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Sustainable **U**rban **C**onsolidation **C**entr**ES** for con**S**truction

Sites design solution

Version 1.0

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Summary

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Executive summary

The SUCCESS project is focused on the construction industry and specifically on its supply chain due to the major impact of the sector on in urban environments. The construction industry has been historically a sector in which the difficulty to innovate has been higher compared to other sectors. However, it has an un-exploited potential of improvement regarding the effectiveness and efficiency of the delivery processes, waste and return management and organizational and communication processes among the involved actors. Because of this, the SUCCESS project aims at answering the challenges highlighted by the European Commission and in particular at improving the understanding of urban freight transport and introducing more resource-efficient, more environment-friendly, safer and seamless supply chain innovations.

This deliverable (D4.2 - Sites design solution) presents the design of the solutions for the four sites assessed in the SUCCESS project aiming to improve the management of their construction supply chain. Firstly, the deliverable shows the regulatory framework regarding the urban logistics of the four public authorities of the SUCCESS project and their willingness to participate and implement measures for its improvement. Besides, the current status of the industry is also evaluated through a set of questions to the different actors of the construction supply chain in which they are also asked for their knowledge of innovative solutions and willingness to implement them.

Secondly, a set of scenarios based on the existence of Construction Consolidation Centres (CCC's), the number of construction sites, and the echelons of the supply chain managed by the CCC were designed. The objective of the design of different scenarios is to identify the economic impacts of each of them for the different actors involved and optimize the supply chain network in terms of routes, vehicles used, volumes of materials transported and load factor. The simulation process based on the scenarios proposed and the mapping of the internal logistics flows carried out in the pilot sites will allow comparing and assessing the different scenarios designed for each site of the SUCCESS project.

Finally, the deliverable presents tools for the assessment of the economic and environmental impact of the different scenarios proposed. The economic impact for each of the main actors of the construction supply chain will be evaluated using and ad-hoc Cost Benefit Analysis (CBA) tool and, concerning environmental assessment, it will be carried out using the COPERT® tool for the calculation of emissions.

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1 Introduction

Work Package 4 of the SUCCESS project (WP4 - Solutions design and test) aims to define and design new scenarios for the whole construction supply chain and its associated logistic in four different pilot sites (Luxemburg, Paris, Valencia and Verona). The assessed solutions will consider, among other factors, the introduction of Construction Consolidation Centres (CCC's) in the construction supply chain as an element that can improve the efficiency of the entire logistic and the performance of the construction sites.

WP4 is related to previous work packages, so that once defined the As-Is situation of the four pilots sites (WP2) and selected the most suitable Business Models for the CCC (WP3) and the optimisation tools and algorithms (WP3), the aim of WP4 is to find and formulate different solutions to increase the efficiency of the construction supply chain and improve the productivity of the construction sites.

Besides, WP4 is also linked to WP5, which performs the evaluation and validation of the KPI's and results obtained in the previous WP's. To summarize, Figure 1 illustrates the link between the different tasks of WP4 and the related tasks of other work packages of the SUCCESS project.

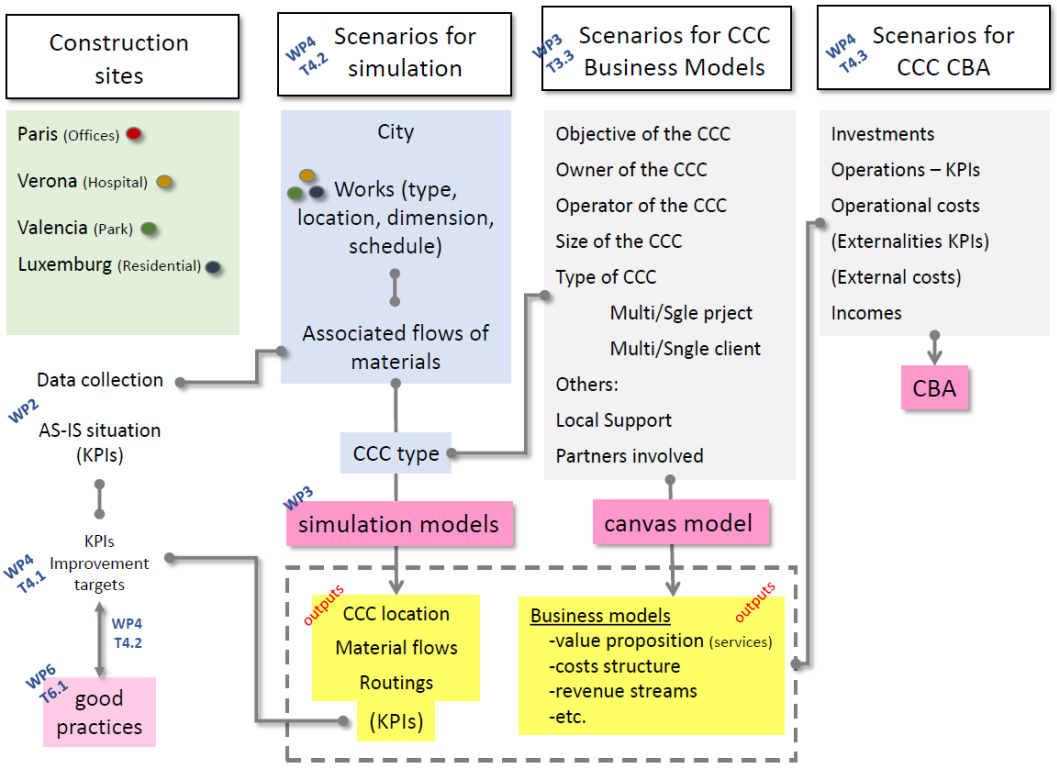

Figure 1. Schematic of the SUCCESS vision and the relation between the different tasks and work packages

Different tools and methodologies were used for the solution design of the construction supply chain and its associated logistic in each of the pilots of the SUCCESS project.

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On the one side, a set of questionnaires were prepared and disseminated among different stakeholders of the construction supply chain (e.g. public authorities, construction companies, suppliers, etc.). Section 2, "Organizational and regulatory measures in the construction sector (analysis of the surveys)" presents the results of the two questionnaires carried out during the project. The first one targeted public authorities and depicted the regulatory framework and legislation concerning the urban logistics of the cities involved in the SUCCESS project. It aimed at trying to know the present situation and the willingness of the public authorities to participate and develop new policies in this regard. The second questionnaire was sent to companies involved in the construction industry (e.g. construction companies, suppliers, trade contractors, etc.) in order to know the solutions that are currently being applied in their daily operations, illustrating the current status in terms of innovation of the industry.

On the other hand, in sections 3 to 5, a set of eight different scenarios were designed to optimize the construction supply chain of the four pilots evaluated. Section 3 defines the additional data collected for the mapping of the internal logistics flows, material stocks etc. in each of the pilots, data that will be used to feed the simulation models. Section 4 defines the set of scenarios for the simulation based on the existence and number of CCC's, the number of construction sites and the management of the different echelons of the supply chain. Section 5 links the scenarios for the simulation together with the business models proposed in each of the pilot sites in WP3. These new scenarios will be simulated using the methodologies and optimisation tools developed in WP3 targeting the improvement of construction sites' productivity and transport efficiency and reducing urban transport's impacts. The results of the simulation process will be shown in the following deliverable *D4.3 - Simulation results*.

Finally, an economic and environmental analysis will be carried out for each scenario in each of the pilots assessed in the SUCCESS project. Section 6 explains the methodology used for the economic analysis that will be performed for each of the actors of the supply chain in each scenario; meanwhile, section 7 defines the methodological approach for the assessment of the environmental impact.

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2 Organizational and regulatory measures in the construction sector (analysis of the surveys)

2.1 Public and Local Authorities

2.1.1 Scope

The main objective of the survey for the local authorities (see Annex 1 "*Questionnaire about urban freight transport for Municipalities and Local Administrations*") is to collect the opinion of the public administrations about regulatory measures and actions that can improve the urban logistic and urban freight transport or, more precisely, the construction transport chain. The survey provided the point of view of the public authorities of different cities about the construction supply chain and its effects and measured their willingness to participate in possible solutions for the construction logistics in terms of:

- Managing the relation between the SUCCESS project's construction sites and the surrounding urban areas
  - Involvement in the construction site
  - Practices in construction logistics
- Regulations regarding urban logistics
- Question related to Urban Consolidation Centres (UCC's) and Construction Consolidation Centres (CCC's) and their possible implementation
- Questions related to delivery vehicles in urban areas.

Despite several attempts by the consortium partners, only the cities of Valencia and Verona answered to the survey in the provided deadlines, while the authorities of Luxembourg (where local elections are occurring in these very days) and Paris had not answered at the time of publication of this deliverable.

2.1.2 Results

Involvement in the Construction Site

Q1: When has the LA (Local Authority) been informed about the construction site?

- Luxemburg: N/A
- Paris: N/A
- Valencia: During the project's planning phase
- Verona: At the beginning of the construction activities

Q2: Which are the main LA's departments involved?

- Luxemburg: N/A
- Paris: N/A
- Valencia: City Planning and Environmental
- Verona: City planning for Road Signing, Environment for mitigation and control of pollutants (particles)

Q3: Who are the main actors in contact with the LA?

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- Luxemburg: N/A
- Paris: N/A
- Valencia: Promoter and Main Contractor
- Verona: Owner/Client and Main Contractor

Comments regarding the involvement of LA's in the Construction Site:

The results of the survey showed similar results in both Verona and Valencia, concerning the municipality departments involved in the Construction Process as well as the main actors involved. However, the benchmark also showed that there are slight differences in the timing when the municipality was informed, showing a gap between both cities that can be improved in Verona to increase the efficiency in future construction projects. More information exchange between the LA's and the client/promoter of the site would be beneficial during planning phases.

Practices in Construction Logistics

Q4: Please detail the main communications set up/to be set up with the LA during the different phases of the project, by distinguishing between mandatory communications and additional communications.

Valencia				
Type of communication	During the project's planning phase	Beginning of the construction activities	During the project's realisation	At the end of the project
Mandatory communications	Communication in order to know Master Plan, regulation and land use requirements.	Project approval, working license & Building license		Certificate Final work & First occupation
Additional communications			Regular visits in order to check out plan execution.	

Verona				
Type of communication	During the project's planning phase	Beginning of the construction activities	During the project's realisation	At the end of the project
Mandatory communications		Description of activities from the main owner and main contractor (workplan, duration of the activities, transport means)	Changes to the original plans	End of the activities
Additional communications			Not mandatory: Monitoring of specific activities of	

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			the workplan, discussion of potential problems, risks	

Q5: What type of interferences between construction site and urban area has the LA managed?

- Luxemburg: N/A
- Paris: N/A
- Valencia: Logistic problems, Impact of noise exposure and Pollution Impact
- Verona: Logistic problems, Impact of noise exposure and Pollution Impact. In the case of Verona a lack of communication between main contractors and the local community was detected

Q6: Which are the main interferences between construction site and urban area and the related practices that the LA has adopted to manage them?

Valencia	
Interference	Practices adopted to manage it
Logistics and closed roads	Request scheduled permission for loading/unloading and/or activities related to crane set up
Trucks, size and weight	Special permission for construction trucks with different time window

Verona	
Interference	Practices adopted to manage it
Pollution impact	By – night parking limitation around the Construction site to permit cleaning operations
Traffic and access rules	Installation of provisional traffic lights to integrate the mobility of transport means to/from the Construction site within the public network of streets; Additional road Signing
Lack of communication/dialog between main contractors and local community	Organisation of local meetings Involvement of the "Circoscrizione", Municipality district around the Construction site. The purpose was to facilitate the dialogue between local community and the owner/main contractor (ex. Construction company).

Comments regarding the practices in Construction Logistics:

The results of the survey showed differences between Valencia and Verona concerning the communication between the LA and the Site manager. In Valencia, the communication and information exchange is higher and starts during the planning phase meanwhile in Verona starts at the beginning of the construction works.

Regarding the problems and the interferences between construction site and urban area that the LA has to manage, both cities face the same problematic: logistics and congestion issues, pollutions and noise. The solutions adopted in

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both sites differ slightly and are adapted to the specific needs of the construction site.

Measures and actions to improve Construction Supply Chain

In the following questions, the Local Authorities were requested to answer "Yes" or "No" for each of the different measures exposed, taking into account the willingness to promote and implement this kind of actions. In case of affirmative response, they were also asked to indicate the probability of its implementation considering the current plans of the city following the criteria:

- (1) Unlikely to be implemented
- (5) Highly probable to be implemented.

Regulations regarding Urban Logistics:

Q7: Increase current traffic restrictions to the delivery vehicles (in terms of weight, speed, etc.)

City	Yes	No	Current Limitations	Future Plans
Verona	X (1)		Not feasible in terms of vehicle limitations.	Potential restriction introducing vehicle speed limits
Valencia	X (3)		Time window and weight limitation	Speed

Q8: Establish new restricted access areas for urban delivery vehicles

City	Yes	No	Current Limitations	Future Plans
Verona	X (3)		Limited Traffic Zones	Extension of the limited traffic zones
Valencia	X (4)		Time window	Time window and request permission / scheduled

Q9: Modify time windows for the urban deliveries in current restricted access areas.

City	Yes	No	Current Limitations	Future Plans
Verona	X (2)		No Specific limitations	
Valencia	X (4)			Include last mile delivery with alternative transport mode

Q10: Establish or modify control emissions areas

City	Yes	No	Current Limitations	Future Plans
Verona	X (2)		No Specific limitations	
Valencia	X (4)			Control and monitoring

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Q11: Plan loading and unloading areas: number, location, size, etc.

City	Yes	No	Current Limitations	Future Plans
Verona	X (4)		Traditional Loading/Unloading areas	Introduce smart and innovative (e.g. online booking) of slots Reduce number of parking slots
Valencia	X (4)		Traditional Loading/Unloading areas	Reorganize public space

Q12: Modify the use of the loading and unloading areas: schedules, management systems, etc.

City	Yes	No	Current Limitations	Future Plans
Verona	X (4)		Traditional Loading/Unloading areas	Introduce smart and innovative (e.g. online booking) of slots Reduce number of parking slots
Valencia	X (4)		Traditional Loading/Unloading areas	Introduce innovative ways to manage mobility

Q13: Establish loading and unloading areas at the road (apart from the parking space)

City	Yes	No	Current Limitations	Future Plans
Verona	X (4)		Traditional Loading/Unloading areas	Introduce smart and innovative (e.g. online booking) of slots
Valencia	X (3)			Only for last mile delivery and some exemptions

Q14: Other measures regarding urban regulations (Please specify):

City	Yes	No	Current Limitations	Future Plans
Verona		X		
Valencia	X (4)			Pedestrianisation Speed limit 30 Km/hour in city centre and other important streets

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Comments regarding Regulations in Urban Logistics:

The city of Valencia is currently working actively in the improvement of the urban mobility and is also redoing the urban mobility plan. In a first phase, they have given priority to the mobility of the citizens by promoting cleaner and greener transport modes (e.g. boosting the bike), reorganizing the public space, limiting the speed to 30 km/h inside the first ring of the city and closing several streets in the city centre to the road traffic. In a second phase, the municipality will give priority to the goods transport and will foster the use of ICT tools. Some of the plans include the reorganization of loading/unloading areas, the increment of Limited Traffic Zones and time windows for deliveries and the use of online booking systems.

In the case of the city Verona the movement of goods inside the city is done using traditional loading/unloading areas, however the municipality is trying to promote the use ICT tools for urban deliveries in order to maximize the efficiency of the delivery operations and reduce its affection to the city congestion. Besides, other soft measures such as speed limitations and the increment of Limited Traffic Zones are in the plans of the municipality of Verona.

Questions related to Urban Consolidation Centres (UCC):

Q15: Introduction of Urban Consolidation Centres (UCC)

City	Yes	No	Current Limitations	Future Plans
Verona	X (3)		Not operational. Two past experiences: – Agreement with taxi drivers for small payload deliveries – Small UCC serving the inner city centre	No plans until the availability of dedicated financing.
Valencia	X (3)			Not final decision yet even though some tests and trials have been analysed

Q16: Introduction of Construction Consolidation Centres (CCC)

City	Yes	No	Current Limitations	Future Plans
Verona		X	N/A	No plans
Valencia	X (3)			Not final decision yet, it would involve any agent and possible PPP (public private partnership. This is

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				a political and technical decision.

Q17: Benefits or exemptions for companies that use UCCs and/or CCCs (e.g. tax reductions, special permits, etc.)

City	Yes	No	Current Limitations	Future Plans
Verona	X (2)		N/A	No plans until the availability of dedicated financing.
Valencia	X (3)			In order to promote this solution some benefits will be included such as special permits, nevertheless it has to be confirmed. This is a political and technical decision.

Q18: Support for the implementation of UCCs and/or CCCs (economical support, granting of land, etc.)

City	Yes	No	Current Limitations	Future Plans
Verona	X (1)			No plans until the availability of dedicated financing.
Valencia	X (3)			It has to be analysed with several agents, however PPP with public land could be a possible model. This is a political and technical decision.

Q19: Subsidies for operations of UCCs and/or CCCs

City	Yes	No	Current Limitations	Future Plans
Verona		X		
Valencia	X (3)			It has to be analysed with several agents, however PPP with public land could be a possible model. This is a political and technical decision.

Q20: Direct participation in the management of Support for the implementation of UCCs and/or CCCs

City	Yes	No	Current Limitations	Future Plans

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Verona		X		
Valencia	X (1)			It has to be analysed with several agents, however PPP with public land could be a possible model. This is a political and technical decision.

Q21: Other measures related to Consolidation Centres (UCCs & CCCs) (Please specify):

City	Yes	No	Current Limitations	Future Plans
Verona	X			Discuss with stakeholders the possibility of UCC (with CCC) outside the City Centre.
Valencia	X			Promote recycling and circular economy

Comments regarding Urban Consolidation Centres (UCC & CCC):

Regarding the use of Urban Consolidation Centres (UCC's), none of the cities interviewed has an UCC currently in operations. However, both cities have made trials and low scale pilots in order to test the potential benefits that this type of solutions bring to the quality of life of the citizens, especially in terms of congestion and emissions reduction. In both cities, the trials tested mainly parcels deliveries and were not focused on the construction industry's supply chain.

Apart from the pilot tests carried out, the results of the survey showed a lack of experience in terms of UCC implementation and possibly, a lack of knowledge of their potential benefits by the a part of their citizens. Nevertheless, even though there are no short-term plans for UCC or CCC implementation in any of the cities, both administrations showed their willingness to participate in innovative solutions for the urban mobility and logistics. This interest seems to be even deeper in the case of Valencia, where the local administrations could be interested into participating in a public-private-partnership (PPP) for the UCC and CCC implementations. This public-private-partnership could be done through different mechanisms such as land concession, special permits, etc. after a technical and political analysis of the possible options.

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Regulations regarding Delivery Vehicles:

Q22: Labelling scheme for delivery vehicles and fleets

City	Yes	No	Current Limitations	Future Plans
Verona	X (5)		Vehicles are monitored by type	N/A
Valencia	X (4)			Create a registry in order to manage access and schedule loading and unloading spots

Q23: Other Benefits or exemptions for companies that use eco-friendly delivery vehicles/labelling schemes

City	Yes	No	Current Limitations	Future Plans
Verona	X (4)		Existing rules by: Time-window and type of street	N/A
Valencia	X (4)			Promote green and alternative way of transport

Q24: Introduction of taxes for the use of infrastructures depending on vehicle type

City	Yes	No	Current Limitations	Future Plans
Verona		X		
Valencia		X		To be confirmed

Q25: Other measures related to delivery vehicles

City	Yes	No	Current Limitations	Future Plans
Verona		X		
Valencia		X		

Comments regarding Delivery Vehicles:

Similar to the case of UCC and CCC implementation, the results of the survey for both cities, Valencia and Verona, showed a lack of regulations regarding the urban delivery vehicles and an important gap for future improvements.

Labelling schemes for urban delivery vehicles have been implemented during the past years around European cities aiming to foster the use of greener and cleaner vehicles for urban deliveries. Labelling schemes usually come together with benefits for the companies that have adhered, so this type of voluntary solutions could be a first step for the promotion of eco-friendly vehicles in the urban logistics.

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2.1.3 Conclusions on Regulatory Framework for Urban Logistic

In general, the main conclusions obtained from the public authorities about the regulatory framework of the urban logistics and more in detail about the construction supply chain are:

- Possible improvements regarding the communication procedures between the public authorities and the actors of the construction supply chain, especially between the administration and the client/promoter. The improvement of the communication procedures, mainly before the start of the project and during the initial phases, should increase the information exchanges and thus increase the efficiency of the processes between the actors involved.
- The public authorities of the different cities face common problems regarding the logistics of the construction industry inside urban areas (i.e. congestion issues, noise and dust pollution). However, the degree of intensity of these problems vary, on the one hand, according to the city's activity and characteristics and, on the other hand, depending on the construction project. Consequently, the solutions to be adopted to mitigate the effects should consider these two dimensions and because of this, more information exchange on the project and city authorities is recommended to solve appropriately the specific problems.
- Urban mobility has become a hot topic during the last years but the public authorities were, in general, firstly focused on citizens' mobility, leaving aside urban logistics. However, the increment of the logistics activity inside the city driven by the development of the e-commerce, has put the spotlight on goods movements inside urban areas. Thus, the public authorities of the cities that are facing major congestion problems are adapting their mobility plans putting more attention on the urban logistics and trying to adapt innovative solutions.
- Concerning the awareness of UCC's and CCC's, we detected a lack of knowledge of the potential benefits that these facilities can bring not only to the citizens but also to the users. The difficulty to allocate the cost and benefits of a CCC is well known, however we detected an important lack of understanding of the potential that consolidation centres can produce. Therefore, we found a need to go further in the improvement of the communication strategies, the knowledge of its functioning and its potential benefits for the entire construction supply chain.
- Concerning the delivery vehicles, the number of cities that are applying restrictions on private vehicles that access the city centre is increasing, especially for the most pollutant ones. In this regard, the cities interviewed are in line with this policy but we found that they are in an early stage and there is still room to foster the use of eco-friendly vehicles.

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2.2 Companies of the Construction Industry

2.2.1 Scope

The objective of the survey to the companies of the construction industry (see Annex 2 "*Survey for companies of the construction industry*") is to collect the opinion of the construction sector's companies about measures and actions that can improve the logistic associated to urban freight transport and more specifically the construction transport chain. The survey will provide the point of view of the different actors of the construction supply chain (Construction Companies, Trade contractors, Material suppliers, Waste management companies, Service providers, etc.) about the possible implementation of solutions for the construction logistics in terms of:

- Solutions related to the inbound movement of materials into and outside the construction site
- Solutions related to the movement of materials inside the construction site
- Solutions supporting the movement of materials
- Impact and efficiency of the different processes on the whole supply chain
- Problems related to urban freight transport in the construction sector
- Opinion regarding measures for urban freight transport and supply chain management in the construction sector
- Opinion regarding measures about business models of the sharing economy and their willingness to participate in this type of solutions
- Opinion regarding measures involving Construction Consolidation Centres and their willingness to participate in this type of solutions
- Opinion regarding measures with delivery vehicles
- Use of ICT tools in the different construction processes.

2.2.2 Results

Part B – Improving the construction supply chain management

B1. Which solutions related to the movement of materials into and outside the construction site have you already experimented or are you aware of?

