February 27, 2019

How to install this update?

Replace your earlier version of MSEW(3.0).exe with the one included in this download. You can use Windows Explorer to copy the file in this zipped download. The default directory of MSEW installation is:

C:\Programs File(x86)\ADAMA\MSEW(3.0)\

List of Changes in each Update:

Changes in Update 14, 14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.7, 14.8, 14.9, 14.91, 14.92, 14.93, 14.94, 14.96, 14.972 and 14.98:

Update 14.98: Approximations used in calculating external stability in Bridge Abutment have been refined. The graphics of force vectors in external stability have also been modified to reflect the refined computations.

Update 14.972: Program date and address of ADAMA have been updated in 14.972.

Update 14.96: When running Isolated Footing over the reinforcement, in special cases, T_{max} at the top layer could be inaccurate. The problem has been fixed in update 14.96.

Update 14.94: When running Isolated Footing over the reinforcement, direct sliding, eccentricity, and bearing capacity Fs or CDR could be somewhat inaccurate (i.e., larger than should be for sliding, smaller eccentricity, and smaller bearing capacity). The inaccuracy is dependent on the location and size of the footing relative to the reinforcement length; the larger the width or the closer the footing is to the rear end of the reinforcement, the smaller the inaccuracy. The problem has been fixed in update 14.94.

Update 14.93: In Bearing Capacity, MSEW also produces the unfactored contact pressure (useful for calculating settlement under service load). In the LRFD mode and under seismic condition, this pressure could be incorrect. It has been fixed in update 14.93.

Update 14.92: In LRFD, when metallic mat, an option to calculate pullout resistance based on Kr/Ka than that used for calculating Tmax for rupture. This option may seem illogical; however, it follows AASHTO 2009-2012.

Update 14.91: In LRFD, when specifying strip footing, live and/or dead load, the footing portion behind the reinforced soil may produce larger eccentricity than should be in calculating bearing capacity; i.e., BC is lower thus more conservative. The problem has been fixed in update 14.91.

Update 14.9: When specifying Isolated Footing with Live Load, located partially over the reinforced soil and partially over the retained soil, direct sliding, eccentricity, and bearing capacity could be less favorable than should be (i.e., results were more 'conservative'). The problem has been fixed in update 14.9.

Update 14.8: While AASHTO does not require calculating Fs for overturning, Fs_ot, MSEW enables the user to see the corresponding Fs_ot when in the inner windows of Eccentricity. However, Fs_ot is to some extent arbitrary in terms of defining driving and resisting moments; i.e., it is not a result of true moment equilibrium for the system unless the wall is hinging on its toe. This could lead to multiple options of calculating Fs_ot when water is included. The previous versions of MSEW considering water in the calculations yielded values of Fs_ot that are smaller when compared to the current version. {It is noted that only when Fs_ot=1.0 all definitions of moments yield the same answer.} The current version redefines what are driving and resisting moments only due to water pressures; all other calculated values in MSEW are not affected. Consequently, Fs_ot is somewhat larger when water is included. For transparency of results, MSEW shows the driving (Md) and resisting (Mr) moments calculated about the toe where Fs_ot=Mr/Md.

Update 14.7: There is a conflict between the resistance factors for Metal Mats and Metal Strips in the Coherent Gravity Method recommended AMSE and AASHTO; i.e., 0.8 and 0.9 by AMSE versus 0.65 and 0.75 by AASHTO. This update sets the default values of these factors to AASHTO. If needed all default values in MSEW can be adjusted by the user.

Update 14.6: Some CDR values calculated using FHWA-NHI-10-024 were larger than in AASHTO LRFD. The difference in values depended on the dimension of the problem; in most cases eth differences were small. The problem was identified and fixed. It affected only values produced by NHI.

Update 14.5: Calculations related to direct sliding when water is invoked, were modified to properly account for water from both sides of the reinforced soil.

Update 14.4: When calculating eccentricity in LRFD, specified horizontal loads were multiplied twice by its load factor. Subsequently, eccentricity in bearing capacity resulted in larger value thus yielding slightly smaller CDR (i.e., more conservative compared with the corrected value). Also, the eccentricity in the External Stability resulted in larger than the corrected values (i.e., more conservative when compared with the corrected values). This impacted also the CDR for overturning; it resulted in slightly larger values than the corrected values (i.e., more conservative compared with the corrected values).

Update 14.3: In the Coherent Gravity Method (metals) there was a correction in LRFD and NHI 2009 making the eccentricity correspond to the loading factors in Internal Stability thus resulting in a consistent Tmax (thus affecting also connection and pullout). The current Tmax is slightly lower than before.

