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DIPLOMA THESIS

Construction technology project:
NEW TOWN HALL FOR PRAGUE 7

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2018

Supervisors: CTU - Ing. Karel Polák, Ph.D.
UPV - Milagro Iborra Lucas
I hereby declare that the work presented in this thesis is my own. All the sources of literature I used to use are listed in references. I do agree with public disclosure of this diploma thesis.

In Valencia at: .................. .................................................................

name and surname of declarer
Thanks to:
I would like to express many thanks to Ing. Karel Polák Ph.D. and Mrs. Milagro Iborra Lucas for valuable advices factual remarks and helpfulness during consulting my diploma thesis. I am also grateful to company Contractis s.r.o. for the help with choosing the project.
Title: Construction technology project – NEW TOWN HALL FOR PRAGUE 7

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Abstract: This diploma thesis is dealing with the implementation of the project NEW TOWN HALL FOR PRAGUE 7. The aim of the project is complex reconstruction of administrative building with estimated costs of 150 million CZK. Main documents of the thesis show instructions for the implementation in the form of construction technology project (CTP).

In the CTP is the construction divided in to a space structure, a technological structure and a time structure. This partition is than used to create a time space diagrams and a time schedules of the construction. Another important part of the CTP is to create global solution of site facilities and health and safety plan.

Keywords: construction technology project, time space diagram, time schedule, health and safety plan, construction planning, construction site, dimensioning of site facilities, lifting device, technological scheme, technological analysis sheet
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INTRODUCTION

This diploma thesis is dealing with the project of the District of Prague 7 which is named New town hall for Prague 7. As the title says, the aim of the project was to find a new headquarters for the town hall of this metropolitan area. For this purpose, was chosen the office building at the address: 1338/38 U Průhonu, Prague 7 – Holešovice. The building was purchased with the intention of a complex reconstruction with estimated costs of 150 million CZK.

The architectural competition, announced in 2016, won Atelier BOD with a technologically simple but clear design dominated by a ceramic cladding facade.

The project documentation for the reconstruction was prepared by the company DELTAPLAN in the following year and the building permit was granted. This all, under the project management of the company CONTRACTIS, is leading to the implementation of project in September 2017.

This diploma thesis originates during the preparation phase and in the first months of its implementation. The main topic of the thesis is the construction technology project and the health and safety plan. These documents are indispensable for successful completion of every construction project. It shows planning and implementation to the schedules and charts of each construction process. This will be described in detail in following chapters.

The aim of this thesis is to create the document, according to which, the wider public community can also look into the problems of preparation and implementation of such as important construction project like this one. The thesis will be completed before the project completion itself, so it can also serve as an instruction or inspiration for the preparation and management teams involved to this construction.
New design

Existing building
CONSTRUCTION TECHNOLOGY PROJECT (CTP)

A construction technology project is being created during a preparatory phase of each construction project. It uses a project documentation and usually a list of measurement (bill of quantities) for performing documents which will serve as a manual for implementation of a construction project. It shows a global look at a construction and construction site and consider every aspect and situation which can happen during an implementation phase.

The CTP divides the construction into time structure, space structure and technological structure. These structures are strongly connected and engineers have to consider each of them, during implementing of the construction project. There are main documents for each structure, which are describing the construction process in every particular detail. Time structure: Construction schedule, Time-space graph, Deployment chart of workers requirements, material and machinery requirements; Space structure: Technological scheme - dividing of the construction to space sections and the construction process to stage processes, Lifting device proposal; Technological structure: List of processes, Technological analysis sheet, Health and safety plan.

Another important part of the CTP in proposal and assessment of construction site. It contains technical report and drawings for different phases of construction. It comments proposal and placement of each element of a construction site and its dimensions such as construction facilities, sanitary facilities, machines, storage areas, fencing, etc..
1 TENDER (PROJECT) DOCUMENTATION

The author of this thesis obtained the tender documentation thanks to the cooperation with a company Contractis s.r.o.. The company represented the investor of the project and provided the entire project management. The project documentation was available at the level of documentation for building permits and documentation for the real implementation of the construction. In this work, the author mentions only the most important drawings and documents, which he used during creating the construction technology project. Individual drawings and documents are attached below.

1.1 List of the submitted documentation

1.1 – Floor plan 1.UG
1.2 – Floor plan GF (Ground floor)
1.3 – Floor plan 3.AG (typical floor)
1.4 – Section A-A´

2.1 – Blind bill of quantities – *not attached, can be available on request in Czech language* (Contains bill of quantities of the main reconstructed building CO110, there is possible to find measurements of architectural-constructioning part and all professions. Then the measurements of building objects CO310 and CO340 are enclosed.)
2 ASSESSMENT OF THE PROJECT DOCUMENTATION

The range and content of project documentation necessary for building permission application is specified in annex 5 of decree no. 499/2006 Co. (Part of law in Czech Republic)

Project documentation must contains following parts:
A. Accompanying technical report
B. Summary technical report
C. Location drawings
D. Documentation of the constructed objects and technical and technological equipment
E. Documents part

Project documentation must contains parts A to E. Range and content of each part can be adapted to type and significance of the construction, its placement, structure, design, usage, environmental impact and duration of the construction.

2.1 Assessment of completeness and accuracy of the project documentation

The project documentation, which was used as a basis for the elaboration of this diploma thesis, was also a tender documentation to public contract for the selection of the main contractor of works. The documentation was downloaded from the official website of the investor, which is the Municipal District of Prague 7. The author of the diploma thesis reviewed all the documents that were available. The completeness of the project documentation was founded sufficient and the documentation fully complies with the requirements of Government regulation No. 499/2006 Coll. About building documentation.
In the project documentation were available following documents:

**A Accompanying technical report**

**B Summary technical report**

**C Location drawings**
- Coordinating location drawing
- Cadastral map

**D Documentation of the constructed objects and technical and technological equipment**

**CO110 – Main building**
- Architectural and construction solutions
- Architectural details
- Pherimeter shell (Facade)
- Isolation
- Stavebně-konstrukční řešení
- Sanitary installations
- Heating, cooling
- Air-conditioning technology
- High voltage systems
- Low voltage systems
- FAS (Fire alarm system)
- MaR
- Gastronomic equipment
- Audio-video equipment
- Space acoustics

**SO320 – Reconstruction of paved areas**

**SO340 – Outdoor landscaping**

**E Documents pats**
- Bill of quantities (List of measurements)

**F Reviews and studies**
2.2 Proposal of correction of the project documentation

The project documentation has been reviewed. During this activity the author focused on possible mistakes and deficiencies in the design or inappropriate solution of the individual technological parts of the project.

The reviewing of the documentation did not reveal any fundamental errors or deficiencies that would make the construction impossible to implement.

The proposed construction fulfills the basic requirements for buildings according to National Regulation No. 268/2009 Coll. About technical requirements for buildings, such as: Mechanical resistance and stability, fire safety, protection of human and animal health, healthy living conditions and the environment, noise protection, safety in use, energy saving and thermal protection. Due to this fact, there was no need to change the technical solution of the construction.

The graphic form of the documentation and the accuracy of the text parts has been revised especially with the emphasis on checking the clarity and meaningfulness. The author also focused on whether the information in the individual documents are not contradicted. No serious mistakes were found in this section either.

Regarding to the project documentation we can say that the project can be implemented without any major problems.
3 SOLUTION OF THE SPACE STRUCTURE

The spatial structure consists of the placement of production (work) spaces for construction processes. It is a group of dump areas, transport routes, machines, equipment and distribution to them, as well as working space for workers. It includes the spatial conditions for the production processes to be implemented safely, in a high quality, economic, and efficiently. The spatial structure is changing during the construction process from one work activity to another. The spatial structure is necessarily solved and exists in accordance with the technological and time structure. Part of the STP reconstruction of the administrative building called New Town Hall for Prague 7 is a complex solution of the spatial structure.

3.1 Technological scheme

When solving the spatial structure, it is necessary to create the technological scheme. This shows the division of the object into the space sections and the stage processes that are carried out at each section. From the drawing are also visible directions of stage processes.

