Trabajo Fin de Máster
Máster en Ingeniería Industrial

Integration of CYPE Fire and PTV Vissm Software Tools for Advanced Fire Simulation and Building Evacuation Analysis

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Dpto. Ingeniería y ciencia de los materiales y el transporte
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Resumen

El 25 de marzo de 1911, un incendio devoró en apenas media hora los pisos octavo, noveno y décimo del edificio Asch, en el Greenwich Village de Nueva York. Estos tres pisos albergaban la fábrica Triangle Shirtwaist, donde trabajaban unas 500 personas, la mayoría de ellas jóvenes inmigrantes que apenas hablaban inglés. El desastre se cobró la vida de 123 mujeres y 23 hombres, conmocionó la ciudad y sirvió para hacer avanzar las regulaciones de seguridad en el trabajo y el reconocimiento de los derechos de la mujer.

Cuando se trata de la seguridad en el lugar de trabajo, tener un plan de evacuación es un elemento fundamental. Además de existir requisitos legales, es un deber moral del empleador proteger a los empleados y la propiedad en caso de un incendio o una emergencia. La tragedia de Triangle Shirtwaist, como otras tantas que se han sucedido a lo largo de la historia, han puesto de manifiesto la necesidad de planificar una ruta segura de evacuación y garantizar los medios para que se lleve a cabo con éxito.

Desde principios del siglo pasado hasta la actualidad la ingeniería ha evolucionado permitiendo conocer a través de simulaciones cada vez más complejas el impacto de un incendio sobre las estructuras y las personas que las habitan. En este trabajo se ha evaluado la integración de distintas herramientas para evaluar el comportamiento de peatones durante una evacuación de incendios. Para llevarlo a cabo, se han usado distintas herramientas; IFC Builder, CYPE Fire FDS y PTV-Vissim, con el objetivo de describir la integración entre los distintos entornos y obtener el mayor número de resultados posible.

Abstract

On March 25, 1911, a fire distroyed the eighth, ninth and tenth floors of the Asch Building in New York's Greenwich Village in just half an hour. These three floors hold the Triangle Shirtwaist factory, where about 500 people worked, most of them young immigrants who barely spoke English. The disaster claimed the lives of 123 women and 23 men and shocked the city but served to advance workplace safety regulations and the recognition of women's rights.

When it comes to workplace safety, having an evacuation plan is a critical element. In addition to legal requirements, it is an employer's moral duty to protect employees and the property in the event of a fire or emergency. The Triangle Shirtwaist tragedy, like many others that have occurred throughout history, has highlighted the need to plan a safe evacuation route and guarantee the means for it to be carried out successfully.

From the beginning of the last century to the present, engineering has evolved, allowing us to know, through increasingly complex simulations, the impact of a fire on the structures and the people who inhabit them. In this work, the integration of different tools to evaluate the behaviour of pedestrians during a fire evacuation has been evaluated. To carry it out, different tools have been used; IFC Builder, CYPE Fire FDS and PTV-Vissim, with the aim of describing the integration between the different environments and obtaining the greatest number of results possible.

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1 INTRODUCTION

This work arises from the need to evaluate the impact of a fire event on pedestrians. In this research project several tools have been used, and getting to know the challenges in integrating them to achieve a complete simulation is the key point which will be emphasized throughout all stages.

According to the German Model Building Code (MBO) as of November 2002 version, built environments must be arranged, erected, modified, and maintained in such a way that they mean no risk to public safety and order, particularly life, health, and the natural environment.

In addition to compliance with official building regulation, stipulations on admissible escape route lengths and necessary exit widths, it is advisable to carry out evacuation calculations as part of a holistic fire protection concept, especially buildings intended for use by a large number of people.

"It is important to point out that escape route calculations cannot consider all influencing factors that occur in real situations. Psychological aspects, which influence the choice of route and the behaviour of the person in question, have not yet been investigated in a scientifically robust way and can only be taken into consideration based on statistical modes of behaviour. As, however, behaviour in real life situations can vary widely and be unpredictable due to the influence of psychological aspects, any simulation can take only limited account of these effects. As a result, simulation represents an idealised case in which persons move in accordance with the parameters and route specifications of the user" [1].

There are different tools specialized in simulating evacuation in a fire event, in this work several of them have been integrated with the aim of combining the advantages of each one of them.

The starting point is for this work is RiMea guide. This guide defines a minimum standard for the input variables, the modelling process, the mathematical simulation and the evaluation and documentation of an evacuation analysis. The methodology for a simulation-based evacuation analysis outlined in this guide is designed to assess the effectiveness of an escape and rescue concept as part of a built environment. In addition to the guidelines indicated in the guide to parameterize the simulation and the steps to consider when defining it, the building from test case 8 has been used as the environment in which to develop the simulation.

For the building definition IFC Builder was used. This is a CYPE tool with a very simple interface that allows the construction in IFC format of simple geometries.

CYPE FIRE FDS was used to define the parameters of the fire simulation. This tool can be used to design fire protection installations for industrial and building projects, which were not used in this project.

Finally, to integrate all inputs, Vissim was used. In this tool both the simulation of fire and the building can be integrated along with the simulation of pedestrians, making it possible to iterate and estimate the evacuation time for a specific case.

1.1 Workflow sketch

To carry out the integration between programs, the following steps will be followed:

- Implement the construction of the test case 8 of the RiMEA guide
- Import it into the CYPE software to prepare an FDS input file and perform the FDS fire propagation simulation
- Import the IFC file into PTV Vissim and prepare and run an evacuation simulation with PTV Vissim
- Show as many results as possible in various CYPE, PTV Vissim and possibly third-party software
- Document workflow, operational steps, challenges, and failures

The starting point of the workflow is creating the IFC/BIM model of the building. This will be done using IFC Builder, a tool that allows to create an IFC model. The model can be imported both into CYPE and Vissim.

The FDS code is created in CYPE Fire FDS, a module of CYPE. The input of this tool is an IFC file from IFC Builder. The output is an FDS file with the parameters of the fire simulation and the same building structure as the IFC file. It is possible to generate a visualization from this tool or import the FDS results generated from an external source and visualized them. FDS is one of the most utilized simulators for the dynamics of a fire and its effluents (gases and heat). It is maintained by the NIST (National Institute of Standards and Technology) in the US. The data which is to be used with Viswalk must be produced first by running FDS.

The initial model of the building along with the FDS simulation results can be imported into Vissim. In this last step, a pedestrian simulation will be generated, and the complete evacuation can be visualised along with pedestrian parameters. By adding the smoke and fire simulation results to Vissim, the evacuation simulation can be enriched with parameters such as air quality.

This flow is represented in Figure 1.1.

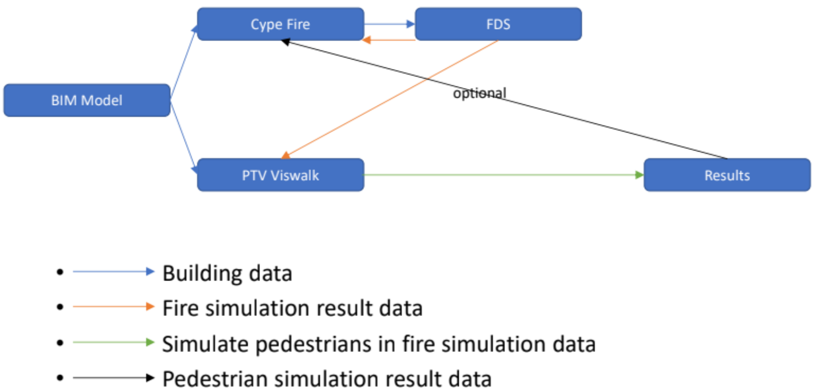


Figure 1.1 Workflow sketch

1.2 Description of the Rimea Guide test case 8

“Rimea Guide is designed as a guide for the approval authorities and defines standardised methods that guarantee all environments are designed in such a way that it is possible to rescue occupants and animals as well as to take effective extinguishing measures in the event of fire.” [1]

This guide serves as a reference for German-speaking authorities to check evacuation analyses of complex buildings. Based on the RiMEA-Guideline expert reports are written to ensure that the fundamental questions of an evacuation analysis are answered.

In the appendix different test scenarios for software-tools are provided. These scenarios are used to show if a software-tool is able to reproduce at least the simplest requirements for an evacuation analysis, in total 14 test cases are available.

In this guide input variables for simulation model are described:

- Geometry

This category describes the spatial arrangement and geometry of the building and the escape routes, their reachability, and their accessibility. The building geometry used as a case study in this work is one of the examples featured in the guide, specifically test case 8.

The different floor plants are described in RiMea Guide (test case 8) as seen on Figure 1.2. The building consists of three floors, the first and second being identical, with a single exit.

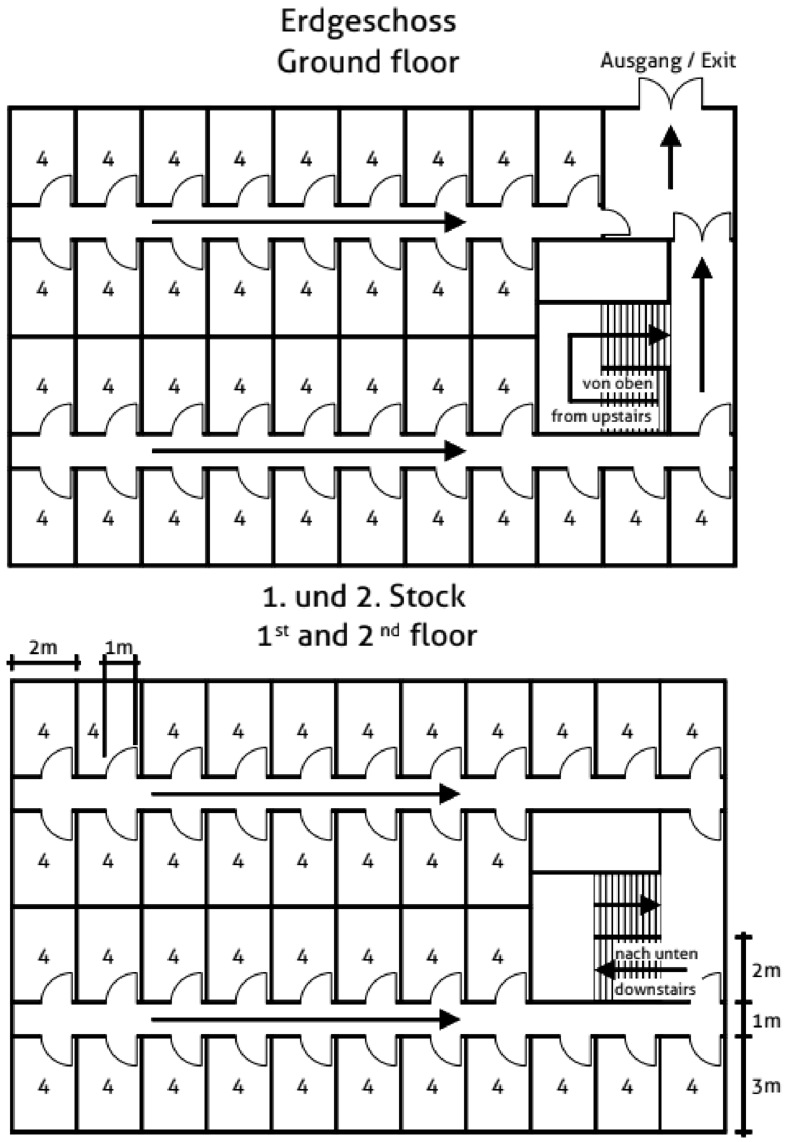


Abbildung 6: Der Testgrundriss für die systematische Analyse der Personenparameter. In jedem „Zimmer" sollen sich vier Personen befinden. Breite eines Türflügels: 1 m

Figure 6: Test floor plan for the systematic analysis of person parameters. Four persons should be located in each "room". Width of a wing of a door: 1 m

Figure 1.2 Floor plants [1]

- Population

The composition of the population is based on age and physical attributes. The statistical composition of the population is typically the same for all simulation runs of a scenario. If data on the composition of the population is available, this should be used if possible.

a) Each person is represented individually in the simulation.

b) The fundamental rules for decisions and movements are the same for all pedestrians and are described by a documented, universal algorithm.

c) The capability of each person or group of people is defined by a set of parameters. Some of these parameters have a stochastic effect on the behaviour of the pedestrians.

d) The movement of each individual person must be recordable.

e) The pedestrians' parameters vary between the individuals of a population.

f) The time difference between two actions of the modelled pedestrians (agents) in the simulation, in other words, the time within which all pedestrians act, should be of a high time-based resolution so that it is possible to consistently model the necessary movement and behavioural actions together with their interactions.

g) The choice of scenarios to be analysed must take consider the population that applies to the building evaluated, the choice of escape routes and the effect of environmental factors.

As described in test case 8, in each of the rooms of the building there are four people who must be evacuated. The characteristics of the population will be described in more detail later, in chapter four.

- Movement times

Detection time, average walking speed of staircase speed may vary depending on type of building and event. There are various publications regarding these average values. For the simulations performed for this work the values considered are detailed in chapter three.

- Density

The initial distribution or initial number of pedestrians defines the densities or numbers of pedestrians that is to be used as a basis for the beginning of the simulation process. If concrete data is available, it should be incorporated in the analysis and the source of the data named. The distribution used for this test case is detailed in chapter four.

2 IFC/BIM MODEL

Chapter 2 details the steps that have been followed to create the IFC/BIM model of the building, from the decision making of the program used to the final observations.

2.1 IFC Builder description

There are several tools for the creation of IFC/BIM of models. IFC Builder (version 2022.f) has been selected to create the IFC model of the building due to its easy integration with CYPE Fire FDS. It is a free CYPE application, hence no licence is required for its use. At first, an attempt was made to model the building in CYPE Architecture, but its integration with CYPE Fire FDS was not possible. Finally, it was modelled in IFC Builder, simpler but compatible with the other software.

IFC (Industry Foundation Classes) is a data format that allows the exchange of an information model without the loss or distortion of the data it contains. It has been developed by buildingSMART.

IFC Builder uses Open BIM work methodology, which allows all the agents involved in the development of the project, in its execution and, even, its subsequent maintenance, to be able to consult and act immediately on the project, to optimize the technical options in interactive way between the disciplines, and then to control and exploit the project data [2].

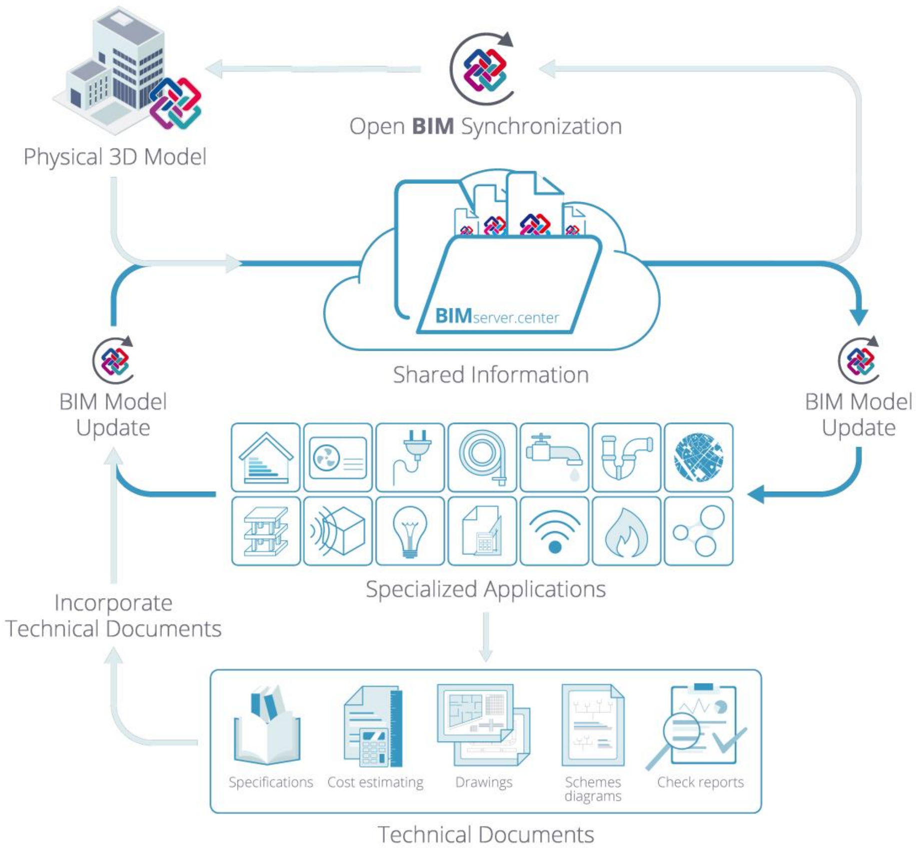


Figure 2.1 Workflow through CYPE applications [2]

The following parameters have been considered:

- The dimensions of the different elements are defined in Figure 1.2.
- The thickness of the walls is assumed to be 0.3 m.
- The distance between floors is 3 m, Figure 2.2 schematically represents the mentioned distance.

