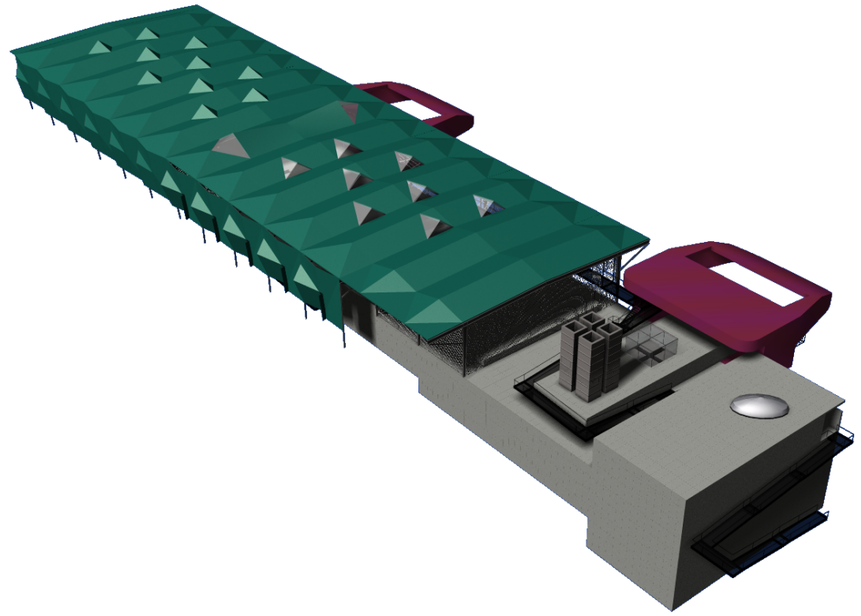
Advanced Water Treatment Plant

City of San Diego



Public Art Technical Memorandum

July 28, 1997

Art Team
Robert Millar
Guthrie+Buresh

The conclusion of the conceptual design phase of the project required presentation of the Art Team's proposal to the City of San Diego Metropolitan Wastewater Department's engineering staff. The Department's term for such a presentation is "Technical Memorandum."

The following Technical Memorandum was written in an effort to convince the engineering staff to adopt the Art Team's proposal for the facility design.

Robert Millar
Fall 2003

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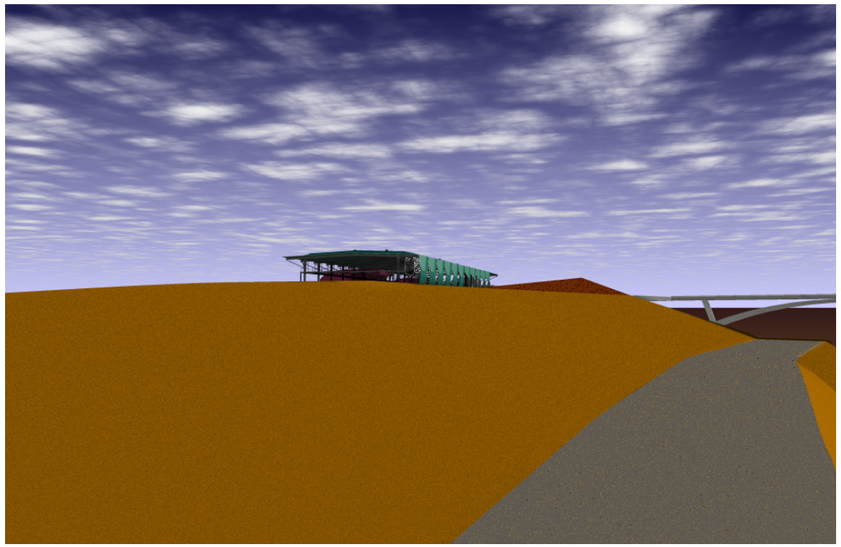


The Design Team for the Advanced Water Treatment Plant was assembled by Malcolm Pirnie Environmental Engineers. It is made up of engineers from their Carlsbad office; Techtonics, an architectural firm; Estrada Land Planning, a landscape architecture firm: and myself, the project artist. As project artist I am responsible for utilizing art and cultural resources to enhance the project.

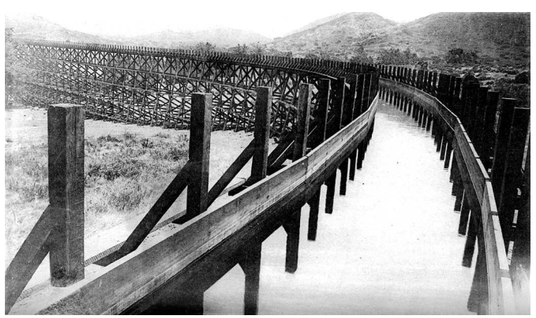
Upon being commissioned for the project, I asked Guthrie+Buresh to join the Art Team. Tom Buresh, Danelle Guthrie, and I have collaborated together on many projects during the past ten years.

Robert Millar

Only one year after founding Mission San Diego in 1769, the Spanish realized the lack of water at their chosen site and were forced to relocate their settlement closer to the San Diego River. Frequent drought in the region continued to frustrate their efforts to develop a reliable water source, and three years later they embarked upon San Diego's first major water project, damming the San Diego River upstream of the Mission and building a five mile aqueduct to their crops.

Two hundred and twenty-five years later, the quest for water for San Diego is still a major issue of survival for the community. With the population reaching 1,183,000 in 1995 and expected to grow another 33% to 1,573,656 over the next twenty years, providing water—an essential element for the sustenance of life—is a continuing challenge.

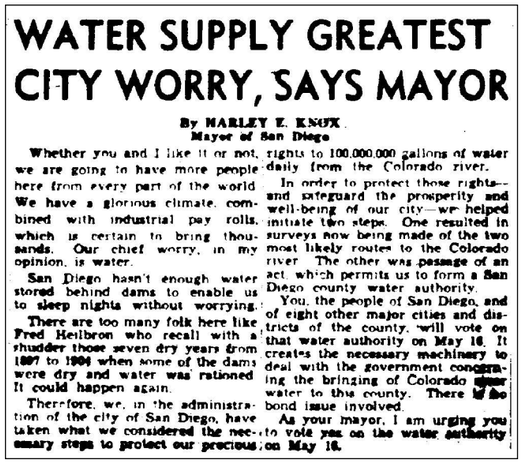
Since the early days of the Spanish Mission, inhabitants of San Diego have struggled to overcome nature's forces. The challenges of building and providing for a growing and prospering metropolis requires leadership and vision, strength and perseverance.



Above:
San Diego Mission Dam
Photographed in 1916.

Right:
Los Coches Trestle
Delivering water to San Diego in the 1880s.

The Advanced Water Treatment Plant (AWTP) is the most unique and revolutionary solution to providing for our water needs. The AWTP will be the first of its kind. Its design and



WATER SUPPLY GREATEST CITY WORRY, SAYS MAYOR

By HARLEY E. KNOX
Mayor of San Diego

Whether you and I like it or not, we are going to have more people here from every part of the world. We have a glorious climate, combined with industrial pay rolls, which is certain to bring thousands. Our chief worry, in my opinion, is water.

San Diego hasn't enough water stored behind dams to enable us to sleep nights without worrying.

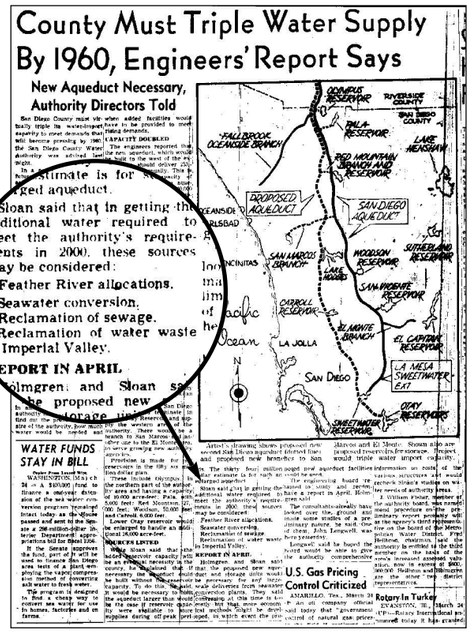
There are too many folk here like Fred Heilbron who recall with a shudder those seven dry years from 1897 to 1904 when some of the dams were dry and water was rationed. It could happen again.

Therefore, we, in the administration of the city of San Diego, have taken what we considered the necessary steps to protect our precious rights to 100,000,000 gallons of water daily from the Colorado river.

