

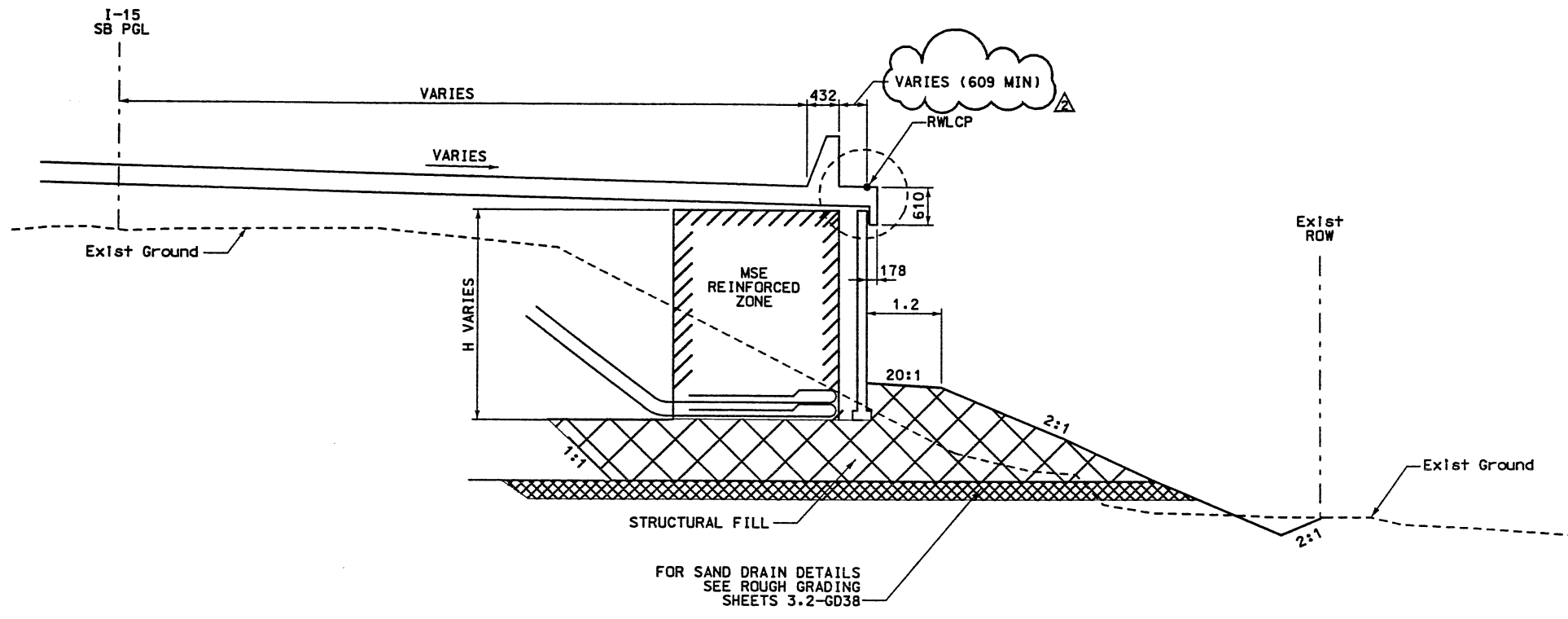
SEALED FOR THE NO. OF SUBMITTAL ONLY.

WALL R351-4

FEB 18 2000
RELEASED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE		
1	10/14/97	RELEASE FOR USE WALL STAGE 1 ONLY	
2	01/19/00	REVISED PROFILE PER FDC 3-1267	
UTAH DEPARTMENT OF TRANSPORTATION		SVERDRUP/DE LEUW	
I-15 CORRIDOR RECONSTRUCTION		SITUATION & LAYOUT	
SECTION 3.2		PROJECT DESIGN ENGINEER	
PROJECT NUMBER *SP-15-7(135)296		MARVIN COOK	
SALT LAKE COUNTY		DATE	
DWG. NO. 3.2-R351-4.1		PROJECT DESIGN ENGINEER	
SHT. 1 OF 9		DRAWN F.J.G.	
		CHECKED K.S.	
		CHECKED K.S.	
		CHECKED	
		QUANT.	
		3212321	

RFC After Final Approval



RETAINING WALL DETAILS
WALL R-351-4
2 STAGE MSE

WASATCH CONSTRUCTORS
FEB 09 1999
RELEASED FOR CONSTRUCTION

- NOTES:
- 1) OVEREXCAVATE EXISTING SOILS AS REQUIRED. REFILL EXCAVATION WITH STRUCTURAL FILL AS PER CORRIDOR STANDARD SPECIFICATION 220.2.
 - 2) FOR COPING DETAILS SEE CORRIDOR STANDARD PLAN CS-29.

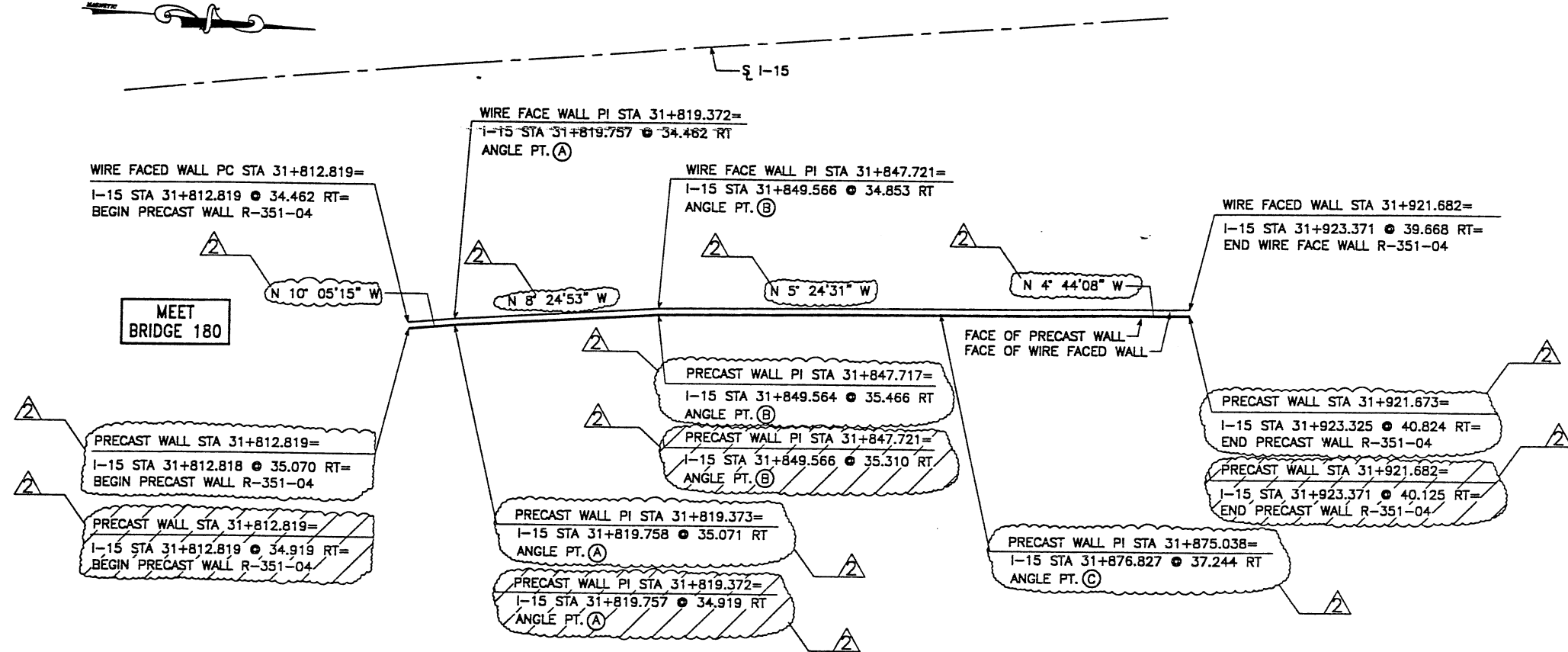


SEALED FOR RELEASE NO. 2 ONLY.
(REALIGNMENT OF RETAINING WALL
CONTROL POINT DUE TO FIRST STAGE
SETTLEMENT AND SECOND STAGE
MSE PANEL ALIGNMENT)

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	10/14/97 RELEASE FOR MSE WALL STAGE 1 ONLY	
△	10/14/97	RELEASE FOR 2ND STAGE CONSTRUCTION	
△	02/02/99	REMOVED CLAY CAP AND CORRESPONDING NOTE	
UTAH DEPARTMENT OF TRANSPORTATION		SVERDRUP/DE LEUW	
I-15 CORRIDOR RECONSTRUCTION		TYPICAL SECTION	
SECTION 3.2		SECTION 3.2	
PROJECT NUMBER #SP-15-7(135)296		QUANT. 3212421	
DESIGN	J.F.A.	CHECK	K.S.
DATE	10/7/97	CHECK	10/7/97
DESIGN	MARVIN COOK	CHECK	K.S.
DATE	10/7/97	CHECK	10/7/97
PROJECT	DESIGN ENGINEER	CHECK	K.S.
DATE	10/7/97	CHECK	10/7/97
PROJECT	MANAGER	CHECK	K.S.
DATE	10/7/97	CHECK	10/7/97
SALT LAKE COUNTY		DWG. NO. 3.2-R351-4.2	
SHT. 2 OF 14			

REFERENCE (X-UTAH)DWG
 E:\PROJECT\239-0007\65-WALLS\65-C
 FINAL OT 01-26-99

APPROVED FOR CONSTRUCTION			NO.	DATE	DESCRIPTION	BY	CHK
			9-24-97		RELEASE FOR 1ST STAGE CONST. ONLY		
			01-26-99		RELEASE FOR 2ND. STAGE CONSTRUCTION		



PLAN VIEW WALL "R-351-04"

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

NOTE:
BASED ON POST SETTLEMENT SURVEY OF WIRE FACE LATERAL OUTWARD DISPLACEMENTS RANGED FROM -75 mm TO 580 mm MEASURED AT THE BASE OF THE WALL.

NOTE:
THE WALL CONNECTIONS ON WALL 350-14 MAY BE ROTATED A MAXIMUM OF 42° VERTICALLY (COL 1 - 6) AND 55° VERTICALLY (COL 7 - 36). SEE DETAIL "SECTION ROTATED" ON VSL STANDARD DRAWING NO. 18 FOR MORE INFORMATION.

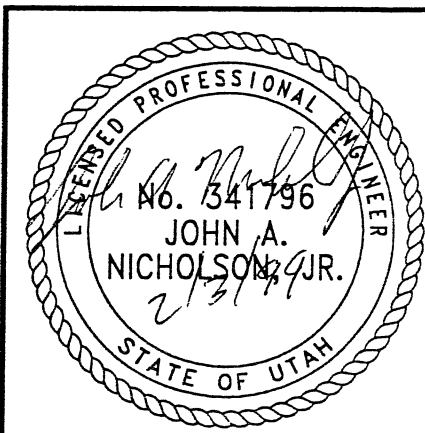
DESIGN PARAMETERS	
ANGLE OF INTERNAL FRICTION (SELECT)	= 34°
ANGLE OF INTERNAL FRICTION (BASE)	= 30°
ANGLE OF INTERNAL FRICTION (RANDOM)	= 34°
UNIT WEIGHT BACKFILL	= 135 PSF
TRAFFIC SURCHARGE	= 250 PSF
SEISMIC ACCELERATION COFF.	= 0.27g (TYP)
SEISMIC ACCELERATION COFF.	= 0.68g (AT BRIDGE ABUTMENTS)
DESIGN 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 WIRE FACE WALL R-351-04, NOTES & DESIGN CRITERIA
RE-2	WALL CONNECTION DETAILS @ STAGE CONST.
RE-3	TYPICAL DETAILS
RE-4	TYPICAL CROSS SECTIONS @ WIRE FACED WALL
RE-5	TYPICAL CROSS SECTIONS
RE-6	WIRE FACED WALL R-351-04
RE-7	WIRE FACED WALL R-351-04
RE-8	PRECAST WALL R-351-04
RE-9	PRECAST WALL R-351-04
RE-10	SPECIAL PANEL DETAILS
RE-11	SPECIAL PANEL DETAILS
RE-12	SPECIAL PANEL DETAILS

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
FEB 09 1999
RELEASED FOR CONSTRUCTION



RETAINED EARTH™ WALLS
PLAN VIEW PRECAST WALL "R-351-04"
UTAH I-15 INTERCHANGE
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

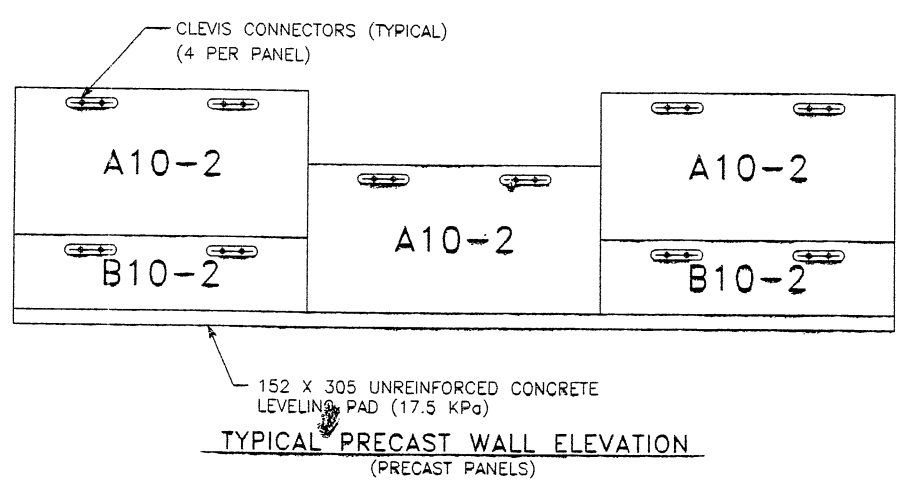
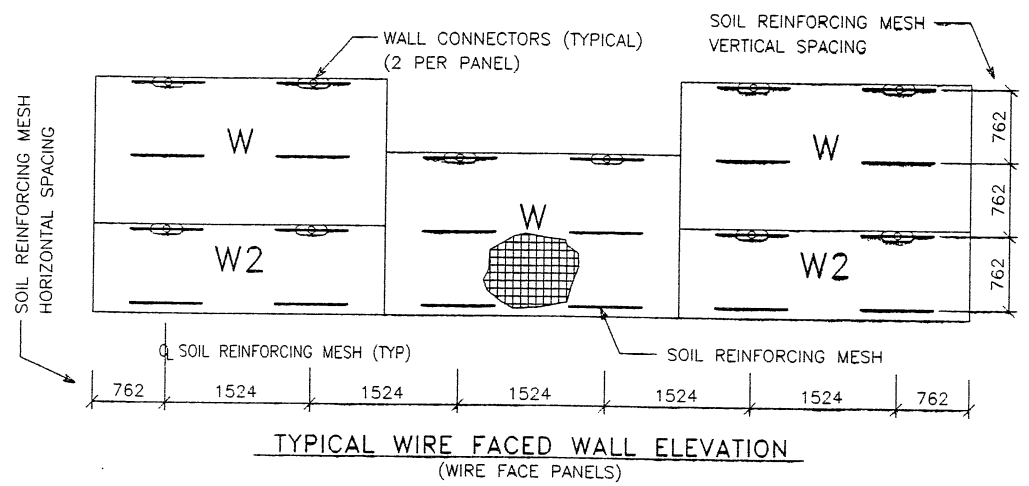
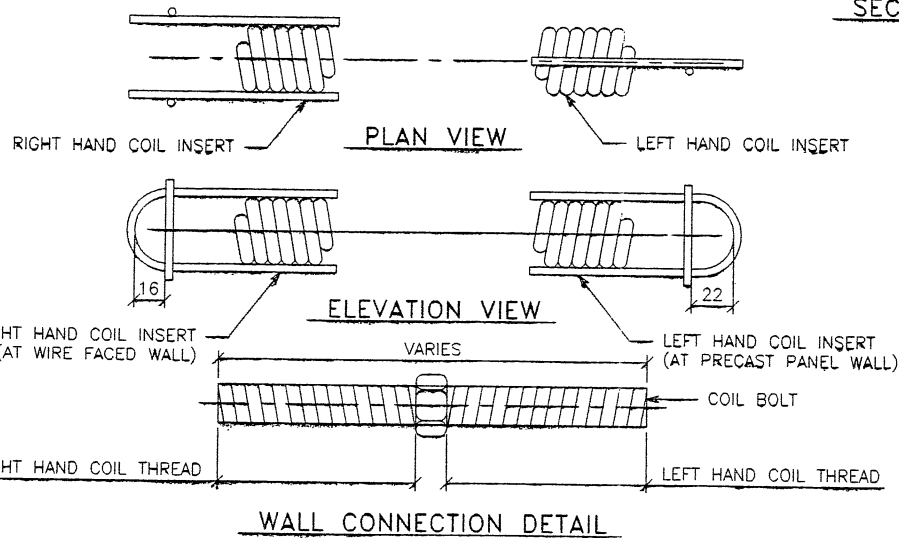
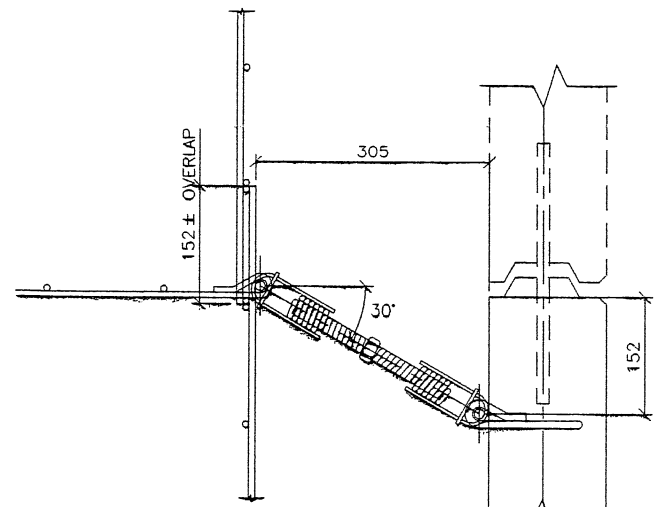
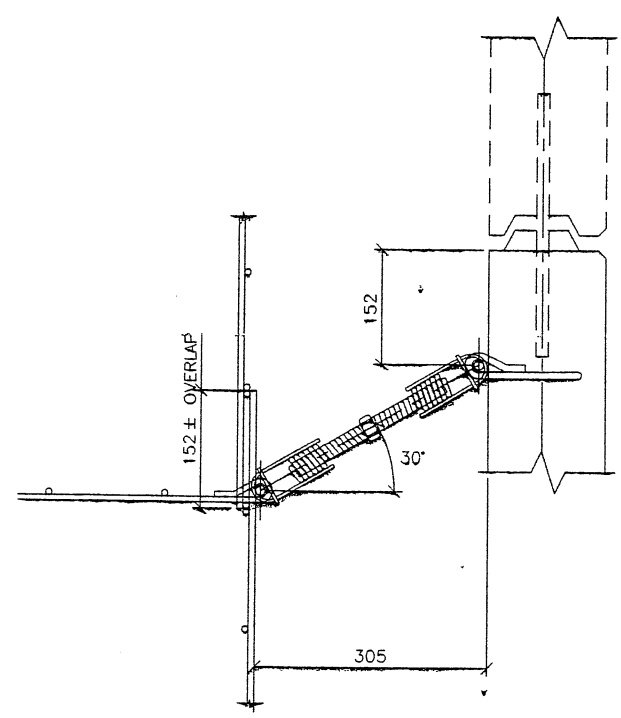
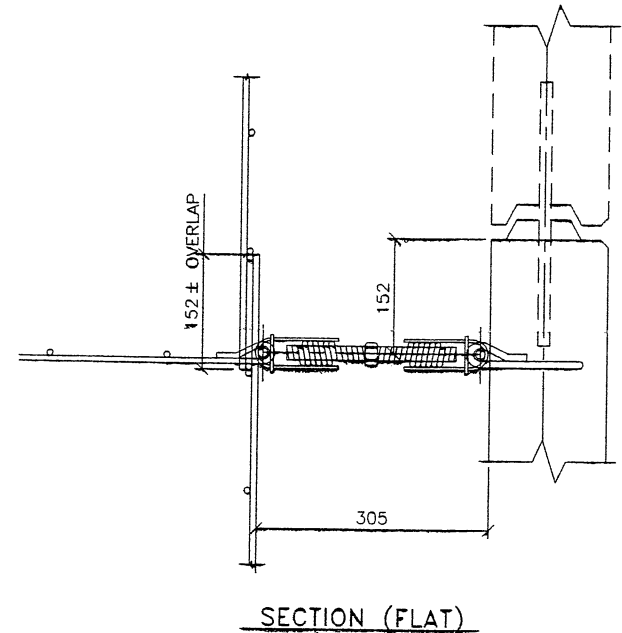
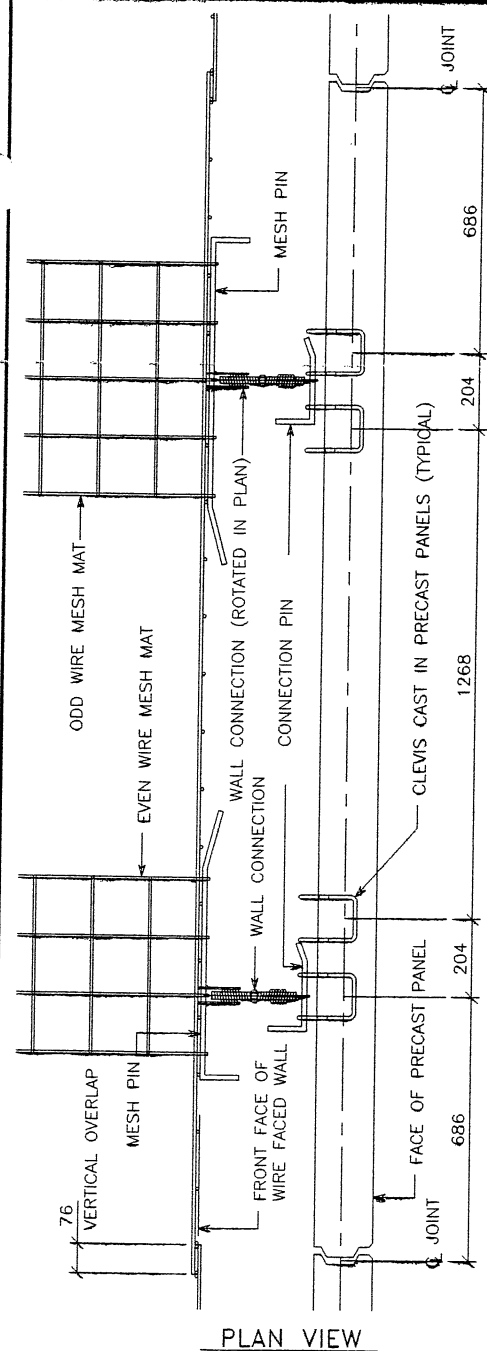
DWG. NO.	3.2R-351-4.3
JOB NO.	239-0007
SHT. NO.	RE-1

