Pre-accepted Geotechnical Programme

(List in ascending order of Program Reference)

For the expired programs, application for renewal of the prior acceptance should be submitted as required in PNAP ADM-6 before they are used in any submission made under the Buildings Ordinance.

Program Reference	Program	Version	Last Valid Date	Remarks
G0001	OASYS FREW	5.14	23-05-1998	
G0002	FLAC		23-05-1998	
G0003	SIGMA/W	2.0	24-05-1998	
G0004	DIPS	3.12	25-06-1998	
G0005	PILED/G		09-07-1998	
G0006	SEEP/G		24-09-1998	
G0007	SLOPE/G	3.0	25-09-1998	
G0008	SWEDGE	1.0	27-09-2001	
G0009	SLOPE	8.23	20-01-2013	
G0010	UNWEDGE	2.01	13-11-1998	
G0011	FLAC	3.3	06-08-2010	
G0012	SLOPE/W	2.06	30-11-1998	
G0013	PCSTABL5M		26-12-1998	
G0014	SLOPE/W	3.03	05-02-1999	
G0015	GALENA	2.0	27-03-2003	
G0016	SPENN3.BAS	1.0	30-08-2020	
G0017	PLAXIS	5.0	24-03-1999	
G0018	JANBU.BAS	1.0	07-03-2024	
G0019	FNDUBC1.BAS	1.0	07-03-2024	
G0020	RWALL1.BAS	1.0	07-03-2024	
G0021	SEEP/W	3	27-08-1999	
G0022	OASYS STAWAL	2.11	09-09-1999	
G0023	OASYS SLOPE	3.9	09-09-1999	
G0024	STABL/G		03-04-2009	Slope Stability Analysis (for use of Simplified Bishop and Simplified Janbu Methods Only)
G0025	OASYS SEEP	2.6	09-09-1999	
G0026	OASYS VDISP	5.5	09-09-1999	
G0027	OASYS GRETA	4.29	01-11-1999	
G0028	OASYS FREW	7.4	01-11-1999	
G0029	OASYS FREW	5.7	01-11-1999	
G0030	OASYS WELL	0.1H	12-11-1999	
G0031	OASYS SAFE	8.66	06-08-2006	
G0032	WALLAP	4.05	22-12-1999	
G0033	SWEDGE	1.12	27-01-2000	
G0034	UNIBEAR	1.0	24-03-2000	
G0035	RIDO	4.0	25-03-2000	
G0036	DIPS	3.0	02-04-2000	
G0037	TALREN	2.3	03-04-2000	
G0038	FLAC	3.3	01-05-2000	
G0039	SEEP/W	4.0	15-05-2000	
G0040	KZERO	2	30-03-2017	
G0041	DIANA	5.0	21-10-2013	
G0042	STABL5	5.2	08-08-2003	
G0043	OASYS SLOPE	3.7	18-09-2006	
G0044	OASYS SEEP	2.2	18-09-2006	
G0045	DIPS	4.0	16-06-2000	
G0046	SWEDGE	1.1	16-06-2000	
G0047	STAWAL	9/91	29-09-2000	
G0048	OASYS SLOPE	3.5	28-01-2004	
G0049	SLOPE/W	3.05	07-02-2005	
G0050	OASYS FREW	5.11	18-09-2006	
G0051	SLOPE/W	3	18-09-2006	

