

February 18, 2026

Prospective Bidders

RE: Request for Quotes - Inspection and Cleaning of Potable Water Storage Tanks

The City of Louisville is seeking qualified technical quotes to provide inspection and cleaning of the City's five potable concrete water storage tanks in the City of Louisville. Completed quotes shall be submitted via email in pdf format to jferron@louisvilleco.gov no later than **2:00 pm** on **March 13, 2026**.

City of Louisville Project Manager

Justin Ferron, P.E.
Civil Engineer III
749 Main Street
Louisville, CO 80027
303-335-4607
jferron@louisvilleco.gov

Quote Submission Schedule

Advertisement:	February 18, 2026
Questions Due:	March 4, 2026, 3:00 pm
Any Addenda Issued:	March 11, 2026
Quotes Due:	March 13, 2026, 2:00 pm

Information Available to Bidders

The City of Louisville has five concrete potable water storage tanks. The specifications on the tanks are as follows:

Name	Size (gallons)	Dimensions (ft.)	Type
Low Zone Tank	3,000,000	23 High x 150 Dia	Concrete Aboveground
Mid Zone Tank	3,500,000	17 High x 180 Dia	Concrete Partial Bury
High Zone Tank	2,000,000	23 High x 122 Dia	Concrete Aboveground
North WTP Clearwell	600,000	48 Wide x 80 Length x 21 Deep	Concrete Underground
South WTP Clearwell	400,000	65 Wide x 90 Length x 10 Deep	Concrete Underground

- The five tanks are located within an approximate six mile radius of each other.

- There are limited facilities available at all sites and the selected contractor will be required to be self-sufficient, i.e. provide own power.
- The approximate altitude of the tanks range from 5535 to 5775 feet above sea-level.

The information listed below is available to all prospective bidders. Exhibits are available for download in a digital format only, with this Request for Quotes.

- Independent Contractor Agreement
- Tank As-Built Drawings

Scope of Services

The Scope of Work shall include but is not limited to the following:

- Contractor shall meet all regulations and standards required for diving, inspecting and repairing potable water tanks, including but not limited to regulations and standards from OSHA, EPA, CDPHE, AWWA, NFPA and TCEQ.
- All dive technicians and equipment that is used in the tank will be fully disinfected prior to accessing tank in accordance with AWWA Standard C652-11. All entries will be conducted in accordance with applicable OSHA regulations pertaining to diving and confined space; including 1910.401 through 1910.441.
- Interior and exterior assessments; review structural, sanitary, safety, security and any installed coating conditions.
- Minimum items to be examined include; ladders, shell, roof, vents, man ways, welds, seams, foundation, anchors, safety systems, hatches, external overflow and plumbing.
- High resolution color video will document the interior inspection. The documentation will be completed with real time closed circuit underwater video equipment. All pertinent findings will be recorded including, dive technician's findings and a narrative summary.
- Cleaning and removal of any sediment or material present in the tanks. Sediment will be thoroughly removed from the floor of each scheduled tank. Sediment will be pumped out of the tank and captured in a sediment bag. All water released will be de-chlorinated and BMP's must be set up to minimize erosion.
- Provide a written report on the tank inspections addressing inspection criteria within this RFQ and referencing applicable OSHA, EPA, AWWA, NFPA and TCEQ requirements. In addition, complete the Comprehensive Inspection checklist of Section 11.28 Storage Tank Rule for the CDPHE using the approved forms specified.

Contract Schedule

- Target Inspection Completion: **June 2026.**

Quote Submittal

The quote must include the following components:

- General firm information.
- References from at least three projects in Colorado with similar requirements that have been completed during the past five years. Include email address of client contact.
- Proposed sub consultants and task(s) they will be completing, if any.
- Not to exceed amount based on the above scope. Provide a detailed cost breakdown for each tank based on the Scope of Work. Include separate detail costs for minor repairs (epoxy) and additional cleaning if the inspections show that such work is necessary. Also, include and note any multi-tank discount pricing for the combination of two or more tanks completed as a single dispatch.

Standard Terms and Conditions

When preparing a proposal for submission in response to this RFQ, contractors should be aware of the following terms and conditions which have been established by the City of Louisville:

- This request for quotes is not an offer to contract. The provisions in this RFQ and any purchasing policies or procedures of the City are solely for the fiscal responsibility of the City, and confer no rights, duties or entitlements to any party submitting quotes. The City of Louisville reserves the right to reject any and all quotes, to consider alternatives, to waive any informalities and irregularities, to abandon the project and this RFQ at any time, and to re-solicit quotes.
- Contractor acknowledges that any potential expenditure incurred by selected firm outside the current fiscal year is contingent upon appropriation, budgeting, and availability of specific funds for such proposed expenditure. The current fiscal year ends on December 31, 2026.
- The City of Louisville reserves the right to conduct such investigations of and discussions with those who have submitted quotes or other entities as they deem necessary or appropriate to assist in the evaluation of any quote or to secure maximum clarification and completeness of any quotes.
- The successful proposer shall be required to sign a contract with the City in a form provided by and acceptable to the City. The consultant shall be an independent contractor of the City (See Attached).

