

Oasys



Oasys GSA

GWA Changes

Oasys

YOUR IDEAS BROUGHT TO LIFE

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Introduction

The GSA gwa format changes as new features are added to GSA objects. This document highlights the changes between GSA 8.7 and GSA 9.0.

Keywords

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|--|---|------------|
| ALIGN ALIGN num name grid_plane num_pt { pt_x pt_curve } | ALIGN ALIGN num name surface num_pt { pt_x pt_curve } | |
| ANALYSIS | - | deprecated |
| ANAL_CASE | - | deprecated |
| ANAL_STAGE ANAL_STAGE.2 stage name colour list phi | ANAL_STAGE ANAL_STAGE.2 stage name colour list phi lock | |
| - | ANAL_STAGE_MAT ANAL_STAGE_MAT stage elem_mat stage_mat phi | |
| BASIC_RES | - | deprecated |
| BASIC_RESP | - | deprecated |
| BEAM_PATTERN | - | deprecated |
| COL_PATTERN | - | deprecated |
| COMBINATION COMBINATION case name desc bridge | COMBINATION COMBINATION case name desc bridge note | |
| DAMPING_TABLE DAMPING_TABLE num name desc | MODE_DAMPING MODE_DAMPING num name table | |
| EL EL.2 num name colour type prop group topo() orient_node orient_angle is_rls { rls { k } } is_offset { ox oy oz } dummy | EL EL.3 num name colour type prop group topo() orient_node orient_angle is_rls { rls { k } } off_x1 off_x2 off_y off_z dummy | |
| EL_BAR | - | deprecated |
| EL_BEAM | - | |
| EL_CABLE | - | |
| EL_GROUND | - | |
| EL_LINK | - | |
| EL_MASS | - | |
| EL_OFFSET | - | |
| EL_QUAD4 | - | |
| EL_QUAD8 | - | |
| EL_RLS | - | |
| EL_SPACER | - | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|--|--|---------|
| EL_SPRING | - | |
| EL_TRI3 | - | |
| EL_TRI6 | - | |
| ERROR ERROR case value | ERROR_NORM ERROR_NORM case value | |
| - | FREQ_DAMPING FREQ_DAMPING num name table | |
| GRID_PLANE GRID_PLANE num name axis option elev elements span angle layout plane_tol type grid below above | GRID_PLANE GRID_PLANE.3 num name type axis elev below above | |
| | GRID_SURFACE GRID_SURFACE.1 num name plane type elements tol span angle grid | |
| GSS_PARAM GSS_PARAM task solver preconditioner zero stiff flat ratio SOR residual auto_cons subspace num_Jacobi tol_Jacobi num_Conj tol_Conj num_nonlin tol_nonlin norm factor rest gauss integration Sturm plate in-plane condition eigen vectors shift tied | GSS_PARAM GSS_PARAM task solver preconditioner zero stiff flat ratio SOR factor residual auto_cons subspace num_Jacobi tol_Jacobi num_Conj tol_Conj num_nonlin tol_nonlin norm factor rest gauss integration Sturm plate in-plane condition eigen vectors shift tied auto_rest global_k | |
| | LAYOUT_BEAM LAYOUT_BEAM.2 ref name rebar size_t layer_t size_b layer_b link cover flange LAYOUT_BEAM.1 ref name rebar cant size_t layer_t size_b layer_b ... link cover flange | |
| - | LAYOUT_COL LAYOUT_COL ref name rebar CIRC size ring link cover LAYOUT_COL ref name rebar RECT size arrange link cover | |
| - | LAYOUT_PERIM LAYOUT_PERIM ref name rebar size layer bar space link cover | |
| | LOAD_3D_FACE | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|--|--|------------|
| | LOAD_3D_FACE.1 name list case axis type proj face value(n) | |
| LOAD_CURVE LOAD_CURVE num name desc | LOAD_CURVE LOAD_CURVE num name abs ord table | |
| MASS_ADD MASS_ADD case dir scale | | deprecated |