Last revision date: 11/5/2022

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
G0052	PMWIN (MODFLOW)		29-09-2000	
G0053	STED	6.54i	19-11-2000	
G0054	SEEP/W	4.02	01-12-2000	
G0055	WALLAP	4.07	25-01-2001	
G0056	ReWaRD	2.03	26-02-2001	
G0057	ReActiv	1.05	26-02-2001	
G0058	GWALL	2.41	20-01-2013	
G0059	OASYS SLOPE	4.12	07-10-2013	
G0060	OASYS STAWAL	3.5	17-08-2013	
G0061	OASYS SAFE	11.4	17-08-2013	
G0062	OASYS VDISP	6.5	12-07-2007	
G0063	OASYS SEEP	3.9	20-01-2013	
G0064	ROCKFAL3	1.0	21-05-2001	
G0065	OASYS SLOPE	4.9	14-05-2001	
G0066	OASYS FREW	8.8	04-01-2020	
G0067	OASYS VDISP	6.4	21-05-2001	
G0068	BMCOLPY/G		11-09-2001	
G0069	OASYS PILE	2.4	05-12-2010	
G0070	OASYS GRETA	5.4	17-08-2013	
G0071	OASYS PILSET	3.4	17-08-2013	
G0072	JANBU	1.0	03-06-2001	
G0073	JANBU	1.0	03-06-2001	
G0074	BEFON	1.0	24-09-2001	
G0075	SAGE CRISP	3.02	18-06-2001	
G0076	CWD	1.0	07-07-2001	
G0077	FEWAND	1.02	07-07-2001	
G0078	GWALL	2.4	19-07-2001	
G0079	DIPS	3.11	21-07-2001	
G0080	WALLAP	3.4	10-08-2001	
G0081	OASYS STAWAL	2.9	13-08-2001	
G0082	GOLDPIT	1.21D	18-08-2001	
G0083	COLOB	98.5	14-11-2004	
G0084	RWALL	98.5	14-11-2004	
G0085	JANBU		30-03-2017	
G0086	JANBU	1.0	20-09-2001	
G0087	SIGMA/W	3.0	04-10-2001	
G0088	WALLAP	4.10	05-08-2012	
G0089	TALREN	3.2	08-10-2001	
G0090	OASYS FREW	8.11	03-02-2008	
G0091	SLOPE/W	4.01	24-11-2001	
G0092	SEEP/W	4.2	19-02-2017	Solving 2-D seepage analysis for solving steady seepage and transient seepage
G0093	OASYS VDISP	5.3	26-11-2001	
G0094	SABLE	98.5	14-11-2004	
G0095	FADSPABW		05-11-2020	
G0096	SHEETPILE/2	2.4	14-01-2002	
G0097	SLSTABBM	0.0	10-06-2002	
G0098	OASYS FREW	5.10	23-11-2000	
G0099	OASYS FREW	8.9	19-12-2005	
G0100	PAROI2	4.6 HK	26-01-2006	
G0101	PCSTABL5M	1.87	07-10-2024	
G0102	OASYS CLOG	2.4	08-12-2002	
G0103	UNWEDGE	2.3	03-07-2006	
G0104	SLOPE/W	4.21	18-11-2024	The acceptance of the program is subject to the following restrictions: (a) The program is used only for slope stability analysis

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				using the limit equilibrium method of Bishop's Simplified, Janbu's Simplified, or Morgenstern- Price; (b) Jambo's method should not be used for deep seated failure and tie-back loads analysis; and (c) Pseudo-static earthquake analysis, block slip analysis, bearing capacity analysis and probability analysis are excluded.
G0105	SOCKET	1.0	01-12-2023	
G0106	KaKp	1.0	01-12-2023	
G0107	SIGMA/W	4	25-06-2003	
G0108	q_all	1.0	12-11-2023	
G0109	FLAC	3.4	17-05-2019	For the application in excavation & retaining structure only
G0110	CHANNEL	1.0	06-05-2012	
G0111	CESAR-LCPC	3.2.1	29-08-2003	
G0112	GSTABL7	1.14	08-10-2003	
G0113	RIDO	4.01	02-05-2022	
G0114	SLOPE/W	4.22	09-07-2015	- for analysis by Bishop Simplified and Morgenstern-Price method only - excluding applications in solving bearing capacity and seismic loading
G0115	SLOPE 2000	1.6	16-08-2007	
G0116	OASYS VDISP	17.7.2	20-05-2017	
G0117	OASYS SLOPE	17.7.2	05-03-2011	
G0119	SLOPE/W	4.24	27-04-2008	- excluding application in solving bearing capacity, seismic loading and block failure problem
G0120	DIPS	3.12	12-03-2012	
G0121	DIPS	5.0	07-05-2023	
G0122	TUNSET	3.7	25-05-2008	
G0123	SLOPE/W	5.0	18-07-2008	Only Janbu Simplified, Bishop, Spencer and Morgenstern-Price should be used. The use of the program in solving bearing capacity and seismic loading are excluded
G0124	PLAXIS	7.2	01-09-2005	
G0125	SLOPE-STABILITY	7.99	20-10-2005	
G0126	DEBRIFLO	1.02	01-10-2016	
G0127	SEEP/W	5	09-04-2009	
G0128	Oasys FREW	17.8	10-09-2022	- Applied in the design of excavation and lateral support works by conventional approach, such as those described in GEO Publication 1/90. - Only SAFE model method can be used in this version of program.
G0129	CONSOLID	1.0	01-12-2023	
G0130	Oasys SEEP	3.10	29-11-2009	
G0131	TUNSET	17	10-11-2006	
G0132	Processing Modflow (PMWIN)	5.1.5	29-04-2007	
G0133	PLAXIS	8.2	17-02-2022	Only Mohr-Coulomb model should be used
G0134	OASYS FREW (Modified C580 Approach)	18.1	17-01-2013	Notes for FREW users - for Use with Modified C580 Approach Based on the findings of the verification exercise and back analyses of past case histories of excavation, users are reminded of the following: 1. Horizontal soil pressure coefficients. Users are reminded that the Ka and Kp values applied in FREW should be in the horizontal direction. When opting for the "User Specified"

