Load Definition: Seismic

Functions

afx_msg VARIANT	**OSLoadUI::AddSeismicDefinition** (const VARIANT FAR &varType, const VARIANT FAR &varAccidental) Adds a Seismic Definition with default parameters.
afx_msg VARIANT	**OSLoadUI::ModifySeismicDefinitionParams** (const VARIANT FAR &varParamName, const VARIANT FAR &varValue) Modifies or adds a seismic parameter in the existing seismic definition.
afx_msg VARIANT	**OSLoadUI::AddSeismicDefSelfWeight** (const VARIANT FAR &varWeightFactor) Adds self weight to Seismic Definition.
afx_msg VARIANT	**OSLoadUI::AddSeismicDefMemberWeight** (const VARIANT FAR &varSeismicType, const VARIANT FAR &varLoadType, const VARIANT FAR &varWeight, const VARIANT FAR &varStartDist, const VARIANT FAR &varEndDist, const VARIANT FAR &varMemberArray) Adds member concentrated/uniform weight to Seismic Definition.
afx_msg VARIANT	**OSLoadUI::AddSeismicDefJointWeight** (const VARIANT FAR &varWeight, const VARIANT FAR &varNodeArray) Adds joint self weight to Seismic Definition.
afx_msg VARIANT	**OSLoadUI::AddSeismicDefWallArea** (long nTypeNo, LPCTSTR szDirection, const VARIANT FAR &varMembArray) Wall Area is only available in IS1893-2016 seismic code.
afx_msg VARIANT	**OSLoadUI::AddResponseSpectrumLoadEx** (long rsaCode, long rsaCombination, const VARIANT FAR &varSet1Names, const VARIANT FAR &varSet1Vals, const VARIANT FAR &varSet2Names, const VARIANT FAR &varSet2Vals, const VARIANT FAR &varSpectrumDataPairs) Adds Response Specturm load item to the currently active load case.

Detailed Description

These functions are related to Seismic Definition.

Function Documentation

◆ AddResponseSpectrumLoadEx()

```
VARIANT OSLoadUI::AddResponseSpectrumLoadEx ( long                rsaCode,
                                              long                rsaCombination,
                                              const VARIANT FAR & varSet1Names,
                                              const VARIANT FAR & varSet1Vals,
                                              const VARIANT FAR & varSet2Names,
                                              const VARIANT FAR & varSet2Vals,
                                              const VARIANT FAR & varSpectrumDataPairs )
```

Adds Response Specturm load item to the currently active load case.

Parameters

[in] **rsaCode** Response Spectrum Loading Code. Refer to the following table for the integers corresponding to diff codes.

[in] **rsaCombination** Modal combination rule. (SRSS = 0, ABS = 1, CQC = 2, ASCE = 3, TEN = 4, CSM = 5, GRP = 6)

[in] **varSet1Names** VARIANT BSTR array containing parameter key words. Refer to the Techincal Reference sections as indicated below.

[in] **varSet1Vals** Parameters values corresponding to the keywords supplied in varSet1Names array.

[in] **varSet2Names** Optional VARIANT BSTR array containing parameter key words for the spectrum generation data command. NULL can be used if not neeed.

[in] **varSet2Vals** Parameters values corresponding to the keywords supplied in varSet2Names array. NULL can be us not needed.

[in] **varDataPairs** VARIANT double array containing pairs of time period and accleration data. NULL can used if not ne Inputs (varSet2Names, varSet2Vals) and (varDataPairs) are mutually exclusive, i.e. if one is specifie other should not specified.

nTypeNo	Seismic Code	Parameters	Ref. Se
0	Generic or Custom	DEC, ECC, X, Y, Z, ACC, DIS, SCA, DAM, CDA, MDA, LIN, LOG, MIS, ZPA, FF1, FF2, DOM, SIG, SAV, IMR, STA	TR.32.10
1	IS:1893 Part 1 2002	TOR, DEC, ECC, X, Y, Z, ACC, DIS, SCA, DAM, CDA, MDA, MIS, ZPA, IGN, DOM, SIG, SAV, IMR, STA	TR.32.10
		SOI, CHE, RF	
2	IS:1893 2016	TOR, DEC, ECC, X, Y, Z, ACC, DIS, SCA, DAM, CDA, MDA, LIN, LOG, MIS, ZPA, IGN, DOM, SIG, SAV, IMR, STA	TR.32.10
		SOI, CHE, RF	
4	ENV 1998-1:1994	ELA, DES, X, Y, Z, ACC, DAM, CDA, MDA, LIN, LOG, MIS, ZPA, DOM, SIG, SAV, IMR, STA	TR.32.10
		SOI, ALP, Q	
5	EN 1998-1:2004	ELA, DES, RS1, RS2, X, Y, Z, ACC, DAM, CDA, MDA, LIN, LOG, MIS, ZPA, DOM, SIG, SAV, IMR, STA	TR.32.10
		SOI, ALP, Q	