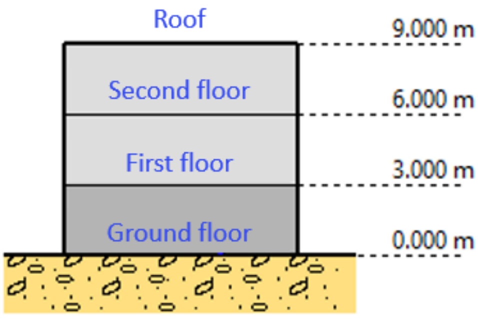


Figure 2.2 Diagram of building dimensions

In IFC Builder it is possible to create straight orthogonal walls. This application does not allow the creation of stairs, which will be inserted later in PTV Vissim. The interface of the tool is as shown in Figure 2.3.

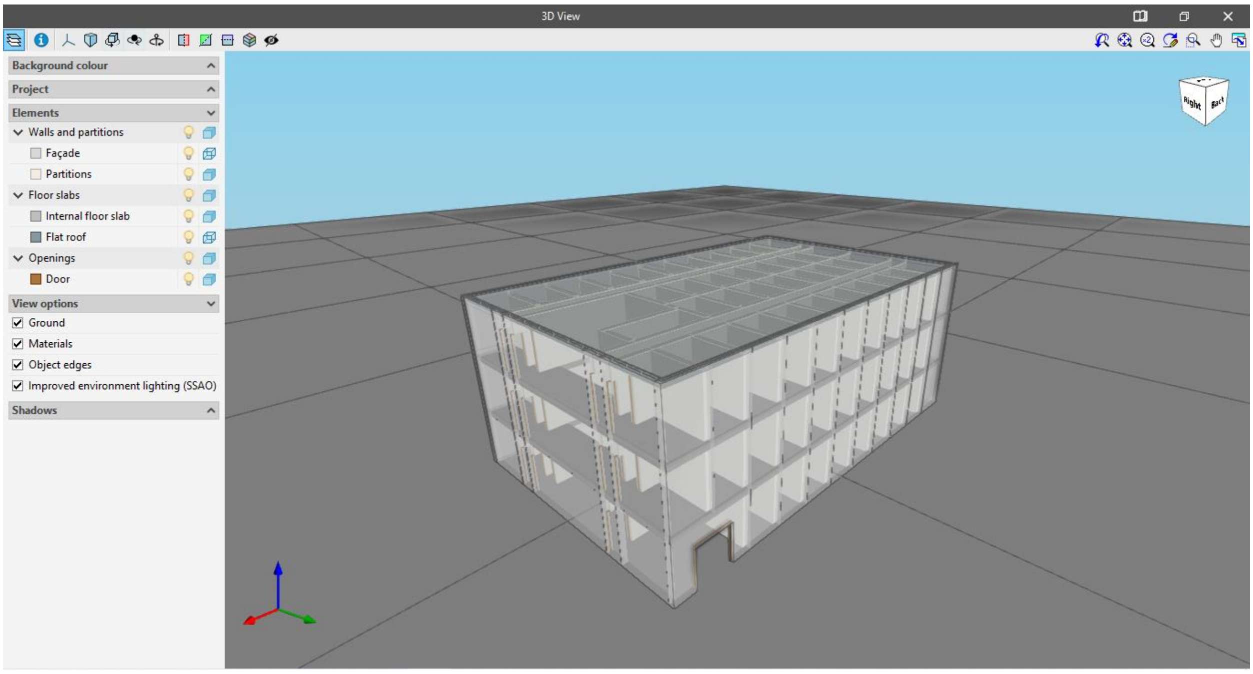


Figure 2.3 Complete model of the building. Image from IFC Builder

This tool allows to create elements such as floor slabs, walls, columns and openings.

Figure 2.4 Construction elements

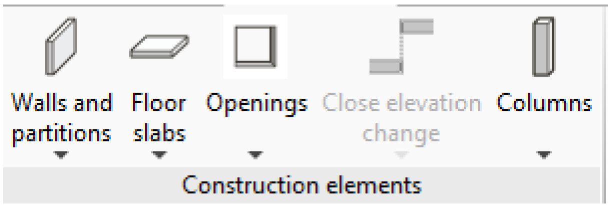


Figure 2.4 Constructive elements

All of these elements have subcategories, as shown in Figure 2.5-Figure 2.7

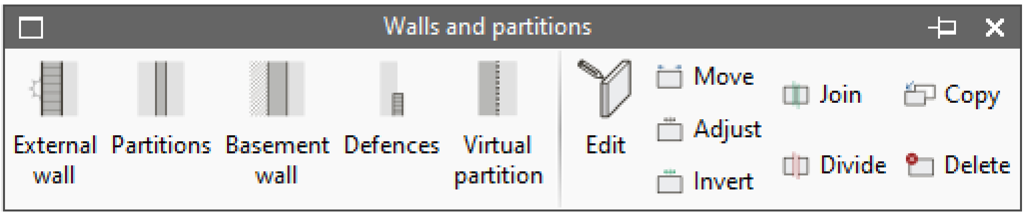


Figure 2.5 Subtypes of walls

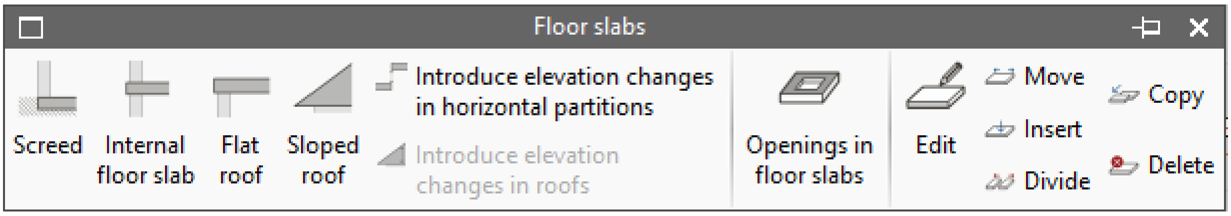


Figure 2.6 Subtypes of slabs

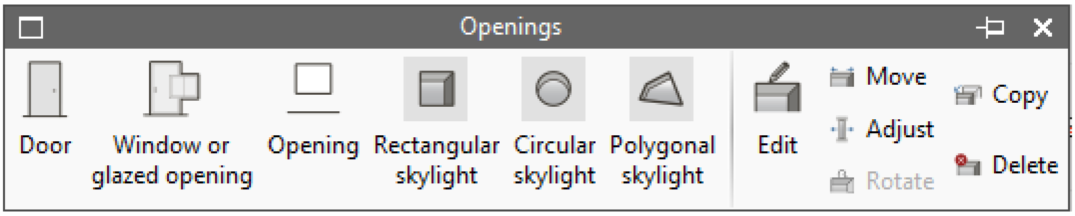


Figure 2.7 Subtypes of openings

2.2 Observations

IFC Builder does not support the insertion of stairs, thus the generated model was incomplete. The IFC model used differ from the original drawing, shown in Figure 1.2, in the use of stairs. As it is not possible to create them through the tool, it would be necessary to introduce them manually, as a proposal, with a Python code.

As an alternative to this application, the building was modelled using CYPE Architecture, a CYPE module that allows the insertion of more complex architectural elements, such as stairs. The problem found was that the output file that is generated cannot be read in CYPE Fire FDS and, finally, the model created with IFC Builder was the one used for the project.

3 FIRE SIMULATION

Chapter 3 details the steps that have been followed to create the numerical fire simulation of the building. The evolution of fire and smoke is essential to evaluate the conditions faced by users during evacuation.

Cype Fire FDS was used to generate the fire simulation data file. This tool will generate an FDS file from which the simulation results will be obtained. CYPE FIRE FDS is an application for the design of complex building models, to carry out simulations of fire evolution using the Fire Dynamics Simulator developed by the NIST (National Institute of Standards and Technology, USA).

"Fire Dynamics Simulator (FDS), is a computational fluid dynamics (CFD) model of fire-driven fluid flow. FDS solves numerically a form of the Navier-Stokes equations appropriate for low-speed (Ma1 < 0.3), thermally-driven flow with an emphasis on smoke and heat transport from fires. The first version of FDS was publicly released in February 2000. To date, about half of the applications of the model have been for design of smoke handling systems and sprinkler/detector activation studies. The other half consist of residential and industrial fire reconstructions. Throughout its development, FDS has been aimed at solving practical fire problems in fire protection engineering, while at the same time providing a tool to study fundamental fire dynamics and combustion." [3]

In this chapter, the way of working of the software and the input parameters necessary to generate the FDS code will be detailed. In addition, a section will be dedicated to explaining the structure of the FDS input file specific to this case.

3.1 Simulation duration based on NTP 436

The initial duration time for the simulation was calculated using the NTP 436 [4]. The NTPs are good practice guides. Its indications are not mandatory unless they are included in a regulation in force. To assess the relevance of the recommendations contained in a specific NTP, it is convenient to consider its date of publication.

According to (3.1 the simulation time is the sum of time of horizontal displacement (t_{PE}), detection time (t_D), delay time (t_B) and alarm time (t_A).

$$t_E = t_D + t_A + t_B + t_{PE} \tag{3.1}$$

The detection time (t_D) is the time span from the beginning of the trigger incident up to its discovery. It could range from a maximum of ten minutes in the case of detection by personnel present or surveillance and less than 1 minute in the case of having an automated alarm centre. For this estimation, a time of five minutes is considered.

The alarm time (t_A) is the time span between the discovery of a trigger incident and the activation of the evacuation signal. Is the same as the emission of the coded messages, lights or sounds and should not exceed 1 minute.

The delay time (t_B) is the time span between the activation of the evacuation signal and the start of evacuation of an individual person. In situations with personnel trained in the emergency plan, should not exceed one minute. In any case it could reach up to five minutes or more if there is not a properly implemented emergency plan. In the case of the example, it is considered a delay time of two minutes.

Considering that P is the furthest point from the exit, the evacuation time of the itinerary that begins at point P and ends at the main exit of the building would be t_{PE} = distance / velocity

With these assumptions it could be considered that the total evacuation time for the studied example would be:

$$t_E = t_D + t_A + t_B + t_{PE} = 5' + 1' + 2' + 85'' = 9'\,25'' = 565''$$

This calculation is a first estimate of the simulation time, but it is an optimistic approximation, since it assumes that the evacuation is carried out by a single person and does not consider waiting times due to the blocking of exits by other people.

3.2 CYPE Fire FDS description

CYPE Fire FDS allows the design of complex buildings models for the execution of fire evolution simulations using the fluid dynamics computational standard FDS (Fire Dynamics Simulator). It has been used as an intermediary between the IFC model of the building and the fire simulation. Through its interfaces, an FDS file can be generated very intuitively to generate the simulation results. For this work version 2023.e was used.

This tool has two interfaces: BIM model interface (Figure 3.1) and FDS model interface (Figure 3.4).

3.2.1 BIM model interface

To start working with the program, a new file must be created and connected to an existing BIM project on the BIMserver.center platform. This BIM model can contain a model with the building structure.

Data entry in CYPE FIRE is carried out in a 3D environment.

This interface is useful to complete the necessary properties of the BIM elements, as sometimes they are not completed in the software where they come from.

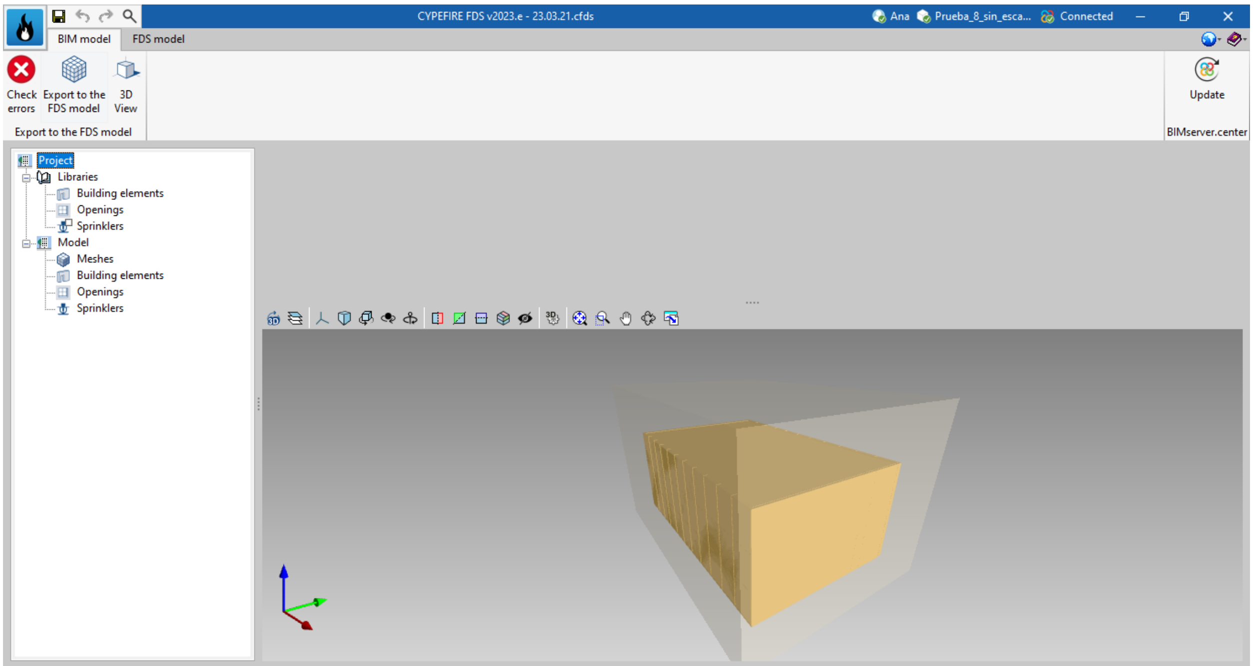


Figure 3.1 BIM model interface

For this case it was necessary to configure, both in holes and in construction elements, the thickness of both elements. In this case, all the walls and slabs are “building elements” and are considered to have the same properties. The category “openings” includes doors and the stairwell.

The different sections are organized within “Libraries” and later assigned to each element of the model.

It was decided to give all the elements a thickness of 0.3 m, which is a standard value (Figure 3.2).

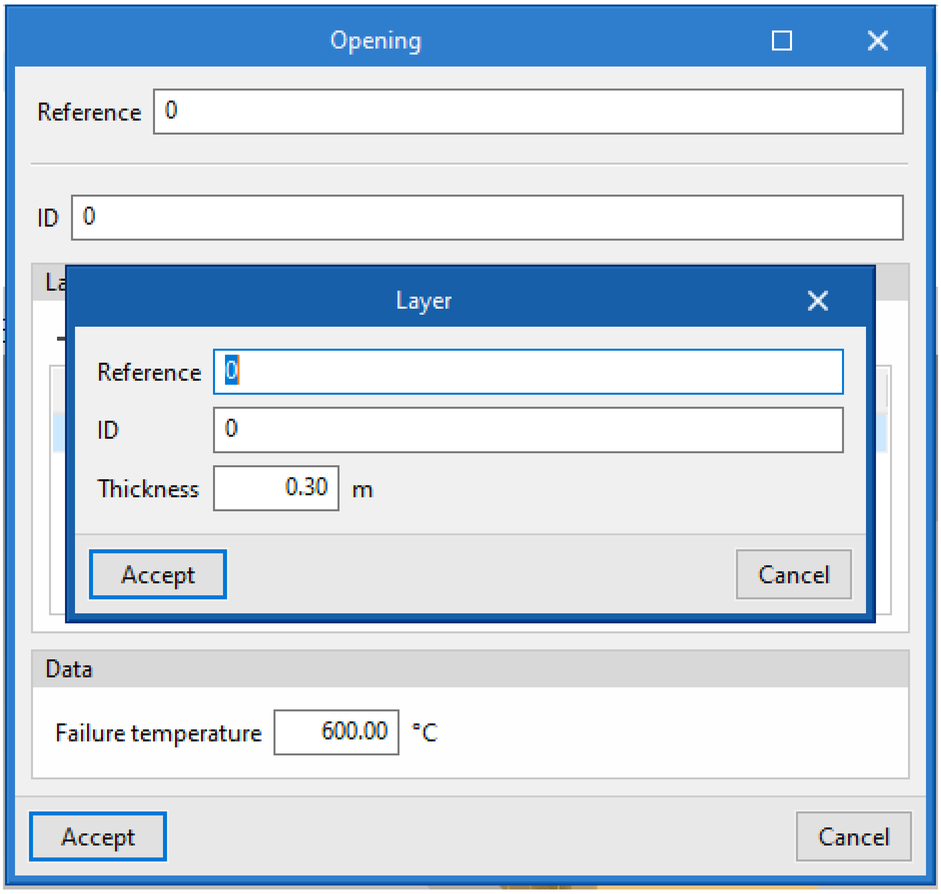


Figure 3.2 Setting the thickness of an opening

The mesh definition is also done in this interface (Figure 3.3). The initial al final coordinates are in the same reference system as the IFC model imported in CYPE Fire FDS and the number of divisions on each axis is up to the creator.

