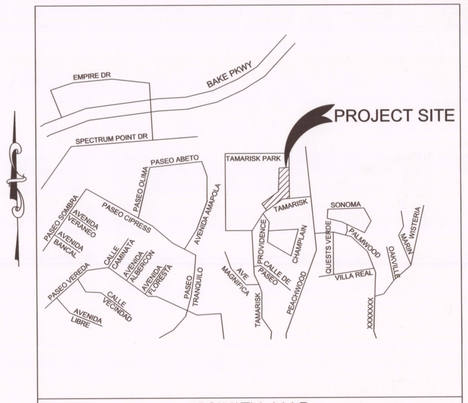
CITY OF LAKE FOREST

TAMARISK PARK ADA ACCESS RAMP IMPROVEMENT PROJECT PHASE 8

CITY PROJECT NO. PW 2013.13



VICINITY MAP

GENERAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE MUNICIPAL CODE ADOPTED BY THE CITY OF LAKE FOREST AND ANY SPECIAL REQUIREMENTS OF THE PERMIT.

2. THE CONTRACTOR SHALL KEEP A COPY OF THE CURRENT ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT (RDMD) STANDARD PLANS ON THE CONSTRUCTION SITE AT ALL TIMES.

3. THE CONTRACTOR SHALL NOTIFY THE CITY OF LAKE FOREST'S PUBLIC WORKS OBSERVER AT (949) 461-3494 AT LEAST TWO WORKING DAYS (MINIMUM OF 48 HOURS) PRIOR TO STARTING CONSTRUCTION WORK WHICH REQUIRES PUBLIC WORKS' INSPECTION.

4. A CITY OF LAKE FOREST ENCROACHMENT PERMIT SHALL BE REQUIRED TO PERFORM WORK WITHIN THE PUBLIC RIGHT-OF-WAY. CITY APPROVED PLANS DO NOT RELIEVE THE CONTRACTOR AND/OR DEVELOPER FROM RESPONSIBILITY TO OBTAIN AN ENCROACHMENT PERMIT. A COPY OF THE PERMIT SHALL BE KEPT ON THE CONSTRUCTION SITE AT ALL TIMES.

5. ALL CONCRETE FLOWLINES WITH LESS THAN 1% GRADE SHALL BE WATER TESTED PRIOR TO FINAL FINISHING TO ENSURE PROPER DRAINAGE WITHOUT UNACCEPTABLE HIGH OR LOW SPOTS.

6. ALL UTILITY TRENCH BACKFILL AND COMPACTION INSPECTION OUTSIDE THE LIMITS OF DEDICATED STREET RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH CITY REGULATIONS.

7. ALL DAMAGED CONCRETE SIDEWALKS OR CURBS SHALL BE SAW-CUT TO THE NEAREST TRANSVERSE SCORE MARK, OR ADJUSTABLE CONTROL JOINT, OR WEAKENED PLANE JOINT AND REPLACED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF RDMD STANDARD PLANS.

8. THE CONTRACTOR SHALL MAINTAIN PARK AND ADJACENT STREETS IN A NEAT, CLEAN, DUST FREE AND SANITARY CONDITION AT ALL TIMES AND TO THE SATISFACTION OF CITY'S INSPECTOR. THE PARK AND ADJACENT STREETS SHALL BE KEPT CLEAN OF DEBRIS, WITH DUST AND OTHER NUISANCE BEING CONTROLLED AT ALL TIMES. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CLEAN UP IN THE PARK AND ON ON ADJACENT STREETS AFFECTED BY HIS CONSTRUCTION. METHOD OF STREET CLEANING SHALL BE BY DRY SWEEPING OF ALL PAVED AREAS. NO STOCKPILING OF BUILDING MATERIALS WILL BE ALLOWED WITHIN THE PUBLIC RIGHT-OF-WAY WITHOUT THE PERMISSION OF CITY'S PUBLIC WORKS OBSERVER.

9. TRAFFIC FLOWS SHALL BE MAINTAINED AT ALL TIMES AND PROTECTED WITH ADEQUATE BARRICADES, LIGHTS, SIGNS AND WARNING DEVICES IN ACCORDANCE WITH CURRENT STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, TRAFFIC MANUAL AND TO THE SATISFACTION OF THE CITY'S PUBLIC WORKS OBSERVER

10. THE RDMD STANDARD PLANS SHALL TAKE PRECEDENCE OVER ANY STANDARDS EXCEPT FOR STANDARD PLANS AFFECTING UTILITY COMPANIES THAT ARE MORE STRINGENT, THEN THE UTILITY COMPANY STANDARD PLANS SHALL TAKE PRECEDENCE.

11ANY UTILITIES UNDER PAVED AREAS OF PRIVATE STREETS SHALL HAVE A MINIMUM OF 40" COVER AND DEVELOPER SHALL PROVIDE PRIVATE LABORATORY COMPACTION CERTIFICATION FOR ALL UNDERGROUND UTILITIES PRIOR TO ANY PAVING. DEVELOPER SHALL SCHEDULE A MEETING WITH THE INSPECTOR AND THE PRIVATE LABORATORY PRIOR TO ANY TESTING.

12. NO CONCENTRATED FLOWS ARE PERMITTED ACROSS ASPHALT PAVEMENT WITHOUT APPROVAL FROM THE CITY'S PUBLIC WORKS OBSERVER.

13. STATE LAW SB 3012 REQUIRED THE CONTRACTOR TO OBTAIN AN IDENTIFICATION NUMBER FROM UNDERGROUND SERVICE ALERT (USA) PRIOR TO THE ISSUANCE OF A CITY ENCROACHMENT PERMIT. THE CONTRACTOR SHALL NOTIFY USA TWO FULL WORKING DAYS (48 HOURS MINIMUM) PRIOR TO ANY CONSTRUCTION ACTIVITIES, INCLUDING PAVEMENT REMOVAL, EXCAVATION AND ASPHALT CONCRETE OVERLAY, WHICH COULD AFFECT ANY UNDERGROUND UTILITY.

14. ANY CONTRACTORS PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE THEMSELVES WITH THE SITE AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM THEIR OPERATIONS, WHETHER OR NOT SUCH FACILITIES ARE SHOWN ON THE PLANS.