6	IBC 2006	X, Y, Z, ACC, DAM, CDA, MDA, LIN, LOG, MISC, ZPA, DOM, SIG, SAV IMR, STA	TR.32.10.
		ZIP, LAT, LON, SS, S1, SCA, FA, FV, TL	
7	IBC 2012	X, Y, Z, ACC, DAM, CDA, MDA, LIN, LOG, MISC, ZPA, DOM, SIG, SAV IMR, STA	TR.32.10.
		ZIP, LAT, LON, SS, S1, SCA, FA, FV, TL	
8	IBC 2015	X, Y, Z, ACC, DAM, CDA, MDA, LIN, LOG, MISC, ZPA, DOM, SIG, SAV IMR, STA	TR.32.10.
		ZIP, LAT, LON, SS, S1, SCA, FA, FV, TL	
10	SNiP II-7-81	A, X, KWX, KX1, Y, KWY, KY1, Z, KWZ, KZ1, ACC, SCA, DAM, CDA, MDA, LIN, LOG, MIS, ZPA, DOM, SIG, SOI, SAV	TR.32.10.
11	SP 14.13330.2011	ECC, A, X, Y, Z, ACC, SCA, DAM, LOG, MIS, ZPA, DOM, SIG, SOI	TR.32.10.
12	CANADIAN: NRC-2005	TOR, DEC, ECC, X, Y, Z, ACC, DIS, SCA, DAM, CDA, MDA, LIN, LOG, MIS, ZPA, DOM, SIG, SAV, IMR, STA	TR.32.10
13	CANADIAN: NRC-2010	TOR, DEC, ECC, X, Y, Z, ACC, DIS, SCA, DAM, CDA, MDA, LIN, LOG, MIS, ZPA, DOM, SIG, SAV, IMR, STA	TR.32.10
14	GB 50011 2010	X, Y, Z, ALP, DAM, CDA, MDA, LIN, LOG, MISS, ZPA, DOM, SIG, INT, FRE, FOR,RAR, GRO, SCL	TR.32.10

Note: Following values should be specified for INT parameter of GB 50011 2010 code -

Fortification Intensity	Value
6	0
7	1
7A	2
8	3
8A	4
9	5

Return values

0 FALSE.

1 TRUE.

VBA Syntax

```
Dim rsCode As Integer
Dim rsCombMethod As Integer
Dim paramNames1(12) As String
Dim paramVals1(12) As Double
Dim rValue As Variant

rsCode = 14 'GB 50011 2010
rsCombMethod = 0    'SRSS
paramNames1(0) = "X"
paramVals1(0) = 1.1
```

```
paramNames1(1) = "Y"
paramVals1(1) = 1.2
paramNames1(2) = "Z"
paramVals1(2) = 1.3
paramNames1(3) = "ALP"
paramVals1(3) = 0
paramNames1(4) = "DAM"
paramVals1(4) = 0.05
paramNames1(5) = "LIN"
paramVals1(5) = 0
paramNames1(6) = "MIS"
paramVals1(6) = 1.1
paramNames1(7) = "ZPA"
paramVals1(7) = 30
paramNames1(8) = "DOM"
paramVals1(8) = 0
paramNames1(9) = "INT"
paramVals1(9) = 5
paramNames1(10) = "FRE"
paramVals1(10) = 0
paramNames1(11) = "GRO"
paramVals1(11) = 1
paramNames1(12) = "SCL"
paramVals1(12) = 4

rValue =
       objOpenStaad.Load.AddResponseSpectrumLoadEx(rsCode,rsCombMethod,paramNames1,paramVals1,Null,Null,Nu
```

.

AddSeismicDefinition()

VARIANT OSLoadUI::AddSeismicDefinition (const VARIANT FAR & varType,
const VARIANT FAR & varAccidental)

Adds a Seismic Definition with default parameters.

Parameters

[in] **varType** Type of seismic code.