In order to protect those rights—and safeguard the prosperity and well-being of our city—we helped initiate two steps. One resulted in surveys now being made of the two most likely routes to the Colorado river. The other was passage of an act which permits us to form a San Diego county water authority.

You, the people of San Diego, and of eight other major cities and districts of the county, will vote on that water authority on May 16. It creates the necessary machinery to deal with the government concerning the bringing of Colorado water to this county. There is no bond issue involved.

As your mayor, I am urging you to vote yes on the water authority on May 16.



County Must Triple Water Supply By 1960, Engineers' Report Says

New Aqueduct Necessary, Authority Directors Told

...Sloan said that in getting the additional water required to meet the authority's requirements in 2000, these sources may be considered:

Feather River allocations.
Seawater conversion.
Reclamation of sewage.
Reclamation of water waste in Imperial Valley.

REPORT IN APRIL

...Ilmgren and Sloan said the proposed new ... storage ...

WATER FUNDS STAY IN BILL

U.S. Gas Pricing Control Criticized

Rotary In Turkey

Above:
The Tribune-Sun
May 1, 1944

The San Diego Union
March 25, 1955

construction places San Diego at the vanguard of water repurification.

The AWTP will stand as a spectacular and extraordinary engineering achievement. It will be the benchmark for all water and wastewater projects that follow. This facility will provide San Diego with the most valuable of assets—a potable water supply—out of what has always been dismissed as waste.

The Design Process

The design of great civic infrastructure projects is a highly complex process and must respond to a myriad of issues. Function is the overriding criteria of success, for it relates directly to the primary purpose of the project. Unless the AWTP works—and works well—it will be judged as a failure.

The second significant criteria of the project is one of economics. To become successful politically it must achieve economic standards, both for its construction and its operating costs.

Responsible solutions in the areas of function and economics are essential for this project, but there are other vital issues as well. The AWTP could take form in many different ways if function and economics were the only relevant issues.

The Camouflage Issue: *To See or Not to See?*

Civic infrastructure projects are joined by function and symbolism to the communities they serve. Should the facility be seen by the

public, and if so, how? Should the facility become part of the urban landscape, or should it be hidden or camouflaged? Should the facility pretend to be something that it is not? Should the design reflect a generic technological or industrial style? Should the design reveal the specific technologies and components of this specific facility?

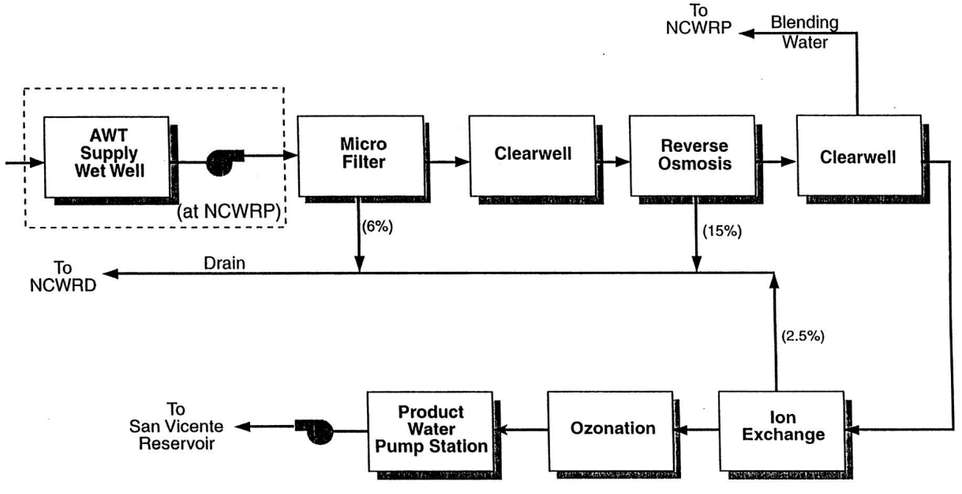
It has become a generally accepted practice in the United States to assume that infrastructure projects should be hidden, disguised, and camouflaged. This may sometimes be a more economic solution and certainly requires less design expertise, but the result of its prevalence has had the long-term effect of encouraging a less informed public, and a devaluation by that public of infrastructure projects. How can the design of this facility reflect the powerful and profound magnitude of this project? How can the design of this facility offer long-term value in expressing the importance of infrastructure projects?

The Art Team commends the City of San Diego, the Metropolitan Wastewater Department (MWWD), and Malcolm Pirnie Environmental Engineers on pursuing a process that intentionally and more overtly incorporates relevant sociological and political issues of this facility into its design. This visionary approach to design is an unfamiliar path to many people.

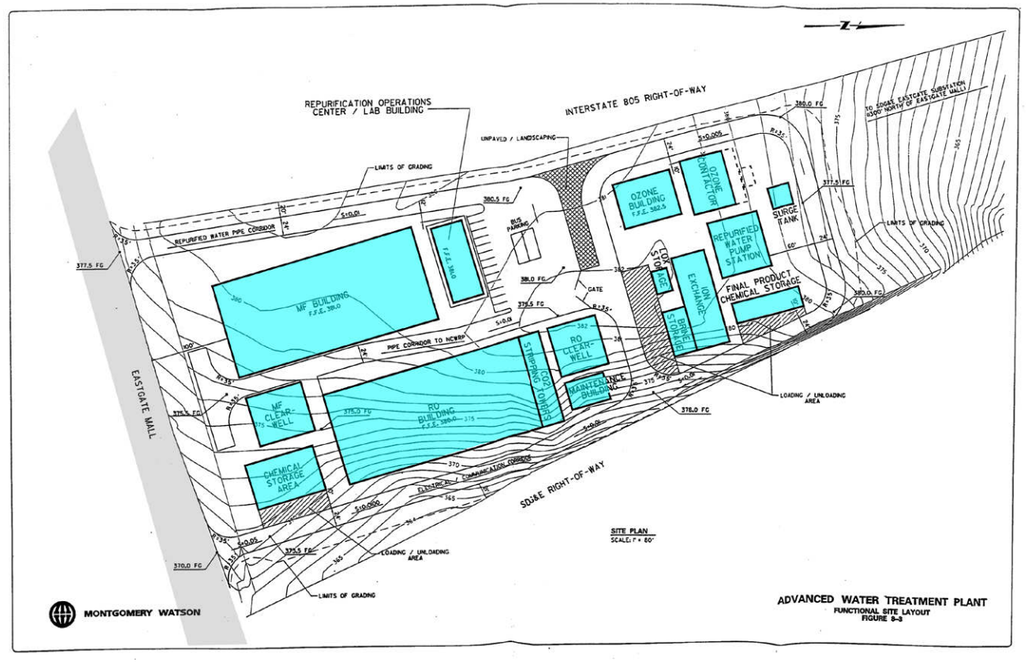
Building a design that tackles issues inherent to the project is more akin to the process of creating civic monuments than to building a typical infrastructure project. These types of projects oftentimes encourage spirited public debate.

At the time of its creation, a majority of Parisians were in support of dismantling the Eiffel Tower. Twenty years later it was the symbol of the city. Lack of common support for the Washington Monument halted its construction at a 150-foot stump for over twenty-five years. The 555-foot obelisk is now an indelible symbol of the United States. The installation of an Alexander Calder sculpture in Grand Rapids in 1968 caused an enormous public uproar. Enduring the initial debate, its image later replaced the city's logo on the municipal letterhead.

The Art Team uses these examples to demonstrate how visionary and courageous it is for the city, and especially for MWWD, to pursue the rightful and immensely challenging goal of building valuable contributions to the urban landscape. As a civic monument the AWTP will tell future generations that we care about what we build and how we choose to build it, and that we are



NCWRP = North City Water Reclamation Plant



willing to take the unfamiliar path to build what should be built.

The Conceptual Design Workshop: *A Better Overall Design*
In December of 1996, the Design Team of the Advanced Water Treatment Plant met for the first time to discuss the project. The team began by examining and confirming criteria of operations and maintenance, process engineering, project management, landscape, and architecture.

