTION

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METRIC  
10 OF 13



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RETAINED EARTH™ WALLS  
 WIRE FACED WALL™ R-345-4™  
 TYPICAL CROSS SECTIONS  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

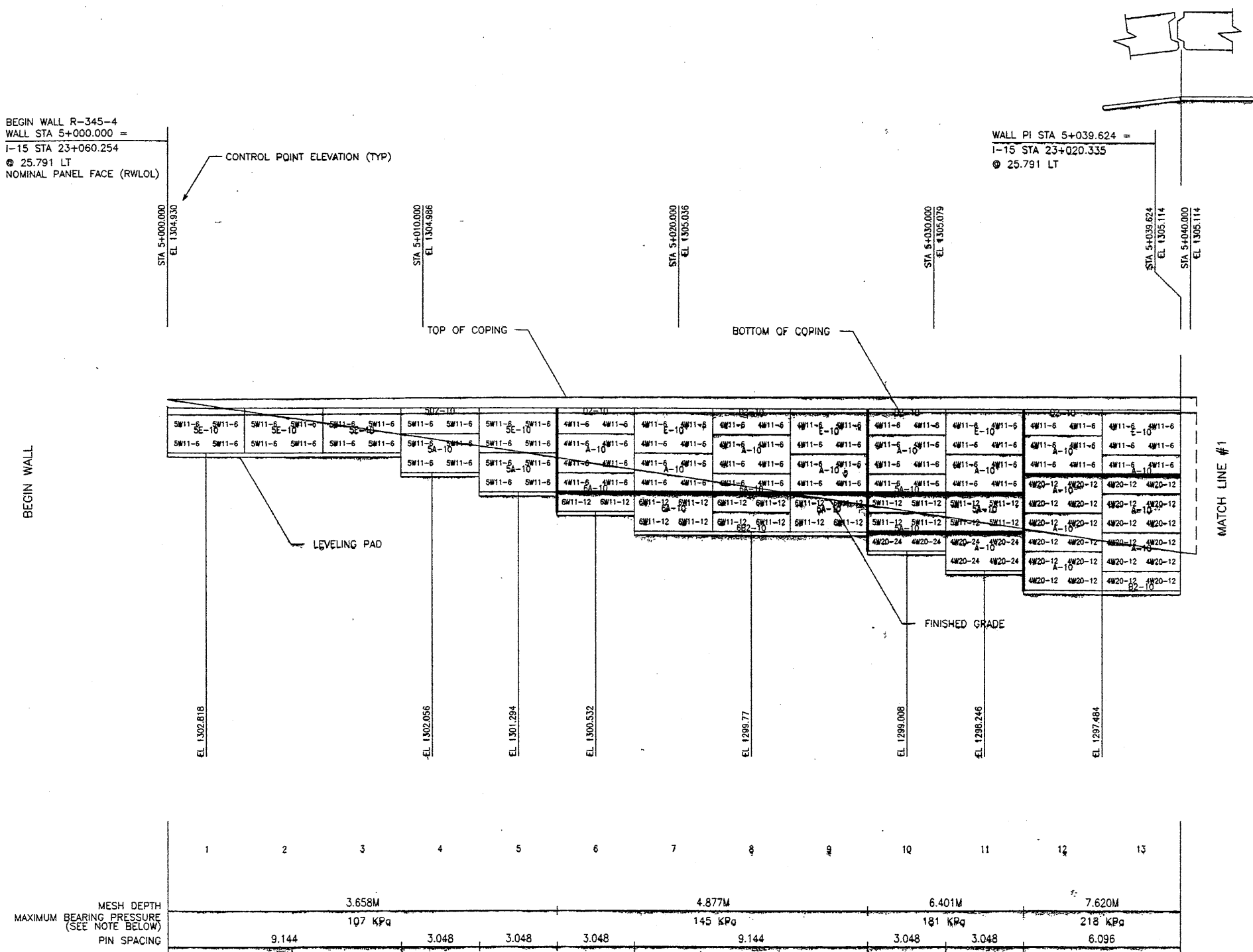
SCALE:	2.2R-345-4.10
JOB NO:	239-0007
	RE-6



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-08-97	RELEASE FOR CONSTRUCTION <i>oe</i>

BEGIN WALL R-345-4  
WALL STA 5+000.000 =  
I-15 STA 23+060.254  
⊙ 25.791 LT  
NOMINAL PANEL FACE (RWLOL)

WALL PI STA 5+039.624 =  
I-15 STA 23+020.335  
⊙ 25.791 LT

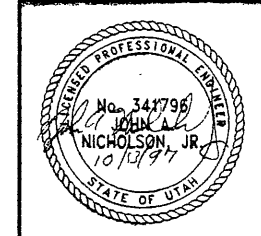


MESH DEPTH  
MAXIMUM BEARING PRESSURE  
(SEE NOTE BELOW)  
PIN SPACING

1	2	3	4	5	6	7	8	9	10	11	12	13
		3.658M				4.877M			6.401M		7.620M	
		107 KPa				145 KPa			181 KPa		218 KPa	
9.144		3.048	3.048	3.048		9.144		3.048	3.048		6.096	

**ELEVATION PRECAST WALL "R-345-4"**  
(FRONT FACE SHOWN)  
(TOTAL SURFACE AREA OF PANELS = 415.04 SM)  
SCALE 1:100 (FULL SIZE)  
SCALE 1:200 (HALF SIZE)

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
THE MANUFACTURER'S SPECIFICATION.



**WABATCH CONSTRUCTORS**  
OCT 15 1997  
RELEASED FOR CONSTRUCTION

NO. DATE DESCRIPTION

DES. 09-23-97 MM

DRN. 09-23-97 DDO

CHK. 09-23-97 MM

RETAINED EARTH™

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6772  
Fax: (919) 781-6889

ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
MAINT. FT. / SAN JOSE, CA / SPRINGFIELD, VA

**VSL**

RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-4"  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

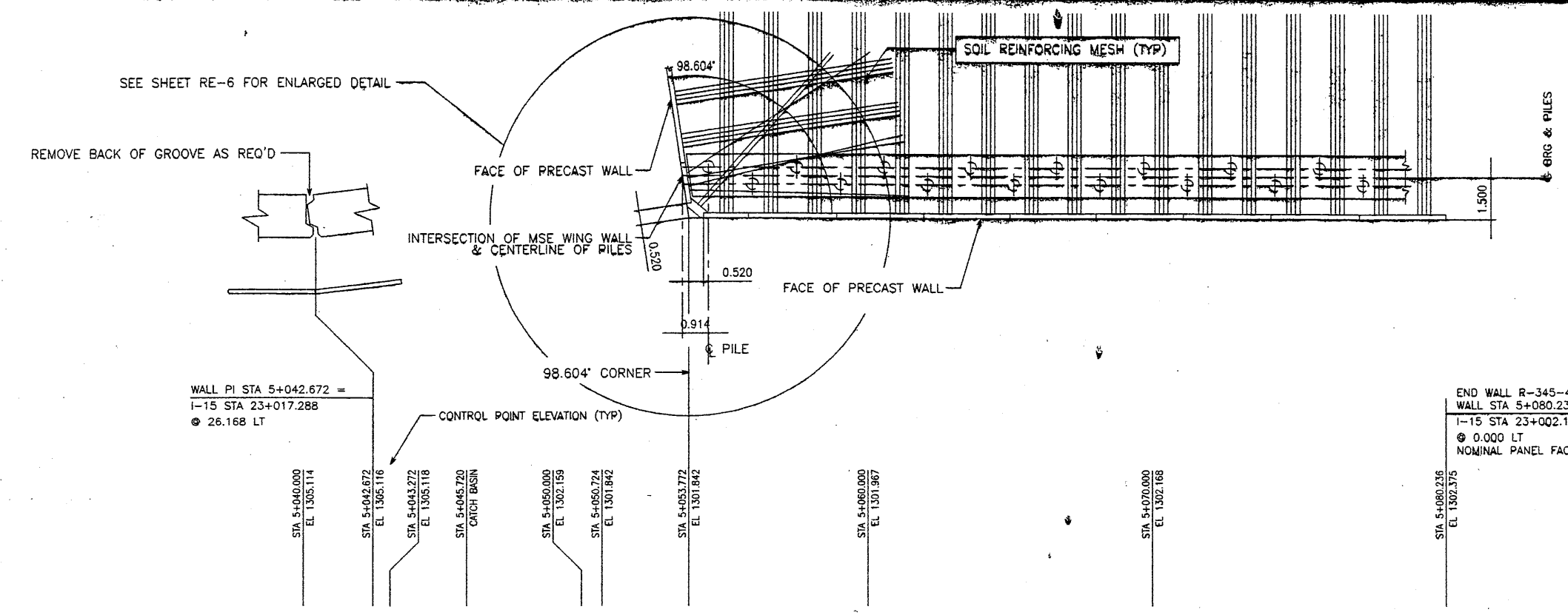
SCALE: 2.1R-345-4.11

JOB NO: 239-0007

RE-7

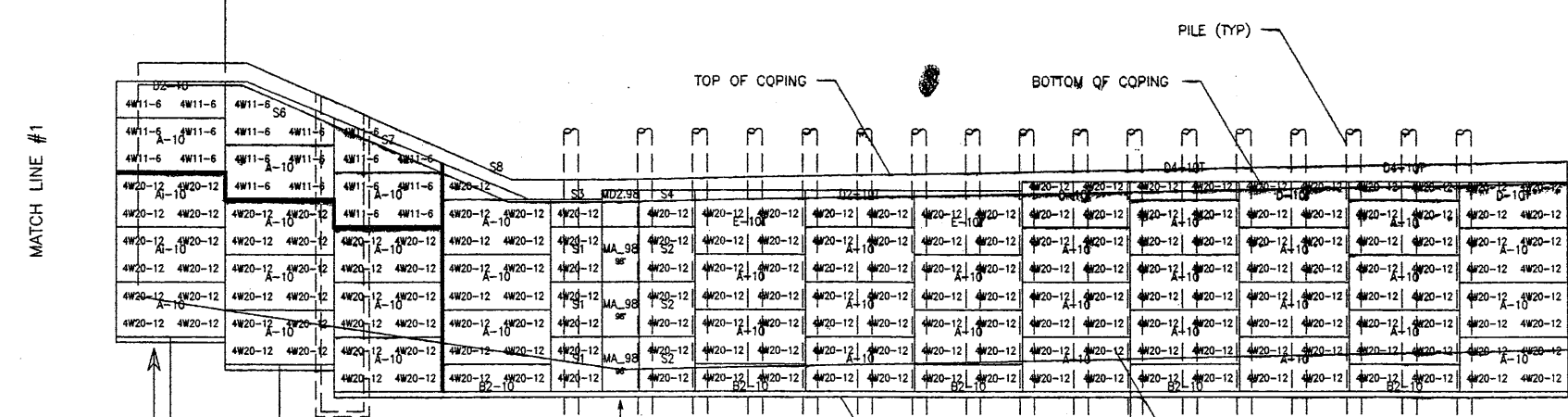
FINAL P 10-08-97

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WALL PI STA 5+042.672 =  
I-15 STA 23+017.288  
⊙ 26.168 LT

END WALL R-345-4  
WALL STA 5+080.236 =  
I-15 STA 23+002.145  
⊙ 0.000 LT  
NOMINAL PANEL FACE (RWLOL)



MESH DEPTH  
MAXIMUM BEARING PRESSURE  
(SEE NOTE BELOW)  
PIN SPACING

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
7.620M		7.010M												
218 KPa		242 KPa												
3.048	3.048	6.096	1.436	1.040	1.560	24.384								

**ELEVATION PRECAST WALL "R-345-4"**  
(FRONT FACE SHOWN)  
(TOTAL SURFACE AREA OF PANELS = 415.04 SM)  
SCALE 1:100 (FULL SIZE)  
SCALE 1:200 (HALF SIZE)

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	10-08-97	RELEASE FOR CONSTRUCTION

DES.	MM	DRN.	DDO	CHK.	MM	RETAINED EARTH™
09-23-97		09-23-97	DDO			VSL

VSL CORPORATION  
2940 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6272  
Fax: (919) 781-4869



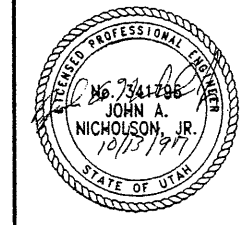
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICES)

**WARATCH CONSTRUCTORS**  
OCT 15 1997  
RELEASED FOR CONSTRUCTION

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RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-4"  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSPORTATION

METRIC  
12 OF 13



SCALE:  
2.1R-345-4.12  
JOB NO:  
239-0007  
RE-8

E:\PROJECT\239-0007\45SERIES\45-04\

FINAL P 310-97

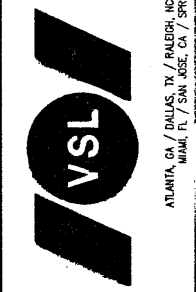
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	10-10-97	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	RETAINED EARTH™	NO.	DATE
1010-97	DDO	JUN			
1010-97	DDO	JUN			
1010-97	DDO	JUN			

- PANEL REINFORCEMENT NOTES:**
- PANELS ARE SHOWN BACK FACE.
  - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS 1.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.

VSL CORPORATION  
 3840 Plaza Rices, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-6272  
 Fax: (919) 781-6669

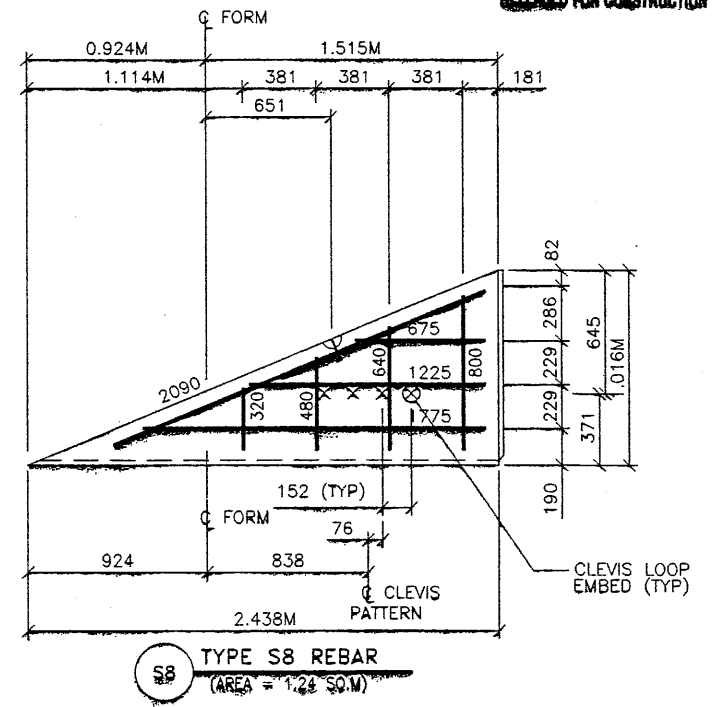
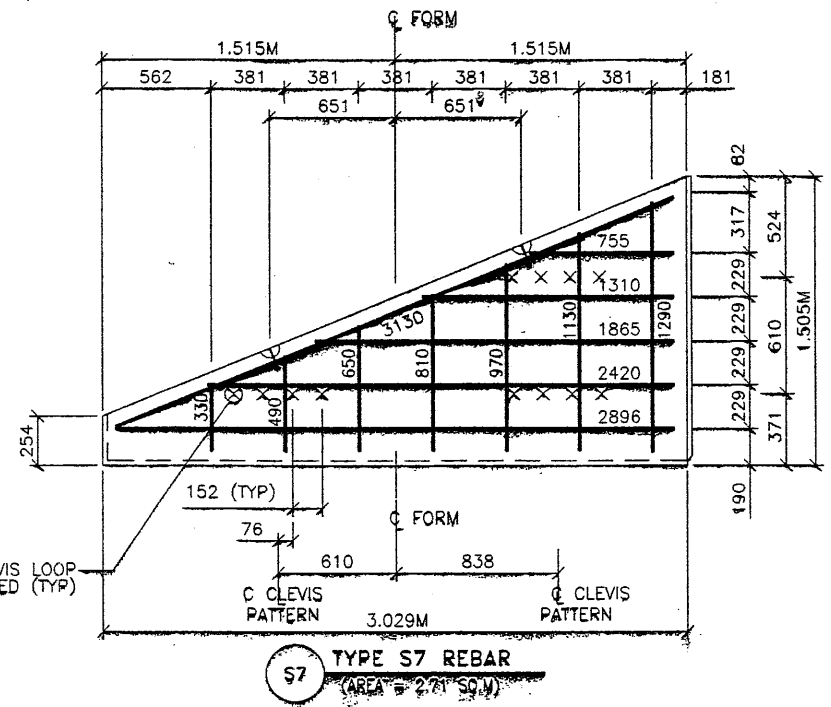
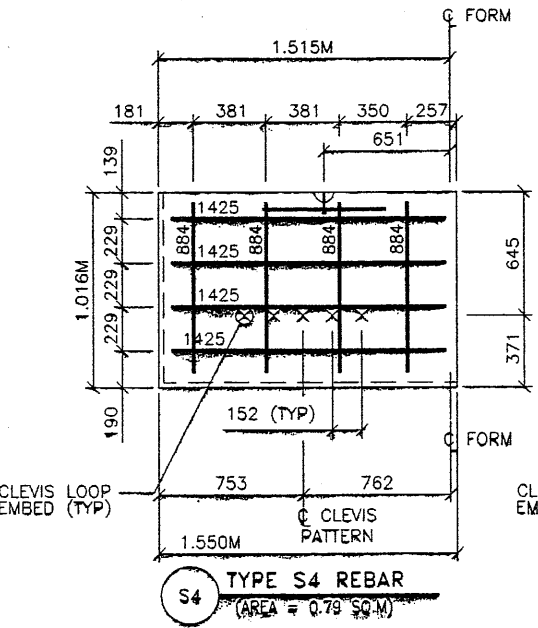
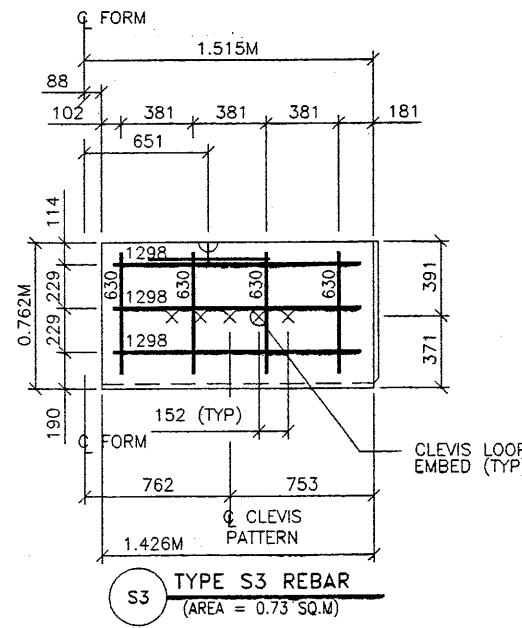
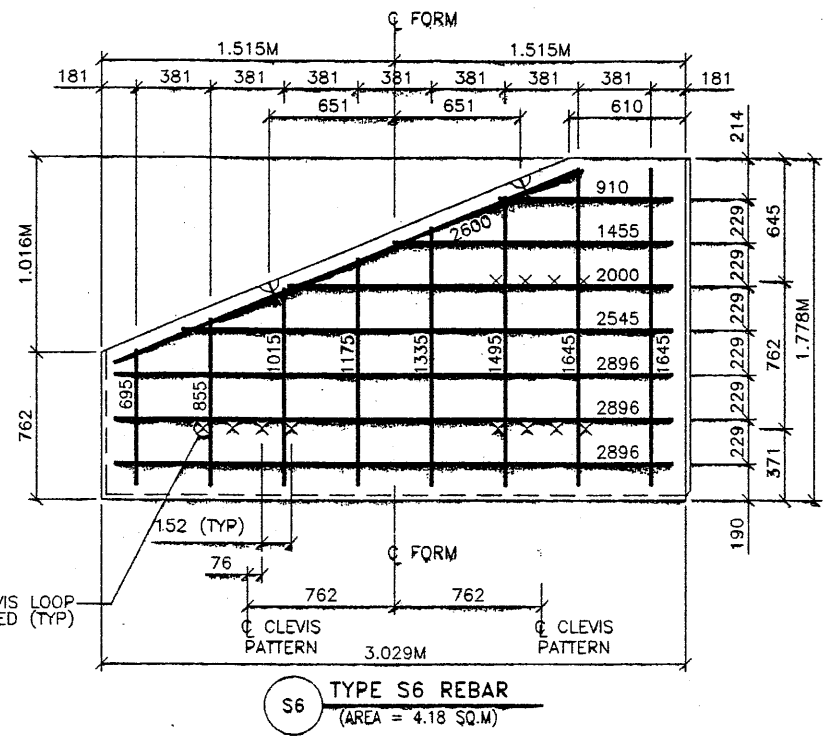
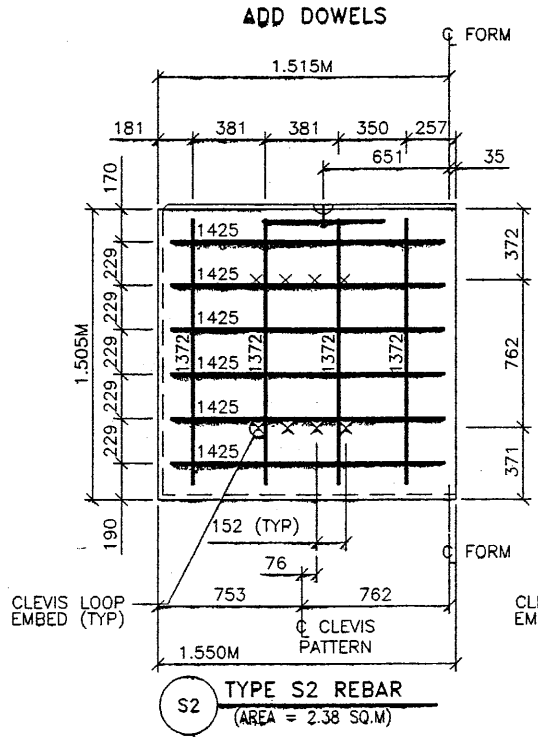
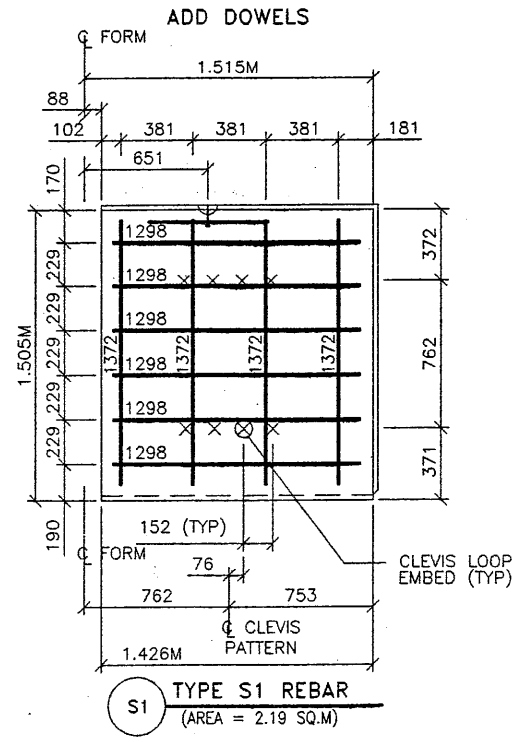
**WATCH CONSTRUCTORS**  
 OCT 15 1997  
 RELEASED FOR CONSTRUCTION



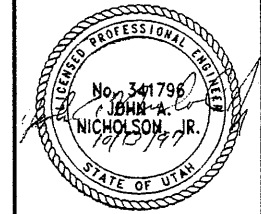
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RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-4"  
 SPECIAL PANEL REINFORCEMENT  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

SCALE:	2.1R-345-4.13
JOB NO:	239-0007
	RE-9



METRIC  
 13 OF 13




CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	04-20-98	RELEASE FOR CONSTRUCTION

DES.	CHK.	DATE	NO.	DATE	REVISION	BY	CHK.
JL	JL	01-20-98	1				
LOP	LOP	01-20-98	2				
JL	JL	01-20-98	3				

**VSL CORPORATION**  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4889



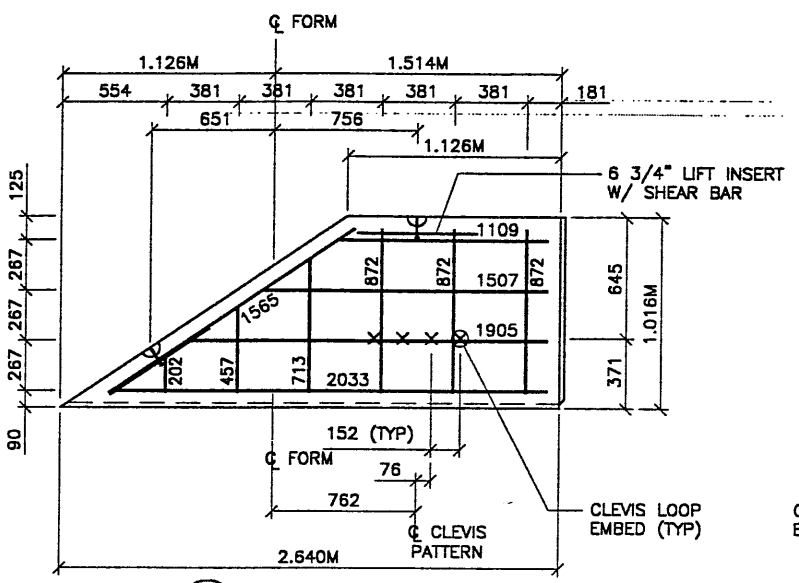
ATLANTA, GA / DANIEL, TN / DANFEL, NC (CORPORATE OFFICE)  
 MAUI, HI / SAN JOSE, CA / SPRINGFIELD, VA

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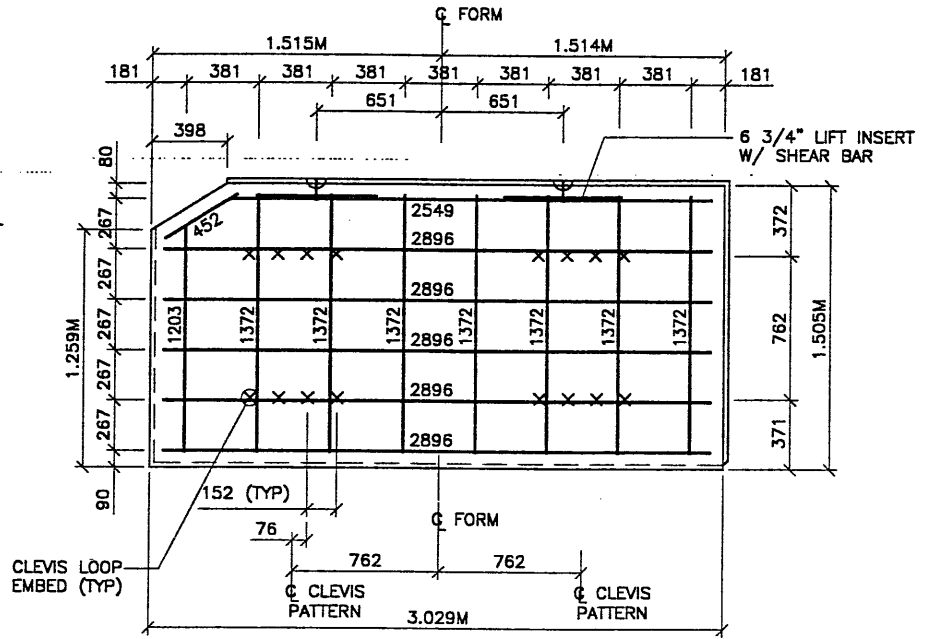
**RETAINED EARTH™ WALLS**  
 PRECAST WALL R-345-6  
 SPECIAL PANEL DETAILS

**UTAH I-15 RECONSTRUCTION**  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-6.6
JOB NO.	239-0007
SHT. NO.	RE-4

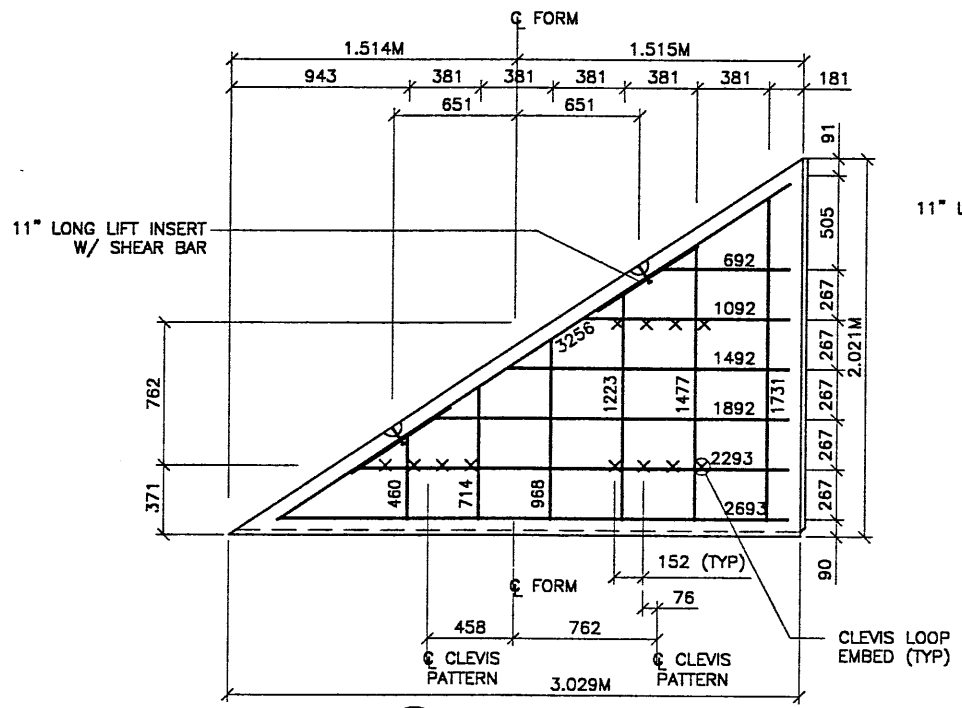


**S1 TYPE S1 REBAR**  
 (AREA = 1.918 SQ.M)

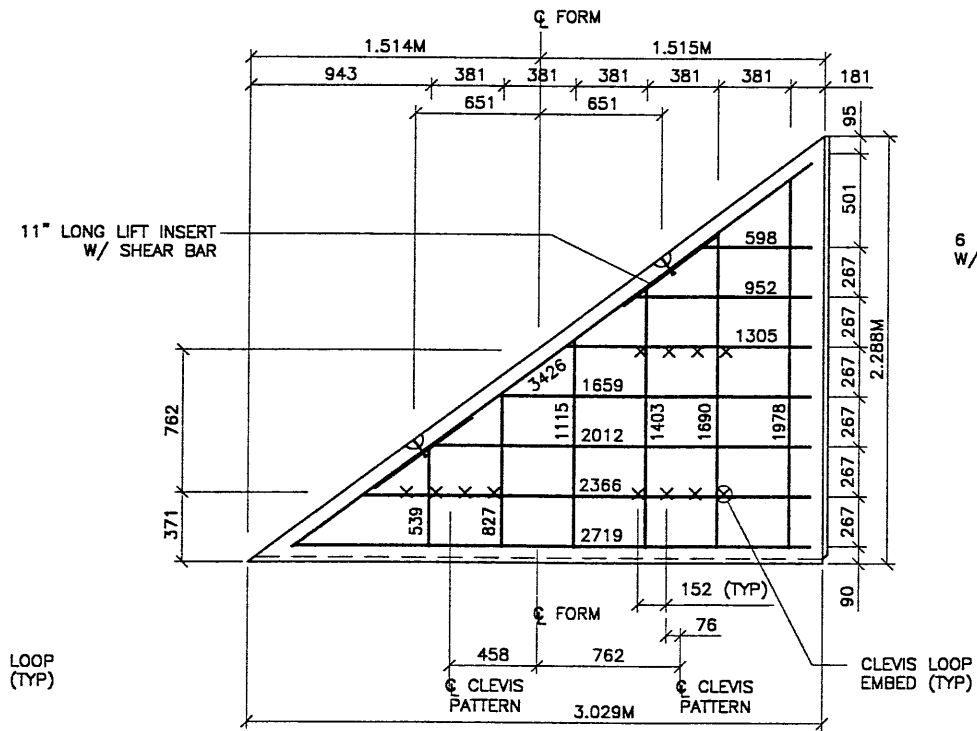


**S2 TYPE S2 REBAR**  
 (AREA = 4.592 SQ.M)

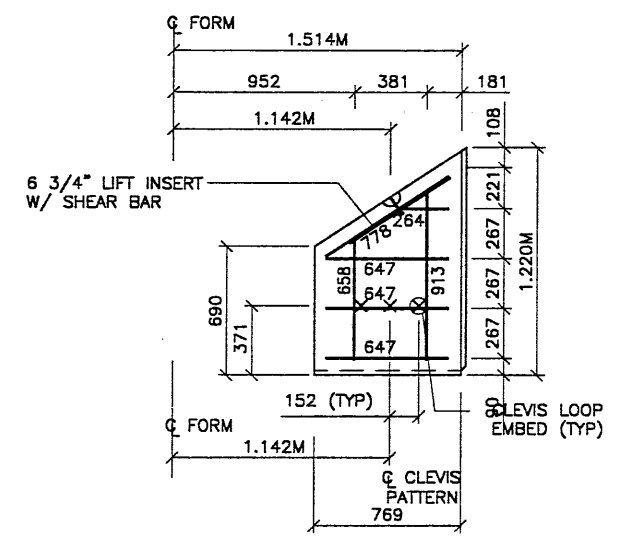
- PANEL REINFORCEMENT NOTES:**
1. PANELS ARE SHOWN BACK FACE.
  2. HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  3. ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  4. ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  5. PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  6. ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS I.
  7. CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  8. EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  9. ALL PANELS TO USE 9.5mm# CLEVIS LOOPS.
  10. VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.
  11. LIFT INSERTS ARE 6 3/4" LONG IN ALL PANELS LESS THAN 1.524M TALL. PANELS TALLER THAN 1.524M SHALL HAVE 11" LONG LIFT ANCHORS.



**S3 TYPE S3 REBAR**  
 (AREA = 3.080 SQ.M)



**S4 TYPE S3 REBAR**  
 (AREA = 3.850 SQ.M)

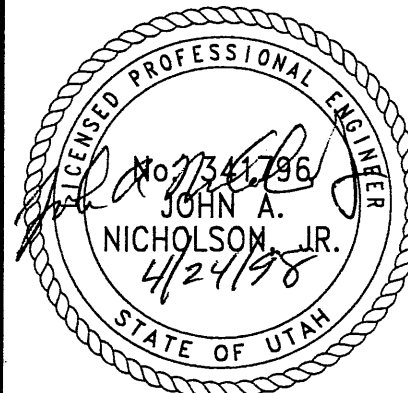


**S5 TYPE S5 REBAR**  
 (AREA = 0.660 SQ.M)

METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

6 of 7

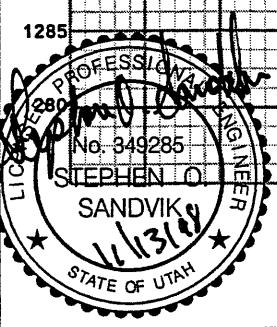
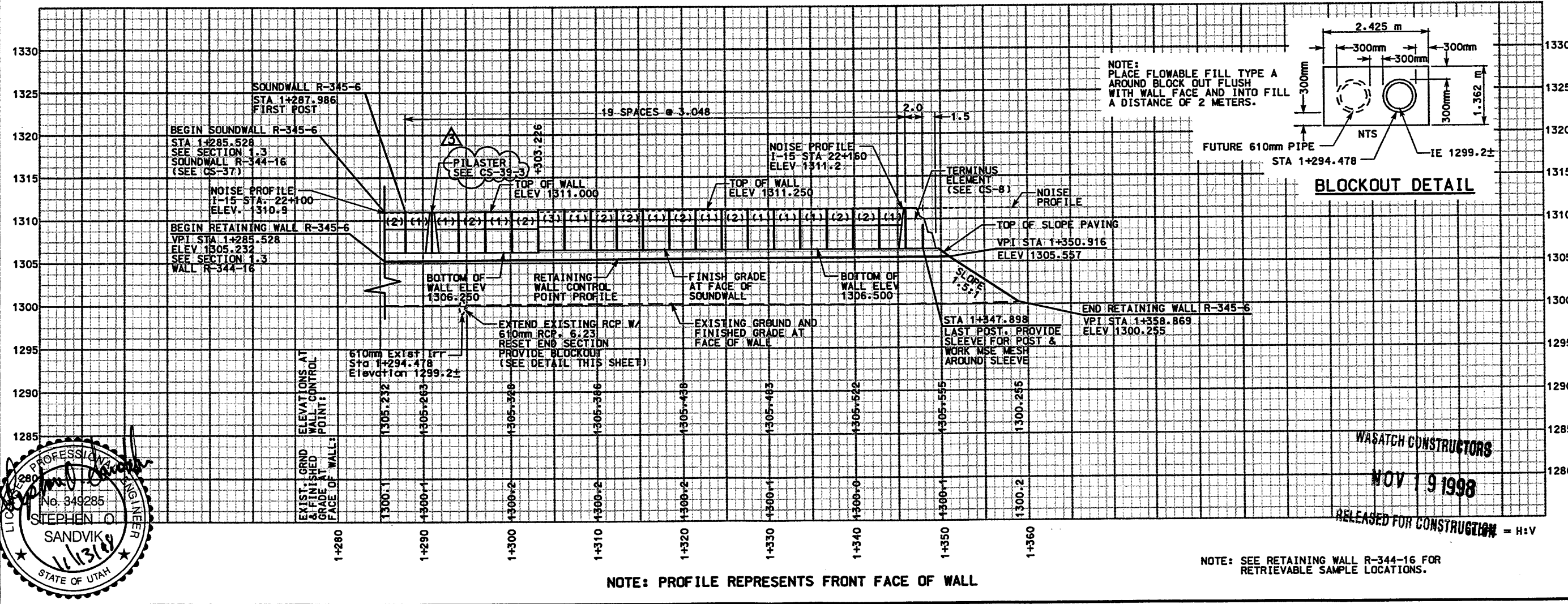
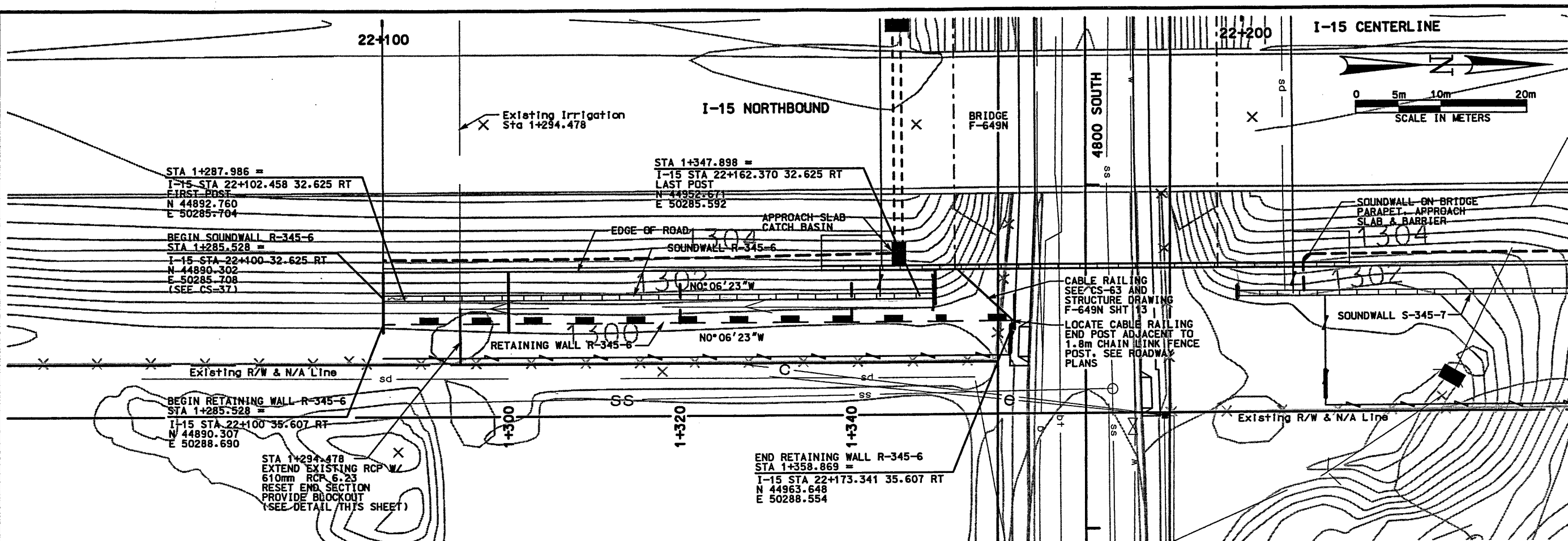


**WASATCH CONSTRUCTORS**  
 APR 30 1998  
 RELEASED FOR CONSTRUCTION



Filename: s:\dgn\11-31-98\49-37.sht File: \vdia\49-37-ret\wall-06.dgn

Users: sandvico



NOTE: PROFILE REPRESENTS FRONT FACE OF WALL

NOTE: SEE RETAINING WALL R-344-16 FOR RETRIEVABLE SAMPLE LOCATIONS.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
Δ	4/28/98	ORIGINAL ISSUE
Δ	9/30/98	ADDED CABLE RAILING
Δ	11/12/98	REVISED PILASTER CALLOUT

UTAH DEPARTMENT OF TRANSPORTATION	
MK CENTENNIAL	
SYVERDRUP/DE LEUW	
APPROVAL RECORD:	1/28/98 Stephen O. Sandvik DESIGN DAF 2/04/98
DATE:	1/28/98
PROJECT DESIGN ENGINEER:	Randle L. Ross
DATE:	1/28/98
PROJECT MANAGER:	
DATE:	

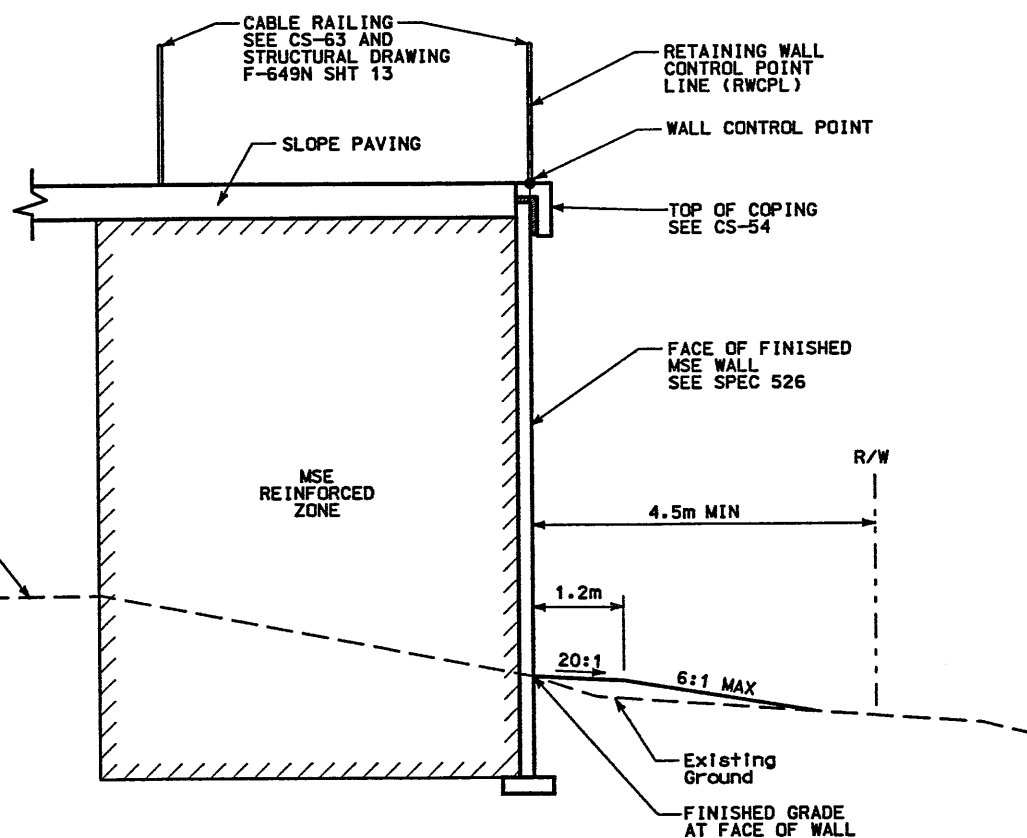
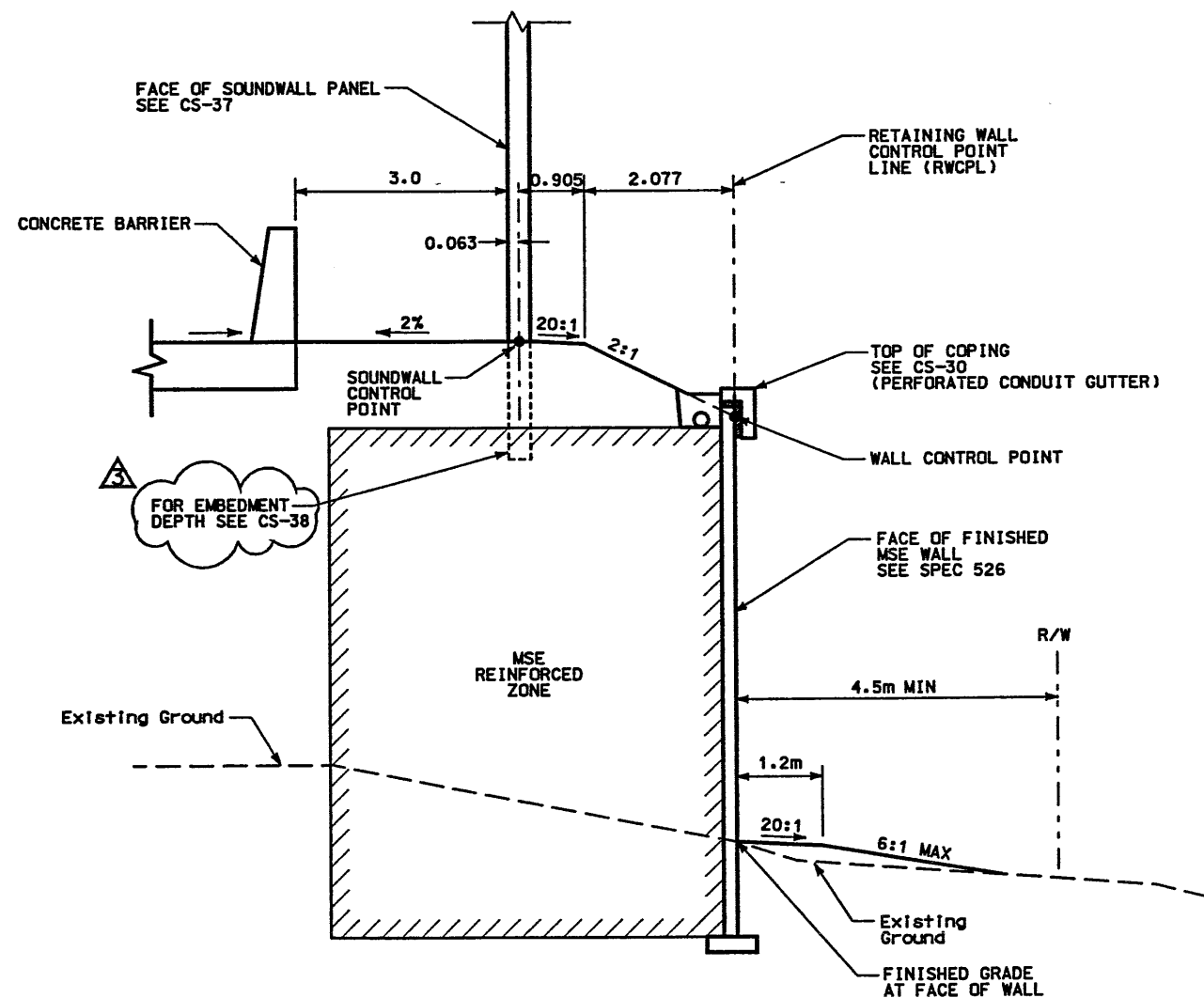
  

I-15 CORRIDOR RECONSTRUCTION	
SITUATION & LAYOUT R-345-6	
SECTION 2.1	
PROJECT NUMBER #SP-15-7(135)296	
SALT LAKE COUNTY	DWG. NO. 2.1R-345-6.1
SHT. 1	OF 7
REF.	

WASATCH CONSTRUCTORS  
NOV 19 1998  
RELEASED FOR CONSTRUCTION = H:V

### RETAINING WALL DETAIL

SECTION 2.1 WALL R-345-6  
(1 STAGE MSE WALL & SOUNDWALL)  
NTS



**DETAIL A**

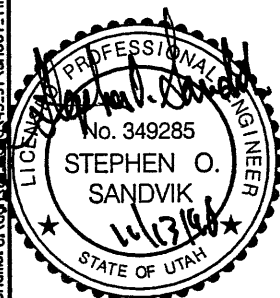
STA 1+285.528 TO 1+350.916  
(SOUNDWALL ENDS AT STA 1+349.398)

**DETAIL B**

STA 1+350.916 TO 1+358.869

**NOTES:**

- 1) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.

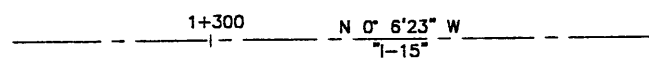


WASATCH CONSTRUCTORS  
NOV 19 1998  
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	4/28/98	Δ	9/30/98
Δ	11/12/98	Δ	11/12/98
Δ	11/12/98	Δ	11/12/98
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		WBS NO. 2113402	
APPROVAL	2/04/98	DESIGN	2/04/98
RECOMM.	2/04/98	BAR	2/04/98
DATE	2/04/98	DATE	2/04/98
PROJECT DESIGN ENGINEER	Stephen O. Sandvik	CHECK BAR	2/04/98
PROJECT MANAGER	Randle L. Ross	CHECK BAR	2/04/98
DATE	2/04/98	CHECK	2/04/98
QUANT.	///	QUANT.	///
I-15 CORRIDOR RECONSTRUCTION WALL DETAIL R-345-6		SECTION 2.1	
COUNTY SALT LAKE		PROJECT NUMBER #SP-15-7(135)296	
DWG. NO. 2.1R-345-6.2		SHT. 2 OF 7	
REF.		SLOPE = H:V	



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	04-20-98	RELEASE FOR CONSTRUCTION <i>JK</i>

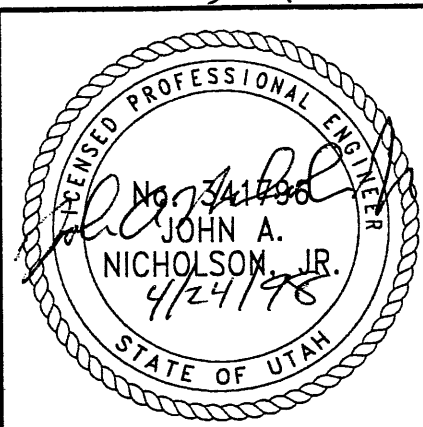


**PLAN VIEW WALL "R-345-6"**  
 SCALE: 1=500 (FULL SIZE)  
 SCALE: 1=1000 (HALF SIZE)

DESIGN PARAMETERS
ANGLE OF INTERNAL FRICTION (SELECT) = 34°
ANGLE OF INTERNAL FRICTION (BASE) = 31°
ANGLE OF INTERNAL FRICTION (RANDOM) = 34°
UNIT WEIGHT BACKFILL = 135 PCF. (21.2 KN/M <sup>3</sup> )
TRAFFIC SURCHARGE = 250 PSF (12 KPa)
SEISMIC ACCELERATION COFF. = 0.13g (TYP)
DESIGN CRITERIA
SAFETY FACTOR (OVERTURNING) = 2.0
SAFETY FACTOR (SLIDING) = 1.5
SAFETY FACTOR (PULLOUT) = 1.5
DESIGN LIFE = 75 YEARS

RETAINED EARTH INDEX
RE-1 PLAN PRECAST FACE WALL R-345-6, NOTES & DESIGN CRITERIA
RE-2 TYPICAL CROSS SECTION
RE-3 ELEVATION PRECAST WALL "R-345-6"
RE-4 SPECIAL PANEL REINFORCEMENT
RE-5 SPECIAL PANEL REINFORCEMENT

**WASATCH CONSTRUCTORS**  
**APR 30 1998**  
**RELEASED FOR CONSTRUCTION**



METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

<b>VSL CORPORATION</b> 2840 Pines Plaza, Suite 200 Raleigh, NC 27612 Telephone: (919) 781-8272 Fax: (919) 781-4869	DES. 02-23-98 JL DRN. 02-23-98 LOP CHK. 02-23-98 JL	NO. _____ DATE _____ REVISION _____ BY _____
		RETAINED EARTH™ 
VSL Corporation (PWS) right in its design, construction and use of the retained earth™ system on the part, the use of the retained earth™ system as a part of any structure herein, is restricted to the material and/or methods specified herein and it is expressly understood that the use of any other material, method, or system is strictly prohibited and VSL Corporation and VSL are not responsible for any consequences that may result from the use of the retained earth™ system.		
<b>RETAINED EARTH™ WALLS</b> <b>PLAN VIEW PRECAST WALL "R-345-6"</b> <b>UTAH I-15 RECONSTRUCTION</b> <b>SALT LAKE COUNTY, UTAH</b> <b>UTAH DEPARTMENT OF TRANSP.</b>		
DWG. NO. 2.1R-345-6.3 JOB NO. 239-0007 SHEET NO. RE-1		

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	04-20-98	RELEASE FOR CONSTRUCTION

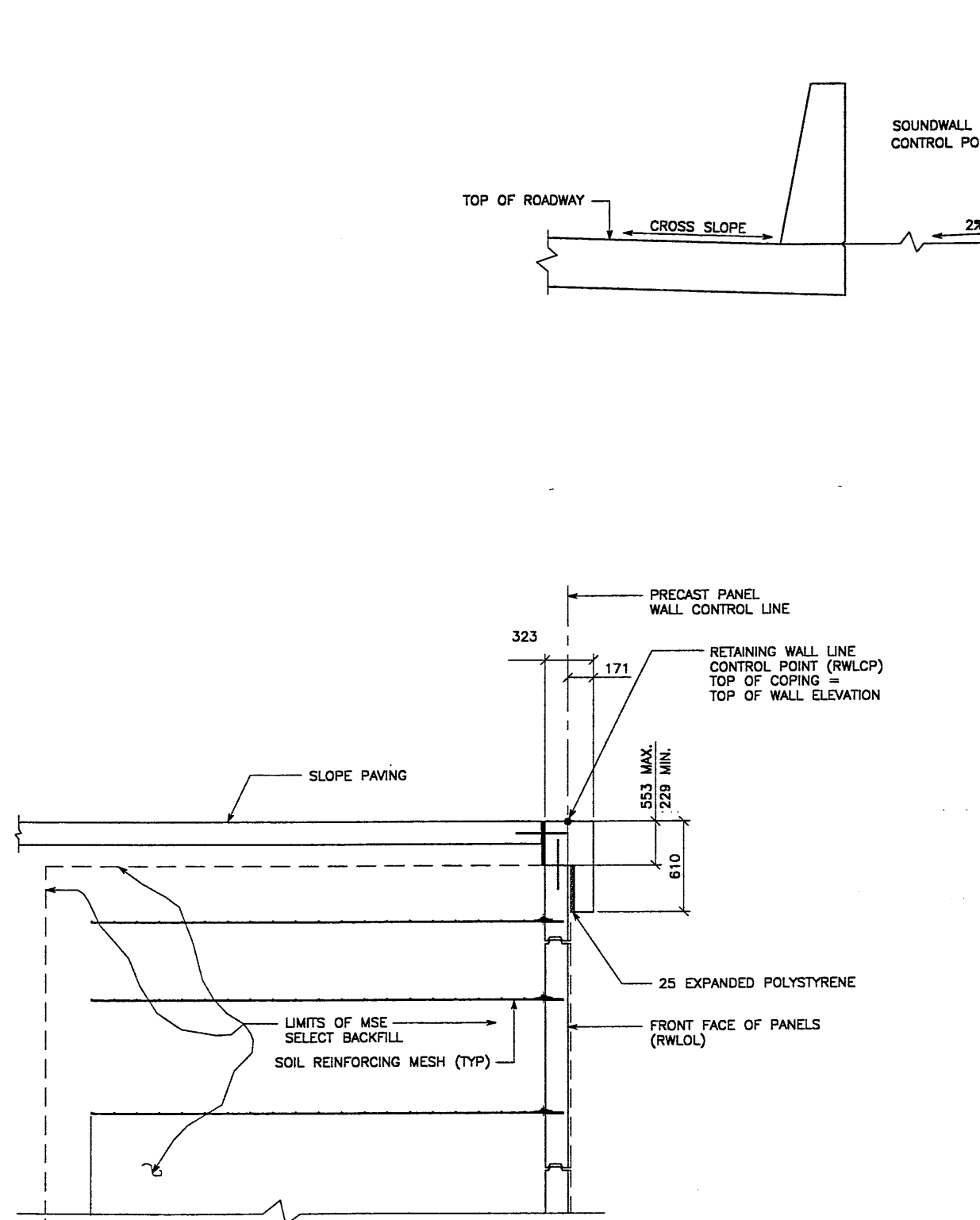
NO.	DATE	REVISION	CHK

VSL CORPORATION  
 2840 Ring Road, Suite 200  
 Raleigh, NC 27607  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4669

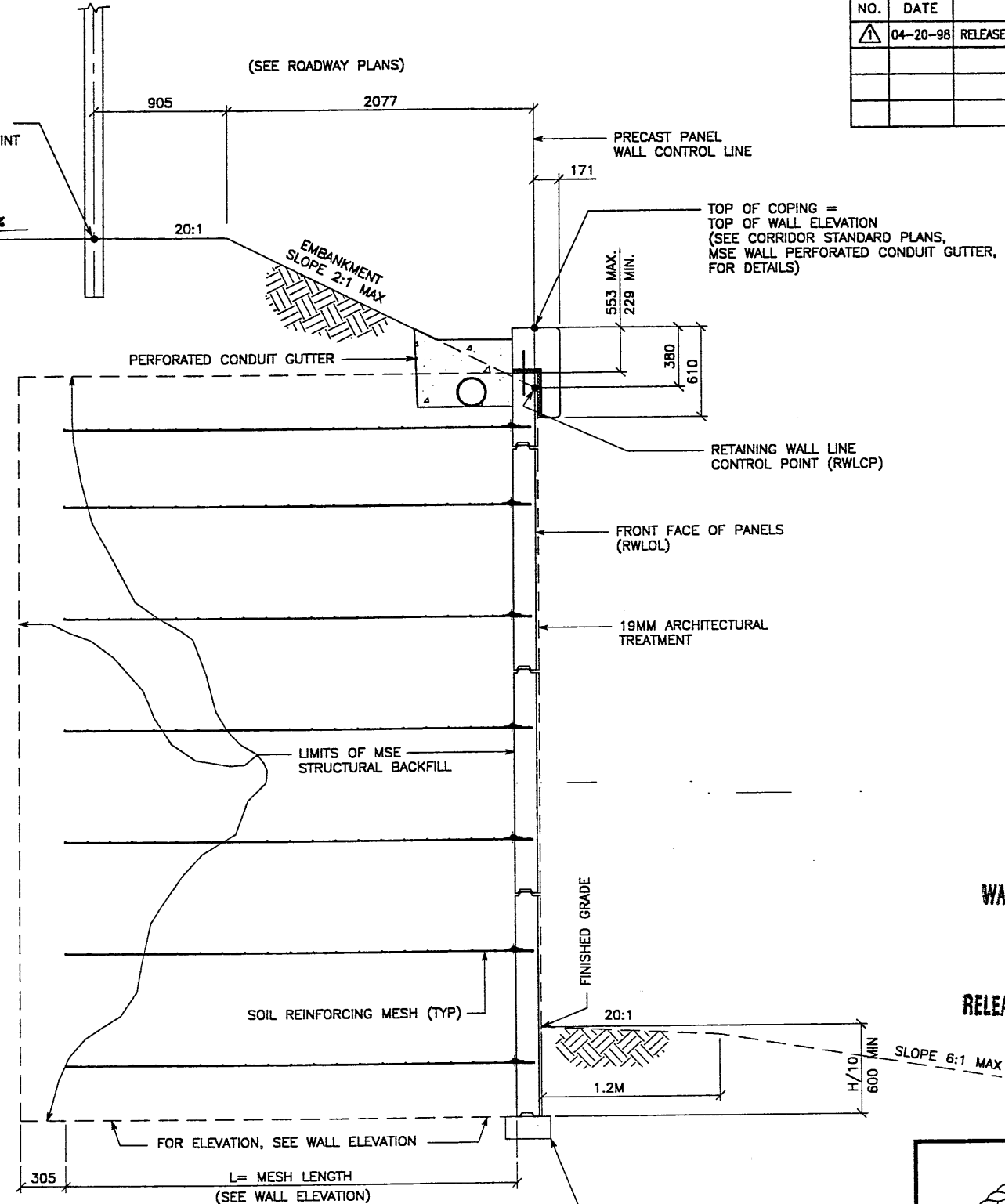
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 WAM, R. / SAN JOSE, CA / SPRINGFIELD, VA

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RETAINED EARTH™ WALLS PRECAST WALL "R-345-6" TYPICAL CROSS SECTION	UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1R-345-6.4	JOB NO. 239-0007
SHT. NO. RE-2	



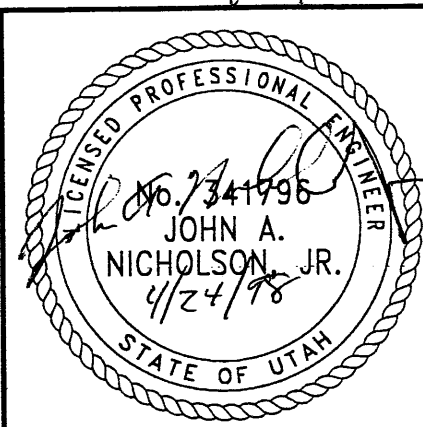
**TYPICAL CROSS SECTION - STA 1+349.724 TO STA 1+358.869**  
 (SEE DWG. NO. 2.1R-345-6.2 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)



**TYPICAL CROSS SECTION**  
 STA 1+285.528 TO STA 1+349.724  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

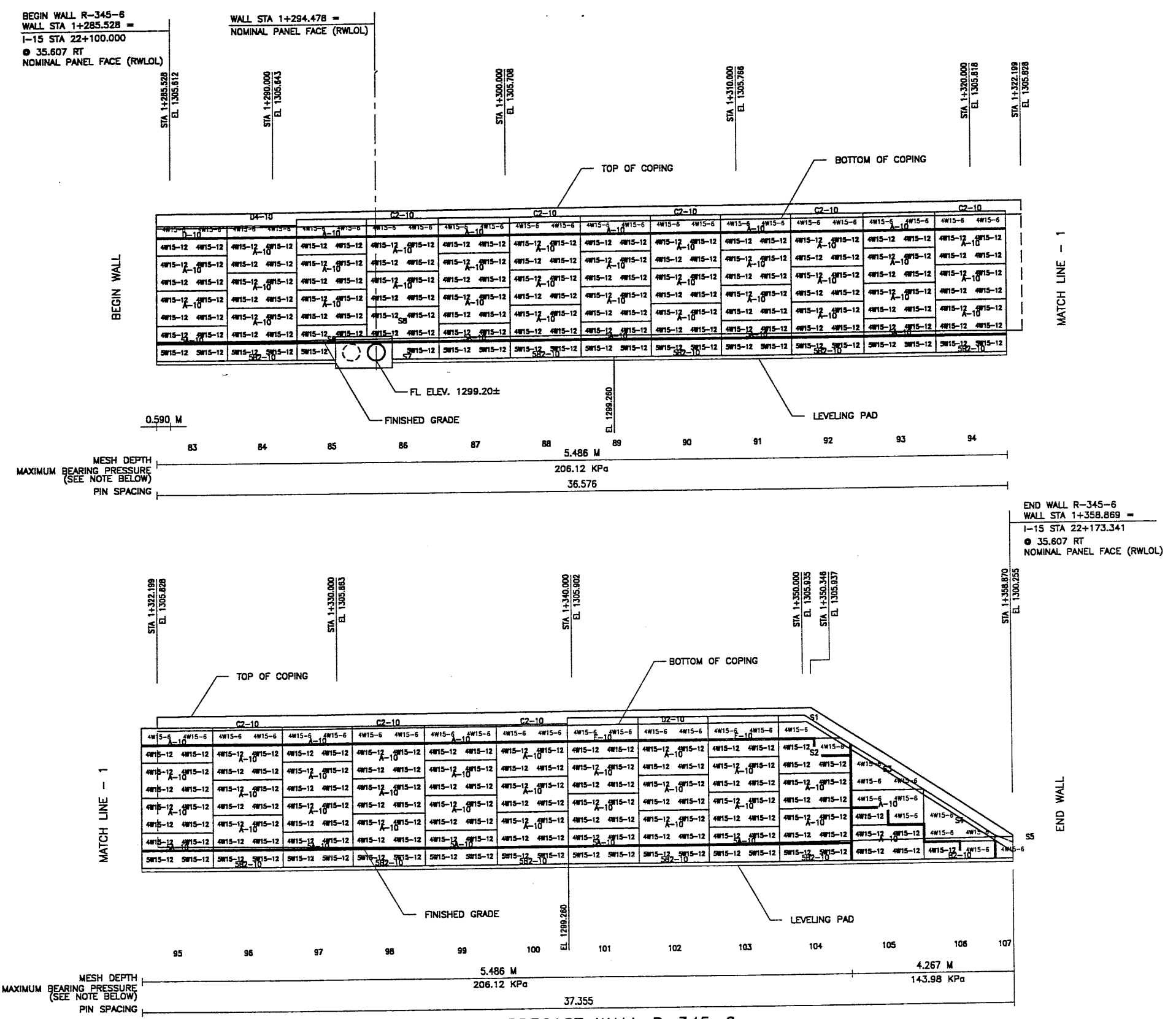
METRIC

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WASATCH CONSTRUCTORS  
 APR 30 1998  
 RELEASED FOR CONSTRUCTION

H:\RE\_EARTH\PROJEC\207\1998\45SERIES\45-06\SUBMTL-2\45-06 (X-UTAH.DWG) 04-20-98 FINAL



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	04-20-98	RELEASE FOR CONSTRUCTION

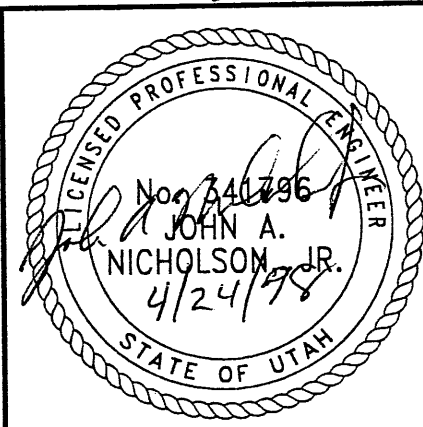
NO.	DATE	REVISION	BY

VSL CORPORATION  
 2600 Fonda Place, Suite 200  
 Raleigh, NC 27617  
 Phone: (919) 784-6972  
 Fax: (919) 781-6655



ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS  
 APR 30 1998  
 RELEASED FOR CONSTRUCTION



RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-6"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

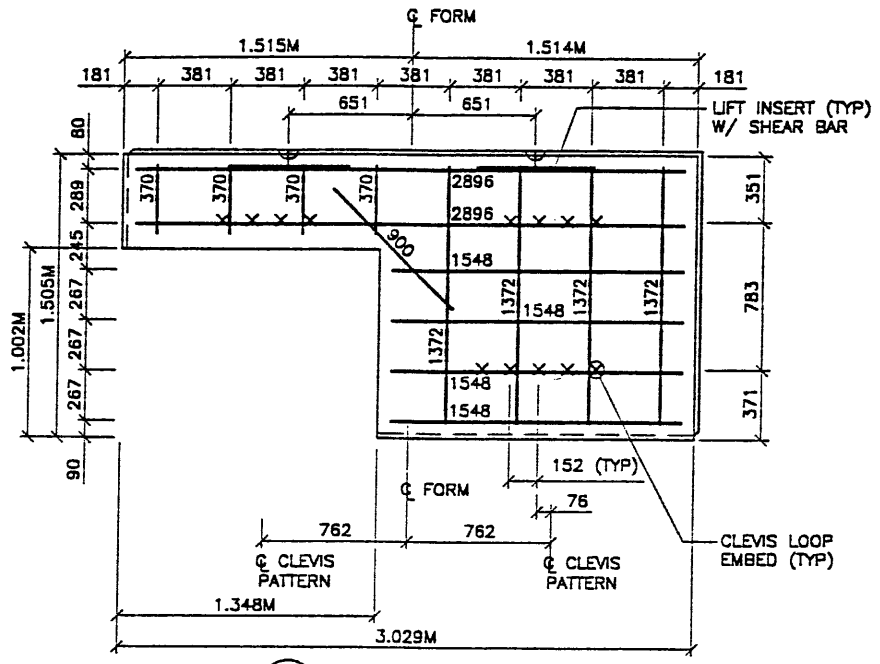
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JOB NO.	239-0007
SHT. NO.	RE-3

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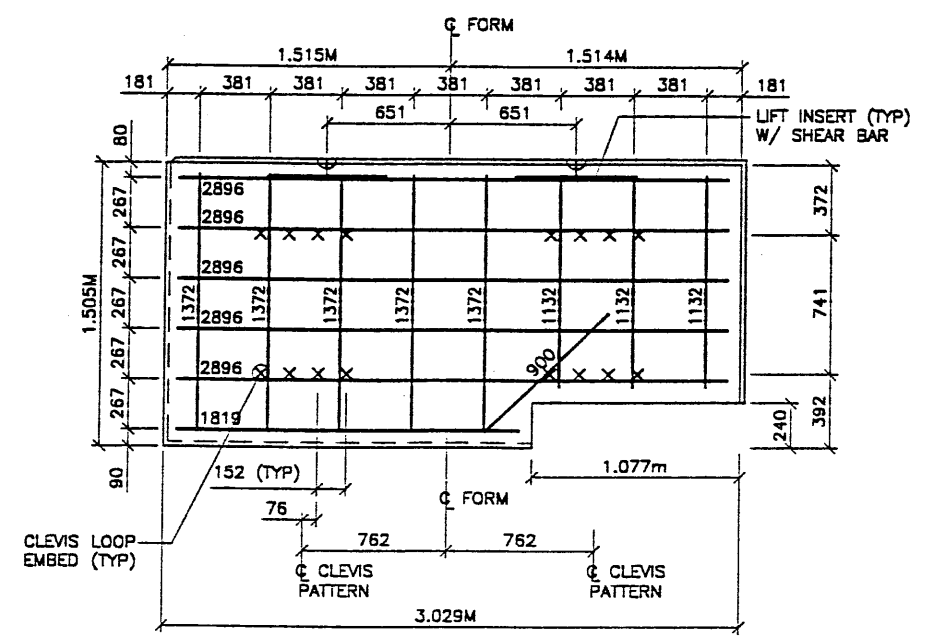
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F:\LOT 04-20-98 H:\RE\_EARTH\A 239-0007\1998\45SERIES\45-06\SUBMTL-2\SPECIALS REFERENCE (X-UTAH.DWG)

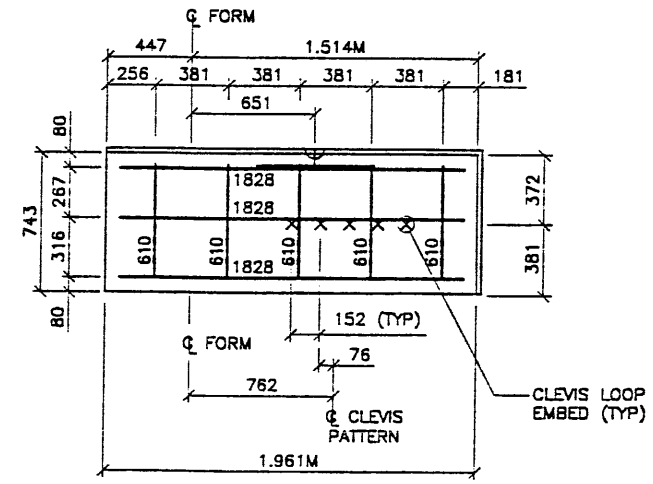
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	04-20-98	RELEASE FOR CONSTRUCTION



**S6** TYPE S6 REBAR  
(AREA = 3.295 SQ.M)



**S8** TYPE S8 REBAR  
(AREA = 4.387 SQ.M)



**S7** TYPE S7 REBAR  
(AREA = 1.500 SQ.M)

- PANEL REINFORCEMENT NOTES:
1. PANELS ARE SHOWN BACK FACE.
  2. HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  3. ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  4. ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  5. PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  6. ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS 1.
  7. CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  8. EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  9. ALL PANELS TO USE 9.5mm# CLEVIS LOOPS.
  10. VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.
  11. LIFT INSERTS ARE 6 3/4" LONG IN ALL PANELS LESS THAN 1.524M TALL. PANELS TALLER THAN 1.524M SHALL HAVE 11" LONG LIFT ANCHORS.

