1. AN EXTRA STRAND OR THE NEXT LARGER ROD SHALL BE ADDED/USED, AS NEEDED, TO TEST THE ANCHORS TO 200% OF THEIR DESIGN LOADS. NO CRANE OUTRIGGER SURCHARGE.

3. CRANE OUTRIGGER SURCHARGE OPTION. SEE DETAIL 15/SH-3 GENERAL CONTRACTOR TO DETERMINE WHAT BEAMS & TIEBACKS TO BE SURCHARGED

4. FADED DESIGN UNDER SEPARATE PERMIT

CITY OF SANTA MONICA GEOTECHNICAL STANDARD NOTES

1. An as-built report shall be submitted to the City for review. This report prepared by the Geotechnical Consultant must include documentation of any foundation inspections, the results of all compaction tests as well as a map depicting the limits of fill, locations of all density tests, outline and elevation of all removal bottoms, and location and elevation of all retaining wall

as-built geologic map. 2. The as-built report by the Geotechnical Consultant must also include documentation of the soldier pile excavations including, but not limited to, total depth or tip elevation, depth below the toe of the excavation, material profile, and depth to groundwater.

backdrains and outlets. Geologic conditions exposed during grading must be depicted on an

TREE PROTECTION ZONE GUIDELINES

 Trees within the public right-of-way may not be removed for any reason and are to be protected from injury or damage during construction. Pruning shall only be done by City Tree Trimmers to provide clearance for construction activities. All questions regarding street trees are to be

directed to the Community Forester. 2. The typical TPZ should encompass the canopy plus an additional radial width of ten feet (10'). However, since these conditions are unique, the application should be evaluated with the final

limits of the TPZ being established by the Community Forester. 3. Mulch the entire area of the TPZ in an effort to improve the growing environment for the roots. During construction phase maintain a four to six inch layer of chip mulch over the soil surface to reduce soil compaction, improve aeration, enhance moisture retention and reduce temperature extremes. Mulch generally consists of shredded leaves or bark, pine straw, peat moss, wood

chips or composted greenwaste. 4. Fence the TPZ with suitable fencing material to prevent wounds to the tree and soil compaction within the root zone. Post the fence with a sign stating: "TREE PROTECTION ZONE -KEEP

5. Should it be necessary to trench within the TPZ all trenches shall be hand dug. No roots larger than two inches (2") shall be cut unless no other alternative is feasible. All smaller roots that require cutting shall be cut with pruning saws. Cuts shall be made flush with the side of the

trench. If at any time twenty-five percent (25%) of the area within the TPZ is being separated from the tree by a trench, then the line shall be either relocated or installed by boring. 6. Removal of hardscape materials from within the TPZ shall be done manually. 7. The minimum distance between an open trench and any tree shall be one foot (1') or six inches

(6") for every inch of trunk diameter measured at four and a half feet (4 ½') above existing grade if this method defines a greater distance. Minimum clearance shall be ten feet (10') from the trunk of the tree.

8. In the event root pruning is required to accommodate grade changes or the installation of hardscape features the root pruning procedures described in this outline should be followed.

10. Prune and fertilize the trees after the completion of all exterior work on the building and at the

9. At no time shall any equipment, materials, supplies or fill soil be allowed in the TPZ unless

beginning of the landscape phase. 11. All questions regarding the City tree adjacent to your project may be directed to the Community Forester, Walt Warriner at (310) 458 – 8974.

ANCHOR STRANDED TENDONS:

Design loads on stranded cables per SCHEDULE on sheet SH-2. Strands shall be fabricated from 0.6-inch diameter, seven-wire, low relaxation strands

Strands shall be high-strength with a guaranteed ultimate minimum strength of 270 ksi. Stranded anchorage assembly shall conform to PTI's "Recommendations for Prestressed

Rock and Soil Anchors" 4th Edition. Strands shall not be welded or used for grounding welding equipment. Diameter of strands, number of strands per anchor and size of concrete anchor shafts

shall be logged and checked by the Geotechnical Engineer. Copies of the logs shall be

submitted to the Design Engineer. The minimum unbonded length for all stranded anchors is 15 feet. 8. The maximum stranded anchor design and test loads are given below:

Number of Strands	Approx. Area	Max. Design Load	Max. Test Load
3-0.6"ø	0.65 in ²	105.5 kips	140.6 kips
4-0.6"ø	0.87 in ²	140.6 kips	187.5 kips
5-0.6"ø	1.09 in ²	175.8 kips	234.4 kips
6-0.6"ø	1.30 in ²	211.0 kips	281.3 kips
7-0.6"ø	1.52 in ²	246.2 kips	328.2 kips
8 -0.6"ø	1.74 in ²	281.3 kips	375.0 kips

GROUT FOR PRESSURE GROUTED ANCHORS:

. Grout shall be a neat cement mixture containing 4.5 to 5 gallons of water per cubic foot (94 lb sack) of Portland cement.

Grout shall achieve a minimum compressive strength of 3000 psi before stressing

Cement shall conform to ASTM C-150, Type V.

4. Water reducing add mixtures may be add if approved by the City and the Shoring

5. Accelerators shall not be used.

6. Fine aggregates, if used, shall conform to ASTM C-33.

PLASTIC SHEATHING:

. Sheathing shall be smooth polyethylene conforming to ASTM D-1248. 2. Tape ends of sheathing with tape to prevent intrusion of grout.

1. Concrete for passive anchors shall be high early-strength and shall reach its design

Provide continuous inspection by a City of Santa Monica approved Deputy

3. Cement shall be ASTM C-150 Type II/V.

4. Aggregates shall be natural sand and rock conforming to ASTM C-33. 5. The concrete mix design shall be reviewed and approved by the Shoring Engineer

6. The concrete mix design shall be prepared by a testing laboratory and stamped

and signed by a Civil Engineer registered in the State of California.

SLURRY FOR SOLDIER PILES SHAFTS AND BACKFILLING:

Slurry shall contain 1½ sacks (141 lbs) of Portland cement per cubic yard of sand. Cement shall be ASTM C-150 Type II/V.

3. Aggregates shall be natural sand conforming to ASTM C-33.

CITY OF SANTA MONICA STANDARD NOTES

prohibited from leaving the site.

. All labor, equipment and material required for the work in public right-of-way are the responsibility of the

The Owner is responsible for the repair of all damage to the offsite improvements during the construction. Call Public Works Inspector for inspection of offsite improvements at substantial completion of onsite work at 310-

No work shall be done within the public right-of-way without obtaining a permit from the Environmental and Public Works Management Department - Administrative Services Division in Room 113 of City Hall.

The work in the public right-of-way shall be done in accordance with the Standard Specifications/Plans for Public Works Construction, current edition as amended by the City.

All concrete footings or portions of soldier beams and concrete encasement within the public right-of-way shall be removed to a depth of 5 feet below the finished surface grade.

Traffic surcharge shall be kept at least 10 feet back from the face of piles or more if required by the soils Notify the following staff members at least three business days prior to the start of construction; Wastewater Supervisor at 310.458.8534; Water Superintendent at 310.458.8508; Electrical Supervisor at 310.458.8529;

and Environmental Public Works Management Department - Administrative Services Division Inspector at Contractor shall coordinate the work with the utility owners affected by the improvements before the start of construction. At least two business days prior to removal of any existing pavements, the contractor shall

notify utility owners, residents, etc. Contact underground service alert phone 800.227.2600. Backfill for all utility trenches shall be crushed aggregate base, mechanically densified to 95% relative compaction from bottom of the trench to the pavement. Compaction test results shall be submitted to the

Environmental and Public Works Management Department - Administrative Services Division Inspector. (Alternate: 1 sack cement sand slurry mix may be substituted for the crushed aggregate base.) The City of Santa Monica Water Division must be contacted to schedule installation of temporary water service at 310.458.8534.

Allowable work hours for construction are: Monday-Friday 8 am to 6 pm; Saturday 9 am to 5 pm; and no work on Sundays & Holidays

Applicant/Contractor shall verify all dimensions and conditions at the job site. New proposed improvements shall not obstruct drainage or drain into neighboring private property.

All offsite work shall be done in accordance with Standard Specifications for Public Works Construction. current edition, and City of Santa Monica Standards.