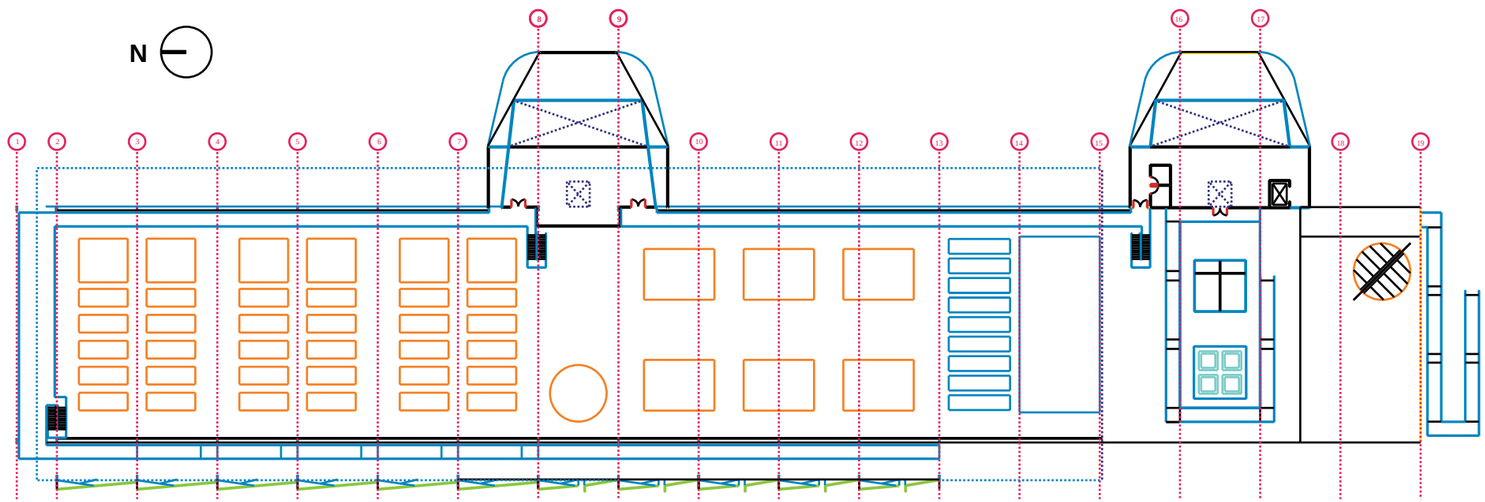
What was required to provide for a functional facility? How would staff work in the facility? How many staff members would there be and what would they do? How did the processes work? What maintenance was required for the equipment and how often? Where was physical accessibility to equipment essential? What sort of visual accessibility was desired by operators? How could we design the facility to provide the lowest possible construction cost? How could we design the facility to provide the lowest possible operating cost?

The Art Team questioned the April 1996 Montgomery-Watson Pre-Design Report which provided for a "campus layout" of numerous facility buildings and supporting "tank farms." We pro-

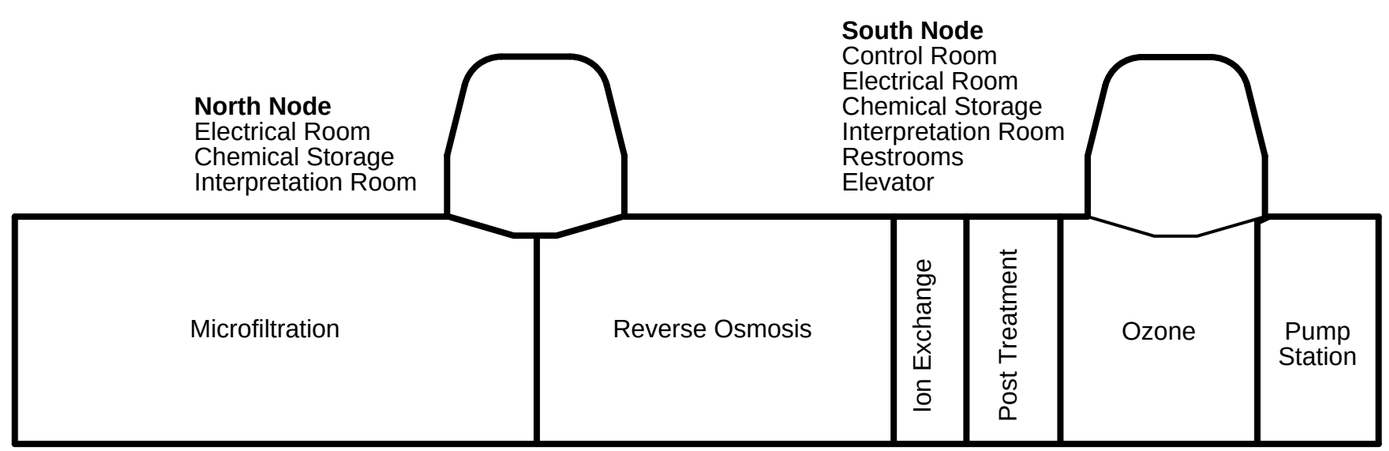
Above:
AWTP Process Diagram
Water Repurification Project Report, Montgomery Watson
March 1996

Above right:
AWTP Site Plan
Water Repurification Project Report, Montgomery Watson
March 1996

AWTP
Schematic and Architectural Plans
The arrangement of all processes in a linear plan provided a more functional, economic, and architecturally desirable solution.



Plan-Architectural



Plan-Schematic

posed a more efficient layout of grouping the processes in a linear format, reflecting the process train, and providing one large enclosed structure over these processes. We proposed grouping support functions together; process control, electrical rooms, chemical storage, public interpretation, etc. into two "nodes" extending off one side of this long, linear structure.

The Design Team considered the proposal and supported it, acknowledging the functional and economic improvement over the plan contained in the Pre-Design Report. The new proposal increased physical accessibility to the equipment, aiding operations and maintenance. It increased options for possible future expansion. In addition, it presented the facility's processes in a manner that reflects and communicates the order and efficiency of the facility's operations.

The Design Team continued working together to develop strategies for laying out the piping, providing for efficient chemical delivery, supporting fire equipment access, and integrating public tours into the new linear facility.

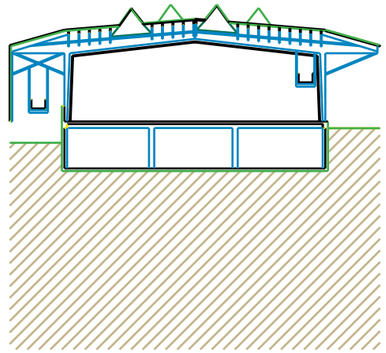
All piping within and between process occurs in a lower pipe gallery. This removes the complex and visually chaotic piping from visitor view, producing a much more ordered presentation of the process equipment. It also places the pipe closer to structural members which facilitates a more economic means of supporting the process piping.

The Design Team intended for metal grating to be the floor material between the equipment level and the lower pipe gallery. This grating provided for increased accessibility to equipment on the lower level and increased visual and audio accessibility to equipment by plant operators. In the interest of economics, all but a small quantity of grating was later removed from the design during the Design Development Workshop.

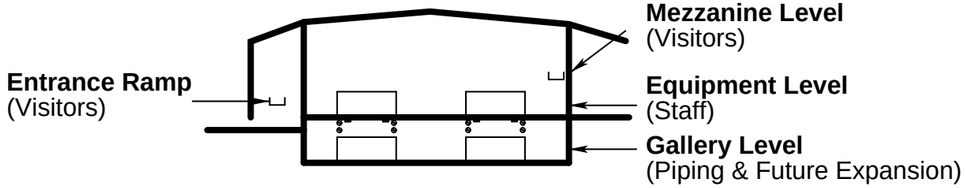
Each of the two nodes contains chemical storage facilities. The location of the nodes in plan is determined by the efficiency of locating electrical rooms and chemicals in close proximity to the processes they support. The nodes contain a drive-thru for chemical delivery trucks. This drive-thru is multifunctional: it places the chemical delivery points immediately adjacent to the storage facilities for efficiency; it utilizes the facility's architecture as a visual screen of chemical delivery operations; and it provides visual access of chemical delivery from the adjacent visitor interpretive areas.

AWTP
Schematic and Architectural Sections
Much of the facility has three distinct levels. Visitors are separated from operations on a mezzanine level, piping is directed to a lower level, and membrane processes are unencumbered at grade level.