- The City of Louisville assumes no responsibility for payment of any expenses incurred by any proponent as part of the RFQ process.
- All responses to this RFQ become the property of the City upon receipt and regardless of selection or rejection, and will not be returned, except that the City may return late responses submitted after the response deadline. Any trade secrets or confidential commercial or financial information submitted with any response is subject to potential disclosure, and submitting it constitutes proposer's waiver of any recourse against the City in respect to disclosure and proposer's agreement to indemnify the City for any costs, legal fees or expenses incurred in relation to any proceeding concerning disclosure of such information. Any trade secrets or confidential commercial or financial information submitted with a response shall be clearly segregated and marked; provided; however, that neither cost information nor the total RFQ will be considered proprietary. The City will notify the vendor of any request for disclosure of information so segregated and marked that may be subject to nondisclosure, and it will be the responsibility of the vendor to object and to pursue any legal actions pursuant to Colorado law. A vendor shall notify the City within 24 hours of notification by City of request for disclosure of the vendor's objections to disclosure and the vendor's intent to pursue lawful protection under Colorado law.

**INDEPENDENT CONTRACTOR AGREEMENT
BY AND BETWEEN THE CITY OF LOUISVILLE
AND _____
FOR _____ SERVICES**

1.0 PARTIES

This INDEPENDENT CONTRACTOR AGREEMENT (this "Agreement") is made and entered into this ____ day of _____, 20__ (the "Effective Date"), by and between the **City of Louisville**, a Colorado home rule municipal corporation, hereinafter referred to as the "City", and _____, [Name of Contractor] a _____ [State of Formation and Type of Entity], hereinafter referred to as the "Contractor".

2.0 RECITALS AND PURPOSE

- 2.1 The City desires to engage the Contractor for the purpose of providing _____ services as further set forth in the Contractor's Scope of Services set forth in Section 3.0 of this Agreement (which services are hereinafter referred to as the "Services").
- 2.2 The Contractor represents that it has the special expertise, qualifications and background necessary to complete the Services.

3.0 SCOPE OF SERVICES

The Contractor agrees to provide the City with the specific Services and to perform the specific tasks, duties and responsibilities set forth in Scope of Services attached hereto as Exhibit "A" and incorporated herein by reference. Contractor shall furnish all tools, labor and supplies in such quantities and of the proper quality as are necessary to professionally and timely perform the Services. Contractor acknowledges that this Agreement does not grant any exclusive privilege or right to supply Services to the City.

4.0 COMPENSATION

- 4.1 The City shall pay the Contractor for Services under this Agreement a total not to exceed the amounts set forth in Exhibit "A" attached hereto and incorporated herein by this reference. For Services compensated at hourly or per unit rates, or on a per-task basis, such rates or costs per task shall not exceed the amounts set forth in Exhibit A. The City shall not pay mileage and other reimbursable expenses (such as meals, parking, travel expenses, necessary memberships, etc.), unless such expenses are (1) clearly set forth in the Scope of Services, and (2) necessary for performance of the Services ("Pre-Approved Expenses"). The foregoing amounts of compensation shall be inclusive of all costs of whatsoever nature associated with the Contractor's efforts, including but not limited to salaries, benefits, overhead, administration, profits, expenses, and outside Contractor fees. The Scope of Services and payment therefor shall only be changed by a properly authorized amendment to this Agreement. No City employee has the authority to bind the City with regard to any payment for any Services which exceeds the amount payable under the terms of this Agreement.
- 4.2 The Contractor shall submit monthly an invoice to the City for Services rendered and a detailed expense report for Pre-Approved Expenses incurred during the previous month.

The invoice shall document the Services provided during the preceding month, identifying by work category and subcategory the work and tasks performed and such other information as may be required by the City. The Contractor shall provide such additional backup documentation as may be required by the City. The City shall pay the invoice within thirty (30) days of receipt unless the Services or the documentation therefor are unsatisfactory. Payments made after thirty (30) days may be assessed an interest charge of one percent (1%) per month unless the delay in payment resulted from unsatisfactory work or documentation therefor.

5.0 PROJECT REPRESENTATION

- 5.1 The City designates _____ as the responsible City staff to provide direction to the Contractor during the conduct of the Services. The Contractor shall comply with the directions given by _____ and such person's designees.
- 5.2 The Contractor designates _____ as its project manager and as the principal in charge who shall be providing the Services under this Agreement. Should any of the representatives be replaced, particularly _____, and such replacement require the City or the Contractor to undertake additional reevaluations, coordination, orientations, etc., the Contractor shall be fully responsible for all such additional costs and services.