DES.	DRN.	CHK.	DATE	REVISION
JL	JL	JL	04-15-98	
			04-15-98	
			04-15-98	

VSL CORPORATION  
2810 Plaza Place, Suite 200  
Bethesda, MD 20817  
Telephone: (301) 761-6772  
Fax: (301) 761-4989



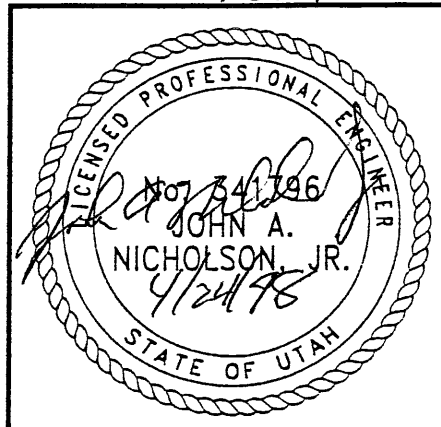
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WASATCH CONSTRUCTORS

APR 30 1998

RELEASED FOR CONSTRUCTION

70F7



METRIC

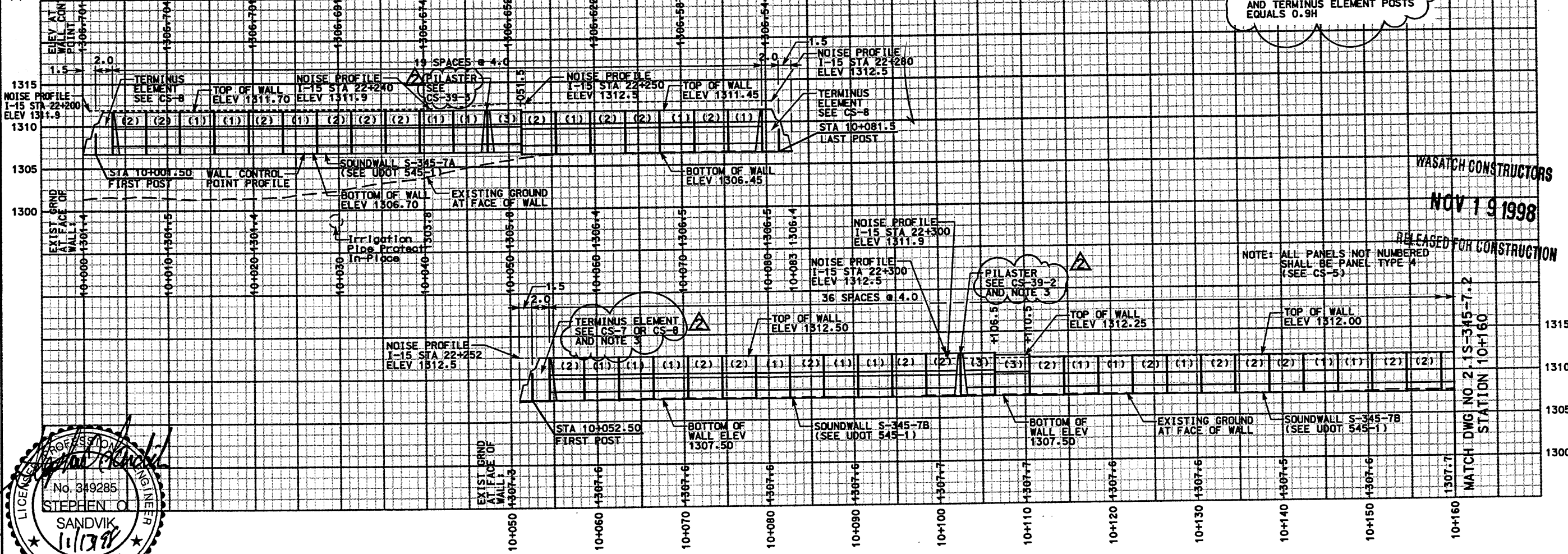
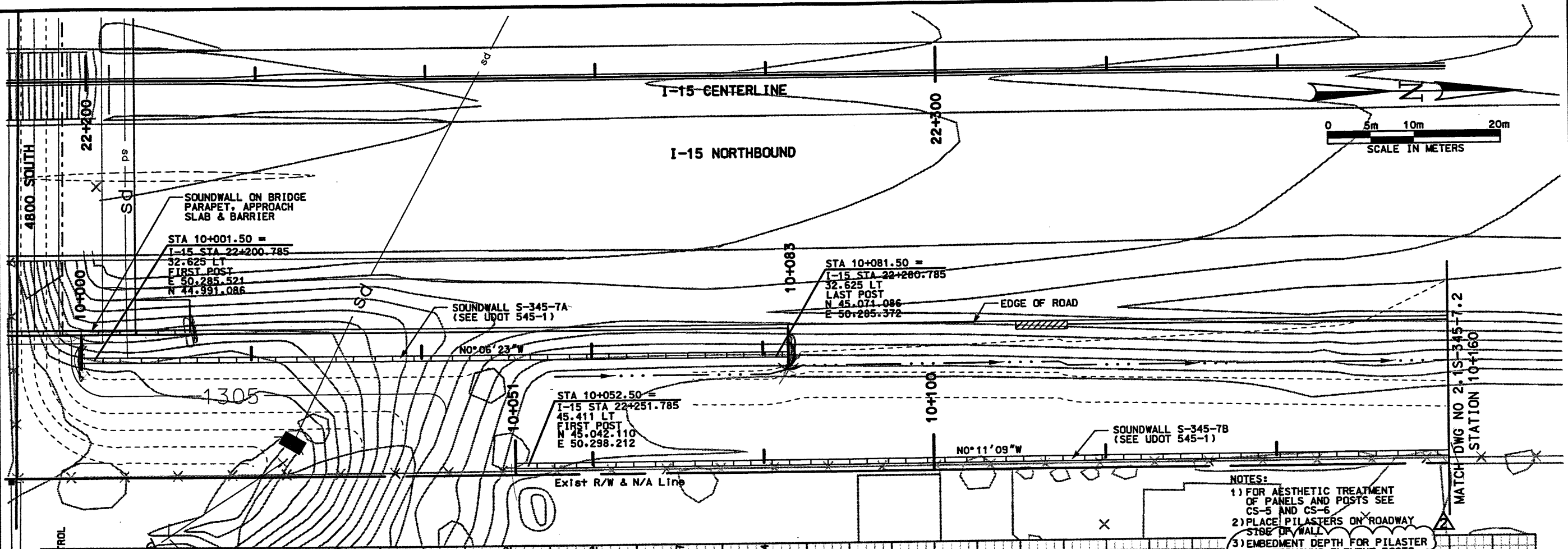
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

RETAINED EARTH™ WALLS  
PRECAST WALL R-345-6  
SPECIAL PANEL DETAILS  
UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-6.7
JOB NO.	239-0007
SHI NO.	RE-5

Username: young10  
Date: 13-NOV-1998 Times: 11:34

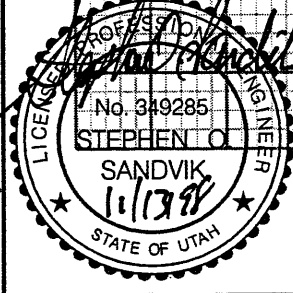
Filename: c:\pdp\115\cadd\45\_s7\sheet\_files\wall\45\_ret\wall-07.dwg



ELEVATION VIEW - EAST FACE OF WALL

NOTES:  
 1) FOR AESTHETIC TREATMENT OF PANELS AND POSTS SEE CS-5 AND CS-6  
 2) PLACE PILASTERS ON ROADWAY SIDE OF WALL  
 3) EMBEDMENT DEPTH FOR PILASTER AND TERMINUS ELEMENT POSTS EQUALS 0.9H

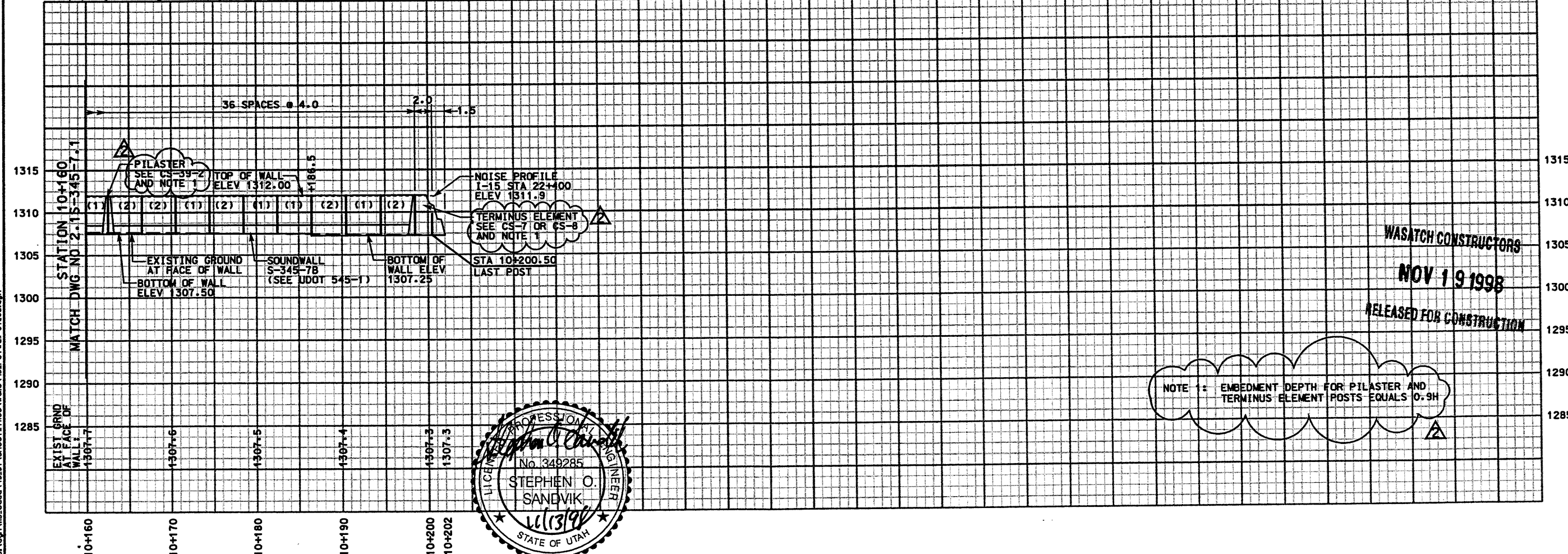
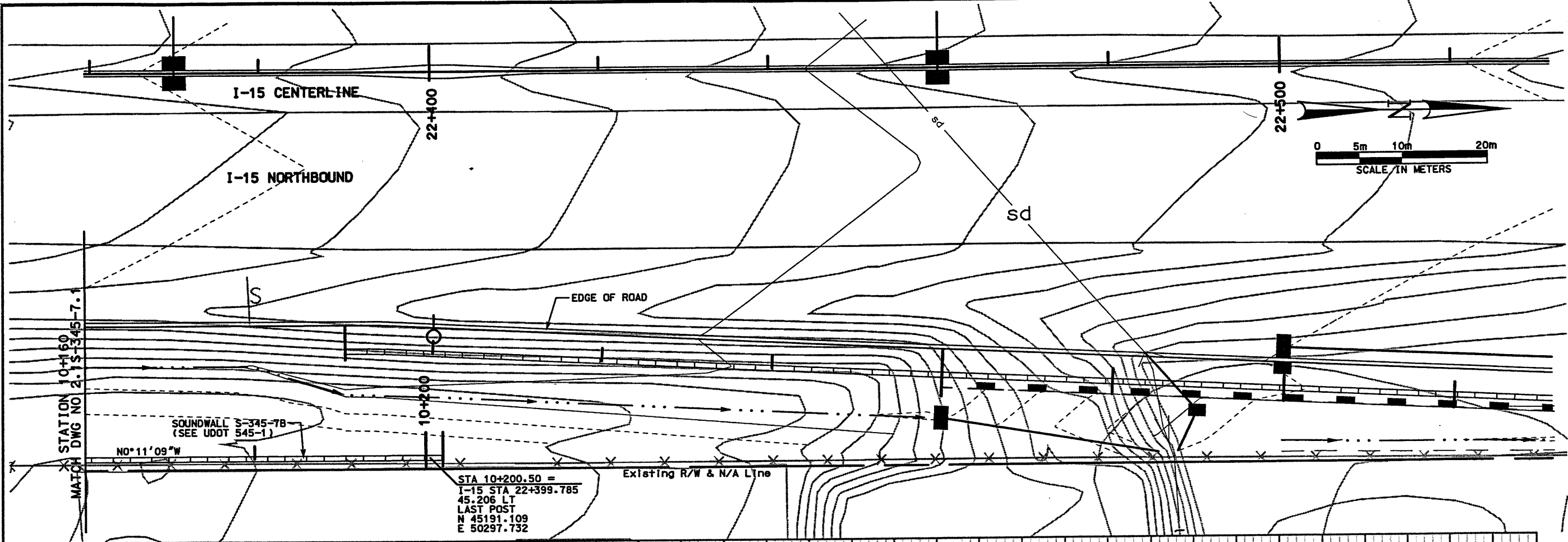
NOTE: ALL PANELS NOT NUMBERED SHALL BE PANEL TYPE 4 (SEE CS-5)



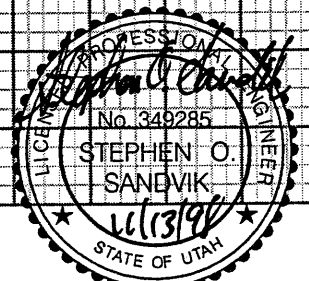
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NO.	DATE	NO.	DATE
Δ	5/18/98	Δ	11/12/98
		Δ	1/1/99
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		Δ	1/1/99
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL S/VERDRUP/DE LEUW		WBS NO. 2119403	
APPROVAL RECORD:	DESIGN	CHECK	DATE
5/18/98	Stephen O. Sandvik	2/18/98	2/18/98
DATE	PROJECT DESIGN ENGINEER	CHECK	DATE
5/18/98	Randle L. Ross	2/18/98	2/18/98
APPROVED	PROJECT MANAGER	CHECK	DATE
5/18/98	Randle L. Ross	5/18/98	5/18/98
DATE	PROJECT MANAGER	CHECK	DATE
		BAR	BAR
I-15 CORRIDOR RECONSTRUCTION SITUATION & LAYOUT S-345-7 SECTION 2.1		PROJECT NUMBER #SP-15-(135)296	
SALT LAKE COUNTY DWC NO. 2.15-345-7.1			
SHT.	1	OF	3
REF.			

RELEASED FOR CONSTRUCTION  
 NOV 19 1998  
 WASATCH CONSTRUCTORS





ELEVATION VIEW - EAST FACE OF WALL



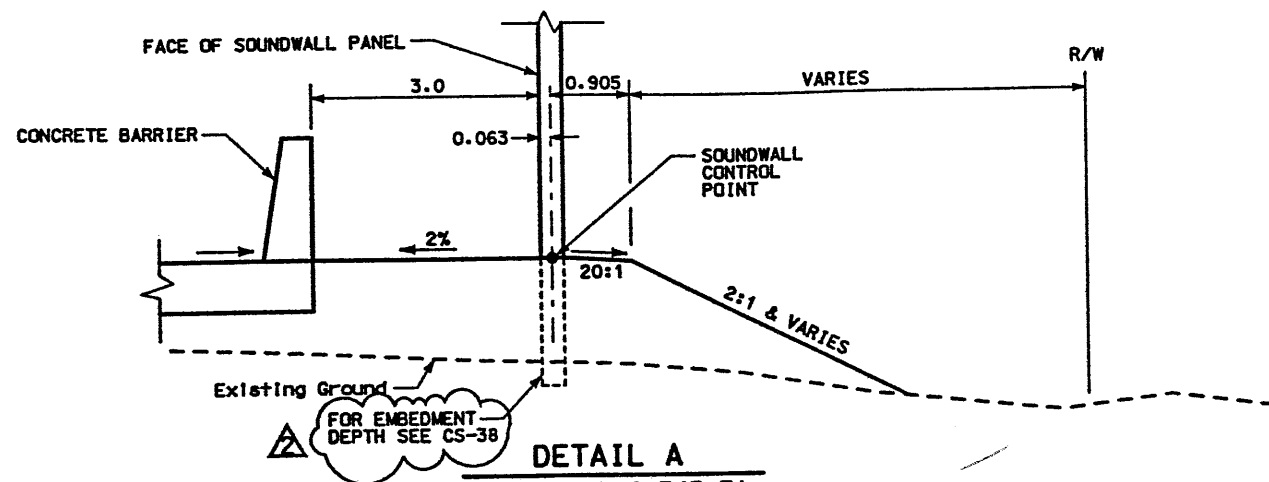
NOTE 1: EMBEDMENT DEPTH FOR PILASTER AND TERMINUS ELEMENT POSTS EQUALS 0.9H

WASATCH CONSTRUCTORS  
NOV 19 1998  
RELEASED FOR CONSTRUCTION

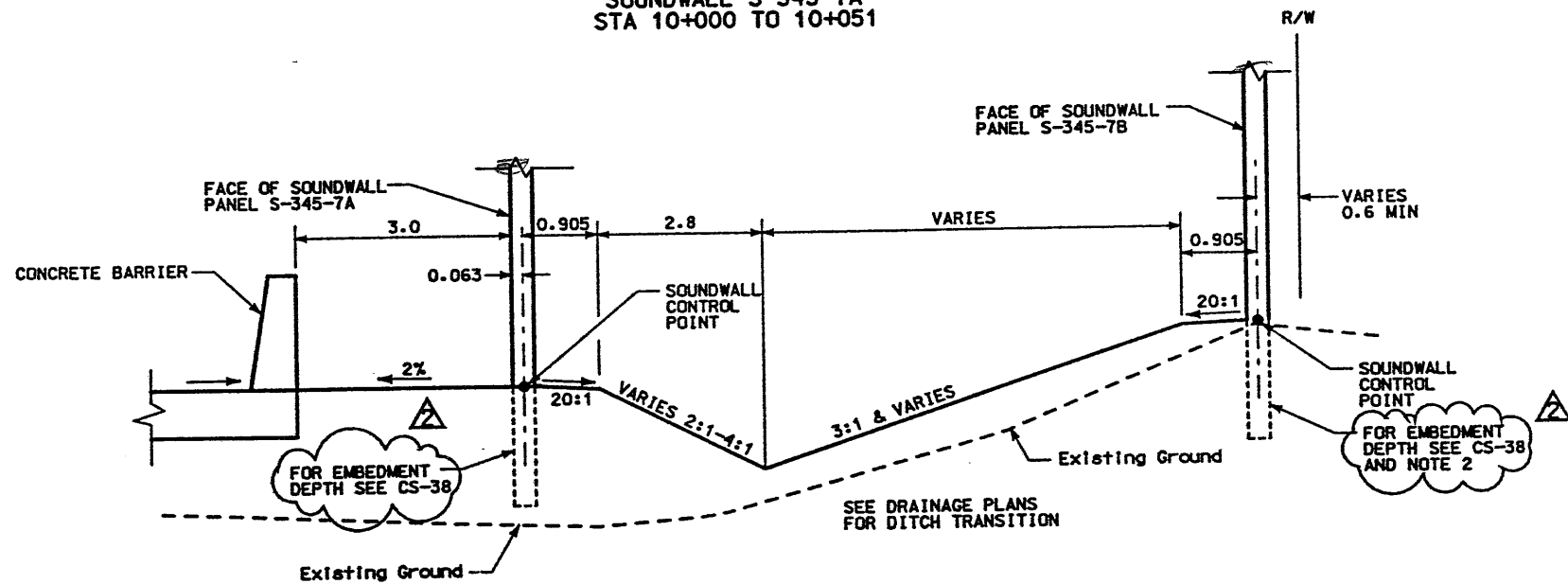
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	5/18/98	Δ	5/18/98
Δ	11/12/98	Δ	11/12/98
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SYVERDRUP/DE LEUW		WBS NO. 2113403	
APPROVAL RECOMM.	DATE	DESIGN SOS	CHECK BAR
2/18/98	Stephen O. Sandvik	2/18/98	2/18/98
PROJECT DESIGN ENGINEER	DATE	DRAWN SOS	CHECK BAR
2/18/98	Randall L. Robb	2/18/98	2/18/98
APPROVED	DATE	QUANT. MM	CHECK BAR
2/18/98	Randall L. Robb	5/18/98	5/18/98
	PROJECT MANAGER		
I-15 CORRIDOR RECONSTRUCTION SITUATION & LAYOUT S-345-7		SECTION 2.1	
SALT LAKE COUNTY		#SP-15-7(135)296	
DWG. NO. 2.15-345-7.2		PROJECT NUMBER	
SHT. 2 OF 3		REF.	



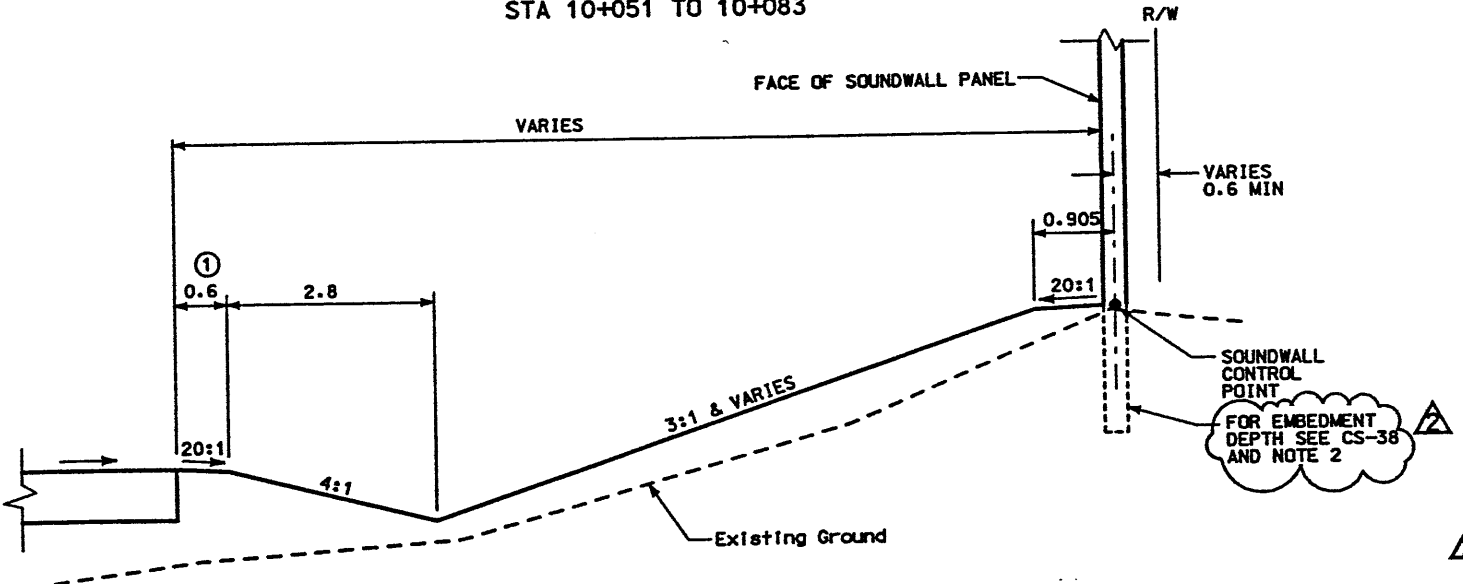
**SOUNDWALL DETAILS**  
SECTION 2.1 WALL S-345-7A & B  
NTS



**DETAIL A**  
SOUNDWALL S-345-7A  
STA 10+000 TO 10+051

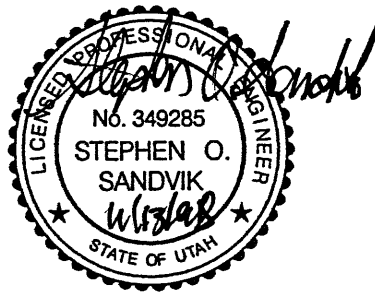


**DETAIL B**  
SOUNDWALL S-345-7A & B  
STA 10+051 TO 10+083



**DETAIL C**  
SOUNDWALL S-345-7B  
STA 10+083 TO 10+202

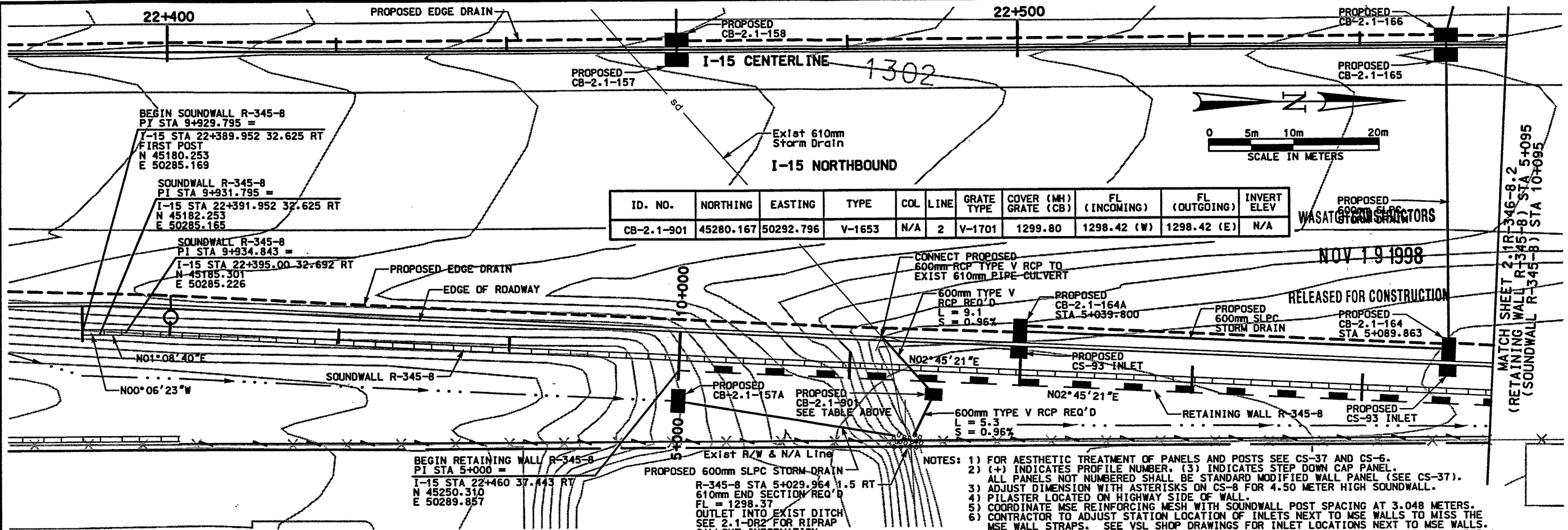
- NOTE:
- 1) VARIES 3.968 TO 0.6 FROM STA 10+083 (END OF WALL S-345-7A) TO STA 10+100.
  - 2) EMBEDMENT DEPTH FOR PILASTER AND TERMINUS ELEMENT POSTS EQUALS 0.9H



**WASATCH CONSTRUCTORS**  
**NOV 19 1998**  
**RELEASED FOR CONSTRUCTION**

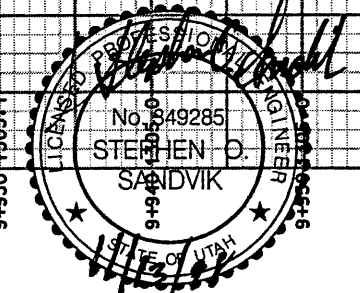
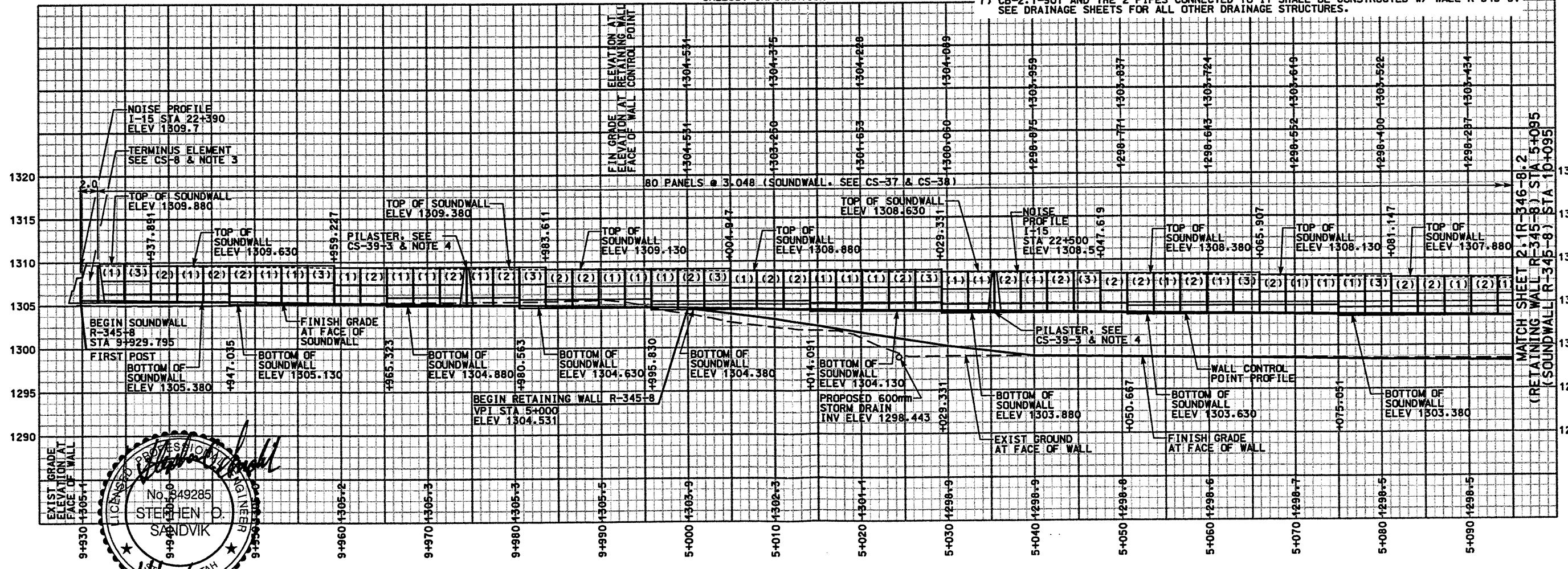
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	ORIGINAL ISSUE	ADDED EMBEDMENT NOTE
△	5/18/98		
△	11/12/98		
△	/ /		
△	/ /		
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		CHECK BAR	1/28/98
DESIGN SDS		CHECK BAR	1/28/98
DRAWN SDS		CHECK BAR	1/28/98
QUANT. MM		CHECK BAR	5/18/98
PROJECT NO.		WBS NO.	2113403
APPROVAL 1/28/98 Stephen O. Sandvik		DESIGN SDS	1/28/98
DATE PROJECT DESIGN ENGINEER		DRAWN SDS	1/28/98
APPROVED 1/28/98 Randle L. Ross		QUANT. MM	5/18/98
DATE PROJECT MANAGER			
I-15 CORRIDOR RECONSTRUCTION		SECTION 2.1	
WALL DETAIL S-345-7		PROJECT NUMBER #SP-15-7(135)296	
COUNTY		SALT LAKE	
DWG. NO.		2-15-345-7.3	
SHT. 3 OF 3		REF.	

Username: cdburnham  
Date: 15-NOV-98 Time: 15:01



ID. NO.	NORTHING	EASTING	TYPE	COL	LINE	GRATE TYPE	COVER (MM) GRATE (CB)	FL (INCOMING)	FL (OUTGOING)	INVERT ELEV
CB-2.1-301	45280.167	50292.796	V-1653	N/A	2	V-1701	1299.80	1298.42 (W)	1298.42 (E)	N/A

- NOTES:
- 1) FOR AESTHETIC TREATMENT OF PANELS AND POSTS SEE CS-37 AND CS-6.
  - 2) (+) INDICATES PROFILE NUMBER, (3) INDICATES STEP DOWN CAP PANEL. ALL PANELS NOT NUMBERED SHALL BE STANDARD MODIFIED WALL PANEL (SEE CS-37).
  - 3) ADJUST DIMENSION WITH ASTERISKS ON CS-8 FOR 4.50 METER HIGH SOUNDWALL.
  - 4) PILASTER LOCATED ON HIGHWAY SIDE OF WALL.
  - 5) COORDINATE MSE REINFORCING MESH WITH SOUNDWALL POST SPACING AT 3.048 METERS.
  - 6) CONTRACTOR TO ADJUST STATION LOCATION OF INLETS NEXT TO MSE WALLS TO MISS THE MSE WALL STRAPS. SEE VSL SHOP DRAWINGS FOR INLET LOCATIONS NEXT TO MSE WALLS.
  - 7) CB-2.1-901 AND THE 2 PIPES CONNECTED TO IT SHALL BE CONSTRUCTED W/ WALL R-345-8. SEE DRAINAGE SHEETS FOR ALL OTHER DRAINAGE STRUCTURES.



NOTE: PROFILE REPRESENTS FACE OF WALL

APPROVED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	11/13/98	ORIGINAL ISSUE
2		
3		
4		

WBS NO. 2113404

UTAH DEPARTMENT OF TRANSPORTATION  
MK CENTENNIAL  
SVERDRUP/DE LEUW

I-15 CORRIDOR RECONSTRUCTION  
SITUATION & LAYOUT R-345-8  
SECTION 2.1  
PROJECT NUMBER #SP-15-7(135)296

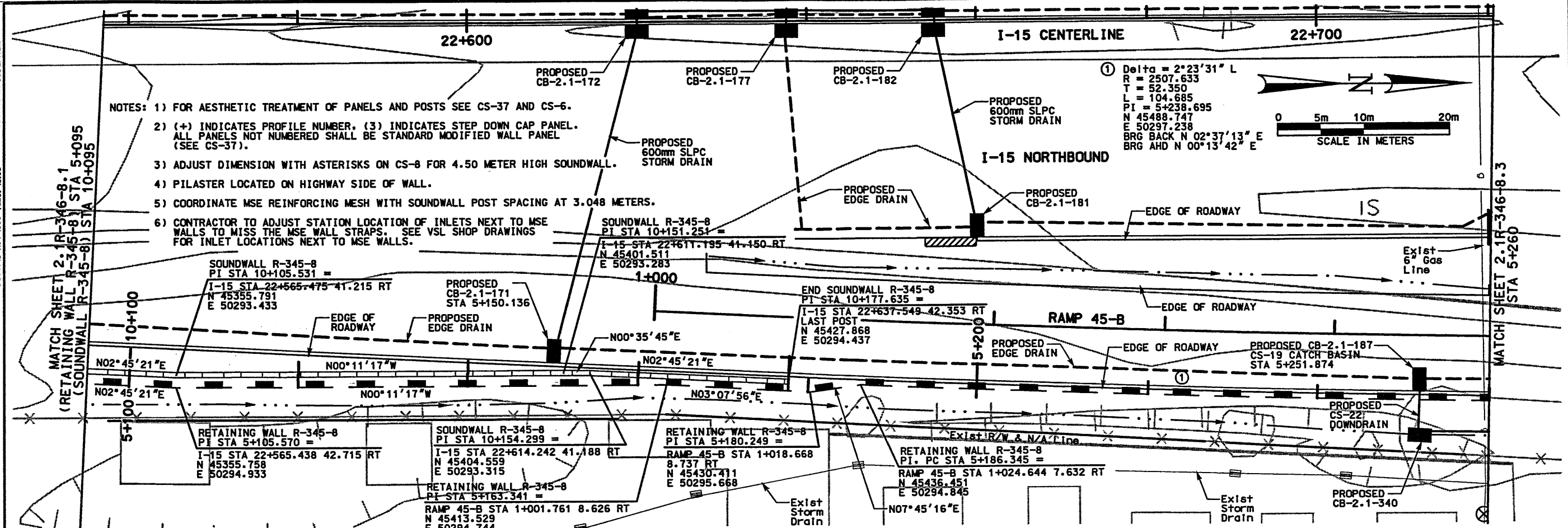
SALT LAKE COUNTY  
DWG. NO. 2-1R-345-8.1

SHT. 1 OF 18

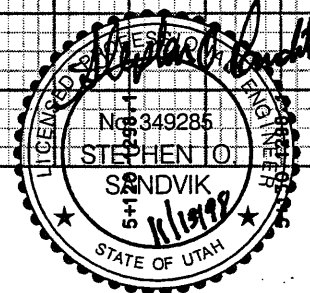
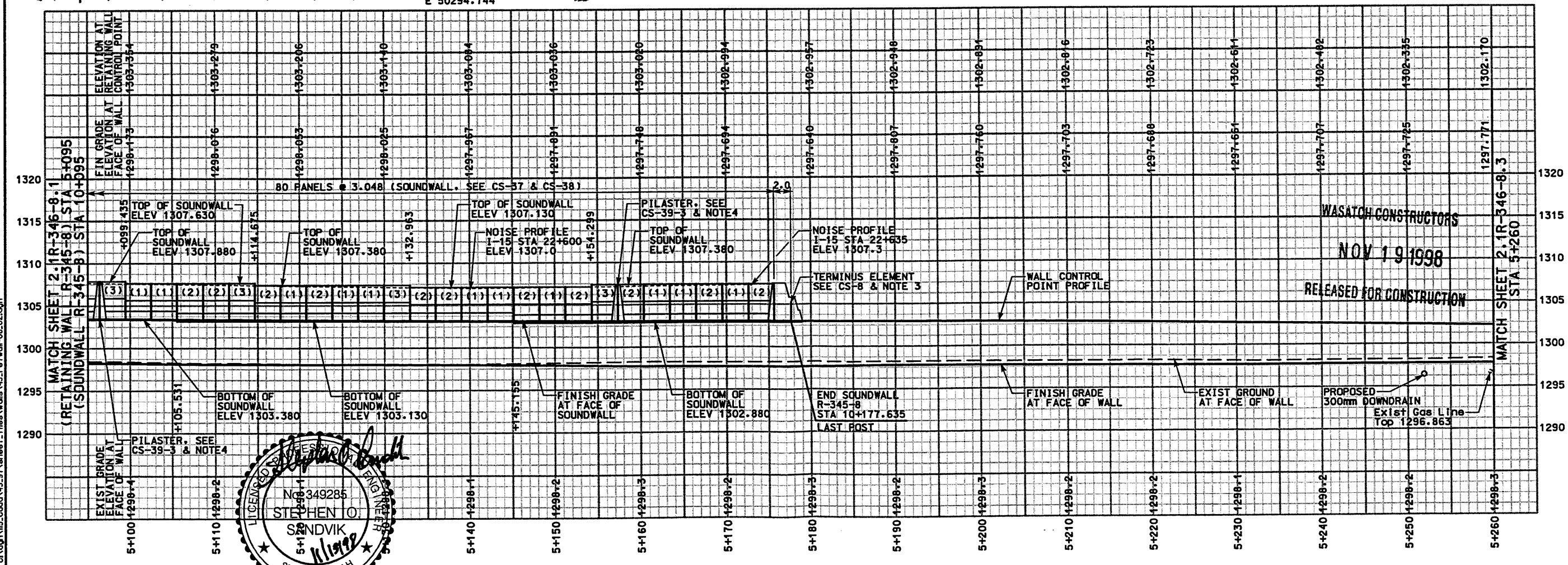
APPROVAL 11/02/98 Stephen O. Sandvik DESIGN DAF 11/02/98 CHECK BAR 11/02/98  
DATE PROJECT DESIGN ENGINEER DRAWN DAF 11/02/98 CHECK BAR 11/02/98  
APPROVED 11/02/98 Randle L. Ross PROJECT MANAGER QUANT. / / /

Filename: c:\dgn\115\_cadd\115\_97\sheet\_115\_rwall\115\_rwall-08.dgn

Date: 15-NOV-1998 Time: 15:03 User: rones coburn



- NOTES: 1) FOR AESTHETIC TREATMENT OF PANELS AND POSTS SEE CS-37 AND CS-6.  
 2) (+) INDICATES PROFILE NUMBER, (3) INDICATES STEP DOWN CAP PANEL. ALL PANELS NOT NUMBERED SHALL BE STANDARD MODIFIED WALL PANEL (SEE CS-37).  
 3) ADJUST DIMENSION WITH ASTERISKS ON CS-8 FOR 4.50 METER HIGH SOUNDWALL.  
 4) PILASTER LOCATED ON HIGHWAY SIDE OF WALL.  
 5) COORDINATE MSE REINFORCING MESH WITH SOUNDWALL POST SPACING AT 3.048 METERS.  
 6) CONTRACTOR TO ADJUST STATION LOCATION OF INLETS NEXT TO MSE WALLS TO MISS THE MSE WALL STRAPS. SEE VSL SHOP DRAWINGS FOR INLET LOCATIONS NEXT TO MSE WALLS.



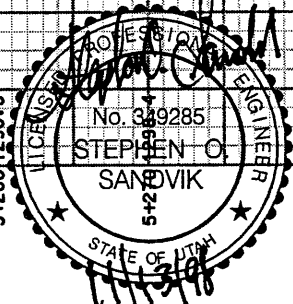
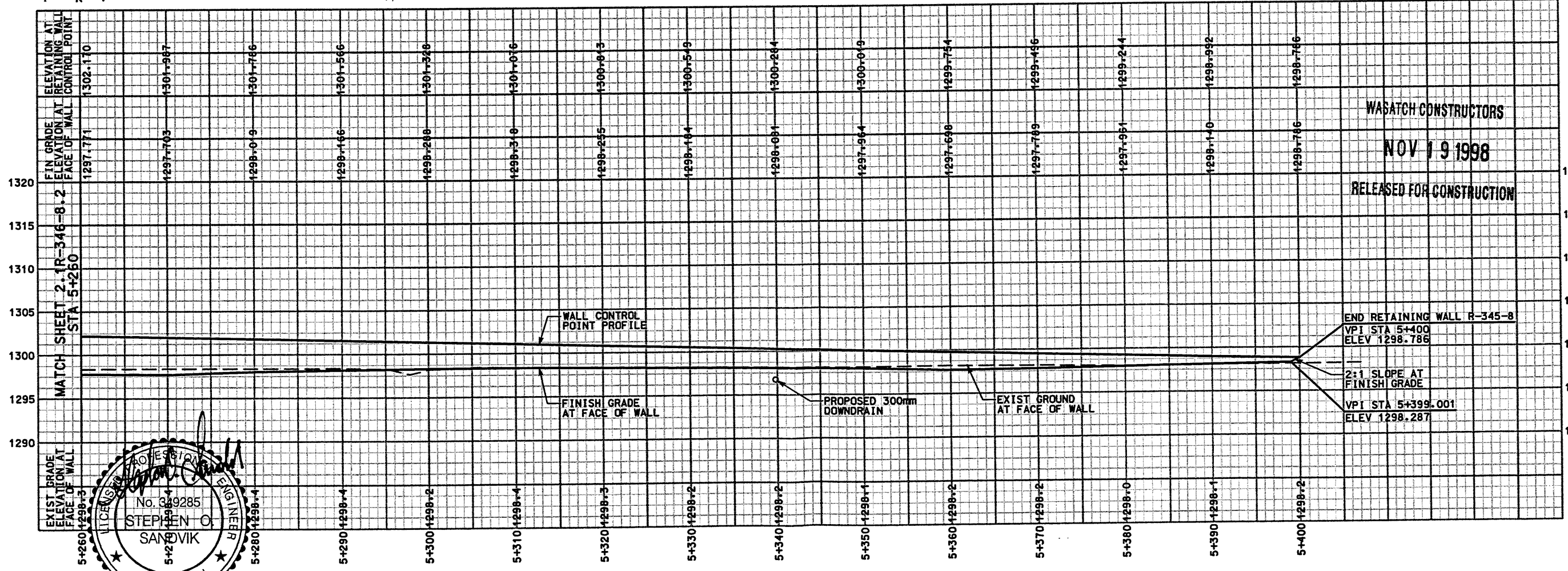
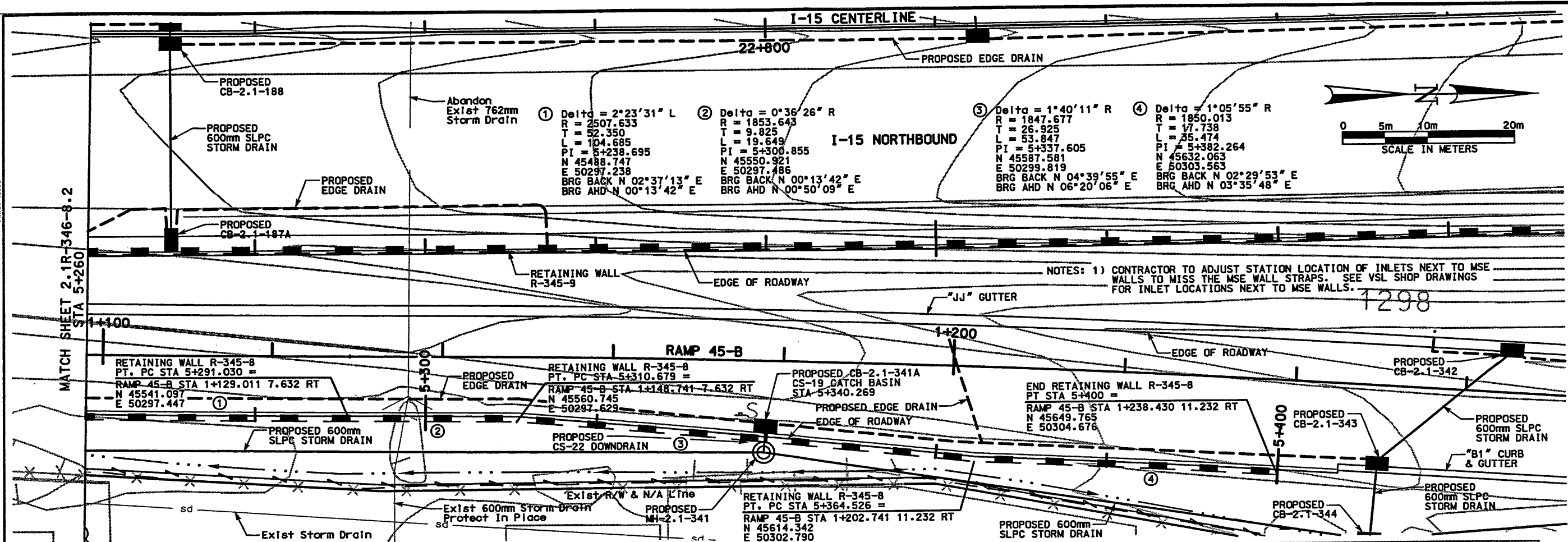
NOTE: PROFILE REPRESENTS FRONT FACE OF WALL

APPROVED FOR CONSTRUCTION		NO.	DATE	DESCRIPTION
△	11/13/98	△	△	ORIGINAL ISSUE
△	△	△	△	△
△	△	△	△	△
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		APPROVAL	DATE	BY
I-15 CORRIDOR RECONSTRUCTION SITUATION & LAYOUT R-345-8 SECTION 2.1		11/02/98	Stephen O. Sandvik	DESIGN
PROJECT NUMBER #SP-15-7(135)296		11/02/98	Randle L. Ross	CHECK
SALT LAKE COUNTY DWG. NO. 2.1R-345-8.2		11/02/98	△	CHECK
SHT. 2 OF 18		QUANT.	△	△
REF.		WBS NO.	2113404	△

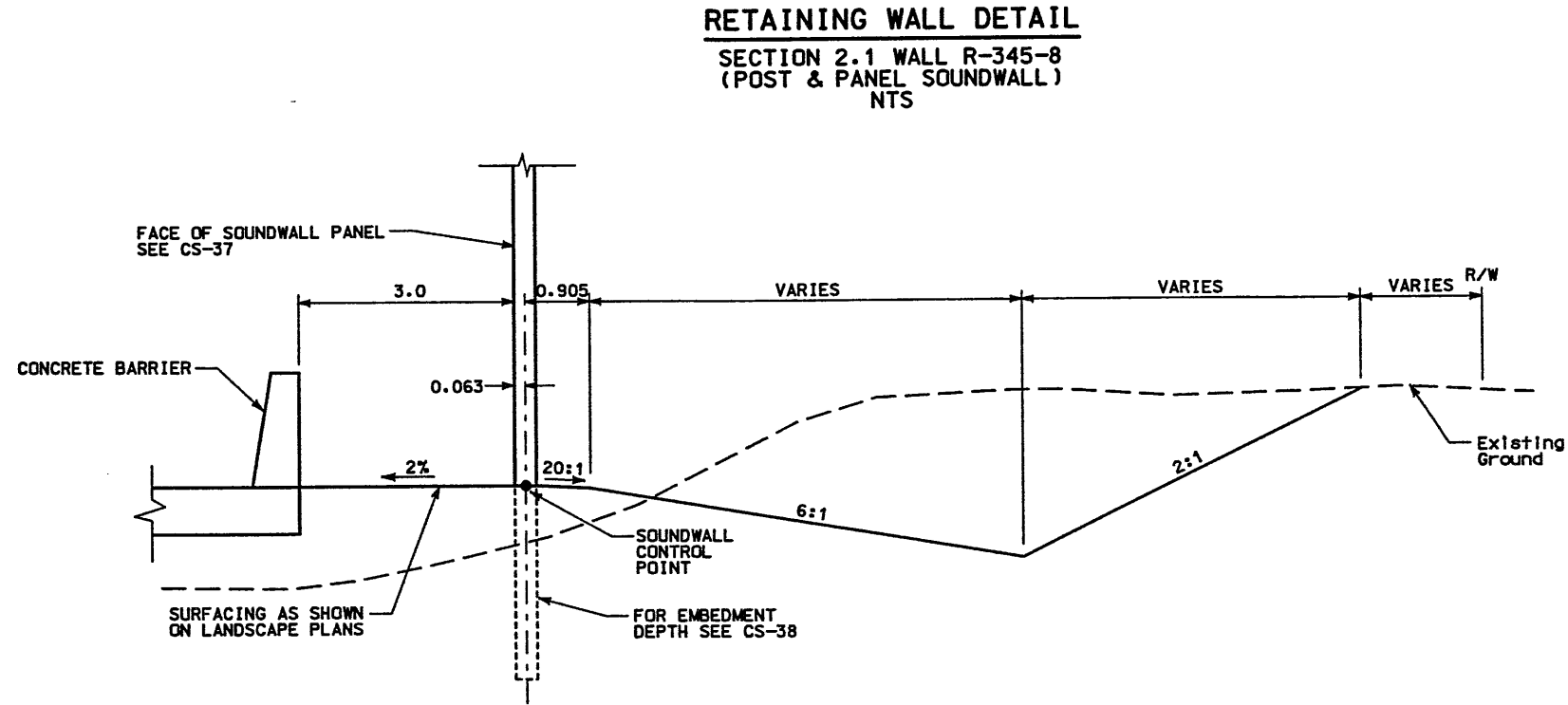
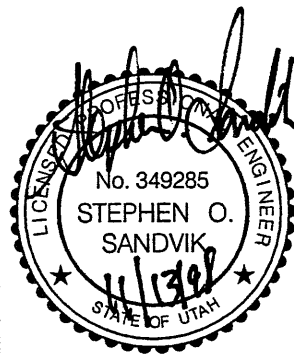


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APPROVED FOR CONSTRUCTION		DESCRIPTION	
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△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113404	
MK CENTENNIAL		DESIGN DATE 11/02/98	
SYVERDRUP/DE LEUW		CHECK BAR 11/02/98	
DESIGNER: Stephen O. Sandvik		PROJECT DESIGN ENGINEER	
DATE: 11/02/98		DRAWN DATE: 11/02/98	
APPROVED: 11/02/98		CHECK BAR 11/02/98	
PROJECT MANAGER: Randi L. ROBB		QUANT. / /	
DATE: / /		CHECK / /	
I-15 CORRIDOR RECONSTRUCTION		SECTION 2.1	
SITUATION & LAYOUT R-345-8		PROJECT NUMBER #SP-15-(135)296	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-8-3	
SHT. 3 OF 18		REF. / /	



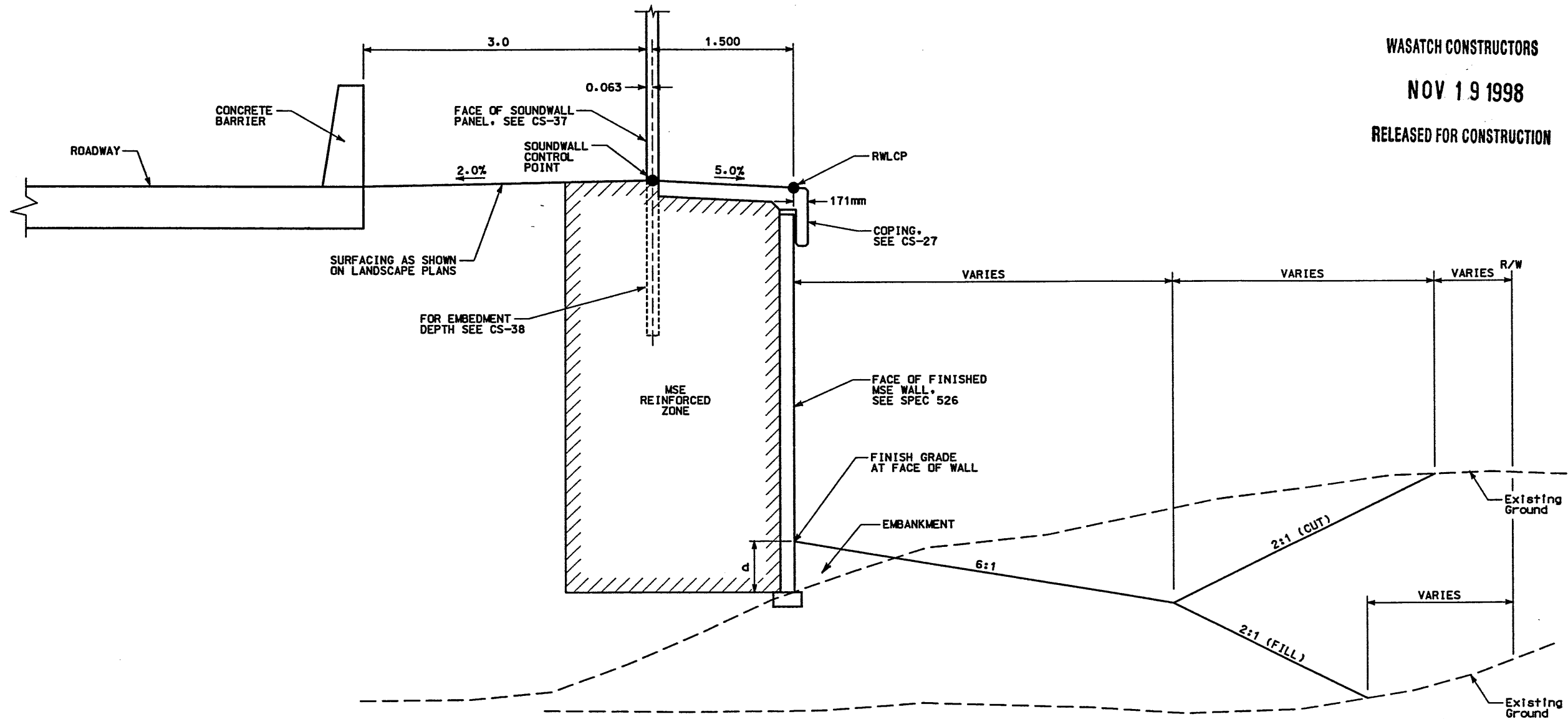
**DETAIL A**  
SOUNDWALL STA 9+929.380 TO STA 10+000

WASATCH CONSTRUCTORS  
NOV 19 1998  
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113404	
MK CENTENNIAL		DESIGN BAR	11/02/98
SVERRUP/DE LEUW		CHECK BAR	11/02/98
DESIGN DATE	11/02/98	DESIGN ENGINEER	Stephen O. Sandvik
PROJECT DATE	11/02/98	PROJECT ENGINEER	Stephen O. Sandvik
QUANT.	1/1	PROJECT MANAGER	Randie L. Robb
DATE	11/02/98	DATE	11/02/98
1-15 CORRIDOR RECONSTRUCTION		PROJECT NUMBER #SP-15-7(135)296	
WALL DETAIL R-345-8		COUNTY SALT LAKE	
SECTION 2.1		DWG. NO. 2.1R-345-8.4	
SHT.	4	OF	18
REF.			

SLOPE = H:V

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-8**  
**(1-STAGE MSE WALL & SOUNDWALL)**  
**NTS**



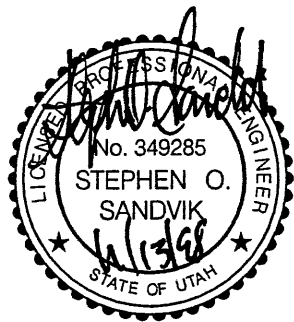
WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

d = EMBEDMENT DEPTH (SEE VSL DETAILS)

**DETAIL B**  
**RETAINING WALL STA 5+000 TO STA 5+040**  
**SOUNDWALL STA 10+000 TO STA 10+040**

**NOTES:**

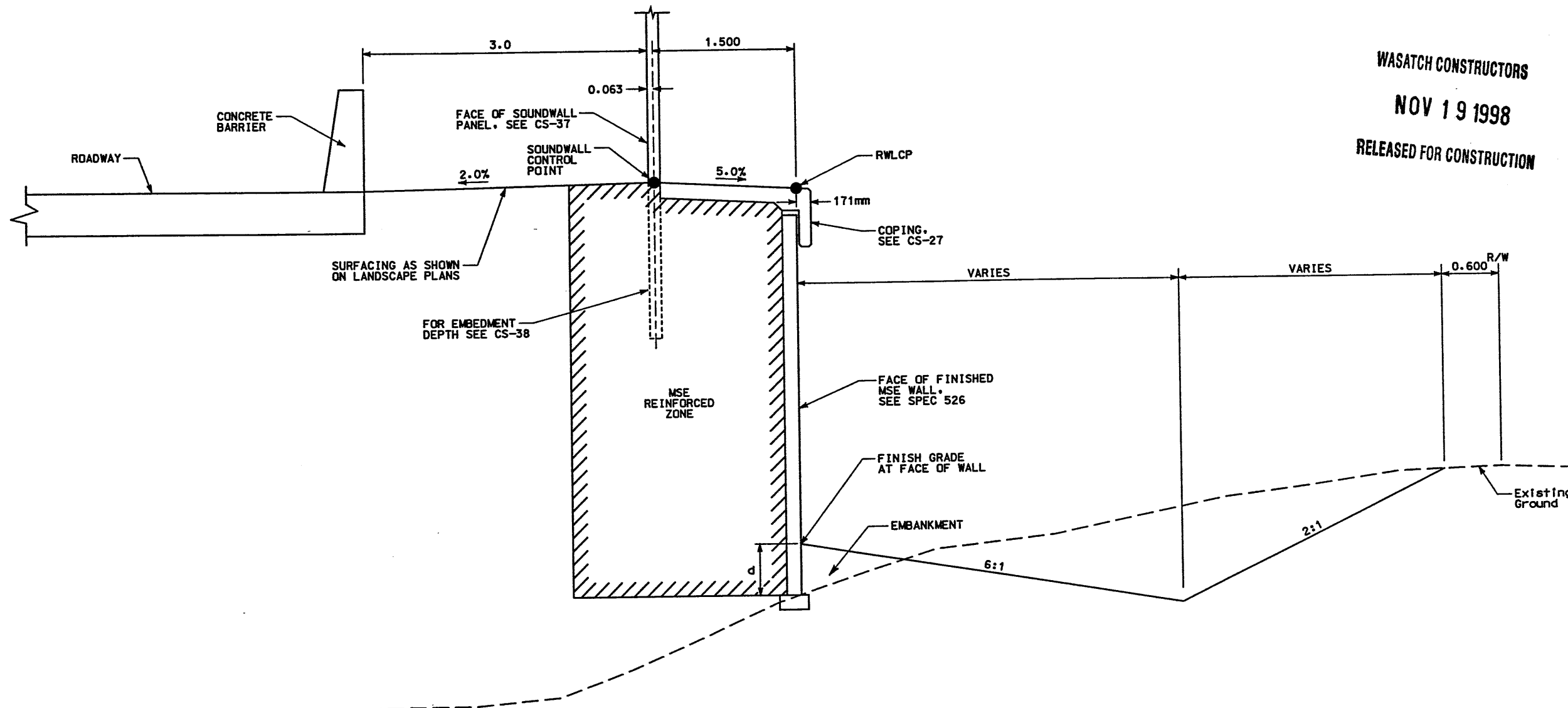
- 1) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	11/13/98	Δ	/ /
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113404	
M.K. CENTENNIAL		SVERDRUP/DE LEUW	
APPROVAL DATE	DESIGN DATE	CHECK DATE	CHECK DATE
11/02/98	11/02/98	11/02/98	11/02/98
Stephen O. Sandvik	Stephen O. Sandvik	Steph L. Ross	Steph L. Ross
PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER
DATE	DATE	DATE	DATE
11/02/98	11/02/98	11/02/98	11/02/98
Randle L. Ross	Randle L. Ross	Randle L. Ross	Randle L. Ross
PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER
DATE	DATE	DATE	DATE
11/02/98	11/02/98	11/02/98	11/02/98
1-15 CORRIDOR RECONSTRUCTION		SECTION 2.1	
WALL DETAIL R-345-8		PROJECT NUMBER #SP-15-7(135)296	
SALT LAKE COUNTY		COUNTY	
2.1R-345-8.5		DWC. NO.	
SHT. 5 OF 18		SLOPE = H:V	
REF.			



**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-8**  
**(1-STAGE MSE WALL & SOUNDWALL)**  
 NTS



WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

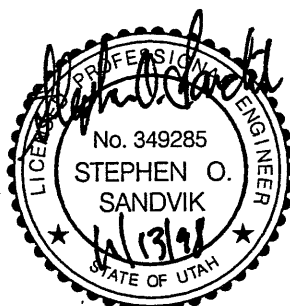
d = EMBEDMENT DEPTH (SEE VSL DETAILS)

**DETAIL C**

RETAINING WALL STA 5+040 TO STA 5+105.570  
 SOUNDWALL STA 10+040 TO STA 10+105.531

**NOTES:**

- 1) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
1	11/13/98	1	11/13/98
2	11/13/98	2	11/13/98
3	11/13/98	3	11/13/98
4	11/13/98	4	11/13/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2213404	
MK CENTENNIAL		SVERDRUP/DE LEUW	
APPROVAL DATE	RECOMM. DATE	CHECK BAR	CHECK BAR
11/02/98	11/02/98	11/02/98	11/02/98
Stephen O. Sandvik	Stephen O. Sandvik	Steph	Steph
PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER
Randle L. Ross	Randle L. Ross	Randle L. Ross	Randle L. Ross
PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER
I-15 CORRIDOR RECONSTRUCTION	WALL DETAIL R-345-8	SECTION 2.1	PROJECT NUMBER #SP-15-7(135)296
SALT LAKE COUNTY		DWG. NO. 2.1R-345-8.6	
SHT. 6	OF 18	REF.	

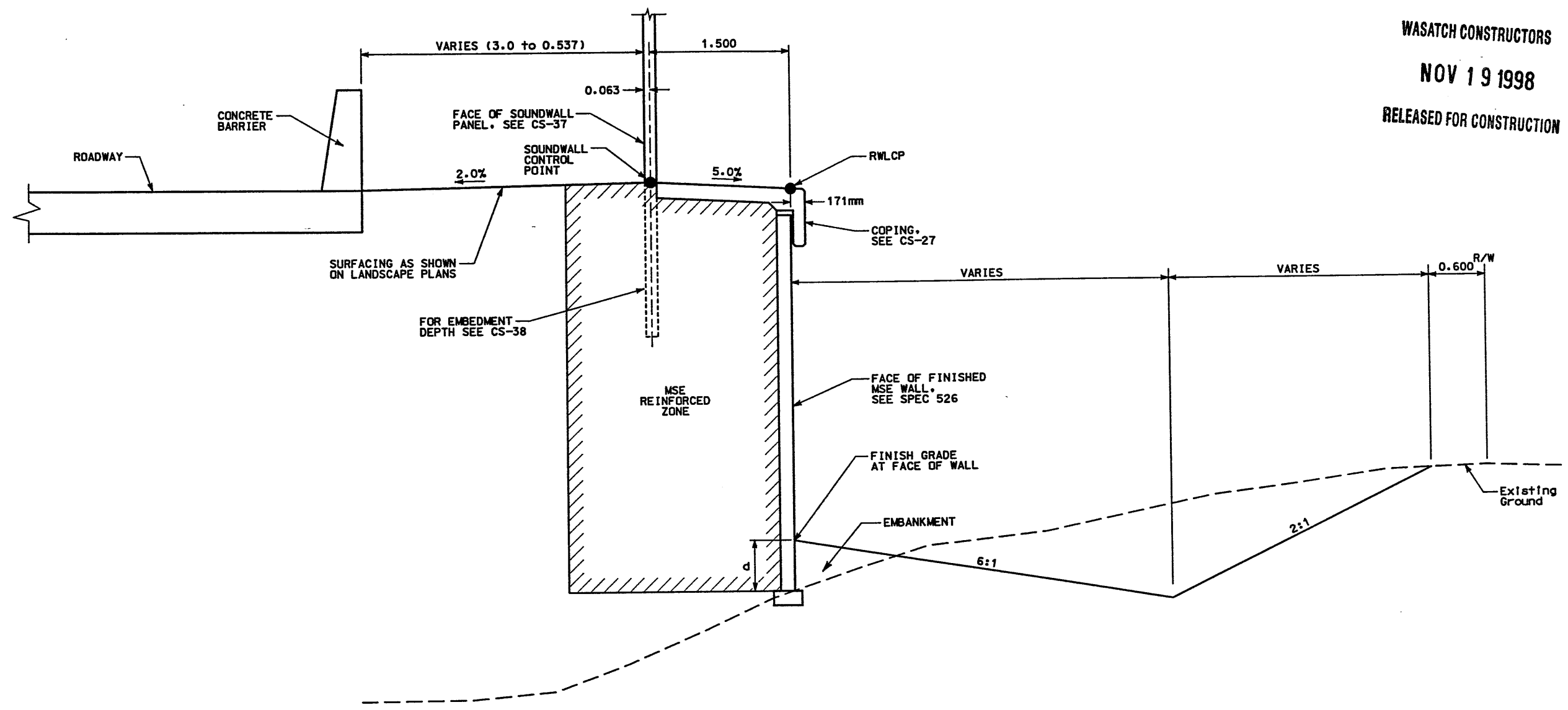
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**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-8**  
**(1-STAGE MSE WALL & SOUNDWALL)**  
**NTS**

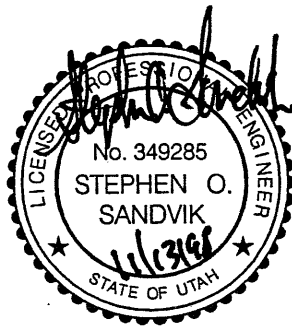
**WASATCH CONSTRUCTORS**  
**NOV 19 1998**  
**RELEASED FOR CONSTRUCTION**



d = EMBEDMENT DEPTH (SEE VSL DETAILS)

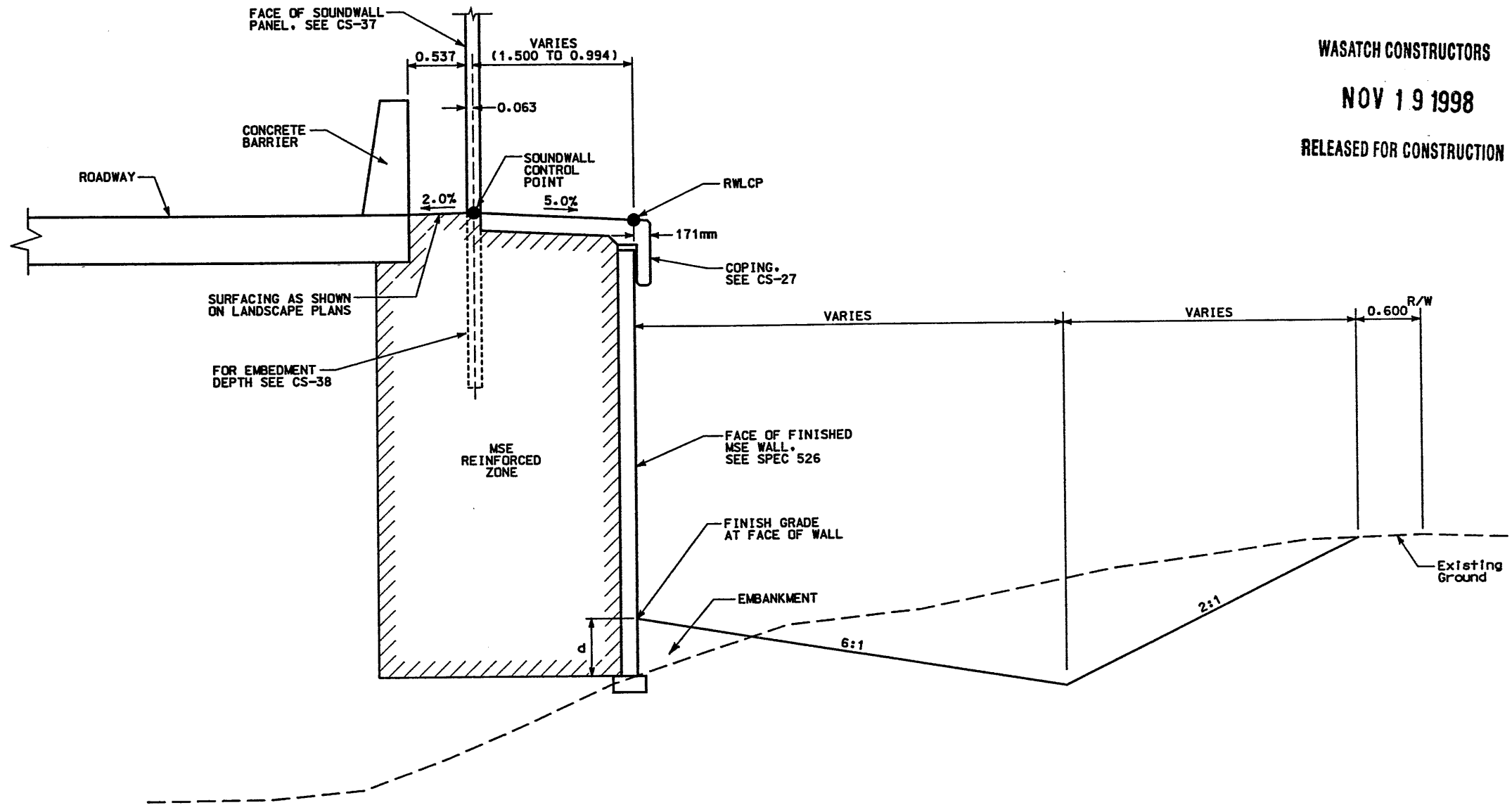
**DETAIL D**  
**RETAINING WALL STA 5+105.570 TO STA 5+153.565**  
**SOUNDWALL STA 10+105.531 TO STA 10+151.251**

- NOTES:
- 1) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	11/13/98	Δ	11/13/98
Δ	11/13/98	Δ	11/13/98
Δ	11/13/98	Δ	11/13/98
Δ	11/13/98	Δ	11/13/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113404	
MK CENTENNIAL		SVERDRUP/DE LEUW	
DESIGN DATE	DESIGN BAR	CHECK DATE	CHECK BAR
11/02/98	11/02/98	11/02/98	11/02/98
DESIGN ENGINEER	PROJECT DESIGN ENGINEER	QUANT.	CHECK
Stephen O. Sandvik	Randilo I. Robb	11/02/98	11/02/98
DATE	PROJECT MANAGER	DATE	DATE
11/02/98	Randilo I. Robb	11/02/98	11/02/98
APPROVED	DATE	APPROVED	DATE
11/02/98	11/02/98	11/02/98	11/02/98
I-15 CORRIDOR RECONSTRUCTION	WALL DETAIL R-345-8	SALT LAKE COUNTY	DWG. NO. 2-1R-345-8.7
SECTION 2.1	PROJECT NUMBER #SP-15-7(135)296	SHT. 7 OF 18	REF.
SLOPE = H:V			

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-8**  
**(1-STAGE MSE WALL & SOUNDWALL)**  
**NTS**



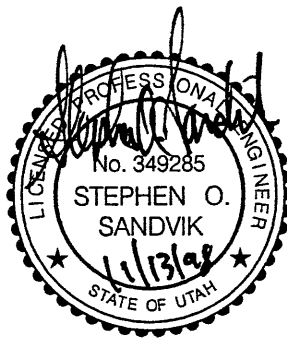
WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

d = EMBEDMENT DEPTH (SEE VSL DETAILS)

**DETAIL E**  
 RETAINING WALL STA 5+153.565 TO STA 5+177.635  
 STA 5+177.635 TO STA 5+186.345 (TRANS TO DETAIL F)  
 SOUNDWALL STA 10+151.251 TO STA 10+177.635

**NOTES:**

- 1) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.

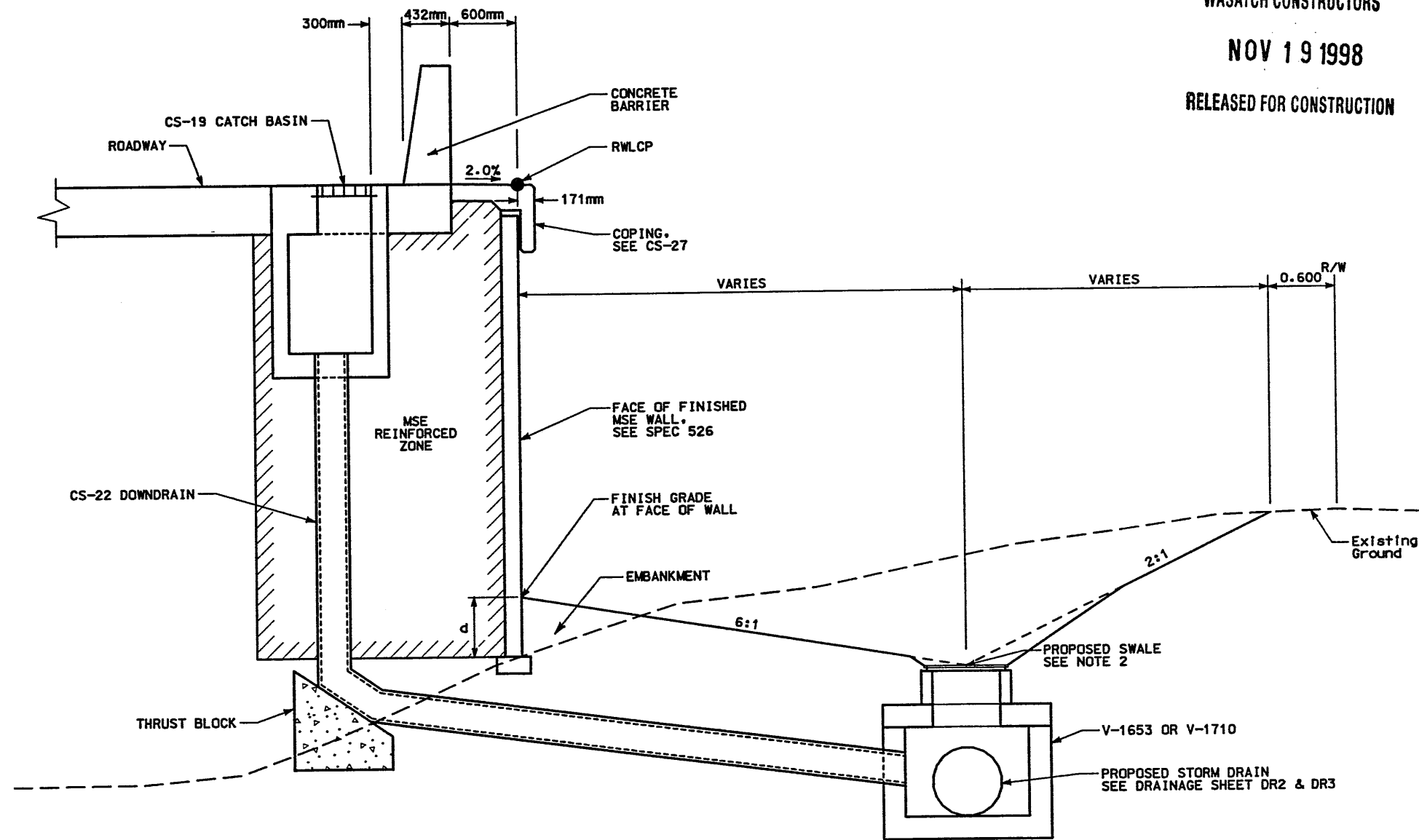


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NO.	DATE	NO.	DATE
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△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113404	
MK CENTENNIAL		DESIGN DATE 11/02/98	
SVERRORUP/DE LEUW		CHECK BAR 11/02/98	
DESIGN DATE 11/02/98		CHECK BAR 11/02/98	
PROJECT DESIGN ENGINEER		CHECK BAR 11/02/98	
Stephen O. Sandvik		CHECK BAR 11/02/98	
DATE 11/02/98		CHECK BAR 11/02/98	
PROJECT MANAGER		CHECK BAR 11/02/98	
Raidig L. Robb		CHECK BAR 11/02/98	
DATE 11/02/98		CHECK BAR 11/02/98	
PROJECT NUMBER		CHECK BAR 11/02/98	
#SP-15-7(135)296		CHECK BAR 11/02/98	
I-15 CORRIDOR RECONSTRUCTION		SALT LAKE COUNTY	
WALL DETAIL R-345-8		DWC NO. 2.1R-345-8.8	
SECTION 2.1		SHT. 8 OF 18	
REF.		REF.	