5. All labor, equipment, and material requirements for offsite improvements are the responsibility of the Owner. 16. Trees within the public right-of-way may not be removed for any reason and are to be protected from injury or damage during construction. Pruning shall only be done by City Tree Trimmers to provide clearance for

construction activities. All questions regarding street trees are to be directed to the Community Forester at (310) 458-8974. Offsite repairs that take place within the tree protection zone are to be coordinated with the Community

18. Non-storm water runoff, sediment and construction waste from the construction site and parking areas is

19. Any sediments or materials, which are tracked offsite, must be removed the same day. 20. Excavated soil must be located on the site and soil piles should be covered and otherwise protected so that sediments do not go into the street or adjoining properties.

21. Washing of construction or other industrial equipment adjacent to construction site is prohibited. Wash water is not allowed to leave the construction site. Drainage controls may be required depending on the extent of grading and the topography of the site.

. Owner is responsible at Owner's expense for repair of all existing damage to offsite improvements and damage caused by construction as required by Sr. Public Works Inspector Contact Sr. Public Works Inspector at (310) 458-8737 for inspection and coordination of offsite improvements

at substantial completion of onsite work. Special inspection (by a certified inspector) is required for all field welding, high strength bolting, sprayed on

fire proofing, concrete with a compressive strength greater than 2500 psi, high-lift grouting, special momentresisting frames, piles, drilled piers, caissons and shotcrete.

TESTING OF TIE-BACK ANCHORS

The Soils Engineer shall keep a record at the job site of all test loads and total anchor movements and

shall certify their accuracy. At least two (2) of the initial anchors shall be tested to 200% of their design loads for 24 hours. The total deflection of the anchor rods shall not exceed 12 inches during loading. The rate of creep under the

200% test shall not exceed 0.75 inch over a 24 hour period, after the 200% test load is applied. If the anchor movement after the 200% test load has been applied for 12 hours isles than 0.5 inches, and the movement over the previous 4 hours has been less than 0.1 inch, the test may be terminated.

At least eight (8) anchors on the project shall be quick tested for 30 minutes. The total deflection of the anchor rods shall not exceed 12 inches during loading. The deflection after the 200% load is applied for 30 minutes should not exceed 0.25 inch.

All anchors not previously tested shall be tested to 150% of their design loads. The total deflection of the anchor rods during the test shall not exceed 12 inches. The rate of creep under the 150% test shall not

exceed 0.10 inch over a 15 minute period in order for the anchor to be approved for the design loading. . In the event that the stated limits in deflection are exceeded, the Soils Engineer shall submit recommended reduced loading values and supplementary anchors may be required.

6. After a satisfactory test, each anchor shall be locked-off at the design load. The locked-off load shall be verified by rechecking the load in the anchor. If the locked-off load varies by more than 10% from the design load, the load shall be locked-off to the design load.

Certification from an approved testing laboratory is required for the calibration of the hydraulic rams to tension anchors prior to the start of testing and monthly thereafter. If excessive twisting of the soldier beams occurs during testing, a 3"x 3/8" flat bar strap shall be installed

SOLDIER BEAM SURVEY MONITORING (By Owner/Developer):

between adjacent soldier beams, above and below the anchor pocket.

Soldier beam survey monitoring shall be conducted on a periodic basis until the permanent structure is capable of supporting the imposed lateral loads.

Each soldier beams shall be monitored for both vertical and horizontal movement. Readings shall be reported in tabular form to the nearest 0.01 feet and be furnished to the shoring engineer within 48 hours

3. Prior to any excavation, survey monitoring control points and initial soldier beam offsets shall be

established by a California licensed surveyor. Initial reading and periodic reading shall be submitted to the City of Santa Monica, Shoring Engineer and Geotechnical Engineer. Additional readings shall be obtained when requested.

Control points shall be established outside the area of influence of the shoring system to ensure the accuracy of the monitoring readings.