6.0 TERM

- 6.1 The term of this Agreement shall be from the Effective Date to _____, 20____, unless sooner terminated pursuant to Section 13, below. The Contractor's Services under this Agreement shall commence on [(the Effective Date) or (on another date desired by the City, after the Effective Date)] and Contractor shall proceed with diligence and promptness so that the Services are completed [in a timely fashion consistent with the City's requirements] [on or before _____].
- 6.2 Nothing in this Agreement is intended or shall be deemed or construed as creating any multiple-fiscal year direct or indirect debt or financial obligation on the part of the City within the meaning of Colorado Constitution Article X, Section 20 or any other constitutional or statutory provision. All financial obligations of the City under this Agreement are subject to annual budgeting and appropriation by the Louisville City Council, in its sole discretion. Notwithstanding anything in this Agreement to the contrary, in the event of non-appropriation, this Agreement shall terminate effective December 31 of the then-current fiscal year.

OPTIONAL LIQUIDATED DAMAGES PROVISION:

- 6.3 **LIQUIDATED DAMAGES.** The City and the Contractor agree and recognize that time is of the essence in this Agreement and that the City will suffer financial loss if the Services set forth in Section 3.0 are not substantially complete by the date specified in paragraph 6.1 above, plus any extensions thereof allowed by amendment to this Agreement approved pursuant to Section 18.0. The City and the Contractor also agree that such damages are uncertain in amount and difficult to measure accurately. Accordingly, the City and the Contractor agree that as liquidated damages, and not as a penalty, for delay in performance the Contractor shall pay the City **ONE THOUSAND DOLLARS (\$1,000)** for each and every day or portion thereof that expires after the deadline set forth in Section

6.1. The liquidated damages herein specified shall only apply to the Contractor's delay in performance, and shall not include litigation or attorneys' fees incurred by the City, or other incidental or consequential damages suffered by the City due to the Contractor's performance. If the City charges liquidated damages to the Contractor, this shall not preclude the City from commencing an action against the Contractor for other actual harm resulting from the Contractor's performance, which is not due to the Contractor's delay in performance.

7.0 INSURANCE

7.1 The Contractor agrees to procure and maintain, at its own cost, the policies of insurance set forth in Subsections 7.1.1 through 7.1.4. The Contractor shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to this Agreement by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types. The coverages required below shall be procured and maintained with forms and insurers acceptable to the City. All coverages shall be continuously maintained from the date of commencement of Services hereunder. The required coverages are:

7.1.1 Workers' Compensation insurance as required by the Labor Code of the State of Colorado and Employers Liability Insurance. Evidence of qualified self-insured status may be substituted.

7.1.2 General Liability insurance with minimum combined single limits of \$1,000,000 each occurrence and \$2,000,000 aggregate. The policy shall include the City of Louisville, its officers and its employees, as additional insureds, with primary coverage as respects the City of Louisville, its officers and its employees, and shall contain a severability of interests provision.

7.1.3 Comprehensive Automobile Liability insurance with minimum combined single limits for bodily injury and property damage of not less than \$400,000 per person in any one occurrence and \$1,000,000 for two or more persons in any one occurrence, and auto property damage insurance of at least \$50,000 per occurrence, with respect to each of Contractor's owned, hired or non-owned vehicles assigned to or used in performance of the Services. If the Contractor has no owned automobiles, the requirements of this paragraph shall be met by each officer or employee of the Contractor providing services to the City of Louisville under this contract.

7.2 The Contractor's general liability insurance and automobile liability and physical damage insurance shall be endorsed to include the City, and its elected and appointed officers and employees, as additional insureds, unless the City in its sole discretion waives such requirement. Every policy required above shall be primary insurance, and any insurance carried by the City, its officers, or its employees, shall be excess and not contributory insurance to that provided by the Contractor. Such policies shall contain a severability of interests provision. The Contractor shall be solely responsible for any deductible losses under each of the policies required above.

7.3 Certificates of insurance shall be provided by the Contractor as evidence that policies providing the required coverages, conditions, and minimum limits are in full force and effect, and shall be subject to review and approval by the City. No required coverage shall be cancelled, terminated or materially changed until at least 30 days prior written notice

has been given to the City. The City reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

- 7.4 Failure on the part of the Contractor to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute a material breach of contract upon which the City may immediately terminate this Agreement, or at its discretion may procure or renew any such policy or any extended reporting period thereto and may pay any and all premiums in connection therewith, and all monies so paid by the City shall be repaid by Contractor to the City upon demand, or the City may offset the cost of the premiums against any monies due to Contractor from the City.
- 7.5 The parties understand and agree that the City is relying on, and does not waive or intend to waive by any provision of this contract, the monetary limitations or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, § 24-10-101 et seq., C.R.S., as from time to time amended, or otherwise available to the City, its officers, or its employees.