Value	Seismic Code
0	UBC 1985
1	UBC 1994
2	UBC 1997
3	Indian: IS 1893-1984
4	Indian: IS 1893-2002/2005
5	IBC 2000
6	IBC 2003
7	COLOMBIAN: NSR 98
8	JAPANESE (AIJ)
9	ALGERIAN: RPA
10	MEX: CFE-1993
11	MEX: NTC-1987
12	Indian: IS 1893-2016
13	Indian: IS 1893(Part4) 2015
14	IBC 2006
15	IBC 2012
16	IBC 2015
17	IBC 2018
18	CANADIAN: NRC-2005
19	CANADIAN: NRC-2010
20	CANADIAN: NRC-1995
21	COLOMBIAN: NSR 2010
22	Chinese: GB50011-2001
23	Chinese: GB50011-2010
24	TURKISH

[in] **varAccidental** Consider accidental torsion (= **1**); ignore (= **0**). For additional information, please refer to Section 5.31.2 of the Technical Reference manual.

Return values

TRUE Successful.

FALSE Unsuccessful.

C++ Syntax

```
// Add Seismic Definition.
VARIANT RetVal = OSLoadUI::AddSeismicDefinition(1, 1);
```

VBA Syntax

```
' Add Seismic Definition.
Option Explicit

   Sub Main
       Dim objOpenStaad As Object
       Dim stdFile As String
       Dim code As Long
       Dim Accidental As Long
       Dim Result As Boolean

       Set objOpenStaad = GetObject(,"StaadPro.OpenSTAAD")
       objOpenStaad.GetSTAADFile stdFile, "TRUE"
       code = 0
       Accidental = 1
       Result = objOpenStaad.load.AddSeismicDefinition(code,Accidental)
   End Sub
```

◆ AddSeismicDefJointWeight()

VARIANT OSLoadUI::AddSeismicDefJointWeight (const VARIANT FAR & varWeight,
const VARIANT FAR & varNodeArray)

Adds joint self weight to Seismic Definition.

Parameters

[in] **varWeight** Weight value. (Type: Double)

[in] **varNodeArray** Node number ID(s) VARIANT array. (Type: Long Array/Long)

Return values

0 OK.

-1 General error.

-100 Invalid argument.

-106 1 dimensional array of long expected.

-113 Integer array/Integer expected.

-2006 Invalid Node Number.

-8034 Seisemic Code not found.

C++ Syntax

```
// Add joint self weight 5.0 units to node(s) in Seismic Definition.
VARIANT RetVal = OSLoadUI::AddSeismicDefJointWeight(5.0, varNodeArray);
```

VBA Syntax

```
Option Explicit
  Sub Main
     Dim objOpenStaad As Object
     Dim stdFile As String
     Dim varReturnVal As Long
     Dim Result As Boolean
     Dim iNodeArray(2) As Long
     iNodeArray(0) = 2
     iNodeArray(1) = 3
     iNodeArray(2) = 4
     Set objOpenStaad = GetObject(,"StaadPro.OpenSTAAD")
     objOpenStaad.GetSTAADFile stdFile, "TRUE"
     If stdFile="" Then
         MsgBox"Bad"
         Set objOpenStaad = Nothing
         Exit Sub
     End If
     Dim code As Long
     Dim Accidental As Long
     code = 0
     Accidental = 1
     Result = objOpenStaad.load.AddSeismicDefinition(code,Accidental)
     Dim dWeight As Double
     dWeight = 3.0
     varReturnVal = objOpenStaad.Load.AddSeismicDefJointWeight(dWeight, iNodeArray)
     MsgBox "Returned " & varReturnVal & "
     Set objOpenStaad = Nothing
  End Sub
```

◆ AddSeismicDefMemberWeight()

```
VARIANT OSLoadUI::AddSeismicDefMemberWeight ( const VARIANT FAR & varSeismicType,
                                              const VARIANT FAR & varLoadType,
                                              const VARIANT FAR & varWeight,
                                              const VARIANT FAR & varStartDist,
                                              const VARIANT FAR & varEndDist,
                                              const VARIANT FAR & varMemberArray )
```

Adds member concentrated/uniform weight to Seismic Definition.

Parameters

[in] **varSeismicType** Type of seismic code (see Table below) (Type : Long).

Value	Seismic Code
0	AUTO DETECT
1	ALGERIAN: RPA
2	CANADIAN: NRC-1995
3	CANADIAN: NRC-2005
4	CANADIAN: NRC-2010
5	Chinese: GB50011-2001
6	Chinese: GB50011-2010
7	COLOMBIAN: NSR 98
8	COLOMBIAN: NSR 2010
9	IBC 2000
10	IBC 2003
11	IBC 2006
12	IBC 2012
13	IBC 2015
14	IBC 2018
15	Indian: IS 1893-1984
16	Indian: IS 1893-2002/2005
17	Indian: IS 1893-2016
18	Indian: IS 1893(Part4) 2015
19	JAPANESE (AIJ)
20	MEX: CFE-1993
21	MEX: NTC-1987
22	TURKISH
23	UBC 1985
24	UBC 1994
25	UBC 1997

[in] **varLoadType** 1 - UNI and 2 - CON (Type : long).