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

VSL

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

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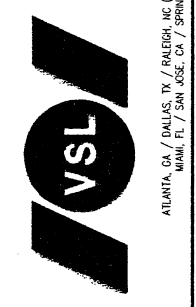


APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	9-24-97	RELEASE FOR 1ST STAGE CONST. ONLY <i>OK</i>

WASATCH CONSTRUCTORS
OCT 15 1997
RELEASED FOR CONSTRUCTION

DES.	MM	NO.	DATE	REVISION	BY
09-16-97	MM				CHK
09-16-97	SW				
09-16-97	MM				

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



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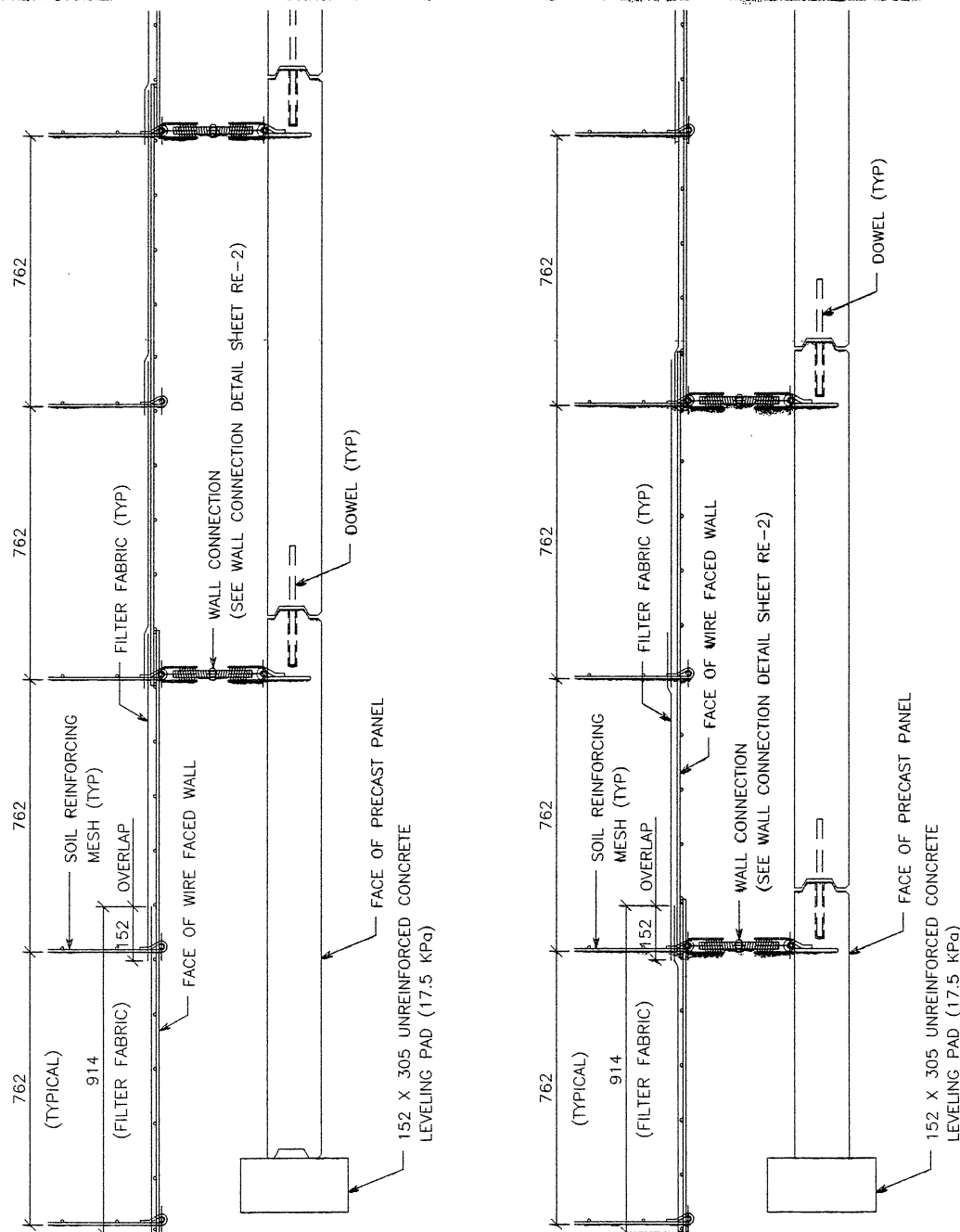
RETAINED EARTH™ WALLS
WIRE FACED WALL "R-351-04"
WALL CONNECTION DETAILS @ STAGE CONST.
UTAH I-15 INTERCHANGE
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

METRIC



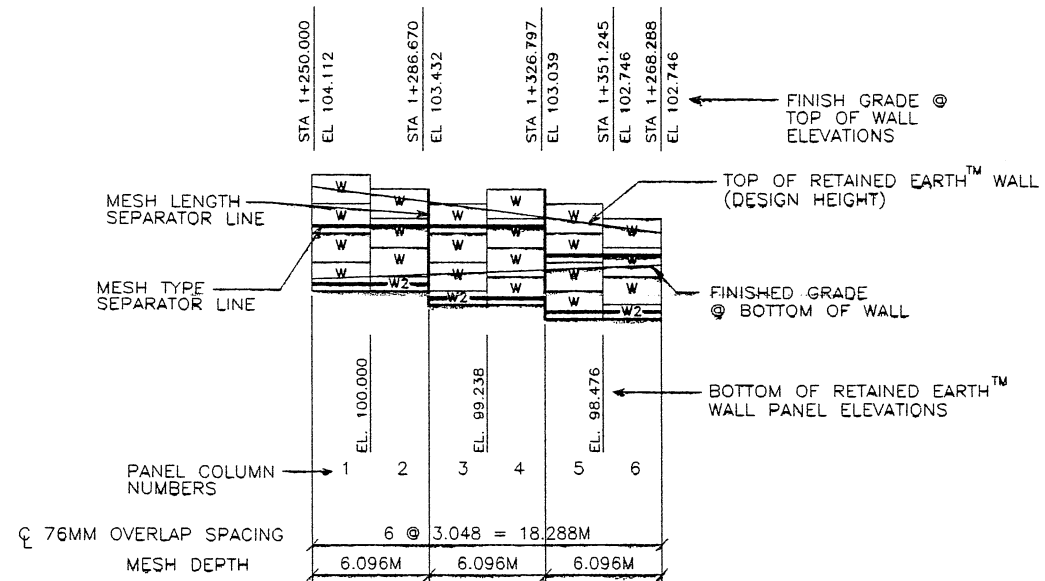
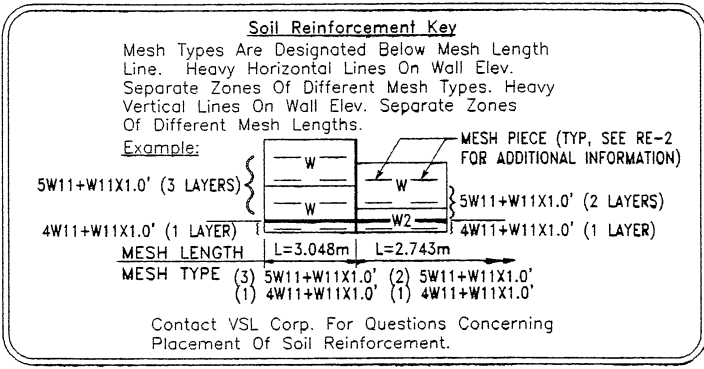
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY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

SCALE:	3.2R-351-4.4
JOB NO.:	239-0007
	RE-2

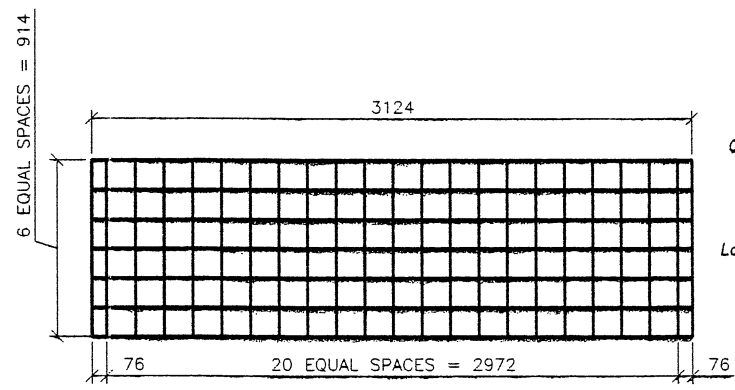


SECTION AT WIRE FACE PANEL TYPE "W"

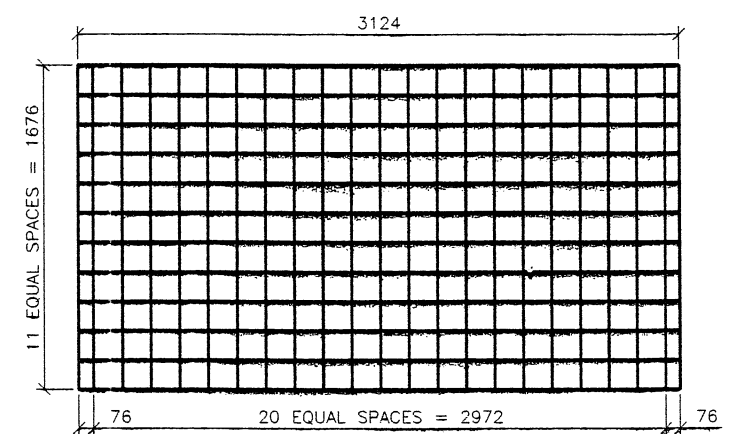
SECTION AT WIRE FACE PANEL TYPE "W2"



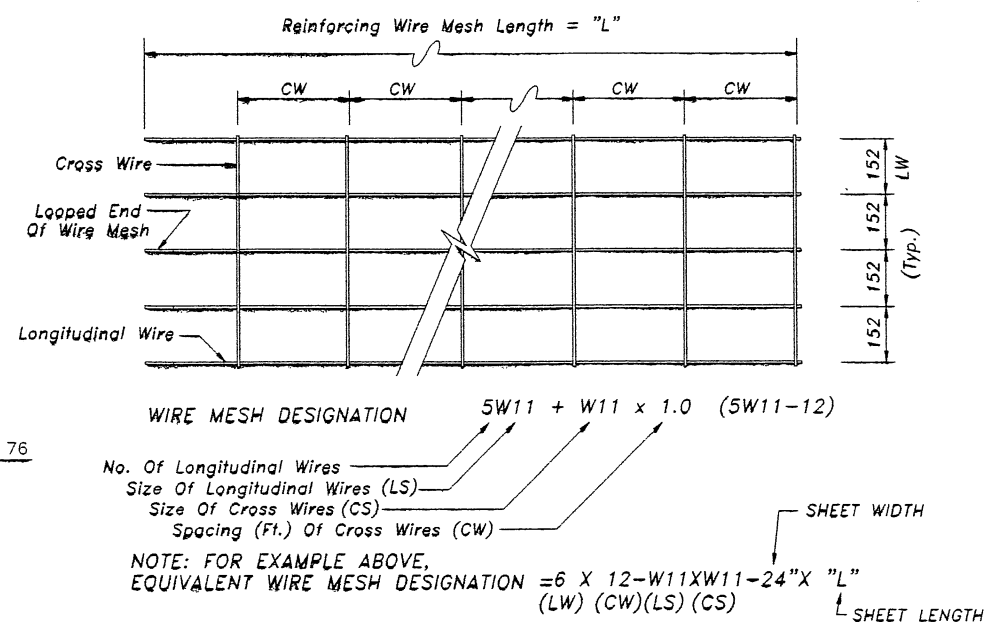
1 WIRE FACED WALL ELEVATION KEY (FRONT FACE SHOWN)



TYPE "W2" WIRE FACE BAR LAYOUT (W11 x W11)

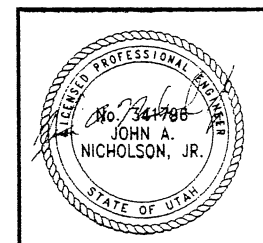


TYPE "W" WIRE FACE BAR LAYOUT (W11 x W11)



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.

METRIC



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APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	9-24-97	RELEASE FOR 1ST STAGE CONST. ONLY

WASATCH CONSTRUCTORS
OCT 1-5 1997
RELEASED FOR CONSTRUCTION

DES.	MM	NO.	DATE	REVISION	BY	CHK
09-16-97						
09-16-97	SW					
09-16-97	MM					

VSL CORPORATION
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Fax (919) 781-1969

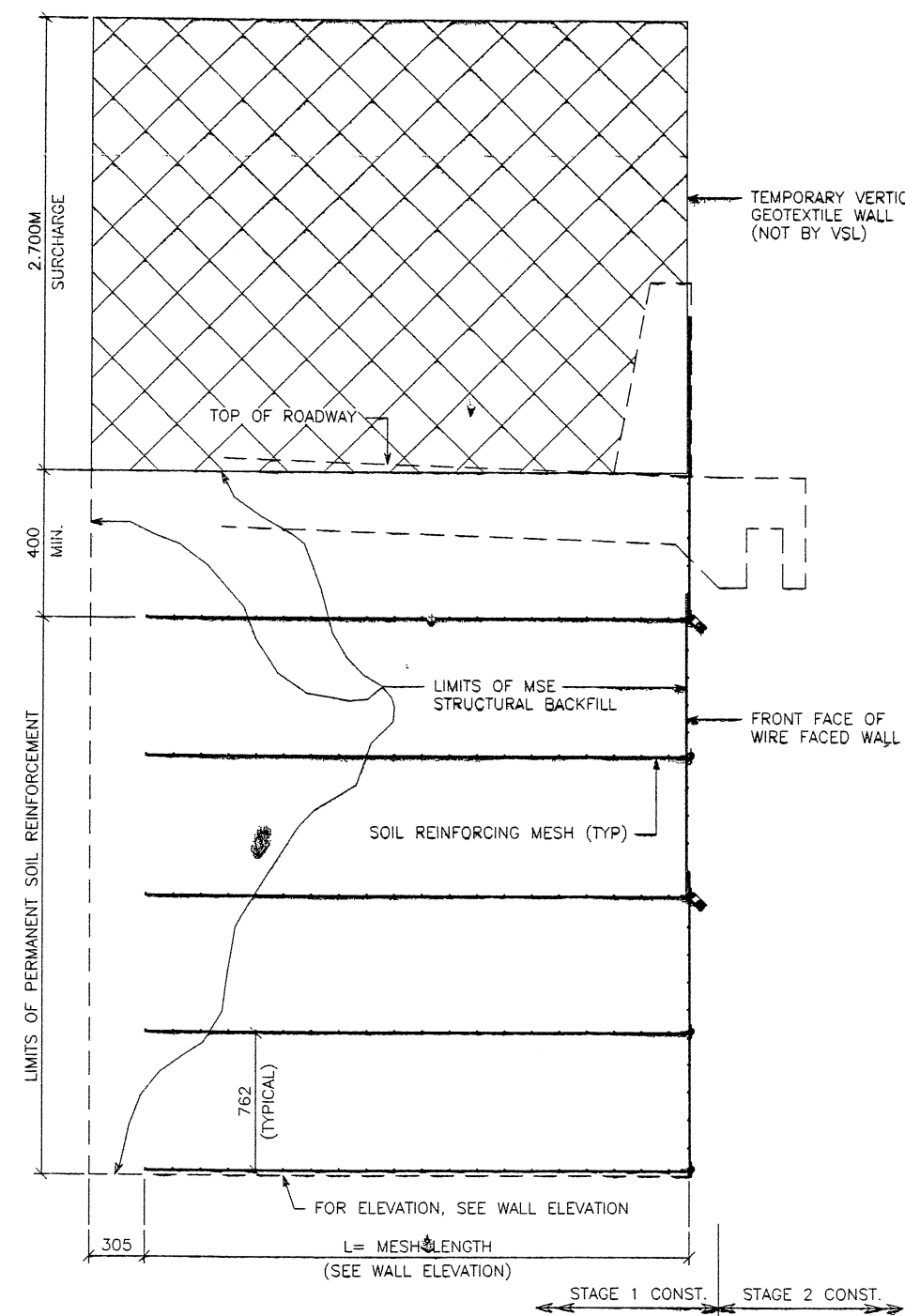


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RETAINED EARTH™ WALLS
WIRE FACED WALL "R-351-04"
TYPICAL DETAILS
UTAH I-15 INTERCHANGE
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

SCALE:	3.2R-351-4.5
JOB NO:	239-0007
	RE-3

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	9-24-97	RELEASE FOR 1ST STAGE CONST. ONLY <i>OL</i>

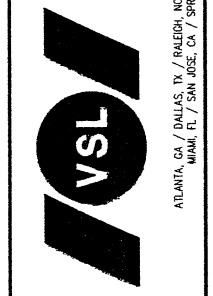


TYPICAL CROSS SECTION
AT FINAL PHASE OF WIRE FACE WALL
 SCALE: 1:20 (FULL SIZE)
 SCALE: 1:40 (HALF SIZE)

WASATCH CONSTRUCTORS
 OCT 15 1997
 RELEASED FOR CONSTRUCTION

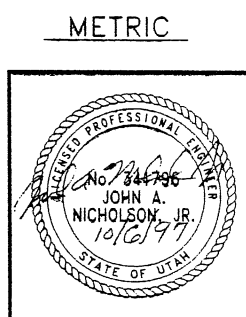
DES.	MM	SW	MM	RETAINED EARTH™	NO.	DATE	BY	CHK
DRN.	09-16-97	09-16-97	09-16-97	VSL				
CHK.								