| | MAT MAT num name mod E nu rho alpha num_uc (abs ord pts[]) num_sc (abs ord pts[]) num_ut (abs ord pts[]) num_st (abs ord pts[]) eps <uls> <sls> cost | |
| MAT MAT num MAT_ELAS_ISO name colour type 6 E nu rho alpha G damp 0 0 env rebar country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user { country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user } | MAT_ANAL MAT_ANAL num MAT_ELAS_ISO name colour type 6 E nu rho alpha G damp 0 0 env rebar country variant grade eE eCO2 recycle user { country variant grade eE eCO2 recycle user } | |
| | MAT_ANAL MAT_ANAL num MAT_DRUCKER_PRAGER name colour type 10 G nu rho Cohesion phi psi Eh scribe alpha damp 0 0 env rebar country variant grade eE eCO2 recycle user { country variant grade eE eCO2 recycle user } | |
| | MAT_ANAL MAT_ANAL num MAT_DRUCKER_PRAGER name colour type 9 G nu rho Cohesion phi psi Eh alpha damp 0 0 env rebar country variant grade eE eCO2 recycle user { country variant grade eE eCO2 recycle user } | |
| MAT | MAT_ANAL | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|--|---|---------|
| MAT num MAT_ELAS_ORTHO name colour type 14 Ex Ey Ez nuxy nuyz nuzx rho alphax alphay alphaz Gxy Gyz Gzx damp 0 0 env rebar country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user { country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user } | MAT_ANAL num MAT_ELAS_ORTHO name colour type 14 Ex Ey Ez nuxy nuyz nuzx rho alphax alphay alphaz Gxy Gyz Gzx damp 0 0 env rebar country variant grade eE eCO2 recycle user { country variant grade eE eCO2 recycle user } | |
| MAT MAT num MAT_ELAS_PLAS_ISO name colour type 10 E nu rho alpha G yield ultimate Eh beta damp 0 0 env rebar country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user { country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user } | MAT_ANAL MAT_ANAL num MAT_ELAS_PLAS_ISO name colour type 9 E nu rho alpha yield ultimate Eh beta damp 0 0 env rebar country variant grade eE eCO2 recycle user { country variant grade eE eCO2 recycle user } | |
| MAT MAT num MAT_FABRIC name colour 4 Ex Ey nu G 1 comp 0 env rebar country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user { country variant grade eE CO2e_A CO2e_B CO2e_C CO2e_D recycle user } | MAT_ANAL MAT_ANAL num MAT_FABRIC name colour 4 Ex Ey nu G 1 comp 0 env rebar country variant grade eE eCO2 recycle user { country variant grade eE eCO2 recycle user } | |
| | MAT_CONCRETE MAT_CONCRETE num <mat> type cement fc fcd fcdc fcdt fcfib EmEs n Emod eps_peak eps_max eps_u eps_ax eps_tran eps_axs light agg 0.0 xd_min xd_max beta shrink confine fcc eps_plas_c eps_u_c | |
| | MAT_CURVE MAT_CURVE num name abs ord table | |
| | MAT_CURVE_PARAM | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|---|---|------------|
| | MAT_CURVE_PARAM num name model gamma_f gamma_e | |
| MAT_FABRIC MAT_FABRIC num name Ex Ey nu G | | deprecated |
| | MAT_FRP MAT_FRP num <mat> f bond Ce | |
| | MAT_REBAR MAT_REBAR num <mat> type fy fu Eh k fyd fydc flim eps_y eps_p eps_pc eps_u 0.0 beta_c beta_t eta1 eta2 k1 xi Ce ductile relax | |
| | MAT_STEEL MAT_STEEL num <mat> fy fu eps_p Eh | |
| MAT_USER_ENERGY MAT_USER_ENERGY mat case value | MAT_ENERGY MAT_ENERGY mat case value | |