SLOPE = H:V

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-8**  
**(1-STAGE MSE WALL)**  
**NTS**

WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION



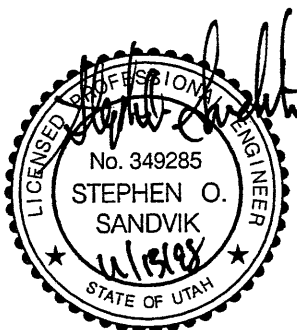
d = EMBEDMENT DEPTH (SEE VSL DETAILS)

**DETAIL F**

**RETAINING WALL STA 5+186.345 TO STA 5+400.000**  
**(DOWNDRAIN LOCATED AT STA 5+251.874 AND STA 5+340.269)**

**NOTES:**

- 1) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.
- 2) SEE DRAINAGE SHEET DR2 AND DR3 FOR DITCH GRADING AND LOCATION.



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
△	11/13/98	△	11/13/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113404	
MK CENTENNIAL		SVERDRUP/DE LEUW	
APPROVAL DATE	DESIGN DATE	CHECK DATE	BAR DATE
11/02/98	11/02/98	11/02/98	11/02/98
Stephen O. Sandvik	Stephen O. Sandvik	Stephen O. Sandvik	Stephen O. Sandvik
PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER
APPROVED DATE	DATE	DATE	DATE
11/02/98	11/02/98	11/02/98	11/02/98
Randle L. Ross	Randle L. Ross	Randle L. Ross	Randle L. Ross
PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER
I-15 CORRIDOR RECONSTRUCTION		WALL DETAIL R-345-8	
SECTION 2.1		PROJECT NUMBER #SP-15-7(135)296	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-8.9	
SHT. 9	OF 18	SLOPE = H:V	
REF.			

(X-UTAH.DWG)

0007\1998\45SERIES\45-06\SUBMTL-2\RE-1

H:\RE\_EARTH\APROUF

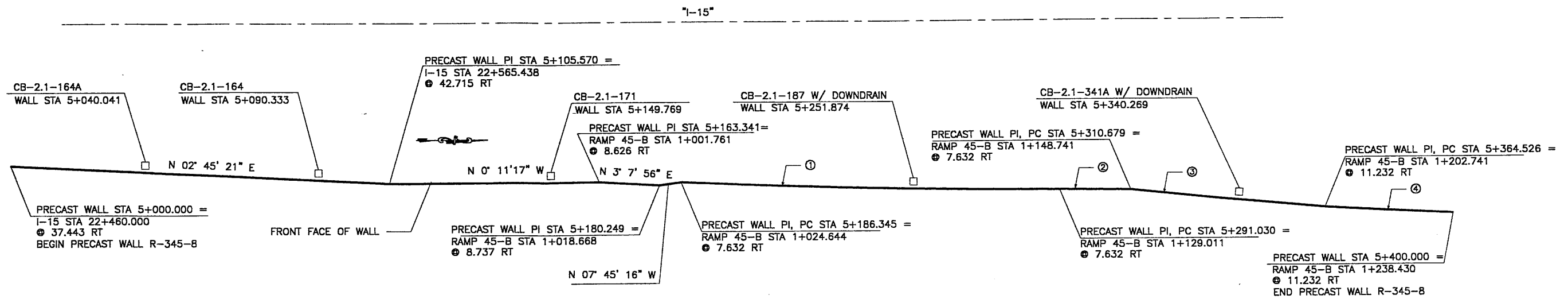
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FINAL

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-8, NOTES & DESIGN CRITERIA
RE-2	TYPICAL CROSS SECTION
RE-3	TYPICAL CROSS SECTION
RE-4	ELEVATION PRECAST WALL "R-345-8"
RE-5	ELEVATION PRECAST WALL "R-345-8"
RE-6	ELEVATION PRECAST WALL "R-345-8"
RE-7	ELEVATION PRECAST WALL "R-345-8"
RE-8	ELEVATION PRECAST WALL "R-345-8"
RE-9	ELEVATION PRECAST WALL "R-345-8"

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-11-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION	BY	CHK



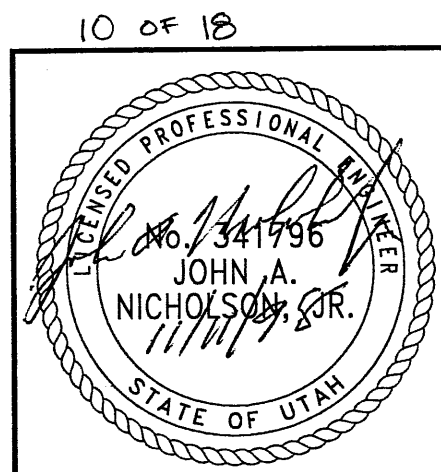
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②	1853.643	19.649	9.825	0°36'26" L
③	1847.677	53.847	26.925	1°40'11" L
④	1850.013	35.474	17.738	1°05'55" L

All Dimensions Are In Meters Unless Noted Otherwise

DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT)	= 34°
ANGLE OF INTERNAL FRICTION (BASE)	= 31°
ANGLE OF INTERNAL FRICTION (RANDOM)	= 34°
UNIT WEIGHT BACKFILL	= 135 PCF. (21.2 KN/M <sup>3</sup> )
TRAFFIC SURCHARGE	= 250 PSF (12 KPa)
SEISMIC ACCELERATION COEFF.	= 0.27g (TYP)
DESIGN CRITERIA	
SAFETY FACTOR (OVERTURNING)	= 2.0
SAFETY FACTOR (SLIDING)	= 1.5
SAFETY FACTOR (PULLOUT)	= 1.5
DESIGN LIFE	= 75 YEARS

PLAN VIEW WALL "R-345-8"  
 SCALE: 1=600 (FULL SIZE)  
 SCALE: 1=1200 (HALF SIZE)

WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

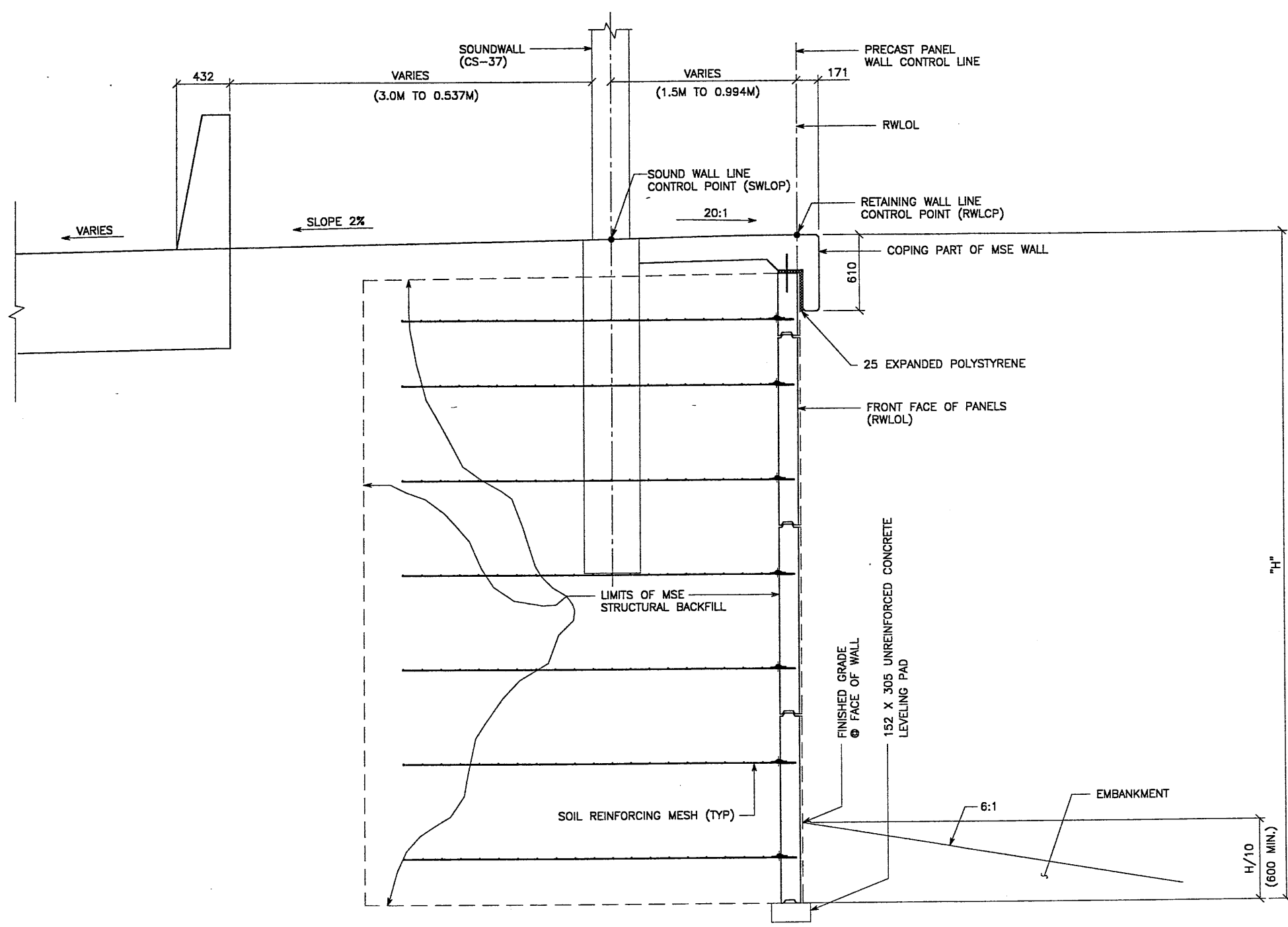


CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

VSL CORPORATION  
 2840 River Plaza, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 791-8272  
 Fax: (919) 791-4869

ATLANTA, GA / DALLAS, TX / FAYETTEVILLE, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™ WALLS PLAN VIEW PRECAST WALL "R-345-8"
UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1R-345-8.10
JOB NO. 239-0007
SHT. NO. RE-1



TYPICAL CROSS SECTION - STA 5+000.000 TO 5+186.345

(SEE DWG. NO. 2.1R-345-8.5 FOR ADDITIONAL INFORMATION)  
 (SEE DWG. NO. 2.1R-345-8.6 FOR ADDITIONAL INFORMATION)  
 (SEE DWG. NO. 2.1R-345-8.7 FOR ADDITIONAL INFORMATION)  
 (SEE DWG. NO. 2.1R-345-8.8 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	11-11-98	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY
JN	RSW	JN				CHK

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4889

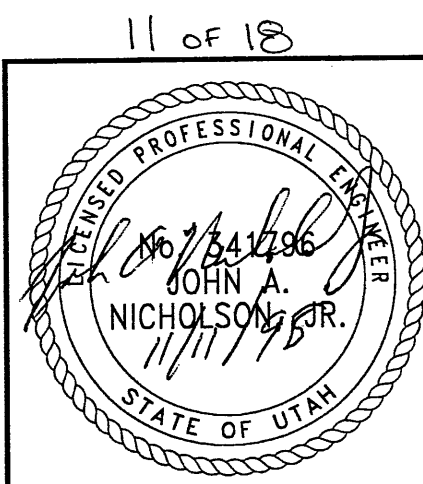
ATLANTA, GA / DALLAS, TX / FAYETTEVILLE, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

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RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-8"  
 TYPICAL CROSS SECTION

UTAH 1-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

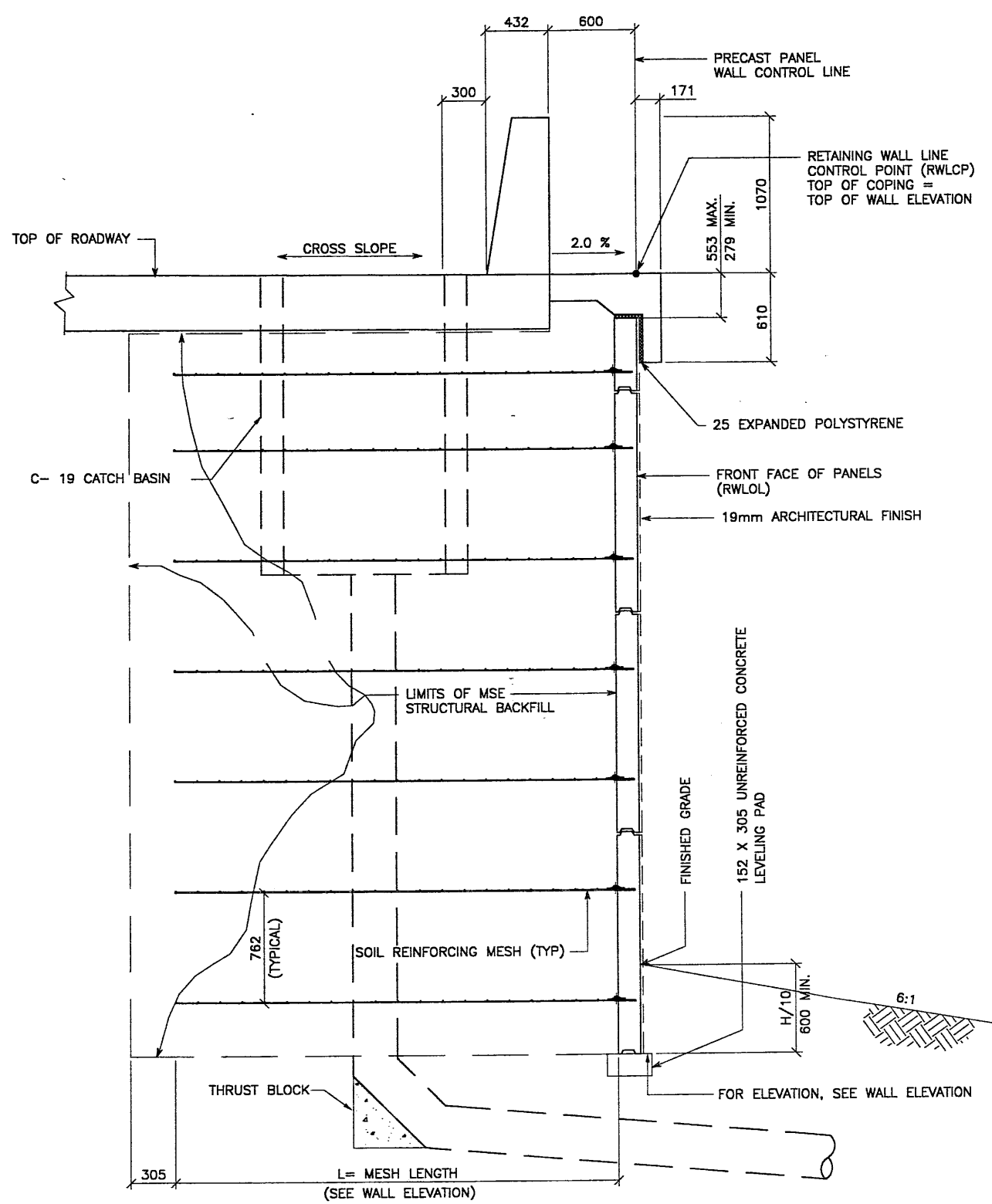


METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

DWG. NO.	2.2R-345-8.11
JOB NO.	239-0007
SHT. NO.	RE-2

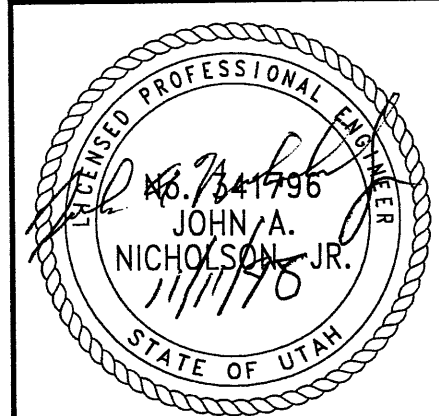




**TYPICAL CROSS SECTION - STA 5+186.345 TO STA 5+400.000**  
 (DOWNDRAIN LOCATED AT STA 5+251.874 AND 5+339.757)  
 (SEE DWG. NO. 2.1R-345-8.9 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

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METRIC



WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-11-98	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY	CHK
JN	RSW	JN					
10-23-98	10-23-98	10-23-98					

RETAINED EARTH™

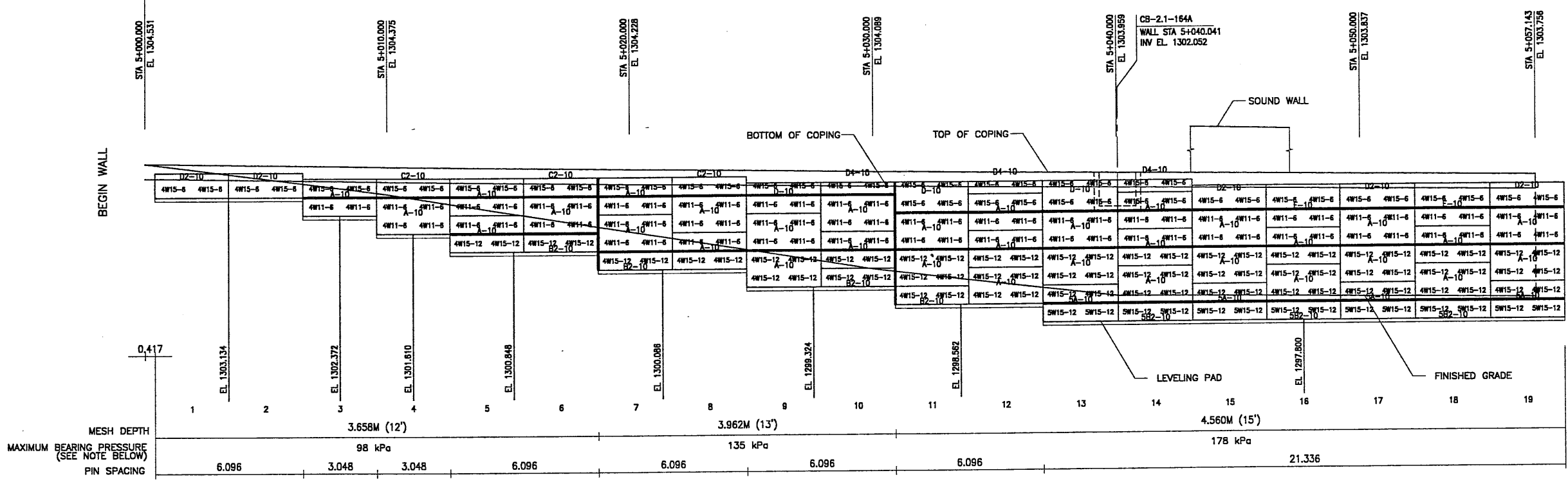
VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4869

ALANTA, GA / DALLAS, TX / DENVER, CO (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

UTAH 1-15 RECONSTRUCTION  
 PRECAST WALL "R-345-8"  
 TYPICAL CROSS SECTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO. 2.1R-345-8.12  
 JOB NO. 239-0007  
 SHI. NO. RE-3

BEGIN WALL R-345-8  
 PRECAST WALL STA 5+000.000 =  
 1-15 STA 22+460.000  
 @ 37.443 RT  
 NOMINAL PANEL FACE (RWLOL)



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-11-98	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY	CHK
10-23-98	JN						
10-23-98	RSW						
10-23-98	JN						

**VSL CORPORATION**  
 2840 Pines Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4869

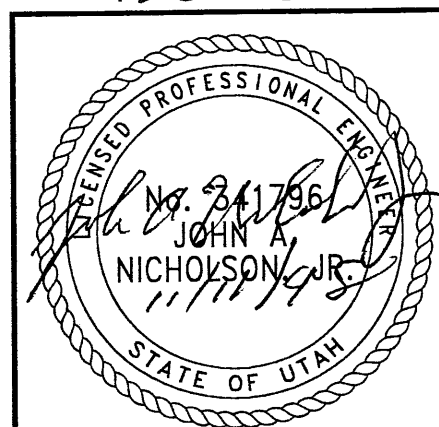
ATLANTA, GA / DALLAS, TX / FALCON, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

**ELEVATION PRECAST WALL R-345-8**  
 (FRONT FACE SHOWN)  
 (TOTAL SURFACE AREA OF PANELS = 1784.20 SM)  
 SCALE 1:100 (FULL SIZE)  
 SCALE 1:200 (HALF SIZE)

METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
 EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
 ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

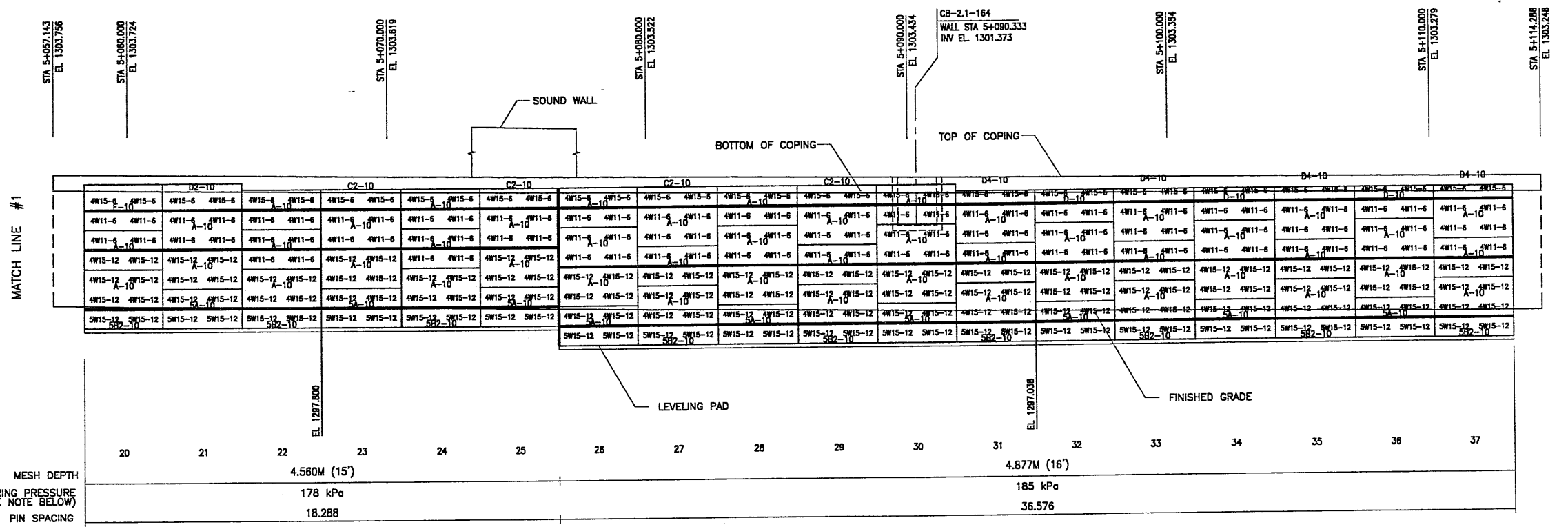


13 of 18

RETAINED EARTH™ WALLS PRECAST WALL "R-345-08"
UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1-R-345-8.13
JOB NO. 239-0007
SHT. NO. RE-4

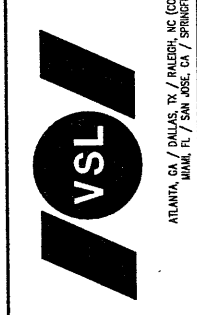
NOTE:  
 THE INDICATED MAXIMUM BEARING  
 PRESSURE AT FINAL STAGE FOR  
 STATIC LOAD CONDITION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-11-98	RELEASE FOR CONSTRUCTION



DES.	JN	RSW	JN	JN	NO.	DATE	REVISION	CHK
10-23-98	JN	RSW	JN	JN				
10-23-98								
10-23-98								

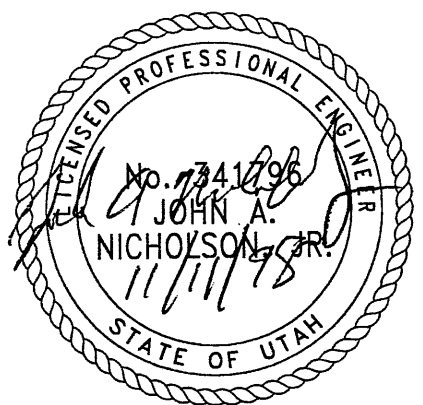
VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-6772  
 Fax: (919) 781-4959



ATLANTA, GA / DALLAS, TX / BALDWIN, NC (CORPORATE OFFICE)  
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WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

14 OF 18



ELEVATION PRECAST WALL R-345-8  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 1784.20 SM) SCALE 1:200 (HALF SIZE)

METRIC

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MESH DEPTH  
 MAXIMUM BEARING PRESSURE (SEE NOTE BELOW)  
 PIN SPACING

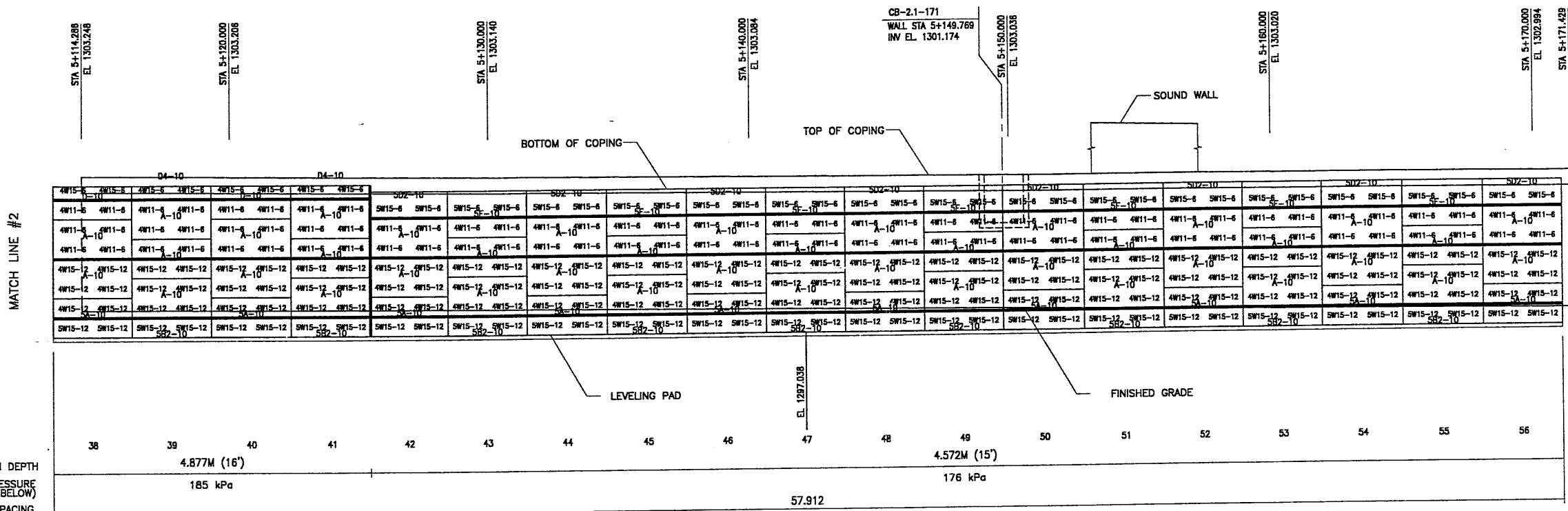
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
4.560M (15')										4.877M (16')							
178 kPa										185 kPa							
18.288										36.576							

NOTE:  
 THE INDICATED MAXIMUM BEARING PRESSURE AT FINAL STAGE FOR STATIC LOAD CONDITION.

RETAINED EARTH™ WALLS PRECAST WALL "R-345-08"
UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1-R-345-8.14
JOB NO. 239-0007
SHT. NO. RE-5

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-11-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION



MATCH LINE #3

MESH DEPTH  
MAXIMUM BEARING PRESSURE (SEE NOTE BELOW)  
PIN SPACING

**ELEVATION PRECAST WALL R-345-8**  
(FRONT FACE SHOWN)  
(TOTAL SURFACE AREA OF PANELS = 1784.20 SM)  
SCALE 1:100 (FULL SIZE)  
SCALE 1:200 (HALF SIZE)

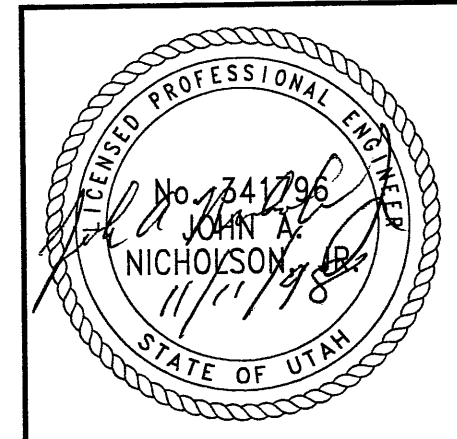
METRIC

NOTE:  
THE INDICATED MAXIMUM BEARING PRESSURE AT FINAL STAGE FOR STATIC LOAD CONDITION.

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WASATCH CONSTRUCTORS  
NOV 19 1998  
RELEASED FOR CONSTRUCTION

15 OF 18



RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-08"  
UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.  
2.1-R-345-8.15  
JOB NO.  
239-0007  
SHT. NO.  
RE-6

VSL CORPORATION  
2600 Plaza Place, Suite 200  
Raleigh, NC 27607  
(919) 781-5272  
Fax: (919) 781-6688

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(X-UTAH.DWG)

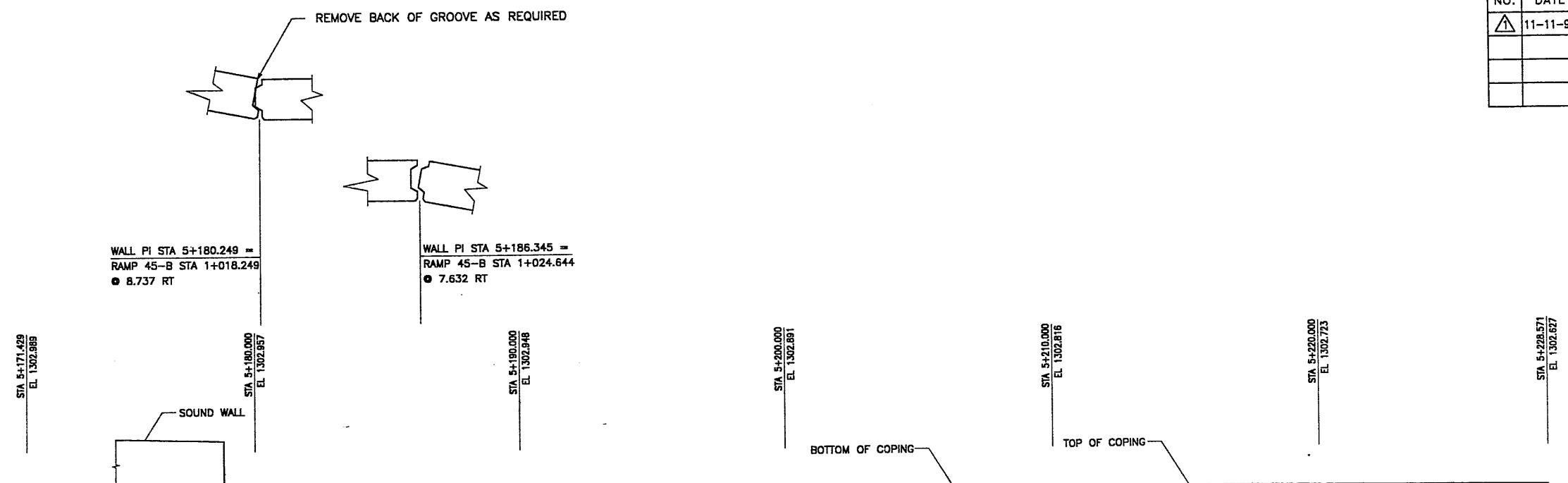
1998\45SERIES\45-08\45-08-08.PRN

H:\RE\_EARTH\PROJECT

1-11-98

FINAL

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-11-98	RELEASE FOR CONSTRUCTION



MATCH LINE - #3										MATCH LINE - #4														
S02-10					S02-10					C2-10					C2-10									
SW15-6	SW15-6	SW15-6	SW15-6	SW15-6	SW15-6	SW15-6	SW15-6	SW15-6	SW15-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6
AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-6	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12	AW11-12
AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12
AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12
SW15-12	SW15-12	SW15-12	SW15-12	SW15-12	SW15-12	SW15-12	SW15-12	SW15-12	SW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12

LEVELING PAD

FINISHED GRADE

EL. 1297.038

57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75

MESH DEPTH 4.572M (15')

MAXIMUM BEARING PRESSURE (SEE NOTE BELOW) 176 kPa

PIN SPACING 57.912

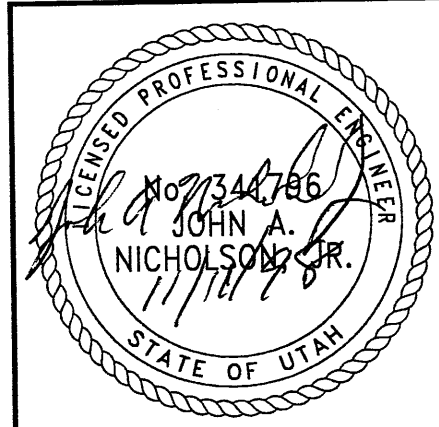
4.267M (14')

173 kPa

**ELEVATION PRECAST WALL R-345-8**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 1784.20 SM) SCALE 1:200 (HALF SIZE)

METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.



WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone (919) 781-8272  
 Fax (919) 781-4689

ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 WANA, IL / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™  
 PRECAST WALL "R-345-08"  
 UTAH 1-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO. 2.1-R-345-8.16  
 JOB NO. 239-0007  
 SHEET NO. RE-7

NO. DATE REVISION BY CHK

JUN 10-23-98 JUN 10-23-98 JUN 10-23-98

RSW JUN JUN

RETAINED EARTH™

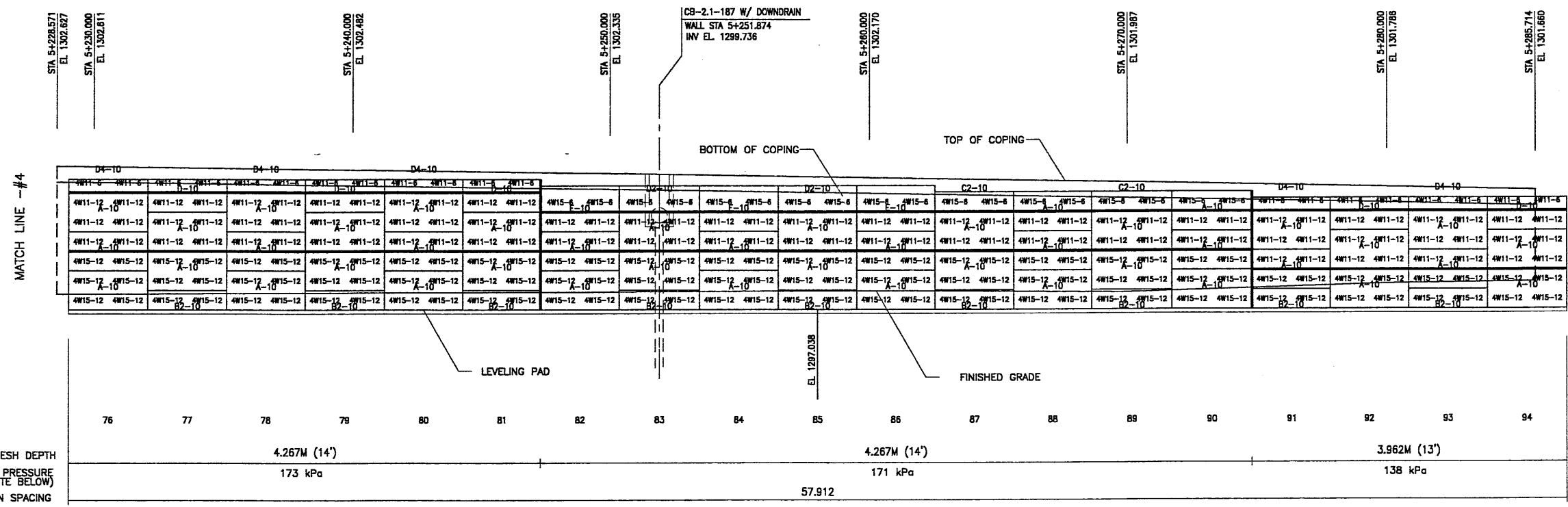
NO. DATE

BY CHK

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H:\RE\_EARTH\PROJECT\1998\45SERIES\45-08\45-08.PRN  
 1-11-98  
 FINAL

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-11-98	RELEASE FOR CONSTRUCTION



DES.	DATE	BY	REVISION
DES. 10-23-98	JN	JN	
DRN. 10-23-98	RSW	RSW	
CHK. 10-23-98	JN	JN	

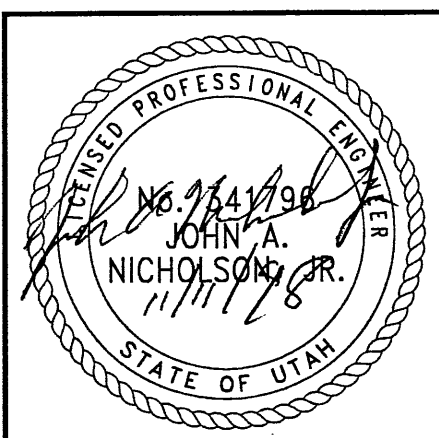
**VSL CORPORATION**  
 2540 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-6272  
 Fax: (919) 781-6959

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**WASATCH CONSTRUCTORS**  
**NOV 19 1998**  
**RELEASED FOR CONSTRUCTION**

17 OF 18



**ELEVATION PRECAST WALL R-345-8**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 1784.20 SM) SCALE 1:200 (HALF SIZE)

METRIC

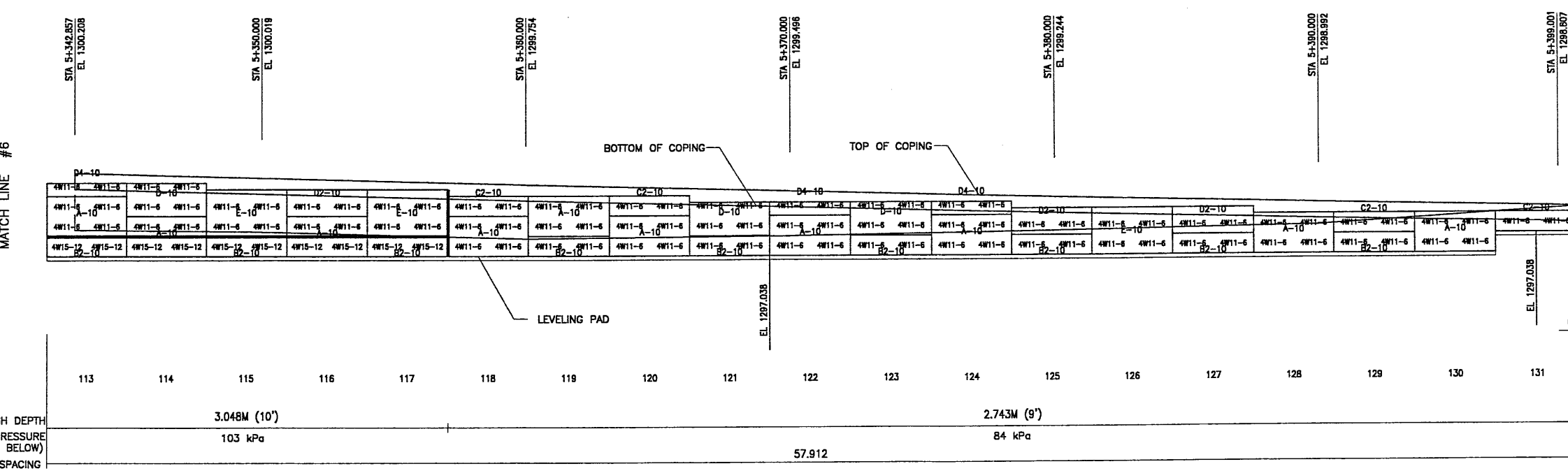
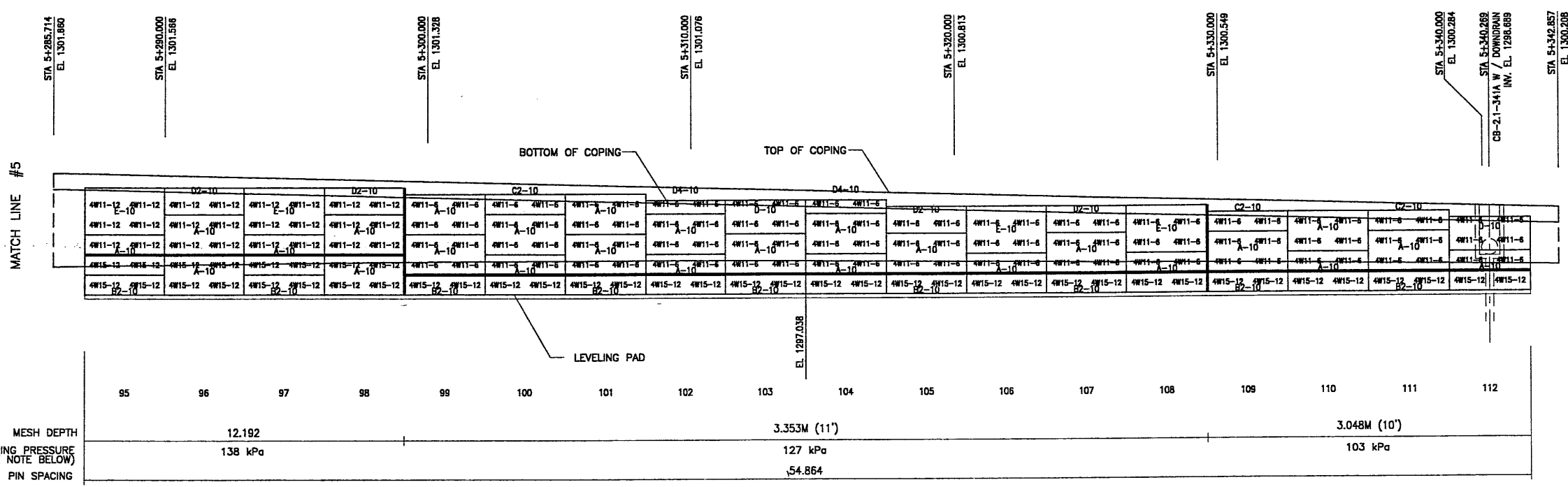
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

RETAINED EARTH™ WALLS PRECAST WALL "R-345-08"
UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1-R-345-8.17
JOB NO. 239-0007
SHT. NO. RE-8

NOTE:  
 THE INDICATED MAXIMUM BEARING PRESSURE AT FINAL STAGE FOR STATIC LOAD CONDITION.



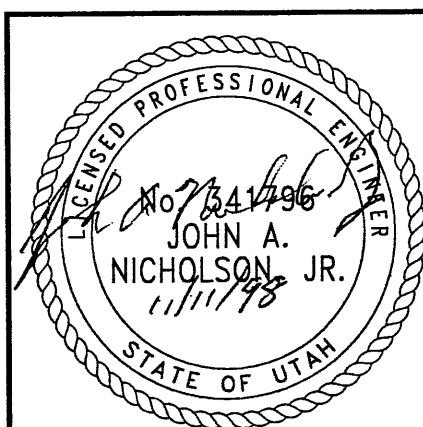
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-11-98	RELEASE FOR CONSTRUCTION



**ELEVATION PRECAST WALL R-345-8**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 1784.20 SM) SCALE 1:200 (HALF SIZE)

METRIC

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WASATCH CONSTRUCTORS  
 NOV 19 1998  
 RELEASED FOR CONSTRUCTION

DES.	DRN.	CHK.	DATE	NO.	REVISION	BY	CHK.
10-23-98	10-23-98	10-23-98					

VSL CORPORATION  
 2840 Place Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-6272  
 Fax: (919) 781-6889

ATLANTA, GA / DALLAS, TX / BALTIMORE, MD (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

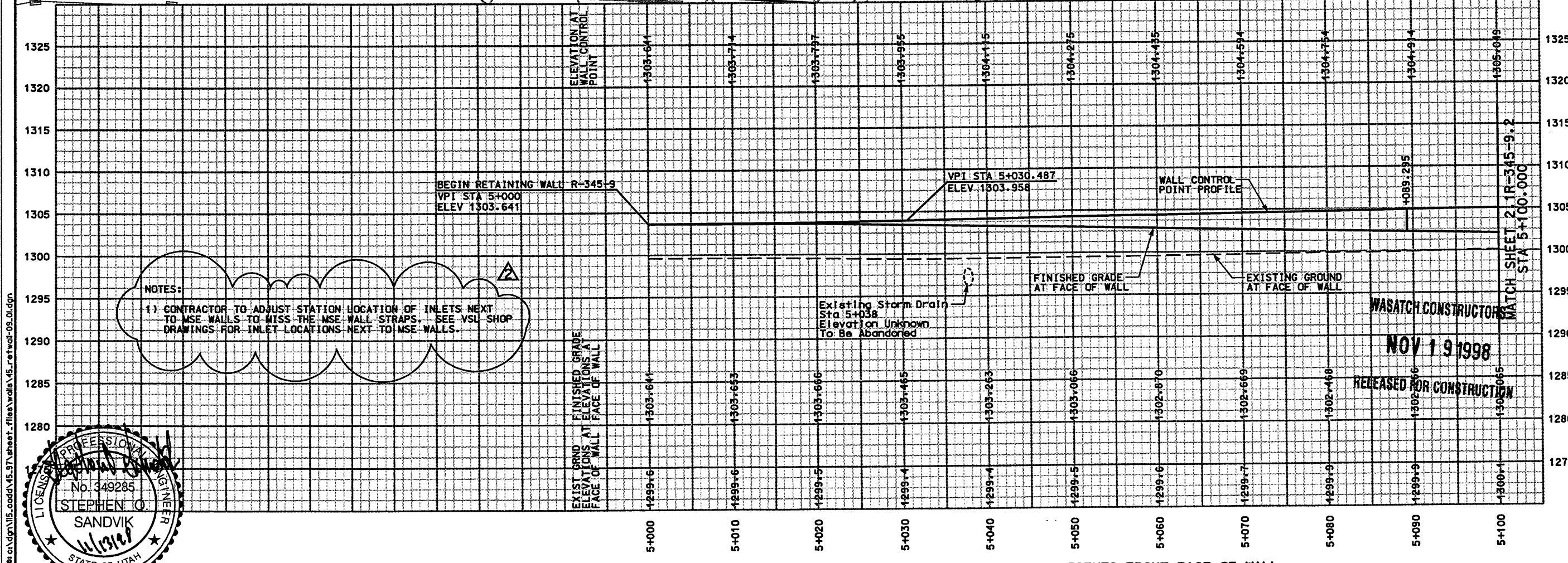
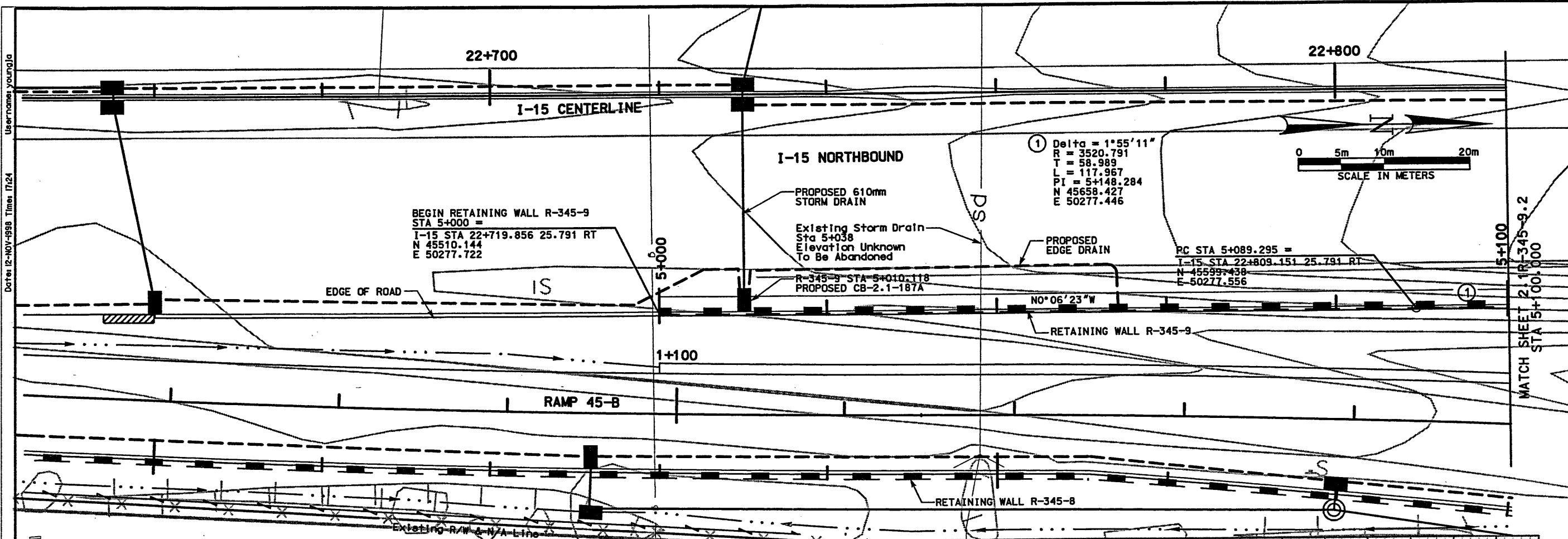
**VSL**

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-08"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

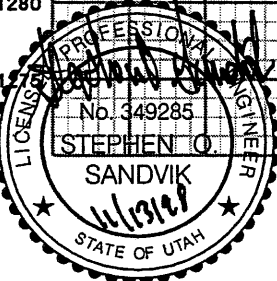
DWG. NO. 2.1-R-345-8.18  
 JOB NO. 239-0007  
 SHEET NO. RE-9

18 of 18

Username: youngja  
Date: 12-NOV-98 Time: 17:24

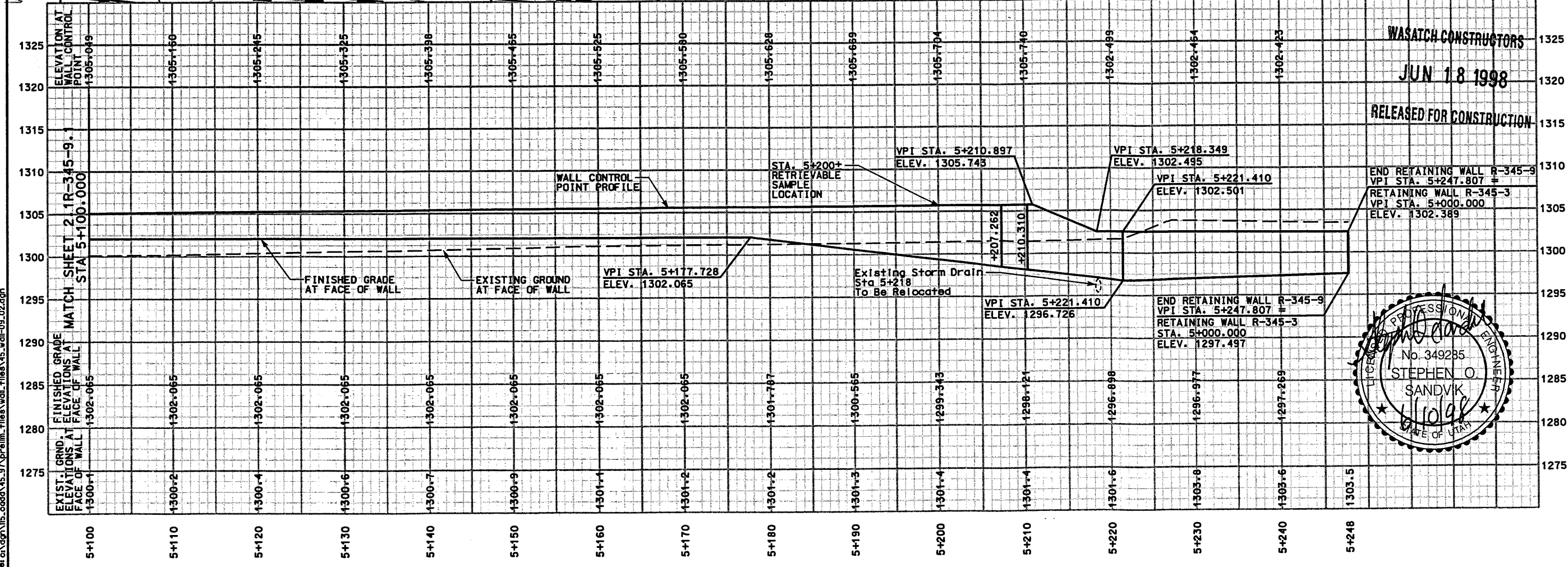
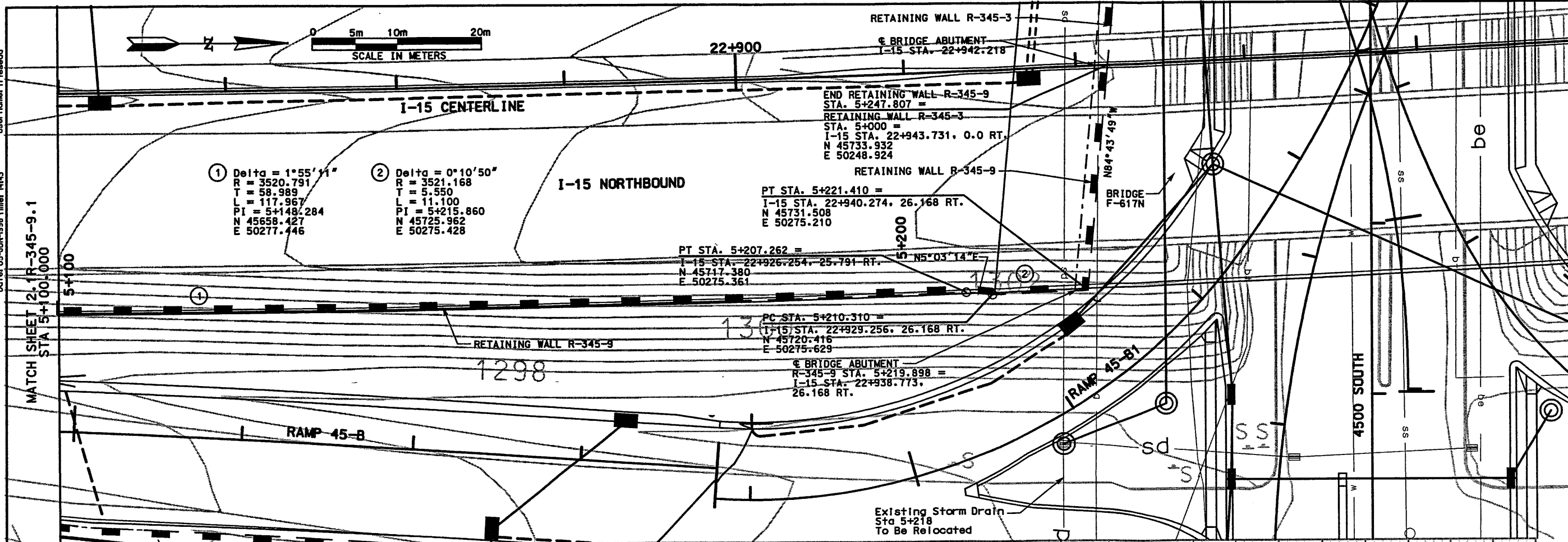


NOTE: PROFILE REPRESENTS FRONT FACE OF WALL



APPROVED FOR CONSTRUCTION	
NO.	DATE
Δ	6/05/98
Δ	11/13/98
Δ	/ /
Δ	/ /
DESCRIPTION	
Δ	ORIGINAL ISSUE
Δ	ADDED NOTE
Δ	/ /
Δ	/ /
UTAH DEPARTMENT OF TRANSPORTATION	
MK CENTENNIAL	
SVERDRUP/DE LEUW	
6/05/98	6/05/98
Stephen O. Sandvik	Stephen O. Sandvik
DESIGN ENGINEER	DESIGN ENGINEER
6/05/98	6/05/98
DATE	DATE
APPROVED	APPROVED
6/05/98	6/05/98
DATE	DATE
Randle L. Robb	Randle L. Robb
PROJECT ENGINEER	PROJECT ENGINEER
6/05/98	6/05/98
DATE	DATE
PROJECT MANAGER	PROJECT MANAGER
QUANT.	QUANT.
WBS NO.	WBS NO.
2113401	2113401
I-15 CORRIDOR RECONSTRUCTION	
SITUATION & LAYOUT R-345-9	
SECTION 2.1	
#SP-15-7(135)296	
PROJECT NUMBER	
SALT LAKE COUNTY	
DWG. NO.	
2.1R-345-9.1	
SHT.	OF
1	15
REF.	

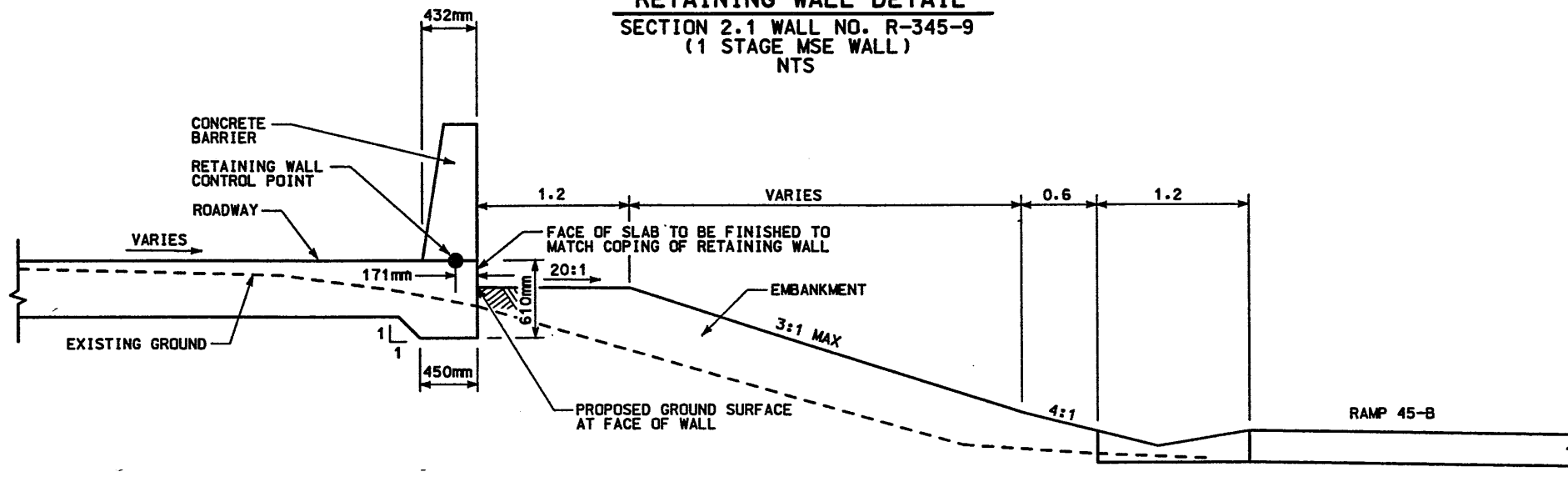
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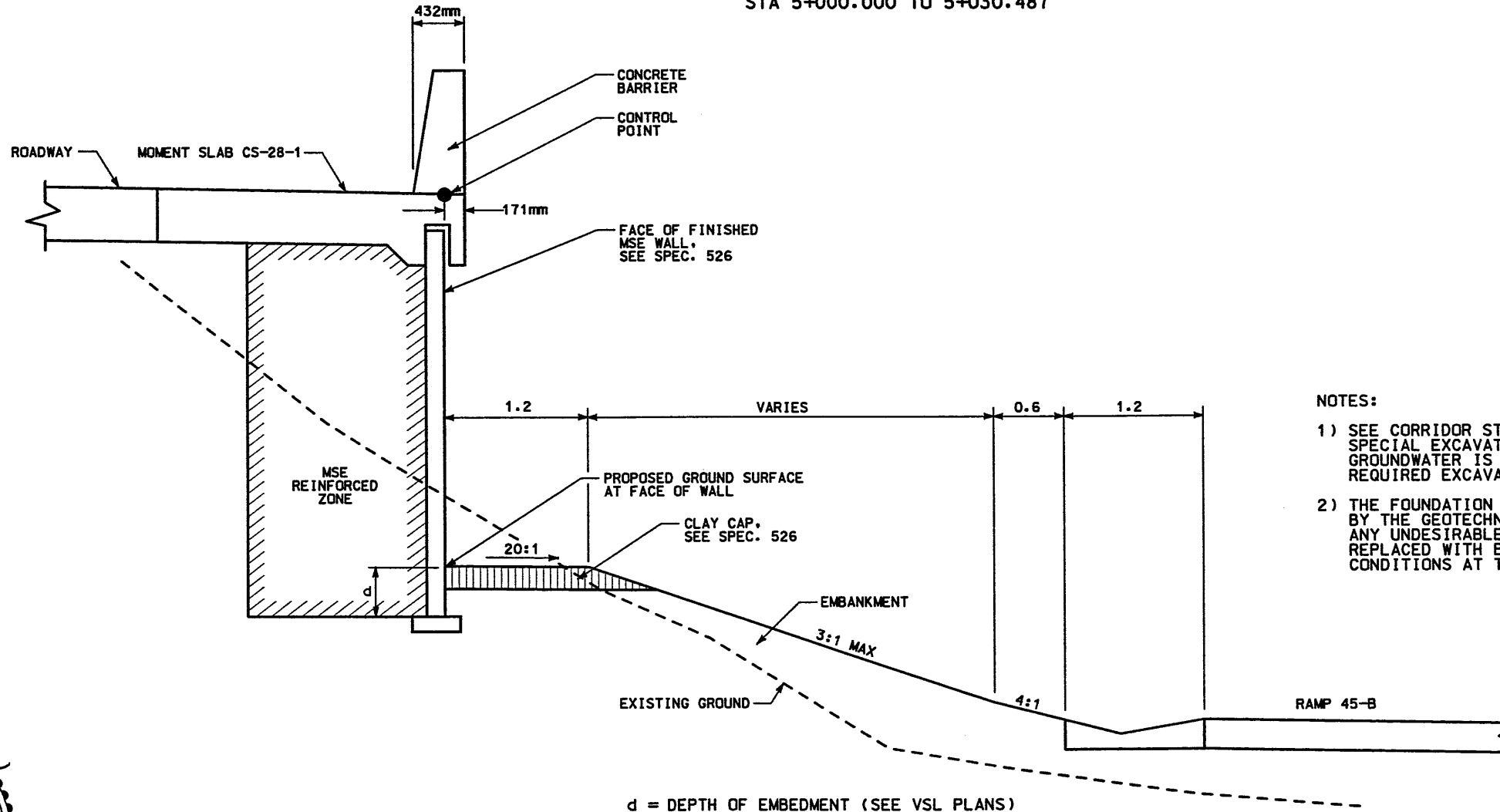
NOTE: PROFILE REPRESENTS FRONT FACE OF WALL

APPROVED FOR CONSTRUCTION	
NO.	DATE
Δ	6/05/98
Δ	/ /
Δ	/ /
Δ	/ /
DESCRIPTION	
ORIGINAL ISSUE	
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERRUP/DE LEUW	
APPROVAL RECORD:	DESIGN DAF / 98
/ 98 Stephen O. Sandvik	CHECK BAR / 98
DATE PROJECT DESIGN ENGINEER	DRAWN DAF / 98
APPROVED / 98 Randle L. Ross	CHECK BAR / 98
DATE PROJECT MANAGER	CHECK / 98
PROJECT NUMBER	QUANT.
2112800	
I-15 CORRIDOR RECONSTRUCTION	
SITUATION & LAYOUT R-345-9	
SECTION 2.1	
COUNTY	
2.1R-345-9.2	
SHT	OF
2	15
REF.	

### RETAINING WALL DETAIL SECTION 2.1 WALL NO. R-345-9 (1 STAGE MSE WALL) NTS



### DETAIL A STA 5+000.000 TO 5+030.487

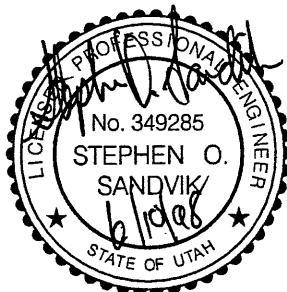


#### NOTES:

- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
- 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.

d = DEPTH OF EMBEDMENT (SEE VSL PLANS)

### DETAIL B STA 5+030.487 TO 5+177.728

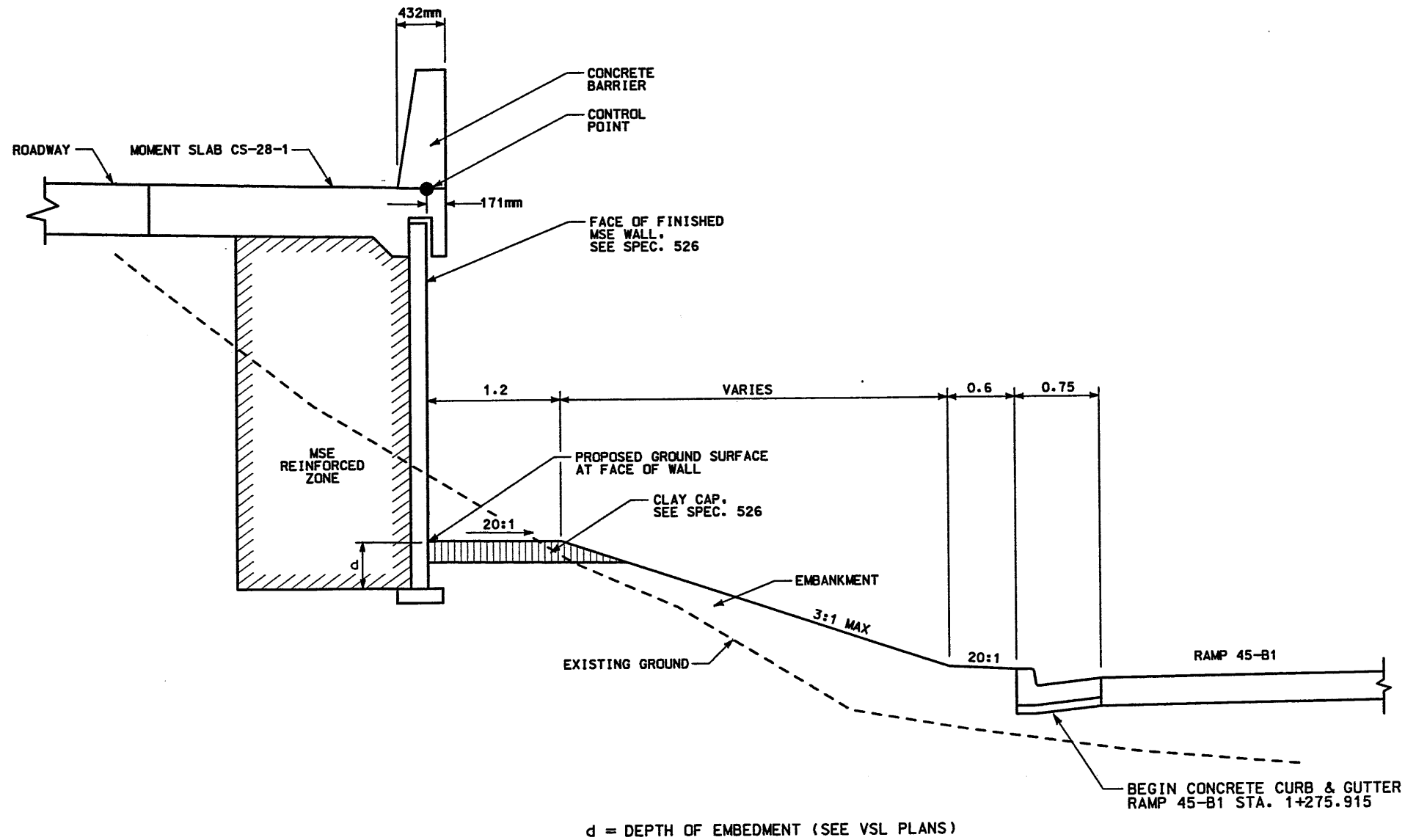


WASATCH CONSTRUCTORS  
JUN 18 1998  
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	6/05/98	Δ	/ /
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112800	
MK CENTENNIAL SVERDRUP/DE LEUW		DESIGN BAR / /98	
DESIGN DAF / /98		CHECK BAR / /98	
PROJECT DESIGN ENGINEER		DRAWN DAF / /98	
DATE / /98		CHECK BAR / /98	
PROJECT MANAGER		QUANT. / /	
PROJECT NUMBER		DATE	
1-15 CORRIDOR RECONSTRUCTION		WALL DETAIL R-345-9	
SECTION 2.1		#SP-15-7(135)296	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-9.3	
SHT. 3 OF 15		REF.	



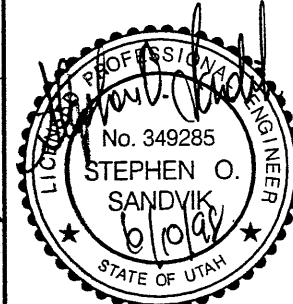
**RETAINING WALL DETAIL**  
SECTION 2.1 WALL NO. R-345-9  
(1 STAGE MSE WALL)  
NTS



**DETAIL C**  
STA 5+177.728 TO 5+210.310

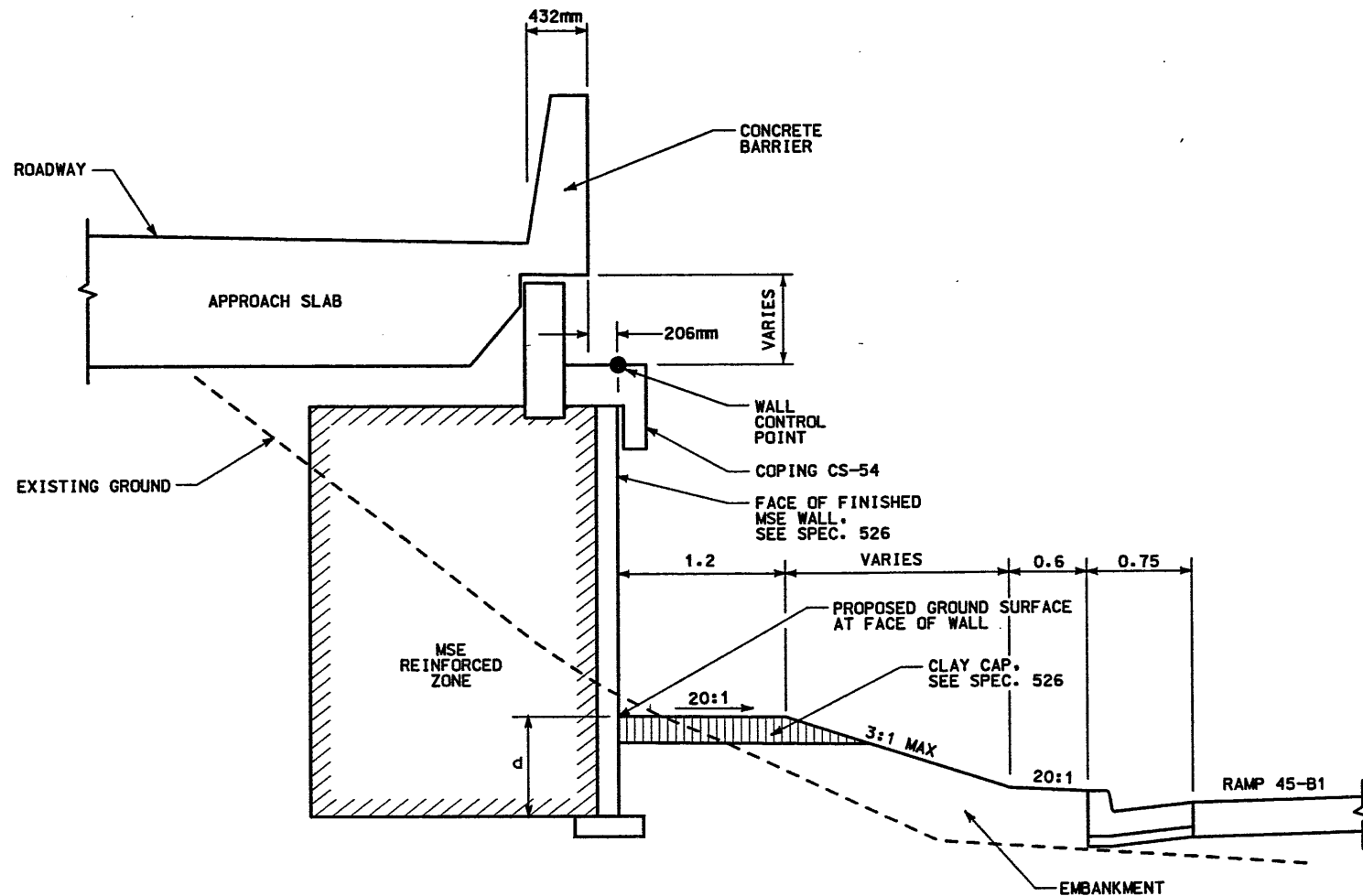
- NOTES:
- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
  - 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.

WASATCH CONSTRUCTORS  
JUN 18 1998  
RELEASED FOR CONSTRUCTION



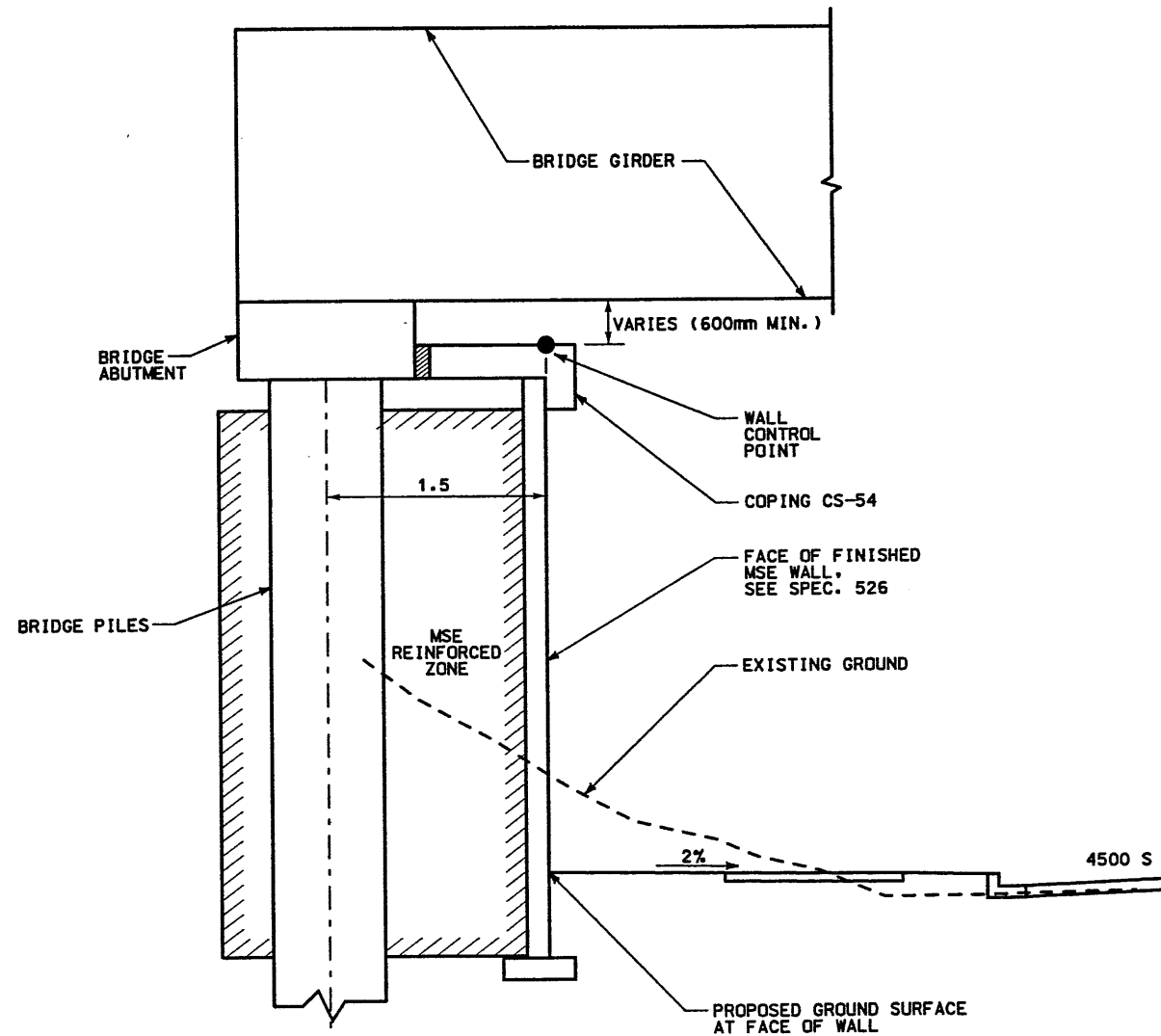
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NO.	DATE	NO.	DATE
△	6/05/98	△	///
△	///	△	///
△	///	△	///
△	///	△	///
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112800	
MK CENTENNIAL SVERRUP/DE LEUW		CHECK BAR / 98	
APPROVAL RECOMM.	DATE	DESIGN DAF	CHECK BAR / 98
/ 98 Stephen O. Sandvik		/ 98	
PROJECT DESIGN ENGINEER	DATE	DRWN DAF	CHECK BAR / 98
/ 98 Randle L. Ross		/ 98	
APPROVED	DATE	PROJECT NUMBER	QUANT.
/ 98			
I-15 CORRIDOR RECONSTRUCTION		PROJECT NUMBER #SP-15-7(135)296	
WALL DETAIL R-345-9		SALT LAKE COUNTY	
SECTION 2.1		DWG. NO. 2.1R-345-9.4	
SHT. 4 OF 15		REF.	

