The Design

Subterranean pathway

At the entrance to the site, in the area where the existing underground cells (TYPE I) are filled with earth, a subterranean pathway will be constructed. The subterranean pathway sits over the sidewalk. A notch in the sidewalk indicates that the sidewalk gives way to the pathway.

Grooves in the rough concrete flooring (non-pigmented) mark the column grid of the past.

Gabion walls retain the earth. Concrete obtained from the demolished part of the site is reused to build these retaining walls.
Though the manhole grid is expressed while moving along the pathway, the expression of the column grid remains unclear. The placement of steel support at the junction of the groove and the gabion is not enough for the column grid to be realized. One would have to imagine the extension of the grooves and their junction which marks the location of the column. This is obvious diagrammatically, when the grooves are observed in plan. But spatially, it will be very difficult to grasp the extension of the grooves and the column marker at their intersection. Two possible solutions have been considered. One would be to make the grid obvious by widening the pathway such that the groove intersections are seen. Because of such width, the sense of being deep under the earth will be lost. An alternative could be to have niches in the gabion wall such that the groove is seen extending beyond the wall. This would hint towards the possible intersection of these grooves beyond the wall, and the extended grid could be intuited.

*Fig 5.2*

*Fig 5.4*

*A notch in the sidewalk indicates that the side way gives way to the pathway.*

*Fig 5.3*

*Fig 5.5*
Retrieved manhole rims are re-used as skylight frames. Skylight position coincides with the manhole position, thus emphasizing the manhole grid.
At an initial stage in design, I had ideas on using concrete with a variety of pigments. The pigment in concrete would correspond to varying temperatures of water in a certain part of the project (e.g., Warm to cool color shades corresponding to high to low water temperatures) which I had imagined, would be a water bath.

I must admit that at time I had imagined the scope of the project to be vast but as my thesis progressed, I found it appropriate to narrow down the scope in order to be able to focus on key conditions. Currently, pigmented concrete is not used anywhere in the design. That said, I would like to pursue possibilities based on this idea in my future projects. Nevertheless, a study in this direction was conducted that I thought would be worth sharing.
At places, the angle of the pathway with respect to the manhole grid is deliberately varied in order to cast different patterns of light and shade on the concrete floor.
A staircase along the subterranean pathway leads to a building above. The new responds to the old. A shift in the grid is the response. The main frame of the new building is rotated at an angle such that any support placed along this angle will not coincide with the columns supporting the filter cells.

The primary structure snaps to these rotated lines. The secondary structure and the inhabited space are constructed by extruding lines from the column grid of the filter cells. Thus the concrete panels which form the skin of this new building are subdivisions of the column grid of the past. The building is lifted above the ground in order to make this extrusion obvious.

Alternatives explored to determine the optimum angle of rotation between the structural grid for the new building and the column grid of the existing cells such that the column locations for the new building would never coincide with the existing columns of the cell.
**Initial ideas exploring the shift of grid.**

The idea of inclining the columns for the new building to clearly differentiate them from the existing columns was considered. But since the deviation of ‘the new’ from ‘the old’ was completely realized with the help of ‘the shift’, it was needless to further complicate the design and dilute the effect that this shift had.
Fig. 6.5 Rotation of the old grid and juxtaposition of the derived grid with the source grid as seen from the exterior
Rotation of the old grid and the juxtaposition of the derived grid with the source grid is made visible from within the building by cutting slits through the roofing panels along the new structural grid. The intended purpose of the slit is to show the structure above and to cast its impression on the floor. After a study of light patterns cast by various slit widths I settled for thin slits whose width was just enough to cast a sharp grid pattern over thicker slits which tended to behave like a source of light. Circular openings extruded from the manhole grid take on the role of skylights.
The plaza and the waterwall

At the end of the subterranean path is a huge water wall. It defines the junction between the three conditions viz. The subterranean condition, the condition of intact filter cells and filter cells with the roof peeled. This waterwall acts like a mysterious veil between the viewer and the two filter cells (TYPE II and III) beyond the service court. In order to achieve this translucent waterwall, it becomes important that water flows in a thin sheet without any turbulence. An experiment has been conducted to determine what kind of edge would result in this sheet and to understand other factors like pressure, uniform flow, height of drop etc. that affect how this sheet behaves.