[in] **varWeight** Uniform weight (Type : double).

[in] **varStartDist** Starting distance(= distance from member starting node to weight starting point)(Type : double).

[in] **varEndDist** Ending distance(= distance from member starting node to weight ending point)(Type : double). if varLoadType is UNI and **varStartDist** and **varEndDist** are 0, the load is assumed to cover the entire length of the member.

[in] **varMemberArray** Member number ID(s) VARIANT array.(Type : long)

Return values

TRUE If it successfully adds member concentrated/uniform weight to Seismic Definition.

FALSE Unsuccessful.

C++ Syntax

```
long seismic = 1;
long varMembArray[2] = {10, 20};
long loadType = 1;
double d1 = 2;
double d2 = 6;
double weight = 5;
// Add seismic UNI to Seismic Definition and assign to member(s).
VARIANT RetVal = OSLoadUI::AddSeismicDefMemberWeight(seismic,loadType,weight, d1, d2, varMembArray);
```

VBA Syntax

```
Option Explicit
 Sub Main
     Dim objOpenStaad As Object
     Dim stdFile As String
     Dim seismic As Long
     Dim loadType As Long
     Dim weight As Double
     Dim d1 As Double
     Dim d2 As Double
     Dim nMembArray(1) As Long
     Dim Result As Boolean

     Set objOpenStaad = GetObject(,"StaadPro.OpenSTAAD")
     objOpenStaad.GetSTAADFile stdFile, "TRUE"
     Dim code As Long
     Dim Accidental As Long
     code = 16
     Accidental = 1
     Result = objOpenStaad.load.AddSeismicDefinition(code,Accidental)
     seismic = 0
     loadType = 1
     weight = 3
     d1 = 2
     d2 = 1
     nMembArray(0) = 10
     nMembArray(1) = 8
     Result = objOpenStaad.load.AddSeismicDefMemberWeight(seismic,loadType,weight,d1,d2,nMembArray)
End Sub
```

◆ AddSeismicDefSelfWeight()

VARIANT OSLoadUI::AddSeismicDefSelfWeight (const VARIANT FAR & varWeightFactor)

Adds self weight to Seismic Definition.

Return values

true Successful.

false General error.

C++ Syntax

```
// Add self weight to Seismic Definition.
VARIANT RetVal = OSLoadUI::AddSeismicDefSelfWeight(0.5);
```

VBA Syntax

```
Option Explicit
    Sub Main
       Dim objOpenStaad As Object
       Dim Result As Boolean
       Set objOpenStaad = GetObject(,"StaadPro.OpenSTAAD")
       Result = objOpenStaad.Load.AddSeismicDefSelfWeight(0.5)
       MsgBox ("AddSeismicDefSelfWeight is "&Result)
    End Sub
```

◆ AddSeismicDefWallArea()

```
VARIANT OSLoadUI::AddSeismicDefWallArea ( long                nTypeNo,
                                          LPCTSTR             szDirection,
                                          const VARIANT FAR & varMembArray )
```

Wall Area is only available in IS1893-2016 seismic code.

Adds wall area to Seismic Definition.

Parameters

[in] **nTypeNo** Type of seismic code (see Table below).

Value	Seismic Code
15	Indian: IS 1893-2016

[in] **direction** value. [X directin or Z direction]

[in] **varMembArray** - Length and Width VARIANT array.

Return values

0 OK.

-1 General error.

-107 1 dimensional array of long expected.

-8034 Invalid seismic code.

-8038 Invalid Direction.

C++ Syntax

```
'Add wall area in Seismic Definition for one of X or Z direction. To add for both directions call the
       API twice with appropriate arguments
VARIANT RetVal = COSLoad::AddSeismicDefWallArea(SeismicCode.IS1893_2016, "X"/"Z", <float array>);
```

.

VBA Syntax

```
'Add wall area in Seismic Definition.
Dim RetVal As VARIANT = OSLoadUI.AddSeismicDefWallArea(SeismicCode.IS1893_2016, "X"/"Z", <float
       array>)
```

◆ ModifySeismicDefinitionParams()

VARIANT OSLoadUI::ModifySeismicDefinitionParams (const VARIANT FAR & varParamName,
const VARIANT FAR & varValue)

Modifies or adds a seismic parameter in the existing seismic definition.