Program Reference	Program	Version	Last Valid Date	Remarks
				option in FREW, user should use Geoguide 1 Figures 18 & 19 to obtain horizontal earth pressure coefficients, resolve the active (Ka) and passive (Kp) pressure coefficients from the charts, and then input their corresponding horizontal components (i.e. Kah and Kph) into FREW. When opting for the "Calculated" option, FREW will compute the earth pressure coefficients based on the method given in the manual (User Manual Section 2.1.3.2 refers). 2. Surcharge application. When the surcharge is expected to appear after the wall installation, the surcharge values should be applied in stage 1 instead of stage 0 of the FREW analysis. Users are reminded that the purpose of stage 0 is to model the existing ground condition prior to any construction works. Surcharge value applied in stage 0 corresponds to the situation where the loading is present at the existing ground condition, and FREW will reset the wall deformation to zero prior to the stage 1 analysis. 3. Surcharge modeling. It is recommended to use UDL surcharge instead of strip load surcharge if the surcharge is widespread across the site. Users are reminded that application of strip load surcharge will only modify the active pressure limit of the underlying soil; whereas the application of UDL surcharge will modify both active and passive pressure limits of the underlying soil (User Manual Section 3.4.5 refers). 4. Model Type mode. Users should note that the verification of FREW has been carried out using the SAFE model. 5. Wall/Soil interface. When the SAFE mode is adopted, users have the option to choose between "fixed" or "free" wall/soil interface in the analysis in order to obtain realistic results for the design situation. Where the soil is fixed to the wall and the anticipated vertical movement of the wall relative to the soil is small, such as in a SLS analysis, the "fixed" option should be used. Users may consider using the "free" option in the following situations: When analysing the behaviour of a wall where the soil will move vertically against the wall and/or the results are close to non-convergence in the FREW analysis; or where limited wall friction is available. Users are reminded that the choice of the wall/soil interface option is related to the modeling of the relative soil/wall movement in the vertical direction, and this should not be confused with the choice of Ka or Kp values that correspond to the wall friction available. Users should obtain the correct Ka and Kp values for FREW inputs by considering the available wall friction. 6. Sensitivity of results to wall embedment depth. When analysing an excavation problem using the CIRIA Report No. C580 method, users should check the sensitivity of the wall behaviour to the wall embedment depth. The wall behaviour in terms of stability is normally represented by

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				the computed structural forces (bending moments/shear forces/ strut loads) in the ULS analysis but the maximum wall deflection is also important in defining the state when there is a rapid increase in wall deflection for a small reduction in the embedment depth. Based on this sensitivity analysis, the wall embedment depth can be selected to achieve an economic design that is sufficiently conservative and robust.
G0135	SLOPE 2000	1.7	09-03-2009	The above acceptance is subject to the following restriction: 1. Pile anchorage simulation is not allowed. 2. Sarma's, Wedge, Lowe Karafiath analysis and 3D analysis options are not allowed. 3. Davis method on bond load calculation for soil nail is not allowed. 4. Combined bond load from soil friction and rock bond for soil nail is not allowed.
G0136	CRSP	4.0	21-09-2023	
G0137	UNWEDGE	3.0	05-02-2021	- This program is applicable to the analysis of wedge failure around excavations constructed in hard rock, where discontinuities are persistent, and where stress induced failure does not occur. - Probabilistic analysis is not included. - Modelling of zero water pressure condition using Swellex and Split-Set bolts and Barton-Bandis strength criterion are not included.
G0138	SLOPE/W	6.20	06-11-2009	
G0139	DIPS	5.1	08-11-2023	
G0140	SWEDGE	4.0	30-07-2017	
G0141	OASYS TUNSET	18.1	19-10-2013	- For analysis of tunneling problem by Attewell, Boscardin and Mair et al methods only and - User specified i/h ratio not allowed.
G0142	SLOPE/W	6.21	17-02-2022	- The FOS of the cohesive and frictional component of strength are assumed equal for all soils involved. - The FOS is assumed to be same for all slices. - When excessively steep surface are used or when a trong material overlies a very weak material, SLOPE/W may have difficulties in obtaining a convergent solution.
G0143	SEEP/W	2007	27-04-2024	
G0144	OASYS SLOPE	18.2	01-12-2014	-The program uses the method of slices and variety of established methods for calculating interslice forces such as Fellenius or Swedish slip circle analysis, the Bishop horizontal or constant inclined inter-slice forces method and janbu method. - Each slice in the inclined interslice force methods is in equilibrium both vertically and horizontally
G0145	SLOPE/W	5.20	14-06-2018	1. Only Bishop Simplified, Janbu Simplified, and Morgenstern & Price method are allowed to use 2. The following applications are excluded - Use of partial factor for slope stability analysis - Bearing capacity analyses - Pseudo-static earthquake analyses - Active and passive pressures - Block failure - Analyses allowing passive mode - Probabilistic analyses - Hoek-Brown failure criterion for modeling shear strength of soil or rock - Unsaturated shear strength