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-9**  
**(1 STAGE MSE WALL)**  
 NTS



d = DEPTH OF EMBEDMENT (SEE VSL PLANS)

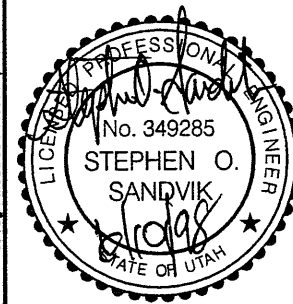
**DETAIL D**  
 STA 5+210.310 TO 5+221.410



**DETAIL E**  
 STA 5+221.410 TO 5+247.807

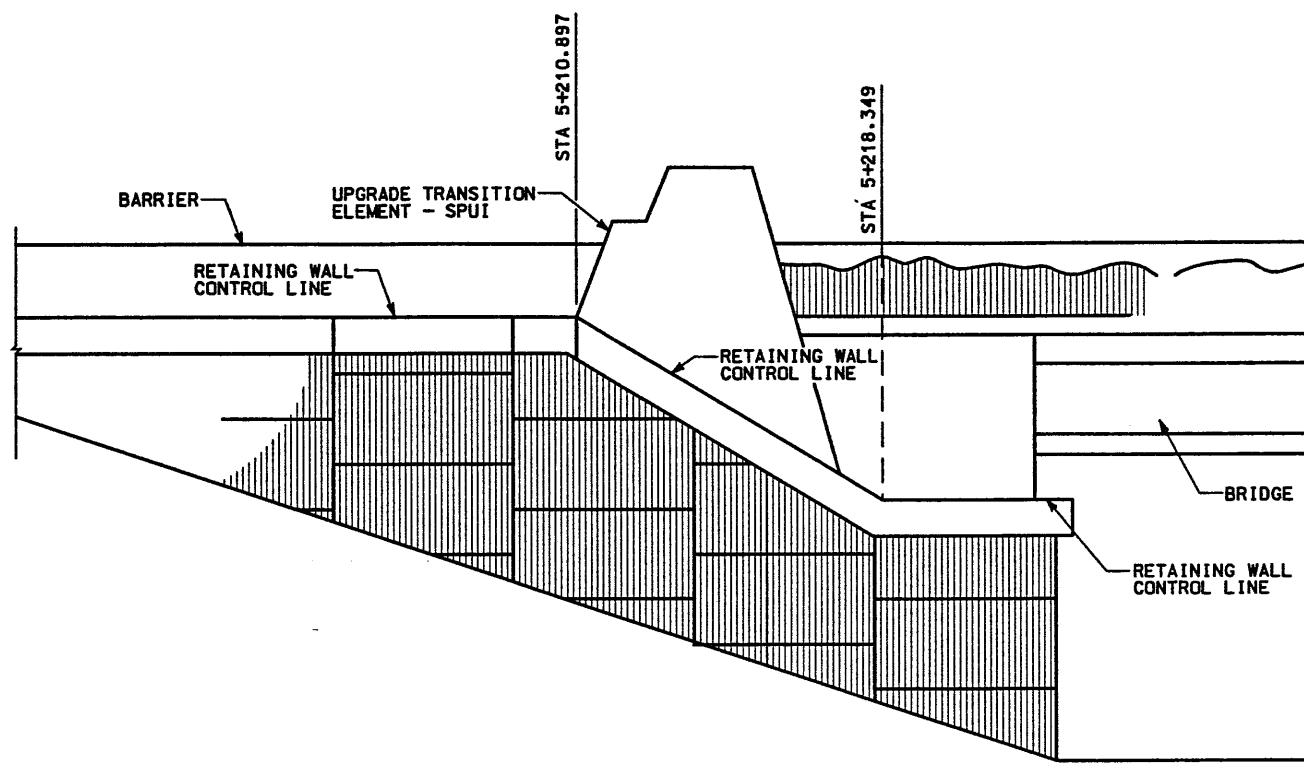
WASATCH CONSTRUCTORS  
 JUN 18 1998  
 RELEASED FOR CONSTRUCTION

- NOTES:
- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
  - 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.

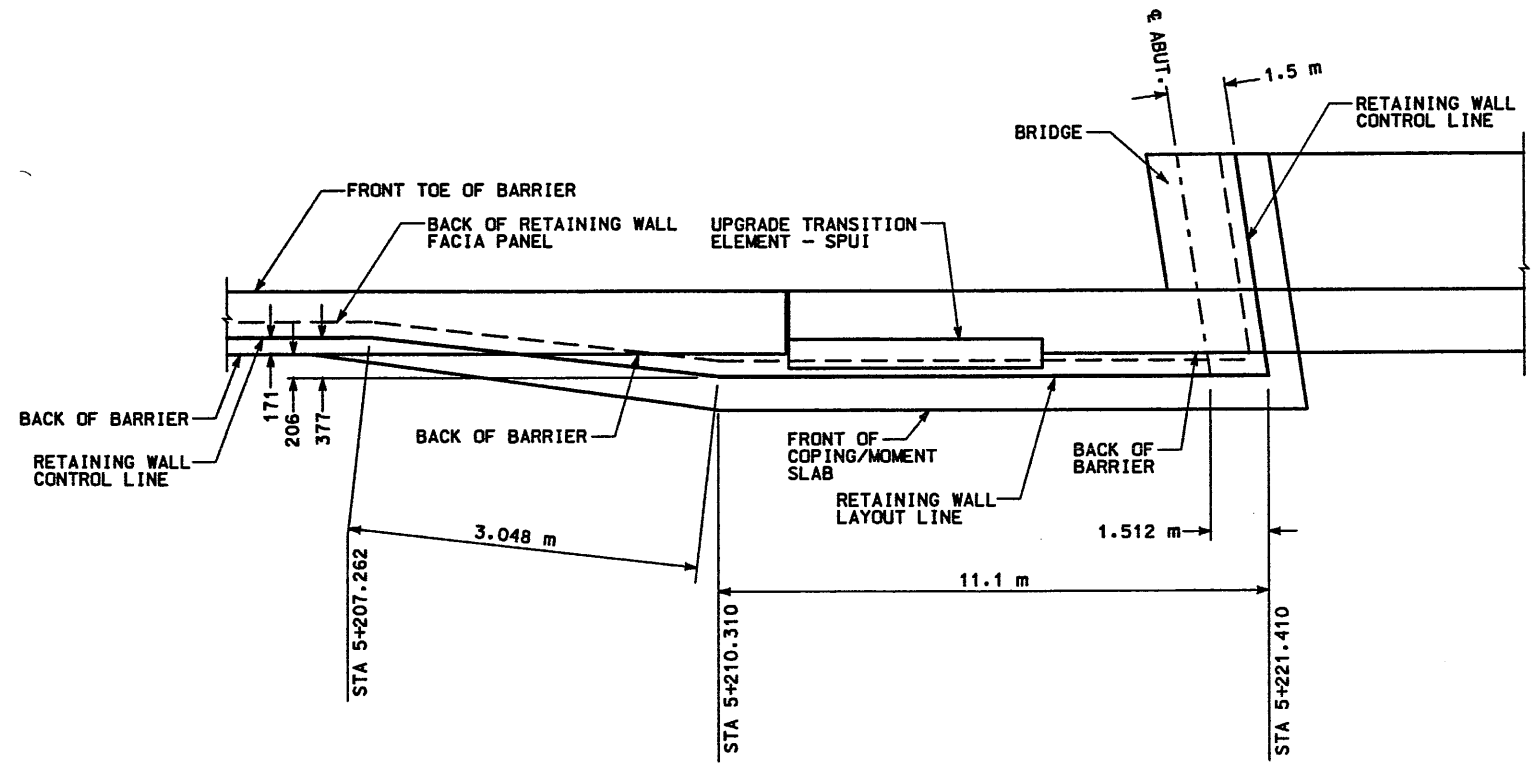


APPROVED FOR CONSTRUCTION		DATE	6/05/98	ORIGINAL ISSUE	
NO.	Δ	DATE	/ /	DESCRIPTION	
UTAH DEPARTMENT OF TRANSPORTATION					
MK CENTENNIAL SVERDRUP/DE LEUW					
DESIGN	DAF	/	/	CHECK	BAR
PROJECT	DESIGN	ENGINEER	/	/	/
DATE	/	/	/	DATE	/
DESIGNED BY	STEPHEN O. SANDVIK				
PROJECT NO.	2112600				
PROJECT NUMBER	#SP-15-7(135)296				
COUNTY	SALT LAKE				
DWG. NO.	2.1R-345-9.5				
SHT.	5 OF 15				
REF.					

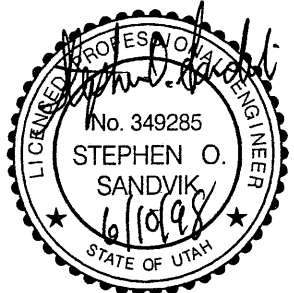




**VERTICAL CONTROL LINE TRANSITION DETAIL**  
NTS



**HORIZONTAL CONTROL LINE TRANSITION DETAIL**  
STA 5+207.262 TO 5+221.410  
NTS



WASATCH CONSTRUCTORS  
JUN 18 1998  
RELEASED FOR CONSTRUCTION

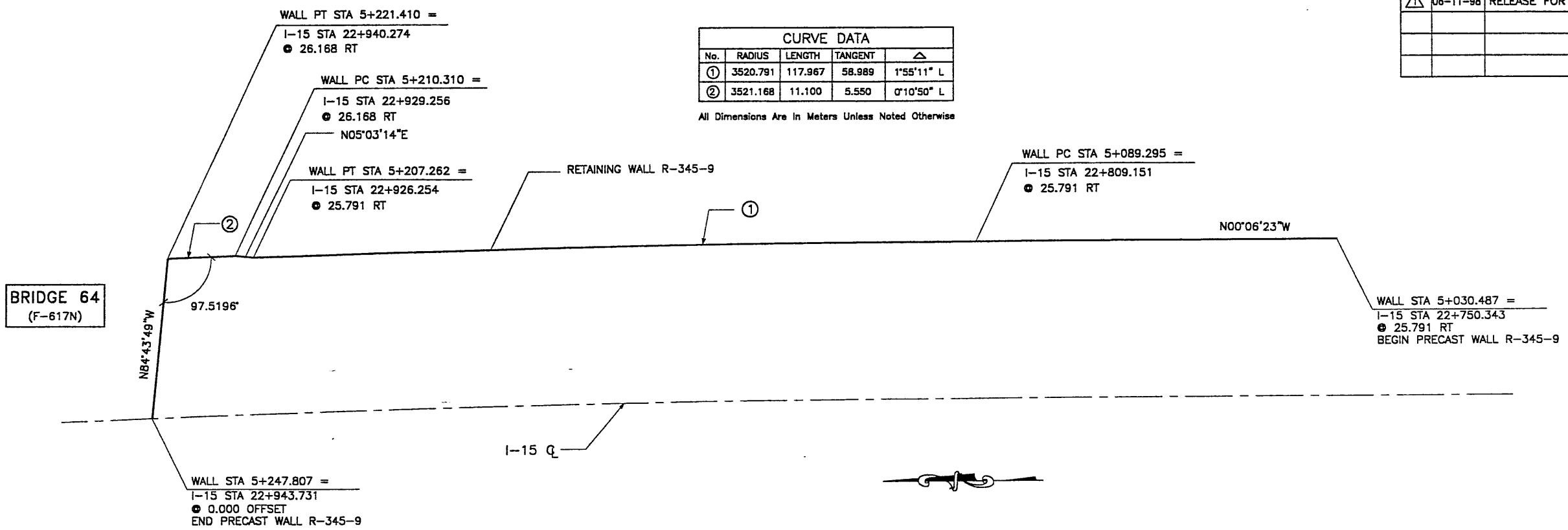
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	6/05/98	△	///
△	///	△	///
△	///	△	///
△	///	△	///
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO.	
M.K. CENTENNIAL		2112600	
SVERDRUP/DE LEUW		CHECK BAR	/ / /
DESIGN DAF	/ / /	CHECK BAR	/ / /
DRAWN DAF	/ / /	CHECK BAR	/ / /
QUANT.	/ / /	CHECK	/ / /
REVISION RECORD	DATE	DESIGN ENGINEER	DATE
/ / /	/ / /	Stephen O. Sandvik	/ / /
APPROVED	DATE	PROJECT DESIGN ENGINEER	DATE
/ / /	/ / /	Randle L. Ross	/ / /
PROJECT NUMBER		PROJECT MANAGER	
#SP-15-(7135)296			
I-15 CORRIDOR RECONSTRUCTION		SALT LAKE COUNTY	
WALL DETAIL R-345-9		DWG. NO.	
SECTION 2.1		2.1R-345-9.6	
SHT. 6 OF 15		REF.	

ALL DIMENSIONS ARE IN MILLIMETERS  
UNLESS OTHERWISE NOTED

H:\RE\_EARTH\APRC 9-0007\1998\45SERIES\45-09\RE-1  
 FINA 5-20-98

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	06-11-98	RELEASE FOR CONSTRUCTION <i>W</i>

NO.	DATE	REVISION	BY	CHK



No.	RADIUS	LENGTH	TANGENT	△
①	3520.791	117.967	58.989	1°55'11\" L
②	3521.168	11.100	5.550	0°10'50\" L

All Dimensions Are In Meters Unless Noted Otherwise

**PLAN VIEW WALL "R-345-09"**

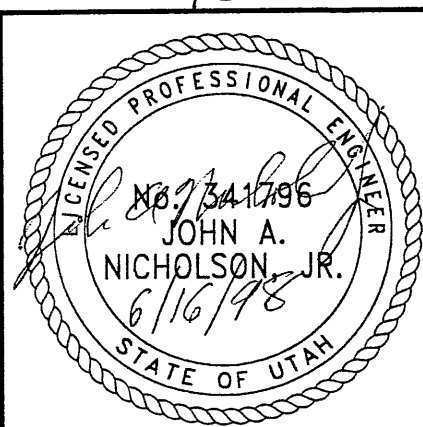
SCALE: 1=400 (FULL SIZE)  
SCALE: 1=800 (HALF SIZE)

- GENERAL NOTES**
- ALL WALLS ARE SHOWN FRONT FACE. NOTE STATIONING.
  - PANEL TYPE IS DESIGNATED ON EACH PANEL. CONNECTOR LABELS INDICATE NUMBER OF CONNECTORS PER ROW.  
EXAMPLE: 5B2-10 IS A "B2-10" PANEL WITH FIVE (5) CONNECTORS PER ROW. IF NO CONNECTORS ARE SHOWN, FOUR (4) CONNECTOR PANELS SHALL BE USED.
  - SOIL REINFORCING MESH TYPE IS DESIGNATED ON EACH PANEL. MESH LABELS INDICATE WIRE SIZE AND SPACING. LONGITUDINAL WIRE AND CROSSBAR SIZES ARE THE SAME UNLESS NOTED OTHERWISE.  
EXAMPLE: 4W11-6 MESH HAS FOUR (4) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 6W11-6 MESH HAS SIX (6) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 4W15-12 MESH HAS FOUR (4) W15 LONGITUDINAL WIRES WITH W15 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 5W15-24 MESH HAS FIVE (5) W15 LONGITUDINAL WIRES WITH W15 CROSSBARS AT 24" CENTERS.  
EXAMPLE: 4W20-24 MESH HAS FOUR (4) W20 LONGITUDINAL WIRES WITH W24 CROSSBARS AT 12" CENTERS.
  - SEE RETAINED EARTH INSTALLATION MANUAL FOR PROPER WALL ERECTION PROCEDURES AND GUIDELINES.
  - CONSTRUCTION PROCEDURES SHALL PREVENT BACKFILL SATURATION AND PONDING.
  - HEAVY EQUIPMENT SHALL NOT BE USED WITHIN ONE METER OF THE BACK OF THE RETAINED EARTH PANELS. HAND COMPACTORS SHALL BE USED IN THIS AREA.
  - CARE SHALL BE TAKEN TO PREVENT DAMAGE TO GALVANIZING. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.
  - BEARING PADS AND FILTER FABRIC ARE NOT REQUIRED BETWEEN THE LEVELING PAD AND THE FIRST ROW OF PANELS. TEMPORARY WEDGES MAY BE USED TO PROVIDE PROPER ALIGNMENT.
  - VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.
  - ALL PANELS SHALL HAVE AN ARCHITECTURAL FINISH, SEE VSL STANDARD SHEET STD-7 FOR DETAIL.

DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT)	= 34°
ANGLE OF INTERNAL FRICTION (BASE)	= 30°
ANGLE OF INTERNAL FRICTION (RANDOM)	= 34°
UNIT WEIGHT BACKFILL	= 135 PCF = 21.20 KN/M <sup>3</sup>
TRAFFIC SURCHARGE	= 250 PSF = 12 KPa
SEISMIC ACCELERATION COFF.	= 0.25g (10% IN 50 YEARS)
SEISMIC ACCELERATION COFF.	= 0.68g (AT BRIDGE ABUTMENTS 10% IN 250 YEARS)
DESIGN CRITERIA	
SAFETY FACTOR (OVERTURNING)	= 2.0
SAFETY FACTOR (SLIDING)	= 1.5
SAFETY FACTOR (PULLOUT)	= 1.5
DESIGN LIFE	= 75 YEARS

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-9, NOTES & DESIGN CRITERIA
RE-2	TYPICAL CROSS SECTIONS
RE-3	TYPICAL CROSS SECTIONS
RE-4	TYPICAL CROSS SECTIONS
RE-5	ELEVATION PRECAST WALL "R-345-9"
RE-6	ELEVATION PRECAST WALL "R-345-9"
RE-7	ELEVATION PRECAST WALL "R-345-9"
RE-8	ELEVATION PRECAST WALL "R-345-9"
RE-9	SPECIAL PANEL DETAILS

**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**



**METRIC**

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

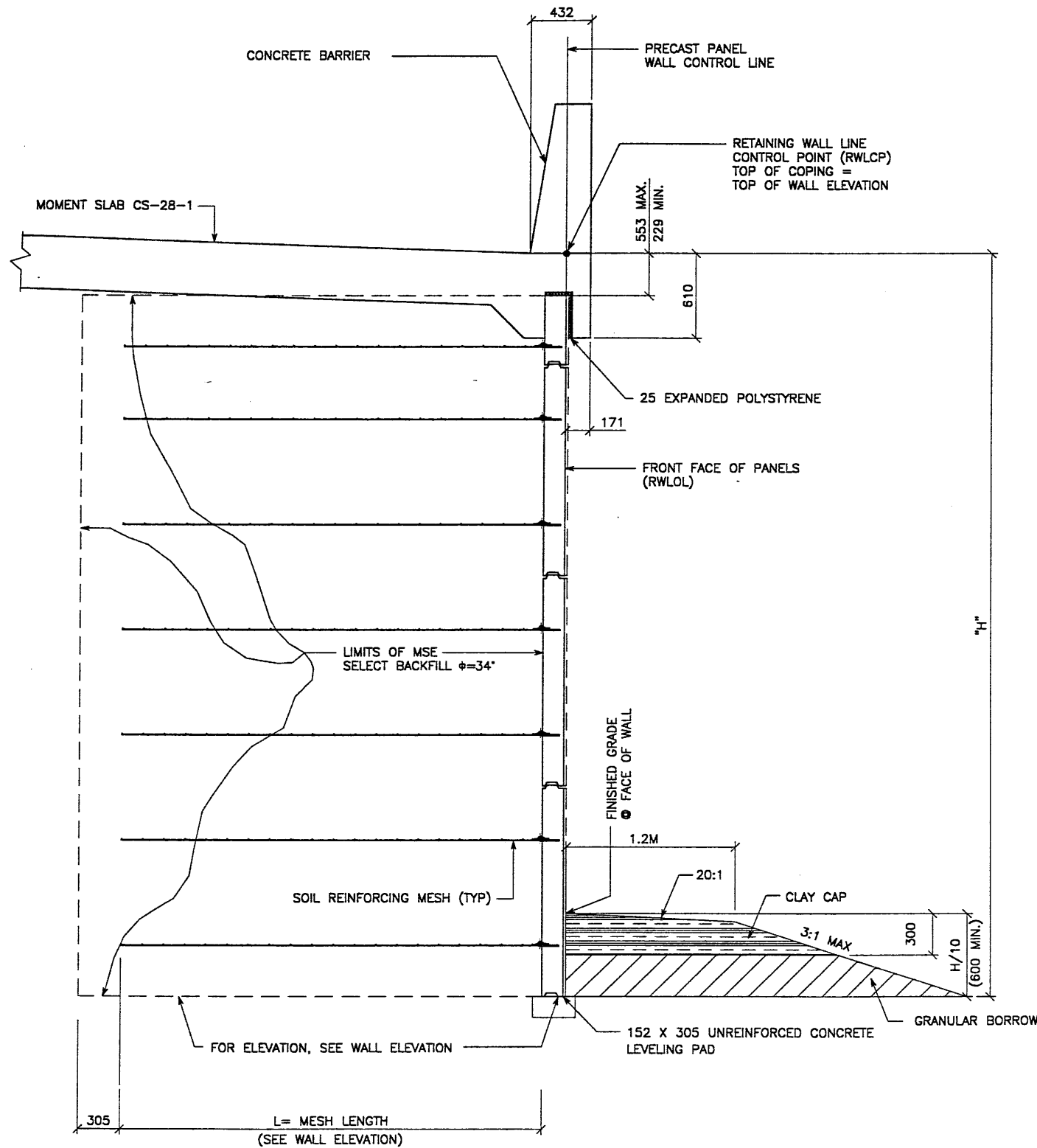
VSL CORPORATION  
2800 Plaza Place, Suite 200  
Durham, NC 27704  
Tel: (919) 781-8272  
Fax: (919) 781-4669



ALANTA, GA / DALLAS, TX / BALTIMORE, MD (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™ WALLS  
PLAN VIEW PRECAST WALL "R-345-9"  
UTAH 1-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-9.7
JOB NO.	239-0007
SHT. NO.	RE-1



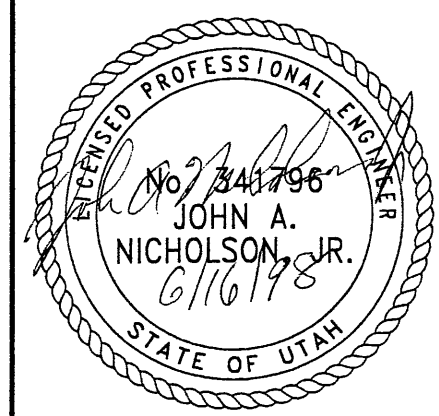
**TYPICAL CROSS SECTION**  
**STA 5+030.487 TO 5+210.310**  
 (SEE DWG. NO. 2.1R-345-9.3 & 2.1R-349-9.4 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

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METRIC

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	6-11-98	RELEASE FOR CONSTRUCTION

**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**  
 8 OF 15



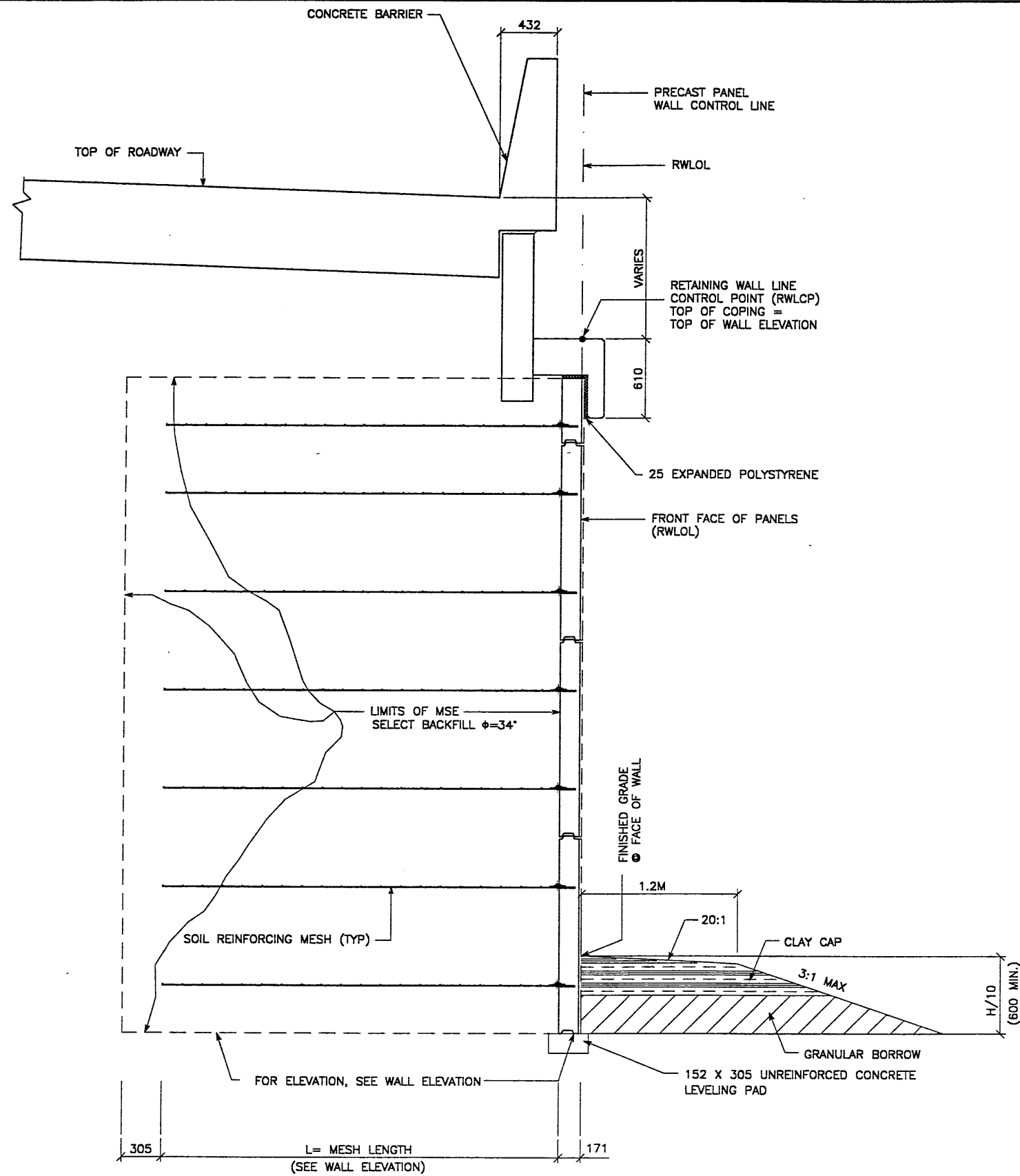
REVISION		NO.	DATE	BY	CHK

DWG. NO.	2.1R-345-9.8
JOB NO.	239-0007
SHT. NO.	RE-2

VSL CORPORATION	2640 Plaza Pico, Suite 200 Raleigh, NC 27603 Tel: (919) 781-5272 Fax: (919) 781-4889
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE) MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA	



**TYPICAL CROSS SECTION**  
 5+210.310 TO 5+221.410

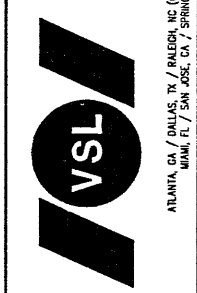
(SEE DWG. NO. 2.1R-345-9.5 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)  
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APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	6-11-98	RELEASE FOR CONSTRUCTION

DES.	NO.	DATE	REVISION
JL	05-20-98		
RSW	05-20-98		
JL	05-20-98		

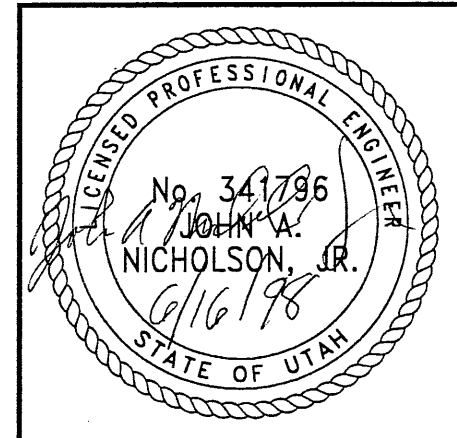
VSL CORPORATION  
 2940 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 791-6272  
 Fax: (919) 981-4869



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**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

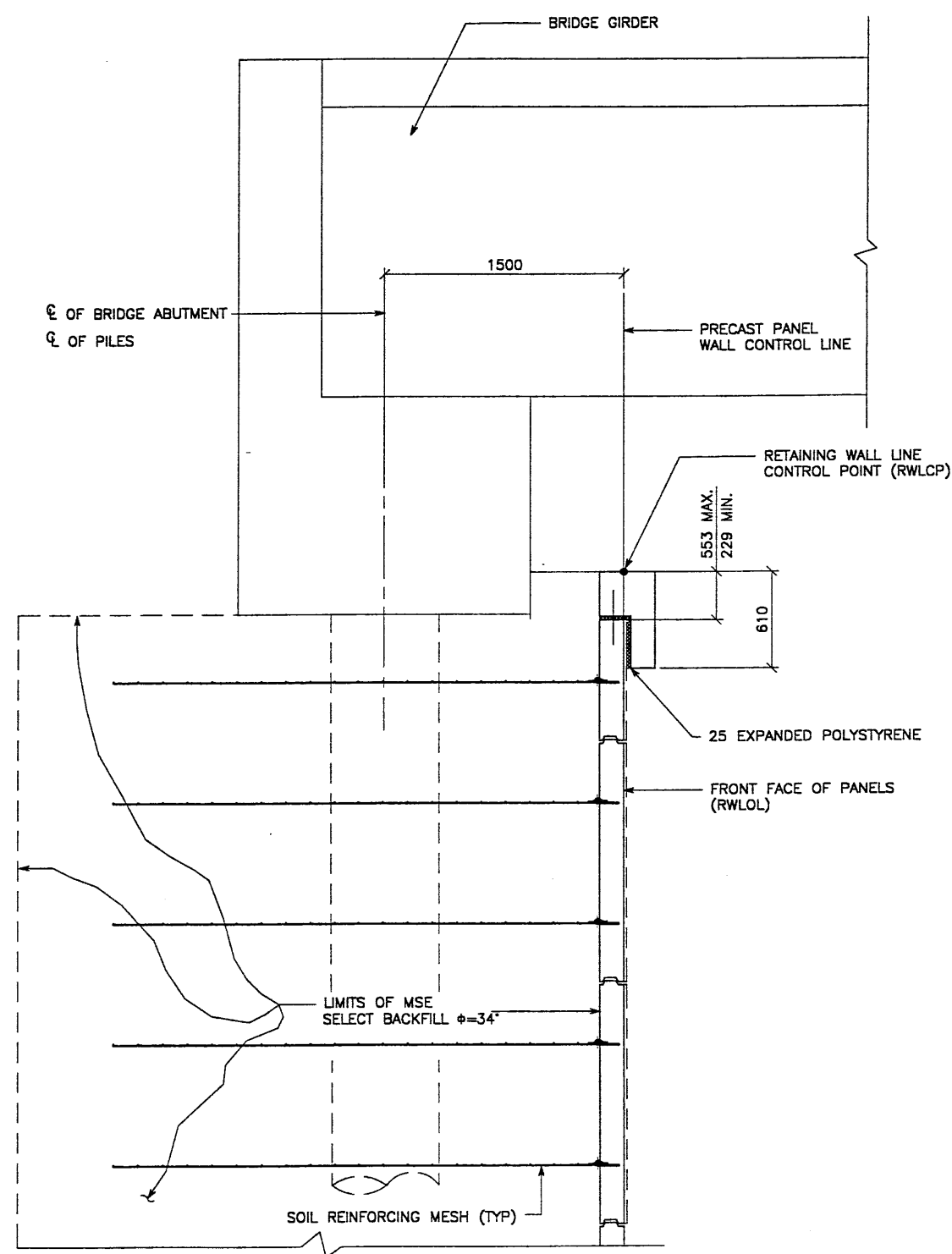
9 of 15



CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-9"  
 TYPICAL CROSS SECTION  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-9.9
JOB NO.	239-0007
SHT. NO.	RE-3

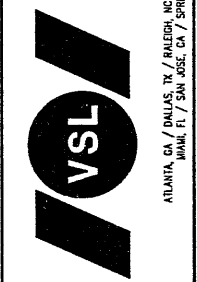


**TYPICAL CROSS SECTION - STA 5+221.410 TO 5+247.807**  
 (SEE DWG. NO. 2.1R-345-9.5 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	6-11-98	RELEASE FOR CONSTRUCTION

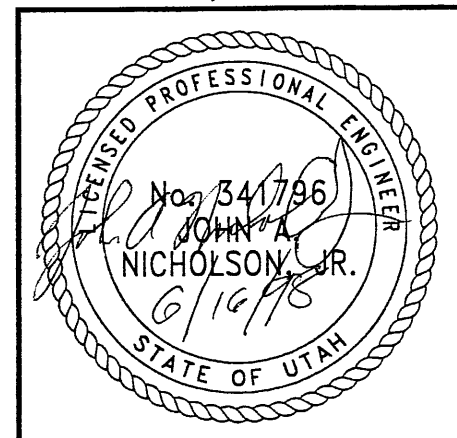
DES.	DRN.	CHK.	NO.	DATE	REVISION	CHK
JL	RSW	JL				
05-20-98	05-20-98	05-20-98				

VSL CORPORATION  
 2610 Plaza Place, Suite 200  
 Raleigh, NC 27617  
 Phone: (919) 781-8772  
 Fax: (919) 781-8869



**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

10 of 15



RETAINED EARTH™ WALLS  
 PRECAST WALL "R-344-9"  
 TYPICAL CROSS SECTION  
 UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

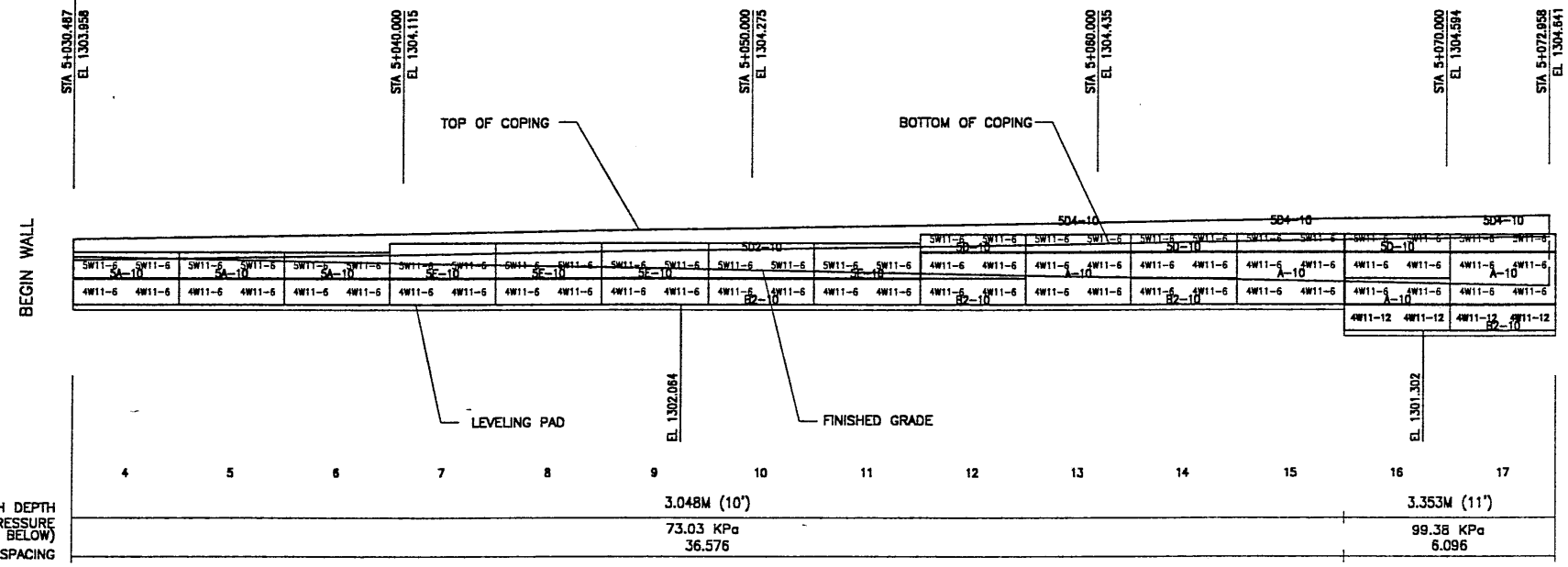
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JOB NO.	239-0007
SHT. NO.	RE-4

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

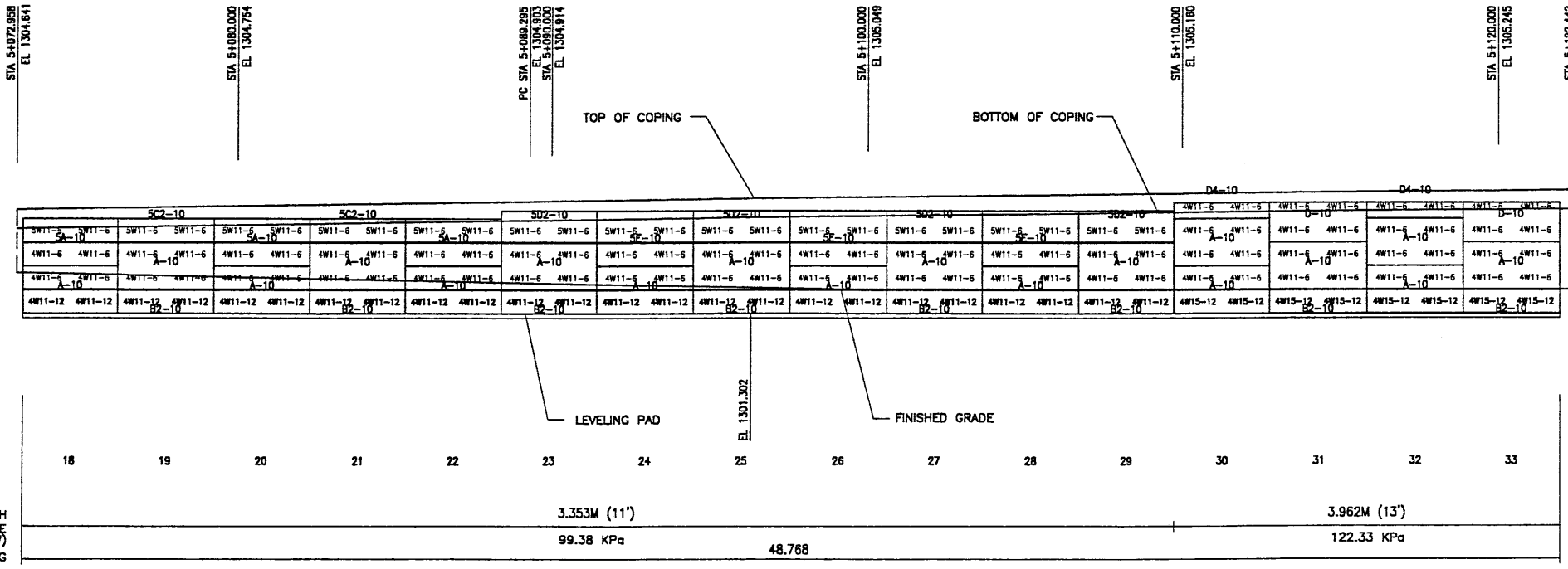
METRIC



BEGIN WALL R-345-9  
WALL STA 5+030.487 =  
I-15 STA 22+750.343  
NOMINAL PANEL FACE (RWLOL)



MATCH LINE #1



MATCH LINE #2

ELEVATION PRECAST WALL "R-345-9"  
(FRONT FACE SHOWN)  
(TOTAL SURFACE AREA OF PANELS = 912.78 SM)  
SCALE 1:100 (FULL SIZE)  
SCALE 1:200 (HALF SIZE)

METRIC

APPROVER NOTE:  
MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
ARE INDICATED BELOW "MESH DEPTH LINE"  
REVIEWER TO VERIFY MAXIMUM BEARING  
CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	6-11-98	RELEASE FOR CONSTRUCTION

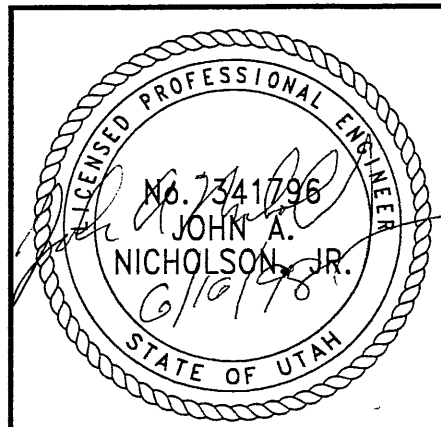
NO.	DATE	REVISION

VSL CORPORATION  
2840 Peachtree Dunwoody, Suite 200  
Atlanta, GA 30328  
Telephone: (404) 781-6272  
Facsimile: (404) 781-6669



ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
MADE IN U.S.A. / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS  
JUN 18 1998  
RELEASED FOR CONSTRUCTION



RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-9"  
UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

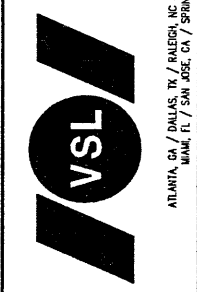
DWG. NO.	2.1R-345-9.11
JOB NO.	239-0007
SHT. NO.	RE-5

11 OF 15

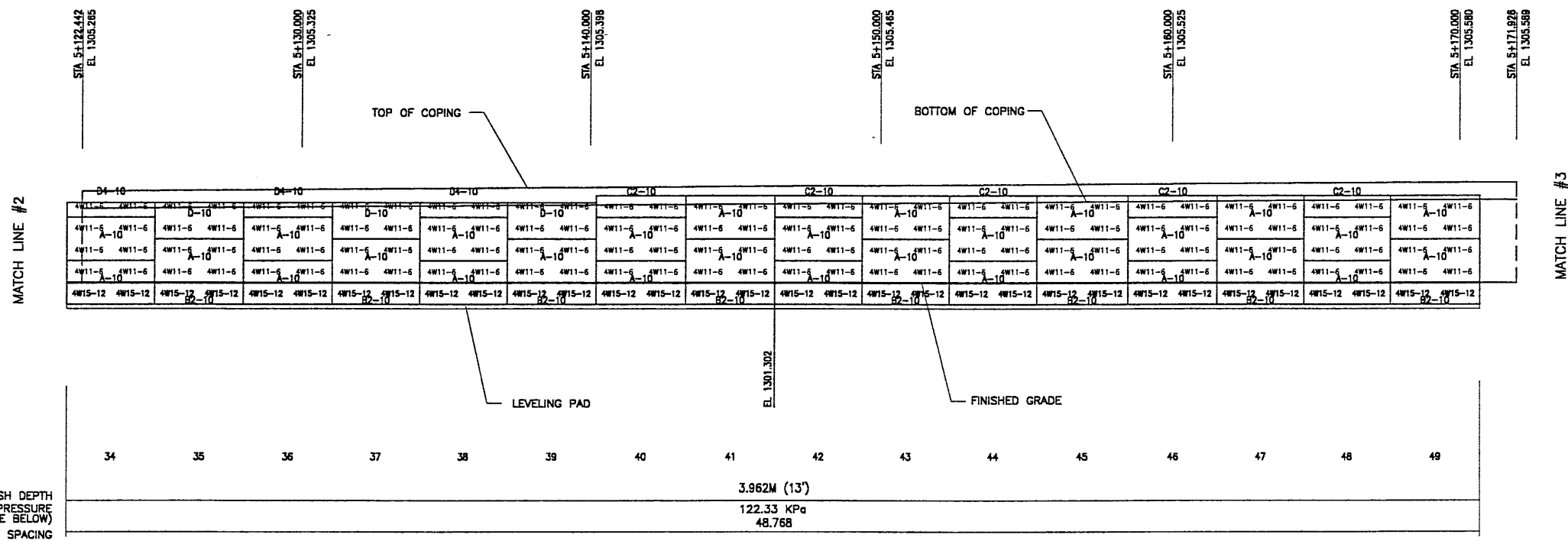
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	6-11-98	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE	REVISION
05-20-98	JL				
05-20-98	RSW				
05-20-98	JL				

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-6272  
 Fax: (919) 781-6999



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MESH DEPTH  
 MAXIMUM BEARING PRESSURE  
 (SEE NOTE BELOW)  
 PIN SPACING

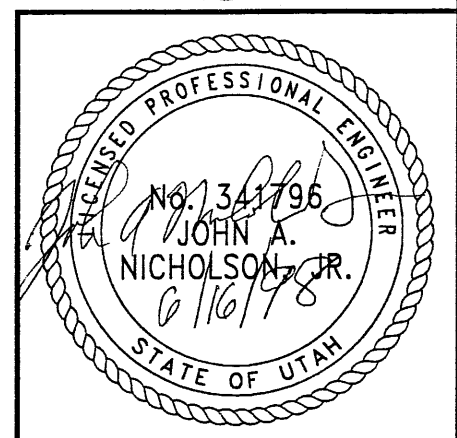
34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
3.962M (13')															
122.33 KPa															
48.768															

**ELEVATION PRECAST WALL "R-345-9"**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 912.78 SM) SCALE 1:200 (HALF SIZE)

**APPROVER NOTE:**  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES ARE INDICATED BELOW MESH DEPTH LINE. REVIEWER TO VERIFY MAXIMUM BEARING CAPACITY OF FOUNDATION.

METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.



**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

12 OF 15

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-9"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-9.12
JOB NO.	239-0007
SHT. NO.	RE-6

ANCE (X-UTAH.DWG)

45-09

H:\RE-EARTH\PROJECT\239-000\1998\45SEF

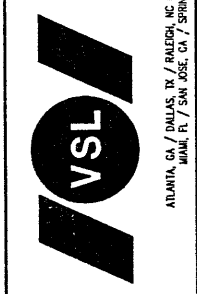
T 05-20-98

FINAL

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	6-11-98	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE
JL	RSW	JL		
05-20-98	05-20-98	05-20-98		

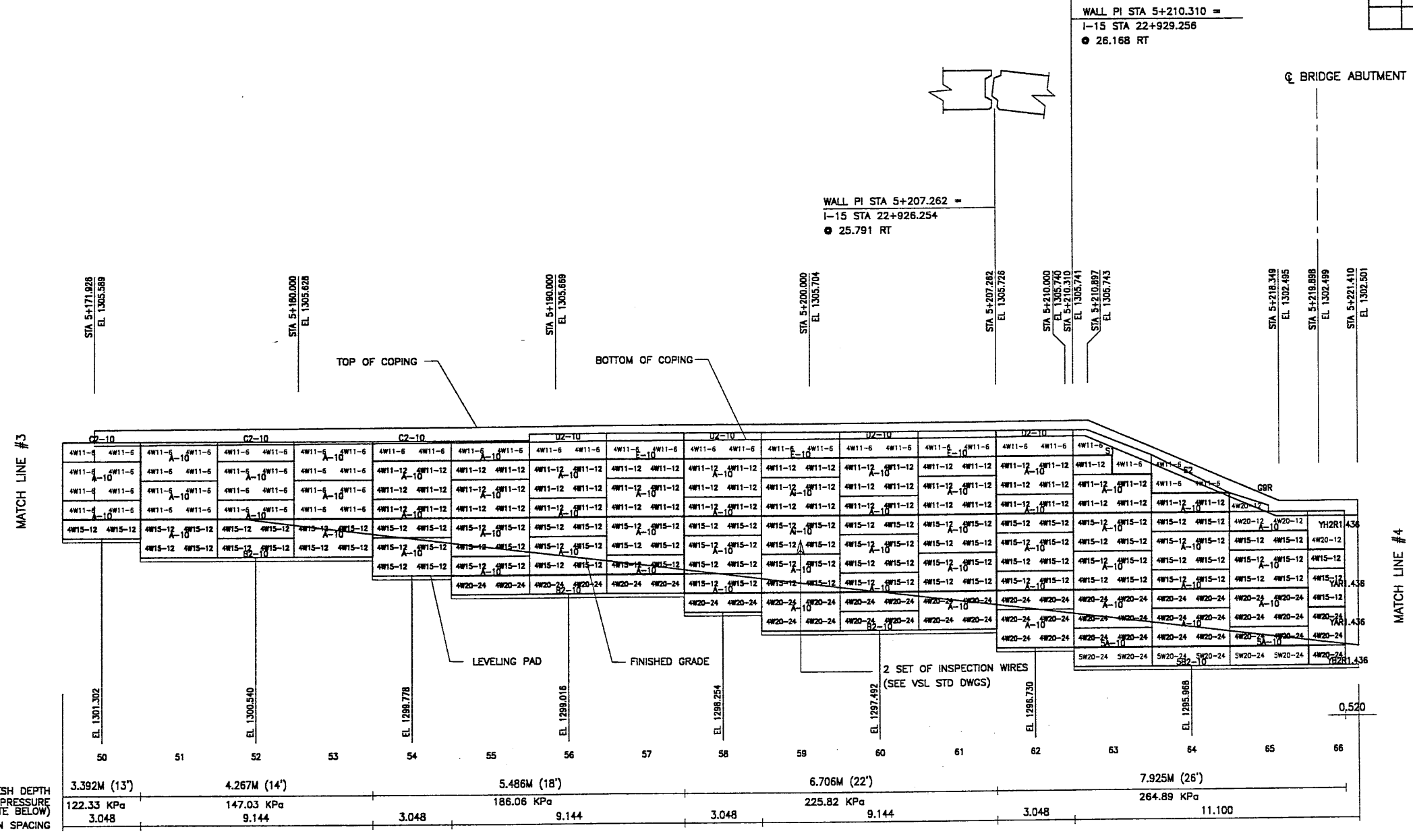
VSL CORPORATION  
 2940 Piedmont Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 791-6272  
 Fax: (919) 791-4689



ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 WILMINGTON, DE / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-9"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-9.13
JOB NO.	239-0007
SHT. NO.	RE-7



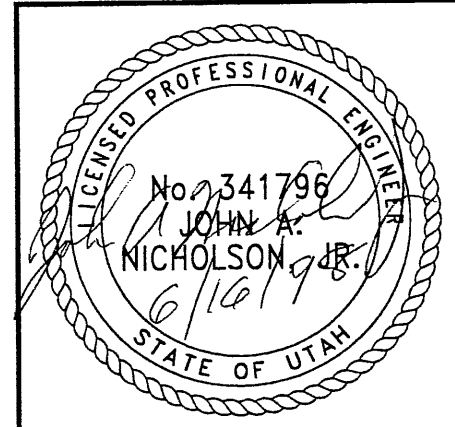
**ELEVATION PRECAST WALL "R-345-9"**  
 (FRONT FACE SHOWN)  
 (TOTAL SURFACE AREA OF PANELS = 912.78 SM)  
 SCALE 1:100 (FULL SIZE)  
 SCALE 1:200 (HALF SIZE)

METRIC

APPROVER NOTE:  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

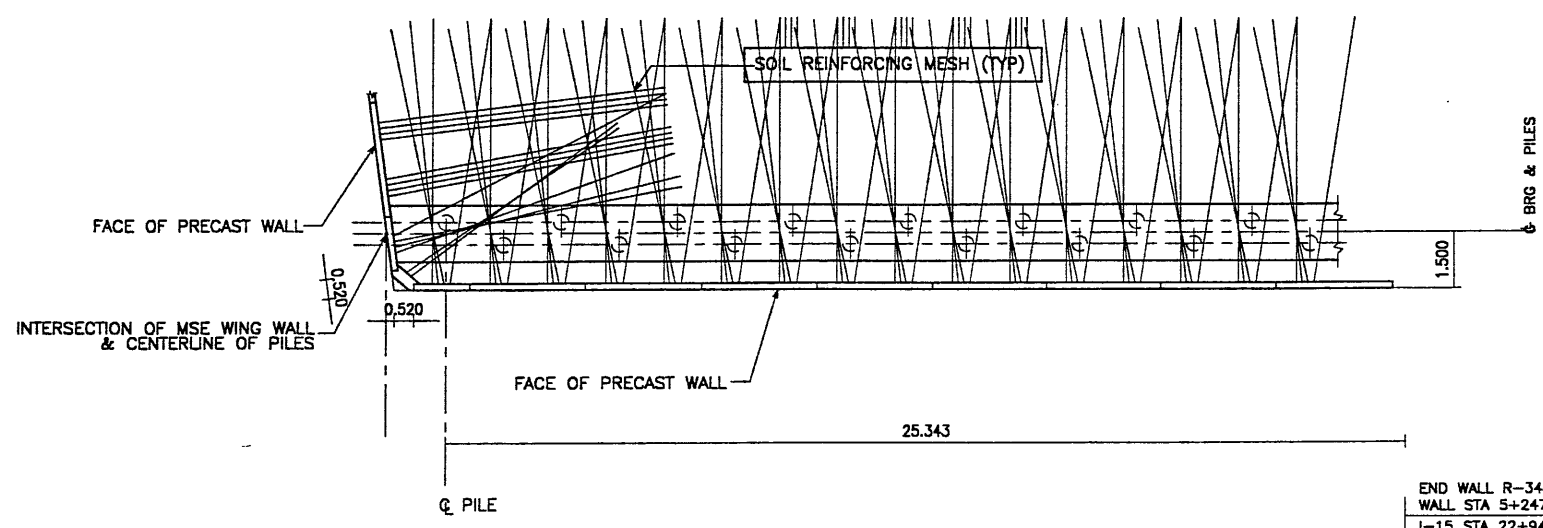
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
 EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
 ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

WASATCH CONSTRUCTORS  
 JUN 18 1998  
 RELEASED FOR CONSTRUCTION



13 OF 15

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	6-11-98	RELEASE FOR CONSTRUCTION



STA 5+221.410 EL. 1302.501											STA 5+240.000 EL. 1302.423	STA 5+247.807 EL. 1302.389
TOP OF COPING												
BOTTOM OF COPING												
C.I.P. COPING												
MATCH LINE #4												
MA 58	12	AW20-12	AW20-12	AW20-12	AW20-12	AW20-12	AW20-12	AW20-12	AW20-12	AW20-12	AW20-12	AW20-12
MA 58	12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12
MA 58	12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12	AW15-12
MA 58	24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24
MA 58	24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24
MR2 98	24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24	AW20-24
LEVELING PAD												
FINISHED GRADE												
68	69	70	71	72	73	74	75	76				
MESH DEPTH 7.925M (26')												
MAXIMUM BEARING PRESSURE (SEE NOTE BELOW) 241.88 KPa												
PIN SPACING 26.397												

ELEVATION PRECAST WALL "R-345-9"  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 912.78 SM) SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
 EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON  
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 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

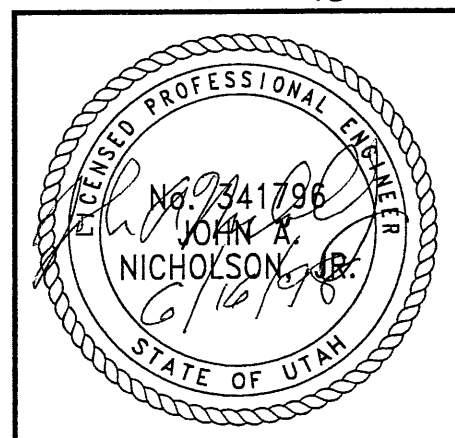
METRIC

WASATCH CONSTRUCTORS

JUN 18 1998

RELEASED FOR CONSTRUCTION

14 OF 15



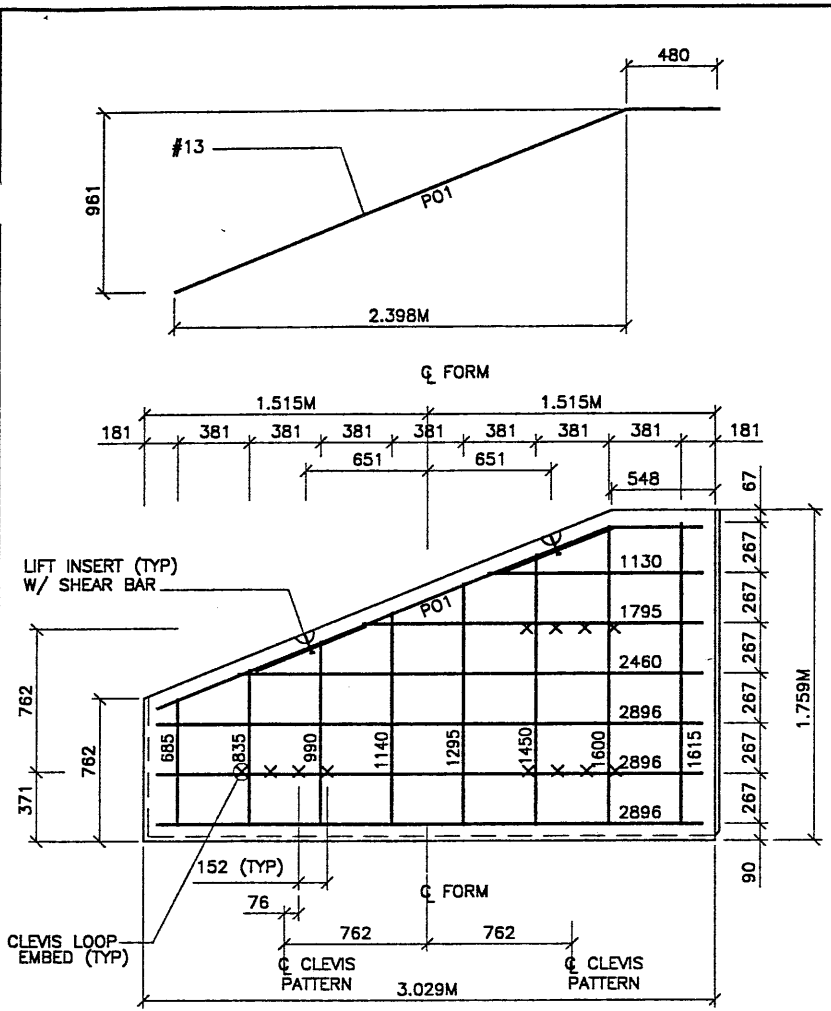
DES.	JL	05-20-98	RETAINED EARTH™	NO.	DATE	BY
DRN.	RSW	05-20-98		NO.	DATE	CHK
CHK.	JL	05-20-98		NO.	DATE	CHK
VSL CORPORATION 2810 Plaza Place, Suite 200 Raleigh, NC 27612 Telephone: (919) 981-8272 Fax: (919) 761-4989						
VSL CORPORATION ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE) MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA						
VSL Corporation (VSL) is a registered professional engineering firm. It is not responsible for the design or construction of any structure unless it has been specifically designed and constructed under its direct supervision and control. The user assumes all liability for the design and construction of any structure.						
RETAINED EARTH™ WALLS PRECAST WALL "R-345-9" UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.						
DWG. NO. 2.1R-345-9.14						
JOB NO. 239-0007						
SHT. NO. RE-8						

FINA

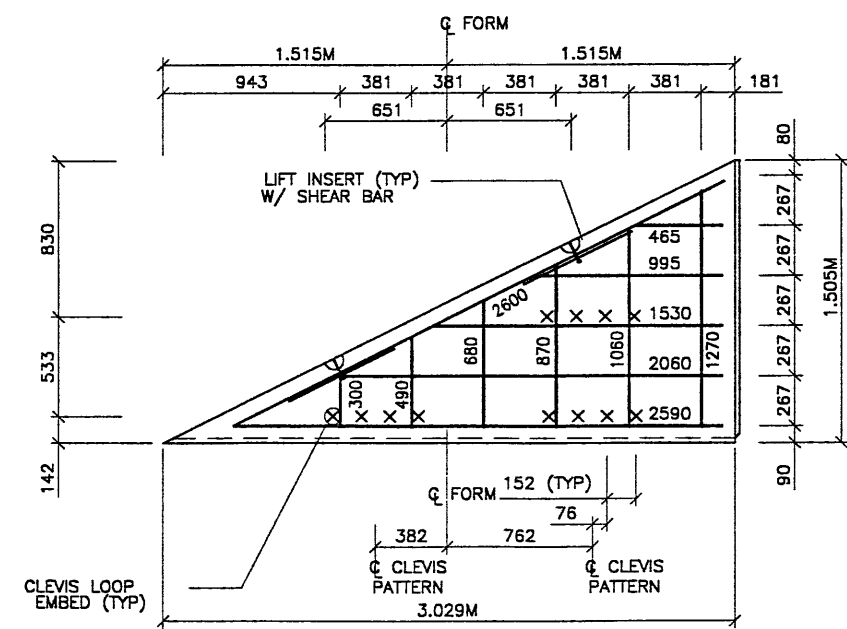
05-20-98

H:\RE-EARTH\PROJECT\239-0007\1998\45SERIES\45-00

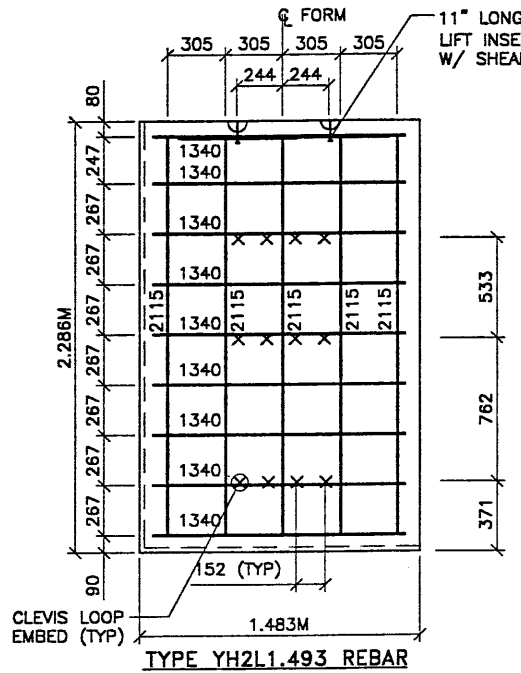
FINA



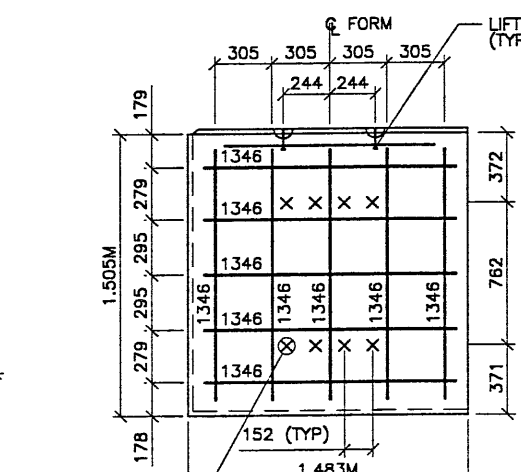
**S1 TYPE S1 REBAR**  
(AREA = 4.15 SQ.M)



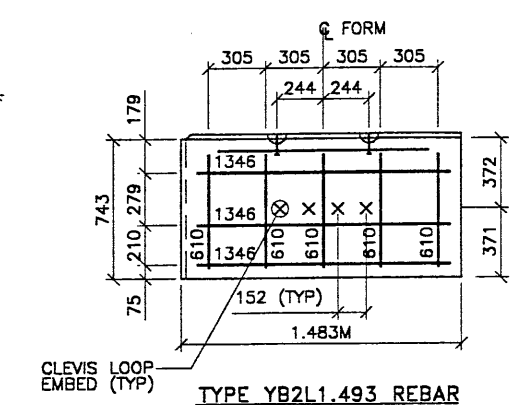
**S2 TYPE S2 REBAR**  
(AREA = 2.32 SQ.M)



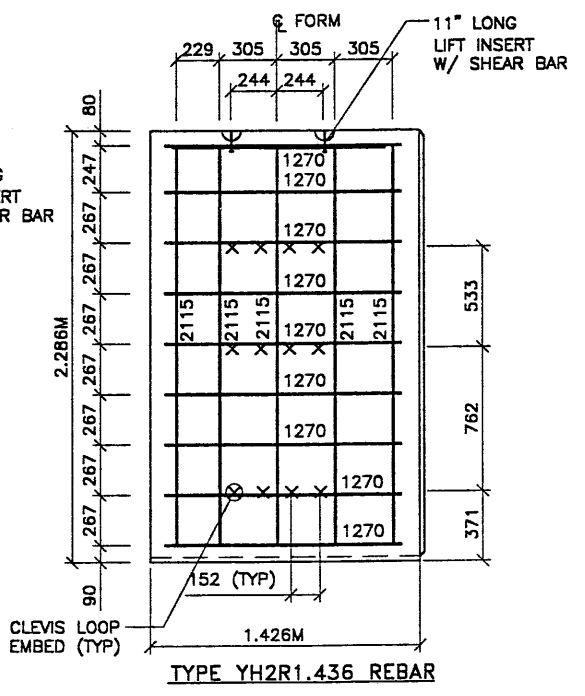
**TYPE YH2L1.493 REBAR**



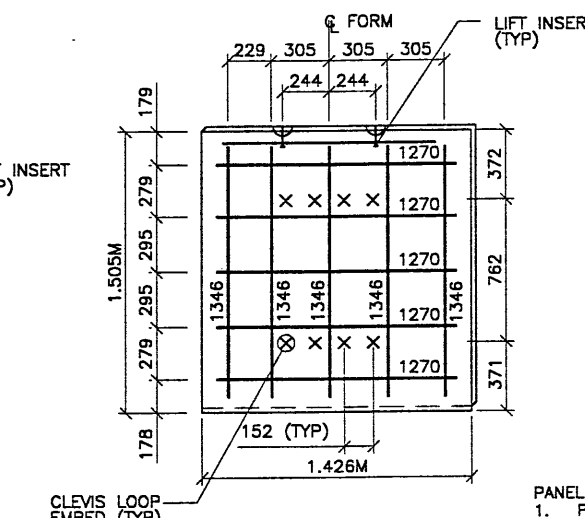
**TYPE YAL1.493 REBAR**



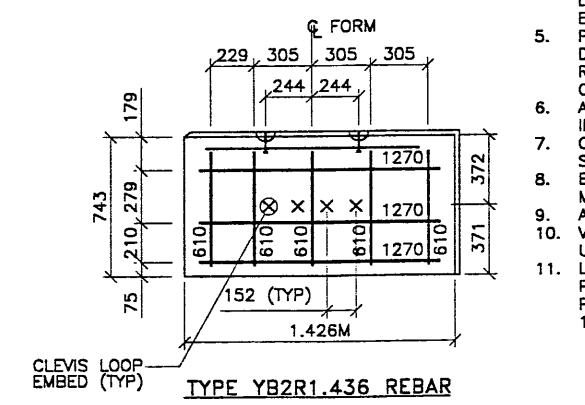
**TYPE YB2L1.493 REBAR**



**TYPE YH2R1.436 REBAR**



**TYPE YAR1.436 REBAR**



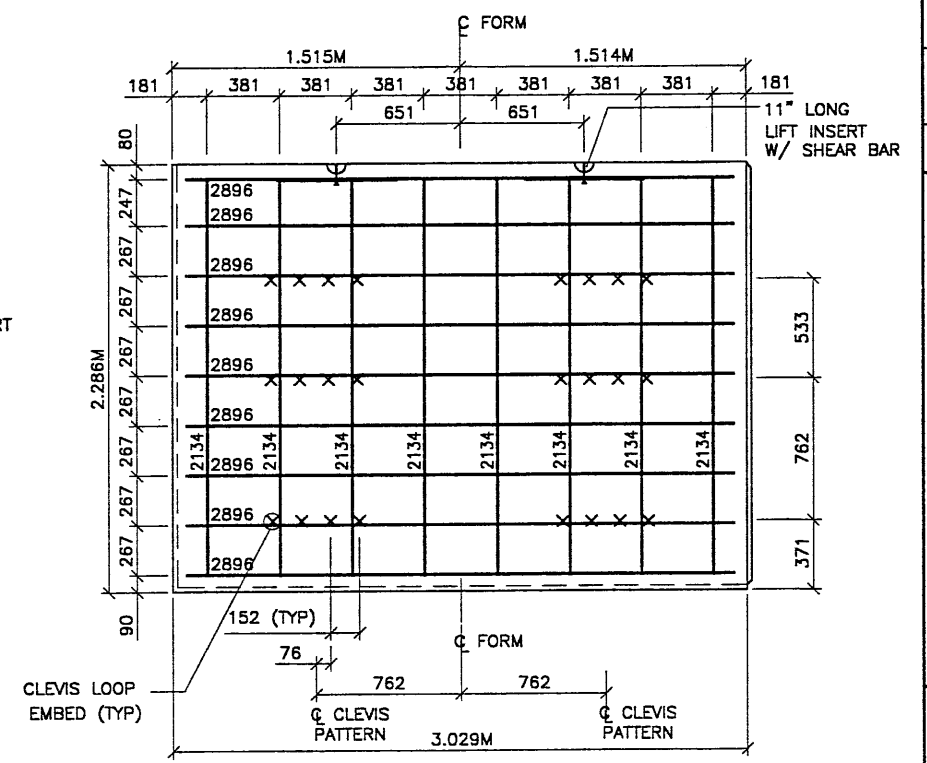
**TYPE YB2R1.436 REBAR**

- PANEL REINFORCEMENT NOTES:**
1. PANELS ARE SHOWN BACK FACE.
  2. HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  3. ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  4. ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  5. PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  6. ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS 1.
  7. CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  8. EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  9. ALL PANELS TO USE 9.5mm# CLEVIS LOOPS.
  10. VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.
  11. LIFT INSERTS ARE 6 3/4" LONG IN ALL PANELS LESS THAN 1.524M TALL. PANELS TALLER THAN 1.524M SHALL HAVE 11" LONG LIFT ANCHORS.