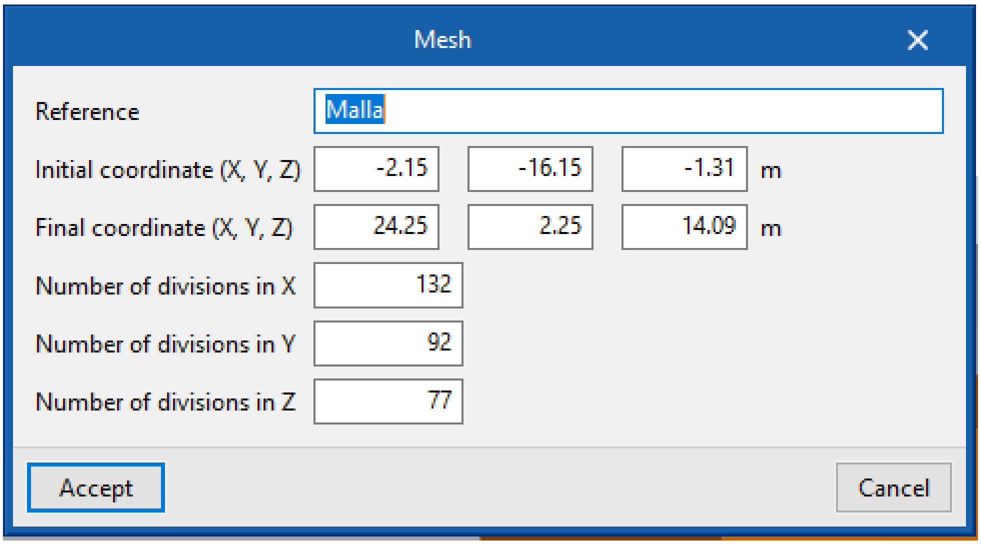
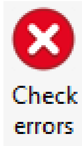


Figure 3.3 Mesh definition

Once all the parameters are defined, it is necessary to *Check for errors* 

and *Export to the FDS Model* 

before working on the FDS model interface.

3.2.2 FDS model interface

This interface is necessary to complete the properties of the fire simulation.

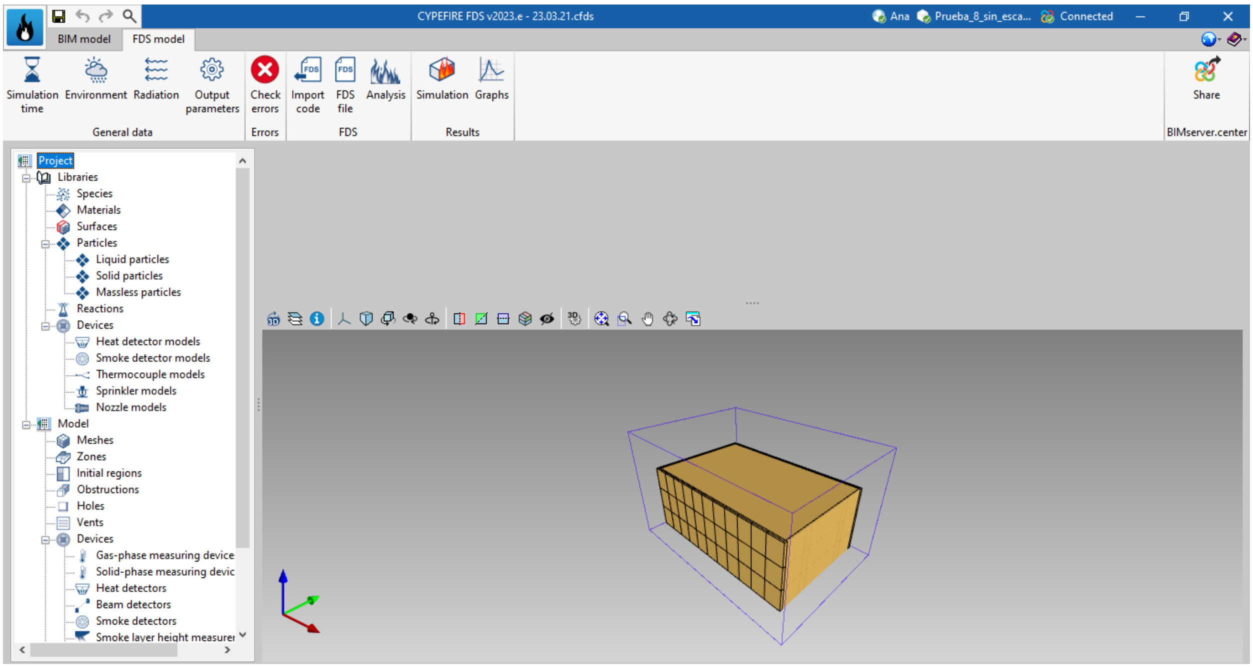


Figure 3.4 FDS model interface

Different parameters are completed in *General data* and *Project*:

- General Data
  - Simulation time: the start and end time of the simulation is introduced. For this field, the calculations were previously made in the section 3.1.
  - Environment: the parameters were left by default.
  - Radiation: the parameters were left by default.
  - Output parameters: it is possible to choose from a group of possible outputs. The ones generated for this case are those of Figure 3.5.

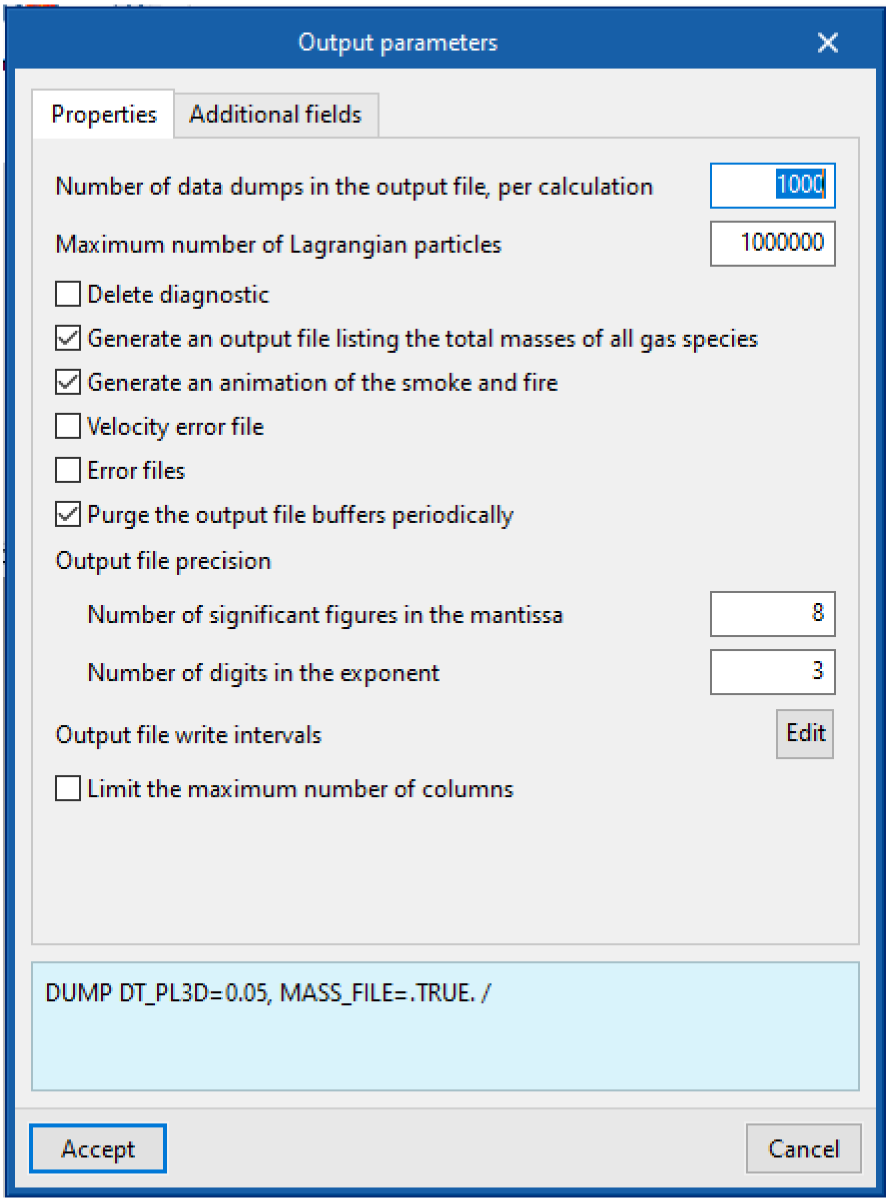


Figure 3.5 Output results configuration

- Project
    - Library>Surfaces: a surface called "BURNER" has been created with the dimensions (Figure 3.6) and the initial thermal properties (Figure 3.7) of the element that initially causes the fire.

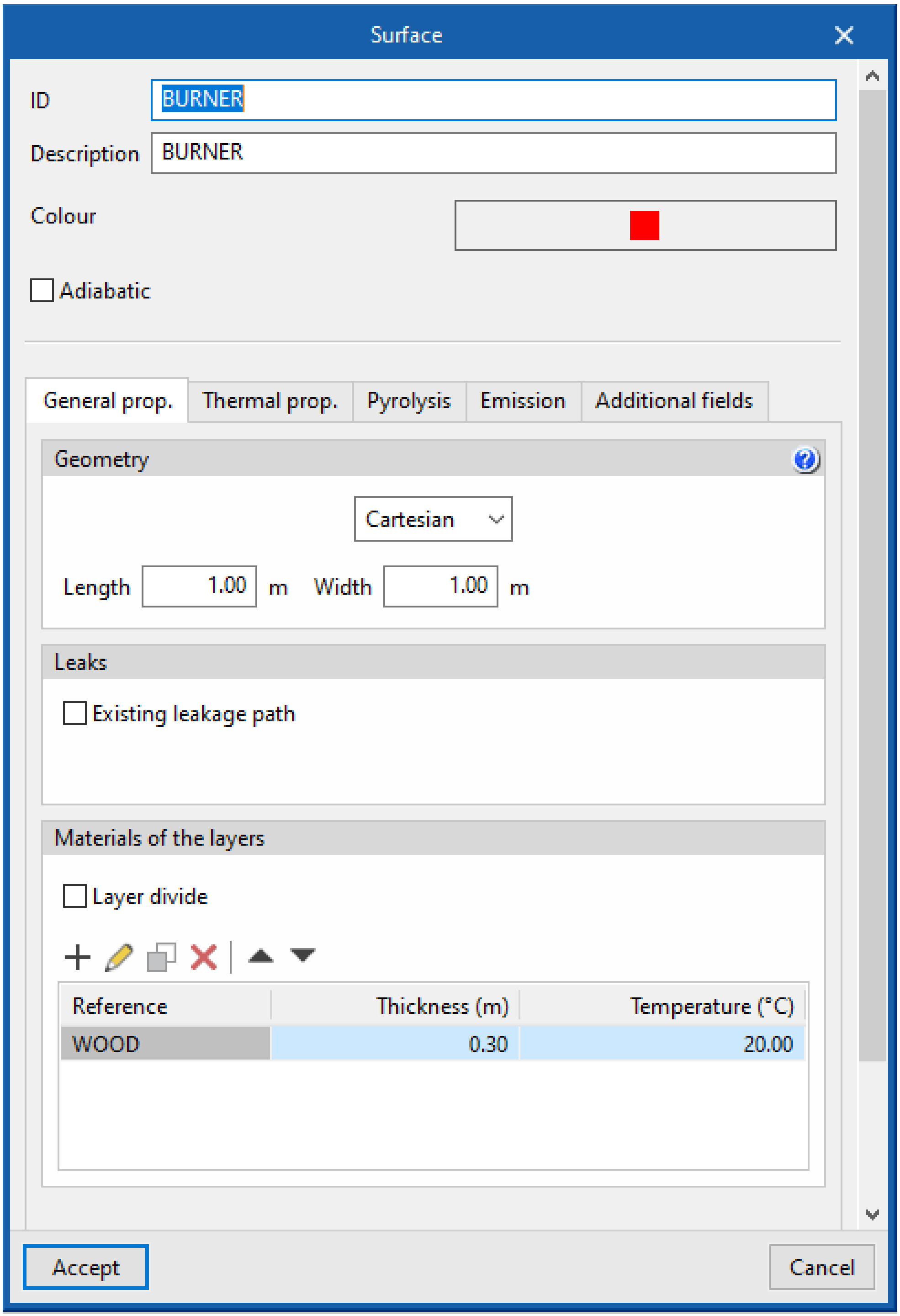


Figure 3.6 Dimensions of the BURNER

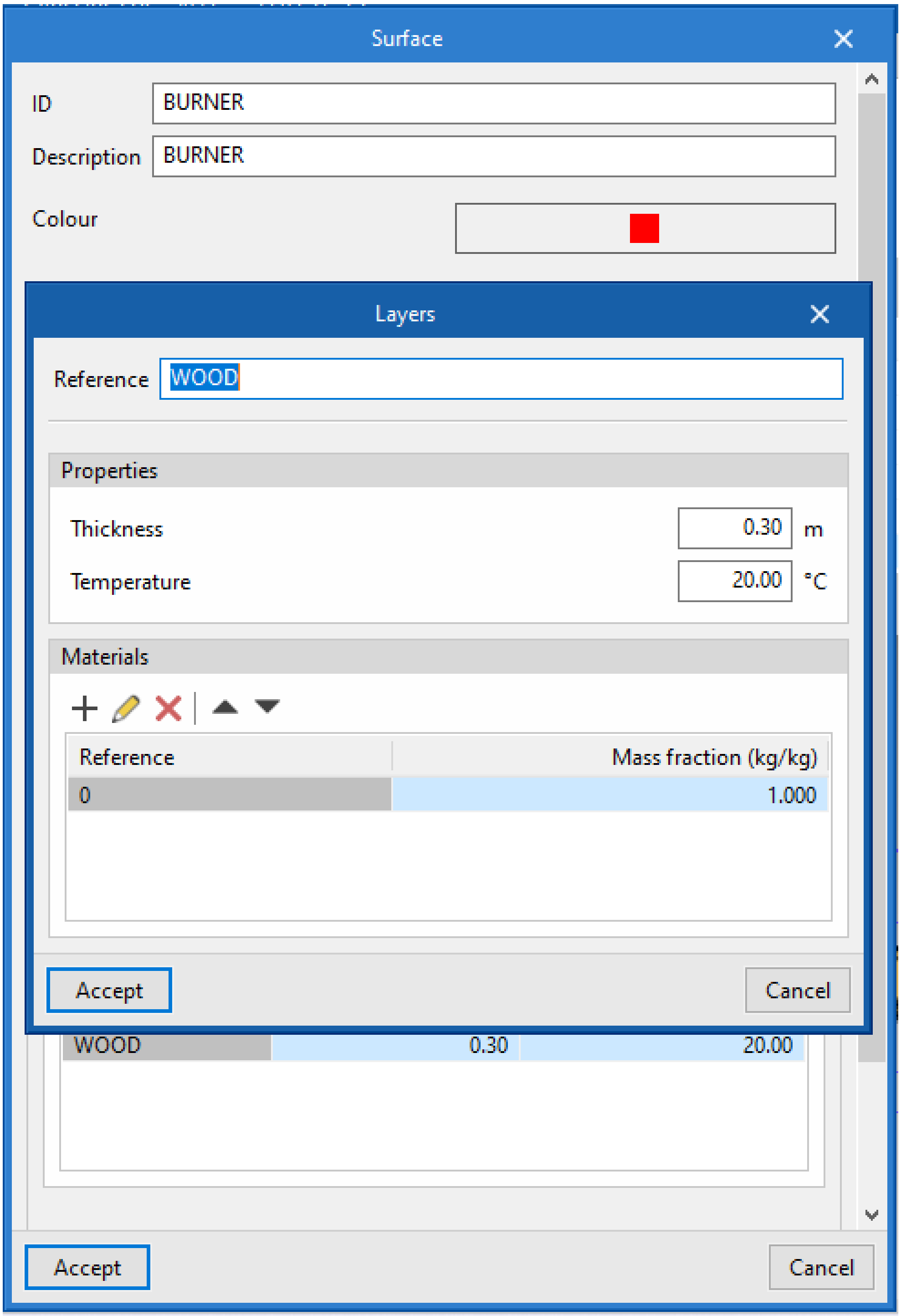


Figure 3.7 Initial thermal properties of the BURNER

- Library>Reactions: the chemical reaction of combustion has been defined as a simple default model (Figure 3.8).

