

**October 19, 1982**

**Sheet 1, Photos A, B, C, D, E, F, G, H, O, P**

This series of photographs marks the beginning of the rebuilding of the San Francisco Cable Car system. The photo documentation process (of the rebuilding of the system) started on the first day of that San Francisco transportation agency Muni shut down service on the entire California and Powell Street Cable Car system.

The Cable Car Barn located at the corner of Mason and Washington Streets was the original building built sometime around 1887. This building houses the mechanisms that power both the Powell Street line and California Street line. The photos in Sheet 1 start with the demolition process the day after the system was shut down. The rebuilding process was a highly complex project that had an "accelerated" construction schedule.

The building itself was (before the reconstruction project) an un-reinforced masonry structure. As can be seen from these photographs the building and its interior were largely untouched since it was built in 1887. Several sections of the building show signs of damage (as seen in Photo "D") from old age and earthquakes that frequent San Francisco region.

The Cable Car operating equipment in the Cable Car Barn was almost all the original equipment installed in 1887. It should be noted that there was a small reconstruction project that took place in the 1960's that resulted in the replacement of the large main sheaves and drive shafts (as seen in photos "M", "N", and "P") and several other small pieces of equipment. Except for this small renovation project in the 1960's the entire system was in continuous operation since the late 1800's and remained in fairly good condition since that time.

This series of photographs starts on the first day in the 18 month construction process. The Cable Car reconstruction project (in its entirety) was spread out over several miles of city streets. The photographs contained in these volumes are a detailed representation of the processes used to rebuild every part of the Cable Car systems.

The Cable Cars operate on a "cable griping" system where the Cable Car grabs or grips an underground moving cable. This cable is a continuous cable loop that is powered by motors located in the Cable Car Barn. Sheaves in the Cable Car Barn are under kept under constant pressure as the cable is connected to a sliding tension platform. This allows for the expansion and contraction of the cable during heating and cooling events. Smaller sheaves are also located at every turn on the entire system that allows the cable to make loop and turns along the two routes.

The "cable" system runs under the city streets and has a "slot" that allows the Cable Car Grip men to operate a lever in the Cable Car that tightens a gripping mechanism onto the moving cable. The slot is in the center line of the track over a trench where the underground cable runs continuously along the entire two lines. Gravity on the downhill sections of the line move the Cable Cars but the cable is ever present on every part of the system.

Much of the equipment shown in these photographs was scrapped and replaced with newer and more efficient equipment. These photographs are the only record of what equipment was in place at the Cable Car Barn at the time it was demolished in October 1982.

**October 19, 1982**

**Sheet 2, Photos A, B, C, D, E, F, G**

During the photographic process, several hours would pass before certain activities could be photographed. The following photograph, taken several different times and at several different shutter speeds, was taken while I was waiting for the Contractor to move a crane into position. If this photo is examined the viewer can see the tip of the crane and two workers at the far right corner of the photograph. These workers were assisting the crane operator move his crane into position (to lift and remove the two large sheaves at the center of the photograph).

It was one of those moments that photographers wait for in the course of their work. Specifically, it was the chance to get the perfect photograph at the right time and place. This photograph is of the sunrise coming up over the houses across the street from the Cable Car Barn. When this picture presented itself I ended up shooting a whole roll of film on this single shot. These edited shots turned out to be one of biggest sellers during the construction process. In fact, it almost financed the entire cost of the photo documentation process for this project.

As a footnote to this photograph I'd like to mention that during the many years of Cable Car operations the Cable Car barn became soiled with years of built up grease from the equipment. During the demolition process of the old Cable Car equipment the Contractor's workers took metal cutting torches to everything in the effort to remove this equipment efficiently in keeping with the tight construction schedule. The sparks for the torches set the grease on fire and produced copious amounts of smoke. That smoke in the Barn is what enhanced the sunlight that is seen coming in the windows making this one photograph my biggest seller.

**October 20, 1982**

**Sheet 3, Photos A, B, C, D, E, F, G, H, I, J, K, O, P, Q, R**

As a part of the photo documentation process I decided to monitor (on a weekly or bi-weekly basis) the exterior progress of the Cable Car Barn building. Photo "A" is the first in this series of photographs that were taken from the same spot for the duration of the project. This location is at the corner of Washington and Mason Streets or the Southeast street corner that will be the focal point of progress photos over the next 18 months.

In Photo "B" the upper floor of the Cable Car is clearly visible. This section of floor is later demolished and is replaced towards the end of the project. This area is the storage part of the building for Cable Cars when they are not in use.

Photo "C" shows the old electrical equipment that is clearly newer in origin (date unknown) but certainly old by the electrical standard of 1982. This equipment was demolished and new electrical replaced this outdated switch gear boxes.

The remaining photographs on this page contain some interesting shots of the Cable Car machinery that was the heart of the Cable Car system. Demolition of this equipment presented

several challenges to the demolition Contractor. Low ceilings (for crane extensions) and the open tension pits made this job very difficult and the Contractor spent considerable time moving equipment over and around it.

NOTE: The "Tension Pit" was aptly named as it is the area where the cable sled sat. The cable sled was a self moving devise designed to keep a constant pressure on the cable that runs under the street. As the temperature changes the cable will either expand or contract accordingly. The cable sled would move in one of two directions to keep the cable taut and at an even tension.

In Photo "H" there is a large yellow crane in the background. It took the Contractor two days to move that crane into position before it could be used. Once in position, the crane could move forward and backwards as needed to remove the old equipment.

Photo "Q" and "R" shows the main driving gear rod that turned the main cable sheaves. The two sets of sheaves were designed to have the cable rap around them in a figure 8. This provided the needed rigidity to keep the cable from sliding on the sheaves. This figure 8 design was clever as the cable is always covered with grease to keep it moving freely. Without the design the figure 8 design the cable would not move as the weight of the cable and the many different turns on the Cable Car line would make it slide on the main cable sheaves. Notice that the two main cable sheaves come in two pieces. These sheaves were saved and used again towards the end of the project. These are the sheaves that were replaced in the early 1960's according to the Cable Car Barn supervisor.

**October 20, 1982**

**Sheet 4, Photos A, B, C, D, E, F, G, H, I, J, K, L**

Photos A, B, G, K, and M show how the two main sheaves are separated. This design locks the main drive shafts into place between the two halves of the sheaves. The crane that was moved into position over the tension pit is used to remove the equipment as it comes apart. The drive shafts are quite substantial and are made of high grade steel and are perfectly balanced for turning these sheaves. Inquires into whether these drive shafts were also replaced in the 1960's were unanswered. However, given the quality of the steel and the machined parts it is suspected that these main drive shafts were replaced during the upgrades in the 1960's. It is unfortunate but these drive shafts were considered to be junk and were sold for junk steel.

Photo F show the "bearing house" that the main drive shafts sat in. Made of solid brass the bearing housings were grooved on the inside curved part to allow oil to flow freely around the shaft. These brass bearing units were junked.

Photo H, I, are more pictures of the main sheaves as they are being removed and stored at a MUNI facility at Pier 70.

Photo E shows the condition in which the Cable Car Barn was left before MUNI shut the system down for replacement. Much of the building was trashed by personal before they vacated the building.

**October 20, 1982**

**Sheet 5, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

It should be noted that certain photos in this collection several are of questionable quality as lighting in the Cable Car Barn was shut down. Having shot close to 50,000 photographs many were edited due to lighting problems (only) and for other reasons including repetition of sequences that didn't require constant coverage.

Photos A, B, and C are quite dark but are still discernible. As the winter months were approaching and work with starting at 6:30 am lighting was always a problem in the morning. Likewise the Cable Car Barn is a large building and with the electrical power shut down the building was always dark.

At the start of this project and during the removal of the old Cable Car equipment it became apparent that I was the only photographer on site to record these pictures. These photographs are the only known photographs of the removal of the old equipment during the two months it took the City of San Francisco to realize that I was the only person taking photographs of this project. At that time I was approached by the City and asked to be the official photographer. Because of copyright issues I turned down this offer and another photographer was hired to document this construction project.

Photographs D, E, F, G, H, I, J, K, L, M, N, O, P, Q, and R continue to document this removal of equipment as it is disassembled. At the time I took these pictures of the old Cable Car equipment being removed from the Barn it was clear that this equipment would never be seen again once it was removed.

**October 20, 1982**

**Sheet 6, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is a group of unknown MUNI employees who worked in the Cable Car Barn when it was in operation. The gentleman on the right was the facility supervisor who had an extensive knowledge of all the equipment in the building. He was my main source of information concerning the finer details of the equipment.

The remaining photographs are shots similar to those already taken and should have been edited. However, edited photographs ended up in the trash so I made an effort to keep any photograph that was viewable. Most of these shots are of the main drive shafts that power the large sheaves. Photo "I" shows the green bearing housings that bolted over the drive shafts and housed the copper bearing pads. Oil was continuously injected into these casings to lubricate the bearings as seen in Photo "N" to turn the drive shafts.

Photo "K" shows the tension sled sheaves being removed from the tension pit.

**October 22, 1982**

**Sheet 7, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo "A" will become a familiar photo documenting building progress. As mentioned this one view will become a mainstay of photo progress taken during every few days or weeks. This was week 2 so the outside of the Cable Car building was again photographed from the corner of Washington and Mason streets.

The remaining photographs show various out buildings at or around the Cable Car Barn site. Everything out building seen was scheduled for demolition and has long vanished from the Cable Car Barn.

Photograph "F" shows a low-boy trailer hauling the main cable sheaves away. MUNI had a facility at Pier 70 that housed all the Cable Cars and some selected equipment slated for use again. There will be photos of Pier 70 and the Cable Cars at this location in are contained in later photographs.

Photo "M" shows the upstairs storage tracks for the Cable Car Barn. During operation many of the Cable Cars were housed at night in this location. Photo "O" was taken from one of the rooms on that floor.

**October 26, 1982**

**Sheet 8, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

During the course of most construction projects it should be noted that the prevailing view of contractors is that "time is money." As will be demonstrated in the photos contained in this series of books is that this project was on a very tight time schedule with many construction constraints. The removal of the old Cable Car Equipment had been nearly completed in just 5 days. With the old equipment now out of the Cable Car Barn it will be full blown demolition job to gut the entire interior of the building, the roof, the second floor, the concrete slab at ground level, and demolition of all electrical panels.

Each of the photographs contained in this sheet show some form of demolition processes taking place. For the most part this part of the work was simply focused on tearing down anything except for the exterior un-reinforced masonry walls which would be stabilized and reused.

Photos "L", "M", "N", and "O" are taken from the upper part of Washington Street. At this point of the project the only work is that found is at the Cable Car Barn. Street work on the California and Powell Street lines had started with the relocation of many underground utilities at selected locations. The demolition of the street Cable Car rails and infrastructure was scheduled to start within days of this photograph.

**October 28, 1982**

**Sheet 9, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

This grouping of photographs on Sheet 9 shows the demolition work in progress at the Cable Car Barn. As can be seen the demolition work was crude and destructive and most everything was gutted and trashed at that time. The small tractor shown in these photographs basically was a tool used to rip out wood walls and other elements of the Barn.

As mentioned, once the demolition work is complete only the exterior walls will remain in place. Having the ability (in this narration) to look back in time I will interject certain facts about the project that would later become major construction issues affecting the project schedule and the project budget.

**October 28, 1982**

**Sheet 10, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo "A and B" are the first in a series of photographs of Public Relations photos. In this photograph MUNI moved one of their Cable Cars to the Embarcadero Plaza as a part of what will be an ongoing reminder that San Francisco is working on this restoration project.

As mentioned, this project has several dozen construction sites all located on the two Cable Car lines. In an effort to photo document the reconstruction process I decided that there was no need to photograph each of the individual construction sites as the work (on this project) was very repetitive in scope and nature at every location. Thus, certain activities like demolition of the existing track area on the entire system or excavation of the street for utility relocation are represented by one or two series of photographs.

The remaining photographs contained in Sheet 10 shows the start of the street work in various locations on the California Street line. Much of what is shown in these photos is the demolition of the Cable Car tracks and associated underground vaults that contained the small sheaves that carried the underground cable around corners and bends in the street.

**October 28, 1982**

**Sheet 11, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

Photo "A, B, E, I, J, L, O, P" takes us back to the demolition of the Cable Car Barn. The demolition at the Cable Car Barn is pretty much everything that is inside the building. Once complete, only the exterior walls will be left in place. A very large part of the reconstruction process was focused on maintaining the building structure in its original style.

Photos C, D, F, K, M, N, and Q shows the Contractor starting to stage the construction of lumber starting on the California line. At this time there is only superficial work taking place as the

staging of lay down areas (areas where material and tools are stored) were being installed by the various Contractors.

**November 3, 1982**

**Sheet 12, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N**

Photos A and B were taken on the California Street line. Demolition of the old Cable Car line is now about to start in earnest. The first order of business is to remove the Cable Car tracks and associated infrastructure such as the cable trough and pulleys that assist the underground cable in its continuous loop back to the Cable Car Barn.

After the demolition of the tracks the area under the old rails was excavated. New structural fill materials were installed to provide a solid and stable base for the new infrastructure and rail system.

Photos C, D, E, F, G, H, I, J, K, L, M, and N show the continuing effort to gut the interior and selected exterior areas at the Cable Car Barn. Demo work of the upper storage track area as shown in Photo I shows dirt or soil being removed. This is the first part of the work (besides demolition work) that is being done to actually start the rebuilding of the Cable Car facility.

NOTE: This series of photographs will become very important at a later time as they document the soil conditions at this location. The area under this section is held in place by very old and structurally unsafe brick retaining walls. This existing condition will later impact this project on a very large scale. This will be discussed in later notes such as this.

**November 3, 1982**

**Sheet 13, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs on this page show the start of work on California Street. Photo H and L shows the start of the removal effort on taking the Cable Car track out of the street. The work shown in this photograph shows workers removing sections of street (about every 30 feet) and cutting the rails and Cable Car slot. The cutting of rail is the first operation to take place before the large excavator comes in and rips this material out of the street. Old rail and steel would be dumped as trash.

Photos M, N, O, P, and Q show some of the first deep excavations that were made on the California Street line at the start of the project. As trenches are dug the sides of the excavations must be "shored up" so that workers can safely enter the trench. In these photographs, the trench that is shown was dug deep to relocate underground several underground utilities that were either in the way or in need of replacement. The shoring of trenches like this is a common method of protecting workers while maintaining the surrounding soil. Without shoring, the banks of the trench would collapse endangering the workers and the surrounding buildings.

NOTE: It should be noted that besides the obvious project scope to rebuild the Cable Car system the City and County took the opportunity during construction to replace some of the aging and damaged sewer, water, gas, electrical, and other infrastructure that was old. These photographs (with the installed trench shoring systems) would soon become common place on the entire Cable Car project.

**November 10, 1982**

**Sheet 14, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

Photos A, B, C, D, F, G, H, I, K, N, O, P, Q show the continued efforts to remove old equipment and "other" structures inside the interior of the Cable Car Barn. Photos A, B, C, and D show workers removing the old windows from the Barn. None of this material was saved due to the age of everything.

Photos E, I, K, L, AND M show some very aggressive progress being made at the exterior of the Cable Car Barn.

NOTE: The grading operations shown are at the exterior of the upper floor of the Cable Car Barn that housed the Cable Car fleet at night. This area above and behind the Cable Car Barn required that huge amounts of soil be removed. Once the area was excavated, structural fill was reinstalled to stabilize the sub surface area. This operation is central to several major changes to the scope of work on this project. While these issues are generally not mentioned in narratives like this I will endeavor to provide an accurate picture of the work as it was executed.

**November 15, 1982**

**Sheet 15, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A shows the exterior of the building as work progresses. The progress of rebuilding the exterior of the Barn can clearly be seen as workers start to demolish the exterior sidewalks. Note that the Contractor's construction trailers are being set at this time. Useable space on this project was at a premium and the various Contractors's got quite creative in how to use what space was available.

Also of note is the fact that there is a very large underground vault structure under the intersection of Washington and Mason Street directly (in front of the camera). This unseen vault houses several large sheaves that disburse and or channel the moving cable on it designated route. As the underground cable comes out of the Cable Car Barn so did it make its loop around the California and Powell Street lines as it passed under the street.

Photo B shows just how unstable the exterior of the Cable Car Barn had become. The section of collapsed brick peeled off during the excavation in this area. Several large sections of this old un-reinforced masonry wall soon became a problem during the construction operations forcing the Contractor to take extra ordinary measures to preserve the structure.



Photo C, F, G, H, and I were taken from the roof of the Cable Car Barn and looks down on Mason Street with great views of the San Francisco skyline.

Photo K shows the upper floor (Cable Car Storage area) and shows the demolition of the rear doors to the area where the Cable Cars were stored at night.

Photos M, N, O, P, Q, and R were taken at Pier 70 in San Francisco. Pier 70 is the warehouse where all the Cable Cars and reusable equipment were stored during construction. Shown in these photographs are the large turning sheaves that were first removed from the Barn. In these photographs we see that these sheaves are being sandblasted to remove the old paint and rust. Once that operation was completed the sheaves are stored in this warehouse until needed again a year later.

### **November 15, 1982**

#### **Sheet 16, Photos A, B, C, D, E, F, G, I**

Photos A, B, C, D, E, and F were taken in the lowest part of the Cable Car Barn. On this day I was having a problem with my flash unit resulting in some very dark photographs. With little to no sunlight in the Barn the darkness would eat the light from the flash and only the subject matter would be captured. Each photograph taken was kept for future editing that never happened. All of the work shown in these photographs is unremarkable and similar to other photos of the demolition process.

Photo's G and H are taken at Pier 70 and show the sandblasting operations as well as the storage of the Cable Cars.

### **November 15, 1982**

#### **Sheet 17, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos in this sheet were taken at the Cable Car Barn where demolition work continued. It should be noted that there is 17 months left in the project time table so time was at a premium. Within that time frame the entire Cable Car building needed to be reconstructed in addition to having all the new Cable Car equipment installed. Likewise, the entire street sections of the California and Powell Street lines needed to be dug up, utilities improved and/or replaced, and new track sections and infrastructure installed.

This project always had this very tight time constraint placed on it and the Contractor's working on the project all have aggressive schedules. Activities within the schedule have been stacked meaning that several different kinds of work will be taking place at the during the same time period.

Please note that all the old Cable Car equipment is now almost gone and only a few pieces of old and unusable equipment are still on site. Photograph K shows the last remaining sheave sled that is ready to be removed to Pier 70.

**November 15, 1982**

**Sheet 18, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Sheet 18 marks the first time that I've started to make the serious trips to other project sites in search of different construction activities. Most of the photographs are taken on the California Street line as this section of track was started first. Photograph F was taken at the turn-table at Fishermen's Wharf which was also slated as a Contractor lay down area. In later construction the contractor used this area as a material storage area.

The scheduling of all the construction work as mentioned was quite complicated. Work at these different locations didn't have any particular sequence that stood out but it must be understood that every construction activity that took place was carefully planned out and executed in sequences or phases.

Photograph Q was another attempt to capture a picture of the stored Cable Cars at Pier 70.

Photo I and R show the back of the Cable Car Barn at the west end of this facility.

NOTE: While the Cable Cars were being stored MUNI crews would take advantage of the time to replace broken parts on the Cable Cars. The carpenters who worked on these cars were all very talented trades' people who took great care to keep the Cable Cars in their original condition.

**November 30, 1982**

**Sheet 19, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N**

Work at the Cable Car Barn is rapidly becoming a major center of construction activity. Photos A, B, C, D, E, F, and G show the continued demolition of the building. In these series of photographs the electrical lights and electrical panels are being removed.

Photograph I shows the upper Cable Car storage area being graded. Winter is starting to settle impact this soils work and the area will remain muddy for the next few months. All earthwork operations will be limited to dry weather as the wet conditions make working the soil impossible.

Photograph M and N mark a major milestone in the project schedule. A very large dirt drilling machine has been moved into the Cable Car Barn. Work on the new building foundation has been started and these pictures show the caissons being drilled deep into the area within the building footprint.

In addition to the drilling of the building foundation additional drilling was scheduled at the exterior of the building. During the next few weeks these exterior walls will be the focus to install exterior steel support that will provide a steel frame to support these exterior un-reinforced brick walls.

As mentioned, the project schedule for this project will start to make the construction activities very interesting as the project had many “stacked” construction activities. These stacked construction activities make life within the project increasingly complex due to the many different types of work that was being performed within the same time frame.

NOTE: During this time period it was discovered during the demolition process that the Cable Car Barn didn't have any foundations along the exterior walls or within the building itself. The term “change order” is about to become a very familiar word around the Cable Car Barn as “unforeseen” conditions are starting to be uncovered as work move forward.

A change order is a method to compensate the Contractor for work considered extra or outside the original scope of work as identified in the construction contract documents. Usually extra work is associated with existing conditions that were unknown or unforeseen. More of this subject matter will be discussed in photographs further along in this series.

**November 30, 1982**

**Sheet 20, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This entire sheet of photographs was all taken within the Cable Car Barn. Photos E, I, J, K, L, and M are exploratory work at the interior and exterior of the building to determine the extent of the lack of proper building foundations.

Photograph E shows one of the exterior walls sitting on no foundation under it. This discovery added extensive work scope to the project and played havoc with the construction managers who scheduled most of the project construction activities.

Photographs J, K, and L show the bottom level of the Cable Car Barn. Most notable are the “buttress” type walls that support the entire city block behind the Cable Car Barn. These structures as shown in these photographs show a very limited support structure for the large land mass behind these walls.

NOTE: In later photographs these walls will be the focus of yet another very large change order to address unforeseen conditions as covered under the current contract. This un-reinforced brick wall has several “buttresses” that support the weight of the hill behind the Cable Car Barn (as can be seen in Photo J, K, and L).

**December 1, 1982**

**Sheet 21, Photos A, B, C, D, E, F, G, H, I, J, K**

Each of the photos shown in this sheet is taken at the Cable Car Barn. Demolition work continues to move forward and the building is systematically being stripped of its interior walls and equipment.

Photos A, B, C, and D shows that all the old windows have been removed and that area is devoid of rail and equipment. Photos C and D show the inspection pits at the upper Cable Car storage area. These pits were used to inspect the under carriage of the Cable Cars before they started service on any given day.

In Photo E and F (the background) reinforcing bar has been moved in for several of the caissons that have been drilled. With the wet weather of the last few days the exterior soils work came to a halt. The area soon became a staging ground for several construction activities.

Photo G shows the continuing demolition activities taking place. With the equipment now removed the process of gutting the entire structural floor has started. Removal of this floor section includes the demolition of the tension trenches and motor foundations. The entire interior floor will be removed and replaced during the lifetime of this project.

Photo K shows just how conditions can quickly change. This section of floor covered an open area that was not known about.

### **December 1, 1982**

#### **Sheet 22, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B starts this series with the bi-weekly shot of the Cable Car Barn progress. As can be seen the building is starting to look like the stripped down building it is. Gone are almost all the windows and doors.

The remainder photos document the demolition process as it continues.

### **December 9, 1982**

#### **Sheet 23, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

All photos on this sheet are photos taken because I liked the view. All are shot at various camera apertures and at various exposures to take advantage of the lighting and window symmetry. I also like having Coit Tower in the photographs.

It should be remember that as a photographer I needed to sell photographs to fund this project. Film processing can be expensive and I was not being paid for this effort. Thus, I was always on the lookout for photographs that I could sell.

### **December 9, 1982**

#### **Sheet 24, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Besides the view, much is happening at the Cable Car Barn. Work at and around the exterior of the building has been started. Photo A shows the demolition of one of the underground vaults at the Northwest corner of the Cable Car Barn. This vault housed two rather large sheaves that the

underground cable used to get around the corner of the building. It must be remembered that the Cable Cars need to use the underground cable to move. This location is the entrance to the Cable Car Barn and is an uphill run into the storage track area so the underground cable was needed to enter this area.

Photo D is a shot taken out of the second floor window. It shows an Iron Worker tying rebar for one of the many concrete pours. The exact location for the placement of this rebar cage is at the corner of Washington and Mason Streets.

Photo E shows that the Contractor has excavated the Southeast corner of the Cable Car Barn. This excavation was "change order work" or "extra work" to install a building foundation under the exterior brick wall. The placement of the building foundations was the cause of great concern as it added several weeks to the very tight project schedule.

This slippage in the schedule is worthy of mention because the then Mayor of San Francisco, Diane Feinstein, was very concerned about the Democratic Convention that was coming to San Francisco mid in 1984. Because Cable Cars were so much a part of San Francisco she insisted that the Cable Car Project be completed before the convention started in July of 1984. Diane Feinstein made it clear at several press events that she expected this project to be completed in time for that event and was often quoted as reminding the construction managers that "heads would roll if this project was not done on time."

Photo F, J, O, Q, and R shows construction workers drilling and installing caissons at the upper section of the Cable Car Barn.

Photo I is a nice shot of the embedded steel plates used to hold the exterior wall supports. These supports will soon become the only thing holding up the exterior brick walls. At this point of the project the second floor and roof structures gave adequate support to the building exterior walls. Given the age of the building there was great concern that these walls would collapse if they were not supported before the second and roof sections were removed. Please note that these embedded (with concrete around them) plates in this photograph are upside down.

## **December 9, 1982**

### **Sheet 25, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is representative of construction activity call "potholing". Usually this term is used when underground utilities need to be found and documented prior to excavations. It is very important to know where things are before excavation starts. The work is almost always done by hand to avoid the potential of damaging whatever underground utility is being sought.

Photo C and D were taken after almost two weeks of no rain. The ground became dry enough that earthwork operations could be started once again.

Photo E is kind of funny if you're in the construction business. The humor is in the fact that the construction schedule for the project was very tight and contained multiple construction activities

taking place at the same time. In this photo a crane has moved into the area where earthwork operations were taking place. The earthwork Contractor had been shut down for over a week due to the wet soil conditions and was greatly offended that this crane had moved into an area under construction. Often when I was on site there were many heated arguments about who was going to occupy a given area at a given time.

Photo F shows a rebar cage that is ready to be set in the recently drilled caisson hole. These caisson cages were about 40 feet long meaning that the drilled caisson was slightly deeper than the 40 foot cage. The crane mentioned about was there to install these rebar cages.

Photos G, H, I, N, M, N, O, P, Q, and R show yet another unforeseen condition on the project site that was uncovered. When the Contractor started to demolition of the underground vault they found an underground fuel tank nearby. As can be seen from the dirt in the photograph this black dirt material contained year's contamination from fuel that leaked into the surrounding soils. There are not actual photos of this as I had not been on site for about 8 days.

Photos B, J, K, L, and M show general shots of the surrounding area at the Barn.

## **December 22, 1982**

### **Sheet 26, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is the usual bi-weekly photograph of the outside of the Cable Car Barn.

Photos B, C, D, and E show the smaller size caissons being drilled. These caisson foundations were installed to support the exterior steel supports for the brick walls. Once filled with concrete the embeds that were shown in the last grouping of photographs were set into the fresh concrete with the flat steel plate on the top of the caisson foundation. Steel I-beams would then be welded to these plates.