Water for this sheet is obtained from Mcmillan reservoir and is brought to the newly constructed tank under the service court through existing regulators. Water falls from the service court level (0.00ft) to the basement floor level (-10.00ft) into the channel and is then pumped back into the tank.
Schematic cross section at the waterwall

Fig 7.2
To the left of the pathway is an immense array of columns, untouched since the roof was removed. They are left in their existing condition with the base of gravel and sand that originally existed, to get a sense for the original filter cell floor. The stark landscape of columns is juxtaposed with the blurred waterwall.
To the right is a plaza generated from the subterranean area by excavating earth. The lines from the columns on the left are projected to mark them on the stepped plaza. These areas have gravel flooring whereas the rest of the flooring is concrete, similar to the pathway. Thus, the grid is differentiated through texture. The manholes are marked by a depression in the concrete flooring. In the channel along the waterwall, the manhole markers act as an outlet for water.

Steps for seating vary in height from steps for walking.
Filter cells as seen beyond the mysterious veil of the waterwall

Fig 7.6
Study - behavior of various edge types

The behavior of different edges has been studied in order to understand the edge type that would lead to a thin turbulence-free sheet of water for the water wall. Three edge types are as follows:

1. Thickness of slab (in this case acrylic sheet) over which water flows > radius of the quarter circle forming the edge

2. Thickness of slab = radius of the quarter circle that forms the edge

3. Thickness < radius of the quarter circle forming the edge

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**Edge type 1**

![Edge type 1](image1)

**Edge type 2**

![Edge type 2](image2)
During the course of the experiment it has been observed that apart from the shape of the edge there are numerous other factors that determine the flow of water. Laminar flow of water over the slab produces better results. A slight tilt of the slab downwards, prevents back flow underneath the surface, causing least water turbulence.

It is important that pressure with which water flows from the source be restricted, such that it does not dominate its flow pattern over the edge.

Edge type 3 works best with minimum back flow and turbulence in the sheet, maximum distance travelled before convergence and maximum clarity of the sheet.
Glass balcony

On top of the waterwall is a balcony with glass floor. The entrance to the balcony is through the door that served as an entrance to the filter cell (10 feet below the service court level, when the plant was in operation). The berm behind the door housed a ramp which led to the cells below. There are 5 such doors along the waterwall which have been retained.
The glass balcony has glass floors and glass railings, so that one can experience the moving water underneath, before it falls over the edge to become a waterwall.
Fig. 8.5 Detail at A

Fig. 8.6 Detail at B
Entrance to the second service court is through a ramp that connects the filter cells (TYPE III) to the court. As one ascends the ramp, the huge concrete wall (new) obstructs the view of the sand bin towers. Only when one reaches the court level and turns around, the sand bin towers lined along the service court present themselves in a strong perspective...the ruins are presented in their raw form, their rustification preserved. To me, this moment is the climax in the journey, a sort of a high-point where the sand bin towers, which indeed are the most powerful feature of the reminiscence of the industrial ruin, especially when observed from this viewpoint, are seen in their original form.

*Sand bin towers in perspective*
The grove of columns

From the service court, the grid of columns is seen once again spread over 5 acres of land. Water, that was the very reason for its existence, revisits the site, this time giving life to trees that act as manhole markers in this grove of columns. Water flows to the trees through a network of water channels. The trees are located a few steps below the ground level. Channels open up at the ground level, and water flows over the gravel with a trickling sound before making itself available to the tree.

Each bay of column with a tree at the centre is an individual’s space to sit in the tranquil setting and contemplate, close to the buzz of the city and yet away...15 feet below the earth.
Is it possible that this part of the site is a bit overdesigned? What is the least I can to to retain the essence of this grove of columns? What is its essence in the first place?

Its capability to provide a place for an individual, a place for contemplation. (made possible by cutting it off from the surroundings with the help of columns and trees and also to an extent by the soothing, trickling sound of water)

The symbolic representation of water as life giver.

The perception of this grove in the form of a sheet of green from the street level (as if there were nothing underneath it) and as a dense jungle from the floor level (as if there were nothing above it).

The only thing I can imagine doing away with in this space is the steps ...though, I somehow, still feel like they are important in this scheme.