This includes:

- *Sourcing: to selected suppliers for acquiring materials and services*
- *Ordering: to acquire the needed materials, equipment, and services*
- *Delivery: to transport the goods from suppliers to the construction site*
- *Waste Management: to collect construction waste / demolition debris / packaging waste, recycle and sort material*
- *Returns Management: how to organize the exit of unused and unsuitable material and its return to sub-contractors or suppliers and to give back returnable packaging (e.g. pallets) to the suppliers.*

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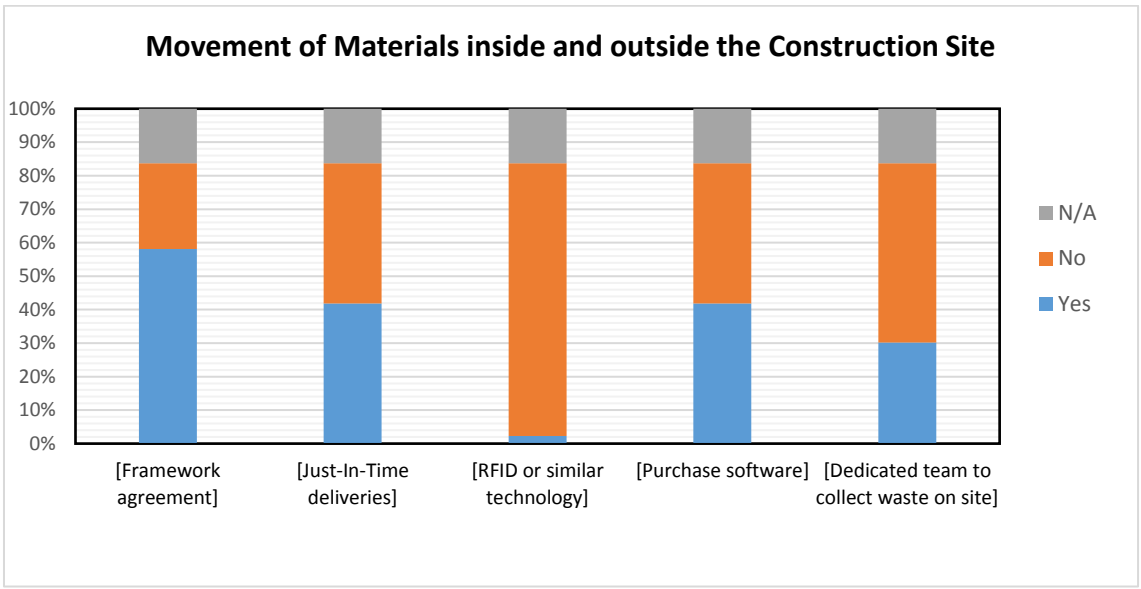

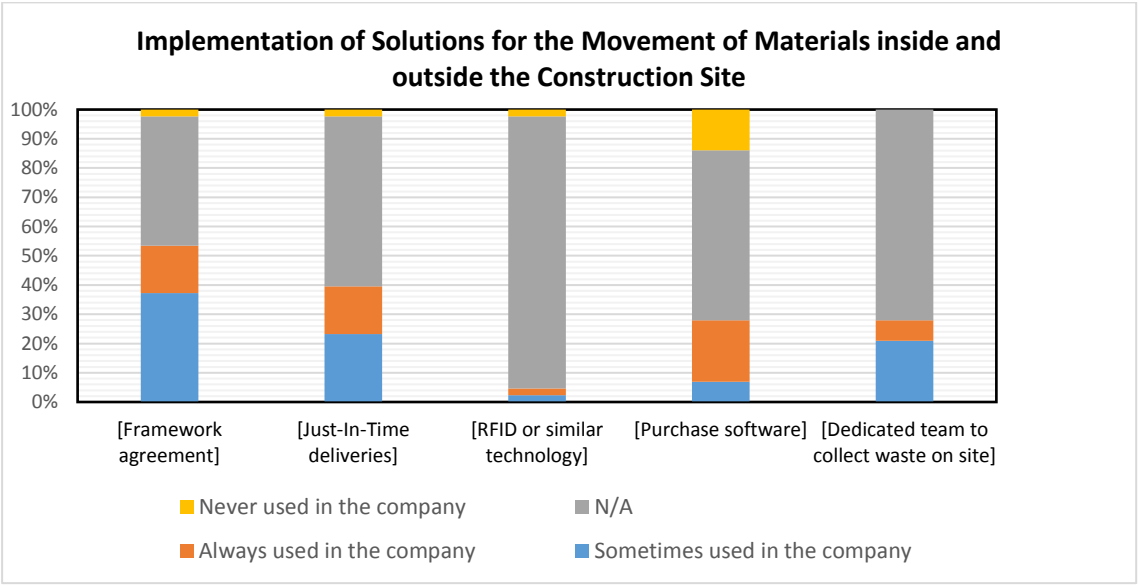

Comments regarding Movement of Materials inside and outside the Construction Site:

The first results of the survey to the construction industry concerning the movements of materials inside and outside the construction site show that there is a lack of knowledge of the set of measures exposed in the SUCCESS survey. Only one of the solutions proposed (framework agreement) is known by more than 50% of the interviewed companies. Besides, it is important to remark that RFID or similar technologies for the identification of materials are mainly unknown by the construction industry. Thus, we can conclude that it is necessary to spread and apply innovative solutions across the industry to increase the efficiency of the sector.

Concerning the implementation, it is important to highlight that the lack of knowledge of these solutions leads firstly to a high percentage of N/A answers and secondly to low implementation levels in the construction sites, where only

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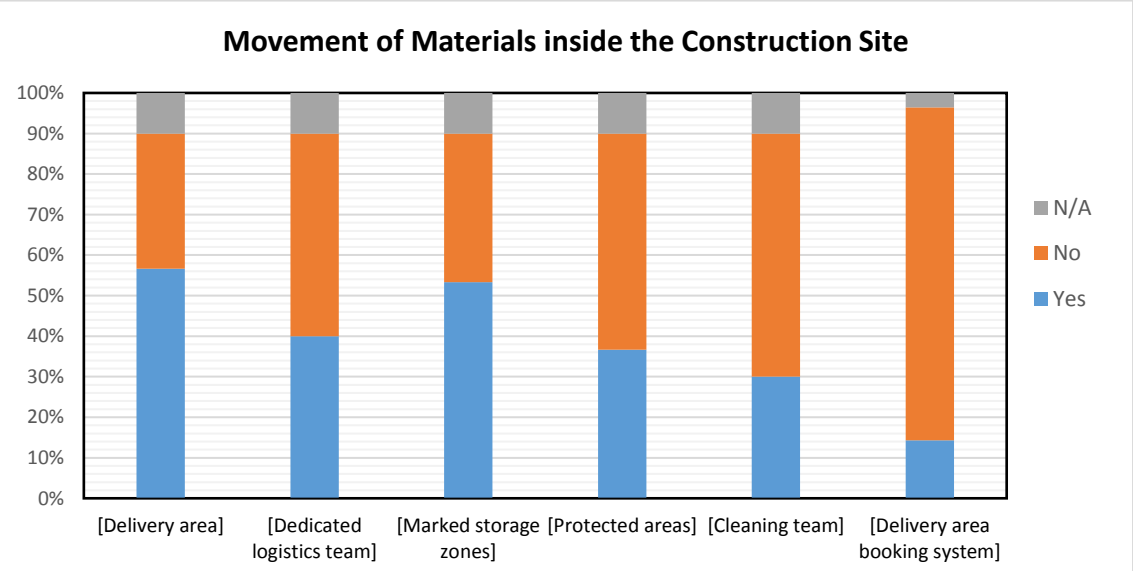
framework agreements are applied more than 50% of the times among the interviewed companies. Nevertheless, it is also remarkable that measures like purchase software are always used when the company knows about them revealing that these type of solutions facilitate and increase the efficiency of the process.

B2. Which solutions related to the movement of materials inside the construction site have you already experimented or are you aware of?

This includes:

- *Material Reception and Expedition: to manage loading and unloading of materials/waste/equipment and the activities involving the trucks from the entrance to the exit of the construction site.*
- *Inventory: to specify the size and placement of stocked goods to avoid overstock or shortage.*
- *Material Handling and Equipment Management: to move materials within the construction site by using the right equipment to guarantee the continuity of the activities.*
- *Housekeeping: to minimize the degradation and pollution of materials and maximize safety for workers keeping the site clean and tidy.*



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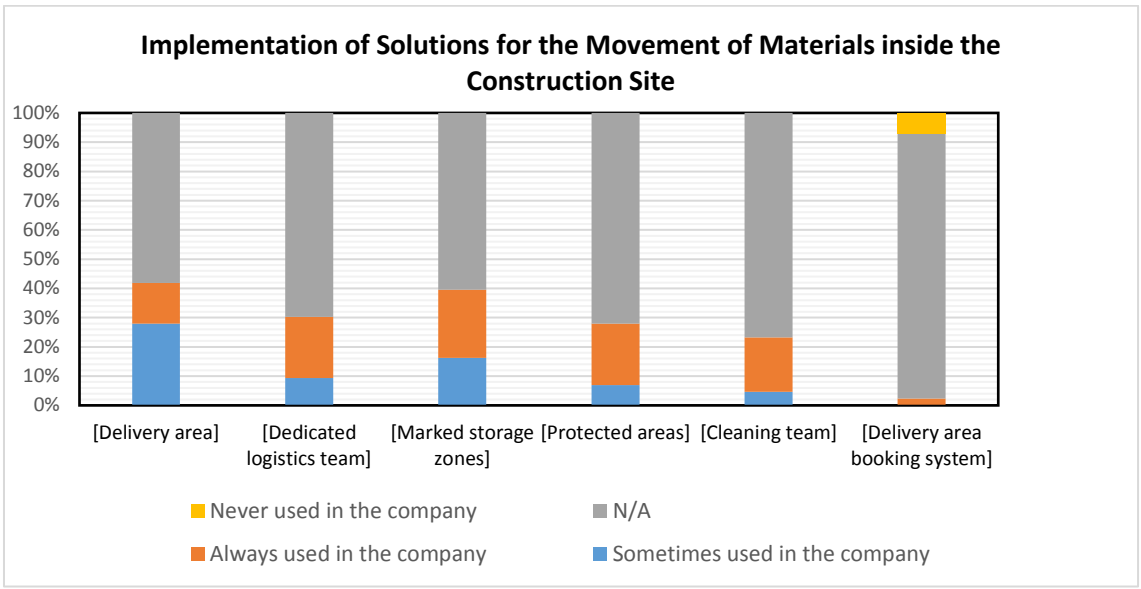

Comments regarding Movement of Materials inside the Construction Site:

Like in the previous topic, the results concerning the movements of materials inside the construction site show that there is a lack of knowledge of the set of measures proposed in the SUCCESS survey. Only two of the set of proposed solutions, the Delivery Area and the Marked Storage Zone, are known by more than 50% of the interviewed companies. The rest of the proposed measures do not exceed 40% of awareness by the companies of the construction industry. In this case, the least known measure is the delivery area booking system, stressing the little use of ICT tools in the construction industry and especially for construction logistics. Consequently, the results emphasize that it is necessary to spread those innovative solutions that can increase the efficiency of the construction industry.

Concerning the implementation of measures for the Movement of Materials inside the Construction Site, the lack of knowledge of the set of measures proposed in SUCCESS is reflected in the low degree of implementation in the construction sites. None of the measures proposed has been applied by more than 50% of the interviewed companies, and especially for the Delivery area booking system we could measure a really low degree of awareness across the industry. However, when the companies know the solutions exposed, in the majority of the cases the percentage of implementation when the solutions are "always used" is higher than when the solution is "sometimes used". Consequently, the degree of acceptance of this type of solutions seems to be high and it is maybe because they increase the efficiency of the processes when applied.

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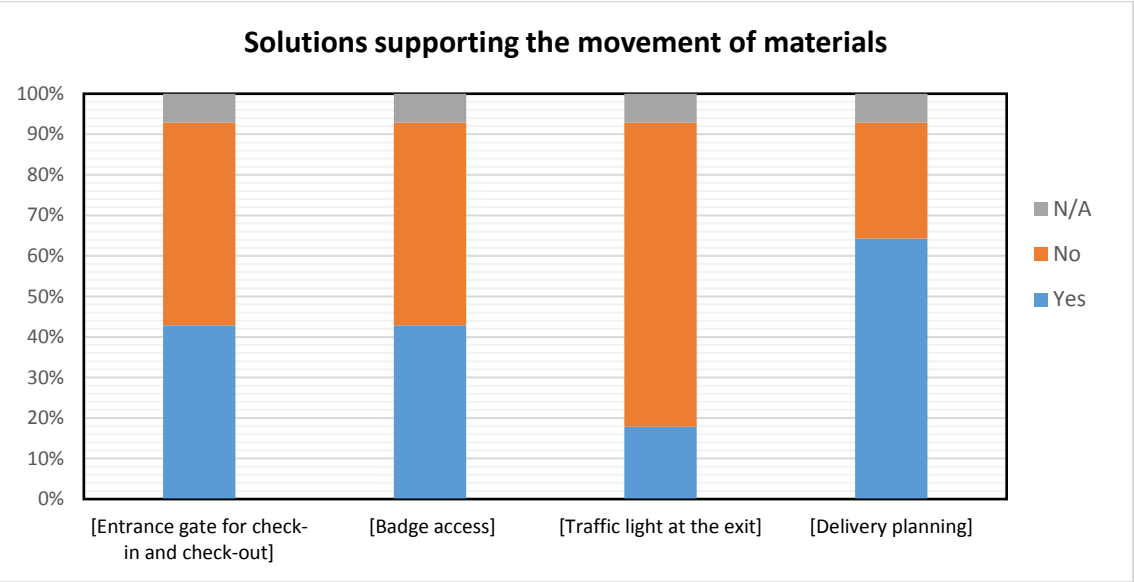
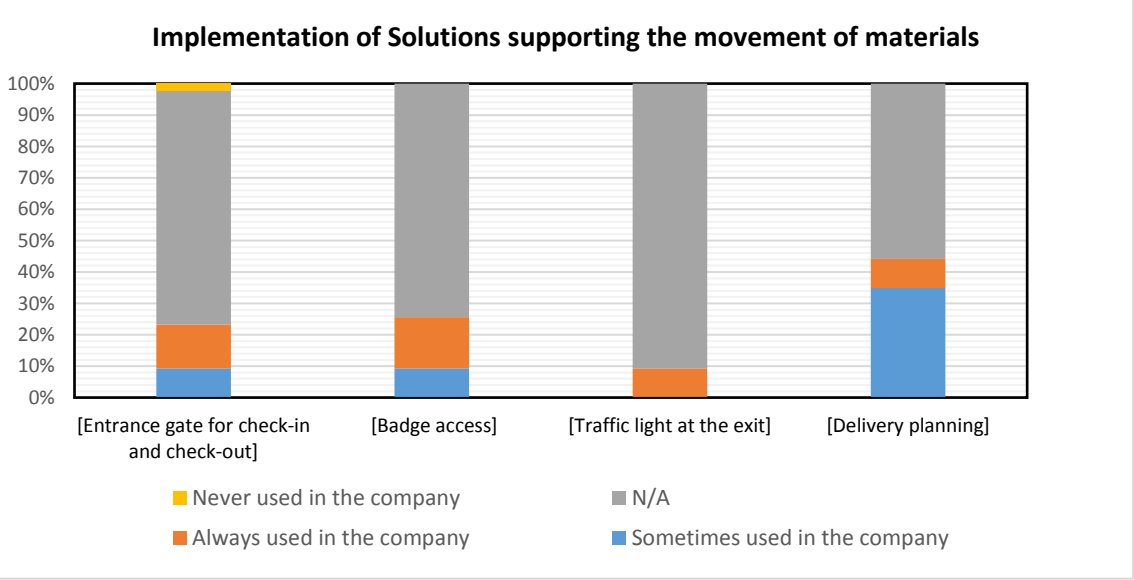
B3. Which solutions supporting the movement of materials have you already experimented or are you aware of?

This includes:

- *Planning and Scheduling Resources: to schedule and plan the activities and the resources such as workforce, equipment, and spaces.*
- *Complaint Management: to address complaints, non-conformities, and resolve disputes.*
- *Entrance and Exit Management: to grant rights to authorized people and vehicles to enter and leave the construction site while maintaining safety in and out the worksite and efficient operations on the worksite.*





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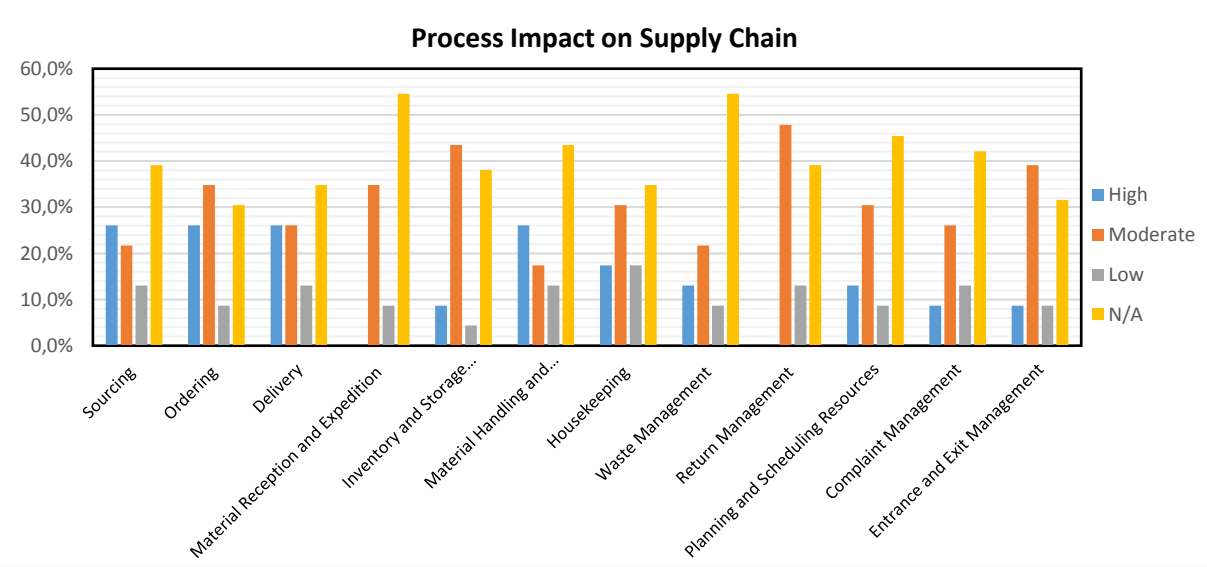
Comments regarding Solutions Supporting the Movement of Materials:

Regarding the set of solutions supporting the movements of materials inside the construction site, the SUCCESS survey to the construction industry shows a low degree of awareness of the exposed solutions. Delivery planning is the only solution among the ones proposed with a degree of awareness higher than 60%. For the rest of the measures we measured between 18% and 45% of awareness across the companies of the construction industry interviewed. So, equally to the previous comments regarding other solutions in the construction site, the results emphasize the need to spread the potential benefits of the solutions proposed.

Concerning the implementation of measures, the lack of knowledge of the set of measures proposed is even higher than in previous sections. Only one of the measures proposed, the delivery planning, is applied in more than 40% of the cases. These results put emphasis on the resistance to change and the implementation of innovative solutions in the construction industry.

B4. Please indicate for each process its impact on the whole supply chain and evaluate its efficiency on your company according to the following range:

Impact: Low impact (1) to High impact (5)



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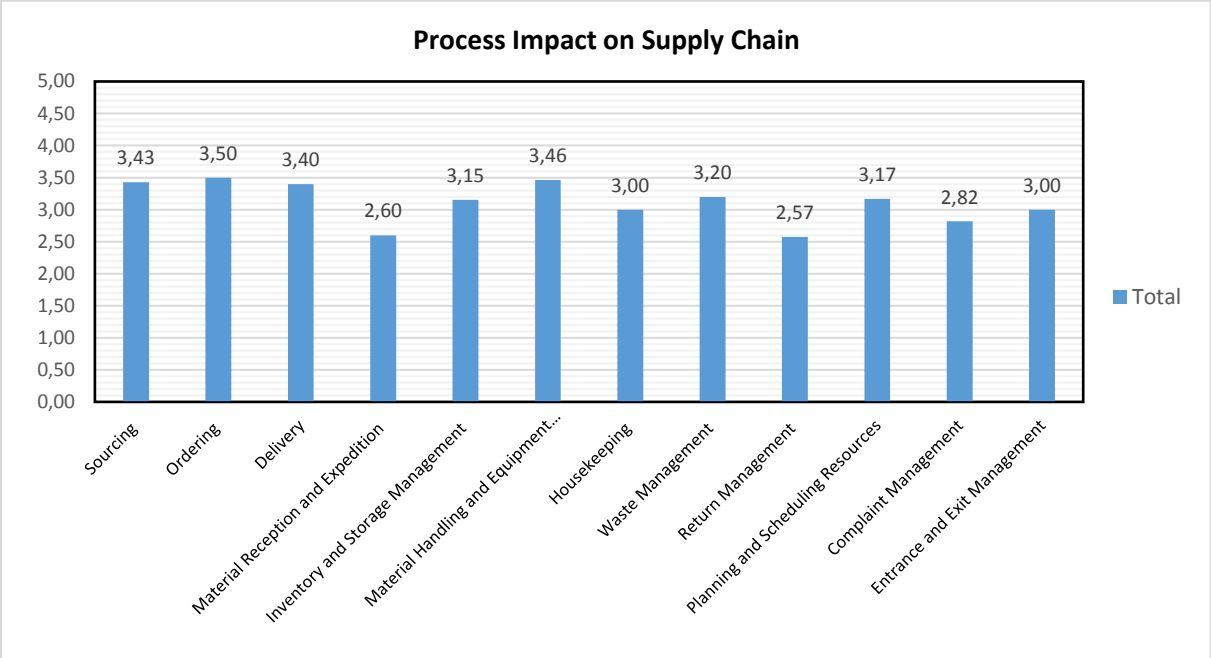

Comments regarding Process Impact on Supply Chain:

The figures of the evaluation carried out about the impact of different processes on the supply chain show that the most critical process is "Ordering", closely followed by "Material Handling" and "Equipment Management", "Sourcing" and "Delivery". The result obtained are in line with the results previously shown, where the framework agreement and the purchase software were some of the best known solutions but also some of the ones with a higher degree of implementation. In the case of the purchase software, it still has to be spread across the industry, however, once it is known, the interviewed companies mainly selected the option "always used" in the survey.

Regarding the delivery processes, the solutions mainly adopted by the industry (e.g. "delivery area" and "marked storage zones") can be considered as traditional solutions where there is a dedicated space for the delivery management. However, there is still a gap to be overcome with more innovative solutions that can improve the efficiency of the delivery process itself, but also the performance of the overall project. Innovative solutions such as online booking systems for the delivery area, JIT deliveries that will require more coordination among the actors of the construction supply chain or dedicated logistics teams on site could be some solutions that can bring digitalization, coordination and specialization to an industry that has been historically reluctant to change and to add innovation to its processes.

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2.2.3 Conclusions on the Status of the Construction Industry

The main conclusions obtained from the construction supply chain, their stakeholders and processes are, in general, that there is a lack of knowledge of the set of measures proposed in the SUCCESS survey. The construction sector has typically been reluctant to change and the technological innovations normally take longer to be adopted by the different actors than in other industries. Consequently, the lack of knowledge of the solutions leads to low implementation levels and, because of this, it is necessary to increase the awareness and spread the successful innovative solutions across the industry in order to increase the efficiency and effectiveness of the whole construction supply chain, maximizing positive impacts and environmental gains.

Concerning the processes of the construction supply chain, the results showed that the most critical processes are related to purchase and delivery management. The ranking is led by the Ordering process, closely followed by the Material Handling and Equipment Management, the Sourcing and the Delivery processes. The results also illustrated that the innovative solutions related to the improvement of these processes have a high rate of implementation when known, so the potential of optimization in the supply chain is high. Therefore, the construction industry has to pursue more coordination, data sharing and process digitalization between all the actors of the construction supply chain to bring more coordination and specialization to an industry in which it has been usually difficult to add innovation to its processes.

Finally, the results of the survey to the companies related to the construction supply chain about their willingness to participate in solutions involving business models of the sharing economy, CCC's and the use or eco-friendly vehicles were very poor. As previously mentioned, the lack of knowledge of this type of solutions and the mentality of the industry to do business as usual derive in low rates of innovation and of introduction of disruptive business models. In this regard, the involvement of public authorities in urban logistics issues through traffic restrictions, labelling, limited traffic zones or even congestion charges seems to be essential to force the industry to apply solutions that reduce the impact of the construction supply chain in urban environments.

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3 Data requirements for the solutions design

3.1 Input data for the scenarios

3.1.1 Mapping of the logistics flows and supply chain network

The Excel file "*SUCCESS_Simulation_Models_Data*" (Annex 3) aims to feed the simulation models by mapping all the logistics flows of each of the four pilots assessed in the SUCCESS project during their entire construction process. The data collection carried out in WP2 only covered a specific period of seven months in each city, however, for a more precise simulation it is required to know the material flows during the entire construction project. Because of this, this file covers part of the data collected during WP2 but extends the time period covered.

The file is divided in three main groups gathering the most relevant information about the logistics characteristics of the construction process that allow to map the logistics flows in which the construction site is divided. These four main groups are:

1. **Task and activity characteristics:** this group describes the different task, sub task and activities in which the whole construction process is divided. The objective is to improve the understanding of the logistic processes for each of the construction materials used in each phase of the construction project. This category includes the following columns:

Task and Activity characteristics				
Task	**Sub-Task**	**Activity**	**Start**	**End**

   a. **Task:** main task in which the material is used during the construction process (e.g. Phase 1A – Park urbanization)
   b. **Sub-Task:** subtask in which the material is used during the construction process (e.g. Gardening and plants).
   c. **Activity:** activity in which the material is used during the construction process (e.g. Precast concrete panel).
   d. **Starting date:** date in which the material starts to be used during the construction process.
   e. **End date:** date in which the material ends to be used during the construction process.

2. **Material characteristics:** this group of columns describes the type and quantity of construction materials needed during the different phases of the construction process. Besides, as the materials of the construction site are measured in different manners according to their own characteristics (e.g. kg, m^3, m^2, units, etc.), they are converted into homogeneous units (m^3 or kg) to know which parameters are the most restrictive according to their transport characteristics.

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Material Characteristics				
Material/s	Measurement	Unit	Conversion to kg	Conversion to m^3

a. **Material:** Name of the construction material (e.g. precast concrete kerb).
b. **Measurement:** Quantity of construction material used during the specific construction process.
c. **Unit:** unit in which the construction material is measured initially during the construction process.
d. **Conversion to kg:** conversion to kilograms of the original measurement of the construction material. This value represents an approximate value due to the difficulty to achieve the exact parameter.
e. **Conversion to m^3:** conversion to cubic meters of the original measurement of the construction material. This value represents an approximate value due to the difficulty to achieve the exact parameter.

3. **Truck characteristics:** this information is required to analyse the transport characteristics of the different materials and obtain a possible optimization in the load factor of the truck.

Truck Characteristics		
Type of Truck	Capacity in volume (m^3)	Capacity in weight (kg)

a. **Type of truck:** type of truck in which the material is usually transported.
b. **Capacity in Volume (m^3):** capacity expressed in terms of volume of truck in which the material is usually transported.
c. **Capacity in weight (kg):** capacity expressed in terms of weight of truck in which the material is usually transported.

4. **Information about the location of suppliers and dumpsites:** this information is required to analyse the transport characteristics of the different construction materials and obtain a possible optimization in the route that the truck follows.

Information about the location of suppliers and dumpsites					
Direct or Reverse	Supplier or Dumpsite	Street and Number	Postal Code	City	Country

a. **Direct or Reverse:** this information is required to determine whether the material is involved in the direct logistic chain (material supply to the site) or, on the contrary, in the reverse logistic chain (e.g. wasted material).
b. **Supplier or Dumpsite:** this information determines the name of material provider in the case of direct logistic or the material destination in case of reverse logistic.
c. **Street and number:** address of the material's origin or destination.