Design Development Workshops: *Architecture and Landscape*
In April of 1997 the Design Team regrouped and embarked upon a ten-week series of workshops focused on further defining the facility design, including the design of the architecture and the

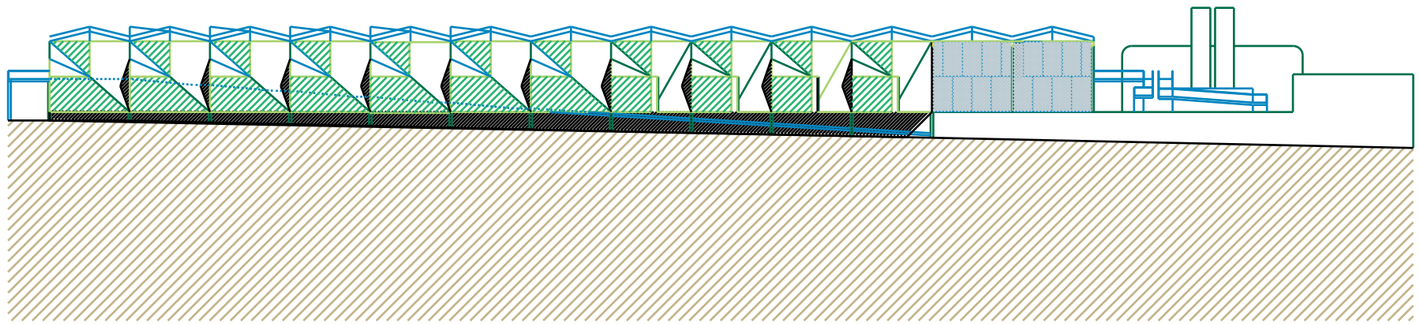


Typical Transverse Section-Architectural
(Looking North)

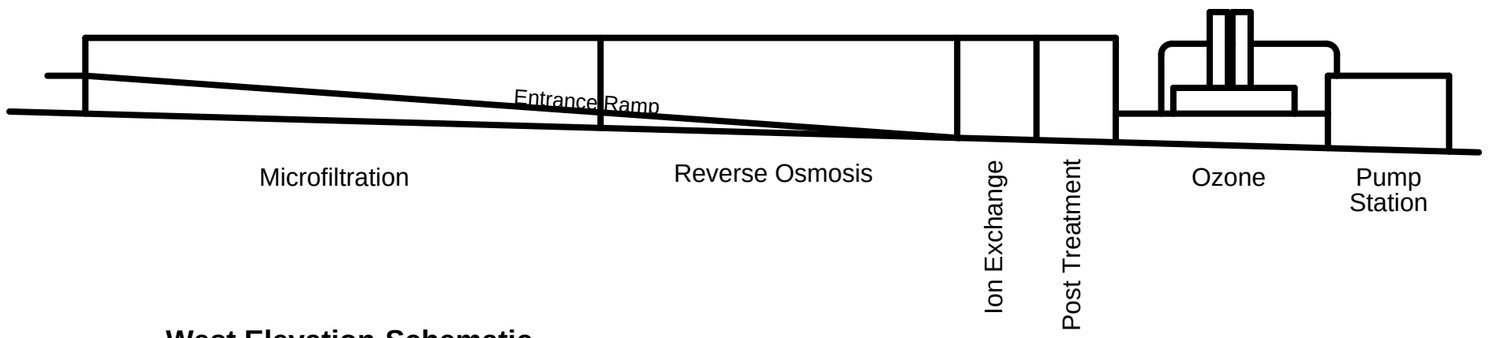


Typical Transverse Section-Schematic
(Looking North)

AWTP
Schematic and Architectural Elevations
Architectural difference is utilized to delineate the difference is processes utilized in the facility.



West Elevation-Architectural



West Elevation-Schematic

landscape.

There are several different processes used in the Advanced Water Treatment Plant. The process train has several cars, several different components. Some of the processes are common to water treatment facilities. In fact, some processes have been in use for a hundred years. Other processes are newer and are currently experiencing rapid evolution as a result of ongoing research and development.

How can the design of this facility reveal the technologies housed

Cutaway of Reverse Osmosis Unit
Microfiltration and reverse osmosis membranes are difficult to see, but recognizing other membranes that surround us help us to understand them.

within it? To begin with, the building must express that this facility utilizes a number of different types of water processes. The architecture of the AWTP is a combination of different elements, working together in an ordered composition towards a common purpose—reflecting the numerous technologies, but singular function, of the plant.

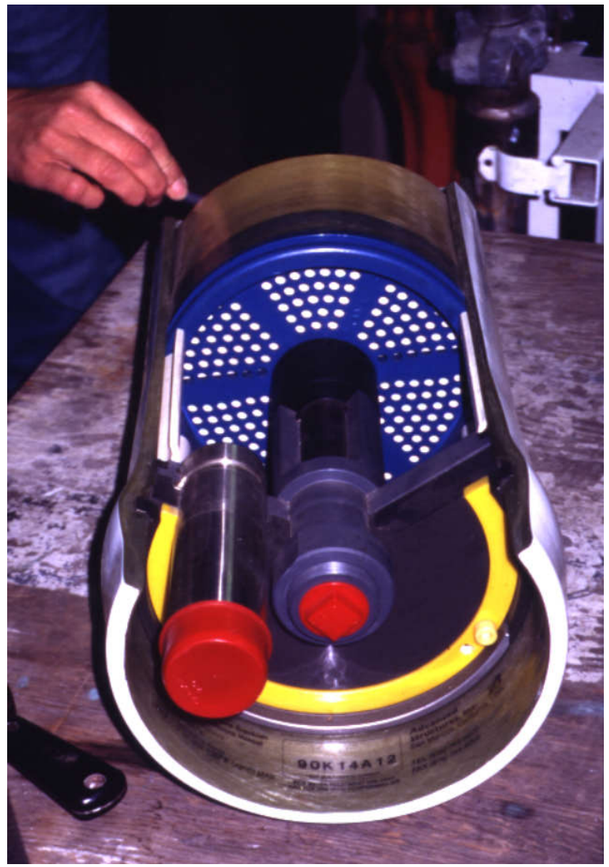
Reflecting Membrane Technology in Design

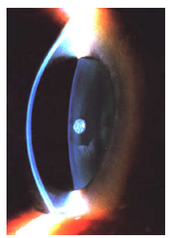
It is membrane technology that enables the Advanced Water Treatment Plant to provide a potable water product. Utilized in microfiltration, ultrafiltration, and reverse osmosis, the evolution of membrane technology has made repurification possible. Water process engineers refer to this facility as a "membrane plant."

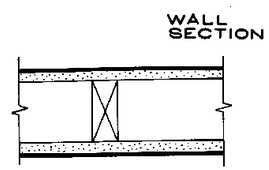
The AWTP presents a special interpretative challenge. The membranes of microfiltration, ultrafiltration, and reverse osmosis are encapsulated within metal housings. Even when these membranes are visually examined, their minute scale prevents an easy understanding of what they are.

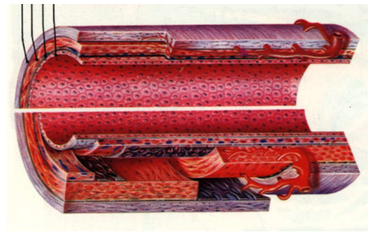
The Art Team initiated an examination of membranes, what they are, how they work, and how they are being utilized by science, engineering, and design. The goal was to identify how the facility design could express what this special technology is.

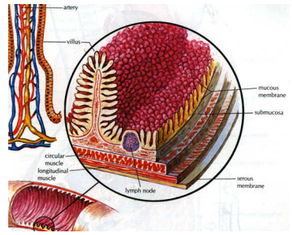
Earlier this century, modernist architectural design clarified the use of architectural membranes. The development of steel structure in the nineteenth century freed architecture from the limita-











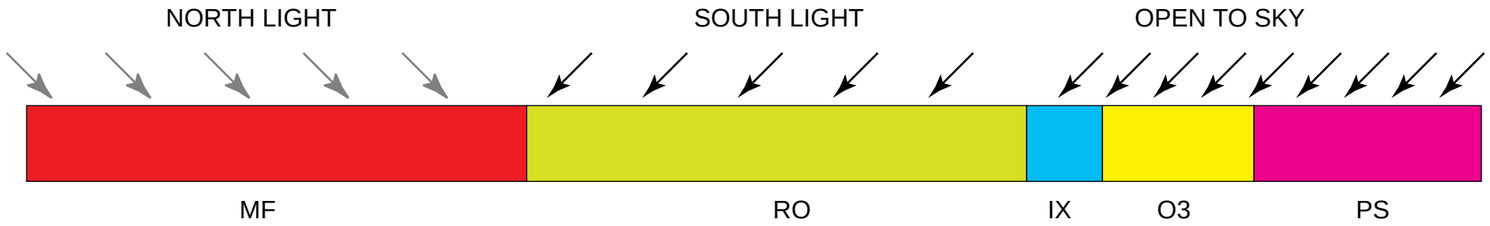
tions of masonry construction. The great crystal palaces in England were the first examples of this type of monumental architecture; an architecture that utilized one element (steel) for its structural needs and another for containment (a membrane).