8.0 INDEMNIFICATION

To the fullest extent permitted by law, the Contractor agrees to indemnify and hold harmless the City, and its elected and appointed officers and its employees, from and against all liability, claims, and demands, on account of any injury, loss, or damage, which arise out of or are connected with the Services hereunder, if such injury, loss, or damage is caused by the negligent act, omission, or other fault of the Contractor or any subcontractor of the Contractor, or any officer, employee, or agent of the Contractor or any subcontractor, or any other person for whom Contractor is responsible. The Contractor shall investigate, handle, respond to, and provide defense for and defend against any such liability, claims, and demands. The Contractor shall further bear all other costs and expenses incurred by the City or Contractor and related to any such liability, claims and demands, including but not limited to court costs, expert witness fees and attorneys' fees if the court determines that these incurred costs and expenses are related to such negligent acts, errors, and omissions or other fault of the Contractor. The City shall be entitled to its costs and attorneys' fees incurred in any action to enforce the provisions of this Section 8.0. The Contractor's indemnification obligation shall not be construed to extend to any injury, loss, or damage which is caused by the act, omission, or other fault of the City.

9.0 QUALITY OF WORK

Contractor's Services shall be performed in accordance with the highest professional workmanship and service standards in the field to the satisfaction of the City.

10.0 INDEPENDENT CONTRACTOR

It is the expressed intent of the parties that the Contractor is an independent contractor and not the agent, employee or servant of the City, and that:

- 10.1. **CONTRACTOR SHALL SATISFY ALL TAX AND OTHER GOVERNMENTALLY IMPOSED RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, PAYMENT OF STATE, FEDERAL AND SOCIAL SECURITY TAXES, UNEMPLOYMENT TAXES, WORKERS' COMPENSATION AND SELF-EMPLOYMENT TAXES. NO STATE, FEDERAL OR LOCAL TAXES OF ANY KIND SHALL BE WITHHELD OR PAID BY THE CITY.**

- 10.2. **CONTRACTOR IS NOT ENTITLED TO WORKERS' COMPENSATION BENEFITS EXCEPT AS MAY BE PROVIDED BY THE INDEPENDENT CONTRACTOR NOR TO UNEMPLOYMENT INSURANCE BENEFITS UNLESS UNEMPLOYMENT COMPENSATION COVERAGE IS PROVIDED BY THE INDEPENDENT CONTRACTOR OR SOME ENTITY OTHER THAN THE CITY.**
- 10.3. Contractor does not have the authority to act for the City, or to bind the City in any respect whatsoever, or to incur any debts or liabilities in the name of or on behalf of the City.
- 10.4. Contractor has and retains control of and supervision over the performance of Contractor's obligations hereunder and control over any persons employed by Contractor for performing the Services hereunder.
- 10.5. The City will not provide training or instruction to Contractor or any of its employees regarding the performance of the Services hereunder.
- 10.6. Neither the Contractor nor any of its officers or employees will receive benefits of any type from the City.
- 10.7. Contractor represents that it is engaged in providing similar services to other clients and/or the general public and is not required to work exclusively for the City.
- 10.8. All Services are to be performed solely at the risk of Contractor and Contractor shall take all precautions necessary for the proper and sole performance thereof.
- 10.9. Contractor will not combine its business operations in any way with the City's business operations and each party shall maintain their operations as separate and distinct.

11.0 ASSIGNMENT

Contractor shall not assign or delegate this Agreement or any portion thereof, or any monies due to or become due hereunder without the City's prior written consent.

12.0 DEFAULT

Each and every term and condition hereof shall be deemed to be a material element of this Agreement. In the event either party should fail or refuse to perform according to the terms of this Agreement, such party may be declared in default.

13.0 TERMINATION

- 13.1 This Agreement may be terminated by either party for material breach or default of this Agreement by the other party not caused by any action or omission of the other party by giving the other party written notice at least thirty (30) days in advance of the termination date. Termination pursuant to this subsection shall not prevent either party from exercising any other legal remedies which may be available to it.

- 13.2 In addition to the foregoing, this Agreement may be terminated by the City for its convenience and without cause of any nature by giving written notice at least fifteen (15) days in advance of the termination date. In the event of such termination, the Contractor will be paid for the reasonable value of the Services rendered to the date of termination, not to exceed a pro-rated daily rate, for the Services rendered to the date of termination, and upon such payment, all obligations of the City to the Contractor under this Agreement will cease. Termination pursuant to this Subsection shall not prevent either party from exercising any other legal remedies which may be available to it.