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
 WIRE FACED WALL "R-351-04"
 TYPICAL SECTIONS @ WIRE FACED WALL
 UTAH I-15 INTERCHANGE
 SALT LAKE COUNTY, UTAH
 UTAH DEPARTMENT OF TRANSP.



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SCALE:	3.2R-351-4.6
JOB NO:	239-0007
	RE-4

04\RE-5

H:\RE_EARTH\PROJECT\239-0007\65-WALL

0-06-97

FINAL P

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	9-24-97	RELEASE FOR 1ST STAGE CONST. ONLY <i>SW</i>

NO.	DATE	REVISION	BY

VSL CORPORATION
 2640 Pineda Place, Suite 200
 Houston, TX 77057 (610) 781-6272
 Fax: (610) 781-6889

WASATCH CONSTRUCTORS
 OCT 15 1997
 RELEASED FOR CONSTRUCTION

VSL
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RETAINED EARTH™ WALLS
 WIRE FACED WALL "R-351-04"
 TYPICAL CROSS SECTION

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

SCALE: 3.2R-351-4.7
 JOB NO: 239-0007
 RE-5

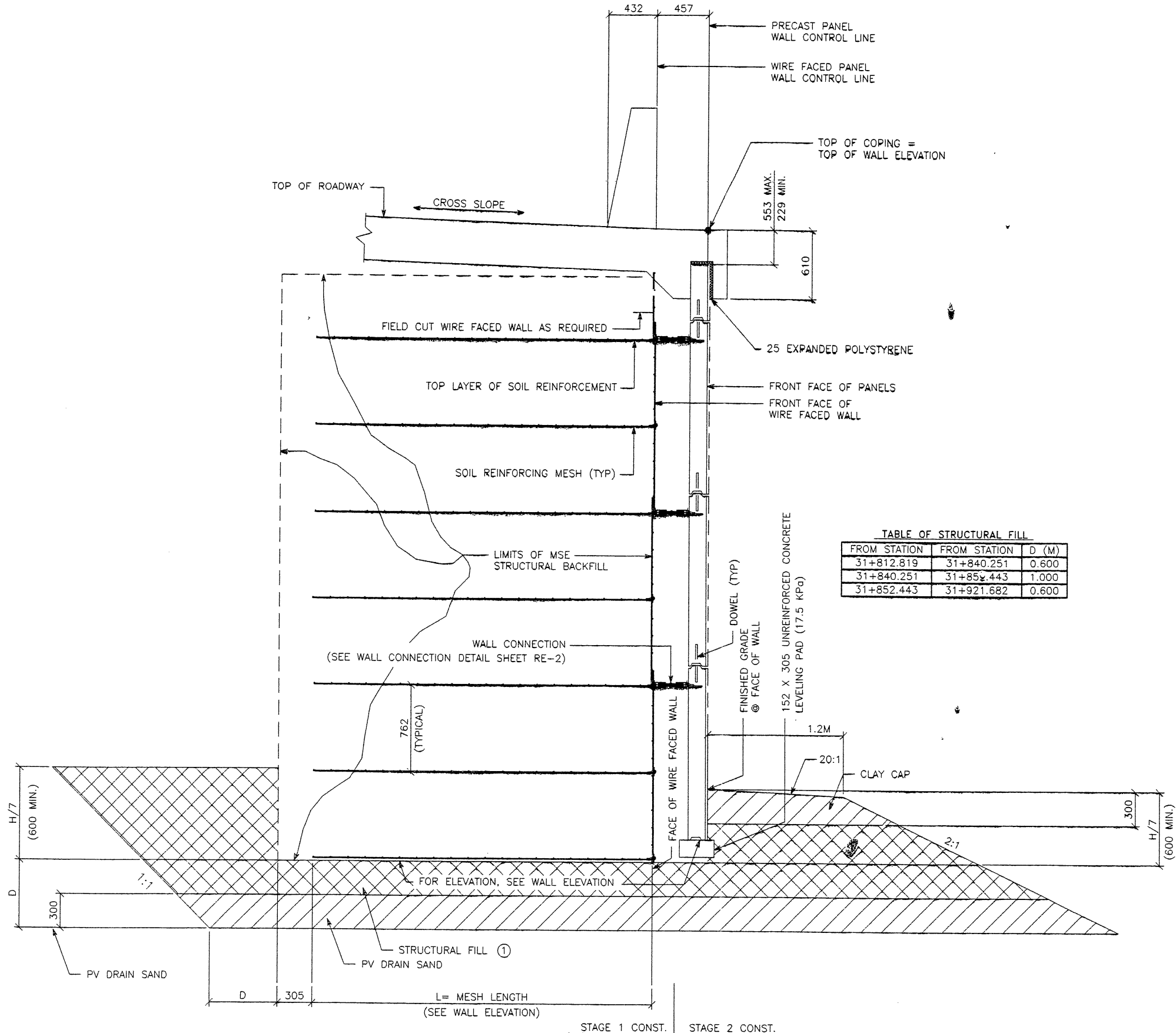


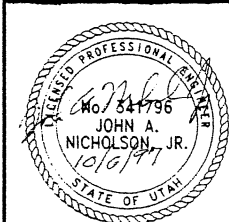
TABLE OF STRUCTURAL FILL

FROM STATION	FROM STATION	D (M)
31+812.819	31+840.251	0.600
31+840.251	31+852.443	1.000
31+852.443	31+921.682	0.600

TYPICAL CROSS SECTION
 SCALE: 1:20 (FULL SIZE)
 SCALE: 1:40 (HALF SIZE)

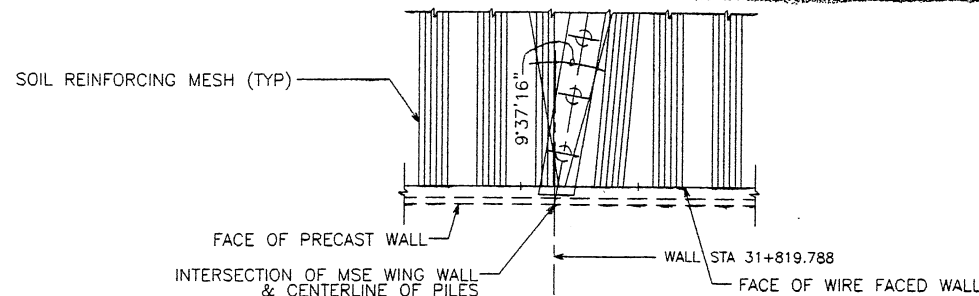
NOTE: SEE WALL S & L PLANS FOR LOCATION OF PV DRAIN SAND WITHIN STRUCTURAL FILL.

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METRIC

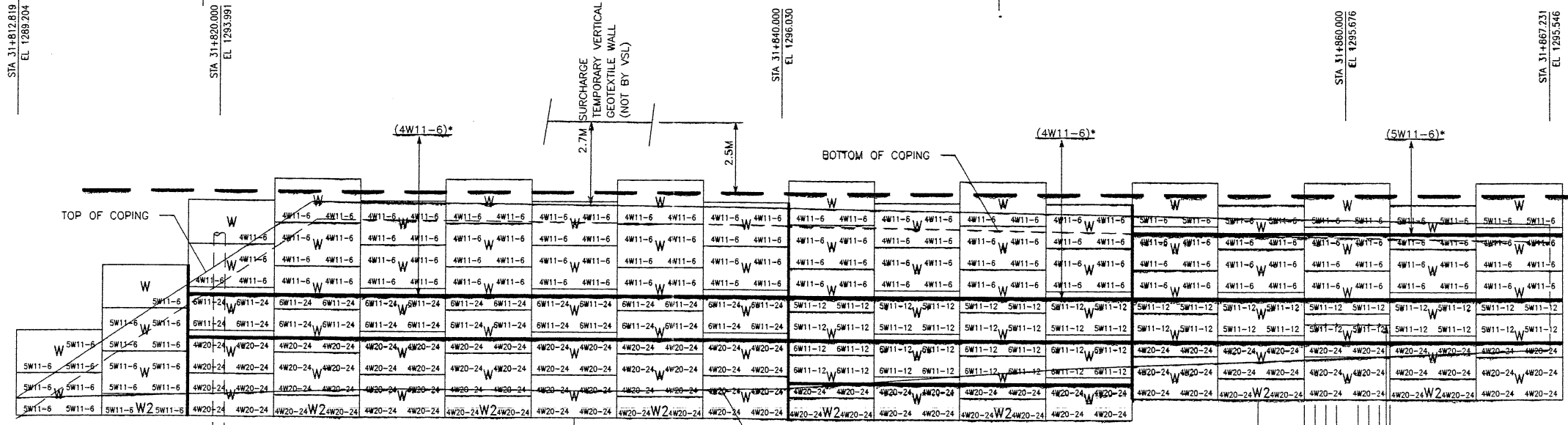
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	9-24-97	RELEASE FOR 1ST STAGE CONST. ONLY <i>OK</i>



BEGIN WIRE FACED WALL R-351-04
 WIRE FACED WALL STA 31+812.819 =
 I-15 STA 31+812.819
 @ 34.462 RT

WIRE FACED WALL PI STA 31+819.372 =
 I-15 STA 31+819.757
 @ 34.462 RT
 ANGLE POINT A

WIRE FACED WALL PI STA 31+847.721 =
 I-15 STA 31+849.566
 @ 34.853 RT
 ANGLE POINT B



MEET
BRIDGE 180

BUILD WALL UP TO THIS LINE;
 ALLOW TO SETTLE;
 RESUME CONSTRUCTION

WASATCH CONSTRUCTORS
 OCT 15 1997
 RELEASED FOR CONSTRUCTION

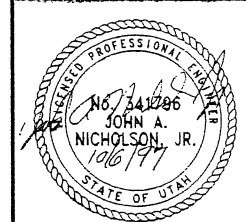
MESH DEPTH	4.877	7.925	5.486	4.877
MAXIMUM BEARING PRESSURE (SEE NOTE BELOW)	117 kPa	202 kPa	220 kPa	198 kPa
PIN SPACING		39.624		15.240

RETAINING WALL "R-351-04" - 1ST STAGE: WIRE FACED WALL
 (FRONT FACE SHOWN)
 (TOTAL SURFACE AREA OF FACING = 650.47 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.

* INDICATES SOIL REINFORCING TYPE MESH TO BE USED ON ADDITIONAL WIRE WALL FACING ADDED AFTER SETTLEMENT.

METRIC



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DES:	MM	SW	MM	RETAINED EARTH™	NO.	DATE	REVISION	CHK	BY
09-16-97									
09-16-97									
09-16-97									

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RETAINED EARTH™ WALLS
 WALL "R-351-04" - 1ST STAGE: WIRE FACED WALL
 UTAH I-15 INTERCHANGE
 SALT LAKE COUNTY, UTAH
 UTAH DEPARTMENT OF TRANSP.

SCALE:	3.2R-351-4.8
JOB NO:	239-0007
	RE-6

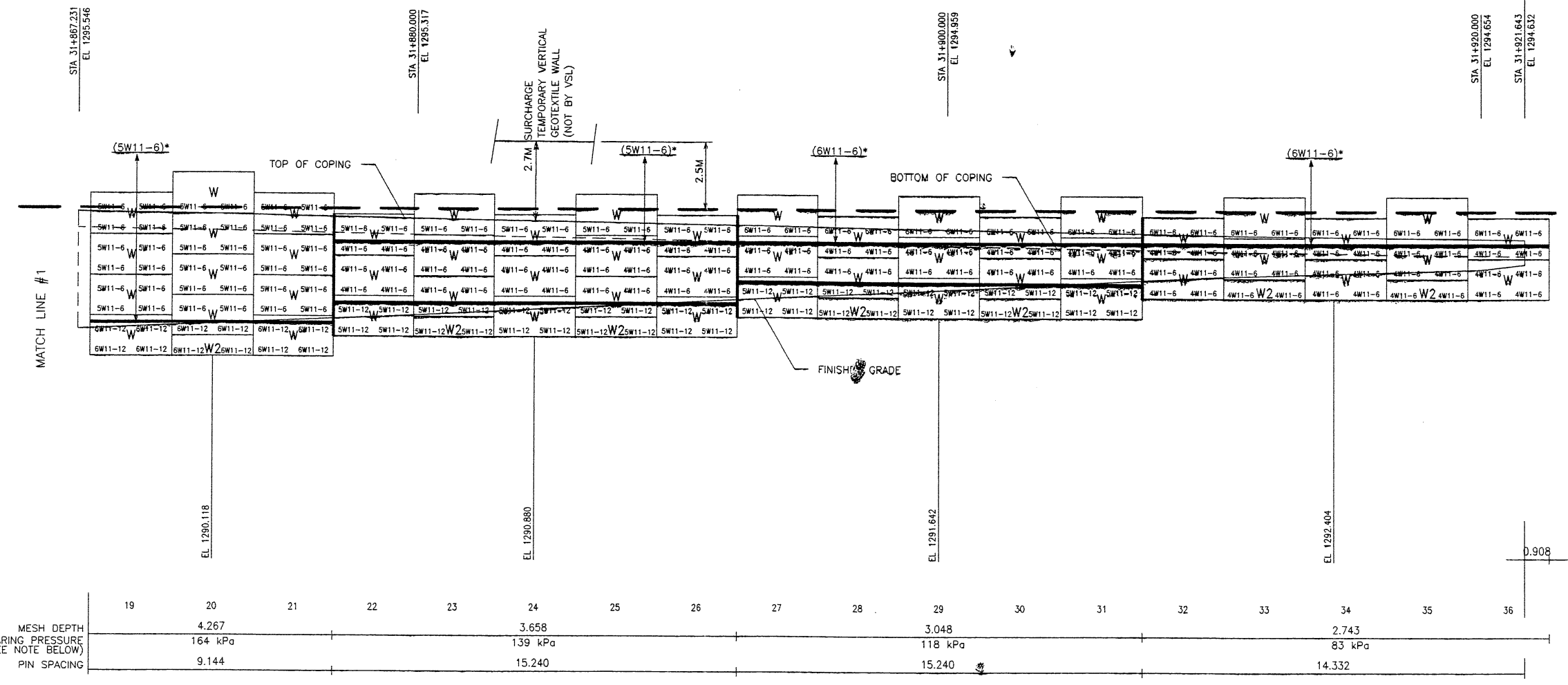
E:\PROJECT\239-0007\6S-WALLS\6S-04\W6S-04
 J-06-97
 FINAL PL

E:\PROJECT\239-0007\65-WALLS\65-04\W6S-04

19-24-97
FINAL P.

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	9-24-97	RELEASE FOR 1ST STAGE CONST. ONLY

END WIRE FACED WALL R-351-04
WIRE FACED WALL STA 31+921.682 =
1-15 STA 31+923.371
@ 39.668 RT



END WALL - BUILD WALL UP TO THIS LINE; ALLOW TO SETTLE; RESUME CONSTRUCTION

WASATCH CONSTRUCTORS
OCT 15 1997
RELEASED FOR CONSTRUCTION

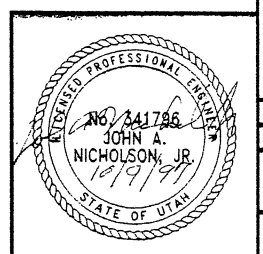
RETAINING WALL "R-351-04" - 1ST STAGE: WIRE FACED WALL
(FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)
(TOTAL SURFACE AREA OF FACING = 650.47 SM) SCALE 1:200 (HALF SIZE)

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

* INDICATES SOIL REINFORCING TYPE MESH TO BE USED ON ADDITIONAL WIRE WALL FACING ADDED AFTER SETTLEMENT.