The architecture of the AWTP can express the use of membranes as well as demystify the seemingly esoteric technology of this facility. The type of architecture that best exemplifies this project is an architecture of a simple structure and light-weight architectural membranes. To reduce the cost of the structural component of the architecture, Techtonics proposed the use of pre-engineered structural members.

Dirigible
Membrane construction in architecture and aerospace is characterized by lightweight structural elements.

Natural Light and Ventilation: *Function and Expression*
One of the architectural goals for the facility was to make use of natural light. Proper design of natural ventilation for the main process building would preclude the need for artificial heating and air conditioning, at a significant savings to construction and operating cost.

Architectural membranes can be utilized to provide natural lighting and ventilation for the facility. As a design element, they further the goals of the design team.



NATURAL DAYLIGHT CONCEPT

The manner in which natural light is introduced to the facility reflects the difference of process areas. Northern light is utilized in the microfiltration area, south-facing skylights are utilized in the reverse osmosis area to introduce limited direct light, and diffused light is utilized south of the reverse osmosis area.

Peaked skylights provide the apertures to the sky. Although oriented in different directions, to reinforce the difference of the microfiltration and reverse osmosis areas, their likeness of fabrication can be mass produced at a lower cost.

The modulation of the roof and the west elevation creates a surface for the facility that the Art Team refers to as a "technological landscape." The modulations are small and repeated, much like the membrane material used in the water processes.

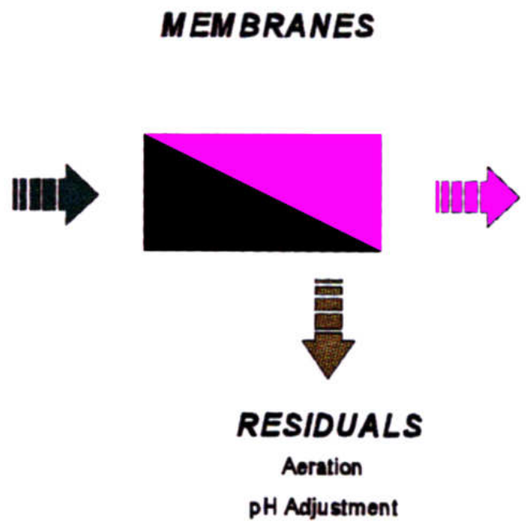
Only limited light is desired through the walls of the facility. The visual focus on the process equipment in the building's interior relies upon the wall membranes restricting the amount of light passing through them.

Landscape Concept: *Reclaiming Dirt From Excavation*

There are significant functional and economic issues for the design of the landscape to address. Excavation for the Gallery Level, along with excavation for the Eastgate Mall tunnel, will produce an enormous amount of dirt. Like the source of material for this facility, it was natural to look upon this material as waste. We questioned whether it was possible to utilize this "waste" in a constructive manner that would reflect the importance of the Advanced Water Treatment Plant.

Low maintenance of all design elements is an important design criterion expressed by operations and maintenance personnel.

AWTP
Daylight concept schematic
Expressing variety in the facility's processes with light.



Membrane Treatment Process

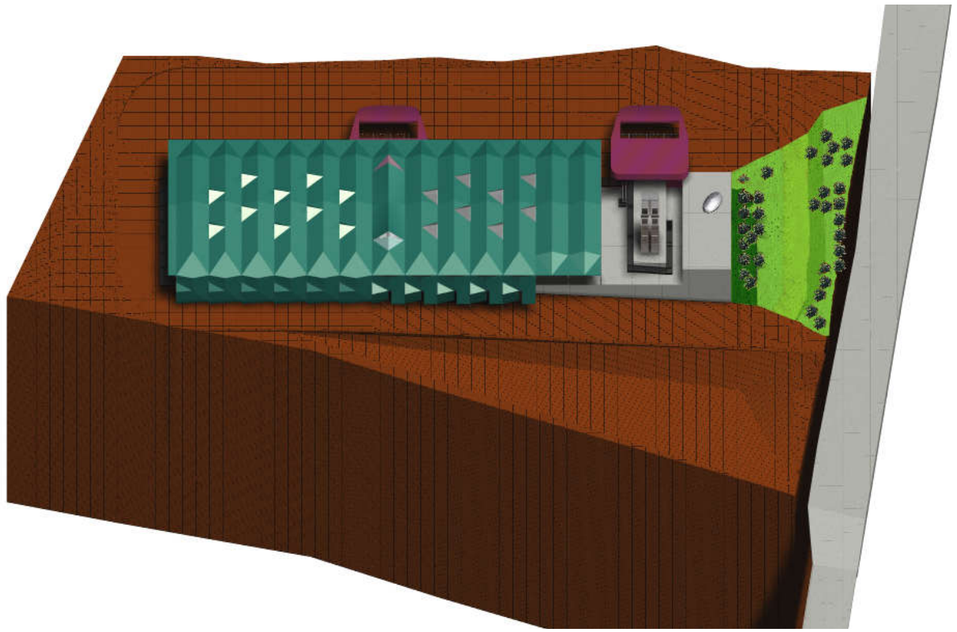
The landscape design responds to this priority.

Discussions with Steve Estrada, the landscape architect of the project, lead us to question how the landscape might reflect membrane technology. The Art Team asked if the landscape might satisfy goals similar to the architectural concept. Where the architecture is a very literal examination of membranes, could the landscape be an abstract response?

The architectural design uses membranes to subtly manipulate the transmission of light, sound, and a sense of physical containment. The landscape design seeks to express the absolute control that is the goal of effective microfiltration and reverse osmosis membranes. The landscape utilizes a complete absence of plant materials in some areas, and complete excess of plantings in other areas.

Membrane Treatment Process
Manual on Membrane Processes, Malcolm Pirnie
The intention of process membranes to create absence and excess became the basis for the landscape concept.

In response to economic and maintenance issues, the team recognized that the area of absence in the landscape needed to be larger in size than the area of excess. The smaller the area of excess, the more abundant the project budget would allow this portion of the landscape to be. This landscape solution amplifies the contrast



AWTP
West Oblique, Version 22.0
Implementation of the Absence/Excess landscape concept.

between the two extremes, reflecting the goal of membrane technology.

Without plant material, how would soil be maintained in place? Steve Estrada responded with a number of options, including turf-block material in combination with cemented decomposed granite. These materials provide a stable soil condition, suitable for vehicles to traverse across, and requires no maintenance. The continuation of this material, over all of the "absence" area directly to the building line, satisfies the functional requirement of being able to drive entirely around the building, and if desired, to park vehicles at any location that the slope allows.

In response to the excess of dirt that the excavations will produce, we examined different ways that the material could be used on the site. Functional requirements of the facility allowed only two areas for this to occur, to the west of the building and the north of the building. Using the dirt to the north of the building above the equipment level of elevation 381.0 would block desired views. There is the opportunity however, to push an amount of dirt down the north slope of the site below an elevation of 381 and not disrupt views.

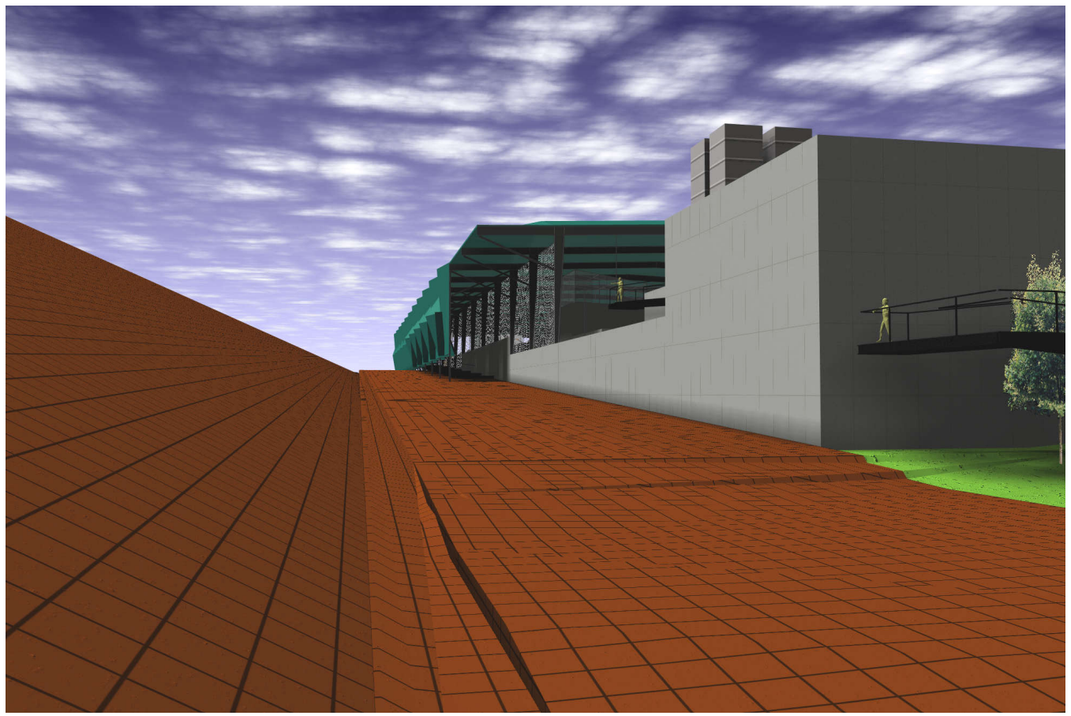
The team identified the west side of the building as a desirable