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d. **Postal code:** postal code of the material's origin or destination.
e. **City:** city of the material's origin or destination.
f. **Country:** country of the material's origin or destination.

3.1.2 Additional data for future scenarios

To build a dataset for the future scenarios that will be assessed in the simulation processes, it is necessary to provide several types of data, derived from the real data collected in the four pilot sites of SUCCESS, but extended and completed with other information. The information needed to complete the dataset was derived from administrative data of the cities and discussions with the relevant stakeholders.

The main elements to be included in the data set are:

- Establish the simulation period
- Define the possible location, when known, of future construction sites of the city
- Estimate the future demand of the different construction projects
- Suppliers
- Define possible locations and main characteristics of CCC's in the four cities under evaluation
- Define the complete truck fleet
- Roads, times and distances.

3.1.2.1 Simulation period

The simulation period has been set to three years. A longer period seems to be not reasonable due to the high fluctuation of the domain. A shorter period cannot catch the complexity of the construction activities, which have a duration spanning from a few months to a few years.

3.1.2.2 Construction sites

For the simulation of future scenarios, it is necessary to define the location, size and duration of the construction sites that are foreseen in each city. For each city we included the Pilot Construction Site assessed in the SUCCESS project, and additional construction sites given by a mix of data from the different cities and random generation.

For the definition of the future construction sites, each site has been given a duration of 1, 2 or 3 years. Besides, in each construction site we set a total budget.

The values were mainly derived from the construction licences given by the administration in the reference period.

If the budget of the construction projects is not defined, the total budget was generated randomly and distributed in the years as follows:

- for a three-years site: 1/5 first year, 2/5 second and third year ;
- for a two-years site: 2/5 first year, 3/5 second year.

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Finally, for each construction site one of the four following typologies was chosen:

- Public buildings
- Apartments
- Urban works (roundabout, parks, etc.)
- Offices.

Beside, depending on the typology of the site generated, the site has been associated to the pilot typology on which it is based, which respectively refers to the pilot site of Verona, Luxemburg, Valencia and Paris.

3.1.2.3 Demand generation

In order to assign the materials to each construction site typology, we used a proportion from the quantities and times of material used in each of the pilot sites assessed in the SUCCESS project.

The quantities of the future sites generated were defined proportionally to the ratio of the budget of the construction site over the budget of the corresponding pilot.

Moreover, the timing for the use of the materials in each site was enlarged or reduced proportionally to the duration of the simulated construction site (1, 2 or 3 years) over the duration of the corresponding pilot to which it is associated.

The data from the pilots are as follows.

Verona - Borgo Trento		Luxembourg		Valencia - Russafa Park		Paris	
Duration		**Duration**		**Duration**		**Duration**	
25	months	24	months	19	months	14	months
Budget		**Budget**		**Budget**		**Budget**	
126,000,000	euro	20,600,000	euro	15,800,000	euro	230,000,000	euro

3.1.2.4 Suppliers

The suppliers used for the simulation in each of the cities evaluated in the SUCCESS project are the same as the ones of the corresponding pilot plus random suppliers for the materials used in the other pilots and not in the current one.

The suppliers are the same for all construction sites.

3.1.2.5 Possible CCC's

The possible locations of the CCC's for the four pilots under evaluation were suggested by the pilot cities. Concerning the capacity in cubic meters of the possible CCC's, it was defined according to the existing information or generated according to similar structures. There was also a capacity, in cubic meters, for each material used in the four assessed pilots. These capacities are assumed to be 1/3 of the overall capacity.

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The capacities are assumed to refer to one month. If the time period used for the simulation is in weeks the capacity is assumed to be 1/4 of the monthly capacity.

In the simulation no setup cost is considered for the CCC's, nor any inventory cost. The economic parameters are considered separately from the routing and location solutions that will be obtained from the simulation.

3.1.2.6 Trucks

The truck fleet used in the simulation process is uniform for the 1st echelon of each simulation and each pilot site (the same kind of truck for all transport). However, for transport inside the city (2nd echelon) there are slight differences between cities due to special traffic restrictions in each of them. Following table shows the truck fleet used in both echelons for the different cities of the SUCCESS project.

Table 1. List of trucks for the Luxemburg pilot site

Type of Truck	Gross Weight [kg]	Net Weight [kg]	Volume [m3]	Consumption [l/km]	Luxemburg		
					1st Echelon	2nd Echelon	Euroclass 1st Echelon
Van / Light Truck	3.500	1.500	10	10	X	X	
2 Axes Truck 7.5T	7.500	4.900	19	15	X	X	
2 Axes Truck 14T	15.000	10.000	25	18	X	X	
3 Axes Truck	24.000	16.000	32	23	X	X	
Articulated Truck	40.000	25.000	75	35	X	X	

Table 2. List of trucks for the Paris pilot site

Type of Truck	Gross Weight [kg]	Net Weight [kg]	Volume [m3]	Consumption [l/km]	Paris		
					1st Echelon	2nd Echelon	Euroclass 1st Echelon
Van / Light Truck	3.500	1.500	10	10	X	X	
2 Axes Truck 7.5T	7.500	4.900	19	15	X	X	
2 Axes Truck 14T	15.000	10.000	25	18	X	X	
3 Axes Truck	24.000	16.000	32	23	X	X	
Articulated Truck	40.000	25.000	75	35	X	X	

Table 3. List of trucks for the Valencia pilot site

Type of Truck	Gross Weight [kg]	Net Weight [kg]	Volume [m3]	Consumption [l/km]	Valencia		
					1st Echelon	2nd Echelon	Euroclass 1st Echelon
Van / Light Truck	3.500	1.500	10	10	X	X	
2 Axes Truck 7.5T	7.500	4.900	19	15	X	X	
2 Axes Truck 14T	15.000	10.000	25	18	X	X	
3 Axes Truck	24.000	16.000	32	23	X	X	
Articulated Truck	40.000	25.000	75	35	X		

Table 4. List of trucks for the Verona pilot site

Type of Truck	Gross Weight [kg]	Net Weight [kg]	Volume [m3]	Consumption [l/km]	Verona		
					1st Echelon	2nd Echelon	Euroclass 1st Echelon
Van / Light Truck	3.500	1.500	10	10	X	X	
2 Axes Truck 7.5T	7.500	4.900	19	15	X	X	
2 Axes Truck 14T	15.000	10.000	25	18	X	X	
3 Axes Truck	24.000	16.000	32	23	X	X	
Articulated Truck	40.000	25.000	75	35	X	X	

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Figure 2. Illustration with the selected types of trucks for the simulation

Regarding the load factor, the group of experts of SUCCESS decided a maximum loading factor of 75% from suppliers to CCC's (1st Echelon) and of 90% from CCC's to construction sites (2nd Echelon). The higher load factor in the second echelon is explained due to the transport optimization that can be reached due to the CCC operations. These numbers are confirmed by the previous experiences of CCC's.

3.1.2.7 Roads, distances, time

For the routing problem, the roads were considered highways from suppliers to CCC's (1st Echelon) and urban roads from CCC's to sites (2nd Echelon). Local adjustments for CCC's far from the city are made by setting a part of the travelling distance to the site on highway. Distances and travel times were computed using the Google Map API's.

3.2 Data Transformation for Simulation

Once the demands were generated for each site as described in 3.1.2.3, the data transformation regards the definition of stochastic scenarios able to catch the variability and randomness of a single simulated scenario.

For each of the cities of the SUCCESS project three different stochastic scenarios were considered:

- The base scenario
- The increased scenario
- The reduced scenario

The **base scenario** is as above mentioned.

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In the **increased scenario** we consider the same construction sites of the base scenario. The size of each construction site is randomly increased with a 50% probability or reduced with a 5% probability. The increase is randomly generated up to 150% of the base site, while the reduction is randomly between 90% and 100% of the base scenario.

For the **reduced scenario**, each base site is deleted with a probability of 10%. Moreover, the size of the remaining sites is reduced with 50% probability or increased with a 5% probability. The maximum (random) reduction is 50%, the maximum increase is 20%.

The following picture illustrates an example of the variability of the three scenarios (global materials requirements in cubic meters) in the Verona case.

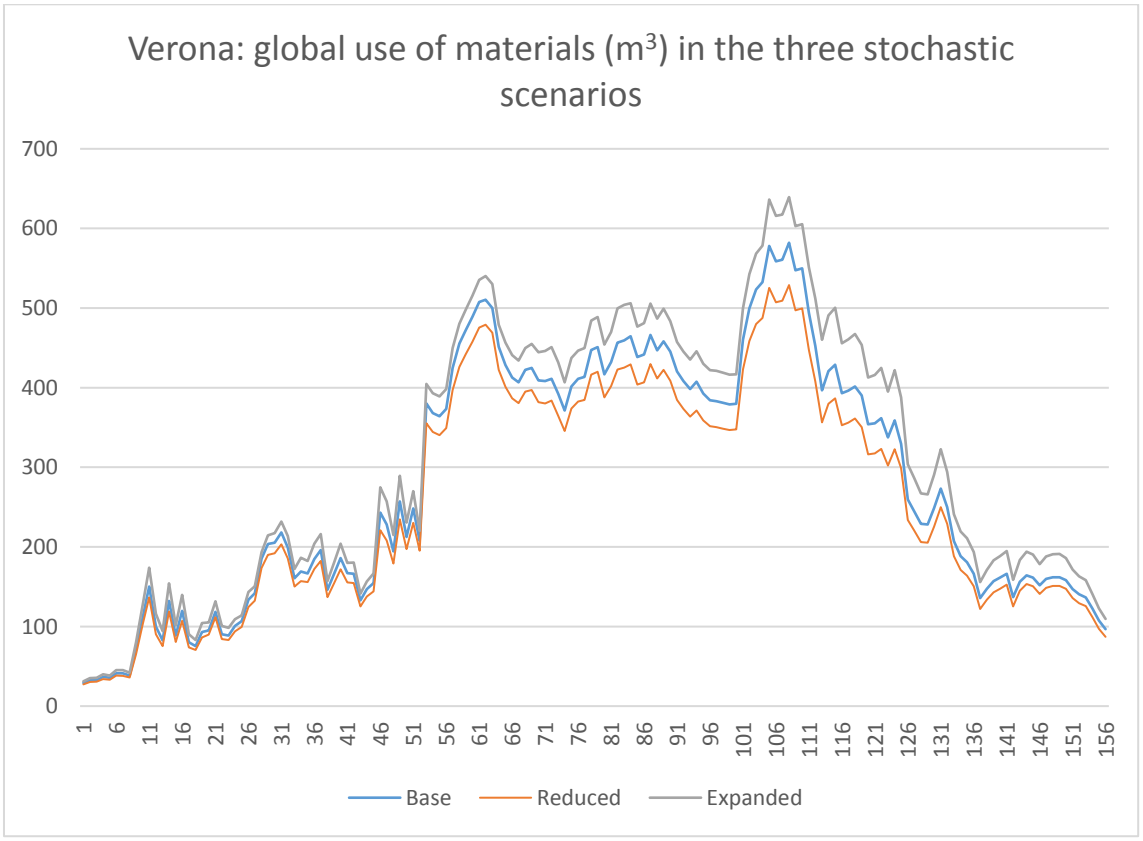

Figure 3. Diagram of the stochastic demand for the pilot of Verona

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4 Design of the Scenarios for the Simulation

4.1 Methodology

The main objective of the "WP4 – Solution Design and Test" and more in detail the task "T4.2 – Solutions Design" is to design new possible solutions for the construction industry and its associated supply chain at the four pilot sites assessed in the SUCCESS Project. For this reason, the scenarios to assess in the simulation process were designed in this task. The scenarios and the specific data collected in WP4 feed the models and algorithms developed in WP3. The final results of this simulation will allow to estimate some KPIs as explained in task "T4.1 - Target Improvement Settings".

Task 4.2 proposes different solutions (with and without CCC's) for the four pilot sites evaluated in SUCCESS and proposes a set of optimization scenarios and sub-scenarios in which the logistic chain of the construction industry can be optimized. The core variables of the different scenarios and sub-scenarios are:

- Single or multiple suppliers involved.
- Single or multiple construction sites involved.
- Single or multiple CCC's introduced.
- Assessment of the first and second echelon (from suppliers to the CCC and from the CCC to the site) or only of the second echelon (from the CCC to the site) of the supply chain.
- Future urban developments of the cities evaluated.

4.2 Scenarios for the Simulation Models

The complete set of scenarios for the simulation models that are going to be assessed with the tools and algorithms developed in T3.4 is depicted in Figure 4. Thanks to the expertise of the construction companies involved in the SUCCESS project and the collaboration of the rest of the partners with their knowledge in urban logistics, it was agreed that some of the scenarios initially designed are not going to be simulated. Notably, the scenarios involving only one supplier were rejected due to the lack of interest of the stakeholders of the construction supply chain.

Figure 4 depicts the final set of scenarios selected for being simulated among the cities of the SUCCESS project in order to set possible optimizations in the construction supply chain. However, not all the scenarios will be simulated in each of the four cities of the SUCCESS project. The group of experts of the SUCCESS project, on the basis on the specificities of each city, assessed which of the different scenarios and business models will have concrete possibilities to be implemented in each of the cities and thus which scenarios will be simulated in the different cities of the project.

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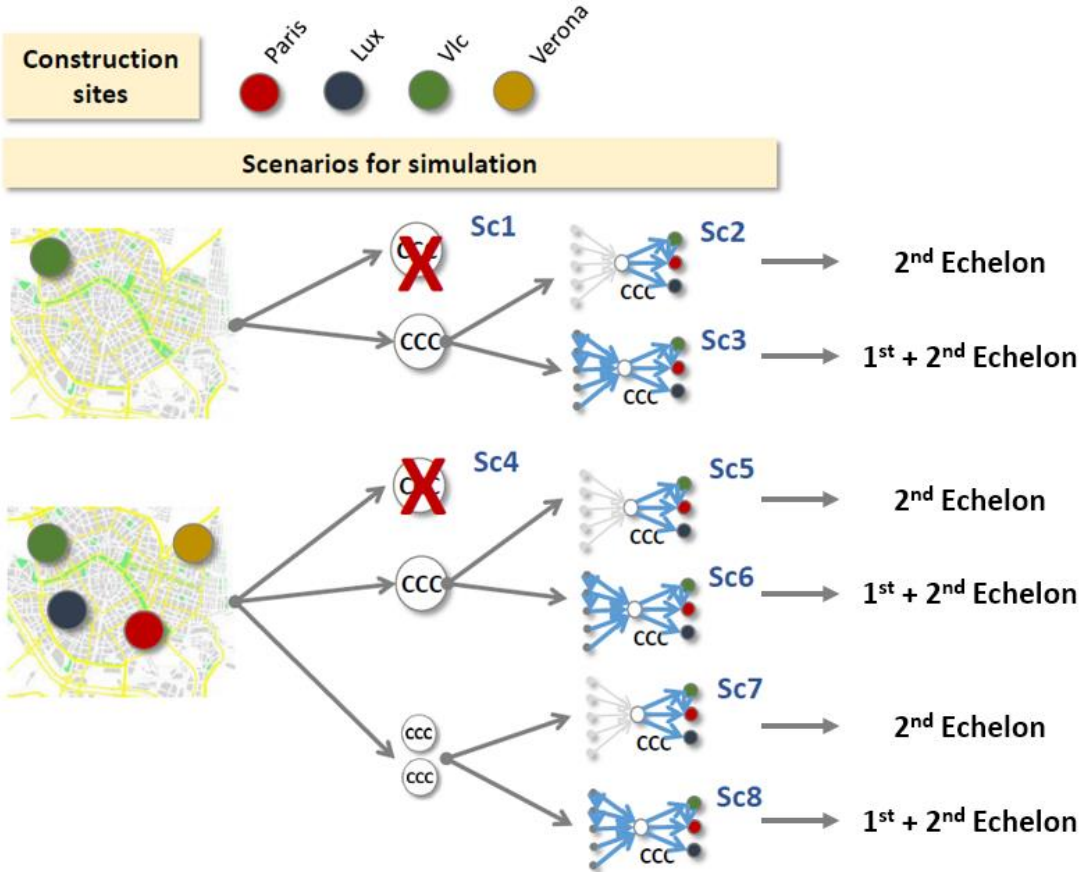

Figure 4. Schematic of the different scenarios to be assessed in the simulation models

For each of the scenarios designed and depicted above, the following issues are going to be considered:

- Supply chain network assessment in terms of the routes covered in each of the cities for the material supply and reverse logistics, the set of vehicles used, the construction materials in terms of volume, weight and load factor. This information is collected for each of the pilot sites with an excel file named "*SUCCESS_Simulation_Models_Data*". More detailed information are available in section 3.1.
- Map of all the internal logistic flows of each construction site by defining the internal material consumption flows by date and material, the level of material stocks, reorder levels and purchasing management. As in the previous case, this information is collected for each of the pilot sites with an excel file named "*SUCCESS_Simulation_Models_Data*". More detailed information are available in section 3.1.
- Regulatory aspects and willingness of the public authorities to participate and implement new measures and actions related to the urban logistics such as time windows, pricing, access bans by vehicles' types and emission categories or UCC/CCC implementation. This information is collected for each of the pilot sites with a *Questionnaire for the Public Authorities* of the city halls involved in the SUCCESS project. More detailed information can be retrieved in section 2.1.
- Organization (e.g. just-in-time scheduling and inventory control), contractual agreements along the supply chain and economic impacts of each scenario for the involved supply chain actors. This information is linked to *T3.3 - Business*

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Models Development and Analysis in which each pilot site provides a set of possible business models that can be applied for the implementation of a CCC (section 5). Besides, the willingness of the construction companies to participate in possible solutions to improve the construction supply chain is collected with a *Questionnaire for Construction Companies*. More detailed information can be retrieved in section 2.2.

4.2.1 Scenarios without CCC [SC1 and SC4]

The first set of scenarios focus on the supply chain optimization associated to a single destination or construction site (SC1) or to several sites (SC4), in both cases by several suppliers. In these two scenarios, there is a set of possible solutions that can increase the efficiency of the supply chain without using a CCC. Some of these solutions are:

- Use of collaborative tools for information interchange between actors
- Framework agreements between the actors of the supply chain
- Use of a dedicated logistic team on site
- Participation in business models of the sharing economy.

More solutions for improving the performance of the construction supply chain can be found in the deliverables of WP6, where a set of best practices and a road map for the solutions' implementation are described in detail.

SC1: Scenario defined without CCC and with a single construction site. This scenario will be analysed in all the pilot sites and possible optimizations on the current situation will be represented.

SC4: Scenario defined without CCC and with several construction sites. This scenario takes into account the information collected in all the sites of the SUCCESS Project (Luxemburg, Paris, Valencia and Verona) and will analyse the logistics flows of several pilot sites simultaneously.

4.2.2 Scenarios with CCC [SC2, SC3, SC5, SC6, SC7 and SC8]

This sub-task proposes the introduction of a new actor in the supply chain by the inclusion of a CCC. Construction Consolidation Centres aim at offering a new way of organizing the construction logistic chain for the improvement of the energy efficiency of the supply chain and for facilitating the safe and efficient flow of goods from the supplier to the final consumer (site). As a result of the use of a CCC, some of the improvements are:

- Increase in the load factor of the trucks supplying the site. Reducing the number of vehicles and of the required deliveries will reduce the negative externalities of transport (environmental issues, congestion, accidents, etc.).
- Just-In-Time (JIT) deliveries minimizing the level of stocks in the site and maximizing the performance of the construction tasks.

The design of new solutions with CCC for each of the different pilot sites will include:

- Proposal of alternatives for the location of CCCs using facility location models

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- Proposal for the location of possible future urban developments in each city
- Collection of the necessary data to locate consolidation centres
- Definition of the possible operating activities of the CCC
- Definition of the policies and regulations applied in each studied city
- Definition of the operating hypotheses of the CCC: only second echelon (Flows from CCC to site) or first and second echelon (from suppliers to CCC and from CCC to site)
- Identification of possible collaboration agreements among actors involved in the whole logistic chain needed by the introduction of a CCC.

SC2: Scenario defined with a CCC and a single construction site. This scenario will analyse the impact of the introduction of a CCC in each of the pilot sites and represent possible optimizations on the current situation without a CCC. The CCC manages the transport flows from CCC to site (2nd Echelon) but does not manage flows from suppliers to CCC (1st Echelon).

SC3: Scenario defined with a CCC and a single construction site. This scenario will analyse the impact of the introduction of a CCC in each of the pilot sites and represent possible optimizations on the current situation without a CCC. The CCC manages the transport flows from CCC to site (2nd Echelon) and from suppliers to CCC (1st Echelon).

SC5: Scenario defined with a CCC and several construction sites. This scenario will analyse the impact of the introduction of a CCC in each of the pilot sites. The scenario represents possible optimizations for a situation with several different sites that are being built at the same time and the introduction of a CCC. The CCC manages the transport flows from CCC to site (2nd Echelon) but does not manage flows from suppliers to CCC (1st Echelon).

SC6: Scenario defined with a CCC and several construction sites. This scenario will analyse the impact of the introduction of a CCC in each of the pilot sites. The scenario represents possible optimizations for a situation with several different sites that are being built at the same time and the introduction of a CCC. The CCC manages the transport flows from CCC to site (2nd Echelon) and from suppliers to CCC (1st Echelon).

SC7: Scenario defined with several CCC's and several construction sites. This scenario will analyse the impact of the introduction of two or more CCC's in each of the pilot sites. The scenario represent possible optimizations for a situation with several different sites that are being built at the same time and the introduction of several CCC's and analyses the best location for each of them. The CCC's manage the transport flows from CCC to site (2nd Echelon) but do not manage flows from suppliers to CCC (1st Echelon).

SC8: Scenario defined with several CCC's and several construction sites. This scenario will analyse the impact of the introduction of two or more CCC's in each of the pilot sites. The scenario represents possible optimizations for a situation with several different sites that are being built at the same time and the introduction of several CCC's and analyses the best location for each of them. The CCC's manage the transport flows from CCC to site (2nd Echelon) and from suppliers to CCC (1st Echelon).

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4.3 Expected results of the Simulation of the different Scenarios

The simulation models developed in WP3 will provide optimal solutions for the different scenarios proposed for each pilot site in terms of:

- Definition of the most suitable location for the CCC
- Total kilometres travelled by type of truck and type of road (i.e. highway, urban)
- Average load factor of the trucks used
- Definition of the most suitable routes for the delivery operations
- Total time travelled for the delivery operations.

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5 Scenarios and business models for each pilot site

As previously mentioned, T4.2 is closely related to WP3, especially to T3.3 "*Business Models Development and Analysis*" and T3.4 "*Optimization Models, Algorithms and Tools*". The main objective of T3.3 and of D3.3 "*Business Models for Construction Logistic Optimisation and CCC introduction*" is to describe the possible business models for the implementation of one or more Construction Consolidation Centres taking into account their commercial, financial and organizational feasibility. Thus, Task 3.3 is important for WP4, and particularly for T4.2 "*Solutions Design*", because this activity sets up possible business models for the implementation of CCC's taking into account the preferences and objectives of each pilot of the SUCCESS project.

Task 3.3 "*Business Models Development and Analysis*" focuses on the study and the analysis of the business models that have been applied in previous UCC's and CCC's. This information is useful to detect the most suitable business models for the implementation of CCC's by the construction industry. Under this framework, the process and the methodology followed in this task was:

1. Identification of different experiences of UCC's and CCC's
2. Elaboration of a state of the art in UCC's and CCC's with their most relevant information
3. Preliminary SWOT analysis of the aforementioned experiences in UCC's and CCC's
4. Definition of the general features of the business models for CCC's and UCC's and identification of data requirements (*General Model Template*)
5. SWOT analysis for the implementation of CCC's in each of the local pilots
6. Definition of Business Models for each pilot site and for each scenario
7. Summary and conclusions

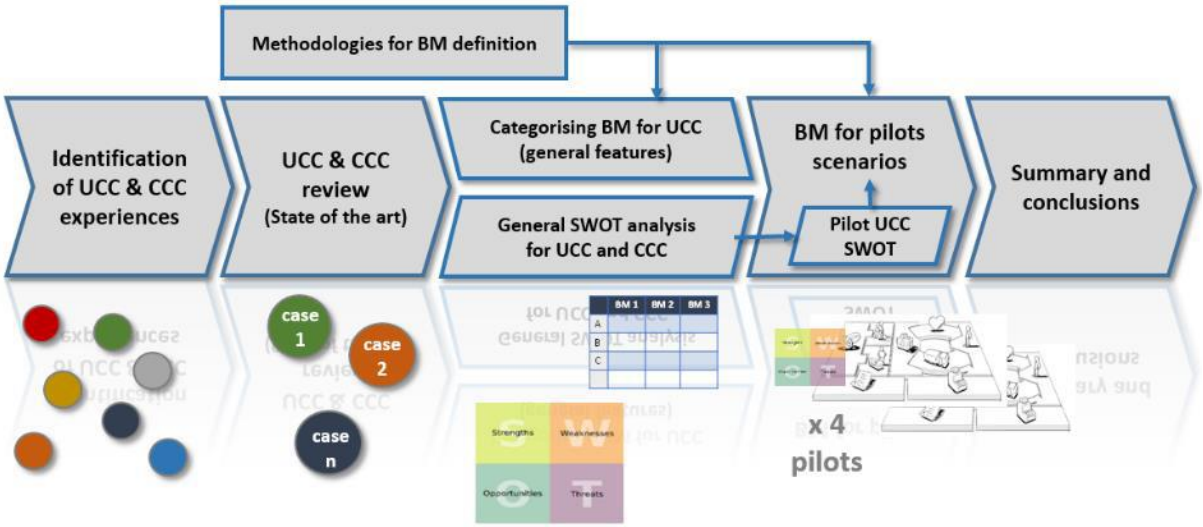

Figure 5. Illustration of the methodological approach of Task 3.3

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During Task 3.3 "*Business Models Development and Analysis*", the different pilots of the SUCCESS project selected the most suitable business models following the "Business Model Canvas" methodology according to their objectives, city characteristics and willingness of the actors involved in the implementation of a CCC.