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				- Analyses using SLOPE/W finite element stress method - Auto-Locate (or Auto-Search) for critical slip surfaces will produce results for indication only - SHANSEP model for soft soils
G0146	SLOPE/W	2007	27-04-2024	1. Only Bishop Simplified, Janbu Simplified, Morgenstern & Price and Spender methods are allowed to use 2. The following applications are excluded - Use of partial factor for slope stability analysis - Bearing capacity analyses - Pseudo-static earthquake analyses - Active and passive pressures - Block failure - Analyses allowing passive mode - Probabilistic analyses - Hoek-Brown failure criterion for modeling shear strength of soil or rock - Unsaturated shear strength - Analyses using SLOPE/W finite element stress method - Auto-Locate (or Auto-Search) for critical slip surface will produce results for indication only - SHANSEP model for soft soils
G0147	OASYS FREW	18.1	07-10-2024	Global Factor Approach Restrictions: - Applied in the design of excavation and lateral support works by conventional approach, such as those described in GEO Publication 1/90 - Only SAFE model method can be in this version of program
G0148	DAN-W	Release 9	29-07-2015	Only Voellmy rheological model may be used
G0149	PAROI 2	4.9e	12-11-2018	Global Factor Approach
G0150	UDEC	4.0	19-01-2017	Only ground excavation and rock reinforcement in tunnel and cavern works are allowed to use
G0151	DAN-W	Release 9	29-07-2015	Only frictional rheological model may be used
G0152	PIES	4	22-03-2013	
G0153	PLAXIS 3D Foundation	2.2	24-11-2019	Global Factor Approach for ELS Works
G0154	PLAXIS (Modified C580 Approach)	9.0	17-09-2023	Notes on the use of PLAXIS for the limit state partial factor method based on CIRIA Report No.C580 For internal use only: Based on the findings of the verification exercise and back analyses of past case histories of excavation, users are reminded of the following : 1. Hydraulic boundary condition. The groundwater pressure distribution assumption in the modeling and the related program setting can have a major influence on the computed results. The assumption should be compatible with the permeability of the various soil/rock layers in the ground and the hydraulic boundary conditions, which should be assessed using field permeability tests, typical permeability values or pumping tests, and piezometric monitoring data. 2. Check on capacity of structural elements. A structural check should be carried out after the analyses. If the structural check indicates the capacity of any of the structural elements being exceeded, the analyses should be repeated for a revised design with stronger structural elements using higher stiffness values.