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



DES.	MM	NO.	DATE
09-16-97	MM		
09-16-97	SW		
09-16-97	MM		

RETAINED EARTH™

VSL CORPORATION
2840 Plaza Place, Suite 200
Raleigh, NC 27612
Telephone: (919) 781-6772
Fax: (919) 781-4969

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

VSL

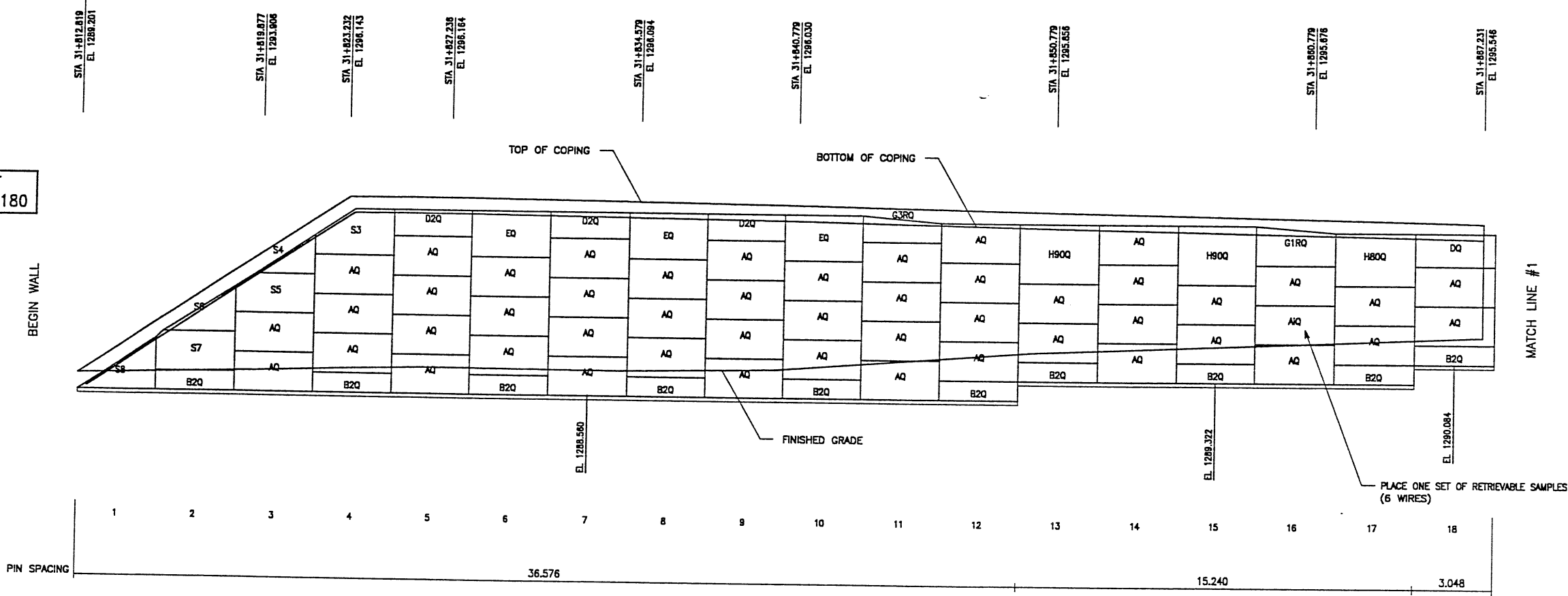
RETAINED EARTH™ WALLS
WALL "R-351-04" - 1ST STAGE: WIRE FACED WALL
UTAH I-15 INTERCHANGE
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

SCALE: 3.2R-351-4.9
JOB NO: 239-0007
RE-7

REFERENCE (X-UTAH)DWG

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△ 01-26-99		RELEASE FOR 2ND. STAGE CONSTRUCTION

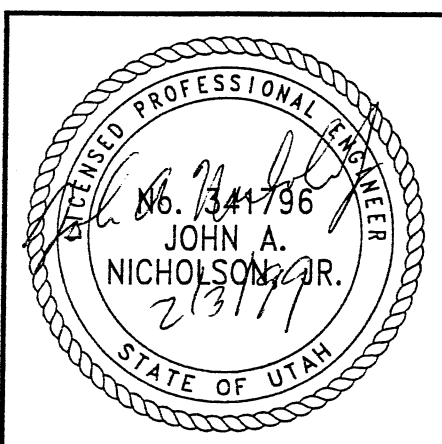
BEGIN PRECAST WALL R-351-04
 PRECAST WALL STA 31+812.819 =
 I-15 STA 31+812.818
 @ 35.070 RT



RETAINING WALL "R-351-04" - 2ND STAGE: PRECAST FACED WALL

(FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)
 (TOTAL SURFACE AREA OF FACING = 507.89 SM) SCALE 1:200 (HALF SIZE)

WASATCH CONSTRUCTORS
 FEB 09 1999
 RELEASED FOR CONSTRUCTION

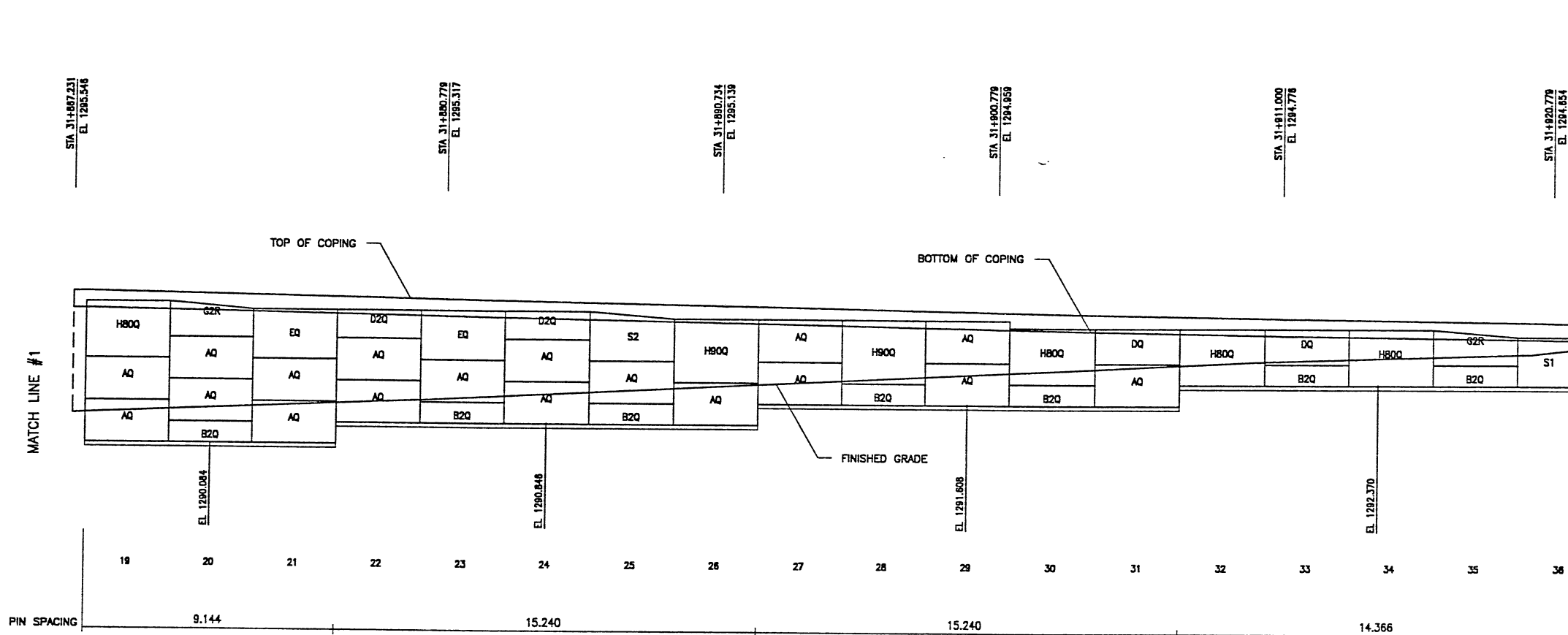


METRIC

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.

DES.	01-26-99	JN	RETAINED EARTH™	NO.	DATE
DRN.	01-26-99	DSW			
CHK.	01-26-99	JN			
VSL CORPORATION 2840 Pines Plaza, Suite 200 Raleigh, NC 27612 781-6272 Telephone: (919) 781-6272 Fax: (919) 781-4869 ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE) MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA					
<small>VSL Corporation (VSL) claims a proprietary right in the design and construction of retaining walls and related structures. Such information is not to be used, copied, or reproduced in any form without the written consent of VSL. Any other use is strictly prohibited. VSL DISCLAIMS ANY LIABILITY THEREFOR.</small>					
RETAINED EARTH™ WALLS WALL "R-351-04" - 2ND STAGE: PRECAST WALL UTAH I-15 INTERCHANGE SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.					
DWG. NO. 3.2R-351-4.10					
JOB NO. 239-0007					
SH. NO. RE-8					

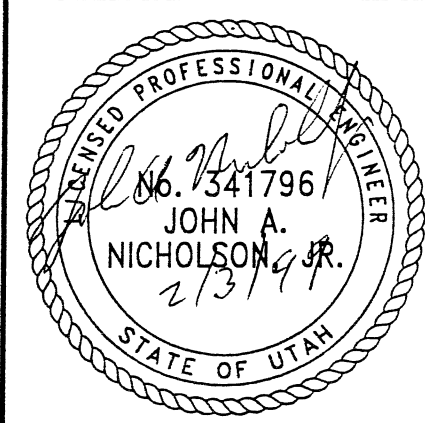
FINAL PLOT 01-26-99 E:\PROJECT\239-0007\65-WALLS\65-04\W65-04



RETAINING WALL "R-351-04" - 2ND STAGE: PRECAST WALL
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)
 (TOTAL SURFACE AREA OF FACING = 507.89 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
 FEB 09 1999
 RELEASED FOR CONSTRUCTION

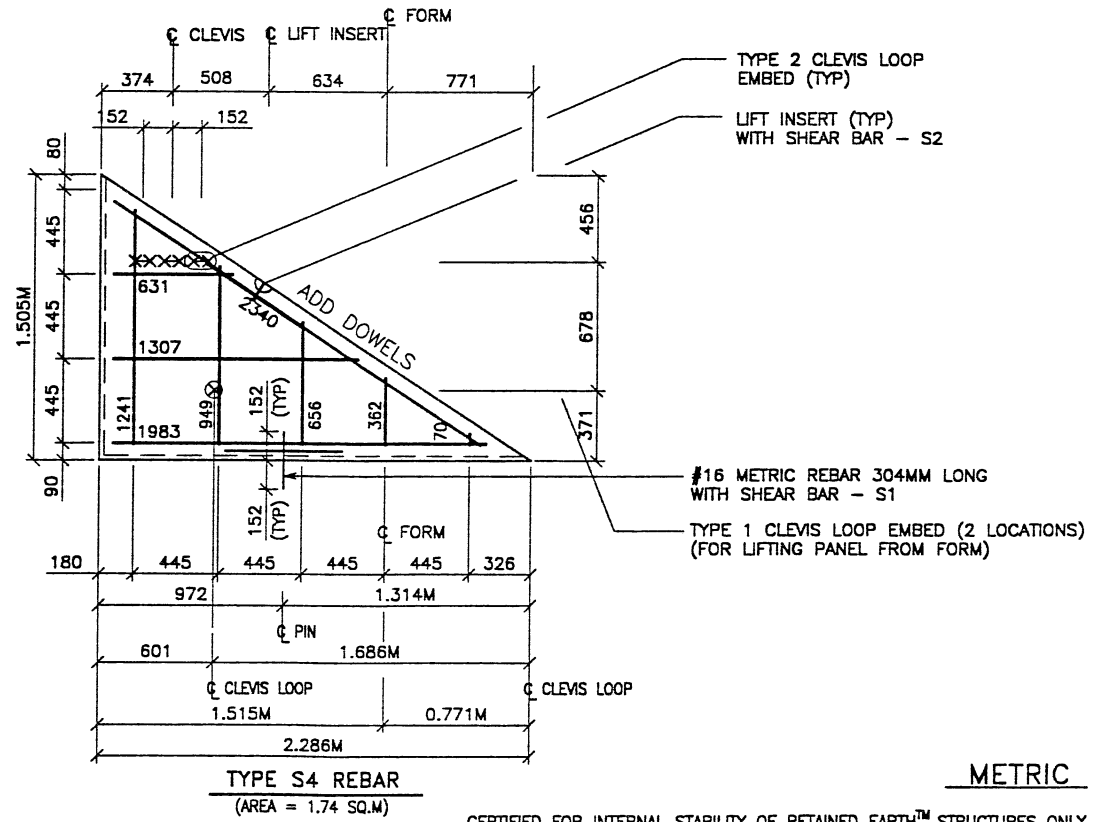
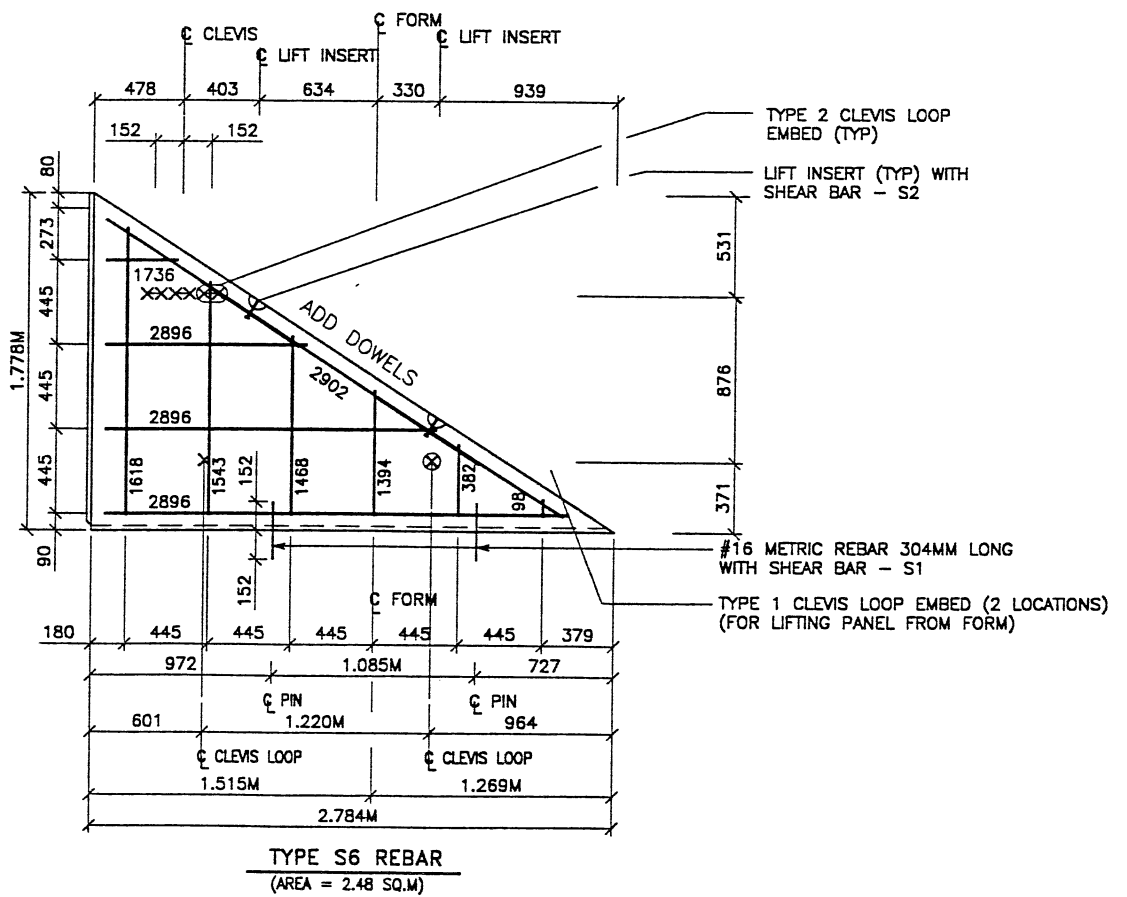
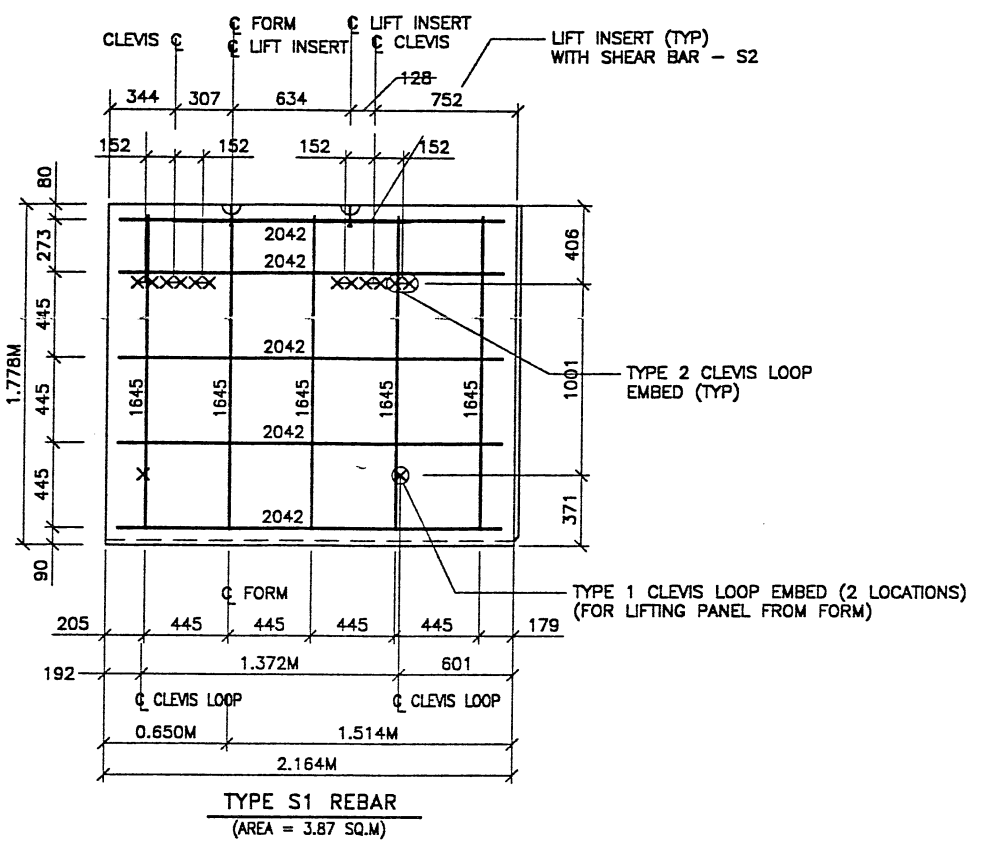
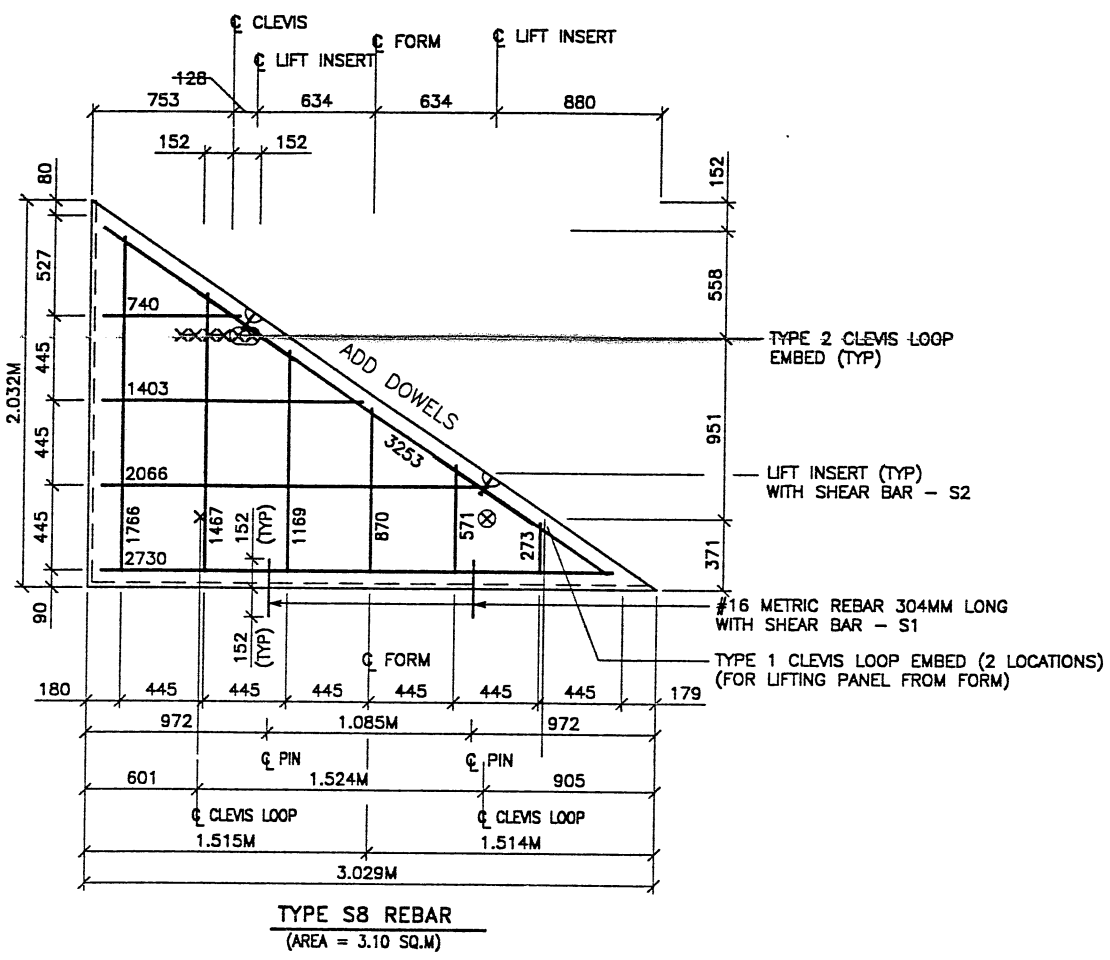
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	01-26-99	RELEASE FOR 2ND. STAGE CONSTRUCTION

END PRECAST WALL R-351-04
 WIRE FACED WALL STA 31+821.673 -
 I-15 STA 31+923.325
 @ 40.824 RT

DES. 01-26-99 JN		RETAINED EARTH™	NO.	DATE	BY	CHK
DRN. 01-26-99 DSW						
CHK. 01-26-99 JN						
<p>VSL CORPORATION 2840 Plaza Place, Suite 200 Raleigh, NC 27612 Telephone: (919) 781-6772 Fax: (919) 781-6959</p> <p>ATLANTA, GA / DALLAS, TX / BALDWIN, NC (CORPORATE OFFICE) MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA</p>						
<p>UTAH I-15 INTERCHANGE SALT LAKE COUNTY, UTAH UTAH DEPARTMENT OF TRANSP.</p>						
<p>DWG. NO. 3.2R-351-4.11 JOB NO. 239-0007 SHI. NO. RE-9</p>						

C:\MSE-WALLS\65-SERIES\65-04\SPECIAL T 01-27-99 FINAL REFERENCE (X-UTAH.DWG)

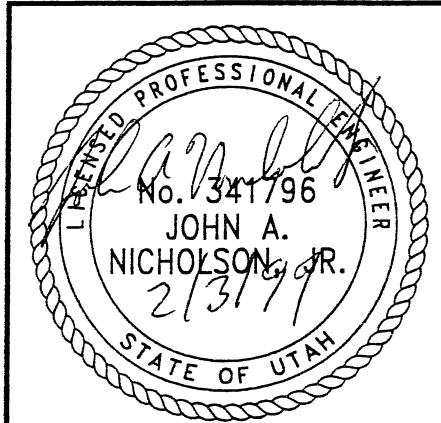
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	01-26-99	RELEASE FOR 2ND STAGE CONSTRUCTION



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.