| MEMB MEMB.3 num name colour MT_STEEL type section design restraint group topo(n) radius node angle is_rls { rls} is_offset { Ox Oy Oz } rest_list MEMB.3 num name colour MT_CONCRETE type section design num_layout { layout } group topo(n) radius node angle is_rls { rls} is_offset { Ox Oy Oz } MEMB.3 num name colour MT_UNDEF type section group topo(n) radius node angle is_rls { rls} is_offset { Ox Oy Oz } | MEMB MEMB.5 num name colour geom mat type section group topo arc node angle fire time[3] dummy con_1 con_2 AUTOMATIC pool height load_ref off_auto_x1 off_auto_x2 off_x1 off_x2 off_y off_z exposure MEMB.5 num name colour geom mat type section group topo arc node angle fire time[3] dummy con_1 con_2 EXPLICIT nump { point rest } nums { span rest }height load_ref pool off_auto_x1 off_auto_x2 off_x1 off_x2 off_y off_z MEMB.5 num name colour geom mat type section group topo arc node angle fire time[3] dummy | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|---|---|------------------------|
| | con_1 con_2 EFF_LEN lyy lzz llt height load_ref pool off_auto_x1 off_auto_x2 off_x1 off_x2 off_y off_z | |
| MEMBER | | deprecated |
| MEMBER_OFFSET | | deprecated |
| MEMBER_RLS | | deprecated |
| NODE_GRID NODE_GRID ref name grid plane grid grid line a grid line b edge length radius column rigidity | | deprecated See NODE |
| PERM PERM num drain K p1 p2 alpha y gradient f u_min fac gamma | | Not used |
| PILE_SOIL_INTERACTION PILE_SOIL_INTERACTION list auto_a x y z p auto_e z | PILE_INTERACTION PILE_INTERACTION nodes area x y z perim elev z vert | |
| | POLYLINE POLYLINE num name colour grid_plane num_dim desc | |
| PORE PORE mat x y pres grad rad | | Not used |
| PROP_2D PROP_2D.2 num name colour axis mat type thick mass bending inplane weight | PROP_2D PROP_2D.5 num name colour type axis mat mat_type grade design thick ref_pt ref_z mass flex shear inplane weight is_env { energy CO2A CO2B CO2C CO2D recycle user | |
| | PROP_3D PROP_3D num name colour mat mat_type grade | |
| PROP_CABLE PROP_CABLE.2 num name colour stiff mass alpha damp | PROP_CABLE PROP_CABLE.4 num name colour stiff mass type alpha damp | |
| | PROP_DAMP PROP_DAMP.1 num name colour axis type damp_x damp_y damp_z damp_xx damp_yy damp_zz | |
| PROP_SEC | PROP_SEC PROP_SEC.3 num name colour mat grade anal desc cost | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|---|---|------------|
| PROP_SEC num name colour mat desc principal type cost is_prop { area I11 I22 J K1 K2 } is_mod { area_to_by area_m I11_to_by I11_m I22_to_by I22_m J_to_by J_m K1_to_by K1_m K2_to_by K2_m mass stress } plate_type calc_J | | |
| PROP_SPR PROP_SPR.2 num name colour axis type curve_x stiff_x curve_y stiff_y curve_z stiff_z damping lock_p lock_n PROP_SPR.2 num name colour axis MATRIX matrix damping | PROP_SPR PROP_SPR.3 num name colour axis SPRING curve_x stiff_x curve_y stiff_y curve_z stiff_z curve_xx stiff_xx curve_yy stiff_yy curve_zz stiff_zz damping PROP_SPR.3 num name colour axis DAMPER damping_x damping_y damping_z damping_xx damping_yy damping_zz PROP_SPR.3 num name colour axis MATRIX matrix damping PROP_SPR.3 num name colour axis FRICTION stiff_x stiff_y stiff_z friction damping PROP_SPR.3 num name colour axis type stiff_x damping +ve_lock_up -ve_lock_up | |