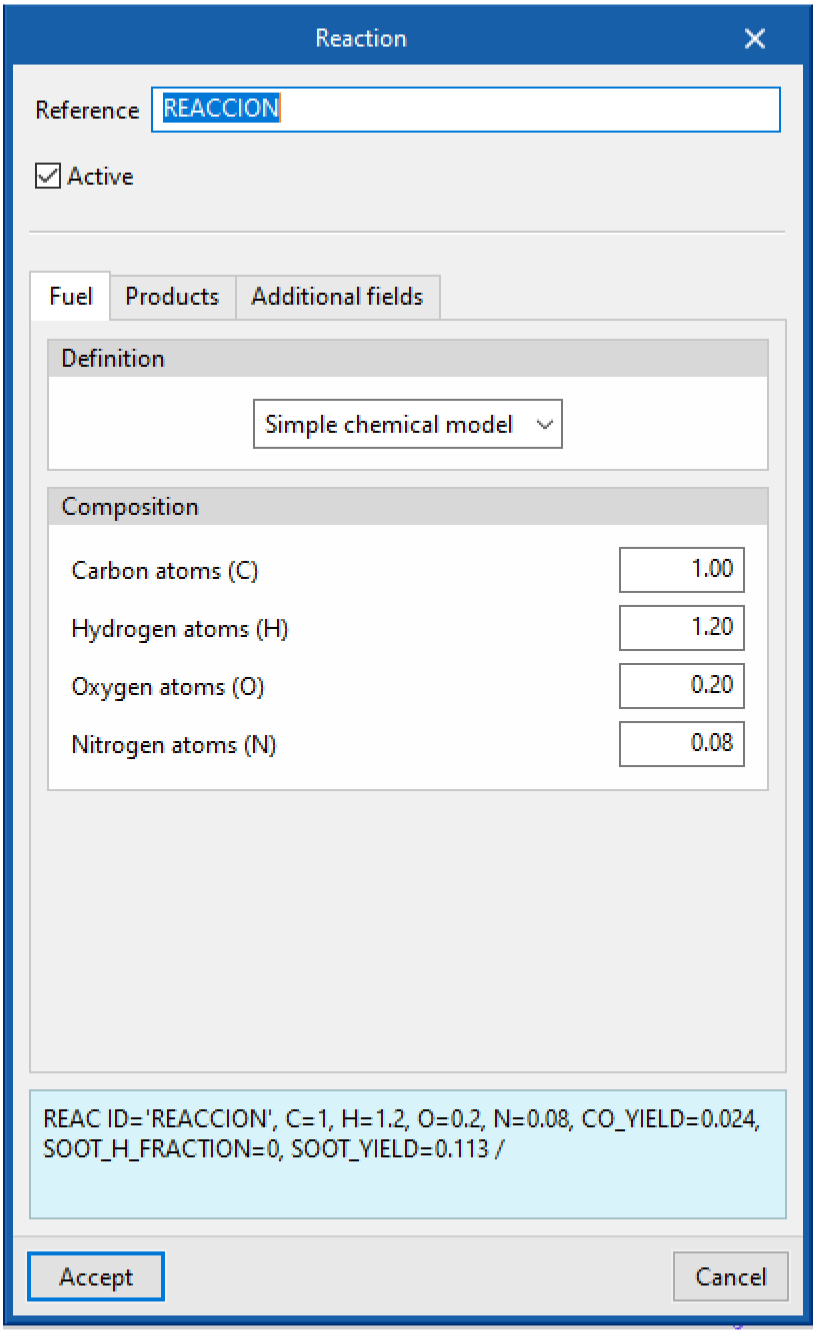


Figure 3.8 Reaction

- Model>Obstacles: two bodies of dimensions 1x1x1 m have been defined that burn inside the offices on the third floor at the end of the corridor.

The rest of the data has been left by default.

Once the desired parameters have been entered, it is mandatory to *Check for errors* before exporting the FDS code. The code can be exported in many formats, in this case it has been exported as notepad and then the code has been copied to an FDS file.

3.3 FDS input file format

Fire Dynamics Simulator (FDS) is a computational fluid dynamics (CFD) model of fire-driven fluid flow.

The software solves numerically a form of the Navier-Stokes equations appropriate for low-speed, thermally driven flow, with an emphasis on smoke and heat transport from fires.

An FDS file is text type, so it is very easy to generate, edit or modify it.

The strings used to create the code are the following. One line has been taken from each string used, in some cases each string has been used more than once.:

- &HEAD CHID='job1', TITLE='job1' //

  Needed for setting up the input file a name.

- &TAIL /

  The ending string of the file.

- &TIME T_END=565 /

  The line will instruct FDS to end the simulation at 565 s.

- &MATL ID='0', CONDUCTIVITY=0.1, DENSITY=500, SPECIFIC_HEAT=1 /

  The MATL namelist group is used to define the properties of the materials that make up bounding solids.

- &SURF ID='0 (Transversalmente 22.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=22, VEL=0, WIDTH=1 /

  The SURF namelist group defines the structure of all solid surfaces or openings within or bounding the flow domain. Boundary conditions for obstructions and vents are prescribed by referencing the appropriate SURF line(s).

- &REAC ID='REACCION', C=1, H=1.2, O=0.2, N=0.08, CO_YIELD=0.024, SOOT_H_FRACTION=0, SOOT_YIELD=0.113 /

  Definition of the fuel of the simulation.

- &MESH ID='Malla', IJK=88, 52, 52, XB=-2.15, 24.25, -16.15, 2.25, -1.31, 14.09 /

  The volume is a parallelepiped defined by its 2 opposites corners; the coordinates of the first point are x, y, z; the second ones are x', y', z'.

  The XB command defines the dimensions of the volume in meters, in the format of XB= x, x', y, y', z, z'.

  The IJK command specifies the number of parts in which you want to divide the three dimensions (x, y, z), in the format of IJK= n(x), n(y), n(z).

  The precision of the simulation depends on the mesh in the geometric plane and the time step in terms of time, but great care must be taken due to excessive computing times. In this case, since the results are not the fundamental thing of the simulation but what is important is the integration flow, a very coarse mesh was used to reduce execution times, which were still very high.

- &OBST ID='WL1', SURF_ID6='0 (Transversalmente 22.00 m)', '0 (Transversalmente 22.00 m)', '0 (Transversalmente 14.00 m)', '0 (Transversalmente 14.00 m)', '0', '0', XB=0.05, 22.05, -13.95, 0.05, -0.31, 0.09

  The OBST group is used to specify obstructions within the computational domain.

- &HOLE ID='GP1', XB=16.05, 20.05, -9.95, -5.95, -0.31, 0.09 /

  The HOLE namelist group defines parameters that carve a hole out of an existing obstruction or set of obstructions.

- &VENT ID='Malla (z-max)', SURF_ID='OPEN', XB=-2.15, 24.25, -16.15, 2.25, 14.09, 14.09 /

  The VENT group is used to prescribe planes adjacent to obstructions or external walls.

- &DEVC ID='GP2 [1]', IOR=-2, QUANTITY='GAS TEMPERATURE', SETPOINT=600, XYZ=1.55, -3.15, 1.09 /

  Regardless of the specific properties, each device needs to be sited either at a point within the computational domain, or over a span of the domain.

  ID is the name of the device, and the user can choose the name he prefers

  XYZ indicates the coordinates (x,y,z) in which we want to measure the gas temperature

  QUANTITY command indicates which quantity we want to output with our device

- &CTRL ID='GP2', FUNCTION_TYPE='ANY', INITIAL_STATE=.TRUE., INPUT_ID='GP2 [1]', 'GP2 [2]' /

  There are many systems whose functionality cannot be described by a simple device with a single “setpoint.” More complicated behaviors can be modeled in FDS using CTRLs.

3.4 Observations

CYPE Fire FDS allows to create an FDS code for complex geometries in a very intuitive way. In addition, by allowing the import of BIM/IFC objects, the procedure is much more simplified. During its use some inconveniences have been detected:

- A minor issue found through the integration process was that the generated FDS code does not include the command “&HEAD CHID='name of the project'/”, necessary for PTV Vissim to import the FDS file results. As a solution, it was added manually in the fds file generated by CYPE Fire FDS. For an effective integration of both software packages, CYPE should add this simple line of code, which is something that is not expected to affect the internal flow of its program.
- The main problem that has been encountered at this point in the workflow is generating a visualization through CYPE Fire FDS is a time-consuming process that can take several days. Alternatively, it is easier to generate the results outside of the application and then view them in the application.

4 Pedestrian Simulation

Chapter 4 details the steps that have been followed to create the pedestrian simulation.

PTV Vissim can be used for traffic and transport planning. It provides a detailed view on the status of road traffic and its impacts, with the ability to define multiple what-if scenarios. It started as a traffic microsimulator, focused on the movement of vehicles. To be able to analyse the impact of vehicles on other users, modelling of other types of vehicles such as motorcycles and bicycles was implemented, and finally pedestrians were added. By adding the modelling of pedestrian behaviour, the tool evolved to form a separate software, Visswalk.

Vissim contains a fully operational version of Visswalk integrated. For the development of this work, Vissim version 2022 (academic licence) has been used, although only pedestrian movement tools were necessary.

4.1 PTV Vissim interface description

The interface of the tool is shown in Figure 4.1.

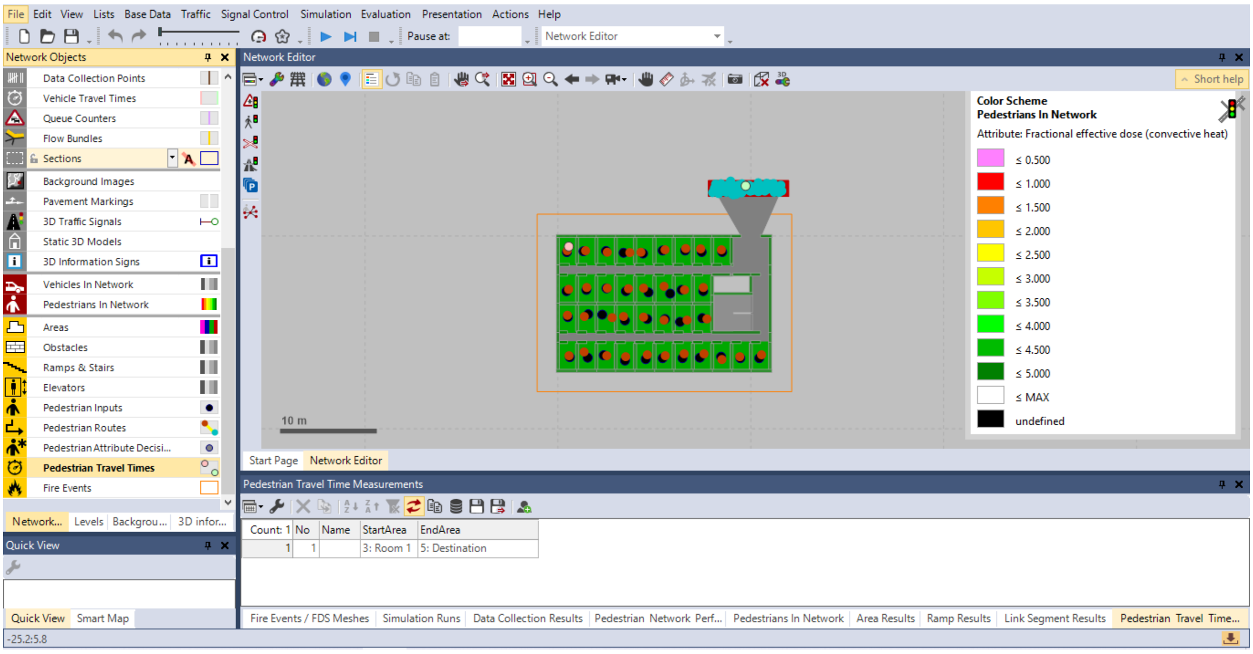


Figure 4.1 Vissim interface

During the development of this work, only tools related to pedestrians have been used. It is possible to visualize only the pedestrian tools by clicking on "Pedestrians Object Types Only" as in Figure 4.2.

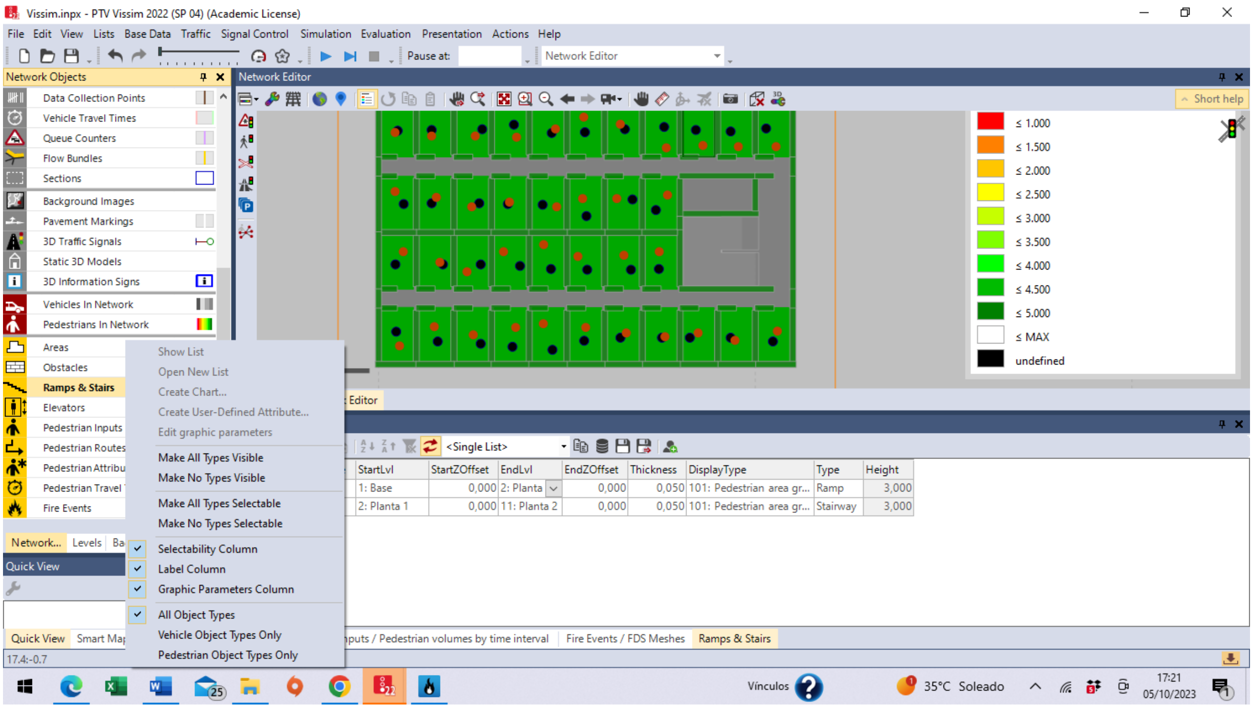


Figure 4.2 Pedestrians Object Types Only

4.1.1 Network objects

This menu allows to configure different aspects of the simulation.

- Areas, Obstacles, Ramps & Stairs: through this panel it is possible to modify the geometry of the building. In this case, it has been necessary to modify the floor area. Also, in IFC Builder it was not possible to insert a stair, which up to this point was not possible to have.
- Pedestrian inputs, Pedestrian Routes: from this menu input and output nodes for pedestrians have been created. Test case 8 of RiMea guide asked for 4 pedestrians for each office (Figure 4.3).

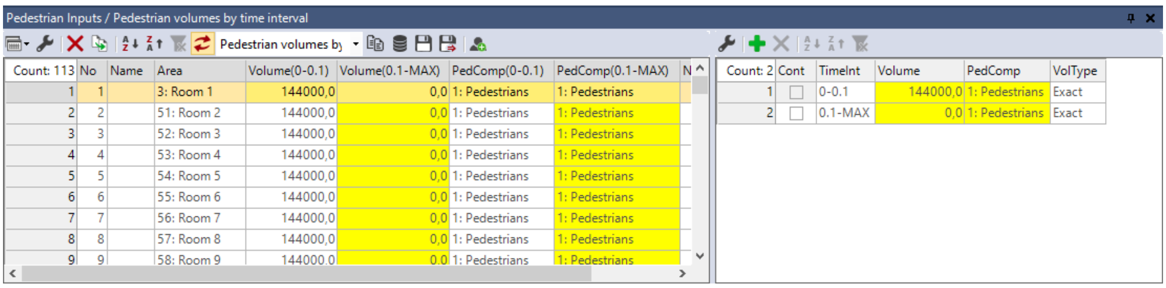


Figure 4.3 Configuration of the number of pedestrians inputs

Pedestrian inputs are measured in pedestrians per hour, a sudden appearance is not possible. That is why it is necessary to define a very small, negligible interval that contains the 4 individuals, and during the rest of the time, which is the real simulation interval, there is no entry of new users.

The walking speed on stairs can be recorded either by means of speed distribution or based on a reduction factor, which is multiplied by the walking speed in a flat surface. Simulation models must take account of the tendencies outlined in the literature with sufficient accuracy.

It is possible to define the characteristics of the population based on age, sex and walking speed. For this work, the default Vissim data has been used.

To define that the total number of pedestrians in an area (office) is equal to 4, two time intervals are defined; a very small one, in which the volume (pedestrians per hour) must be equal to 4 and another one, equal to zero.

$$f = \frac{4\,pedestrians}{0{,}1\,s} \cdot \frac{3600\,s}{1\,h} = 144000\,\frac{pedestrians}{h}\ in\ the\ first\ interval$$

During a first simulation, the complete time in which all pedestrians, with the speed configuration, evacuate the building can be calculated. In this first simulation, pedestrians begin to leave the building as soon as the fire starts, without considering the detection time.