15. PRIOR TO BEGINNING CONSTRUCTION WORK WHICH COULD DAMAGE OR CONFLICT WITH UNDERGROUND STRUCTURES OF UTILITIES, THE CONTRACTOR SHALL EXCAVATE INSPECTION HOLES TO DETERMINE THE LOCATION AND DEPTH OF SAID STRUCTURES AND UTILITIES.

16. IF EXISTING UTILITIES OR OTHER FACILITIES CONFLICT WITH THE PROPOSED IMPROVEMENTS, WORK SHALL STOP AND THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE SHALL BE NOTIFIED IMMEDIATELY.

17. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DAMAGER OR ALTERED EXISTING IMPROVEMENTS WITHIN THE PUBLIC RIGHT-OF-WAY AS DIRECTED BY THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.

18. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL AT ALL TIMES.

19. SURVEY MONUMENTS SHALL BE PROTECTED AND PERPETUATED IN PLACE. DISTURBED OR COVERED MONUMENTS SHALL BE RESET BY A REGISTERED CIVIL ENGINEER, WHO IS AUTHORIZED TO PRACTICE LAND SURVEYING, OR A LICENSED LAND SURVEYOR.

20. IRRIGATION LINES SHALL BE REMOVED, RELOCATED OR RECONSTRUCTED AS SHOWN OR AS DIRECTED IN THE FIELD, BY THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.

21. NEW AND EXISTING MANHOLES AND WATER VALVES SHALL BE ADJUSTED TO GRADE.

22. UTILITIES SHALL BE INSTALLED, TESTED, AND APPROVED PRIOR TO STREET PAVING. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE SERVING UTILITY COMPANY AND VERIFY THAT THE UTILITY FACILITY IS IN PLACE BEFORE PAVING.

23. TRENCH BACKFILL SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD PROVISIONS LISTED ON THE ENCROACHMENT PERMIT.

24. THE CONTRACTOR SHALL NOT ORDER OR PLACE ANY CONCRETE OR ASPHALT CONCRETE PAVING UNTIL THE FORMS AND SUBGRADE OR AGGREGATE BASE HAVE BEEN INSPECTED AND APPROVED BY THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OF HIS AUTHORIZED REPRESENTATIVE IN THE FIELD.

25. "AS-BUILT" RECORD DRAWINGS SHALL BE FURNISHED TO THE CITY UPON COMPLETION OF CONSTRUCTION.

26. APPROVAL OF THESE PLANS BY THE CITY OR ITS AGENTS SHALL NOT RELIEVE THE CONTRACTOR OR THE APPLICANT FROM THE RESPONSIBILITY FOR THE CORRECTION OF ERRORS OR OMISSIONS DISCOVERED DURING CONSTRUCTION. UPON REQUEST, THE APPROPRIATE REVISIONS SHALL BE SUBMITTED TO THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER FOR REVIEW AND APPROVAL.

NOTICE TO CONTRACTOR

CAUTION: THE CIVIL ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO, OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY FACILITIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THE LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ANY NECESSARY ADJUSTMENTS TO ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PREVENT DAMAGE TO ANY UTILITY FACILITIES SHOWN AND ANY OTHER FACILITIES NOT SHOWN ON THESE PLANS.

ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING WORK SHOWN ON THESE PLANS AGREE THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THEY WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT. THIS INCLUDES PROVIDING FOR THE SAFETY OF ALL PERSONS AND PROPERTY AND SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTORS AND SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE DESIGN PROFESSIONAL FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

DECLARATION OF RESPONSIBLE CHARGE

I DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PLANS AND SPECIFICATIONS BY THE CITY OF LAKE FOREST IS CONFINED TO REVIEW ONLY, AND DOES NOT RELIEVE ME AS CIVIL ENGINEER OF WORK OF MY RESPONSIBILITIES FOR THE PROJECT.

DRAWING INDEX:

SHEET No.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES
3	ADA RAMP PLAN AND DETAILS
4	PLAN AND PROFILE 10+00.00 TO 11+28.72
5	PLAN AND PROFILE 11+28.72 TO 13+22.58

SHEET INDEX

CALL TOLL FREE
811
48 HOURS BEFORE YOU DIG

BASIS OF BEARINGS:
THE BEARING N85-12-00E BEING THE CENTERLINE OF TAMARISK DRIVE AS SHOWN ON TRACT NO. 12463 FILED IN BOOK 543, PAGES 46-47 OF MISCELLANEOUS MAPS IN THE OFFICE OF THE COUNTY RECORDER OF ORANGE COUNTY, CALIFORNIA.

BENCHMARK:
CHISELED " + " ON TOP OF CURB LOCATED ON TAMARISK
EL - 100.00

PLANS PREPARED BY:
ONWARD ENGINEERING
300 S. HARBOR BLVD., SUITE 814
ANAHEIM, CA 92805
P: (714) 533-3050
F: (714) 808-1270

REGISTERED PROFESSIONAL ENGINEER
DOUGLAS BENASH
No. 53935
EXP. 12-31-15
CIVIL
STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:
PLANS PREPARED UNDER SUPERVISION OF		
DOUGLAS BENASH PROJECT ENGINEER R.C.E. NO 53935	9-3-15 DATE	

NO.	DATE	DESCRIPTION OF REVISIONS	APPROVED

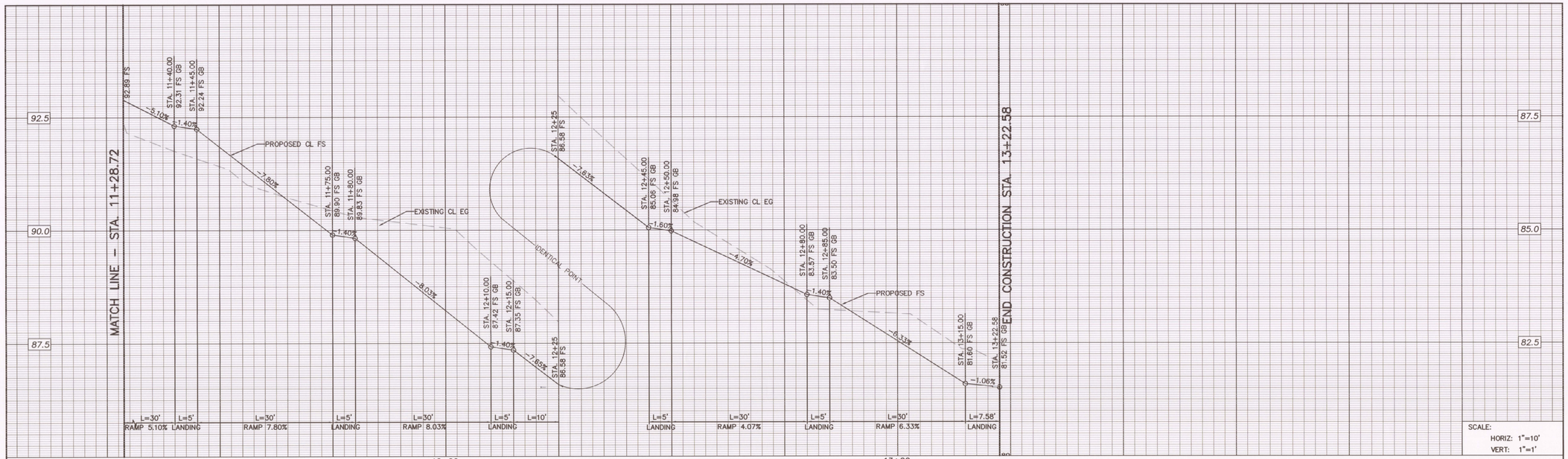
PLANS APPROVED BY THE CITY OF LAKE FORREST