6. The periodic basis for shoring monitoring shall be as follows:

Initial monitoring shall be performed prior to any excavation.

b. Once excavation has begun, the periodic readings shall be performed weekly until the excavation has reached the project's estimated subgrade and permanent wall footings are completed. At this time the Shoring Engineer shall evaluate the performance of the system to determine future monitoring requirements. c. If the performance of the shoring system is within acceptable guidelines, as established by this

specification (See Item Nos. 7 and 8 below), the Shoring Engineer, with the concurrence of the City Engineer, may permit the periodic readings to be performed on a bi-weekly basis. Once initiated, biweekly readings shall continue until the P-2 Garage slab is completed and capable of transmitting lateral loads to the permanent structure. d. After the completion of the Upper Level Parking slab and with the concurrence of the Shoring

Engineer and City Engineer, the periodic monitoring can be performed on a monthly basis until the permanent subterranean portion of the structure is completed and all backfill is in place. If any horizontal or vertical movement of the soldier beams reaches one half (½) inch, the Geotechnical Engineer, Structural Engineer and Shoring Engineer shall evaluate such movement and recommend

corrective measures, if necessary, before excavation continues. If the magnitude of any horizontal or vertical movement of soldier beams reaches one (1) inch, the Geotechnical Engineer, Structural Engineer and Shoring Engineer shall reevaluate the movement and

recommend corrective measures before excavation continues 9. A photographic/video survey by a professional photographer/videographer of the adjacent streets and structures shall be performed to establish the pre-excavation base-line condition. Prior to any excavation. survey monitoring control points and initial soldier beam offsets shall be established to monitor the

horizontal and vertical movement of the soldier beams and adjacent structures.

MATERIAL SPECIFICATION:

SOLDIER PILE SHAFTS:

. Shafts are to be machine drilled. Shafts are to be accurately located so that the soldier beams are in the proper relation to the new basement walls, footings and property lines.

. Provide protection against sloughing or caving as required. Drilled holes to be left open over-night shall be secured/covered with plywood.

4. All water should be removed from the shaft prior to filling with concrete, if possible. If all water cannot be removed by pumping, concrete shall be carefully pumped into the soldier pile shaft from the bottom up through a rigid pipe and the design strength of concrete shall be increased by 1000 psi.

. Wood lagging shall be rough sawn Douglas-Fir No. 2 or Hem-Fir No. 1 (f_b=900 psi min.). See TYPICAL PLAN SECTION DETAIL on 1/SH-2. . Wood lagging shall be ACQ pressure treated with a minimum retention of preservative of 0.4 pcf and

STRUCTURAL STEEL:

approved for use in ground contact by the City of Santa Monica.

Structural steel shall conform to ASTM A-572, Grade 50 or ASTM A-992. . Miscellaneous steel shall conform to ASTM A-36, ASTM A-572, Grade 50 or ASTM A-992.

3. Pipe and pipe sleeves shall conform to ASTM A-53, Grade B.

 All welds shall be electric arc using E70XX electrodes. 2. All structural steel welding shall conform to the 2007 California Building Code Section 2205.10 and

. All welders shall be approved by the City of Santa Monica.

Structural Steel Welding Code ANSI/AWS D1.1.

4. Provide continuous inspection by a City of Santa Monica approved Deputy Inspector for all field welds.

ANCHOR RODS:

Design loads for anchor rods per SCHEDULE on SH-2.

. Rods shall conform to ASTM A-722, shall be high-strength and have a guaranteed ultimate minimum strength of 150 ksi. Diameters of anchor rods and size of concrete anchor shafts shall be verified and logged by the

Geotechnical Engineer. Daily logs shall be faxed to the shoring engineer for review. Anchor rods shall not be welded or used for grounding welding equipment.

. Anchor rods shall not be used if kinked or bent sharply. . The minimum un-bond length for all rods is 10 feet.

The maximum anchor rod design load, maximum test load and minimum development lengths are shown

Nominal Rod Size	Rod Area	Design Load	Max Test Load
1"ø	0.85 in ²	76.5 kips	102.0 kips
1-1/4"ø	1.25 in ²	112.5 kips	150.0 kips
1-3/8"ø	1.58 in ²	142.2 kips	189.6 kips
1-3/4"ø	2.58 in ²	240.0 kips	320.0 kips