Photos G and M show the interior first floor of the Barn. As can be seen the concrete floor slab has been completely removed. The steel columns that are seen in this photo will not be salvaged and they are scheduled to be demolished in the very near future.

Photos J and L show the retaining wall that supports the upper section of the hill where the Cable Car storage area is located. It has become apparent to the Designer of Record that this wall is support a tremendous amount of weight from the hill above the Barn. There was some real concern that given the age of this wall and the bearing weight from the soil that the wall could not be salvaged.

Photos O, P, and Q show just how tight space was in the Cable Car Barn first floor. The smaller tractors in this photograph had to be used because bigger machines would not fit in the spaces below.

Photographs M and R show the very large drilling rigs working at the exterior of the building.

**December 22, 1982**

**Sheet 27, Photos A, B, C, D, E, F, G**

Photos A, B C, and E show the interior of the Cable Car Barn in detail. As can be seen the area is pretty much dug up and clear of building debris and equipment.

Photos D, F, and G again show the drilling rigs at the exterior of the building. These drilling rigs are drilling the foundations for the exterior wall supports and new building foundations.

**January 11, 1983**

**Sheet 28, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

Photos A, B, C, D, E, F, G, H, K, J, K, L, and M show the interior of the Barn on the first floor. Excavation of this area is currently under way and dirt spoils are scheduled to be removed the next day. There is not much to see except that I was having fun with the existing sunlight that day.

Photo N shows several people standing around talking. Whenever I see groups of people discussing construction issues I've learned that there is a problem being discussed. In this case the Engineer and Designer of Record were on site to address retaining walls at the first floor of the Barn on the West side and the upper West retaining wall supporting the hillside that is directly above it. As mentioned in earlier photo shots these two walls quickly because the subject of conversation.

At this time was that the upper retaining wall had been found to be moving several inches toward the downhill side. Given that there are residential homes above this wall it was apparent that something needed to be done to correct this problem. The people in these pictures are the engineers of record for this project. There will be more photos and information on the corrective actions in later pictures.

**January 11, 1983**

**Sheet 29, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, and H show the installation of the first structural steel building support. These exterior steel wall supports will maintain the integrity of the un-reinforced brick walls. During construction the amounts of vibration from construction made a full collapse of these walls a real possibility. These steel frames totally support the exterior walls. Once in place metal bolts are drilled into and through the wall. These bolts are welded to the steel frame and a very large washer is placed on the interior of the wall to help support the brick.

NOTE: These supports also perform another function. Given the tight construction schedule it became necessary to perform what is called "work-around" solution to certain construction activities. This wall support system was brilliant in its design as it provided an opportunity to

shave 3 months off of the construction schedule. Given the unforeseen conditions of the project this 3 month time savings put the project back on schedule.

This is the sequence of work activities for the exterior walls. Once braces are in place and connected, the interior of the walls have rebar drilled into them. A lacing of rebar is installed on the interior section of the wall for the placement of a 2 foot thick concrete section. This concrete is applied via a spray method called shotcrete. Concrete is poured into a machine that then sprays it onto the wall under pressure. The concrete or shotcrete is then sprayed onto the wall until it reaches the desired thickness.

Here's the brilliant part of this design. The normal order of construction is that you start building something from the ground up to the roof. Because of the stacked nature of the construction activities for work as it was planned, the first floor work could not be interrupted for the planned sequence of this application of concrete. In order to pick up the 3 months of construction delay (due to bad weather and foundation problems) the project Construction Manager suggested that the concrete shotcrete application be started from the top down or from the roof to the basement. This radical approach to this application was deemed to be a workable solution to mitigate the current time delays.

Photos E and F show the exterior progress being made on the project. It should be noted that the steel frame that was set this day happened several hours after I took this photograph.

Photos I, J, K, L, and M shows once again the concern about the back retaining wall. With the Engineer and Designer of Record on site workers were called in to remove the vegetation on this retaining wall as shown. This visit was needed to ascertain the condition of this wall.

Photos N and M shows what is soon to become a common place event. Construction materials are now ready to be installed in the building. This delivery is of sewer pipe that will be installed below the floor level. Continued next page

**January 11, 1983**

### **Continuation of Sheet 29**

Photo Q is taken on the California Street location. Photo Q is a shot of the recently excavated California Street line. Without the Cable Cars the City is as empty as this photograph.

Photo R shows the construction lay-down area at the Fishermen's Wharf turntable area. The turntable at both Powell at Market and at the Fishermen's Wharf was one of a handful of old Cable Car pieces of equipment that was salvaged for later reuse. Each of the turntables were lifted off the pedestal and stored at the Pier 70 warehouse. During the next year they would be reconditioned and repainted before they are returned to their respective locations.



**January 11, 1983**

**Sheet 30, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and E show workers installing the exterior steel frames to support the un-reinforced brick walls of the existing building. This installation process is a fairly simple straight forward process. The steel frame is a prefabricated frame that comes in sections to the job site. As the sections arrive they are off loaded with a crane and set on the steel embedded plates. Once the units are set the workers shown in these photographs weld the now upright steel sections into place.

Photos C, D, F, G, H, I, J, K, L, M, N, O, P, Q, R show the condition of the interior bottom floor of the Cable Car Barn. In photo P we see a smaller drilling rig inside the building. Most equipment that would normally be used would never be able to fit inside the Barn. There was a much thought in the planning process about what equipment would be used in each phase of the project.

This photograph also illustrates how the construction schedule was planned out. In this case there were many activities that were critical to follow up activities planned in the future. Construction scheduling has always been a science and on the Cable Car Project it was an essential process that was carefully monitored by a scheduling team. As mentioned in this narrative I have mentioned that unforeseen conditions had already impacted the project schedule. Thus, planned work had to proceed in the normal sequence of the baseline schedule and work at the first floor interior had to be executed at the preplanned time.

**January 11, 1983**

**Sheet 31, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, and F show some of the existing underground utilities on California Street that were uncovered during the process of the new construction. Many of the underground utilities were very old and outdated. Several of these underground utilities were abandoned many years ago while others were unidentified when they were found. In photograph B there is an underground structure in the back center of the photo that looks like underground hole made out of brick. Several of these types of structures were found throughout the construction project of both the Powell and California Street lines. It was later determined that these were abandoned brick sewer lines installed in the late 1800's. Some of these old sewer lines were fairly small (about 3 feet in diameter) while other were large enough to walk in. These old brick sewers were quite beautiful as the workmanship was top quality. These structures were removed and/or capped during the project.

Photo G is a good representation of the effort to identify known underground utilities. As mentioned, this activity is called "potholing" and is meant as a way to identify, locate, and generally find out what's located underground. The work is usually done by hand, once the street pavement and concrete base is removed by jackhammer. However, as many of these

underground utilities were unknown or unrecorded these potholing activities were meant only to document the location of known utilities.

Photos H and I shows the very first new Cable Car rail being stockpiled. The location of this photograph is not known but stockpiles of rail started to become common place at several different location.

Photos J, K, L, M, N, and O show the Cable Car right-of-way being demolished and readied for the new construction.

### **January 18, 1983**

#### **Sheet 32, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, and E show some of the workers who performed admirably during the execution of work under a tight time constrained project sequence. These photos mark the first time I became interested in the men and women who worked on this project. During the photo documentation process I became friends with many of the workers on this project. Most of these construction workers realized the importance of the project and were excited about being a part of history.

Photo F is taken inside the Cable Car Barn at the back western retaining wall. As seen in some early photographs this wall was found to be supporting the upper section of the Cable Car storage area. The brick buttresses in previous photographs are being shorten and/or removed for the application of shotcrete. The new wall was designed to better support this existing retaining wall.

Photos G, J, L, M, N, O, P, Q, and R take us back to the upper retaining wall that was found to be slipping several inches. The condition of this wall prompted a serious effort to stabilize the hillside before it collapsed from the weight of the soil and homes above it. This photograph shows some temporary bracing being installed while the engineers of record worked on a solution to stabilize the entire wall. As mentioned this wall supported the entire half block of homes and apartments directly above and to the West of the Cable Car Barn. The seriousness of this problem was never revealed but the amount of concern it generated was obvious to those working on the Cable Car Barn. Given the amount of time, several days, that it took to issue a change order to the Contractor prompting them to install these braces was considered extraordinary and unheard of at that time.

Photos H and I also shows the effort to stabilize the upper West retaining wall. This work was an unforeseen condition not identified during the design phase of the project. Photo F and J shows workers installation of reinforcing bar with shotcrete being sprayed on to provide additional support to that upper retaining wall several days after the bracing was installed. Notice the area where the bracing was being installed and shotcrete was sprayed on. After the wall is shotcreted and given time for the concrete to cure these braces were removed and the holes filled.

Photos J, K, L, M, N, O, P, Q, and R show workers installing additional bracing to this western wall.

**January 18, 1983**

**Sheet 33, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P**

Photos A, B, C, D, and E show the same or similar work as found in the photo description from Sheet 32. Of interest is the area of this wall that was covered with plastic sheeting to allow shotcrete operations to continue in the winter weather. 1982-1983 had what was then dubbed an El Nino year. That winter experience some very heavy rain that played havoc with the construction schedule.

Photos F, G, H, I, J, K, M, O, and P are taken from the area above the retaining wall being worked on. Photo H is taken from one of the apartment houses looking out to their backyard.

**January 24, 1983**

**Sheet 34, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B are part of the continuing series of showing construction progress at the front of the Cable Car Barn. Of interest are the exterior wall braces that are being installed at this time. Not known to many people was the fact that these exterior un-reinforced brick walls were the cause of concern to the project engineers. During this phase of the project construction inside the Barn was causing vibrations the concern that the walls might collapse. Work on this installation of these braces was accelerated to address this concern.

Photos C, D, E, F, G, H, and I show the continuing effort to stabilize the back western retaining wall. At this time workers have removed the soil from the front of this wall to expose what concrete footing that supported it. Photograph C shows that the foundation section of this wall is being increased in size.

Photos E and M shows how the upper retaining wall was monitored by surveyors during the fortification of this existing wall. Overall it was found that this wall moved about 6 inches towards the downhill side of the Barn during the course of two weeks. Gone unchecked that wall certainly would have collapsed bringing down several of the apartments and homes above it.

Photos K and L show carpenters mass producing concrete forms.

Photos N and O show one of the many women who were a part of the rebuilding effort. In 1983 women were just starting to break into the construction industry. Being a part of the construction industry I experienced the transformation of the industry from an all male population to a construction industry that allowed women to work side by side with the men. In retrospect, these women were not very well respected and most men in the industry did not like the changes that were in the works. These photographs are some of my favorite in this series.

Photos P, Q, and R show the exterior un-reinforced brick walls of the Barn from the interior of the building. Photo Q shows that these exterior wall had no foundation of any kind. Brick was placed directly on some fill material of questionable origin and it's clear that there was a mix of junk materials used to support them. The entire wall section that runs parallel to Washington Street was completely removed of this questionable material and new foundations were readied to be installed.

**January 24, 1983**

**Sheet 35, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P**

Photos A, B, C, D, F, and H show the extraordinary efforts it took to install a wall foundation on the South wall along Washington Street. As can be seen workers had to hand dig the dirt at the bottom of this wall to install steel beams directly under it. These steel beams extended from the exterior of the wall, under it, and into the interior of the Barn.

Photos H, I, J, K, and L show the interior conditions of the Cable Car Barn. Nothing remarkable.

Photo M shows several utility workers shutting down the existing gas line to the Cable Car Barn.

Photo N shows the installation of a construction trailer. This trailer is scheduled to be used by the Construction Management firm in charge of the Cable Car Project.

Photo O and P show the exterior sections of the wall bracing then being installed. Note in Photo P the installation of reinforcing bar through the exterior brick wall to the exterior steel bracing. This reinforcing bar will be used for the installation of a reinforcing wall section before it is sprayed with shotcrete. The ends of these bars were then welded to the steel frame to provide additional support for the brick walls.

**February 2, 1983**

**Sheet 36, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B show workers exposing underground utilities. The horizontal steel beams shown in this photo are shoring that is holding up the trench. If examined closely in these photographs you can see that the workers have installed supports off of this horizontal steel support to hold up the underground utilities.

Photos C, D, E, F, G, and H show one of the very old San Francisco sewer lines that were uncovered during construction. These old sewer lines had been abandoned many years ago and were largely unknown. This old sewer line ran down Washington Street from the Cable Car Barn to the bay where it once drained.

Photos I, J, K, L, M, N, O, P, Q, and R are the first series of photographs that document the welding of the new Cable Car rails. This welding was very unique in as much as the rail is welded via a process called "cad welding." This process butts two separate pieces of Cable Car

rail up against each other. The two ends then have a small mold section is put around the rail ends as seen in Photos K, L, M, N, O, P, Q, and R. A larger bucket type devise is then set on top of this mold.

NOTE: See Sheet 37 for the continuous process not covered in this sheet.

### **February 2, 1983**

#### **Sheet 37, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

This entire sheet of photographs is a continuation of Sheet 36. The work in these photographs is of rail welding operations on California Street. In Sheet 36 the last group of photographs shows workers putting two separate lengths of rail together, the installation of a mold around the rail, the setting of the bucket over the mold that contains a two part material that produces a chemical reaction when ignited by a cutting touch. This Sheet picks up that sequence of work by showing the highly flammable being set off by the cutting touch. When fired off the two part material produces an extreme reaction that will melt the two ends of the rail and fuse them together.

This two part material was very dangerous in nature and required some highly trained workers to apply it. Photo B and C shows just how hot this material can become once it's ignited. Photo A shows that some of this material shooting out of the mold onto the street. Once this material hits the pavement it will melt a hole several inches down into the street.

The yellow tool in the photographs is used to align the rails into a straight rail section and to support the bucket. While hot the workers break the mold apart and start to break off pieces (Photos M, N, and O) of the two part mixture that are not needed. As can be seen by the gloves being used this work is extremely dangerous business. Once the mold is broken and the excess materials are removed the rail ends are cooled. When cool the yellow tool is removed and the process started again.

This series of photographs happened thousands of times throughout the entire Powell Street and California Street lines. The process is always the same and this group of photos will be the only photo documentation seen in my effort.

### **February 22, 1983**

#### **Sheet 38, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

Photos A and B are the usual bi-weekly status photo of the Cable Car Barn exterior while Photo C, D, E, F, and G show this view at different vantage points. No real noticeable progress since my last shots several weeks ago. However, this is deceptive as much work has taken place over the last twenty calendar days.

Photos H, I, J, K, L, M, and R show the installation at the North wall of the interior of the Cable Car Barn of the steel frame to support the exterior wall. This North wall and the associated steel

frame support are not very different from the exterior steel supports. This wall section required that these supports be installed inside the building as the outside exterior of the North wall has home next to the building. The application process I've discussed is exactly the same as it is at the front or East section of the wall.

Photos N, O, and P show the interior of the building without much activity. Photo O does show that a hole has been knocked into the brick wall to support a future door or breezeway.

Photo R is another shot of the installation of reinforcing bar into the exterior wall. These bars will be the base of additional rebar at a later date.

### **February 22, 1983**

#### **Sheet 39, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N**

Photos A, B, and C show workers doing something (I'm not sure what). Photos B + C seem to show a worker doing some repair work to the backhoe bucket.

Photo D, I, J, and N shows that some very good progress has been made on the stabilization of the upper western retaining. Notice that the temporary wall braces that were installed to support the load have now been removed. In the last 20 calendar days workers have installed this bracing, installed new rebar, shotcreted the entire wall, removed the braces and shotcreted the voids where the temporary bracing was. Knowing construction as I do this was a remarkable feat.

Photograph K is just a shot I took for fun. Nothing noteworthy.

March 7, 1983

#### **Sheet 40, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

The photos on Sheet 40 (this sheet) are somewhat out of order. Photos P and R were taken from the upper floor. During the last week parts of the roof have been demolished as can be seen. In photos P and R there is no light coming through meaning that the roof at the Northeast section is still intact while the other areas of the roof was then being demolished.

Photo G is very interesting as you can see the structural steel wall support extending up through the roof. This series of photographs are very interesting. As the roof is removed so too must the exterior walls be temporarily supported by additional structural steel. Photo F shows a worker installing a temporary wall support.

Photos A, B, C, D, F, G, H, I, J, K, L, M are good shots of the roof demolition process as it's systematically removed in sections. As mentioned earlier in this narrative the entire Cable Car Barn is being taken apart. As time goes on the only part of the building that will have any of the original parts will be these exterior walls.

Photo O shows just what the weather was doing this year. The area behind and above the Cable Car Barn is totally rained out and muddy. The crane shown in this photograph was stuck in the mud and no work was being performed in this area. As mentioned earlier 1982-1983 were exceedingly wet years. The rain seriously hampered the construction progress on the entire project.

**March 7, 1983**

**Sheet 41 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, I, J, K, and M shows the demolition of the existing Cable Car Barn roof. The process being shown is fairly straight forward for the removal of a tar and gravel roof. The workers shown in the first few photographs are using a machine that cuts through the roof membrane. The roofing materials are cut into manageable sections for ease of removal.

Once cut these sections are cut or pried loose for disposal. The disposal (not shown) is basically taking these smaller sections of roof and tossing them over the edge into a dump truck. The disposition of this material once it was removed is unknown.

Photo N is an interesting shot of some of the reinforcing bar cages that were being installed around the building. Finding them on the roof was a surprise as they were pretty far from the location where they were to be used. It is suspected that these rebar cages were stored on the roof to make room for construction activities on the ground around the building. The exterior of the building was wet from heavy winter rains.

Photo O and P are photographs of the structural steel frame that surrounded three sides of the four sided building. Photo P shows how the exterior un-reinforced brick walls were supported during construction operations. Upon examination of Photo P the rods that attach to the structural steel are clear seen. These rods continue through the wood blocks (which are just spacers) that fill the void between the brick and the steel frame.

Photo Q and R show the West side or uphill side of the Cable Car Barn. Photo Q shows why space was tight on this site. It also gives the viewer an idea of how wet this winter was.

**March 7, 1983**

**Sheet 42 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A, B, C, D are a continuation of the rail installation process from Sheet 37 showing the rail splicing process. Worker in this photograph are seen cleaning up the welds using grinding tools.

Photos F, G, H, I, J, K, L, and M show the installation of the foundations that support the Cable Cars. When completed the Cable Car track will be attached to this foundation. Note at the center point of the track the metal slot being formed into the area where concrete is to be poured. This slot is where the Cable Car griping mechanism extends down and through the slot. The Cable Car operator via the use of a large lever operates this griping mechanism. The griping mechanism closes down around an underground cable that is constantly moving. This cable extends from the Cable Car Barn around each of the lines (California and Powell/Hyde) and then returns to the Cable Car Barn. This cable is a continuous loop powered by the equipment in the Barn.

Under the slot there is a trench where the cable runs. This trench can be seen if the photo J is studied closely. Photo J shows how the trench is kept in place when concrete is poured around it. Also seen in the photograph is the trench. The trench has a metal plate over the top of it to keep it clean and free of concrete. Once concrete is poured this cover is removed and the process continues (in later photographs).

Photos N, O, P, Q, and R show the steel spaces being installed to add additional support to the exterior un-reinforced brick walls. During the construction process there was great concern that these exterior walls would collapse. The main cause of concern was from vibrations of the construction processes being used in and around the Barn. The steel spacers were installed under change order resulting from the level of concern about keeping these exterior walls intact for both the renovation of the historic Barn and also for the safety of the workers working in and around the building.

**March 7, 1983**

**Sheet 43 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

Photo A is my usual bi-weekly photograph of the Cable Car Barn exterior. As can be seen there is a great deal of work being performed in and around the Barn. In this photo the intersection of Washington and Mason Street. In this photograph the paving section of the street intersection has been removed. The work in this area is mainly addressing the underground utilities that are being replaced and/or moved.

NOTE: There is a very large underground vault room directly under this intersection. This vault room houses several large steel sheaves (pulley like devises) that carry the moving cable around the streets. This vault will be seen in more detail in later photographs. However, the scope of work in this area addresses the underground utilities.

Photo B is a very good example of the process called "potholing." Potholing is the process where underground utilities are exposed for viewing and measuring. This process is usually done by hand so as to not break the utility that is being identified. It is important to remember that many of the underground utilities are high risk utilities like gas lines and electrical conduits. Once the utility is exposed it is located via measurements to determine location and elevation. This information is key to the designers of record. Once the information is gathered it will determined whether the utility can be left in place or if it has to be relocated. This information also gives the contractor vital information so that these utilities are protected.

Photos C and D are pretty much duplicates of one of the old sheaves that was removed during demolition. I was never sure why this half of the sheave was never removed for storage at Pier 70. I suspect that it was later trashed.

Photos E, F, and G are photographs of the upper West retaining wall. During the reconstruction of this wall the surveyors were on site again to measure if the wall was moving again.

Photos I, J, K, L, M, N, O, and Q show the progress being made inside the Cable Car Barn. The yellow machine is call a hoe ram. It is used to jack hammer concrete or rock on a large scale. All of these photographs were taken to show work being performed inside the Barn.

Photo P was taken on Mason Street. Workers in this photo are doing two things. First, the workers are exposing underground utilities (potholing). Second, the small drill rig is taking soil samples for use in the design process.



**March 16, 1983**

**Sheet 44 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is taken from the top of the upper West side of the Cable Car Barn. Demolition of the Cable Car Barn is starting to show just how much of the building is being torn down.

Photos I, J, K, and L show some of the workers that later became of interest to me. The black woman in this photo became a favorite subject of mine. It must be remembered that in 1983 that women were just entering the construction trades. This woman was a chosen subject for just that reason. This photograph was sold to several of the labor unions for their use.

Photos M, N, O, and P show the tight construction areas that were a part of daily life for the Contractor of record. These photos show the removal of old concrete and soil from the interior of the Barn.

Photo Q is a shot of the structural steel that supports the North wall of the Barn. This steel was installed on the interior of the building as there was a building on the other side of this wall. As this building was only inches away from the North un-reinforced brick wall the designers were forced to locate it on the inside of the Barn. Notice there is no roof on the building at this time.

**March 16, 1983**

**Sheet 45 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is another shot of the Cable Car Barn from the top of the upper West retaining wall.

Photo B is a photo of the Contractor's Project Manager (left) and the Construction Manager (right). The construction management process was virtually unknown in 1983. This Construction Manager worked for O'Brien Kreitzberg and Associates (OKA).

Photos C and D are taken from the uphill side of the West retaining wall. This photograph shows some real progress being made on the project. It also shows just how wet the 1982-1983 winter months were. The rain continued to hamper the construction effort and cause project delays on a massive scale. These delays will become a major cause of concern to the Construction Management firm OKA. As a part of the construction life cycle all project delays are constantly being addressed with an eye toward mitigation. This winter delayed the project by months which were huge in construction terms.

Photos E, F, and G show some of the street work that needed to be completed before the installation of the Cable Car track foundations. Photo G is a good example of a very deep underground utility that is being replaced. If I remember this utility was a sewer/storm water line that was being installed to replace the aging system. The metal on the sides of the trench are shoring to protect the trench from collapsing into the excavation. It also protected the adjacent building foundations and workers who were installing this line.

Photo H is a great shot of the turntable area at Market and Powell Street. As can be seen the turntable has been removed and stored at Pier 70 for later reuse. This turntable will be completely rebuilt over the next few months.

Photos I, J, K, L, and M are shots of construction progress on Powell and California Streets.

Photos O, P, Q, and R are taken at the Cable Car Barn. Work at the Barn continues with the removal of broken concrete, dirt, and old steel.

### **March 28, 1983**

#### **Sheet 46 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N**

All photos on this page show the status of the work at the Cable Car Barn. Photo A and B is looking East towards the front of the Barn. This picture shows the structural steel frame on the North wall. These photos also show some of the debris of the last part of the demolition work of the original building.

Photos C, D, E, F, G, H, I, J, and P show the work progress (on the upper second floor) that was the Cable Car storage area. Note that this area is still very wet and muddy. As mentioned the winter of 1982 and 1983 heavier than normal rain. Even in late March the rain continued to affect the construction schedule.

Photo N shows a good cross section of the Cable Car original track being removed from the Powell Street line. It's noteworthy to mention the brick under the Cable Car tracks and cable slot. As part of the new construction all parts of the Cable Car lines were demolished.

### **April 6, 1983**

#### **Sheet 47 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B show a very large drill rig (the blue machine) drilling holes for caissons to support the buildings in the photograph.

This photograph is taken looking towards the North on the upper floor section of the Barn. Immediately after the drilling is completed the crane (the white machine) sets the rebar cage into the hole. The rebar cage hanging from the crane in the photograph gives a good indication of just how deep these caissons are. After the rebar cage is set concrete is poured into the caisson hole. The entire operation is fluent and completed as quickly as possible so that the caisson hole doesn't cave in.

Photos C and D show a very different job site then we saw from the Sheet 45. In less than a week the rain has stopped and the site has been drying out. While still moist the sunshine of the last week has dramatically dried out the site allowing earthworks operations to resume.

Photos E, F, G, H, I, J, K, and L show that the entire roof of the Cable Car Barn has been removed. These photos taken from the upper West side of the building (looking east) shows workers removing the waterproofing membrane that was on the second floor. This membrane protected the lower floor from water that might enter via the old doors and from wet Cable Cars that were stored on this level. As this old material is removed so do things start to get cleaned up for subsequent work.

Photo M and N show the upper West wall. This massive repair of the existing retaining wall continues to be rebuilt. Surveyors in Photo N continue to monitor the wall for any potential movement.

Photos O, P, and Q are taken at the Mason and Washington Street intersection. Underground utilities continue to be uncovered. Many of these utilities were never mapped when they were installed so everyday brings new surprises to the construction team. In these photographs the project managers are trying to figure out what has just been uncovered.

Photo R shows the start of drilling operations on the South wall of the Cable Car Barn. This work has been delayed as a new building foundation under this wall needed to be installed. Foundation work under this un-reinforced brick wall has been greatly anticipated as there was some very real concern that this wall might collapse before the bracing could be installed.

### **April 6, 1983**

#### **Sheet 48 Photos A, B, C, D, E, F, G**

Photos A, B, C, and D continue with photos from page 47. The drilling operation for the structural steel frame foundations has been started. Photo C is a good example of work that was being done while other work was ongoing. These activities are an example of what is called "stacking" different work activities on the construction schedule. As mentioned in earlier the construction schedule was living document under constant change. With the end of the winter months behind the project schedule became even more complicated with many late construction activities being squeezed in where ever possible.

Photo E is of a worker supervising the repair of the upper West retaining wall.

Photo F is more potholing work to identify underground utilities.

### **April 11, 1983**

#### **Sheet 49 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is my usual shot of the Cable Car Barn Progress. Of note is that the entire roof has been removed from the Barn.

Photos B, F, and M shows the second floor of the Barn in the process of being demolished. This demolition process is much like the construction sequence in reverse. Removal of the upper floor is completed and then the old existing steel frame is disassembled and trashed.

Photos C, G, J, and R show debris being removed from the building. As the upper floor is demolished the old materials are dropped onto the first floor level. From here the large Cat picks up the debris and loads it into a waiting truck to be hauled away.

Photos E and F show the upper floor being removed from a different angle.