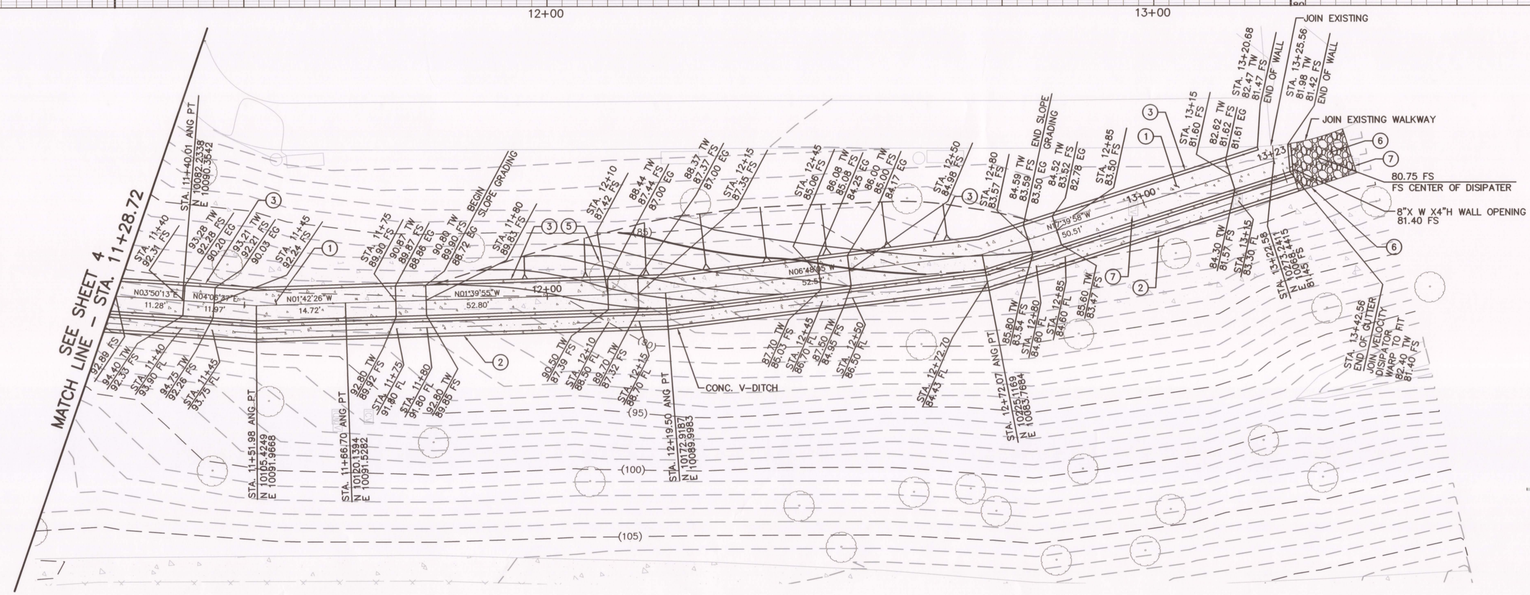
2/5/16
DATE
THOMAS E. WHEELER P.E. PUBLIC WORKS DIRECTOR / CITY ENGINEER

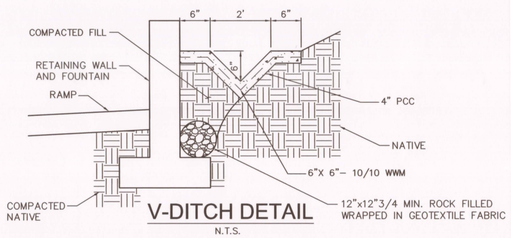
TITLE SHEET

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

PW 2013.23
SHEET 1 OF 5







V-DITCH DETAIL

N.T.S.

CONSTRUCTION NOTES

1. CONSTRUCT RAMP PER DETAIL 1, SHEET 3.
2. CONSTRUCT V–DITCH PER DETAIL SHEET 4.
3. CONSTRUCT HANDRAIL PER DETAIL 2 AND 3, SHEET 3.
4. MODIFY CHAINLINK FENCE, WITH NEW 5'–0"± WIDE GATE AND POSTS TO MATCH EXISTING.
5. REMOVE TREE.
6. CONSTRUICT RIP–RAP VELOCITY DISSIPATER PER SS–10 IN APPENDIX II/ FRENCH DRAIN.
7. RELOCATE PULL BOX.