To make it more realistic and know a more accurate influence of gases and fire on people's health, a second simulation would have to be run, adding an initial time interval with the duration of the detection time considered, in which no pedestrian leaves the building, and make the calculation of results from an FDS file with a longer simulation duration (total evacuation time + detection time).

- Fire events: from this menu an FDS document with the parameters of the simulation could be imported into Vissim. The results of the simulation must be in the same folder than the FDS file.

4.1.2 Network editor

Network Editor is the main window of the software, a tool that allows users to create and edit traffic networks for traffic and pedestrian simulations.

4.1.3 Lists

In PTV Vissim, "lists" are a tool used in the program interface to view and edit information about the objects that have been created in the traffic network. Lists are a way of presenting information in the form of a table, with rows and columns, which makes it easier to read and edit them.

4.2 Observations

At this point in the work, two obstacles have been encountered:

- When importing the BIM file, Vissim recognises the entire floor slab as a single pedestrian area. As only one pedestrian input is allowed for each area, the floor slab must be manually divided into different areas, as many as pedestrian inputs are desired.
- FDS changed the naming convention of .q result files. Vissim/Viswalk is not yet adapted to that change, hence, it requires to bulk change the names of the .q files to be able to have some visualization of the results. As an example, the generated result file is named as NAME_1_20p3.q, and it should be changed to NAME_1_20_3.q for Vissim to read it. In a simulation of this kind, around 2000 files are generated. Thus, changing all the names must be done with a macro, not

manually.

- Using PLOT3D_QUANTITY as an output vector allows only 5 result parameters from each FDS file. If more parameters are required, it would be necessary to double the number of FDS files, varying the result parameters to be shown.

5 RESULTS

Throughout the integration process, different input files have been created and other output files have been generated. Table 5.1 summarizes the flow of information among different software components:

SOFTWARE	INPUT	OUTPUT
IFC BUILDER	Parameters of the building	IFC File (.ifc)
CYPE FIRE FDS	IFC File (.ifc) Parameters of the fire simulation	FDS code (.fds/ .txt)
FDS RESULTS	FDS code (.fds)	FDS results files (.q)
PTV VISSIM	IFC File (.ifc) FDS reulsts files (.q) FDS code (.fds)	Vissim simulation (.inpx)

Table 5.2 Input and outputs of each software used

5.1 Results from IFC Builder

As output file, an IFC file with the geometry of the desired building is obtained. When working in IFC builder, the model is saved in BIM Server. While the primary focus of this research is on the IFC format, .dwg files are also generated with drawings of the various floors created.

Some examples of the visualization of the test case in this tool are shown in Figure 5.1 and Figure 5.2 .

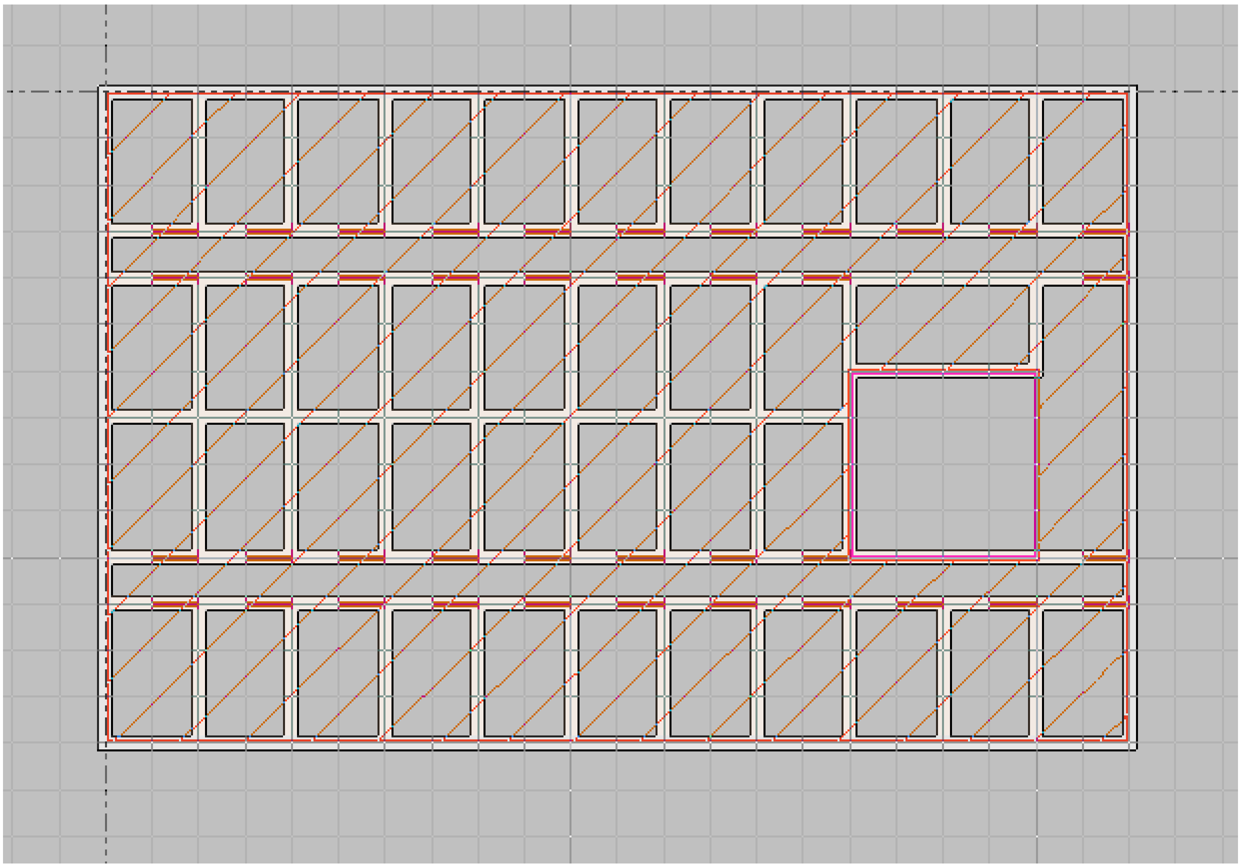


Figure 5.1 Floor plant of the test case in IFC Builder

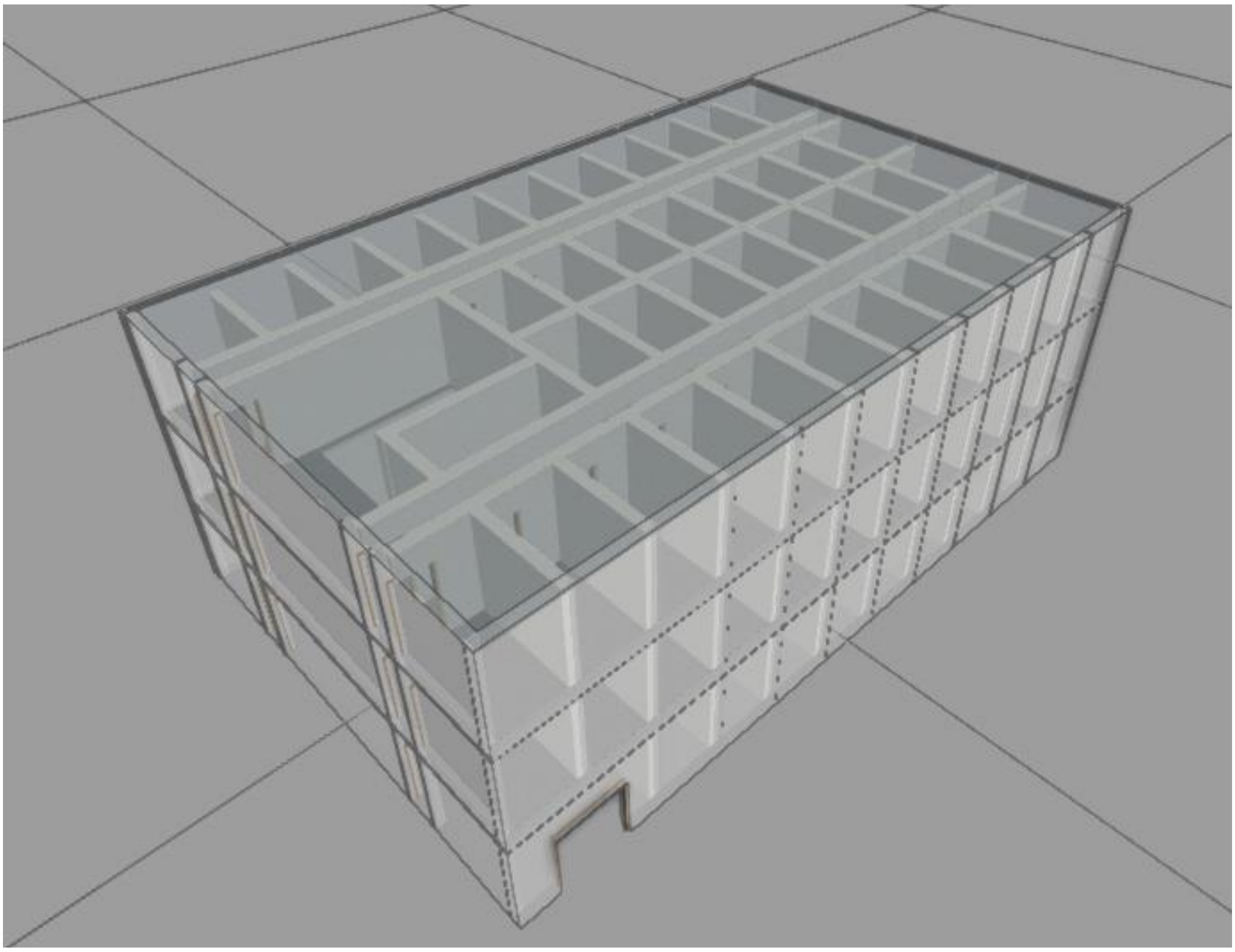


Figure 5.2 3D view of the test case building in IFC Builder

5.2 Results from CYPE Fire FDS

Starting from the building created in IFC/BIM format and entering the fire simulation conditions, it is possible to obtain an FDS file. The code for this file can be found in Annex A: FDS Code.

From the FDS file it is possible to obtain a series of simulation results files. These results can be obtained through CYPE Fire FDS, and viewed in this application through Smokeview, or externally. The generation of results from CYPE Fire FDS is much slower than the external, but in both cases, once obtained, the visualization can be done from Smokeview (CYPE Fire FDS). To view externally generated results, all these files will have to be inserted into a folder called FDS inside the folder where the work in progress is stored.

Some examples of the visualization of the test case in this tool are shown in Figure 5.3.

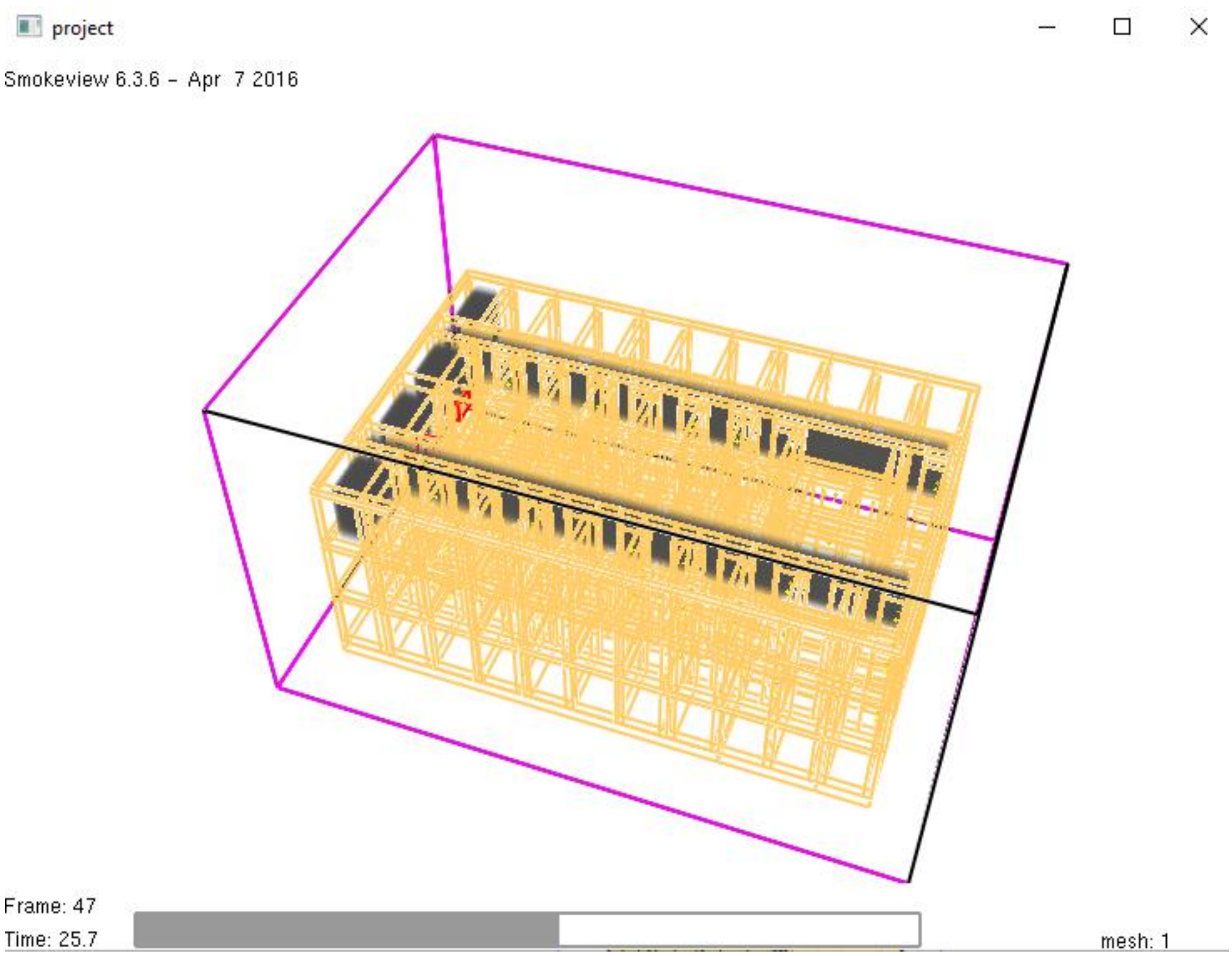


Figure 5.3 Smokeview

5.3 Results from PTV Vissim

PTV Vissim allows to export different parameters in database format (.db). The data options that can be exported are shown in Figure 5.4, those that are related to pedestrian simulation have been marked.

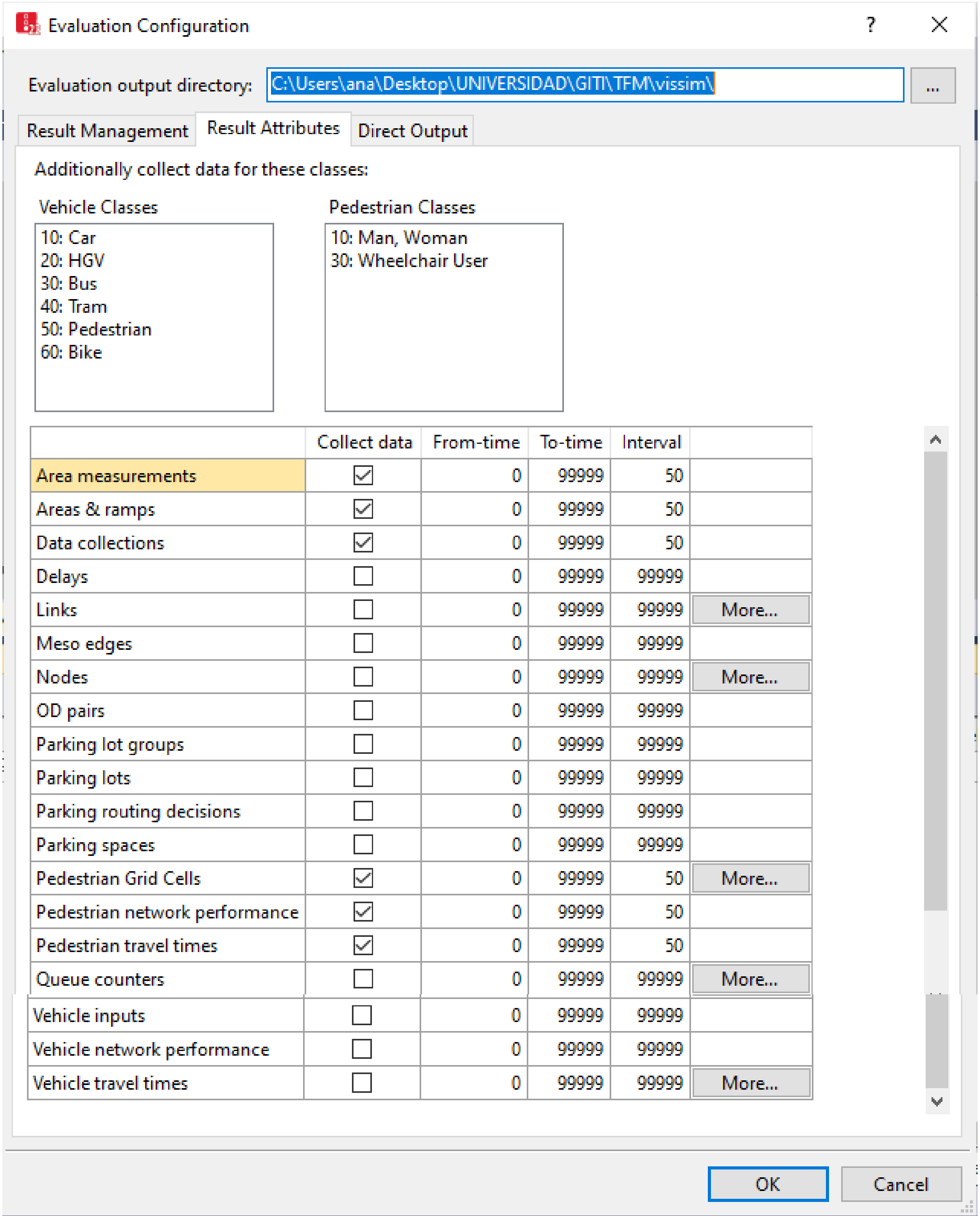


Figure 5.4 Collectible data in PTV Vissim

All attributes consider the pedestrians who have already left the network or reached their destination and the pedestrians who are still in the network at the end of the evaluation interval.