Parameters

[in] **varParamName** Parameter name for the corresponding code in the seismic definition.

[in] **varValue** Value corresponding to the above parameter. (Type : Double)

Seismic Code	Parameters
ALGERIAN: RPA	A Q RX RZ STYPE CT CRDAMP PX PZ
CANADIAN: NRC-1995	V ZA ZV RX RZ I F CT PX PZ
CANADIAN: NRC-2005	SA1 SA2 SA3 SA4 IE SCLASS MVX MVZ JX JZ RDX RDZ ROX ROZ CT PX PZ FA FV
CANADIAN: NRC-2010	SA1 SA2 SA3 SA4 I SCLASS MVX MVZ RDX RDZ ROX ROZ CTX CTZ PX PZ FA FV STX STZ MD
CHINESE: GB50011-2001	INTENSITY FREQUENT RARE GROUP SCLASS DAMP DELN SF PX PZ GFACTOR
	Note: For CHINESE: GB50011-2001 FREQUENT/RARE parameter value will be 0, 1 respectively
CHINESE: GB50011-2010	INTENSITY FREQUENT FORTIFIED RARE GROUP SCLASS DAMP GFACTOR DELN SF PX PZ
	Note: For CHINESE: GB50011-2010 FREQUENT/FORTIFIED/RARE parameter value will be 0, 1 and 2 respectively
COLOMBIAN: NSR 98	ZONE I S
COLOMBIAN: NSR 2010	AA AV FA FV I CT PX PZ ALPHA
IBC 2000	SDS SD1 S1 I RX RZ SCLASS CT PX PZ
IBC 2003	SDS SD1 S1 I RX RZ SCLASS CT PX PZ
IBC 2006	SS S1 ZIP I RX RZ SCLASS CTX CTZ PX PZ LAT LONG TL FA FV XX XZ
IBC 2012	SS S1 ZIP I RX RZ SCLASS CTX CTZ PX PZ LAT LONG TL FA FV XX XZ
IBC 2015	SS S1 ZIP I RX RZ SCLASS CTX CTZ PX PZ LAT LONG TL FA FV XX XZ
IBC 2018	SS S1 ZIP I RX RZ SCLASS CTX CTZ PX PZ LAT LONG TL FA FV XX XZ
	Note: For IBC 2006 - 2018 Please provide any one of ZIP OR LAT LONG OR SS S1
INDIAN: IS 1893-1984	ZONE K I B PX PZ
INDIAN: IS 1893-2002/2005	ZONE RF I SS ST DM PX PZ DT GL SA DF CS AX ES CV DV
INDIAN: IS 1893-2016	ZONE RF I SS ST DM PX PZ DT GL SA DF HT DX DZ
INDIAN: IS 1893(Part4) 2015	ZONE RF I SS ST DM PX PZ SA DF
JAPANESE (AIJ)	ZONE CO TC ALPHA
MEX: CFE-1993	ZONE QX QZ GROUP STYPE REGULAR TS PX PZ
MEX: NTC-1987	ZONE QX QZ GROUP SHADOWED REGULAR REDUCE PX PZ
	Note: For SHADOWED, REGULAR and REDUCE parameter value will be 0 or 1 respectively
TURKISH	A TA TB I RX RZ CT PX PZ

UBC 1985	ZONE I K TS
UBC 1994	ZONE I RWX RWZ S CT PX PZ
UBC 1997	ZONE I RWX RWZ STYPE CT PX PZ NA NV

Note: For code specific description of parameters and their corresponding values please refer to section TR.31.2 of the STAAD.Pro manual.

Return values

0 OK.

-1 General error.

C++ Syntax

```
// Modify SCLASS to 4 for IBC 2003.
VARIANT RetVal = OSLoadUI::ModifySeismicDefinitionParams("SCLASS", 4.0);
```

VBA Syntax

```
' Modify Q to 2.0 for ALGERIAN: RPA.
Option Explicit

   Sub Main
       Dim objOpenStaad As Object
       Dim stdFile As String
       Dim parameter As String
       Dim result As Long
       Dim value As Double

       Set objOpenStaad = GetObject(,"StaadPro.OpenSTAAD")
       objOpenStaad.GetSTAADFile stdFile, "TRUE"
       value = 2.0
       parameter = "Q"
       result = objOpenStaad.load.ModifySeismicDefinitionParams(parameter,value)
   End Sub
```