Partition of the object on a space sections:

SS 0 – Around the building
SS 1 – Substructure (1 UG)
SS 2 – Ground floor (GF)
SS 3 – First floor (1 AG)
SS 4 – Second floor (2 AG)
SS 5 – Third floor (3 AG)
SS 6 – Fourth floor (4 AG)
SS 7 – Fifth floor (5 AG)
SS 8 – Sixth floor (6 AG)
SS 9 – Seventh floor (7 AG)
SS 10 – Eighth floor (8 AG)
SS 11 - Roof
SS 12 - Facade
Partition of the object on a stage processes:
0 – Construction site and preparatory demolition works
1 – Demolition of load-bearing structures (Two parts)
2 – Load-bearing constructions (Two parts)
3 – Earthworks (Only a manhole placement)
4 – Roofing and terraces
5 – Internal partitions and installation wiring
6 – Completion of rough floors and internal surfaces and technologies
7 – Completion of technical equipment, completion works and final surfaces
8 – Completion of technical equipment, completion works and final surfaces
9 – Building envelope (Facade)
10 – Acceptance of construction – Building approval
TECHNOLOGICAL SCHEME (S.S. FOR CO01)
PARTITION OF THE BUILDING TO SPACE SECTIONS

SS 11
PG 10
8 AG
SS 11

SS 11
SS 9
7 AG

SS 11
SS 8
6 AG

SS 11
SS 7
5 AG

SS 11
SS 6
4 AG

SS 11
SS 5
3 AG

SS 11
SS 4
2 AG

SS 11
SS 3
1 AG

SS 11
SS 2

SS 1
1 UC

SPACE SECTIONS:
SS 6 - AROUND THE BUILDING
SS 1 - SUBSTRUCTURE (1 UG)
SS 2 - GROUND FLOOR (0 AG)
SS 3 - FIRST FLOOR (1 AG)
SS 4 - SECOND FLOOR (2 AG)
SS 5 - THIRD FLOOR (3 AG)
SS 6 - FOURTH FLOOR (4 AG)
SS 7 - FIFTH FLOOR (5 AG)
SS 8 - SIXTH FLOOR (6 AG)
SS 9 - SEVENTH FLOOR (7 AG)
SS 10 - EIGHTH FLOOR (8 AG)
SS 11 - ROOF
SS 12 - ROOF

ALLOCATION OF THE SPACE PROCEDURES:
0.3 (4 construction objects 00310, 00340)
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
0.1, 2, 3, 5, 7, 8
TECHNOLOGICAL SCHEME (FOR MAIN CONSTRUCTED OBJECT: CO01)

DIRECTIONS OF THE STAGE PROCESSES

STAGE PROCESSES: SP0, SP1, SP2

STAGE PROCESSES: SP3, SP4, SP5, SP6, SP7, SP8

STAGE PROCESS: SP9

0 – CONSTRUCTION SITE AND PREPARATORY DEMOLITION WORKS
1 – DEMOLITION OF LOAD-BEARING STRUCTURES (TWO PARTS)
2 – LOAD-BEARING CONSTRUCTIONS (TWO PARTS)
3 – EARTHWORKS (Only for a monolithic placement)
4 – ROOFING AND TERRACES
5 – INTERNAL PARTITIONS AND INSTALLATION WIRING
6 – INTERNAL FINISHING AND BASE LAYERS OF THE FLOOR COMPOSITION
7 – COMPLETION OF ROUGH FLOORS AND INTERNAL SURFACES AND TECHNOLOGIES
8 – COMMISSIONING OF TECHNICAL EQUIPMENT, COMPLETION WORKS AND FINISH SURFACES
9 – BUILDING ENVELOPE (Façade)
10 – ACCEPTANCE OF CONSTRUCTION – BUILDING APPROVAL

STAGE PROCESSES:

DIRECTIONS OF THE STAGE PROCESSES:

HORIZONTAL / HORIZONTALLY DESCENDING
HORIZONTALLY DESCENDING
HORIZONTALLY ASCENDING
HORIZONTAL
HORIZONTALLY ASCENDING
HORIZONTALLY ASCENDING
HORIZONTALLY ASCENDING
HORIZONTALLY ASCENDING
HORIZONTALLY ASCENDING
HORIZONTALLY ASCENDING
3.2 List of the main constructions

- **Main load-bearing structures**

  The main load-bearing structure consists of a combination of reinforced concrete monolithic skeleton structure and prefabricated panels. The skeleton structure is stiffened by vertical monolithic plates. Prefabricated panels are used in the horizontal direction as a ceiling slabs of individual floors. During the reconstruction, a part of the main supporting structure will be demolished. Speaking about vertical structures, it is the elevator shaft, the staircase, and the stiffing walls. Demolition of horizontal load-bearing structures contains removing of prefabricated panels up to 30 percent of the total floor area.

  In the demolished area will be performed a new lift shaft, built of permanent formwork concrete blocks and a new staircase. In the rest of the openings in the ceiling structure, there will be performed a new monolithic reinforced concrete slab. Removed stiffening walls will be compensated by reinforcement of existing skeleton columns.

- **Internal partitions – non-load-bearing walls**

  Most partitions are made of plasterboard structures with a thickness of 50 - 200 mm, most of these walls are double-cladded. The other major part of the internal partitions is made up of glass dividing walls. The masonry walls are predominantly in the 1.UG, in the upper floors are not the masonry walls so often.

- **Roofing**

  The roof of the building is classified as flat roof. Most of the roof area is a walkable surface adapted for approach of persons. The roof is located at five stages of the building. In the sixth, seventh and eighth floors is the roof classified as a terrace, that is accessible to employees working in the building. Roofs of the eighth and ninth stages are accessible primarily for the maintaining of the building. The roofing composites can be read from the project documentation.
The dates for the implementation of the roofing can be seen in the time-space graph and the construction schedule.

- **Perimeter shell - Facade**

  The facade of the building is the dominant element. The existing perimeter shell consists of a heavy ceramic tiles on a metallic grate. Shell will be dismantled after finishing the demolition works and the construction works of the new load-bearing structure. This will be done primarily to prevent the spread of noise and solid particles in the air (dust, concrete, ...) to neighboring objects and public spaces.

  The new facade is designed as a heavy ventilated shell. The dominant element are a ceramic brick tiles supported by a load-bearing aluminum grate structure. The shell is insulated with thermal insulation. Window frames are made up of panels. Panels are also parts of parapet wall. Part of the composition is a supporting parapet, which is made of blocks of permanent formwork. The interior surface of the parapet wall is made of a plasterboard.

- **Internal plastering**

  Internal plasters are made by machine-sprayed lime-cement. Due to the small number of brick and concrete structures inside the building, this is not a major construction process. Ceiling surface is not plastered – ceiling construction is designed.

- **Rough floors**

  Rough floors are made up as a standard composition. First acoustic insulation, then bearing layer from concrete screed. This layer has a thickness of 50 mm and is reinforced with wire mesh. The heating distribution pipes leads in the floor and is necessary to adapt the process. There is also distribution tube for electrical wires. Because of the large area where the flooring will be realized, it is a major construction process. The dates for the implementation of the seventh stage process can be seen in the time-space graph and the construction schedule.
3.3 Determining the main coefficients of work queue

Work queue – Coefficient, which is the basic indicator that characterizes the minimum amount of space required for a particular process and is a spatial aspect of the two processes' relationship.

For the above-mentioned stage processes, the major coefficients of the work queue were calculated. This coefficient is calculated from the following formula,

\[ f_{ij} = \left( \frac{M}{C} \right) \times 100 \quad \text{[\%]} \]

where M is the minimum working queue for the process, expressed in the number of floors, and C is the total working space of the building expressed in the total number of floors (where the process is performed).

F1 is the coefficients of the work queue for 0.,1.,2.,5.,6.,7.,8.S.P.
\[ F2 = \frac{1}{10}\times100 = 10\% \]

F2 is the coefficients of the work queue for 3.E.P. – Earthworks
\[ F2 = \frac{1}{1}\times100 = 100\% \]

F3 is the coefficients of the work queue for 9.E.P. – Facade
\[ F2 = \frac{1}{8}\times100 = 12,5\% \]

F4 is the coefficients of the work queue for 4.E.P. - Roofing
\[ F3 = \frac{1}{5}\times100 = 20\% \]

3.4 Lifting device proposal

There are two variants which can be considered during proposing of the lifting device. First variant is a placement of stationary tower crane, second variant is using of mobile car crane.

According to size of the construction site, difficulty of the project and volume of workload when the lifting device is needed, the only adequate solution is proposing of a stationary tower crane.
Proposal of tower crane:

1. Minimal height of the crane:
   (from ground level to lower edge of jib-crane)
   formula: $H_{\text{min}}=H_b+H_{bu}+H_h+H_t+H_m$
   
   $H_b$.....height of the building $H_b=31,4$ m
   $H_{bu}$.....height of the burden $H_{bu}=4$ m
   $H_h$.....height of the hang $H_h=3$ m
   $H_t$.....height of the trolley $H_t=0,5$ m
   $H_m$.....height for manipulation $H_m=1,5$ m
   
   $H_{\text{min}}=31,4+4+3+0,5+1,5$
   $H_{\text{min}} = 40,4$ m

2. Minimal range of the crane:
   formula: $L_{\text{min}}=L_m+L_f$
   
   $L_m$..... length for manipulation $L_m=2$ m
   $L_f$..... length to the furthest point of construction, from the location of the crane
   $L_b=40$ m
   
   $L_{\text{min}}=2+40$
   $L_{\text{min}} = 42$ m

3. Maximum weight of the burden:
   $m_b$.....maximal estimated weight of the burden
   $m_b = 3$ t

Machine proposal:

To the calculated crane parameter requirements corresponds:

**Liebherr 130 EC-B6 – 185HC**

Technical parameters of the machine:

Height:
formula: $H = H_b + H_1 + n \cdot H_n$

$H_{ba}$.....height of the ballast $H_{ba} = 4,85$ m

$H_1$.....height of the first part $H_1 = 8,85$ m

$H_n$..... height of the middle part $H_n = 4,14$ m

$H = 4,85 + 8,85 + 9 \cdot 4,14$

$H = 50,96$ m $> H_{\min}$

Maximal range when carrying the maximum burden:

$L_{(3t)} = 42,5$ m $> L_{\min}$

$\rightarrow$ Proposed crane has sufficient parameters.

On the construction site will be one tower crane of this type in disposal. Exact dates of the deployment and usage are visible in time-space chart and graph of machine usage of the construction site. Exact position of the tower crane is visible in drawings of construction sites.

On the construction site will be placed also construction lift GEDA ERA 1200 Z/ZP. This lift can transport persons and small amount of material or tools. Exact position of the lift is visible in drawings of construction sites.
Pic. 1: Tower crane Liebherr 130 EC-B6 – 185HC

Pic. 2: Range of the tower crane Liebherr 130 EC-B6 – 185HC
4 SOLUTION OF THE TECHNOLOGICAL STRUCTURE

The technological structure of the construction process exists in time and space, therefore it must be solved in accordance with the time and spatial structure of the main construction process.