Photo H shows workers cleaning excess concrete from the wall drain. A drainage system was also installed at this upper West retaining wall. The purpose is to drain any water from the back of the wall.

Photo O shows in some detail the removal of excess soil from the upper area second floor level. This grading has been expected for several months as winter rains delayed this activity. This upper level was a very busy place for a number of months. The construction schedule had over 30 separate activities happening at the same time. Needless to say this area became quite dangerous as men and equipment were constantly on the move.

Photo P shows the drilling rig on the South side of the Barn. This drilling rig is repositioning itself as it move uphill to drill the structural steel frame foundations.

**April 11, 1983**

**Sheet 50 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is of a small drawing table being used by some workers.

Photos B, C, D, E, F, G, H, I, J, M, N, O, P, and Q shows more shots of the upper floor being demolished.

Photo R shows a work installing handrail posts. These posts will support a cable handrail that protects the worker from falling down the now removed second floor. The elevation difference is about 25 feet so any work that goes off the edge would most likely be killed. Safety is always a concern on any construction site and on this site it was an important issue.

**April 18, 1983**

**Sheet 51 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos on this page show a very interesting construction activity at the Cable Car Barn. This entire page shows the installation of a metal pipe into the old smoke stack of the Barn. I was told that this smoke stack once vented a coal fired generator which first powered the Cable Car system back in the late 1800's. It was not known when the coal fired generator was replaced by electrical power or why it was changed out.

It is important to remember that all the masonry that is found in the Cable Car Barn was un-reinforced including this very large smoke stack. Given the number of earthquakes that San Francisco has experienced that it's amazing that this building withstood not only the 1906 Great Earthquake but several rather large quakes since.

In order to protect this historic structure all the masonry in the building had to be strengthened including this smoke stack. Engineers decided that the installation of this very thick steel pipe was the methodology to be used. In the first few photographs iron workers are seen rigging the first of two sections of pipe for its lift. Once rigged the section of pipe is hoisted up and guided into the smoke stack by one of the iron workers who has been hoisted to the top of the structure by a second crane. Once on top the worker will guide this section into place.

After the first section is set, a second pipe is hoisted up and welded to the end of the first pipe section. It was noted at the time just how big this smoke stack really is. From the street it doesn't look as tall as it is but in Photo I the iron worker on top of the smoke stack is dwarfed.

Once the pipe is set in place spacers will be set at the top and bottom of the smoke stack. Grout was then injected around the pipe to bond the brick structure together around the metal pipe. This smoke stack has over the last 80 years has served no real purpose other than its historic architectural look.

Photo H shows the first media interest in the restoration process. This lone photographer from one of the local TV stations was on hand to film this event. While I never saw this event on TV it should be noted that there was very little media interest in the restoration process when it was first started.

**April 18, 1983**

**Sheet 52 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, and D shows the second smaller section (smaller in length) being hoisted into place. I was not allowed at the top of the smoke stack to get closer to this operation to film the welding of the two pipes.

Photos E, F, G, H, I, J, K, L, and M show carpenters building concrete forms. Concrete forms are similar to a mold. These wood forms are built to hold concrete between two sections and are removed when the concrete hardens. The purpose or use of this particular formwork is unknown but what is notable is that these carpenters are performing an activity while several other construction activities (like the installation of the pipe into the smoke stack) are taking place.

Photos N, O, P, Q, and R shows the demolition process taking place five months after the project was started. At this time the last of the old building structural steel and associated foundations is being removed.

**April 25, 1983**

**Sheet 53 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is my usual standard progress at Washington and Mason Streets. The building is almost entirely gone except for the three sides of the exterior. At this time the steel frame to support the exterior South wall has been installed on the interior section of the building. The entire intersection has now been closed down and torn up. Work at the smoke stack is still moving forward and on this day the spacers are being set around the smoke stack pipe recently installed.

Photos B, C, D, E, and F show the continuing demolition process being finished up. In Photo B the large Caterpillar bulldozer is seen ripping some of the old interior masonry walls and concrete footings from the old steel frame. In the background of these photographs several cranes can be seen working on the second level of the Barn. To the trained eye there are several construction activities taking place at the same time. Worker on any given day number at least 50 and that number was soon to grow.

Photos G, H, I, J, K, L, and M show an interesting engineered construction process taking place. The upper soils section of the Cable Car Barn was unsuitable for the use of a more typical concrete slab on grade. Due to soil conditions this section was designed to be built on top of very deep piers or caissons. These drilled piers were sometimes 80 feet deep and they usually reached some bedrock before drilling stopped.

Once the piers are drilled, soil is then dug out to the proper elevation. Photo G and H shows a good example of these drilled piers being uncovered after their installation. Note the difference in elevation (from where the workers are standing) at the top of the pier. Structural steel beams are being installed to support the new second level concrete slab. As these materials are installed so does the elevation point of the floor raise too. These photos are also a good reason why the upper retaining wall was of such concern to the design team. As the upper retaining wall started to move several weeks ago (in the downhill direction) it is clear from these photos that the old existing retaining wall would have most likely collapsed once soils were removed.

Photo N shows the project surveyor sitting down to do his calculations on the elevations of the structural steel supports.

Photos O and P are taken looking South over the second level (see above).

Photo Q shows wood forms being installed for a future concrete pour. This photo is a good example to the lay person of how concrete walls are built. Once the outer forms are installed another set of matching forms will be set on the opposite side. This encloses the space and acts as a mold for containment of the concrete.

Photo R shows a carpenter building more concrete forms.

### **April 25, 1983**

### **Sheet 54 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B are taken outside the Cable Car Barn. Nothing on any importance is seen other than the installation of some temporary fencing.

Photo C and D shows workers fixing a broken air hose outside the Contractor's tool trailer and a carpenter working on concrete forms.

Photo E is of two workers from two different subcontractor companies. This photo shows these two guys engaged in a very heated discussion about having to work in the same area. There were many such discussions around the Cable Car Barn project site. With 10 to 30 different work activities happening in the same location I was surprised that there wasn't very many of these discussions that came to blows.

Photos E and F shows carpenters working below ground to install concrete forms at one of the underground vaults and constructing the forms are to be used. The process of making concrete forms is a difficult one (as seen in Photo F). Concrete form work is always made in reverse so that it can be easily taken apart once concrete is placed. That is to say that when the forms are being made the carpenter has to think about the negative side of a form as the positive part is the actual concrete that has been placed between the forms.

Photos H, I, J, L, M, N, and O show two more women laborers that had recently been employed. Mentioned earlier in this narrative seeing women in construction was in 1982 a fairly rare event. During these years there was a period when women were taking an active interest in the construction industry. The two women in these photos were just placed on the project.

Photo Q marks the first time I saw the "official" construction photographer on the project. I haven't mentioned that I was approached by the City and County of San Francisco to be the official photographer for the project. I had been approached because I had already been on site for the last few months and because I had the only real construction record on film. The negotiations with the City for this work fell apart when I insisted on maintaining the copyright for the photographs I was taking. Because I would not give up the copyright the City would not agree to pay me for the work I had been doing. In the end and in hindsight it was a good thing that it didn't happen as these photographs would be buried in some file box locked in some storage facility. I was later told that the photographs taken by this man were archived by the City sometime after the project was completed.

Photo R show workers on top of the building next to the Cable Car Barn during the time when they were taking down a wall next to this building.

**April 25, 1983**

**Sheet 55 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A and B shows the workers from Page 54 Photo R taking down a wing wall that was near the North wall of the Cable Car Barn. It should be noted that the new Cable Car Barn had no need for any of the old existing walls with the exception of the exterior walls that were considered historic.

Photos C, D, E, and F are of the Powell/Market Street turntable. The photo shows the complete rebuilding of this part of the Cable Car system. As can be seen there is a new foundation (one of three) that has been poured and what is seen is the concrete slab section that will make the new floor of this turntable at or near Fishermen's Wharf. Sometime around this time it was decided that the old Cable Car Turntables could not be reconditioned. A newer turntable system was developed and a contract was let out to build three new turntables.

Photos G and H show some of the new storm drain systems being installed. As mentioned much of the old City infrastructure had to be relocated and/or replaced. I don't remember where this shot was taken but I suspect that it was in the North Beach area.

Photos I and J show the area above Fisherman's Wharf looking at North Beach. This photo shows that a fairly long section of track foundations have been installed. At this stage of construction there is not much work left to complete. Underground utilities have been installed and/or relocated and once these concrete sections are connected the only activity left is to install Cable Car track and then pave the construction and return it to public use.

Photos K, L, M, N, O, P, Q, and R show in some detail how the track and cable sections are built. Once the area was excavated and the installation of all underground utilities was complete workers would install the track foundation rebar. Concrete form work would define the extent of the track section and concrete would be poured under the Cable Car rail. Once the track section was poured so would rail be set and concrete poured around the rail. This buried the actual rail into the concrete section making it level with the street sections as seen in Photo L. By pouring this at street level it makes the area friendly to auto traffic.

**April 25, 1983**

**Sheet 56 Photos A, B, C, D, E**

This sheet finishes up the April 25, 1983 construction progress photos. All photos are taken Powell Hyde line and show the construction of underground vault boxes, rail track foundations, and underground utility replacement. Photo C show the old Cable Car tracks (not removed yet) and the process of digging up the streets.

**May 15, 1983**

**Sheet 57 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, and D show the interior of the Cable Car Barn nearly clean and free of the old building. The tractor that has been removing debris is sitting idle and is ready to be removed from the project. There was a discussion about this piece of equipment that just finished the debris removal two days ago. The discussion was about this piece of equipment being in the way of work that was started on the interior of the building a month ago.

As can be seen this photograph the work on the new interior foundations has already been started. Drilling rigs and cranes have been working hard to install foundations for the new structural steel frame that is scheduled to be installed in several weeks. Holes are drilled and the rebar placed while concrete trucks wait to pour concrete in these very deep holes.

Photo E shows the recently excavated interior of the front or East wall of the Cable Car Barn. Of note is the fact that this section of wall lacks the normal foundation found in most buildings. In this photo you can see the dirt that the walls are sitting directly upon. As part of the change order work for the South wall new foundations will have to be installed at this location.

Photos F and G show small window-like openings in the exterior brick walls. These small openings are for the cable (that moves the Cable Car) to pass through. Both photos show new concrete wall foundations poured and caissons or piers being installed for the new structural steel.

Photo H and I show the drillers drilling the caisson or pier holes at the interior of the Barn.

Photo J is a picture of what was thought to be the old brick storm drain system. At the bottom of the hole is a pipe that was most likely used for drainage within the building? The actual function of this system is and will remain unknown. The circular nature of the structure suggests that this was a man hole at some time.

Photos K and M shows the interior of the Barn looking west. The old brick buttresses on this retaining wall can be seen in various stages of demolition. The forefront of the photo shows caisson rebar and pipe that is being installed. The scaffold at the back wall shows that another construction activity is about to be started.

Photo L shows this West retaining wall and the upper section above it. Note the houses on the uphill side. These are the homes that were in danger when the upper, upper retaining wall started to move. This wall was subsequently addressed with the installation of a new wall footing.

Photo N, M, O, P, Q, and R is taken at the upper second level of the Barn. Caissons at this location continue to be installed. This construction activity completely cut off access to the upper level making the completion of this work activity critical to continued work progress in this area. Notice the smaller rebar coming out of the caissons. These are for grade beams that tie the caissons together forming a foundation grid.

The workers in Photo P, Q, and R are of the rebar workers or rod busters (in construction parlance) installing spacers between the rebar and the caisson side. The spacers provide a uniform area or uniform void where concrete needs to be placed.



**May 15, 1983**

**Sheet 58 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, and E are photos taken on the upper second level of the Cable Car Barn. These photos show the caissons and/or piers being installed (as shown on Sheet 57). The order of this work is as follows: survey team locates caisson location, holes are drilled, rebar cage is set, concrete forms or sono tubes are installed, elevation of top of concrete is established, concrete is poured, forms are stripped, and smaller grade beams are installed.

Photos F and G shows the next step in this construction process. Once grade beams are installed between the caissons the area is back filled with soil. Structural steel beams are set on top of caissons, metal decking is set on structural beams, metal deck is welded, rebar for the concrete slab on top of metal deck is installed, concrete forms around the slab edges are set, and the concrete slab is poured.

Photos H, I and J show a typical concrete form used for the installation of vertical walls. The concrete forms are the method of containing the concrete when it's being poured. The form is then removed (or stripped) leaving a wall of the desired height and thickness. In these photographs these concrete forms are for a retaining wall for the homes on the North side of the Cable Car Barn can be seen.

Photos N, M, O, P, and Q show the concrete placement of the caissons. Several of the people standing by the side of the caisson are project inspectors and a person from the lab that samples and tests the concrete for strength. The placement of concrete is very much controlled with limits on how much water is added and/or how far it is dropped into a form or hole. All the construction processes for the placement of concrete are closely monitored. This inspection process extends to the installation of the forms, the placement of rebar for spacing and height, and this all happens after an extensive review of the materials that are going to be used for this process.

**May 26, 1983**

**Sheet 59 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A and B are random photos looking downhill on Washington Street next to the Barn. The work in this picture shows the new foundation that has been installed under the exterior brick wall on the South side of the Barn. Photo B clearly shows the extent of this foundation as it's was excavated, formed, and concrete poured. The trench-like opening next to the wall needed to be excavated to fit the concrete form work into. Once the forms are stripped waterproofing is applied to the exterior of the footing to negate the penetration of water into the building.

Photo C was taken from the second floor level of the Barn. The Contractor's Superintendent and the Construction Management's project inspector are looking and discussing this retaining wall.

Photos D and E show the status of the interior area of the Cable Car Barn during this time period. Notice the large crane that has been staged on the inside of the Barn interior. This crane could not access the upper second level as construction work has not been completed. In order to work around that the crane was moved into this location.

Photo F shows just how extensive the caisson work was at the first floor level of the Barn. Noteworthy is that the large brick retaining wall that was existing has been removed. This picture shows the vertical caissons that have been installed. Each caisson is almost touching the other making a very complete and

## San Francisco History Center, San Francisco Public Library

solid barrier to the soils of the upper level. These caissons were installed as a change order to the contract because the un-reinforced masonry brick wall was not strong enough to handle the load of the soils above it. To mitigate this problem these caissons were installed to replace the retaining wall which is not totally gone. These caissons were extremely deep going down some 90 feet.

Photos G, H, I, K, L, M, O, show a significant change in the work at the Cable Car Barn. With the area completely demolished work for the new Cable Car Equipment has started. As with most construction processes, work is always started from the bottom up or for work at the deepest elevation. In these photos we see the beginning of the installation of several equipment "pits" at the first floor area. Photo L is the slab that will carry the new motor to drive the sheaves that turn the cable for the Cable Cars. The construction of the tension pit is just about to start. The tension pit is the area where the cable is kept taut via the use of a sled like machine. As the weather cools or heats these sleds (installed towards the end of the project) keep constant tension on the cable. Hence the name tension pits.

Photos J, P, Q and R are all photos of the second level of the Barn. In addition to the work at almost every part of the Barn construction continues at this upper level at the same time. The large pit at this upper section shown in Photo Q and R is (if I remember it right) the inspection pit where each cable car is inspected before leaving the Barn for the day.

**May 26, 1983**

**Sheet 60 Photos A A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P**

Photos A and B show a typical concrete pour at the Barn. This photo gives an idea of the process used in building walls and floors. The wall being poured is not extended to the top of the wood forms as seen on the backside of the workers. The reason for this is that sometimes walls have to be poured in sections. After the wall is poured and the concrete hardened, one side of the forms will be stripped. In this example a floor slab has to be poured before the remainder of the wall is built. Once the floor slab is poured a new set of concrete forms will be set on top of the slab and that upper section of the wall will be poured. Sometimes these one sided forms will stay in place for months until the work catches up with it.

In photo A and B notice the machine with the long cord being handled by two workers. This is a concrete vibrator and it's used to consolidate the concrete as it's poured. This process requires some extensive knowledge of concrete placement as too much vibration will pull the rock in the concrete to the bottom. Not enough vibration will leave voids called honeycombs in the concrete wall.

Photos B, C, and E show new exterior walls being poured in place along the Jackson Street entrance at the upper level. This wall section was one of the biggest and highest wall sections built on the project.

Photos F, G, H, I, J, K, L, M, N, and O are all taken at the Fisherman's Wharf/North Beach turntable. These concrete forms were very complicated and required some careful formwork to be built. Round concrete forms are tough as they need to be very accurate and uniform. The carpenters that built these forms were very talented. These concrete forms are exactly the same as the other forms shown in this series except that they are round. Concrete placement uses the same methodology in its placement.

**June 13, 1983**

**Sheet 61 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A and B are my usual photographs of the Cable Car Barn taken at Washington and Mason Streets. Not much has changed at the exterior of the building since my last photograph several weeks ago.

Photo C gives a good view of the down slope on Washington Street. As can be seen in this photo several blocks have been shut off to traffic and the pavement has been ripped up. Potholing for utilities continues in and around the area locating any underground utility that can be found.

Photos C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, and R are all taken on the interior of the Barn. Probably not noticeable to the viewer is the tremendous amount of construction progress taking place on the first floor of the Barn. In photo G an excavator is seen removing excess dirt from the Barn floor. This is the area where the tension pit ends as it runs toward the spot where this photo is taken. Photo J is looking at the location where the cable leaves the building after going around the motor sheaves. The slot at the brick wall is the location where the cable slides through and out into the sheave vault (under Washington and Mason Streets). Photo N shows the large concrete foundation where the cable motors sit.

**June 13, 1983**

**Sheet 62 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

Photos A and B show the finished exterior entrance from Jackson Street into the Cable Car storage area on the second level.

Photos C, D and E show the turntable being formed for the concrete pour. This turntable will be one of three on the entire Cable Car system. This turntable is the only one of the three that is motorized. As Cable Cars enter this upper second floor level each Cable Car will be directed onto a single track for storage at night.

Photos F, G, H, I, and J are photos of prefabricated concrete forms being stored on site.

Photo L is an interesting shot of the upper floor level. If remembered, this shot is of the upper level slab that sits on structural steel beams that sit on poured in place caissons. Of note is the front section of this slab that has cables sticking out of them. These are post tensioned cables that run through concrete beams from end to end. Once the concrete is cured these cables are pulled with a hydraulic machine to a prescribed tension. If closely examined the poured caissons can be clearly seen in this photo (under the slab).

Photos M, N, O, and P show the area around the exterior of the Barn.

Photo Q shows concrete forms being installed around the area where the large cable turning motors will sit. Not that the top of the wood concrete form is the finished floor elevation. These walls go around the foundation where the motors sit on a very large and heavy metal base (to be set towards the end of the project).

**July 1, 1983**

**Sheet 63 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, and H show the Powell Street Wharf turntable. As can be seen the concrete has been poured forming the turntable base. In photo A towards the base of the turntable foundation is a small opening. This is where the cable loops to an underground sheave and returns to the Cable Car Barn. In photo E we see the concrete roof that sits over an underground vault. This photograph shows a very interesting embedded eye bolt. It took almost a year to find out what these embedded bolts were for. Towards the end of the project Cable Car equipment will be installed in these underground vaults. These eye bolts play a very important roll in the installation of this equipment.

Photo I shows the entrance to the Cable Car Barn second level from Jackson Street.

Photos J, K, and L are one of the many construction workers on this project. This guy is a cement mason who seemed interesting.

Photos O and P are extremely interesting because they show just how fast this job is progressing. Taken from the second floor level the tension pit has been excavated and the slab on grade has been readied to be poured. As can be seen the tension pit walls and the slab on grade will be poured in one pour. Photo P is also a shot of the tension pit but from ground level.

Photos Q and R show two of the most interesting construction individuals on this project to date. The bigger guy was named Barney and he was the concrete superintendent on this project. The other guy was his foremen. Barney was a good example of one of the crazy people who worked this project. Barney had another name or nickname. Everyone called him "pour" because that's all he could yell at his workers all day to drive them to work harder. This guy was pouring concrete before the concrete forms were even completed. The Construction Manager and this guy were always going at it because of quality concerns. Barney just wanted to pour concrete and the Construction Manager wanted a quality product. Before I knew that this structure was called the tension pit I believed that it was called the tension pit because of Barney. This guy would drive his workers every minute of every hour of the day and in a sense he was quite effective in getting the production level up for his employer. He was a very likeable guy. I just glad I didn't work for him.

**July 1, 1983**

**Sheet 64 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C show this area as being very busy this day. This area was primarily a staging and lay down area for the Contractor of Record. Because of the stacked construction schedule and the many different construction activities happening at one time space was at a premium. Also, there are a number of private homes in the area and access to those homes had to be provided at all time.

Photos D, E, F, and G show the more work at the tension pit. Notice that Barney is at the end of the pit driving his crew on.

Photo H shows two of the many workers on this project. As the project went on I became one of many familiar characters on this project. During my visits to the project workers like this started to become my friends and in a way they were coworkers on this historic project. In time the people on this project became my favorite subject matter on this project.

SFP 105 Paul Baffico Rebuilding the San Francisco Cable Car Line Color Slide Collection /  
Photographer's Narrative  
San Francisco History Center, San Francisco Public Library

Photo I shows the concrete foremen waiting in the crane for workers to unload forms.

Photos J, K, L, M, N, O, P, Q, and R are all of work at the tension pit.

**July 1, 1983**

**Sheet 65 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

There is not much more to say about photos on this sheet that hasn't been written. All work is of the tension pit and the description can be found on Sheets 63 and 64.

**July 1, 1983**

**Sheet 66 Photos A A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

I'm not sure why I've taken so many photographs of the same work at the tension pit. Descriptions of photographs on this Sheet can be read in Sheets 63 and 64.

Photo Q is interesting as it shows work at the Cable Car Barn smoke stack. Notice that the slide shows a scaffold at the smoke stack. This scaffold allows workers to access the work area (at the top of the smoke stack). This scaffold is for the installation of grouting operations around the pipe that was place inside the smoke stack some weeks ago.

**July 9, 1983**

**Sheet 67 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B show the Cable Car Barn turntable at the second level. This upper floor area is a very complicated construction site as work must be installed in a very particular order. In this photo this turntable area has been poured and stripped.

Photos C, D, and I show the installation of some anchor bolts. These anchor bolts were not embedded in the concrete when this footing foundation was poured. I'm not sure why but these bolts are special bolts designed to be installed once concrete is poured and hard.

Photos G, H, J, K, L, and Q show the tension pit poured and the forms stripped. All of this work in this area has been critical to the project construction schedule. The formal term for a critical construction is called the "critical path." As this project moves forward I'll be using this term more often as the critical path is what drives any project.

**July 9, 1983**

**Sheet 68 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, I, and L are more shots of the tension pit. Photo B shows an example of an aborted concrete pour. Barney was not able to get the walls formed up in time for the concrete that was place several days before my site visit.

San Francisco History Center, San Francisco Public Library

Photos C, D, H, and K show something new on the site. The exterior area along the South wall next to Washington Street has had solidier beams installed with wood lagging to shore up the Washington side. This area will serve several different functions. There will be a new entrance and stairway installed in this area.

Photo E shows the upper second level of the Barn.

Photo F shows the beginning of the work to stabilize the exterior un-reinforced masonry brick walls. In the center of this photograph a scaffold has been set up for workers to start the installation of rebar into these walls. A worker drills a one inch hole and inserts a piece of rebar that about 14 inches long. Epoxy is used as a glue to bind the rebar into the drilled hole. This is prep work for the later installation of the rebar curtain that will be sprayed with shotcrete.

Photo F and P shows a grade checking driving a metal stake for survey purposes. The grade checker is responsible for maintaining the elevations of dirt to the design grades. As soil or dirt is removed the grade checker will be there to ensure that no more and no less of this material is removed.

Photo N, O, and Q show the bracing that supports the exterior brick walls. The x-bracing is to keep the frame from moving laterally during seismic events.

**July 14, 1983**

**Sheet 69 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B are the usual exterior photographs taken from Washington and Mason Streets. During the last few days much has happened on the project. The most notable is the installation of a tower crane at the center of the project site. This crane can reach almost every area around the construction site. The project is still trying to pick up time that was lost as a result of the heavy winter rains. As usual the construction schedule continues to drive all activities on the project. During this time frame there are several dozen different construction activities taking place and there is some gain on the three months that was lost.

Photo C is of one of the project laborers. On most projects the diversion of labor is very clear. There are carpenters, laborers, iron workers (installing structural steel) plumbers, electricians, elevator installers, masons, rod busters (installers of rebar) and managers of every kind.

Noteworthy in photo C is the structural steel that is being off loaded on the project site during this week (next to this worker on the ground). This is a huge schedule milestone for the project and the looks of the Cable Car Barn are about to change.

Photo D, E, F, G, H, I, J, K, and L shows a laborer sandblasting the concrete footing and wall surfaces that were poured some months ago. Sandblasting operations are performed to clean rusted rebar and to clean and rough up the existing concrete before the next application of concrete forms takes place.

Photo M shows the installation of rebar at the first level Western wall. This will be a shotcrete application of concrete. This work will be seen in later photographs.

Photo N is a shot of the tower crane at the center of the project.

Photos O and P show just how much structural steel is now on site. The delivery of the structural steel means that the new frame of the building is about to go up. Notice that the second level area is the chosen

location of where this steel has been “shaken” out. When structural steel arrives on a site it is usually loaded on a flat bed truck. Iron workers will off load this material in the order it needs to be installed. The official term for this activity is shaking out the load.

Photo Q shows how all the different parts of the site are now being used as a lay down areas for both equipment and materials. This construction is considered tight for useable space and every inch of the streets are now pressed into service.

**July 14, 1983**

**Sheet 70 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A shows the tower crane base at the first floor level of the Barn. The base of the crane was located at the bottom of the Cable Car drive machine area. The crane will not be on site for the duration of the project and will come out once the building structural steel is installed and the metal decking on the steel is completed.

Photo B and C shows several people looking at the rear retaining wall and over the project site. This group of people in this photograph is the Contractor's Project manager and the construction management project staff. The woman that is in the stripped shirt at the back of this group is the woman that I would marry 23 years from the date this photograph was taken. Kathleen K Mayo is on site where she will soon become the project manager for the Cable Car Barn. Kathleen K Mayo was brought onto the project by O'Brien Kreitzberg to manage the then 3 to 4 month project delay caused by the winter rains.

Photo D shows some very old Cable Car equipment that was unearthed during the excavation of soils in the Barn. The wheel at the bottom of the photo was clearly one of the smaller sheaves that were used on the cable to power the Cable Cars.

Photo E shows close detail the structural steel that supports the exterior wall.

Photo F once again shows just how fast construction is moving on this project. The photo shows the installation of a CMU (concrete masonry units) block at the upper second level. This wall was not here just 5 days ago when I was last on site.

Photo G shows a set of anchor bolts that have been installed. I'm not sure why I took this photo as it's fairly mundane.

Photos J, K, L, M, N, O, P, Q, and R show general conditions. Of note is Photo N which was taken from the second level looking down at the tension pit. The tension pit is now complete and has been covered over for useable space. Notice the counterweight on the tower crane as well as all the smaller cranes at the floor of the Barn.