The four pilots of the SUCCESS consortium assessed the most critical aspects of the CCC implementation in their cities and defined possible scenarios for the CCC introduction based on their needs and possibilities.

As previously shown in the "SUCCESS Vision", these business models are linked to WP4 because they show the approach followed by the four pilots for the implementation of a CCC by proposing the most suitable business models in each of them.

5.1 Scenarios and Business Models in Luxemburg

The City of Luxemburg defined two different business models and scenarios for the implementation of a CCC. On the one side, the firs approach is a concealed CCC next to a big urban development in the city centre of Luxemburg that would be operated by the main construction company in charge of the works (SC2 and SC3 if the optimization of the first echelon is considered). This CCC will work on a temporary basis until the end of the urban development in order to increase the logistic efficiency of the construction in a complicated location due to the proximity to the centre and the associated issues such as congestion. On the other hand, the second scenario for a CCC is a multi-site CCC for several construction companies that is operated by an external logistic provider and that only serves small and medium construction sites (less than 10M€). This scenario corresponds to SC5 and SC6 if optimization of the first echelon is also considered.

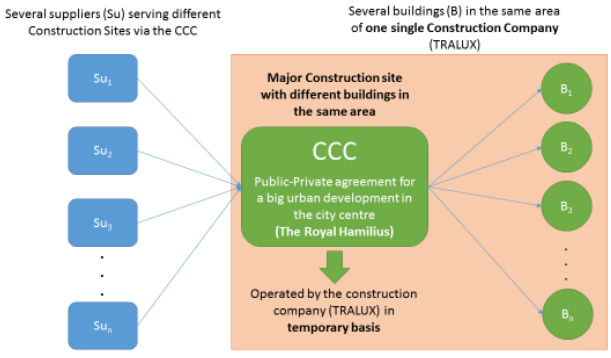

Figure 7. Scenario of the Business Models considered in Luxemburg for a concealed CCC of a single construction company and several sites located in the city centre.

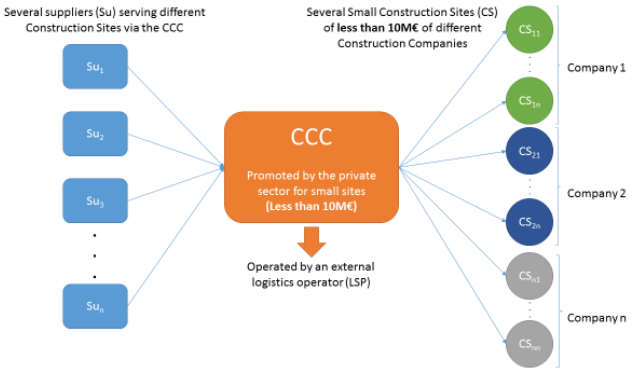

Figure 6. Scenario of the Business Models considered in Luxemburg for a multi-site CCC of several construction companies and several small and medium size sites.

5.2 Scenarios and Business Models in Paris

In the pilot of the city of Paris three different scenarios and business models have been considered and assessed for the possible implementation of a CCC. The first scenario

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to be analysed is, as in the other cities, a multi-site CCC operated by an external logistic operator that serves several construction companies and counts on the support of the public authorities (SC6). In this case, the scenario considers that the CCC is promoted by the public sector. The second assessed scenario is a multi-site and multi-company CCC but in this case promoted by the private sector under a private consortium of several construction companies that has the support of the local authorities in terms of traffic regulations (SC6). Finally, the last scenario and business model for a CCC is a multi-site centre for a single company that directly operates the CCC. In this scenario, the CCC is considered as a cost centre due to the fact that the main core business of the company is the construction and the aim of the CCC is to improve the efficiency of the logistic operations (SC6).

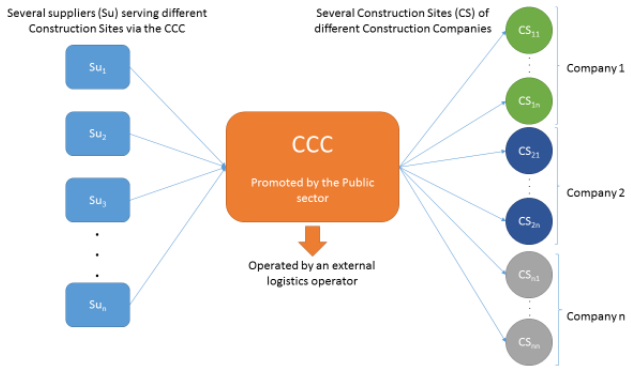

Figure 9. Scenario of the Business Models considered in Paris for a public CCC that serves several construction companies and several sites.

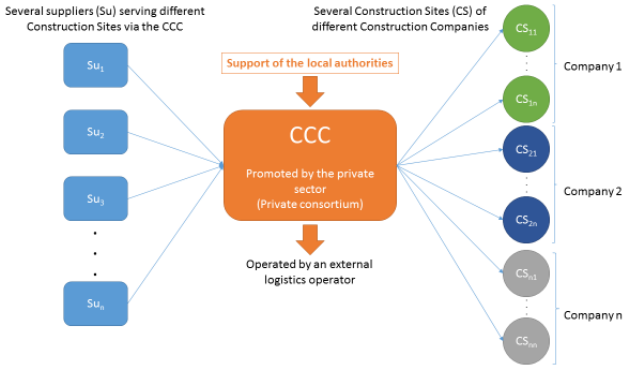

Figure 8. Scenario of the Business Models considered in Paris for a private CCC that serves several construction companies and several sites.

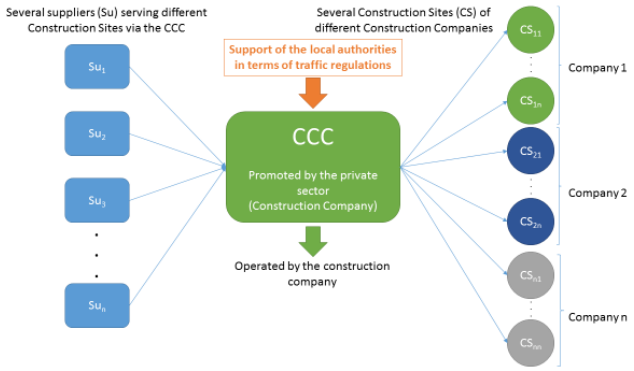

Figure 10. Scenario of the Business Models considered in Paris for a CCC of a single construction company serving several sites.

5.3 Scenarios and Business Models in Valencia

In the case of Valencia four different business models have been proposed to be analysed for the implementation of a CCC. On the one hand, two of them have in common that they are operated by an external logistic operator and that serve

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several construction sites of different companies (SC6). However, one is promoted by the public sector and the other responds to a particular situation of Valencia for the transformation of medium sized construction material distributors that are located inside the city of Valencia into CCC for small sites. On the other hand, the other two business models are applied to a single construction company that has several sites in the same area.

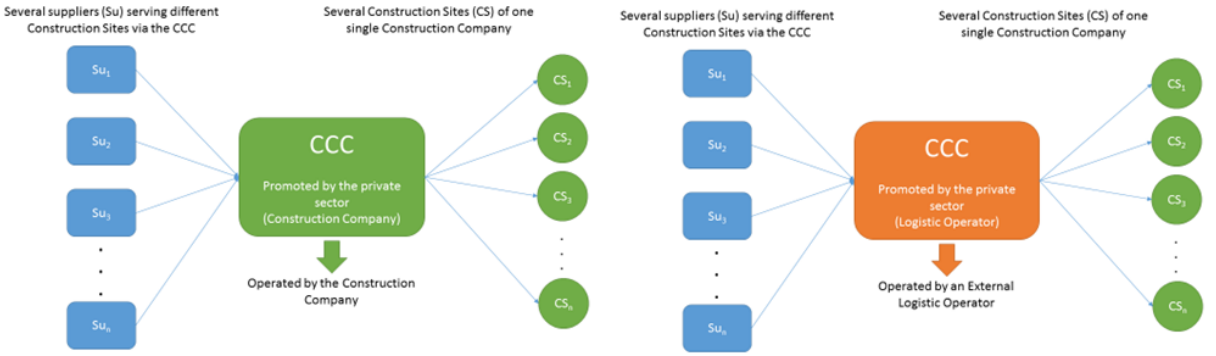

Figure 11. Scenarios of the Business Models considered in Valencia that serve a single construction company and several sites in the same area.

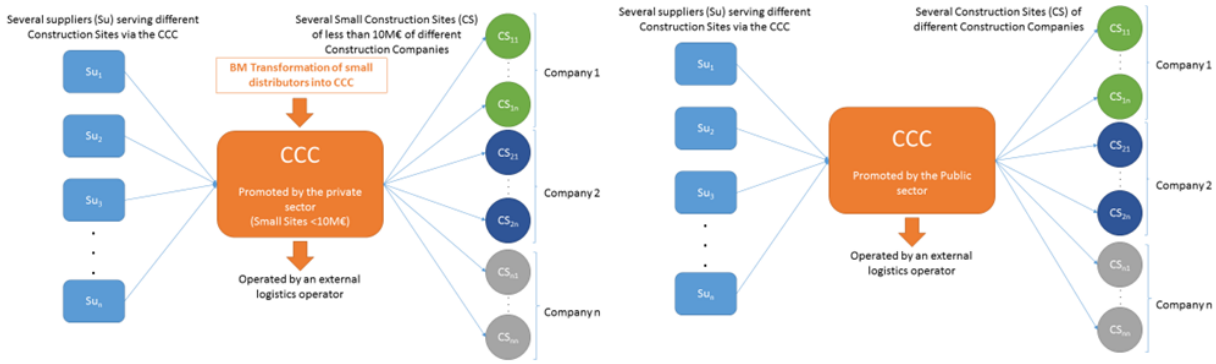

Figure 12. Scenarios of the Business Models considered in Valencia that serve several construction companies and sites.

5.4 Scenarios and Business Models in Verona

In the Verona pilot, two different scenarios and business models are assessed for the possible implementation of a CCC. The first scenario to be analysed is a multi-site CCC located in one of the most important logistic areas of Italy that is operated by an external logistic operator and serves several construction companies (SC6). The CCC has the support of the public authorities and is promoted by the private sector under a PPP agreement. Secondly, the other business model considered is a CCC for a single construction company that has several construction sites in the same area and that has the support of the local authorities in terms of traffic regulations (SC6).

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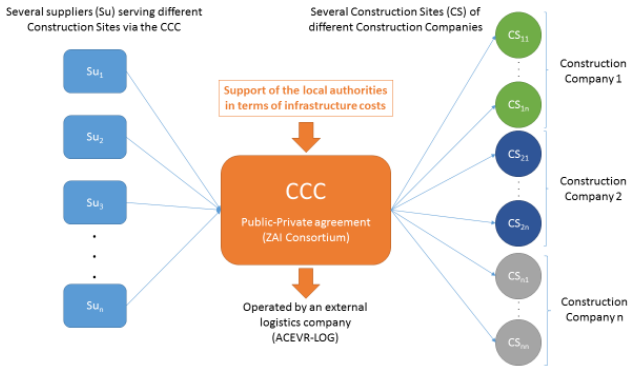

Figure 14. Scenario of the Business Model considered in Verona for several construction companies and several sites.

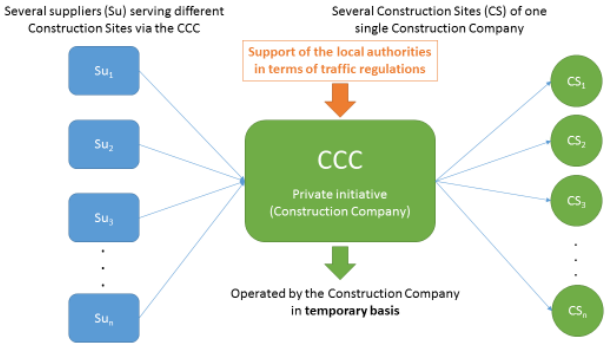

Figure 13. Scenario of the Business Models considered in Verona for a single construction company that has several sites.

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5.5 Summary of the Scenarios and Business Models for Simulation

The following figures summarize the different scenarios that will be simulated using the algorithms and tools developed in WP3. The scenarios to be simulated in each pilot are:

- SC1 and SC4 are used as a benchmark and will be simulated for all the pilots. The simulation of these two scenarios is used to be able to compare the potential benefits of the introduction of a CCC in the supply chain. SC1 simulates the "As is Situation" with only one site, while SC4 simulates the situation with several sites at the same time without any CCC.
- SC2 and SC3 will be simulated in all the pilots to see how the introduction of a CCC affects the supply chain with only one single construction site. SC2 will evaluate only the optimization of the second echelon, while SC3 will assess the optimization of both echelons.
- SC5 and SC6 will be simulated in all the pilots to see how the introduction of a CCC affects the supply chain with several construction sites. SC5 will evaluate only the optimization of the second echelon, while SC6 will assess the optimization of both echelons.
- SC7 and SC8 will be simulated only in the city of Paris. After an internal discussion based on the cities' characteristics and the difficulty to implement two CCC's simultaneously, the rest of the cities of the success consortium decided not to simulate these scenarios. SC7 will evaluate the supply chain with two CCC's including the optimization of the second echelon, while SC8 will assess the optimization of both echelons with two CCC's.

Pilot Site	Scénario 1 no CCC - 1 site	Scénario 2 1 CCC - 1 site optimisation on 2nd echelon	Scénario 3 1 CCC - 1 site optimisation on 1st and 2nd echelons	Scénario 4 no CCC - multiple sites	Scénario 5 1 CCC - multiple sites optimization on 2nd echelon	Scénario 6 1 CCC - multiple sites optimization on 1st and 2nd echelons	Scénario 7 multiple CCCs - multiple sites optimization on 2nd echelon	Scénario 8 multiple CCCs - multiple sites optimization on 1st and 2nd echelons
Luxembourg	X	X	X	X	X	X		
Paris	X	X	X	X	X	X	X	X
Verona	X	X	X	X	X	X		
Valencia	X	X	X	X	X	X		

Figure 15. Summary of the scenarios to be simulated in each pilot.

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Pilot	Business model / Scénario proposed	Description	Nb CCC	Duration	CCC operated by	1st echelon managed	2nd echelon managed	Nb Construction Companies	Nb Sites	Scénario 1 no CCC - 1 site	Scénario 2 1 CCC - 1 site optimisation on 2nd echelon	Scénario 3 1 CCC - 1 site optimisation on 1st and 2nd echelons	Scénario 4 no CCC - multiple sites	Scénario 5 1 CCC - multiple sites optimisation on 2nd echelon	Scénario 6 1 CCC - multiple sites optimisation on 1st and 2nd echelons	Scénario 7 multiple CCC - multiple sites optimisation on 2nd echelon	Scénario 8 multiple CCC - multiple sites optimisation on 1st and 2nd echelons
Luxembourg	Scenario 1	Public-Private Agreement (PPP)	1	Temporary	Construction company		X	1	1 (several buildings)		X						
Luxembourg	Scenario 2	Promoted by private sector	1	Permanent	Logistics operator		X	Several	Several (<10M€)			X					
Paris	Scenario 1	Promoted by private sector	1	Permanent	Construction company	X	X	1	Several						X		
Paris	Scenario 2	Promoted by private sector (consortium)	1	Permanent	Logistics operator	X	X	Several	Several						X		
Paris	Scenario 3	Promoted by the public sector	1	Permanent	Logistics operator	X	X	Several	Several						X		
Paris	Scenario 4 - Virtual/Digital CCC	Promoted by private sector		Permanent						N/A							
Verona	Scenario 1	Public-Private Agreement (PPP)	1	Permanent	Logistics operator	X	X	Several	Several						X		
Verona	Scenario 2	Promoted by private sector	1	Temporary	Construction company	X	X	1	Several						X		
Valencia	Scenario 1	Promoted by private sector	1	Temporary	Logistics operator	X	X	1	Several						X		
Valencia	Scenario 2	Promoted by private sector	1	Permanent	Construction company	X	X	1	Several						X		
Valencia	Scenario 3	Public-Private Agreement (PPP)	1	Permanent	Logistics operator	X	X	Several	Several						X		
Valencia	Scenario 4	Promoted by private sector	1	Permanent	Logistics operator	X	X	1	Several						X		

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6 Economic impact of each scenario: CBA analysis

6.1 Methodology

The assessment of the economic impact of the different scenarios evaluated in WP4 was carried out using two different methodologies depending on the actors involved and the scenarios evaluated.

On the one side, we evaluated the potential economic benefits that the implementation of a CCC can bring to the different actors of the Construction Supply Chain. In this first approach, the group of experts of the SUCCESS consortium has analysed the potential benefits and the economic savings that the introduction of a CCC will have for the suppliers and public authorities. The potential benefits for suppliers are mainly analysed in terms of savings of transport and working hours while in the case of public authorities the benefits are assessed in terms of congestion reduction and emissions avoided inside the city due to the transport optimization.

On the other side, the economic evaluation concerning the implementation of a CCC has been analysed using the CBA methodology in the scenarios where the construction company is the promoter of the CCC and the responsible of the investments required for its functioning (e.g. fleet, facilities, labour force, etc.).

6.1.1 Economic Benefits for the actors of the Construction Supply Chain

The potential benefits that a Construction Consolidation Centre could bring to the different stakeholders of the construction supply chain will be calculated separately for each of them and will be based on the assumption that the CCC's are generally located in neighbourhoods outside the city. The location of the CCC at the outskirts of the city allows the suppliers that have to deliver materials to the different construction sites to avoid entering the city, thus, saving time and reducing transport costs.

In addition, the transport optimization due to the increase of the load factor of the trucks that deliver materials in both echelons (i.e. the first echelon from suppliers to CCC and the second echelon from the CCC to the different construction sites) also allows a reduction in the number of trucks entering the city. Besides, this de-coupled transport scheme also increases, potentially, the use of more eco-friendly vehicles for the last mile distribution, i.e. from the CCC to the different construction sites.

In the case of the public authorities, the reduction in the total number of trucks entering the city, and the potential use of less pollutant vehicles leads to decrease of pollutant emissions inside the city.

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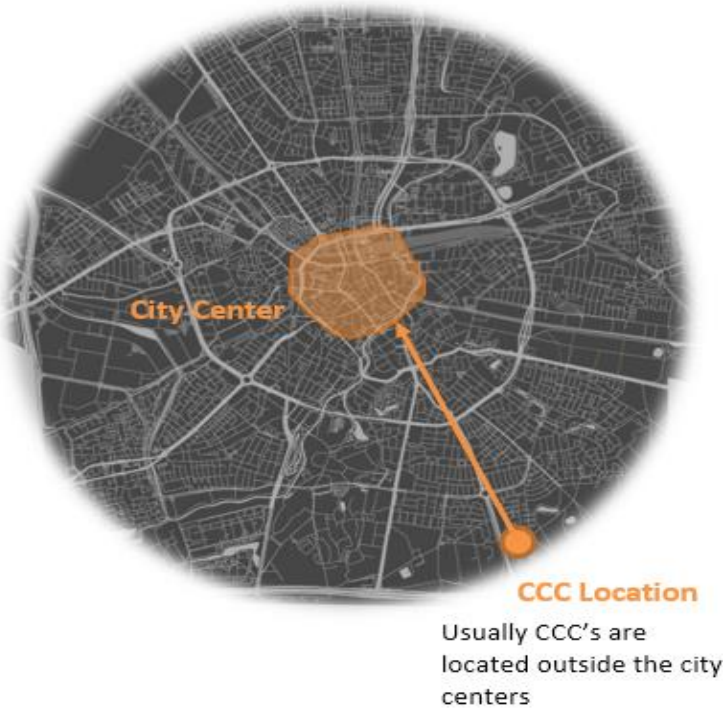

Figure 16. General CCC location

Consequently, the economic results that will be obtained for the suppliers and public authorities will be based on the previous hypotheses about the CCC's location, whereas time savings, reduction of transport costs and kilometres travelled by suppliers will be evaluated from an economic point of view. Besides, in the case of public authorities, congestion reduction and emissions avoided will also be assessed. The savings for each of the stakeholders of the construction supply chain will be calculated on a yearly basis.

The methodology for economic analysis for the different stakeholders of the construction supply chain will also be available on an interactive website tool linked to the SUCCESS website. In this web-based tool, any interested entity will have the opportunity to perform an estimation of the potential benefits that the implementation of a CCC in their city would bring to them.

6.1.2 Cost Benefit Analysis (CBA)

A Cost Benefit Analysis (CBA) is a tool that provides support for judgement and decision making in case of economic decisions for project financing. This makes the CBA a tool which results provide evidence that the project is desirable or not from an economic point of view. This is demonstrated by the result of the economic analysis and particularly by a positive economic net present value.

For the analysis of the benefits of the implementation of a Construction Consolidation Centre (CCC), a Cost Benefit Analysis was carried out in those scenarios where the construction company is the interested entity in the CCC investment. In these cases, the investments required to implement the CCC were estimated for their life-span (i.e.

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10 years). In addition, the costs necessary to maintain the facility functioning and operating were also analysed and estimated. Finally, the expected socio-economic benefits that the implementation of a CCC would generate to the construction company and the rest of actors of the construction supply chain have been forecasted. The potential benefits that the CCC can bring to the different actors were analysed by the group of experts of the SUCCESS consortium and also compared to the current state of the art of CCC benefits.

The methodology used in the cost benefit analyses follows the basic principles outlined in the Guide to Cost Benefit Analysis of Investment Projects by the Evaluation Unit of the European Commission Directorate General of Regional Policy.

The CBA section will present the main economic results obtained after the simulation process of the different scenarios and, in addition, a simplified version will be available in an interactive web based tool linked to the SUCCESS website. This web based tool will provide to any interested entity the opportunity to know the potential benefits that the implementation of a CCC in their city would bring.

Indicators Evaluated in the CBA analysis

The most commonly used indicators for evaluating projects are NPV (Net Present Value) and IRR (Internal Rate of Return) and in this case, they were used in order to assess whether the project would be economically profitable for any construction company that would like to implement it.

The economic NPV was calculated by discounting the difference between costs and benefits back to the present. It indicates how much the investor's wealth has increased after recovering their initial investment, that is, like an extra amount on top of the minimum return such investments are expected to render. The minimum required return on the investment is implicit in the discount rate, which represents the cost of capital, or the opportunity cost of relinquishing the return on alternatives involving the same level of risk.

NPV is calculated using the following formula:

$$NPV = -I_o + \sum_{j=1}^{n} \frac{Fj}{(1+r)^j}$$

Where F_j is the flow of net benefits (benefits – costs) for t = j; I_o is the investment in t = 0; r is the discount rate and n is the time horizon or lifespan of the project (10 years in our study).

NPV is one of the most commonly used measures to decide whether or not to go ahead with a project. A project is profitable for an investor if NPV is greater than zero. Therefore, the decision making rule is as follows:

NPV > 0 ⇒ Profitable Project (go-ahead recommended)

NPV < 0 ⇒ NON Profitable Project (should be rejected)

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NPV = 0 ⇒ Going ahead with the project would yield the same return as the alternative that was used to calculate the opportunity cost.

It is worth recalling that the discount rate is one of the parameters involved in calculating the NPV. Therefore, if NPV is positive, the result reveals the extra return for investors in relation to what they are expected to obtain from an alternative project. If NPV is zero, investors get the same return they expected to receive from undertaking an alternative project. And finally, if NPV were negative, the amount estimated would reveal the difference between the alternative project and the result of the project being evaluated; that is, the result is the amount that investors would no longer receive unless they opted for the alternative, which does not necessarily mean that the project would make a loss.

The second indicator used is the IRR, which is defined as the discount rate that produces a zero NPV. Mathematically speaking, the IRR is calculated on the basis of the following expression:

$$0 = -I_0 + \frac{F_1}{(1+IRR)^1} + \frac{F_2}{(1+IRR)^2} + ... + \frac{F_n}{(1+IRR)^n}$$

$$0 = -I_o + \sum_{j=1}^{n} \frac{Fj}{(1+IRR)^j}$$

Where F_j is flow of net benefits in t = j; I_o is investment in t = 0 and n is the time horizon or lifespan of the project.

The IRR is frequently used to evaluate projects. The decision making rule would be to give the go-ahead to a project if the IRR is higher than the opportunity cost of the investor (discount rate), but not to set the project in motion when the IRR is lower than the discount rate.

Generally speaking, the IRR and the NPV lead to the same decision:

- If NPV is positive, the IRR is higher than the discount rate and the investors are recommended to implement the initiative under study.
- If NPV is zero, the IRR is exactly the same as the discount rate and the investors would receive the same return as from an alternative project.

If NPV is negative, the IRR is lower than the discount rate required by the investors. Therefore, the project is less profitable for the investor than the alternative, which leads to a recommendation not to undertake the initiative.