METRIC

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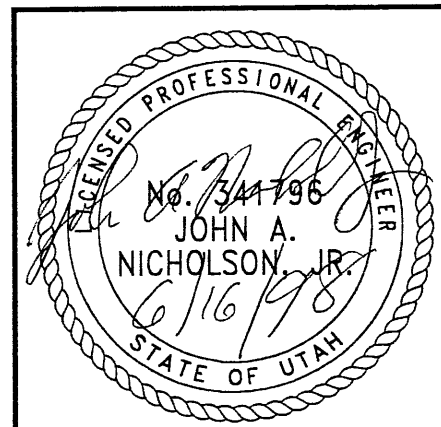
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	6-11-98	RELEASE FOR CONSTRUCTION



**TYPE H2-10 REBAR**  
(AREA = 6.97 SQ.M)

**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

15 OF 15



NO.	DATE	DESCRIPTION	BY	CHK

DES. 05-20-98	RSW	RETAINED EARTH™		
DRN. 05-20-98	RSW			
CHK. 05-20-98	JL			

VSL CORPORATION  
2800 Paces Plaza, Suite 200  
Raleigh, NC 27617 761-8272  
Telephone: (919) 761-8272  
Fac: (919) 761-6899

ALABAMA, GA. / DANIA, FL. / FLORIDA, NC (CORPORATE OFFICE)  
MASS. / MINN. / N.J. / N.Y. / OHIO / PA. / S.C. / VA. / WISCONSIN

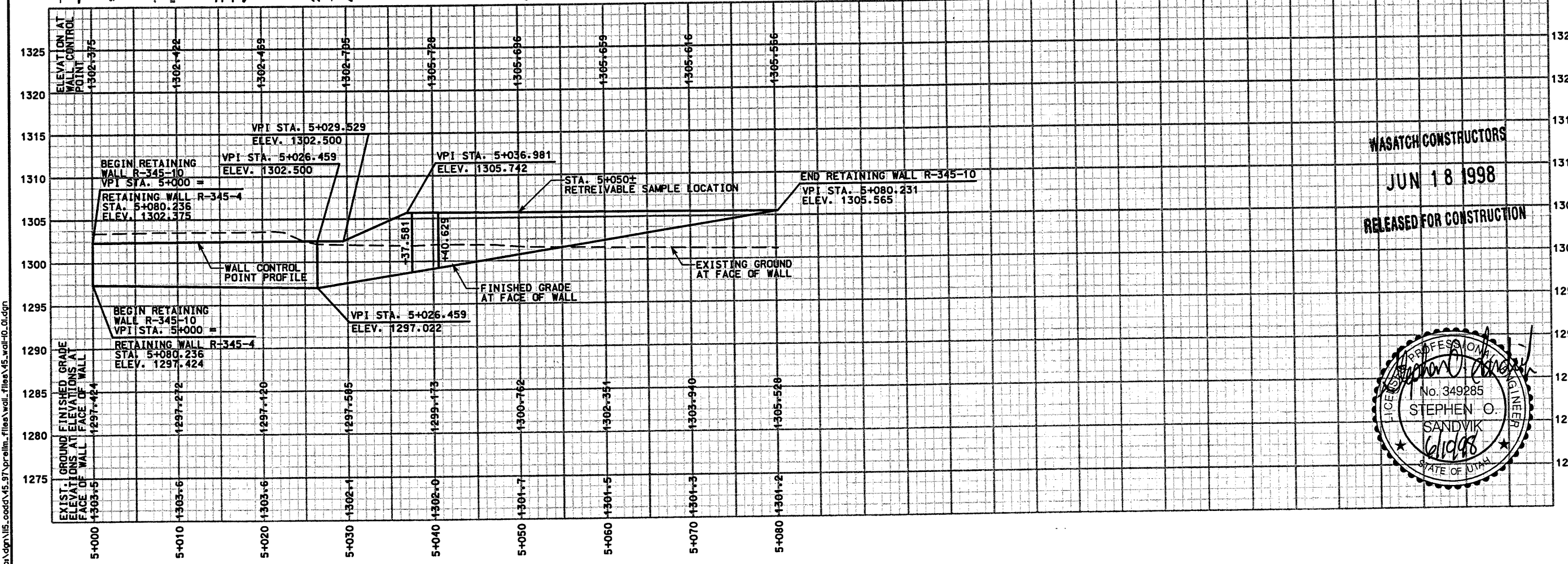
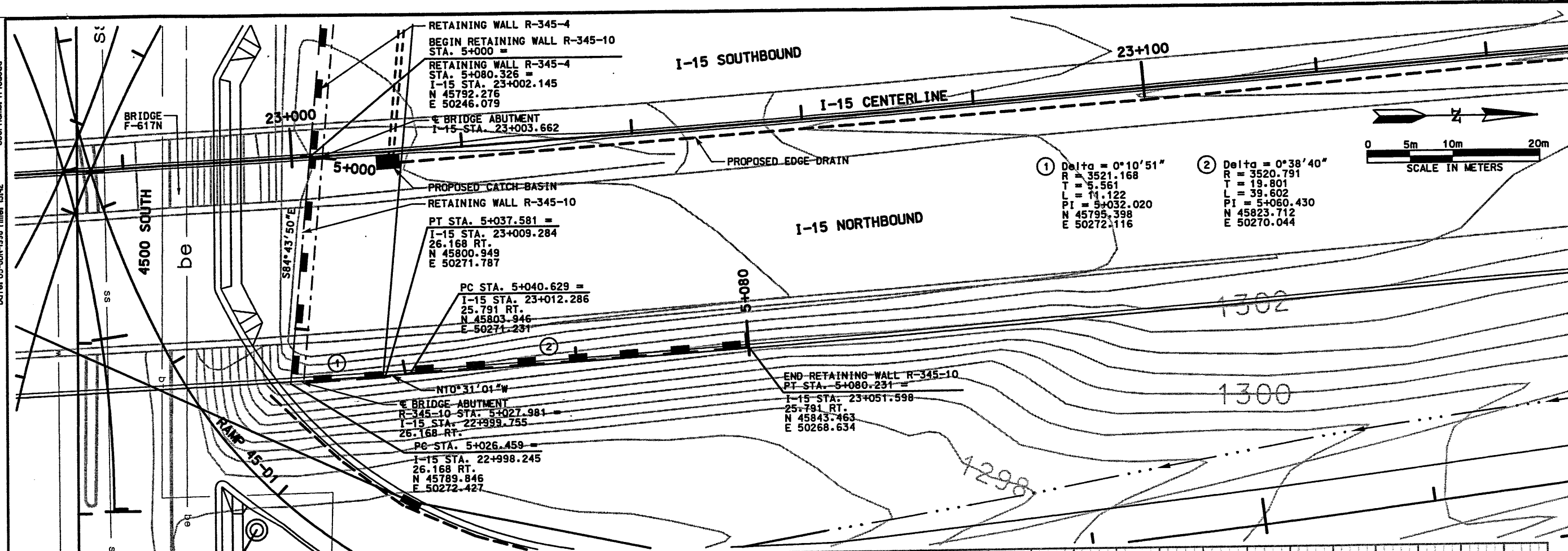
**VSL**

RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-9"  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

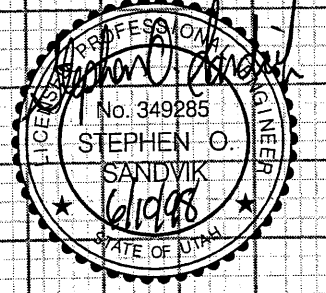
DWG. NO. 2.1R-345-9.15  
JOB NO. 239-0007  
SHT. NO. RE-9



Filename: c:\p\115\cadd\15-97\p\115-115\wall\15-wall-10.dwg  
 Date: 05-JUN-1998 Time: 15:42  
 User: nomafriseedo



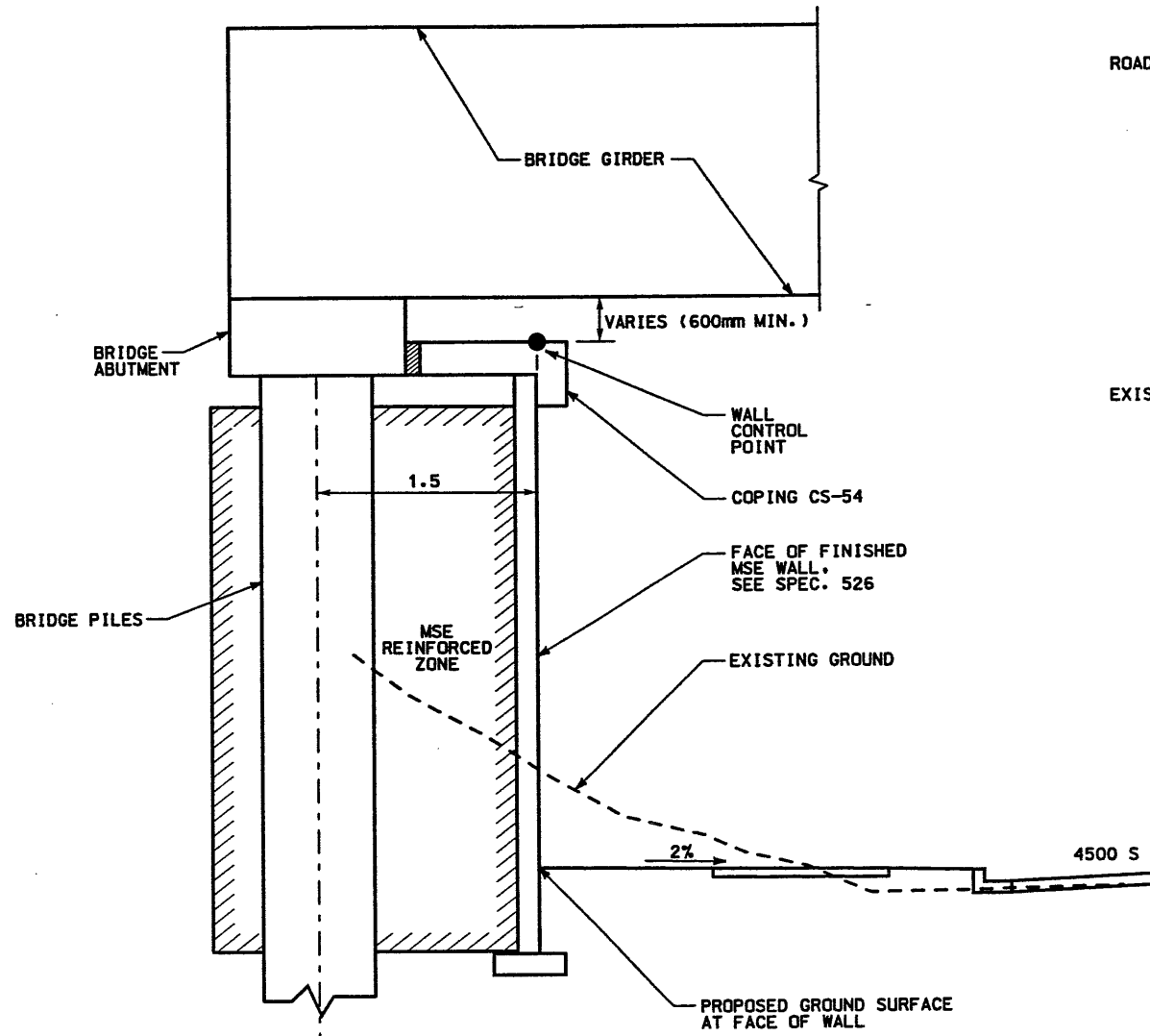
NOTE: PROFILE REPRESENTS FRONT FACE OF WALL



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	6/05/98	Δ	6/05/98
Δ	6/05/98	Δ	6/05/98
Δ	6/05/98	Δ	6/05/98
Δ	6/05/98	Δ	6/05/98
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO.	
MK CENTENNIAL		DESIGN DAF / 98	
SVERRUP/DE LEUW		DRAWN DAF / 98	
DESIGN DAF / 98		CHECK BAR / 98	
PROJECT DESIGN ENGINEER		DATE	
APPROVED / 98		PROJECT MANAGER	
DATE		DATE	
I-15 CORRIDOR RECONSTRUCTION		SECTION 2.1	
SITUATION & LAYOUT R-345-10		PROJECT NUMBER	
SALT LAKE COUNTY		#MSP-15-7(135)296	
DWG. NO.		DATE	
2.1R-345-10.1		6/18/98	
SHT.	1	OF	11
REF.			

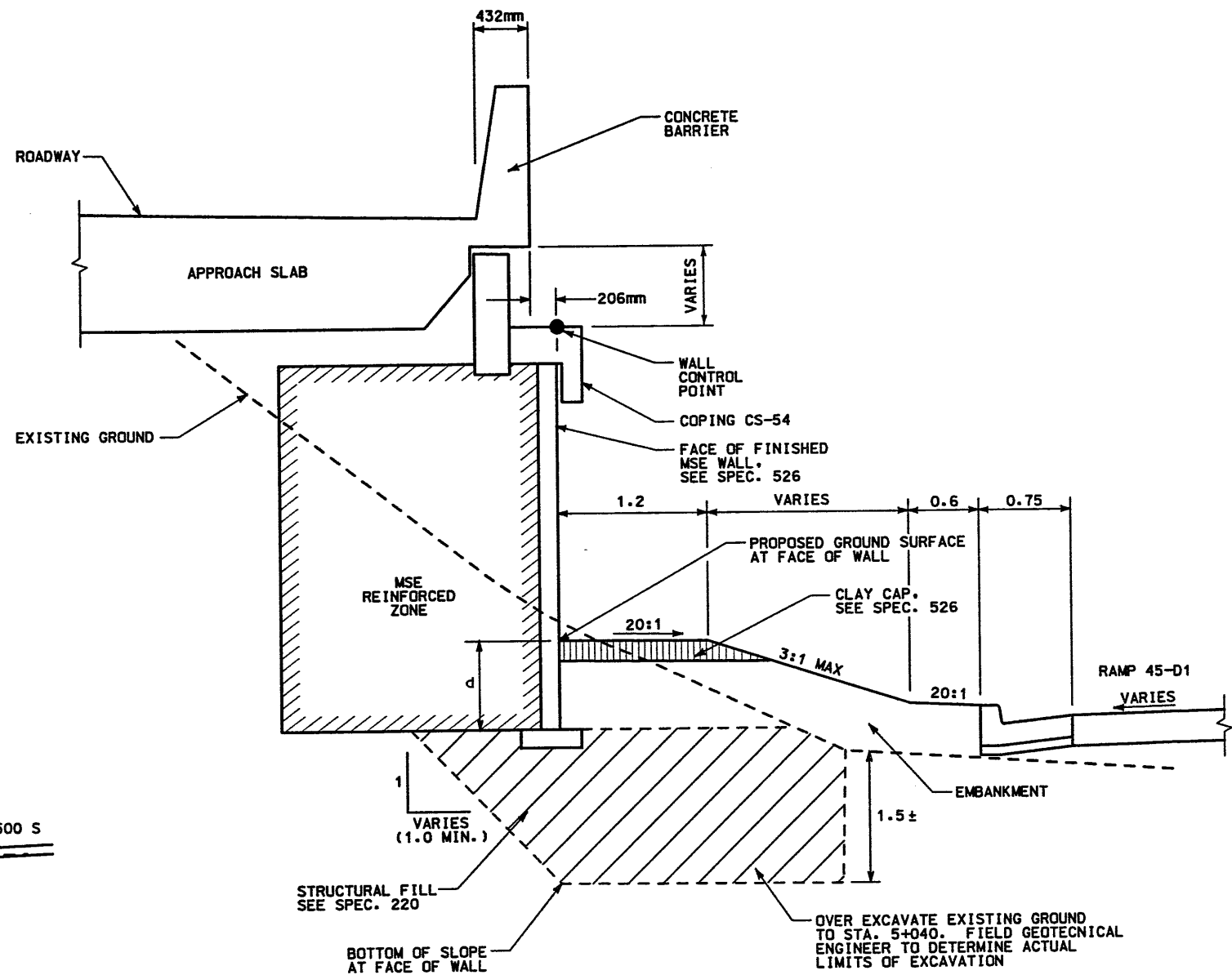


**RETAINING WALL DETAIL**  
SECTION 2.1 WALL NO. R-345-10  
(1 STAGE MSE WALL)  
NTS



**DETAIL A**  
STA 5+000 TO 5+026.459

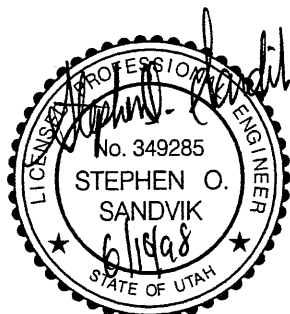
d = DEPTH OF EMBEDMENT (SEE VSL PLANS)



**DETAIL B**  
STA 5+026.459 TO 5+037.581  
(SEE DETAIL ON 2.1R-345-10.4 FOR  
TRANSITION FROM DETAIL B TO DETAIL C)

**NOTES:**

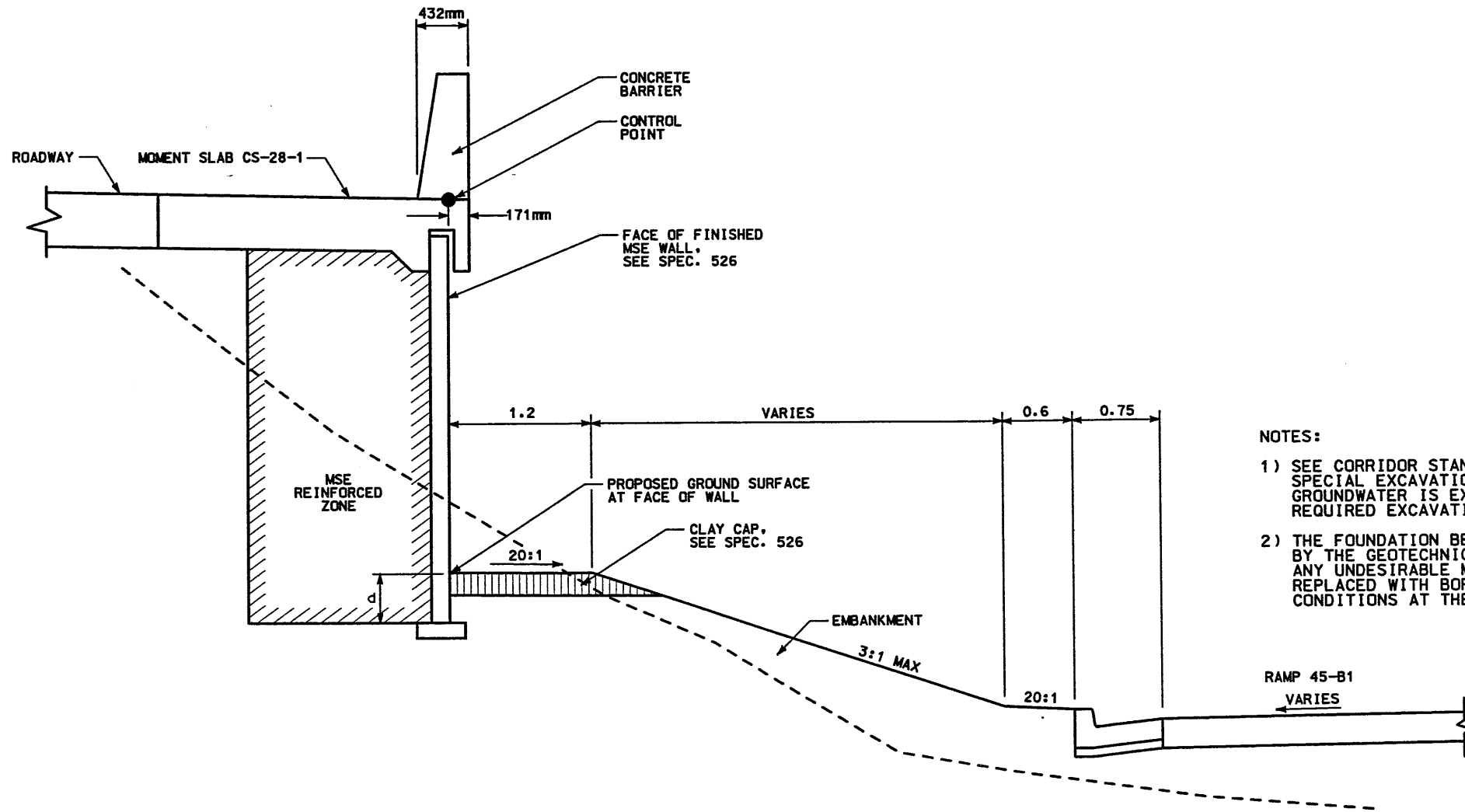
- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
- 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.



**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	6/05/98	Δ	/ /
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		WBS NO.	2112800
APPROVAL RECOMM.	DESIGN DAF	CHECK BAR	/ / 98
/ 98 Stephen O. Sandvik	/ 98	/ 98	/ 98
DATE	PROJECT DESIGN ENGINEER	DATE	CHECK BAR
/ 98	Randle L. Ross	/ 98	/ 98
APPROVED	PROJECT MANAGER	DATE	QUANT.
/ 98	/ /	/ /	/ /
1-15 CORRIDOR RECONSTRUCTION	WALL DETAIL R-345-10	SECTION 2.1	PROJECT NUMBER
			#SP-15-7(135)296
SALT LAKE COUNTY			
DWG. NO. 2.1R-345-10.2			
SHT. 2 OF 11			
REF.			

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO. R-345-10**  
**(1 STAGE MSE WALL)**  
**NTS**

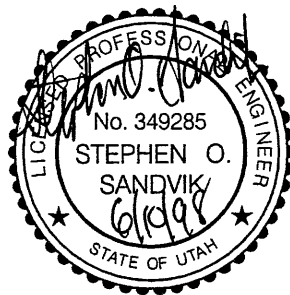


**NOTES:**

- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
- 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.

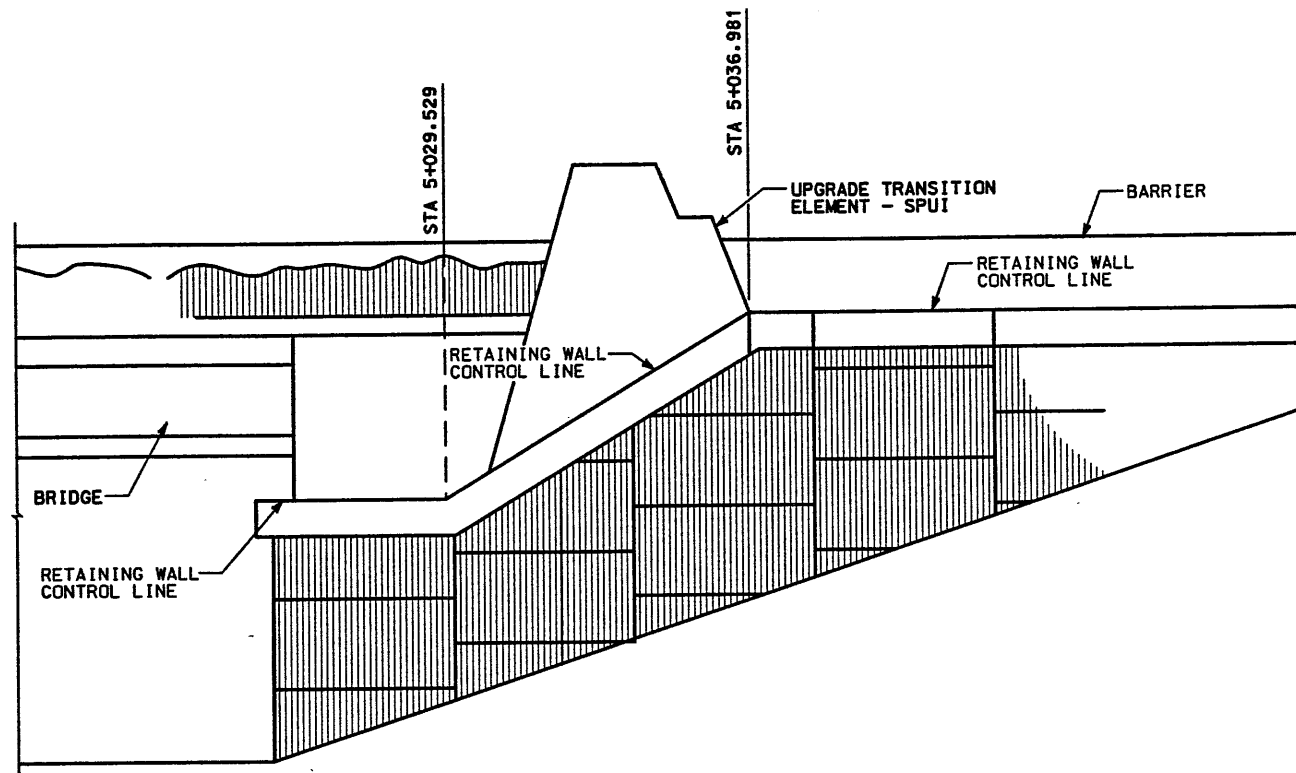
d = DEPTH OF EMBEDMENT (SEE VSL PLANS)

**DETAIL C**  
**STA 5+040.629 TO 5+080.231**

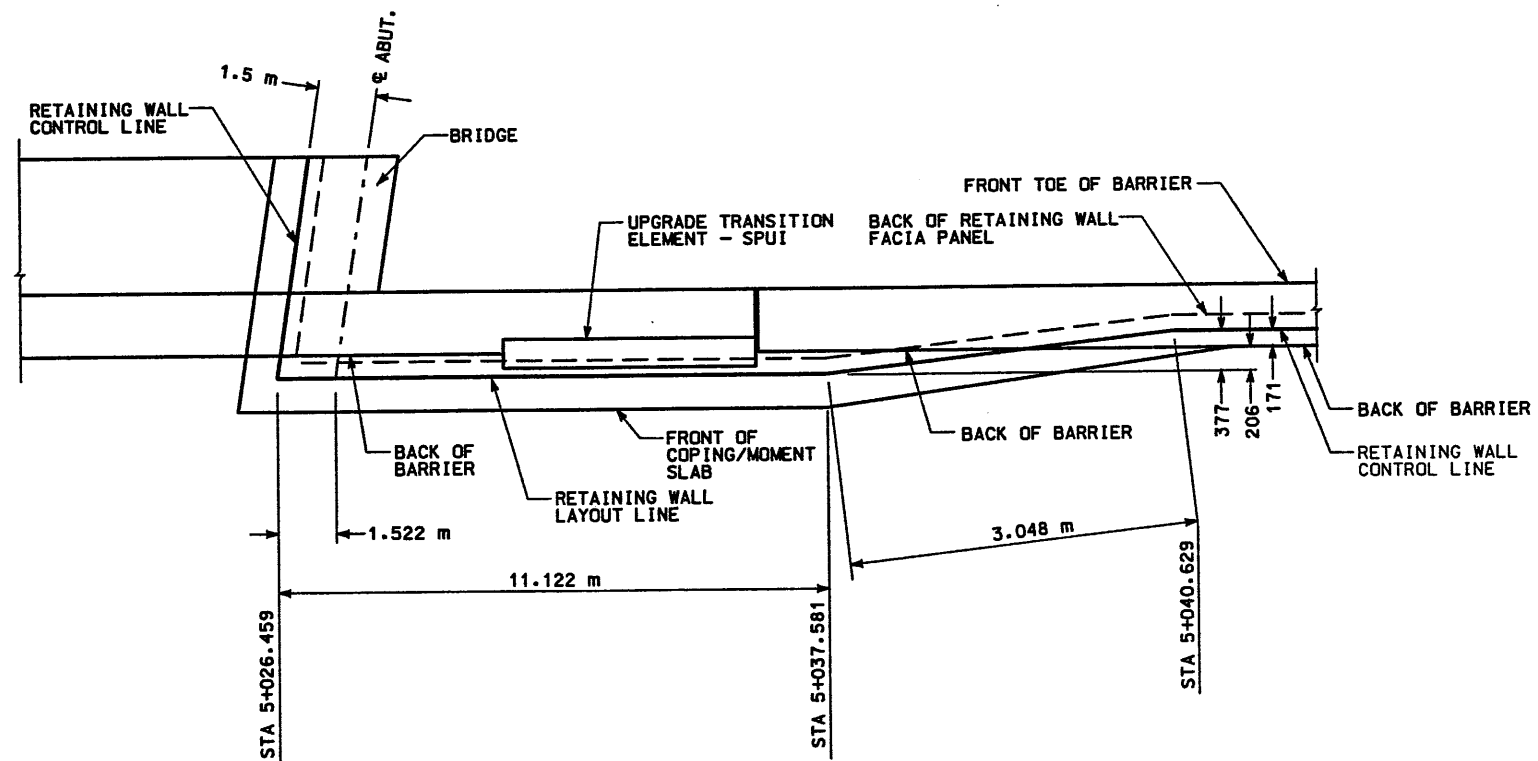


**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	6/05/98	△	///
△	///	△	///
△	///	△	///
△	///	△	///
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2112600	
MK CENTENNIAL SYVERDRUP/DE LEUW		DESIGN DAF	/ / 98
APPROVAL RECORD	/ 98 Stephen O. Sandvik	CHECK BAR	/ / 98
DATE	PROJECT DESIGN ENGINEER	DRAWN DAF	/ / 98
APPROVED	/ 98 Randle L. Ross	QUANT.	///
	PROJECT MANAGER	CHECK	///
I-15 CORRIDOR RECONSTRUCTION		SECTION 2.1	
WALL DETAIL R-345-10		PROJECT NUMBER #SP-15-7(135)296	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-10.3	
SHT.	3	OF	11
REF.			



**VERTICAL CONTROL LINE TRANSITION DETAIL**  
NTS



**HORIZONTAL CONTROL LINE TRANSITION DETAIL**  
STA 5+026.459 TO 5+040.629  
NTS



**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

ALL DIMENSIONS ARE IN MILLIMETERS  
UNLESS OTHERWISE NOTED

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	6/05/98	△	/ /
△	/ /	△	/ /
△	/ /	△	/ /
△	/ /	△	/ /
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		WBS NO.	2112600
APPROVAL RECOMM.	DATE	DESIGN DAF	CHECK BAR / /98
/ /98 Stephen O. Sandvik	/ /	/ /	/ /
PROJECT DESIGN ENGINEER	DATE	DRAWN DAF	CHECK BAR / /98
/ /98 Randle L. Ross	/ /	/ /	/ /
PROJECT MANAGER	DATE	QUANT.	CHECK / /
/ /98	/ /	/ /	/ /
1-15 CORRIDOR RECONSTRUCTION	WALL DETAIL R-345-10	SECTION 2.1	PROJECT NUMBER #SP-15-7(135)296
SALT LAKE COUNTY	DWG. NO. 2.1R-345-10.4	SHT. 4 OF 11	REF.

REFERENCE (X-UTAH.DWG)

H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIES\45-10\RE-1

FINAL PLOT 05-21-98

CURVE DATA				
No.	RADIUS	LENGTH	TANGENT	Δ
①	3521.168	11.122	5.561	0°10'51" L
②	3520.791	39.602	19.801	0°38'40" L

All Dimensions Are In Meters Unless Noted Otherwise

DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT) = 34°	
ANGLE OF INTERNAL FRICTION (BASE) = 30°	
ANGLE OF INTERNAL FRICTION (RANDOM) = 34°	
UNIT WEIGHT BACKFILL = 135 PCF (21.2 kN/m <sup>3</sup> )	
TRAFFIC SURCHARGE = 250 PSF	
SEISMIC ACCELERATION COFF. = 0.13g (TYP)	
SEISMIC ACCELERATION COFF. = 0.33g (AT BRIDGE ABUTMENTS)	
DESIGN CRITERIA	
SAFETY FACTOR (OVERTURNING) = 2.0	
SAFETY FACTOR (SLIDING) = 1.5	
SAFETY FACTOR (PULLOUT) = 1.5	
DESIGN LIFE = 75 YEARS	

GENERAL NOTES

- ALL WALLS ARE SHOWN FRONT FACE. NOTE STATIONING.
- PANEL TYPE IS DESIGNATED ON EACH PANEL. CONNECTOR LABELS INDICATE NUMBER OF CONNECTORS PER ROW.  
EXAMPLE: 5B2-10 IS A "B2-10" PANEL WITH FIVE (5) CONNECTORS PER ROW. IF NO CONNECTORS ARE SHOWN, FOUR (4) CONNECTOR PANELS SHALL BE USED.
- SOIL REINFORCING MESH TYPE IS DESIGNATED ON EACH PANEL. MESH LABELS INDICATE WIRE SIZE AND SPACING. LONGITUDINAL WIRE AND CROSSBAR SIZES ARE THE SAME UNLESS NOTED OTHERWISE.  
EXAMPLE: 4W11-6 MESH HAS FOUR (4) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 4W20-12 MESH HAS FOUR (4) W20 LONGITUDINAL WIRES WITH W20 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 4W20-24 MESH HAS FOUR (4) W20 LONGITUDINAL WIRES WITH W20 CROSSBARS AT 24" CENTERS.  
EXAMPLE: 5W11-6 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
EXAMPLE: 5W11-12 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 12" CENTERS.  
EXAMPLE: 6W11-12 MESH HAS SIX (6) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 12" CENTERS.
- SEE RETAINED EARTH INSTALLATION MANUAL FOR PROPER WALL ERECTION PROCEDURES AND GUIDELINES.
- CONSTRUCTION PROCEDURES SHALL PREVENT BACKFILL SATURATION AND PONDING.
- HEAVY EQUIPMENT SHALL NOT BE USED WITHIN ONE METER OF THE BACK OF THE RETAINED EARTH PANELS. HAND COMPACTORS SHALL BE USED IN THIS AREA.
- CARE SHALL BE TAKEN TO PREVENT DAMAGE TO GALVANIZING. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.
- BEARING PADS AND FILTER FABRIC ARE NOT REQUIRED BETWEEN THE LEVELING PAD AND THE FIRST ROW OF PANELS. TEMPORARY WEDGES MAY BE USED TO PROVIDE PROPER ALIGNMENT.
- VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.
- ALL PANELS SHALL HAVE AN ARCHITECTURAL FINISH. SEE SHEET RE-3 FOR DETAIL.

I-15 Q

I-15 NORTHBOUND

BRIDGE 64  
(F-617N)

S 84° 43' 50" E

WALL STA 5+000.000 =  
I-15 STA 23+002.145  
BEGIN PRECAST WALL R-345-10

PT WALL STA 5+080.231  
I-15 STA 23+051.598  
● 25.791 RT  
END PRECAST WALL R-345-10

PC WALL STA 5+040.629 =  
I-15 STA 23+012.286  
● 25.791 RT

N 10° '31 01" W

PT WALL STA 5+037.581 =  
I-15 STA 23+009.284  
● 26.168 RT

BEND WALL STA 5+026.459 =  
I-15 STA 22+998.245  
● 26.168 RT  
END PRECAST WALL R-345-10

PLAN VIEW WALL "R-345-10"

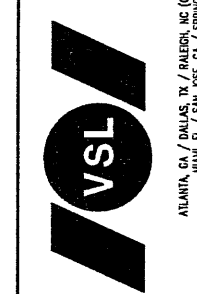
SCALE: 1=200 (FULL SIZE)  
SCALE: 1=400 (HALF SIZE)

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-10, NOTES & DESIGN CRITERIA
RE-2	TYPICAL CROSS SECTIONS
RE-3	TYPICAL CROSS SECTIONS
RE-4	ELEVATION PRECAST WALL "R-345-10"
RE-5	ELEVATION PRECAST WALL "R-345-10"
RE-6	SPECIAL PANEL DETAILS
RE-7	SPECIAL PANEL DETAILS

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	06-11-98	RELEASE FOR CONSTRUCTION <i>CV</i>

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY	CHK
05-21-98	05-21-98	05-21-98					

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6772  
Fax: (919) 781-6869



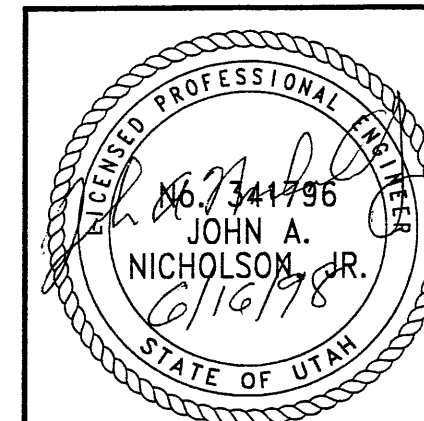
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WASATCH CONSTRUCTORS

JUN 18 1998

RELEASED FOR CONSTRUCTION

5 OF 11



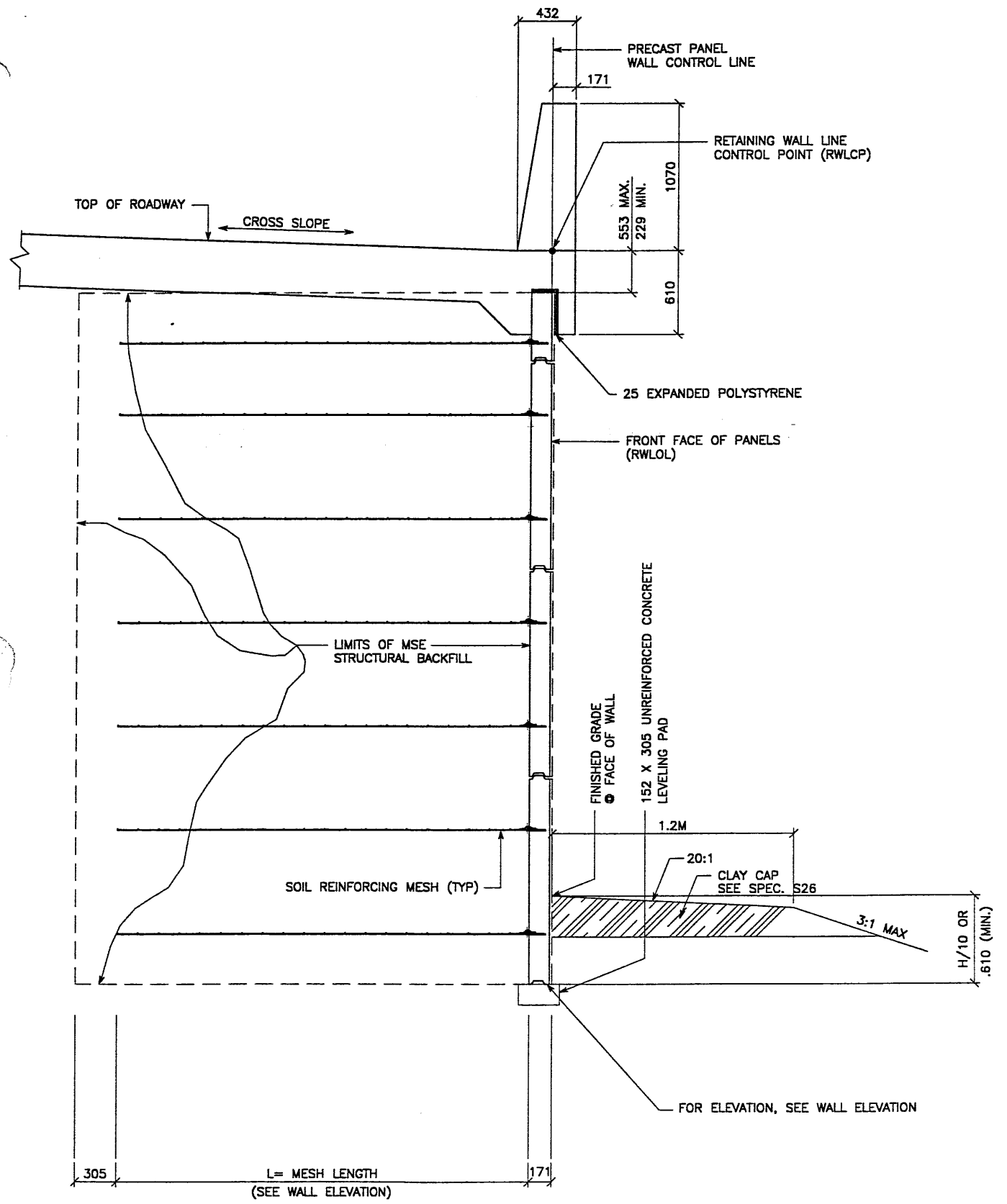
METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

RETAINED EARTH™ WALLS  
PLAN VIEW PRECAST WALL "R-345-10"  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-10.5
JOB NO.	239-0007
SHT. NO.	RE-1

FINAL PLOT 05-20-98 H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIES\45-10\RE-2 XPREFERENCE (X-UTAH.DWG)




**TYPICAL CROSS SECTION - STA 5+040.629 TO 5+080.231**  
(SEE DWG. NO. 2.1R-345-10.3 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)  
SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	06-11-98	RELEASE FOR CONSTRUCTION <i>al</i>

NO.	DATE	REVISION	BY

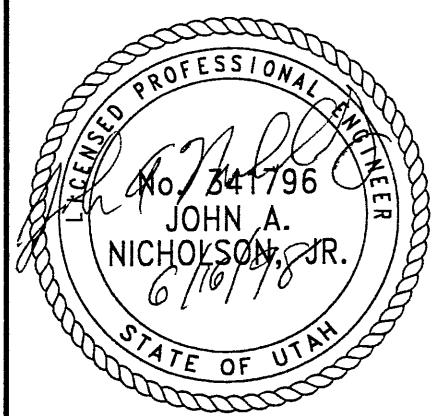
VSL CORPORATION  
2810 Plaza Place, Suite 200  
Raleigh, NC 27617-8181-8772  
Tel: (919) 781-4669  
Fax: (919) 781-4669



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MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS  
JUN 18 1998  
RELEASED FOR CONSTRUCTION

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METRIC

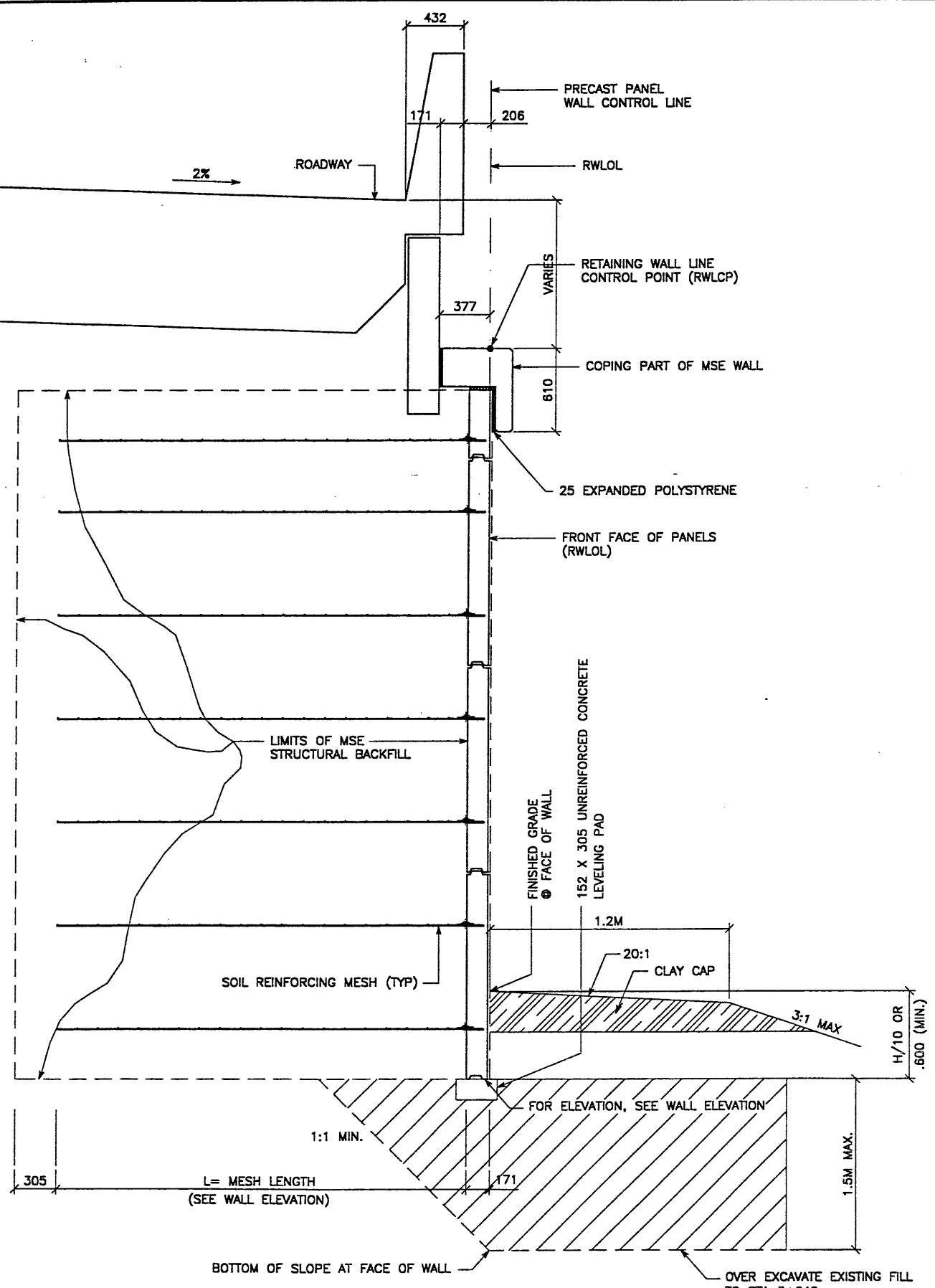
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

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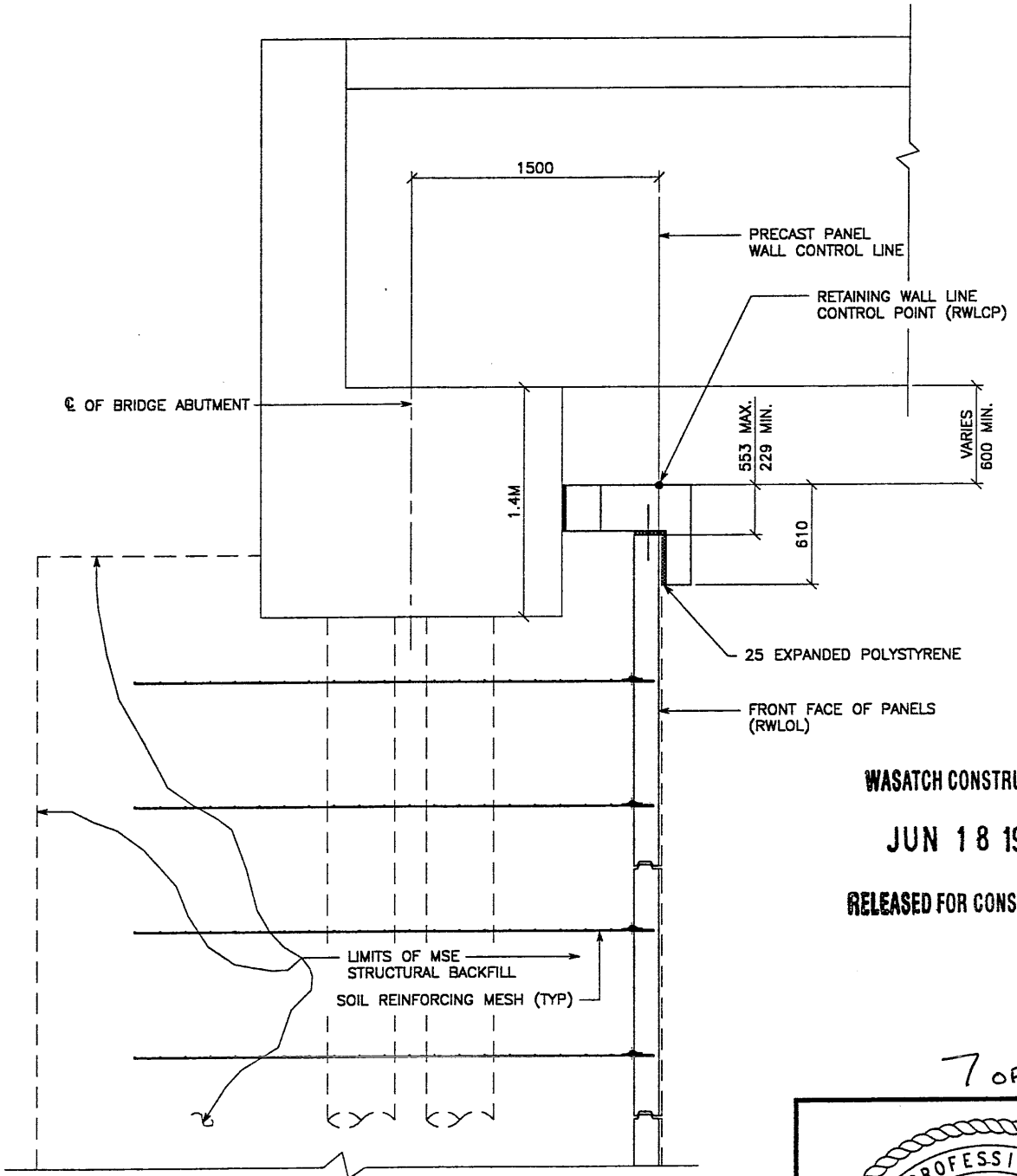
RETAINED EARTH™ WALLS WIRE FACED WALL "R-345-10" TYPICAL CROSS SECTION	UTAH 1-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO. 2.1R-345-10.6	
JOB NO. 239-0007	
SHT. NO. RE-2	

H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIES\45-10\RE-3  
 FINAL PLOT 05-20-98  
 REFERENCE (X-UTM.DWG)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	06-11-98	RELEASE FOR CONSTRUCTION



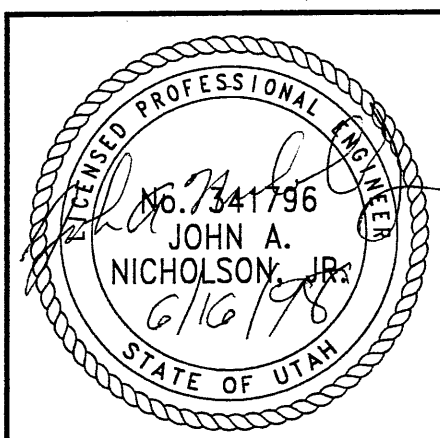
**TYPICAL CROSS SECTION - STA 5+026.459 TO 5+037.581**  
 (SEE DWG. NO. 2.1R-345-10.2 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)



**TYPICAL CROSS SECTION - STA 5+000.000 TO 5+026.459**  
 (SEE DWG. NO. 2.1R-345-10.2 FOR ADDITIONAL INFORMATION)  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

METRIC

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**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

7 of 11

NO.	DATE	DESCRIPTION	BY	CHK

DES.	JL	RETAINED EARTH™
DRN.	LOP	
CHK.	JL	

**VSL CORPORATION**  
 2010 Plaza Street, Suite 200  
 San Jose, CA 95128  
 Tel: (415) 761-8272  
 Fax: (415) 761-8869

**VSL**  
 ATLANTA, GA / DALLAS, TX / RALPHO, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

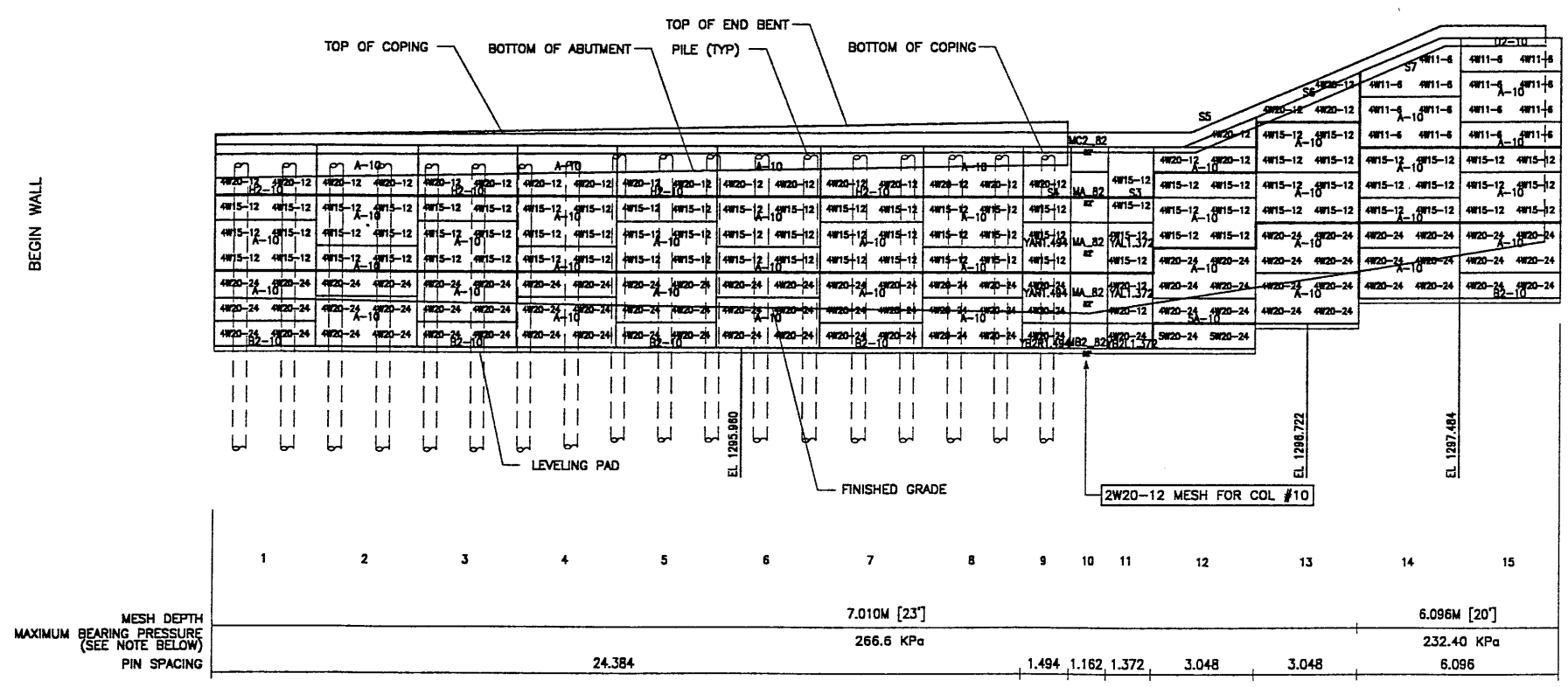
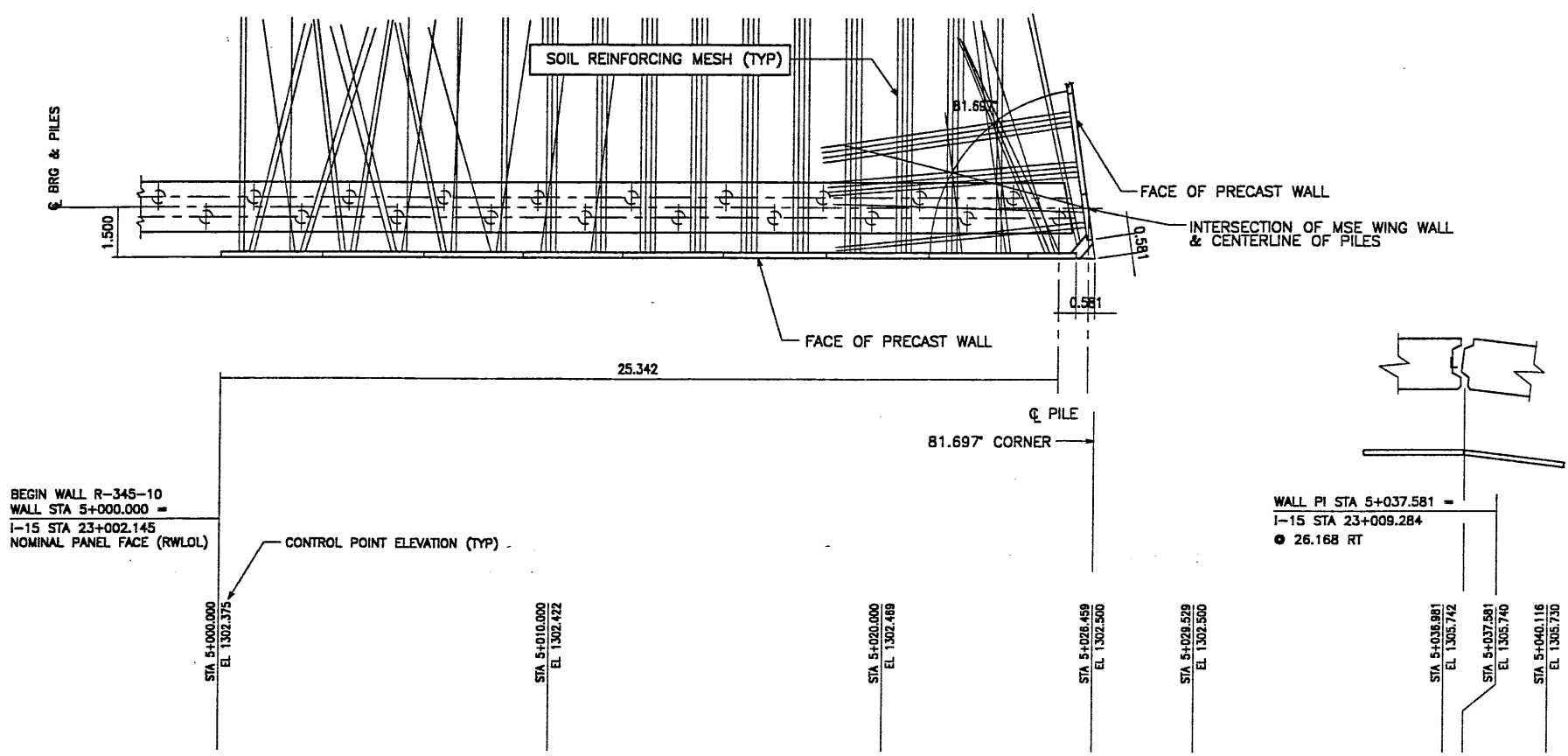
**RETAINED EARTH™ WALLS**  
**WIRE FACED WALL "R-345-10"**  
**TYPICAL CROSS SECTION**  
**UTAH I-15 RECONSTRUCTION**  
**SALT LAKE COUNTY, UTAH**  
**UTAH DEPARTMENT OF TRANSP.**

DWG. NO.	2.1R-345-10.7
JOB NO.	239-0007
SHT. NO.	RE-3



H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIES\45-10\45-10  
 FINAL PLOT 05-20-98  
 REFERENCE (X-UTAH.DWG)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△ 06-11-98		RELEASE FOR CONSTRUCTION <i>du</i>

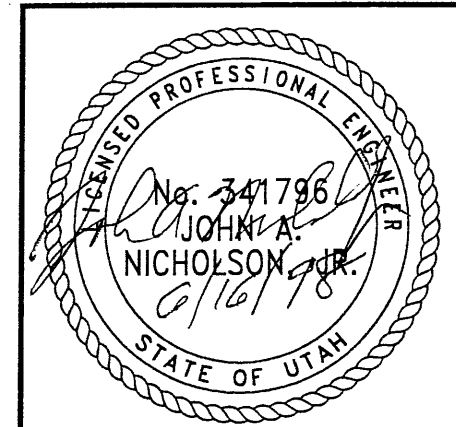


**ELEVATION PRECAST WALL "R-345-10"**  
 (FRONT FACE SHOWN)  
 (TOTAL SURFACE AREA OF PANELS = 429.34 SM)  
 SCALE 1:100 (FULL SIZE)  
 SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
 EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
 ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

METRIC



**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

8 of 11

REVISION		DATE	BY	CHK

DES.	01-01-98	JL	RETAINED EARTH™
DRN.	01-01-98	LOP	
CHK.	01-01-98	JL	

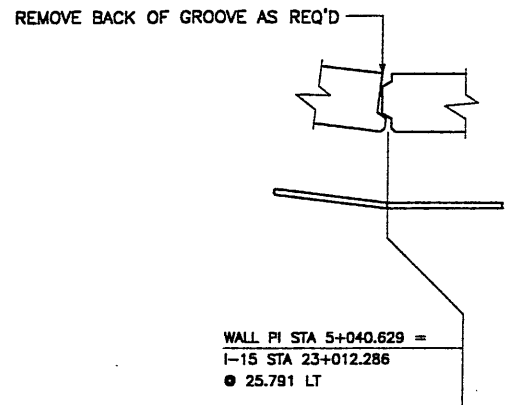
<b>VSL CORPORATION</b> 2810 Piedmont Place, Suite 200 Raleigh, NC 27617 Phone: (919) 781-6272 Fax: (919) 781-6885		ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE) MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA
---	--	---

RETAINED EARTH™ WALLS PRECAST WALL "R-345-10" UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.	DWG. NO. 21R-345-10.8 JOB NO. 239-0007 SHT. NO. RE-4
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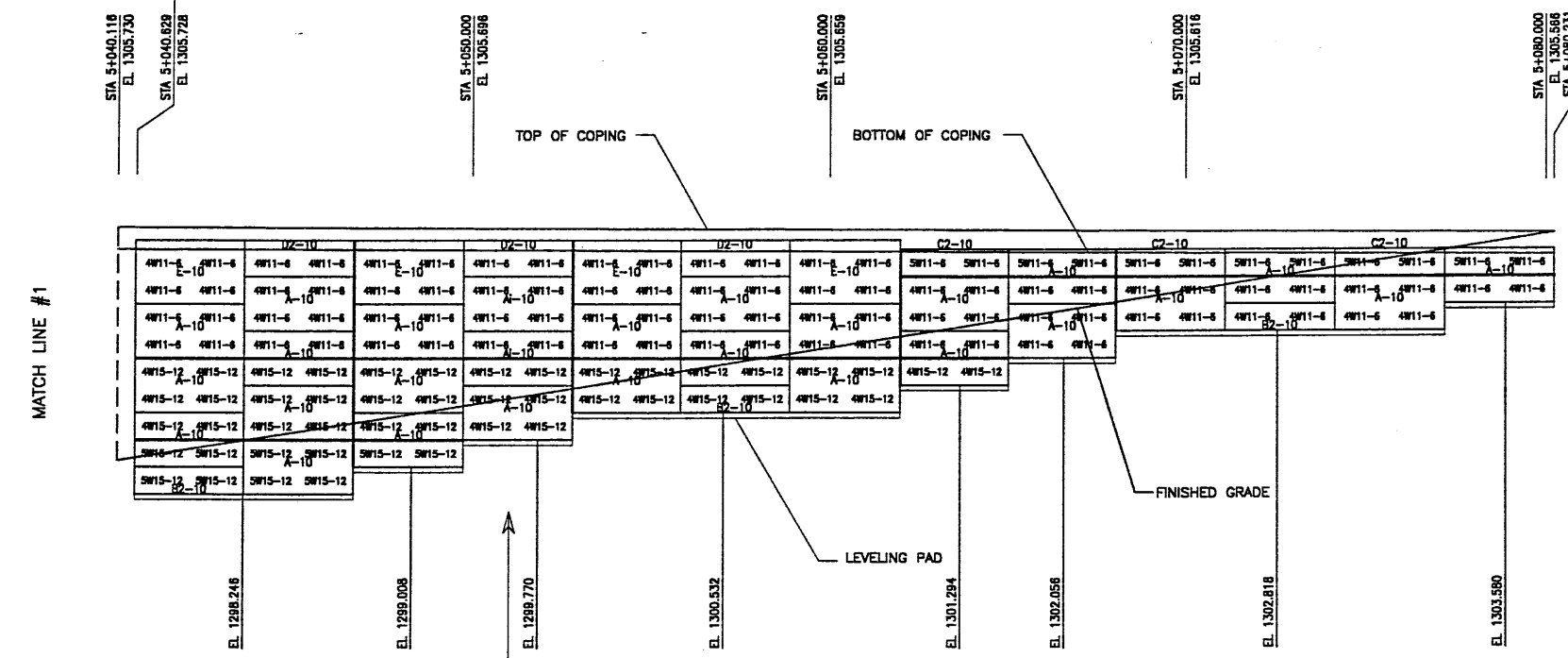
FINAL PLOT 05-20-98 H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIES\45-10\45-10

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	06-11-98	RELEASE FOR CONSTRUCTION <i>d</i>



WALL PI STA 5+040.629 =  
I-15 STA 23+012.286  
● 25.791 LT

END WALL R-345-10  
WALL STA 5+080.231 =  
I-15 STA 23+051.598  
● 25.791 LT  
NOMINAL PANEL FACE (RWL0L)



MESH DEPTH	16	17	18	19	20	21	22	23	24	25	26	27	28
MAXIMUM BEARING PRESSURE (SEE NOTE BELOW)	5.486M [18']	4.872M [16']	4.267M [14']	3.658M [12']	3.048M [10']								
PIN SPACING	215.29 KPa	194.13 KPa	145.06 KPa	124.85 KPa	79.95 KPa								
	6.096	3.048	3.048	9.144	3.048	3.048	9.144	3.048					

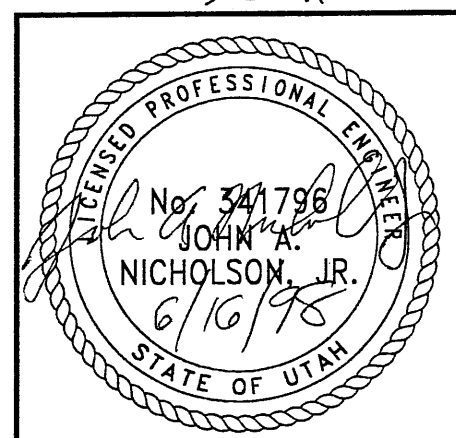
**ELEVATION PRECAST WALL "R-345-10"**  
(FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
(TOTAL SURFACE AREA OF PANELS = 494.94 SM) SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
ARE INDICATED BELOW "MESH DEPTH LINE".  
REVIEWER TO VERIFY MAXIMUM BEARING  
CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
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THE MANUFACTURER'S SPECIFICATION.

METRIC

WASATCH CONSTRUCTORS  
JUN 18 1998  
RELEASED FOR CONSTRUCTION



NO.	DATE	REVISION	BY	CHK

DES. 01-01-98	JL	RETAINED EARTH™
DRN. 01-01-98	LOP	
CHK. 01-01-98	JL	

**VSL CORPORATION**  
2840 Plano Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 791-8272  
Fax: (919) 791-4889

ALABAMA, CA, DALLAS, TX, DENVER, CO, HOUSTON, TX, LOS ANGELES, CA, MIAMI, FL, NEW YORK, NY, PHOENIX, AZ, SAN ANTONIO, TX, TAMPA, FL, WASHINGTON, DC

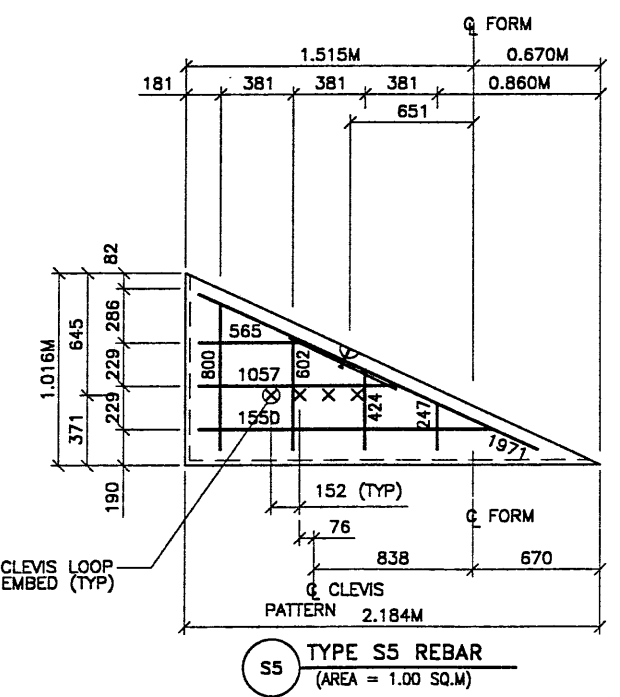
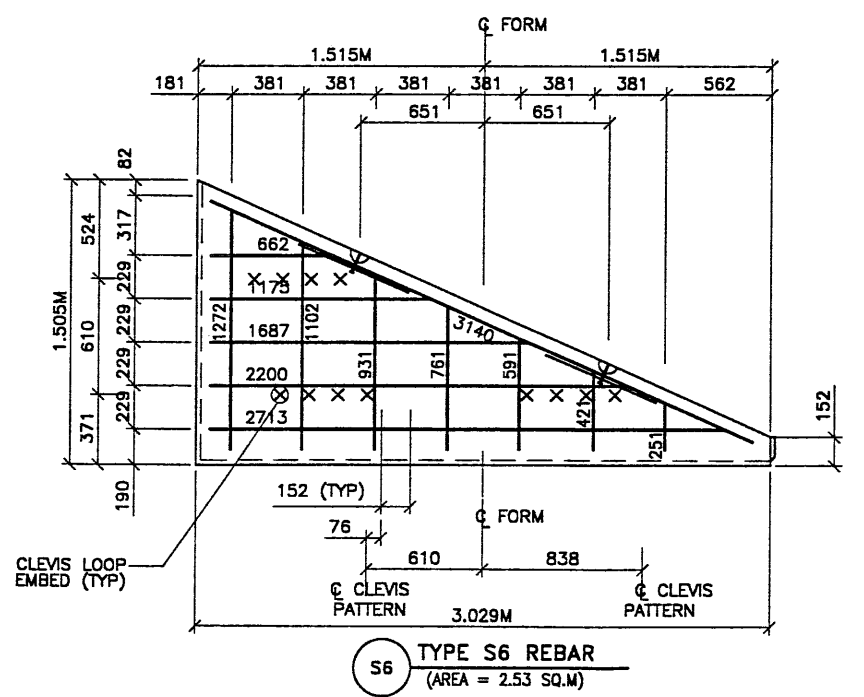
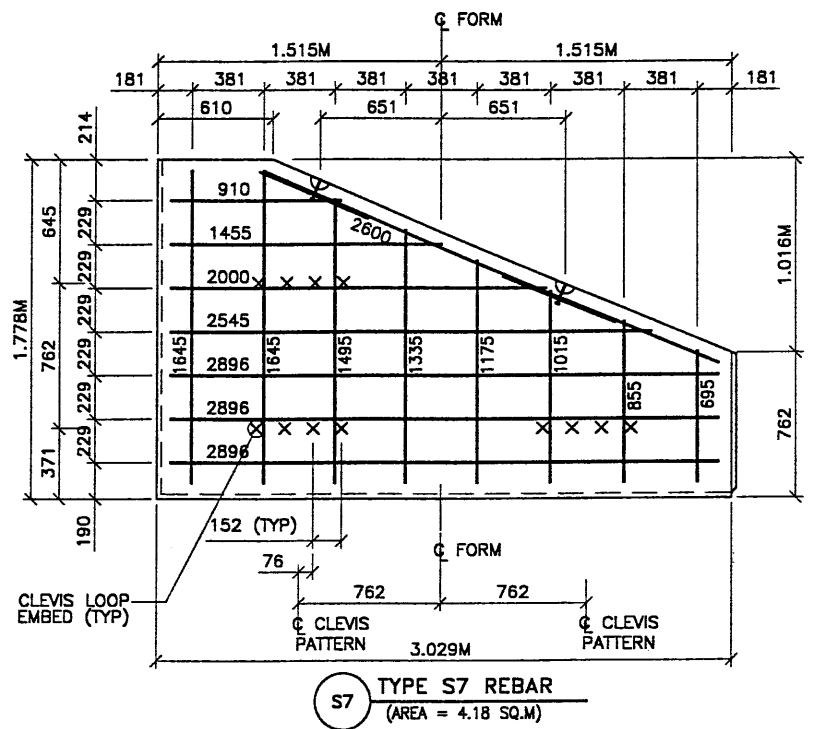
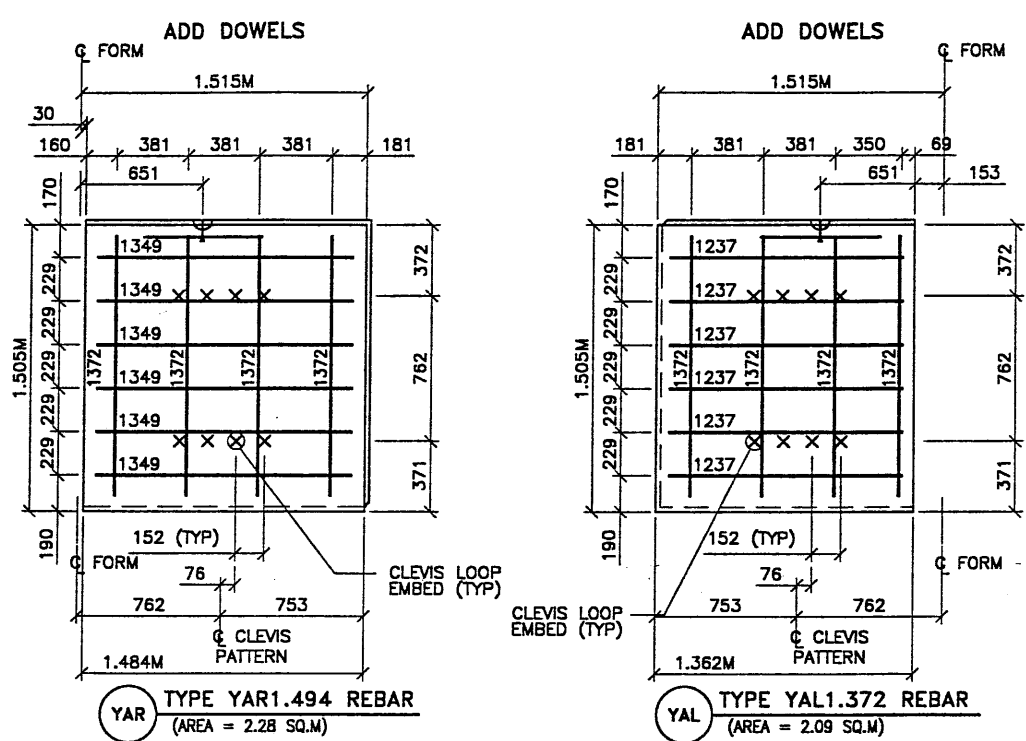
RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-10"  
UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-10.9
JOB NO.	239-0007
SHT. NO.	RE-5

REVISION (X-UTAH.DWG)

H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIES\45-10\SPECIALS

FINAL PLOT 05-21-98



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	06-11-98	RELEASE FOR CONSTRUCTION

- PANEL REINFORCEMENT NOTES:
- PANELS ARE SHOWN BACK FACE.
  - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS 1.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.

NO.	DATE	DESCRIPTION

VSL CORPORATION  
 7840 Peach Ridge, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8872  
 Fax: (919) 781-4689

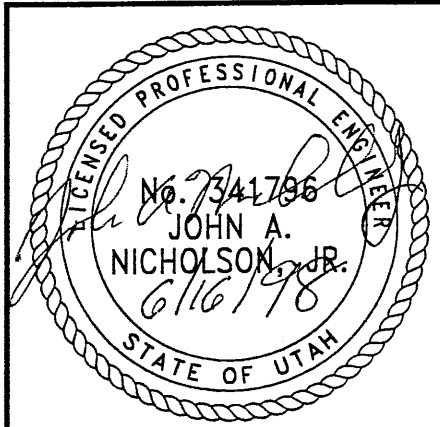
VSL  
 ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)  
 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-10"  
 SPECIAL PANEL REINFORCEMENT  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.  
 2.1R-345-10.10  
 JOB NO.  
 239-0007  
 SH. NO.  
 RE-6

WASATCH CONSTRUCTORS  
 JUN 18 1998  
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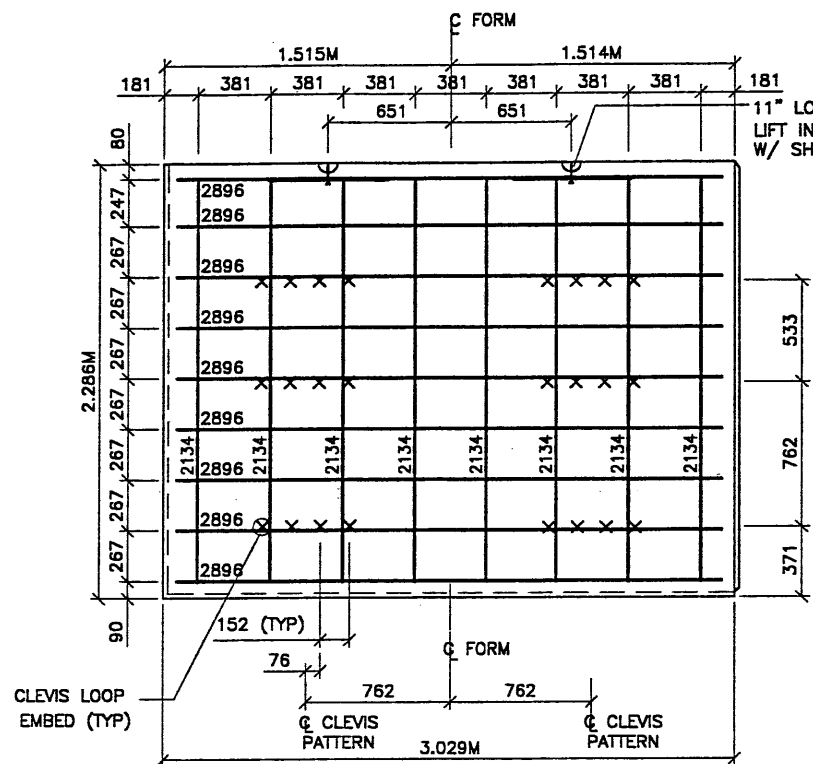
10 OF 11



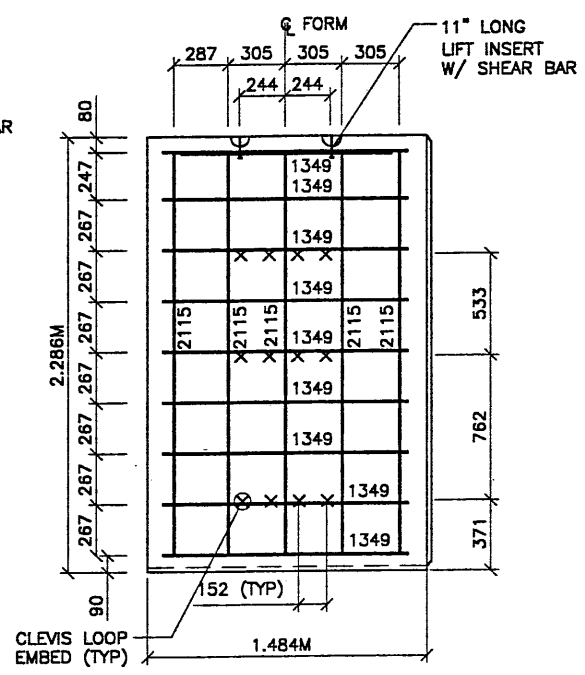
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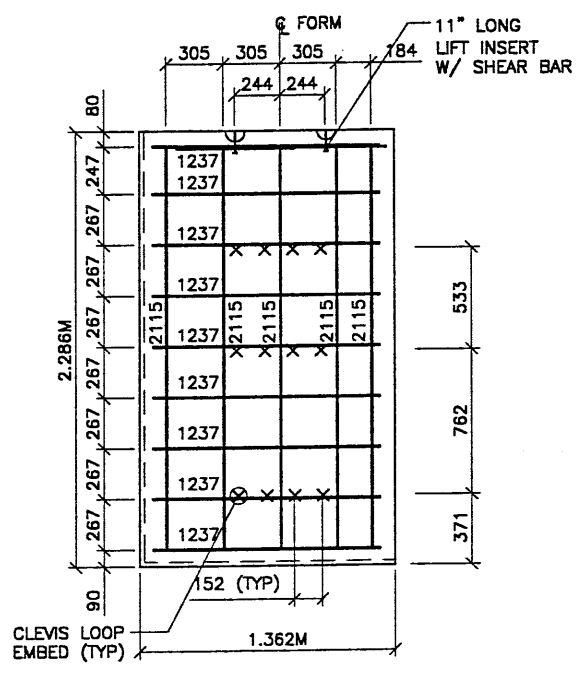
FINAL PLOT 05-21-98 H:\RE\_EARTH\PROJECT\239-0007\1998\45-10\SPECIALS\45-10\DWG



**TYPE H2-10 REBAR**  
(AREA = 6.97 SQ.M)



**TYPE S4 REBAR**  
(AREA = 3.42 SQ.M)



**TYPE S3 REBAR**  
(AREA = 3.14 SQ.M)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	06-11-98	RELEASE FOR CONSTRUCTION <i>[Signature]</i>

- PANEL REINFORCEMENT NOTES:**
- PANELS ARE SHOWN BACK FACE.
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  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS I.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 27,500 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mm# CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.