**July 21, 1983**

**Sheet 71 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is a shot of the first floor area of the Barn. It's been seven days since my last visit to the Cable Car Barn and as usual work has been quickly moving ahead. This day marks one of the major milestones on the construction baseline schedule. The installation of structural steel was started this week and the steel framework of the building has been the focus of much attention as it has become the critical path of

most future work. Structural steel beams have been shaken out of the structural steel load and are being positioned for the installation during the next few days.

Photos B, C, D, G, H, I, J, K and Q show the prep work (along the South exterior wall) for the cable trough. With three Cable Car segments it must be remembered that cable must be installed on each line in a continuous loop to and from the Cable Car Barn. This work along Washington Street side of the Barn is very similar to work being done in the streets of San Francisco where new Cable Car infrastructure is being installed. At the outside intersection of Washington and Mason Streets there is a very large underground vault that has several large sheaves to facilitate the movement of the Cable Car cable. Completion of this work was important as subsequent work to this underground vault required that this work completed first.

Photo E shows the first of the structural steel being installed. Once the column foundations are installed the erection of steel moves rather quickly. The structural steel in this photograph (towards the edge of the picture) shows that the building will have substantially more square footage than the original Barn.

Photo F is way to dark to even be in this group. Why it's here is a testament to the long processes that I had to go through to facilitate the photo documentation process. Often I'd take film in for same day processing and then I'd be applying my copyright stickers and marking slide sheets at night. All of this work in addition to my day job working as a carpenter on another project having nothing to do with the Cable Car system. Sometime pictures like this slipped and were missed when I was putting them away.

I found it ironic at the time that I couldn't find a carpenter's job on the Cable Car Barn as most of the work belonged to subcontractors who belonged to the general contractor on the project. Work activities were completed so fast that subcontractor crews would be in and out and onto the next job not allowing for any full time work at the Barn. This made my life a little hard as I had to come once a week during the day to take photos. I don't remember how I found the time to do this work but I made time and continued to visit the project at least once a week but working there would have made my life much easier.

Photo R shows two iron workers making up a connection for a cable brace. This cable brace will connect to the structural steel column and will be used to pull the columns to vertical and plumb positions.

### **July 14, 1983**

#### **Sheet 72 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

Photo A is taken at the upper level exit of the Cable Car Barn (on Washington Street). Concrete forms for the building wall are installed and ready to be filled with concrete.

Photos B, C, D, F, G, H, I, and J are all very dark photos of the installation of structural steel at the Cable Car Barn. These pictures were taken at about 6 am in the morning and the sun was just about up. Iron workers are by nature a very tough and gregarious group of workers. This job is one of the most dangerous jobs in the industry. Photo I shows Iron Workers erecting structural Steel. To erect steel workers will walk the steel beams while they are hanging from a hook on a crane. As can be seen in this photo Iron Workers walk on a fairly thin beam without nets or safety cables. While the use of safety cables are become increasingly common in the construction industry Iron Workers will not wear them citing that they cause unsafe conditions. While I will not debate this issue these men (few women yet) will seemingly not blink an eye while hanging several stories off one of these pieces of steel.



Photos K, L, and M show some of the underground utilities discovered during construction activities.

The disposition and identification of these utilities are unknown.

Photo N shows a newly cut cable passageway through one of the exterior walls. With the new Cable Car equipment the design of the new motor systems required some relocation of the pathways of cable leaving and entering the Barn.

Photo O shows some of the rebar being delivered to the job site. Materials in huge amounts were always being offloaded at the Barn. Rebar was one of the largest materials (in quantities) used on the project.

### **July 21, 1983**

#### **Sheet 73 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, and I are of my favorite subject matter. Today must have been “people” day. When taking these photos I’m always reminded of really old photographs of people and what they looked like and how they dressed. I’m sure someday these photos too will be looked at with people who too marvel at these workers. Photo A shows an iron worker tightening up a cable. This cable is tied off to a structural steel column and this worker is actually moving the steel column this way. The process is called “plumb and lining” and it makes things level (on the vertical or plumb) and square. A structural steel building (like any new structure) must be built correctly. All corners must be square and the vertical plane must be straight. The plumb and lining process usually takes place when all the structural steel is set. However, in the Cable Car Barn the project schedule rules all activities. This work must be completed in sections so that “other” construction activities can take place while the remainder of the structural steel is placed.

Photos J, M, and P shows a drilling rig working outside the Barn on Washington Street. I’m not sure what was being drilled but I’m guessing these holes are for the exterior of the Cable Car Barn opening to the building.

Photo K shows the installation of structural steel at the upper second level of the Cable Car Barn. This section of steel is where the worker in Photo A is working.

Photo I is an interesting shot of the interior of the Cable Car Barn. The location of this picture is at the Washington and Mason intersection. If you look at the bottom center of the photograph you can see the windows where the old cable traveled from the Barn on its loop to the end of each Cable Car Line.

Photo M also gives an idea of the work progress inside the Cable Car Barn. The container in the bottom right of the photograph is the tool shed used by the iron workers. Notice the structural steel at the left.

### **July 21, 1983**

#### **Sheet 74 Photos A, B, C, D, E, F, G**

Photo A and B show workers just finishing up their lunch. The materials in the forefront of the photo are steel beams for concrete forms.

Photos C, D, E, F, and G are just some shots of the Cable Car Barn interior. There is nothing of real interest in these photographs except for photo G that shows the existing utilities at the South wall of the building (still in place).

**August 11, 1983**

**Sheet 75 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A starts this page with a photo update of the Cable Car Barn construction progress. In this photo we see that the entire street area around the Barn has been demolished. In the forefront to the left workers are excavating a new underground vault room for the cable sheaves that are located in that area. The relocation of underground utilities also continues at this and almost every other Cable Car line location. While the restoration of the Cable Car system was huge in scope it was the relocation of the underground utilities that was the real show stopper for the project.

Photos B, C, F, I, J, K, L, M, N, O, P, Q, and R shows just how much progress is being made in the Cable Car Barn. Structural steel is just flying up and subsequent work is following right behind. This project was somewhat unusual in the sense that the project schedule really stacked the construction activities. As an area is completed the next trade is in line to start their work. The Construction Management Company and the Contractor were brilliant in the execution of the work and I've never seen a project go up so fast. Photos F and M shows the structural steel in place and the metal decking installed. On top of this area are the other trades installing the plumbing, electrical, heating, ventilation, and air conditioning (HVAC) and finally the rebar on the metal decking. Once the work in those areas is complete it's poured almost the same day.

Photo Q shows shadows from the flooring above over the Cable Car Barn first floor.

**August 11, 1983**

**Sheet 76 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

Photos A, B, C, and D are photos taken from the second floor of the Barn. These shots show in more detail the metal decking being installed over the structural steel. As the deck is laid down so do welder's tack weld the metal deck. Usually metal pins call Nelson Studs are welded to the metal deck. These Nelson Studs are used to bond the concrete to the decking. Once these metal studs are installed the electrical will be installed along with any other work (plumbing or embeds for HVAC) that needs to be installed before concrete is poured. Note: The metal decking along the exterior walls have until this time been left unattached. The reason for this lay in the installation of shotcrete to the exterior walls. Until that work is complete no metal decking can be completed along these exterior walls.

Photos E, H, I, J, K, L, M, N, O, and P show the application of shotcrete on the exterior walls. These photos are very dark as lighting was a real problem now that the metal decking was in place. However the process is as follows. Pieces of rebar about 2 feet long are drilled and anchored into the exterior wall. Once that process is complete a vertical rebar mat is installed. This rebar mat is installed along the wall for the express purpose of holding concrete in place and for providing seismic strength to the unreinforced brick exterior walls. The thickness of the shotcrete is about 2 feet and the shotcrete bonds to both the vertical rebar and the horizontal pieces of rebar drilled into the brick. Once this process is complete (as seen in photo D) a small pumping machine is brought in and connected to the rubber hose that sprays the concrete onto the vertical surface. A concrete truck delivers concrete to the pump machine and is then sprayed on to the wall under very great pressure. Photo I shows a good example of the worker

spraying this material. Once the material is sprayed onto the wall, workers will use a "screed" to remove excess concrete and ensure that the wall is the desired thickness. Once the concrete is screeded cement masons will smooth the surface to a hard finish. Once sprayed the wall will look like a normal concrete wall. It must be remembered that this application of shotcrete was an important element of the work because this kind of application save the project schedule months.

Note: This shotcrete is a very dirty application. Concrete is pretty much flying out of the machine and spatters all over the place. Clean up operations must be performed quickly or the concrete will harden making the cleaning process much harder.

**August 22, 1983**

**Sheet 77 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is as usual my bi-weekly photo of the Cable Car Barn exterior. This photo shows a number of different construction activities taking place during this time period. The most notable activity is the excavation of the large underground vault that directs via cable sheaves to the three different Cable Car lines. This vault room is quite large and required extensive shoring to keep soil in place around the excavation.

Photos B, D, L, N, O, and Q shows iron workers installing structural steel beams at the exterior walls. What was not generally known during this phase of construction was that the project engineers were very concerned about the exterior un-reinforced brick walls. The concern was based on the age of these exterior walls and the old mortar that was used when the building was built. The engineers were worried that one or more of the three exterior walls might crumble and fall. The beams being installed in these photos will be embedded into the sprayed shotcreted walls and will tie into the new structural. Once in place and with the walls shotcreted these exterior walls will be tied into the building structure. Photo D will give the viewer a good indication of just how thick these walls will be. Shotcrete will be sprayed to the other most face of this steel beam.

Photo C is taken at the second floor of the Barn. Metal decking is now spread and tacked into place. The rebar that is sticking straight up is embedded into recently poured concrete walls. This rebar will be bent 90 degrees onto the metal deck slab further tying the building elements together.

Photo E has and is one of my favorite photographs. Iron workers are waiting for the tower crane to deliver structural steel to the area where they are working. This one iron worker looking down at me taking this photo reminds me of how exciting this project was. Iron workers being of the nature they are (arrogant and self assured) soon became one of my favorite subjects. Likewise, I've had the good fortune of being in the position to place structural steel myself. It's a trade I almost followed but never did.

Photos G, H, and I are of workers on the project. Photo I shows an iron worker tying a "tag line" to the steel beam. The tag line is used when the crane hoist the steel up to its selected location and is used to keep the steel from spinning.

Photos J, K, L, M, and N are good examples of how the exterior walls were prepped for the shotcrete application. The second paragraph of this page explains that process.

Photo R was taken at the base of the tower crane. These tower cranes are amazing in the amounts of weight they can hoist. The panel box on the tower crane is open exposing all the electrical systems used in these machines.

**August 22, 1983**

**Sheet 78 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs on this page show the installation of the structural steel at the Cable Car Barn. The progress being made is totally amazing and I've never seen anything like it. As the structural steel is installed it is not plumbed and lined. Iron workers will adjust the steel so that it is straight and true before the "rattle up" takes place. Rattle up is the process of tightening all of the bolts that hold the structural together. Once rattle up is complete, the welding process is started. Not all structural steel is welded together. Welding pretty much is confined to the seismic bracing and/or connections that keep the building from moving during earthquakes.

Photo A shows a hanging platform that allows welders to do their work. Welding is not an easy process and all welds have to be inspected by a testing lab.

Photos C, D, E, F, G, and H shows iron workers installing the upper levels of structural steel. As mentioned this work is extremely dangerous. These iron workers are a different breed and they climb the steel as if it were a ladder. It's an amazing process to watch.

Photo I shows just how important it is to erect the steel in the right order. As the structural steel is erected it was important to stockpile the metal decking on the floors. If this didn't happen then the metal deck would have to be hand loaded onto the upper levels.

Photos J and K show a welder welding structural. I just love Photo J as this iron worker's moves are so fluid and organized. No wasted moments means no wasted money or time.

Photos L, M, N, O, P, and Q show iron workers installing structural steel around the exterior wall areas. As mentioned this steel will embed into the shotcreted wall tying everything together.

**August 22, 1983**

**Sheet 79 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos on this page are just a continuation of the installation of structural steel. Sheet 78 has all the needed narrative for this page.

**August 22, 1983**

**Sheet 80 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C show the Jackson Street entrance to the Barn. In these photos, workers are installing the brick veneer to the front or street entrance to the Barn. It should be noted that the concrete walls are being veneered to match the original design intent of the Cable Car Barn. These walls were recently poured and the brick will make them pretty much invisible.

Photos D, E, and F are very dark pictures taken first thing that morning before the sun came up. They show workers getting ready for the day's work.

Photos G, H, J, K, L, N, O and Q are taken at the South side of the exterior wall. This work is at the new entry door and cable troughs for the moving cable to power the Cable Cars. Workers are getting ready and building concrete forms for walls at this location. Photo Q show two carpenters looking at the blueprints and doing the required layout of the new concrete walls. The worker in Photo O is cleaning the sand from the sandblasting operations. The rebar at this location had gotten rusty and dirty and a sand blasting machine is the best way to clean the rebar.

**August 30, 1983**

**Sheet 81 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and K are the standard photographs of the exterior of the Cable Car Barn at Washington and Mason Streets. It's been 8 days since my last photo in this location and much has happened during that time. The most notable construction progress is to be seen in the now very large excavation at the front of the picture. As mentioned the vault room at this location is one of the largest underground vaults on the system. In Photo A there is a small drill rig drilling "tie-backs" into the sides of the open trench. Tie-backs are drilled holes with a bar inserted into the hole once it's drilled. Once inserted on the vertical face of the excavated hole the tie-backs hold or supports the vertical surface. One can get a good sense of just how big this vault room will be by looking at the size of the excavation.

Photo C is another picture of yet another woman on the project. The unions at this time were really working hard to place women on construction projects. I got a nice smile out of this person.

Photos D and E show workers installing underground utilities. I think from the materials being used that this is a storm drain line.

Photos F, G, H, I, J, and R give the viewer a glimpse of the continued erection of structural steel at the Barn. Photo F shows a welder working on the installation of metal decking. The delivery of additional structural steel in Photo H gives some idea of the massive amounts of materials that when into this part of the work. Note: The structural steel in this building is really called "red iron" as it's primed with red primer. It's still structural steel but unlike most structural steel this metal will not be coated with fire proofing materials. Because it lacks the sprayed on fire proofing material the primer will protect the steel during its lifetime.

Photo I is another favorite photo of mine. I took this picture at first light and for some reason it always reminds me of a scene from the movie Mary Poppins. I'm not sure why it does but it kind of has that Mary Poppins look to it.

Photos M and N show one of the sled sheaves that was not salvaged. I didn't understand why it wasn't saved but it was in bad condition when this photo was taken. This sheave got trashed.

Photos O, P, and Q show work at the South exterior wall at the intersection of Washington and Mason. There is some fairly large foundations being installed in this photograph and I'm sure the reason for this is that it holds the Washington Street side in place.

**August 30, 1983**

**Sheet 82 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is taken at the Washington and Mason Street intersection.

Photos B, C, and D, were taken on the second level of the Cable Car Barn. The new design of the Cable Car Barn has required that this upper section be enclosed and/or roofed. The open roof area in Photo C has a skylight over one of three turntables on the project. This turntable is motorized while the other two are not. There was much discussion about making all the turntables motorized and the MUNI union lobbied for it. However, the other two turntables were rebuilt in the same manner they were when the system was first installed.

Photo E is interesting because the tower crane use to sit at this location is now gone. Usually tower cranes will remain on a project to the last possible second. However, due to the nature of this project, namely the very aggressive construction schedule, the tower crane had to be removed sooner then later.

Photos F, G, H, and O show the installation of the rebar on the exterior walls. In Photo G we see a gap in the installation of the metal decking. That's because the exterior walls have to have the shotcrete applied before the floor is complete. Photo O is interesting because it shows two large widow "bucks" being installed. I can't remember if windows were cut into this wall or not but the frames being installed are clearly for some kind of opening through the exterior wall.

Photos I and M show a mobile crane that has been installed in place of the tower crane. Space in this building was becoming even more restricted then ever now that the structural steel is in place. This smaller (but still large) crane will erect the last of the structural steel. Note: Because it's August there is a big push to get the building ready for winter. The push is at the roof level as steel needs to be installed, metal decking is needed for the concrete roof lid, and then the roof has to be installed to keep the building water tight. This will allow interior work to start during the winter months while keeping the building dry.

Photo N shows several additional construction trailers on the project site. The first trailer on the downhill side belongs to the Contractor and the second trailer uphill belongs to the construction management team.

Photo P is another shot of the Washington Street side of the Cable Car Barn. It shows a large retaining wall form being installed.

Photo Q is taken on the Southeast side of the Cable Car Barn. This excavation is interesting because some of the more unusual construction "work around" methods can be seen. The large green pipe was installed to reroute the storm drain system around the excavation. There are also several rather large underground utilities that are exposed and disconnected.

**September 12, 1983**

**Sheet 83 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, and D show the exterior of the Cable Car Barn 12 days since the last photo. The photos were taken at sunrise and several minutes after that so lighting was a problem. Note: During this time period I was working a full time construction job in Marin County CA. The process of photo documentation during these last few months was a difficult one as I (like everyone else) had to work to

make a living. Sneaking off to San Francisco every other week for several hours cost me more than one job because I was often absent from work taking pictures of one thing or another. These photos are a good example of this as I was at the Cable Car Barn at 5:30 am. With sunrise minutes away my time on the project site is very limited before I make the return trip to Marin.

Photos E, F, G, H, N, O, P, and R are taken on the first floor of the Barn. The last of the structural steel is on site and being installed during this period. Because the day is just starting there was not much work being performed at this time.

Photos I, J, K, M, and Q are taken from the second level. Of note is the smaller crane that has replaced the larger tower crane. This crane has worked itself into a corner and will carefully install the last of the structural steel beams before it is removed from the first floor of the Barn. Photo N shows the crew raising a steel beam. What is not shown is how complicated it was to raise this beam through the steel that is already in place. Working slowly the iron worker will thread this steel through the upper floors to its final resting place on the second floor level.

### **September 12, 1983**

#### **Sheet 84 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, and E are taken from the second floor level. Photo E gives a good view of the work being done at the exterior walls. This area shown is now ready for shotcrete which is a few days away.

Photos D and E are from the same series of photos on Sheet 83 and shows iron worker raising steel.

Photo F shows one of my favorite times of the day, sunrise! This photo is of two carpenters getting ready to start their day.

Photos G, H, I, J, and O were shot on the second floor of the Cable Car Barn. Carpenters are installing concrete forms for the storage tracks on this level. This work is very complex as track geometry requires that concrete forms be installed perfectly. The designers of record have spent a great deal of time figuring out the distances of track in this very tight area.

Photos M and N are taken from the exterior street level at the front of the building on the Northeast side of the block. This work in the street shows a number of different construction activities taking place including the excavation of the main sheave room under Washington Street. Photo N is kind of interesting as one of the residents across the street from the Cable Car Barn is seen washing her sidewalks in an attempt to keep the front of her house and business clean. It was a never ending job given the type of work that is ongoing at this time.

Photo P and the photos Q and R show some of the experimentation that I used to get some interesting photographs. These photos never amounted to much but it's interesting to note that by opening my camera aperture and allowing more light into the camera made it look like an evening shot if you realize that Photo P is the correct camera setting to use in these conditions.

**September 12, 1983**

**Sheet 85 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, E, F, G, H, I, J, K, L, M, O, P, and Q are all shots of the last of the steel erection sequence at the Barn. Seen in Photos A and B are the top floor of the building being completed. Workers are rigging the last of the steel floor beams for erection on the second floor level and the roof level above the second floor. The last of this steel is scheduled to be set by weeks end marking a major milestone on the project schedule.

Photo F and several photos after this were taken from the roof level of the Cable Car Barn. I loved the view of San Francisco and the east bay from the top of the building. It was one of those very lovely San Francisco days.

Photo D shows one of the iron workers hamming it up for my camera. I think I mentioned that over the course of the last few weeks I've met the entire work force at the Cable Car Barn. Most if not everyone loved the idea of my photo documenting this historic construction project. There was occasion that one of two workers refused to have their picture taken for personal reasons and I respected that. However, the other 99.9% of the workers loved having their picture taken.

**September 12, 1983**

**Sheet 86 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All the photos on this page were taken from the second level of the Barn. Most of these photos show the last of the steel members being installed on the upper levels. Note in Photo F and G the skylight openings in the roof.

Photos K, L, and I show workers installing a parapet roof wall with lighter gage steel.

Photos N and O are my favorite on this sheet as the viewer can see the upper second floor Cable Car storage area being worked on. This photo is another example of the many of the different construction activities that are taking place concurrently. As the workers are installing the concrete form work between the tracks so too are iron workers installing rebar. During these activities structural steel is still being installed overhead making work in this area very dangerous. With the project still trying to catch up with the delays caused by the last winter rains the project is still over a month behind the original baseline schedule. Consolidating these different work activities greatly reduces the amount of time needed to complete this scope of work on the second floor.

NOTE: As it is September most of the Construction Managers on the project are thinking about the upcoming winter months. In the push to shave time off the schedule the most important part of the building is yet to be started. Installation of the roof is critical to the project completion date as there is a great deal of interior work that can be done if the building is water tight. At this time the project schedule "critical path" goes right through the installation of structural steel and metal decking. Once this material is installed electrical and HVAC systems can be built into the metal deck before the concrete is place on the upper roof level. The concrete is still weeks away but there is much hope that the weather will hold through the next six weeks.



**September 12, 1983**

**Sheet 87 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

The entire sheet of photographs was taken on the second floor of the Barn. All of the photos show carpenters forming up the track sections for concrete placement. In photos K, L, and M we see the carpenter layout man surveying in the needed survey control points. It's worthy to note that survey is of the upmost importance to any construction project. Like a map, most jobsites are laid out in grids. Contained in each grid are measurements that show where something is supposed to be located. In this case the carpenter layout foreman is locating track section measurements so that the carpenters have the exact location of the edge of the concrete form. From these marks all work is installed according to the drawing layout.

**September 12, 1983**

**Sheet 88 Photos A, B, C, D, and E**

Photos A, and E were taken on the roof of the Cable Car Barn. As mentioned the installation of the roof is critical to the project. In these photos we see the progress being made towards this end.

Photo B shows the wall forms for the building edge on the Northeast side of the Barn. This photo shows how tight space is as Washington Street is right next to this wall. Concrete formwork is being installed on a section of wall that has been poured already. As one section is poured the forms are stripped and raised to the next level. Then that section is poured and the process is started again until the wall reaches the desired height.

Photos C and D show the upper level of the Barn at the storage area where Cable Cars are stored at night. Nothing remarkable about these two shots and we see in Photo D a plumber setting a floor drain before the concrete is placed.

**September 12, 1983**

**Sheet 89 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

NOTE: As is customary for any construction project (that uses structural steel) the raising of the last steel beam requires that some sort of celebration be held to honor the occasion. On the Cable Car Project this celebration was a full blown media event complete with television and newspaper reporters who hadn't ever been to the project site much less understood the feeling of the workers who were working on the project. For the workers, this was a very special day and it was symbolic of the mood and feelings (their love for the Cable Car System) of the men and women that worked on this very special project.

Photos A, B, C, D, E, F, and G were taken at the front of the Cable Car Barn. The iron workers seen in these photographs were a proud bunch of guys and on this day that pride was very noticeable. During their time on site I got to know these all of these guys pretty well. Everyone on site had heard about my photographs and this made it very easy in getting them to pose for a group photograph. In fact, word of the photograph spread from worker to worker and before I knew it the Union Rep too paid a visit to the project site so they could be in the photo with their banner. These guys had erected a structural steel building in nearly record time on a historic project. These guys would tell (anyone who would listen) just how important the Cable Car project was to them.

Photos H, I, J, K, L, M, and N show these iron workers rigging the last two structural steel beams (behind the workers on the ground). Rigging is the method of connection of the steel cable (or choker) onto the metal beam. Some measurement was needed for the placement of the choker cable so that the structural beam would rise evenly on a horizontal plane. The placement of the choker was also important because if not placed in the right location the beam would slip out of the cable and fall to the ground.

Photos R, P, and Q show the next to last beam being raised.

Photo R shows two of the construction management team with the balloons that would be attached to the last structural steel member.

### **September 12, 1983**

#### **Sheet 90 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A was a meeting of some of the local news people meeting at the construction management trailer for a briefing on the days events. The woman in the door in green is Jane Neilson who was the "official" Public Relations person for the Cable Car project. Jane Neilson worked for the construction management of O'Brien Kreitzberg during the life of the project.

Photos C, D, and E show that year's winner of the Cable Car Bell Ringing Contest making a personal appearance. Just in case someone doesn't know about this contest it is held every year with some fanfare to single out the best bell ringer of the Cable Car operators. Of course this gentleman rang the bell at the anointed hour in full view of the press.

Photos F, G, H, I, J, K, L, M, N, O, and P show the assortment of people who had come to record and report on the days events. Photo O shows two people who played an important role in the project. The heavy set guy (Barney) worked for the concrete contractor and the Asian guy is Harry Chin who to this day is still a friend of both my wife and I. NOTE: Since I started to photo document this project I had for the most part been the only photographer to continuously record the progress of the project. On this day several new photographers showed up on site to start the same process that I had started a year before. I soon found that several of these photographers would become a regular visitor to the project. Several are still known to me these 25 years after the project was completed.

Photos P, Q and R show the last beam being hoisted over the exterior walls of the building and into the position needed for the local press to take their photos. NOTE: The use of balloons on the last steel beam is not the usual tradition for the raising of the last beam. More often the iron workers will use a Christmas tree mounted on the beam as the preferred symbol of this event. While I've been to several of these topping off parties where Christmas trees were used this was the first and last time that I've seen balloons used. The last photograph shows the iron workers cutting the balloons loose from the beam after it was placed.

### **September 13, 1983**

#### **Sheet 91 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B show one of the women laborers working on the project. It's break time!

Photos B, C, D, E, F, G, and H show the recently opened excavation at the Southeast corner of the Barn. This excavation is being made to install the sheave room where the cables come out of the barn and head

in the direction of any of the three Cable Car lines. This photograph also shows the recently installed underground infrastructure that includes the large storm drain system. Notice in the upper right corner the brick archway. There was some speculation about this structure was when it was installed many years ago. The general feeling is that this brick structure was an old sewer line on Washington Street long since abandoned for newer sewer line. The group of people in this excavation are just uncovering this area for the first time and like most excavations in San Francisco it was a learning process of what a person might find underground.

Photos I, J, K, L, M, N, and O again show the last steel beam being placed. Photo L is interesting as I took one of the newspaper reporters with me to this location for her photograph. A very similar photo can be found on the front page (or near the front page) of the September 14, 1982 San Francisco Chronicle.

Photo Q shows one of the construction managers with an unknown VIP looking at the project.

Photo R was taken of one of the iron workers sitting on the steel. This photograph is a personal favorite of mine.

### **September 13, 1983**

#### **Sheet 92 Photos A, B, C, D, E, F, G, H**

Photos A, B, C, and D show the installation of sprayed on concrete on the inner walls of the Cable Car Barn. NOTE: While this day was an important day in the progress of the Barn it shows that work did not stop because of it. The ever important completion date was still coming up and there was a lot of work that needed to be completed before that date.

Photo E shows the excavation at Washington Street of the underground sheave room. The young lady with the shovel was stationed here to hand dig any hidden underground utilities.