The main documents of the technological structure of the construction process are: List of processes, Technological analysis sheet and Health and safety plan.

4.1 List of processes

The List of processes is a document showing the most detailed technological structure of the object construction in the structure of individual building activities. The document reflects continuity of each process and it is the first technological document, which shows characteristics of the individual constructional processes and evaluates them by total measurements, individual workload expressed by hours of work and assignes them to the main stage processes.

The List of processes of this CTP contains 1190 items.

The complete List of processes is not attached. It is available on request in Czech language. There is attached only first page with translated template. The items were not translated (22 pages and 1190 items). The continuity of construction process is obvious from the technological analysis sheet.
### Construction: NEW TOWN HALL Prague 7

**Document: LIST OF PROCESSES**

<table>
<thead>
<tr>
<th>Number (No.)</th>
<th>Description</th>
<th>Masur units</th>
<th>Total measurement</th>
<th>Difficulty (per hour)</th>
<th>Total difficulty</th>
<th>Machines</th>
<th>Merged to</th>
</tr>
</thead>
</table>

**CO110 MAIN BUILDING CONSTRUCTION WORKS**

#### CONSTRUCTION SITE FACILITIES

1. Geodetické zaměření a vytvoření hranic staveniště a VYTVYCOVACÍCH OS
2. Demontáž vrat
3. Demontáž závory včetně ovládacích sloupků
4. Získání zařízení staveniště ze stavebních buněk
5. Umístění staveništěho hlavního rozvaděče
6. Položení staveništěho rozvodu siloproudu
7. Položení staveništěho rozvodu vody a kanalizace
8. Napojení na vodu, kanalizaci a odvodnění staveniště
9. Připojení staveniště na siloproudu
10. Vybourání otvůr v obvodovém pláště v každém patře pro vstupy z výšky
11. Staveništní výšek sloupový - 1 kpl
12. Jeřáb většinový Lebherr 130 EC-B6 - 1 kpl
13. Vyvážení otvoru v většinovém jeřábu
14. Demontáž vrat ks 1.00
15. Vyvážení otvoru v většinovém jeřábu

#### MAIN BUILDING CONSTRUCTION WORKS

16. Demontáž jeřábu
17. Demontáž výchał
18. Vyvážení staveniště
19. Závěrečný úklid vnitřního rozvodu
20. Závěrečný úklid venkovního rozvodu
21. Demontáž se staveništičních rozvodů (siloproud)
22. Demontáž staveništičního rozvaděče
23. Demontáž staveništičních rozvodů (voda, kanalizace)
24. Odvězení zařízení staveniště (buňkovitost)
25. Rozebrání oplocení

#### PREPARATORY DEMOLITION WORKS

26. Odpojení objektu od rozvodu vody
27. Odpojení objektu od rozvodu elektriky
28. Odpojení objektu od rozvodu plynu
29. Vypuštění rozvodu vody a topení
30. Vyvážení nebo zavěšení kovových křídél dveří do 2 m²
31. Vyvážení nebo zavěšení kovových křídél dveří přes 2 m²
32. Demontáž zařízení předmětů
33. Demontáž koncových prvků elektro (zásuvky, světla, vypínače,…….)
34. Demontáž koncových prvků vzt
35. Demontáž všech prvků elektrorozvodní
36. Demontáž stropních těles
37. Vyvážení prosklené stěny ve 2.NP
38. Demontáž SDK podhůd s dvojúrovňovou nosnou kci z ocelových profilů optičtinové jednoduché
39. Demontáž podhůdu lamel
40. Demontáž roštů podhůdu
41. Demontáž kabelových rozvodů elektro vedoucích pod stropem
42. Demontáž vzt potrubí vedoucí pod stropem
43. Demontáž potrubí rozvodu vody a kanalizace vedoucího pod stropem
44. Odsekničení a odeběrání obkladů stěn z vnitřních obkládaček přes 1 m²
45. Otloučení vnitřních omítok MV nebo MVC stropů o rozsahu do 100 %
46. Demontáž SDK přížky s jednoduchou ocelovou nosnou konstrukcí optičtinové dvojité

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**Bc. Michal Bartoš**

**2017/2018**

**Construction Process:**

1. Geodetické zaměření a vytvoření hranic staveniště a VYTVYCOVACÍCH OS (xy)
2. Demontáž vrat
3. Demontáž závory včetně ovládacích sloupků
4. Získání zařízení staveniště ze stavebních buněk
5. Umístění staveništěho hlavního rozvaděče
6. Položení staveništěho rozvodu siloproud
7. Položení staveništěho rozvodu vody a kanalizace
8. Napojení na vodu, kanalizaci a odvodnění staveniště
9. Připojení staveniště na siloproud
10. Vybourání otvůr v obvodovém pláště v každém patře pro vstupy z výšky
11. Staveništní výšek sloupový - 1 kpl
12. Jeřáb většinový Lebherr 130 EC-B6 - 1 kpl
13. Vyvážení otvoru v většinovém jeřábu
14. Demontáž vrat ks 1.00
15. Vyvážení otvoru v většinovém jeřábu

**FINAL CLEANING AND REMOVAL OF THE CONSTRUCTION SITE**

14. Překlínání a konstruování směřujícího pláště pro vstupy z výšky
15. Odstranění ukradených ašíz kovových prvků
16. Odstranění zbytků stavebního materiálu
17. Vyvážení a zavěšení kovových křídél dveří do 2 m²
18. Vyvážení a zavěšení kovových křídél dveří přes 2 m²
19. Demontáž zařízení předmětů
20. Demontáž koncových prvků elektro (zásuvky, světla, vypínače,…….)
21. Demontáž koncových prvků vzt
22. Demontáž všech prvků elektrorozvodní
23. Demontáž stropních těles
24. Odsekničení a odeběrání obkladů stěn z vnitřních obkládaček přes 1 m²
25. Otloučení vnitřních omítok MV nebo MVC stropů o rozsahu do 100 %
26. Demontáž SDK přížky s jednoduchou ocelovou nosnou konstrukcí optičtinové dvojité
4.2 Technological analysis sheet

In the Technological analysis sheet are merged individual items from the list of processes to wider groups according to the technological demands and similarities of the professions. The Technological analysis sheet shows continuity of construction processes in larger scale than the List of processes and evaluates them by total workload expressed by hours of work. Another information visible in Technological analysis sheet are: Number of workers needed for each process, duration of each process, technological pauses and need of machines.

The Technological analysis sheet of this CTP contains 343 items.
## 0.S.P.
### MAIN BUILDING CONSTRUCTION WORKS
#### CONSTRUCTION SITE AND PREPARATORY DEMOLITION WORKS

<table>
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<tr>
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<th>Duration</th>
<th>Modified Duration</th>
<th>No. Days/Connection</th>
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<th>Profession</th>
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### 7.AG - DEMOLITION WORKS

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### 8.AG - DEMOLITION WORKS

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## 1.UG - LOAD-BEARING STRUCTURES

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### 2.S.P. LOAD-BEARING CONSTRUCTION (FIRST PART)

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### 2.AG - LOAD-BEARING STRUCTURES

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<td>239</td>
<td>Demolition of existing road structure and excavation</td>
<td>239.95</td>
<td>D,  OS</td>
<td>33.99</td>
<td>5.0</td>
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<td>Installation of the manhole and pipelines</td>
<td>98.26</td>
<td>D</td>
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<td>315</td>
<td>Erecting of masonry parapet wall</td>
<td>104.19</td>
<td>6</td>
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<td>Placement of facade panels (windows)</td>
<td>54.40</td>
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<td>7.0</td>
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<td>219.92</td>
<td>6</td>
<td>8</td>
<td>36.65</td>
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<td>-</td>
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<td>318</td>
<td>Glazing - flush facade (8.AG)</td>
<td>41.97</td>
<td>4</td>
<td>8</td>
<td>10.49</td>
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<td>-</td>
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<tr>
<td>319</td>
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<td>102.00</td>
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<td>8</td>
<td>25.50</td>
<td>4.0</td>
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<tr>
<td>320</td>
<td>Montage of louvres</td>
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<td>8</td>
<td>36.76</td>
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<td>-</td>
<td>D</td>
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<td>321</td>
<td>Montage of steel facade supporting grid</td>
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<td>20</td>
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<td>100.05</td>
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<td>Thermal insulation and waterproof layer of parapet walls</td>
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<td>324</td>
<td>Metal facade elements</td>
<td>427.62</td>
<td>10</td>
<td>8</td>
<td>42.76</td>
<td>6.0</td>
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<tr>
<td>325</td>
<td>Facade clocks</td>
<td>16.00</td>
<td>2</td>
<td>8</td>
<td>8.00</td>
<td>1.0</td>
<td>-</td>
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</tr>
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</table>

10.S.P. ACCEPTANCE OF CONSTRUCTION - BUILDING APPROVAL

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Quantity</th>
<th>Rate</th>
<th>Amount</th>
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<td>326</td>
<td>Building approval</td>
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<td>1.0</td>
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<td>-</td>
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<tr>
<td>327</td>
<td>Acceptance of construction - handover</td>
<td>8.00</td>
<td>1</td>
<td>8</td>
<td>8.00</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
4.3 Health and safety plan

The plan is prepared in accordance with Act No. 309/2006 Coll. And Government Regulation No. 591/2006 Coll. H&S plan draws attention to the specific health and safety requirements for the particular construction site.