Update 14.2: The Vehicular Impact Load introduced in Update 14.1 was corrected for Rc<1.0 when dealing with geosynthetics.

Update 14.1: FHWA-NHI-10-024, in Analysis mode, modifications in Vehicular Impact Load were made with respect to pullout as well as adding options.

Update 14: Water inside the reinforced and retained soils and in front of the wall now can be considered. It is in AASHTO-style, essentially signifying a sudden drawdown situation which is typical in designing water-front structures. It is limited to simple walls in either Design or Analysis mode. The impact of head differences are considered in bearing capacity, eccentricity, sliding, required strength of reinforcement, pullout resistive length, and connection. Note that the impact on connection is in terms of an increase in Tmax. However, in block walls the confining effective stress between stacked blocks could be affected by uplift water pressure thus possibly reducing the connection strength in such structures.

Note that you can also export the specified water heads to ReSSA for global stability analysis. However, if you wish to consider this specified water information, you may need to download the posted update for ReSSA (Update 3.2 or higher).

Change in Update 13.1:

In bridge abutment (true or on piles) the user can specify the unit weight, γ, and internal friction angle, ϕ, of the soil above the reinforcement. The retained soil remains as before; it extends to the road surface along a vertical section at the rear end of the reinforced mass.

Changes in Update 13:

1. Design methodology following FHWA-NHI-010-024 (2009) was partially implemented. In particular, **vehicular impact** and **true bridge abutment** can now be used. However, implementation of the seismic design suggested in this document is deferred. The user can use the AASHTO seismic approach including the option of M-O method for user's specified wedge. Also, complex structures (except for true bridge abutment) have not been implemented. *It is noted that the NHI-010-024 has adopted many of the calculation methodologies and definitions (e.g., CDR) which were first introduced in previous updates and versions of MSEW.* Hence, its detailed hand-calculations can be helpful.
2. Included in this update is the ability to access through Help (above the toolbar the NHI manuals published in 2009). It is suggested that you copy these NHI manuals, provided in the downloaded zipped file, to the same directory where MSEW(3.0).exe is residing.
3. Several corrections were made:
    a. In true bridge abutment, minor calculation correction for eccentricity for Pv-d and Pv-l (consequently, e increases a little thus the stress induced by the footing increases a little; the end effect is minor).
    b. It is made clear that in true bridge abutment the soil above the reinforcement, retained by the footing, has the same properties as the retained soil.
    c. Suggestion for load factor on UNIFORM live load is made following the approach in NHI-010-024; it is suggested for LRFD design but the user can override it.
    d. In NCMA, presumptive value of q-ult under seismic conditions was calculated rather than bypassed by user-specified value as done in the static q_ult. This has been corrected.
    e. Horizontal dead load now is multiplied by a load factor (LRFD); it was not in previous versions.

Change in Update 12.0:

You can now assess the required resistance of your facing units to generate acceptable sliding stability. MSEW will produce at each elevation the required resistance. Using facing column weight and interface strength, you may assess the available resistance of your facing units to ascertain that the required capacity exists. Assessment of the facing resistance capacity should be done by the user. This new option is in Analysis Mode only. When in Results, click on Direct Sliding to see a button next to RETURN. Also, in printout an option to print the relevant data is available.

Change in Update 11.1: ***Important***

In Update 11.0, for certain data combination as related to seismicity (Kh in external stability) based on displacement, AASHTO LRFD may be conducted based on Kh that corresponds to AASHTO ASD (NHI-043) using its specified displacement. This problem is clearly visible in the printout of results. Update 11.1 corrects this problem.

Change in Update 11.0:

There are two important updates:

1. In LRFD seismic analysis, the user can invoke the AASHTO rules published in 2008-2010. Selection of PGA is a little more involved than AASHTO 2007. MSEW provides AASHTO's tables used for such selection.

2. Mononobe-Okabe equation is for ideal 'reality' where the backslope and the retained soil are infinite. Sometimes it may lead to paradoxical situations where K_{AE} is extremely large or that M-O equation cannot be solved as it represent infinite wedge dimensions. To possibly overcome such a problem, the user now can specify the maximum extent of M-O wedge so as to avoid dealing with 'infinite' idealization. For user specified maximum extent of wedge, MSEW maximizes K_{AE} for K_h>0 and for K_h= 0 to determine the ΔK_{AE} needed to calculate P_{AE} in external stability. MSEW produces the K_{AE} values for the equivalent M-O limited-extent problem. The resulted equivalent critical wedges can be viewed graphically.