Photo F shows a worker welding the steel decking to the structural steel. And while steel was pretty much completed there was still a whole bunch of work that needed to be completed in this process.

Photo G and H are photographs of that San Francisco Chronicle photographer walking the roof beams to take her picture.

### **September 30, 1983**

#### **Sheet 93 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A and B are the usual progress pictures taken at Washington and Mason Street. There are several things of interest in these photographs including the excavation of the underground sheave room (bottom front). Also seen is the progress of the building interior which is now pretty much closed in.

Photo C is taken on the uphill side of the Cable Car Barn on Washington Street looking down to Mason. The large excavation for the underground sheave room is straight ahead and out of view.

Photos D and E show this underground excavation in more detail and shows just how large and deep this excavation was. NOTE: This photograph shows the installation of the drain rock at the very bottom of the excavation. Underground drainage can be seen being installed and this area is now in preparation for the installation of the concrete slab on grade.

SFP 105 Paul Baffico Rebuilding the San Francisco Cable Car Line Color Slide Collection /  
Photographer's Narrative  
San Francisco History Center, San Francisco Public Library

Photos F, G, H, I, J, K, L, and M show the roof area of the Cable Car Barn. Notice that roofing has been installed at the higher areas of the Cable Car Barn building. If I remember right this was one of the machine rooms located on the roof. This is a significant milestone as its late September and the weather months are on their way.

Photos N, M, O, P, Q, and R were taken as storm clouds are now appearing over the San Francisco Bay. This day marked a renewed interest in getting the roof completed and enclosed so that interior work could continue during the winter months.

**September 30, 1983**

**Sheet 94 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C were "fun" shots of some of the people working on the system.

Photos D, E, F, G, H, I, J, K, and L are photos taken on the second floor of the Cable Car Barn. This area with the storage tracks for night time storage of Cable Cars has been under construction for several weeks. The geometry of these track sections was quite complicated and not an easy bit of carpentry work to build. Photo F shows a good example of this track geometry on the curve into the storage area on the second floor. Critical to this work was the clearances needed by each Cable Car to clear any parked Cable Car vehicle in this storage area. This meant that there was no room for error on the track section layouts as Cable Cars have an operating envelope (as it is with every railroad car) where strict measurements of the envelope of a Cable Car must be factored into the computations during design. Example: Cable Cars behave differently on curves than they do on straight away track sections as they require more clearance on a curve than a straight section of track.

Photo M shows some graffiti on one of the interior walls of the Barn. So the reader knows Devo was a rock and roll music group in the late 1970's and early 1980's. Actually, Devo is one of my favorite alternative rock groups. Hence the picture!

Photo N shows what I think is one of the most complicated sections of the Cable Car Barn. The area in this picture is where the powered moving cables leave the Barn to the different Cable Car lines. The picture shows carpenters building the raceways for the moving cable at the interior of the Barn. Not seen yet is the equipment that actually moves or operates the cable. This area of the Cable Car Barn leads to the large excavation at the exterior area at Washington and Mason Streets. The large underground vault will house several sheaves that will turn the cable around corners. NOTE: Wherever there is a turn on the Cable Car line there is always a sheave that turns the cable in the direction of travel for the Cable Cars.

Photos O, P, Q, and R show the bottom floor of the Barn. The Cable Car machinery will be installed at this level. This area is where the tension pits and motor mounts will be installed towards the end of the project. As can be seen this area is still under construction and will remain under construction for the next few months.

**September 30, 1983**

**Sheet 95 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This entire sheet is kind of my people page as it shows the faces of many of the workers on this project. As mentioned before it was the people on the project that made my photographs what they are. While it might be argued that the construction part of these photos is important I would remind the reader that without the people this project would never have been built.

Photos A, B, C, and D show one of several female carpenters who were working on the site during this time period. The photo was taken at one of the large retaining walls on the project (I don't remember where on the Cable Car Barn site) and clearly shows the work that is required to build these concrete forms.

Photo F shows the upper storage area of the Barn.

Photos G, H, and I are of the carpenter survey foreman who is establishing grades (the up and down measurements) for use by the other trades. The carpenter survey foreman is one of the more important people on the project as they are the keepers of line and grade. On any project it is important that there is one single point of contact for this type of work. The line and grades that are established are meant for use by all trades working on the project. If questions about line and grade need answering then it is this fellow's job to supply the needed information.

Photos J and K show the "other" part of the survey team. The carpenter survey foreman uses a transit or level (survey equipment) to pick up established survey points and transfer them to areas in the Cable Car Barn. This team is shown in these photos establishing grade elevations to key point in the Barn. All workers on this project will be required to use these established points during any construction activity.

Photos L, M, N, O, P, Q, and R show the workers who spray Gunitite (concrete product trademark) on the exterior walls. The process follows these steps: rebar is drilled and glued into the existing unreinforced brick masonry walls, rebar cages are installed on the wall; Gunitite is sprayed over the unreinforced masonry walls making the exterior wall a reinforced wall.

**September 30, 1983**

**Sheet 96 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

The remainder of these photographs is the last of a roll of film. With the exception of Photo F these photos are more of what was shown in the narrative in Sheet 94 and 95. Photo F is a shot taken on the roof of the Barn of metal decking waiting for workers to install the concrete topping.

**October 24, 1983**

**Sheet 97 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

NOTE: It's been over a month since I've last been on site. My regular day job as a carpenter required me to be at work without fail. As I was working outside of San Francisco I could not visit the Cable Car Barn for almost the entire month.

Photos A and B are the usual monthly progress photos taken outside of the Cable Car Barn. The construction progress is quite impressive from work done this last month. Notice the structural steel that has been installed at or over the underground vault at Washington and Mason Streets.

Photos C, D, E, F, and G show a little more detail of the construction of the underground vault at Washington and Mason Streets. These steel girders seen in this photo will support the surface street when completed. These photos give a good idea to the size of this underground vault that housed several sheaves. Photo C and D also show one of the construction managers on the project. This fellow is Harry Chin and after 25 years he is still a friend of mine. Harry was one of the bright minds in the execution of this project and we became friends during the execution of this project.

Photos H, I, K, and L show in a little more detail of work at the exterior of the Barn. Nothing remarkable in any of these photographs.

Photo J was taken out on the Cable Car line at a location that I can't remember. This over exposed photo shows workers installing underground utilities using a "shield" shoring system. The shield shoring is a fairly simple system that protects workers from cave in of the sides of the trench. The shield is dragged forward as workers complete their work task.

Photos M, N, O, P, Q, and R were taken on the second floor Cable Car storage area. The most notable thing is in Photo M that shows that the floor section, or slab on grade, has been recently poured. This concrete was placed around the track sections that had already been poured. The slab sits on top of these track sections and the concrete is poured up to (or very close) to the top of rail.

## **October 24, 1983**

### **Sheet 98 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A looks west towards the tension pit. Notice the upper mezzanine floor that has the handrail installed indicating that interior work is in full swing. This upper mezzanine is what I believe is the area serves as a museum and tourist visiting location. Also of note is the large opening in the floor directly in front of my camera and below and in front of the mezzanine floor. This area will house the old sheaves (as seen at the beginning of this photo documentation collection) that will be connected to new turning equipment.

Photos B, C, D, G, and H show iron workers bring in miscellaneous steel for several different areas. While the "official topping off" of structural steel was already held it should be noted that steel installation will be an ongoing activity over the next few months. With metal deck floors yet to be completed (as seen in photo C) much of the stock steel is for much of the detailed work that still needs to be completed.

Photo E, F, I, J, O, Q, and R were taken on the first floor of the Barn. The photo shows a very deep excavation where underground piping is being installed. The workers were not sure if this work was being done under change order or if it was contract work. I suspected that this work did not get installed at the right time (or scheduled window) and that the contractor was installing work that should have been in already. Often much of the photographed work at the Cable Car Barn was being installed without me knowing the reasons for why it was being done at any given time. During the photo documentation process I could not ask for explanations of why any work was being installed much less ask if the work being performed was change order work or contractual scope work. This meant that I had to ask the

workers about the work or “guess” as to what was being done. In these photos the workers didn’t know or wouldn’t say so I’m not totally sure what is going on in these photographs.

NOTE: From the first day that I started this photo documentation process I was not a welcomed person on the job site. The Construction Manager was always trying to chase me off the project as I was not an official employee of either the contractor or project management. While I often blended in with the workers (wearing jeans and hard hat) it often became a game of hide and seek for me staying one step of those people who did not want me on site. I was happy at the time that the site was so big and that there were so many stairs and ladders which gave me several exit points when I was being chased. Also of note was that at the start of this project the Construction Management Public Relations person asked me to bid on the photo documentation for the City of San Francisco. After supplying a bid for this work as a condition of me accepting the job I insisted on keeping the Copyright for these photographs. The City refused this request so I turned down the project based on my not being able to keep the copyright on my work.

Photos K and L are of a piece of equipment being used during the excavation as mentioned above.

Photos M and N were taken on the second floor Cable Car storage area. These “blocked out” portions of the concrete slab were left open to install additional work. Photo N is the area where the turntable is yet to be installed. Depending on the method of installation areas in the concrete slab were often left open so that they were accessible or that the contractor “means and methods” required that subsequent work be done at a later date.

**October 24, 1983**

**Sheet 99 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B show a worker threading fire sprinkler pipe. This type of pipe material is (or was) used for the express purpose of fire sprinkler lines. The photo of this work was taken at the deep excavation on the first floor of the Cable Car Barn.

Photos C, D, E, F, G, H, I, J, K, and L are of workers on the project. During this photo documentation process I often would concentrate on photos of the workers. I did this for several reasons as I was trying to sell these photographs to cover the costs associated with buying film and then having it developed. Printing these pictures too cost money so I had hoped to pick up some of the \$9,000 plus that it cost me for these things.

Photos M and P shows a worker at Washington Street entrance to the Barn. This laborer is striping wood concrete edge forms that contained the concrete for the slab on grade.

Photos N, O, Q, and R show work on the first floor as it progressed. The scaffolding in Photos Q and R was used by the workers spraying Guniting on the exterior brick walls. This work continued for several more weeks as subsequent work got completed and the scheduled application of this sprayed on concrete came up.

**November 11, 1983**

**Sheet 100 Photos A, B, C**

Photo A shows a scaffold that I think was being used by the Guniting crews to spray concrete on the exterior.

Photos B and C are the last of a roll of film from the day's shoot. In this case these two workers were repairing their skip loader and I was using my flash unit to supply them some light. NOTE: The Cable Car Barn still did not have electrical power connected to the power grid. Light in the Barn was at a premium and I often helped some of the workers by supplying them the light from my flash unit. As I had a battery pack by this point of the job I was able to activate the flash unit about every 2 to 3 seconds which usually gave people enough time to see something in the dark recesses of the Barn.

**November 11, 1983**

**Sheet 101 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B and C are my standard Cable Car Barn exterior progress photos taken about once a month. Of note is the work that has been done on the underground vault at Washington and Mason Streets. This underground vault was a complicated area of work and required many weeks of construction work to get it this far along.

Photos D, G, E and H were taken on the up hill side of Washington Street looking down towards Mason Street. This photo shows the first real hint of the doorway at this location and the concrete formwork that is about to be installed for the enclosed stairs.

Photo F was taken on one of the Mason Street lines at an unknown location. This photo shows the street pretty much torn up and the track sections being installed. The real interesting aspect of this photo is the methodology that this segment contract was using to build the work. While I'm not sure (meaning I don't remember) but the entire Cable Car Project was divided into 8 different segments with 8 different Contractors working on each. Construction limits defined the different limits of each project and each of the different contractors were using their own "means and methods" of building the project.

Photos K and L show a conveyor belt machine that is being used to excavated dirt from the first floor of the Barn.

Photos M, N, P and Q are show the status of work taking place on the first floor of the Barn. Photo J shows the tension pit area with the steel rails for the sleds now installed.

Photo O was shot at the second floor Cable Car Storage area. At the forefront of the photograph we see that the turntable has been poured out (completed) with concrete. This is a major milestone for the project.

**November 11, 1983**

**Sheet 102 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A was taken on the second floor area where Cable Cars are stored at night. The photo was taken from the center of the turn table block out. NOTE: The turntable that will be installed controls the Cable



Cars and the track that will be used when the cars are stored at night. This turntable is motorized and is controlled via a control panel at the entrance to the upper level of the Barn.

Photo B shows general construction progress at the first floor area. This area will be the locker rooms for the Cable Car operators and support workers. The piping at the back of the walls is for the toilets and sinks.

Photos C and D shows the floor opening that will house the actual motors that spin the cable on all three lines of the Cable Car system. The opening is deep as the support structure for the motors sit in this area. The support structure will be seen in later photographs.

Photos E, M, O, Q and R show the progress of work at the first floor area. Photo E shows the slab on grade being readied for concrete. Under normal construction this area would have been poured months ago. However, because the construction scheduled was compressed to allow the reconstruction in record time this activity was pushed back to allow "other" work to be installed out of normal sequence. Photo O shows roller compacting gravel at the area that was recently excavated for the installation of piping. This work was critical to the pouring of the concrete slab on grade.

Photo I is interesting as it shows that the spray on Gunit material on the exterior brick walls is still being installed at this late date. This work was nearly complete on this date which made a number of the Construction Managers very happy as the exterior walls were pretty much stabilized at this point in time. As mentioned earlier in this narrative there was much concern about the stability of the old exterior unreinforced masonry brick walls while construction was underway.

Photos K, L, N, and P show many different construction activities taking place on the first floor of the Barn.

### **November 11, 1983**

#### **Sheet 103 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A was taken from the corner of Washington and Mason Streets. Looking down between the steel girders there is a clear view of the work under the street level. This rather large underground vault was a fairly complex bit of construction. There are several pedestals being constructed to hold the sheaves that turn the under Cable Car cable towards the right direction of travel. Many of these pedestals are sloped or angled to the correct direction for the sheave to sit on.

Photos B and C show that metal decking has been installed and that the carpenters have built concrete forms to contain concrete this is scheduled to be poured the next day. Notice the blocked out area where tracks will be installed. These blocked out areas also serve another purpose of being an expansion joint allowing the concrete floor to move when it has a dead and live load. The building was also expected to expand and contract and thus this design allows for movement.

Photos C and D were taken looking down from the museum floor onto the first floor of the Barn. This area shows the slots where the moving underground cable will be directed from the Cable Car motors that power the cable. From this location the cable leaves the building into the underground vault at Washington and Mason Street intersection.

Photo F shows how the back West wall was covered with masonry block to cover the drilled in place piles to support the back upper section of the Cable Car Barn. This area is being used for construction staging as the Cable Car construction site offers little room for staging.

Photos G, H, I, J, K, L, M, N, O, P, Q, and R are the result of my having a people day. As I have mentioned before I loved taking pictures of the men and women who all made this project possible. The worker too loved having their pictures taken as they all knew the historic nature of this project. The only photo of note is Photo J showing three plumbers installing under floor drains and water lines.

### **November 11, 1983**

#### **Sheet 104 Photos A, B, C, D, E, F, G, H, I, J**

All photos (with the exception of Photo H and J) on this sheet are mainly photos of workers on the project.

Photo H shows an overhead crane being installed on the first floor of the Barn. The hoist will move heavy loads once the Cable Car Barn is turned over to MUNI. This hoist is not for use during construction. NOTE: With the installation of this piece of equipment the demeanor of the project (at least for me) starts to change. As equipment starts to be installed it's clear that the project is starting to become more complete.

### **November 23, 1983**

#### **Sheet 105 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is my usual monthly progress shot of the Cable Car Barn exterior. Most notable in this photo is the underground vault. Work has progress far enough in the vault that the ceiling of the vault (or the base to support the streets) is being readied for concrete. After the concrete roof is poured then the street sections can be replaced.

Photo B, C, D, E, F, G, H, I, J, L, N, and O show the concrete form work being installed at the underground vault at Washington and Mason Streets. Notable are the arched forms that will act as a vault support for the street section above. I'm not sure why this ceiling area was vaulted but I like to think that is was in keeping with historic look of the Barn. The reality however is that it most likely was designed to carry the load of the street and traffic above. The other photos show the scaffold that will hold the weight of the wood forms, the rebar, and the concrete when it's poured.

Photo F show as section of street base that was poured an unknown location. To be honest, I'm not sure why I took this photograph. My only explanation is that I took pictures of everything and everyone as I didn't know how these photos would be used or the importance of them.

Photo Q shows one of the many miles of new sewer boxes that were installed during this project. It must be remembered that once the streets were dug up that many of the old utilities were in the way of the new Cable Car work or that the existing underground utilities were just old and needed upgrading or replacement. Much of the work done on this project was infrastructure upgrades or replacement. NOTE: Notice the red terra cotta pipe with the white plastic pipe going into it at the bottom left of this photo. During construction many of the underground utilities required by-passes to allow continued use. As can be seen in this photo there are always houses or businesses next to the construction site. As people lived

and worked in these structures disconnection of the underground sewer, water, gas, and electric required that a temporary system be installed until the new infrastructure was operational.

Photo R is of a concrete floor. I have no idea why I took this photo and for the life of me I can't explain what it is.

**November 23, 1983**

**Sheet 106 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, and j show different angles of the Washington and Mason Street intersection. There are several things of note in this series of photographs. First, in Photo F we see that the concrete retaining wall that supports Washington Street has been poured to the street level. The rebar in this photo shows the beginning of the stem wall that will prevent people from falling into the opening at that location. Photos C and E show terra cotta pipe that was used as a temporary sewer line during the construction phase. The importance of this photo lay in the fact that the temporary line is no longer being used. This means that the underground utilities have been installed and are now operational.

Photos G and H are marvelous shots of the existing and very old cableway that used to house the old Cable Car cable system. Notice the middle of these very old brick vaults that you can see the sheaves that carried the old cable under the streets. I was then and still and still is my feeling that these old vaults should have been saved and reused. The sad truth is that these old structures were not in the right location, that they lacked access for workers, and that they were kind of falling apart from old age. None of these old brick vaults survived the reconstruction and it is quite possible that these photographs are the only ones taken of this cableway.

Photos J, K, L, and M show the construction work progress outside the Cable Car Barn. It was a very rainy and grey day this afternoon as can be seen by the rain coats being worn by many of the workers.

Photos O, P, Q, and R show work inside the Cable Car Barn. Photo O was taken on the second floor at the storage area of the Barn. The "pit" seen in this photograph is of an inspection pit used by the maintenance workers each day. It is the place where the under carriage of the Cable Cars are inspected.

**November 11, 1983**

**Sheet 107 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C show some of the continuing excavation at the first floor of the Cable Car Barn. Working in this area proved difficult for several of the tradesmen who failed to get their work installed at the proper time. The first floor is now nearing completion and getting equipment in to do some of the digging (as seen in these photos) is all but impossible. Any excavation into the ground now has to be done by hand with a pick and shovel. In Photo C we see some electrical conduit that was either forgotten or the electrical subcontractor forgot to install it.

Photos D, E, F, and G were taken on the second level of the Barn at the Cable Car storage area. As can be seen concrete at the floor has been placed.

Photo H was also taken at the second level of the Barn at the storage tracks. The designer of record for the building has really planned out the new Cable Car Barn building configuration to maximize the floor space available. Several new levels have been added and this space has allowed Muni to have offices and

locker rooms. The floor seen in this photograph will contain new bathrooms for the offices above the Cable Car storage area.

Photo I was taken at the bottom floor outside the North side of the building. Not installed yet are the new stairs into the Barn. This view has been seen several times in these groups of photographs and work here is starting to take shape.

Photo J, K, N, and Q show sheetmetal workers installing heating and ventilation duct work and the wet piping needed for the building systems. Photo J was taken in a space that will not be used for offices and is primarily an area that is needed to get duct work installed.

Photo L was taken looking down from the second floor to the first floor machine area.

Photos O, P, and R show that interior finishes are starting to be installed. These photos show the metal studs being installed. These walls will provide the much needed space for bathrooms, offices, and locker rooms.

### **November 23, 1983**

#### **Sheet 108 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A shows that the Guniting operations are still being worked. This Guniting spray on-concrete was a critical activity that was purposely delayed to allow "other" critical work to be done first. This delay to these operations saved the project schedule several months in critical time so that the Cable Car system would be operational in time for the Democratic National Convention.

Photos B, C, D, E, J, K, L and M are more of my favorite subject matters. People!

Photo N shows the tension pits from a side view. Remember that there will be sleds that move to keep the under cable taut when it expands or contracts. There will be pictures of this equipment later in this series.

Photos N, O, and P all show construction activity at the second level of the Cable Car Barn at the track storage area.

Photos Q and R were taken on the first floor level of the Barn. This photo shows electricians installing underground electrical conduit.

### **December 8, 1983**

#### **Sheet 109 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B are typical monthly photos taken from the corner of Washington and Mason Streets. As can be seen in the photos the winter weather has set in and rain is again heavy this rainy season. Most of the Cable Car Barn has been enclosed but there are still openings at skylight locations and equipment openings that allow water intrusion into the Barn. Some of the roof is on but there are several areas where the roof has not been completed and only the metal decking is covering the ceiling or roof.

Notable in this photo is the progress being made at the vault room at this intersection. The photos show that the carpenters have installed the deck flasework which will serve as the bottom of the poured-in-place concrete lid. Electricians in this photo are installed the embedded electrical conduit and as can be seen the iron workers have already installed the rebar. This area is very close to having concrete poured on it.

Photo C was taken at the second floor level. Rail has or is being stockpiled in this area as the concrete floor has been poured. As mentioned in past photos space is very limited on this project jobsite and as areas are completed so too does materials be stockpiled for later use.

Photos D, E, G, H, I, K and M were all taken on the first floor of the Barn. This group of photographs shows the progress at this level. The open hole in the floor has continued to be worked on for the last few months. With most of the building done the work at the bottom floor slab on grade has continued. In Photos E, H, I, and K we see the preparation work to install under floor drainage and electrical work. Once this work is installed the area will be backfilled and the poured in place concrete will be installed.

Photos F and J shows mechanical equipment being stored and installed on the first floor of the job site. It's a good sign that equipment is now being delivered as the process of completing the building will soon be focused on the equipment that supports it.

Photos N and O were taken at the second floor Cable Car storage area. The inspection pits can be seen on several of the storage tracks. Also, skylight framing is now being installed. Once this framing is complete then glass can be installed and the upper floor will become more waterproof.

Photos P and Q were taken from what I think is the first floor area. Photo P was taken somewhere on the first floor and (I'm sorry but I don't remember this area) it appears to be an inspection pit out to Mason Street. From the position of the photo I think this is track that is used to repair Cable Cars when the under carriage has problems.

Photo R is a little more detailed shot of the underground vault at the corner of Washington and Mason Streets. The photo is looking uphill on Washington and shows the progress being made on the concrete slab that acts as the ceiling or lid to this underground vault. Under the plywood forms is where the large sheaves will be placed to direct the moving underground cable to move the Cable Cars. At this time the room underneath is full of scaffolding to support the formwork and soon to be placed concrete slab.

## **December 8, 1983**

### **Sheet 110 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is again that area above the underground vault at Washington and Mason Streets. Once this area is poured then concrete forms will be stripped. This moves this area closer to having the shoring (to protect the edges of this pit) removed and the area being backfilled up to street level.

Photo B is of a cement mason who is "finishing" the concrete that has just been placed.

Photo C shows the continued work of spraying Shotcrete on the exterior walls around the building. This activity has been ongoing for some time and if the reader remembers this work was considered a "work around." This work was rescheduled to allow the construction of 90% of the structural elements of the building to be built. This application has stabilized the exterior brick walls and has in essence earthquake proofed the buildings old exterior brick walls.

Photo D shows just how quickly work is moving and how tight the construction schedule really is. Notice the dark color of the walls behind these workers (plumbers or HVAC workers). That dark color shows that the sprayed on Shotcrete has just been applied several hours before. The dark color indicates the freshness of the concrete as contrasted by the lighter Shotcrete at the upper level. That upper level Shotcrete was placed several days or weeks ago and has dried.

Photo E shows rail being installed at the upper level of the Cable Car storage area. The installation of rail is a major schedule milestone on the projects indicating that the building is getting closer to be completed.

Photo F shows a HVAC worker (or plumber) prepping the heating unit for installation.

Photos G, H, I, J, K, L, M, O, and P are just some shots of the workers. There is nothing special or noteworthy in these photos except that these shots document some of the men and women that made this project possible.

Photos Q and R were taken at the first floor level. While I can't identify any of the people in the photos I know with some certainty that the guy in the tie is one of the designers or engineers of record. Because the drawings are in sight it is assumed that these guys were problem solving some construction issue.

### **December 8, 1983**

#### **Sheet 111 Photos A, B, C, D, E, F, G, H, I**

Photo A shows a worker in or around the underground vault area, at Washington and Mason, chipping some kind of opening. I'm not sure what this opening was going to be for but it is near the underground vault where the cable leaves the building.

Photos B, C, M, and O are good shots of the underground vault at Washington and Mason Streets. Looking down we can see the new concrete wall (where the worker is) and the excavation surrounding this vault. Notice the underground utilities to the side. As mentioned the underground utilities were a very large part of the work scope for this entire project. As seen in this photo many of the underground utilities were rigged to work on a temporary basis throughout the entire Cable Car project. Also of note is the shoring to the side of the new vault structure. This lagging holds the street sidewalk and building foundations from caving in. Once this new vault structure is completed all lagging will be removed as they backfill this excavation.

Photos D, E, F, H, I, and J were taken looking downhill on Washington Street (towards Mason). The construction activities in and around this area made this section of street very congested as several dozen activities can be seen taking place. Included in Photo J is a shot of the section of track way being installed on Washington. This is yet another project schedule milestone.

### **January 11, 1984**

#### **Sheet 112 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C show tremendous progress this last 30 plus days. With the holidays and my usual day job I've been unable to visit the project since December 8, 1983. Even on this date the sun hangs low over the West as I made a quick trip into San Francisco from my home in Marin County to take photos. As can be seen work over the underground vault at Washington and Mason Street has nearly been completed. Concrete has been poured over the vault roof and the concrete forms have been stripped.

SFP 105 Paul Baffico Rebuilding the San Francisco Cable Car Line Color Slide Collection /  
Photographer's Narrative  
San Francisco History Center, San Francisco Public Library

Photos C, D, E, and F show construction progress outside the Cable Car Barn on Mason Street.

Photos G, H, I, J, L, M, N, O, P, Q, and R shows construction work at the first floor of the Barn. These photos show the work that is being done in the ground level of the Cable Car Barn. With each passing day the construction schedule continues to shrink in the number of days before the system is set to open. The ground floor of the Barn is the most important place on the entire Cable Car System as it houses all the motors and electrical power to run the system. This first floor area is the most complicated area for construction as there are several depressed areas (below the finish floor slab) that house equipment. Much of the work taking place at this point in time falls within the schedule plan. That is that much of this work could not have been done before this point in time because of other construction activities had to be completed first. The construction schedule for this project was quite tight and nothing on this project was done unless it was scheduled first. This group of photos shows much of the underground work that was then being completed. Once done the first floor concrete slab on grade could be poured.