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				3. Wall/Soil interface. Use of an unrealistically low strength such as zero strength at the interface will likely result in numerical instability (e.g. non-convergence) or unreasonably large wall deflections. Therefore, the wall/soil interface ratio Rinter should not be set to zero. It is suggested that the users adopt a Rinter value of not less than 0.1 times the soil shear strength in the analysis. 4. Effects of mesh size on accuracy of results. The mesh/element size to be adopted in the analysis should be suitably fine so that further refinement of the mesh/element size would not generate a significant change in the required wall embedment depth. A finer mesh/element size may also be required at the areas of stress concentration or zones of large deformation gradient. The variation of the mesh/element size over the computation domain should be optimized to avoid numerical instability (e.g. non-convergence) and to achieve adequate calculation accuracy. 5. Wall embedment depth and large strains. When analyzing an excavation problem using the limit state partial factor method based on CIRIA Report No. C580 to obtain the design wall embedment depth, users should check the sensitivity of the wall behaviour to the wall embedment depth. There could be a rapid increase in the maximum wall deflection/strut loads upon a small reduction in the wall embedment depth, reflecting the sensitivity of the design to small variations in wall embedment. Hence a suitable value of design wall embedment depth should be selected to take into account the results of sensitivity analysis and the construction tolerance that can be achieved under the construction control and supervision regime imposed. 6. Selection of Soil Models. Users should not use effective stress shear strength parameters (phi' & c') to model undrained behaviour. Also, the users should note that PLAXIS may not give appropriate pore water pressure distributions in an undrained analysis unless an appropriately sophisticated soil model is adopted. Reference should be made to the report of the Committee of Inquiry on the Nicoll Highway collapse for advice on selection of appropriate soil models for soil-structure interaction analysis. 7. Requirement for convergence. Excavation is an unloading problem. Hence, the PLAXIS calculation for ELS works is a load-controlled analysis. Users may use the default setting where the "Arc-length control" function for iteration of calculation is activated. Under special circumstances of large shear strains and significant plasticity developing in the mesh elements, the users may deactivate the "Arc-length control" function to force the analysis to solve to convergence (see PLAXIS Reference Manual under Iterative Procedure Control Parameters). In such a case, the users must check whether the shear strains generated in the mesh indicate development of a global failure mechanism. If the analysis has predicted a global failure mechanism, the users

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				should re-activate the "Arc-length control" function and re-run the analysis. If there is no convergence, then the wall embedment depth should be increased.
G0155	PLAXIS	9.02	09-12-2016	Stage excavation with props or anchors by global factor approach and steady state seepage flow analysis, all on Mohr-Coulomb soil model only.
G0156	WALLAP	4.10	25-07-2013	1. Only the Bending Moment and Displacement type of analysis with the wall and soil modelled by sub-grade reaction is allowed. 2. The use of the program should be in compliance with the technical recommendations stipulated in paragraph 4 of Appendix A of the Circular Latter "Design of Excavation and Lateral Support Works by the Limit State Partial Factor Method Extension of the Trial Period" issued by this Department dated 18 January 2007.
G0157	PLAXIS 3D Tunnel	2.4	29-11-2013	1. The assessment of tunneling on existing structures should include back analysis of previous tunneling in nearby site for program calibration. 2. The tunnel linings dismantling model should include substantial soil cover and adequate ground improvement for ground stabilization. 3. Only linear elastic perfectly plastic Mohr Coulomb constitutive model is allowed. 4. Only steady-state seepage flow analyses is allowed.
G0158	WALLAP	5.04	19-04-2014	Global Factor Approach The feature of seismic loading, thermal stress of structs, wedge stability, yield moment of wall and FOS calculation using BSC Piling Handbook method are excluded.
G0159	DAN-W	Release 10	19-10-2023	The analysis of post-failure debris motion with normal elements only
G0160	WALLAP	5.04	17-05-2018	Global Factor Approach - The features of seismic loading, wedge stability and FOS calculation using BSC Piling Handbook method are excluded
G0161	PLAXIS	2010	31-08-2014	- Restricted to stage excavation with props or anchors by global factor approach and steady state seepage flow analysis, all on Mohr-Coulomb soil model only.
G0162	VALDEZ	5.0	18-12-2017	- The program is developed specifically for the design of reinforced earth wall in compliance of Geoguide 6 for Hong Kong; and - Global slope stability checks should be carried out by another program.
G0163	RocFall	4.0	23-06-2019	
G0164	OASYS FREW	19.0	07-10-2024	- Applied in the design of excavation and lateral support works by conventional approach, such as those described in GEO Publication 1/90. - Only SAFE model method can be used in this version of program.
G0165	OASYS XDISP	19.2	14-05-2022	The application of BUILDING DAMAGE ASSESSMENT function is excluded from this application
G0166	TALREN 4	2.0.3	12-05-2018	- Only Simplified Bishop's Method and Modified Fellenius Method are used in analysis - Only tensile strength of soil nails/slope reinforcing strips