14.0 INSPECTION AND AUDIT

The City and its duly authorized representatives shall have access to any books, documents, papers, and records of the Contractor that are related to this Agreement for the purpose of making audits, examinations, excerpts, and transcriptions.

15.0 DOCUMENTS

All computer input and output, analyses, plans, documents photographic images, tests, maps, surveys, electronic files and written material of any kind generated in the performance of this Agreement or developed for the City in performance of the Services are and shall remain the sole and exclusive property of the City. All such materials shall be promptly provided to the City upon request therefor and at the time of termination of this Agreement, without further charge or expense to the City and in hardcopy or an electronic format acceptable to the City, or both, as the City shall determine. Contractor shall not provide copies of any such material to any other party without the prior written consent of the City. Contractor shall not use or disclose confidential information of the City for purposes unrelated to performance of this Agreement without the City's written consent.

16.0 ENFORCEMENT

- 16.1 In the event that suit is brought upon this Agreement to enforce its terms, the parties shall each bear and be responsible for their own attorneys' fees and court costs.
- 16.2 This Agreement shall be deemed entered into in Boulder County, Colorado, and shall be governed by and interpreted under the laws of the State of Colorado. Any action arising out of, in connection with, or relating to this Agreement shall be filed in the courts of Boulder County or the federal district court for the District of Colorado, and in no other court. [If out of state contractor: Contractor hereby waives its right to challenge the personal jurisdiction of the courts of Boulder County and the federal district court for the District of Colorado over it.] Colorado law shall apply to the construction and enforcement of this Agreement.

17.0 COMPLIANCE WITH LAWS

Contractor shall be solely responsible for compliance with all applicable federal, state, and local laws, including the ordinances, resolutions, rules, and regulations of the City; for payment of all applicable taxes; and obtaining and keeping in force all applicable permits and approvals.

18.0 INTEGRATION AND AMENDMENT

This Agreement represents the entire Agreement between the parties and there are no oral or collateral agreements or understandings. This Agreement may be amended only by an instrument in writing signed by the parties.

19.0 NOTICES

All notices required or permitted under this Agreement shall be in writing and shall be given by hand delivery, by United States first class mail, postage prepaid, registered or certified, return receipt requested, by national overnight carrier, or by email transmission, addressed to the party for whom it is intended at the following address:

If to the City:

City of Louisville

Attn: _____

749 Main Street

Louisville, CO 80027

e-mail: _____

If to the Contractor:

Except for notices by email transmission, any notice required or permitted under this Agreement shall be effective when received as indicated on the delivery receipt, if by hand delivery or overnight carrier; on the United States mail return receipt, if by United States mail. Notices by email transmission shall be effective on transmission, so long as no message of error or non-receipt is received by the party giving notice. Either party may by similar notice given, change the address to which future notices or other communications shall be sent.

20.0 EQUAL OPPORTUNITY EMPLOYER

- a) Contractor will not discriminate against any employee or applicant for employment because of age 40 and over, race, sex, color, religion, national origin, disability, genetic information, sexual orientation, veteran status, or any other applicable status protected by state or local law. Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to any status set forth in the preceding sentence. Such action shall include but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice to be provided by an agency of the federal government, setting forth the provisions of the Equal Opportunity Laws.

- b) Contractor shall be in compliance with the applicable provisions of the American with Disabilities Act as enacted and from time to time amended and any other applicable federal, state, or local laws and regulations. A signed, written certificate stating compliance with the Americans with Disabilities Act may be requested at any time during the life of this Agreement or any renewal thereof.

21.0 NO THIRD PARTY BENEFICIARIES

It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to City and Contractor, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other third party on such Agreement. It is the express intention of the parties that any person other than City or Contractor receiving services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

22.0 SUBCONTRACTORS

Contractor may utilize subcontractors identified in its qualifications submittal to assist with non-specialized works as necessary to complete projects. Contractor will submit any proposed subcontractor and the description of its services to the City for approval. The City will not work directly with subcontractors.

23.0 AUTHORITY TO BIND

Each of the persons signing below on behalf of any party hereby represents and warrants that such person is signing with full and complete authority to bind the party on whose behalf of whom such person is signing, to each and every term of this Agreement.

In witness whereof, the parties have executed this Agreement to be effective as of the day and year first above written.