WASATCH CONSTRUCTORS
FEB 09 1999
RELEASED FOR CONSTRUCTION



REVISION		NO.	DATE	BY	CHK

D.S.	08-19-98	MM
DRN.	08-19-98	RSW
CHK.	08-19-98	MM

RETAINED EARTH™

VSL CORPORATION
2840 Rouse Place, Suite 200
Raleigh, NC 27617
Telephone: (919) 781-8272
Fax: (919) 781-4969

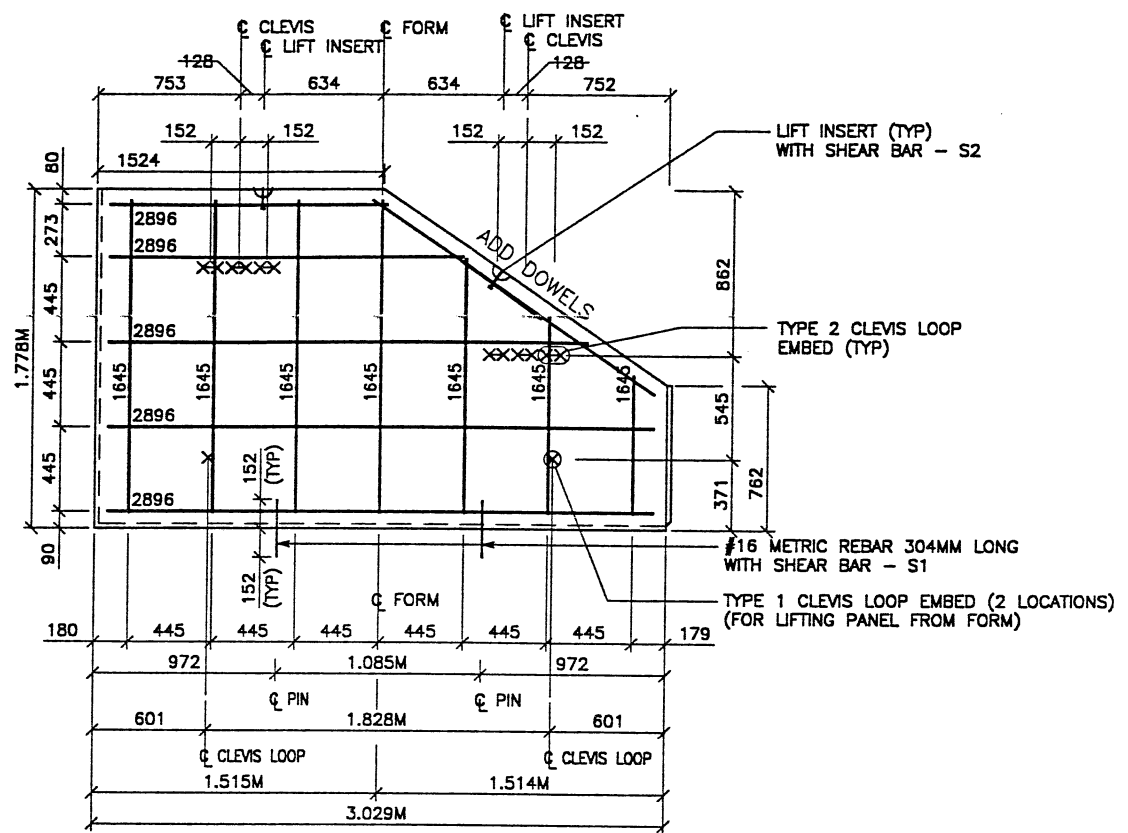
ATLANTA, GA / DALLAS, TX / RALEIGH, NC (CORPORATE OFFICE)
MIAMI, FL / SAN JOSE, CA / SPRINGFIELD, VA

RETAINED EARTH™ WALLS
WALL "R-551-04"
2-STAGE PANEL REINFORCEMENT
UTAH I-15 INTERCHANGE
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

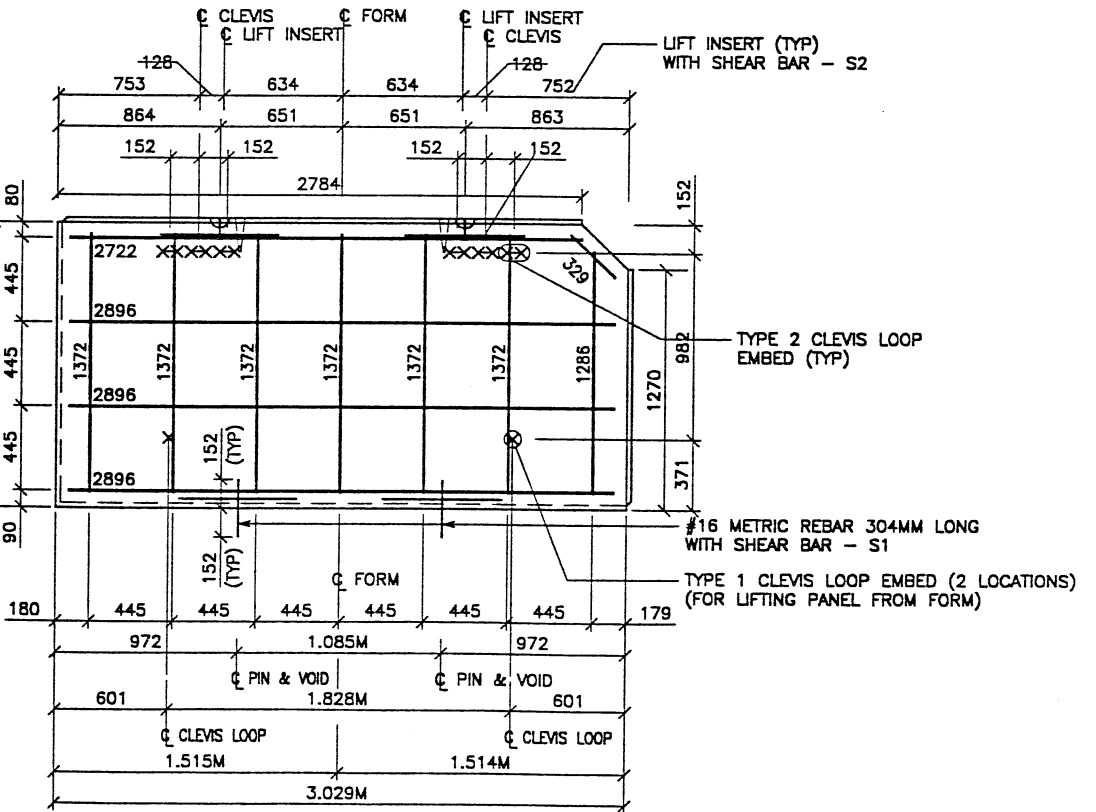
DWG. NO.
3.1R-351-4.12

JOB NO.
239-0007

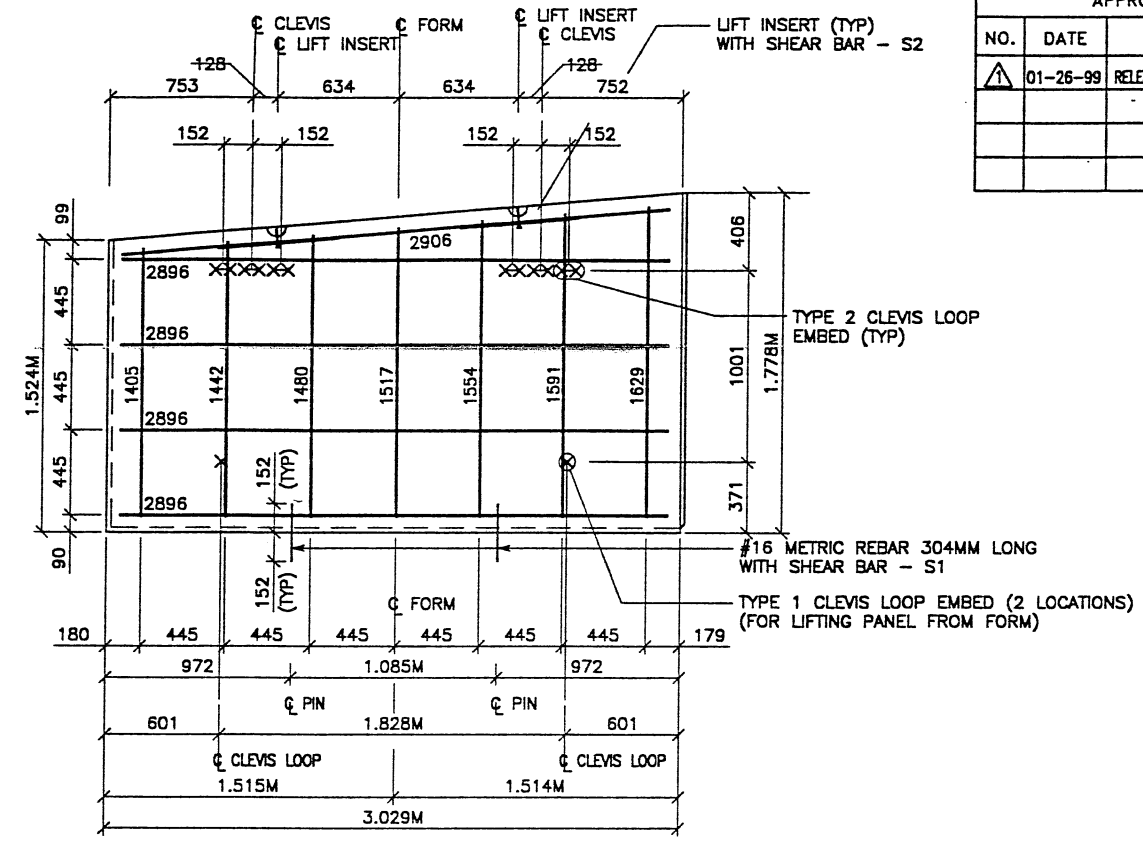
SHT. NO.
RE-10



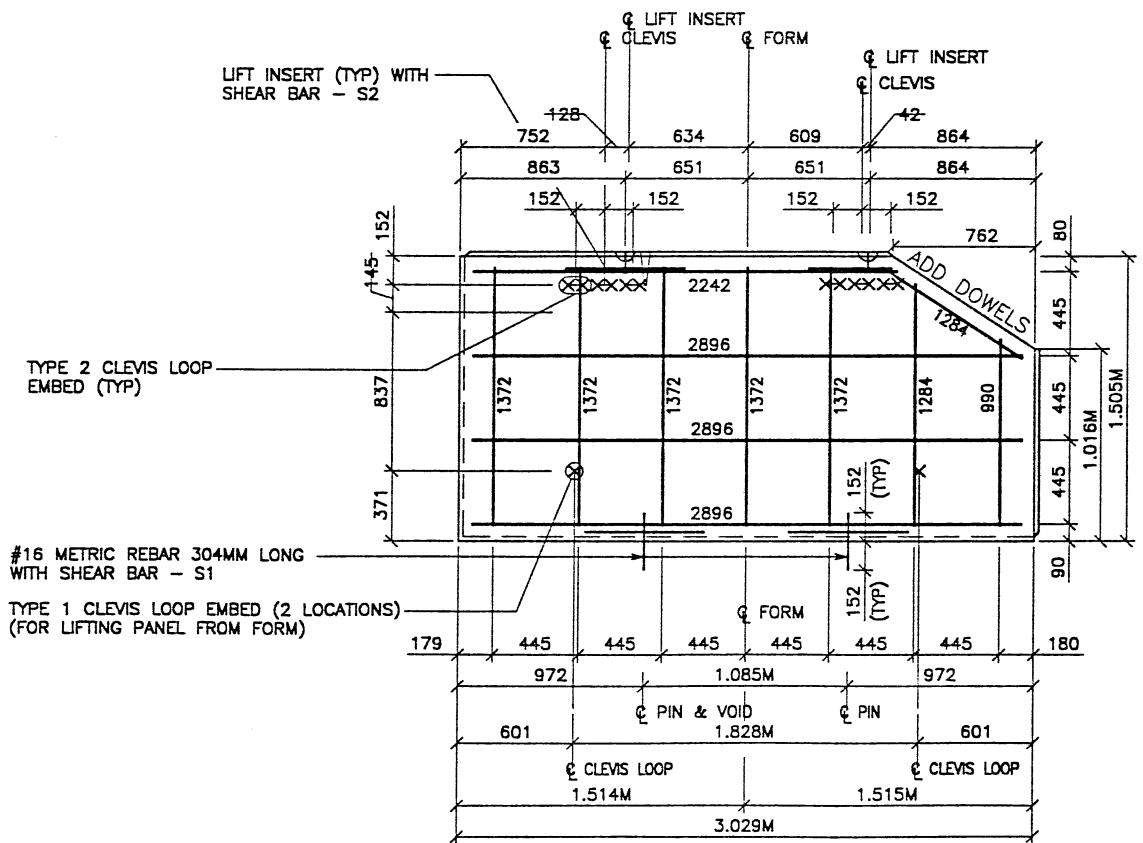
TYPE S3 REBAR
(AREA = 4.65 SQ.M)



TYPE S7 REBAR
(AREA = 4.61 SQ.M)



TYPE S2 REBAR
(AREA = 5.03 SQ.M)



TYPE S5 REBAR
(AREA = 4.45 SQ.M)

METRIC

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APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	01-26-99	RELEASE FOR 2ND STAGE CONSTRUCTION

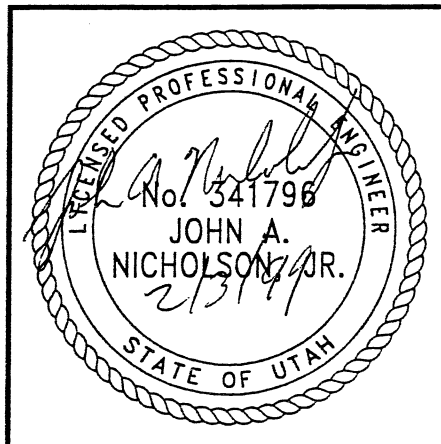
DES.	DRN.	CHK.	DATE	REVISION	BY	CHK

VSL CORPORATION
2840 Plaza Place, Suite 200
Raleigh, NC 27612
Telephone: (919) 781-0272
Fax: (919) 781-0669