Change in Update 10.2:

In Back-to-Back, Analysis Mode, the value of Fs for direct sliding and of e/L at elevation zero (interface with foundation) could be erroneous; running the same problem twice (or more) will show the correct values. This problem was corrected in Update 10.2.

Change in Update 10.1:

Change Relevant only to NCMA, Seismic Pullout Fs: When implementing Update 8.1 in April 2008, the reported Fs to resist pullout under seismic conditions was incorrect. While Tmax, Tmd , and Pr were correct, the division Fs=Pr/(Tmax+Tmd) was incorrect. The reported Fs prior to Update 8.1 were correct.

Change in Update 10.0:

1. In LRFD, Bearing Capacity, in ANALYSIS Mode only, a button was added where upon clicking, the user can see the unfactored resultant on the base of the wall, R, unfactored eccentricity, e, and subsequently σ_v. This uniform stress is

needed to calculate vertical settlement (recall that all LRFD force components, whether resistance or loads, are factored).
2. The type of calculations methodology (e.g., AASHTO 2002, AASHTO 2007) now is marked on the printed output (see first page, Title)
3. The Update Number of MSEW now is marked on the printed output (see first page, Title.)

Change in Update 9.2:
In Design Mode, when in the Final Design Layout (synergistic result), the user can superimpose the minimum required length, static or seismic, on the synergistic layout. The user can see minimum lengths for Direct Sliding, Eccentricity, Bearing Capacity, and Pullout. This visualization facilitates the assessment of the impact of each stability mode on the reinforcement synergistic layout. Potential inconsistent data input by user which may lead to inaccurate results was corrected. Some inconsistent data displayed in printout were corrected.

Change in Update 9.1:
The current update is compatible with Vista operating system. Note that the default location of the database may be in a different directory from your existing one. Click on *Locate* to find and connect to your existing database. Geometry transferred to ReSSA for vertical walls was modified to better match ReSSA structure.

Change in Update 9.0:
Data files generated and saved by the initial release of MSEW version 2.0 and retrieved by version 3.0 would run in AASHTO 98 even if AASHTO 02 was selected. Clicking on AASHTO 02 second time would have switched the run to 02.

Change in Update 8.1:
1. In metallic reinforcement you can do the analysis either using the Simplified Method (AASHTO) or the Coherent Gravity Method (CGM). In LRFD, some of the default load factors were adjusted for the CGM as well as the K/Ka distribution.
2. In seismicity, a 'displacement' based equation for Kh was added following AASHTO 2007.
3. Option for considering live load (LL) in calculating Tmax for strength and connection but ignoring it for pullout.
4. Pir in two-tiered walls, upper tier, in case of backslope offset in lower tier, was corrected.

Change in Update 8.0:
You now can save and retrieve database using files named by you (text files having extension INF). The database file name is saved with the data files. You can create as many database files as you wish using MSEW; each file may have

its own name. Also, the data file exported from MSEW to ReSSA for Metallic, Back-to-Back was corrected.

Change in Update 7.0:
Live loads are considered to increase Tmax while not affecting the pullout resistance. This may not always be realistic; however, it may have significant influence on reinforcement length. The user now has an option to either consider live load as before or ignore it in calculating Tmax and pullout resistance. Typo in the printout for metal mat was fixed. Option added for calculating connection capacity for block walls: ignore hinge height and consider the batter to be zero.

Change in Update 6.3:
LRFD 2004/2005 was changed to LRFD 2007. Changes are mainly semantic. A displacement-based option for the seismic coefficient was introduced for external stability. This alternative approach is empirical following AASHTO. Effects of strip and isolated footings in bearing capacity\LRFD were corrected. This was needed only for the footing's portion over the reinforced soil.

Change in Update 6.2:
Splash screen was modified to enable the user direct access (if connected to the Internet) to check the latest posted update.

Change in Update 6.1:
The load factor in Pullout, AASHTO LRFD Mode, Dead Load is now implemented more accurately in MSEW when compared with previous updates.

Change in Update 6.0:
The load factor in Direct Sliding and Eccentricity, AASHTO LRFD Mode, Uniform Surcharge Load is now implemented more accurately in MSEW when compared to Update 6.0.

Change from Update 5.0:
In calculating Direct Sliding and Eccentricity, AASHTO LRFD Mode, Uniform Surcharge Load over the reinforced soil is multiplied now by a load factor of one whereas before it was multiplied by the same load factor as that specified for the surcharge over the retained soil.

Thank you for using MSEW.
ADAMA Engineering
adama@GeoPrograms.com