**January 11, 1984**

**Sheet 113 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C show the placement of concrete at the back West end of the Cable Car Barn. Photo A shows how concrete is being placed at this location. Photo B and C shows a cement finisher using a mechanical finishing machine to smooth the top of the concrete off.

Photo F shows how some of the work in this building was installed out of sequence. The stairs seen in this photo would normally have been installed after the floor was installed. Stairs of this kind would be set at the bottom and connected at the top. In this case time didn't permit this normal construction sequence to take place so like almost everything else in the Barn work was performed out of sequence. In this case the stairs were set first and the floor will be poured up to the bottom of the stairs.

Photos E, G, H, I, J, K, L, M, N, O, P, and Q are photographs of some of the different workers in the Cable Car Barn.

Photo R shows a smaller crane inside the first floor of the Barn. The crane is moving Cable Car rail to the location where it is needed.

**January 11, 1984**

**Sheet 114 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos on this page show the setting of Cable Car rail in the Barn. Photo A, B, C, and D shows a pre-bent section of rail that is about to be set in place. This pre-bent rail required that the track sections in the floor be built to exact measurements as defined in the project drawings or blueprints. Once the rail is bent into the desired curve there is not re-bending that can be done on the job site. Much of the rail work was done by hand, as can be seen in photos M, N, O, and P. The larger sections of rail would be moved by crane but at some point the rail is final set by workers. Photos Q and R were taken at the second level of the Barn. These photos show the daily inspection pits where workers will examine the under carriage of the Cable Car as needed.

**January 11, 1984**

**Sheet 115 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C show the tension pits on the first floor of the Barn. At this location large moving platforms or sleds as they were called will be set on the steel shown in these photos. The sleds have sheaves built on them and the cable that runs under the street will loop around them. The main purpose of these sleds is to keep the proper tension on the cable as it expands and/or contracts from the colder or warmer weather.

Photos D, E, F, G, H, and I show workers installing the rail into the rail slots that have already been built and poured with concrete. Rail of all types has a standard gage that requires that it be installed to the proper gage or distance from rail to rail. The work is fairly exacting and the rail must have the proper distance between them or the Cable Cars would derail. Photo I is very interesting as it shows the rail coming up to and being cut for the Cable Car turntable. The turntable is being manufactured at this time and is expected to arrive soon.

Photos J and L shows some building equipment being installed. In this case it's a sump pump that has been installed in one of the low areas where equipment will be installed at a later date.

Photos L and M shows that metal studs have been installed. Photo M is showing that sheetrock (wall finishes) is being installed. The installation of wall finishes is a major milestone to the project. As the sheetrock is installed so too is it taped, sanded and painted. This application of finishes is huge as now other finishes can be installed. Things like light fixtures, cabinets, and doors will soon follow this work.

Photos N, O, and P were all shot at the second level Cable Car storage area of the Barn.

Photos Q and R were taken outside the Cable Car Barn on Washington Street. I'm not sure what these concrete boxes are but they do contain electrical conduit of a larger size. Work like this is extremely important because until this work is completed no back filling of excavations can be made. Now that these boxes and electrical conduit are installed subsequent civil work can follow.

**January 11, 1984**

**Sheet 116 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C were taken on or near Mason Street just outside the Cable Car Barn. As can be seen the outside area is a construction mess. I haven't talked much about the people who live and work at or around the Barn or anyplace on the Cable Car line. During construction life for these people was very difficult. Construction cut off access to homes and business not to mention the noise and dirt that comes with ripping up city streets. It was amazing however to find out from the Construction Managers that complaints were for the most part very few and far between. I like to think that San Franciscan's knew how important this project was and that they didn't mind the sacrifice that came with living with all of the above.

Photos D and E are pictures of some new workers to the project. These are cement finishers working on the Shotcrete work that is still being performed. When I asked about this work I was told that a mistake had been made in the application process at this location. These workers were on site to "fix" this problem at this wall.



Photos F, G, H, I, J, K, L, M, N, O, P, Q, and R were all taken on the different roof levels of the Cable Car Barn. As can be seen skylight glass and copper roofing is being installed. At this time most of the roof is on and near complete. Workers are now putting on the finishing touches by caulking and installing copper flashing.

### **February 3, 1984**

#### **Sheet 117 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is again one of my standard photographs of the Cable Car Barn during construction. Of note in this photograph is that fact that the underground vault at Washington and Mason Streets has been backfilled.

Photos B and C show the delivery of the reconditioned sheaves that were removed and put into storage at Pier 70. These sheaves have been cleaned and primed for painting. Their return marks yet another milestone to the project. While installation is still several weeks away it's good to see these sheaves back at the Cable Car Barn.

Photos D, E, F, G, H, I, J, K, L, M, and N were taken inside the underground vault beneath Washington and Mason Streets. This is the first time I could get into this space as the scaffolding that was holding up the concrete falsework (concrete forms) has been cleared making the room accessible. The openings to the street above kind of give a view to just how large this room is. Of note in these photos are the plywood concrete forms that are being constructed. Notice that these forms are built on an angle and that they are not flat. These structures will hold the cable sheaves on them when finished. They are angled for the express purpose of having the sheaves sit at the proper angle. From the Cable Car Barn the motors and the sleds spin the cable and send it out to this underground vault room. These sheaves turn the cable in the right direction into the passageways as seen in photos M, N, and O. These underground passageways carry the cable over the Cable Car route. The cable at this location is a downhill run so the cable does not have to be accessed by the gripper on the Cable Car. Because it is a downhill run the Cable Car uses gravity to move it forward.

Photos P and Q show the rail being installed at the outside of the Barn. Photo Q was taken at the upper storage area level which is where the Cable Cars exit the Barn.

Photo R shows the "We Shall Return" banner that has seen better days.

### **February 3, 1984**

#### **Sheet 118 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A was taken outside the Barn where workers are playing with an air compressor machine.

Photos B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, and Q mark another major milestone. This series of photographs show the 2 part Cable Car motor base plate being delivered and installed at the Cable Car Barn. Photo B shows drayage workers removing metal plates (or trench plates as they are called) at the location where the motor base plate sits. This base plate shown in photo G weighs several thousand pounds and is being moved by drayage workers who move very heavy objects as a living. Note in photo G that these workers are using a very old method of moving heavy objects. That is that they are using pipe as rollers to jockey this heavy piece of equipment into place.

San Francisco History Center, San Francisco Public Library

It was amazing to watch these workers put this heavy piece of equipment on rollers and then push it to the location the needed. The base plate could be steered by changing the direction of the metal pipes as needed L, M, and N. This meant that the base plate had to be lifted by jacks and the pipes turned. It was a slow way of moving this heavy equipment but with the floor above there was no way to get a crane that was big enough to handle this heavy load.

In photo H we see the location where these workers will push this base plate to it final resting place. The wood seen in this photograph is drayage that will maintain the same floor elevation that the base plate is setting on. It should be noted that the Cable Car Barn has several different floor levels and that each "hole" had to be covered as the base plate moved across the floor. As the base plate is pushed into place it will travel over this wood drayage and into the location where it belongs. NOTE: The final location of the base plate is some 7 feet below finish floor. The first section of the base plate is moved onto drayage that starts from the minus 7 foot level up to the finish floor level. Once this base plate is set over this drayage the base plate is rocked back and forth while workers remove the wood drayage one piece at a time. As the wood is removed so to does the motor base plate get lowered to the designed elevation. The process is lengthy but is a very effective way of moving heavy objects by the brut force of these workers.

**February 3, 1984**

**Sheet 119 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos on this page show these two base plates being moved into position. It was an amazing bit of work and these workers were remarkable in the work they did.

NOTE: In photo H notice the yellow cranes that sit above the floor of the Cable Car Barn. These cranes are not yet operable yet as there is no electrical power to make them work. In fact, these cranes are not capable of moving really heavy objects. They are meant to move Cable Car equipment once the Barn is finished and up and running.

**February 3, 1984**

**Sheet 120 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

Photos A, B, C, D, and J shows Cable Car track being installed inside the Cable Car Barn. Installation of the rail was picture perfect as the surveyors and carpenters took great care in the installation of the concrete form work.

Photos E, F, G, and H we see workers doing some of the work to finish up several of the construction activities that were started months ago. It must be remembered that the project schedule required that work be performed out of normal construction sequence.

In this group of photographs we see workers catching up with work that normally would have been completed long ago. These photographs show workers installing work "the hard way" or by hand without the use of cranes to help them.

Photo K we see the motor base plate being set per the description on the last page.

Photo L show a worker on top of the moving crane (part of the building equipment). Notice the blue object in the foreground. This is a very large crane making its way into the corner of the interior of the bottom floor of the Cable Car Barn.

Photo M is of an electrical cabinet being moved into place. This equipment is very important in the supplying of electrical power to the interior of the building. Up until this equipment is put into use there has been no permanent electrical power. That has meant that there have been no lighting in the building since the project really got started.

Photo O shows rail being installed on Washington Street.

### **February 12, 1984**

#### **Sheet 121 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, R**

This entire sheet of photographs is from a Block Party that was held to celebrate the "End of Construction on Hyde Street." The party was held in an auto repair shop and had a fairly good turnout. A Cable Car was towed in for the party and this event turned out to be a great public relations outreach.

### **February 13, 1984**

#### **Sheet 122 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B shows how during the last few days the two Cable Car motor base plates have been set and totally installed. This activity is yet another project milestone as now Cable Car equipment installation is starting to ramp up.

Photos C and D show that Cable Car equipment is now starting to arrive at the Barn. This delivery of this equipment signals an important turn in the direction of the project. Heavy construction operations are still pretty much ongoing but the end of the major construction efforts are winding down. The motors seen in this photo are intended for use in the Cable Car Barn. While I don't know what purpose these motors serve I assumed that they have some use in the Cable Car motor assembly units as they showed up with the 2 motor bases.

Photos E, F, G, H, I, J, K, L, M, N, O, and P show work that is in progress at the underground vault area under Washington and Mason Streets. The work in these photos pretty much deal with the concrete pads or support blocks that support the cable sheaves. These sheaves are fairly large pieces of equipment that support not only the cable but the turn that the cable makes as it heads towards the direction of each Cable Car line. The anchor bolts that are seen in photo P give some impression of the tension and weight that these pads support.

Photos Q and R show yet more Cable Car motor equipment being delivered to the project site. In this case the motor's that turn the large sheaves and associated equipment has been delivered.

### **February 13, 1984**

#### **Sheet 123 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

Photos A, B, C, D, E, F, G, H, I, J, and K show the large Cable Car motors being brought onto the project site. Unlike the large motor mounts these large motors are being dragged into position via the use of a winch and/or hoist. NOTE: This equipment will be connected to the two large motor mounts that have already been installed. Your attention is directed to those large sheaves that were removed from the Cable Car Barn at the start of the project. These sheaves were stored at Pier 70 and restored after being

sand blasted and having primer paint applied. These sheaves were delivered back to the Cable Car Barn about a week or two before this date. It is these sheaves that connect to the motors seen in these photographs.

Photo L shows some stored HVAC duct work. Notice the metal studs are nearly completed making the installation of wall finishes (sheetrock) imminent.

Photos M and N were taken at the second level Cable Car Storage area. One photo shows track in/out and the second shows workers finishing up the shotcrete work with a finish coat.

Photo O shows an electrical transformer being delivered to the project site.

## **February 15, 1984**

### **Sheet 124 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B are as the viewer knows my usual exterior shot of the Cable Car Barn. While much of the building exterior and streets look similar to photos taken last month it should be remembered that there has continued to be a lot of progress being made.

Photos C, D, I and F shows street work on Mason Street that has recently been started (above the intersection of Washington and Mason) is now well underway. Excavations of the street have started and work on the existing underground utilities has begun. Notice in Photo C the underground utilities that have been "rerouted" to allow removal of the old utilities. This rebuilding of all the underground utilities was pretty much a project within this project. The scope of the utility rebuilding was huge and as always is the case identification of these underground pipes was quite difficult. Underground utilities, especially old utilities, can be very hard to identify. Many were very old and abandoned and certainly they were not marked. It is fair to say that the discovery of unknown utilities often played havoc with both the construction schedule and the construction budget.

Photos E, F, G, and H show that Cable Car rail has not been installed at and around the Cable Car Barn. Track work installation by nature is fairly complex but this installation was made even more difficult by the number of curved rail sections. These curved sections are to be found in higher numbers at the Cable Car Barn than anywhere else.

Photos K, L, M, N, O, P, Q, and R show a very interesting exercise to check the braking system on the Cable Cars. At about this time all the Cable Cars that have been in storage at Pier 70 have been cleaned and/or rebuilt. In this case all the Cable Cars got a new type of braking system installed and this required testing. In these photos we see a Cable Car being pushed up Jackson Street by a very large tow truck. Cable cars loaded with sand bags (in photos P and Q) provided a live load that was double the normal load of people. For this test the tow truck would push the Cable Car up the hill and the Cable Car operators would set the brake and move the tow truck out of the way. The plan was to have Cable Car operator release the breaks letting the Cable Car pick up significant speed. The Cable Car gripman would then pull the break handle all the way to the locked position and observe what the car did and how it behaved. In Photo K the Cable Car is readied for its first run of the test as the tow truck positioned it to push the car up the hill.

**February 15, 1984**

**Sheet 125 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, I, J, and L continue on with the testing of the new Cable Car breaking system. Photo A shows the some of the sand being installed in or on the Cable Car. Photo B shows how steep the hill is and photo C shows a Cable Car pushed up this very steep hill. The sequence continues with Photo D and E showing the Cable Car making its run down the hill at full speed. Photo F and G shows the results of this test which according to the operator was a surprise. The Cable Car did in fact stop within the parameters of the test requirements but the front of the Cable Car derailed. If photo G is closely examined the front wheels of the carriage came off the track and move slightly to the side. Righting the Cable Car was fairly simple and the tests were run several additional times.

Photo K shows what a nasty rainy day it was during these Cable Car breaking tests. These two guys are seeking shelter from rain while the Cable Car is being repositioned up the hill. Once set these two workers act as flagmen stopping cars while the tests are being performed.

Photo M, all tracks lead to the Cable Car Barn. This photo shows that almost all the tracks have been set within the Barn.

Photo N shows an unidentified piece of equipment inside the Barn.

Photo O is shows a very important part of the Cable Car Barn work being installed. This photo shows that the installation of the elevator shaft has been started. Elevators are notoriously known as being long lead items of work to be installed. Normally, once an elevator is ordered it can take as long as 8 months to receive it on any given project. Workers in this case are installing the elevator rail.

Photo P shows two plasters installing wall finish in an equipment room somewhere in the Barn.

Photo Q is huge as door frames have recently been being installed. Door frame installation is critical to all finishes inside any building. These door frames must be installed with the installation of the metal wall studs. Once set and the wall framing completed wall finishes (sheetrock) can then be installed.

Photo R is a shot taken from the mezzanine level looking down to the first floor. There has been huge change to the interior of the building. Notice in the bottom center of the photo some rather complex equipment has been set. Notice too the large sheaves (recovered) in storage. Also of note is the bridge across the tension pits. Worker access was extremely important for both safety reasons and worker access to areas of the Cable Car Barn.

**February 15, 1984**

**Sheet 126 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A is a shot of the Cable Car sheaves. These sheaves are run or operated by the motor units that sit on the large motor mount plates recently installed. The cable under the street runs in a loop from the Barn and back to the Barn. As the cable comes back into the Barn it enters a figure 8 kind of loop around these sheaves. The figure 8 helps provide traction to the cable and keeps it from slipping on the sheaves.

Photos B, C, D, E, F, G, and H shows workers pouring a special grout mixture under the Cable Car motor mounts that are now bolted to the floor. The grout fills the 1 or 2 inch space under the motor mounts and

provides a firmer base to the equipment that sits on top of it. This non-shrink grout is very specialized and is most often used under structural steel columns. This application to these motor mounts is not however that uncommon. Workers have to make sure that the right water/grout mixture is used. Once mixed the workers have minutes before hydration starts to harden this material.

Photo I is I think an electrical switch gear cabinet.

Photos J, K, and L shows the ever present surveyors marking control lines and elevations.

Photos M, N, O, P, and R are of the underground vault at or under Washington and Mason Streets. The formwork seen in these photos are for the sheaves that will later be mounted on each of these different concrete pedestals.

## **February 15, 1984**

### **Sheet 127 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

This entire series of photographs continue with the work in the vault under Washington and Mason Street. As the day was ending the workers at this location were cleaning up excess concrete from an earlier concrete pour. During this days photography I was down in this vault with the workers when a very heavy rain hit San Francisco. While down in the vault I noticed water pouring in several openings from the yet to be connected street storm drain systems (that were recently installed but not finished). As water came in it too started to fill up this underground vault area (as seen in Photo A. Water flow into this vault increased dramatically as the rain continued and the temporary lights, as seen in Photo B, started to short circuit as the light bulbs started blowing up from the electrical current shorting out in the water. Within seconds this entire vault filled with several feet of water. At this time there were maybe a dozen workers caught in darkness with hip deep water. I was very happy that I had an extra battery flash unit as I used it to supply light for these workers (and myself) to get to higher ground as seen in photo C. These few photographs of this event came as I was running out of the film in my camera that day so I was unable to shot the entire sequence of these events. The last bit of film in my camera shows the workers clearing out a drainage escape route for this water as I used my flash unit to provide them light. An exciting day of filming.

## **February 22, 1984**

### **Sheet 128 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B start this series with the usual shot of the exterior of the Cable Car Barn from the corner of Washington and Mason Streets. Much of the exterior area hasn't changed much because of the heavy rains during the last few weeks.

Photos C, D, E, and F were taken on the second floor Cable Car storage area at the turntable location. This photo shows that workers are now installing the bits and pieces of this motor operated turntable. The spoke like metal generating from the radius point of the turntable have been embedded into the last concrete pour. These metal spokes will provide support to the turntable base. Notice in photo E the track sections that will connect to the turntable as it spins. This allows the Cable Cars to be stored on several different tracks.

Photos G, H, I, J, K, L, and M show that in the last seven calendar days that a tremendous amount of work has happened at the underground vault under Washington and Mason Street. Nearly all of the

sheave pedestals have been poured and all concrete formwork has been stripped and removed. Notice the bolt patterns at the top of the pedestals. Each pedestal will have its own sheave mounted to these bolts. Once the sheaves are installed on these bolts the under side of the sheave base will be grouted with non-shrink grout.

Photos N, O, P, Q, and R show that work outside the Cable Car Barn is ramping up. The critical path of the schedule is now flowing through this work at Washington and Mason Streets. The recent winter rains have given way to spring like conditions and the contractor has started to work on the underground infrastructure at this location. NOTE: Work on the entire Cable Car line continues during this period. Photographs of those sections were not followed closely by me as the work is repetitious and there was no way I could cover every street activity taking place during these last few months. The next series of photographs shows street work that is basically the same at any location on the Cable Car system.

### **February 22, 1984**

### **Sheet 129 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C and D shows work on different parts of the Cable Car lines. While work at the Cable Car Barn was the most glamorous the street work too needed to be documented. Work on the Cable Car line has been ongoing since the start of this project and most of the work has been civil work. These photographs show one of the many turns that exist on the Cable Car system. These track sections were fairly substantial.

Photos E, and G show different workers working at the Cable Car Barn.

Photo G of the Cable Car was taken at an unknown location. From what I can see it looks like another test of the Cable Car breaking system.

Photos H, I, J, L, M, N, O, P, Q, and R show some pretty exciting work that has just started. As mentioned, most of the photographs taken show construction work progress at the Cable Car Barn. The focus of these photographs shows the A to Z of construction activities at the Barn while panning much of the other work on the system. The next series of photographs will photo document some of the construction activities of the other areas of the Cable Car system and its associated equipment. The mechanics behind the operations of a Cable Car system are fairly simple. A cable runs the entire length of each of the Cable Car lines. This cable is in a continuous loop from the Cable Car Barn to the end of each line. At each and every turn in direction it must be remembered that the Cable Car system requires an underground vault housing sheaves. The sheaves are kind of like large pulleys that allow the cable to make turns around corners without restraint. When a Cable Car wants to move it slowly grips the cable under the street. Via the use of sheaves the cable makes its way on a continuous loop. At each turn there is an underground vault room where the sheaves are housed. Within these underground vaults are the same kinds of pedestals that are seen outside the Cable Car Barn underground vault at Washington and Mason. Each of the underground has similar concrete pedestals that will support sheaves as it makes its way around each turn found on the Cable Car route. The photos shown on this page mark the first day that any actual Cable Car equipment was being installed outside of the Barn. These photos show the cable sheaves arriving and being off-loaded and installed into the opening that services each underground vault. Fun stuff!

**February 22, 1984**

**Sheet 130 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, and H shows how these sheaves were installed in the underground vaults. On this day the contractor was just off-loading the sheaves from a large truck. As the sheaves were off-loaded they were put down into the underground vault for later installation.

Photos I, J, K, L, M, O, P, Q, and R are taken back at the Cable Car Barn. As can be seen in the dates these photos were taken there were several locations where Cable Car equipment was being installed. In these photos we see the Cable Car motors being lifted by a crane in the Barn. Note the low floor to ceiling clearance for the crane. The motors I was told weight several tons. Photo I shows a good example of how workers jockeyed these motors into position for the crane. Using lengths of pipe the motors are hand pushed using a moving technique employed by the Egyptians. Photo K shows that one of the motors has been moved to a location where it can be picked up by the crane. Once it is in the air it is turned and moved into place over the large base plates installed several days ago. This equipment is then bolted down to the base plate.

**February 22, 1984**

**Sheet 131 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This entire sheet of photographs continues with the installation of the Cable Car motor units. There is really not much new information I can add to what is being done in these photographs. See sheet 130 for additional information.

**February 22, 1984**

**Sheet 132 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This entire sheet (with the exception of photos P and R) of photographs again shows the installation of the Cable Car motor units. What is noteworthy is the very tight space that this installation of these motors presented. Workers had to be extremely careful with not only the Cable Car equipment but with all the new construction at the Barn. As can be seen in Photo B the clearance between the floor and ceiling, and/or other new equipment recently installed is very minimal. Normally a crane of the size shown in photo B would show the boom of the crane in an upright position. This crane had to be kept in the down position which required an even larger crane because the crane boom handles the weight. The lower the boom the less load it can pick. Also, because of the lower boom the weight on the crane could not be evenly disturbed on the wheels of the crane. The low boom put most of the weight that was being picked onto the front tires of the crane. In photo N we see a modification to the crane that allows more weight to be picked up as weight is dispersed onto the metal wheels thus allowing the front of the crane to carry more weight. Photo G is an interesting photograph. These workers were quite ingenious when it came to moving heavy equipment. In this photo we see the workers taking the cable from the crane and pulling it out and hooking it to a pulley some 60 feet in front of the crane. In this application the crane is not lifting weight but it is pulling the weight of the motors which are sitting on the metal pipe.

Photo P is of a brick mason making repairs to the existing brick exterior of the Barn. During construction (and the old age of the building) much of the exterior brick was damaged. These masons are seen making repairs to this masonry.



Photo R shows electrical wire being off-loaded into the Barn.

**February 27, 1984**

**Sheet 133 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This entire sheet of photos again shows the installation of the Cable Car equipment. It's five calendar days since my last visit and work is humming along inside the Cable Car Barn. In this series of photos we see the workers installing the drive shafts from the motors to a mount that supports these drive shafts. These photos show the housing with the drive shaft being set. NOTE: Much of this equipment is new to me and I am not quite sure what the proper names of much of this equipment. My understanding of this equipment comes from watching and asking questions of the workers who too didn't always know what component parts were called. Starting with photo I we see the older sheaves that have been saved from the existing equipment taken out of the Barn at the start of the job, being reinstalled onto the new equipment. These sheaves have been sandblasted and repainted. It was my understanding that these sheaves were installed new during the 1960's. Something that I could never confirm. As can be seen in these photos these sheaves are fairly large in size. It is these sheaves that actually power or move the cable under the streets. Also, as mentioned the cable is installed in a figure 8 around the first and second sheave to provide traction for the cable (or metal against metal).

**February 27, 1984**

**Sheet 134 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, I, and J again show the large sheaves being installed on the drive shaft section of the Cable Car motors. In photos I, J, and M we see a worker filing the edges of these sheaves. As can be seen in these photos the drive shaft units are precision made equipment. In order to protect these drive shafts this worker is removing any and all rough edges.

Photo K shows a worker on Powell and California Streets doing some welding on the metal access boxes in the street.

Photo N is again taken on California Street. This welder is welding rebar to the metal plates in the pictures. I have no idea why he's doing that but it looked good.

Photos O, P, Q, and R were taken at the Fishermen's Wharf turntable location. In these photographs we see workers prepping for the installation of one of three turntables. In photo R we can see the pivot point of the turntable where it meets the body of the Cable Car turntable. NOTE: These photos were taken on the underside of the turntable. Many of the upcoming photographs were taken underground or under some piece of equipment.

**February 27, 1984**

**Sheet 135 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, E, F, and G, was taken on the top side of the Fishermen's Wharf Cable Car turntable. Workers are again working on the installation of the Cable Car turntable.

Photo C shows how the turntable distributes the weight of the turntable and Cable Car when it's in position.

SFP 105 Paul Baffico Rebuilding the San Francisco Cable Car Line Color Slide Collection /  
Photographer's Narrative  
San Francisco History Center, San Francisco Public Library

Photo D shows a round pipe like structure that will house the moving cable when the project is near completion. Installation of the cable, often miles long, didn't take place until the very end of the project.

Photos H and I show Cable Car street work being installed. In photo H rail is being installed and photo H shows an ironworker installing steel rebar.

Photos J, K, and M were taken in an underground vault and a location long forgotten. However, it is representative of most of the underground vaults. Notice that the sheave is very low to the top of the concrete pedestal. These vaults were extremely low (or had little head room). Often the head room was only a few feet in height.

Photos N, O, P, Q, and R are all taken at the Chinatown area. As can be seen the Cable Car project pretty much tore up most of the street when work was progressing. Having been there at the time it was amazing that many of the residents and business owners didn't complain more. I like to think that these people realized the importance of the Cable Car project and minimized the impact it was having on them. During construction the contractor's took great care of these people and were of great help to them when it was needed.

**February 22, 1984**

**Sheet 136 Photos A, B, C, D, E, F, G, H**

Each of these photographs was taken at the California and Powell intersection. As mentioned I've not taken many photos of the street work across the project. The reasoning for this was based on the fact that much of the work was repetitive in nature. Likewise, given the large amounts of cash that I was spending to photo document this project I had to limit the amount of film and processing costs that I was expending at the time.

**March 5, 1984**

**Sheet 137 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This series of photographs was taken at the San Francisco owned Pier 70. This warehouse was the location where all the Cable Cars were stored during the construction of the Cable Car system. The photos in this set show some of the work that was being done to the Cable Cars during this period. In writing this narrative several years after this project was completed I was stunned to find that I actually took a picture of myself. In photos Q and R the viewer can see a self portrait of me, Paul William Baffico. During this time the MUNI workers actually let me help with the construction of the brand new Cable Car. These photos show some of the work that was being done to the body of the Cable Cars. What a surprise to see these after 25 years!