NO.	DATE	REVISION	BY

VSL CORPORATION  
2810 Plaza Place, Suite 200  
Atlanta, GA 30328  
Tel: (404) 781-6772  
Fax: (404) 781-6869

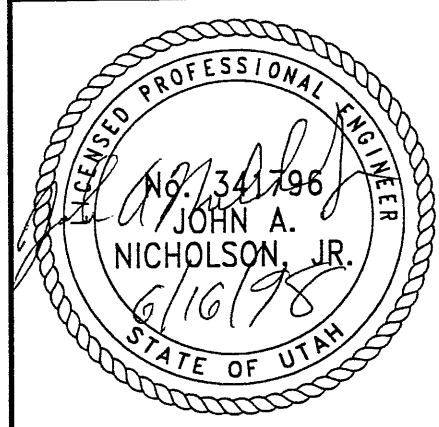


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MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

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**WASATCH CONSTRUCTORS**  
**JUN 18 1998**  
**RELEASED FOR CONSTRUCTION**

11 OF 11

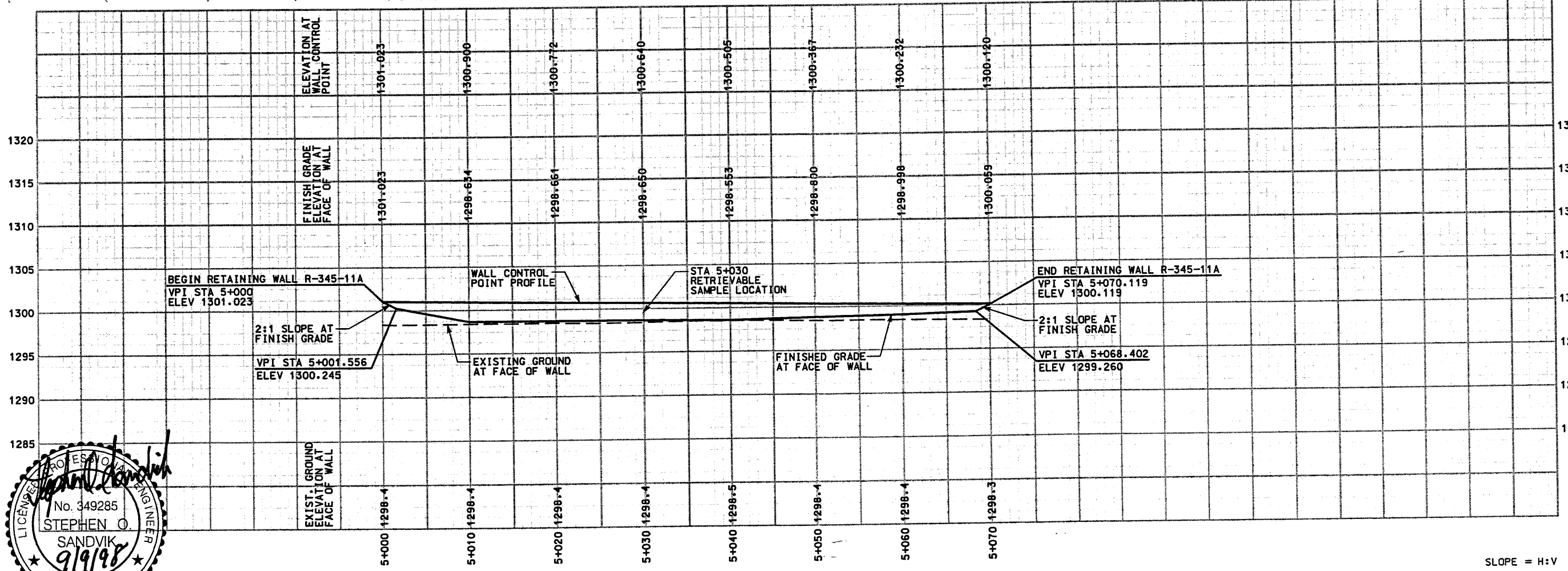
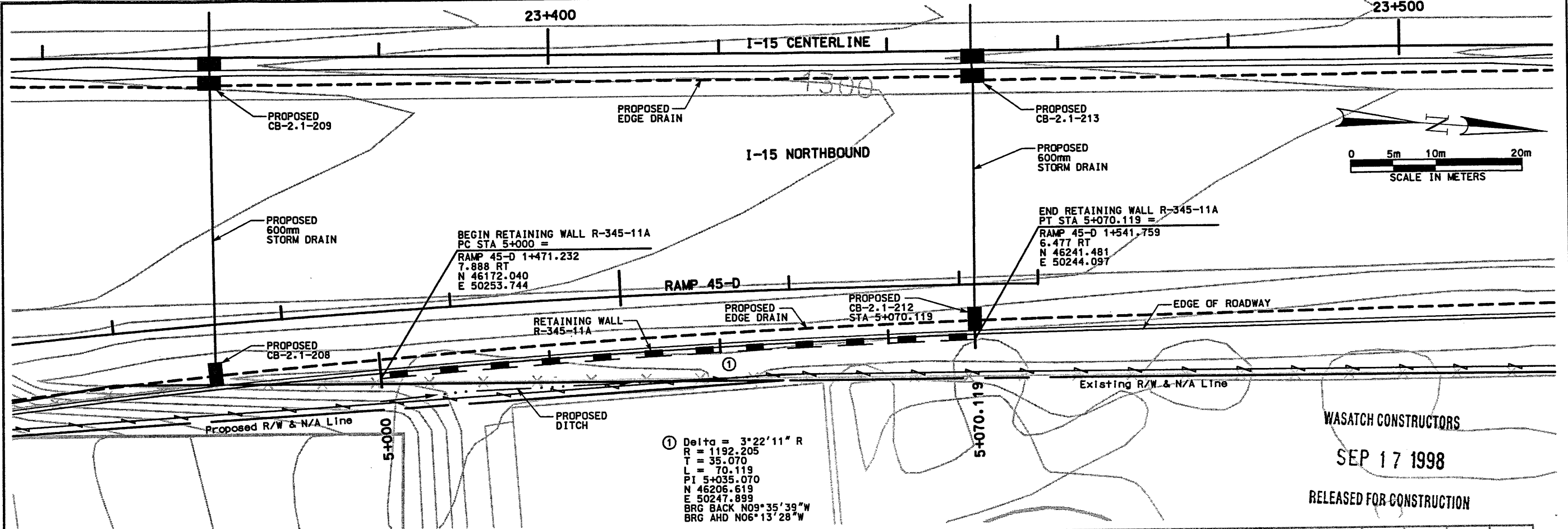


**METRIC**

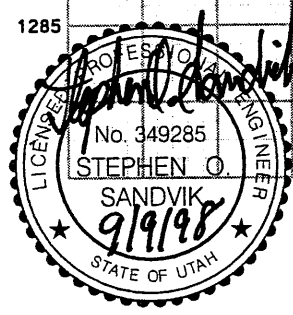
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

RETAINED EARTH™ WALLS PRECAST WALL "R-345-10" SPECIAL PANEL REINFORCEMENT	UTAH I-15 RECONSTRUCTION SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.
DWG. NO.	2.1R-345-10.11
JOB NO.	239-0007
SHT. NO.	RE-7

Username: younggr  
Date: 10-SEP-1998 Time: 13:59

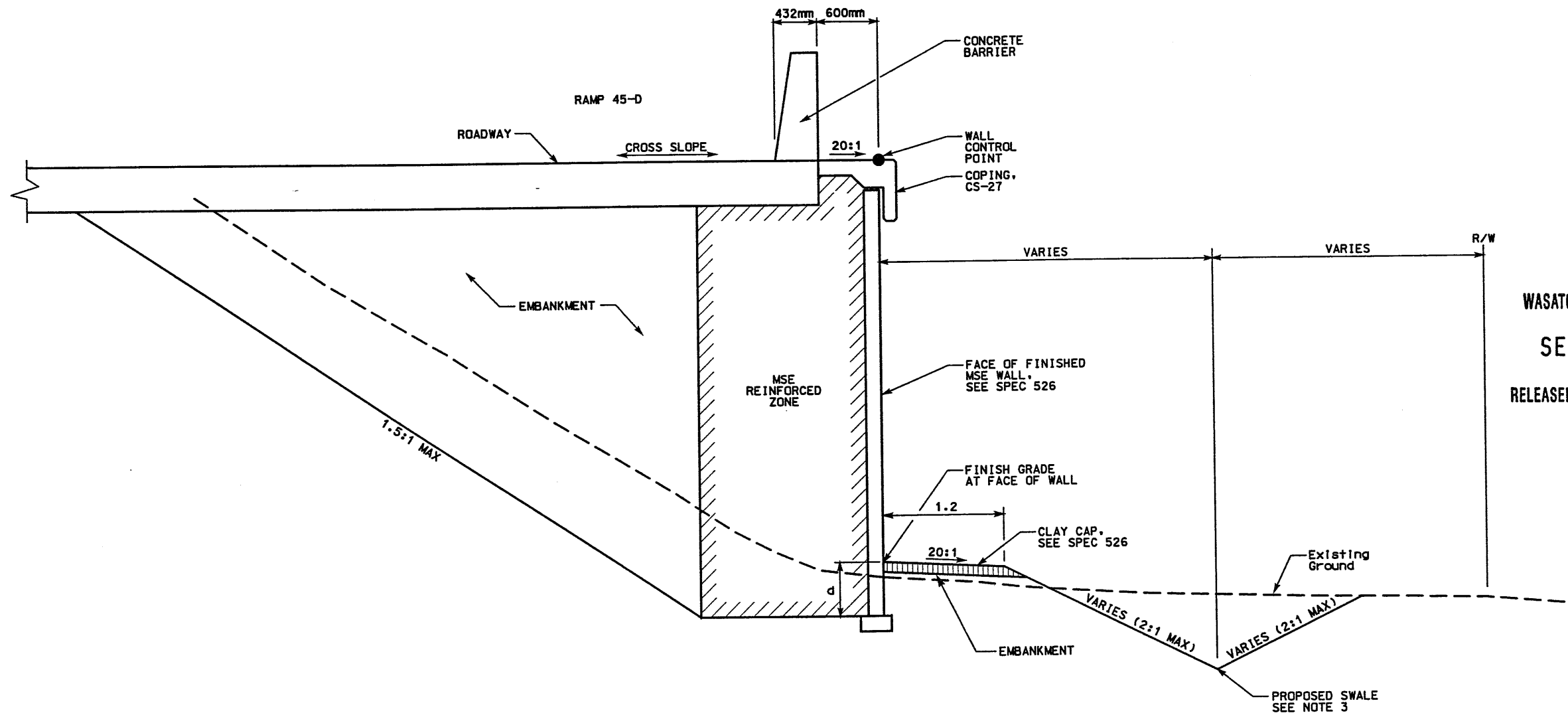


NOTE: PROFILE REPRESENTS FRONT FACE OF WALL



APPROVED FOR CONSTRUCTION			
NO.	DATE		
1	9/09/98		
2	/ /		
3	/ /		
4	/ /		
DESCRIPTION			
ORIGINAL ISSUE			
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW			
APPROVAL DATE	DESIGN DATE	CHECK BAR	8/04/98
8/04/98	8/04/98	DESIGN BAR	8/04/98
DATE	PROJECT DESIGN ENGINEER	CHECK BAR	8/04/98
8/04/98	Stephen O. Sandvik	CHECK BAR	8/04/98
DATE	PROJECT MANAGER	CHECK	/ /
8/04/98	Randle L. Ross	QUANT.	/ /
I-15 CORRIDOR RECONSTRUCTION SITUATION & LAYOUT R-345-11A SECTION 2.1		WBS NO.	2113406
PROJECT NUMBER #SP-15-7(135)296			
SALT LAKE COUNTY			
DWG. NO. 2.1R-345-11A.1			
SHT.	1 OF 5		
REF.			

### RETAINING WALL DETAIL SECTION 2.1 WALL NO R-346-11A (1-STAGE MSE WALL) NTS

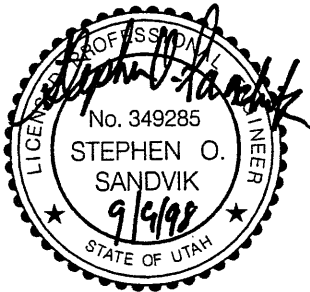


d=EMBEDMENT DEPTH (SEE VSL DETAILS)

**DETAIL A**  
STA 5+000.000 TO STA 5+070.119

**NOTES:**

- 1) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.
- 2) CONSTRUCT 0.3m CLAY CAP PER SPECIFICATION 526. CONSTRUCT CLAY CAP AFTER SETTLEMENT PERIOD PER APPROVAL OF GEOTECHNICAL FIELD ENGINEER.
- 3) SEE DRAINAGE SHEET 2.1-DR4 FOR SWALE GRADING AND LOCATION.



WASATCH CONSTRUCTORS  
SEP 17 1998  
RELEASED FOR CONSTRUCTION

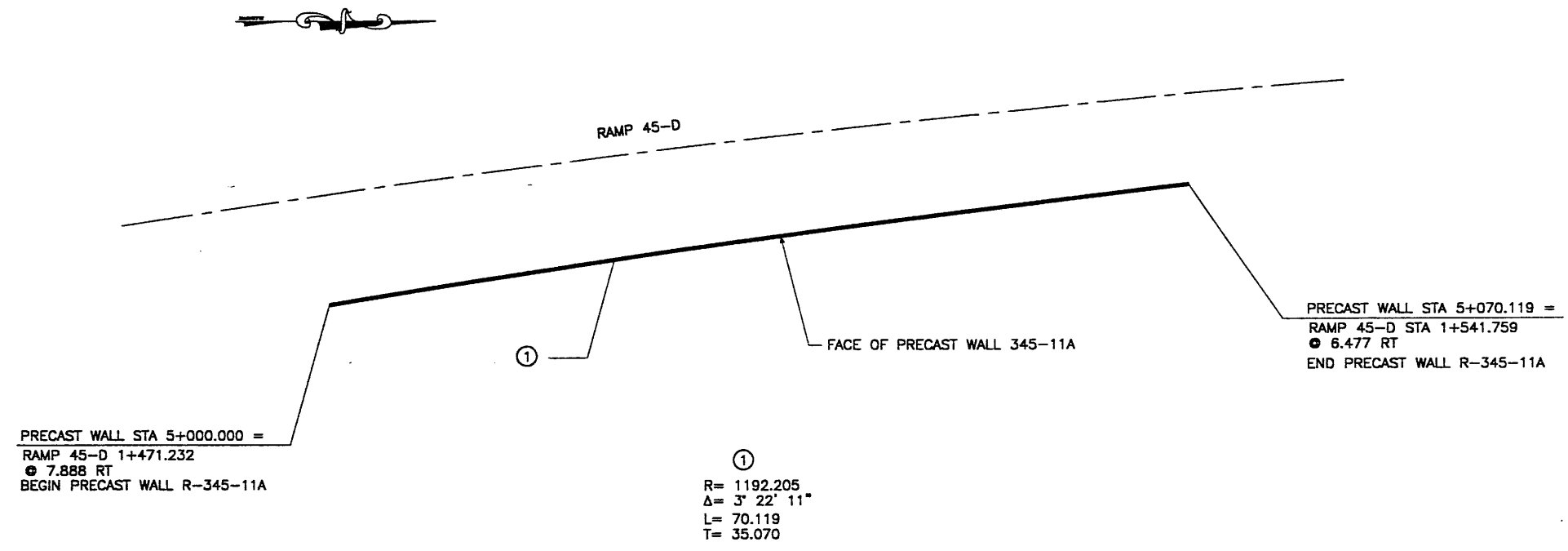
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	9/09/98	△	///
△	///	△	///
△	///	△	///
△	///	△	///
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113406	
MK CENTENNIAL SVERRORUP/DE LEUW		CHECK BAR 8/04/98	
DESIGN DAF 8/04/98		CHECK BAR 8/04/98	
PROJECT DESIGN ENGINEER		CHECK BAR 8/04/98	
DATE 8/04/98		CHECK QUANT. 8/04/98	
PROJECT MANAGER		CHECK QUANT. 8/04/98	
DATE 8/04/98		PROJECT NUMBER	
I-15 CORRIDOR RECONSTRUCTION		#SP-15-7(135)296	
WALL DETAIL R-345-IIA		COUNTY	
SECTION 2.1		SALT LAKE	
DWG. NO. 2.1R-345-11A.2		SHT. 2 OF 5	
REF.			



FINA 07-14-98 H:\RE\_EARTH\PROJECT\239-0007\1998\545-11A\RE-1 VSL (X-UTR).DWG

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-11A, NOTES & DESIGN CRITERIA
RE-2	TYPICAL CROSS SECTIONS
RE-3	ELEVATION PRECAST WALL "R-345-11A"

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	08-28-98	RELEASE FOR CONSTRUCTION

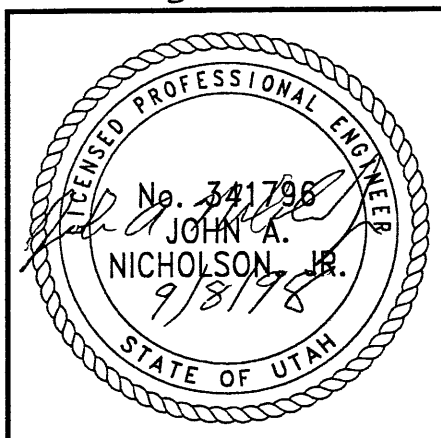


PLAN VIEW WALL "R-345-11A"  
 SCALE: 1=250 (FULL SIZE)  
 SCALE: 1=500 (HALF SIZE)

DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT) = 34°	
ANGLE OF INTERNAL FRICTION (BASE) = 31°	
ANGLE OF INTERNAL FRICTION (RANDOM) = 34°	
UNIT WEIGHT BACKFILL = 135 PCF. (21.2 KN/M <sup>3</sup> )	
TRAFFIC SURCHARGE = 250 PSF (12 KPa)	
SEISMIC ACCELERATION COFF. = 0.13g (TYP)	
SEISMIC ACCELERATION COFF. = N/A (AT BRIDGE ABUTMENTS)	
DESIGN CRITERIA	
SAFETY FACTOR (OVERTURNING) = 2.0	
SAFETY FACTOR (SLIDING) = 1.5	
SAFETY FACTOR (PULLOUT) = 1.5	
DESIGN LIFE = 75 YEARS	

- GENERAL NOTES
- ALL WALLS ARE SHOWN FRONT FACE. NOTE STATIONING.
  - PANEL TYPE IS DESIGNATED ON EACH PANEL. CONNECTOR LABELS INDICATE NUMBER OF CONNECTORS PER ROW.  
 EXAMPLE: 5B2-10 IS A "B2-10" PANEL WITH FIVE (5) CONNECTORS PER ROW.  
 IF NO CONNECTORS ARE SHOWN, FOUR (4) CONNECTOR PANELS SHALL BE USED:
  - SOIL REINFORCING MESH TYPE IS DESIGNATED ON EACH PANEL. MESH LABELS INDICATE WIRE SIZE AND SPACING. LONGITUDINAL WIRE AND CROSSBAR SIZES ARE THE SAME UNLESS NOTED OTHERWISE.  
 EXAMPLE: 4W11-6 MESH HAS FOUR (4) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 6" CENTERS.  
 EXAMPLE: 5W11-12 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W11 CROSSBARS AT 12" CENTERS.  
 EXAMPLE: 5W15-12 MESH HAS FIVE (5) W11 LONGITUDINAL WIRES WITH W15 CROSSBARS AT 12" CENTERS.
  - SEE RETAINED EARTH INSTALLATION MANUAL FOR PROPER WALL ERECTION PROCEDURES AND GUIDELINES.
  - CONSTRUCTION PROCEDURES SHALL PREVENT BACKFILL SATURATION AND PONDING.
  - HEAVY EQUIPMENT SHALL NOT BE USED WITHIN ONE METER OF THE BACK OF THE RETAINED EARTH PANELS. HAND COMPACTORS SHALL BE USED IN THIS AREA.
  - CARE SHALL BE TAKEN TO PREVENT DAMAGE TO GALVANIZING. DAMAGED GALVANIZING SHALL BE COATED WITH ZINC RICH PAINT.
  - BEARING PADS AND FILTER FABRIC ARE NOT REQUIRED BETWEEN THE LEVELING PAD AND THE FIRST ROW OF PANELS. TEMPORARY WEDGES MAY BE USED TO PROVIDE PROPER ALIGNMENT.
  - VSL RETAINED EARTH IS PROTECTED UNDER U.S. PATENT 4,725,170.
  - ALL PANELS SHALL HAVE AN ARCHITECTURAL FINISH, SEE VSL STANDARD SHEET STD-7 FOR DETAILS.
  - GEOTECHNICAL ENGINEER TO FIELD VERIFY FOUNDATION CONDITIONS AND EXTENT OF STRUCTURAL FILL.

WASATCH CONSTRUCTORS  
 SEP 17 1998  
 RELEASED FOR CONSTRUCTION



CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

NO.	DATE	DESCRIPTION	NO.	DATE	BY	CHK

DES. 07-14-98	JL	RETAINED EARTH™
DRN. 07-14-98	RSW	
CHK. 07-14-98	JL	

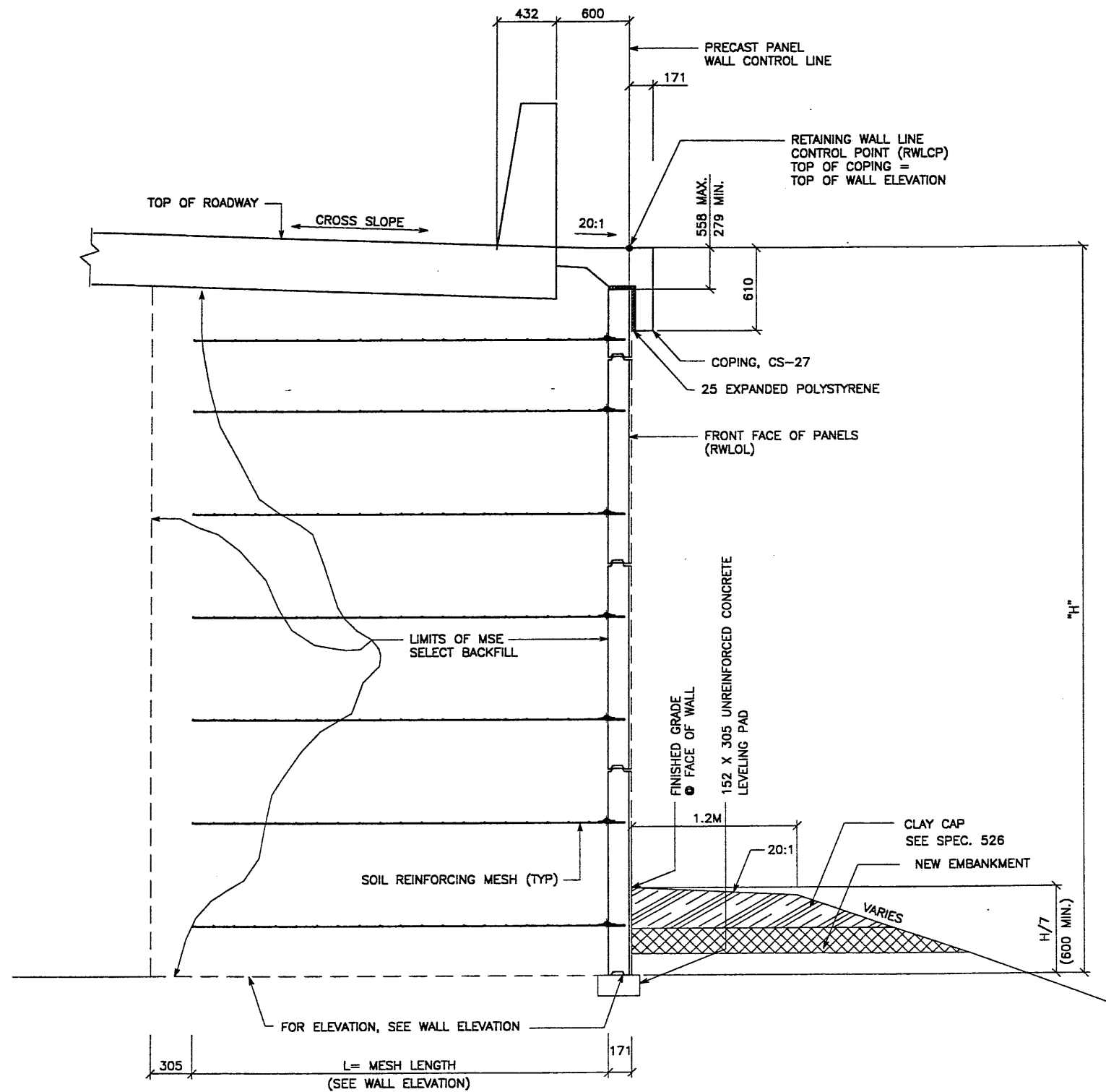
  

VSL CORPORATION  
 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-9889

ALBANY, GA / BALTIMORE, MD (CORPORATE OFFICE)  
 CHICAGO, IL / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™ WALLS  
 PLAN VIEW PRECAST WALL "R-345-11A"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO. 27R-345-11A.3  
 JOB NO. 239-0007  
 SHT. NO. RE-1



TYPICAL CROSS SECTION - STA 5+000.000 TO STA 5+070.119

(SEE DWG. NO. 2.1R-345-11A.2 FOR ADDITIONAL INFORMATION)

SCALE: 1:20 (FULL SIZE)

SCALE: 1:40 (HALF SIZE)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	08-28-98	RELEASE FOR CONSTRUCTION

DES.	DRN.	CHK.	NO.	DATE	REVISION	BY	CHK
JL	RSW	JL					

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6272  
Fax: (919) 781-4689

ATLANTA, GA / DALLAS, TX / EL PASO, TX (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS  
SEP 17 1998  
RELEASED FOR CONSTRUCTION

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RETAINED EARTH™ WALLS  
PRECAST WALL R-345-11A  
TYPICAL CROSS SECTION  
UTAH 1-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

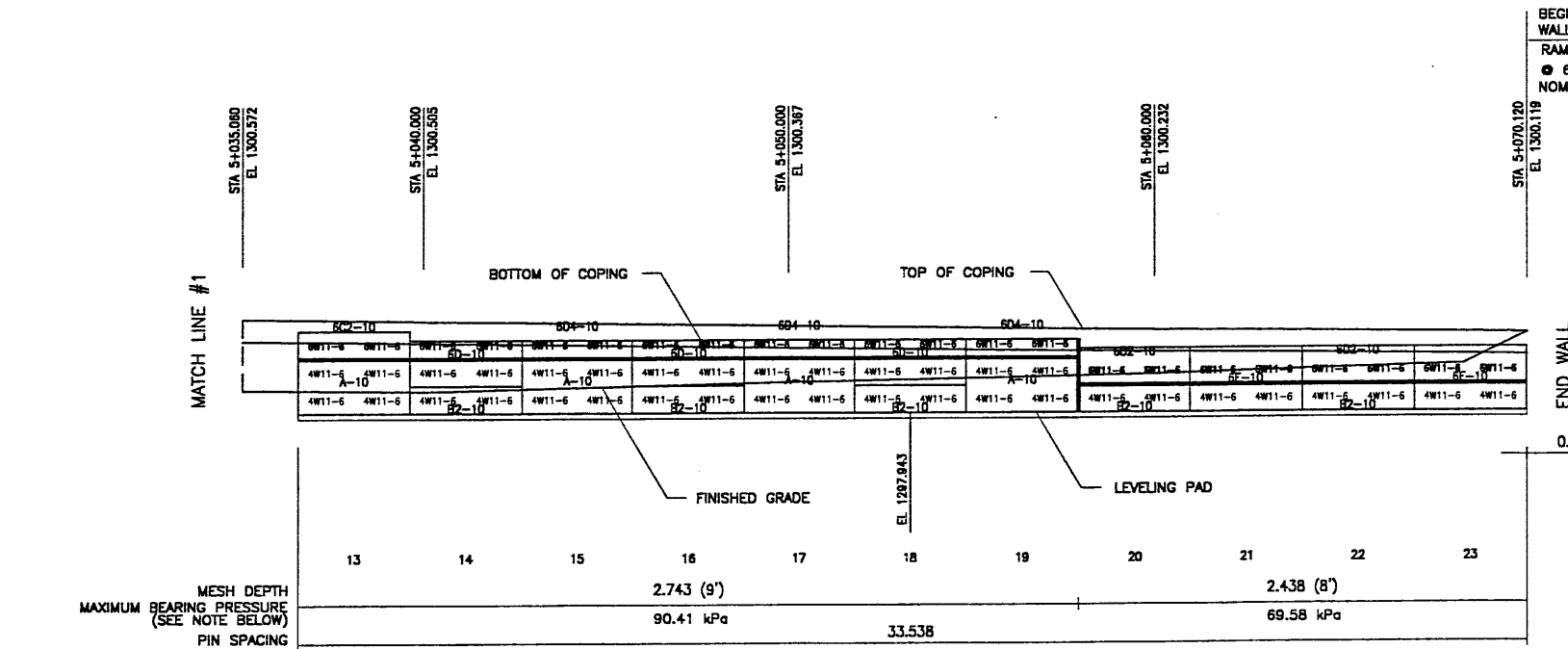
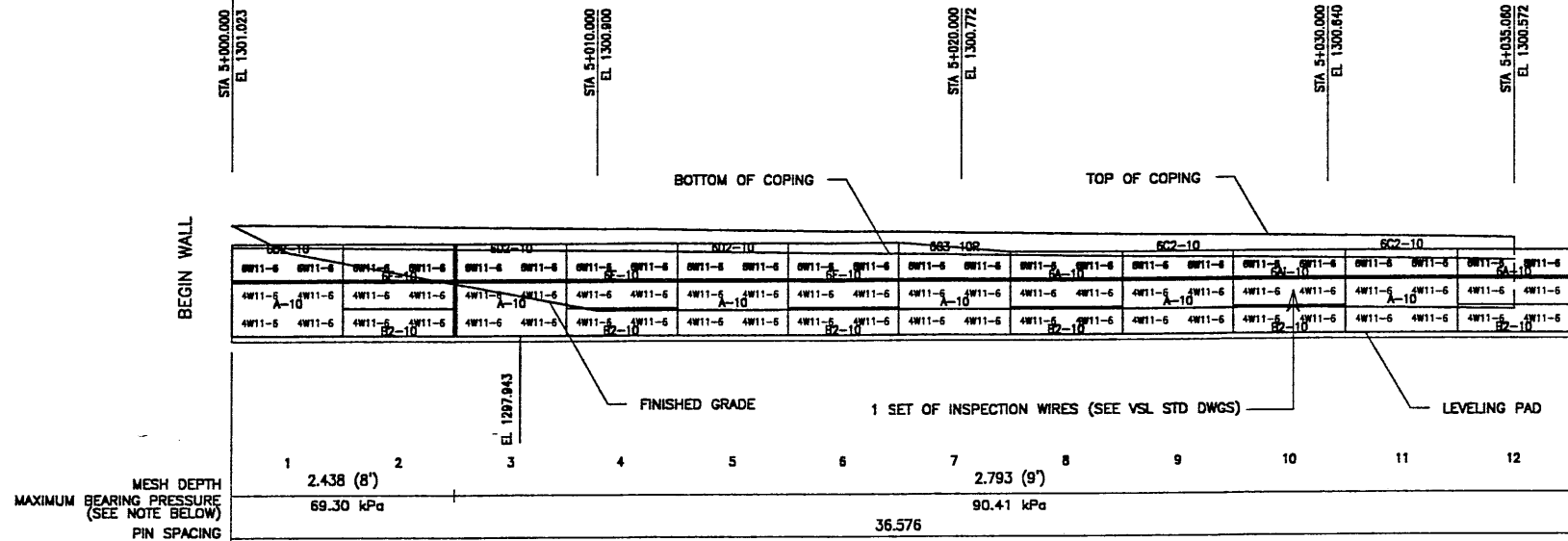
4 of 5

DWG. NO.	2.7R-345-11A.4
JOB NO.	239-0007
SHT. NO.	RE-2

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

METRIC

BEGIN WALL R-345-11A  
WALL STA 5+000.000 =  
RAMP 45-D STA 1+471.232  
@ 7.888 RT  
NOMINAL PANEL FACE (RWLOL)



ELEVATION PRECAST WALL R-345-11A

(FRONT FACE SHOWN)  
(TOTAL SURFACE AREA OF PANELS = 154.50 SM)

SCALE 1:100 (FULL SIZE)  
SCALE 1:200 (HALF SIZE)

METRIC

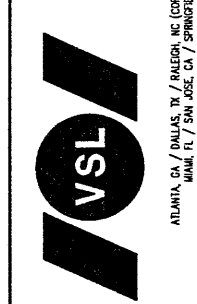
APPROVER NOTE:  
MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
ARE INDICATED BELOW "MESH DEPTH LINE"  
REVIEWER TO VERIFY MAXIMUM BEARING  
CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	08-28-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION	BY	CHK

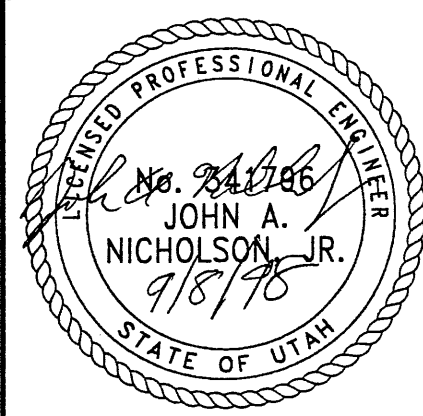
VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-6272  
Fac: (919) 781-6889



WASATCH CONSTRUCTORS  
SEP 17 1998  
RELEASED FOR CONSTRUCTION

RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-11A"  
UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.  
21R-345-11A.5  
JOB NO.  
239-0007  
SHT. NO.  
RE-3

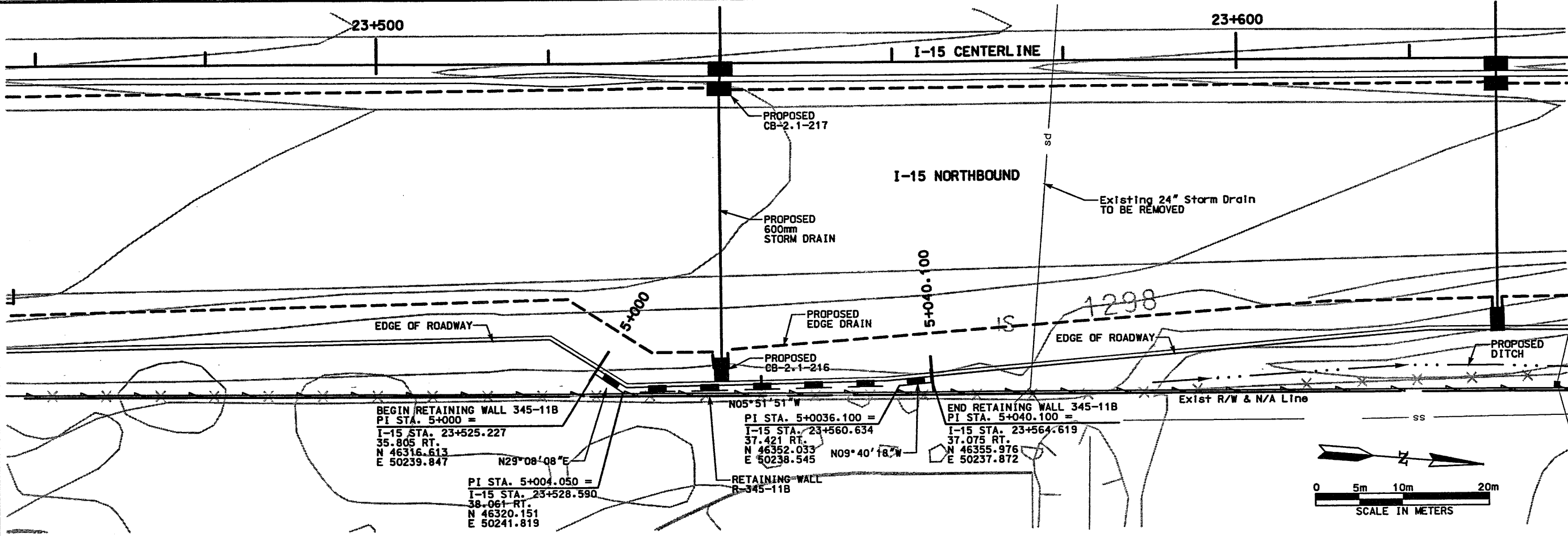


5 of 5

Username: rreseda 1/

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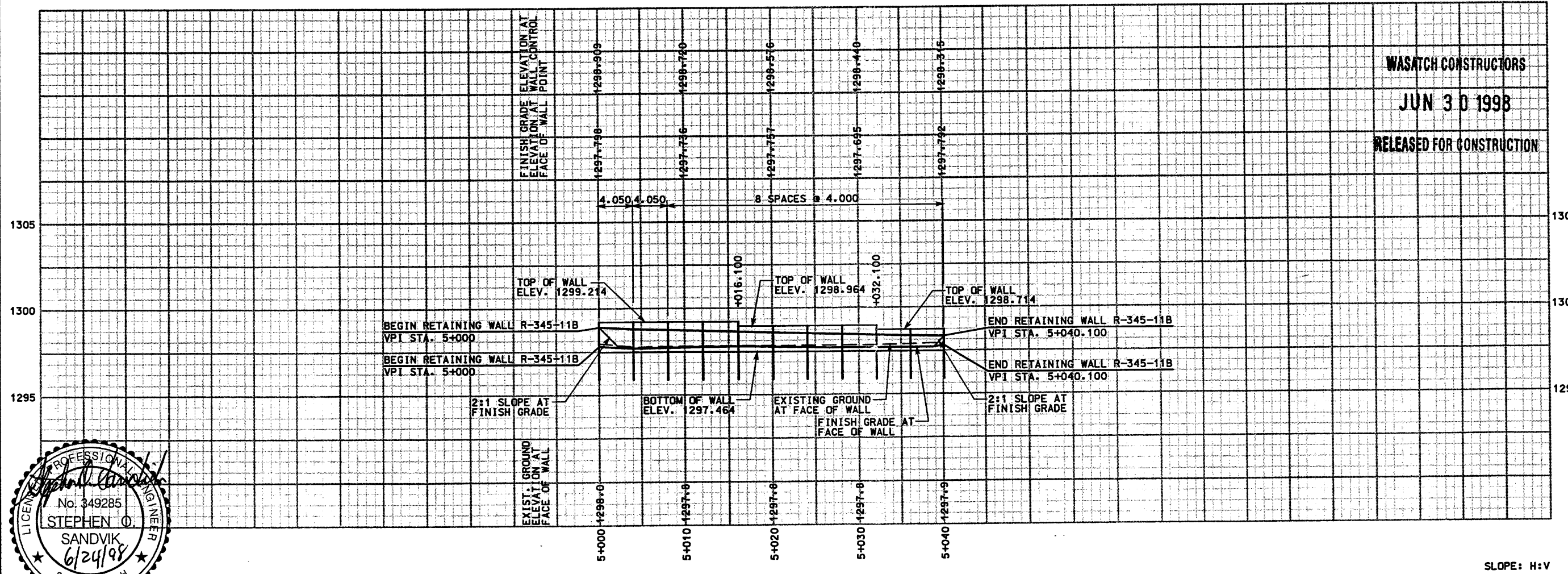
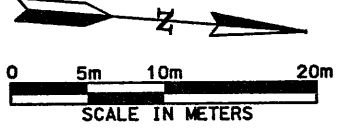
BEGIN RETAINING WALL R-345-11B  
 PI STA. 5+000 =  
 I-15 STA. 23+525.227  
 35.805 RT.  
 N 46316.613  
 E 50239.847  
 N29°08'08"E

PI STA. 5+004.050 =  
 I-15 STA. 23+528.590  
 38.061 RT.  
 N 46320.151  
 E 50241.819

N05°51'51"W  
 PI STA. 5+0036.100 =  
 I-15 STA. 23+560.634  
 37.421 RT.  
 N 46352.033  
 E 50238.545

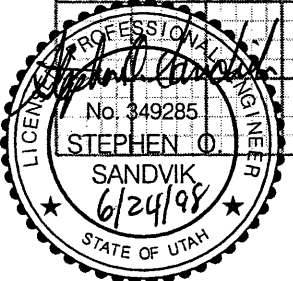
RETAINING WALL  
 R-345-11B

END RETAINING WALL R-345-11B  
 PI STA. 5+040.100 =  
 I-15 STA. 23+564.619  
 37.075 RT.  
 N 46355.976  
 E 50237.872  
 N09°40'18"W



NOTE: PROFILE REPRESENTS FRONT FACE OF WALL

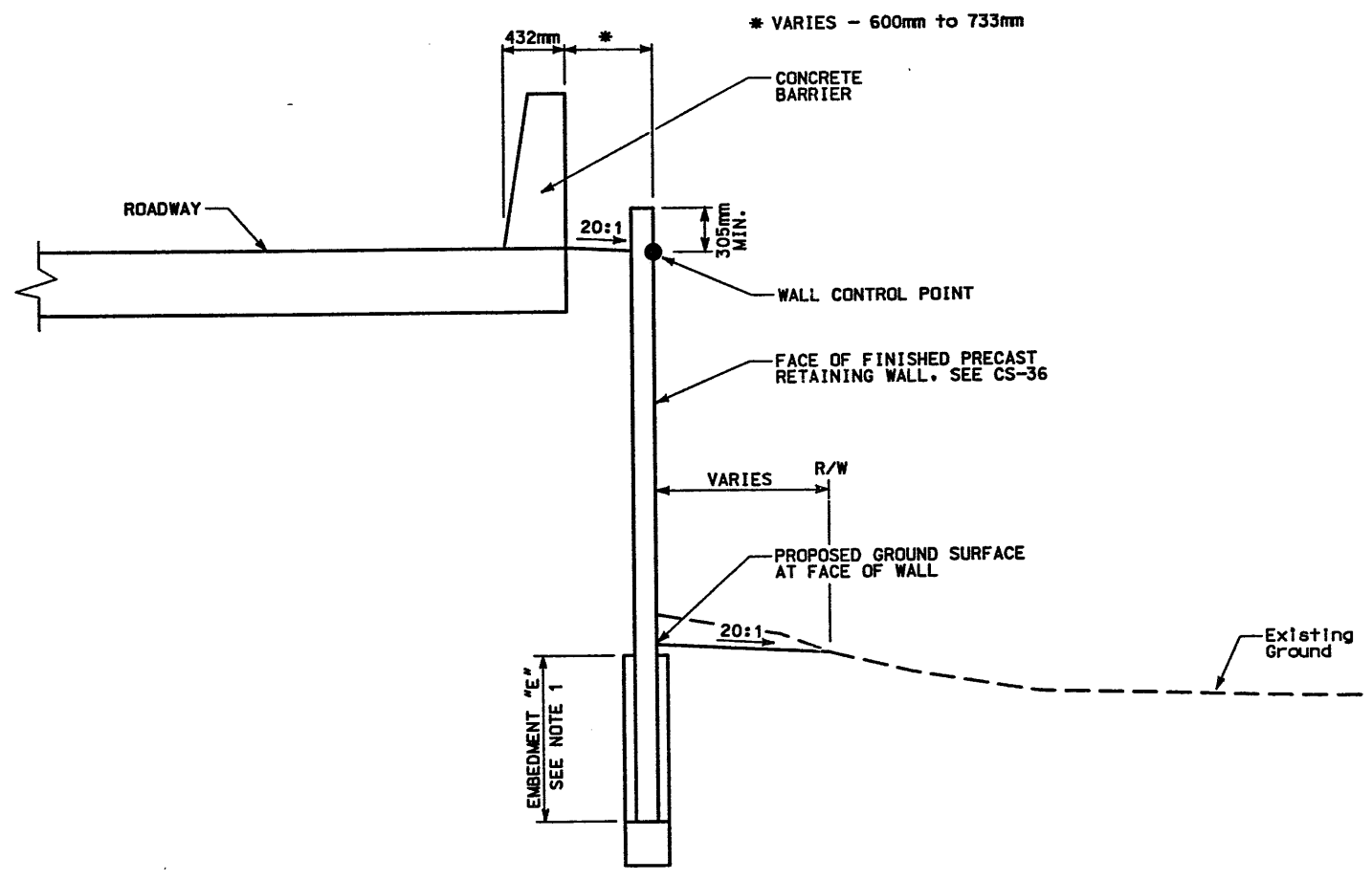
SLOPE: H:V



WASATCH CONSTRUCTORS  
 JUN 30 1998  
 RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DATE	6/24/98	ORIGINAL ISSUE
NO.	1	DATE	6/24/98	ORIGINAL ISSUE
UTAH DEPARTMENT OF TRANSPORTATION		DESIGN	DAF	DESIGN
I-15 CORRIDOR RECONSTRUCTION		DATE	6/24/98	DESIGN
SITUATION & LAYOUT R-345-11B		PROJECT DESIGN ENGINEER	O. Sandvik	DESIGN
SECTION 2.1		DATE	6/24/98	DESIGN
PROJECT NUMBER #SP-15-7(135)296		PROJECT MANAGER	Randle L. Ross	DESIGN
SALT LAKE COUNTY		DATE	6/24/98	DESIGN
DWG. NO. 2.1R-345-11B.1		DATE	6/24/98	DESIGN
SHT.	1	OF	2	
REF.				

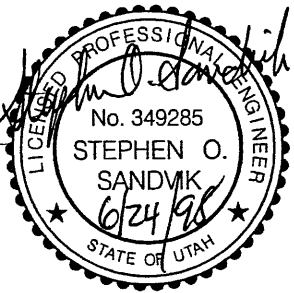
**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL NO R-346-11B**  
**(POST & PANEL RETAINING WALL)**  
**NTS**



**DETAIL A**

STA 5+000.000 TO STA 5+040.100

- NOTES:  
 1) EMBEDMENT "E" SHALL BE PER UDOT STD DWG 546 PLUS 0.6 METERS.



WASATCH CONSTRUCTORS  
 JUN 30 1998  
 RELEASED FOR CONSTRUCTION

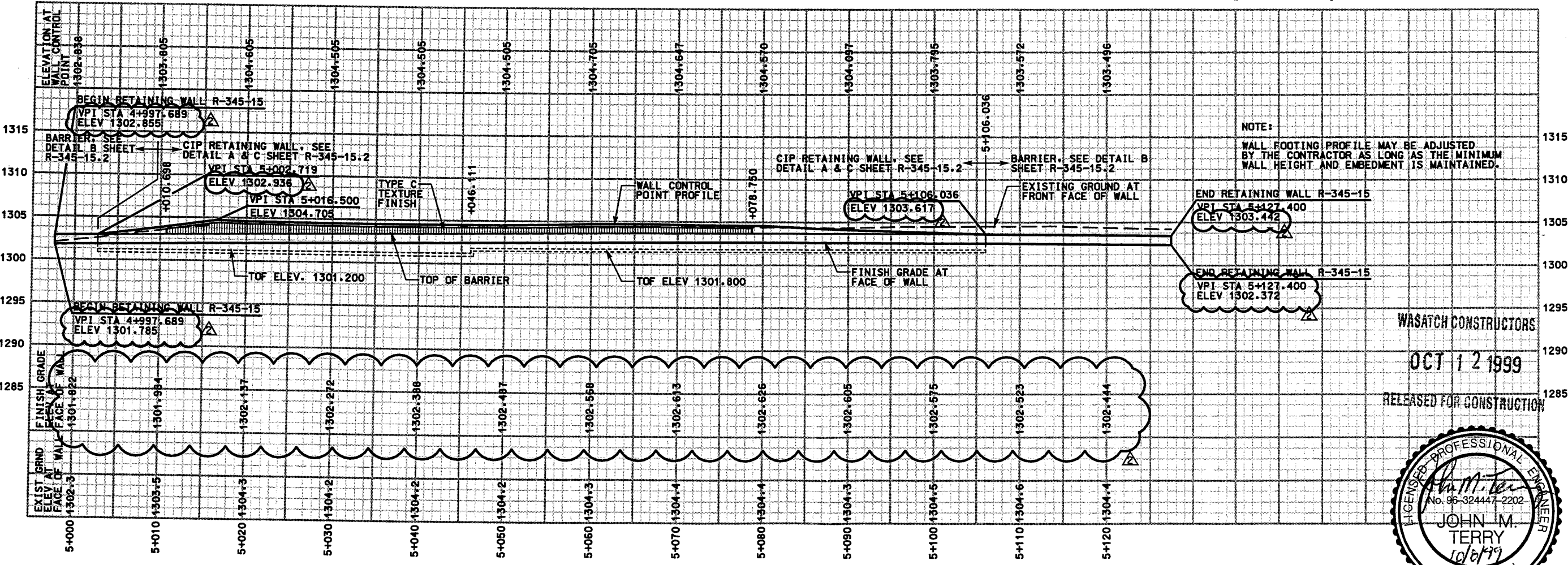
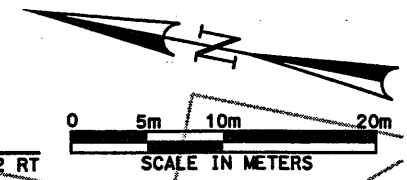
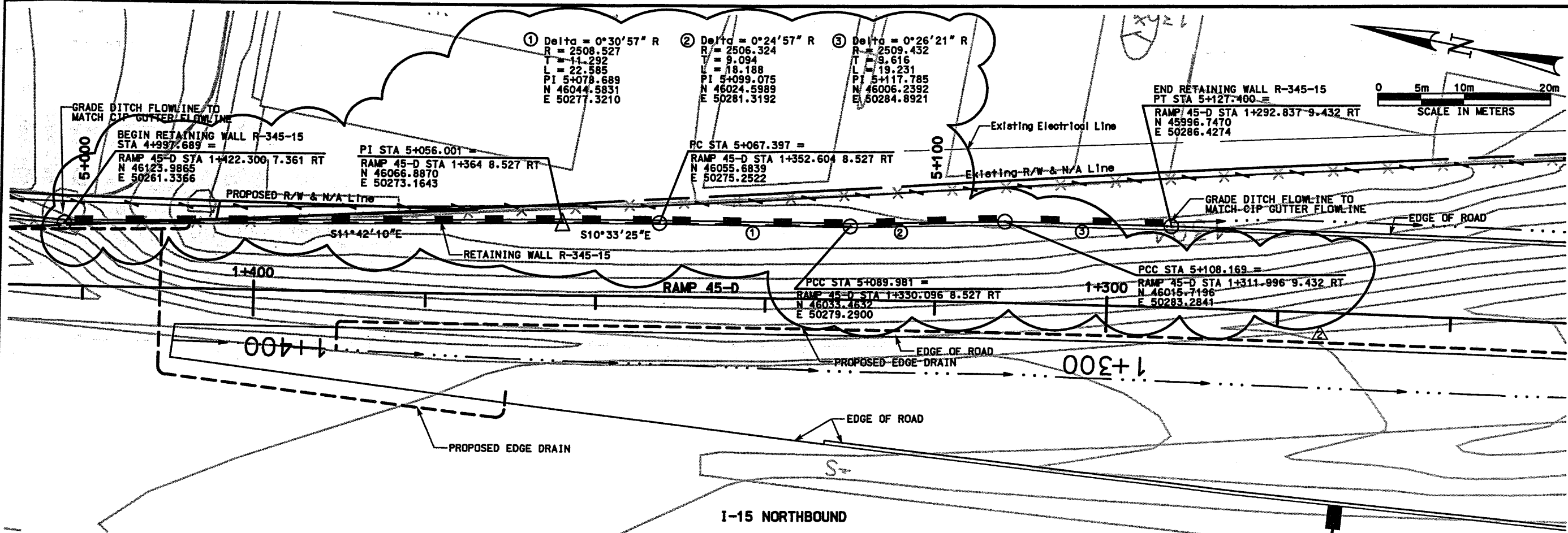
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NO.	DATE	ORIGINAL ISSUE	
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△	/ /	/ /	
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△	/ /	/ /	
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2113408	
MK CENTENNIAL SVERDRUP/DE LEUW		CHECK BAR / /98	
APPROVAL RECOMM.		DATE	
/ /98	Stephen O. Sandvik	DESIGN DAF / /98	CHECK BAR / /98
/ /98	PROJECT DESIGN ENGINEER	DRAWN DAF / /98	CHECK BAR / /98
/ /98	Randle L. Ross	QUANT. / /	CHECK / /
/ /98	PROJECT MANAGER		
I-15 CORRIDOR RECONSTRUCTION		PROJECT NUMBER	
WALL DETAIL R-345-11B		#SP-15-7(135)296	
SECTION 2.1			
SALT LAKE COUNTY			
DWG. NO. 2.1R-345-11B.2			
SHT. 2 OF 2			
REF.			



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Date: 30-JUN-1999 Time: 15:07

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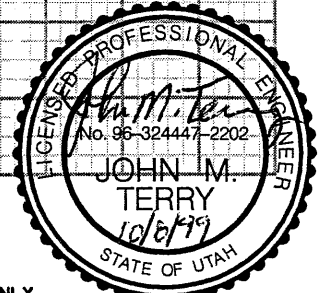


NOTE:  
WALL FOOTING PROFILE MAY BE ADJUSTED BY THE CONTRACTOR AS LONG AS THE MINIMUM WALL HEIGHT AND EMBEDMENT IS MAINTAINED.

NOTE: PROFILE REPRESENTS FRONT FACE OF WALL

SEALED FOR THE NO. OF SUBMITTAL ONLY.

RFC After Final Approval



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
1	7/15/98	1	7/15/98
2	6/30/99	2	7/15/98
3	7/15/98	3	7/15/98
4	7/15/98	4	7/15/98

UTAH DEPARTMENT OF TRANSPORTATION	WBS NO.	2113408
MK CENTENNIAL	CHECK BAR	7/15/98
SVERDRUP/DE LEUW	CHECK BAR	7/15/98
APPROVAL DATE	DESIGN DATE	7/15/98
7/15/98	7/15/98	
PROJECT DESIGN ENGINEER	PROJECT DESIGNER	7/15/98
Randle L. Ross	7/15/98	
DATE	DATE	
PROJECT MANAGER	QUANT.	7/15/98

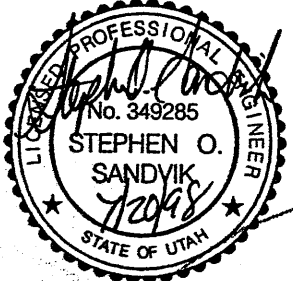
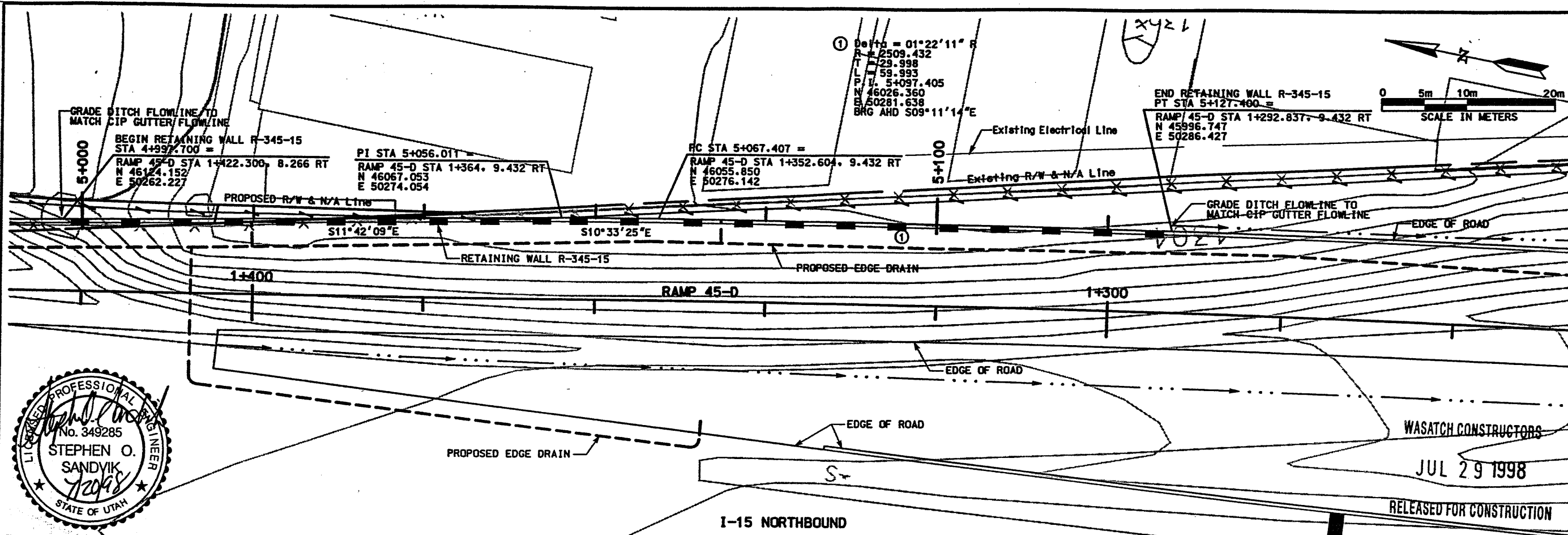
  

I-15 CORRIDOR RECONSTRUCTION	SALT LAKE COUNTY
SITUATION & LAYOUT R-345-15	DWG. NO.
SECTION 2.1	2.1R-345-15.1
PROJECT NUMBER	#SP-15-7(135)296
SHT. 1 OF 4	
REF.	

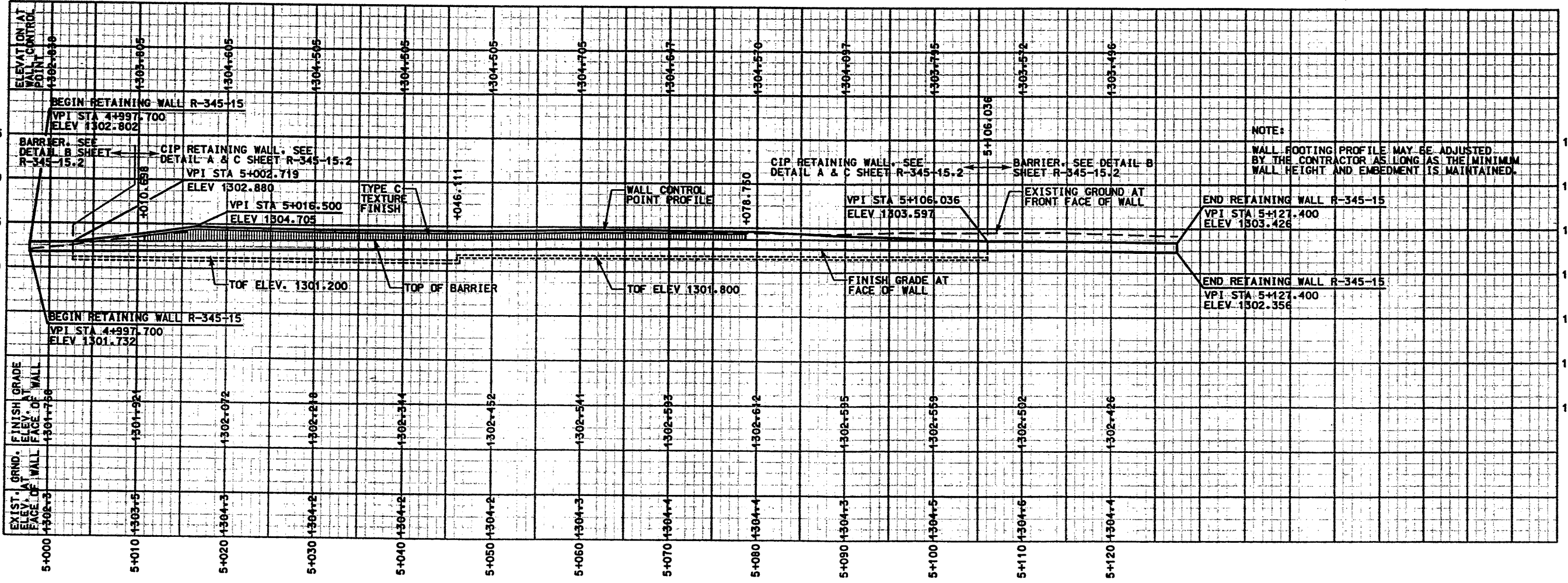
WASATCH CONSTRUCTORS  
OCT 12 1999  
RELEASED FOR CONSTRUCTION



Date: 20-JUL-1998 Time: 06:52 User: nms.freesds



WASATCH CONSTRUCTORS  
JUL 29 1998  
RELEASED FOR CONSTRUCTION



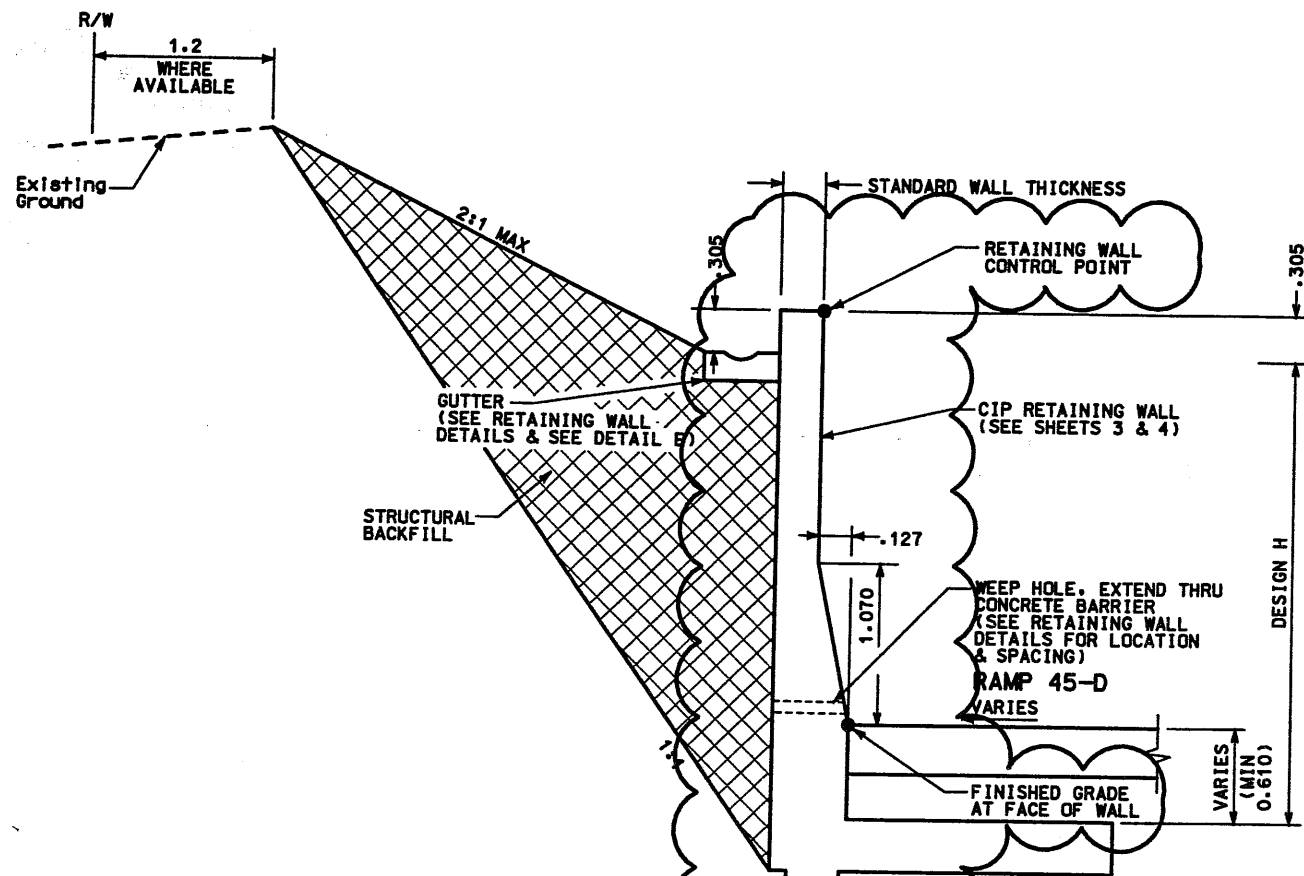
NOTE: PROFILE REPRESENTS FRONT FACE OF WALL

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	7/15/98	Δ	7/15/98
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
Δ	/ /	Δ	/ /
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO.	
MK CENTENNIAL		2113408	
SYVERDRUP/DE LEUW		DATE	
DESIGNER: Stephen O. Sandvik		7/15/98	
PROJECT DESIGN ENGINEER		CHECK BAR	
DRAWN: Randie L. Ross		7/15/98	
DATE		CHECK BAR	
APPROVED: 7/15/98		7/15/98	
PROJECT MANAGER		CHECK	
QUANT.		CHECK	
I-15 CORRIDOR RECONSTRUCTION		SECTION 2.1	
SITUATION & LAYOUT R-345-15		PROJECT NUMBER	
SALT LAKE COUNTY		#SP-15-(135)296	
DWC NO.		2.1R-345-15.1	
SHT 1 OF 4			

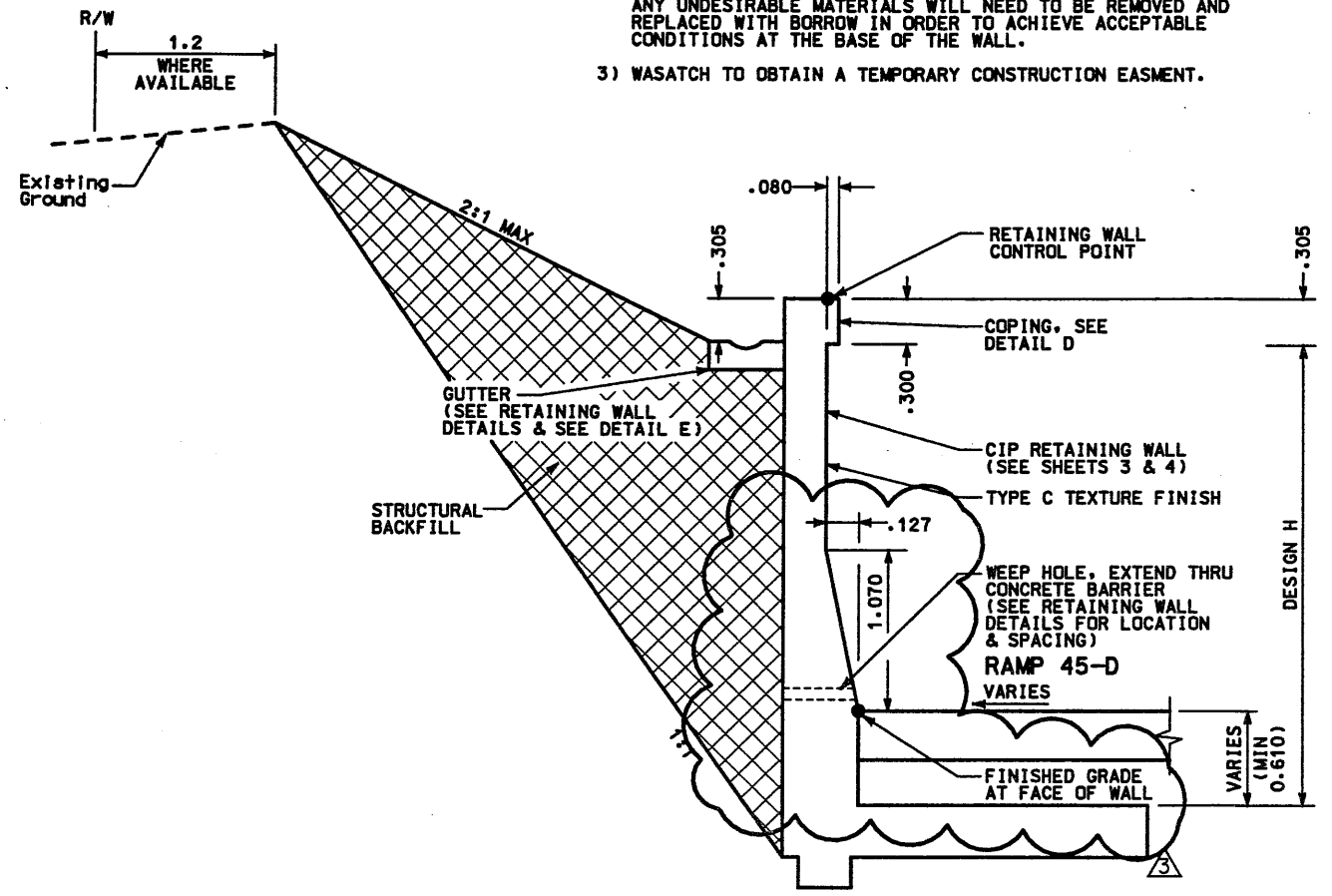
**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL R-345-15**  
**(CAST IN PLACE)**  
 NTS

**NOTES:**

- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
- 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.
- 3) WASATCH TO OBTAIN A TEMPORARY CONSTRUCTION EASMENT.

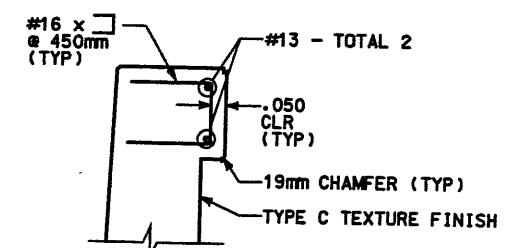


**DETAIL C**  
 STA 5+002.719 TO 5+010.698  
 STA 5+078.750 TO 5+089.981

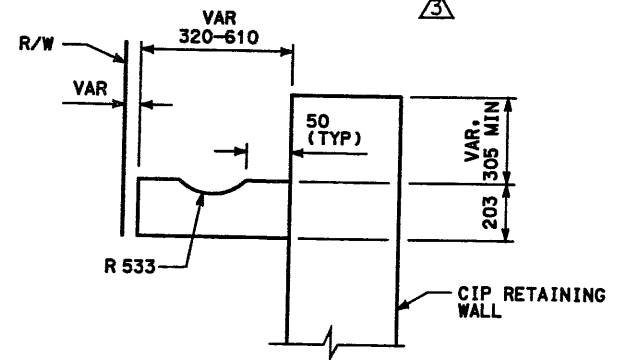


**DETAIL A**  
 STA 5+010.698 TO 5+078.750

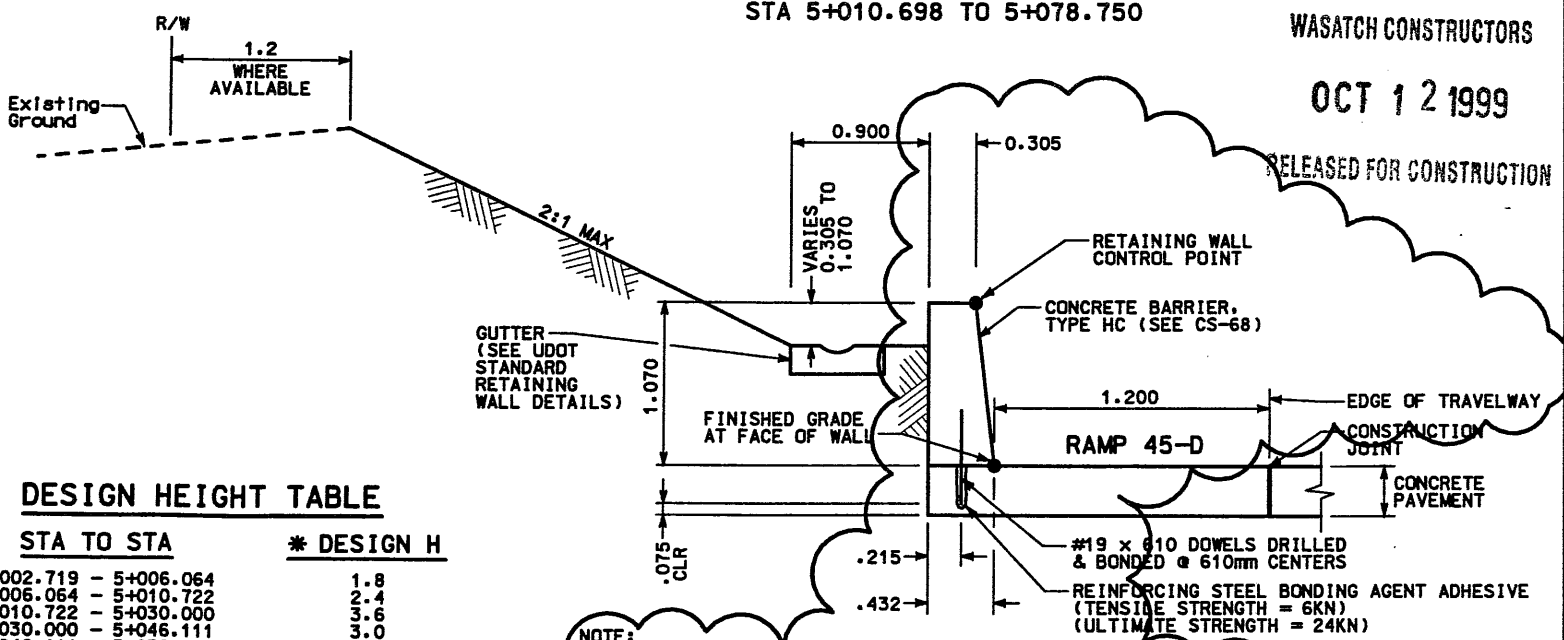
WASATCH CONSTRUCTORS  
 OCT 12 1999



**DETAIL D**  
 COPING DETAIL



**DETAIL E**  
 MODIFIED GUTTER DETAIL  
 STA 5+035.000 TO STA 5+055.000



**DETAIL B**  
 STA 4+997.689 TO 5+002.719

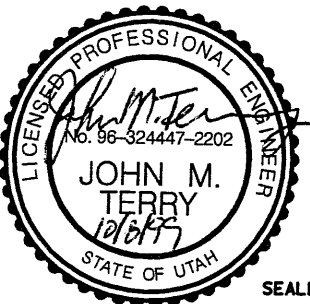
**DESIGN HEIGHT TABLE**

STA TO STA	* DESIGN H
5+002.719 - 5+006.064	1.8
5+006.064 - 5+010.722	2.4
5+010.722 - 5+030.000	3.6
5+030.000 - 5+046.111	3.0
5+046.111 - 5+050.000	2.4
5+050.000 - 5+081.374	3.0
5+081.374 - 5+096.358	2.4
5+096.358 - 5+106.036	1.8

\* DESIGN H'S PROVIDED BASED ON ELEVATIONS SHOWN ON PROFILE.

- NOTE:**
- 1) DELETE BATTER ON BACK SIDE OF BARRIER AND CHANGE BATTER ON FACE SIDE OF BARRIER SHOWN ON CS-68.

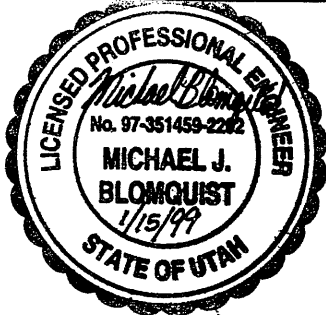
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 User: rmaswell  
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SEALED FOR THE NO. OF SUBMITTAL ONLY.