The results list "*Network performance results for pedestrians*" contains the following attributes:

RESULT ATTRIBUTE LONG NAME	SHORT NAME	DESCRIPTION
SIMULATION RUN	**SimRun**	Number of simulation run
TIME INTERVAL	**TimeInt**	Duration of the evaluation intervals in which the data is aggregated
PEDESTRIANS (ADDED)	**PedEnt**	Pedestrians that have newly been inserted into the network
PEDESTRIANS (ARRIVED)	**PedArr**	Pedestrians arrived: Total number of pedestrians who have already reached their destination and have been removed from the network before the end of the simulation.
PEDESTRIANS (ACTIVE)	**FgAct**	Total number of pedestrians in the network at the end of the simulation. Pedestrians arriving PedArr (Pedestrians (arrived)) and pedestrians not used in the network are not included in the attribute Pedestrians (active).
DICHDENSITY (AVERAGE)	**DensAvg**	Average pedestrian density: ratio of pedestrians in the network to walkable areas.
SPEED (AVERAGE)	**SpeedAvg**	Average speed [km/h] or [mph] *Total distance DistTot / Total travel time TravTmTot*
FLOW (AVERAGE)	**FlowAvg**	Product of current speed, averaged over all pedestrians and the current density
TRAVEL TIME (AVERAGE)	**TravTmAvg**	Average travel time of pedestrians traveling within the network or who have already been removed from the network.
FLOW TOWARDS DESTINATION (AVERAGE)	**FlowToDestAvg**	Product of current speed, averaged over pedestrians and current density, accounting for static potential and position of each pedestrian.
SPEED TOWARDS DESTINATION (AVERAGE)	**SpeedToDestAvg**	Average speed [km/h] or [mph] *Total distance DistTot / Total travel time TravTmTot* accounting for the static potential and position of each pedestrian
STOPS (AVERAGE)	**StopsAvg**	Average number of stops per pedestrian: *Total number of stops / (Number of ped in the network + number of ped that have arrived)*
DELAY STOPPED (AVERAGE)	**DelayStopAvg**	Average time of stop

NORMALIZED SPEED (AVERAGE)	**NormSpeedAvg**	Ratio of actual speed over desired speed, averaged over pedestrians and time steps.

Table 5.3 Network performance results list [5]

It is possible to generate area measurements that record data of pedestrian areas with sections. Result attributes can be displayed and stored in evaluations and lists. To allow an area measurement to record data, the following conditions must be satisfied:

- At least one section must be defined in the network. If sections are placed on top of pedestrian areas, they can record pedestrian area data.
- At least one area measurement must be defined or generated and assigned to at least one section.
- At least one pedestrian input and one pedestrian route must be defined in the pedestrian area.

RESULT ATTRIBUTE LONG NAME	SHORT NAME	DESCRIPTION
NUMBER OF PEDESTRIANS (MAXIMUM), (MINIMUM), (AVERAGE)	**NumPedsMax, NumPedsMin, NumPedsAvg**	maximum, minimum number of vehicles in sections, average number in sections
NUMBER OF STOPS	**NumStops**	Number of stops during the evaluation interval. A pedestrian counts as standing still if his speed is less than 0.2 m/s.
LEAVE TIME MAXIMUM), (MINIMUM), (AVERAGE)	**tLeavMax, tLeavMin, tLeavAvg**	first, last, and average point in time all pedestrians leave the sections [simulation second]
ORIENTATION X	**OrientXAvg**	Average of the x component of the orientation vectors
ORIENTATION Y	**OrientYAvg**	Average of the y component of the orientation vectors
WALK-OUT COUNT	**WalkOutCnt**	Number of pedestrians who have left sections This does not include passengers boarding PT vehicles.
DENSITY (MAXIMUM), (MINIMUM), (AVERAGE)	**DensMax, DensMin, DensAvg**	Pedestrian density in sections
DENSITY EXPERIENCED (MAXIMUM), (MINIMUM),	**DensityExp**	Pedestrian density experienced within the perception radius of a pedestrian

(AVERAGE)		
ENTRY TIME (MAXIMUM), (MINIMUM), (AVERAGE)	**tEntMax, tEntMin, tEntAvg**	first, last, and average point in time all pedestrians reach the sections [simulation second]
WALK-IN COUNT	**WalkInCnt**	Number of pedestrians walking in the sections. Pedestrians from inputs and pedestrians alighting from PT vehicles are not counted.
AREA MEASUREMENTS	**AreaMeasurement**	Name and number of area measurement
TOTAL DISTANCE (MAXIMUM), (MINIMUM), (AVERAGE)	**TotDistMax, TotDistMin,TotDistAvg**	maximum, minimum and average total distance travelled in sections of all pedestrians who have left the sections during the aggregation interval
TOTAL TIME GAIN (AVERAGE)	**TotTmGainAvg**	average total time gain in sections for pedestrians who have left the sections during the aggregation interval
TOTAL DELAY (MAXIMUM), (MINIMUM), (AVERAGE)	**TotDelayMax, TotDelayMin, TotDelayAvg**	maximum, minimum and average total time delay in sections for pedestrians who have left the sections during the aggregation interval The total time delay refers to the sum of different time delays, for example waiting time at signal controller or obstruction due to other pedestrians.
TOTAL DWELL TIME (MAXIMUM), (MINIMUM), (AVERAGE)	**TotDwlTmMax, TotDwlTmMin, TotDwlTmAvg**	maximum, minimum and average total dwell time in sections of all pedestrians who have left the sections during the aggregation interval The total dwell time refers to the sum of different dwell times, for example waiting time at signal controller or travel time.
SPEED (MAXIMUM), (MINIMUM), (AVERAGE)	**SpeedMax, SpeedMin, SpeedAvg**	maximum, minimum and average speed
SPEED X-COMPONENT (MAXIMUM), (MINIMUM), (AVERAGE)	**SpeedXMax, SpeedXMin, SpeedXAvg**	maximum, minimum, and average speed of x-component of speed vector
SPEED Y-COMPONENT (MAXIMUM), (MINIMUM), (AVERAGE)	**SpeedYMax, SpeedYMin, SpeedYAvg**	maximum, minimum, and average speed of y-component of speed vector
SPEED DEVIATION	**SpeedDevAvg**	average deviation of pedestrian speeds

(AVERAGE)		
SPEED VARIANCE	**SpeedVar**	Vectorial speed differences of all pedestrians within the personal environment radius of their own speed
NEAREST NEIGHBOR DISTANCE (MAXIMUM), (MINIMUM), (AVERAGE)	**NearNeighbDistMax**, **NearNeighbDistMin**, **NearNeighbDistAvg**	Maximum, minimum and average distance to the center of the pedestrian to which the distance is lowest.
SOURCE QUANTITY	**SourceQu**	Number of pedestrians walking in the sections. This also includes pedestrians from inputs and pedestrians alighting from PT vehicles.
STOP DELAY (TOTAL)	**StopDelay Tot**	Total standstill time of pedestrians during the evaluation interval. A pedestrian counts as standing still if his speed is less than 0.2 m/s
DESIRED SPEED (AVERAGE)	**DesSpeedAvg**	average desired speed of all pedestrians
WORLD COORDINATE X (MAXIMUM), (MINIMUM), (AVERAGE)	**WorldXMax, WorldXMin WorldXAvg,**	maximum, minimum and average world coordinate x
WORLD COORDINATE Y (MAXIMUM), (MINIMUM), (AVERAGE)	**WorldYMax, WorldYMin, WorldYAvg**	maximum, minimum and average world coordinate y
WORLD COORDINATE Z (MAXIMUM), (MINIMUM), (AVERAGE)	**WorldZMax, WorldZMin, WorldZAvg**	maximum, minimum and average world coordinate z
TIME INTERVAL	**TimeInt**	Duration of the evaluation intervals in which the data is aggregated
DESTINATION COUNT	**DestCnt**	Number of pedestrians that will not be leaving the sections, e.g. because their route ends in one of them or they are alighting a PT vehicle.

Table 5.4 Area Measurement Results list [5]

In addition to exporting information in database format, it is possible to view the results in the form of graphs from PTV Vissim.

Also, it is possible to export the information by measuring at intervals, obtaining values of different parameters every defined interval of seconds.

As an example, in Figure 5.5 the evolution of the grid density of the exit area is represented along 50 s intervals.

It is possible to determine the density and speed of pedestrians based on grid cells. Grid cells that are only partially located on areas or ramps or partially occupied by obstacles are not considered pedestrian-friendly land. The position of the pedestrian is detected at the end of the time interval, for example at the time interval 5 to 6 s, it is detected at 6 s and is not detected at the beginning at 5.1 s.

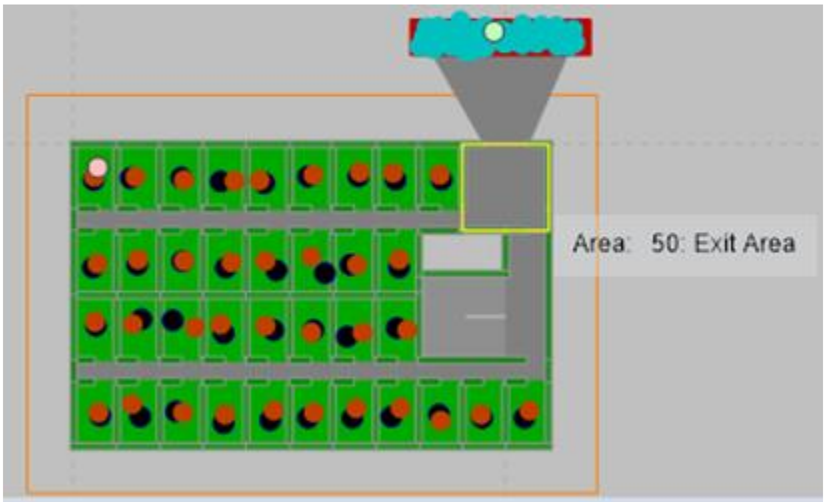


Figure 5.5 Exit area

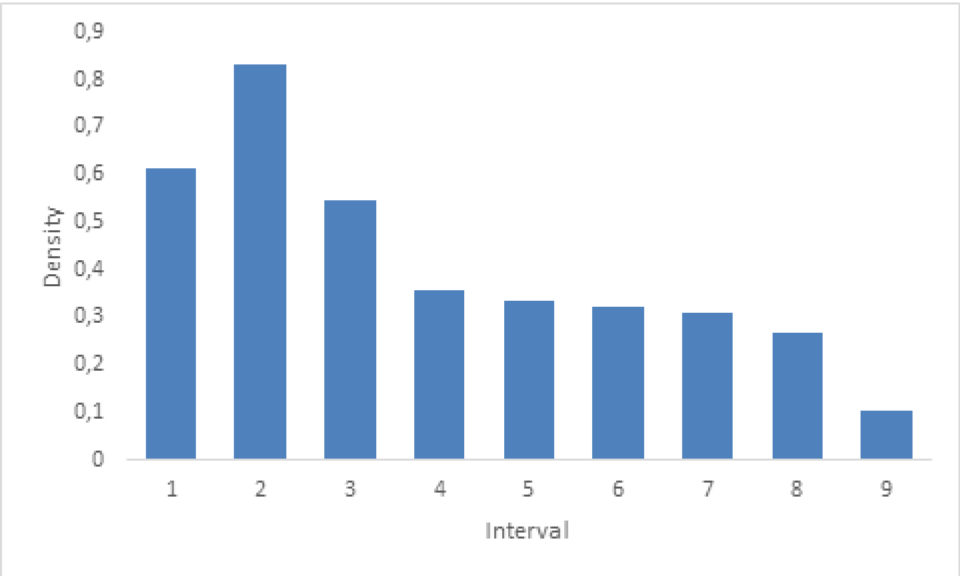


Figure 5.6 Evolution of the density of the exit area

CONCLUSIONS

This chapter summarizes the observations made throughout the different steps of the integration process. The technical detail of each of them can be seen in the observations of each corresponding chapter.

Regarding the modelling of the building, IFC Builder is useful and simple for orthogonal geometries, but is not for more complex ones. Furthermore, many architectural elements, such as stairs, cannot be defined, making its limited. In the development of test case 8, the insertion of stairs was an important input from the beginning of the project to be able to evaluate how fire and combustion gases spread through the building. As they could not be inserted until importing the model into Vissim, its effect on the fire simulation was not considered.

CYPE Fire FDS experience has been very positive for generating FDS files but not for displaying visualizations, as this process is very slow.

It should be noted how easy it is to modify the .fds file through the different interfaces of the tool, but it is only useful for this purpose. Some minor adjustments were necessary import the input fds file into Vissim, these were made manually.

A disadvantage detected during the use of CYPE Fire FDS is that it is not possible to import a file generated in CYPE Architecture to this tool, despite being a software supported by the same company. CYPE Architecture allows to create more complex geometries and insert architectural elements, such as stairs, which would have greatly simplified the simulation in this building.

Using Vissim as the final element of the integration allows to extract more simulation results than any other tool. In addition, the visualization of the fire simulation is much easier than through Smokeview (CYPE Fire FDS).

In this tool stairs could be included. This element is necessary for the pedestrians to be able to walk from one floor plant to another and it is also interesting from the visualization point of view but has no impact on the propagation of combustion gases and fire, which is not realistic.

As drawbacks, some manipulations had to be done manually to be able to run the simulation. As there can be only one pedestrian input per area, and in the IFC model every floor plan was designed as one big area, it was mandatory to introduce several pedestrian inputs to divide the three original areas into several parts, one per office. Also, there had to be a manipulation in the naming of the results files, as Vissim needs a specific structure of name files that is not automatically generated when obtaining the results, considering there were thousands of result files, this could not be done manually.

Throughout the integration process, some issues have been detected that could be further explored.

Designing ifc elements with Python could be the solution to insert those that cannot be defined with IFC builder, such as stairs. This idea requires some programming knowledge and time to develop it, so it has not been done for this work, but some tests were done, and it is possible to define ifc elements and import them later into CYPE. The code used to generate a staircase has been included in Annex B. The python code reads the ladder from Vissim, which would have to be manually added to the fds. CYPE could generate a more refined code that would perform these transformations, in order to generate more complex scenarios.

Regarding the evaluation of the effect of combustion gas concentrations, temperature and fire propagation on pedestrians, iterations of different simulations have not been carried out, but it could be interesting to vary parameters and study their evolution. In addition, it could be verified that the evacuation routes are correctly designed to guarantee the safety of the entire population.

It is important to highlight the advantages of using different tools to carry out the simulation. Once the problems during the integration have been detected, it is much faster to work in different environments than in only one. On the other hand, it is possible to obtain more and richer variety of results by using different applications.