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

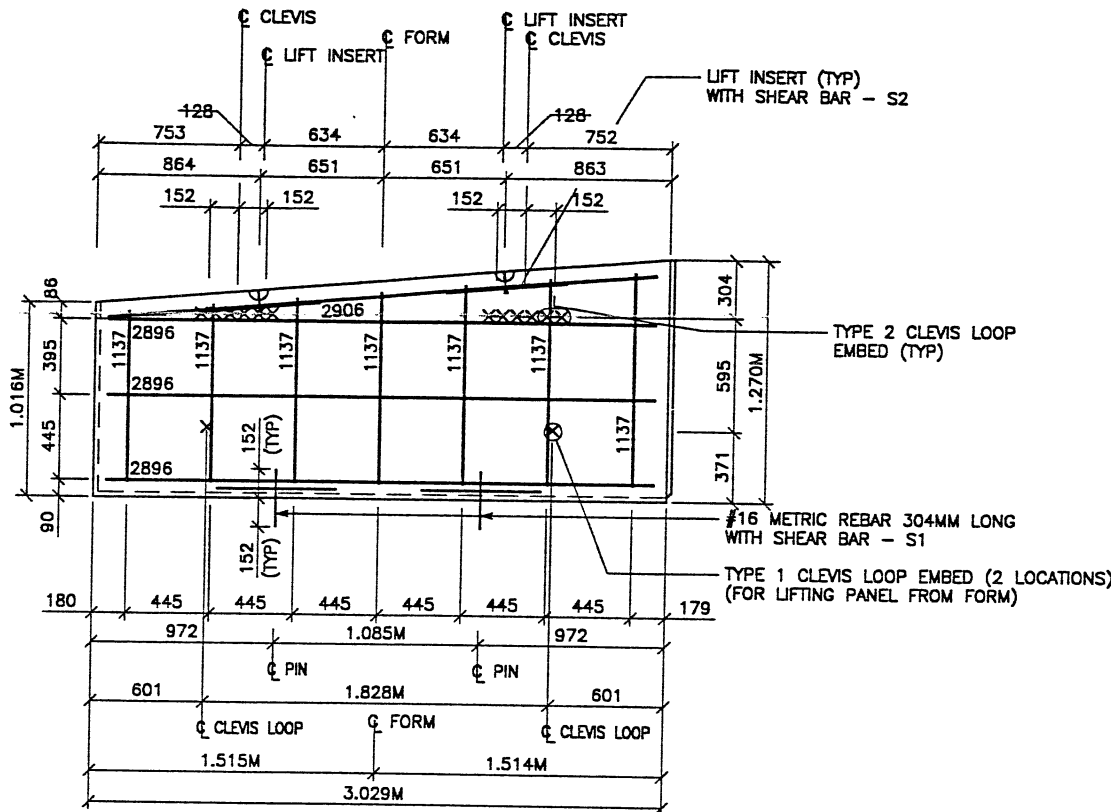
WASATCH CONSTRUCTORS
FEB 09 1999
RELEASED FOR CONSTRUCTION



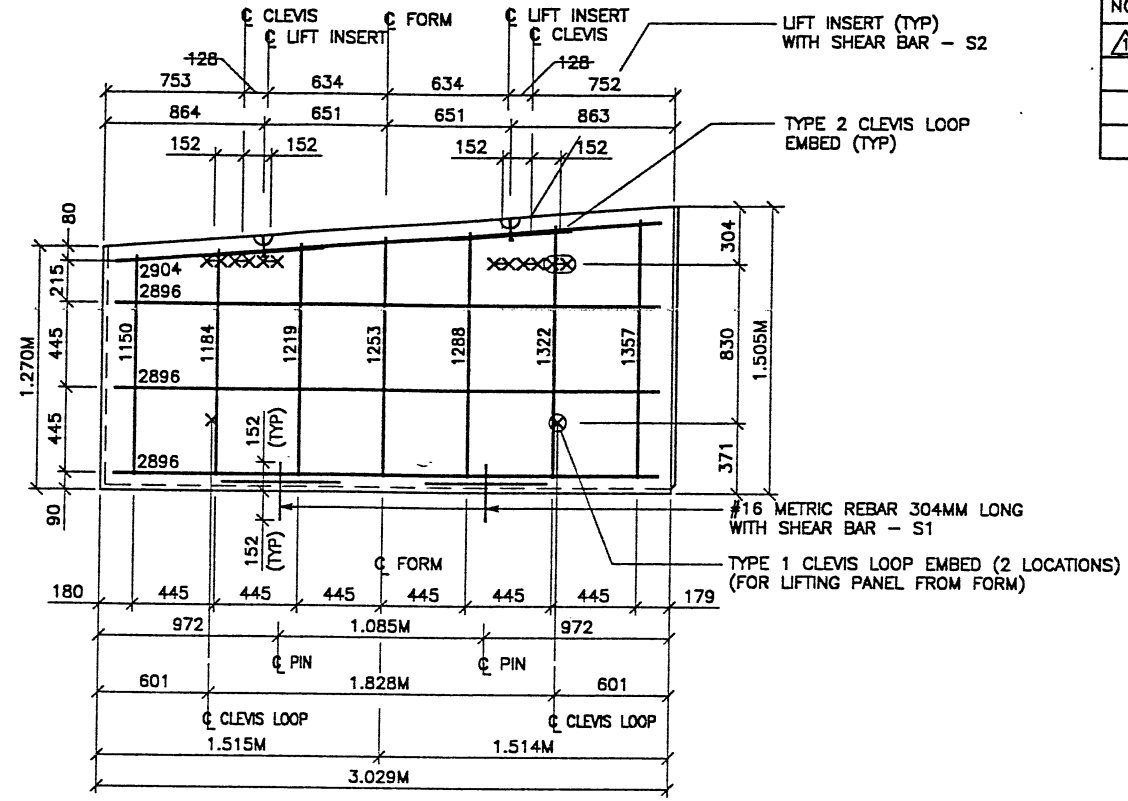
RETAINED EARTH™ WALLS
WALL R-351-04
2-STAGE PANEL REINFORCEMENT
UTAH I-15 INTERCHANGE
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	3.1R-351-4.13
JOB NO.	239-0007
SHT. NO.	RE-11

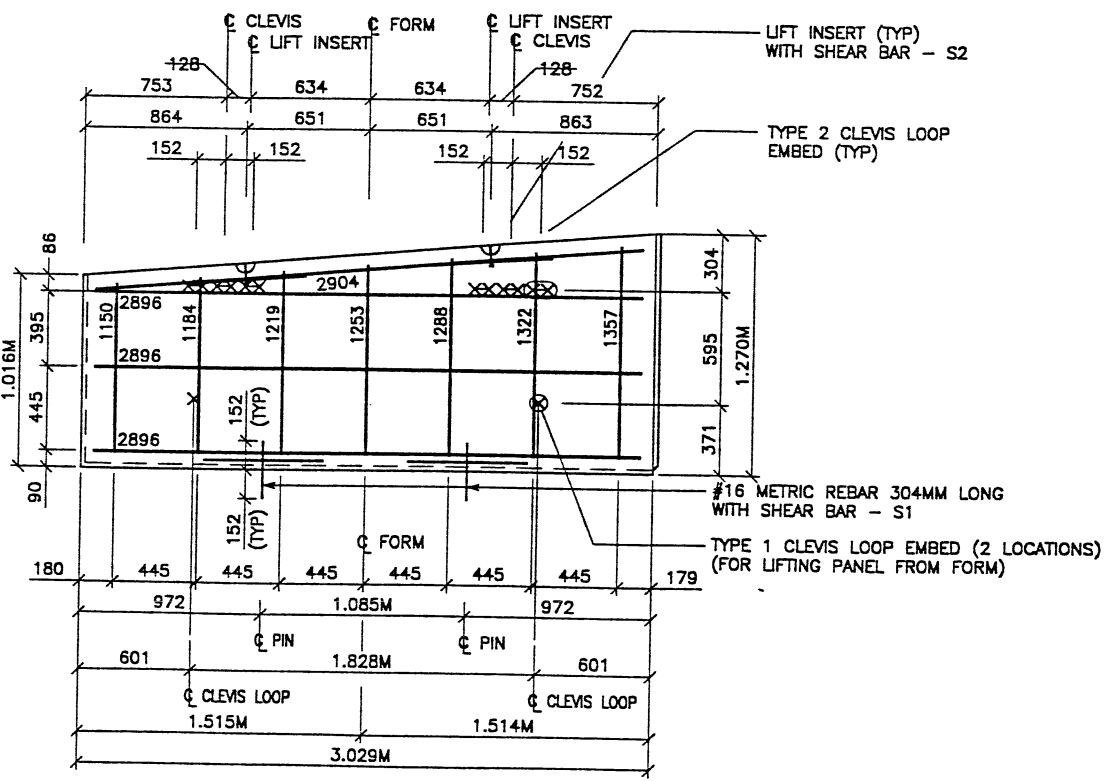
ENCE (X-UTAH.DWG)



TYPE G2RQ REBAR
(AREA = 3.483 SQ.M)



TYPE G1RQ REBAR
(AREA = 4.258 SQ.M)



TYPE G3RQ REBAR
(AREA = 2.710 SQ.M)

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
▲	01-28-99	RELEASE FOR CONSTRUCTION

DES.	10-09-98	RSW
DRN.	10-09-98	RSW
CHK.	10-09-98	CB

VSL CORPORATION
2940 Plaza Place, Suite 200
Raleigh, NC 27612
Telephone: (919) 781-8272
Fax: (919) 781-4869

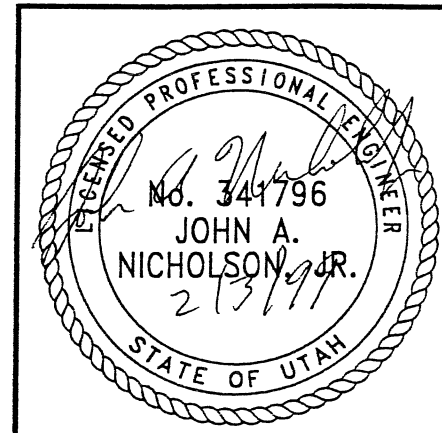


ALUMINA, GA / DANVILLE, TN / RALEIGH, NC (CORPORATE OFFICE)
JAMAICA, RI / SAN JOSE, CA / SPRINGFIELD, VA

WASATCH CONSTRUCTORS
FEB 09 1999
RELEASED FOR CONSTRUCTION

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RETAINED EARTH™ WALLS
WALL "R-351-04"
2-STAGE PANEL REINFORCEMENT
UTAH I-15 INTERCHANGE
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.



DWG. NO.	3.1R-351-4.14
JOB NO.	239-0007
SHT. NO.	RE-12

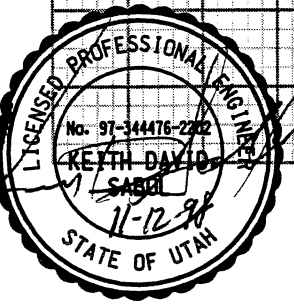
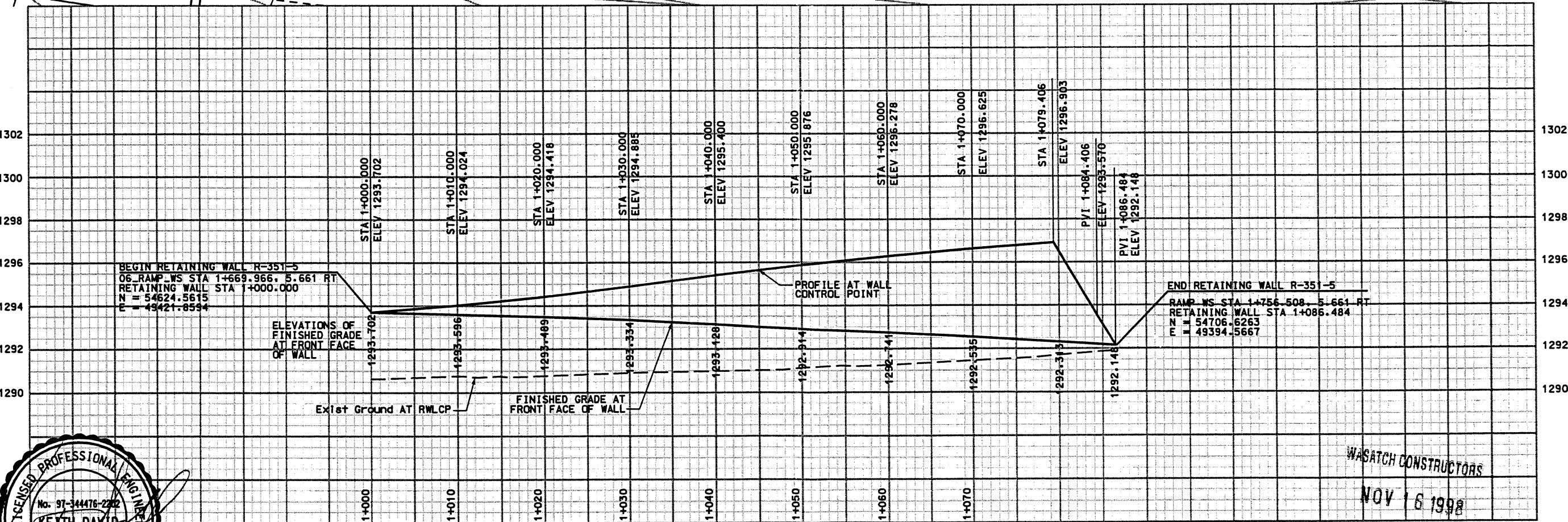
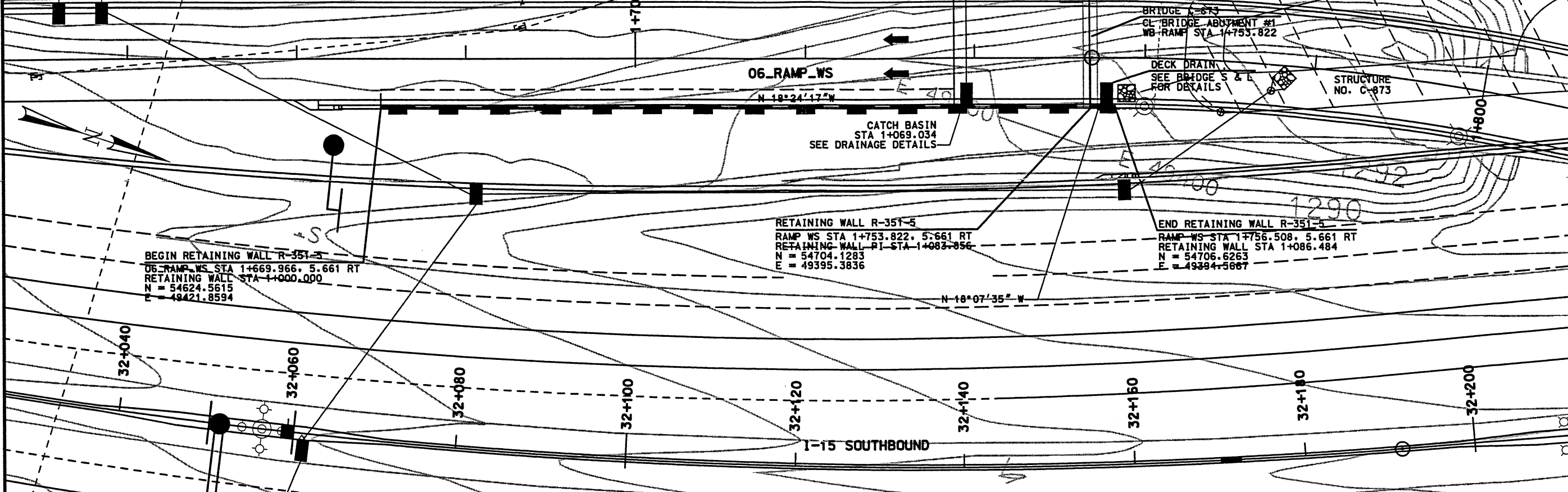
CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE RETAINED EARTH™ MASS, METHODS OF CONSTRUCTION, AND QUALITY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

METRIC

C:\MSE-WALLS\65-SERIES\65-04\SPECIAL
FINAL T 01-28-99

Dotm I-15-1998 Thm11902 Usernames cooking

5m 0 5m 10m
SCALE IN METERS

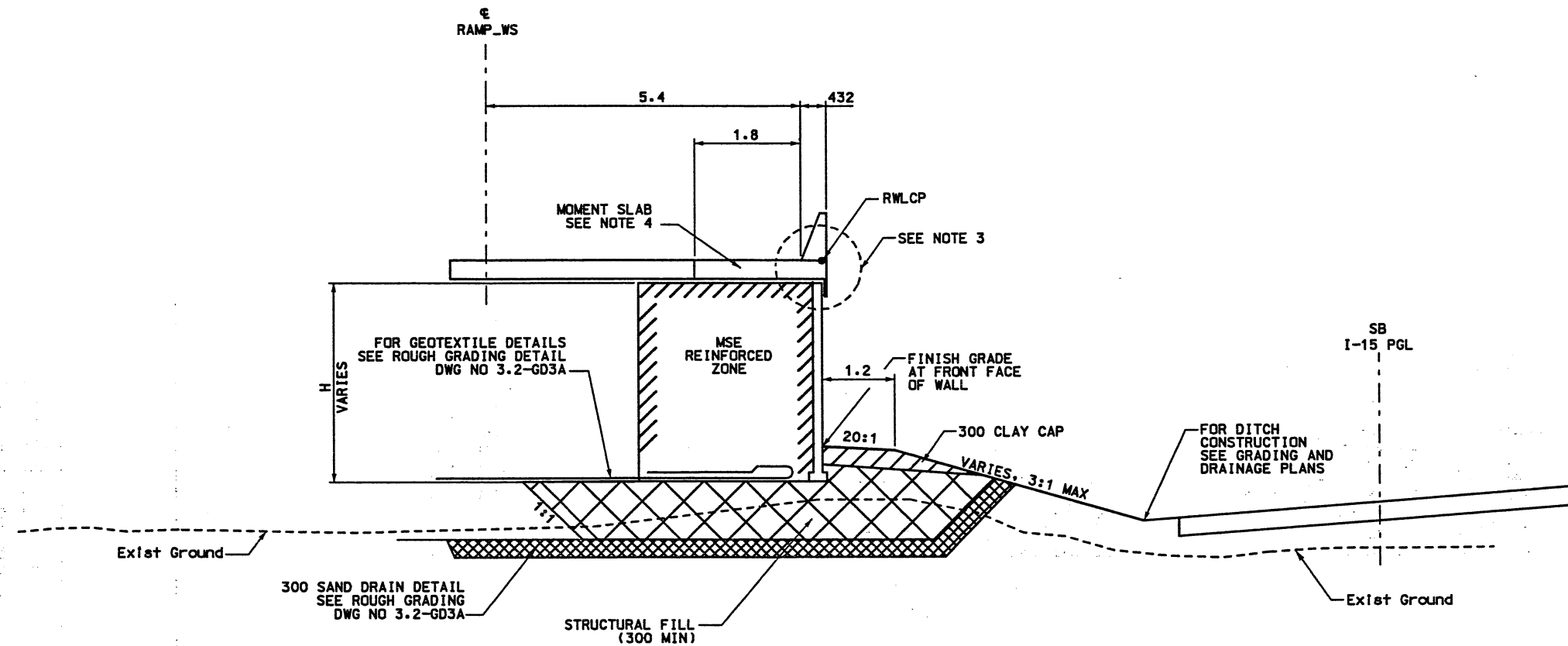
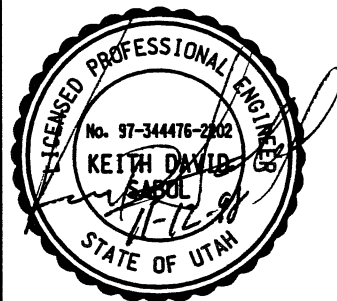


WASATCH CONSTRUCTORS
NOV 16 1998
RELEASED FOR CONSTRUCTION

WALL R-351-5
VIEW IS FRONT FACE OF WALL

APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
1	11/11/98	1	11/11/98
RELEASED FOR CONSTRUCTION		RELEASED FOR CONSTRUCTION	
UTAH DEPARTMENT OF TRANSPORTATION			
SVERDRUP/DE LEUW		CHECK MC 11/11/98	
DESIGN PLC 11/11/98		CHECK PLC 11/11/98	
DRAWN SVD 11/11/98		CHECK SVD 11/11/98	
QUANT.		QUANT.	
3213416		3213416	
MARVIN COOK PROJECT DESIGN ENGINEER		KEITH SABOL SECTION MANAGER	
APPROVAL DATE 11/11/98		APPROVED DATE 11/11/98	
I-15 CORRIDOR RECONSTRUCTION		SITUATION & LAYOUT	
SECTION 3.2		PROJECT NUMBER #SP-15-(135)296	
SALT LAKE COUNTY		DWG. NO. 3.2-R351-5.1	
SHT. 1 OF 8			

F:\names\15_cadd\15_cadd\06_37\sheet_files\wall\06_wal_05.dgn



RETAINING WALL DETAILS
NTS

WALL R-351-5
1 STAGE MSE
STA 1+000.000 TO STA 1+067.256

NOTES:

- 1) OVER EXCAVATE EXISTING SOILS AS REQUIRED. REFILL EXCAVATION WITH STRUCTURAL FILL AS PER CORRIDOR STANDARD SPECIFICATION 220-2
- 2) CONSTRUCT 300mm CLAY CAP WITH LOW PLASTIC SILTY CLAY AS PER CORRIDOR STANDARD SPECIFICATION
- 3) FOR COPING DETAILS SEE CS-28-1
- 4) FOR MOMENT SLAB DETAILS SEE CS-28-1
- 5) FOR COPING DETAILS STATION 1+067.256 TO STATION 1+071.558 SEE CS-54-4 SECTION A
- 6) FOR COPING DETAILS STATION 1+071.558 TO STATION 1+074.606 SEE CS-54-4 SECTION B
- 7) FOR COPING DETAILS STATION 1+074.606 TO STATION 1+079.406 SEE CS-54-4 SECTION C
- 8) FOR COPING DETAILS STATION 1+079.406 TO STATION 1+079.901 SEE CS-54-4 SECTION D
- 9) FOR COPING DETAILS STATION 1+079.901 TO STATION 1+084.406 SEE BRIDGE PLANS DWG NO C-873 SHEET 9 AND 10
- 10) FOR COPING DETAILS STATION 1+084.406 TO STATION 1+086.484 SEE CS-54-4 SECTION F