The H&S plan is in accordance with Czech law and contains 31 pages. Due to this fact the whole H&S plan has not been translated. Translated has been the content and the most important parts. The document below contains enough to explain requirements on H&S in Czech Republic and it describes measures necessary to decrease the risks on the construction site.
TECHNICAL REPORT

Health and safety plan

NOVÁ RADNICE PRO PRAHU 7
U PRŮHONU 1338/38, PRAHA 7

FSV – ČVUT

ETSIE – UPV

Bc. Michal Bartoš

Diploma thesis
2017/2018
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1 Identification data

Investor:
District of Prague 7
IČO: 045 98 261
Osadní 799/26, 170 00 Praha 7
Name of the Construction:
Change of existing building:
New Town Hall for Prague 7
U Průhonu 1338/38, 170 00 Praha 7

H &S coordinator in the preparation phase:
CONTRACTIS, s.r.o.
IČO: 257 27 737
Moulíkova 3286/1b, 150 00 Praha 5
Ing. Stanislav Sobola

Project documentation:
Documentation for realization of the construction
03/2017
Deltaplan spol. s r.o.,
Jankovcova 1522/53, 170 00 Praha 7
Ing. Pavel Štěpán 603 442 609
Ing.arch.Luděk Přenosil – ČKA 00364 602 210 212

General contractor:
Not known yet – after tender

Person providing professional management of the building:
Not known yet – after tender

Project manager:
CONTRACTIS, a.s.
IČO: 257 27 737
Moulíkova 3286/1b, 150 00 Praha 5
Ing. Tomáš Mrkvan
tomas.mrkvan@contractis.cz
724 891 470

2 Schedule

<table>
<thead>
<tr>
<th>Stage</th>
<th>Issue</th>
<th>Date (month/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Site preparation</td>
<td>9/2017</td>
</tr>
<tr>
<td>2.</td>
<td>Internal demolitions, modification of supporting structure, rough internal building and assembly work</td>
<td>9/2017-10/2018</td>
</tr>
<tr>
<td>3.</td>
<td>Dismantling of the façade, installing a new façade, roofing, yard reconstruction</td>
<td>8/2018-1/2019</td>
</tr>
<tr>
<td>4.</td>
<td>Completion, assembly, internal works</td>
<td>10/2018-1/2019</td>
</tr>
</tbody>
</table>

3 Contact details
### Important telephone numbers

<table>
<thead>
<tr>
<th>Emergency service</th>
<th>Telephone number:</th>
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</thead>
<tbody>
<tr>
<td>Fire brigade</td>
<td>150</td>
</tr>
<tr>
<td>Ambulance</td>
<td>155</td>
</tr>
<tr>
<td>Police</td>
<td>158</td>
</tr>
<tr>
<td>Integrated rescue system</td>
<td>112</td>
</tr>
<tr>
<td>Regional Labour Inspectorate</td>
<td>950 179 333</td>
</tr>
<tr>
<td>Sanitary station</td>
<td>235 365 828</td>
</tr>
</tbody>
</table>

### General information

The plan is prepared in accordance with Act No. 309/2006 Coll. And Government Regulation No. 591/2006 Coll. The plan is prepared for the construction **New Town Hall for Prague 7**.

H&S plan draws attention to the specific health and safety requirements for the particular construction site. Respecting the H&S plan (hereinafter referred to as the "Plan") is mandatory for each contractor and generally everybody occurring on the construction site. The plan sets out the basic conditions to ensure occupational safety and health at work. The plan must be adapted to the actual phase of the construction and changes during the construction. With each change, the persons involved in the construction will be provably acquainted without undue delay.

The planned volume of work and activities on the construction site during the realization of the project exceeds 500 working days per person. Total estimated number of working days, in which more than 20 people occur on the construction site, is longer than 30 days. According to § 15 of Act No. 309/2006 Coll. the contracting authority is obliged to deliver a notification of the start of work to the Regional Labor Inspectorate at least 8 days before the site is handed over to the contractor.

### Proposal of H &S plan according to law

Works and activities that expose a worker to an increased threat to life or health damage will be performed on the site:

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Risk work</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>point 1</td>
<td>Works exposing workers to the risk of damage to health or death by landslide of released soil in a trench depth of more than 5 m</td>
<td>no</td>
</tr>
<tr>
<td>point 2</td>
<td>Works containing the use of hazardous highly toxic chemicals and of biological mixtures according to special regulations</td>
<td>no</td>
</tr>
<tr>
<td>point 3</td>
<td>Works with sources of ionizing radiation</td>
<td>no</td>
</tr>
</tbody>
</table>
point 4 | Works above or near water associated with the immediate danger of drowning | no |
point 5 | Works in which is a risk of falling from a height or free depth of more than 10 m | yes |
point 6 | Works performed in protection zones of power lines, technical equipment | yes |
point 7 | Well-drilling, earthworks or micro-tunneling from underground work, tunneling work | no |
point 8 | Diving works | no |
point 9 | Works performed in increased air pressure (keson) | no |
point 10 | Works containing the use of explosives | no |
point 11 | Works connected with assembly and disassembly of heavy structural components of metal, concrete and wood intended for permanent installation in buildings | no |

On the construction site will be performed works and activities that expose a worker to an increased threat to life or damage to health, which are contained in Annex 5 to Government regulation No. 591/2006 Coll. Regarding to this fact a creating of the plan is mandatory!

Workers on the construction site will be introduced to the plan on arrival at the workplace…. They will get explanation about the assessment of the risks to the potential safety and health hazards. The site manager is supposed to explain the instructions.

Leading person of each subcontractor is responsible for his employees and their respecting the plan.

4.2 Nomination of H&S coordinator according to law
There will be more than one contractor on the construction site. Due to this fact is there an obligation to determine the required number of health and safety coordinators. This is all in accordance with Law No. 309/2006 Coll. §14. The representative authority of investor is obliged to contractually commit all concerned contractors to cooperate with the H&S coordinator. Respect his suggestions, proposals and removals of the identified defects and deficiencies.

5 Construction description
The building after reconstruction will serve as an administrative building. Building will be used as headquarter building of District of Prague 7. The main constructions are described in the third chapter of this diploma thesis.

The construction consists of the following objects:

- CO 110 – Main building reconstruction
- CO 320 – Reconstruction of paved areas
- CO 340 – Outdoor landscaping

6 Construction site data
Title: New town hall for Prague 7
Type of construction: Reconstruction of administrative building
Address: U Průhonu 1338/38, 170 00 Praha 7
Built-up area: 653 m²

6.1 Number of floors: 9 above ground + 1 underground Protective zones
On the land of construction site:
…list of protective zones…

Near the land of construction site:
…list of protective zones…

6.1.1 Electricity Act No.458/2000 Coll.
…the regulations for activities in the protective zones of electricity…

The protective zone is area near gas industry objects. The measures are:
Protective zones:
   a) gas pipelines in the build-up area       1 m
   b) other gas pipelines                      4 m
   c) technological objects                    4 m

6.1.3 Water supply, Sewerage Act No.274/2001 Coll.
The protective zone includes a space on both sides of the pipeline. The boundaries of
the zone are defined by the outer edge of the pipeline:
   a) water distribution
       up to diameter 500 mm       1,5 m
       above diameter 500 mm       2,5 m
   b) sewerage
       up to diameter 500 mm       1,50 m
       above diameter 500 mm       2,50 m

6.1.4 Ground communications Act No.13/1997 Coll.
The construction site can not occupy public roads and affects public transport without
permission. There are no special protective zones of ground communication.

6.2 Construction site
The construction site is located in the courtyard behind the building. It
is accessible from the street U Průhonu in Prague 7 Holešovice. Land no.881
(c.o. Praha-Holešovice) with an area of 1452 m² is on a flat land. Area of 653
m² is built-up by the existing building and remaining 799 m² exists as
courtyard and access road to the courtyard. The construction site will be fenced
(required height of the fence ia 1,8m) and equipped with warning and information signs
such as "no entry", "no entry to the site" or "entry disabled" to prevent unauthorized
access to the site.
Construction site is equipped by first aid kid and fire protection equipment - fire
extinquishers.

An announcement of the permission for the works and the sign "building
allowed" will be visibly located at the construction site.
Smoking drinking alcohol and taking drugs is not allowed in the construction site. There
will be one smoking area marked by appropriate sings "Smoking permitted".
All persons occurring in the construction site have to respect all the warning sings in the area.

A first-aid kit will always be available on the construction site. The contents of the first aid kit are determined by a competent person in the risk prevention.

Another important information about the construction site are available in the document “Technical report: Proposal of the construction site”.

6.3 Transport solution
The building is reachable from U Průhonu Street, Praha 7. There is also the road to courtyard where the site is located.

Estimated traffic routes:  
Entrance: st. Argentinská – st. U Průhonu  
Exit: st. U Průhonu - st. Argentinská

6.4 Protection against noise and vibration
Noisy and demolition works will be performed only on working days from 7 am to 21 pm and on weekends from 8 am to 4 pm.

Contractors are obligated to use appropriate methods and machines to eliminate disturbing of surroundings of construction site.