SHORING DESIGN PARAMETERS

EARTH PRESSURE DISTRIBUTION = 20H PSF - TIED BACK

ANCHOR FRICTION (POST GROUTED) = 1500 PSF @ 10' BELOW GRADE

ACTIVE WEDGE ANGLE = 30 DEGREES

SLOPE CUT GRADIENT = 1:1 OR FLATTER

COEFF. OF FRICTION = 0.35

= 2250 PSF @ 20' BELOW GRADE

= 3000 PSF @ 30'+ BELOW GRADE

MAX. LAGGING PRESSURE = 400 PSF

TRAFFIC SURCHARGE - STREETS = 100 PSF

TRAFFIC SURCHARGE - ALLEYS = 250 PSF

PASSIVE BEARING PRESSURE = 500 PCF

MAXIMUM PASSIVE PRESSURE = 7000 PSF

MAX. UN-SHORED VERTICAL CUT = 5 FEET

EARTH PRESSURE DISTRIBUTION = 15H PSF - CANTILEVERED

GENERAL NOTES:

- Construction shall conform to the 2010 California Building Code and other applicable City of
- Excavations shall be made in compliance with the 2013 edition of the California Construction
- Safety Orders (CAL-OSHA) regulations. The design of the temporary earth embankment shoring system is based upon
- recommendations contained in the Geotechnical Engineering Investigation Report, Proposed Mixed-Use Project, APN 4291-007-014 through 021, 710 Wilshire Blvd, Santa Monica, CA
- prepared by Hamilton & Associates, Inc. dated April 29, 2013. (H&A Project No. 13-1663) and Geotechnical Engineering Investigation Report, Proposed Mixed-Use Project, APN 4291-007-014 through 021, 710 Wilshire Blvd, Santa Monica, CA prepared by Coastline Geotechnical

Consultants, Inc. dated August 23, 2010. (CGC Project No. 2814C-119).

- . The Shoring Contractor shall familiarize with data therein and a copy of the geotechnical reports will be available at the job site. The locations of existing and new underground utilities are shown in an approximate way only and all utilities may not be shown. The Contractor(s) shall determine the exact location of all
- existing utilities before commencing. The Contractor(s) are responsible for damages which might be caused by their failure to exactly locate any and all underground utilities. The Contractor shall contact Underground Service Alert at 800-227-2600 or 811 two working
- days before commencing any excavation. Heavy vehicular traffic, such as cranes, concrete trucks, material trucks or material storage, shall be prohibited within 10 feet of the soil side of the shoring bulkhead or top of sloped

9. The Contractor shall provide a soil berm, sand bags or other means to prevent surface water

- embankments except for temporary construction ramps at the front side of the shoring bulkhead; or specifically designed for surcharges as indicated on drawings. Dust shall be controlled during the shoring installation, excavation, grading and back-filling.
- from entering excavation over top of shoring and cut slopes. Temporary cuts shall not exceed slopes recommended in the geotechnical report nor those shown on these drawings.
- 1. The installation of shoring system shall be performed under the continuous observation of the
- Geotechnical Engineer and the City of Santa Monica Deputy Inspector for welding, concrete
- 12. Installation and testing of the tieback anchors shall comply with the "Tied-back Anchor" section of the project Geotechnical Report and the "Testing of Tieback Anchors" Specification on SH-2. 13. Coordinate with Architectural, Structural, Civil and Site Survey drawings for soldier beam
- layouts. Existing grades and proposed bottom of footings are estimates only and may not 4. The shoring system has been designed in accordance with applicable codes, the approved
- soils report and an assumed drained soils condition. 5. After the permanent basement structure is complete, soldier beams and lagging within the public right-of-way shall be removed 5 feet below sidewalk grade. Tieback anchors within 15 feet of sidewalk or alley grade shall be removed at the completion of the project. All tieback
- anchors not removed shall be de-tensioned at the completion of the project. 6. Soldier beams shall not encroach more than 12 inches into the public right-of-way without an encroachment agreement from the City of Santa Monica. An as-built report shall be submitted to the City of Santa Monica for review. This report shall be

prepared by the Geotechnical Consultant and must include a documentation of soldier pile

excavations including, but not limited to, total depth of soldier piles or tip elevation, depth below

the toe of excavation, material profile and depth to groundwater, if encountered. 18. A tieback agreement for the proposed project at 710 Wilshire was executed with the City of

All foundation excavations must be observed and approved by the Project Geotechnical

SOLDIER PILE INSTALLATION PROCEDURE:

Consultant prior to placement of reinforcing steel.