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ONWARD ENGINEERING

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REGISTERED PROFESSIONAL ENGINEER
DOUGLAS BENASH
No. 53935
EXP. 12–31–15
CIVIL
STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:
PLANS PREPARED UNDER SUPERVISION OF		
DOUGLAS BENASH PROJECT ENGINEER R.C.E. NO 53935		9–3–15 DATE

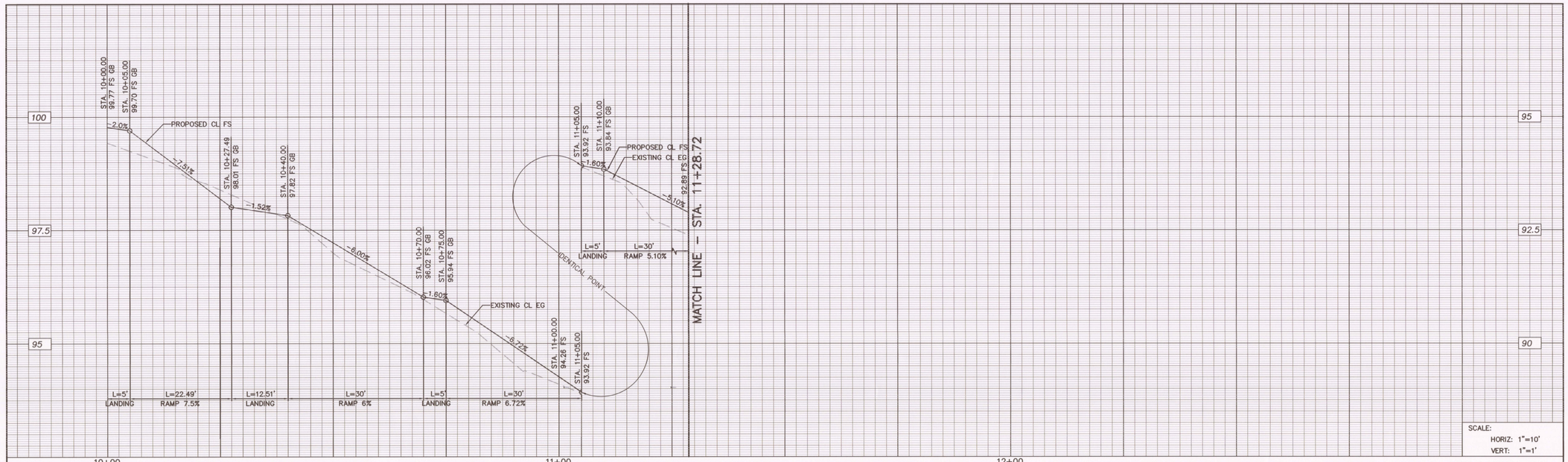
NO.	DATE	DESCRIPTION OF REVISIONS	APPROVED

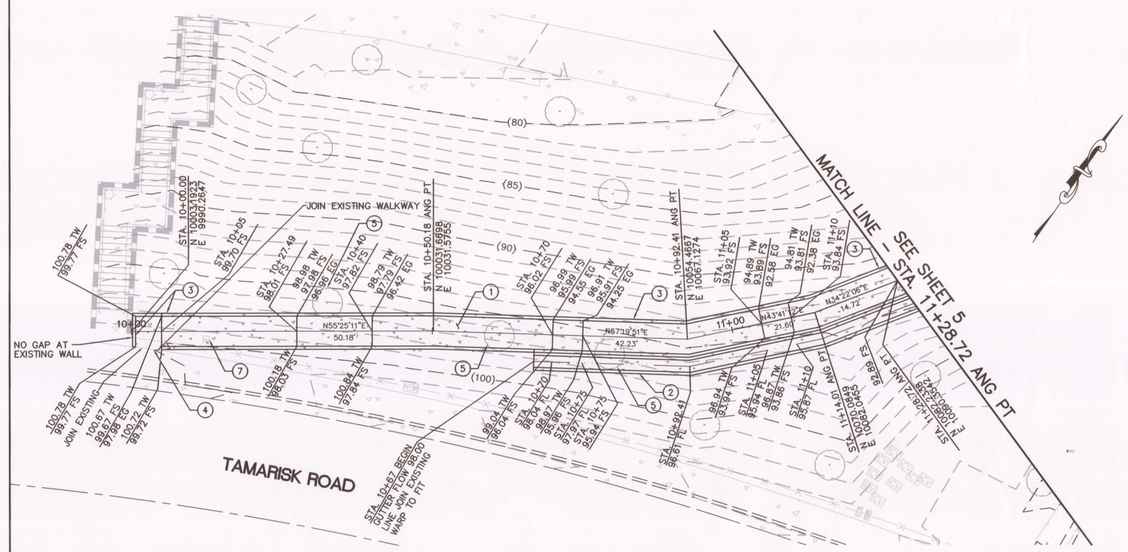
PLANS APPROVED BY THE CITY OF LAKE FORREST
THOMAS E. WHEELER P.E. PUBLIC WORKS DIRECTOR / CITY ENGINEER
2/4/16
DATE

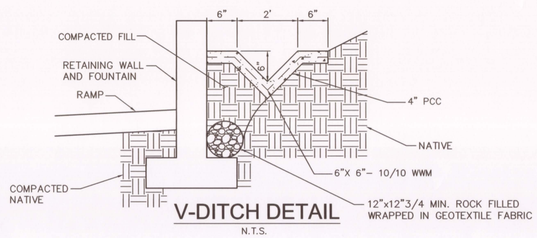
PLAN AND PROFILE
STA. 11+28.72 TO STA. 13+22.58

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

PW 2013.23
SHEET 5 OF 5







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REGISTERED PROFESSIONAL ENGINEER
DOUGLAS BENASH
No. 53935
EXP. 12–31–15
CIVIL
STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:
PLANS PREPARED UNDER SUPERVISION OF		
DOUGLAS BENASH PROJECT ENGINEER R.C.E. NO 53935	DATE 9–3–15	

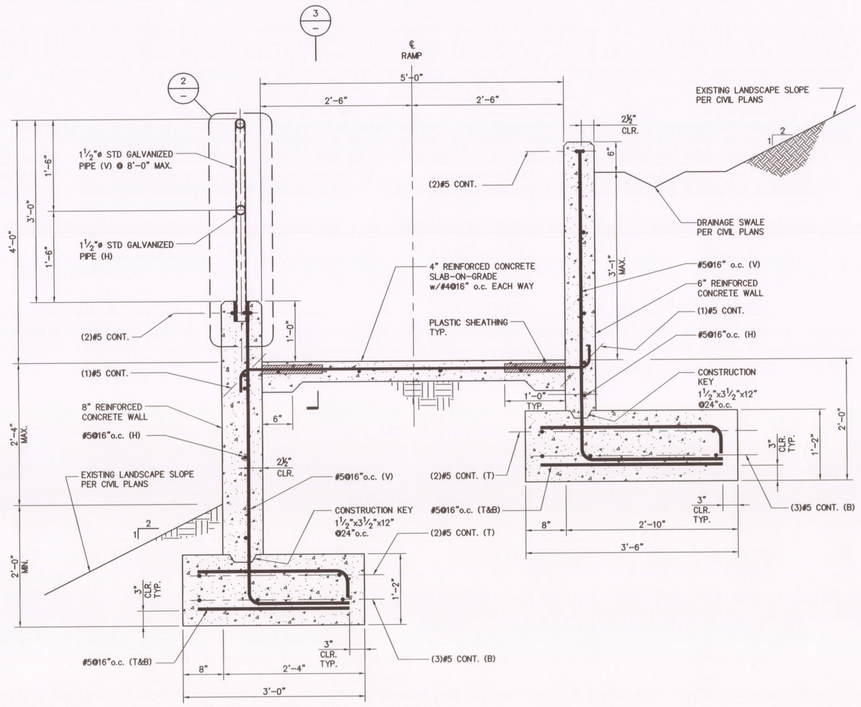
NO.	DATE	DESCRIPTION OF REVISIONS	APPROVED