CITY OF LOUISVILLE

By: _____
Mayor

Attest: _____
City Clerk

CONTRACTOR:

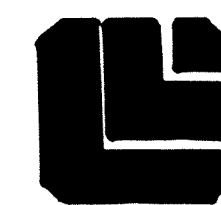
By: _____
Title: _____

Exhibit A – Scope of Services

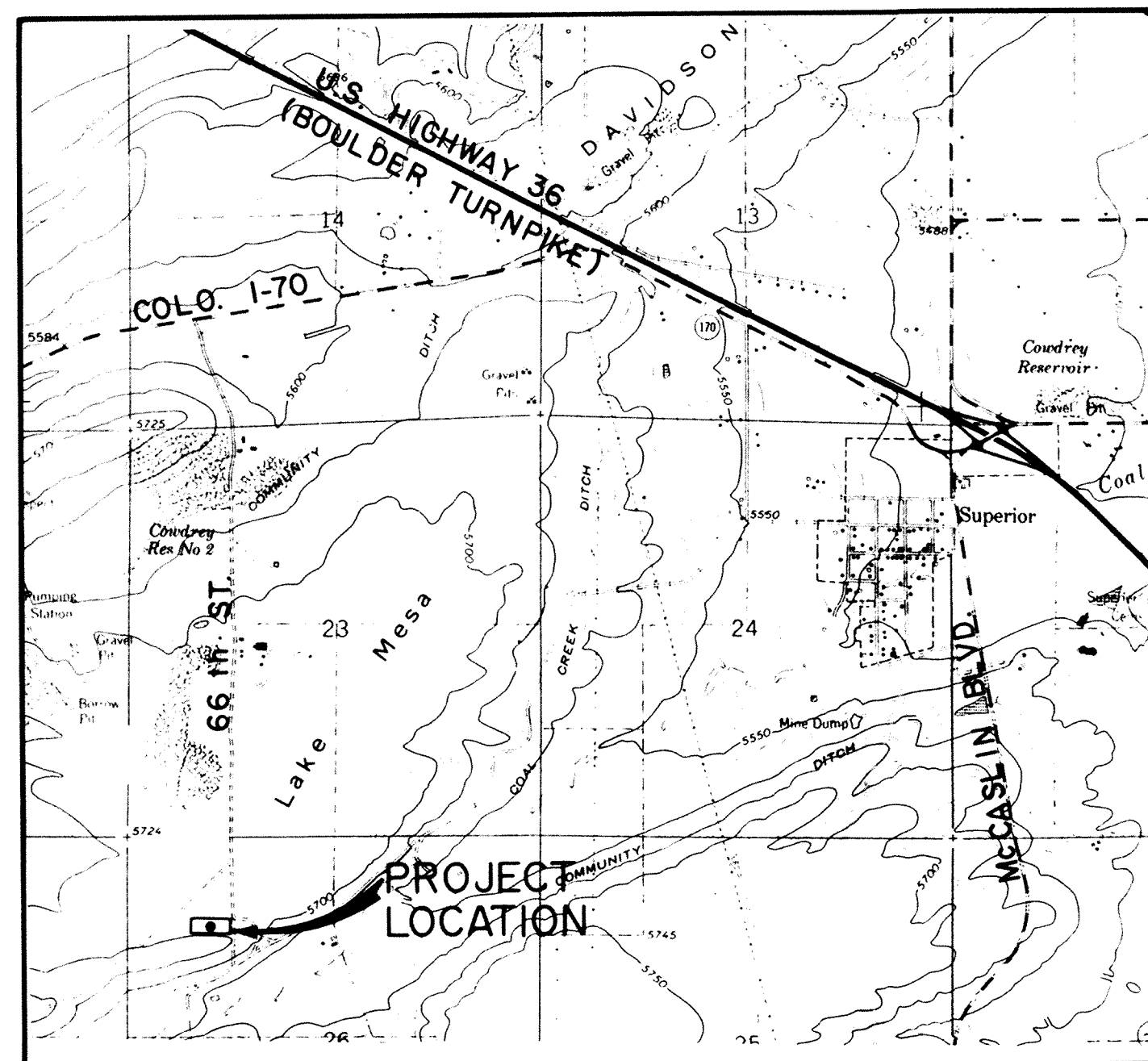
[See Following Page(s)]

2.0 M.G. HIGHZONE POTABLE WATER STORAGE TANK

PREPARED FOR:



CITY OF LOUISVILLE
749 MAIN ST.
LOUISVILLE, COLORADO 80027



VICINITY MAP
SCALE: 1"=2000'

SHEET INDEX

SHEET 1	COVER SHEET
SHEET 2	OVERALL SITE PLAN
SHEET 3	GRADING PLAN & PIPING
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SHEET 5	GRADE SLAB PLAN
SHEET 6	COLUMN, FOOTING & JOINT DETAILS
SHEET 7	WALL DETAILS - ALTERNATE 1
SHEET 8	WALL DETAILS - ALTERNATE 2
SHEET 9	WALL DETAILS - ALTERNATE 2
SHEET 10	WALL DETAILS - ALTERNATE 3
SHEET 11	ROOF SLAB PLAN & DETAILS
SHEET 12	PIPING & STRUCTURAL DETAILS
SHEET 13	MISCELLANEOUS DETAILS

ALTERNATE 1 TO BE
CONSTRUCTED

AS BUILT

NOTE TO THE OWNER:

THESE "AS-BUILT" OR RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. ROCKY MOUNTAIN CONSULTANTS, INC. WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THIS DOCUMENT AS A RESULT.