6.2 Data requirements for Economic Analysis

General Input Data

As mentioned in the previous Section 6.1, one of the main assumptions taken into account for the calculation of the economic benefits that a CCC would bring to the

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Construction Supply Chain is that CCC's are generally located at the outskirts of the cities. Consequently, the suppliers do not have to enter the city and this leads to less trucks and less pollutants emission inside the city. For this reason, the input data required for the economic assessment of all the stakeholders of the construction supply chain is:

- **Average distance in kilometres from the outskirts to the city centre [km]**. This parameter is used to estimate the distance between the possible CCC location and the different construction sites served by the CCC. If the location of the CCC is not known, it is suggested to choose a location in the neighbourhoods that are near to the ring roads surrounding the city that will allow the tool to estimate transport savings.
- **Average time access from the outskirts to the city centre [min]**. This parameter is used to estimate the total time between the possible CCC location and the different construction sites served by the CCC. If the location of the CCC is not known, it is suggested to choose a location in the neighbourhoods that are near the ring roads surrounding the city that will allow the tool to estimate time-savings.
- **Average daily deliveries of suppliers [number]**: This parameter is used to estimate the total number of yearly deliveries and calculate the savings in terms of kilometres, time and emissions due to the transport optimization.
- **Number of construction sites served by the CCC [number]**: This parameter is used to know the total number of deliveries inside the city and then calculate the savings due to transport optimization from the CCC to the sites.

6.2.1 Data for the Economic Benefits of the Construction Supply Chain

Suppliers

Regarding the economic impact of the implementation of a CCC for the suppliers, the specific data required is:

- **Average transport cost [€/km]**: This parameter is used to estimate the transport savings due to the kilometres not covered by the suppliers inside the city because they delivery at the CCC located at the outskirts instead of in the city centre. For the evaluation of the SUCCESS pilots, the data collected in WP2 will be used for the calculation of the transport cost (i.e. type of trucks and percentage of use of each). The transport costs will be estimated per type of truck and pilot using the software ACOTRAM, a free tool of the Spanish Ministry of Development that allows to estimate transport cost per type of truck. The free software can be downloaded from the website www.fomento.gob.es

In addition, the following set of assumptions were taken into account for the economic analysis of the suppliers:

- Average waiting time inside the construction site [min]: During the WP2, the waiting time of suppliers at the construction site was analysed and the average

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waiting time measured was 13 min. This value will be considered in the analysis of the different scenarios of the SUCCESS pilots and in the interactive tool that will be available on the SUCCESS website.

- Reduction of waiting time inside the construction site [%]: in D4.1, dealing with target improvement values, it was decided that a reduction of 100% of the waiting time inside the construction site can be reached. This value will be considered in the analysis of the different scenarios of the SUCCESS pilots and in the interactive tool that will be available on the SUCCESS website.
- Average waiting time outside the construction site [min]: During the WP2, the waiting time of suppliers outside the construction site was analysed and the average waiting time measured was 11 min. This value will be considered in the analysis of the different scenarios of the SUCCESS pilots and in the interactive tool that will be available on the SUCCESS website.
- Reduction of waiting time outside the construction site [%]: in D4.1, dealing with target improvement values, it was decided that a reduction of 80% of the waiting time outside the construction site can be reached. This value will be considered in the analysis of the different scenarios of the SUCCESS pilots and in the interactive tool that will be available on the SUCCESS website.

Public Authorities

Regarding the economic and environmental impact of the implementation of a CCC for public authorities, the specific data required is:

- **Current Euroclass:** This parameter is used to estimate the transport emissions avoided due to the kilometres not covered by the suppliers inside the city thanks to the delivery at the CCC located at the outskirts instead of in the city centre. For the evaluation of the SUCCESS pilots, the data collected in WP2 will be used for the euroclass definition per pilot site.

In addition, concerning the environmental and economic impact that the implementation of a CCC would bring for public authorities, the following assumptions were considered:

- CO_2 Emissions Factor per km: for each pilot of the SUCCESS project, an average value was estimated based on the data collected during WP2 concerning the type of truck and the euroclass. In the interactive tool that will be available in the SUCCESS website this value was set as the average value of the four sites.
- PM Emissions Factor per km: for each pilot of the SUCCESS project, an average value was estimated based on the data collected during WP2 concerning the type of truck. In the interactive tool that will be available in the SUCCESS website this value was set as the average value of the four sites.
- Economic Value of the CO_2 **[€/Tn CO2 2017]**: the general value will be assumed in the analysis of the different scenarios of the SUCCESS pilots but also in the interactive tool that will be available in the SUCCESS website.

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6.2.2 Data for the Cost Benefit Analysis (CBA)

General Input Data

Additionally to the general input data of Section 6.2.1, the specific input data required for the CBA analysis of a CCC are listed below:

- **Annual Budget [€]** of all the construction sites served by the CCC. As the CBA analysis will be for a period of ten years, an average value of the future sites will have to be considered
- Percentage that the **Labour Force Costs [%]** represent compared to the total budget of the project.
- Percentage that the **Material Costs [%]** represent compared to the total budget of the project.
- **Price of facility rental [€/m²]** at the outskirts of the city evaluated for the location of the CCC.

Cost Structure

For the CBA, the cost structure of the operations in a CCC was divided in three main axes:

- Facility Cost and Investments: this category includes all the costs regarding the facility requirements for the implementation of a CCC. In this category are considered the following costs and investments:
  - Project Investment
  - Storage Rack
  - Software investment
  - Facility rental
  - Facility maintenance
  - Software maintenance
  - General expenses of the CCC.
- Vehicles and Equipment Costs and Investments: this category includes investment cost, maintenance costs, fuel, oil, for the different types of vehicles and equipment. The residual value of the vehicles and machinery was set at 10% of the acquisition value. The lifespan was considered 10 years for vehicles and forklifts and 5 years for pallet trucks. Finally, as shown in Section 3.1 in the analysis the following type of trucks and equipment were considered:
  - Articulated truck
  - 3 axes truck
  - 2 axes and 15t truck
  - 2 axes and 7.5t truck
  - Van up to 3.5t
  - Forklift
  - Pallet truck

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- Personnel costs, which are mainly the costs of the operators of the CCC, the drivers and other personnel required such as the CCC Managers or administrative staff.

Other Assumptions for the CBA

The following assumptions were taken into account in the case of the CBA for the implementation of a CCC by a construction company:

Inflation rate	2	%
Discount rate	5	%
Operational Hours per day of the CCC [h]	12,0	h
Labour Force: Working Hours per day [h]	7,5	h
Working Hours [Person/Year]	1.870	h
Number of Working days per year	255	days
Average Delivery Vehicle Size: Suppliers-CCC	20	m^3
Average Load Factor of Suppliers	75%	%
Project Lifespan	10	Years
Average Stock Time in the CCC	7	Days
Average High of the Cargo	1,25	m
Percentage of the Total Storage Area in Shelves	70%	%
Storage High of shelves in the CCC	3	Units
Daily Average Storage Occupancy	80%	%
Average Time Needed for Unloading Trucks	25	min
Personnel Needed for Unloading Trucks	1	Operator/s
Forklifts Needed for Unloading Trucks	1,0	Forklift
Other Machinery Needed for Unloading Trucks	1,0	Pallet Trucks
Average Time Needed for Loading Trucks	35	min
Personnel Needed for Loading Trucks	1,0	Operator/s
Forklift Needed for Loading Trucks	1	Forklift
Other Machinery Needed for Loading Trucks	1,0	Pallet Trucks
Housekeeping & Repacking Operations inside CCC (Forklifts)	1,0	Forklift
Housekeeping & Repacking Operations inside CCC (Other equipment)	1,0	Pallet Trucks
CCC Average Load Factor	90%	%
Average Capacity of Articulated Trucks : CCC-Site	75	m^3
Average Capacity of 3 Axes Trucks: CCC-Site	32	m^3
Average Capacity of 2 Axes Trucks: CCC-Site	15	m^3

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6.3 Expected results

6.3.1 Expected results of the Economic and Environmental Benefits for the stakeholders of the Construction Supply Chain

Suppliers

The results expected for the suppliers will be expressed in the following terms:

- Transport savings expressed in €/year due to the transport optimization and the time and kilometres not travelled inside the city
- Transport savings per delivery express in €/delivery due to the transport optimization and the time and kilometres not travelled inside the city
- Time savings expressed in annual working hours [h/year] due to the time not spent by the suppliers inside the city for deliveries on site.
- Wasted time savings expressed in annual working hours [h/year] due to the better reliability of deliveries, optimum schedules and time windows, better handling material, and less waiting time inside and outside the construction site.

Public Authorities

The results expected for the public authorities will be considered in terms of economic and environmental benefits and will be expressed in the following terms:

- Transport savings expressed in km/year that will estimate the total amount of kilometres not travelled inside the city by the different stakeholders of the construction supply chain.
- Congestion avoided inside the city, expressed in percentage, comparing the number of trucks entering the city that will be avoided thanks to the location of the CCC outside the city centre.
- Total emission savings due to the trucks avoided inside the city and the use of more eco-friendly vehicles from the CCC to the different construction sites.
- Estimation of the economic value of the emissions avoided inside the city and the use of more eco-friendly vehicles from the CCC to the different construction sites.

6.3.2 Expected results of the Cost Benefit Analysis (CBA)

The main results expected from the analysis are, firstly, the dimensioning of the CCC and, secondly, to show the profitability or not of the initiative. Regarding the dimensioning of the CCC, it is done in the following terms:

- Facility dimensioning: provide an approximated value of the area needed for the CCC operations including the storage area needed and the area of the complete facility.
- Fleet dimensioning: provide an approximated value of the type and number of trucks needed for the CCC operations.
- Machinery dimensioning: provide an approximated value of the type and number of equipment needed for the CCC operations.

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- Labour force dimensioning: provide an approximated value of the number and type of workers needed for the CCC operations.

On the other side, the results of the analysis will also provide information about the investments required for the implementation of a CCC, the operational cost of it, the savings produced due to the performance improvements on site and the benefits or losses that the CCC would generate during its lifespan. Besides, the CBA will provide values of the NPV and the IRR about the profitability (or not) of the initiative that can be used as a recommendation to undertake or not the initiative.

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7 Evaluation of emissions in simulation (COPERT Methodology)

7.1 Introduction to the COPERT Tool

COPERT is a software program, supported by the European Environmental Agency (EEA), developed as a European tool for the calculation of emissions from the road transport sector. The emissions calculated include regulated (CO, NO_x, VOC, PM) and unregulated pollutants (N_2O, NH_3, SO_2, NMVOC speciation).Energy consumption and GHG emissions are also computed.

COPERT is published with national up to date databases describing most EU national vehicle fleets, from personal cars to heavy duty vehicles.

To compute energy consumption and emissions, COPERT uses:

- truck characteristics like category and number of axles, Euro class, fuel type, but also load factor (by default, a 50% load is used)
- driving conditions, distinguishing between highway, rural and urban, with a further distinction between peak and off-peak journeys. COPERT can also include user defined input regarding the use of A/C.

7.2 Methodology

Under the framework of the SUCCESS project, the COPERT tool will be used for the estimation of the emissions of the different pilots and scenarios designed and simulated. For each scenario simulated in every pilot city, indicators will be computed to assess their environmental impact in terms of emissions of pollutants and , mainly due to the combustion of fuel in trucks' thermal engines, i.e.:

- Particulate matters (PM)
- Nitrogen oxides (NO_x) and carbon monoxide (CO)
- Greenhouse gases (mainly CO_2)

The computation will be done from:

- The number of kilometres made by each category of trucks to operate 1st and 2nd echelon deliveries, both outside and inside the cities
- A series of assumptions made about:
    - For each truck category, the actual truck mix: Euro class, fuel type, using:
        - the data available in COPERT for each country
        - or what-if analysis
    - The share of kilometres made during peak hours / off-peak hours
    - The average speed of trucks used for deliveries.

For each scenario simulated, different series of assumptions will be made about some key drivers to emissions which are not part of the simulation variables or parameters, like the type of fuel used by trucks or their Euro class.

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Cumulated emissions will be calculated for the whole simulation perimeter and timespan.

Description of the calculations made to assess environmental KPI'S

The following diagram summarizes the processing done before running the COPERT tool.

Note that the urban and non-urban shares will be assumed to be identical for all journeys of each echelon.

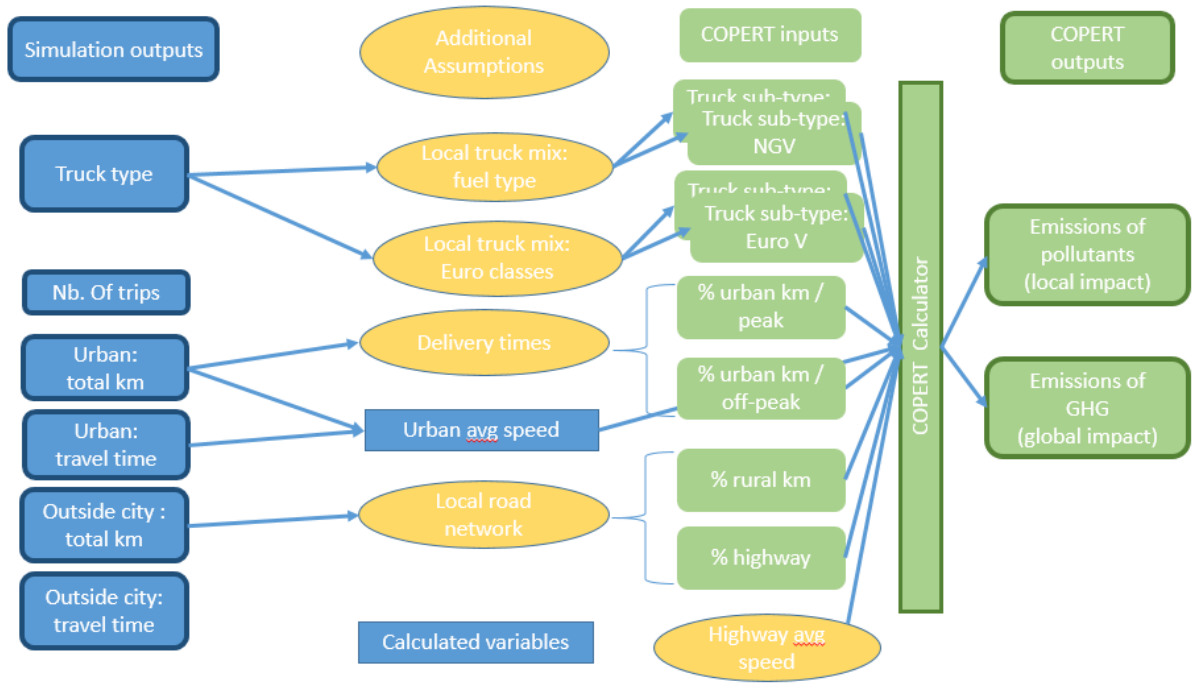

Figure 17. Schematic of the processes of the COPERT tool

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8 Conclusions

The deliverable D4.2 "Sites design Solution" presents the methodology followed for the evaluation of the different scenarios to be simulated in WP4 aiming at improving the management of the construction supply chain.

The deliverable illustrates the regulatory framework and possible interventions regarding the construction logistics in urban environments for the four pilots of the SUCCESS project.

In addition, the deliverable shows the status of the construction industry and the degree of innovation in management of the construction supply chain, warning about an important gap compared to other industries that must be fulfilled.

This deliverable is the foundation of the simulation models, designing a set of scenarios for each of the different pilot sites evaluated in SUCCESS. The business models of the CCC's, the simulation carried out in WP3 and fed with the data collected in WP2 and specific data collected in WP4 will be the basis of the solutions designed for each pilot. The results of the simulation process will be reported in the following deliverable D4.3 "Simulation Results" of WP4.

Last but not least, in the deliverable we presented the tools that will assess the economic and environmental impact of the different scenarios proposed. The economic impact will be evaluated using an ad-hoc CBA tool and the environmental impact will be assessed through the calculation of the emissions carried out using COPERT®.

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Annexes

Annex 1: Questionnaire about urban freight transport for Municipalities and Local Administrations

SUCCESS project

The SUCCESS Project - *Sustainable Urban Consolidation CentrES for COnStruction* – funded by the H2020 programme, started in May 2015 and has an estimated duration of 36 months. The main objective of SUCCESS is to **reduce the negative impacts of freight distribution in urban areas and its associated costs** by improving knowledge and understanding of freight distribution and service trips for the construction sector and by demonstrating impacts in terms of transport and environmental efficiency. The project focuses on how the Supply Chain Management and Construction Consolidation Centres (CCCs) concept could bring tested and replicable solutions to address problems in the construction supply chain.

SUCCESS addresses the feasibility of optimising and integrating the supply chain and will simulate the implementation of Construction Consolidation Centres in urban areas by the analysis of four different pilot sites: Luxemburg, Verona, Paris and Valencia. The project will also develop a best practice guidance on innovative approaches integrating knowledge, competences of research institutes, public authorities and business operators.

For more information about this Project: http://www.success-urbanlogistics.eu/

Structure of the survey

The survey is structured in three sessions, which are:

- The first part aims at collecting general information on the interviewed;
- The second part, which aims to gather practices in construction logistics adopted by the Municipality to manage the impact of the SUCCESS construction site on the urban area;
- The third part, analyses the willingness of city hall and local authorities to implement possible measures and actions to improve the logistic associated to urban freight transport and more specifically the construction transport chain.

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Entity interviewed

City Hall	
Contact Person	
Department	
Position	
E-mail	
Telephone	

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2 Managing interferences between the SUCCESS construction site and the urban area

Involvement in the construction site

Q1	When has the Municipality been informed about the construction site?
	□ During the project's planning phase □ At the beginning of the construction activities □ During the project realisation

Q2	Which are the main municipality's departments involved?
	□ City planning □ Environment □ Other _____

Q3	Who are the main actors in contact with the Municipality?
	□ Owner/client □ Promoter □ Designer □ Main contractor □ Sub contractors □ Other _____

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Q4	Please detail the main communications set up/to be set up with the municipality during the different phases of the project, by distinguishing between mandatory communications and additional communications.				
	Type of communication	During the project's planning phase	At the beginning of the construction activities	During the project realisation	At the end of the project
	Mandatory communications				
	Additional communications				

Q5	What type of interferences between construction site and urban area has the municipality managed?
	□ Logistic problems (congestion, etc…) □ impact noise exposure □ pollution impact □ Other _____

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Q6	Which are the main interferences between construction site and urban area and the related practices that the municipality has adopted to manage them?	
	Interference	Practices adopted

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3 Possible measures and actions to improve construction transport chain

Please, mark "Yes" or "No" for each of the different measures exposed in the following sections taking into account the willingness of your administration to promote and implement this kind of actions. In case of affirmative response, please indicate also the probability of its implementation considering the current plans of your city, **being 1 unlikely to be implemented and 5 highly probable to be implemented**. In addition, this questionnaire will include information about the current status of each topic and the future plans.

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Question		Yes	No	Probability	Current limitations	Future plans
Q7	Increase current traffic restrictions to the delivery vehicles (in terms of weight, speed, etc.)					
Q8	Establish new restricted access areas for urban delivery vehicles					
Q9	Modify time windows for the urban deliveries in current restricted access areas.					
Q10	Establish of modify control emissions areas					
Q11	Plan loading and unloading areas: number, location, size, etc.					
Q12	Modify the use of the loading and unloading areas: schedules, management systems, etc.					
Q13	Establish loading and unloading areas at the road (apart from the parking space)					
Q14	Other measures regarding urban regulations:					

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Question		Yes	No	Probability	Current situation	Future plans
Q15	Introduction of Urban Consolidation Centres (UCC)					
Q16	Introduction of Construction Consolidation Centres (CCC)					
Q17	Benefits or exemptions for the companies that use UCC and/or CCC (e.g. tax reductions, special permits, etc.)					
Q18	Support for the implementation of UCC and/or CCC (economical support, granting of land, etc.)					
Q19	Subsidies for operations of UCC and/or CCC					
Q20	Direct participation in the management of Support for the implementation of UCC and/or CCC					
Q21	Other measures related to Consolidation Centres (UCC & CCC):					

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Delivery vehicles

Question		Yes	No	Probability	Current situation	Future plans
Q21	Labelling scheme for delivery vehicles and fleets					
Q22	Benefits or exemptions for companies that use eco-friendly delivery vehicles/ labelling schemes					
Q23	Introduction of taxes for the use of infrastructures depending on vehicle type					
Q24	Other measures related to delivery vehicles:					

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Annex 2: Survey for companies of the construction industry

Introduction

The European project SUCCESS – Sustainable Urban Consolidation CentrES for conStruction is funded by the Horizon 2020 programme and is part of the CIVITAS initiative. It aims to reduce the negative impacts of freight distribution in urban areas and its associated costs by improving knowledge and understanding of freight distribution and service trips for the construction sector and by demonstrating impacts in terms of transport and environmental efficiency.

We are going to ask some questions about your experience with construction logistics.

Please complete this brief survey. You should spend no more than 15 minutes on the survey.

This survey was sent to you by the SUCCESS consortium. For more information about this project: http://www.success-urbanlogistics.eu/

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A About your company

A1. Fill this the table below

Name of your company:	
Your name:	
Your position:	
Department:	
E-mail:	
(We may contact you for additional information)	
Telephone:	

A2. What is the total number of permanent employees in your company?

☐ < 10 employees
☐ 10 - 49 employees
☐ 50 - 249 employees
☐ > 250 employees

A3. Which of the following categories applies best your company's activities?

☐ Construction Company
☐ Trade contractor
☐ Material supplier (-> Answer only B1)
☐ Waste management company (-> Answer only B1)
☐ Service provider (equipment rental company, cleaning company …) (-> Answer only B1 and B2)
☐ Architecture firm (-> Answer only section C)
☐ Engineering firm (-> Answer only section C)
☐ Other: _____

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B Improving the construction supply chain management

B1. Which **solutions related to the movement of materials into and outside the construction site** have you already experimented or are you aware of?

It includes:

- *Sourcing: to select suppliers for acquiring materials and services.*
- *Ordering: to acquire the needed materials, equipment, and services.*
- *Delivery: to transport the goods from suppliers to the construction site.*
- *Waste Management: to collect construction waste / demolition debris / packaging waste, recycle and sort material.*
- *Returns Management: to organize unused and unsuitable material exit and return to sub-contractor or supplier and give returnable packaging back to the supplier (e.g. Pallets)*

Solutions	Is it already implemented in your company?			If no, are you aware of the solution?	
	Sometimes	Always	No	Yes	No
Framework agreement	☐	☐	☐	☐	☐
Just-In-Time deliveries	☐	☐	☐	☐	☐
RFID or similar technology	☐	☐	☐	☐	☐
Purchase software	☐	☐	☐	☐	☐
Dedicated team to collect waste on site	☐	☐	☐	☐	☐

Please detail other solutions you implemented:

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B2. Which **solutions related to the movement of materials inside the construction site** have you already experimented or are you aware of?

It includes:

- *Material Reception and Expedition: to manage loading and unloading of materials/waste/equipments and the activities involving the trucks from the entrance to the exit of the construction site.*
- *Inventory: to specify the size and placement of stocked goods to avoid overstock or shortage.*
- *Material Handling and Equipment Management: to move materials within the construction site by using the right equipment to guarantee the continuity of the activities.*
- *Housekeeping: to minimize the degradation and pollution of materials and maximize safety for workers in keeping the site clean and tidy.*

Solutions	Is it already implemented in your company?			If no, are you aware of the solution?	
	Sometimes	Always	No	Yes	No
Delivery area	☐	☐	☐	☐	☐
Dedicated logistics team	☐	☐	☐	☐	☐
Marked storage zones	☐	☐	☐	☐	☐
Protected areas	☐	☐	☐	☐	☐
Cleaning team	☐	☐	☐	☐	☐
Delivery area booking system	☐	☐	☐	☐	☐

Please detail other solutions you implemented:

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B3. Which **solutions supporting the movement of materials** have you already experimented or are you aware of?

It includes:

- *Planning and Scheduling Resources: to schedule and plan the activities and the resources such as workforce, equipments, and spaces.*
- *Complaint Management: to address complaints, non-conformities, and resolve disputes.*
- *Entrance and Exit Management: to grant rights to authorized people and vehicles to the construction site while maintaining safety in and out the worksite and efficient operations on the worksite.*

Solutions	Is it already implemented in your company?			If no, are you aware of the solution?	
	Sometimes	Always	No	Yes	No
Entrance gate for check-in and check-out	☐	☐	☐	☐	☐
Badge access	☐	☐	☐	☐	☐
Traffic light at the exit	☐	☐	☐	☐	☐
Delivery planning	☐	☐	☐	☐	☐

Please detail other solutions you implemented:

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B4. Please indicate for each process its **impact on the whole supply chain** and evaluate its efficiency on your company according to the following range:

Impact: Low impact (1) to High impact (5)
Evaluation: Very low (1) to Excellent (5)

Process	Impact	Evaluation
Sourcing		
Ordering		
Delivery		
Material Reception and Expedition		
Inventory and Storage Management		
Material Handling and Equipment Management		
Housekeeping		
Waste Management		
Return Management		
Planning and Scheduling Resources		
Complaint Management		
Entrance and Exit Management		

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B5. **Problems related to urban freight transport** in the construction sector:

Please evaluate the following problems related with urban freight transport according to the impact on your daily operations, being 1 not relevant and 5 highly relevant:

Impact: Not relevant (1) to Highly relevant (5)

Problems	Impact
Weight limits restrictions for the delivery vehicles	
Access restrictions to certain areas	
Time windows for urban deliveries	
Location and use of loading and unloading areas	
Traffic congestion	
Others (please indicate): - - - - - -	

Opinion regarding measures for urban freight transport and supply chain management in the construction sector:

In case of affirmative response, please indicate also the probability of its implementation considering the current plans of your company, being **1 unlikely to be implemented and 5 highly probable to be implemented**. In addition, this questionnaire will include information about the current status of each topic and the future plans.

- Sharing economy

Do you know the concept "sharing economy"?[1]

☐ Yes ☐ No

Do you know any specific example of sharing economy applied in the construction sector?