PLANS APPROVED BY THE CITY OF LAKE FORREST
DATE 2/5/16
THOMAS E. WHEELER P.E. PUBLIC WORKS DIRECTOR / CITY ENGINEER

PLAN AND PROFILE
STA. 10+00.00 TO STA. 11+28.72

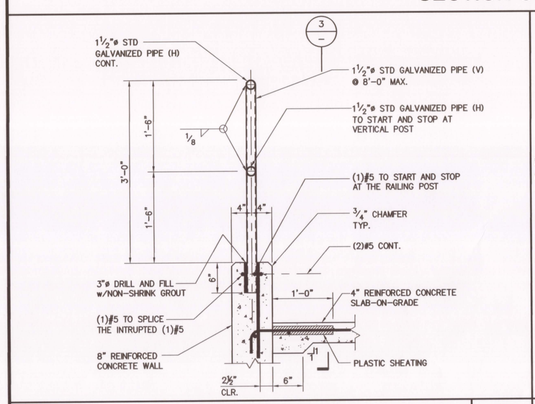
CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

PW 2013.23
SHEET 4 OF 5



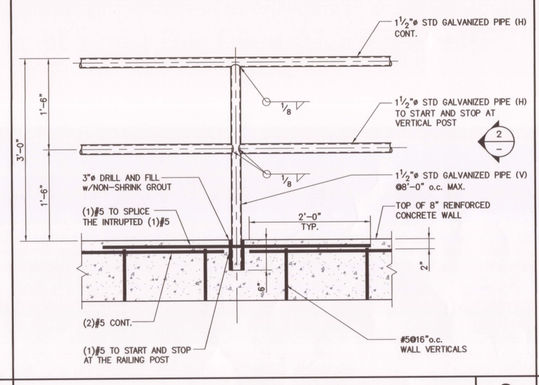
SECTION OF WALLS

1"=1'-0" | 1



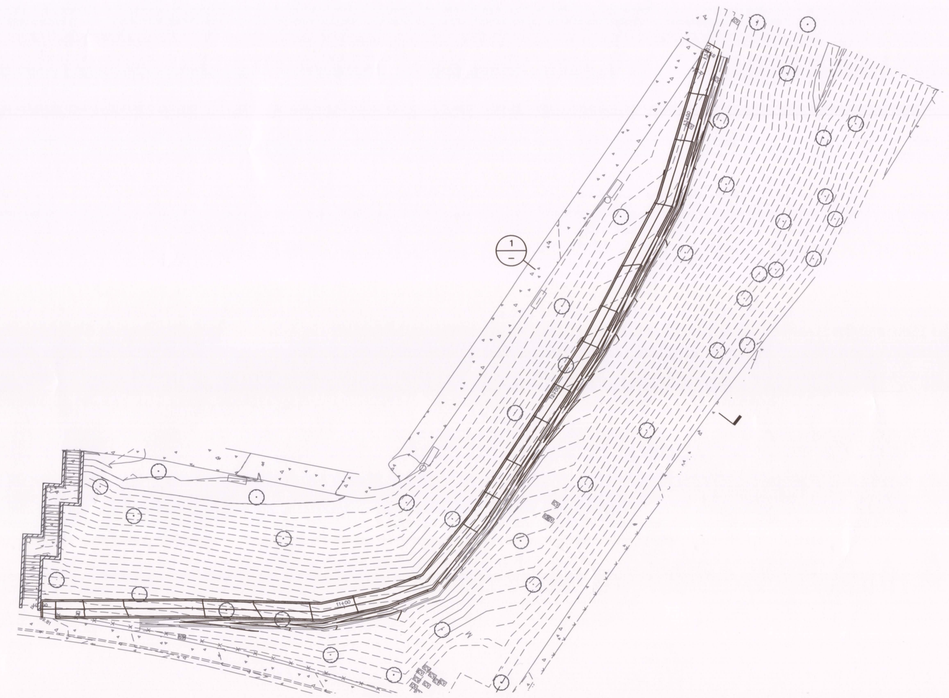
RAILING DETAIL

1"=1'-0" | 2



RAILING DETAIL

1"=1'-0" | 3



ADA RAMP PLAN NOTES

REFERENCE NORTH

1. VERIFY ALL DIMENSIONS BEFORE START OF WORK.
2. FOR ALL ELEVATIONS, SEE CIVIL DRAWINGS.
3. FOR GENERAL NOTES, SEE SHEET 2
4. GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND LOCATING ALL OPENINGS THROUGH THE SLAB AND WALLS INCLUDING BUT NOT LIMITED TO ELECTRICAL, MECHANICAL AND PLUMBING. SUBMIT TO THE STRUCTURAL ENGINEER FOR APPROVAL.

PW 2013.13

PROPOSED ADA RAMP

1"=20'-0" | A

CALL BEFORE YOU DIG

CALL TOLL FREE
811
48 HOURS BEFORE YOU DIG

PROFESSIONAL ENGINEERING CENTER PEC Structural Engineering CALIFORNIA

Professional Engineering Center
Structural Engineering Center, Inc
335 N. Puente Street, Unit G
Brea, CA 92821
Tel. 714.441.2830
Fax 800.707.1341
www.structuralec.com

15-N033

REGISTERED PROFESSIONAL ENGINEER NAGI ABO-SHADI No. S.E. 4750 EXP.12/31/16 STRUCTURAL STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:
PLANS PREPARED UNDER SUPERVISION OF		
NAGI ABO-SHADI PROJECT ENGINEER R.S.E. NO 4750		DATE

NO.	DATE	DESCRIPTION OF REVISIONS	APPROVED
2	09/02/15	100% SUBMITTAL	
1	07/24/15	SCHEMATIC DESIGN	

PLANS APPROVED BY THE CITY OF LAKE FORREST

7/5/16
DATE
THOMAS E. WHEELER P.E. PUBLIC WORKS DIRECTOR / CITY ENGINEER

ADA RAMP PLAN & DETAILS

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SHEET 3 OF 5 | 3

\\11.11.11.200\proj\etecod\15N033\DWG\SHEET3.dwg 09/03/15 - 12:46pm NAGI

GENERAL

1. Perform construction and workmanship in compliance with contract documents and City of Lake Forest Building and Safety.