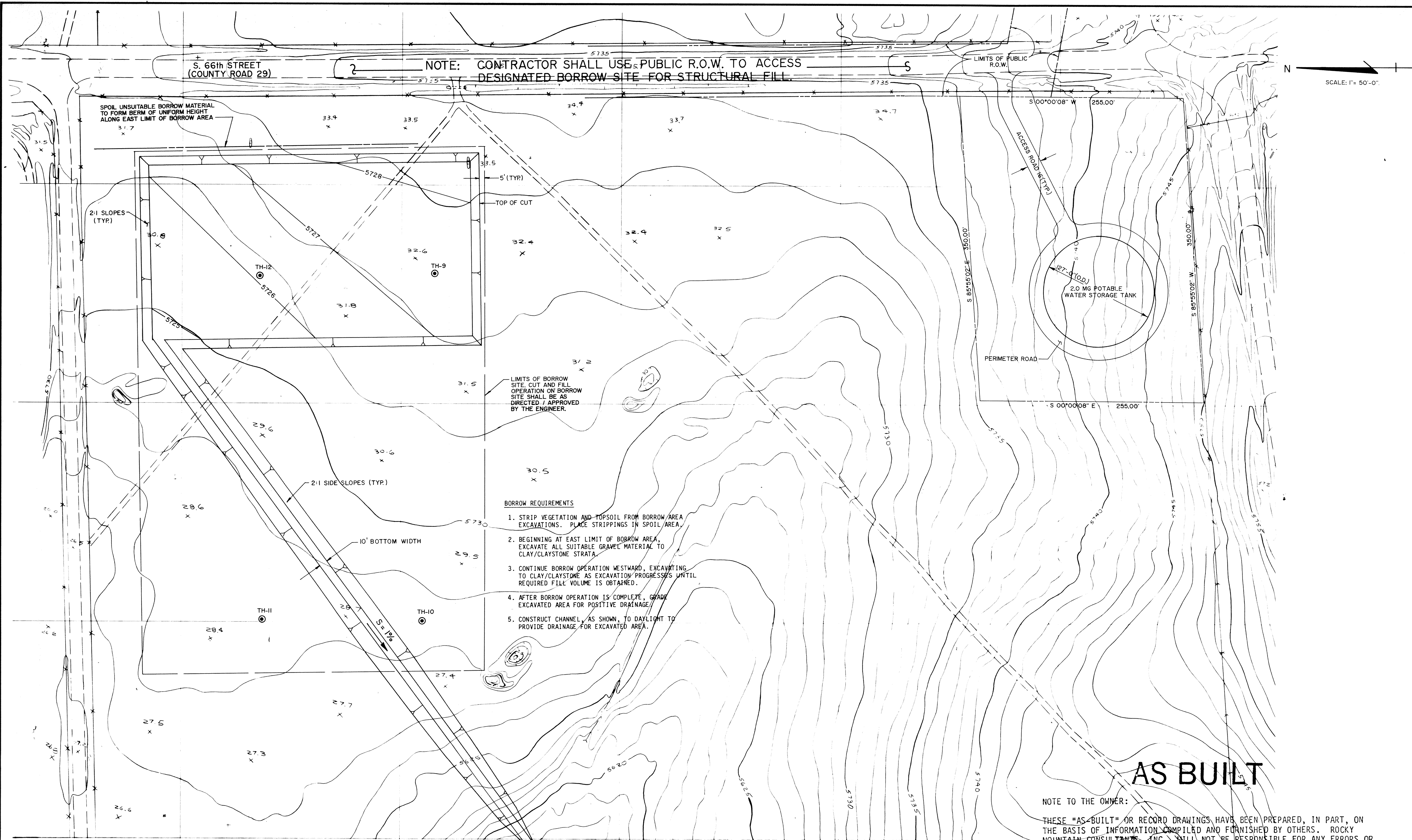


PREPARED BY:
ROCKY MOUNTAIN CONSULTANTS

8301 EAST PRENTICE AVE., BUILDING 30- SUITE 101
ENGLEWOOD, COLORADO 80111 (303) 741-6000
JOB NO. 7-0058.022.00

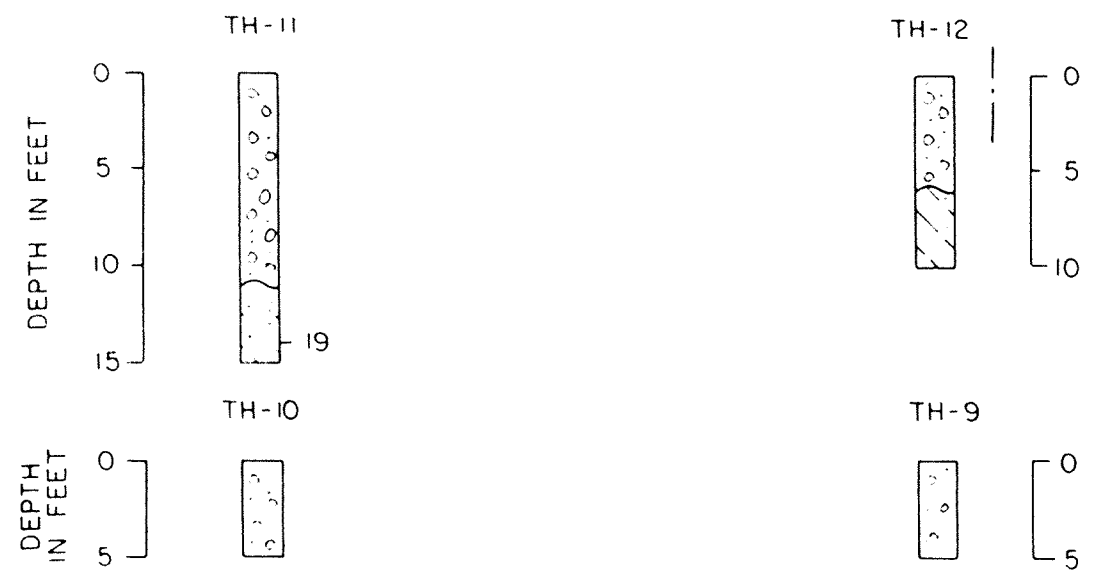


48 hours before you dig,
CALL FOR THE BLUE STAKES
534-6700
Gas, Electric, Telephone, CATV and
Pantandle Eastern Pipeline Locations



LEGEND

- TOPSOIL, GRAVELLY CLAY, VERY LOOSE, DRY, DARK BROWN (GC)
- CLAY, MEDIUM STIFF TO STIFF, SLIGHTLY SILTY TO SANDY, MOIST, GREY TO RUST (CH, CL)
- CLAYSTONE, MEDIUM HARD TO HARD, SLIGHTLY SILTY, MOIST, GREY TO RUST (CH, CL)
- GRAVEL, SANDY, MEDIUM DENSE TO DENSE, CLAYEY TO SLIGHTLY SILTY, DRY TO MOIST (GW, GC)
- SAND, CLAYEY, LOOSE TO MEDIUM DENSE, MOIST TO WET (SC)
- STANDARD PENETRATION TEST BLOW COUNTS
- APPROXIMATE CONTACT BETWEEN SOIL INTERVALS



NOTES:

- THE BORINGS WERE DRILLED ON JUNE 15, 1987 WITH A 4" DIAMETER, CONTINUOUS SOLID STEM AUGER.
- (14) LOCATION OF STANDARD PENETRATION TEST, INDICATES THAT 14 BLOWS OF A 140 POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2 INCH DIAMETER SAMPLER 12 INCHES.