NOTE: During this construction period the San Francisco MUNI decided to build a new Cable Car from the ground up. As there were no real blueprints or drawings of how they were constructed some very talented workers (as seen in photo C and F) completely built a brand new Cable Car. As mentioned I had the privilege of being allowed to help with this construction.

**March 5, 1984**

**Sheet 138 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, I, and J are photos of myself working on the new Cable Car being constructed at Pier 70. These photos were taken using a tripod and the camera timer to record some of this work I did. Damn, I was skinny!

Photos K, L, M, N, O, P, and Q are of course just the Cable Cars in storage.

Photo R shows a large lift that allowed workers to work on the undercarriage of the Cable Car.

**March 5, 1984**

**Sheet 139 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

NOTE: This series of photographs are kind of jumbled in their order and were taken on March 5, 1984. In what order I couldn't say but I suspect that the street shots were taken at the end of the day when I finished working at Pier 70.

Photos A, B, and C show that Cable Car signage is now being installed on the different Cable Car lines. One of the things I love most about San Francisco is how diverse this city is. Notice that the signs are in both English and Chinese! You got to love it if you're a tourist in San Francisco.

Photo D shows the new roof of the Cable Car that is under construction.

Photos E, F, G, H, I and J show construction work and track installation at the Ghirardelli Square turntable area. NOTE: In photo F notice the photographer towards the right center of the photograph. At this point of the project the media was taking more notice of the project. Up until this time I and one other photographer were the only people who had an interest in this project. And of the two of us I was the only photographer for the first six or seven months of the project.

Photos K, L, M, N, O, P, and Q are the continuance of the sequence of Cable Car repairs from the last group of photos.

**March 5, 1984**

**Sheet 140 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A shows more rail installation at the second floor Cable Car Storage area.

Photos B, C, D, and E were taken at a Public Relations event at Fisherman's Wharf. The press was out in full force as the end of the project was close. About this time the press started to show up on site in full force. The normally press free project was soon to become a media poster child. The woman in the green dress is Jane Neilson who was the project public relations representative for the Cable Car project. This is the woman I dealt with at the early stages of the project when I was asked to supply a bid to take the photos for the City of San Francisco.

Photos F, G, H, I, J, K, L, M, N, O, P, Q, and R shows the Fishermen's Wharf turntable arriving on project site. The media event mentioned above was centered on this major milestone event and everyone

## San Francisco History Center, San Francisco Public Library

who was someone was on site that day. Notice the pivot turntable assembly at the center of the round opening as seen in Photo H. This pivot is a very heavy plate with bearings that allow the turntable to spin. There was much discussion towards the end of this project about these turntables as they require manual labor to spin the turntable (with Cable Car on top) around. The local Cable Car Operators union decided that there were too many injuries associated with their operators spinning the Cable Cars on these turntables. At the eleventh hour the unions wanted all Cable Car turntables to be motorized. After some debate the City decided that it was too late and would cost too much money to change the design. To this day the only motorized turntable is located at the Cable Car Barn second floor.

Note: Photo P on this page is another picture of me on the turntable assembly. Its fun looking back after some 25 years and seeing a picture of myself with camera equipment in hand. If I remember correctly this photograph was taken by one of the workers on the project who decided that it was only fair that I have a camera stuck in my face. The other thing that strikes me is in looking at these photographs and seeing a wonderful view of the San Francisco Bay. What a great day it was and it brings happiness to me in looking back at this marvelous city and knowing that I was a part of this project.

**March 5, 1984****Sheet 141 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos on this page are all of the turntable event at the Fishermen's Wharf media event as described on Page 140. The photos are fairly self explanatory. A crane is brought in and set to pick the turntable up and put it in place. Photo O shows just how many media reporters that was on site to photograph this event. One of the interesting things in Photo N is the workers who despite the media event are continuing their work activities for that day. It must be remembered that the opening day of the Cable Car had been set in stone by the then mayor Diane Feinstein who was hell bent on having the system open for the Democratic National Convention. Schedule was everything and the Contractor's refused to stop work for anything other than some emergency.

**March 5, 1984****Sheet 142 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, E, and R are the last photos of the setting of the Cable Car turntable at Fishermen's Wharf.

Photos F, G, H, I, J, K, L, M, N, O, P, and Q were photos of opportunity for me. Because I was on site for the installation of the turntable I took some additional photos of the workers setting the Cable Car rail. The setting of the rail was pretty much the same operation that took place on the entire system. Or, the technology was an industry standard and while there were 8 or more contractors on the project all of them performed that same work.

**March 7, 1984****Sheet 143 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C are the standard pictures of the exterior of the Cable Car Barn. The reader must know by now that these photos were taken at the corner of Washington and Mason Streets. Nothing of note since my last set of photos several weeks before this date. The large underground vault is being backfilled and some underground sewer line or storm drain is being installed.

Photos D, E, F, G, H, I, J, K, L, M, N, O, P, Q, and R show one of the workers helping to install the Cable Car sheaves to the motor units at the Cable Car Barn. To be honest I really have not idea what she was doing but this young lady had been doing it for several weeks as I have shots of her working on the same task.

### **March 7, 1984**

#### **Sheet 144 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, J, K, L, M, N, O, P, and Q are all photographs of the Cable Car motors and sheaves being assembled in the Cable Car Barn. Photo B is interesting as you can see the double slot in the main sheaves that fits the cable. The reason for the double slot is because the cable (that powers the Cable Cars) raps around two of these sheaves in a figure 8 pattern. This configuration allows the cable to grip the sheave to turn the cables without them slipping at this metal to metal connection point. That is the figure 8 pattern keeps the cable tight into the sheave and the motors then can turn the cable. The workers in these photos are highly specialized machine union workers who are assembling the Cable Car motors and sheaves. The workers are assembling the sheave half to make it a completely round wheel. At the center of the sheave are the round seats that connect with the drive shaft of the electric motor unit. Photo K shows the workers making this connection to the drive shaft.

Photo I shows several workers installing track at the second level Cable Car storage area.

Photo R show yet another sheave being delivered to the project site. The location of this sheave was not known to me but I assumed it was within several blocks of the Cable Car Building.

### **March 7, 1984**

#### **Sheet 145 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, and D show more of the assembly of the Cable Car motor and associated sheaves. Photo C offers a unique shot of this assembly in process. The two elongated machines are the electric motors that power the large sheaves. Notice the drive shaft where the sheaves bolt up around the polished metal drive shaft.

Photos E, F, G, H, I, J, K, L, M, N, O, and P show more track work inside the Cable Car Barn. Photo M shows that the Cable Car Barn second floor turntable has been set in place at this second floor Cable Car storage area. While there has not been much in the way of construction that I have missed I did in fact not photograph this turntable being set in place. Sadly to say the Contractor decided the day before to move ahead with this work and set the turntable a day early. Photo I shows the operator's control board for the only motor operated turntable on the entire Cable Car System. This turntable is one of the more interesting ones as it will provide the direction of a Cable Car onto a storage track when the cars are not being used.

Photo Q show the truck brining the underground vault sheave onto site and being offloaded onto Mason Street.

Photo R show the tension sleds being moved into the Cable Car Barn. As a part of the cable motor assembly these sleds are a very important component part to the motor units. These sleds move along a track at the tension pits on the first floor of the Barn. The sleds are designed to keep tension on the cable

as it expands and contracts with the heat or cold. Not seen on these units are the cable sheaves that bolt onto the sleds and allow the cable to spin in one continuous loop.

**March 7, 1984**

**Sheet 146 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This entire sheet again shows the installation of the Cable Car sheaves onto the electric motor units. Not much more to be said except the assembly process has taken several weeks and is nearing completion.

**March 7, 1984**

**Sheet 147 Photos A, B, C, D, E, F, G, H, I, J, K, and L**

Photos A, B, C, D, E, F, and G shows the continued work on the assembly of the Cable Car sheave to the motor units.

Photos H, I, J, K, and L show the cable sheaves being off loaded at the Cable Car Barn. These sheaves are being stockpiled at the Washington and Mason intersection which lead me to believe that these sheaves were for the underground vault under this intersection. In fact this turned out to be partly true as one sheave was for another underground vault down Washington Street.

**March 12, 1984**

**Sheet 148 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, L, N, O, P, and Q show another major milestone on the project. This day marks the delivery of the last Cable Car turntable to the Powell and Market Street area. The Powell Street turntable is a manually operated turntable similar to the Fishermen's Wharf turntable. Photo E shows some of the media out taking photos as well as a small crowd of onlookers.

Photos M, and R show one of the larger sheaves being placed and/or installed into the underground vault at Washington and Mason Streets. Notice up above the sheave that workers have placed machines called "come-along's." These small hand operated winches were quite effective in moving these sheaves in these underground vaults. While the Washington Street underground vault is the largest of the underground vaults, moving the sheaves in this fashion was common to the placement of these sheaves. Each come-along was connected to eye hooks that were embedded into the concrete ceilings of each underground vault. They allow workers to move these heavy sheaves without the use of cranes or forklifts.

It must be remembered that Cable Car technology is fairly old and extremely simple. These sheaves pretty much redirect the direction of the underground cable around corners and they provide the pivot point at the end of each Cable Car line back to the Barn.

**March 12, 1984**

**Sheet 149 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, and E show the continued installation of the underground sheaves at the Washington and Mason underground vault. This vault is the first vault out of the Cable Car Barn and has the largest

number of sheaves on the entire Cable Car system, hence the large size of this room. Photo A offers a good shot of the base plate of this sheave. The base plate is set on large anchor bolts embedded into the larger concrete bases as seen in Photo D. As the sheave is moved closer to each of the pedestals it is positioned to be lifted and set onto the anchor bolts.

Photos F, G, H, I, J, K, and L show the Cable Car motor units nearing completion of the assembly process.

### **March 16, 1984**

#### **Sheet 150 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, and F are the standard photos of the exterior of the Cable Car Barn. This photo was taken just after sunrise and is at least an hour before Cable Car crews start work. Notable in this photo is that the Cable Car tracks have been installed on Washington Street. This new section of track leaves the Cable Car second floor storage area for all points. This new section of track goes right over the underground vault that is now backfilled and compacted. Track sections too are being installed on the Mason Street side of the Cable Car Barn. Also noticeable is the new uphill entrance at the side Cable Car Barn on Washington Street. In photo F we see a good shot of the track section where it splits on Washington and Mason Street. We are looking up the hill which is a one way street in the other direction (or downhill).

Photos G and H shows a rolling vibratory compactor working on the backfilled section of street. This compactor is rolling the newly laid rock base that will be the base of the new track section at this location. All excavations require "approved" rock backfill and the complete vibratory rolling to complete and compact the base soil.

Photo I is a shot looking down Washington Street from Mason Street. The entire track section under the Cable Car contract work is now in full bloom.

Photos J, K, L, M, N, P, Q, and R show the installation of the sheaves at the underground vault at Mason and Washington Streets. Photos J and K show a "dolly" that is basically a set of wheels with a small platform to hold heavy objects. In this case the heavy object is one of the sheave wheel assemblies.

Photo O shows that the electrical panels in the Cable Car Barn are now being installed and readied for permanent electrical power. At this time the Cable Car Barn has been run by temporary electrical power. Until these types of electrical cabinets are installed and connected there can be no permanent power hooked up. This unit serves the roof area of the Barn.

### **March 20, 1984**

#### **Sheet 151 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, and G were taken at the area around the outside of the Barn. Photos A and B are the usual exterior shot of the Cable Car Barn. The frequency of my visit this trip has only been a few days since my last full photo shoot. If compared with the photos of a week ago the area outside the Barn looks similar to those photos of a week ago. However, to the trained eye there has been much track work completed these last few days and this work is moving towards completion.

Photo H was taken on the Washington Street side of the Cable Car Barn. It's the new door area to the side of the building. In this shot a small retaining wall is being installed to hold back the street sidewalk.

Photos I, J, K, L, M, N, O, P, Q, and R were all taken inside the Cable Car Barn. Photos I and J show the second floor storage and inspection tracks. While going under a Cable Car may seem exciting this inspection area is small and confining. Photos K and N are yet another electrical cabinet being installed. Photo L show the HVAC (heating, ventilation, and air conditioning) systems. Photo M was taken at the jobsite office for one of the subcontractors. Workers have just had their daily safety meeting and everyone is off to work. As can be seen in Photo O this jobsite office is not really big. No single subcontractor was allowed to install anything larger than what is seen in this photograph. The reason for this is directly related to the amount of room that was available to the Prime Contractor. With as much activities taking place space was at a real premium. Photo Q shows that the main cable motors are still being installed. At this time this work is nearly complete with only one sheave left to install. Photo R was taken in the underground vault under Washington and Mason Streets. Sheaves are still being installed at this time and this photo shows just how these sheaves sit on the concrete pedestals.

**March 20, 1984**

**Sheet 152 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos in this sheet show work being performed at the Cable Car Barn. Photos A, B, C, and E show the main cable sheaves from a different angle than those photographs on Page 151. Photo D is a photo of the movable crane that will be mounted on the first floor work area. This crane travels on rails mounted below the ceiling area and is meant to provide a means of moving Cable Car parts around.

Photos F, G, H, I, M, N, O, P, Q, and R show the smaller sheaves being installed in the underground vault under Washington and Mason Street intersection (and just off to the side of the Cable Car Barn). The moving of these sheaves was pretty amazing as it was all done with the use of small come-along's. This vault room was different than all other underground vault rooms because of the size and height of this room. All other underground vaults are much smaller and have only a few feet of headroom. However, the means and methods of moving the sheaves in each of the vaults is exactly the same as what is shown in these photographs. Up to 5 or 6 come-along's are used to pick up and pull and/or move each sheave until it reaches the desired location. Usually with only a few inches these sheaves are slowly moved into position with the maneuvering of the sheaves using these small hand winches. Its slow work and simple technology but it is quite effective.

Photos J and K show one of the Muni workers making an inspection of the tunnels where the underground cable travels. This person (whose name I can't remember) was assigned to the Cable Car Project from day one.

**March 20, 1984**

**Sheet 153 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This entire sheet of photographs shows the sequence of how workers moved the large sheaves in the underground vault at Washington and Mason Street. These guys were real professionals and the information I learned from watching them move this equipment was useful during my entire career. The most important lesson came from the amount of patience that these guys had when having to move their chain hoist equipment around just to move these sheaves a few inches around. Photo O does show a motorized winch being used but this underground vault was the only location where it could be used



successfully. That was because this underground vault was the largest vault room on the entire Cable Car system and it provided enough space for its use.

**March 28, 1984**

**Sheet 154 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, and H show the construction progress at the exterior of the Cable Car Barn. Photos A and B are the standard shots of construction progress on the building exterior. Of note are the wood concrete forms at the upper window sill locations. These wood forms are for the installation of concrete at the window bases. Each window will have the same application of these concrete sill bases so that windows can be ordered and installed.

As can be seen in the remaining photos (C, D, E, F, and H) track work at and around the Cable Car Barn continues. Its several weeks now since the track work around the Barn were started. Unlike other locations where track is being installed this work has been accelerated to meet schedule concerns for work that is considered "late." NOTE: The slot at the middle of the track section is where the Cable Car connects or grabs the underground cable.

Photos I, J, K, L, M, N, O, P, Q, and R show construction activities inside the Cable Car Barn. Photos I, J, and K mark yet another major construction milestone towards the completion of the Cable Car Barn building with the installation of the elevator. Elevators are installed after interior finishes are complete or nearly completed. The reason is that wall and floor finishes have to be finished for the elevator door jams and associated push buttons and signage. Photo K shows an elevator installer assembling the main platform of the elevator cab.

Photos M and N show a worker installing the fire protection (sprinkler) system in the Cable Car Barn. At this point in time most of the upper floor sprinkler systems are complete as wall finishes in the upper offices needed to be completed first. This worker is installing the fire sprinkler on the first and second floor where there are no wall finishes.

Photo P is of a carpenter installing the concrete sill formwork at the upper second floor windows. Once these concrete sills are poured, windows can be installed.

Photo L shows a surveyor marking a "point" for track installation. Survey information is critical to any project but special care was taken in the layout of track sections.

Photos O, Q, and R show continued installation of Cable Car tracks and switches inside the Cable Car Barn.

**March 28, 1984**

**Sheet 155 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Track installation inside the Cable Car Barn has been on the list of the most important activities that need to be completed. With the completion of the track work the reminder of the concrete infill work can be performed.

Photos A, G, and P shows a workers grinding the metal that makes up the cable slot for the installation of the metal grating. Metal grates are being installed to prevent Cable Car workers from falling down the opening next to the track.

Photos B, D, E, F, and N show fire sprinkler piping being installed at both the first and second floors of the Cable Car Barn.

Photos I and J show the second floor Cable Car storage area in full view. Many of the workers are working on the track sections.

Photo K was taken at the upper second level turntable. The installation of the track to fit the turntable section was fairly tricky. As can be seen in this photo the tolerances are small between the fixed track and the turntable track. Great care has been taken during the construction process to correctly survey the location of the track sections. That care has resulted in a high accuracy in making all the track components fit together into a useable set of tracks.

Photos Q and R were taken on the first floor level at the tension pit by the Cable Car motors. The worker in this photo is drilling bolt holes to mount some piece of equipment onto one of the tension sleds that are now being installed.

**March 28, 1984**

**Sheet 156 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs on this page show the Cable Car sheaves within the Cable Car Barn. Photo A is the rear end of one of the tension sleds at the tension pit. These sleds move as the cable either expands or contracts. The sleds keep constant pressure on the cable to ensure it doesn't come off the sheaves.

Photos B, C, D, E, F, G, H, I, J, and O are all of the Cable Car motor units and associated sheaves that drive the cable underground over the different Cable Car routes. It's been several weeks now since the motor assembly units have been brought to the site and assembly of the motor units and sheaves has began. NOTE: Without permanent electrical being connected to the Cable Car building the testing of these motors is on hold. At the time of these photographs there was no expected date when permanent power was going to be connected. With the testing phase being critical to the opening of the Cable Car systems there was some concern at the time that electrical power would be a problem to the start up of the system.

Photos Q and R were taken in the underground vault at Washington and Mason Streets. At this time all but a few sheaves at the Barn have been set. Photo R shows a mistake that was made when the sheave pedestal was constructed. The sheave scheduled for this location was mismarked on the drawings and the wrong baseplate and bolt pattern was built. This wasn't a big problem as the engineers of record provided an alternative method of connection for the correct sheave. As can be seen it was merely a matter of drilling and installing new bolts.

**March 28, 1984**

**Sheet 154 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

Photos A, B, D, E, F, G, and H were taken in the underground Washington and Mason Street vault. As mentioned most of the sheaves have been set in this vault. Notice the different angles on the pedestal

bases? This angle facilitates the direction of the cable as it leaves the Cable Car Barn and heads in its respective direction. With the sheaves on an angle the cable can also be adjusted for height and direction. Later when the cables have been installed and the motors are turning them this is not the place to be standing as it's quite dangerous.

Photo H is a good shot of the tension sleds being stored until needed. The subcontractor who installed the Cable Car motors and sheaves are now cleaning up their work area as it will be some days/weeks until they are ready to test the system.

Photos I, J, K, and M show the electrical cabinets that power the Cable Car motors being installed. It must be remembered that until these panels are completed that there will be no permanent electrical power turned on to the building.

### **March 30, 1984**

#### **Sheet 158 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, and F show the standard photos of the exterior of the Cable Car Barn. As it's only been several days since my last visit to the project not much has changed at the exterior area. Track work at the exterior of the Barn has been the focus of construction activity the last few weeks. While it may not look much different there has been tremendous progress made the last week.

Photos G and H show an electrical technician are seen starting the process of powering up some of the Cable Car equipment for a systems test. Systems start up is probably one of the more difficult construction activities to take place in the Cable Car Barn since the project was started. The process must be fully documented and the Public Utilities Commission and for the end user Muni before the system is opened to the public.

Photos I, J, K, L, M, N, O, P, Q, and R show workers assembling small sheaves onto their stands. These sheaves will carry the cable underground essentially keep the cable from touching or dragging on the ground. These small sheaves will be place about 15 to 20 feet apart and they will be installed on the entire Cable Car system. There are several hundred if not thousands of these small sheaves that are mounted under the streets and out of sight from the public.

### **March 30, 1984**

#### **Sheet 159 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photo A was taken just off to the side of the tension pit on the first floor of the Cable Car Barn. Work in the Barn is nearing completion and the last little bits of work are being installed. In this photo we see that sheetrock is being hung at the area above the tension pits.

Photo B, D, E, F, G, H, I, J, L, M, N, O, P, and Q show electrical workers installing the electrical wiring that will be needed to power the Cable Car motors. This electrical cable is quite different the most wiring found in a house or business. The wire is very specialized and is meant to carry heavy electrical loads. The first step in the installation process is to pull the wire through the conduits, buried in the floor, from the motor units to the electrical panels. One pulled both ends of the cable will be "landed" or connected to the electrical cabinets.

Photo R is a good shot of the tension pit with the sleds sitting on their rail. It must be remembered that these tension sleds move according to the tension on the underground cable. These sleds allow the cable to expand or contract without causing the cable to break under extreme tension.

### **March 28, 1984**

**Sheet 160 Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R** All photos on this sheet show one of the more unusual public media events that I've seen yet. In these photos the construction management firm O'Brien Kreitzberg staged this event using some very beautiful mules. The mules were brought on site to pull one of the California Street Cable Cars on the upper section of California Street at Nob Hill. The use of mules for this event was not really clear but I'm just here to document these events no explain them. As can be seen this event drew a fairly large crowd from the area. Of course, everyone loves the Cable Cars and their disappearance from the City has been felt so most everyone was glad to see them back. Even if they were pulled by mules.

### **April 1, 1984**

#### **Sheet 1, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O**

All photos on this page were taken during one of the public relations events for the must anticipated return of San Francisco's Cable Cars. This public relations event was (in my opinion) a little strange as the people who staged it hired someone who leased out his mules for special events. While the significance of the mules remains unclear to me (after 25 years) the event was what it was. For the record, this event was held on California Street on Nob Hill. The Cable Car in the photos was trucked in on a flat bed truck and it was placed on the track for most of this day.

### **April 4, 1984**

#### **Sheet 162, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and C are not quite my usual photographs of the exterior of the Cable Car Barn. As can be seen in these photos track work continues to be installed at and around the Cable Car Barn. In addition to the track sections shown in these photos work on the sidewalks curbs and gutters is now going in. The installation of curbs and gutter is yet another milestone in the project. Once these gutters and sidewalks are installed the paving of the street sections will be started and the street reopened (still several weeks away).

Photos D, E, F, G, and H show some heavy metal frames being delivered and installed in one of the underground vaults. Please note that I have no idea of what this material is but it was put into the vault within the track section making it a piece of system equipment. As sheaves are being installed in the area it is assumed that this equipment is for the sheave installation.

Photos I and J shows workers pouring concrete in a small curb form at the mezzanine area of the Cable Car Barn.

Photos K, L, M, N, O, P, and Q were taken in the underground vault area under Washington and Mason Streets. The installation of the sheaves at this location continues at this time. Notice Photo P that shows the smaller sheave wheels installed. It must be remembered that the actual cable that drives the Cable Cars must run freely and unhampered as it leaves the Cable Car Barn and makes the loop around the

system and back to the Barn. These small sheaves carry the cable and spin as the cable travels across it. These small sheaves are being installed on the entire system.

Photo R was taken looking away from the Cable Car motors at the tension sleds that have been recently installed. Workers are still putting the finishing touches on this equipment and all that is needed is electrical power and the cable that powers or moves the Cable Cars.

**April 4, 1984**

**Sheet 163, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B are the usual photographs of the exterior of the Cable Car Barn at Washington and Mason Streets. Work on the street sections are moving forward pretty quickly now that the curb and gutters have been installed. Notice the fresh dirt fill that has been placed off to the right of the track section. This fill material will be compacted and readied for paving operations.

Photos D, E, F, G, and H were taken from the topside of the Cable Car Barn looking down Washington Street and down Mason Street. Installation of the track section and curbs and gutters are close to being completed.

Photo I was taken above and over one of the tension pits. One of the workers is using the tension sled as a work bench.

Photos J, P, and R show the installation of the Supervisors office area at one of the entrances to the Cable Car Barn. In this photograph a welder is seen finishing off some work that remained from the installation of the structural steel and flooring deck.

Photos K, L, and Q are of workers moving in some of the old Cable Car equipment. The floor to ceiling clearances were pretty tight for the type of crane being used inside the Barn. Workers had to be extremely careful when using the cranes inside.

**April 9, 1984**

**Sheet 164, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

If the reader hasn't yet noticed my visits to the Cable Car Barn have been more frequent. The reason for this has to do with the completion date of the project in July 1984. Work on the Cable Car system has really been ramped up as the system has to be open for the Democratic National Convention. With as much work as there is left to do and so little time left in the project workers are starting to feel the pressure of finishing the project.

Photos A and B are my usual photographs of the Cable Car Barn exterior. Work in and around the Cable Car Barn continues to be preformed and there is really nothing much that is new from my visit five calendar days ago.

Photos G, L, N, and P of wire reels is yet another very important project milestone as the actual Cable Car cable is about to be installed by Muni. It should be noted that the process of pulling new wire requires that several smaller size wires will be used to pull the main Cable Car cable through the system. The order is as follows, a rope is run from the Cable Car Barn is pulled the length of the Cable Car line and then back to the Cable Car Barn. Once the loop is completed, a small wire is connected to the rope and

the smaller wire is then pulled the entire length of the Cable Car line. A larger and more substantial wire is then connected to the small wire and it is pulled the entire length of the system. Finally, the Cable Car cable is attached to the wire and it is pulled the entire length of the system. Once the final cable is pulled it is spliced to make a continuous loop around each of the different Cable Car lines. The cable must be pulled correctly around each of the different sheaves at each of the turns. This process requires that no mistakes will be made as the entire process would have to be repeated should one sheave be missed. NOTE: Once the cable is in place the process above will never have to be done again. That's because if the cable requires replacement the old cable would be used as the lead wire pulling the new wire along the path that the old cable was following.

Photos E, F, and R show track sections being installed.

Photos I and J reveal that some new work has been completed from my last visit 5 calendar days ago. The tension sled sheaves have been installed. These sheaves are all new as none of the older sheaves were saved. NOTE: In regards to the older Cable Car equipment I don't remember if I mentioned that it was not saved. Instead it was given to the subcontractor who demolished the old Cable Car equipment. I was amazed that the city would give that old equipment away like that and not save it. Oh well gone forever!

**April 9, 1984**

**Sheet 165, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, and M mark an important occasion in the history of this project. The pulling of the cable is amazing given the time period to rebuild the entire Cable Car system. In all my 37 years (as of 2009) I've never seen a project so well run and executed. Seeing this cable in place was kind of sad for me as the end of the project is near. I've come to live and breathe Cable Car during this time period. The down side to this project has been the amount of effort I've had to expend to get these photographs. I haven't mentioned it anywhere but after this project I put my camera equipment away and didn't touch it again for 20 years. I was tired; what can I say?

Photo C is looking out of the Barn towards Washington Street. This is the exit point for the Cable Cars every morning when service starts.