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				are allowed in the slope stability analysis
G0167	OASYS SLOPE	19.0	24-05-2024	- The Partial Factor Analysis function is excluded, and - Fellenius Method should not be used
G0168	OASYS FREW	19.0	27-12-2018	- Modified C580 Approach - The new stability check feature is excluded - Guidelines given in the Advisory Notes for FREW user
G0169	PLAXIS 2D	2011	20-01-2025	- Restricted to stage excavation with pots or anchors by global factor approach and steady state seepage flow analysis, all on Mohr-Coulomb soil model only. - Guidelines given in the Advisory Notes on PLAXIS 2D (Version 2011) for ELS and Steady-State Seepage Analysis.
G0170	WALLAP (Modified C580 Approach)	5.04	09-01-2016	- The stability analysis: wedge stability and FOS calculation is excluded, - Single pile analysis is excluded.
G0171	DIPS	6.0	04-09-2022	- The features / functions are excluded - Flexural topping, fold analysis, oriented core and rock mass classification
G0172	OASYS PILSET	19.1	14-05-2022	
G0173	SLOPE/W	2012	07-10-2024	SLOPE/W 2012 uses limit equilibrium theory to computer the factor of safety of earth soil slopes.
G0174	PLAXIS	2012	27-04-2024	1. Restricted to staged excavation with props or anchors by global factor approach and steady state seepage flow. 2. Guidelines given in the Advisory Notes on PLAXIS 2012 for ELS and Steady State Seepage Analysis
G0175	OASYS FREW (Global Factor Approach)	19.2	09-11-2023	Global Factor Approach - The application of the program is confined in the analysis of excavation and lateral support works by conventional approach, such as those described in GEO Publication 1/90. - Only the SAFE model method can be used. - The stability check feature is excluded. - The seismic analysis to EC8 feature is excluded. - The integral bridge analysis is excluded. - The EC7 partial factor sets feature is excluded.
G0176	OASYS FREW (Modified C580 Approach)	19.2	09-11-2023	Modified C580 Approach - The application of the program is confined to the analysis of excavation and lateral support works by the Limit State Partial Factor Method based on CIRIA Report No. C580. - Only the SAFE model method can be used. - The stability check feature is excluded. - The seismic analysis to EC8 feature is excluded. - The integral bridge analysis is excluded. - The EC7 partial factor sets feature is excluded. - Guidelines given in the Advisory Notes on the use of FREW for the Limit State Partial Factor Method.
G0177	PLAXIS	2D AE	25-07-2021	- Restricted to staged excavation with props or anchors by global factor approach and steady state seepage flow. - Guidelines given in the Advisory Notes on PLAXIS 2D AE for ELS and Steady State Seepage
G0178	OASYS PDISP	19.2	09-09-2024	- The application of non-linear soil stiffness feature is excluded from this application. - The Legacy Mindlin Method and New Mindlin Method without Correction Factor features are excluded from this application.
G0179	phase²	8.0	02-01-2022	Guidelines given in the Advisory Notes on Phase²
G0180	SEEP/W 2012	8.14	08-07-2024	Solve steady state and transient seepage analyses for saturated and unsaturated porous material. The program is designed for 2-Dimensional (vertical section view)

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				modelling. Axisymmetric & plan view modelling are not included in this application.
G0181	PLAXIS 3D	2013	18-10-2018	- This application is restricted to the analysis of the stage construction of excavation and lateral support design for cantilever/ strutted shaft walls and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only. - Guidelines given in the Advisory Notes on PLAXIS 3D 2013 for ELS Analysis.
G0182	SLOPE/W 2012	8.15.5.11777	22-08-2022	
G0183	PLAXIS 2D	2016.0	27-09-2019	1. Restricted to staged excavation with props or anchors by global factor approach and steady-state groundwater seepage flow analysis. 2. Guidelines given in the Advisory Notes on PLAXIS 2D 2016 for ELS and Steady-State Seepage Analysis.
G0184	PLAXIS 3D	2016	15-01-2020	- This application is restricted to the analysis of the stage construction of excavation and lateral support design for cantilever/ strutted shaft walls and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only. - Guidelines given in the Advisory Notes on PLAXIS 3D 2016 for ELS Analysis.
G0185	SWEDGE	6.0	04-05-2020	Evaluation of geometry and stability of surface rock wedges Following remarks are for internal use only: 1. SWEDGE is an interactive program for analyzing and evaluating the geometry and stability of surface wedges in rock slopes based on 3D limit equilibrium approach 2. Wedges are defined by two intersecting discontinuity planes, the slope surface and an optional tension crack 3. Factor of safety approach is adopted with effect/presence of surcharge and water pressure along the intersecting joints for rock wedge stability analysis
G0186	LS-DYNA	8.0	27-09-2024	- Restricted to the debris mobility assessment. - Guidelines given in the Advisory Notes for the use of LS-DYNA on debris mobility prediction
G0187	PLAXIS 2D	2017	29-11-2023	- PLAXIS is a finite element package specially intended for the analysis of deformation and stability in geotechnical engineering projects. PLAXIS is equipped with special features to deal with the numerous aspects of complex geotechnical structures. - The application is confined to the area of the 2D finite element analysis of stage construction of excavation and lateral support works with props or anchors by global factor approach and steady-state groundwater seepage flow analysis, all on linear elastic Mohr-Coulomb soil model only. - Restricted to staged excavation with props or anchors by global factor approach and steady-state groundwater seepage flow analysis with application of the Mohr-