| RAFT_DISP_DATA RAFT_DISP_DATA num type name extrusion_dir x1 y1 z1 x2 y2 z2 across_num extrusion along_num calculate detail | | deprecated |
| RAFT_NONLINEAR_CURVE RAFT_NONLINEAR_CURVE num desc points { strain factor } | SOIL_CURVE SOIL_CURVE num desc points { strain factor } | |
| RAFT_PSI_CURVE RAFT_PSI_CURVE num desc points { rel_disp factor } | SOIL_PSI_CURVE SOIL_PSI_CURVE num desc points { rel_disp factor } | |
| RAFT_PSI_PROPERTY | SOIL_PSI_PROP | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|--|--|------------|
| RAFT_PSI_PROPERTY num desc ref PSI_x PSI_y PSI_z PSI_b stres_xt stres_xb stres_yt stres_yb stres_zt stres_zb stres_bt stres_bb | SOIL_PSI_PROP num name Xcurve Ycurve Zcurve Bcurve Xtop Xbot Ytop Ybot Ztop Zbot Btop Bbot | |
| RAFT_SOIL_INTERACTION RAFT_SOIL_INTERACTION list auto x y user z p_min p_max | RAFT_INTERACTION RAFT_INTERACTION nodes area x y elev z p_min p_max | |
| RAFT_SOIL_LOAD RAFT_SOIL_LOAD num load_plane_ori load_plane_x load_plane_y load_plane_z load_plane_angle load_plane_shape load_plane_width load_plane_depth normal_load shear_load_x shear_load_y rect_num | SOIL_RECT_LOAD SOIL_RECT_LOAD.2 num name orient x y z angle dim_x dim_y load_norm shear_x shear_y | |
| RAFT_SOIL_PROF RAFT_SOIL_PROF num layer desc top num_int E_top E_bot nu curve PSIP | SOIL_PROFILE SOIL_PROFILE.2 num layer name colour top num Etop Ebot nu curve prop | |
| RAFT_SOIL_ZONE RAFT_SOIL_ZONE num x_min x_max y_min y_max profile | SOIL_ZONE SOIL_ZONE num name x_min x_max y_min y_max profile | |
| RC_BEAM_DES RC_BEAM_DES num name conc main link cover_t cover_b cover_l cover_r | - | deprecated |
| RC2D_PROP RC2D_PROP num name theta_1 theta_2 Zt_1 Zb_1 Zt_2 Zb_2 thick_op thick concrete grade_Fc rebar grade_Fy a_BA a_BB a_TA a_TB add_ecc Fck_op Fck_etc gamac_op factor_c Fyd_op Fyd_etc gamas_op factor_s phi_op phi_etc min_ecc_op min_ecc min_comp_op min_comp_etc | RC2D_PROP RC2D_PROP.2 num name theta_1 theta_2 Zt_1 Zb_1 Zt_2 Zb_2 thick_op thick concrete grade_Fu rebar grade_Fy a_BA a_BB a_TA a_TB add_ecc Fck_op Fck_etc gamac_op factor_c Fyd_op Fyd_etc gamas_op factor_s phi_op phi_etc min_ecc_op min_ecc min_comp_op min_comp_etc | |
| RC_MEMBER_DES_PROP RC_MEMBER_DES_PROP num name type conc main link link_size agg_size cover[4] bar layout[3] | RC_MEMBER_DES_PROP RC_MEMBER_DES_PROP num name type conc main link link_size agg_size cover_t cover_b cover_l cover_r | deprecated |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|---|--|------------|
| SEC SEC num name mat desc SEC num name mat desc area lyy lzz J Ky Kz | SECTION SECTION num name member axis mass cost is_mod { <mod> } num_comp { <comp> } | |
| SEC_PROP SEC_PROP num prop name mat desc area lyy lzz J Ky Kz | | deprecated |
| SEC_BEAM | | deprecated |
| SEC_MOD SEC_MOD num area_f area_i I11_f I11_i I22_f I22_i J_f J_i K1_f K1_i K2_f K2_i mass stress principal | SECTION_MOD SECTION_MOD ref name mod centroid stress areaOp area prin lyyOp lyy lzzOp lzz JOp J kyOp ky kzOp kz volOp vol mass | |
| - | SECTION_BAR_PERIM SECTION_BAR_PERIM ref BarSpacing LayerSpacing NumLayer nInBundle BarSize | |
| - | SECTION_BAR_RECT SECTION_BAR_RECT ref num arrange uniform bundle bar barAlt space | |
| - | SECTION_SMEAR SECTION_SMEAR ref mat fraction bar pitch cover SECTION_COMP SECTION_COMP ref name matAnal matType matRef desc offset_y offset_z rotn reflect pool | |