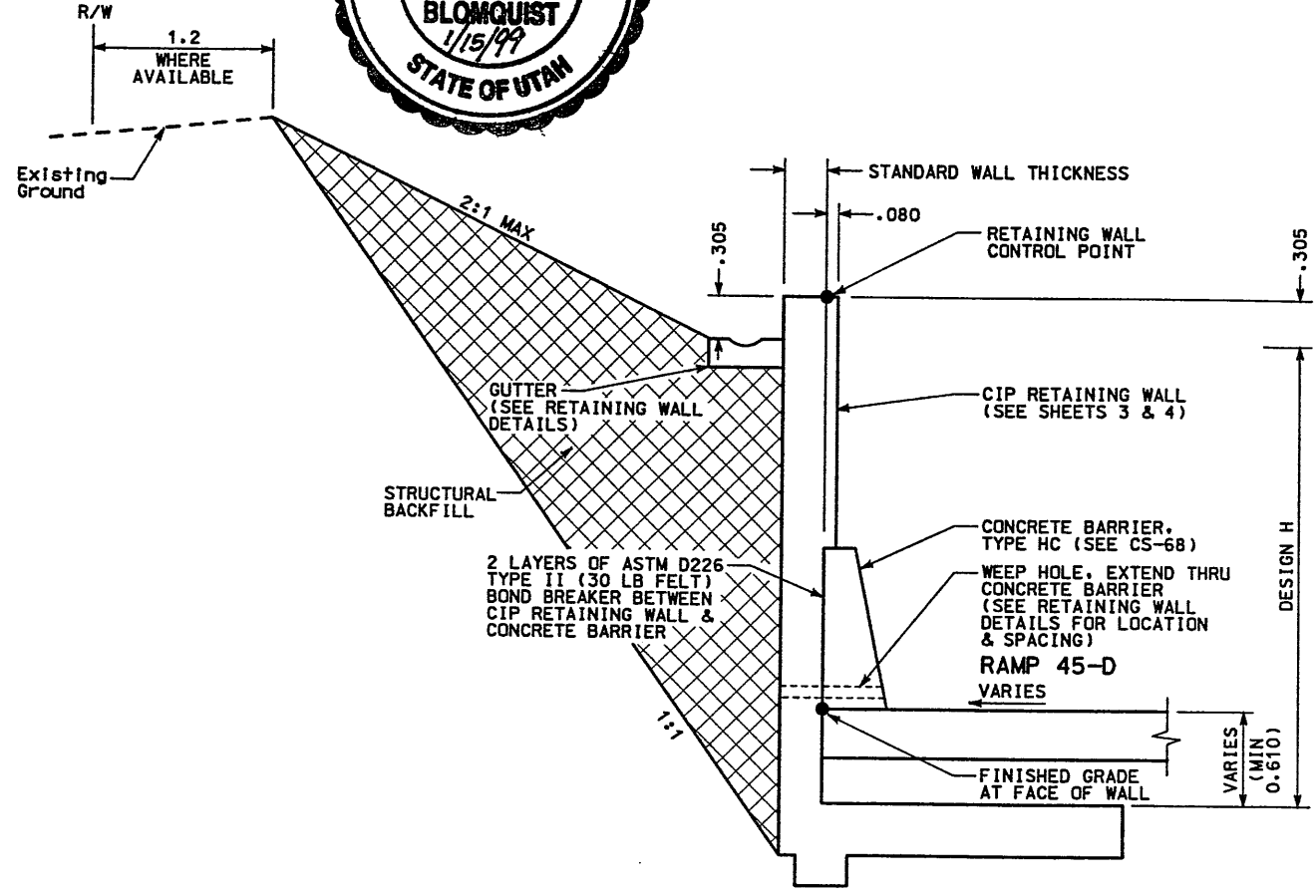
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	7/15/98	Δ	7/15/98
Δ	1/13/99	Δ	1/13/99
Δ	6/30/99	Δ	6/30/99
Δ	1/1/00	Δ	1/1/00
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO. 2119408	
MK CENTENNIAL		DESIGN DATE 7/15/98	
SVDRUP/DE LEUW		CHECK BAR 7/15/98	
DESIGN DATE 7/15/98		CHECK BAR 7/15/98	
DESIGN ENGINEER Stephen O. Sandvik		CHECK BAR 7/15/98	
PROJECT DESIGN ENGINEER		CHECK BAR 7/15/98	
DRAWN DATE 7/15/98		CHECK QUANT. 7/15/98	
DRAWN BY Rainald L. Robb		CHECK QUANT. 7/15/98	
PROJECT MANAGER		CHECK QUANT. 7/15/98	
I-15 CORRIDOR RECONSTRUCTION		PROJECT NUMBER #SP-15-(135)296	
WALL DETAIL R-345-15		COUNTY SALT LAKE	
SECTION 2.1		DWG. NO. 2.1R-345-15.2	
SHT 2 OF 4		REF.	

RFC After Final Approval

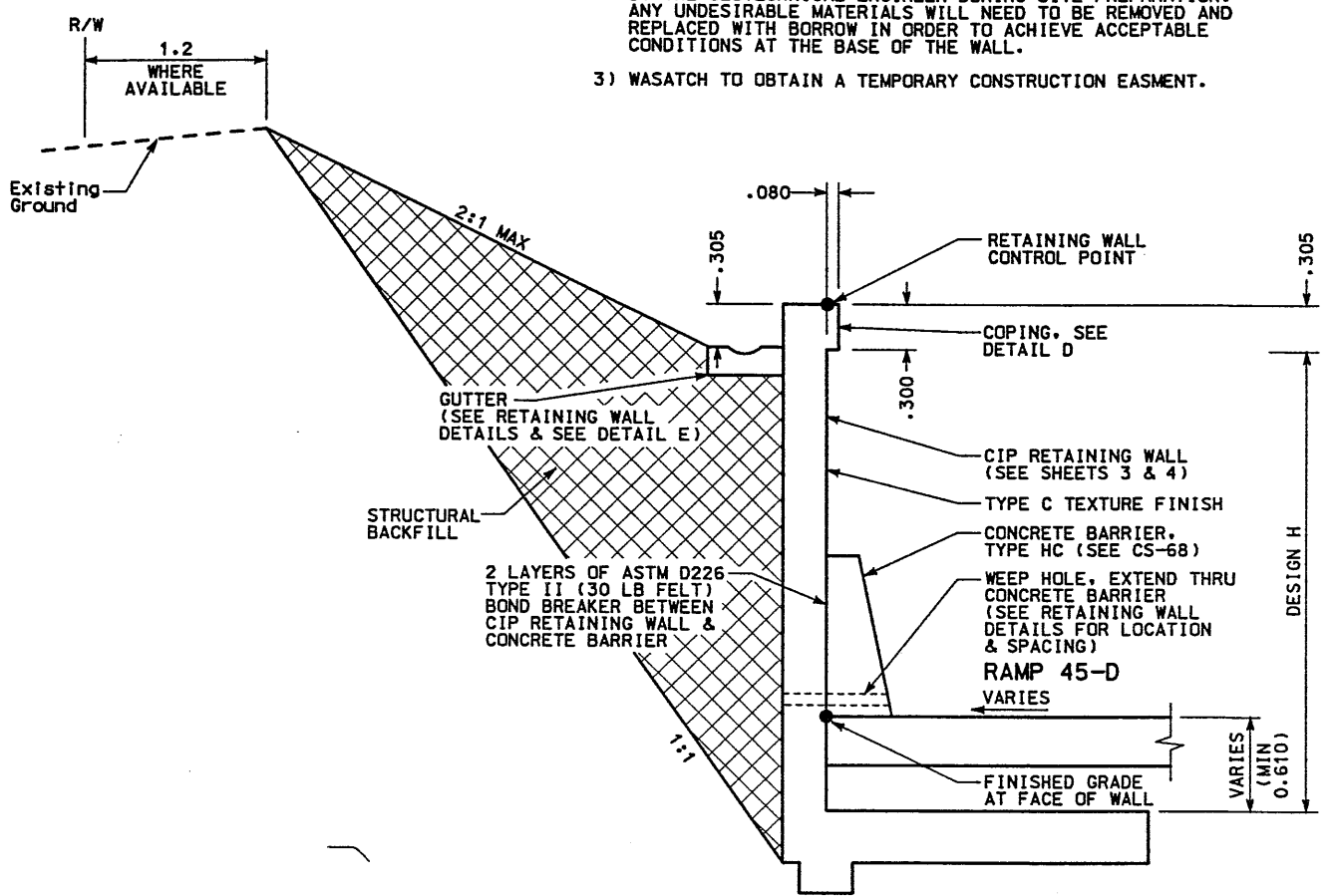


**RETAINING WALL DETAIL**  
SECTION 2.1 WALL R-345-15  
(CAST IN PLACE)  
NTS

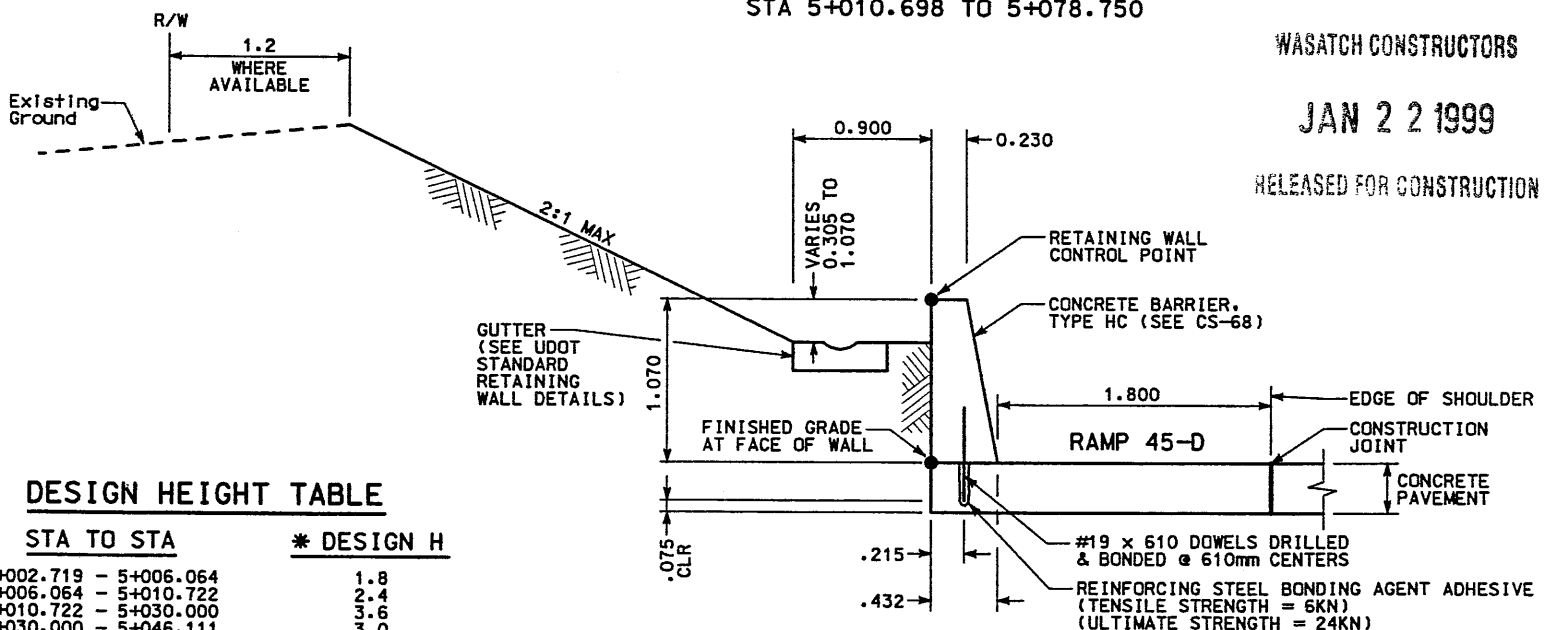
- NOTES:
- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
  - 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.
  - 3) WASATCH TO OBTAIN A TEMPORARY CONSTRUCTION EASMENT.



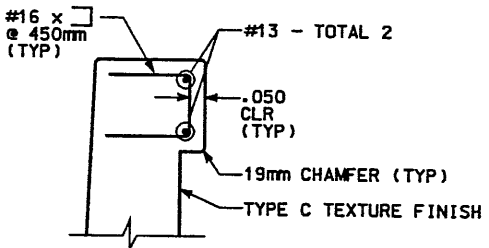
**DETAIL C**  
STA 5+002.719 TO 5+010.698  
STA 5+078.750 TO 5+106.036



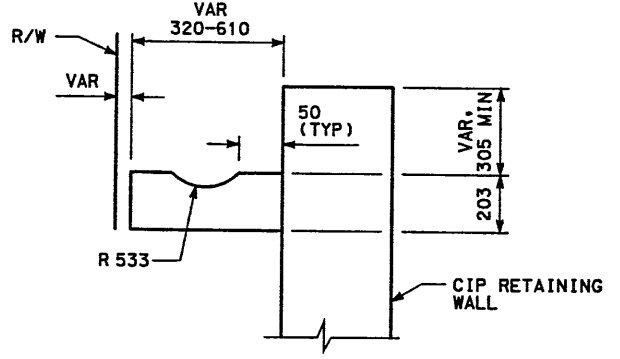
**DETAIL A**  
STA 5+010.698 TO 5+078.750



**DETAIL B**  
STA 4+997.700 TO 5+002.719  
STA 5+106.036 TO 5+127.400



**DETAIL D**  
COPING DETAIL



**DETAIL E**  
MODIFIED GUTTER DETAIL  
STA 5+035.000 TO STA 5+055.000

**DESIGN HEIGHT TABLE**

STA TO STA	* DESIGN H
5+002.719 - 5+006.064	1.8
5+006.064 - 5+010.722	2.4
5+010.722 - 5+030.000	3.6
5+030.000 - 5+046.111	3.0
5+046.111 - 5+050.000	2.4
5+050.000 - 5+081.374	3.0
5+081.374 - 5+096.358	2.4
5+096.358 - 5+106.036	1.8

\* DESIGN H's PROVIDED BASED ON ELEVATIONS SHOWN ON PROFILE.

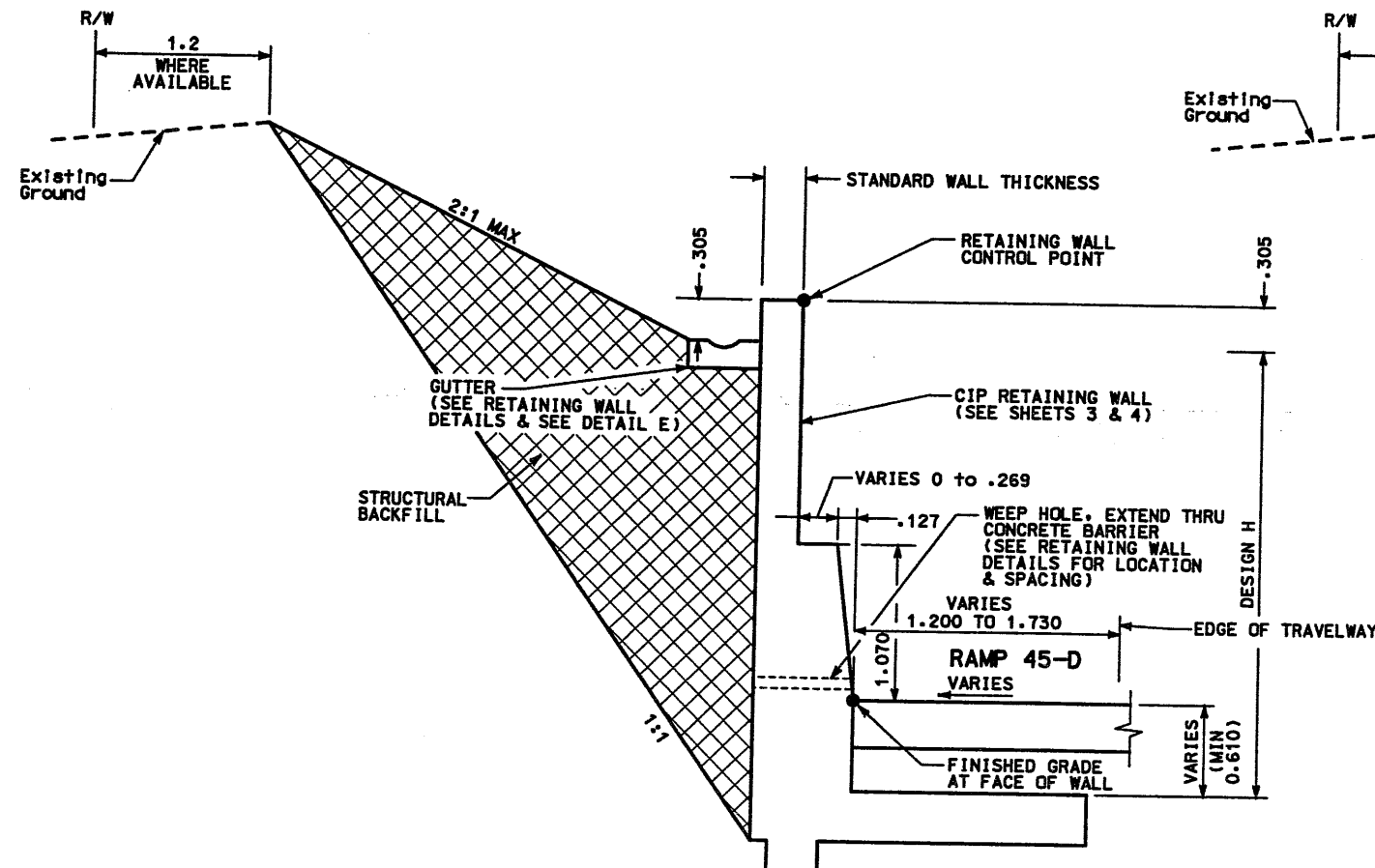
NOTE:  
1) DELETE BATTER ON BACK SIDE OF BARRIER SHOWN ON CS-68.

WASATCH CONSTRUCTORS  
JAN 22 1999  
RELEASED FOR CONSTRUCTION

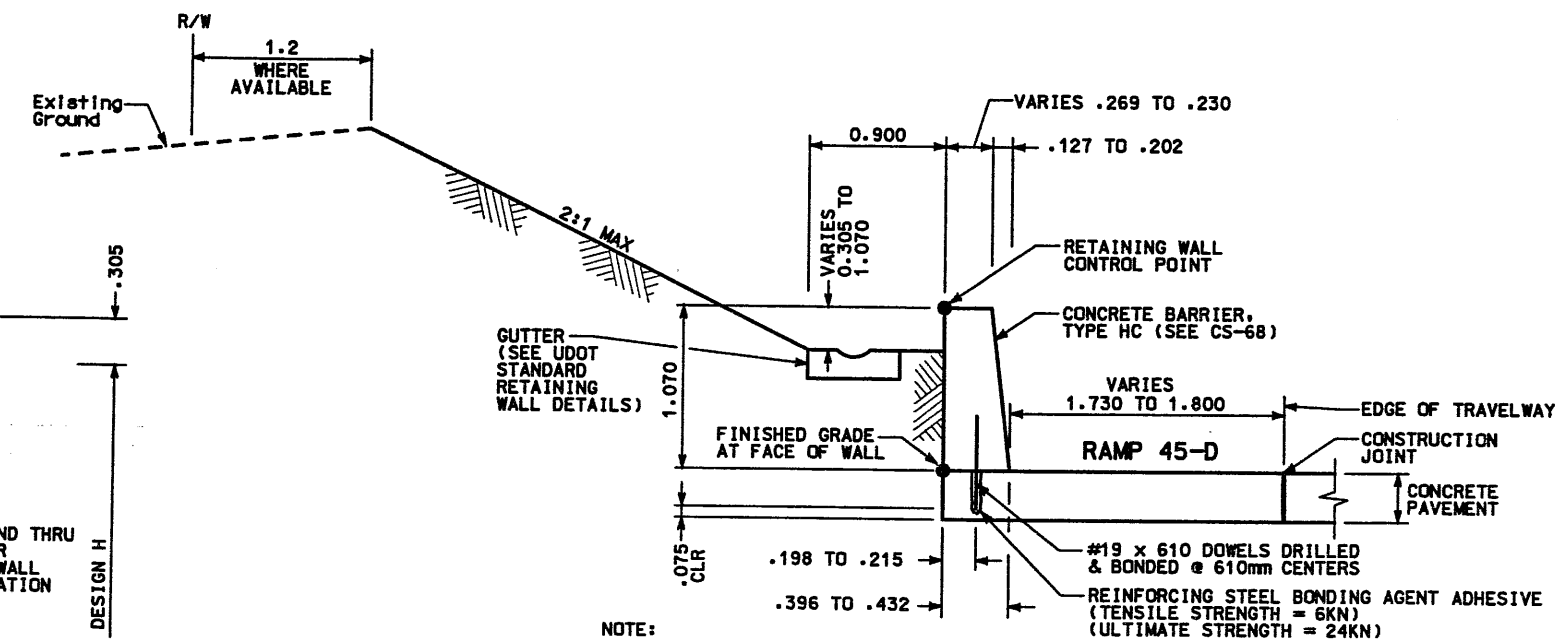
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
Δ	7/15/98	Δ	7/15/98
Δ	1/13/99	Δ	1/13/99
Δ	1/13/99	Δ	1/13/99
Δ	1/13/99	Δ	1/13/99
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO.	
MK CENTENNIAL		2113408	
SVERRUP/DE LEUW		DESIGN DAF 7/15/98	
DESIGN DAF 7/15/98		CHECK BAR 7/15/98	
DRAWN DAF 7/15/98		CHECK BAR 7/15/98	
QUANT. / / /		CHECK / / /	
APPROVAL RECORD		DATE	
7/15/98 Stephen O. Sandvick		PROJECT DESIGN ENGINEER	
APPROVED 7/15/98		DATE	
7/15/98 Randle L. Ross		PROJECT MANAGER	
I-15 CORRIDOR RECONSTRUCTION		COUNTY	
WALL DETAIL R-345-15		SALT LAKE	
SECTION 2.1		DWG. NO.	
#SP-15-7(135)296		2.1R-345-15.2	
PROJECT NUMBER		SHT. 2 OF 4	
REF.			

User: mcmr-fr-amp17-d Date: 14-JAN-1999 Time: 15:37  
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**RETAINING WALL DETAIL**  
SECTION 2.1 WALL R-345-15  
(CAST IN PLACE)  
NTS

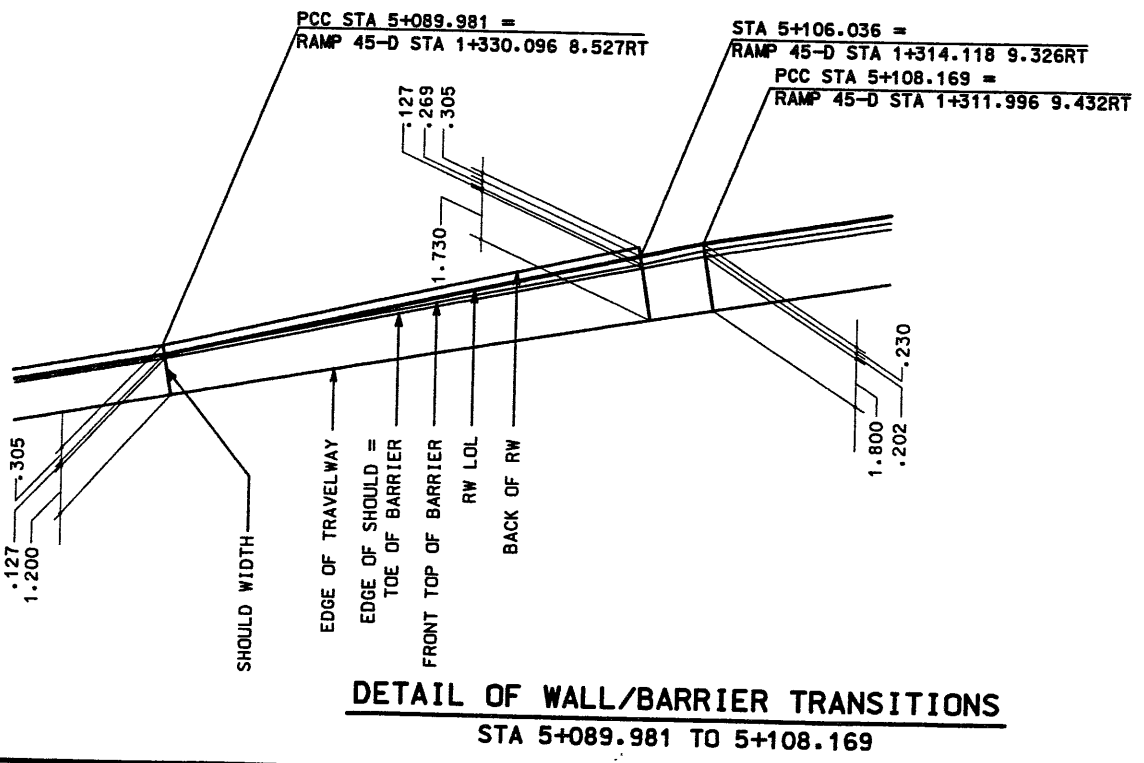


**DETAIL F**  
STA 5+089.981 TO 5+106.036

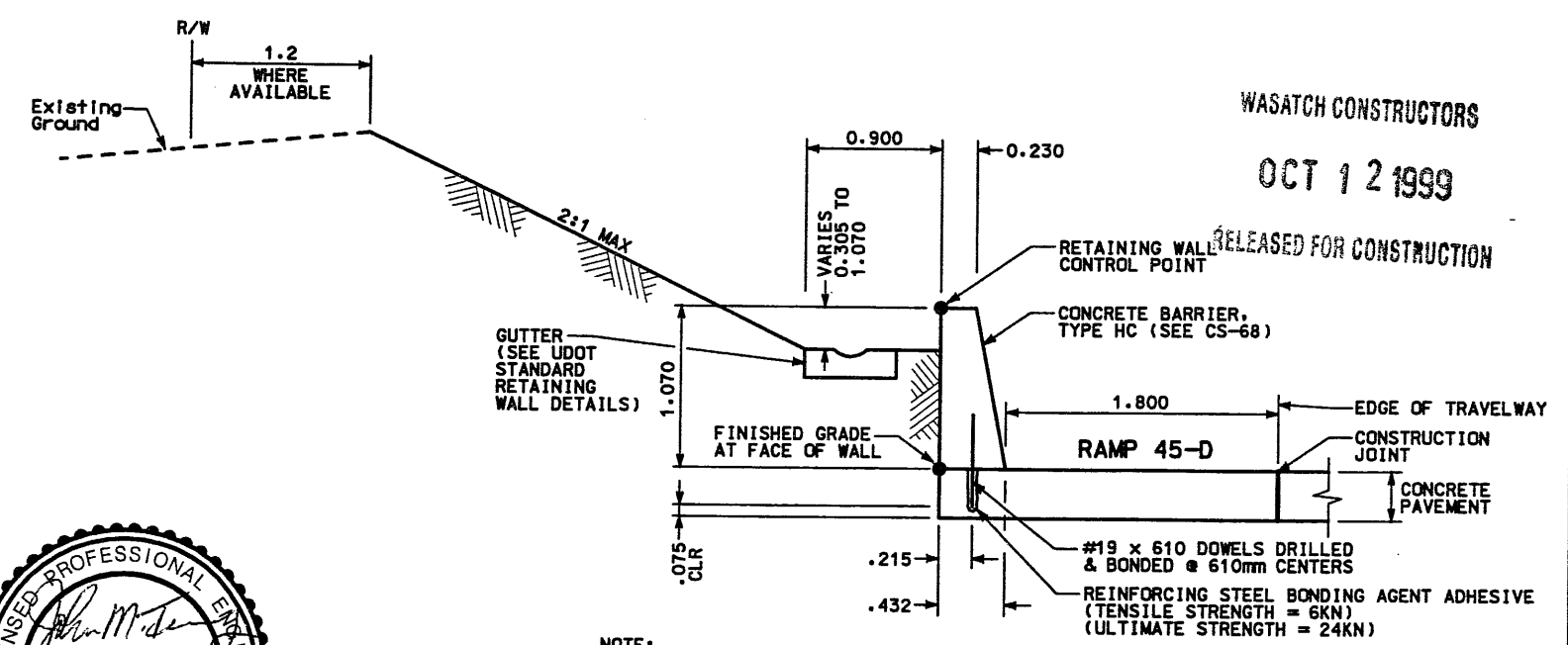


**DETAIL G**  
STA 5+106.036 TO 5+108.169

NOTE:  
1) DELETE BATTER ON BACK SIDE OF BARRIER AND CHANGE BATTER ON FACE SIDE OF BARRIER SHOWN ON CS-68.

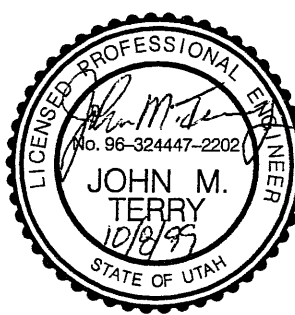


**DETAIL OF WALL/BARRIER TRANSITIONS**  
STA 5+089.981 TO 5+108.169



**DETAIL H**  
STA 5+108.169 TO 5+127.400

NOTE:  
1) DELETE BATTER ON BACK SIDE OF BARRIER SHOWN ON CS-68.



WASATCH CONSTRUCTORS  
OCT 12 1999  
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	COMBINE BARRIER TO WALL, FIG 2-1082 (INITIAL RELEASE)	
NO.	DATE	DATE	DATE	DATE
Δ	6/30/99	/ /	/ /	/ /
UTAH DEPARTMENT OF TRANSPORTATION MARK CENTENNIAL SYVERDRUP/DE LEUW		DESIGN	CHECK	BAR
		7/15/98	7/15/98	7/15/98
		DESIGN	DAF	7/15/98
		DRAWN	DAF	7/15/98
		CHECK	BAR	7/15/98
		QUANT.	/ /	/ /
		PROJECT MANAGER	Randy L. Ross	
		DATE	/ /	
I-15 CORRIDOR RECONSTRUCTION		WBS NO.	2113408	
WALL DETAIL R-345-15		PROJECT NUMBER	#SP-15-(7(135)296	
SECTION 2.1		COUNTY	SALT LAKE	
		DWG. NO.	2.1R-345-15.2A	
SHT. 2A OF 4				

RFC After Final Approval

Date: 13-JAN-1999 Time: 16:21 User: mcmrumpfrd  
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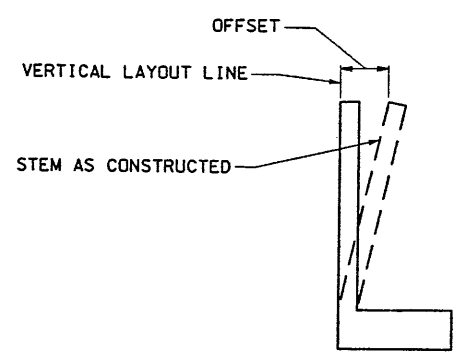
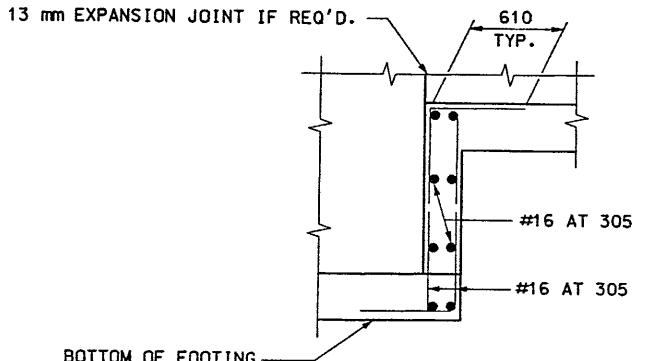


TABLE OF OFFSETS  
(IN METERS)

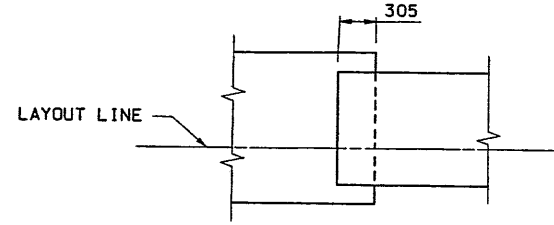
H	OFF.
1.200	0.006
1.800	0.010
2.400	0.013
3.000	0.016
3.600	0.019
4.200	0.025

**APPROXIMATE WALL OFFSET VALUES**

VALUES FOR OFFSETTING FORMS TO BE DETERMINED BY THE ENGINEER

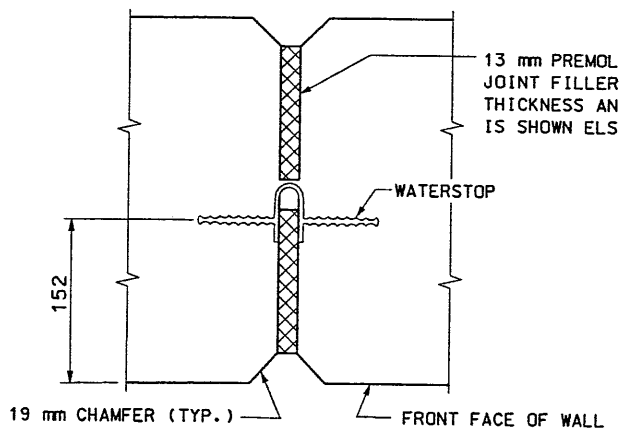


**ELEVATION**



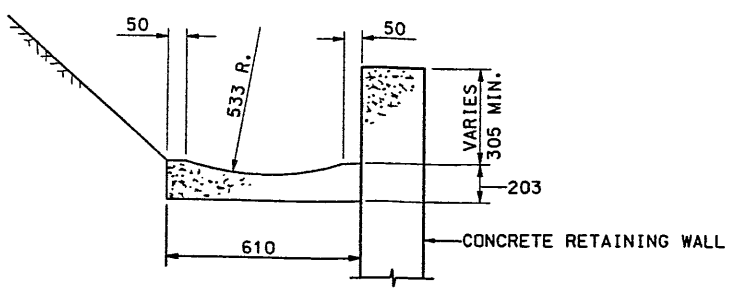
**PLAN**

**FOOTING STEP DETAILS**

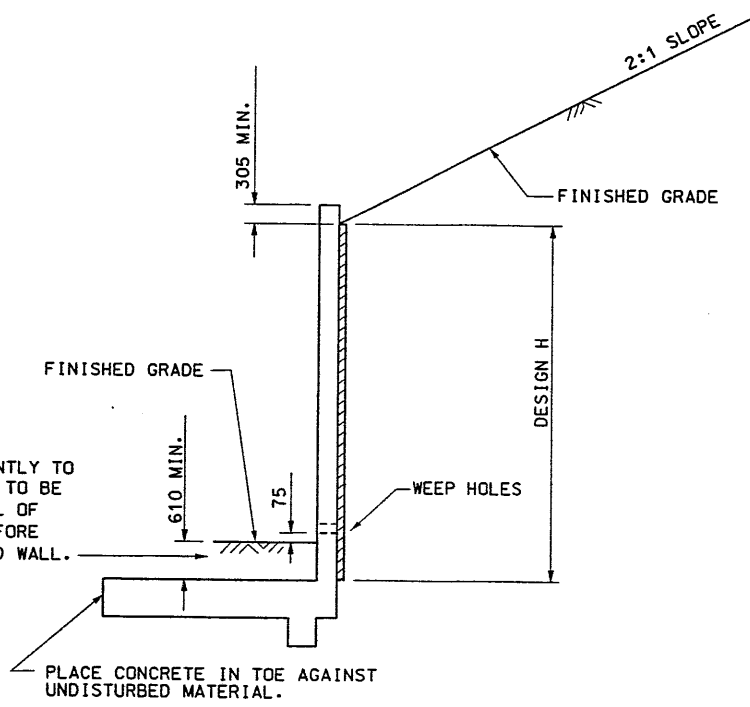


**WALL EXPANSION JOINT (PLAN VIEW)**

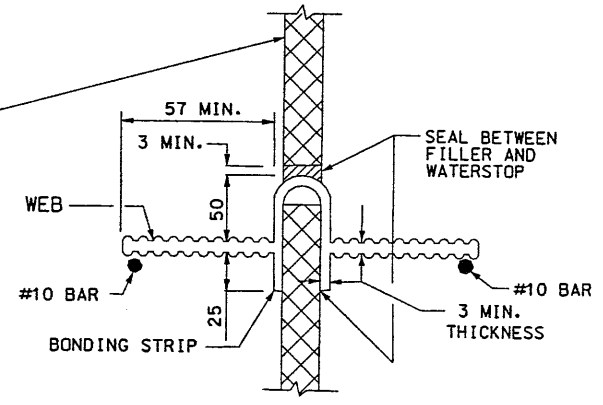
PLACE JOINTS AT 30.500 m MAX. SPACING



**TYPICAL GUTTER DETAIL**



**DESIGN AND DRAINAGE**



**WATERSTOP DETAIL**

**WATER STOP NOTES**

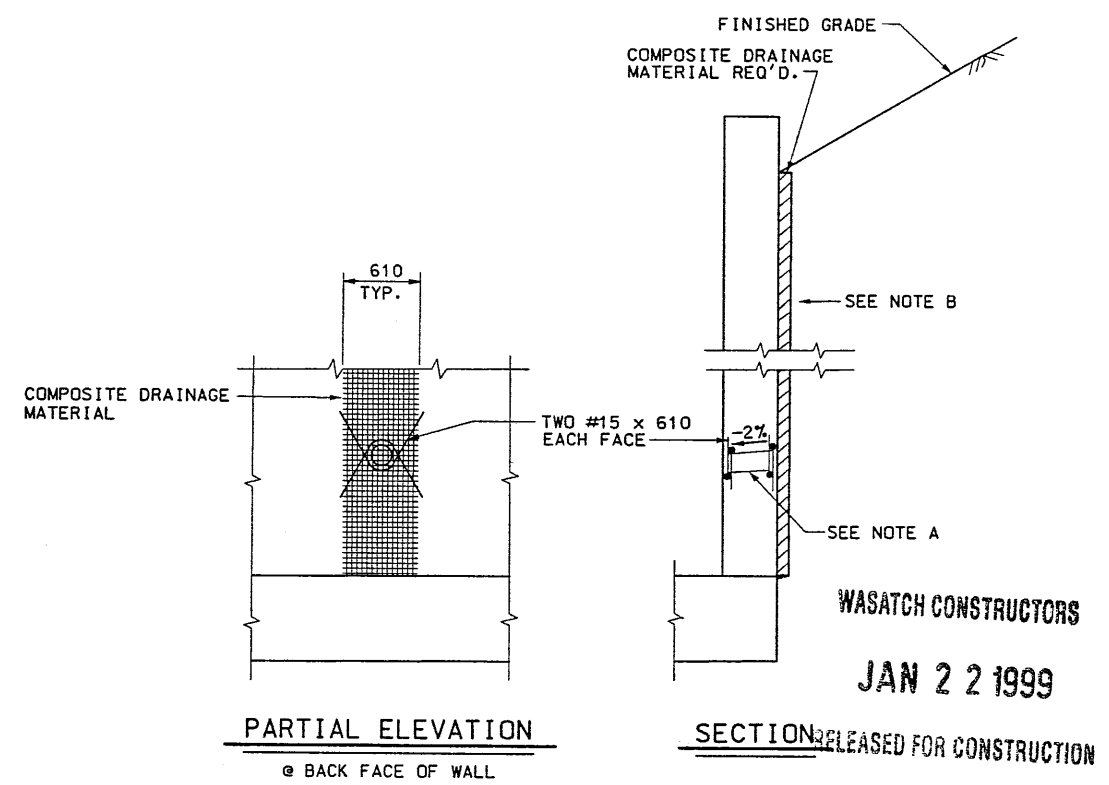
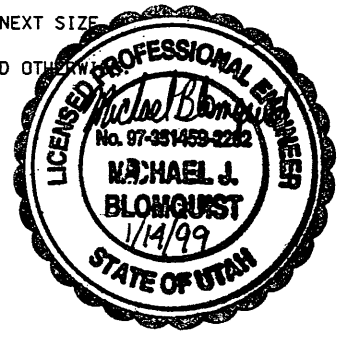
1. WATERSTOP TO HAVE FIVE OR MORE PAIRS OF RAISED RIBS TO PROVIDE 65 mm<sup>2</sup> MIN. RIB CROSS-SECTIONAL AREA ON EACH HALF OF THE WATERSTOP. HEIGHT OF RIBS TO BE 2 mm MIN.
2. HOLES WILL BE PERMITTED IN THE OUTER 13 mm OF THE WEB FOR WIRE, RINGS, ETC. TIE WEB TO #10 REINFORCING BARS @ 305 mm MAX. INTERVALS TO SUPPORT THE WATERSTOP IN PROPER POSITION DURING CONCRETE PLACEMENT. ALTERNATIVE DETAIL MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

**GENERAL NOTES**

1. USE EPOXY-COATED REINFORCING STEEL CONFORMING TO AASHTO M 31M GRADE 400.
2. DESIGN H MAY BE EXCEEDED BY 150 mm BEFORE GOING TO THE NEXT SIZE.
3. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS SPECIFIED OTHERWISE.

**DESIGN DATA**

DESIGN: LOAD FACTOR DESIGN  
 LOADING CASE:  
 2:1 UNLIMITED SLOPE  
 CONCRETE: N = 9, f'c = 25.2 MPa, fc = 9.0 MPa  
 CLASS AA(AE)  
 REINFORCING STEEL: fy = 410 MPa, fs = 165.5 MPa  
 SOIL:  
 BACKFILL: φ = 34°, γ = 2.160 kg/m<sup>3</sup>  
 MAXIMUM ALLOWABLE BEARING PRESSURE = 129.6 KPa  
 SEISMIC:  
 FOR 2:1 UNLIMITED SLOPE, kh = 0.13 g



**PARTIAL ELEVATION**

@ BACK FACE OF WALL

**SECTION**

WASATCH CONSTRUCTORS

JAN 22 1999

**WEEP HOLE DETAIL**

**NOTES:**

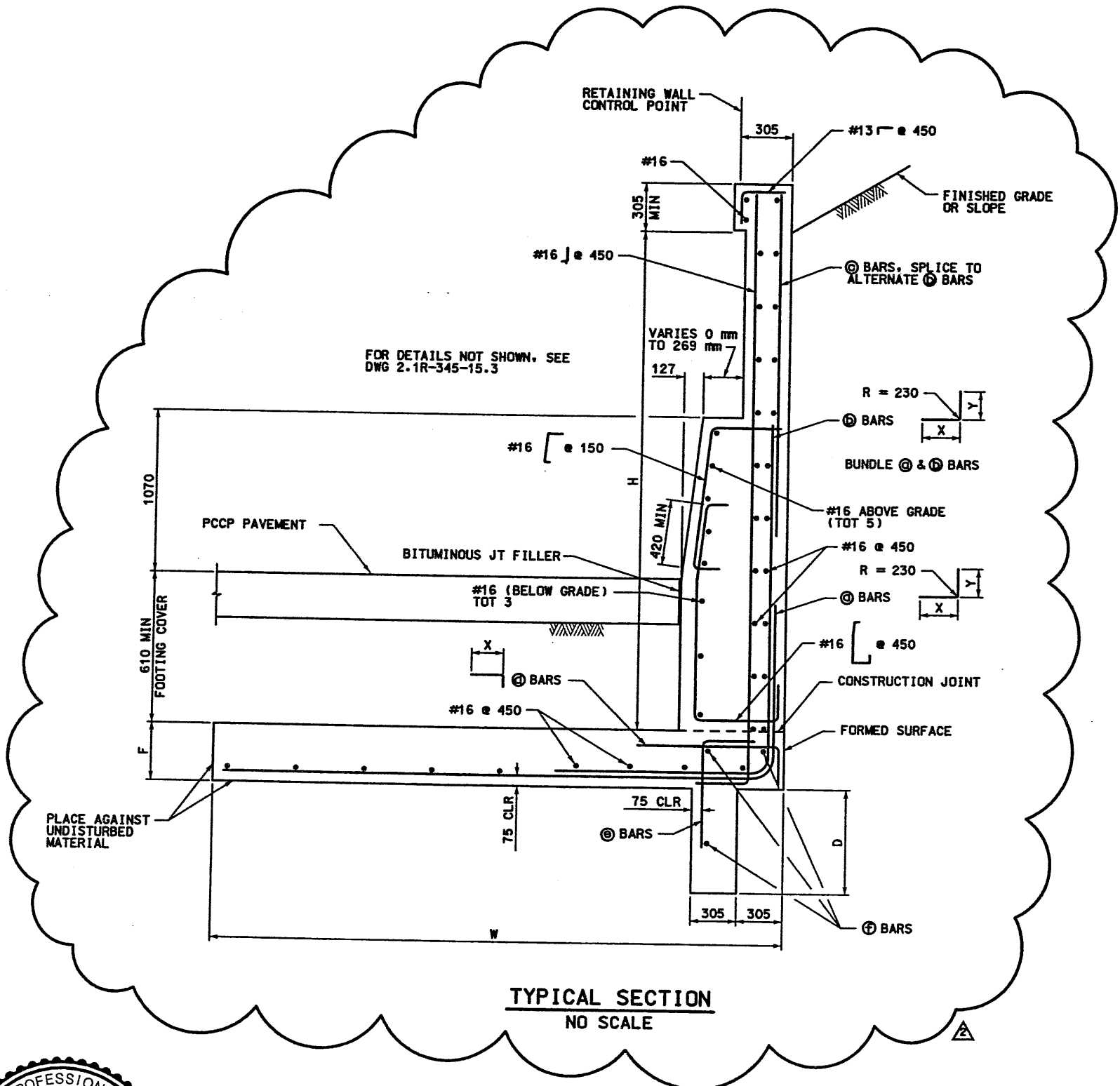
- A. 100 mm φ DRAINS @ 4.000 m MAX. CENTER TO CENTER.
- B. COMPOSITE DRAINAGE MATERIAL REQUIRED FROM BOTTOM OF WALL TO TOP OF FINISHED GRADE.

APPROVED FOR CONSTRUCTION	DESCRIPTION	CHANGE TO "L" SHAPE, FDC 2-0582C	
	DATE	1/13/98	
UTAH DEPARTMENT OF TRANSPORTATION	NO.	1	
	TRACKING NO.		
SVERDRUP/DE LEUW	CHECK	AK	1/8/99
	CHECK	MJB	1/11/99
MICHAEAL J. BLOMQUIST	DESIGN	MJB	1/8/99
	PROJECT DESIGN ENGINEER	RF	1/11/99
DATE	APPROVAL	1/13/99	
	APPROVED	1/13/99	
SECTION MANAGER	DATE		
	QUANT.		
I-15 CORRIDOR RECONSTRUCTION	CONCRETE RETAINING WALL	STANDARD DETAILS	
PROJECT NUMBER		*SP-15-7(135)296	
COUNTY		SALT LAKE	
DWG. NO.		2.1R-345-15.3	
SHT.	3	OF	4



Date: 08-OCT-99 9:59 Time: 11:43 User: name.blackhpb

Filename: \\vgn\115\_0001\45\_37\sheet\_7\115\wala\45\_ret\115\_04.rev



FOR DETAILS NOT SHOWN, SEE DWG 2.1R-345-15.3

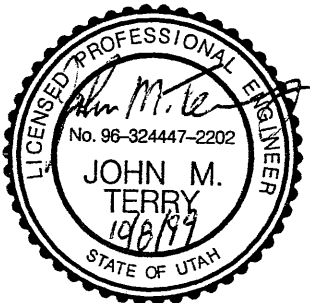
TABLE OF DIMENSIONS AND REINFORCING STEEL \*

DESIGN H	1200	1800	2400	3000	3600
W	1200	1650	2250	3000	3750
F	305	305	380	380	380
D	230	230	230	450	685
⊕ BARS	#16 @ 450	#16 @ 305	#19 @ 305	#19 @ 305	#19 @ 220
X	CONT	CONT	CONT	CONT	CONT
Y	CONT	CONT	CONT	1500	1500
⊕ BARS	---	---	---	#19 @ 305	#19 @ 220
X	---	---	---	1650	2250
Y	---	---	---	CONT	2550
⊕ BARS	---	---	---	---	#16 @ 450
⊕ BARS	---	---	---	#13 @ 305	#13 @ 305
X	---	---	---	1200	1200
⊕ BARS	---	---	---	#16 @ 305	#16 @ 305
⊕ BARS	---	---	---	3 - #16	3 - #16

CONT = CONTINUOUS \* DIMENSIONS ARE IN MILLIMETERS

WASATCH CONSTRUCTORS  
OCT 12 1999  
RELEASED FOR CONSTRUCTION

GENERAL NOTES:  
DESIGN: LOAD FACTOR DESIGN  
LOADING CASE:  
2:1 UNLIMITED SLOPE  
CONCRETE: N = 9, f'c = 25.2 MPa, fo = 9.0 MPa  
CLASS AA(AE)  
REINFORCING STEEL: fy = 410 MPa, fs = 165.5 MPa  
SOIL:  
BACKFILL: φ = 34°, γ = 2,160 kg/m<sup>3</sup>  
MAXIMUM ALLOWABLE BEARING PRESSURE = 129.6 KPa  
SEISMIC:  
FOR 2:1 UNLIMITED SLOPE, kh = 0.13 g



APPROVED FOR CONSTRUCTION

NO. DATE DESCRIPTION

1/13/99 CHANGE TO "L" SHAPE, FCC2-0882C

10/07/99 FCC 2-1278 ADDED BARRIER SHAPE TO ROADWAY SIDE

UTAH DEPARTMENT OF TRANSPORTATION

SVERDRUP/DE LEUW

DESIGN BY: ANE KASHANI

CHECK BY: ANE KASHANI

DATE: 1/11/99

DRAWN BY: JOHN TERRY

CHECK BY: JOHN TERRY

DATE: 1/11/99

PROJECT NUMBER: #SP-15-7(135)296

SECTION MANAGER

I-15 CORRIDOR RECONSTRUCTION

CONCRETE RETAINING WALL

STANDARD DETAILS

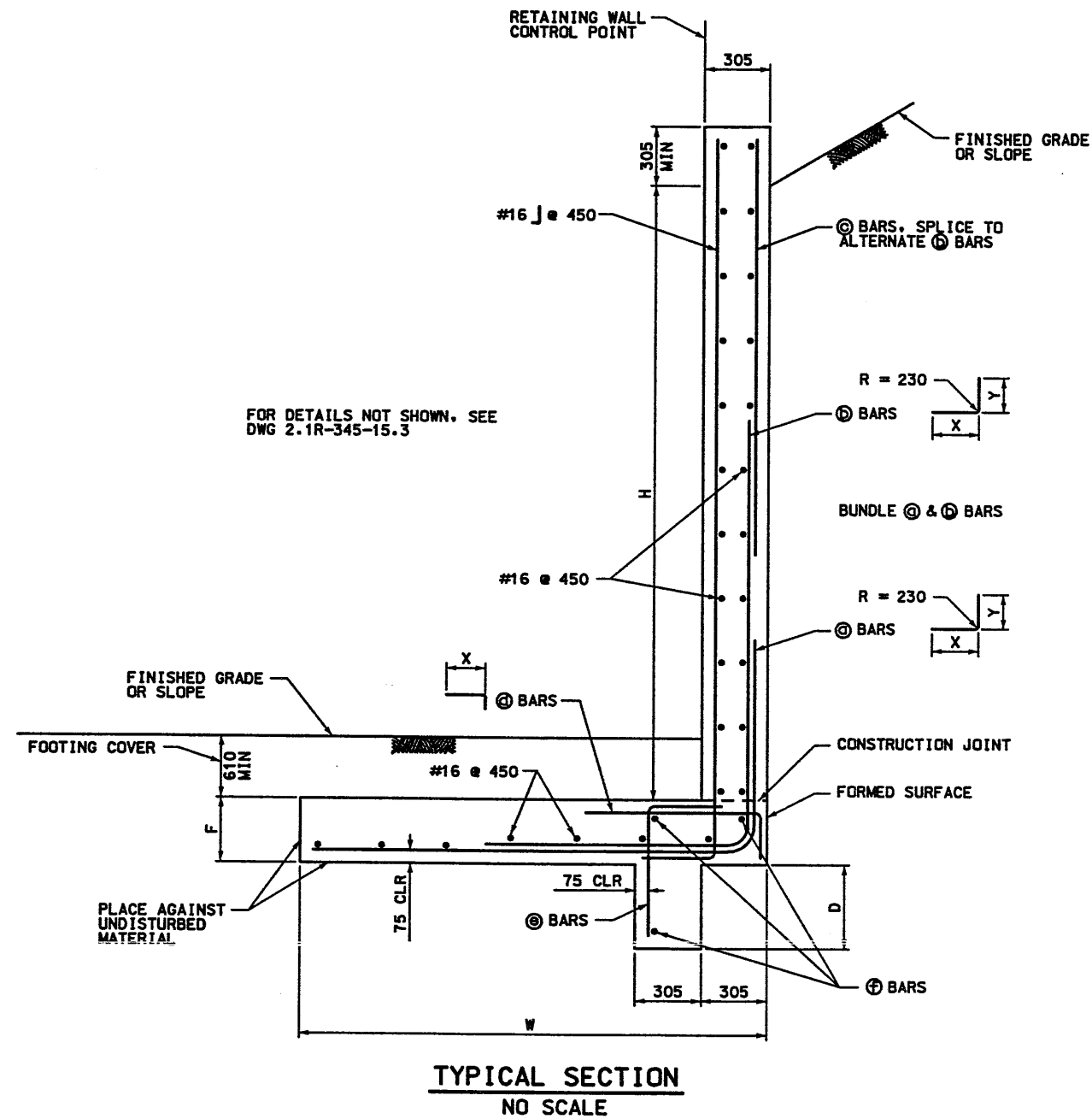
SALT LAKE COUNTY

DWG. NO. 2.1R-345-15.4

SHT. OF

RFC After Final Approval





FOR DETAILS NOT SHOWN, SEE DWG 2.1R-345-15.3

TABLE OF DIMENSIONS AND REINFORCING STEEL \*

DESIGN H	1200	1800	2400	3000	3600
W	1200	1650	2250	3000	3750
F	305	305	380	380	380
D	230	230	230	450	685
⊙ BARS	#16 @ 450	#16 @ 305	#19 @ 305	#19 @ 305	#19 @ 220
X	CONT	CONT	CONT	CONT	CONT
Y	CONT	CONT	CONT	1500	1500
⊙ BARS	---	---	---	#19 @ 305	#19 @ 220
X	---	---	---	1650	2250
Y	---	---	---	CONT	2550
⊙ BARS	---	---	---	---	#16 @ 450
⊙ BARS	---	---	---	#13 @ 305	#13 @ 305
X	---	---	---	1200	1200
⊙ BARS	---	---	---	#16 @ 305	#16 @ 305
⊙ BARS	---	---	---	3 - #16	3 - #16

CONT = CONTINUOUS \* DIMENSIONS ARE IN MILLIMETERS

GENERAL NOTES:

DESIGN: LOAD FACTOR DESIGN

LOADING CASE:  
2:1 UNLIMITED SLOPE

CONCRETE: N = 9, f'c = 25.2 MPa, fc = 9.0 MPa  
CLASS AA(AE)

REINFORCING STEEL: fy = 410 MPa, fs = 165.5 MPa

SOIL:  
BACKFILL: φ = 34°, γ = 2.160 kg/m<sup>3</sup>  
MAXIMUM ALLOWABLE BEARING PRESSURE = 129.6 KPa

SEISMIC:  
FOR 2:1 UNLIMITED SLOPE, kn = 0.13 g

WASATCH CONSTRUCTORS  
JAN 22 1999  
RELEASED FOR CONSTRUCTION



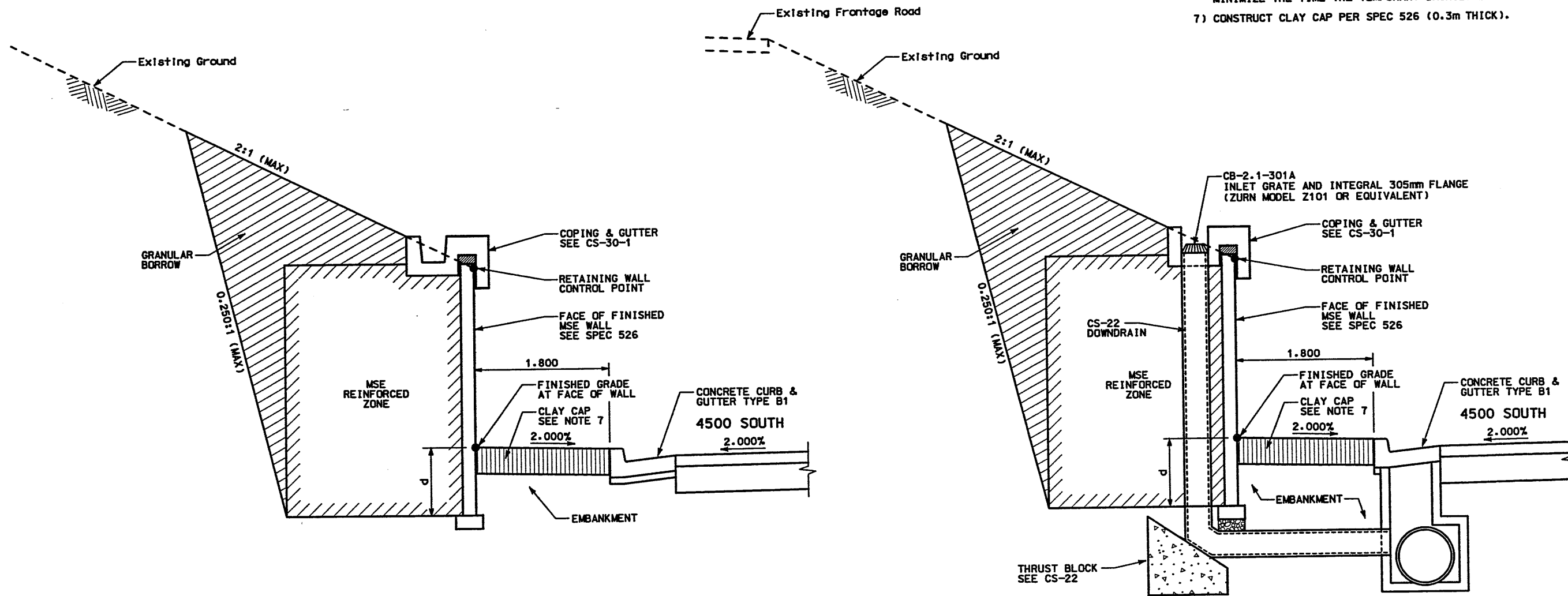
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	CHANGE TO "L" SHAPE, FDC2-0582C	
1	1/13/99		
UTAH DEPARTMENT OF TRANSPORTATION			
SVERDRUP/DE LEUW		DESIGN	TRACKING NO.
1/13/99	1/11/99	1/11/99	1/11/99
ABE KASHANI	ABE KASHANI	ABE KASHANI	ABE KASHANI
PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER
DATE	DATE	DATE	DATE
1/13/99	1/11/99	1/11/99	1/11/99
JOHN TERRY	JOHN TERRY	JOHN TERRY	JOHN TERRY
SECTION MANAGER	SECTION MANAGER	SECTION MANAGER	SECTION MANAGER
I-15 CORRIDOR RECONSTRUCTION		STANDARD DETAILS	
CONCRETE RETAINING WALL		PROJECT NUMBER	
		#SP-15-7(135)296	
SALT LAKE COUNTY			
DWG. NO.			
2.1R-345-15.4			
SHT.	4	OF	4



**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL R-345-17**  
**(1 STAGE MSE WALL)**  
**NTS**

**NOTES:**

- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
- 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.
- 3) SEE DRAINAGE PLANS & DETAILS FOR DRAINAGE DETAILS. DRAINAGE SHOWN HERE FOR INFORMATION ONLY.
- 4) CONTRACTOR SHALL PROVIDE BARRICADES OR OTHER MEANS TO KEEP VEHICLE TRAFFIC AT LEAST 7 METERS FROM THE TOP OF THE TEMPORARY CUT SLOPE.
- 5) THE CONTRACTOR SHALL BE PREPARED TO DEAL WITH SEEPAGE EXITING THE TEMPORARY BACKCUT. THE CONTRACTOR SHALL USE FABRIC OR DRAINAGE BOARD MATERIAL TO PROVIDE DRAINAGE FOR SEEPAGE AND TO MINIMIZE EROSION OF THE TEMPORARY BACKCUT AS DIRECTED BY THE GEOTECHNICAL FIELD ENGINEER.
- 6) THE TEMPORARY BACKCUT SHALL BE BACKFILLED AS SOON AS POSSIBLE AND WALL CONSTRUCTION SHALL BE EXPEDITED TO MINIMIZE THE TIME THE TEMPORARY BACKSLOPE IS EXPOSED.
- 7) CONSTRUCT CLAY CAP PER SPEC 526 (0.3m THICK).



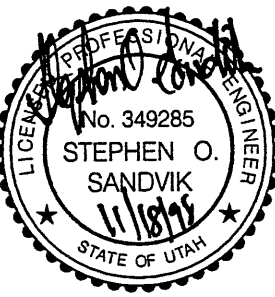
d = EMBEDMENT DEPTH (SEE VSL DETAILS)  
**DETAIL A**  
 STA 5+000.000 TO STA 5+148.893

d = EMBEDMENT DEPTH (SEE VSL DETAILS)  
**DETAIL B**  
 STA 5+004.651  
 (DOWN DRAIN INLET LOCATION)

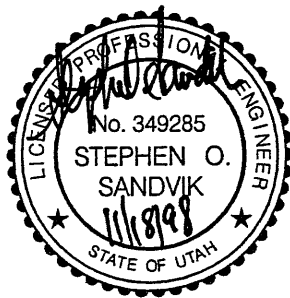
ENTIRE SHEET REVISED

CONTRACTOR TO ADJUST STATION LOCATION OF INLETS NEXT TO MSE WALLS TO MISS THE MSE WALL STRAPS. SEE VSL SHOP DRAWINGS FOR INLET LOCATIONS NEXT TO MSE WALLS.

**WASATCH CONSTRUCTORS**  
**DEC 0 2 1998**  
 RELEASED FOR CONSTRUCTION



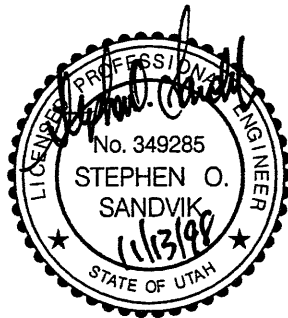
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	ORIGINAL ISSUE	CHANGED WALL TO MSE
1	8/05/98	11/16/98	/ /
UTAH DEPARTMENT OF TRANSPORTATION MK CENTENNIAL SVERDRUP/DE LEUW		WBS NO. 2113410	PROJECT NUMBER #SP-15-7(135)296
I-15 CORRIDOR RECONSTRUCTION WALL DETAIL R-345-17	SECTION 2.1	DESIGNER Stephen O. Sandvik	PROJECT DESIGN ENGINEER Randie L. Ross
APPROVAL DATE 8/05/98	DESIGN DATE 8/05/98	CHECK BAR DATE 8/05/98	CHECK DATE 8/05/98
APPROVED DATE 8/05/98	DRAWN DATE 8/05/98	CHECK DATE 8/05/98	CHECK DATE 8/05/98
PROJECT NUMBER #SP-15-7(135)296		PROJECT MANAGER Randie L. Ross	
SALT LAKE COUNTY		DWG. NO. 2.1R-345-17.2	
SHT. 2 OF 11		REF.	



THE INFORMATION  
ON THIS SHEET  
HAS BEEN DELETED

WASATCH CONSTRUCTORS  
DEC 0 2 1998  
RELEASED FOR CONSTRUCTION

I-15 CORRIDOR RECONSTRUCTION		UTAH DEPARTMENT OF TRANSPORTATION				APPROVED FOR CONSTRUCTION	
WALL DETAIL R-345-17		MK CENTENNIAL SVERDRUP/DE LEUW				DESCRIPTION	
SECTION 2.1		DESIGN DATE	9/05/98	CHECK DATE	9/05/98	ORIGINAL ISSUE	
PROJECT NUMBER *SP-15-7(135)296		DESIGN BY	Bret A. Reynolds	CHECK BY		DELETED ENTIRE DETAIL	
SALT LAKE COUNTY		DATE	11/18/97	CHECK DATE	11/16/98		
DWG. NO. 2.1R-345-17.3		PROJECT DESIGN ENGINEER	Randle L. Ross	CHECK DATE	/ /		
SHT. 3 OF 11		SECTION MANAGER		CHECK DATE	/ /		
		APPROVED DATE	11/19/97	CHECK DATE	/ /		
		WBS NO.	2113410				



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HAS BEEN DELETED

WASATCH CONSTRUCTORS  
DEC 0 2 1998  
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I-15 CORRIDOR RECONSTRUCTION		UTAH DEPARTMENT OF TRANSPORTATION		APPROVED FOR CONSTRUCTION	
WALL DETAIL R-345-17		MK CENTENNIAL SVERDRUP/DE LEUW		DESCRIPTION	
SECTION 2.1		DESIGN DATE 8/05/98		DATE 8/05/98	
PROJECT NUMBER #SP-15-7(135)296		PROJECT DESIGN ENGINEER Bret A. Reynolds		ORIGINAL ISSUE	
SALT LAKE COUNTY		DRAWN DATE 8/05/98		DELETED ENTIRE DETAIL	
DWG. NO. 2.1R-345-17.4		SECTION MANAGER R. J. ROSS		DATE / /	
SHT. 4 OF 11		QUANT. / /		WBS NO. 213410	
		CHECK BAR 8/05/98		DATE / /	
		CHECK BAR 8/05/98		DATE / /	

H:\RE\_EARTH\APPROV\9-0007\1998\45SERIES\45-17\RE-1

T 11-19-98

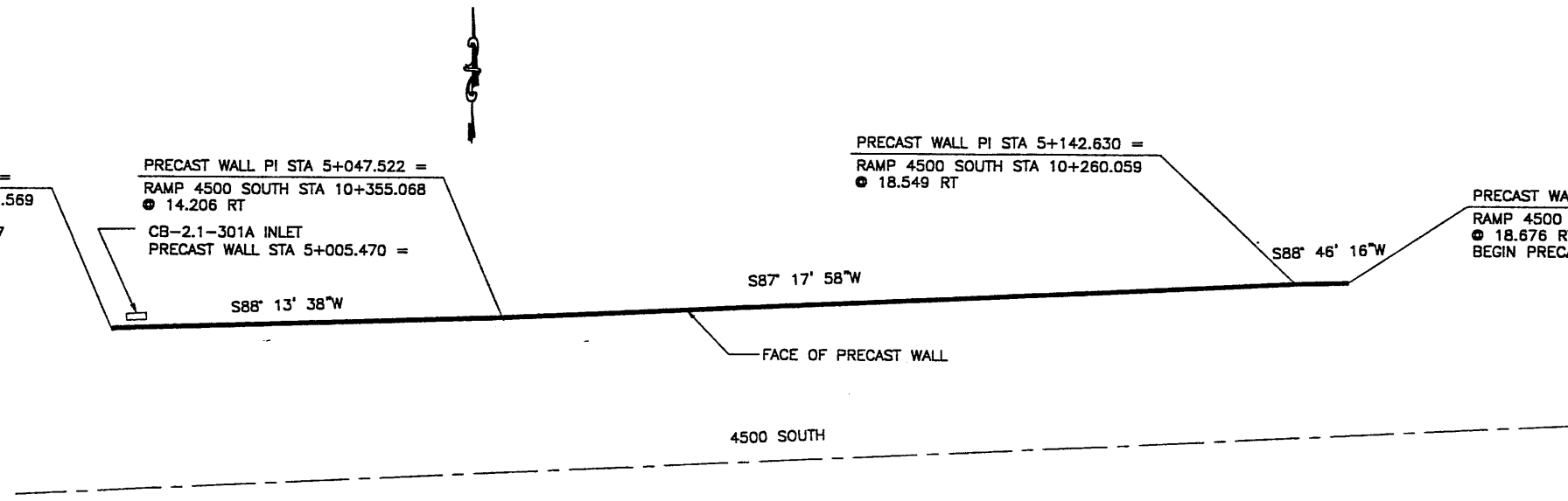
FINAL

PRECAST WALL STA 5+000.000 =  
RAMP 4500 SOUTH STA 10+402.569  
● 12.805 RT  
BEGIN PRECAST WALL R-345-17

PRECAST WALL PI STA 5+047.522 =  
RAMP 4500 SOUTH STA 10+355.088  
● 14.206 RT  
CB-2.1-301A INLET  
PRECAST WALL STA 5+005.470 =

PRECAST WALL PI STA 5+142.630 =  
RAMP 4500 SOUTH STA 10+260.059  
● 18.549 RT

PRECAST WALL STA 5+148.983 =  
RAMP 4500 SOUTH STA 10+253.707  
● 18.676 RT  
BEGIN PRECAST WALL R-345-17



**PLAN VIEW WALL "R-345-17"**

SCALE: 1=400 (FULL SIZE)  
SCALE: 1=800 (HALF SIZE)

DESIGN PARAMETERS
ANGLE OF INTERNAL FRICTION (SELECT) = 34°
ANGLE OF INTERNAL FRICTION (BASE) = 30°
ANGLE OF INTERNAL FRICTION (RANDOM) = 30°
UNIT WEIGHT BACKFILL = 135 PCF = 21.2 KN/M <sup>3</sup>
TRAFFIC SURCHARGE = 250 PSF = 12 KPa
SEISMIC ACCELERATION COFF. = 0.13g (TYP.)
DESIGN CRITERIA
SAFETY FACTOR (OVERTURNING) = 2.0
SAFETY FACTOR (SLIDING) = 1.5
SAFETY FACTOR (PULLOUT) = 1.5
DESIGN LIFE = 75 YEARS

METRIC

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APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-19-98	RELEASE FOR CONSTRUCTION

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-17, NOTES & DESIGN CRITERIA
RE-2	TYPICAL CROSS SECTIONS
RE-3	TYPICAL CROSS SECTIONS
RE-4	ELEVATION PRECAST WALL "R-345-17"
RE-5	ELEVATION PRECAST WALL "R-345-17"
RE-6	ELEVATION PRECAST WALL "R-345-17"
RE-7	SPECIAL PANEL DETAILS

**WASATCH CONSTRUCTORS**

**DEC 0 2 1998**

RELEASED FOR CONSTRUCTION

50 F 11

NO.	DATE	REVISION	BY	CHK

DES.	11-05-98	JN	RETAINED EARTH™
DRN.	11-05-98	RSW	
CHK.	11-05-98	JN	

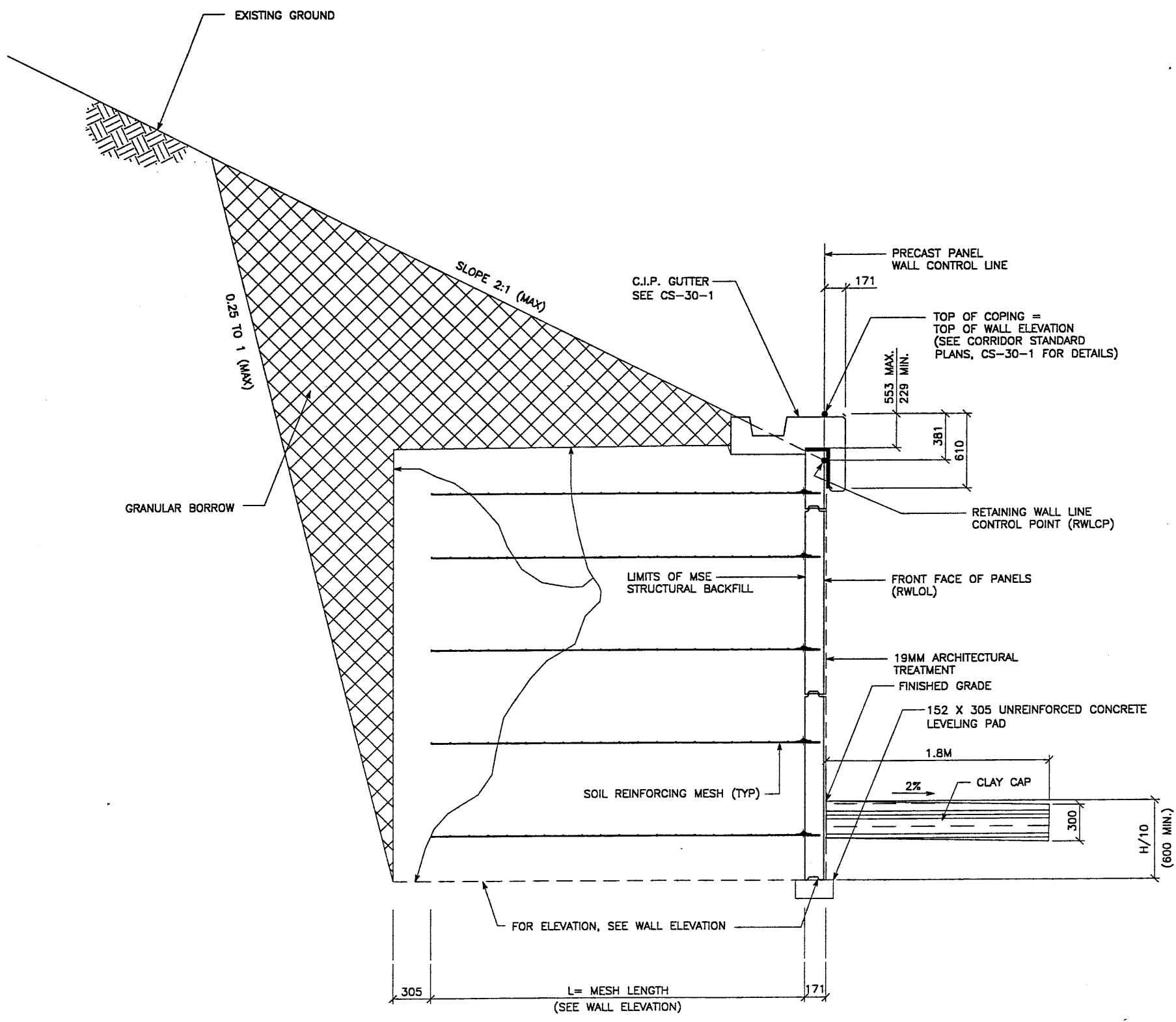
VSL CORPORATION  
2840 Ross Blvd, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 781-8272  
Fax: (919) 781-4869

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MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-17.5
JOB NO.	239-0007
SHT. NO.	RE-1





TYPICAL CROSS SECTION - RETAINING WALL 345-17  
 STA. 5+000.000 TO STA. 5+148.893

SEE SHEET 2.1R-345-17.2 FOR ADDITIONAL INFORMATION  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

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NO.	DATE	DESCRIPTION
1	11-19-98	RELEASE FOR CONSTRUCTION

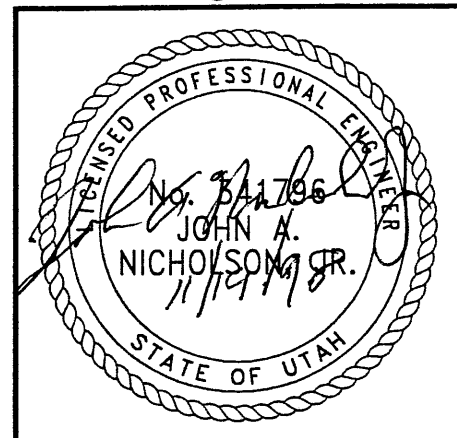
NO.	DATE	REVISION	CHK

**VSL CORPORATION**  
 2840 Plaza Pico, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4889

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WASATCH CONSTRUCTORS  
 DEC 02 1998  
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RETAINED EARTH™ WALLS  
 PRECAST WALL "345-17"  
 TYPICAL CROSS SECTIONS

UTAH I-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.  
 2.1R-345-17.6

JOB NO:  
 239-0007

SHT. NO.  
 RE-2

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1	11-19-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION	CHK