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				Coulomb soil model. - Guidelines given in Advisory Notes on PLAXIS 2D 2017 for ELS and Steady-State Seepage Analysis.
G0188	PLAXIS 3D	2017	09-11-2020	- PLAXIS is a finite element package specifically intended for the analysis of deformation and stability in geotechnical engineering projects. PLAXIS is equipped with special features to deal with the numerous aspects of complex geotechnical structures. - The application is confined to the area of the 3D finite element analysis of stage construction of excavation and lateral support works and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only. This program is aimed to be used to determine the deformation of the ground and the structure. Forces in structural elements would be used for supporting structures design, such as diaphragm wall, struts and walings. This is an upgraded version of the BD pre-accepted 3D FEA program PLAXIS 3D 2016 (BD ref no: G0184). - This application is restricted to the analysis of the stage construction of excavation and lateral support design for cantilever/ strutted shaft walls and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only. - Guidelines given in the Advisory Notes on PLAXIS 3D 2017 for ELS Analysis.
G0189	PLAXIS 2D	2018	25-07-2021	- Restricted to staged excavation with props or anchors by global factor approach and steady-state groundwater seepage flow analysis with application of the Mohr-Coulomb soil model and steady-state seepage flow only. - Guidelines given in the Advisory Notes on PLAXIS 2D 2018 for ELS and Steady-State Seepage Flow Analysis.
G0190	LS-DYNA	10.0	23-12-2021	- The coupled analysis of interaction between rock/boulder/debris and debris-resisting barrier structures - The area of application is restricted to the coupled analysis of interaction between rock/boulder/debris and debris-resisting barrier structures; - The steel-wire net of flexible debris-resisting barrier is modelled as an impermeable membrane; - Although the Arbitrary Lagrangian-Eulerian (ALE) can represent the hard inclusion in granular debris flow based on the back-analysis of the Illgraben case study in Switzerland, the designer should exercise his judgement whether the explicit modelling of boulder impact on the structures is required with consideration given to the abundance and size of boulders in the design scenarios. If necessary, sensitivity analysis should be undertaken to assess the design robustness; - Other assumptions/limitations shall also refer to the approved conditions for debris mobility assessment using LS-DYNA in 2016 by GEO
G0191	PLAXIS 2D	2019	12-03-2023	- PLAXIS is a finite element package specially intended for the analysis of deformation and stability in geotechnical

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				engineering projects. PLAXIS is equipped with special features to deal with the numerous aspects of complex geotechnical structures. - The application is confined to the area of the 2D finite element analysis of stage construction of excavation and lateral support works with props or anchors by global factor approach and steady-state groundwater seepage flow analysis, all on linear elastic Mohr-Coulomb soil model only. - Restricted to staged excavation with props or anchors by global factor approach and steady-state groundwater seepage flow analysis with application of the Mohr-Coulomb soil model and steady-state seepage flow only. - Guidelines given in Advisory Notes on PLAXIS 2D 2019 for ELS and Steady-State Seepage Analysis.
G0192	PLAXIS 3D	2018	12-03-2023	- PLAXIS is a finite element package specifically intended for the analysis of deformation and stability in geotechnical engineering projects. PLAXIS is equipped with special features to deal with the numerous aspects of complex geotechnical structures. - The application is confined to the area of the 3D finite element analysis of stage construction of excavation and lateral support works and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only. This program is aimed to be used to determine the deformation of the ground and the structure. Forces in structural elements would be used for supporting structures design, such as diaphragm wall, struts and walings. This is an upgraded version of the BD pre-accepted 3D FEA program PLAXIS 3D 2017 (BD ref no: G0188). - This application is restricted to the analysis of the stage construction of excavation and lateral support design for cantilever/ strutted shaft walls and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only - Guidelines given in the Advisory Notes on PLAXIS 3D 2018 for ELS Analysis.
G0193	SPENN5.BAS	1.0	12-03-2023	To obtain embedded depth and required moment resistance at lowest strut of the strutted sheet pile wall
G0194	PLAXIS 2D	CE V20	17-09-2023	PLAXIS is a finite element package specifically intended for the analysis of deformation and stability in geotechnical engineering projects. PLAXIS is equipped with special features to deal with the numerous aspects of complex geotechnical structures. The application is confined to the area of the 2D finite element analysis of stage construction of excavation and lateral support works with props or anchors by global factor approach and steady-state groundwater seepage flow analyses, all on linear elastic Mohr Coulomb soil model only.