| - | SECTION_CONC SECTION_CONC ref grade agg | |
| - | SECTION_COVER SECTION_COVER ref type:UNIFORM cover outer SECTION_COVER ref type:VARIABLE top bot left right outer SECTION_COVER ref type:FACE num face[] outer | |
| - | SECTION_GROUP SECTION_GROUP ref code mat bar bundle type:POINT y1 z1 yNormal zNormal start | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|----------------|--|---------|
| | end preStress value exclude xi SECTION_GROUP ref code mat bar bundle type:LINE num y1 z1 y2 z2 start end preStress ... SECTION_GROUP ref code mat bar bundle type:ARC num y1 z1 y2 z2 y3 z3 start end preStress ... SECTION_GROUP ref code mat bar bundle type:CIRCLE num yCentre zCentre y1 z1 start end preStress ... SECTION_GROUP ref code mat bar bundle type:PERIM num cover rows start end preStress ... SECTION_GROUP ref code mat bar bundle type:FACE num cover rows face offStart offEnd start end preStress ... | |
| - | SECTION_HOLE SECTION_HOLE.3 ref tag shape area pos_y pos_z SECTION_HOLE.2 ref shape area pos_y pos_z | |
| - | SECTION_MARKUP SECTION_MARKUP.1 ref entity ys zs ye ze text | |
| - | SECTION_SMEAR SECTION_SMEAR ref mat fraction bar pitch cover | |
| - | SECTION_STEEL SECTION_STEEL ref grade plasElas netGross exposed beta type plate lock | |
| - | SECTION_TMPL SECTION_TMPL ref defn:RECT_COL mat num arrange bundle barC barS start end | |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|---|---|------------|
| | SECTION_TMPL ref defn:CIRC_COL mat numSet < num bundle bar layer space start end > SECTION_TMPL ref defn:BEAM pos mat numTop bundleTop barTop layerTop spaceTop numBot bundleBot barBot layerBot spaceBot numSide bundleSide barSide pitchSide start end SECTION_TMPL ref defn:PERIM mat BarSpacing LayerSpacing NumLayer nInBundle BarSize start end | |
| SEC_PROP | - | deprecated |
| SEEP | - | deprecated |
| SPC SPC num axis x y z xx yy zz | - | deprecated |
| SPEC_ACCELERATION SPEC_ACCELERATION case item acc | SPEC_ACC SPEC_ACC case item acc | |
| SPR_CURVE SPR_CURVE num name tran desc | NL_SPRING_CURVE NL_SPRING_CURVE num name tran table | |
| SRSS_RES | | deprecated |
| STEEL_BEAM_DES STEEL_BEAM_DES num name grade area_ratio plas_elas over Lyy Lzz Llt temp ExpoType expo | STEEL_BEAM_DES STEEL_BEAM_DES num name grade area_ratio plas_elas over Lyy Lzz Llt { fy fu E fact } temp expo perim | |
| STOREY STOREY no name list | - | deprecated |
| - | STEEL_SECTPOOL STEEL_SECTPOOL num name sdl_sections | |
| STOREY_DRIFT STOREY_DRIFT num name x y list | - | deprecated |
| STRESS STRESS elem case pos layer xx yy zz xy yz zx | STRESS_2D STRESS_2D elem case pos layer xx yy zz xy yz zx | |
| | STRESS_3D STRESS_3D elem case pos xx yy zz xy yz zx | |
| SUPPORT | - | deprecated |

| Keyword in 8.7 | Keyword in 9.0 | Remarks |
|---|--|------------|
| SUPPORT num axis Kx Ky Kz Kxx Kyy Kzz | | |
| TASK_DET | - | deprecated |
| TASK_GSBRIDGE | - | deprecated |
| TASK_GSRAFT | - | deprecated |
| TASK_GSRELAX | - | deprecated |
| TASK_GSS | - | deprecated |
| TASK_GSSPEC | - | deprecated |
| - | TASK_TAG TASK_TAG task tag | |
| - | TEMP_3D TEMP_3D.1 name list case type values(n) | |
| - | TIME TIME case time | |
| Z_ELEVATION Z_ELEVATION elevation | - | deprecated |