Above:
AWTP
From West Side of Eastgate Mall Bridge

Below:
AWTP
From South-East
The design thoughtfully composes architecture and landscape elements, while revealing the facility's workings.

location for using dirt. Sculpting the ground in this area provides a wonderful opportunity to affect the transition experience of leaving the Eastgate Mall tunnel and moving through the landscape and into the architecture. The team studied a number of possible options of sculpting this material, and arrived at a long prism shape with a high end to the south and a gradual slope down to elevation 381 to the north. The south, west, and east sides would maintain a consistent 2:1 slope.

The scale of the landscape balances the scale of the adjacent architecture. This is an unusual and dramatic landscape design for an urban environment. Within cities, landscape almost always takes a subservient role to architecture. The exceptional use of



landscape material in this design speaks abstractly, yet directly, to the relationship of what we build (architecture) with the environment (landscape).

The comprehensive use of architecture and landscape in such a balanced manner is unique to the urban environment. The landscape design has created an important asset for the project out of a material that was initially assumed to be "waste." It is in an incredibly fitting contribution to the project.

Visitor Entrance to Facility: *Moving Through Landscape and Into Architecture*

The Advanced Water Treatment Plant will stretch 580 feet across the site. Visitors will enter the site from the North City facility through an underpass beneath Eastgate Mall. At that point they will be at an elevation of 358. Proceeding along the west side of the AWTP facility, visitors will gently rise, first on the groundplane and later on a metal ramp, to a final elevation of 400 feet above sea level at the northernmost end of the plant. At this point they will be elevated 19 feet above the surrounding natural grade.

AWTP
View from Tunnel
Version 22.0
The dramatic impact of the landscape and architecture synthesis.

AWTP

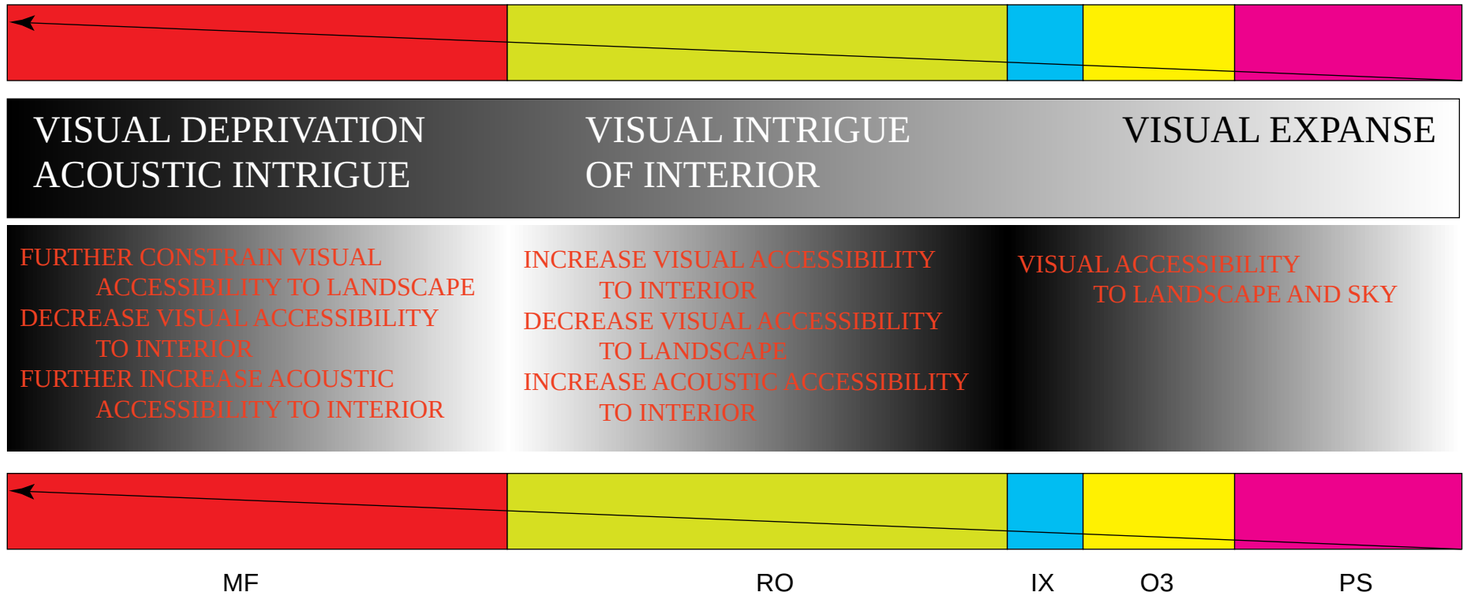
Visitor's entrance concept

The visitor's experience of entering the facility is highly modulated by architectural membranes controlling both vision and sound.

Exiting the Eastgate Mall tunnel, the pump station will rise dramatically above on the visitor's right, the landscape will rise dramatically above on the visitor's left and the facility will stretch almost two football fields in length away from this location.

The visitor's circulation continues north, along the west side of the building. The path along the first third of the length of the building will be on the groundplane. At this point, the path will then become a ramp, supported by the building structure.

What is most significant is that this design enables the visitor to experience the evolution of moving through a landscape experience to moving through an architectural experience. Each of these experiences is carefully related to the other, providing a continuing phenomenological experience—from the Eastgate Mall tunnel to the end of the entrance ramp.