☐ Yes, please indicate: _____ ☐ No

Measure	Yes	No	Probability	Current situation	Future plans
Willingness to participate in sharing economy solutions					

[1] Sharing Economy, collaborative consumption or peer economy is a socio-economic ecosystem built around the sharing of human, physical and intellectual resources. It includes the shared creation, production, distribution, trade and consumption of goods and services by different people and organisations. Business models based on sharing economy can be implemented in any sector and some of the most renowned and successful ones are: Airbnb, Uber or Bla bla Car.

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Willingness to share information with other companies of the construction sector aiming at improving the global efficiency of the construction supply chain					
Willingness to manage directly any business model of sharing economy					

Do you consider interesting the implementation of the following measures aiming at improving the urban freight transport?

- Construction Consolidation Centres (CCC)[2]

Do you know the concept "Construction Consolidation Centre (CCC)"?

☐ Yes ☐ No

Do you know any specific example of Construction Consolidation Centre applied in your region/country?

☐ Yes, please indicate: _____ ☐ No

Measure	Yes	No	Interest	Current situation	Future plans
Introduction of Construction Consolidation Centres in your city (CCC)					
Benefits or exemptions for the companies that use CCC (e.g. tax reductions, special permits, etc.)					

[2]A Construction Consolidation Centre (CCC) is a distribution facility through which material deliveries are channelled to construction sites. The material is handled with appropriate equipment and stored in dry, secure locations. On call off from the site, the CCC operator makes up consolidated loads and delivers them on a Just-In-Time basis. This process is often combined with on-site logistics specialists delivering materials to the point of use and provides an excellent opportunity to improve the overall resource efficiency of a construction project. *Greger Lundesjo, (2011,) The Logistics Business : Using Construction Consolidation Centres to reduce construction waste and carbon emissions*

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Support for the implementation of CCC (economical support, granting of land, etc.)					
Subsidies for operations of CCC					
Implementation of your company for an exclusive CCC for your own operations					
Participation of your company in a shared CCC that manages operations of several companies					
Willingness of your company to manage directly the CCC					
Other measures related to Consolidation Centres (CCC):					

- Delivery vehicles

Question	Yes	No	Interest	Current situation	Future plans
Labelling scheme for delivery vehicles and fleets					
Benefits or exemptions for companies that use eco-friendly delivery vehicles/ labelling schemes					
Introduction of taxes for the use of infrastructures depending on vehicle type					

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Other measures related to delivery vehicles:					

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C Use of ICT tools

C1. How frequently do you work at the construction site?

☐ Never ☐ Seldom ☐ About half the time ☐ Usually ☐ Always

The rest of your time, do you work at the office: ☐ Yes ☐ No. Please specify: _____

C2. At the construction site, what proportion of employees has access to the following?

	No one	Some	Most	Every one
Computer	☐	☐	☐	☐
Mobile computing device with internet connection (e.g. i-Phone, tablet)	☐	☐	☐	☐
Internet access from own device (computer/telephone)	☐	☐	☐	☐
Internet access from a shared device (computer, telephone)	☐	☐	☐	☐

C3. To what networks do you have access?

	In office	On site
GSM		
3G / 4G		
Wifi		
VPN		
Others:_____		

C4. Does your company have an intranet/fileserver?

☐ Yes ☐ No, but this would be useful ☐ No, but it is not necessary

If yes, what does it contain? (Multiple choice possible)

☐ News
☐ Manuals
☐ Project information
☐ Personnel information
☐ Quality information
☐ Pictures
☐ Project drawings
☐ Project contracts
☐ Project reports
☐ Other: _____

If yes, do you have access to the intranet/fileserver on the construction site?

☐ Yes
☐ Sometimes
☐ No, but this would be useful

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☐ No, but it is not necessary

C5. At the construction site, do you have a shared fileserver to exchange information and/or document with partners?

☐ Yes
☐ No, but this would be useful
☐ No, but it is not necessary

C6. Do you use computer-aided design (CAD) or BIM?

☐ Yes
☐ No, but this would be useful
☐ No, but it is not necessary

If yes, do you use it for logistics purposes (identify storage area, suppliers, delivery areas…)?

☐ Yes. Please describe _____
☐ No, but this would be useful
☐ No, but it is not necessary

C7. For each of the process, which ICT tools do you use? (Multiple choice possible)

	Phone	Fax	Mail	Word	Excel	Softw are	None
Sourcing	☐	☐	☐	☐	☐	☐	☐
Ordering	☐	☐	☐	☐	☐	☐	☐
Delivery	☐	☐	☐	☐	☐	☐	☐
Material Reception and Expedition	☐	☐	☐	☐	☐	☐	☐
Inventory and Storage Management	☐	☐	☐	☐	☐	☐	☐
Material Handling and Equipment Management	☐	☐	☐	☐	☐	☐	☐
Housekeeping	☐	☐	☐	☐	☐	☐	☐
Waste Management	☐	☐	☐	☐	☐	☐	☐
Return Management	☐	☐	☐	☐	☐	☐	☐
Planning and Scheduling Resources	☐	☐	☐	☐	☐	☐	☐
Complaint Management	☐	☐	☐	☐	☐	☐	☐
Entrance and Exit Management	☐	☐	☐	☐	☐	☐	☐

C8. What do you think are the biggest obstacles or disadvantages to use ICT collaboration tools to coordinate the activities between the partners? (Maximum 3 choices)

☐ Resistance to change
☐ Lack of finance/cost of investment
☐ Difficulties in measuring profits/ assessing investments
☐ Lack of interest / Commitment from the management
☐ Decision makers have no time for IT efforts due to heavy workloads
☐ What we use now meets our current needs, and changes are unnecessary

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☐ Partners do not use computers
☐ Partners use different systems or software
☐ The quality of data received from project partners is not high enough
☐ The IT network is not good enough to share information between partners
☐ Staff doesn't have adequate knowledge
☐ Lack of standards/coordination problems
☐ Other. Please describe _____

C9. Which ICT solutions to improve the construction supply chain management are you aware of?

Thank you for taking time to participate in our survey

Are you interested in receiving news about our project? ☐ Yes ☐ No

Email after survey completion

Thank you for taking time to participate in our survey. We truly value the information you have provided. By participating in this survey, you help the community to better understand the level of maturity in terms of construction supply chain management.

The compiled results of the survey will be detailed in our next newsletter.

You can find us on our website www.success-urbanlogistics.eu/, on linkedIn group and on Twitter.

Thank you again for your time and input,

SUCCESS team

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Annex 3: Example of the data collected for the simulation

Example of the data of the pilot of Valencia:

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Task and Activity characteristics					Material Characteristics					Truck Characteristics				Information about location of suppliers and dumpsites				
Task	Sub-Task	Activity	Start	End	Material/s	Measurement	Unit	Conversion to kg	Conversion to m3	Type of Truck	Capacity in volume (m3)	Capacity in weight (kg)	Direct or Reverse	Supplier or Dumpsite	Street and Number	Postal Code	City	Country
	Demolitions	Demolition Structures	16/12/2014	08/01/2015	Bricks, Walls, and structures	2.185,0	t	2.184.990,0	3.277,5	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Demolitions Pavements	09/01/2015	02/02/2015	Wasted pavements	3.695,9	t	3.695.960,0	7.291,6	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Demolitions Fibrocement	02/02/2015	17/02//2015	Wasted concrete	3.095,5	t	3.095.530,0	4.643,3	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Demolitions	17/02/2015	12/03/2015	Other Materials	2.381,3	t	2.381.250,0	1.831,7	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
	Earth Movements	Earth Movements	18/02/2015	28/08/2015	Topsoil Layer	61.114,4	m2		24445,5	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		Earth Movements	18/02/2015	28/08/2015	Earth movement	32.679,9	m3		32.679,9	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
	Foundations, Structures and Walls	Armado en Cimentaciones	24/04/2015	22/06/2015	Steel B 500 S 6-25mm	82.181,5	kg	82.181,5		Truck 3 Axes	15	20.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Armado en Muros y estructuras	24/07/2015	11/09/2015	Steel B 500 S 6-25mm	83.246,1	kg	83.246,1		Truck 3 Axes	15	20.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Armado en contrafuertes	23/06/2015	09/07/2015	Steel B 500 SD 6-25mm	22.607,1	kg	22.607,1		Truck 3 Axes	15	20.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Hormigón en zanjas, zapatas y riostras	24/04/2015	22/06/2015	Concrete HL-150/B/20 e=10	4.685,5	m2		468,5	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón en zanjas, zapatas y riostras	24/04/2015	22/06/2015	Concrete HA-25/B/40/IIa	1.931,4	m3		1.931,4	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón en zanjas, zapatas y riostras	24/04/2015	22/06/2015	Concrete HA-30/B/40/IV	13,7	m3		13,7	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón en losas de antepecho y muro verde	31/08/2015	11/09/2015	Concrete HA-25/B/20/IIa	157,6	m3		157,6	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón en losas en locales tecnicos	24/07/2015	29/07/2015	Concrete A-30/B/20/IV+Qa	208,1	m3		208,1	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón en losas en locales tecnicos	24/07/2015	29/07/2015	Concrete HA-30/B/20/IIIa	11,8	m3		11,8	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón en muros de contrafuerte	23/06/2015	09/07/2015	Concrete HA-30/B/20/IIIa	390,2	m3		390,2	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón en muros de contrafuerte	23/06/2015	09/07/2015	Formwork	956,0	m2	718,0	1,5	Truck 3 Axes	15	20.000	Direct	Ischebeck Iberia	Polígono Industrial El Oliveral, Calle S, nave 25	46394	Ribarroja del Turia, Valencia	Spain
		Hormigón resto de muros	10/07/2015	25/08/2015	Concrete A-30/B/20/IV+Qa	336,3	m3		336,3	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Hormigón resto de muros	10/07/2015	25/08/2015	Formwork	876,3	m2	658,0	1,3	Truck 3 Axes	15	20.000	Direct	Ischebeck Iberia	Polígono Industrial El Oliveral, Calle S, nave 25	46394	Ribarroja del Turia, Valencia	Spain
		Muros verdes	08/07/2015	14/08/2015	Formwork	836,6	m2	627,0	1,3	Truck 3 Axes	15	20.000	Direct	Ischebeck Iberia	Polígono Industrial El Oliveral, Calle S, nave 25	46394	Ribarroja del Turia, Valencia	Spain
		Muros verdes	08/07/2015	14/08/2015	Green Wall 200x378x15cm	1.844,0	m2	553.200,0	280,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Panel de hormigón prefabricado	04/05/2015	11/06/2015	Precasted Concrete Panel e=18cm; (2,4x1.5-2,5)	141,9	m2	59.800,0	26,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Panel de hormigón prefabricado	04/05/2015	11/06/2015	Precasted Concrete Panel e=18cm; (2,4x2.5-3,5)	861,6	m2	368.000,0	160,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Panel de hormigón prefabricado	04/05/2015	11/06/2015	Precasted Concrete Panel e=31cm; (2,4x3,5-4,5)	596,9	m2	427.800,0	186,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Panel de hormigón prefabricado	04/05/2015	11/06/2015	Precasted Concrete Panel e=38cm; (2,4x4,5-5,5)	455,3	m2	400.200,0	174,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Acero S275JR inox 304 en muro verde	01/07/2015	23/07/2015	Steel S 275 JR inox 304	46.767,0	kg	46.767,0		Truck 3 Axes	15	20.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Acero S275JR inox 304 en muro verde	01/07/2015	23/07/2015	EPOXI Mortar - Chemical Anchors r=10-20mm	185,0	kg	185,0	0,1	Van	2	2.500	Direct	Hilti	Avda. Pista de Silla, nº 22; Pol. Ind. Massanassa (Pista de Silla)	46470	Massanassa, Valencia	Spain
		Forjado losa maciza	07/08/2015	20/08/2015	Concrete Floor Structure	609,2	m2		230,0	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46017	Valencia	Spain
		Forjado losa maciza	07/08/2015	20/08/2015	Steel for Floor Structure	27.732,0	kg	27.732,0		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Acero galvanizado en chapa S275JR en pasarelas	08/09/2015	30/09/2015	Steel PLate S 275 JR	41.406,0	kg	41.406,0		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	Gardening and plants	Relleno y extendido vegetal	01/03/2016	24/06/2016	Topsoil Layer	38.651,0	m2		23.190,6	Dump Truck	12	25.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46184	San Antonio de Benageber, Valencia	Spain
		Relleno y extendido vegetal	01/03/2016	24/06/2016	Gravel	38.651,0	m2		7.730,2	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
		Relleno y extendido vegetal	01/03/2016	24/06/2016	Sand	38.651,0	m2		19.325,5	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		Césped reforzado Netlon paso de vehiculos	27/06/2016	27/07/2016	Reinforced Grass Netlon	3.230,0	m2	1.615,0	21,5	Truck 3 Axes	15	20.000	Direct	Bianchi Ingenieros	Gran Vial, 8	8170	Montornés del Vallés, Barcelona	Spain
		Trasplante arbol	27/06/2016	04/07/2016	Trees	99,0	Units	7.920,0	37,1	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46186	San Antonio de Benageber, Valencia	Spain
		Arbolado en fase 1B	04/04/2016	28/04/2016	Trees and plants	355,0	Units	12.300,0	114,9	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46187	San Antonio de Benageber, Valencia	Spain
		Arbolado en zona 1A y zona 2	27/06/2016	19/08/2016	Trees and plants	744,0	Units	24.980,0	240,9	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46188	San Antonio de Benageber, Valencia	Spain
		Plantación trepadoras y setos	15/03/2016	11/04/2016	Plants	23,0	Units	75,0	8,6	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46189	San Antonio de Benageber, Valencia	Spain
		Plantación trepadoras y setos	15/03/2016	11/04/2016	Fences	1.464,0	Units	29.280,0	66,9	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46190	San Antonio de Benageber, Valencia	Spain
		Plantación herbaceas y arbustos	27/06/2016	20/07/2016	Plants and bushes	1.665,8	m2	13.350,0	753,0	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46191	San Antonio de Benageber, Valencia	Spain
		Plantación setos	12/04/2016	18/04/2016	Fences	354,0	Units	7.080,0	16,9	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46192	San Antonio de Benageber, Valencia	Spain
		Plantación arbustos y borde	21/07/2016	25/08/2016	Plants and bushes	4.804,0	m2	62.453,0	1.962,0	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46193	San Antonio de Benageber, Valencia	Spain
		Plantación trepadoras y setos	19/04/2016	12/05/2016	Plants	3,0	Units	6,0	0,3	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46194	San Antonio de Benageber, Valencia	Spain
		Plantación trepadoras y setos	19/04/2016	12/05/2016	Fences	1.361,0	Units	27.220,0	63,2	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46195	San Antonio de Benageber, Valencia	Spain
		Plantación herbaceas y arbustos	27/06/2016	15/07/2016	Grass and Bushes	2.720,0	m2	40.850,0	625,0	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46196	San Antonio de Benageber, Valencia	Spain
		Plantación Trepadoras y frutales	13/05/2016	18/05/2016	Fruit trees	235,0	Units	18.880,0	88,1	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46197	San Antonio de Benageber, Valencia	Spain
		Plantación arbustos y gramíneas	18/07/2016	08/08/2016	Bushes and Flowers	2.906,0	m2	152.160,0	1.268,0	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46198	San Antonio de Benageber, Valencia	Spain
		Plantación setos	09/08/2016	17/08/2016	Fences	1.931,0	Units	38.620,0	8.809,0	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46199	San Antonio de Benageber, Valencia	Spain
		Plantación trepadoras y setos	29/04/2016	20/05/2016	Plants	1.167,5	Units	3.541,0	437,8	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46200	San Antonio de Benageber, Valencia	Spain
		Plantación área	23/05/2016	16/06/2016	Grass	3.506,3	m2	52.595,0	84,5	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46201	San Antonio de Benageber, Valencia	Spain
		Plantación setos	27/06/2016	27/06/2016	Fences	69,0	Units	1.380,0	3,5	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46202	San Antonio de Benageber, Valencia	Spain
		Plantación trepadoras y varias	23/05/2016	24/05/2016	Plants	104,0	Units	253,0	10,4	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46203	San Antonio de Benageber, Valencia	Spain
		Plantación acuática	22/08/2016	23/08/2016	Acuatic plants	133,0	m2	4.250,0	3,0	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46204	San Antonio de Benageber, Valencia	Spain
		Plantación viales	28/07/2016	19/08/2016	Plants	1.220,0	m2	19.520,0	18,3	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46205	San Antonio de Benageber, Valencia	Spain
		Plantación temporal y arbustos	17/06/2016	11/07/2016	Bushes	2.427,0	m2	58.240,0	986,0	Truck 3 Axes	15	20.000	Direct	Jardinería Villanueva SL	Autovía Ademuz Salida 12, Valencia	46206	San Antonio de Benageber, Valencia	Spain
	Pavements, sidewalks and kerbs	Base zahorra cpto 0,98 PM	07/10/2015	06/11/2015	Graded aggregate	7.636,0	m3	16.799.200,0		Dump Truck	12	25.000	Direct	Áridos Carasoles S.LU	Partida Carasoles s/n	46006	Valencia	Spain
		Solera HA-25/B/20/IIa e25	09/11/2015	10/12/2015	Concrete HA-25/B/20/IIa e25	3.838,8	m3		3.838,8	Concrete Mixer	6		Direct	Lafarge Áridos y hormigones	Camino Tres Cruces s/n Ctra. La Perrina (Carretera CV-404)	46190	Ribarroja del Turia, Valencia	Spain
		HM-20/B/20/I e/calzada	14/12/2015	25/01/2016	Concrete HM-20/B/20/I	5.102,7	m3		5.102,7	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Pav adoquín recuperado basalto Artes	26/02/2016	27/04/2016	Basalt Pavement	4.060,0	m2	974.400,0	406,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Pav adoquín recuperado basalto Artes	26/02/2016	27/04/2016	Sand	143,0	m3		143,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		Pav adoquín recuperado basalto Artes	26/02/2016	27/04/2016	Cement	17.875,0	kg	17.875,0	24,0	Truck 4 Axes	32	25.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Calatorao Pavement 60x40x7	9.824,0	m2	1.830.080,0	688,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 27	54280	Calatorao, Zaragoza	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Calatorao Pavement 60x30x7	560,0	m2	106.400,0	40,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 28	54281	Calatorao, Zaragoza	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Calatorao Pavement 60x19x7	2.660,0	m2	497.420,0	187,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 29	54282	Calatorao, Zaragoza	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Calatorao Pavement 40x19x7	150,0	m2	29.260,0	11,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 30	54283	Calatorao, Zaragoza	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Calatorao Pavement 50x19x7	25,0	m2	5.320,0	2,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 31	54284	Calatorao, Zaragoza	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Calatorao Pavement 30x19x7	330,0	m2	63.840,0	24,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 31	54284	Calatorao, Zaragoza	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Sand	475,0	m3		475,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		Pav exterior calatorao	18/12/2015	28/04/2016	Cement	59.375,0	kg	59.375,0	79,0	Truck 4 Axes	32	25.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
		Pav losa hormigón en aceras dentro de parcela	28/12/2015	25/02/2016	Concrete pavement 600x197x10	6.100,0	m2	1.342.000,0	610,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Pav losa hormigón en aceras dentro de parcela	28/12/2015	25/02/2016	Sand	213,0	m3		213,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		Pav losa hormigón en aceras dentro de parcela	28/12/2015	25/02/2016	Cement	26.625,0	kg	26.625,0	35,0	Truck 4 Axes	32	25.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
		Pav exterior losa ánfora Niños	26/01/2016	11/03/2016	Concrete pavement 800x500x75	2.350,0	m2	387.750,0	177,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Pav exterior losa ánfora Niños	26/01/2016	11/03/2016	Sand	83,0	m3		83,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		Pav exterior losa ánfora Niños	26/01/2016	11/03/2016	Cement	12.450,0	kg	12.450,0	16,0	Truck 3 Axes	15	20.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
		Pav baldosa hidraulica (Calle Filipinas)	28/03/2016	21/04/2001	Hydraulic pavement 20x20	1.120,0	m2	74.800,0	34,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Pav baldosa hidraulica (Rotonda)	20/07/2016	11/08/2016	Hydraulic pavement 20x20	1.000,0	m2	66.000,0	30,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Pav tipo albero aripaq en Artes, Huerta y	18/04/2016	28/04/2016	Albero pavement: D=0-5mm	11.931,0	m2	2.266.890,0	1.193,1	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Tarima de madera maciza Niños	14/03/2016	28/03/2016	Sand	175,0	m3		175,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		Tarima de madera maciza Niños	14/03/2016	28/03/2016	Gravel	409,0	m3		409,0	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
		Tarima de madera maciza Niños	14/03/2016	28/03/2016	Wood pavement	142,0	m2	2.800,0	4,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Bordillo de madera huerta	29/03/2016	19/04/2016	Wood kerb 250x22x12	240,0	Units	13.000,0	16,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Bordillos y rigolas de hormigón dentro de la parcela	09/11/2015	02/12/2015	Concrete Kerb 600x300x300	465,0	Units	57.200,0	26,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Bordillos y rigolas de hormigón dentro de la parcela	09/11/2015	02/12/2015	Concrete Kerb 600x300x150	1.905,0	Units	120.000,0	55,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Bloque de hormigón prefabricado	11/11/2015	11/12/2015	Concrete block	4.501,0	m	270.000,0	135,0	Truck 4 Axes	32	25.000	Direct	Rialta Hormigones SL	Presbitero Giner 27	46720	Villalonga, Valencia	Spain
		Bloque de piedra natural	14/12/2015	18/01/2016	Stone: Albardilla block	325,0	m	66.000,0	30,0	Truck 4 Axes	32	25.000	Direct	Granital SL	Av. Augusto de Andrade 6C	7350-315	Santa Eulália	Portugal
		Bloque de piedra natural	14/12/2015	18/01/2016	Stone: Caliza calatorao block	4.330,0	m	429.000,0	195,0	Truck 4 Axes	32	25.000	Direct	Granital SL	Av. Augusto de Andrade 6C	7350-315	Santa Eulália	Portugal
		Carril bici: solera 15 cm, tratamiento endurecedor	19/01/2016	01/02/2016	EPOXI treatament	1.755,0	m2	3,0	0,6	Van	8	2.500	Direct	Hilti	Pol. Industrial Massanassa, Avda. Pista de Silla 22	46470	Massanassa, Valencia	Spain
	Closing, fences and roofs	Vallado y puertas general parque de 1,8 m	04/09/2015	18/09/2015	General fence TIG H=1'8m	490,0	m	3.454,5		Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
		Vallado y puertas general parque de 1,8 m	04/09/2015	18/09/2015	Door general fence TIG H=1'8m	14,0	Units	1.120,0	4,2	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
		Vallado y puertas general parque de 1,8 m	04/09/2015	18/09/2015	Door general fence TIG H=1'1m	5,0	Units	325,0	2,7	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
		Vallado y puertas general parque de 1,8 m	04/09/2015	18/09/2015	Kinds area fence	63,0	m	1.980,0	3,2	Truck 4 Axes	32	25.000	Direct	Suministros COVAL SL	Pol. Ind. Mas de Tous	46185	La Pobla de Vallbona, Valencia	Spain
		Alcorques y anillos de acero	16/06/2016	24/06/2016	Alcorque 1618x1618mm	293,0	Units	29.000,0	43,0	Truck 4 Axes	32	25.000	Direct	Colomer Equipamiento Urban	Pol. Ind. Pla de la Bruguera, Pge. Jorba, 10	8211	Castellar del Vallès, Barcelona	Spain
		Bordura de acero galvanizado	26/01/2016	11/02/2016	Garden Steel edge	4.165,0	m	73.025,0	208,3	Truck 4 Axes	32	25.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
		Barandillas (postes y pasamanos)	29/04/2016	09/05/2016	Steel post for handrail h=1'10m	340,0	Units	21.400,0	3,9	Truck 4 Axes	32	25.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
		Barandillas (postes y pasamanos)	29/04/2016	09/05/2016	Steel handrail	326,7	m	2.650,0	3,3	Truck 4 Axes	32	25.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
		Acero galvanizado en pérgola	23/06/2015	01/07/2015	Steel S355JR	15.879,8	kg	15.879,8		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Acero galvanizado en vallado general	26/08/2015	03/09/2015	Steel S275J0	18.341,0	kg	18.341,0		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Acero galvanizado en vallado general	26/08/2015	03/09/2015	Steel Ring d=0,9	92,0	Units	2.030,0	17,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Acero galvanizado en vallado general	26/08/2015	03/09/2015	Steel Ring d=1,2	75,0	Units	2.210,0	18,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Acero galvanizado en vallado general	26/08/2015	03/09/2015	Steel Ring d=1,8	12,0	Units	532,0	4,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
Fase 1B: Park Urbanization	Fountains	Base zahorra cpto 0,98 PM	03/07/2015	07/07/2015	Graded aggregate	1.085,9	m3		1.085,9	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
		Solera de HA-30/B/20/IV	16/07/2015	27/08/2015	Concrete HA-30/B/20/IV	6.227,0	m2		934,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Solera de HA-30/B/20/IV	16/07/2015	27/08/2015	Steel mesh	1.150,0	m2	4.130,0	24,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Hormigón en muretes fuentes	28/08/2015	07/09/2015	Steel formwork	1.150,0	m2	21.000,0	6,0	Truck 3 Axes	15	20.000	Direct	Ischebeck Iberia	Polígono Industrial El Oliveral, Calle S, nave 25	46394	Ribarroja del Turia, Valencia	Spain
		Hormigón en muretes fuentes	28/08/2015	07/09/2015	Concrete HA-30/B/20/IV	143,0	m3		143,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Hormigón en muretes fuentes	28/08/2015	07/09/2015	Steel B 500 S 6-25mm	2.156,4	kg	2.156,4		Truck 3 Axes	15	20.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Albardillas, losa de borde, fiola de piedra	24/12/2015	29/02/2016	Stone: Albardilla	1.458,2	m	268.300,0	120,0	Truck 4 Axes	32	25.000	Direct	Granital SL	Av. Augusto de Andrade 6C	7350-315	Santa Eulália	Portugal
		Aplacados piedra natural y granito	02/12/2015	23/12/2015	Natural stone and granite	394,5	m	36.294,0	17,0	Truck 4 Axes	32	25.000	Direct	Granital SL	Av. Augusto de Andrade 6C	7350-315	Santa Eulália	Portugal
		Pavimentos de piedra natural y granito	28/09/2015	01/12/2015	Granite Pavement	5.171,0	m2	1.427.196,0	620,0	Truck 4 Axes	32	25.000	Direct	Granital SL	Av. Augusto de Andrade 6C	7350-315	Santa Eulália	Portugal
	Bricklayer and Isolations	Impermeabilización bituminosa en muros	05/08/2015	14/08/2015	Cement	3.700,0	kg	3.700,0	5,0	Truck 3 Axes	15	20.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
		Impermeabilización bituminosa en muros	05/08/2015	14/08/2015	Sand	24,6	m3		24,6	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		Impermeabilización bituminosa en muros	05/08/2015	14/08/2015	Impermeable bitumen LBM-30-FP	2.057,0	m2	6.175,0	8,5	Dump Truck	12	25.000	Direct	Lemara	Carrer Tabardo, 12	46469	Beniparrell, València	Spain
		Impermeabilización bituminosa en muros	05/08/2015	14/08/2015	Impermeable bitumen LBM-30-FP (EXT)	1.716,8	m2	5.150,0	7,1	Dump Truck	12	25.000	Direct	Lemara	Carrer Tabardo, 12	46469	Beniparrell, València	Spain
		Impermeabilización bituminosa en muros	05/08/2015	14/08/2015	Exterior impermeable mortar HPDE e=0.65mm	609,2	m2	305,0	2,0	Truck 4 Axes	32	25.000	Direct	Lemara	Carrer Tabardo, 12	46469	Beniparrell, València	Spain
		Geotextil	05/08/2015	14/08/2015	Geotextil 200gr/m2	7.369,6	m2	1.480,0	3,0	Truck 4 Axes	32	25.000	Direct	Bianchi Ingenieros	Gran Vial, 8	8170	Montornés del Vallés, Barcelona	Spain
		Impz superficies en contacto con agua	08/09/2015	25/09/2015	Impermable mortar	9.409,6	m2	14.113,0	21,0	Truck 4 Axes	32	25.000	Direct	Lemara	Carrer Tabardo, 12	46469	Beniparrell, València	Spain
		Coronación piedra natural	16/10/2015	10/11/2015	Stone: Calatorao 500*300*800mm	604,0	m	208.380,0	90,6	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 31	54284	Calatorao, Zaragoza	Spain
		Aplacados piedra natural	19/01/2016	22/01/2016	Stone: Calatorao 600*228*90mm	93,0	m	4.389,0	2,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 31	54284	Calatorao, Zaragoza	Spain
	Play ground elements and signals	Mobiliario urbano	27/06/2016	13/07/2016	Bench different types	175,0	Units	5.250,0	120,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Mobiliario urbano	27/06/2016	13/07/2016	Bench and table	6,0	Units	600,0	12,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Mobiliario urbano	27/06/2016	13/07/2016	Fountain	8,0	Units	340,0	1,5	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Mobiliario urbano	27/06/2016	13/07/2016	Bike park area	26,0	Units	300,0	3,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Mobiliario urbano	27/06/2016	13/07/2016	Bollards	10,0	Units	250,0	1,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Mobiliario urbano	27/06/2016	13/07/2016	Rubish bin	65,0	Units	975,0	7,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Juegos infantiles	14/07/2016	14/07/2016	Play ground items	9,0	Units	360,0	15,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Juego cinta transportadora especial	15/07/2016	19/07/2016	Special play ground	1,0	Units	500,0	6,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Juego ciudad de la ciencia	25/07/2016	08/08/2016	Special play ground	1,0	Units	600,0	6,0	Truck 4 Axes	32	25.000	Direct	Mobipark SL	Pol. Industrial Cantavella, C/ Liria 8	46135	Albalat dels Sorells, Valencia	Spain
		Señalética	09/08/2016	15/08/2016	Signals and plaques	187,0	Units	12.700,0	12,0	Van	8	2.500	Direct	Suministros COVAL SL	Pol. Ind. Mas de Tous	46185	La Pobla de Vallbona, Valencia	Spain
	Fountains, Pipes and Elements	Excavaciones	21/08/2015	25/08/2015	Ground and soil	918,0	m3		918,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		Hormigones	04/09/2015	07/09/2015	Concrete HNE-15/B/20	31,7	m3		31,7	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Hormigones	04/09/2015	07/09/2015	Isolation	14,0	m2	168,0	0,6	Van	8	2.500	Direct	Hilti	Avinguda Reial Monestir Santa Mar, 8	46930	Quart de Poblet, Valencia	Spain
		Hormigones	04/09/2015	07/09/2015	Concrete HA 25/B/40/Iia	3,0	m3		3,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Arquetas y pasamuros	27/08/2015	07/09/2015	Pasamuros	55,0	Units	130,0	0,0	Truck 3 Axes	15	20.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Arquetas y pasamuros	27/08/2015	07/09/2015	Chest	6,0	Units	4.980,0	4,8	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		Grupos de bombeo y accesorios hidráulica	01/09/2015	15/09/2015	Water Pumps	13,0	Units	650,0	1,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		Grupos de bombeo y accesorios hidráulica	01/09/2015	15/09/2015	Hydraulic accessories	47,0	Units	510,0	2,4	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		Tuberías	26/08/2015	07/09/2015	PVC Pipes Different Sizes	2.365,0	m	9.057,0	25,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	PVC Pipes Different Sizes	1.135,0	m	2.814,0	11,4	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	Tubes for electric cables	2.560,0	m	4.780,0	20,7	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	Tubes for fountains	102,0	m	9.433,0	1,6	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	Other elements	25,0	Units	1.000,0	4,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		Excavaciones	26/08/2015	28/08/2015	Ground and soil	530,9	m3		530,9	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		Hormigones	04/09/2015	07/09/2015	Concrete HNE-15/B/20	10,0	m3		10,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Hormigones	04/09/2015	07/09/2015	Isolation	18,0	m2	210,0	0,8	Van	8	2.500	Direct	Hilti	Avinguda Reial Monestir Santa Mar, 8	46930	Quart de Poblet, Valencia	Spain
		Hormigones	04/09/2015	07/09/2015	Concrete HA 25/B/40/Iia	4,8	m3		4,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Arquetas y pasamuros	02/09/2015	07/09/2015	Pasamuros	55,0	Units	130,0	0,0	Van	8	2.500	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Arquetas y pasamuros	02/09/2015	07/09/2015	Chest	6,0	Units	4.980,0	4,8	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		Grupos de bombeo y accesorios hidráulica	07/09/2015	18/09/2015	Water Pumps	14,0	Units	750,0	1,2	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		Grupos de bombeo y accesorios hidráulica	07/09/2015	18/09/2015	Hydraulic accessories	161,0	Units	1.025,0	6,5	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		Tuberías	31/08/2015	07/09/2015	PVC Pipes Different Sizes	1.530,6	m	6.230,0	15,3	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	PVC Pipes Different Sizes	1.135,0	m	2.814,0	11,4	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	Tubes for electric cables	2.560,0	m	4.780,0	20,7	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	Tubes for fountains	102,0	m	9.433,0	1,6	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	Other elements	35,0	Units	1.250,0	5,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		Accesorias y equipamiento	01/03/2016	07/03/2016	Cable	9.041,0	m	450,0	2,0	Van	8	2.500	Direct	Amara	Avenida Río Vinalopó, s/n. Polígono Industrial Quart de Poblet	46930	Quart de Poblet, Valencia	Spain
		OBRA CIVIL CT ENTERRADOS PARQUE	12/10/2015	19/10/2015	Concrete	21,0	m2		2,1	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		CANAL ACOMETIDAS M.T. EDIFICIO PARQUE	19/10/2015	03/11/2015	Ground and soil	352,0	m3		352,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		CANAL ACOMETIDAS M.T. EDIFICIO PARQUE	19/10/2015	03/11/2015	PVC TubeS (Different Diameters)	420,0	m	1.680,0	4,3	Truck 3 Axes	15	20.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		CANAL ACOMETIDAS M.T. EDIFICIO PARQUE	19/10/2015	03/11/2015	Chests	13,0	Units	10.660,0	1,5	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		INTERCONEXIÓN CENTROS DE REPARTO	23/07/2015	02/09/2015	Ground and soil	1.425,0	m3		1.425,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		INTERCONEXIÓN CENTROS DE REPARTO	23/07/2015	02/09/2015	PVC Tubes	1.560,0	m	23.450,0	62,3	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		INTERCONEXIÓN CENTROS DE REPARTO	23/07/2015	02/09/2015	Gravel	31,2	m3		31,2	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
		INTERCONEXIÓN CENTROS DE REPARTO	23/07/2015	02/09/2015	Sand	312,0	m3		312,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		INTERCONEXIÓN CENTROS DE REPARTO	23/07/2015	02/09/2015	Chests	36,0	Units	5.472,0	5,3	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		ANILLO M.T. 9 TUBOS PERÍMETRO PARQUE	29/06/2015	02/09/2015	Ground and soil	1.425,0	m3		1.425,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		ANILLO M.T. 9 TUBOS PERÍMETRO PARQUE	29/06/2015	02/09/2015	PVC Tubes	1.985,0	m	29.775,0	82,3	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		ANILLO M.T. 9 TUBOS PERÍMETRO PARQUE	29/06/2015	02/09/2015	Gravel	39,7	m3		39,7	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
		ANILLO M.T. 9 TUBOS PERÍMETRO PARQUE	29/06/2015	02/09/2015	Sand	397,0			397,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		ANILLO M.T. 9 TUBOS PERÍMETRO PARQUE	29/06/2015	02/09/2015	Chests	30,0	Units	4.560,0	3,2	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		CANALIZACIONES INTERIORES	02/04/2015	02/09/2015	Ground and soil	3.862,0	m3		3.862,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		CANALIZACIONES INTERIORES	02/04/2015	02/09/2015	PVC Tubes	5.380,0	m	59.180,0	138,9	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		CANALIZACIONES INTERIORES	02/04/2015	02/09/2015	Gravel	107,6	m3		107,6	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
		CANALIZACIONES INTERIORES	02/04/2015	02/09/2015	Sand	1.076,0			7.076,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		CANALIZACIONES INTERIORES	02/04/2015	02/09/2015	Chests	172,0	Units	26.144,0	3,2	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		SERVICIOS A ALIMENTAR	06/08/2015	02/09/2015	Cable	7.663,5	m	298,4	2,0	Van	8	2.500	Direct	Amara	Avenida Río Vinalopó, s/n. Polígono Industrial Quart de Poblet	46930	Quart de Poblet, Valencia	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	Ground and soil	1.735,8	m3		1.735,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	PE Tube d=100mm	80,0	m	320,0	1,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	Tubes (Iron) Several diameters	2.520,0	m	83.160,0	100,8	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	Gravel	126,0	m3		126,0	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	Sand	504,0	m3		504,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	Concrete HNE-15/B/20 e	61,0	m3		61,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	Chests	75,0	Units	11.250,0	8,0	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		CANALIZACIONES	16/06/2015	02/09/2015	Hydraulic Elements	83,0	Units	1.500,0	6,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	Tubes and Pipes	Demolición de pavimentos	01/04/2015	13/04/2015	Demolition: Pavements, walls	171,3	m3	206.208,0	171,8	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Excavaciones en zanjas	14/04/2015	10/06/2015	Ground and soil	4.021,0	m3		4.021,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		Tubería de PVC	19/05/2015	04/08/2015	PVC Pipes Different Sizes	7.675,0	m	614.000,0	4.912,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Tubería de PVC	19/05/2015	04/08/2015	Concrete HM-20/P/20/IIa	5.403,2	m3		5.403,2	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Tubería de PVC	19/05/2015	04/08/2015	Steel mesh	40.293,5	kg	40.293,8		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		Arquetas y pozos	09/07/2015	04/08/2015	Chests	28,0	Units	5.040,0	2,7	Truck 3 Axes	15	20.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		Arquetas y pozos	09/07/2015	04/08/2015	Wells	122,0	Units	312.320,0	240,0	Truck 4 Axes	32	25.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		Imbornales	17/11/2015	02/12/2015	Scuppers	163,0	Units	12.960,0	15,0	Truck 4 Axes	32	25.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		RED DE RIEGO	13/07/2015	25/08/2016	Ground and soil	2.935,0	m3		2.935,0	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		RED DE RIEGO	13/07/2015	25/08/2016	Chests	597,0	Units	85.050,0	28,4	Truck 4 Axes	32	25.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		CANALIZACIONES	13/07/2015	04/09/2015	Pe Tube Different Sizes	11.710,0	m	46.840,0	117m3	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		ELEMENTOS DE RIEGO (aspersores, válvulas, etc)	12/08/2016	25/08/2016	Valves and other elements	369,0	Units	7.380,0	5,9	Truck 3 Axes	15	20.000	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		REPERCUSIÓN RIEGO POR GOTEO	05/08/2016	25/08/2016	Irrigation tubes	7.457,0	m	1.193,1	2,3	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		RED DE RIEGO BAJA PRESIÓN INT. PARQUE-CONDUCCIONES	23/07/2015	04/09/2015	Pe Tube Different Sizes	1.620,0	m	40.530,0	145,3	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		RED DE RIEGO BAJA PRESIÓN INT. PARQUE-CONDUCCIONES	23/07/2015	04/09/2015	Concrete HNE-15/B/20	28,0	m3		28,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		RED DE RIEGO BAJA PRESIÓN INT. PARQUE-CONDUCCIONES	23/07/2015	04/09/2015	Valves and other elements	53,0	Units	8.640,0	15,3	Truck 3 Axes	15	20.000	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
		Pozo de filtración	23/06/2015	04/08/2015	Polipropileno Modul	3.976,0	Units	35.784,0	198,9	Truck 4 Axes	32	25.000	Direct	Sifonika	C/ Pinar, nº 5	28006	Madrid	Spain
		Pozo de filtración	23/06/2015	04/08/2015	Inspection box	72,0	Units	8.640,0	38,8	Truck 4 Axes	32	25.000	Direct	Sifonika	C/ Pinar, nº 5	28006	Madrid	Spain
		Pozo de filtración	23/06/2015	04/08/2015	Geotextil 500gr/m2	3.706,2	m2	1.860,0	82,4	Truck 3 Axes	15	20.000	Direct	Bianchi Ingenieros	Gran Vial, 8	8170	Montornés del Vallés, Barcelona	Spain
		Pozo de filtración	23/06/2015	04/08/2015	Chests	35,0	Units	4.200,0	3,6	Truck 4 Axes	32	25.000	Direct	Belcaire SL	Avda. Jaime Chicharro s.n.	12530	Burriana, Castellon	Spain
		DEMOLICIONES	23/02/2015	05/03/2015	Walls, roofs and pavements	16.360,0	m2	1.344.000,0	1.680,0	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		OBRAS DE FÁBRICA	07/04/2015	04/05/2015	Bricks CV 24x11.5x5	1.123,9	m2	95.530,0	56,2	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
		OBRAS DE FÁBRICA	07/04/2015	04/05/2015	Varnish	2.379,9	m2	720,0	0,6	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
		OBRAS DE FÁBRICA	07/04/2015	04/05/2015	Concrete reconstruction HA 25 a 20kg gs	11,6	m3		11,6	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		ESTRUCTURAS METÁLICAS	11/02/2015	25/02/2015	Steel LDL 60x6.3	90,0	units	1.850,0	0,2	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		ESTRUCTURAS METÁLICAS	11/02/2015	25/02/2015	Steel elements	50,0	units	500,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		ESTRUCTURAS METÁLICAS	11/02/2015	25/02/2015	Steel B 500 S D=16mm, L= 50cm	40,0	units	100,0	0,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
		ESTRUCTURAS METÁLICAS	11/02/2015	25/02/2015	Pain Oxirón metal	1.074,8	m2	0,3	0,3	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
		ESTRUCTURAS METÁLICAS	11/02/2015	25/02/2015	Steel mesh 6cm ME 20x20-ø5	249,2	m2	524,0	1,0	Van	8	2.500	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
		CUBIERTAS	26/02/2015	24/04/2015	Sandwich panel	2.027,8	m2	22.297,0	125,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
		CUBIERTAS	26/02/2015	24/04/2015	Tiles (12-15 tiles/m2)	28.125,0	Units	116.982,0	187,4	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		CUBIERTAS	26/02/2015	24/04/2015	Water pipe D=100mm	126,0	m	328,9	1,3	Truck 3 Axes	15	20.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		CUBIERTAS	26/02/2015	24/04/2015	Roof Windows	818,7	m	4.885,0	26,0	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
		PAVIMENTOS INTERIORES	27/05/2015	11/06/2015	Pavement restoration with mortar	1.792,5	m2	4.020,0	26,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		PAVIMENTOS INTERIORES	27/05/2015	11/06/2015	Concrete pavement Solera HM-25/B/20/I 10cm	587,5	m2		58,7	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		PAVIMENTOS INTERIORES	27/05/2015	11/06/2015	Epoxi asphlat e=2mm	2.629,2	m2	7,0	5,3	Van	8	2.500	Direct	Hilti	Avda. Pista de Silla, nº 22; Pol. Ind. Massanassa (Pista de Silla)	46470	Massanassa, Valencia	Spain
		PAVIMENTOS INTERIORES	27/05/2015	11/06/2015	Cement	20,3	kg	20,3	13,5	Truck 4 Axes	32	25.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
		PAVIMENTOS INTERIORES	27/05/2015	11/06/2015	Gravel	162,0	m3		162,0	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain

Nave 1	CARPINTERÍA Y CERRAJERÍA	14/05/2015	04/06/2015	Steel plate e=10mm, Different Sizes	53,0	Units	630,0	0,4	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	14/05/2015	04/06/2015	Steel structure IPE-140 S275JR	2,0	Units	320,0	0,3	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	14/05/2015	04/06/2015	Steel windows	62,0	Units	3.205,0	7,0	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	14/05/2015	04/06/2015	Wood structure for windows	350,0	m2	453,0	4,6	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	14/05/2015	04/06/2015	Glass window e=6mm	63,0	Units	5.040,0	9,4	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Light	51,0	Units	83,0	1,2	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	External electrical connections 40x40x70 HM-20	11,0	Units	2.530,0	1,2	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Electric Cables	1.242,0	m	120,0	0,0	Van	8	2.500	Direct	Amara	Avenida Río Vinalopó, s/n. Polígono Industrial Quart de Poblet	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Other electrical equipment	35,0	Units	100,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Concrete HNE-15/B/20	56,0	m3		56,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	PVC Tube PVC Ø160	140,0	m	1.120,0	4,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Chests	21,0	Units	17.052,0	6,7	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
	INSTALACIONES	06/05/2015	13/05/2015	PVC Tube PVC Ø250	16,0	m	304,0	1,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Concrete HNE-15/B/20	2,4	m3		2,4	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Chests	8,0	Units	6.480,0	2,7	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Concrete HNE-15/B/20	0,8	m3		0,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	PE 100 ø75mm	7,0	m	5,0	0,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Other equipment	8,0	Units	20,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	PVC Signals 20x20cm	12,0	Units	50,0	0,5	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	06/05/2015	13/05/2015	Other electrical equipment	28,0	m	100,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	DEMOLICIONES	23/02/2015	05/03/2015	Walls, roofs and pavements	369,8	m3		369,8	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
	OBRAS DE FÁBRICA	05/03/2015	25/06/2015	Varnish	1.039,4	m2	310,0	0,3	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	OBRAS DE FÁBRICA	05/03/2015	25/06/2015	Concrete wall HA-30/B/20/IIa, e=15cm	30,4	m		12,3	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	OBRAS DE FÁBRICA	05/03/2015	25/06/2015	Steel B 500 S	607,0	kg	607,0		Truck 4 Axes	32	25.000	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
	OBRAS DE FÁBRICA	05/03/2015	25/06/2015	Steel structure UPN-180 S275JR	212,0	m2	1.520,0	2,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	OBRAS DE FÁBRICA	05/03/2015	25/06/2015	Plywood board 244x122cm	44,4	m2	789,4	0,6	Van	8	2.500	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	OBRAS DE FÁBRICA	05/03/2015	25/06/2015	Steel plates 0,7x40mm	212,0	m2	4.950,0	0,6	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	OBRAS DE FÁBRICA	05/03/2015	25/06/2015	Ceramic tiles 24x11,5x9	44,4	m2	1.550,0	4,8	Truck 3 Axes	15	20.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	ESTRUCTURAS METÁLICAS	25/06/2015	29/06/2015	Steel LDL 60x6.3	6,0	units	125,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	ESTRUCTURAS METÁLICAS	25/06/2015	29/06/2015	Steel plate S 355 e=10mm	61,0	units	725,0	0,5	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	ESTRUCTURAS METÁLICAS	25/06/2015	29/06/2015	Steel B 500 S D=16mm, L= 50cm	64,0	units	150,0	0,0	Truck 4 Axes	32	25.000	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
	ESTRUCTURAS METÁLICAS	25/06/2015	29/06/2015	Pain Oxirón metal	292,8	m2	0,1	0,1	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	CUBIERTAS	30/06/2015	15/07/2015	Sandwich panel	925,1	m2	10.175,0	57,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
	CUBIERTAS	30/06/2015	15/07/2015	Tiles (12-15 tiles/m2)	13.876,0	Units	58.491,0	94,0	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	30/06/2015	15/07/2015	Water pipe D=100mm	243,8	m	634,6	2,4	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	PAVIMENTOS INTERIORES	13/08/2015	14/08/2015	Pavement restoration with mortar	497,2	m2	2.237,0	14,9	Truck 3 Axes	15	20.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
	PAVIMENTOS INTERIORES	13/08/2015	14/08/2015	Concrete pavement Solera HM-25/B/20/I 10cm	20,0	m2		2,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	PAVIMENTOS INTERIORES	13/08/2015	14/08/2015	Epoxi asphlat e=2mm	497,2	m2	1,3	1,0	Van	8	2.500	Direct	Hilti	Avda. Pista de Silla, nº 22; Pol. Ind. Massanassa (Pista de Silla)	46470	Massanassa, Valencia	Spain
	PAVIMENTOS INTERIORES	13/08/2015	14/08/2015	Gravel	84,0	m3		84,0	Dump Truck	12	25.000	Direct	Ariben SA	Los Cabezos	46180	Benaguacil, Valencia	Spain
	PAVIMENTOS INTERIORES	13/08/2015	14/08/2015	Cement	10,5	kg	10,5	7,0	Truck 3 Axes	15	20.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
Nave 4	CARPINTERÍA Y CERRAJERÍA	04/08/2015	13/08/2015	Steel plate e=1mm, Different Sizes	16,0	Units	195,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	04/08/2015	13/08/2015	Steel structure IPE-140 S275JR	2,0	Units	320,0	0,3	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	04/08/2015	13/08/2015	Steel windows	36,0	Units	1.858,0	4,0	Truck 4 Axes	32	25.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	04/08/2015	13/08/2015	Wood structure for windows	209,8	m2	320,0	4,0	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	04/08/2015	13/08/2015	Steel Door 90x205cm	3,0	Unit	543,0	1,0	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	04/08/2015	13/08/2015	Glass window e=6mm	35,0	Units	2.880,0	5,4	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Light	15,0	Units	25,0	0,8	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	External electrical connections 40x40x70 HM-20	3,0	Units	690,0	0,4	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Electric Cables	525,0	m	85,0	0,0	Van	8	2.500	Direct	Amara	Avenida Río Vinalopó, s/n. Polígono Industrial Quart de Poblet	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Other electrical equipment	13,0	Units	100,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Concrete HNE-15/B/20	29,3	m3		29,3	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	PVC TubeS (Different Diameters)	130,0	m	653,0	3,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Chests	20,0	Units	15.320,0	5,8	Truck 4 Axes	32	25.000	Direct	Amara	Calle Río vinalopó 13	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	PVC Tube PVC Ø250	16,0	m	315,2	1,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Concrete HNE-15/B/20	1,2	m3		1,2	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Chests	4,0	Units	3.280,0	1,4	Truck 4 Axes	32	25.000	Direct	Amara	Calle Río vinalopó 13	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Concrete HNE-15/B/20	0,8	m3		0,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	PE 100 ø75mm	7,0	m	5,0	0,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Other equipment	8,0	Units	20,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	PVC Signals 20x20cm	12,0	Units	50,0	0,5	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	30/07/2015	03/08/2015	Other electrical equipment	28,0	Units	100,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	DEMOLICIONES	23/02/2015	05/03/2015	Walls, roofs and pavements	309,0	m3		309,0	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
	OBRAS DE FÁBRICA	01/09/2015	09/09/2015	Bricks CV 24x11.5x5	486,8	m2	41.310,0	24,3	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	OBRAS DE FÁBRICA	01/09/2015	09/09/2015	Varnish	996,6	m2	300,0	0,3	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	ESTRUCTURAS METÁLICAS	27/08/2015	27/08/2015	Steel LDL 60x6.3	5,0	units	125,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	ESTRUCTURAS METÁLICAS	27/08/2015	27/08/2015	Steel plate e=10mm, Different Sizes	4,0	units	50,0	0,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	ESTRUCTURAS METÁLICAS	27/08/2015	27/08/2015	Steel B 500 S D=16mm, L= 50cm	12,0	units	28,0	0,0	Truck 4 Axes	32	25.000	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
	ESTRUCTURAS METÁLICAS	27/08/2015	27/08/2015	Pain Oxirón metal	96,0	m2	0,0	0,0	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	CUBIERTAS	28/08/2015	04/09/2015	Tiles (12-15 tiles/m2)	6.784,0	Units	28.809,0	46,2	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	28/08/2015	04/09/2015	Sandwich Panel	452,3	m2	4.972,0	29,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
	CUBIERTAS	28/08/2015	04/09/2015	Water pipe D=100mm	101,9	m	387,0	1,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	PAVIMENTOS INTERIORES	18/09/2015	21/09/2015	Pavement restoration with mortar	170,4	m2		5,1	Truck 4 Axes	32	25.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
	PAVIMENTOS INTERIORES	18/09/2015	21/09/2015	Concrete pavement Solera HM-25/B/20/I 10cm	258,4	m2		25,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	PAVIMENTOS INTERIORES	18/09/2015	21/09/2015	Epoxi asphlat e=2mm	428,8	m2	1,2	0,9	Van	8	2.500	Direct	Hilti	Avda. Pista de Silla, nº 22; Pol. Ind. Massanassa (Pista de Silla)	46470	Massanassa, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	16/09/2015	18/09/2015	Steel plate e=1mm,	14,0	Units	659,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	16/09/2015	18/09/2015	Wood structure for windows	209,8	m2	5.320,0	5,2	Truck 4 Axes	32	25.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
Nave 3	CARPINTERÍA Y CERRAJERÍA	16/09/2015	18/09/2015	Steel Door 90x205cm	2,0	Unit	362,0	0,7	Truck 4 Axes	32	25.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	16/09/2015	18/09/2015	Glass window e=6mm	18,0	Units	930,0	0,2	Truck 4 Axes	32	25.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Light	35,0	Units	58,0	1,3	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	External electrical connections 40x40x70 HM-20	8,0	Units	1.840,0	0,9	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Electric Cables	727,0	m	95,0	0,0	Van	8	2.500	Direct	Amara	Avenida Río Vinalopó, s/n. Polígono Industrial Quart de Poblet	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Other electrical equipment	10,0	Units	100,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Concrete HNE-15/B/20	22,8	m3		22,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	PVC TubeS (Different Diameters)	65,0	m	325,0	3,1	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Chests	8,0	Units	6.560,0	2,7	Truck 4 Axes	32	25.000	Direct	Amara	Calle Río vinalopó 13	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	PVC Tube PVC Ø250	8,0	m	157,0	0,8	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Concrete HNE-15/B/20	1,2	m3		1,2	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Chests	4,0	Units	3.280,0	1,3	Truck 4 Axes	32	25.000	Direct	Amara	Calle Río vinalopó 13	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Concrete HNE-15/B/20	0,8	m3		0,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	10/09/2015	15/09/2015	PE 100 ø75mm	7,0	m	28,0	0,1	Van	8	2.500	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Other equipment	7,0	Units	20,0	0,0	Van	8	2.500	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	10/09/2015	15/09/2015	PVC Signals 20x20cm	6,0	Units	50,0	0,5	Van	8	2.500	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	10/09/2015	15/09/2015	Other electrical equipment	16,0	Units	100,0	0,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	DEMOLICIONES	23/02/2015	05/03/2015	Walls, roofs and pavements	175,0	m3		175,0	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Concrete HL-150/B/20 limpieza e=10 cm	91,4	m2		91,4	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Concrete HA 25 znj-zap-rios blanda 20 cim	14,7	m3		14,7	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Steel B 500 S corruø6-25	881,6	kg	881,0		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Concete Horm H-25/B/20/IIa For Walls	2,2	m3		2,2	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Steel B 500 S corruø6-25	180,0	kg	180,0		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Concrete Pavement E=30cm	143,7	m2		43,1	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Concrete Pavement HM-20/B/20/I E=15cm	65,0	m2		9,8	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Concrete Structure HA-25/B/20/IIa	14,5	m3		14,5	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Steel B 500 S reinforcement	1.453,0	kg	1.453,0		Truck 4 Axes	32	25.000	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Concrete Slab HA-25/B/20/IIa e=12cm	11,6	m2		1,4	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	30/09/2015	09/10/2015	Steel B 500 S reinforcement	162,1	kg	162,0		Truck 4 Axes	32	25.000	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	12/10/2015	15/10/2015	Bricks CV 24x11.5x5	50,8	m2	4.318,0	2,5	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	12/10/2015	15/10/2015	Bricks CV 24x11.5x9	223,4	m2	34.180,2	20,1	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	12/10/2015	15/10/2015	Bricks CV 33x16x7	30,0	m2	3.570,0	2,1	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	12/10/2015	15/10/2015	Plaster	738,9	m2	13.837,0	11,1	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	12/10/2015	15/10/2015	Termic Insulation	422,1	m2	101,3	27,0	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	07/10/2015	09/10/2015	Sandwich panel	193,9	m2	2.134,0	14,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
	CUBIERTAS	07/10/2015	09/10/2015	Tiles (32 tiles/m2)	6.205,0	Units	25.795,1	41,5	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	07/10/2015	09/10/2015	Water pipe D=100mm	71,1	m	272,3	0,7	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	CARPINTERÍA Y CERRAJERÍA	19/10/2015	21/10/2015	Steel auxiliar structures	23,4	m2	380,0	3,0	Truck 4 Axes	32	25.000	Direct	Ischebeck Iberia	Polígono Industrial El Oliveral, Calle S, nave 25	46394	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	19/10/2015	21/10/2015	Glass window e=6mm	23,4	m2	580,0	1,2	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	19/10/2015	21/10/2015	Doors	10,0	Units	300,0	10,0	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
Alqueria	CARPINTERÍA Y CERRAJERÍA	19/10/2015	21/10/2015	Fences	18,3	m2	48,0	0,9	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Exterior paint	512,7	m2	64,0	0,1	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Plaster	221,4	m2	552,0	0,4	Van	8	2.500	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Mortar Varnish	512,7	m2	5.376,0	35,9	Truck 3 Axes	15	20.000	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Pavement 60x60cm	212,8	m2	12.640,0	4,8	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Pavement border	140,4	m	1.206,0	0,6	Van	8	2.500	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Interior paint	805,4	m2	100,6	0,1	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Bathroom tiles	39,8	m2	2.200,0	0,8	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	22/10/2015	27/10/2015	Interio Roof	16,8	m2	2.043,0	0,2	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Lights	28,0	Units	48,0	1,4	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Cables	414,0	m	828,0	2,0	Van	8	2.500	Direct	Amara	Avenida Río Vinalopó, s/n. Polígono Industrial Quart de Poblet	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Chests	3,0	Units	2.460,0	1,0	Truck 4 Axes	32	25.000	Direct	Amara	Calle Río vinalopó 13	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Other equipment	28,0	Units	100,0	0,2	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Concrete HNE-15/B/20	1,7	m3		1,7	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	PVC TubeS (Different Diameters)	66,0	m	330,0	3,5	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Chests	12,0	Units	9.840,0	4,0	Truck 4 Axes	32	25.000	Direct	Amara	Calle Río vinalopó 13	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Concrete HNE-15/B/20	6,1	m3		6,1	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Chests	3,0	Units	2.460,0	1,0	Truck 4 Axes	32	25.000	Direct	Amara	Calle Río vinalopó 13	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	PVC TubeS (Different Diameters)	28,0	m	140,0	1,3	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	12/10/2015	16/10/2015	PE 100 ø25mm	5,0	m	2,0	0,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Other equipment	18,0	Units	100,0	0,2	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	HVAC equipment	8,0	Units	250,0	3,0	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Fire prevention	6,0	Units	120,0	1,5	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/10/2015	16/10/2015	Elevator	1,0	Unit	2.510,0	3,0	Truck 3 Axes	15	20.000	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Concrete HL-150/B/20 limpieza e=10 cm	55,7	m2		5,6	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Concrete HA 25 znj-zap-rios blanda 20 cim	15,5	m3		15,5	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Steel B 500 S corruø6-25	693,5	kg	693,5		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Concrete H-25/B/20/IIa For Walls	8,9	m3		8,9	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Steel B 500 S corruø6-25	585,5	kg	585,5		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Structural Steel HEB 200 S275JR	14,0	Untis	1.826,7		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Structural Steel IPE 300 S275JR	4,0	Units	970,6		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Structural Steel HEB 160 S275JR		Units	979,8		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Structural Steel UPN 100 S275JR		Units	888,8		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Structural Steel IPE 120 S275JR	13,0	Units	82,9		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Steel plate S275JR	4,0	Units	942,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	04/11/2015	05/11/2015	Paint Oxirón	37,9	m2	4,7	0,1	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/11/2015	11/11/2015	Bricks CV	193,8	m2	16.473,0	9,7	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
Edificio de Servicios	FÁBRICAS Y ALBAÑILERÍA	09/11/2015	11/11/2015	Steel Mesh B 500 T	193,8	m2	1.356,3	0,7	Truck 4 Axes	32	25.000	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/11/2015	11/11/2015	Bricks CV 24x11.5x5	191,2	m2	16.252,0	9,6	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/11/2015	11/11/2015	Sand	13,8	m3		13,8	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/11/2015	11/11/2015	Cement	2.007,0	kg	2.007,0	3,0	Truck 3 Axes	15	20.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/11/2015	11/11/2015	Roof e=100mm	225,0	m2	2.700,0	15,8	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/11/2015	11/11/2015	Isolation for walls	248,6	m2	62,2	14,9	Truck 3 Axes	15	20.000	Direct	Hilti	Avinguda Reial Monestir Santa Mar, 8	46930	Quart de Poblet, Valencia	Spain
	CUBIERTAS	06/11/2015	06/11/2015	Sandwich panel wood panel 16mm	59,6	m2	655,6	4,5	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
	CUBIERTAS	06/11/2015	06/11/2015	Tiles (12-15 tiles/m2)	892,5	Units	3.710,0	7,0	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	06/11/2015	06/11/2015	Water pipe D=100mm	126,0	m	504,0	1,3	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	CARPINTERÍA Y CERRAJERÍA	13/11/2015	13/11/2015	Steel auxiliar structures	28,4	m2	3.860,0	5,0	Truck 4 Axes	32	25.000	Direct	Hilti	Avinguda Reial Monestir Santa Mar, 8	46930	Quart de Poblet, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	16/11/2015	16/11/2015	Paint	191,7	m2	23,0	0,0	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	16/11/2015	16/11/2015	Plaster	191,7	m2	2.300,0	4,8	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	INSTALACIONES	12/11/2015	12/11/2015	Lights	12,0	Units	19,2	0,6	Van	8	2.500	Direct	Imeaspi SA	Calle Doctor Fleming 14	46930	Quart de Poblet, Valencia	Spain
	INSTALACIONES	12/11/2015	12/11/2015	Cables	110,0	m	220,0	1,5	Van	8	2.500	Direct	Amara	Avenida Río Vinalopó, s/n. Polígono Industrial Quart de Poblet	46930	Quart de Poblet, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Concrete HL-150/B/20 limpieza e=10 cm	1.294,3	m2		129,4	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Concrete HA 25	133,2	m3		133,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Steel B 500 S corruø6-25	6.684,5	kg	6.684,5		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Concrete H-25/B/20/IIa p/	84,4	m3		84,4	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Steel B 500 S corruø6-25	7.612,1	kg	7.612,1		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Structural Steel HEB 200 S275JR	38,0	Units	12.345,8		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Structural Steel UPN 120 S275JR	16,0	Units	17.152,0		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Structural Steel IPE 120 S275JR	2,0	Units	1.664,0		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Structural Steel	20,0	Uniits	1.968,3		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	02/06/2016	28/06/2016	Paint	1.840,0	m2	230,0	0,3	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	14/07/2016	08/08/2016	Facade ceramic Bricks	754,1	m2	64.090,0	37,8	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	14/07/2016	08/08/2016	Bricks CV 24x11.5x5	207,9	m2	17.670,0	10,4	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	14/07/2016	08/08/2016	Isolation for walls	153,9	m2	38,0	10,1	Truck 3 Axes	15	20.000	Direct	Hilti	Avinguda Reial Monestir Santa Mar, 8	46930	Quart de Poblet, Valencia	Spain
Muelle 3	FÁBRICAS Y ALBAÑILERÍA	14/07/2016	08/08/2016	Sand	10,4	m3		10,4	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	14/07/2016	08/08/2016	Cement	1.552,0	kg	1.552,0	2,1	Truck 3 Axes	15	20.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
	FÁBRICAS Y ALBAÑILERÍA	14/07/2016	08/08/2016	Roof e=100mm	40,0	m2	480,0	2,8	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	29/06/2016	25/07/2016	Sandwich panel wood panel 16mm	1.590,8	m2	17.490,0	95,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
	CUBIERTAS	29/06/2016	25/07/2016	Tiles (12-15 tiles/m2)	23.850,0	Units	99.147,8	140,0	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	29/06/2016	25/07/2016	Water pipe D=100mm	290,0	m	1.119,6	2,9	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	REVESTIMIENTOS Y ACABADOS	18/08/2016	24/08/2016	Doors	2,0	Units	240,0	0,6	Van	8	2.500	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	18/08/2016	24/08/2016	Calatorao Pavement 60x40x5	203,6	m2	18.270,0	10,8	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 29	54282	Calatorao, Zaragoza	Spain
	REVESTIMIENTOS Y ACABADOS	18/08/2016	24/08/2016	Gravel e= 10cm	780,0	m2		78,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	18/08/2016	24/08/2016	Sandwich Panel	158,1	m2	1.738,0	11,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
	REVESTIMIENTOS Y ACABADOS	18/08/2016	24/08/2016	Roof	40,0	m2	480,0	2,8	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	18/08/2016	24/08/2016	Tiles	243.5	m2	1.010,5	1,6	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	INSTALACIONES	09/08/2016	16/08/2016	PVC TubeS (Different Diameters)	315,0	m	1.575,0	16,4	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	INSTALACIONES	09/08/2016	16/08/2016	Sinks	8,0	Units	220,0	0,9	Truck 3 Axes	15	20.000	Direct	Aquader	Calle Cuarte 59	46113	Moncada, Valencia	Spain
	INSTALACIONES	09/08/2016	16/08/2016	Toillets	10,0	Untis	350,0	1,3	Truck 3 Axes	15	20.000	Direct	Aquader	Calle Cuarte 59	46113	Moncada, Valencia	Spain
	MOVIMIENTO DE TIERRAS	24/12/2015	24/12/2015	Ground and soil	920,9	m3		920,9	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Concrete HL-150/B/20 limpieza e=10 cm	2.039,2	m2		203,9	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Concrete HA 25 znj-zap-rios blanda 20 cim	231,4	m3		231,4	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Steel B 500 S corruø6-25	11.311,2	kg	11.311,2		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Concrete H-25/B/20/IIa for Walls	160,9	m3		160,9	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Steel B 500 S corruø6-25	11.530,3	kg	11.530,3		Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Concrete Pavement E=30cm	1.521,0	m2		456,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Concrete Pavement HM-20/B/20/I E=15cm	97,5	m2		14,6	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Structural Steel HEB 200 S275JR	56,0	Units	16.193,8	12,5	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Structural Steel UPN 120 S275JR	3,0	Units	3.900,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Structural Steel IPE 120 S275JR	16,0	Units	26.800,0	1,6	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Structural Steel Plates 20x30	80,0	Units	6.048,0	0,1	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CIMENTACIÓN Y ESTRUCTURA	25/12/2015	08/02/2016	Paint Oxirón	1.482,0	m2	185,0	0,3	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/03/2016	13/04/2016	Facade Bricks CV 24x11.5x5	605,1	m2	51.680,0	30,4	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/03/2016	13/04/2016	Steel Mesh B 500 T	605,1	m2	956,3	3,0	Truck 4 Axes	32	25.000	Direct	Hierros y Ferrallas Cruz	Pol. Masía del Conde Loriguilla 5	46393	Loriguilla, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/03/2016	13/04/2016	Bricks CV 24x11.5x5	605,1	m2	51.433,5	30,3	Truck 4 Axes	32	25.000	Direct	Vicente Camp SL	Pla de Quart km 4	46960	Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/03/2016	13/04/2016	Isolation for walls	605,1	m2	148,0	44,0	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
Muelle 4	FÁBRICAS Y ALBAÑILERÍA	09/03/2016	13/04/2016	Sand	30,3	m3		30,3	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/03/2016	13/04/2016	Cement	30,0	m3	4.537,0	6,4	Truck 4 Axes	32	25.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain
	FÁBRICAS Y ALBAÑILERÍA	09/03/2016	13/04/2016	Roof e=100mm	153,4	m2	2.640,0	15,3	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	09/02/2016	18/03/2016	Sandwich panel wood panel 16mm	2.463,8	m2	27.093,0	149,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
	CUBIERTAS	09/02/2016	18/03/2016	Tiles (12-15 tiles/m2)	36.957,0	units	153.635,5	246,4	Truck 4 Axes	32	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	CUBIERTAS	09/02/2016	18/03/2016	Water pipe D=100mm	450,0	m	1.785,0	5,0	Truck 4 Axes	32	25.000	Direct	Ribloc	Poligono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
	CARPINTERÍA Y CERRAJERÍA	03/05/2016	09/05/2016	Steel elements 2x2,5m	69,0	Units	13.541,0	1,7	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	03/05/2016	09/05/2016	Steel elements VE	4,0	Units	120,0	0,0	Truck 4 Axes	32	25.000	Direct	Gestion Ferralla SL	Pol. Casanova , Avda. de les Ceramistes, nº 20 Nave 2	46190	Ribarroja del Turia, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	03/05/2016	09/05/2016	Glass	77,7	m2	2.693,6	5,5	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	CARPINTERÍA Y CERRAJERÍA	03/05/2016	09/05/2016	Doors	4,0		160,0	0,6	Truck 3 Axes	15	20.000	Direct	Fivi	C/ Dinamarca nº 3	46240	Carlet, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	10/05/2016	24/05/2016	Calatorao Pavement 60x40x5	450,1		68.750,0	24,0	Truck 4 Axes	32	25.000	Direct	Canteria CIM	Presbitero Giner 29	54282	Calatorao, Zaragoza	Spain
	REVESTIMIENTOS Y ACABADOS	10/05/2016	24/05/2016	Gravel e= 10cm	940,0	m2		94,0	Dump Truck	12	25.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
	REVESTIMIENTOS Y ACABADOS	10/05/2016	24/05/2016	Mortar e=7cm	192,6	m2	2.022,0	13,4	Truck 3 Axes	15	20.000	Direct	Beton Catalán	CTRA. DE TURIS A XIVA	46389	TURIS, VALENCIA	Spain