ANNEX A: FDS CODE

```
&HEAD CHID='job1', TITLE='job1' //
&TIME T_END=565 /
&MATL ID='0', CONDUCTIVITY=0.1, DENSITY=500, SPECIFIC_HEAT=1 /

&SURF ID='0 (Transversalmente 22.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=22, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 14.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=14, VEL=0, WIDTH=1 /
&SURF ID='0', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=0.3, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 2.20 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=2.2, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 3.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=3, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 2.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=2, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 2.80 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=2.8, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 1.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=1, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 6.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=6, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 2.60 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=2.6, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 1.80 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=1.8, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 4.00 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=4, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 5.80 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=5.8, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 0.80 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=0.8, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 3.20 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=3.2, VEL=0, WIDTH=1 /
&SURF ID='0 (Transversalmente 4.20 m)', BACKING='VOID', LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, THICKNESS(1)=4.2, VEL=0, WIDTH=1 /
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&SURF ID='BURNER', BACKING='VOID', HRRPUA=1000, LENGTH=1, MATL_ID(1,1)='0', MATL_MASS_FRACTION(1,1)=1, RGB=255, 0, 0, THICKNESS(1)=0.3, VEL=0, WIDTH=1 /

&REAC ID='REACCION', C=1, H=1.2, O=0.2, N=0.08, CO_YIELD=0.024, SOOT_H_FRACTION=0, SOOT_YIELD=0.113 /

&MESH ID='Malla', IJK=88, 52, 52, XB=-2.15, 24.25, -16.15, 2.25, -1.31, 14.09 /

&OBST ID='WL1', SURF_ID6='0 (Transversalmente 22.00 m)', '0 (Transversalmente 22.00 m)', '0 (Transversalmente 14.00 m)', '0 (Transversalmente 14.00 m)', '0', '0', XB=0.05, 22.05, -13.95, 0.05, -0.31, 0.09 /

&OBST ID='WL2', SURF_ID6='0 (Transversalmente 22.00 m)', '0 (Transversalmente 22.00 m)', '0 (Transversalmente 14.00 m)', '0 (Transversalmente 14.00 m)', '0', '0', XB=0.05, 22.05, -13.95, 0.05, 2.69, 3.09 /

&OBST ID='WL3', SURF_ID6='0 (Transversalmente 22.00 m)', '0 (Transversalmente 22.00 m)', '0 (Transversalmente 14.00 m)', '0 (Transversalmente 14.00 m)', '0', '0', XB=0.05, 22.05, -13.95, 0.05, 5.69, 6.09 /

&OBST ID='WL4', SURF_ID6='0 (Transversalmente 22.00 m)', '0 (Transversalmente 22.00 m)', '0 (Transversalmente 14.00 m)', '0 (Transversalmente 14.00 m)', '0', '0', XB=0.05, 22.05, -13.95, 0.05, 8.69, 9.09 /

&OBST ID='WL5', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 2.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL6', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=2.05, 4.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL7', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=4.05, 6.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL8', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=6.05, 8.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL9', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=8.05, 10.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL10', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=10.05, 12.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL11', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=12.05, 14.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL12', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=14.05, 16.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL13', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=16.05, 18.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL14', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=18.05, 20.05, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL15', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=20.05, 22.25, -0.15, 0.25, 0.09, 3.09 /

&OBST ID='WL16', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -2.95, -0.15, 0.09, 3.09 /

&OBST ID='WL17', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -3.95, -2.95, 0.09, 3.09 /

&OBST ID='WL18', SURF_ID6='0', '0', '0 (Transversalmente 6.00 m)', '0 (Transversalmente 6.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -9.95, -3.95, 0.09, 3.09 /

&OBST ID='WL19', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -10.95, -9.95, 0.09, 3.09 /

&OBST ID='WL20', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -13.95, -10.95, 0.09, 3.09 /

&OBST ID='WL21', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=20.05, 22.25, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL22', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=18.05, 20.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL23', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=16.05, 18.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL24', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=14.05, 16.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL25', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=12.05, 14.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL26', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=10.05, 12.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL27', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=8.05, 10.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL28', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=6.05, 8.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL29', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=4.05, 6.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL30', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=2.05, 4.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL31', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 2.05, -14.15, -13.75, 0.09, 3.09 /

&OBST ID='WL32', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -13.95, -10.95, 0.09, 3.09 /

&OBST ID='WL33', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -10.95, -9.95, 0.09, 3.09 /

&OBST ID='WL34', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -9.95, -6.95, 0.09, 3.09 /

&OBST ID='WL35', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -6.95, -3.95, 0.09, 3.09 /

&OBST ID='WL36', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -3.95, -2.95, 0.09, 3.09 /

&OBST ID='WL37', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -2.95, -0.15, 0.09, 3.09 /

&OBST ID='WL38', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL39', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL40', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0

(Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL41', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL42', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL43', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL44', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL45', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL46', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 18.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL47', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=18.05, 20.05, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL48', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -3.15, -2.75, 0.09, 2.69 /

&OBST ID='WL49', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL50', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL51', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL52', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL53', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL54', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL55', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL56', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL57', SURF_ID6='0 (Transversalmente 4.00 m)', '0 (Transversalmente 4.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 20.05, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL58', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -4.15, -3.75, 0.09, 2.69 /

&OBST ID='WL59', SURF_ID6='0 (Transversalmente 5.80 m)', '0 (Transversalmente 5.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 21.85, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL60', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL61', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL62', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL63', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL64', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL65', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL66', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL67', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -10.15, -9.75, 0.09, 2.69 /

&OBST ID='WL68', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL69', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL70', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL71', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL72', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL73', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL74', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL75', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL76', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 18.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL77', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=18.05, 20.05, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL78', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -11.15, -10.75, 0.09, 2.69 /

&OBST ID='WL79', SURF_ID6='0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -6.15, -4.15, 0.09, 2.69 /

&OBST ID='WL80', SURF_ID6='0', '0', '0 (Transversalmente 0.80 m)', '0 (Transversalmente 0.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -6.95, -6.15, 0.09, 2.69 /

&OBST ID='WL81', SURF_ID6='0', '0', '0 (Transversalmente 3.20 m)', '0 (Transversalmente 3.20 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -9.95, -6.75, 0.09, 2.69 /

&OBST ID='WL82', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 15.85, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL83', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL84', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL85', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0

(Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL86', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL87', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL88', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL89', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -7.15, -6.75, 0.09, 2.69 /

&OBST ID='WL90', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -6.95, -4.15, 0.09, 2.69 /

&OBST ID='WL91', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -6.95, -4.15, 0.09, 2.69 /

&OBST ID='WL92', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -6.95, -4.15, 0.09, 2.69 /

&OBST ID='WL93', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -6.95, -4.15, 0.09, 2.69 /

&OBST ID='WL94', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -6.95, -4.15, 0.09, 2.69 /

&OBST ID='WL95', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -6.95, -4.15, 0.09, 2.69 /

&OBST ID='WL96', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -6.95, -4.15, 0.09, 2.69 /

&OBST ID='WL97', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -9.95, -7.15, 0.09, 2.69 /

&OBST ID='WL98', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -9.95, -7.15, 0.09, 2.69 /

&OBST ID='WL99', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -9.95, -7.15, 0.09, 2.69 /

&OBST ID='WL100', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -9.95, -7.15, 0.09, 2.69 /

&OBST ID='WL101', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -9.95, -7.15, 0.09, 2.69 /

&OBST ID='WL102', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -9.95, -7.15, 0.09, 2.69 /

&OBST ID='WL103', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -9.95, -7.15, 0.09, 2.69 /

&OBST ID='WL104', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL105', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL106', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL107', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL108', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL109', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL110', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL111', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL112', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=17.85, 18.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL113', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -13.95, -11.15, 0.09, 2.69 /

&OBST ID='WL114', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL115', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL116', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL117', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL118', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL119', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL120', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL121', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL122', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=17.85, 18.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL123', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -2.95, -0.15, 0.09, 2.69 /

&OBST ID='WL124', SURF_ID6='0', '0', '0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -5.95, -4.15, 0.09, 2.69 /

&OBST ID='WL125', SURF_ID6='0 (Transversalmente 4.20 m)', '0 (Transversalmente 4.20 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 20.25, -6.15, -5.75, 0.09, 2.69 /

&OBST ID='WL126', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 2.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL127', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=2.05, 4.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL128', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=4.05, 6.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL129', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=6.05, 8.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL130', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0

(Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=8.05, 10.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL131', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=10.05, 12.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL132', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=12.05, 14.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL133', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=14.05, 16.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL134', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=16.05, 18.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL135', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=18.05, 20.05, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL136', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=20.05, 22.25, -0.15, 0.25, 3.09, 6.09 /

&OBST ID='WL137', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -2.95, -0.15, 3.09, 6.09 /

&OBST ID='WL138', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -3.95, -2.95, 3.09, 6.09 /

&OBST ID='WL139', SURF_ID6='0', '0', '0 (Transversalmente 6.00 m)', '0 (Transversalmente 6.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -9.95, -3.95, 3.09, 6.09 /

&OBST ID='WL140', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -10.95, -9.95, 3.09, 6.09 /

&OBST ID='WL141', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -13.95, -10.95, 3.09, 6.09 /

&OBST ID='WL142', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=20.05, 22.25, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL143', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=18.05, 20.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL144', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=16.05, 18.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL145', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=14.05, 16.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL146', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=12.05, 14.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL147', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=10.05, 12.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL148', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=8.05, 10.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL149', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=6.05, 8.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL150', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=4.05, 6.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL151', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=2.05, 4.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL152', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 2.05, -14.15, -13.75, 3.09, 6.09 /

&OBST ID='WL153', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -13.95, -10.95, 3.09, 6.09 /

&OBST ID='WL154', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -10.95, -9.95, 3.09, 6.09 /

&OBST ID='WL155', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -9.95, -6.95, 3.09, 6.09 /

&OBST ID='WL156', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -6.95, -3.95, 3.09, 6.09 /

&OBST ID='WL157', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -3.95, -2.95, 3.09, 6.09 /

&OBST ID='WL158', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -2.95, -0.15, 3.09, 6.09 /

&OBST ID='WL159', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL160', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL161', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL162', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL163', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL164', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL165', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL166', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL167', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 18.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL168', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=18.05, 20.05, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL169', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -3.15, -2.75, 3.09, 5.69 /

&OBST ID='WL170', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL171', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL172', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL173', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL174', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL175', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0

(Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL176', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL177', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL178', SURF_ID6='0 (Transversalmente 4.00 m)', '0 (Transversalmente 4.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 20.05, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL179', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -4.15, -3.75, 3.09, 5.69 /

&OBST ID='WL180', SURF_ID6='0 (Transversalmente 5.80 m)', '0 (Transversalmente 5.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 21.85, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL181', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL182', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL183', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL184', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL185', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL186', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL187', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL188', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -10.15, -9.75, 3.09, 5.69 /

&OBST ID='WL189', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL190', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL191', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL192', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL193', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL194', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL195', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL196', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL197', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 18.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL198', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=18.05, 20.05, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL199', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -11.15, -10.75, 3.09, 5.69 /

&OBST ID='WL200', SURF_ID6='0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -6.15, -4.15, 3.09, 5.69 /

&OBST ID='WL201', SURF_ID6='0', '0', '0 (Transversalmente 0.80 m)', '0 (Transversalmente 0.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -6.95, -6.15, 3.09, 5.69 /

&OBST ID='WL202', SURF_ID6='0', '0', '0 (Transversalmente 3.20 m)', '0 (Transversalmente 3.20 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -9.95, -6.75, 3.09, 5.69 /

&OBST ID='WL203', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 15.85, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL204', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL205', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL206', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL207', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL208', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL209', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL210', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -7.15, -6.75, 3.09, 5.69 /

&OBST ID='WL211', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -6.95, -4.15, 3.09, 5.69 /

&OBST ID='WL212', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -6.95, -4.15, 3.09, 5.69 /

&OBST ID='WL213', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -6.95, -4.15, 3.09, 5.69 /

&OBST ID='WL214', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -6.95, -4.15, 3.09, 5.69 /

&OBST ID='WL215', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -6.95, -4.15, 3.09, 5.69 /

&OBST ID='WL216', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -6.95, -4.15, 3.09, 5.69 /

&OBST ID='WL217', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -6.95, -4.15, 3.09, 5.69 /

&OBST ID='WL218', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -9.95, -7.15, 3.09, 5.69 /

&OBST ID='WL219', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -9.95, -7.15, 3.09, 5.69 /

&OBST ID='WL220', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0

(Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -9.95, -7.15, 3.09, 5.69 /

&OBST ID='WL221', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -9.95, -7.15, 3.09, 5.69 /

&OBST ID='WL222', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -9.95, -7.15, 3.09, 5.69 /

&OBST ID='WL223', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -9.95, -7.15, 3.09, 5.69 /

&OBST ID='WL224', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -9.95, -7.15, 3.09, 5.69 /

&OBST ID='WL225', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL226', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL227', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL228', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL229', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL230', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL231', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL232', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL233', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=17.85, 18.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL234', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -13.95, -11.15, 3.09, 5.69 /

&OBST ID='WL235', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL236', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL237', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL238', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL239', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL240', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL241', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL242', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL243', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=17.85, 18.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL244', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -2.95, -0.15, 3.09, 5.69 /

&OBST ID='WL245', SURF_ID6='0', '0', '0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -5.95, -4.15, 3.09, 5.69 /

&OBST ID='WL246', SURF_ID6='0 (Transversalmente 4.20 m)', '0 (Transversalmente 4.20 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 20.25, -6.15, -5.75, 3.09, 5.69 /

&OBST ID='WL247', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 2.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL248', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=2.05, 4.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL249', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=4.05, 6.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL250', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=6.05, 8.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL251', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=8.05, 10.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL252', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=10.05, 12.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL253', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=12.05, 14.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL254', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=14.05, 16.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL255', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=16.05, 18.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL256', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=18.05, 20.05, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL257', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=20.05, 22.25, -0.15, 0.25, 6.09, 9.09 /

&OBST ID='WL258', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -2.95, -0.15, 6.09, 9.09 /

&OBST ID='WL259', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -3.95, -2.95, 6.09, 9.09 /

&OBST ID='WL260', SURF_ID6='0', '0', '0 (Transversalmente 6.00 m)', '0 (Transversalmente 6.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -9.95, -3.95, 6.09, 9.09 /

&OBST ID='WL261', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -10.95, -9.95, 6.09, 9.09 /

&OBST ID='WL262', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=21.85, 22.25, -13.95, -10.95, 6.09, 9.09 /

&OBST ID='WL263', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=20.05, 22.25, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL264', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=18.05, 20.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL265', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0

(Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=16.05, 18.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL266', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=14.05, 16.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL267', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=12.05, 14.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL268', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=10.05, 12.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL269', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=8.05, 10.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL270', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=6.05, 8.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL271', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=4.05, 6.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL272', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=2.05, 4.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL273', SURF_ID6='0 (Transversalmente 2.20 m)', '0 (Transversalmente 2.20 m)', '0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 2.05, -14.15, -13.75, 6.09, 9.09 /

&OBST ID='WL274', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -13.95, -10.95, 6.09, 9.09 /

&OBST ID='WL275', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -10.95, -9.95, 6.09, 9.09 /

&OBST ID='WL276', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -9.95, -6.95, 6.09, 9.09 /

&OBST ID='WL277', SURF_ID6='0', '0', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -6.95, -3.95, 6.09, 9.09 /

&OBST ID='WL278', SURF_ID6='0', '0', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -3.95, -2.95, 6.09, 9.09 /

&OBST ID='WL279', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 3.00 m)', '0 (Transversalmente 3.00 m)', XB=-0.15, 0.25, -2.95, -0.15, 6.09, 9.09 /

&OBST ID='WL280', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL281', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL282', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL283', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL284', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL285', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL286', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL287', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL288', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 18.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL289', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=18.05, 20.05, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL290', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -3.15, -2.75, 6.09, 8.69 /

&OBST ID='WL291', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL292', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL293', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL294', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL295', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL296', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL297', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL298', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL299', SURF_ID6='0 (Transversalmente 4.00 m)', '0 (Transversalmente 4.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 20.05, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL300', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -4.15, -3.75, 6.09, 8.69 /

&OBST ID='WL301', SURF_ID6='0 (Transversalmente 5.80 m)', '0 (Transversalmente 5.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 21.85, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL302', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL303', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL304', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL305', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL306', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL307', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL308', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL309', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -10.15, -9.75, 6.09, 8.69 /

&OBST ID='WL310', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0

(Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL311', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL312', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL313', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL314', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL315', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL316', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL317', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 16.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL318', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 18.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL319', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=18.05, 20.05, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL320', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=20.05, 21.85, -11.15, -10.75, 6.09, 8.69 /

&OBST ID='WL321', SURF_ID6='0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -6.15, -4.15, 6.09, 8.69 /

&OBST ID='WL322', SURF_ID6='0', '0', '0 (Transversalmente 0.80 m)', '0 (Transversalmente 0.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -6.95, -6.15, 6.09, 8.69 /

&OBST ID='WL323', SURF_ID6='0', '0', '0 (Transversalmente 3.20 m)', '0 (Transversalmente 3.20 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -9.95, -6.75, 6.09, 8.69 /

&OBST ID='WL324', SURF_ID6='0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=14.05, 15.85, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL325', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=12.05, 14.05, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL326', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=10.05, 12.05, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL327', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=8.05, 10.05, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL328', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=6.05, 8.05, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL329', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=4.05, 6.05, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL330', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=2.05, 4.05, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL331', SURF_ID6='0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=0.05, 2.05, -7.15, -6.75, 6.09, 8.69 /

&OBST ID='WL332', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -6.95, -4.15, 6.09, 8.69 /

&OBST ID='WL333', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -6.95, -4.15, 6.09, 8.69 /

&OBST ID='WL334', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -6.95, -4.15, 6.09, 8.69 /

&OBST ID='WL335', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -6.95, -4.15, 6.09, 8.69 /

&OBST ID='WL336', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -6.95, -4.15, 6.09, 8.69 /

&OBST ID='WL337', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -6.95, -4.15, 6.09, 8.69 /

&OBST ID='WL338', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -6.95, -4.15, 6.09, 8.69 /

&OBST ID='WL339', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -9.95, -7.15, 6.09, 8.69 /

&OBST ID='WL340', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -9.95, -7.15, 6.09, 8.69 /

&OBST ID='WL341', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -9.95, -7.15, 6.09, 8.69 /

&OBST ID='WL342', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -9.95, -7.15, 6.09, 8.69 /

&OBST ID='WL343', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -9.95, -7.15, 6.09, 8.69 /

&OBST ID='WL344', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -9.95, -7.15, 6.09, 8.69 /

&OBST ID='WL345', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -9.95, -7.15, 6.09, 8.69 /

&OBST ID='WL346', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL347', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL348', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL349', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL350', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL351', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL352', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL353', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL354', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=17.85, 18.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL355', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0

(Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -13.95, -11.15, 6.09, 8.69 /

&OBST ID='WL356', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=1.85, 2.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL357', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=3.85, 4.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL358', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=5.85, 6.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL359', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=7.85, 8.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL360', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=9.85, 10.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL361', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=11.85, 12.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL362', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=13.85, 14.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL363', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=15.85, 16.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL364', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=17.85, 18.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL365', SURF_ID6='0', '0', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -2.95, -0.15, 6.09, 8.69 /

&OBST ID='WL366', SURF_ID6='0', '0', '0 (Transversalmente 1.80 m)', '0 (Transversalmente 1.80 m)', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=19.85, 20.25, -5.95, -4.15, 6.09, 8.69 /

&OBST ID='WL367', SURF_ID6='0 (Transversalmente 4.20 m)', '0 (Transversalmente 4.20 m)', '0', '0', '0 (Transversalmente 2.60 m)', '0 (Transversalmente 2.60 m)', XB=16.05, 20.25, -6.15, -5.75, 6.09, 8.69 /

&OBST ID='GP2', CTRL_ID='GP2', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP3', CTRL_ID='GP3', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP4', CTRL_ID='GP4', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP5', CTRL_ID='GP5', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP6', CTRL_ID='GP6', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP7', CTRL_ID='GP7', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP8', CTRL_ID='GP8', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP9', CTRL_ID='GP9', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP10', CTRL_ID='GP10', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=17.05, 18.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP11', CTRL_ID='GP11', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=19.05, 20.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP12', CTRL_ID='GP12', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -3.15, -2.75, 0.09, 2.09 /

&OBST ID='GP13', CTRL_ID='GP13', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP14', CTRL_ID='GP14', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP15', CTRL_ID='GP15', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP16', CTRL_ID='GP16', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP17', CTRL_ID='GP17', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP18', CTRL_ID='GP18', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP19', CTRL_ID='GP19', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP20', CTRL_ID='GP20', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP21', CTRL_ID='GP21', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -4.15, -3.75, 0.09, 2.09 /

&OBST ID='GP22', CTRL_ID='GP22', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP23', CTRL_ID='GP23', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP24', CTRL_ID='GP24', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP25', CTRL_ID='GP25', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP26', CTRL_ID='GP26', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP27', CTRL_ID='GP27', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP28', CTRL_ID='GP28', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP29', CTRL_ID='GP29', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP30', CTRL_ID='GP30', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -10.15, -9.75, 0.09, 2.09 /

&OBST ID='GP31', CTRL_ID='GP31', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP32', CTRL_ID='GP32', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP33', CTRL_ID='GP33', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP34', CTRL_ID='GP34', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP35', CTRL_ID='GP35', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP36', CTRL_ID='GP36', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP37', CTRL_ID='GP37', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP38', CTRL_ID='GP38', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP39', CTRL_ID='GP39', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=17.05, 18.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP40', CTRL_ID='GP40', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=19.05, 20.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP41', CTRL_ID='GP41', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -11.15, -10.75, 0.09, 2.09 /

&OBST ID='GP43', CTRL_ID='GP43', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP44', CTRL_ID='GP44', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP45', CTRL_ID='GP45', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP46', CTRL_ID='GP46', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP47', CTRL_ID='GP47', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP48', CTRL_ID='GP48', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP49', CTRL_ID='GP49', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP50', CTRL_ID='GP50', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP51', CTRL_ID='GP51', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=17.05, 18.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP52', CTRL_ID='GP52', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=19.05, 20.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP53', CTRL_ID='GP53', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -3.15, -2.75, 3.09, 5.09 /

&OBST ID='GP54', CTRL_ID='GP54', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP55', CTRL_ID='GP55', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP56', CTRL_ID='GP56', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP57', CTRL_ID='GP57', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP58', CTRL_ID='GP58', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP59', CTRL_ID='GP59', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP60', CTRL_ID='GP60', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP61', CTRL_ID='GP61', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP62', CTRL_ID='GP62', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -4.15, -3.75, 3.09, 5.09 /

&OBST ID='GP63', CTRL_ID='GP63', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP64', CTRL_ID='GP64', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP65', CTRL_ID='GP65', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP66', CTRL_ID='GP66', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP67', CTRL_ID='GP67', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP68', CTRL_ID='GP68', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP69', CTRL_ID='GP69', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP70', CTRL_ID='GP70', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP71', CTRL_ID='GP71', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -10.15, -9.75, 3.09, 5.09 /

&OBST ID='GP72', CTRL_ID='GP72', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP73', CTRL_ID='GP73', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP74', CTRL_ID='GP74', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP75', CTRL_ID='GP75', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP76', CTRL_ID='GP76', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP77', CTRL_ID='GP77', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP78', CTRL_ID='GP78', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP79', CTRL_ID='GP79', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP80', CTRL_ID='GP80', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=17.05, 18.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP81', CTRL_ID='GP81', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=19.05, 20.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP82', CTRL_ID='GP82', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -11.15, -10.75, 3.09, 5.09 /

&OBST ID='GP84', CTRL_ID='GP84', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP85', CTRL_ID='GP85', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP86', CTRL_ID='GP86', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP87', CTRL_ID='GP87', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP88', CTRL_ID='GP88', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP89', CTRL_ID='GP89', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP90', CTRL_ID='GP90', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP91', CTRL_ID='GP91', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP92', CTRL_ID='GP92', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=17.05, 18.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP93', CTRL_ID='GP93', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=19.05, 20.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP94', CTRL_ID='GP94', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -3.15, -2.75, 6.09, 8.09 /

&OBST ID='GP95', CTRL_ID='GP95', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP96', CTRL_ID='GP96', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP97', CTRL_ID='GP97', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP98', CTRL_ID='GP98', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP99', CTRL_ID='GP99', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP100', CTRL_ID='GP100', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP101', CTRL_ID='GP101', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP102', CTRL_ID='GP102', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP103', CTRL_ID='GP103', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -4.15, -3.75, 6.09, 8.09 /

&OBST ID='GP104', CTRL_ID='GP104', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=21.05, 22.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP105', CTRL_ID='GP105', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP106', CTRL_ID='GP106', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP107', CTRL_ID='GP107', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP108', CTRL_ID='GP108', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP109', CTRL_ID='GP109', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP110', CTRL_ID='GP110', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP111', CTRL_ID='GP111', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP112', CTRL_ID='GP112', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -10.15, -9.75, 6.09, 8.09 /

&OBST ID='GP113', CTRL_ID='GP113', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=1.05, 2.05, -11.15, -10.75, 6.09, 8.09 /

&OBST ID='GP114', CTRL_ID='GP114', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=3.05, 4.05, -11.15, -10.75, 6.09, 8.09 /

&OBST ID='GP115', CTRL_ID='GP115', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=5.05, 6.05, -11.15, -10.75, 6.09, 8.09 /

&OBST ID='GP116', CTRL_ID='GP116', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=7.05, 8.05, -11.15, -10.75, 6.09, 8.09 /

&OBST ID='GP117', CTRL_ID='GP117', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=9.05, 10.05, -11.15, -10.75, 6.09, 8.09 /

&OBST ID='GP118', CTRL_ID='GP118', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=11.05, 12.05, -11.15, -10.75, 6.09, 8.09 /

&OBST ID='GP119', CTRL_ID='GP119', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=13.05, 14.05, -11.15, -10.75, 6.09, 8.09 /

&OBST ID='GP120', CTRL_ID='GP120', PERMIT_HOLE=.FALSE., SURF_ID6='0 (Transversalmente 1.00 m)', '0 (Transversalmente 1.00 m)', '0', '0', '0 (Transversalmente 2.00 m)', '0 (Transversalmente 2.00 m)', XB=15.05, 16.05, -11.15, -10.75, 6.09, 8.09 /

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ANNEX B: PYTHON CODE