6.5 Protection against air pollution by exhaust gases and dust
Excessive increase of dust in the construction site and its surroundings affected by the construction will be eliminated by the following measures:

- Contractors are obligated to use appropriate methods and machines to eliminate disturbing of surroundings of construction site.
- Bulk material will be cover during transport and storage.
- Demolition works causing excessive increase of dust will be performed with appropriate attention to eliminate the risk and methods. (showering, covering, …)

6.6 Waste management
Waste has to be ecologically treated and spared according to § 79 of Law No. 185/2001 Sb., about waste, and another laws and regulations.

6.7 Temporary structures
Temporary construction is for example, scaffolding, supporting and support structures.

All the temporary constructions must meet all the conditions given by the National regulation No. 362/2005 Coll., Annex, Part VII:
7 Workflow
Before the reconstruction starts, all engineering and technological networks will be identified and marked. The construction will be performed in accordance with the created Construction schedule and Time-space graph.

7.1 Building dismantling
Major part of the whole building will be dismantled. From the existing structures will be preserved the main load-bearing structure and foundations.
The main constructions are described in the third chapter of this diploma thesis.

7.2 Reconstruction
The main constructions are described in the third chapter of this diploma thesis.

8 List of technologies, crafts and activities and risk identification on site, recommended measures

8.1 Moving around the site
There are general risks arising from moving around the construction site. The risk is especially the conflict of people with constructing mechanization. The main measure is to use reflective vests (reflective jackets), limit the speed of traffic in and around the construction site. All workers will be equipped with work shoes to prevent foot injuries. These risks apply to all persons on the site.
Other hazards include sprains, slipping, stumbling, falling. Measures are: use of protective working footwear with anti-slip soles, maintenance and cleaning of the site, removing of obstacles.
There are also hazards which are dependent on weather conditions.

8.2 Site security, approaches
Site security, including site equipment, will be checked daily by the contractor. The construction site will be secured against unauthorized entry.

8.3 Devices for power distribution
Temporary electrical equipment on the site must meet standard requirements and must be checked in periodic inspections and revisions at specified intervals. The main switch of the electrical equipment must be located so that it is easily accessible and must be marked and secured.

8.4 Engineering networks
Before the reconstruction starts, all engineering and technological networks will be identified, marked, and relevant contractor employees will be familiarized with their location.

8.5 Storage area
The storage areas must be straight, drained and reinforced,.....

8.6 Demolition works
The demolition works may only be performed according to the technological procedure available in the demolition documentation. The dismantling works will be done manually and there will be no mechanization to avoid collision. Structures will be demolished by mechanization, there will be no persons in the operating area of the mechanization.

Before the demolition work starts, the endangered area will be identified and secured against unauthorized entry. The building will be disconnected from all technical networks (gas, electricity, water supply).

8.7 Concrete works
The concrete works may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.

8.8 Transport and installation of heavy structural components
During the realization of the construction work will be used the lifting equipment (crane) for transportation and installation of heavy structural components.

The works with heavy structural components may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.

8.9 Work related to the assembly and disassembly of heavy structural components
During the realization of the construction work will be used the lifting equipment (crane) for transportation, assembly and disassembly of heavy structural components.

The works with heavy structural components may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.

8.10 Bricklaying
The bricklaying can be performed by using scaffolding. The bricklaying works may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.

8.11 Work on ladder
Only short-term, physically easy works with hand tools can be done on the ladder. The works on ladder may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.

8.12 Work on scaffolding
Assembly and disassembly of the scaffolding must be performed according to the instructions and only under the supervision of a person professionally qualified for this activity. The works on scaffolding may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.
8.13 Work at heights and above free depth
Works at workplaces where the worker is at a height of 1.5 m above the ground (stage) level. Workers working at heights must wear appropriate PPE. The works at heights and above free depth may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.

8.14 Welding, cutting and grinding
Welding, cutting and grinding works may only be performed according to the technological procedure available in the implementing documentation. The safety requirements available in the implementing documentation must be respected during the work.

8.15 Construction works and vehicle movement
There are risks of pushing and trapping of worker when collision with the machine, loss of machine stability and overturning, machine overload, failure.

8.16 Work with hand tools and small machines
Risks include hurting some parts of a body by parts of tools, especially by a rotating tool. In particular, there can happen injuries such as cutting, stabbing, crushing, bruising. Other dangers are dustiness and excessive noise and vibrations.

Risks can be limited by appropriate selection of tools, by proper use according to the instructions. Before using the machine, the contractor will familiarize the workers with a working conditions that have an impact on safety.

Risks will be eliminated by the usage of appropriate PPEs, especially working shoes, work gloves, safety glasses, and hearing protection.

To eliminate all risks will be used primarily collective protection. If it is not possible, it will be necessary to use personal PPE.

Employer's obligation is to identify and minimize risks during working at the construction site.

9 Coordination of activities – for the construction phase
There will be more than one contractor on the construction site. Due to this fact is there an obligation to determine the required number of health and safety coordinators. For this construction is enough to nominate just one H&S coordinator.

The coordinator shall update the plan in the preparation phase and during the implementation phase of the construction. The update will be based on the timetable of the general contractor, contractor’s risks and their technological procedures.

All changes, like changes in time schedule or technological procedures is necessary to consult with the coordinator.

The coordinator will monitor work on the site with a focus on identifying whether the health and safety requirements at work are being followed. He will highlight the contractor's identified mistakes. The coordinator will make an inventory of the deficiencies identified in safety and health at work.
9.1 Coordination of work procedures
Coordination of influencing work will be performed on the construction site by their departments, especially regarding to space and time requirement, to avoid any risk to workers in the performed activities. The contractor, in coordination with the coordinator, will take the necessary measures in connection with the construction schedule to perform work and activities so that work is coordinated with regard to safety and health at work without risk of danger to one another, or take other necessary measures.

9.2 Obligation of contractors to reduce security risks
The contractor is obliged to cooperate with the H&S coordinator during the whole construction process and also when updating the plan.

10 PPE
All persons occurring at the construction site are required to use at least the minimum personal protective equipment - a reflective vest (reflective jacket), work shoes with antiskid sole, protective helmet.

The required personal protective equipment for individual activities and construction processes is specified in the list of risks and technological procedures of individual construction processes.

For example the following: working clothes, reflective jacket (reflective vest), work shoes with S3 anti-slip sole, working gloves (suitable for carrying out activities), protective helmets, hearing aids (earphones, earplugs), eye protection (spectacles, respirators, personal protective equipment against falling, etc.

Persons working without PPE are unwanted on the construction site.

Pic. 1: PPE1
11 Related legislation
During the performing of the construction, it is also necessary to ensure compliance with the mandatory safety regulations in the building industry and the regulation, in particular:

Law No. 262/2006 Coll., Labour code

…and another 35 laws and national regulations…

12 Annexes
Part of the plan for the realization phase of the construction will be annexes. For example Drawings of the construction site, Time schedule of the construction, Time-space graph and other documents
13 List of contractors and subcontractors of the construction works
By signing, I confirm that I have met this plan and all its annexes. As a representative of the company, I confirm the familiarization with the H&S plan and the training of all employees of the company.

<table>
<thead>
<tr>
<th>Date</th>
<th>Company</th>
<th>Resp. person</th>
<th>Signature</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td></td>
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<td>30</td>
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</tbody>
</table>
5 SOLUTION OF THE TIME STRUCTURE

The time structure of the construction process results from a functional connection with the spatial and technological structure of the construction process. The main documents illustrating the course and the result of the time structure are: Time schedule, Operational time-space graph, Complex time-graph graph, Deployment chart of workers requirements, Material requirements and Machinery requirements.

5.1 Time schedule of the construction

The time schedule is prepared in MS Project, fully corresponds to the time-space graph and shows a critical way.

Generally the time schedule shows duration of each process and continuity of construction processes regarding to exact dates of implementation.
1. UG - Demolitions of vertical load bearing structures