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 2840 Plaza Place, Suite 200  
 Raleigh, NC 27612  
 Telephone: (919) 781-8272  
 Fax: (919) 781-4889

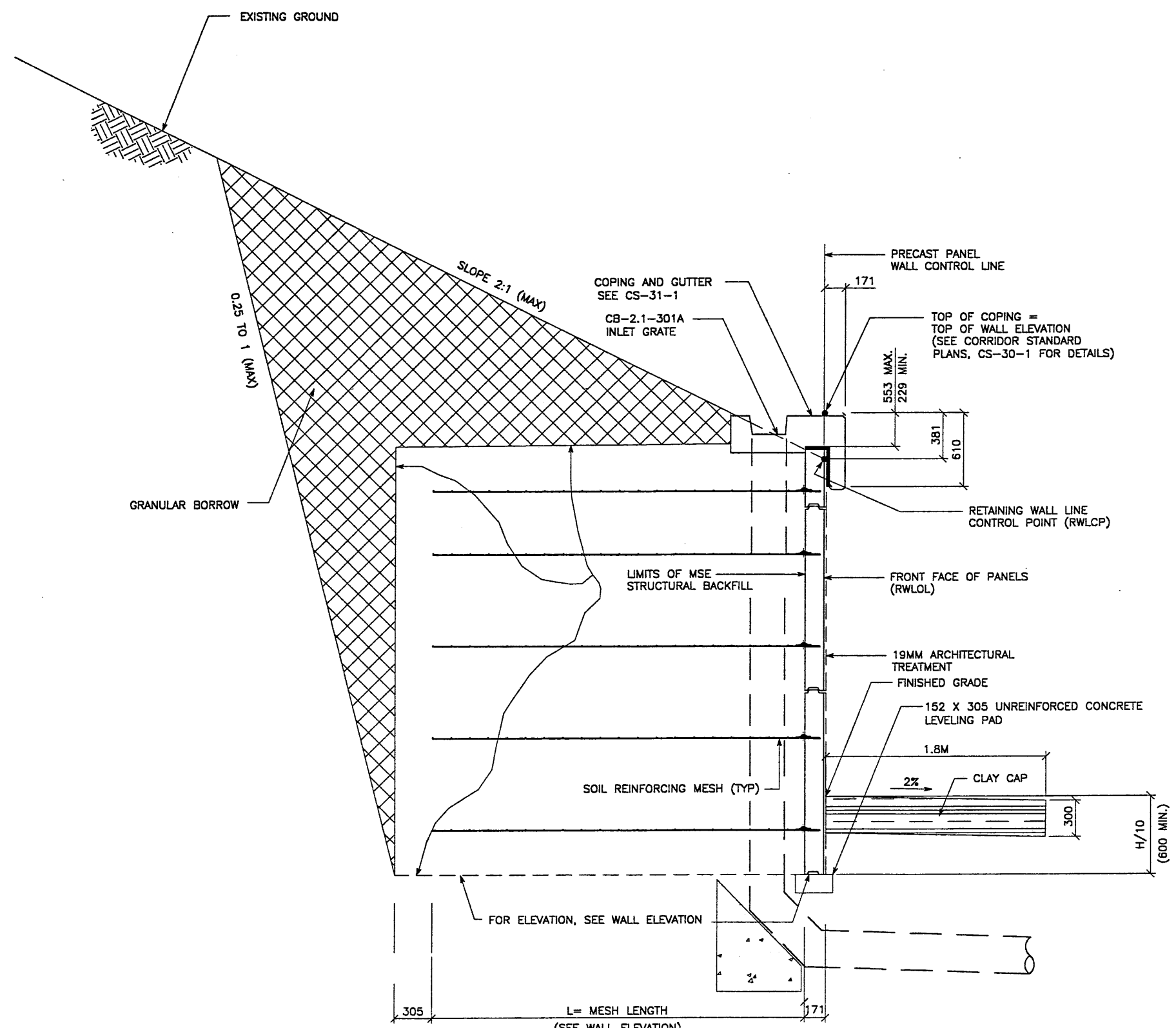
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 ALUMINA, CA / PALMS, TX / PALMSPRINGS, CA (CORPORATE OFFICE)  
 JARVIS, UT / SAN JOSE, CA / SPRINGFIELD, VA

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**RETAINED EARTH™ WALLS**  
 PRECAST WALL™ 345-17™  
 TYPICAL CROSS SECTIONS

UTAH 1-15 INTERCHANGE  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-17.7
JOB NO.	239-0007
SHT. NO.	RE-3

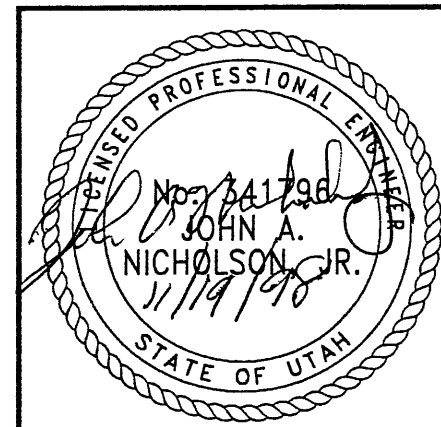


**TYPICAL CROSS SECTION - DOWN DRAIN INLET LOCATION**  
**STA. 5+005.470**

SEE SHEET 2.1R-345-17.2 FOR ADDITIONAL INFORMATION  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

METRIC

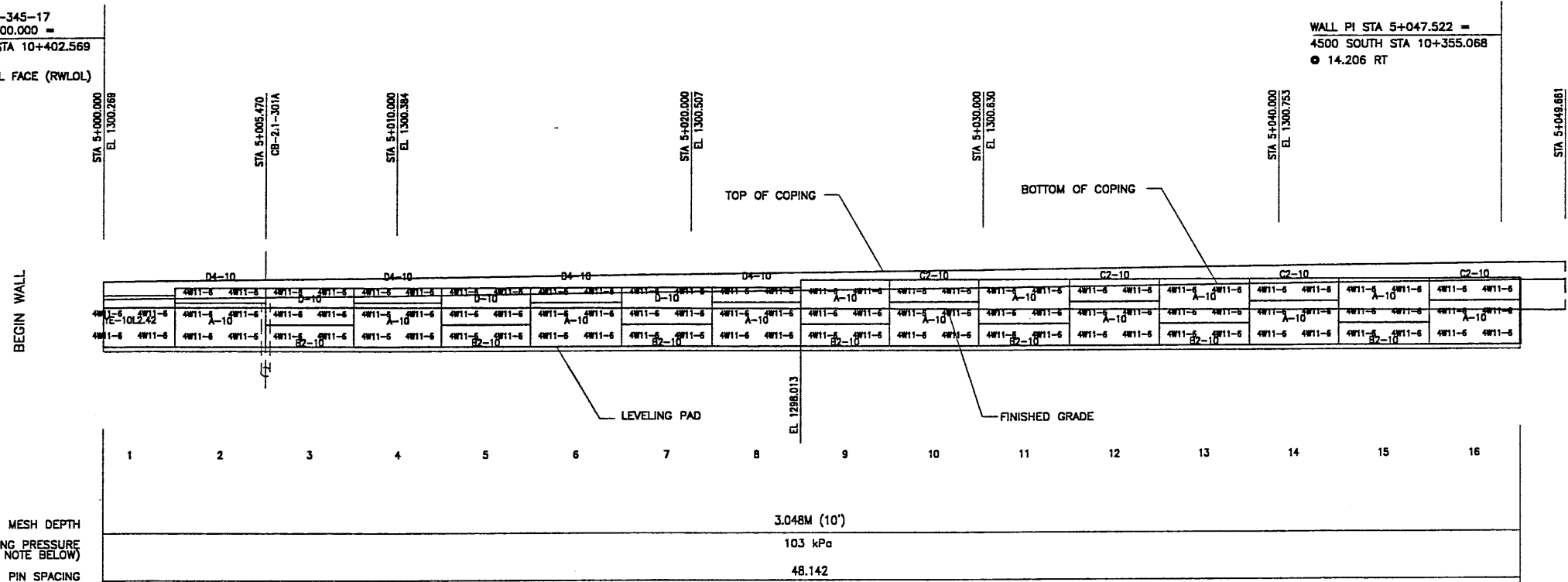
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**WASATCH CONSTRUCTORS**  
**DEC 02 1998**  
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 7 of 11

FINAL DT 11-19-98 H:\RE\_EARTH\PROJECT\239-0007\1998\45SER1\45-17.DWG


BEGIN WALL R-345-17  
 WALL STA 5+000.000 =  
 4500 SOUTH STA 10+402.569  
 @ 12.805 RT  
 NOMINAL PANEL FACE (RWL/DL)



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▲	11-19-98	RELEASE FOR CONSTRUCTION

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 Telephone: (919) 761-6272  
 Fax: (919) 761-4888



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 MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

**WASATCH CONSTRUCTORS**  
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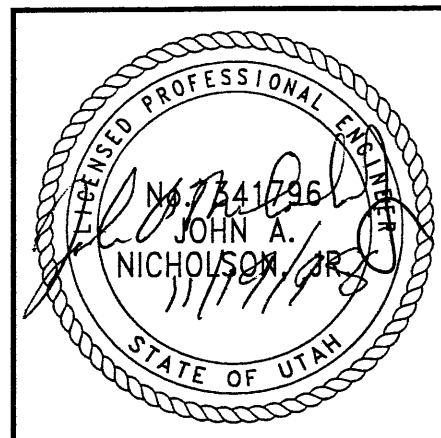
8 of 11

**ELEVATION PRECAST WALL "R-345-17"**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 419.48 SM) SCALE 1:200 (HALF SIZE)

**APPROVER NOTE:**  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

METRIC

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RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-17"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-17.8
JOB NO.	239-0007
SHT. NO.	RE-4

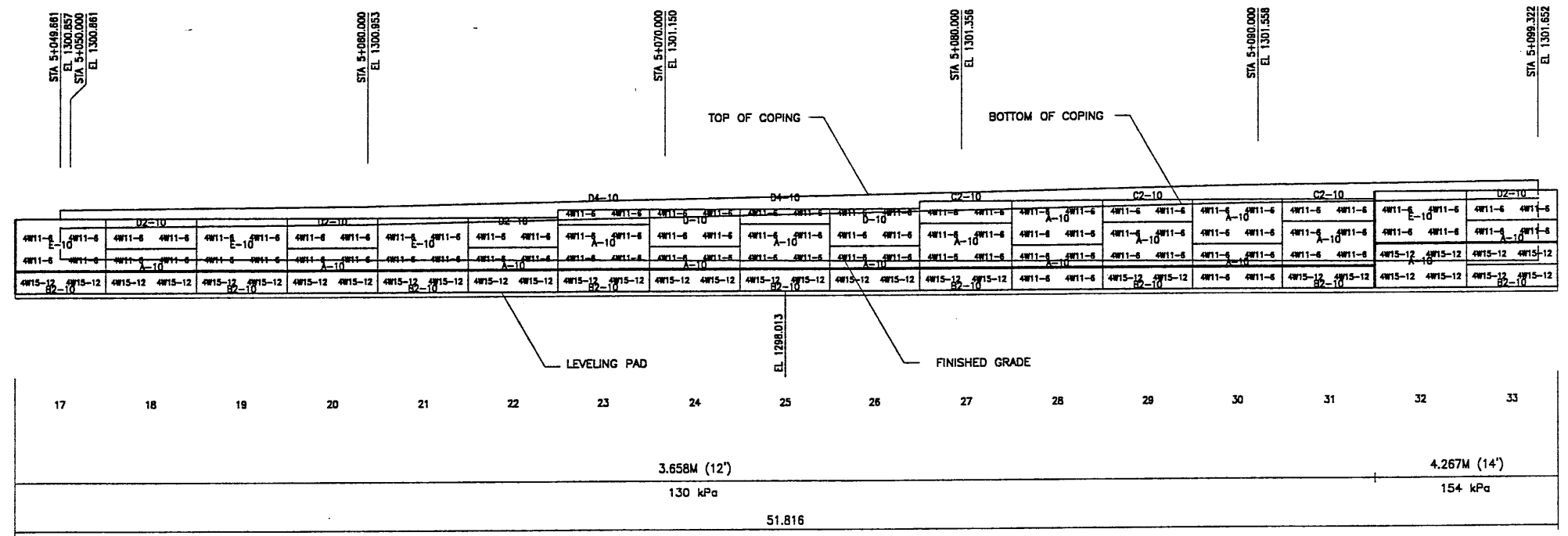
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NO.	DATE	DESCRIPTION
△	11-19-98	RELEASE FOR CONSTRUCTION

DES.	CHK.	DATE	NO.	REVISION	BY
JUN 11-05-98	JUN				
RSW 11-05-98	RSW				
JUN 11-05-98	JUN				

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 2840 Plaza Place, Suite 200  
 Raleigh, NC 27617  
 Telephone: (919) 781-8272  
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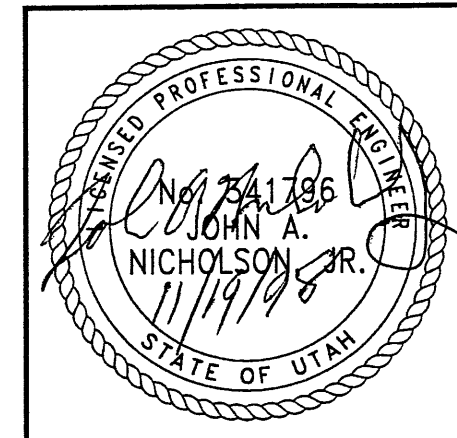


MESH DEPTH  
 MAXIMUM BEARING PRESSURE  
 (SEE NOTE BELOW)  
 PIN SPACING

**ELEVATION PRECAST WALL "R-345-17"**  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 419.48 SM) SCALE 1:200 (HALF SIZE)

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**WASATCH CONSTRUCTORS**  
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 9 of 11

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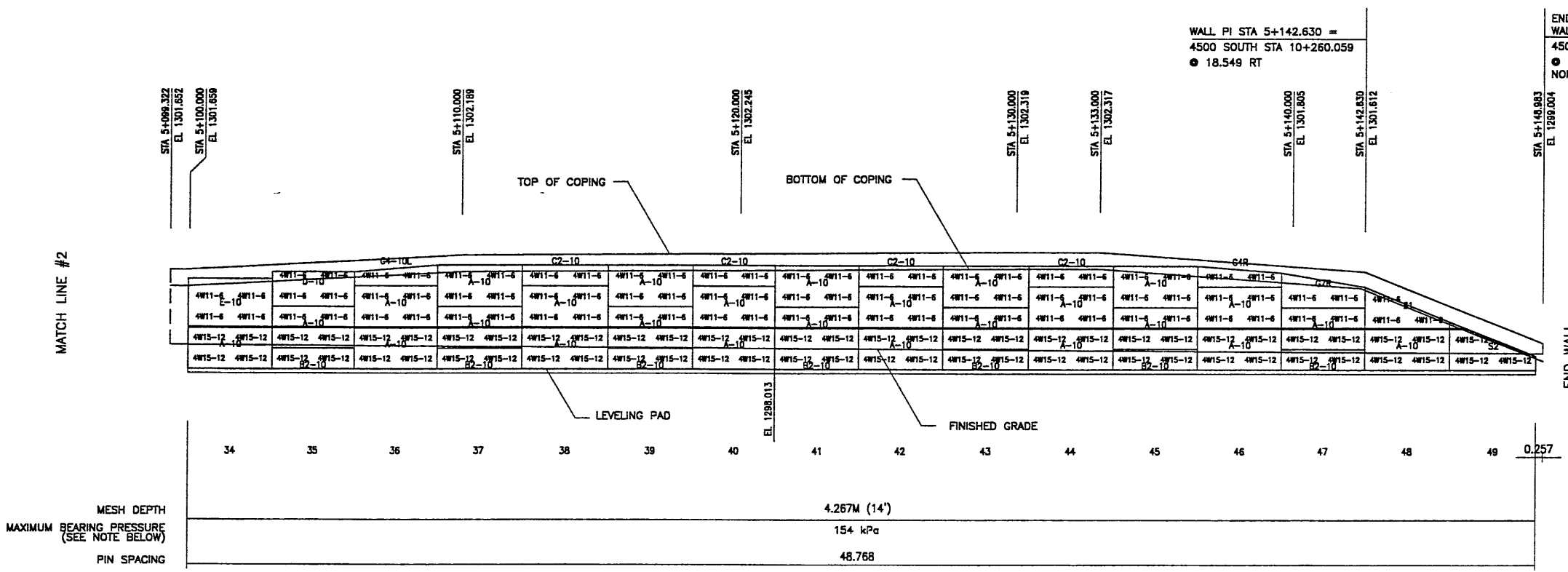
RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-17"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-17.9
JOB NO.	239-0007
SHT. NO.	RE-5

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FINAL 11-19-98

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-19-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION

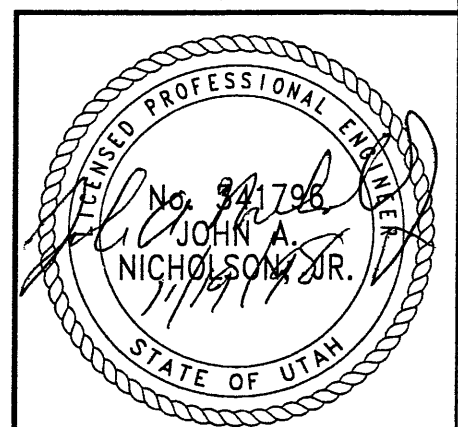


ELEVATION PRECAST WALL "R-345-17"  
(FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
SCALE 1:200 (HALF SIZE)  
(TOTAL SURFACE AREA OF PANELS = 419.48 SM)

METRIC

APPROVER NOTE:  
MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
ARE INDICATED BELOW "MESH DEPTH LINE"  
REVIEWER TO VERIFY MAXIMUM BEARING  
CAPACITY OF FOUNDATION.

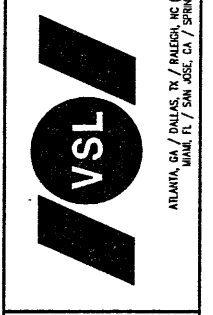
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10 OF 11

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Telephone: (919) 781-6772  
Fax: (919) 781-6869

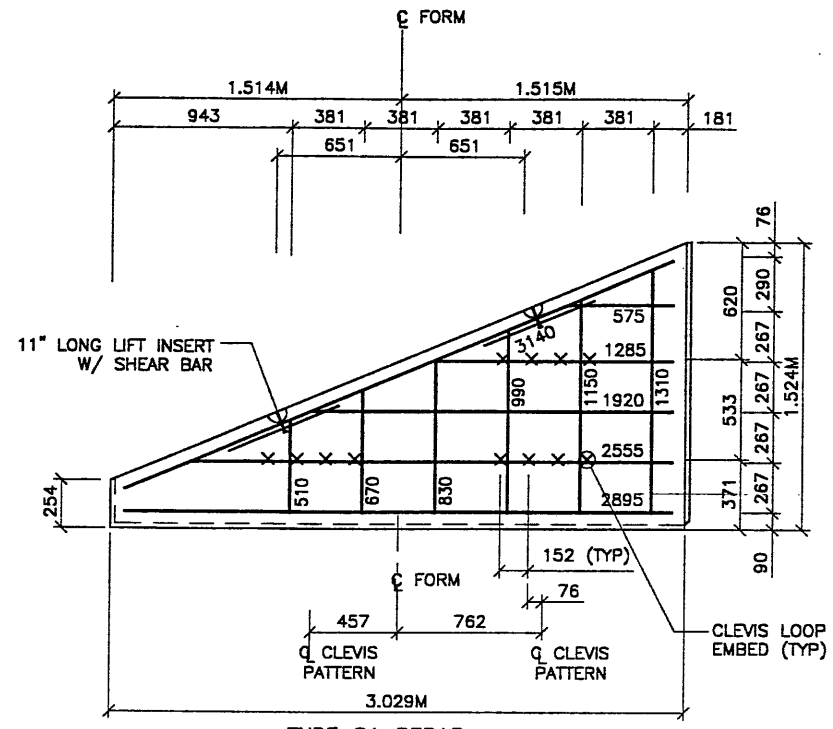


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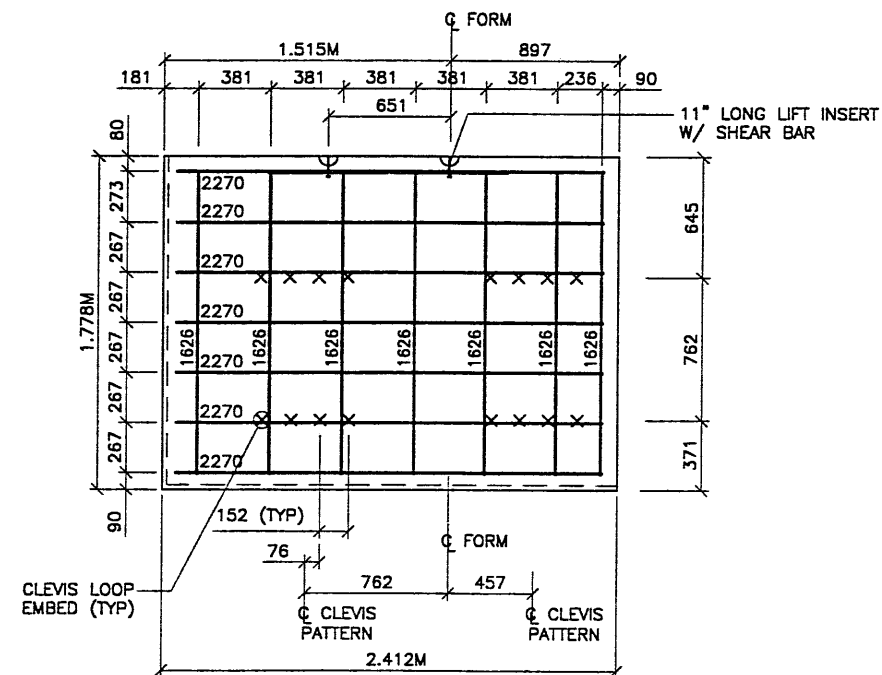
RETAINED EARTH™ WALLS  
PRECAST WALL "R-345-17"  
UTAH I-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

OWG. NO.	2.1R-345-17.10
JOB NO.	239-0007
SHT. NO.	RE-6

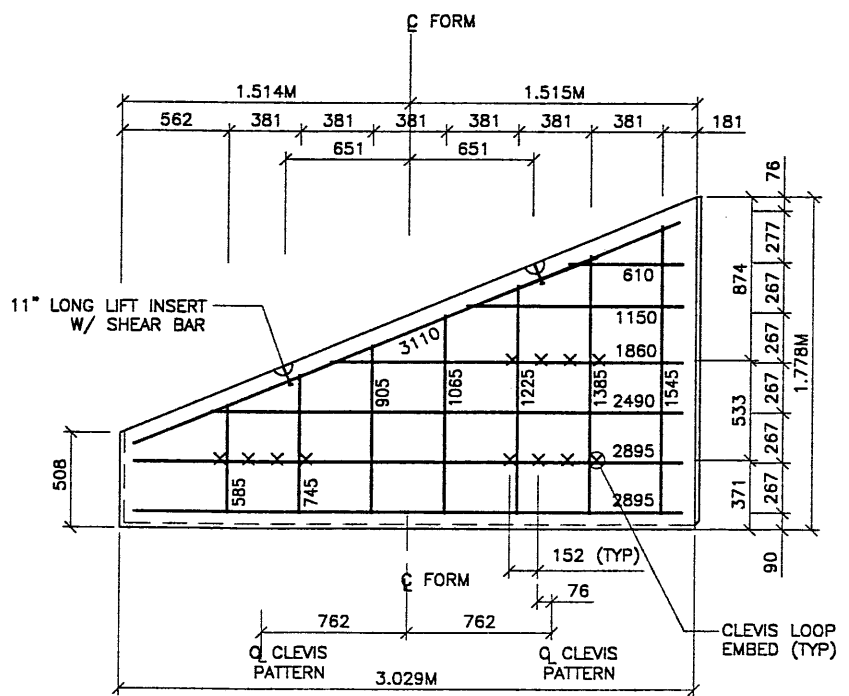
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NO.	DATE	DESCRIPTION
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TYPE S1 REBAR  
(AREA = 2.71 SQ.M)



TYPE YE-10L2.42 REBAR  
(AREA = 4.31 SQ.M)



TYPE S2 REBAR  
(AREA = 3.48 SQ.M)

- PANEL REINFORCEMENT NOTES:
1. PANELS ARE SHOWN BACK FACE.
  2. HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  3. ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  4. ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  5. PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  6. ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS I.
  7. CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 25,200 KPa.
  8. EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  9. ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  10. VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.
  11. LIFT INSERTS ARE 6 3/4" LONG IN ALL PANELS LESS THAN 1.524M TALL. PANELS TALLER THAN 1.524M SHALL HAVE 11" LONG LIFT ANCHORS.
  12. SEE FOSTER GEOTECHNICAL STD. PLANS FOR ADD'L PANEL DETAILS

VSL CORPORATION  
2940 Pico Plaza, Suite 200  
Raleigh, NC 27612  
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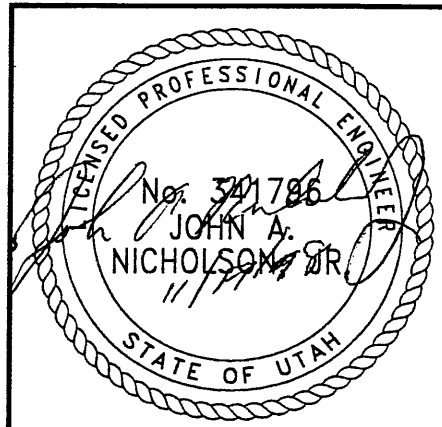
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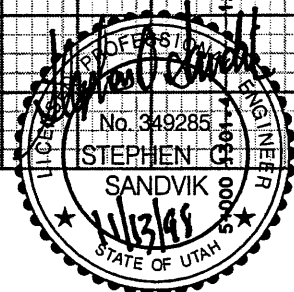
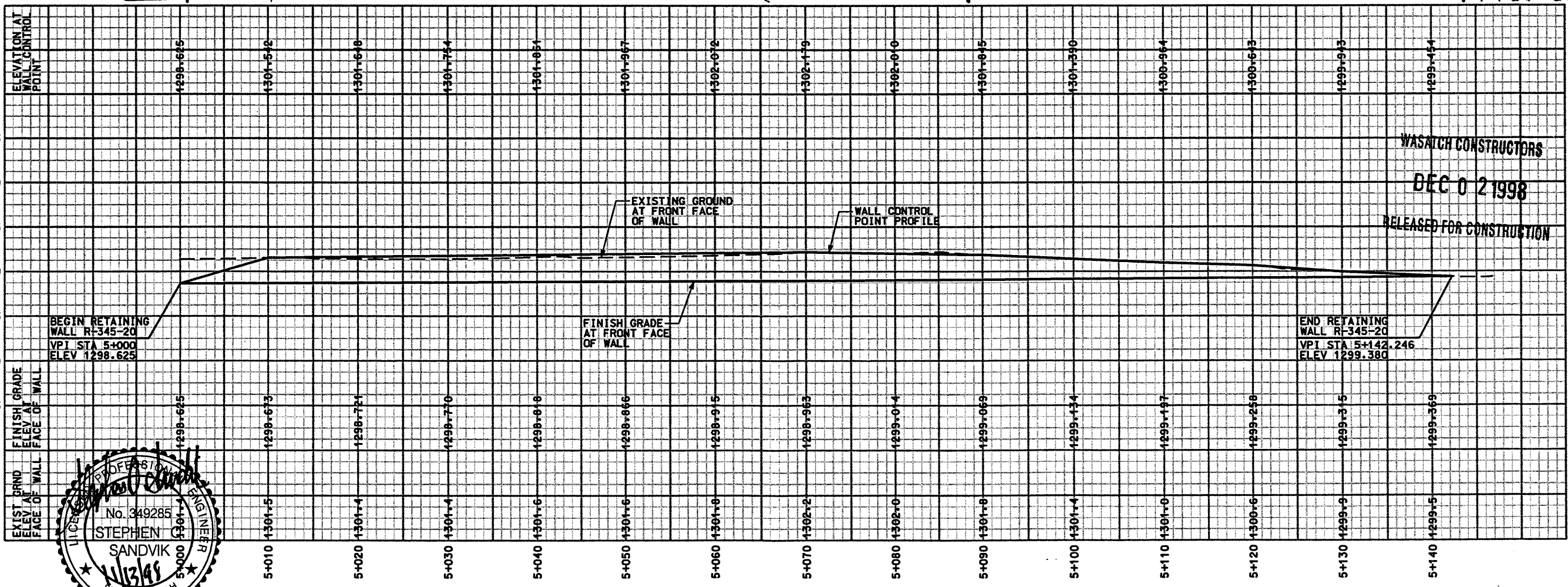
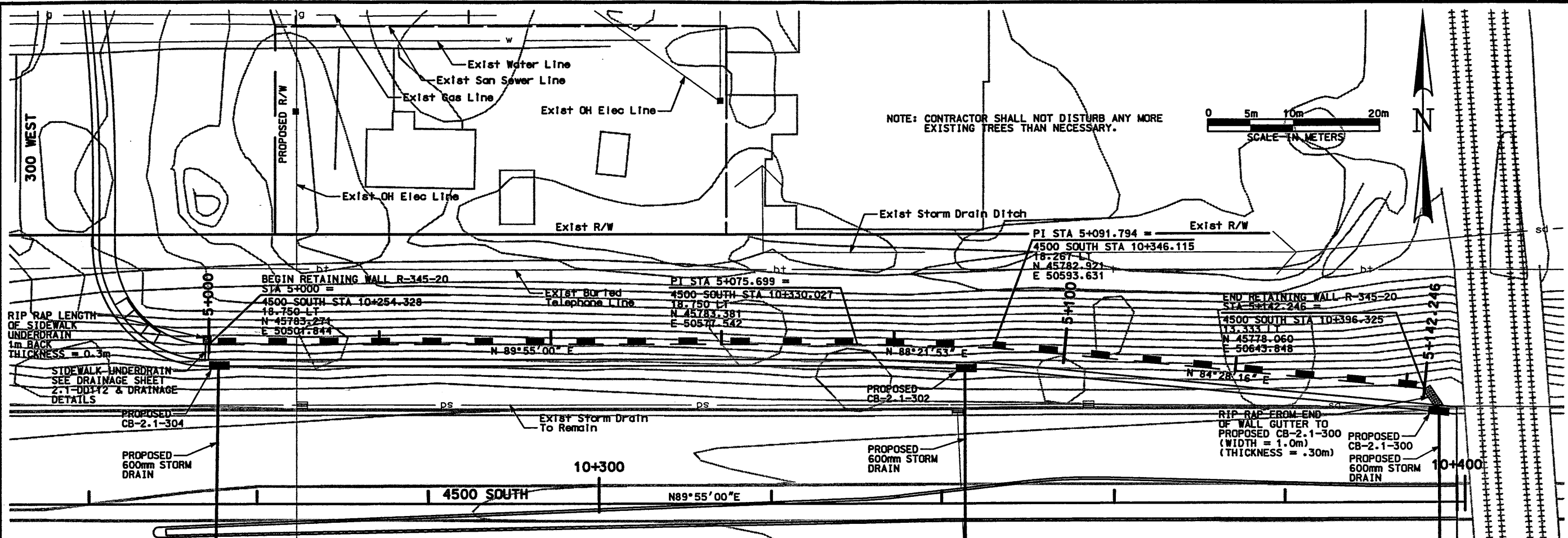
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METRIC

RETAINED EARTH™ WALLS  
SPECIAL PANEL DETAILS  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-17.11
JOB NO.	239-0007
SHT. NO.	RE-7





**UTAH DEPARTMENT OF TRANSPORTATION**  
 MK CENTENNIAL  
 SVERDRUP/DE LEUW

**I-15 CORRIDOR RECONSTRUCTION**  
 SITUATION & LAYOUT R-345-20  
 SECTION 2.1  
 PROJECT NUMBER #SP-15-7(135)296

**APPROVED FOR CONSTRUCTION**

DATE: 8/21/98  
 PROJECT DESIGN ENGINEER: Stephen O. Sandvik  
 PROJECT MANAGER: Randle L. Ross

DATE: 8/21/98  
 CHECK BAR: 8/26/98  
 CHECK BAR: 8/26/98  
 CHECK BAR: 8/26/98

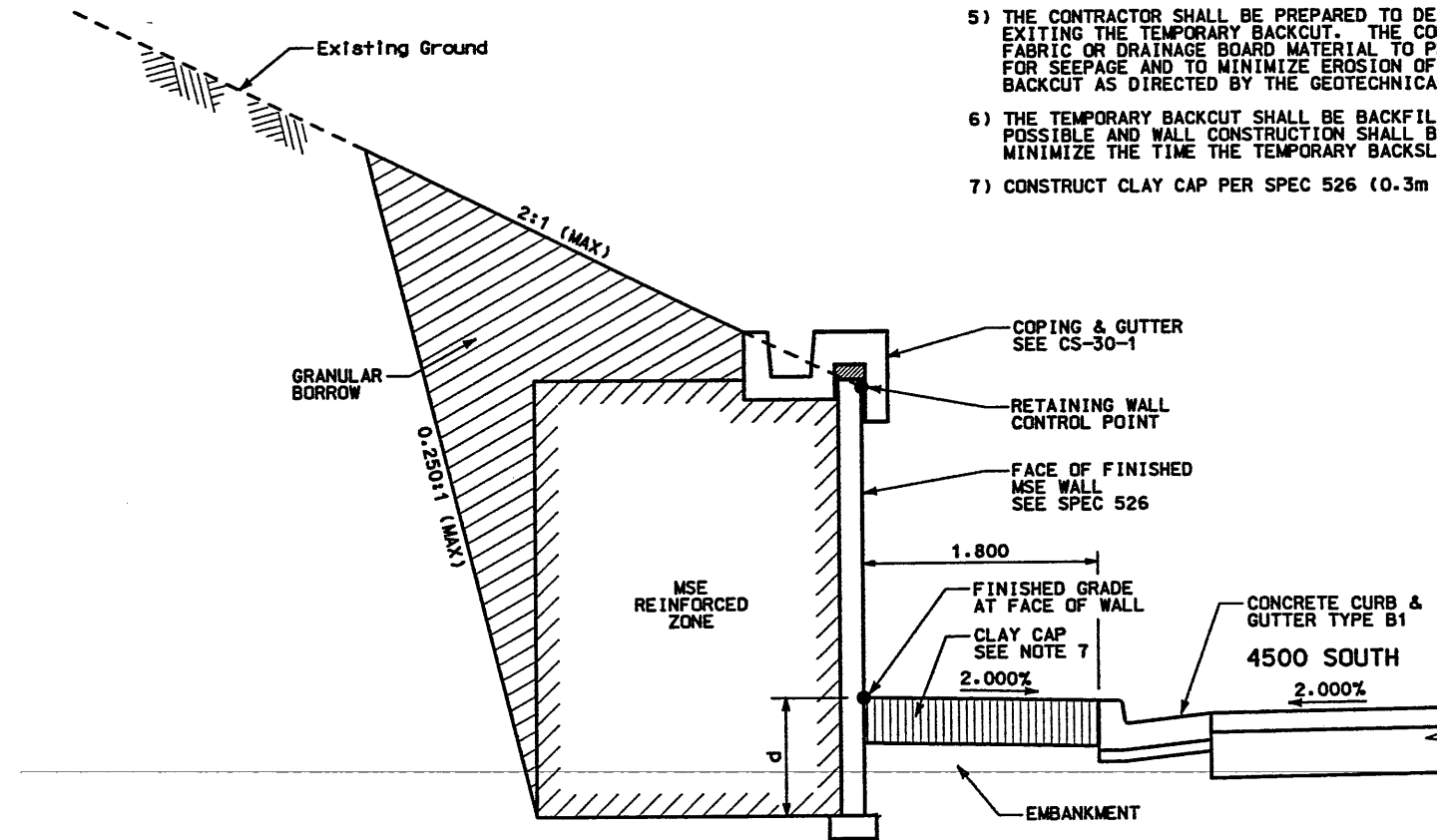
WBS NO. 2113411

SHT 1 OF 8

**RETAINING WALL DETAIL**  
**SECTION 2.1 WALL R-345-20**  
**(1 STAGE MSE WALL)**  
**NTS**

**NOTES:**

- 1) SEE CORRIDOR STANDARD SPECIFICATION 221 FOR SPECIAL EXCAVATION REQUIREMENTS WHERE GROUNDWATER IS EXPECTED AT OR ABOVE THE REQUIRED EXCAVATION.
- 2) THE FOUNDATION BEARING MATERIALS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER DURING SITE PREPARATION. ANY UNDESIRABLE MATERIALS WILL NEED TO BE REMOVED AND REPLACED WITH BORROW IN ORDER TO ACHIEVE ACCEPTABLE CONDITIONS AT THE BASE OF THE WALL.
- 3) SEE DRAINAGE PLANS & DETAILS FOR DRAINAGE DETAILS. DRAINAGE SHOWN HERE FOR INFORMATION ONLY.
- 4) CONTRACTOR SHALL PROVIDE BARRICADES OR OTHER MEANS TO KEEP VEHICLE TRAFFIC AT LEAST 7 METERS FROM THE TOP OF THE TEMPORARY CUT SLOPE.
- 5) THE CONTRACTOR SHALL BE PREPARED TO DEAL WITH SEEPAGE EXITING THE TEMPORARY BACKCUT. THE CONTRACTOR SHALL USE FABRIC OR DRAINAGE BOARD MATERIAL TO PROVIDE DRAINAGE FOR SEEPAGE AND TO MINIMIZE EROSION OF THE TEMPORARY BACKCUT AS DIRECTED BY THE GEOTECHNICAL FIELD ENGINEER.
- 6) THE TEMPORARY BACKCUT SHALL BE BACKFILLED AS SOON AS POSSIBLE AND WALL CONSTRUCTION SHALL BE EXPEDITED TO MINIMIZE THE TIME THE TEMPORARY BACKSLOPE IS EXPOSED.
- 7) CONSTRUCT CLAY CAP PER SPEC 526 (0.3m THICK).

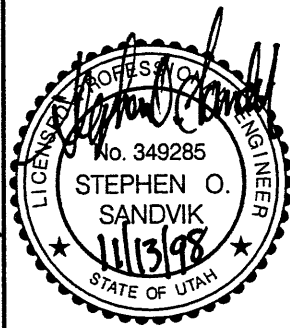


d = EMBEDMENT DEPTH (SEE VSL DETAILS)

**DETAIL A**

STA 5+000.000 TO STA 5+142.246

**WASATCH CONSTRUCTORS**  
**DEC 0 2 1998**  
**RELEASED FOR CONSTRUCTION**



APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
△	11/16/98	△	11/16/98
△	/ /	△	/ /
△	/ /	△	/ /
△	/ /	△	/ /
UTAH DEPARTMENT OF TRANSPORTATION		WBS NO.	
MK CENTENNIAL		2113411	
SVERRUP/DE LEUW			
DESIGN	CHECK	DESIGN	CHECK
DAF	BAR	DAF	BAR
8/21/98	8/26/98	8/21/98	8/26/98
DESIGN	CHECK	DESIGN	CHECK
DAF	BAR	DAF	BAR
8/21/98	8/26/98	8/21/98	8/26/98
QUANT.	QUANT.	QUANT.	QUANT.
/ /	/ /	/ /	/ /
APPROVAL	DATE	APPROVAL	DATE
RECORD		RECORD	
8/21/98	8/21/98	8/21/98	8/21/98
STEPHEN O. SANDVIK	STEPHEN O. SANDVIK	STEPHEN O. SANDVIK	STEPHEN O. SANDVIK
PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER	PROJECT DESIGN ENGINEER
APPROVED	DATE	APPROVED	DATE
8/21/98	8/21/98	8/21/98	8/21/98
RAIDLE L. ROSS	RAIDLE L. ROSS	RAIDLE L. ROSS	RAIDLE L. ROSS
PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER	PROJECT MANAGER
I-15 CORRIDOR RECONSTRUCTION		SALT LAKE COUNTY	
WALL DETAIL R-345-20		DWG. NO.	
SECTION 2.1		2.1R-345-20.2	
PROJECT NUMBER		#SP-15-7(135)296	
SHT. 2 OF 8		REF.	

H:\RE\_EARTH\APROJ\9-0007\1998\45SERIES\45-17\RE-1

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-19-98	RELEASE FOR CONSTRUCTION

PRECAST WALL STA 5+000.000 =  
RAMP 4500 SOUTH STA 10+254.328  
● 18.750 LT  
BEGIN PRECAST WALL R-345-20



PRECAST WALL PI STA 5+075.699 =  
RAMP 4500 SOUTH STA 10+330.027  
● 18.750 LT

PRECAST WALL PI STA 5+091.794 =  
RAMP 4500 SOUTH STA 10+346.115  
● 18.267 LT

PRECAST WALL STA 5+142.246 =  
RAMP 4500 SOUTH STA 10+396.325  
● 13.333 LT  
END PRECAST WALL R-345-20

N89° 55' 00"E

S88° 21' 53"E

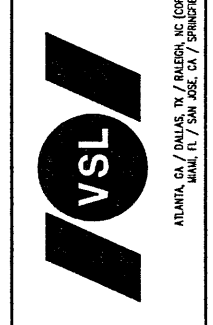
S84° 28' 16"E

FACE OF PRECAST WALL

RAMP 4500 SOUTH

NO.	DATE	REVISION	CHK

VSL CORPORATION  
2840 Phoco Place, Suite 200  
Raleigh, NC 27612 781-6272  
Telephone: (919) 781-6272  
Fax: (919) 781-6869



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RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-345-20, NOTES & DESIGN CRITERIA
RE-2	TYPICAL CROSS SECTIONS
RE-3	ELEVATION PRECAST WALL "R-345-20"
RE-4	ELEVATION PRECAST WALL "R-345-20"
RE-5	ELEVATION PRECAST WALL "R-345-20"
RE-6	SPECIAL PANEL DETAILS

PLAN VIEW WALL "R-345-20"

SCALE: 1=400 (FULL SIZE)  
SCALE: 1=800 (HALF SIZE)

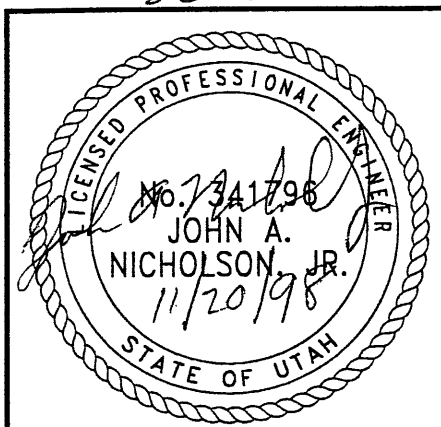
DESIGN PARAMETERS
ANGLE OF INTERNAL FRICTION (SELECT) = 34°
ANGLE OF INTERNAL FRICTION (BASE) = 30°
ANGLE OF INTERNAL FRICTION (RANDOM) = 30°
UNIT WEIGHT BACKFILL = 135 PCF = 21.2 KN/M <sup>3</sup>
TRAFFIC SURCHARGE = 250 PSF = 12 KPa
SEISMIC ACCELERATION COFF. = 0.13g (TYP.)
DESIGN CRITERIA
SAFETY FACTOR (OVERTURNING) = 2.0
SAFETY FACTOR (SLIDING) = 1.5
SAFETY FACTOR (PULLOUT) = 1.5
DESIGN LIFE = 75 YEARS

WASATCH CONSTRUCTORS

DEC 0 2 1998

RELEASED FOR CONSTRUCTION

3 of 8



METRIC

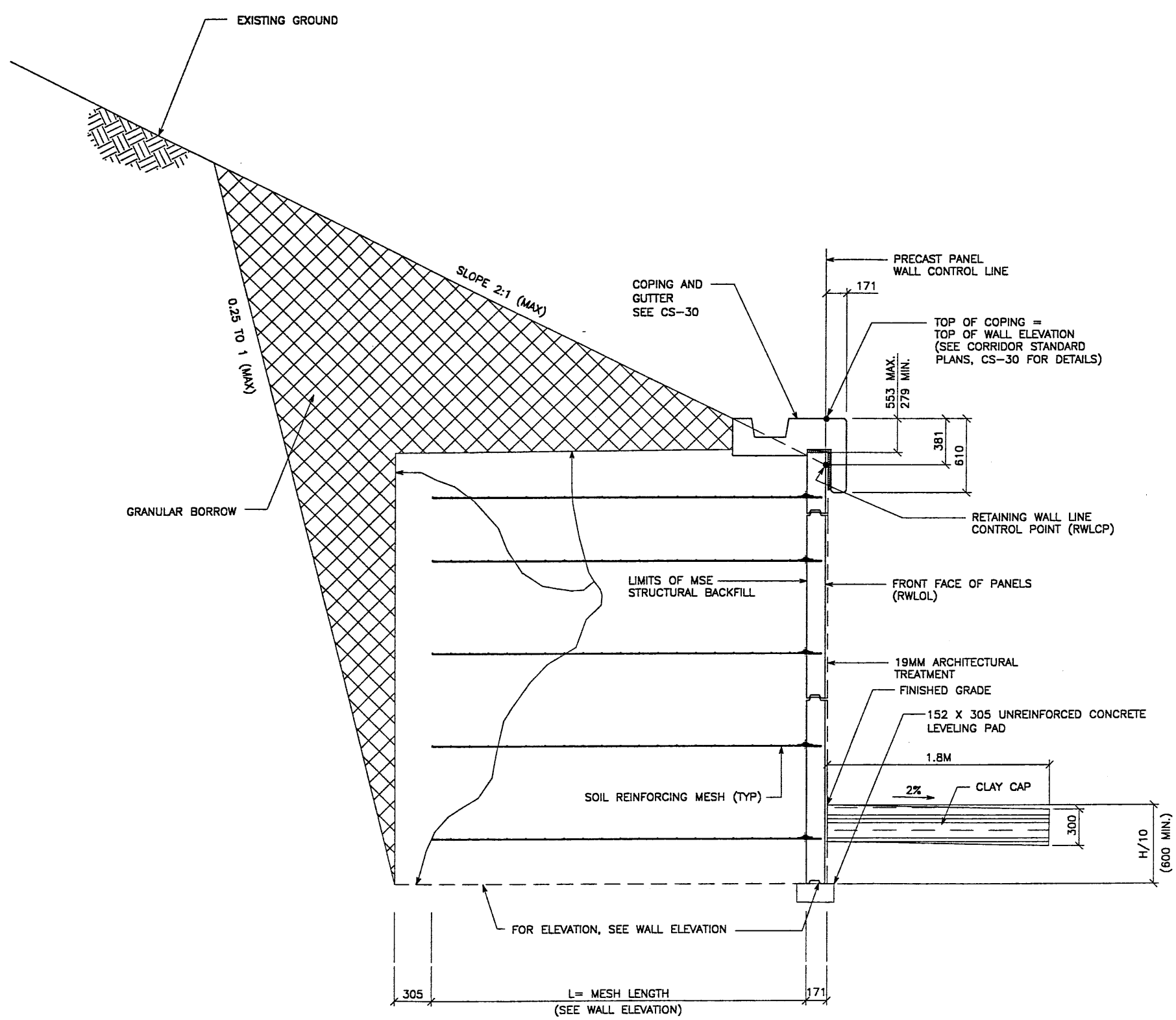
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

RETAINED EARTH™ WALLS  
PLAN VIEW PRECAST WALL "R-345-20"  
UTAH 1-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-20.3
JOB NO.	239-0007
SHT. NO.	RE-1

FINAL T 11-19-98

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-19-98	RELEASE FOR CONSTRUCTION <i>JN</i>



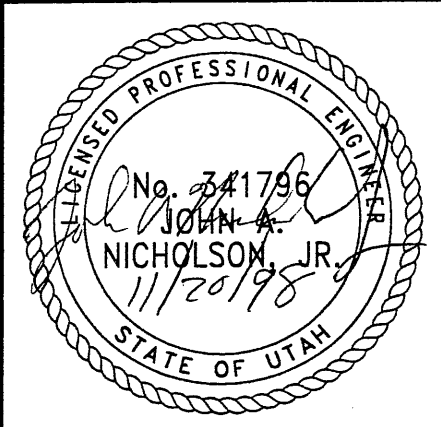
**TYPICAL CROSS SECTION - RETAINING WALL 345-20**  
**STA. 5+000.000 TO STA. 5+142.246**

SEE SHEET 2.1R-345-20.2 FOR ADDITIONAL INFORMATION  
 SCALE: 1:20 (FULL SIZE)  
 SCALE: 1:40 (HALF SIZE)

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

METRIC

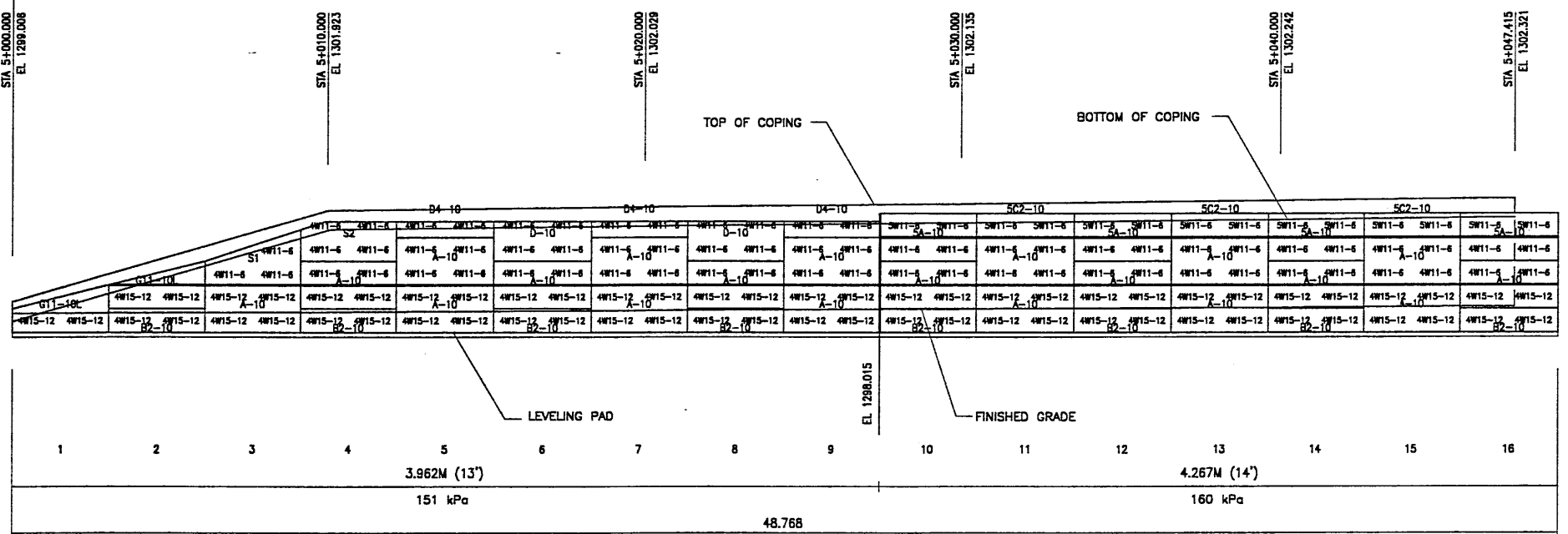
**WASATCH CONSTRUCTORS**  
**DEC 0 2 1998**  
 RELEASED FOR CONSTRUCTION  
 4 of 8



DES. 11-5-98 JN		CHK. 11-5-98 JN		RETAINED EARTH™ VSL	NO. DATE	BY CHK
DRN. 11-5-98 RSW		CHK. 11-5-98 JN				
<b>VSL CORPORATION</b> 2840 Plaza Place, Suite 200 Raleigh, NC 27612 Telephone: (919) 781-8272 Fax: (919) 781-6969				ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE) MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, MA		
<small>VSL Corporation (VSL) owns a strict proprietary right in the design, construction and calculation information contained herein. Such information is made available to the contractor in part or in any other form for the purpose of construction of the project only. VSL shall not be held liable for any errors or omissions in this drawing. VSL shall not be held liable for any claims or damages arising from the use of this drawing. THE USER ACCEPTS ALL LIABILITY FOR THE USE OF THIS DRAWING.</small>						
<b>RETAINED EARTH™ WALLS</b> <b>PRECAST WALL "345-20"</b> <b>TYPICAL CROSS SECTIONS</b> <b>UTAH 1-15 INTERCHANGE</b> <b>SALT LAKE COUNTY, UTAH</b> <b>UTAH DEPARTMENT OF TRANSP.</b>						
DWG. NO. 2.1R-345-20.4 JOB NO. 239-0007 SH. NO. RE-2						

H:\RE\_EARTH\PROJECT\239-0007\1998\455SERIE 15-20 11-19-98 FINAL

BEGIN WALL R-345-20  
 WALL STA 5+000.000 =  
 4500 SOUTH STA 10+254.328  
 ● 18.750 LT  
 NOMINAL PANEL FACE (RWLOL)



MESH DEPTH  
 MAXIMUM BEARING PRESSURE  
 (SEE NOTE BELOW)  
 PIN SPACING

ELEVATION PRECAST WALL "R-345-20"  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 464.28 SM) SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

METRIC

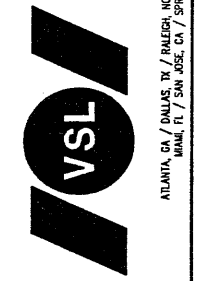
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
 EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE  
 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE  
 ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS  
 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

MATCH LINE #1

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲ 11-19-98		RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION

VSL CORPORATION  
 2500 Plaza Place, Suite 200  
 San Jose, CA 95131  
 Tel: (415) 781-6272  
 Fax: (415) 781-4869



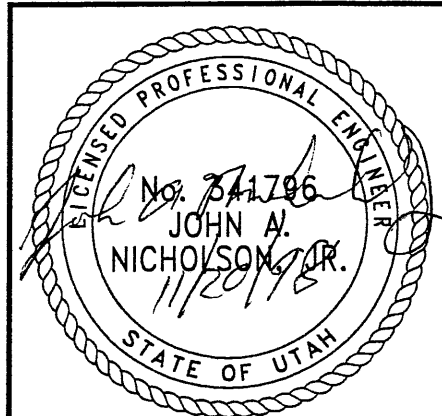
ALABAMA, GA / DALLAS, TX / BALTIMORE, MD (CORPORATE OFFICE)  
 MAINE, IL / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS

DEC 0 2 1998

RELEASED FOR CONSTRUCTION

5 of 8

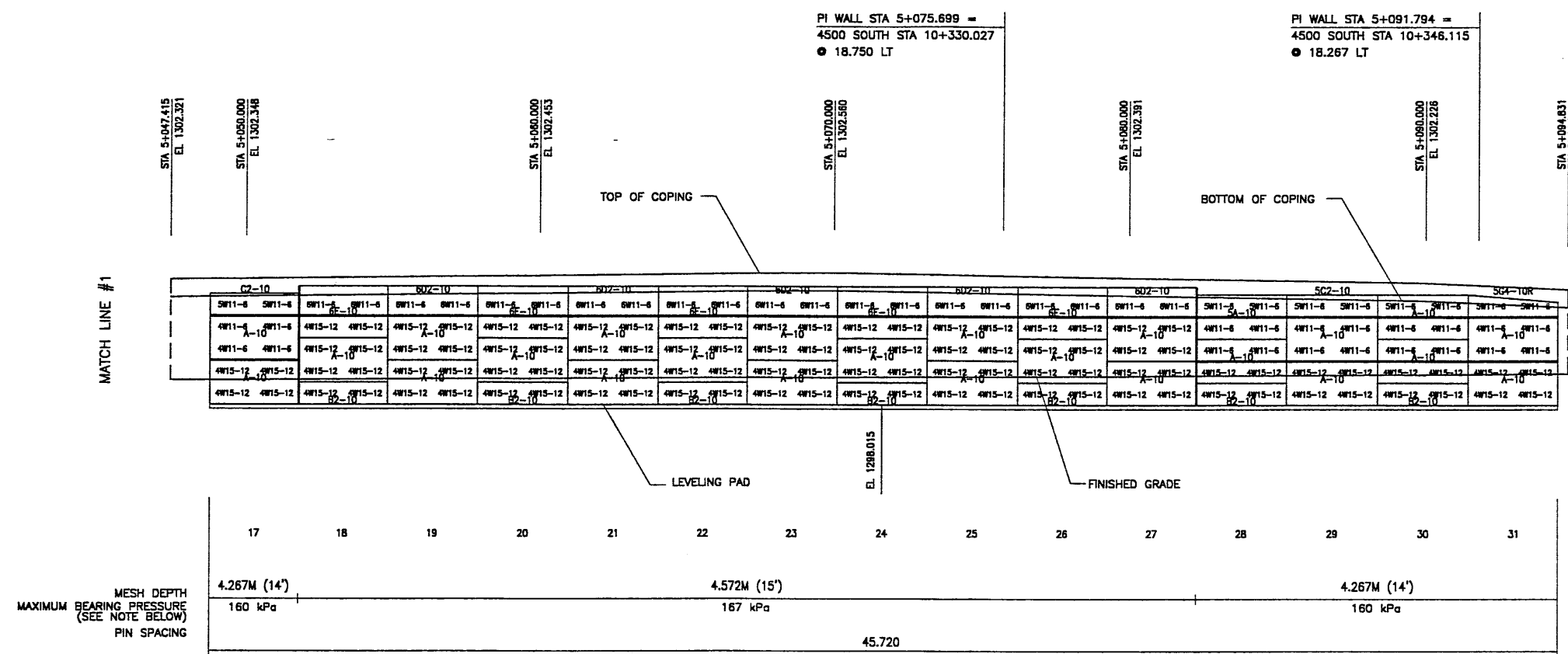


RETAINED EARTH™ WALLS  
 PRECAST WALL "R-345-20"  
 UTAH I-15 RECONSTRUCTION  
 SALT LAKE COUNTY, UTAH  
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-20.5
JOB NO.	239-0007
SHT. NO.	RE-3

FINAL T 11-19-98 H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIE\45-20\DWG (X-UTAH.DWG)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-19-98	RELEASE FOR CONSTRUCTION

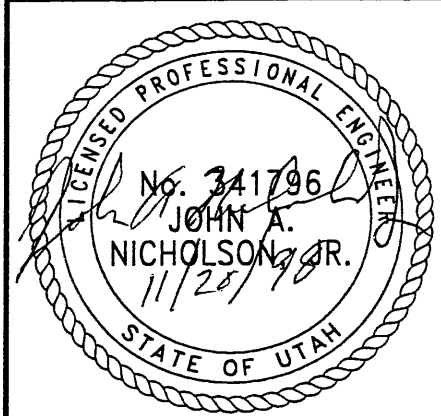


**ELEVATION PRECAST WALL "R-345-20"**  
(FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
(TOTAL SURFACE AREA OF PANELS = 464.28 SM) SCALE 1:200 (HALF SIZE)

APPROVER NOTE:  
MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
ARE INDICATED BELOW "MESH DEPTH LINE"  
REVIEWER TO VERIFY MAXIMUM BEARING  
CAPACITY OF FOUNDATION.

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OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
THE MANUFACTURER'S SPECIFICATION.

METRIC



**WASATCH CONSTRUCTORS**  
**DEC 02 1998**  
**RELEASED FOR CONSTRUCTION**  
**6 OF 8**

DESIGN		CHECKED		DATE		REVISION		BY	
JN	11-05-98	RSW	11-05-98	JN	11-05-98				

RETAINED EARTH™

VSL CORPORATION  
2840 Plaza Place, Suite 200  
Raleigh, NC 27612  
Tel: (919) 871-8272  
Fax: (919) 781-4985

ATLANTA, GA / DALLAS, TX / BALTIMORE, MD (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

VSL

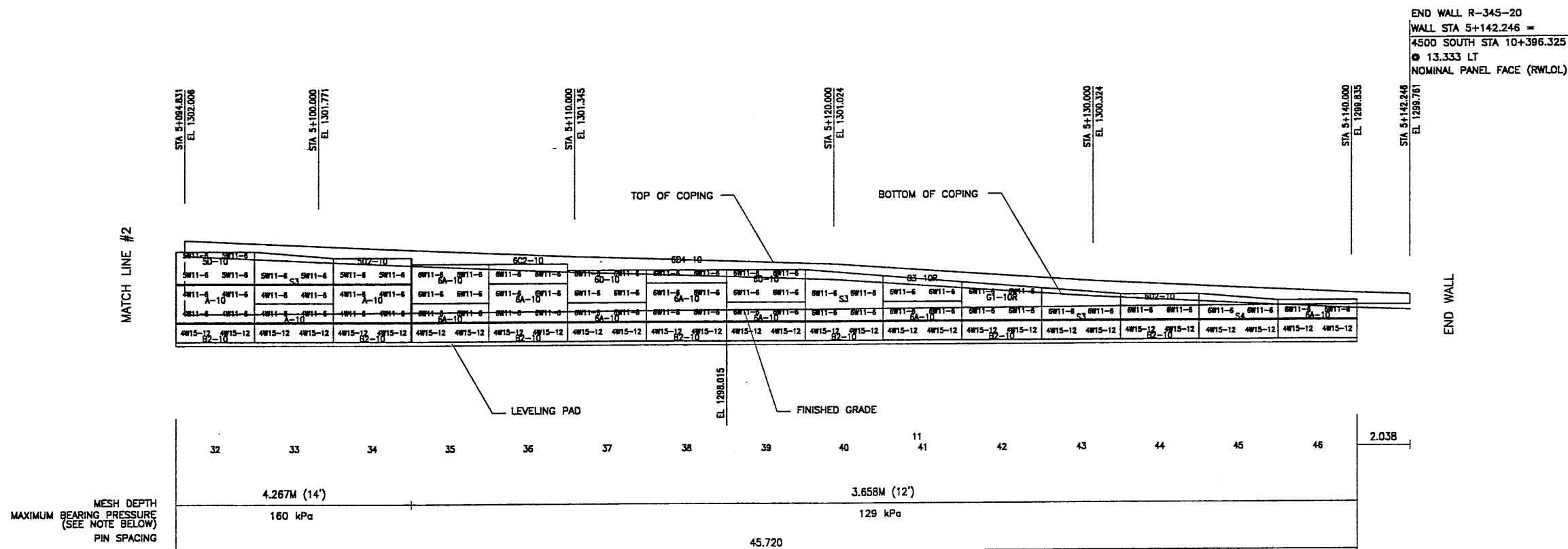
UTAH 1-15 RECONSTRUCTION  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO. 2.1R-345-20.6  
JOB NO. 239-0007  
SHT. NO. RE-4



FINAL 11-19-98 H:\RE\_EARTH\PROJECT\239-0007\1998\45SERIE 45-20 VSL (X-UTAH.DWG)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-19-98	RELEASE FOR CONSTRUCTION



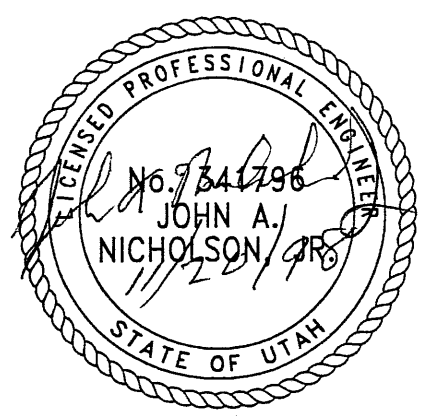
WASATCH CONSTRUCTORS  
 DEC 0 2 1998  
 RELEASED FOR CONSTRUCTION  
 7 OF 8

ELEVATION PRECAST WALL "R-345-20"  
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)  
 (TOTAL SURFACE AREA OF PANELS = 464.28 SM) SCALE 1:200 (HALF SIZE)

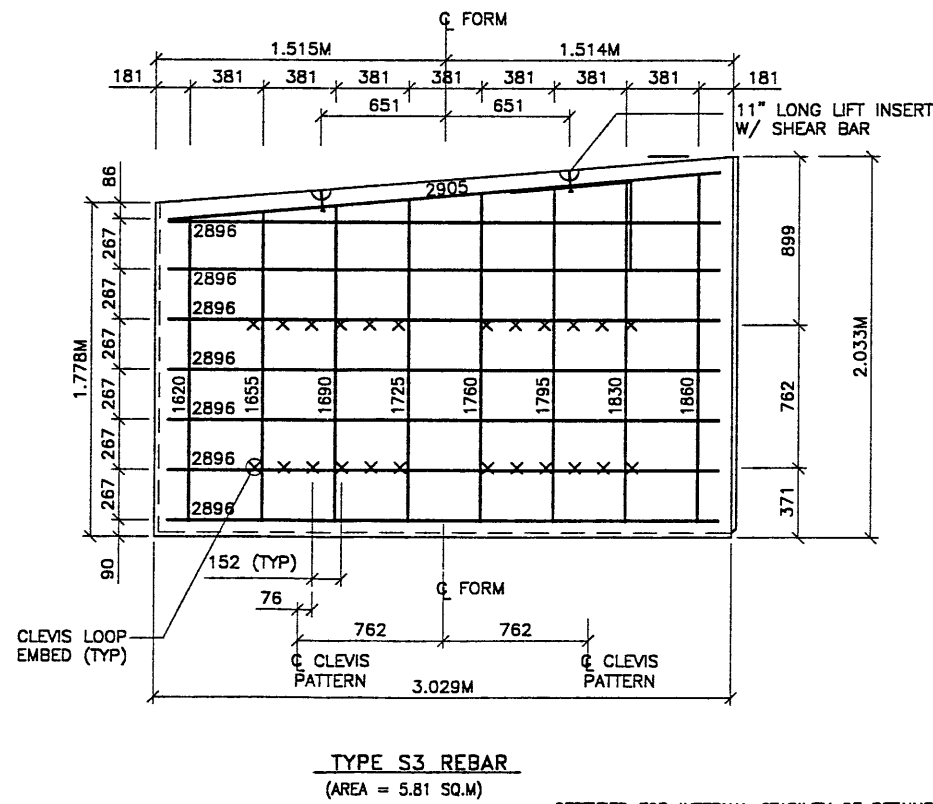
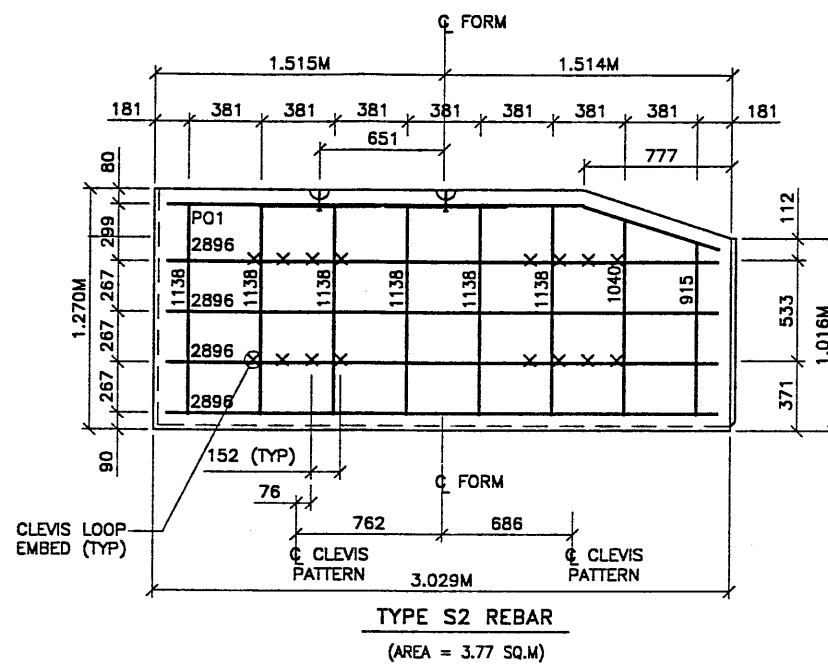
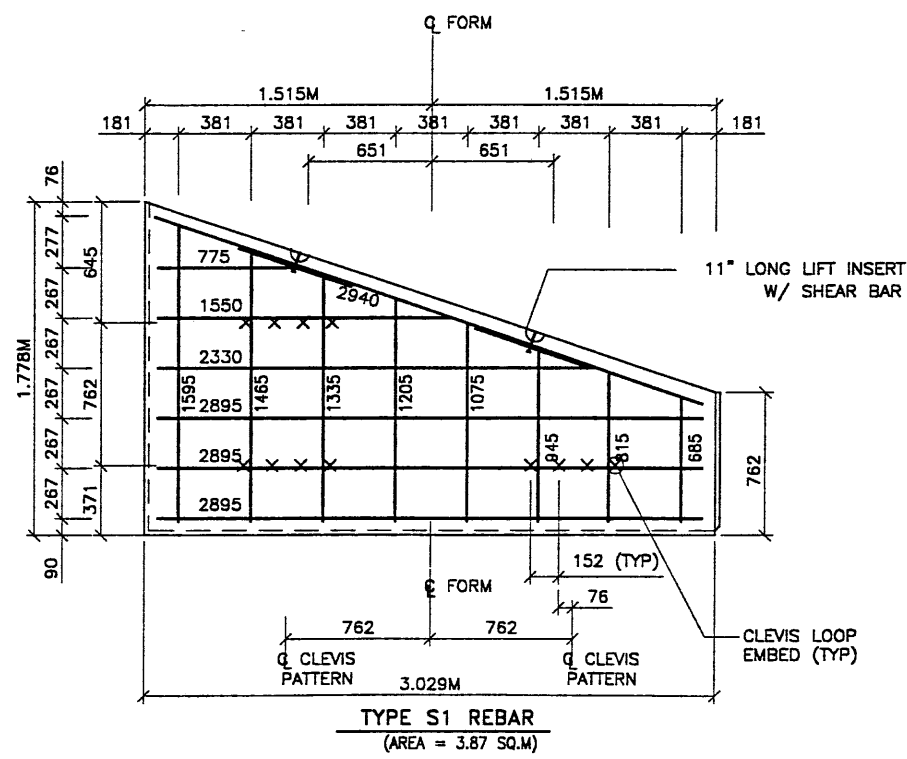
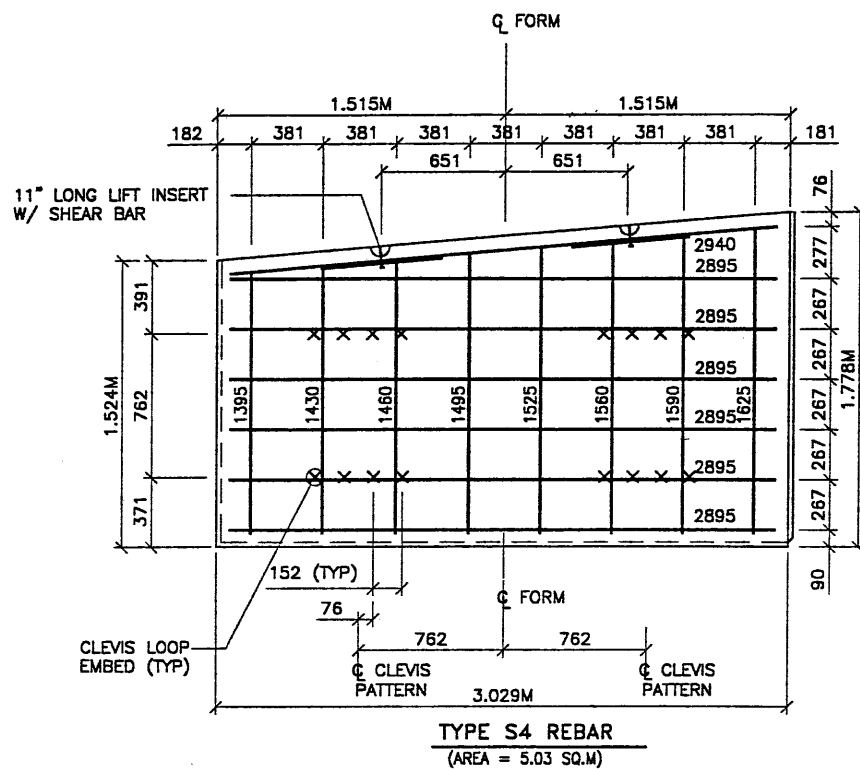
APPROVER NOTE:  
 MAXIMUM FINAL UNFACTORED BEARING PRESSURES  
 ARE INDICATED BELOW "MESH DEPTH LINE"  
 REVIEWER TO VERIFY MAXIMUM BEARING  
 CAPACITY OF FOUNDATION.

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.  
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 OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO  
 THE MANUFACTURER'S SPECIFICATION.

METRIC



DES.	11-05-98	JN	RETAINED EARTH™ VSL	NO.	DATE	BY	CHK
DRN.	11-05-98	RSW					
CHK.	11-05-98	JN					
<p>VSL CORPORATION                  2610 Plaza Place, Suite 200                  Raleigh, NC 27601 (919) 791-8272                  Fax: (919) 791-4889</p> <p>ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)                  WAM. R. / SAN JOSE, CA / SPRINGFIELD, VA</p>							
<p>RETAINED EARTH™ WALLS                  PRECAST WALL "R-345-20"                  UTAH I-15 RECONSTRUCTION                  SALT LAKE COUNTY, UTAH                  UTAH DEPARTMENT OF TRANSP.</p>							
<p>DWG. NO. 2.1R-345-20.7</p>							
<p>JOB NO. 239-0007</p>							
<p>SHT. NO. RE-5</p>							



METRIC

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY OF PREFABRICATED MATERIALS CONFORM TO THE MANUFACTURER'S SPECIFICATION.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
Δ	11-19-98	RELEASE FOR CONSTRUCTION

- PANEL REINFORCEMENT NOTES:**
- PANELS ARE SHOWN BACK FACE.
  - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
  - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
  - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 BAR 1345 mm LONG.
  - PANEL REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION A615, GRADE 60.
  - ALL REINFORCING STEEL TO BE GALVANIZED IN ACCORDANCE WITH ASTM 767 CLASS I.
  - CONCRETE PANELS TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 25,200 KPa.
  - EQUIVALENT WELDED WIRE FABRIC MAY BE USED.
  - ALL PANELS TO USE 9.5mmØ CLEVIS LOOPS.
  - VSL RETAINED EARTH™ IS PROTECTED UNDER PATENT 4,725,170.
  - LIFT INSERTS ARE 6 3/4" LONG IN ALL PANELS LESS THAN 1.524M TALL. PANELS TALLER THAN 1.524M SHALL HAVE 11" LONG LIFT ANCHORS.
  - SEE FOSTER GEOTECHNICAL STD. PLANS FOR ADD'L PANEL DETAILS

NO.	DATE	DESCRIPTION

VSL CORPORATION  
2640 Plaza Place, Suite 200  
Raleigh, NC 27612  
Telephone: (919) 791-8272  
Fax: (919) 791-4869

VSL  
ALAMITA, CA / DALLAS, TX / BALDWIN, NC (CORPORATE OFFICE)  
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

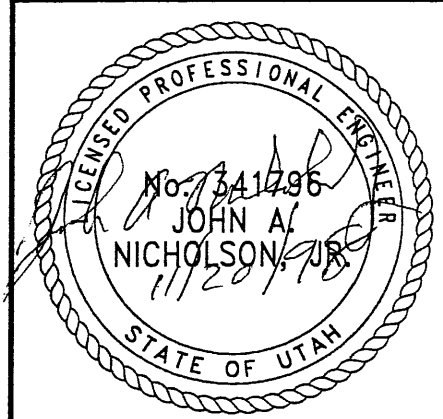
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WASATCH CONSTRUCTORS

DEC 0 2 1998

RELEASED FOR CONSTRUCTION

8 OF 8



RETAINED EARTH™ WALLS  
SPECIAL PANEL DETAILS  
UTAH I-15 INTERCHANGE  
SALT LAKE COUNTY, UTAH  
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	2.1R-345-20.8
JOB NO.	239-0007
SHT. NO.	RE-6