```
# -*- coding: utf-8 -*-
"""
Created on Tue Sep 26 19:35:53 2023
convierte la escalera de Vissim al formato DFS
Es solo una demo de lo que se puede hacer, solo se diseña para el ejemplo usado
con la geometría en U y solo un rellano de escalera
@author: TPTLM
"""


import win32com.client
# import matplotlib.pyplot as plt
import os


def flightSteps(rectangle_points, z0,hStep, fSteps, orientacion):
    """
    Create a flight of stairs along x axis or Y axis, starting from z0 with
    fSteps=number of steps , each one of them with a height=hStep
    Returns:
    List of parallelepipeds as (x1, y1, z1, x2, y2, z2) steps.
    """# rectangle_points es el rectángulo del tramo de escaleras, visto desde arriba
(planta)
    # Separar las coordenadas x e y en vectores en una sola línea:
    xs, ys = zip(*rectangle_points)
    if(orientacion==0):
# Horizontal
        lstep=(xs[1]-xs[0])/fSteps
    else:
        # orientacion=1 #Vertical
        lstep=(ys[1]-ys[0])/fSteps
# Vamos a poner una escalera en U, con un descansillo.


    flight=[]
    # wstep=(y4-y1)
    cad="&OBST XB=x1,x2,y1,y2,z1,z2 SURF_ID='Sup_Escalera' "
    for i in range (1,fSteps):
        if (orientacion==0): #HORIZONTAL
            x1=xs[0]+(i-1)*lstep
            x2=xs[0]+(i+1)*lstep
            y1=ys[0]
            y2=ys[3]
```

```
            z1=z0+(i-1)*hStep
            z2=z1+hStep
        else:
            x1=xs[0]
            x2=xs[3]
            y1=ys[0]+(i-1)*lstep
            y2=ys[0]+(i+1)*lstep
            z1=z0+(i-1)*hStep
            z2=z1+hStep
        flight.append((x1, x2, y1,y2, z1,z2))
    return flight




def create_staircaseU(rectangle_points, z_range, nSteps,l,w, orientation):
    """
    Create a list of parallelepipeds forming a staircase given a matrix of 4 rows and 2
columns
    representing points that define a rectangle in (x, y) coordinates, and a z range
(z_inicio, z_final).

    Args:
    rectangle_points: A 4x2 matrix containing points defining the rectangle.
    z_range: A tuple containing the starting and ending z coordinates.
    orientation 0 Horizontal 1 Vertical

    Returns:
    List of parallelepipeds as (x1, x2, y1, y2, z1, z2) tuples.
    """
# rectangle_points es el rectángulo del tramo de escaleras, visto desde arriba (planta)
    print(f"create_staircaseU(RECT=
{rectangle_points},ZRANGE={z_range},NSteps={nSteps} l={l}  w={w}")
    # Separar las coordenadas x e y en vectores en una sola línea:
    xs, ys = zip(*rectangle_points)
    z0=z_range[0]
    z2=z_range[1]
    stepHeight=(z2-z0)/nSteps
    n2=nSteps//2   # Num de Escalones del segundo rellano
    n1=nSteps-n2  # Num de Escalones del primer rellano
    z1=z0+n1*stepHeight # esta es la ALTURA z DEL rellano de escaleras
    x0=xs[0]
    y0=ys[0]    # Considero 0 el primer punto del rectángulo y los criterios de signos
vienen dados pensando que es la esquina inferior del rectángulo
    if(orientation==0):
        print("Horizontal")
        orientacion=0  # Horizontal
        xf=xs[1]
        lengthFlight=(xf-x0)/abs(xf-x0)*l
```

```
        xINT=x0 +lengthFlight # o es xs[0]+l  (y para considerar posibles cambios de signo
con abs)
        ysup=ys[3]
        widthFlight=(ys[3]-ys[0])/abs(ys[3]-ys[0])*w
        yINT1=y0+widthFlight
        yINT2=ysup-widthFlight
        # Primera hilera de escaleras
        rect1=[[x0,y0],[xINT,y0],[xINT,yINT1],[x0,yINT1]]
        f1=flightSteps(rect1, z0,stepHeight, n1,orientacion)
        # Segunda hilera de escaleras
        rect2=[[xINT,yINT2],[x0,yINT2],[x0,ysup],[xINT,ysup]]
        f2=flightSteps(rect2, z1,stepHeight, n2,orientacion)
        rellano=[(xINT,xf,y0,ysup,z0+(n1-1)*stepHeight,z1)]

    else:
        print("Vertical")
        orientacion=1 #Vertical
        xf=xs[3]
        lengthFlight=(xf-x0)/abs(xf-x0)*l
        xINT1=x0 +lengthFlight # o es xs[0]+l  (y para considerar posibles cambios de
signo con abs)
        xINT2=xf -lengthFlight # o es xs[0]+l  (y para considerar posibles cambios de signo
con abs)
        y0=ys[0]
        ysup=ys[2]
        widthFlight=(ys[3]-ys[0])/abs(ys[3]-ys[0])*w
        yINT=y0+widthFlight
        rect1=[[x0,y0],[xINT1,y0],[xINT1,yINT],[x0,yINT]]
        f1=flightSteps(rect1, z0,stepHeight, n1,orientacion)

        rect2=[[xINT2,yINT],[xINT2,y0],[xf,y0],[xf,yINT]]
        f2=flightSteps(rect2, z1,stepHeight, n2,orientacion)
        rellano=(x0,xf,yINT,ysup,z0+(n1-1)*stepHeight,z1)

    staircase =f1+rellano+f2

    # staircase =f1+f2


    return staircase


# Obtén el directorio actual del script de Python
directorio_actual = os.path.dirname(os.path.abspath(__file__))
# Define el nombre del archivo de salida en el mismo directorio
archivo_salida = os.path.join(directorio_actual, 'ParaAñadirAlFDS.txt')

Vissim = win32com.client.Dispatch("Vissim.Vissim")
vissim_file_path = "D:\\OnedriveLM\OneDrive - UNIVERSIDAD DE
SEVILLA\\Tutorados\\Ana Cabrera Ramirez"
nombre_archivo = "23.01.19_IfcImport.inpx"
```

```
ruta_completa = os.path.join(vissim_file_path, nombre_archivo)
Vissim.LoadNet(ruta_completa)

# Diccionario con las alturas de los diferentes niveles.
zs= dict(Vissim.Net.Levels.GetMultipleAttributes(('No','zCoord')) )
# Obtener las coordenadas de los puntos de los objetos Ramp
ramp_objects = Vissim.Net.Ramps



# Me quedo con la primera rampa y voy a estudiar sus propiedades. Tener en cuenta
que se accede por la Key, no por el índice empezando en 0 como parece
# lógico en Python
ramp = Vissim.Net.Ramps.ItemByKey(1)
lvlInicio=ramp.AttValue('StartLvl')
lvlFinal=ramp.AttValue('Endlvl')
# print(f"Rampa {ramp.AttValue('Name')}, forma {ramp.AttValue('Form')} Nivel
inicial={lvlInicio} Nivel final={lvlFinal} ")
# print(f"Zinicial={zs[int(lvlInicio)]} Zfinal={zs[int(lvlFinal)]} ")
# print(f"Nro de escalones {ramp.AttValue('Steps')}")
# print(f"Nro de segmentos {ramp.Segments.Count}")
#  Los levels tienen de atributo zCoord  que habrá que obtenerlo para calcular las
escaleras

# Crear una matriz mx2 con las propiedades "x" y "y"
# Estas son las coordenadas del rectángulo
matriz = [[P.AttValue('X'),P.AttValue('Y')] for P in ramp.Points]
l,w=ramp.Segments.GetMultipleAttributes(('Length','Width'))[0]
strs=create_staircaseU(matriz, [zs[int(lvlInicio)],zs[int(lvlFinal)] ],
ramp.AttValue('Steps'),l,w,0 )
# Abre el archivo para escribir (machacando el existente)
with open(archivo_salida, 'w') as archivo:
    # Itera a través de las tuplas de coordenadas
    for tupla in strs:
        # Extrae los valores de la tupla
        if isinstance(tupla, tuple):
            x1, x2, y1, y2, z1, z2 = tupla
            cad = f"&OBST XB={x1},{x2},{y1},{y2},{z1},{z2} SURF_ID='Sup_Escalera' /"
            # Escribe la cadena en el archivo
            archivo.write(cad + '\n')
        else:
                print(f"La variable {tupla} no es una tupla válida.")



# Cerrar Vissim
Vissim = None
```

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