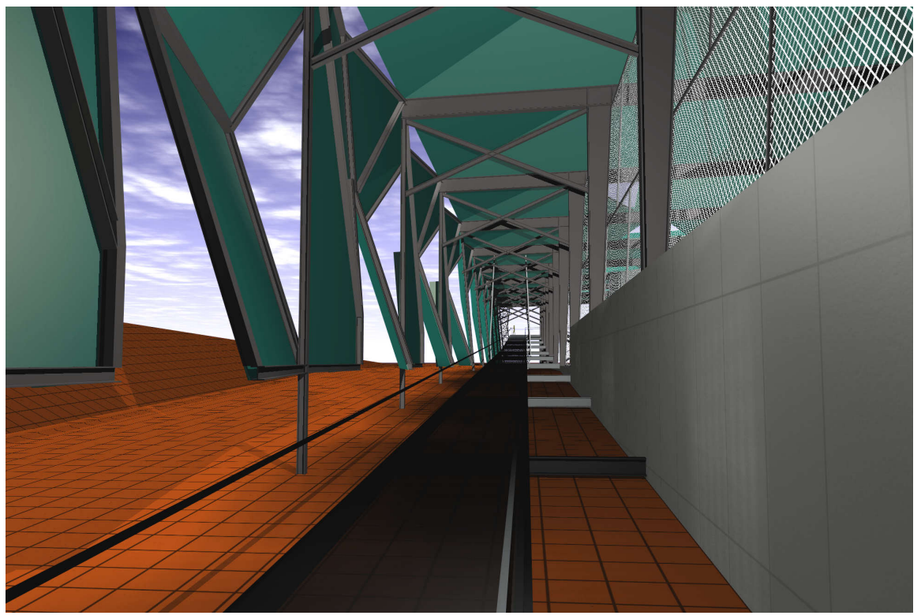


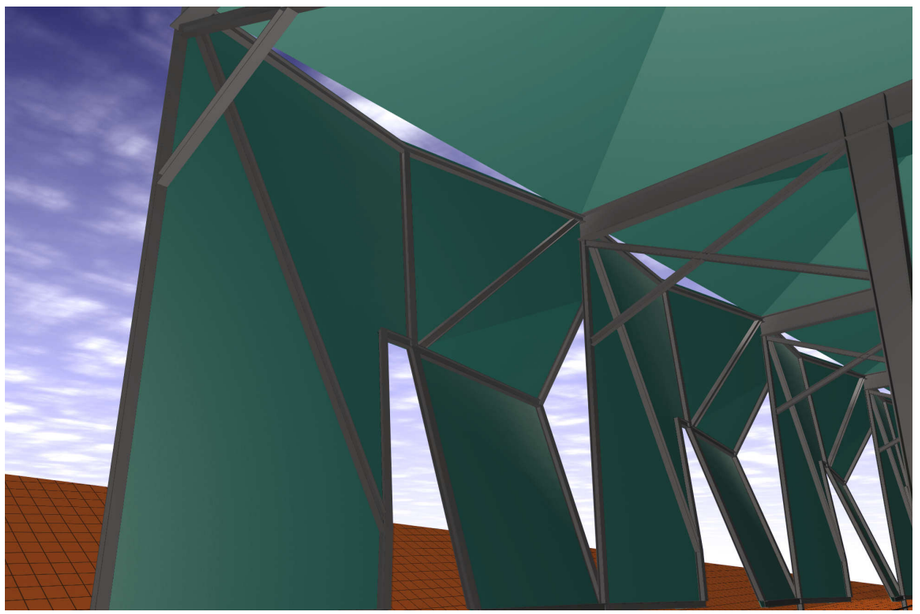
RAMP—VISITOR'S PRELUDE

The visitor's entrance experience of gradually rising in elevation along the west side of the facility before entering is both functional and symbolic. It offers fabulous opportunities to engage the materials that form the architectural membranes of the west elevation of the facility—controlling the pictorial experience of the surrounding landscape as well as the visual and audio experience of the process equipment inside the plant.

An architectural membrane of formed and perforated metal encloses the west side of the ramp. This membrane, along with the membrane that separates visitors from the facility on their right, serves to control what they see, when they see it, how they see it, what they hear, when they hear it, and how they hear it.

The visitor's experience along this ramp is carefully designed to heighten the experience of arrival at the top of the ramp, offering a fitting prelude to the interpretation of membrane technology. It is here that the visitor passes out of the carefully controlled expe-





rience of the ramp and is delivered onto an elevated landing with a stunning panoramic view of the surrounding and developing landscape. The view is spectacular, with the 805 freeway winding up the hill toward the site, warehouses and related facilities to the east, office parks across the geographic depression of the 805 to the west, and a distant view to the ocean.

Visitors' Experience in the Facility

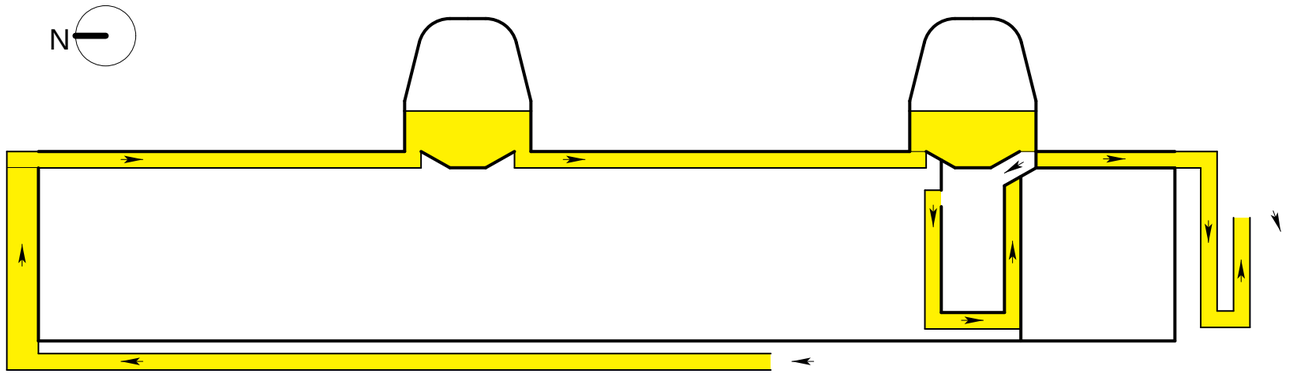
After the visitor is captivated by the expansive vista from the north mezzanine at the end of the entrance ramp he/she turns back toward the AWTP structure. The view is dramatic—all of the facility's equipment laid out in perfect order below. The north mezzanine provides the visitor access into the facility and an unobstructed view over the 580 foot long process train.

Above left:
AWTP
Visitor's Enrance (Detail)
Version 22.0

Above right:
AWTP
Visitor's Enrance
Version 22.0
Architectural membranes direct views of the surrounding landscape, restrict views into the plant, and allow equipment sound to build anticipation.

Significantly, the elevation above the equipment increases the effectiveness of process interpretation to the visitor. The process train is easier to visualize and therefore easier to understand for those who are unfamiliar with the facility's technologies.

The visitor catwalk runs along the west side of the facility. The noise of the microfiltration and reverse osmosis equipment makes it desirable to provide enclosed, acoustically private areas for interpretive media relating to the facility. The first of these areas



Visitor Circulation

is housed on the second level of the north node. The educational displays within this area are directed toward water processes utilized by the AWTP. A variety of models, graphic displays, and interactive computer stations will tell the story of the facility and its processes, what it does and how it does it.

This interpretive area is placed at the separation of microfiltration and reverse osmosis. The windows from the area, overlooking these processes, will give a commanding view of the high technology equipment.

The visitor exits the north interpretive area and continues south on a catwalk structure, past the reverse osmosis equipment and the ion exchange process, toward the south node. The ion exchange process is opened up to the visitors with a viewing window running vertically down its east side.

AWTP
Visitor's Circulation
Version 22.0
The visitor is given complete visual access to equipment from a separate and controlled mezzanine level.

The mezzanine level of the south node houses the south interpretive area. This area is dedicated to interpretive media examining more expansive water, waste, and environmental issues of the region, exhibiting their sometimes simple and sometimes complex relationships.

The mezzanine level of the south node also houses public restroom facilities.

The tour path continues from the south node onto the roof of the adjacent ozone generation equipment, cooling equipment, and ozone destruct equipment. Skylights provide visual accessibility to equipment.

A ramp leads off the north side of the roof of the ozonation buildings and wraps around them to the west, and delivers the visitor to the equipment level on the east side of the building. Visitor circulation shares the staff circulation area along the east side of the pump station then continues off the south end of the facility on another ramp. Carefully placed windows in the pump station facility allow the visitor to see into the motor control room, the pump room, and into the clearwell.

The visitor exits the facility on a ramp engaging the excess area of the landscape. This leisurely transition of elevation, toward and through a luscious landscape, provides a pleasant repose for the finish of the facility tour.

The landscape of the "excess area" references a traditional English pleasure garden, an important chapter in the history of landscape design. These picturesque gardens, developed during the seventeenth and eighteenth centuries, were influenced by the idealized vision of landscape by painters such as Claude Lorrain and Nicolas Poussin.

The natural composition of landscape elements in this area contrast with the strict engineering order and geometry of the facility, the architecture, and the "absence" portion of the landscape. This landscape is lush, green, and consists of very carefully composed elements of trees, other plant materials, rocks, and sculpture.

At the end of the ramp, the visitor returns to the starting point at the Eastgate Mall tunnel.

The Roof Membrane

At Malcolm Pirnie's request, the Art Team conducted a number of studies to reduce the cost of the project’s architecture. Occurring at the time same time that we where exploring ways to empower the architectural design, we explored reducing the length of the roof membrane—exposing the processes at the south end of the facility to view from outside. This development resulted in a significant cost savings, while diversifying and strengthening the architectural design.

Materials and Finishes

The structural components utilized for the main linear space are of pre-engineered construction which provides for a substantial cost savings over other alternatives. This structure supports the roof and wall membranes, which are lightweight.

The design allows for great flexibility in the choice of materials for the roof and wall membranes. Moderated by their location in the facility (i.e., roof membrane versus wall membrane between equipment and the entrance ramp), the criteria for these choices include functional concerns such as initial cost and life, and ability to contain or transmit light and sound.