WASATCH CONSTRUCTORS

NOV 16 1998

RELEASED FOR CONSTRUCTION

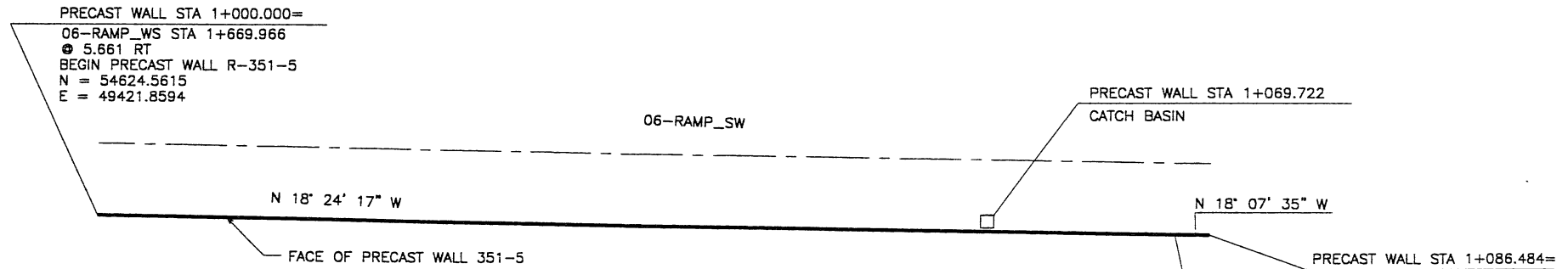
APPROVED FOR CONSTRUCTION		DESCRIPTION	
NO.	DATE	NO.	DATE
1	11/11/98	1	11/11/98
APPROVED FOR CONSTRUCTION		RELEASED FOR CONSTRUCTION	
UTAH DEPARTMENT OF TRANSPORTATION			
SVERDRUP/DE LEUW		3213416	
DESIGN	PLC 11/11/98	CHECK	MC 11/11/98
DRAWN	SVD 11/11/98	CHECK	PLC 11/11/98
QUANT.		CHECK	
APPROVAL	11/11/98	DATE	
RECOMM.		DATE	
MARVIN COOK	PROJECT DESIGN ENGINEER	KEITH SABOL	SECTION MANAGER
APPROVED 11/11/98	DATE	APPROVED 11/11/98	DATE
I-15 CORRIDOR RECONSTRUCTION		TYPICAL SECTION	
SECTION 3.2		#SP-15-(135)296	
SALT LAKE COUNTY			
DWG. NO.			
3.2-R351-5.2			
SHT.	2	OF	8

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-10-98	RELEASE FOR CONSTRUCTION

RETAINED EARTH INDEX	
RE-1	PLAN PRECAST FACE WALL R-351-05, NOTES & DESIGN CRITERIA
RE-2	TYPICAL CROSS SECTION
RE-3	ELEVATION PRECAST WALL "R-351-05"
RE-4	ELEVATION PRECAST WALL "R-351-05"
RE-5	SPECIAL DETAILS
RE-6	SPECIAL 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: 5W15-12 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.



PLAN VIEW WALL "R-351-05"

SCALE: 1=500 (FULL SIZE)
SCALE: 1=1000 (HALF SIZE)

DESIGN PARAMETERS
ANGLE OF INTERNAL FRICTION (SELECT) = 34°
ANGLE OF INTERNAL FRICTION (BASE) = 34°
ANGLE OF INTERNAL FRICTION (RANDOM) = 34°
UNIT WEIGHT BACKFILL = 135 PCF. (21.2 KN/M ³)
TRAFFIC SURCHARGE = 250 PSF (12 KPa)
SEISMIC ACCELERATION COFF. = 0.27g (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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WASATCH CONSTRUCTORS
NOV 16 1998
RELEASED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	NO.	DATE	BY	CHK

DES.	JUN					
DRN	10-19-98	RSW				
CHK	10-19-98	JUN				

RETAINED EARTH™

VSL CORPORATION
7000 North Central Expressway, Suite 200
Dallas, Texas 75206
Telephone: (972) 781-6272
Fax: (972) 781-4869

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

RETAINED EARTH™ WALLS
PLAN VIEW PRECAST WALL "R-351-05"
UTAH I-15 RECONSTRUCTION
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

DWG. NO.
3.2R-351-5.3

JOB NO.
239-0007

SHT. NO.
RE-1

ICE (X-UTAH.DWG)
 S:\65-11\RE-2
 H:\RE_EARTH\PROJECT\239-000\195
 T 11-10-98
 FIN

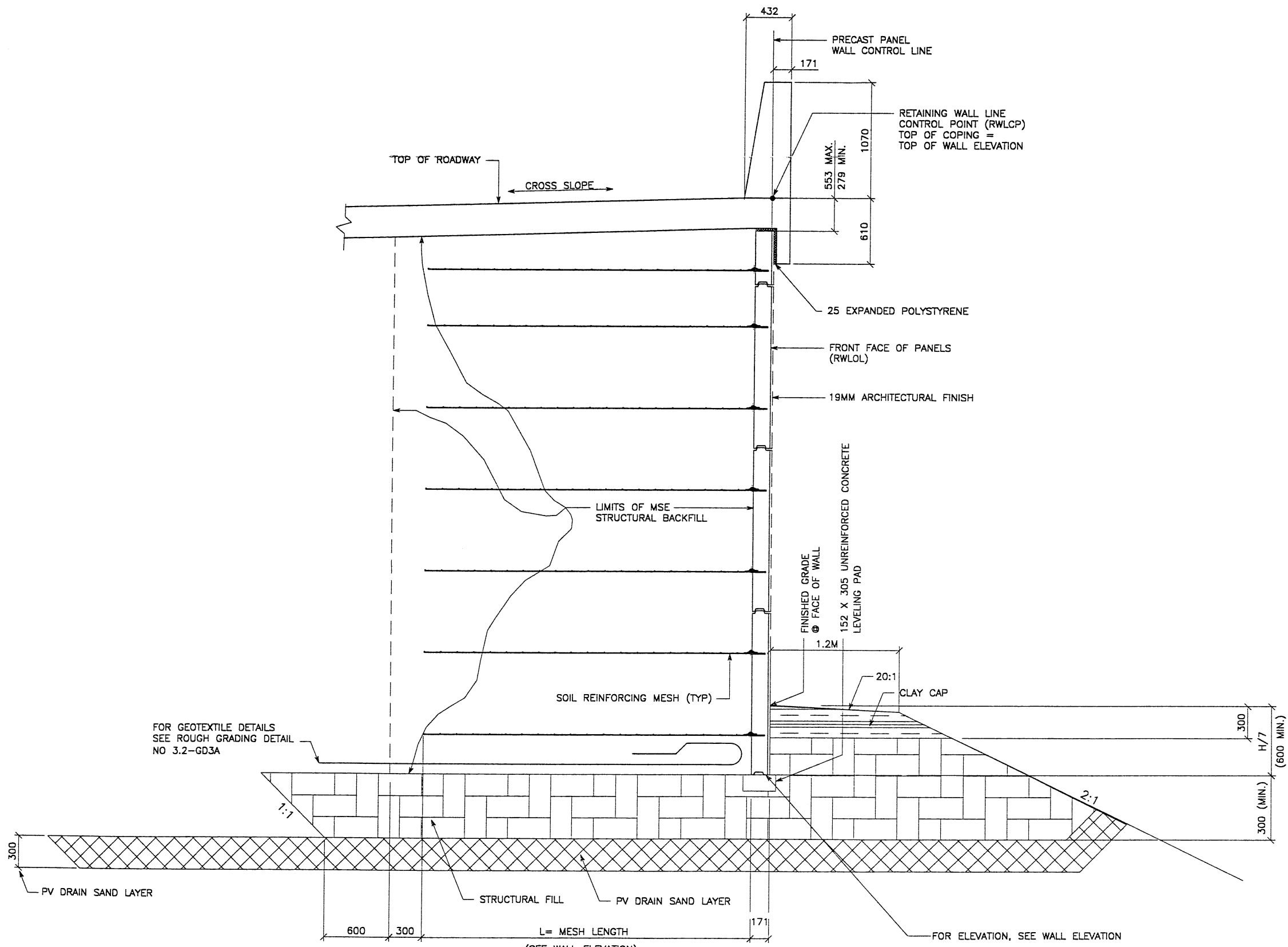
APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-10-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION	CHK

VSL CORPORATION
 2800 Plaza Place, Suite 200
 Raleigh, NC 27617
 Telephone: (919) 781-6772
 Fax: (919) 781-1899

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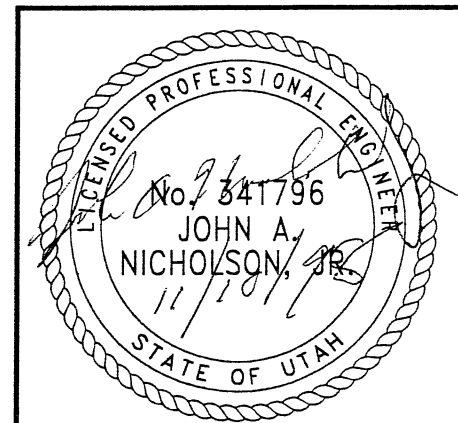


TYPICAL CROSS SECTION - STA 1+000.000 TO 1+079.406
 (SEE DWG. NO. 3.2R-351-5.2 FOR ADDITIONAL INFORMATION)
 SCALE: 1:20 (FULL SIZE)
 SCALE: 1:40 (HALF SIZE)

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

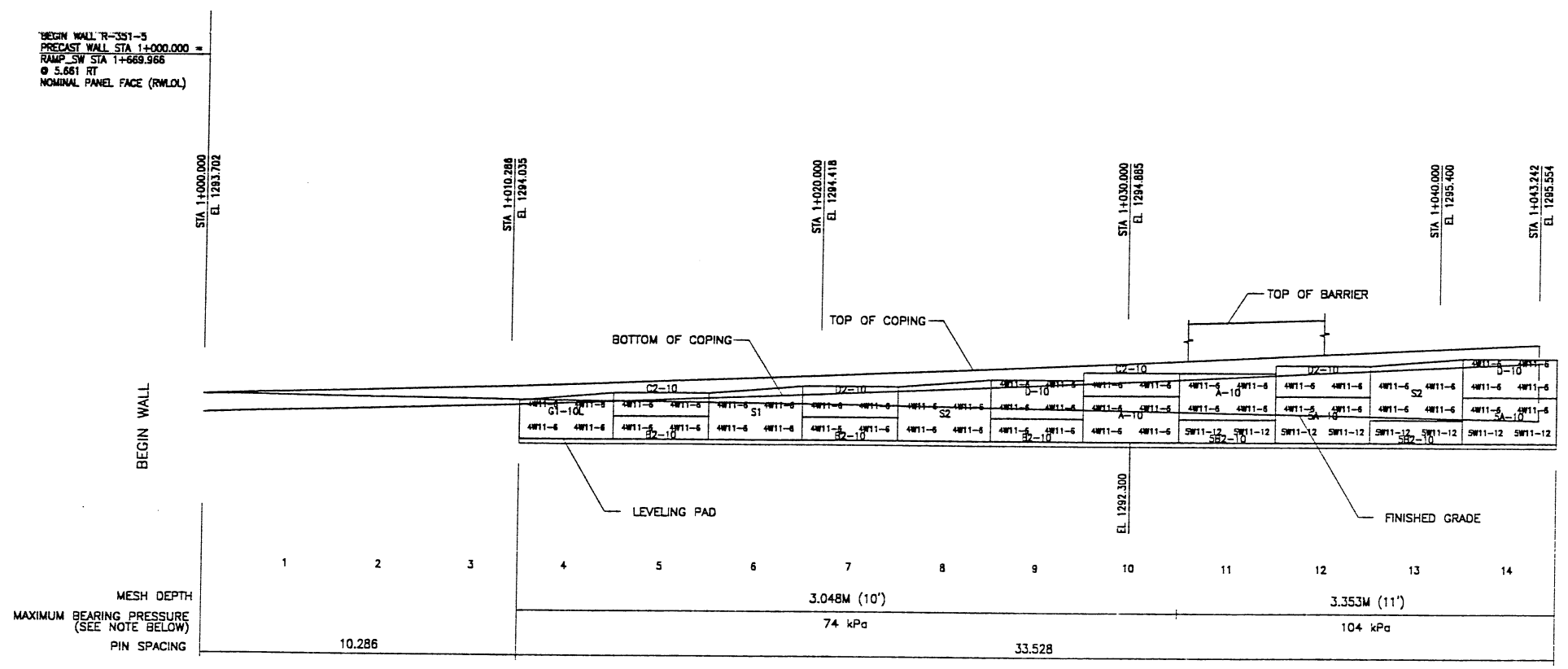
WASATCH CONSTRUCTORS
 NOV 16 1998
 RELEASED FOR CONSTRUCTION



RETAINED EARTH™ WALLS
 WIRE FACED WALL "R-351-05"
 TYPICAL CROSS SECTION
 UTAH 1-15 RECONSTRUCTION
 SALT LAKE COUNTY, UTAH
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.
 3.2-R-351-5.4
 JOB NO:
 239-0007
 SHEET NO
 RE-2

FIN: PLOT 11-10-98 H:\RE_EARTH\PROJECT\270-0007\1998\6S-WALLS\6S-05\6S-05 DENCE (X-UTAH.DWG)



APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-10-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION

VSL CORPORATION
 2010 Plaza Place, Suite 200
 Raleigh, NC 27617
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 Fax: (919) 781-6969

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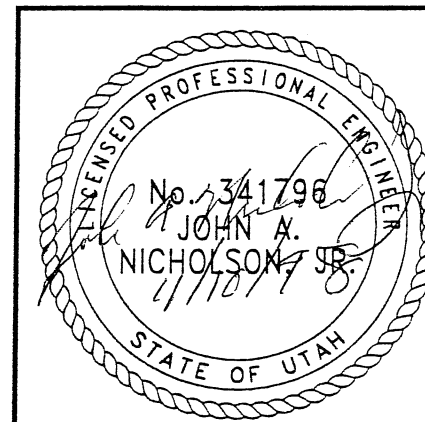
ELEVATION PRECAST WALL R-351-5
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)
 (TOTAL SURFACE AREA OF PANELS = 235.22 SM) SCALE 1:200 (HALF SIZE)

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.

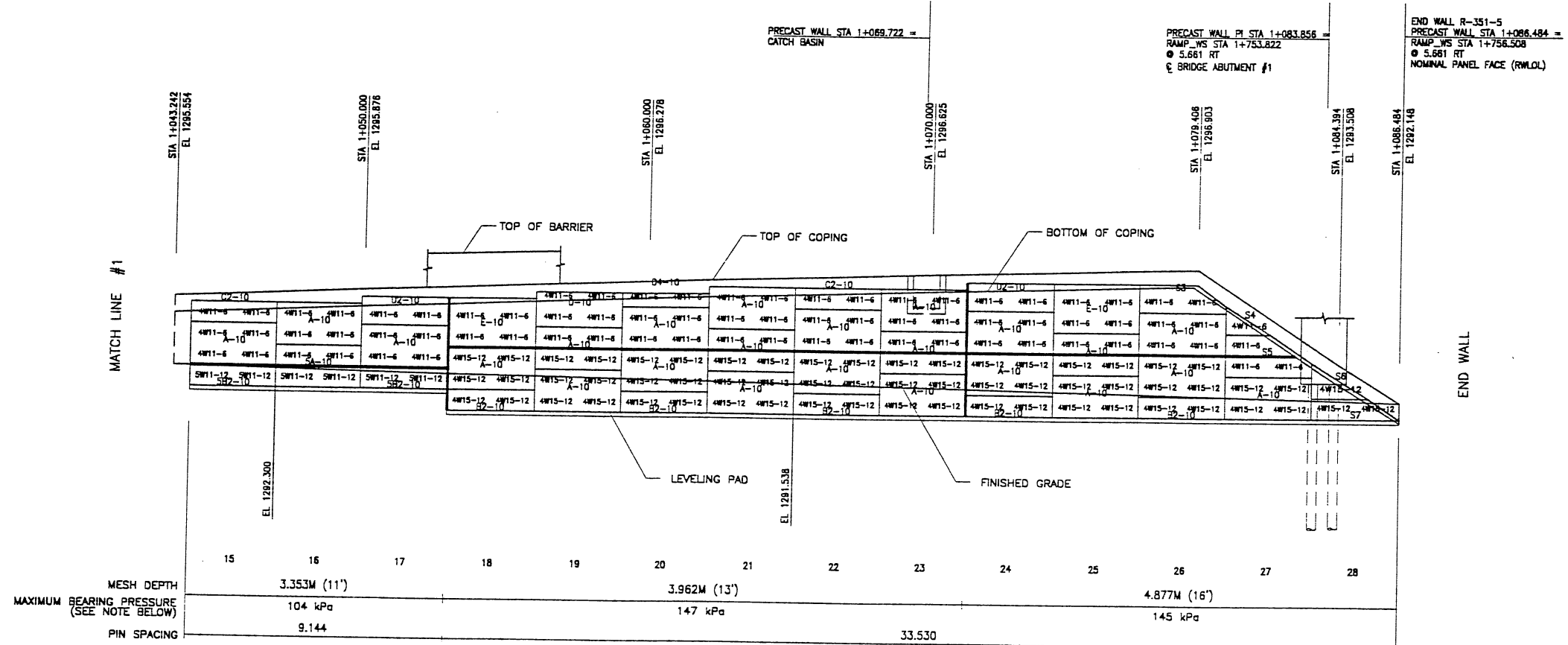
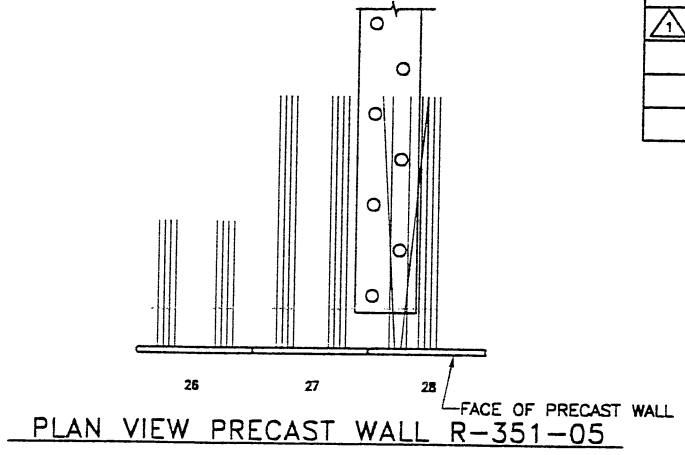
WASATCH CONSTRUCTORS
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RETAINED EARTH™ WALLS
PRECAST WALL "R-351-05"
 UTAH I-15 RECONSTRUCTION
 SALT LAKE COUNTY, UTAH
 UTAH DEPARTMENT OF TRANSP.