2. UG - Demolitions of foundations

3. DISASSEMBLING OF BUILDING ENVELOPE

4. Disassembling of building envelope

5. Scaffolding

6. Disassembling of scaffolding

59. LOAD-BEARING STRUCTURES (FIRST PART)

60. Foundations

61. Mincopied foundations

62. Grozing and insulation of the basement

68. Vertical load-bearing structures (Hollow concrete blocks - reinforced and filled by concrete)

75. Vertical load-bearing structures (Hollow concrete blocks - reinforced and filled by concrete)

81. Vertical load-bearing structures (Hollow concrete blocks - reinforced and filled by concrete)

88. DEMOLITIONS OF LOAD-BEARING STRUCTURES (SECOND PART)

99. Disassembling of the staircase barrier

100. Disassembling of the staircase barrier
<table>
<thead>
<tr>
<th>ID</th>
<th>Name of process</th>
<th>Duration (days)</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>2.AG - DEMOLITION WORKS</td>
<td>4 dny</td>
<td>04/04/2018 09:00</td>
<td>09/04/2018 18:00</td>
</tr>
<tr>
<td>102</td>
<td>Demolitions of shear walls, opening in walls, cutting of reinforced concrete</td>
<td>4 dny</td>
<td>04/04/2018 09:00</td>
<td>09/04/2018 18:00</td>
</tr>
<tr>
<td>103</td>
<td>Demolitions of staircase</td>
<td>2 dny</td>
<td>10/04/2018 09:00</td>
<td>11/04/2018 18:00</td>
</tr>
<tr>
<td>104</td>
<td>2.AG - DEMOLITION WORKS</td>
<td>5 dny</td>
<td>10/04/2018 09:00</td>
<td>16/04/2018 18:00</td>
</tr>
<tr>
<td>105</td>
<td>Demolitions of shear walls, opening in walls, cutting of reinforced concrete</td>
<td>3 dny</td>
<td>10/04/2018 09:00</td>
<td>12/04/2018 18:00</td>
</tr>
<tr>
<td>106</td>
<td>Demolitions of staircase</td>
<td>2 dny</td>
<td>13/04/2018 09:00</td>
<td>16/04/2018 18:00</td>
</tr>
<tr>
<td>107</td>
<td>1.AG - DEMOLITION WORKS</td>
<td>5 dny</td>
<td>13/04/2018 09:00</td>
<td>19/04/2018 18:00</td>
</tr>
<tr>
<td>108</td>
<td>Demolitions of shear walls, opening in walls, cutting of reinforced concrete</td>
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<td>13/04/2018 09:00</td>
<td>17/04/2018 18:00</td>
</tr>
<tr>
<td>109</td>
<td>Demolitions of staircase</td>
<td>2 dny</td>
<td>18/04/2018 09:00</td>
<td>19/04/2018 18:00</td>
</tr>
<tr>
<td>110</td>
<td>GF - DEMOLITION WORKS</td>
<td>6 dny</td>
<td>18/04/2018 09:00</td>
<td>23/04/2018 18:00</td>
</tr>
<tr>
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<td>Demolitions of shear walls, opening in walls, cutting of reinforced concrete</td>
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<td>18/04/2018 09:00</td>
<td>19/04/2018 18:00</td>
</tr>
<tr>
<td>112</td>
<td>Demolitions of staircase</td>
<td>3 dny</td>
<td>20/04/2018 09:00</td>
<td>24/04/2018 18:00</td>
</tr>
<tr>
<td>113</td>
<td>Demolitions of external staircase</td>
<td>1 den</td>
<td>25/04/2018 09:00</td>
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<tr>
<td>114</td>
<td>1.LUG - DEMOLITION WORKS</td>
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</tr>
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<td>Demolitions of shear walls, opening in walls, cutting of reinforced concrete</td>
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<td>20/04/2018 09:00</td>
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</tr>
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<td>116</td>
<td>Demolitions of staircase</td>
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<td>24/04/2018 09:00</td>
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<tr>
<td>117</td>
<td>Cleaning after the second part of demolition works</td>
<td>9 dny</td>
<td>16/04/2018 09:00</td>
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</tr>
<tr>
<td>118</td>
<td>LOAD-BEARING CONSTRUCTION (SECOND PART)</td>
<td>110 dny</td>
<td>20/04/2018 09:00</td>
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<tr>
<td>119</td>
<td>1.LUG - LOAD-BEARING STRUCTURES</td>
<td>31 dny</td>
<td>27/04/2018 09:00</td>
<td>11/06/2018 18:00</td>
</tr>
<tr>
<td>120</td>
<td>Columns - reinforcing existing structures</td>
<td>1 den</td>
<td>27/04/2018 09:00</td>
<td>27/04/2018 18:00</td>
</tr>
<tr>
<td>121</td>
<td>Columns - formwork</td>
<td>1 den</td>
<td>30/04/2018 09:00</td>
<td>30/04/2018 18:00</td>
</tr>
<tr>
<td>122</td>
<td>Columns - concreting</td>
<td>1 den</td>
<td>01/05/2018 09:00</td>
<td>01/05/2018 18:00</td>
</tr>
<tr>
<td>123</td>
<td>Columns - formwork removal</td>
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<td>03/05/2018 09:00</td>
<td>03/05/2018 18:00</td>
</tr>
<tr>
<td>124</td>
<td>Waterproof layers under load-bearing walls</td>
<td>2 dny</td>
<td>01/05/2018 09:00</td>
<td>02/05/2018 18:00</td>
</tr>
<tr>
<td>125</td>
<td>Load-bearing masonry under the diaphragm floor</td>
<td>3 dny</td>
<td>03/05/2018 09:00</td>
<td>07/05/2018 18:00</td>
</tr>
<tr>
<td>126</td>
<td>Floor composition under the diaphragm floor (insulations, tiles, screed)</td>
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<td>07/05/2018 09:00</td>
<td>10/05/2018 18:00</td>
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<tr>
<td>127</td>
<td>Double slab - formwork (permanent trapezoidal sheet)</td>
<td>10 dny</td>
<td>10/05/2018 09:00</td>
<td>11/05/2018 18:00</td>
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<tr>
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<td>Double slab - reinforcing (new mesh)</td>
<td>1 den</td>
<td>14/05/2018 09:00</td>
<td>14/05/2018 18:00</td>
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<tr>
<td>129</td>
<td>Double slab - concreting</td>
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<td>15/05/2018 09:00</td>
<td>16/05/2018 18:00</td>
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<tr>
<td>130</td>
<td>Assembly of other steel load-bearing elements</td>
<td>1 den</td>
<td>16/05/2018 09:00</td>
<td>16/05/2018 18:00</td>
</tr>
<tr>
<td>131</td>
<td>Internal straight staircase - formwork</td>
<td>1 den</td>
<td>17/05/2018 09:00</td>
<td>17/05/2018 18:00</td>
</tr>
<tr>
<td>132</td>
<td>Internal straight staircase - reinforcing</td>
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<td>18/05/2018 09:00</td>
<td>18/05/2018 18:00</td>
</tr>
<tr>
<td>133</td>
<td>Internal straight staircase - concrete</td>
<td>1 den</td>
<td>21/05/2018 09:00</td>
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<tr>
<td>134</td>
<td>Internal straight staircase - formwork removal</td>
<td>1 den</td>
<td>31/05/2018 09:00</td>
<td>31/05/2018 18:00</td>
</tr>
<tr>
<td>135</td>
<td>Staircase landing - formwork</td>
<td>1 den</td>
<td>18/05/2018 09:00</td>
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<tr>
<td>136</td>
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<td>1 den</td>
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<td>Staircase landing - concrete</td>
<td>1 den</td>
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<tr>
<td>139</td>
<td>Horizontal construction (slab) - formwork</td>
<td>1 den</td>
<td>23/05/2018 09:00</td>
<td>23/05/2018 18:00</td>
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<tr>
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<td>2 dny</td>
<td>24/05/2018 09:00</td>
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<tr>
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<td>Horizontal construction (slab) - concrete</td>
<td>4 dny</td>
<td>25/05/2018 09:00</td>
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<tr>
<td>142</td>
<td>Horizontal construction (slab) - formwork removal</td>
<td>1 den</td>
<td>07/06/2018 09:00</td>
<td>07/06/2018 18:00</td>
</tr>
<tr>
<td>143</td>
<td>Placement of prefabricated staircase</td>
<td>1 den</td>
<td>11/06/2018 09:00</td>
<td>11/06/2018 18:00</td>
</tr>
<tr>
<td>144</td>
<td>GF - LOAD-BEARING STRUCTURES</td>
<td>33 dny</td>
<td>29/05/2018 09:00</td>
<td>20/06/2018 18:00</td>
</tr>
<tr>
<td>145</td>
<td>Columns - reinforcing existing structures</td>
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<td>29/05/2018 18:00</td>
</tr>
<tr>
<td>146</td>
<td>Columns - formwork</td>
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<td>30/05/2018 18:00</td>
</tr>
<tr>
<td>147</td>
<td>Columns - concreting</td>
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<td>31/05/2018 09:00</td>
<td>31/05/2018 18:00</td>
</tr>
<tr>
<td>148</td>
<td>Columns - formwork removal</td>
<td>1 den</td>
<td>01/06/2018 09:00</td>
<td>01/06/2018 18:00</td>
</tr>
<tr>
<td>149</td>
<td>Assembly of other steel load-bearing elements</td>
<td>1 den</td>
<td>04/06/2018 09:00</td>
<td>04/06/2018 18:00</td>
</tr>
<tr>
<td>150</td>
<td>External staircase - formwork</td>
<td>1 den</td>
<td>04/05/2018 09:00</td>
<td>04/05/2018 18:00</td>
</tr>
<tr>
<td>151</td>
<td>External staircase - reinforcing</td>
<td>1 den</td>
<td>07/05/2018 09:00</td>
<td>07/05/2018 18:00</td>
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</tbody>
</table>

Projekt: DT-Gart
Datum: 02/11/2017 17:20

Stránka 3
<table>
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<th>Start Date</th>
<th>End Date</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>12/07/2018</td>
<td>18/07/2018</td>
<td>Horizontal construction (slab) - concrete</td>
</tr>
<tr>
<td>13/07/2018</td>
<td>19/07/2018</td>
<td>Staircase landing - reinforcing</td>
</tr>
<tr>
<td>20/07/2018</td>
<td>26/07/2018</td>
<td>Columns - formwork removal</td>
</tr>
<tr>
<td>27/07/2018</td>
<td>02/08/2018</td>
<td>Placement of prefabricated staircase</td>
</tr>
<tr>
<td>03/08/2018</td>
<td>09/08/2018</td>
<td>Horizontal construction (slab) - reinforcing</td>
</tr>
<tr>
<td>10/08/2018</td>
<td>16/08/2018</td>
<td>Columns - reinforcing of existing structures</td>
</tr>
<tr>
<td>17/08/2018</td>
<td>23/08/2018</td>
<td>Assembly of other steel load-bearing elements</td>
</tr>
</tbody>
</table>