- Drill soldier pile shafts. Drilled holes to be left open over-night shall be secured/covered with
- plywood that is staked down to prevent removal by 3rd parties. Place soldier beams in shafts. See TYPICAL PLAN SECTION on 1/SH-2 for location tolerances. 3. Fill shaft with concrete up to bottom of proposed footing elevation as shown on ELEVATIONS on
- SH-4, SH-5 and SH-6. Fill balance of shaft with slurry. . Take all initial soldier beam monitoring readings. See SOLDIER BEAM SURVEY MONITORING
- Start excavation only after concrete has cured a minimum of 7 days. Excavation of 5 feet
- maximum is permissible after slurry has cured a minimum of 24 hours. Install lagging, where occurs, between soldier beams as excavation progresses. Lifts shall not exceed 5 feet.
- Lagging is required between the soldier beams. Lagging lifts shall not exceed 5 feet along the streets and alleys and 3 feet along the adjacent buildings.
- 9. Fill voids behind lagging with native material, slurry or granular material to insure bearing of soil along the full length of lagging. The Geotechnical shall determine if native material may be used.

Drill anchor shafts as excavation proceeds to drill bench elevation. Place anchor rods/strands as

soon as the shafts are completely drilled and inspected by the Soils Engineer. See TYPICAL REQUIRED EXCAVATION STAGES FOR DRILLING ANCHORS DETAIL. 1. All tieback anchors are to be pressure grouted. Fill entire length of shaft with initial grout,

3. Timber lagging shall be pressure treated. See the Material Specification, TIMBER for

- perform pressure grouting of the anchor bond zone a minimum of 24 hours after initial grout placement. A maximum of 3 post-grouting procedures may be performed.
- 12. Test anchors after a minimum of 3 days cure period after concreting or post-grouting. 13. Anchor rods/strands shall be tensioned straight and true. Kinking or sharp curvature shall not be
- 14. Do not continue with the excavation until anchors are tested and certified.
- 15. Excavate to proposed sub-grade elevation.

OBSERVATION BY SHORING ENGINEER:

- A pre-construction meeting between the Shoring Engineer, Geotechnical Engineer, Shoring Contractor, General Contractor and the City of Santa Monica Inspectors shall take place prior to start of shoring for the purpose of procedural review, utility identification/location and soldier
- The Shoring Engineer shall make periodic observations to the job site for the purpose of
- observing the installation of the shoring system. . The Contractor shall give the Shoring Engineer at least a 48 hour advance request for structural observation.

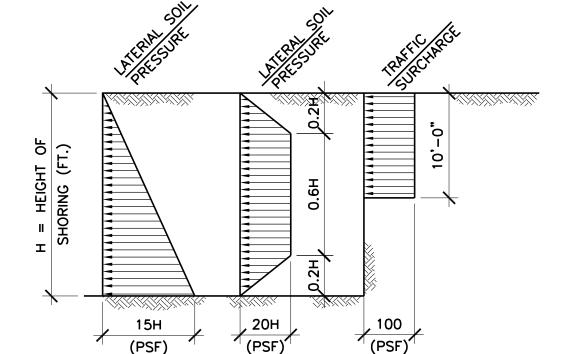
DESIGN CRITERIA:

2010 California Building Code . Building Code:

2. Concrete: ACI 318-05

AISC "Manual of Steel Construction," Thirteenth Edition (ASD) 3. Steel: . 4. Soils: . Geotechnical Engineering Investigation Report, Proposed Mixed-Use Project, APN 4291-007-014 through 021, 710 Wilshire Blvd, Santa

Monica, CA prepared by Hamilton & Associates, Inc. dated April 29, 2013. (H&A Project No. 13-1663) and Geotechnical Engineering Investigation Report, Proposed Mixed-Use Project, APN 4291-007-014 through 021, 710 Wilshire Blvd, Santa Monica, CA prepared by Coastline Geotechnical Consultants, Inc. dated August 23, 2010. (CGC Project No. 2814C-119).



LANDMARK BLDG. SET

AS NOTED JUNE 25, 2013

Exp. 9-30-17

ROJECT NUMBER YL PROJECT # 12-1203

<u>CONSULTANTS</u>

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