

# FHC - Hydraulic Calculation Report

Submitted by FHC user number: 1903  
Enarfire Consulting SAS  
Calle 15 # 17A - 51  
Funza 270522  
Cundinamarca  
Colombia

Project: JUDICATURA-CALI  
Project Ref: 2019-025  
Area Ref: Most Unfavourable  
Inst. Number: 1

Tel: 3123275887  
Fax:

## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : 2019-025  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : Oficinas Piso 18 Torre A  
Project Data File : 2019-025-ESC-01.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 8 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 68.80 m  
Number of pipes in system : 65 from 25 to 150 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 5.45 m/s in pipe 12 13  
Volume of pipework and fittings : 1.85 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 1009.2 l/min @ 11.179 bar at node no 1**

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Project Ref: 2019-025  
Area Ref: Most Unfavourable  
Inst. Number: 1

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## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : 2019-025  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : Oficinas Piso 18 Torre A  
Project Data File : 2019-025-ESC-01.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 8 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 68.80 m  
Number of pipes in system : 65 from 25 to 150 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 7.40 m/s in pipe 18 19  
Volume of pipework and fittings : 1.85 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 1317.4 l/min @ 15.698 bar at node no 1**

Water supply / pump curve : 750GPM@225PSI

Flow rates = 0 568 1135 1703 2270 2838 3406 3973 L/min

Pressures = 15.858 15.789 15.720 15.651 15.651 15.513 15.168 14.820 bar

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## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : ROCIADORES SOTANO 1  
Project Data File : 2019\_025\_ESC\_04.FHC  
Hazard classification : high risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m<sup>2</sup>)  
Assumed maximum area of operation : 0.00 m<sup>2</sup>  
Number of operating sprinkler heads : 8 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m<sup>2</sup>  
Highest head / nozzle above source : 5.80 m  
Number of pipes in system : 50 from 25 to 200 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 7.28 m/s in pipe 103 104  
Volume of pipework and fittings : 1.78 m<sup>3</sup>  
Elbows are welded for : 0 mm and above  
Comment : ---  
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**Source duty = 1879.0 l/min @ 10.885 bar at node no 1**

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## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : ROCIADORES SOTANO 1  
Project Data File : 2019\_025\_ESC\_04.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 8 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 5.80 m  
Number of pipes in system : 50 from 25 to 200 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 8.93 m/s in pipe 103 104  
Volume of pipework and fittings : 1.78 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 2090.2 l/min @ 15.651 bar at node no 1**

Water supply / pump curve : 750GPM@225PSI

Flow rates = 0 568 1135 1703 2270 2838 3406 3973 L/min

Pressures = 15.858 15.789 15.720 15.651 15.651 15.513 15.168 14.820 bar

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## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : ARCHIVO GENERAL PISO 1  
Project Data File : 2019-025-ESC-03.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 12 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 9.30 m  
Number of pipes in system : 129 from 25 to 200 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 6.88 m/s in pipe 236 237  
Volume of pipework and fittings : 2.70 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 1839.0 l/min @ 7.774 bar at node no 1**

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Inst. Number: 1

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## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : ARCHIVO GENERAL PISO 1  
Project Data File : 2019-025-ESC-03.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 12 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 9.30 m  
Number of pipes in system : 129 from 25 to 200 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 10.30 m/s in pipe 236 237  
Volume of pipework and fittings : 2.70 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 2282.7 l/min @ 15.648 bar at node no 1**

Water supply / pump curve : 750GPM@225PSI

Flow rates = 0 568 1135 1703 2270 2838 3406 3973 L/min

Pressures = 15.858 15.789 15.720 15.651 15.651 15.513 15.168 14.820 bar

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Inst. Number: 1

Tel: 3123275887  
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## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : GABINETES PISO 18 TORRE A  
Project Data File : 2019-025-ESC-02.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 3  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 0.00 m  
Number of pipes in system : 40 from 65 to 200 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 5.27 m/s in pipe 127 130  
Volume of pipework and fittings : 3.46 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 2883.5 l/min @ 14.925 bar at node no 1**

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Inst. Number: 1

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## Project Data and Design Parameters

Project name : JUDICATURA-CALI  
Area reference : Most Unfavourable  
Address / location : VALLE DEL CAUCA  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : GABINETES PISO 18 TORRE A  
Project Data File : 2019-025-ESC-02.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 3  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 0.00 m  
Number of pipes in system : 40 from 65 to 200 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 5.42 m/s in pipe 127 130  
Volume of pipework and fittings : 3.46 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 2969.6 l/min @ 15.433 bar at node no 1**

Water supply / pump curve : 750GPM@225PSI

Flow rates = 0 568 1135 1703 2270 2838 3406 3973 L/min

Pressures = 15.858 15.789 15.720 15.651 15.651 15.513 15.168 14.820 bar

# FHC - Hydraulic Calculation Report

Submitted by FHC user number: 1112

Hedaga S.A  
Cr 106 n 15A - 25  
Bogota 110921  
Colombia

Project: Algranel  
Project Ref: ---  
Area Ref: Most Unfavourable  
Inst. Number: 1

Tel: 057 4857222  
Fax:

## Project Data and Design Parameters

Project name : Algranel  
Area reference : Most Unfavourable  
Address / location : Cartagena  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : ---  
Project Data File : TK-2.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 204 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 15.43 m  
Number of pipes in system : 554 from 40 to 250 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 7.96 m/s in pipe 3190 3260  
Volume of pipework and fittings : 38.87 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 12819.0 l/min @ 7.925 bar at node no 1010**

# FHC - Hydraulic Calculation Report

Submitted by FHC user number: 1112

Hedaga S.A  
Cr 106 n 15A - 25  
Bogota 110921  
Colombia

Project: Algranel  
Project Ref: ---  
Area Ref: Most Unfavourable  
Inst. Number: 1

Tel: 057 4857222  
Fax:

## Project Data and Design Parameters

Project name : Algranel  
Area reference : Most Unfavourable  
Address / location : Cartagena  
Project number : ---  
Installation number(s) : 1  
Drawing number(s) : ---  
Issue no / date : ---  
Designers reference : ---  
Project Data File : TK-2.FHC  
Hazard classification : hight risk  
Design authority : National Fire Protection Association  
Insurance company : ---  
Specified density of discharge : 0.00 mm/min (l/min/m2)  
Assumed maximum area of operation : 0.00 m2  
Number of operating sprinkler heads : 204 + 1 hydrant(s)  
Maximum area covered per head : 0.00 m2  
Highest head / nozzle above source : 15.43 m  
Number of pipes in system : 554 from 40 to 250 mm  
Pressure loss equation used : Hazen-Williams  
Fluid : WATER  
Pipe Data Table : STD\_PIPE.PDT  
Maximum fluid velocity : 8.28 m/s in pipe 3190 3260  
Volume of pipework and fittings : 38.87 m3  
Elbows are welded for : 0 mm and above  
Comment : ---  
Checked by & Date :

**Source duty = 13321.5 l/min @ 8.458 bar at node no 1010**

Water supply / pump curve : 2500gpm@165psi (Aurora)

Flow rates = 0 2271 4542 6813 9463 11355 13248 14194 L/min

Pressures = 14.479 13.789 12.893 12.066 11.376 10.135 8.549 7.377 bar