DWG. NO. 3.2-R-351-5.5
 JOB NO. 239-0007
 SHEET NO. RE-3

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
1	11-10-98	RELEASE FOR CONSTRUCTION



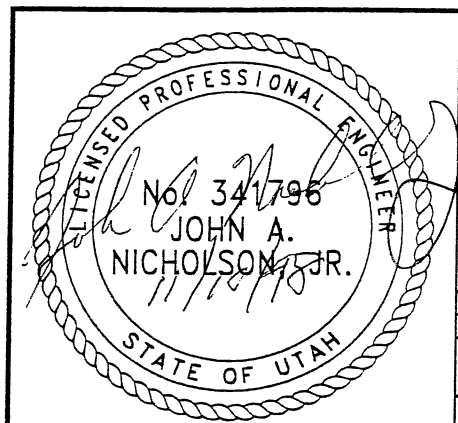
ELEVATION PRECAST WALL R-351-5
 (FRONT FACE SHOWN) SCALE 1:100 (FULL SIZE)
 (TOTAL SURFACE AREA OF PANELS = 235.22 SM) SCALE 1:200 (HALF SIZE)

METRIC

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

CERTIFIED FOR INTERNAL STABILITY OF RETAINED EARTH™ STRUCTURES ONLY.
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 STABILITY, IS THE RESPONSIBILITY OF THE OWNER. DESIGN IS BASED ON THE
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WASATCH CONSTRUCTORS
 NOV 16 1998
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REVISION		NO.	DATE

DLS.	10-19-98	JN
DRN.	10-19-98	RSW
CHK.	10-19-98	JN

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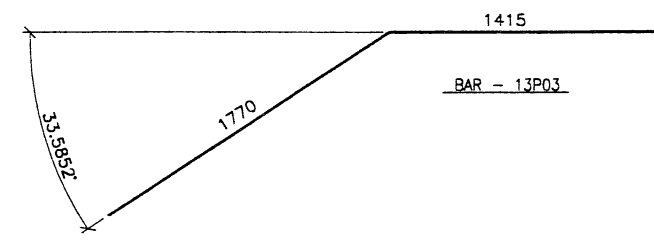
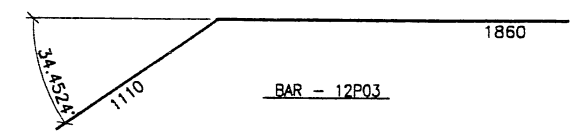
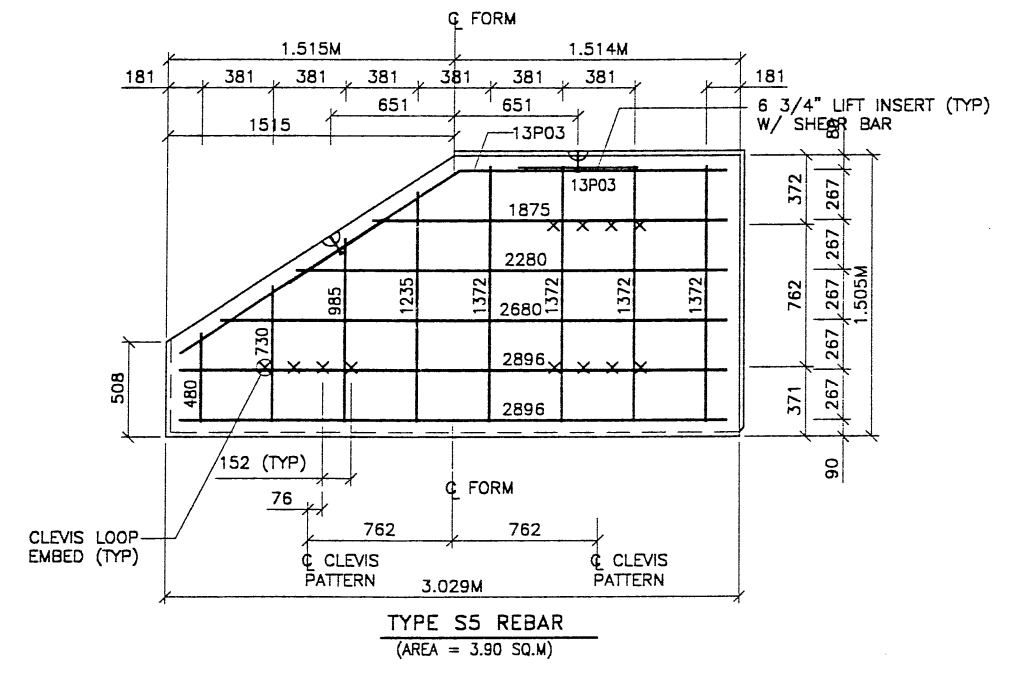
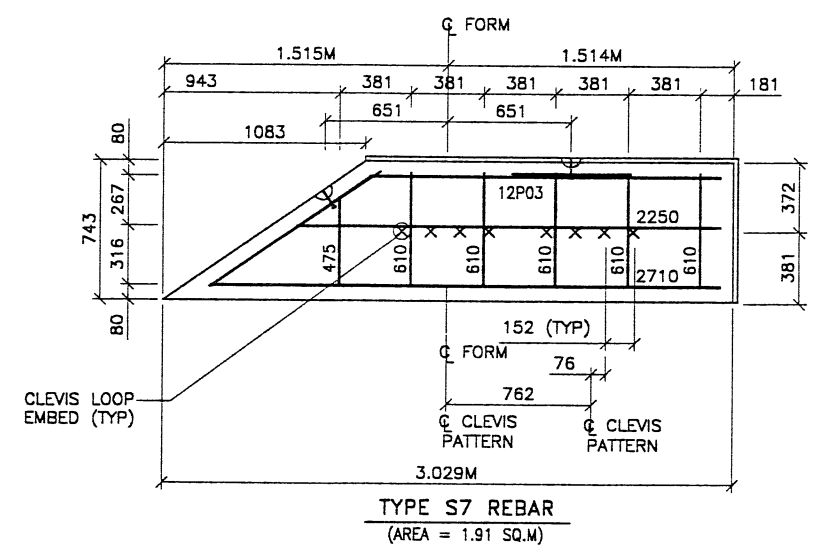
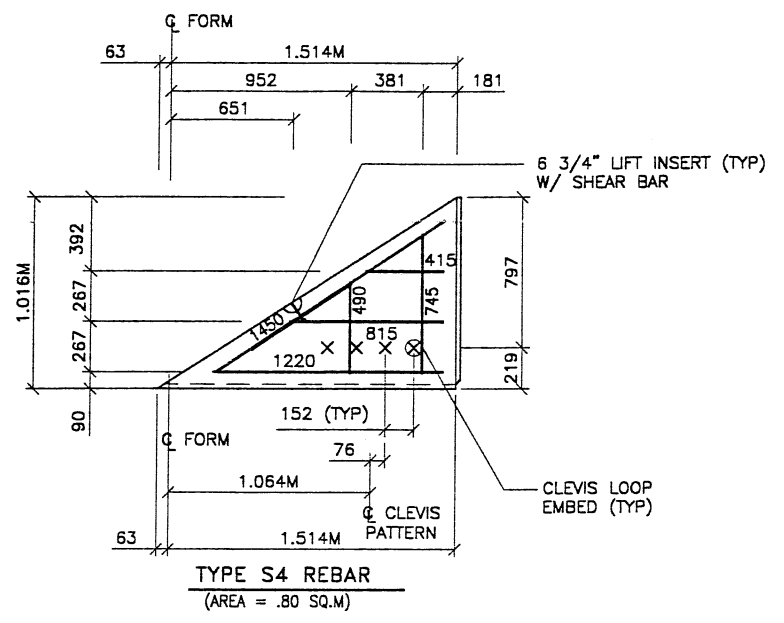
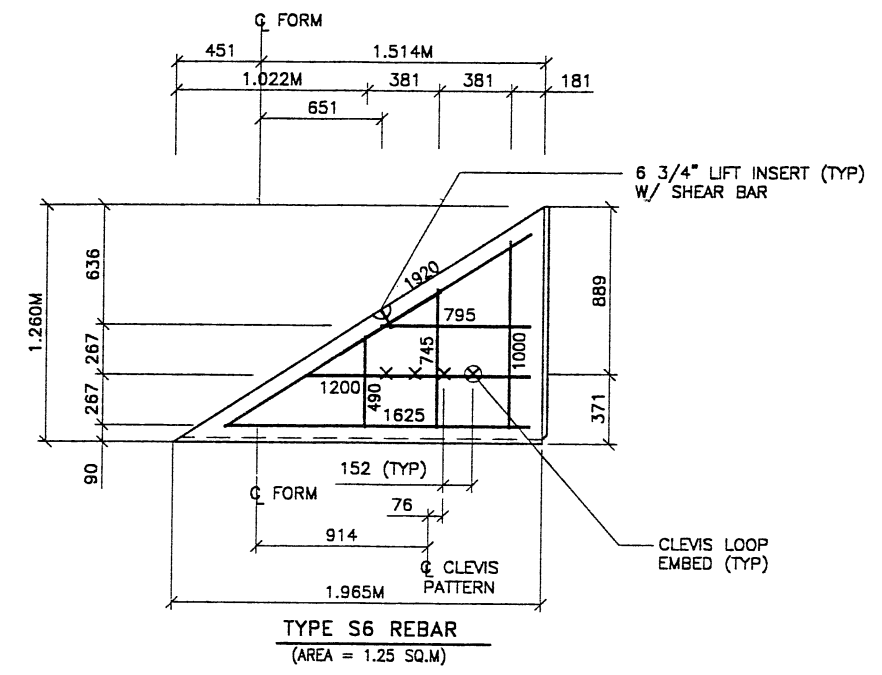
RETAINED EARTH™ WALLS
 PRECAST WALL "R-351-05"
 UTAH I-15 RECONSTRUCTION
 SALT LAKE COUNTY, UTAH
 UTAH DEPARTMENT OF TRANSP.

DWG. NO.	3.2-R-351-5.6
JOB NO.	239-0007
SHR. NO.	RE-4

APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-10-98	RELEASE FOR CONSTRUCTION

NO.	DATE	REVISION

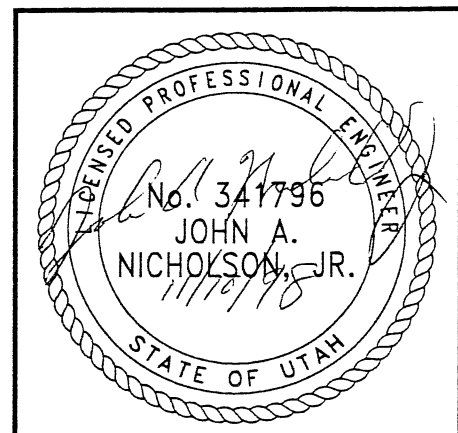
- PANEL REINFORCEMENT NOTES:
- PANELS ARE SHOWN BACK FACE.
 - HORIZONTAL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE BACK FACE.
 - ALL REINFORCEMENT SHALL HAVE 50 mm MINIMUM COVER TO THE SIDES.
 - ALL REINFORCING BARS ARE #13 METRIC. LABELS ON EACH BAR INDICATE LENGTH. EXAMPLE: 1345 IS A #13 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 20,700 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.



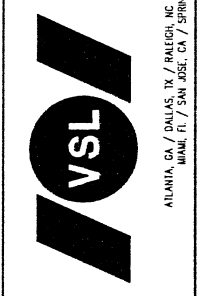
METRIC

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 16 1998
RELEASED FOR CONSTRUCTION



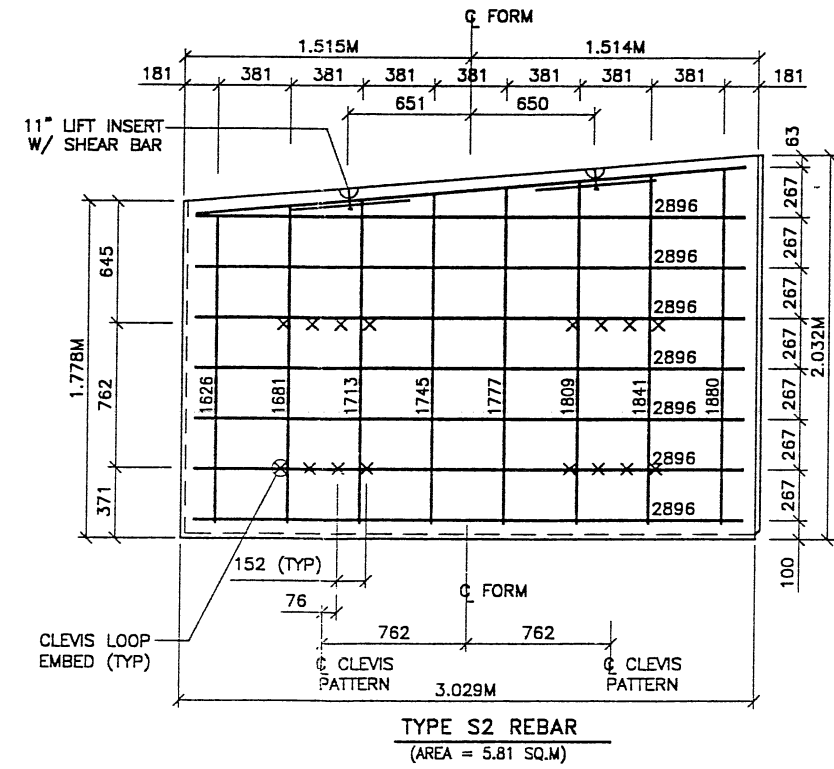
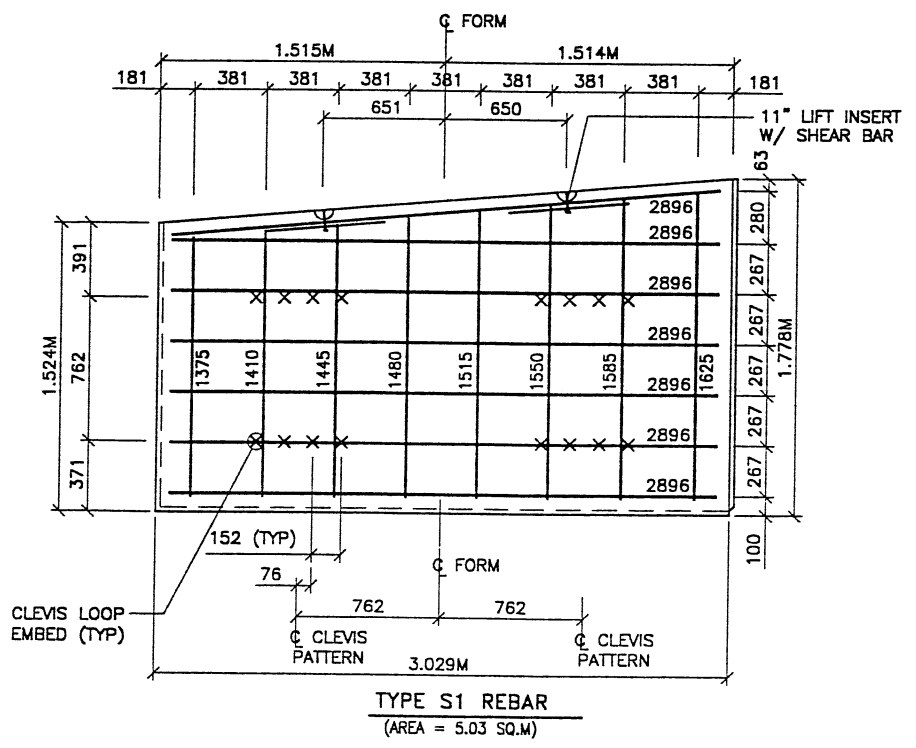
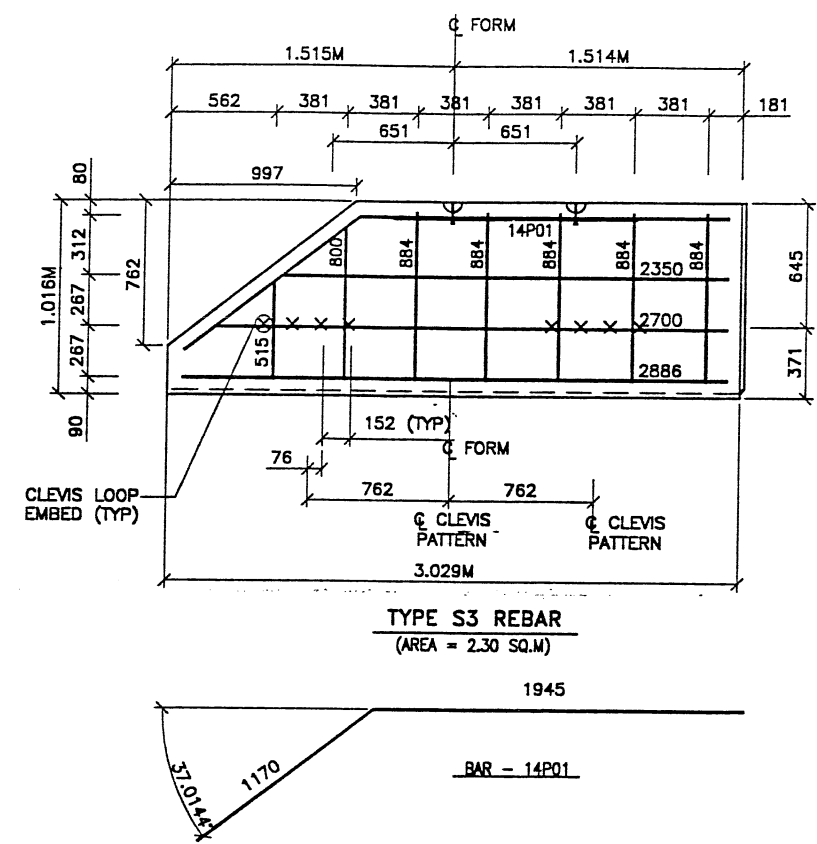
VSL CORPORATION
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RETAINED EARTH™ WALLS
PRECAST WALL "R-351-5"
SPECIAL PANEL DETAILS
UTAH I-15 RECONSTRUCTION
SALT LAKE COUNTY, UTAH
UTAH DEPARTMENT OF TRANSP.

DWG. NO.	3.2-R-351-5.7
JOB NO.	239-0007
Sht. NO.	RE-5



METRIC

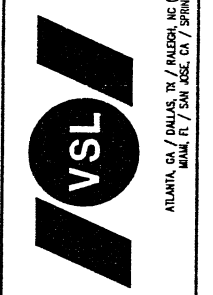
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APPROVED FOR CONSTRUCTION		
NO.	DATE	DESCRIPTION
△	11-10-98	RELEASE FOR CONSTRUCTION
△	6-04-99	REVISED CONCRETE STRENGTH

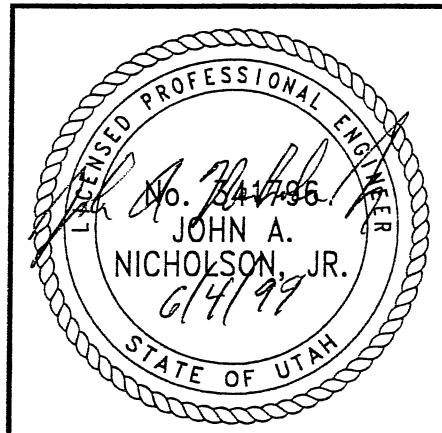
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NO.	DATE	DESCRIPTION
△	11-10-98	RELEASE FOR CONSTRUCTION
△	6-04-99	REVISED CONCRETE STRENGTH

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WASATCH CONSTRUCTORS
JUN 29 1999
RELEASED FOR CONSTRUCTION



RETAINED EARTH™ WALLS
PRECAST WALL "R-351-5"
SPECIAL PANEL DETAILS

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

DWG. NO.	3.2-R-351-5.8
JOB NO.	239-0007
SHT. NO.	RE-6