# ADOT Specific Requirements for Reinforced Earth Company Concrete Panel Wall System with Ribbed Steel Strip Reinforcements

| ADOT Vendor | Reinforced Earth Company (RECO)  
1660 Hotel Circle North; Suite 304, San Diego, CA 92108 |
|-------------|----------------------------------------------------------|
| General Information | ADOT Pride #: 10092  
Approval Date: 10/06/2010  
Re-evaluation due: 7/31/2020 |
| Design Standards | More stringent of the following:  
1. 2008 ADOT Standard Specifications for Road and Bridge Construction.  
2. Latest ADOT MSE Wall LRFD Based Special Provisions. [Contact ADOT for latest version at the time of the application of the system to a given project.]  
| HITEC Evaluation | Not available |
| Facing Evaluated | • Precast concrete panels of the following shapes: Cruciform; 5 ft x 5 ft square and 5 ft x 10 ft rectangular |
| Facing Connector | • See Drawings 5.1.B (REW), 5.1.B (SQR), and 5.1.B (RLA) for Cruciform; 5 ft x 5 ft square and 5 ft x 10 ft rectangular facing panels, respectively  
• Drawing 5.1.D.  
• Drawing 5.1.Q for connection to appurtenances. |
| Soil Reinforcement Evaluated | • Ribbed steel strip reinforcement |
| Notes/Constraints | In addition to the general design requirements provided in the Design Standards listed above, the following specific requirements apply:  
• Use of the system evaluated herein is subject to ADOT approval based on project- and site-specific evaluation.  
• Only the system components evaluated as noted above are approved for use. High Adherence (HA) ladder reinforcements were not evaluated. Tolerances shall be the more stringent of those noted in RECO’s attached drawings and the Design Standards listed above.  
• Use of soil reinforcements not connected to the wall face is not allowed.  
• Soil reinforcement length is measured from back of the facing panel.  
• Reinforcement pullout shall be calculated based on the default values for steel strip reinforcement provided in the latest AASHTO specification (Design Standard #4 listed above).  
• Live load shall be considered in accordance with the requirements of Design Standard #2 listed above, i.e., ADOT Special Provisions, for external stability, internal stability and facing panel designs.  
• The external and internal stability analysis shall be performed using procedures in the example problems in Design Standard #3 listed above and |
in accordance with the requirements in Design Standard #2 listed above, including the use of the simplified method for internal stability analysis.

- The number of bearing pads between panels shall be in accordance with requirements of Design Standard #2 listed above, i.e., ADOT Special Provisions.

- The facing connectors shall be designed to have adequate life considering corrosion loss based on the design (service) life of the structure noted on the plans or specifications, with a minimum of 75 years design life for permanent structures.

- Due to the nut and bolt connection between the ribbed steel strip reinforcement and the facing panel, a splay angle up to fifteen (15) degrees is permissible. Splay angle is defined as the deviation from the normal to the face of the wall in the horizontal plane at a reinforcing level. Reduction in tensile capacity perpendicular to the wall face due to splay shall be accounted for in the analysis.

- Where soil reinforcements are spliced, butt-ended strips with a plate on top and bottom of butted strips shall be used. The top and bottom plate shall be bolted to each strip similar to the connection of the strip at the wall face.

- The geotextile across the joints at the backface of the facing panels shall meet the requirements of AASHTO M 288.

- All details for penetration of culverts or other objects through the wall face shall be evaluated on a project- and site-specific basis.

- All details for penetration of vertical and horizontal obstructions through the reinforced soil zone shall be evaluated on a project- and site-specific basis. Examples of these obstructions include foundation elements, catch basins, slotted drains, etc.

- Drainage details shall be modified as appropriate to meet project- and site-specific requirements.

Assumptions

- Vendor submittals shall be in accordance with the design standards and other requirements listed herein.

- ADOT and its design representatives will evaluate the project- and site-specific application of RECO’s Concrete Panel system with ribbed steel strip reinforcement and review submittals for approval consideration in strict accordance with the design standards, limitations, and requirements listed herein. Typical details in this package may not be applicable to a given project and will be modified, based on site-specific considerations, as necessary by the designer in consultation with the vendor.

- During construction of the RECO’s Concrete Panel system with ribbed steel strip reinforcement, ADOT and its representatives will enforce project- and site-specific acceptance requirements in accordance with the plans and specifications.
TYPICAL DETAILS
(22 pages)

Typical details submitted to ADOT as part of the product approval process are attached. These represent generic details that must be evaluated by the designer based on project- and site-specific requirements. The designer shall also be responsible for ensuring conformance to the constraints and design standards noted in this evaluation.
CONNEXIONS AS NW H449 BOLT SET 1/2''

CONNECTION DETAIL

REINFORCED EARTH

.CONNECTED NOW RESPECT TO A NURAL STRAIGHT OF REINFORCED EARTH STRUCTURES ONLY
MSE WALLS TYPICAL SECTION WITH WALL TRAFFIC BARRIER

Scale: Not to Scale

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The design contained in these drawings is based on information provided by the owner. On the basis of this information, The Reinforced Earth Company has designed, and is responsible for the internal stability of the structure only. External stability, including foundation and slope stability, is the responsibility of the owner.
SUBSURFACE DRAIN OUTLET

SCALE NOT TO SCALE
MSE WALLS TYPICAL SECTION WITH OVERHEAD LIGHT

SCALE: NOT TO SCALE
STEPPING OF LEVELING PAD (RLA)

STEPPING OF LEVELING PAD (SOR)

STEPPING OF LEVELING PAD (REW)

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The design explained on these drawings is based on information provided by the owner. On the basis of this information, The Reinforced Earth Company has designed, and is responsible for the internal stability of the structures only. External stability, including foundation and slope stability, is the responsibility of the owner.
Note: Panels are stair-stepped.

Stepping of top of wall with final grade (RLA)

Stepping of top of wall with final grade (SOR)

Stepping of top of wall with final grade (REW)

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ATTACH REINFORCING STRIPS TO 2 OUT OF 3 TE STRIPS
AT EACH LEVEL OR EACH PANEL TO MINIMIZE SPACING
OF REINFORCEMENT. ADDITIONAL TE STRIPS
HAVE BEEN PROVIDED BEYOND THOSE REQUIRED
BY CALCULATION, IF THE MANUAL SPACING
SPACE APPELS IS GREATER THAN 12 CONTACT
A REINFORCED EARTH COMPANY FIELD REPRESENTATIVE
PRIOR TO INSTALLATION.

TYPICAL STRIP SKEWING DETAIL
AT ABUTMENT PILES

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responsibility of the owner.

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"REINFORCED EARTH" IS THE REGISTERED TRADEMARK OF
The Reinforced Earth Company.

PROJECT NAME
LOCKTON
ENGINEER
DR. LAWRENCE
DESCRIPTION
REINFORCED EARTH
PLACEMENT OF REINFORCEMENT AROUND STEEL PILES
DATE
01/21/10
SD DATE
01/21/10
SD NAME
SD'S NAME
02-01-10
DATE
01/21/10
SD'S NAME
02-01-10
PLACEMENT OF REINFORCEMENT AROUND STEEL PILES
PLACEMENT OF REINFORCEMENT AROUND DROP INLETS STRUCTURES

TYPICAL STRIP BENDING DETAIL AT INLETS
TYPICAL STRIP BENDING DETAIL AT ANY PROPOSED & EXISTING PIPES

DETAIL OF PIPE PENETRATION AT WALL FACE