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**Legend:**
- **Yellow** = Horizontal construction (slab) - concrete
- **Blue** = Staircase landing - reinforcing
- **Green** = Columns - formwork removal
- **Red** = Placement of prefabricated staircase
- **Orange** = Horizontal construction (slab) - reinforcing
- **Pink** = Columns - reinforcing of existing structures
- **Green** = Assembly of other steel load-bearing elements

**Scale:**
- 1 = 1 meter

**Note:**
- Date format: DD/MM/YYYY
- Time format: HH:MM

---

**Projects:**
- **Name:** [Project Name]
- **Location:** [Location]
- **Contact:** [Contact Information]
COMPLETION OF ROUGH FLOORS AND INTERNAL SURFACES AND TECHNOLOGIES

45 dny

27/09/2018 09:00 29/11/2018 18:00

- Internal plastering and base layers of the floor compositions
- Door frames
- Piping and wiring in ceilings
- Sanitary installations in walls
- Heating facility
- Door frames in plasticboard walls
- Fireproof and internal windows
- Ventilation elements (1. UG)
- Ventilation elements (GF - 7. AG)
- Plasticboard ceilings
- Aluminium grid ceiling
- Wooden ceilings (1. UG)
- Others (fire rollers, internal carports)
- Operating covers

COMPLETION OF TECHNICAL EQUIPMENT, COMPLETION WORKS AND FINAL SURFACES

46 dny

19/11/2018 09:00 29/01/2019 18:00

- Self-leveling floor screed
- Epoxy floor (walking surface)
- Internal thermo-insulation system
- Fire safety cladding
- NAM - completion (1. UG)
- NAM - completion (GF - 7. AG)
- Electrical wiring - High voltage - completion
- Fire alarm system - completion
- Electrical wiring - Low voltage - completion
- AIFT - completion
- Permanent sprinkler system - completion
- Wooden floors (walking surface)
- Acoustic surfaces (filling)
- Acoustic measurement
- Wall painting (suspended)
- Locksmith (steel) items
- Wall painting (common)

Stránka 7
5.2 Time-space graph

The time-space graph is created in two levels. The first one is a complex time-space graph in the structure of stage processes and the second is created as an operational (detailed) time-space graph in the structure of partial construction processes.

Generally the time-space graph shows continuity of construction processes regarding to exact dates of implementation and space possibilities.
5.3 Deployment chart of workers requirements, Material requirements and Machinery requirements

The Employee Deployment Chart shows the number of workers on individual days of construction and includes labouring and management workers.

The chart of machines shows the need for the most important machines in individual days of construction.

A graph of material needs shows when critical materials are needed. It acts as an indicator for ordering materials and supplying them to the construction.
6 CONSTRUCTION SITE

6.1 Technical report with dimensions of construction site facilities

The technical report is created according to the National regulation. No. 499/2006 Coll. The social (sanitary) and technical parts of the site are assessed and dimensioned.
TECHNICAL REPORT

Construction site

NOVÁ RADNICE PRO PRAHU 7
U PRŮHONU 1338/38, PRAHA 7

FSV – ČVUT
ETSIE – UPV

Bc. Michal Bartoš

Diploma thesis
2017/2018
1) Identification data about the construction site, its size, expected modifications, fencing, permanent and temporary soil dump and accessibility

- **Identification data**

  Title: New town hall for Prague 7  
  Type of construction: Reconstruction of administrative building  
  Address: U Průhonu 1338/38, 170 00 Praha 7  
  Built-up area: 653 m²  
  Number of floors: 9 above ground + 1 underground

- **Construction site size information**

  The construction site is located in the courtyard behind the building. It is accessible from the street U Průhonu in Prague 7 Holešovice. Land no.881 (c.o. Praha-Holešovice) with an area of 1452 m² is on a flat land. Area of 653 m² is built-up by the existing building and remaining 799 m² exists as courtyard and access road to the courtyard.

- **Expected modifications of the construction site and its fencing**

  Surface of the area of the courtyard and the access road is made of interlocking concrete pavers, which is in sufficient condition and has required bearing capacity for construction site facilities including a crane. Special preparations or changes of the surface are not necessary.

  The yard space where the construction site is located is surrounded by neighboring buildings. Fencing and security of the site against the entry of unauthorized persons will be needed from the northern side of the area. Fencing will correspond with the edge of the existing building. Entrance for pedestrians will be set up through the existing building. There will be gatehouse with a terminal.

  An entry gate for vehicles will be set up on the line of the fencing.
During implementation of 2.S.P. (load-bearing constructions), 7.S.P. (rough internal floors) and 9.S.P. (facade works) will be area of construction site enlarged by shifting the fencing approximately 5 meters away from the edge of the building. This area will serve first as operating place for automix and concrete pump then position for the pole scaffolding (1.5 m wide) and at the end for operating place for automix and stationary concrete pump. These machines will provide a transport of concrete mixture for load-bearing constructions and rough internal floors.

This occupation of the public space affects pedestrian traffic by closing the walkway and public vehicle traffic by limitation of maximum driving speed. Speed will be limited on 30 km/h. When the construction finishes the fencing will be removed. Just before finishing the construction the construction site facilities will be dismantled and all surfaces in the courtyard will be reconstructed. (See CO320 and CO340)

- **Permanent and temporary soil dump**

Due to minimal scope of earthworks the soil dump will not be necessary. Excavation works will be carried out during the 3.S.P. only for placement of the manhole (sewerage system).

- **Accessibility of the construction site**

For access to the building will be necessary to pass through the gatehouse, which will be located inside the building. There will be placed the entrance terminal. Each entry to the building and exit from the building will be recorded. Entry for the vehicles will be set up through two-wing gate of the width 4.0 m. The gate will be serviced on a request to the security staff. There is a limited speed of 10 per hour at the site. Traffic will be managed by the security staff. Entry will be allowed only to the suppliers of the construction and to the construction management team. Due to the small area of the construction site, large traffic is not possible.
2) Significant technical infrastructure networks

Near the area of the construction site are located infrastructure networks that fall under the administration of Prague 7. However, there will be no need to reconnect them within the building. (Exception is the installation of a new sewerage manhole.) Existing distribution of water and electrical energy (connections) will be used for the construction site and for the reconstructed building. (their condition is assessed in the building documentation) Infrastructure networks are located at the street U Průhonu, under a road surface.

3) Source of water supply and electricity for construction site, site drainage and sewerage system

All the necessary sources of energy for the construction will be provided by connecting the construction site to the existing connection of the building. Electricity will be secured by setting up a site switchboard, electricity consumption will be measured. Water consumption will be measured. The drainage of the site will be carried out by the existing gravity drainage system. The waste water and sewage from the site will be made by the existing sewerage system into the public sewer at U Průhonu Street.

- Electrical energy connection

The proposal counts with the period with the maximum amount of electric devices occurring on the construction.

<table>
<thead>
<tr>
<th>Device</th>
<th>Power</th>
<th>Amount</th>
<th>Total power</th>
<th>Device type</th>
</tr>
</thead>
<tbody>
<tr>
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<td>36 W</td>
<td>36</td>
<td>1.3 kW</td>
<td>P1</td>
</tr>
<tr>
<td>External lighting of the site</td>
<td>1000 W</td>
<td>5</td>
<td>5 kW</td>
<td>P3</td>
</tr>
<tr>
<td>Internal lighting of the site</td>
<td>200 W</td>
<td>30</td>
<td>6 kW</td>
<td>P2</td>
</tr>
<tr>
<td>Crane Liebherr 200 EC - Litronic</td>
<td>58 kW</td>
<td>1</td>
<td>58 kW</td>
<td>P1</td>
</tr>
<tr>
<td>Concrete vibrator</td>
<td>3.5 kW</td>
<td>2</td>
<td>7 kW</td>
<td>P1</td>
</tr>
<tr>
<td>Minor construction equipment</td>
<td>2 kW</td>
<td>20</td>
<td>40 kW</td>
<td>P1</td>
</tr>
</tbody>
</table>
On the construction site will be placed electric transformer with a power 150 kW. Transformer will serve as the main switch for the construction site.

Electrical wires will lead on the ground level. They will be protected by covering. The covering can bear passing trucks.

- Water supply system

Water supply distribution will be provided by the existing building´s water service pipe. Dimension of the distribution is counted to appropriate consumption of social and hygienic facilities and construction processes.

- Sewerage system

Construction sewerage system will be connected with the existing building´s sewer service pipe. It will serve for sewage and rain water outfall.

4) Precautions regarding to Health and safety requirements, third persons safety and modifications for persons with reduced mobility.

During the construction will be this issue supervised by responsible person. (H&S coordinator) This person will be elected by the investor or his representative person.

The requirements for construction works in the field of health and safety protection are based on the law no. 309/2006 Sb. And the government regulation no. 591/2006 Sb.. Specific requirements and solutions are given in The Health and safety plan itself.

- Traffic limitations on public roads
Construction will not affect public transport by enclosing the street U Průhonu most of the time. Only during the 3.S.P. (Placement of the sewerage manhole) will by closed one line of the road. Exact term of implementation of 3.S.P. will be specified according to the construction development. Estimated dates are visible in Time schedule of the construction and Time space graph. During the implementation of 2.S.P., 7.S.P. and 9.S.P. will be enclosed the pedestrian walkway and traffic speed will be limited on 30 km per hour.

- **Modifications for persons with reduced mobility**

  Working of the persons with the reduced mobility is not presumed.

5) **Site layout and safety in terms of protection of public interests**

- **Protective zones in terms of nature conservation**

  In the area of the construction site, there are no protective zones or nature conservations. Otherwise there are requirements of Czech law.