   Seismic Parameters:
   1. Risk Category — II and Importance Factor, I_e = 1.0
   2. The site is located at N33.6548° Latitude and W117.6882° Longitude.
   3. Site Class "D"
   4. Mapped Spectral Acceleration — S_S =1.453 g; S_1 =0.541 g
   5. Design Spectral Response Acceleration — S_{DS} =0.969 g; S_{D1} =0.541 g

2. Governing Code Authority: 2013 California Building Code.
3. Structural drawings, as part of contract documents, indicate information sufficient to convey design intent. Take field measurements and verify field conditions and compare with contract documents. If errors, inconsistencies or omissions are discovered, promptly notify Structural Engineer before proceeding with work.
4. No portion of structural related work, including shop drawing development, shall be performed without considering requirements of contract documents in their entirety.
5. Conditions shown or noted as existing are based on best information currently available when drawings were prepared. No warranty is implied as to accuracy of these existing conditions.
6. Contract documents do not indicate method of construction. Provide construction means, methods, techniques, sequences and procedures as required. Provide adequate procedures, shoring, bracing and erection procedures complying with national, state and local safety ordinances.
7. Structural observation visits to site by field representatives of Structural Engineer do not include inspections of construction. Structural observations performed by Structural Engineer during construction are not continuous and detailed inspection services. Structural observations performed by Structural Engineer are performed solely for the purpose of determining if Contractor understands design intent conveyed in contract documents. Structural observations do not guarantee Contractor's performance and are not to be construed as supervision of construction.
8. Modifications or substitutions: design, materials, equipment and products other than those indicated or specified may be considered for use provided a written request, subject to review, is submitted to owner, Structural Engineer and Governing Code Authority prior to its use or inclusion on any shop drawing.
9. The structural drawings are the property of Professional Engineering Center, PEC. The structural drawings shall not reproduced without written permission of PEC. The electronic files for the structural drawings are the property of PEC and will not be released to the Contractor or subcontractor for their use.

FOUNDATIONS

1. Foundation construction shall be in accordance with 2013 CBC, Chapter 18.
2. Foundation design is based on the recommendations provided in the geotechnical report No. 20151502-D7109 prepared by AESCO, Inc., dated June 30, 2015 and all subsequent addenda.
3. Foundation design is based on a gross bearing capacity of 1,500 psf for Dead Load and Live Load. This can be increased by 33% for total loads including wind or seismic forces.
4. Foundation design is based on a triangular distribution of lateral earth pressures with an equivalent fluid pressure of 35 psf/ft. for design of walls below grade. This assumes a horizontal grade behind the wall. For the case of the 2:1 (H:V) slope behind the wall, an equivalent fluid pressure of 40 psf/ft. should be used.
5. The coefficient of friction is 0.35. The passive earth pressure may be computed as an equivalent fluid pressure of 150 psf/ft. When combining passive and friction for lateral resistance, the passive component should be reduced by one third.
6. Foundation footings a minimum of 24 inches below adjacent grade or finish floor, whichever is lower.
7. Foundation excavations are to be observed by and acceptable to the Geotechnical Engineer or his representative prior to placement of fill, reinforcing steel, or concrete.
8. Perform filling, backfilling, compaction, etc., according to the recommendation provided in the soil's report and only under direction of the Geotechnical Engineer or his representative.
9. The owner or his representative is responsible for performing soil testing to verify the soil properties.
10. Excavation filling and compaction report shall be developed by the Geotechnical Engineer or his representative and provided to the building official prior to the placement of the concrete for the foundation.
11. Follow all the recommendations provided in the geotechnical report for the site preparation and the foundation construction. The geotechnical report is a part of the construction document.

CAST-IN-PLACE CONCRETE

1. Provide normal weight aggregates of natural sand and rock complying with ASTM C33.
2. Provide Portland Cement conforming to ASTM C150, Type II, and CBC Standard 19-1, Part I.
3. Provide normal weight concrete (145 pcf) attaining a minimum compressive strength of 4,000 psi at 28 days with a maximum water-cement ratio of 0.45.
4. Submit concrete design mix data for each type and compressive strength of concrete required signed by and bearing the seal of a registered civil engineer in state to Structural Engineer. Base design mix on field experience or trial mixtures as stipulated in CBC Section 1905.3.
5. Slump not to exceed 4 inches.
6. Do not use concrete or grout containing chlorides.
7. Do not embed conduits, pipes, or sleeves other than electrical conduits 1" diameter and smaller in structural concrete, including slabs on metal deck, except where specifically detailed or accepted by Structural Engineer. Locate electrical conduit 3" apart minimum and within middle third of member.
8. Form exposed corners of columns, beams, walls, etc., with 3/4 inch chamfers unless detailed otherwise.
9. Provide keys in construction joints unless detailed otherwise. Thoroughly clean, remove laitance and thoroughly wet and remove standing water in construction joints before placing new concrete. At vertical joints, slush with a coat of neat cement before placing new concrete.
10. Roughen concrete surface to a full amplitude of 1/16 inch where masonry walls intersect concrete.
11. Perform concrete work in compliance with ACI 301.
12. Maintain concrete above 50 degrees Fahrenheit and in a moist condition for a minimum of 7 days after placement unless otherwise accepted by Structural Engineer.