Photos D, E, K, and L are all taken on the second floor of the Barn. As can be seen the place has been cleaned up and in Photo K we see that the place is being painted. Paint marks one of the final steps in the completion of a building. It's good to see the paint being applied.

Photo G shows that construction work on the upstairs second floor turntable is still in progress at this late date. Actually, the turntable is very close to being done and only the covering on the turntable itself needs to be installed.

Photo M is a very nice example of how the cable is held in place during operations. Notice the bottom and top sheaves keeping the cable in one location and elevation. Low tech but effective.

Photos J and L show some of the areas that will be used for storage. These areas are not quite big enough to have offices built in them so they were designed for storage of Cable Car materials.

**April 29, 1984**

**Sheet 166, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, D, E, F, G, and H are the standard photographs of the exterior of the Barn. In the last 20 calendar days since my last visit there appears to be no noticeable progress in the track work or on the exterior of the building. However, not seen in these photographs is exactly just how much work has been completed? The most obvious thing I noticed was the installation of the flagpoles on the top of the Barn. I also noticed that the concrete window sills have progressed to the point that they are almost complete. There are many small pieces of work that have been completed and these are not noticeable to the casual observer.

Photos K, L, and N are of equipment that has been installed that is not a part of the construction process. Instead this equipment is part of the final building paraphernalia that will be turned over to Muni for their workers to use when the building becomes functional.

Photos O, P, Q, and R are of workers putting making the final adjustments to the large sheaves. I was told by the workers that the sheaves needed to be balanced. The adjustments that are being made in this photograph show these adjustments being made.

Photo M is a very interesting shot of the sheaves that carry the Cable Car cable out of the Barn. Notice that there are different slots for the different Cable Car routes?

**April 29, 1984**

**Sheet 167, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P**

Photos A, B, and C are a continuation of workers balancing the large sheaves before they are activated. As these sheaves spin, like a car tire they need to be balanced so they don't wobble when they are being used.

Photos D, E, F, G, and H show a worker making some adjustments to the tension sled weights. I think that I've mentioned that much of the old Cable Car equipment was trashed. In addition to the large Cable Car motor sheaves these green racks of weights are being reused on the new cable tension sleds. The weights add stability to the sleds as each of the different cables for each Cable Car segment are quite heavy and under tension can rip the sleds right off their tracks.

Photo I tells much about the work that is still ongoing in the Barn. The plastic cover over equipment that hasn't been installed is protection from the sheetrock taping and painting that is still ongoing at the Barn.

Photos J and K is of a worker assembling the pulleys or sheaves for the cable runs under the street around the Cable Car Barn.

Photo L is a photo of the first tension sled assembled that will have the first of the cables installed on it.

Photos M, N, O, and P all show the process of workers installing the first of the cables since the system has been rebuilt.

**May 3, 1984**

**Sheet 168, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A and B were taken three days after my last visit. There is not much to talk about here as the time duration since my last visit is not very long. Concrete has been poured around the track but that's about all the progress the reader will see.

Photo C and D show that track work continues to be worked on and that the roll up metal door has been installed in the last few days. That door means that the Cable Car Barn is almost ready to be locked at night. There have been a few breaks in during the last year and a half but for the most part thief hasn't been bad according to the Project Manager.

Photo E gives a good example of the counter weight on the tension sled in the working position.

Photos G and H show the cable stands that separate the cable (from top and bottom) as it makes the loop around the sheaves on the tension sleds.

Photos F and I are photographs of the Cable Car motor units that are now pretty much completed.

Photo J is of tension sleds that still do not have their main sheave installed yet. The installation of the tension sled sheaves doesn't take very long to assemble. It was found during the installation of the sheaves that it was better to install the counter weights before the sheave was assembled. The workers making this installation had to shift gears and rethink the methodology of the planned installation. The workers made this adaptation in the assembly without much trouble.

Photos M and N provide a close look at the cable sheaves where the cable leaves the Barn.

Photos O, P, Q, and R show general construction progress. Nothing of note in these photos except that painting operations is still ongoing for most of the building.

**May 3, 1984**

**Sheet 169, Photos A, B, C, D, E, F, G, H, I**

Photos A, B, E, and F show the cable tension sleds being assembled for the installation of cable that is now being installed on the Fishermen's Wharf line.

Photos C, D, G, and I show general work being performed at the Cable Car Barn. Many of the pieces of equipment in these photos are for Cable Car operations once the system goes into service. I did not identify this equipment as I was more interested in the installation then the function of the machinery.

**May 4, 1984**

**Sheet 170, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

It should be mentioned that there is much activity taking place on the Cable Car system. This is my second day this week on the project site as the pulling of the cable is a major milestone in the overall project schedule. All photos in this sheet were taken at various locations on the Cable Car system. At this time work at all the locations on the system was being completed so that testing of the systems could



be fired up and readied for service. Many of the photos show track work being finished up and cable pulleys or small sheaves being installed (as in Photo C and D). Cable lead wires are also being run as the main Cable Car cable has arrived on site and is being installed (in photos F, G, H, I, J, K, L, M, N, O, P, Q, and R). Remember, rope is pulled first, then a more stout smaller cable is tied on the rope and pulled through to the Barn, then a bigger cable is pulled off that and finally the larger and final Cable Car cable is pulled last.

**May 3, 1984**

**Sheet 171, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos on this sheet show the installation activities on the underground cable. Under normal conditions should a Cable Car cable get older and break a repair or splice is usually made. I was told that the normal life span of a Cable Car cable was about three years. When cables need total replacement a new cable is tagged on the end of the old cable. The old cable then acts as the lead wire to pull the newer cable through the entire system (including pulleys). Once the old cable is removed, the new cable is spliced and the tension cables adjusted to put tension on it. At that time it's ready to go back into service.

However, since the system was rebuilt it was not possible to pull the new cable through the different system lines. This completely new pulling process thus required a rather methodical installation process using small rope, larger and larger cable and finally the final cable pull. The workers in all these photographs are shown installing the cables that will pull the final cable into place. The new cables had to be threaded in and over the sheave across the entire system run or length. That meant that these workers had to go down each access hole and thread the smaller cable around the sheaves. As access to each of these service vaults is not a common event, the size of the vaults was quite small as can be seen. Often the vaults were too small for even one person much less a worker and some crazy photographer who was photo documenting this process. As a result of this I was forced to take pictures from above ground of this cable pulling exercise. The entire effort to install just one of the Cable Car runs took several days to complete as it was a laborious process at best.

**May 4, 1984**

**Sheet 172, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Today marks the third day of Cable Car cable being installed to the Beach turntable from the Cable Car Barn. I must apologize to the viewer for the similar nature of work on each of the slide sheets. However, I felt a need to photo document the entire process of at least one Cable Car cable line installation as a part of this project. These entire sheets (and several to follow this sheet) are the first installation photos of the cable installation since the system was rebuilt and the photos were taken in various locations in the city. The last two photos (Photos Q and R) show the small cable in place. The installation of this cable was being installed in two city block increments and required about a dozen workers total.

Photo O shows yet more materials and equipment being delivered to the project.

**May 4, 1984**

**Sheet 173, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, I, and J show the Cable Car cable installation back at the Barn. The first cable loop was pulled today and the final large cable was pulled through the entire system run and back to the Cable Car Barn. The cable is now ready to be spliced from the starting point to the finish point of its length making it a single cable loop. NOTE: Each of the three different Cable Car runs will have cable installed on each of them using this same process. Noting will be different except for the length of the actual cable as each Cable Car run is of different lengths.

**May 5, 1984**

**Sheet 174, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, and D are all the standard photographs of the Cable Car Barn exterior. There are many things happening in and around the Cable Car Barn as opening day approaches. In these photographs we see that the track sections have nearly been completed. While there is some remaining work to be done the track sections are fairly complete on this date. The surround areas around the track sections are still dirt and all that remains is the final grading of the dirt base sections, the installation of concrete road base and finally the asphalt paving. In Photo C and D we see yet another project milestone taking place. The installation of door and window frames is now starting. This major event will now allow the building to be enclosed to the weather. This is important as the Cable Car interior finishes require some warm air to dry sheetrock taping and paint as it is applied.

Photos E, F, G, H, I, J, K, L, M, N, O, P, Q, and R show another major milestone being met on this date. These photographs show the splicing of the very first Cable Car cable since the system was shut down and rebuilt. While cable splicing is not something I'm very familiar with, I would direct the viewer to the internet web sites on "cable splicing" should a more detail explanation of what these workers are doing be needed. Suffice it to say that the cable ends are being spliced together to make it into one continuous cable loop from the Barn to the end of the line. In order to do this workers are seen unraveling the cable strands for some 10 to 15 feet back from each of the two ends of the cable. Once the cable is unraveled it will be "woven" together to make this splice. NOTE: The job of splicing cable is a very old and specialized trade. If the cable is not properly spliced it will not last the day and will snap at this splice joint. The cable must be properly woven together into a uniform cable width as it must pass through and over each of the cable sheaves on the entire line.

**May 5, 1984**

**Sheet 175, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

All photos on this page show the continuation of the cable splicing activities. As has been mentioned these photos mark the first of cable splicing activities that will continue for the next few weeks. Photo Q is rather interesting as it shows that a cable break sensor has been installed. This is a new concept to the Cable Car system as sensors have never been used before. The concept is fair simple, if the cable breaks the sensor picks up a trouble light on the motor control panel. Cable breaks are fairly common and the addition of this sensor was very much welcome by the

NOTE: It was worth a mention that it is less then a month and a half until the Cable Car completion date in June 1984 (that was been mandated by the then mayor of San Francisco Mayor Diane Feinstein) is

reached. In looking at this project and seeing the totally amazing progress that has been made to date it was scary to think that the completion date was so close. At this time there is a great deal of unfinished work on the Cable Car project to be completed.

**May 5, 1984**

**Sheet 176, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs on this sheet show the continued splicing of the first run of cable at the Cable Car Barn.

**May 5, 1984**

**Sheet 177, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs on this sheet show the continued splicing of the first run of cable at the Cable Car Barn.

**May 5, 1984**

**Sheet 178, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs on this sheet show the continued splicing of the first run of cable at the Cable Car Barn.

**May 5, 1984**

**Sheet 179, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, I, J, K, L, and M show that the splicing of the first section of cable is complete. I must apologize for the number of photographs of this event but it's not for me to determine how many photographs are enough but only to photo document the process. In this group of photographs we can see the completion of the splicing process and the manpower that was or is needed to put the cable on the tension sheave. As can be seen the process is quite labor intensive and the level of skill needed to "weave" the wire ends together is impressive.

Photos N, M, O, P, Q, and R show a party and/or luncheon that was held to celebrate the completion of the cable splice milestone. This party however was quite unique as it was hosted by the women who lived in the house shown in the photograph background. It wasn't until after the Cable Car system was opened in July of 1984 that the Project Manager (the woman with the sunglasses centered in Photo P) informed me that this party was funded by the women who for a number of years had supplied their services to the men working on the project. In true San Francisco form the local house of prostitution decided to show their appreciation to the guys who frequented their business by hosting this barbeque.

**May 5, 1984**

**Sheet 180, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs in this sheet are again photo documentation of the cable splicing at the Cable Car Barn. These photos are taken of the second and third cable run splices that are being made on this day. May 5, 1984 turned out to be a very full photo day with the cable splicing operations taking place. It's about 40 calendar days until the system opens and the workers are being pushed to complete as much work as they

can. Or, more to the point the workers are being pushed to complete all the work that is needed to run the system. Time is very limited and much of the Cable Car system is still not complete.

Of note is Photo C that shows the tension pit and the metal rungs that anchor the tension sled. This picture shows that the tension pit rungs are being used as an anchor for the pulling of cable. These blocks with hooks are from the old Cable Car Barn and is equipment that has been used for many, many years. The application is pretty straight forward in as much as the pulley is being connected to this anchor point and the cable is being pulled using this anchor point.

**May 5, 1984**

**Sheet 181, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Yet more photos of the cable installation at the Cable Car Barn. I will not repeat the process but will direct the viewer to Photo Q. Of note is the sheetrock wall in the background of the photograph. The photo shows that much of the interior finishes in the Cable Car Barn remain uncompleted. As painting and wall finishes are not critical to the operation of the Cable Car system much of the nonessential work is not being pursued.

**May 5, 1984**

**Sheet 182, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos in this sheet are again part of the cable installation to the California, Powell, and Hyde Street Cable Car lines. The pulling and splicing of cable has continued from early in the morning on this May 5, 1984 well into the evening hours of this day. The first of the photos taken today show work that was started at 6 am while the photographs on this sheet were taken at close to midnight the same day. The workers in these photographs are starting to show the signs of fatigue. This exhaustion can be seen in Photo N when one of the worker's broke a pin on the main sheave gear. It was a fairly minor problem but it did cost these worker's a few additional hours to fix it. Also of note in these photos are the large green wire spools of Cable Car cable.

Photos P and Q have to be some of my favorite photos. As tired as this crew was these guys stopped to take the time to let me photograph them. This photo was taken very late at night and these guys have been working at least 18 hours.

**May 5, 1984**

**Sheet 183, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

NOTE: All photographs on Sheets 183 and 184 are pictures that are out of sequence of the days activities and are extra photographs that I had edited from my very long day on May 5, 1984.

Photos A, B, C, D, F, and J were taken inside the Cable Car Barn and show the main sheave motor assemblies.

Photo E was taken looking east or down Washington Street. Notice that the street section (paving) and sidewalks, curbs, and gutters have not been installed.

Photo I and K are excellent photographs of the first floor of the Cable Car Barn. I wasn't sure of the date when the electrical power was connected but it was within the last few days of these photographs. Main electrical power will now allow testing of the equipment which is critical to the start up operations of the new and improved Cable Car system.

Photos L, M, N, O, and P were taken at the second floor Cable Car storage area of the Barn. The place is looking fairly complete but notice that the window glass is still not installed.

Photos J and R show the cable reel and the pulling of the cable on one of the lines.

### **May 5, 1984**

#### **Sheet 184, Photos A, B, C, D, E, F, G, H, I, J**

The photographs on this sheet are all first edit photographs. Photograph C are of the cable pulling operations outside the Cable Car Barn.

Photos B, D E, F, G, H, I and J were taken inside the Barn and show just how much work needs to be completed.

NOTE: As I've mentioned it's just over a month until the Cable Car system opens to the public. This set of photographs mark the last set of pictures that I'll be taking until the system opens to the public. The project has been rather taxing on me and with the few weeks left until the system opens I will not be taking any more photographs of the construction progress until it opens to the public.

### **June 6, 1984**

#### **Sheet 185, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

The next series of slide sheets marks the beginning of the end to a project that I've come to love. While the photo documentation process has been an exhaustive and a very expensive undertaking (for me) I've come to love this job. While I was totally aware of the historic importance of this project I never realized just how important it would become to me on a personal level. Likewise, in looking back at the effort on the project I never realized just how profound an experience it would be for me. In writing this narrative some 25 years later (almost to the exact date above) I've had a chance to revisit the project with a new perspective on just what these pictures are all about and I feel graced to have been a part of the history of San Francisco.

The photo sheets that remain in this series all document the grand opening of the Cable Car System and subsequent parties that took place to celebrate this major event. In the tradition of this great city San Francisco again pulled together and had some of the best parties I've ever been too. Sheet 185 marks just such an historic event with the grand opening of the Cable Car Barn.

All photos on this sheet were taken at the official opening of the Cable Car Barn. The then mayor of San Francisco Diane Feinstein was the official dignitary at this event. This series of photographs have all the important potentates in attendance who until this day have never set foot on the project. Likewise, the large numbers of the media and press that were on site this day took even me off guard as I've pretty much had the construction site to myself.

**June 6, 1984**

**Sheet 186, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, E, F, G, H, I, J, K, and L are a continuation of Sheet 185 showing the party that was held at the Cable Car Barn on this day. The Chinese community was a very prominent part of the day's celebration at the Barn. In true Chinese fashion the parade of the dragon symbolized good luck for the opening of this building. Not clearly seen in this photograph were the fire crackers that were used to ward off evil spirits in addition to the drum and dance group who put on an amazing display.

NOTE: Photo A shows one of my favorite people who worked on the project. The brown haired young lady with the radio was the senior project construction manager. As I've mentioned in an earlier photograph Kathy Koenig would 24 years later become my wife. Cute isn't she?

Photos M, N, O, P, Q and R show that work at the Cable Car Barns continues despite the party going on outside. Cable pulling was "critical path" work effort and would remain the critical path activity for several more days.

**June 6, 1984**

**Sheet 187, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

Photos A, B, C, D, and E are all photographs continued from Sheet 186 and were taken at the Cable Car Barn. Work at the Barn has nearly been completed. It would be my guest estimate that about 94% of the work had been completed on this date. These photographs show that cable is still be pulled and that electrical work and building finishes are being installed.

Photos F, G, H, I, J, K, L, M, and N are the last grouping of photographs from the Grand Opening of the Cable Car Barn. This party marks the first of many parties on the calendar for this and next month.

**June 21, 1984**

**Sheet 188, Photos A, B, C, D, E, F, G, H, I, J, K, L, and M**

Photos A, B, C, and D are the usual bi-weekly photos of the Cable Car Barn exterior. Much has happened on the exterior during the last few weeks. Of note are the window frames in all the openings of the Barn. These window frames will now allow the building interior to finally be closed off to the outside elements. Also of note is that Washington Street has been paved. While some street work has yet to be completed (see Photo A bottom left hand corner) most of the underground infrastructure is now complete but there is still many little construction activities that will need to be completed. Likewise, the cable to power the Cable Cars is still being pulled on two of the system lines and at this time only one Cable Car line is up and running.

Photos E, F, G, H, I, J, K, L, and M show yet another party taking place at the Cable Car Barn. The persons attending the event in these photos are local community leaders and local business people who are attending a less glamorous party from the one held on June 6, 1984.

NOTE: June 21, 1984 marks the end of the Cable Car project for me. At the time of my rewriting this narrative (some 25 years later) I remember that this single day was by far the most incredible day that I've ever had in my life. While it was bitter sweet that after so much effort that the work was almost complete

## San Francisco History Center, San Francisco Public Library

and that the rebuilding of the Cable Car system was about to end. I am of the opinion that this one single photographic documentation effort had been the most draining experience that I've ever had. But, I have to tell the reader that this one day, this opening day, made that entire work effort worth every second of the work that I had done.

On this day, I had breakfast, lunch, and dinner with the then Mayor of San Francisco, Tony Bennet, and several dozen of the people who had made this project such a success. And while there was still much work that needed to be completed there were no activities that truly required me to be there to photograph it.

**June 21, 1984****Sheet 189, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photographs on this sheet mark the ending ceremonies of the official opening of the San Francisco Cable Car system. These photographs show the start of these last events with a public relations breakfast for members of the press and other officials. Please forgive the poorly lit photos as I purposely did not bring all my flash equipment as this day was projected as being an 18 hour day for me.

Photo F shows the briefing of the day's events by the then public relations officer for the construction management firm.

**June 21, 1984****Sheet 190, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos: Okay, let the party begin. The photos above were taken at Union Square. Starting at 9:30 am crowds started to gather for the Grand opening of the Cable Car system. As can be seen there were thousands of people gathered for this day's events that were scheduled to start at noon. At 11:50 am the crowd started to go wild at the sound of the Cable Car bells ringing. Then boom, the Cable Cars could be seen coming down Powell Street ringing their bells. When the Cable Car bells stopped ringing the crowds went crazy to the sound of the marching bands starting the song "San Francisco." Hearing thousands of people singing "San Francisco open your golden gates" (or is it pearly gates) brought tears to all those people around standing around me. When this song ended it was then that I, for the first time, heard what is often referred to as the "roar-of-the-crowd." It was the most amazing cheering I've ever heard to this day. What a start to a party that was truly amazing in size and scope.

NOTE: On this day I had the incredible pleasure to meet Cyril Magnin who was then the Chief of Protocol for San Francisco. Mr. Magnin was quite old by 1984 and I stumbled across him after he was separated by the massive crowd from his "keepers." Mr. Magnin was quite frail and at almost 82 years old he was somewhat confused by the days events. As I pulled him out of the crowd for his safety (at Powell and Market Streets) he turned to me, thanked me and mentioned that he thought that there must be something big going on because of the crowds. He was so sweet! When I pulled him off the street I saw a panicked look on the faces of the two men who were accompanying him. Once they realized what I was doing it took a few seconds for these guys to realize that I was taking him out of the crowd for his safety. The crowd was so large that it took a few minutes for Mr. Magnin's people to get to him. In addition to the opening day of the Cable Car system meeting Cyril Magnin was the second best part of this day.

**June 21, 1984**

**Sheet 191, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This sheet of photographs is a continuation of Sheet 190 and is the opening day of the Cable Car system at Union Square. Not much to mention except that Tony Bennett sang "I left my heart in San Francisco." It was not the first time I heard him sing this song today and it would be hardly the last time I heard him sing it. But I could listen to him sing that song all day and night which is funny because I heard him sing that song dozens of times that day. Totally amazing!

**June 21, 1984**

**Sheet 192, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

All photos on this sheet are just a continuation of the festivities to open the Cable Car system. These photos are taken at the Embarcadero Center in San Francisco which is where the party moved to at around 2 pm. Here, like Union Square, there was more music and more speeches. Oh yes, notice the wonderful sunny day we had in San Francisco. An oddity for June in this city as June and sunny really don't go together.

NOTE: Photo D is a good shot of Diane Feinstein with Tony Bennett in tow. He sang "I left my Heart in San Francisco" to the crowds who of course when wild.

**June 21, 1984**

**Sheet 193, Photos A, B, C, D, E, F, G, H**

Additional photos of the Embarcadero Center opening day ceremonies for the Cable Car system. The event at this location was pretty much confined to speeches by the Mayor and other persons and lasted all of an hour. The mood was festive and the crowd was huge.

**June 21, 1984**

**Sheet 194, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

This sheet of photographs marks the start of the day's events at the Cable Car Barn. Of course what better way to start the events then with Tony Bennett singing I Left My Heart in San Francisco? Oh my, the women were just oozing with excitement. Mayor Diane Feinstein (Photo A) is seen giving Tony Bennett a Cable Car bell after his song and several other awards and certifications were given out at this at this "VIP invitation only" event.

**June 21, 1984**

**Sheet 195, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

More photos of the speeches and of some of the entertainment at this party. This event had a late afternoon dinner and to be honest I have no idea who most of these people were.



**June 21, 1984**

**Sheet 196, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q**

Photo A is an interesting shot of the Cable Car cable motors. Notice that there is only one set of motors that have the cable installed over the turning sheaves? This motor powered the Powell Street line which was the only line running this day. Cable was still being pulled and works in the Barn continued even through today's party as seen by Photo K of a carpenter. Photo E and Q are of Fred Kreitzberg who was one of the founders of O'Brien and Kreitzberg the construction managers. I later ended up working 18 years for O'Brien and Kreitzberg Associates (OKA) until Fred sold the company and retired. A great man!

Photo I was taken of several of the Cable Car operators. These guys were kind enough to pose for me when asked. Actually, they were kind of forgotten with all the back-slapping that was going on in the Barn this day. As mentioned, most of the people attending this event were people I've never seen before. This party went on into the evening hours but another event required that I leave the party and move to the next party. That would be the parade that was being held at Fishermen's Wharf. I hated to leave as the "beverages" being served at the Cable Car Barn party was flowing pretty freely. Not shown in these photos are some of the many people who never made it out of that party. Most of these people were "three sheets to the wind" when I left and from personal first hand accounts several dozen people ended up spending the night at the Barn. Asleep at the tables is what I was told.

NOTE: Not very noticeable was the fact that most of the glass in the exterior windows had yet to be installed. At this point in time the Cable Car system was operating on a "testing" phase only. The system was still not open to the public and it would not be open for several more weeks.

**June 21, 1984**

**Sheet 197, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

As can be seen in these photos it was an amazing evening in San Francisco's Fishermen's Wharf. I don't know who ordered up the good weather but it was a very warm evening on the wharf. In San Francisco it was just one of those days when the stars were in the right place making the day perfect. It was so perfect that I just had to shoot these photographs of this wonderful evening.

By the way, Photo R shows the start of the Cable Car Parade. Is that Ronald McDonald as the Grand Marshall? I'm not sure why but yes; this was the opening salvo of what was one wild parade.

**June 21, 1984**

**Sheet 198, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

There is really not much to explain in these photos of the Cable Car parade. As a native San Franciscan I have to tell the readers that this was by far the best party I've ever been to in San Francisco. It was one hell of an incredible day for me as I was forced to pick the parties I went too as there were so many different events that were planned for this day. Packing about forty pounds of equipment and having spent almost two years on this project I was feeling pretty strained by the day's events! But, the sunset and nice weather

**June 21, 1984**

**Sheet 199, Photos A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R**

The Parade! What more can I say about this parade. Wild, yes! Crazy, well yes! Very San Francisco, you bet. Never let it be said that San Francisco doesn't know how to throw a party.

**June 21, 1984**

**Sheet 200, Photos A, B, C, D, E, F, G**

Not shown in these photographs are the fireworks of the evening....but you get the picture (excuse the pun). With the parade over and the fireworks shot the party and day's events ended. It ended for me with a ride on the Cable Car back to the Barn to pick up my car and go home. While the Cable Cars were operating that night the general public was not allowed to ride them yet. My press pass allowed me the honor of being one of the first to ride the rebuilt system and I must admit it was a very special ride that evening.

In concluding this narrative of the photo documentation of this nation's only moving historic landmark I remembered that I was left with an empty feeling that evening. However, in hindsight this project was by far one of the most exciting and unusual projects that I ever done. In preserving these construction photographs I've help preserve a process that certainly won't happen again in my lifetime. Re-writing this narrative from 24 years ago has instilled a sense of pride and a feeling that I've left something behind for the city that I grew up in and for a city that I will always consider to be my home. It was fun to revisit this project by reviewing each and every photograph for the narrative and to talk with my wife about some of the construction events that took place during those years. It is something that I'm thrilled to pass this on to future generations of San Franciscan's as well as those people who have stumbled onto this collection of photographs.

I've often been asked why I spent so much time, money, and effort to photo document these events. I do remember that on the first day of the Cable Car shutdown that I was horrified that I was the only photographer on the project taking pictures of the removal of the old Cable Car equipment. Then I thought about the lost opportunity of someone not documenting this process. The funny thing about it is that I really have no single reason for doing it. Perhaps I felt that it was an important event in San Francisco history or maybe it was my love of the Cable Cars that pushed me in this direction? The really fun and interesting part of the project came in the rewriting this narrative and in leaving this record behind for those who you who are interested enough to read through it.

During the last 25 years these photographs have sat in my photo collection gathering dust. In selecting the San Francisco Library Photographic Historic Room it excites me to think that this collection will finally be available to the public both now and in the future. As it turned out this project was my last photographic endeavor (to date) as I grew tired of taking this level of photographs. I hope that I did a good job of it.

Since that time 25 years ago I often think about this project when visiting San Francisco. Both my wife and I think about those crazy construction days when the construction schedule was king and completing work activities was the most important thing in getting this project completed. I am happy and thrilled that it's complete but more important that it's available to you. Thank you San Francisco, it really was my pleasure!