		REVESTIMIENTOS Y ACABADOS	10/05/2016	24/05/2016	Ceramic tiles 60x60	192,6	m2	29.350,0	5,9	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		REVESTIMIENTOS Y ACABADOS	10/05/2016	24/05/2016	Roof e=100mm	192,6	m2	3.251,0	19,2	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		REVESTIMIENTOS Y ACABADOS	10/05/2016	24/05/2016	Sandwich Panel Steel	261,5	m2	2.876,0	17,0	Truck 4 Axes	32	25.000	Direct	ONDULINE SAU	Pol. Industrial El Campillo Fase II Parcela 12	48500	Gallarta, Bizkaia	Spain
		REVESTIMIENTOS Y ACABADOS	10/05/2016	24/05/2016	Ceramic tiles 40x40	262,1	m2	40.035,0	6,3	Truck 3 Axes	15	20.000	Direct	Hermanos Moreno SL	Calle Ciudad de Liria 51	46988	Paterna, Valencia	Spain
		INSTALACIONES	14/04/2016	02/05/2016	PVC TubeS (Different Diameters)	360,0	m	1.800,0	19,4	Truck 4 Axes	32	25.000	Direct	Ribloc	Polígono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		INSTALACIONES	14/04/2016	02/05/2016	Manholes different sizes	29,0	Units	150,0	0,1	Truck 4 Axes	32	25.000	Direct	Ribloc	Polígono Industrial Mateu Cromo, M-506 Km 24.5	28320	Pinto, Madrid	Spain
		Demolitions Pavements	02/02/2016	10/02/2016	Wasted pavements	6.218.800,0	kg	6.218.800,0	4.783,7	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Demolitions Asphalt	01/02/2016	01/02/2016	Wasted asphalt	913.200,0	kg	913.200,0	702,5	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Bordillos y rigolas de hormigón calle Filipinas	17/03/2016	25/03/2016	Concrete block	2.005,0	m	250.800,0	125,4	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Pav baldosa hidr gs 4 pastillas	28/03/2016	21/04/2016	Hydraulic pavement 20x20	1.120,0	m2	61.600,0	24,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
Filipinas Street works	Pavements and sidewalks Filipinas Street	Mezclas asfalticas	26/04/2016	28/04/2016	Asphalt irrigation EAL-1	9.664,5	m2	11.597,4		Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Mezclas asfalticas	26/04/2016	28/04/2016	Asphalt AC22 bin 50/70S e=9cm	9.664,5	m2	2.085.600,0	869,8	Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Mezclas asfalticas	26/04/2016	28/04/2016	Asphlat AC22 bin 50/70S e=7cm	7.175,7	m2	1.204.800,0	502,3	Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Mezclas asfalticas	26/04/2016	28/04/2016	Asphalt irrigation EAR-1	9.664,5	m2	7.731,6		Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Mezclas asfalticas	26/04/2016	28/04/2016	Road layer FA-12 e=3cm	9.664,5	m2	693.600,0	289,3	Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Señalización horizontal	29/04/2016	29/04/2016	Reflex paint	640,0	m2	80,0	0,1	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
		Señalización horizontal	29/04/2016	29/04/2016	Paint	2.038,0	m	254,7	0,4	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
		Demolitions Pavements	02/05/2016	11/05/2016	Wasted pavements	6.218.800,0	kg	6.218.800,0	4.783,7	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Demolitions Asphalt	12/05/2016	12/05/2016	Wasted asphalt	913.200,0	kg	913.200,0	702,5	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Bordillos y rigolas de hormigón Rotonda	04/07/2016	19/07/2016	Concrete block	2.081,0	m	249.720,0	124,8	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Pavimento losa de hormigón en Rotonda	10/08/2016	11/08/2016	Concrete HM-20/B/20/I E=15cm	750,0	m2		75,0	Concrete Mixer	6		Direct	HORMIGESTION SL	Azagador de la Torre 53	46026	Valencia	Spain
		Pav baldosa hidr gs 4 pastillas 20x20cm	20/07/2016	11/08/2016	Hydraulic pavement 20x20	1.000,0	m2	55.000,0	20,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
Peris i Valero works	Pavements and sidewalks Peris i Valero street	Mezclas asfalticas	24/08/2016	30/08/2016	Concrete kerb	675,0	m2	276.500,0	135,0	Truck 4 Axes	32	25.000	Direct	Norten PH	Pol. Ind. Camporroso, C/ VC-4, Parcela H-1	2520	Chinchilla, Albacete	Spain
		Mezclas asfalticas	24/08/2016	30/08/2016	Asphalt irrigation EAL-1	11.587,2	m2	13.904,6		Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Mezclas asfalticas	24/08/2016	30/08/2016	Asphalt AC22 bin 50/70S e=9cm	11.587,2	m2		1.042,8	Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Mezclas asfalticas	24/08/2016	30/08/2016	Asphalt irrigation EAR-1	11.587,2	m2	9.269,8		Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Mezclas asfalticas	24/08/2016	30/08/2016	Road layer FA-12 e=3cm	11.587,2	m2		347,6	Dump Truck	12	25.000	Direct	Pavasal	A-3 Madrid-Valencia, Km 343	46930	Quart de Poblet, Valencia	Spain
		Señalización horizontal	31/08/2016	31/08/2016	Reflex paint	77,0	m2	9,6	0,0	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
		Señalización horizontal	31/08/2016	31/08/2016	Paint	148,0	m	18,5	0,0	Van	8	2.500	Direct	Sefergon SL	Pol. Mas de Tous, C/ Belgrado, Parcela 19, Nave 3	46185	La Pobla de Vallbona, Valencia	Spain
		Total Waste Material	01/12/2014	30/09/2016	Concrete and Mortar	3.095,5	t	3.095.530,0	4.643,3	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Bricks and tiles	2.002,9	t	2.002.900,0	3.004,4	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Roof Tiles	19,7	t	19.700,0	29,6	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Wood elements	97,9	t	97.900,0	146,9	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Glass elements	11,8	t	11.750,0	17,6	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Plastic	44,0	t	43.970,0	66,0	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
Reverse Logistics	Reverse Logistics	Total Waste Material	01/12/2014	30/09/2016	Steel and other Metals	162,4	t	162.390,0	243,6	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Ground and soil	103.017,0	t	103.017.030,0	154.525,5	Dump Truck	12	25.000	Reverse	Bolinches SA	Camí Torrent 9	46960	Aldaia, Valencia	Spain
		Total Waste Material	01/12/2014	30/09/2016	Plaster	4,6	t	4.600,0	6,9	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Fiber Cement Waste	1.949,3	t	1.949.250,0	2.923,9	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	General waste	1.093,3	t	1.093.300,0	1.640,0	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Asphalt	18.264,0	t	18.263.960,0	18.264,0	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	High Volume Items	25,4	t	25.380,0	38,1	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain
		Total Waste Material	01/12/2014	30/09/2016	Dangerous Materials	253,0	t	253.000,0	379,5	Dump Truck	12	25.000	Reverse	Chimo Mora	Camino del rabosar	46988	Paterna	Spain