REINFORCING STEEL

1. Provide reinforcing steel complying with ASTM A615, Grade 60.
2. Splice reinforcing steel where indicated. If splice locations are not specifically shown or indicated, verify splice locations with Structural Engineer prior to developing reinforcing steel shop drawings.
3. Lap reinforcing steel at splices to the following minimum lengths, unless noted otherwise: (applicable to 2,500 psi, normal weight concrete only):

bar size	top bars	other bars	bar size	top bars	other bars
#3	1'-9"	1'-4"	#7	5'-3"	4'-0"
#4	2'-4"	1'-10"	#8	6'-10"	5'-3"
#5	2'-11"	2'-3"	#9	8'-8"	6'-8"
#6	3'-10"	2'-11"	#10	11'-0"	8'-6"

   "Top bars" are horizontal bars with more than 12 inches of concrete cast below bars.
   "Other bars" are horizontal bars with less than 12 inches of concrete cast

   Splice lengths indicated above only apply when clear distances between reinforcing steel, including spliced reinforcing steel, are 2 bar diameters or greater. Increase splice lengths by 43% if clear distances are less than 2 bar diameters, but never less than minimum clear distances indicated below.
4. Minimum clear distance between reinforcing steel, including spliced reinforcing steel, shall be 1" or 1 bar diameter, whichever is greater.
5. Minimum concrete coverage: maintain the following minimum clear distances between reinforcing steel and face of concrete unless noted otherwise:
   slabs on grade (center of slab)
   concrete below grade, formed 2"
   concrete below grade, unformed 3"
6. Chairs or spacers for reinforcing shall be plastic or plastic coated when resting on exposed surfaces.
7. Weld reinforcing steel complying with AWS D1.4, except as modified by CBC Standard 19-1. Weld reinforcing steel conforming to ASTM A706. If welding of reinforcing steel other than A706 is desired, submit proposed procedure, indicating conformance to code and requirements of Governing Code Authority, to Structural Engineer for acceptance and to Governing Code Authority for approval prior to execution. Welders shall be certified as required by Governing Code Authority.
8. Bend reinforcing steel cold unless otherwise accepted by Structural Engineer. Provide special inspection of all cold bent reinforcing.
9. Securely tie anchor bolts, reinforcing steel, inserts, etc., in place prior to pouring concrete or grout.

STRUCTURAL STEEL

1. STRUCTURAL STEEL: Material, Fabrication, and Erection
   A. Materials
   Provide structural steel complying with CBC and the following ASTM Standard Specifications, unless noted otherwise:
   Steel Pipes STM A53 Grade B

   Furnish identifiable structural steel in compliance with 2013 CBC Section 2205.
   B. Fabricate and erect structural steel in compliance with AISC 360-2005 "Specification for Structural Steel Buildings" and CBC Chapter 22.I
   C. Steel construction and welding inspection shall be provided in accordance with Section 1704.3 and Table 1704.3.
   D. Fabricate structural steel on the premises of a fabricator registered and approved to perform such fabrication without special inspection. A certificate of compliance shall be submitted to the building official prior to erection according to 2013 CBC Section 1704.2.2.
   E. Submit shop drawings to Structural Engineer for review and, upon request, to Building Official.

STRUCTURAL STEEL (CONT'D)

3. Welding
   A. Basic Requirements
      1. Weld structural steel in compliance with ANSI/AWS D1.1 and AISC Specification, Chapter J. Welders shall be certified as required in the plans and by Governing Code Authority. Welding shall be done by electric arc process using low-hydrogen electrodes whose specified tensile strength is not less than 70 ksi unless noted otherwise. Welding may be performed using submerged arc process with automatic welding (SAW-1). Perform shop welding of full penetration groove welds by fabricators approved by the Building Official.
      2. Unless a larger size fillet weld is indicated, provide minimum size of weld per AISC Specification, Section J2 and Table J2.4.
      3. No attempt has been made to differentiate between shop and field welded connections.
      4. Shop welds must be performed in a fabricator's shop licensed by the Governing Code Authority.
   B. Inspections
      1. Welding inspection shall be provided in accordance with Section 1704.3.1 and Table 1704.3. The following requirements shall apply to welding inspections performed for the project.
      a. The lead welding inspector shall be a Certified Welding Inspector (CWI) per AWS-QC1 Standards, shall be approved by the Structural Observer and certified by the Building Official as a registered deputy inspector for structural steel welding (ICC Certification) and shall possess a minimum level of UT Level II Certification. Other welding inspectors performing visual inspection under the supervision of the lead welding inspector shall possess ICC Certification, and persons performing nondestructive testing shall possess UT Level II Certification. Not more than four non-CWI inspectors shall be under the supervision of a CWI.
      b. All welding shall be inspected visually as required by AWS D1.1 Section 6.9 and Table 6.1.

STRUCTURAL OBSERVATION

1. Structural observation is required for the structural system in accordance with 2013 CBC Section 1702. Structural observation is the visual observation of the elements and connections of the structural system at significant construction stages and the completed structure for general conformance to the approved plans and specifications. Structural observation does not waive the responsibility for the inspections required of the Building Inspector or the Deputy Inspector.
2. The Owner shall employ a Structural Engineer to perform the structural observation. The engineer shall be registered or licensed in the state of California. The Department of Building and Safety recommends the use of the engineer or architect responsible for the structural design when they are independent of the Contractor.
3. The Structural Observer shall provide evidence of employment by the Owner. A letter from the Owner or a copy of the Agreement for Services shall be sent to the Building Inspector before the first site visit. The Structural Observer shall also inform the Owner of the requirements for a pre-construction meeting and shall preside over this meeting.
4. The Owner or Owner's Representative shall coordinate and call for a meeting between the Engineer responsible for the structural design, Structural Observer, Contractor, affected Subcontractors and Deputy Inspectors. The purpose of the meeting that is presided by the Structural Engineer shall be to identify the major structural elements and connections that affect the vertical and lateral load systems of the structure and to review scheduling of the required observations. A record of the meeting shall be included in the first Observation Report submitted to the Building Inspector/Official.
5. The Structural Observer shall perform site visits at those steps in the progress of the work that allow for correction of deficiencies without substantial effort or uncovering of the work involved. At a minimum, the following significant construction stages require a site visit and an observation report from the Structural Observer:

   CONSTRUCTION STAGES ELEMENTS/CONNECTIONS TO BE OBSERVED
   A. Foundation reinforcing in footings.
   B. Wall reinforcing and railing attachment.
6. The original report shall be sent to the Building Inspector's office and shall be signed and sealed by the responsible Structural Observer. A copy of the Observation Report shall be attached to the approved plans. The copy attached to the plans need not be sealed but shall be signed by the responsible Structural Observer or their designee. Copies of the report shall also be given to the Owner, Contractor, and Deputy Inspector.
7. A final Observation Report must be submitted showing that all observed deficiencies were resolved and the structural system generally conforms with the approved plans and specifications. The Department of Building and Safety will not accept the structural work without this final Observation Report and the correction of the specific deficiencies noted during normal building and deputy inspection.