Pre-accepted Geotechnical Programme

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				This application is restricted to staged excavation with props or anchors by global factor approach and steady-state groundwater seepage flow analyses with application of the Mohr-Coulomb soil model and steady-state seepage flow only. Guidelines given in the Advisory Notes on PLAXIS 2D CE V20 for ELS and Steady-State Seepage Flow Analysis.
G0195	PLAXIS 3D	CE V20	17-09-2023	PLAXIS is a finite element package specifically intended for the analysis of deformation and stability in geotechnical engineering projects. PLAXIS is equipped with special features to deal with the numerous aspects of complex geotechnical structures. The application is confined to the area of the 3D finite element analysis of stage construction of excavation and lateral support works and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only. This program is aimed to be used to determine the deformation of the ground and the structure. Forces in structural elements would be used for supporting structures design, such as diaphragm wall, struts and walings. This is an upgraded version of the BD pre-accepted 3D FEA program PLAXIS 3D 2018 (BD ref no: G0192). This application is restricted to the analysis of the staged construction of excavation and lateral support design for cantilever/ strutted shaft walls and associated strutting system under hydrostatic groundwater pressure condition, all on linear elastic Mohr Coulomb soil model only. Guidelines given in the Advisory Notes on PLAXIS 3D CE V20 for ELS Analysis.
G0196	PLAXIS 2D	2018	17-09-2023	PLAXIS is a finite element package specifically intended for the analysis of deformation, stability and groundwater flow in geotechnical engineering projects. It also allows the calculation of factor of safety of slopes using a strength reduction method named "phi-c reduction": The application is confined to the area of 2D finite element analysis of using phi-c reduction method for slope stability analysis under drained and undrained conditions and without lateral support. Only the Mohr Coulomb soil constitutive model is to be used for modelling the stress-strain-strength behaviour of the soils. Restricted to use of phi-c reduction method for slope stability analysis under drained and undrained conditions and without lateral support. Only the Mohr Coulomb soil constitutive model is to be used for modelling the stress-strain-strength behaviour of the soils. Guidelines given in the Advisory Notes on PLAXIS 2D 2018 for slope stability analyses using phi-c reduction.
G0197	PLAXIS 3D	2017	17-09-2023	PLAXIS is a finite element package specifically intended for the analysis of deformation, stability and groundwater

Pre-accepted Geotechnical Programme

Program Reference	Program	Version	Last Valid Date	Remarks
				flow in geotechnical engineering projects. It also allows the calculation of factor of safety of slopes using a strength reduction method named "phi-c reduction". The application is confined to the area of 3D finite element analysis of using phi-c reduction method for slope stability analysis under drained and undrained conditions and without lateral support. Only the Mohr Coulomb soil constitutive model is to be used for modelling the stress-strain-strength behaviour of the soils. Restricted to use of phi-c reduction method for slope stability analysis under drained and undrained conditions and without lateral support. Only the Mohr Coulomb soil constitutive model is to be used for modelling the stress-strain-strength behaviour of the soils. Guidelines given in the Advisory Notes on PLAXIS 3D 2017 for slope stability analyses using phi-c reduction.
G0198	OASYS FREW	19.4	11-11-2024	The program is for use in area of design of excavation and lateral support work by the conventional approach and limit state partial factor method. The displacement, bending moments and shear forces in a flexible retaining wall such as sheet pile or diaphragm walls and the earth pressures on each side of the wall at different stages of construction such as excavating, filling, changing soil or wall properties and applying or removing struts, anchors or surcharges can be analysed. Scope of the Program: 1. The retaining wall is represented as a line of nodal points. 2. Three stiffness matrices relating nodal forces to displacements are developed. One represents the wall in bending and the others represent the soil on each side of the wall. 3. Active and passive limits are imposed on the soil pressures
G0199	SLOPE/W	2021	16-03-2025	SLOPE/W 2021 uses limit equilibrium theory to computer the factor of safety of earth soil slopes.
G0200	SEEP/W	2021	16-03-2025	SEEP/W 2021 is a finite element software product for analysing groundwater seepage and excess pore-water pressure dissipation problems within porous materials such as soil and rock. The porous materials can be saturated or partially saturated. The program can be applied to both steady state and transient (time dependent problems).