- **Protection of cultural monuments**

  In the area of the construction site, there is no need of protection of cultural monuments. Otherwise there are requirements of Czech law.

6) **Proposal of usage of new of existing object or buildings for the construction site**

- **Occupation of a land for the construction site and occupied plots and public areas**

  The construction site’s space corresponds to the boundaries of the plot, where is the building located. The plot is owned by the investor of the project. Another plots will not be occupied. Public areas (St. u Průhonu) will be occupied during the 2.S.P., 3.S.P., 7.S.P. and 9.S.P.. Before the situation
happens, asking for permission will be needed. Permission will be issued by the city council of Prague 7. Estimated dates are visible in Time schedule of the construction and Time space graph.

- **Size of the construction site**

  The construction site’s space corresponds to the boundaries of the plot, where is the building located.

- **Partition of the construction on separate sites**
  - Construction will be realized on one compact construction site.

- **Determination of area sizes and it’s way of using**
  - The area of the construction site is located on the plot of the investor and integrated to one main site. In this area will be placed storage areas, construction containers (offices, sanitary facilities, …) and machines. On the construction site will not be preparer a concrete mixture.

- **Soil and material management**

  - **Topsoil management**
    - Construction does not interfere with areas with topsoil.

  - **Soil management**
    - Excavated soil by volume of 161 m³ will be partly moved out from the site and partly kept for backfilling of the excavated pit. (Only for 3.S.P. Manhole placement.)

  - **Materials got by demolition works**
    - In the construction site, there will be placed waste containers. Materials got by demolition works will be sorted on the construction site. There will be containers for rubble (bricks, concrete, ceramic tiles, …), metal, glass and community waste.
- It is not allowed to burn the waste in the site!

**Infrastructure networks for the construction site**
- All the necessary sources of energy for the construction will be provided by connecting the construction site to the existing connection of the building.

**Supplying of the site**
- The material will be loaded directly onto the site and then transported on its place of usage.

- **Expected number of workers during the construction works and social and sanitary background**

  The estimated maximum number of workers, will be 129 workers in one day. The number can be changed according to the deployment of professions. Offices and social and sanitary facilities will be designed as container site. There will be no central catering system. Catering will be set individually.
Content:

1 Construction site dimensions
   1.1 Dimensions of sanitary facilities
   1.2 Required sanitary area and number of sanitary equipment
   1.3 Proposal of construction site containers
   1.4 Total area of site containers and its placement
   1.5 Storage of material

Drawings of construction site are part of construction site proposal. Three drawings for different stage processes were created.

Construction site was designed according to these principles:

1. Determination of the primary direction of the construction process
2. Determination of existing buildings or objects, which are possible to use as a part of construction site facilities
3. Placement of primary machines (excavators, cranes, lifts, …)
5. Solution of a traffic in the construction site, including proposal of internal temporary or permanent roads. 6. Proposal of offices, social background and sanitary facilities.
7. Determination of necessary energy sources and proposal of MEP systems and utility networks (Electric distribution, water distribution, sewerage system) or using existing ones.
1 Construction site dimensions

Maximal theoretic number of workers on the construction is 129 (regarding to Deployment chart of workers). This situation most likely will not occur, so the construction site is dimensioned on ¾ of maximum number of workers, i.e. 97 workers.

Container site will be designed for the management team in form of office. Estimated number of persons in management team is 8.

1x Site manager
4x Construction foreman
1x Assistant of site manager
1x Construction supervisor of the investor
1x Coordinator H&S

1.1 Dimensions of sanitary facilities

<table>
<thead>
<tr>
<th>Room type</th>
<th>Area per one person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing room</td>
<td>1,25 m²</td>
</tr>
<tr>
<td>Washroom</td>
<td>0,25 m²</td>
</tr>
<tr>
<td>Dining room</td>
<td>0,5 m²</td>
</tr>
<tr>
<td>Office</td>
<td>5,0 m²</td>
</tr>
</tbody>
</table>

Sheet. 2. Dimensions of rooms

<table>
<thead>
<tr>
<th>Number of workers</th>
<th>Number of sanitary equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 50 men</td>
<td>2 toilets + 2 urinals</td>
</tr>
<tr>
<td>up to 100 men</td>
<td>3 toilets + 3 urinals</td>
</tr>
<tr>
<td>up to 200 men</td>
<td>6 toilets l + 6 urinals</td>
</tr>
<tr>
<td>each 15 workers</td>
<td>1 washbasin</td>
</tr>
<tr>
<td>each 20 workers</td>
<td>1 shower cabin</td>
</tr>
</tbody>
</table>

Sheet. 3. Dimensions of sanitary equipment
1.2 Required sanitary area and number of sanitary equipment

Minimal area of the changing room for 97 workers: $97 \times 1.25 = 121.25 \text{ m}^2$
Minimal area of the dining room for 97 workers: $97 \times 0.5 = 48.5 \text{ m}^2$
Minimal area of the office for 8 persons: $8 \times 5 = 40 \text{ m}^2$
Minimal area of the washroom for 105 persons: $105 \times 0.25 = 26.25 \text{ m}^2$

For 105 persons is required: at least 3 - 4 WC toilets
at least 3 - 4 urinals
at least 7 washbasins
at least 5 shower cabins

1.3 Proposal of construction site containers

All the containers and facilities will be rented from company AB-Cont s.r.o..

**Changing rooms:**

For the changing rooms will be used six containers AB6. Net floor area of the container is 14 m$^2$. Every container is equipped with 4 lights, each with power 36W.

![Stavební buňka - AB 6](image)

*Pic. 1: Container AB6*

**Dining rooms:**

For the dining room will be used triple container TB. Net floor area of the container is 43 m$^2$. 
Office for site management team:

For the office will be used triple container TB. Net floor area of the container is 43 m².

Sanitary facilities:

For the washroom will be used sanitary container SB5, which contains 4x shower cabin, 6x washbasin and 1x boiler. Net floor area of the container is 14 m².
For the restroom will be used sanitary container SB7, which contains 5x WC toilet, 2x urinal a 5x washbasin. Second type of sanitary container is TK3 and contains 2x WC toilet, 1x urinal a 2x washbasin. Net floor area of the container is 7 m².
1.4 Total area of site containers and its placement

Changing rooms: 6x container AB6 = 84 m²
Dining room: 1x triple container TB = 43 m²
Office: 1x triple container TB = 43 m²
Sanitary facilities: 1x sanitary container SB5
                  1x sanitary container SB7
                  1x sanitary container TK3
                  =35 m²

All the containers are compatible and is possible to assemble container site as needed. The location of the container site is evident from construction site drawings. Regarding to small area of the courtyard where the construction site is located is not possible to provide sufficient area of the changing rooms. Another area for the changing rooms will be established inside of the reconstructed building, if necessary.
1.5 Storage of the material

The material storage proposal is designed to ensure a continuity of construction production and minimize transport and storage costs. This proposal presumes supplying of the construction with material for three days in advance. The pallets with material will always be stored at a maximum of 2 in one column.

The material susceptible to moisture disturbance and generally outdoor conditions will be stored in covered warehouses or in the premises of the first floor of the reconstructed building. The material which can be stored without special protection requirements, will be stored outside on reserved space in construction site. (formwork, reinforcing steel, …) (See site construction drawings.)

7) Determination of the conditions for the construction from the point of view of safety and health safety protection and health and safety plan

The requirements for construction works in the field of health and safety protection are based on the law no. 309/2006 Sb. And the government regulation no. 591/2006 Sb.. Specific requirements and solutions are given in The Health and safety plan itself.

8) Environmental conditions during construction

All the construction processes will respect the environment and will be processed in maximum effort of environmental protection. They will comply with the relevant law regulations. In particular:

- Law no. 17/1992 Sb., The Environment (in general)
- Law no. 86/2002 Sb., Protection of the air
- Government Regulation no. 9/2002 Sb., Technical requirements for products and processes in terms of noise emission
- Waste management will be executed in accordance with Law no. 185/2001 Sb.
6.2 Site drawings (3x)

Three drawings for different stage processes were created. First drawing is created for 0.S.P. - Construction site and preparatory demolition works and 1.S.P. – Demolition of load-bearing structures, second for 2.S.P. – Load-bearing constructions and third for 6.S.P., 7.S.P. and 9.S.P.
6.3 Wide location drawing with assessment of transport routes

The wide location drawing shows neighboring lands with building objects.

Pic. 3: Wide location drawing
CONCLUSION

The construction technology project was created for the project called New Town Hall for Prague 7. The project is dealing with the reconstruction of the administrative building. The main construction process will start on 4.9.2017. The expected completion date of the reconstruction process and the approval date of the building is scheduled on 29.1.2019. The reconstruction process of the building should therefore last 19 months. These data are based on the created time-space charts and the time schedule of the construction works.

The construction and technology project solves the spatial, technological and time structure of the entire construction. The social, sanitary and technical equipment of the construction site, and the proposal and assessment of the lifting device have been designed and dimensioned. The problematic of the construction site is described in the technical report of the construction site. Another technical report shows a description of the health and safety issues on the constructions site. There are shown the general important information about the health and safety and the main risks influencing the construction.

The author of this thesis shows his knowledge of planning and organising of a construction projects, his ability to understand to the continuity of a construction processes and appropriate knowledge of the involved legislation. The whole solution respects a real requirements and a real conditions for an implementation of every construction projects.
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Prof. Ing. Čeněk Jarský, DrSc.
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