ITEM	TESTING, INSPECTION & VERIFICATION TASKS	FREQUENCY	
		CONT.	PERIODIC
	CONCRETE INSPECTIONS & VERIFICATION (Table 1705.3)		
1.	Inspection of Reinforcing Steel, Including Placement. (ACI 318: 3.5, 7.1 -7.7)		X
2.	Inspection of Reinforcing Steel Welding in Accordance with Table 1704.3, Item 5b. (AWS D1.4, ACI 318: 3.5.2)	X	
3.	Inspect Bolts to be Installed in Concrete prior to and During Placement of Concrete Where Allowable Loads Have Been Increased.	X	
4.	Verifying Use of Required Design Mix. (ACI 318: Ch. 4, 5.2 – 5.4)		X
5.	At the Time Fresh Concrete is Sampled to Fabricate Specimens for Strength Tests, Perform Slump and Air Content Tests, and Determine the Temperature of the Concrete. (ASTM C 172, ASTM C 31, ACI 318: 5.6, 5.8)	X	
6.	Inspect formwork for shape, location and dimensions of the concrete member being formed.		X
8.	Test ASTM A 615 Reinforcing Steel that is to be Welded, Chemical Tests Shall be Performed to Determine Weldability in Accordance with Section 3.5.2 of ACI 318.		X
9.	Installation of (Chemical / Epoxy) Adhesive Anchors, Rods and Dowels.	X	

QUALITY ASSURANCE

1. The following constitutes a statement of special inspection in accordance with 2013 CBC Section 1705.
2. Continuous Special Inspection is the full-time observation of work requiring special inspection by an approved special inspector who is present in the area where the work is being performed.
3. Periodic Special Inspection is the part-time or intermittent observation of work requiring special inspection by an approved special inspector who is present in the area where the work has been or is being performed and at the completion of the work.
4. The owner shall employ one or more approved agencies to perform inspections during construction on the types of work listed under Section 1704. These inspections are in addition to the inspections identified in Section 110.
5. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official. The Structural Engineer is permitted to act as the inspection agency and his personnel are permitted to act as the special inspector, provided those personnel meet the qualification requirements of this section to the satisfaction of the building official.
6. Testing laboratory shall submit reports indicating results and observations of tests and inspections and stating compliance or noncompliance with contract documents to Structural Engineer and, upon request, to Governing Code Authority. Contractor shall reimburse Owner for costs related to tests and inspections of unidentifiable materials or materials furnished without certified laboratory test reports, materials found deficient after initial tests and inspections, or materials replacing deficient materials.
7. Testing laboratory shall provide special inspection, complying with CBC Section 1704, for the following:
   A. Steel construction and welding inspection shall be provided in accordance with Section 1705.2 and Table 1705.2.2.
   B. Concrete and reinforcing inspection shall be provided in accordance with Section 1705.3 and Table 1705.3.
8. Provide cement, aggregates, reinforcing steel, etc., from identifiable tested stock. Submit certified laboratory test reports to Structural Engineer and, upon request, to Governing Code Authority. If materials cannot be identified or if certified laboratory test reports cannot be made available, testing laboratory will perform tests to determine conformance with contract documents as directed by Structural Engineer.
9. Testing laboratory shall review concrete mix design data and shall perform the following concrete tests as per in CBC Section 1903:
   A. Slump tests in compliance with ASTM C143.
   B. Prepare four test cylinders for compressive strength testing in compliance with ASTM C39, ACI 318 and CBC Section 1905.6. Test one cylinder at 7 days after deposit, two cylinders at 28 days after deposit and retain remaining cylinder for tests until completion of project. Determine concrete compressive strength at 28 days based on average of two cylinders tested.
   C. Entrained air content in compliance with ASTM C231

ITEM	TESTING, INSPECTION & VERIFICATION TASKS	FREQUENCY	
		CONT.	PERIODIC
	FOUNDATION INSPECTIONS & VERIFICATION SOILS Table 1705.6		
1.	Verify subgrade materials below the footing for design bearing capacity.		X
2.	Verify depth of excavation and type of subgrade materials reached.		X
3.	Perform classification and compaction testing of controlled backfill materials.		X
4.	Verify materials used, layered thicknesses and compaction of back fills.	X	
5.	Verify the subgrade and site preparations for controlled fill.		X

ITEM	TESTING, INSPECTION & VERIFICATION TASKS	FREQUENCY	
		CONT.	PERIODIC
	STRUCTURAL STEEL INSPECTIONS & VERIFICATIONS (TABLE 1705.2.2)		
1.	Material Verification of Structural Steel:		
	a. Identification Markings to Conform to ASTM Standards Specified in the approved construction documents.		X
	b. Manufacturer's Certified mill Test Reports.		X
2.	Material Verification of Weld Filler Materials:		
	a. Identification Markings to Conform to AWS Specification in the Approved Construction Documents. (ANSI/AISC 360 Section A3.5)		X
	b. Manufacturer's Certificate of Compliance Required.		X
3.	Inspection of Welding:		
	a. Structural steel: (AWS D1.1)		
	1. Complete and partial penetration groove welds.	X	
	2. Single-pass Fillet Welds ≤ 5/16"		X
	b. Reinforcing steel: (AWS D1.4, ACI 318: 3.5.2)		
	1. Verification of weldability of reinforcing steel other than ASTM A 706.		X

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15-N033

REGISTERED PROFESSIONAL ENGINEER NAGI ABO-SHADI No. S.E. 4750 EXP. 12/31/16 STRUCTURAL STATE OF CALIFORNIA

DESIGNED BY: DRAWN BY: CHECKED BY:

PLANS PREPARED UNDER SUPERVISION OF

NAGI ABO-SHADI
PROJECT ENGINEER R.S.E. NO 4750 DATE

NO.	DATE	DESCRIPTION OF REVISIONS	APPROVED
2	09/02/15	100% SUBMITTAL	
1	07/24/15	SCHEMATIC DESIGN	

PLANS APPROVED BY THE CITY OF LAKE FORREST

2/5/16
DATE
THOMAS E. WHEELER P.E. PUBLIC WORKS DIRECTOR / CITY ENGINEER

GENERAL NOTES

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

2
SHEET 2 OF 5

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