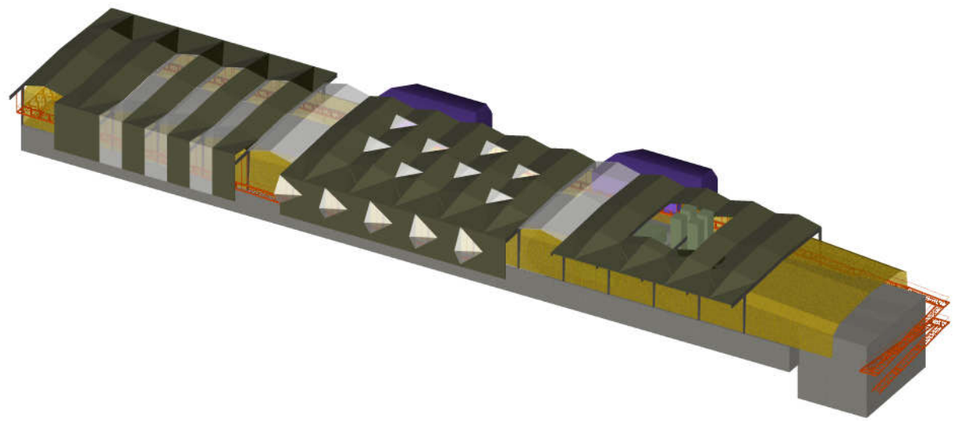
The metals selected for the roof and wall membranes, as well as smaller elements and details of the facility, involve a trade-off between higher initial cost and longer life or lower initial cost and shorter life (faster deterioration). The next phase of the project will include research on these choices. We expect the study to include painted steel, galvanized steel, aluminum, copper, lead-coated copper, zinc, and stainless steel.

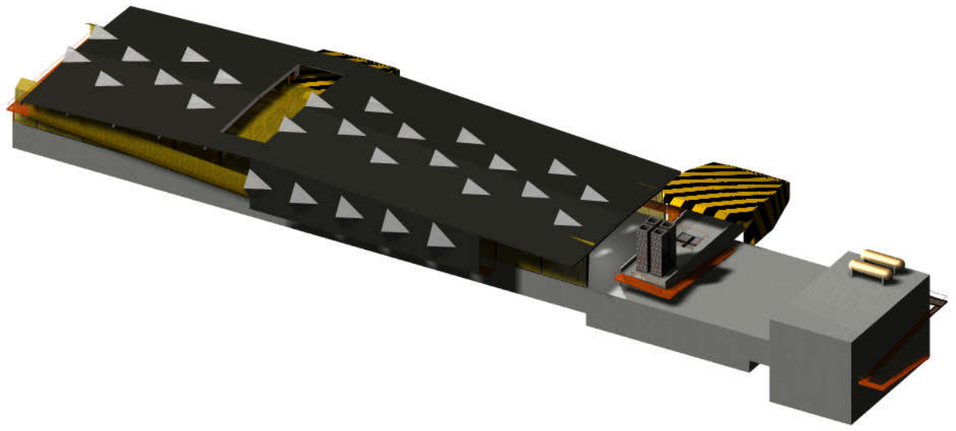
The composition of the architectural membranes and forms reflect the different processes within the plant. This composition uses natural light as well as membrane material and color. The Art Team will continue these material studies in the following phase of work.

An issue that arose during the design process was the expression of the industrial nature of some elements of the project. This discussion focused on two distinct elements of the facility: the viewing of the ozonation and pump station areas from outside the facility, and the visual treatment of the nodes.

The design strategy adopted by the Design Team—of revealing the technology of the project—suggests two possible responses. Either deliberately exposing elements of the facility to outside view and designing them to be viewed by the public, or veiling the technology with architectural materials that symbolize, signify, or index what is being veiled.

The Art Team was instructed to screen the chemical storage facilities, housed in the nodes, from view. To express the nature of what is housed in these structures, the Art Team proposed marking these nodes with yellow and black diagonal stripes. The team





Above right:
AWTP Preliminary Study
South-West Axonometric
Version 17.0

Right:
AWTP Preliminary Study
South-West Axonometric
Version 21.0
Architectural studies included examination of roof membrane length and material colors.

will continue to study options of exposing the storage facilities or coloring the nodes in a manner that will index them as potentially dangerous chemical storage.

Conclusion

Water projects are symbols of the civilizations that build them. The care, attention, and importance we exercise upon a new and unique infrastructure project such as the Advanced Water Treatment Plant says as much about our civilization as any library, museum, or symphony hall ever could.

The visionary leadership of the Metropolitan Wastewater Department has provided a unique and profound opportunity for the Design Team to make a valuable contribution to the urban landscape. We will build a monument that embodies our long and complex history of survival in a desert, a working monument that is the first of its kind.

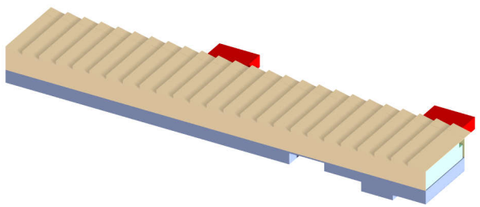
The Art Team has responded to the project's criteria with an extremely functional design, of relatively low cost. The Team has considered ease of maintenance and operations in every element of the design. We have endeavored to create a project that is worthy of housing both the technology as well as the devotion and aspirations of those who strive to provide for San Diego's citizens.

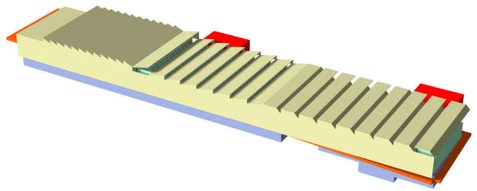
People from around the world will be eager to visit this facility. Its use of revolutionary technology offers solutions to water supply problems worldwide. The sophistication of the architecture and landscape of the AWTP make this facility an international showcase for San Diego's pioneering use of membrane technology.

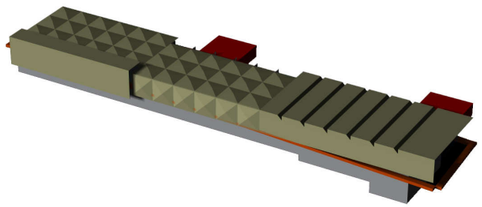
The Design Team has designed the plant in a manner that reflects our awareness of the magnitude of this unique and profound project, and the pride that we have in its creation. The Advanced Water Treatment Plant will stand for many years, as a symbol of the people of San Diego as well as the engineers, designers, and artists who built it.

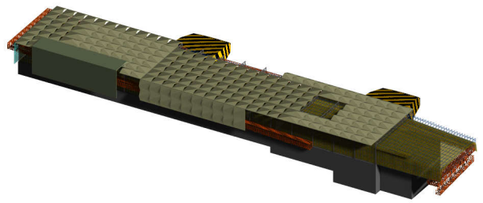
AWTP
South-West Axonometric
Version 22.0
View of the facility from the top of the prism.

Left to right:
Version 1.0
Version 2.0
Version 3.0
Version 14.0









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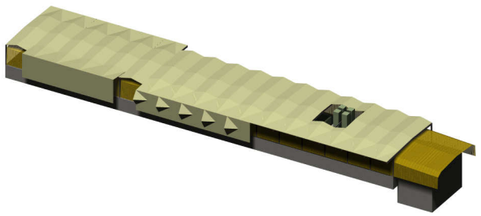
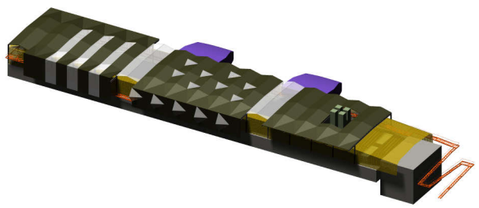
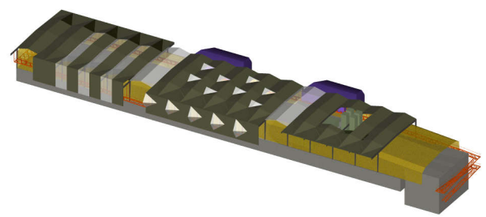
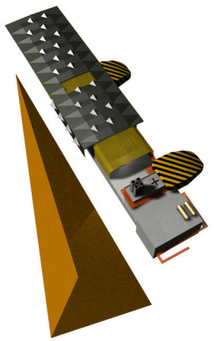
Version 15.0
Version 16.0
Version 17.0
Version 18.0









Left to right:
Version 19.0
Version 20.0
Version 21.0
Version 22.0