But as a strategy, I definitely see value in removal of excess to bring out the quintessence of any space.
Conclusion

This thesis is an intervention to reveal the past of a ruin. Once a sand filtration plant, and abandoned today, the most striking feature of McMillan Sand Filtration plant is its grids that presents itself in a variety of ways.

I have attempted to bring back its essence, instead of taking away from it. ‘The new’ does not disregard ‘the old’, they ‘co-exist’. In fact, the new is built to enhance the old and reveal its essence. It deviates from the old and draws from it. It has its own identity but the old, always remains the reference point. A dialogue between the two is expressed through architecture.

The various grids of columns, manhole-skylights and the impressions left by the collapsed grid are revealed, the spatial experiences within these grids enhanced through the use of light and texture.

Water, the very reason for the existence of this site is brought back to it in the form of a waterwall, a mysterious veil at the junction of the grid conditions. This further heightens the drama of light versus shade, subterranean versus open.

My thesis has been my first experience of designing within a strong context. It has also presented challenges in terms of its scale which I have never been exposed to in the past.

A building that is history in the sense that it is obsolete today, but still has a such dominant physical presence that it demanded not to be ignored. The only way to build on this site was to build “with” it. Infact, each time I tried not to, it easily belittled any effort to bring forth the “I “of the designer in me.

During this journey, reading Carlo Scarpa gave me deep insights into how, careful and measured design decisions, and doing very little could create a strong impact. I learnt to raise questions like “What it ought to be?” rather than “What I want it to be? and that I have a long way to go before the answers to these, could be one and the same.

My initial struggle with the scale of the project exposed me to the work of Bernard Tschumi, through which I tried to understand how a system (of follies) could be used to create anchor points and bring order to a large site (Parc de La Villette). Though I eventually abandoned the idea of actually designing a master plan, it was an interesting exercise that I went through.

I learned how easy it was to lose control of the design (especially with a project of this scale) if the essence of things was not captured and that by simply focusing on the essential parts one could deal with the whole. I have really enjoyed the constant back and forth between scales, and gradually zooming in from the macro to the micro scale in this project. I feel that by doing “less” and focussing on the essence, I have been able to deal with the site in entirety.

One of the most important lessons learned is that nothing can replace hands on approach towards design. Through constant pushing by my teachers to draw and make, I have realized that putting ideas on paper or making a quick model are extremely vital to any design process. I have learned to look at these techniques as an integral part of developing designs rather than mere techniques of presentation.
“The critical approach used in the restoration work distinguishes between ancient and modern. The ancient is rigorously respected and highlighted where possible; the ravages of time and man have been painstakingly repaired, but work kept in minimum. The modern has been used only when strictly necessary to the restored whole, and the architecture of our time has in this case been used unresistingly but with a constant concern to compose old with new and to create thereby a harmonious whole.”

- Carlo Scarpa
Summary of Recommendations for Site Revitalization February, 2002
Government of the District of Columbia, Office of Planning & Department of Housing and Community Development
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(Fig 4.2 The Thickness of Landscape, horizontally and vertically considered/ George Hazelrigg )

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(Fig 10.10 The Thickness of Landscape, horizontally and vertically considered/ George Hazelrigg )

Fig 1.5  http://scholar.lib.vt.edu/theses/available/etd-11072002-195615/  
(Fig 10.28 The Thickness of Landscape, horizontally and vertically considered/ George Hazelrigg )

Fig. 2.1  Sketch produced from photograph.  
http://www.readexpress.com/read_freeride/2007/05/following_the_citys_water_flow.php

Fig 3.1  http://studiocleo.com/gallerie/scarpa/scarpapage.html

Fig 3.2  http://www.greatbuildings.com/gbc/images/cid_2440141.150.jpg

Fig 3.3  http://aiany.org/eOCULUS/2005/images/1004/k_Report_Eisenman.jpg

Fig 3.4  http://static.flickr.com/40/99503926_79297c3bd9.jpg

Fig 3.5 - 3.6  http://www.eisenmanarchitects.com/

Fig 3.7  http://pruned.blogspot.com/2006/11/duisburg-nord-at-night.html

Fig 3.8  http://www.latz-landschaftsarchitekten.de/sites/view/syntax

Fig 3.9  http://www.cromwell-intl.com/travel/turkey/istanbul/pictures/cistern-01.jpg

Fig 3.10  http://www.confluence.org/tr/all/n410015e0285820/pic6.jpg

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