- (50/65") LOCATION OF STANDARD PENETRATION TEST, INDICATES THAT 50 BLOWS OF A 140 POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2 INCH DIAMETER SAMPLER 6.5 INCHES.

NOTES:

- ALL FILL AREAS SHALL BE OVEREXCAVATED A MINIMUM OF THREE FEET (3'), OR AS DIRECTED BY THE ENGINEER, PRIOR TO PLACEMENT OF SELECT STRUCTURAL FILL.
- FOLLOWING EXCAVATION TO SUBGRADE, THE SUBGRADE SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL SELECT STRUCTURAL FILL SHALL BE OBTAINED ADJACENT TO THE PROJECT SITE (WITHIN 1500 FEET) AND PLACED IN ACCORDANCE WITH THE SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.
- EXCESS CUT FROM THE PROJECT SITE SHALL BE PLACED IN THE SELECT STRUCTURAL FILL BORROW SITE IN ACCORDANCE WITH THE SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.
- ALL FITTINGS SHALL BE M.J. TYPE WITH "MEGA-LUG" JOINT RESTRAINT.
- ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED.
- EARTHWORK QUANTITIES
 - A. CUT +5,480 CU. YDS.
 - B. SELECT STRUCTURAL FILL: +17,850 CU. YDS.
 - C. CLASS 6 BASE COURSE: +560 CU. YDS.

AS BUILT

NOTE TO THE OWNER:

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ROCKY MOUNTAIN CONSULTANTS
8301 EAST PRENTICE AVENUE, SUITE 101
ENGLEWOOD, COLORADO 80111
(303) 741-6000

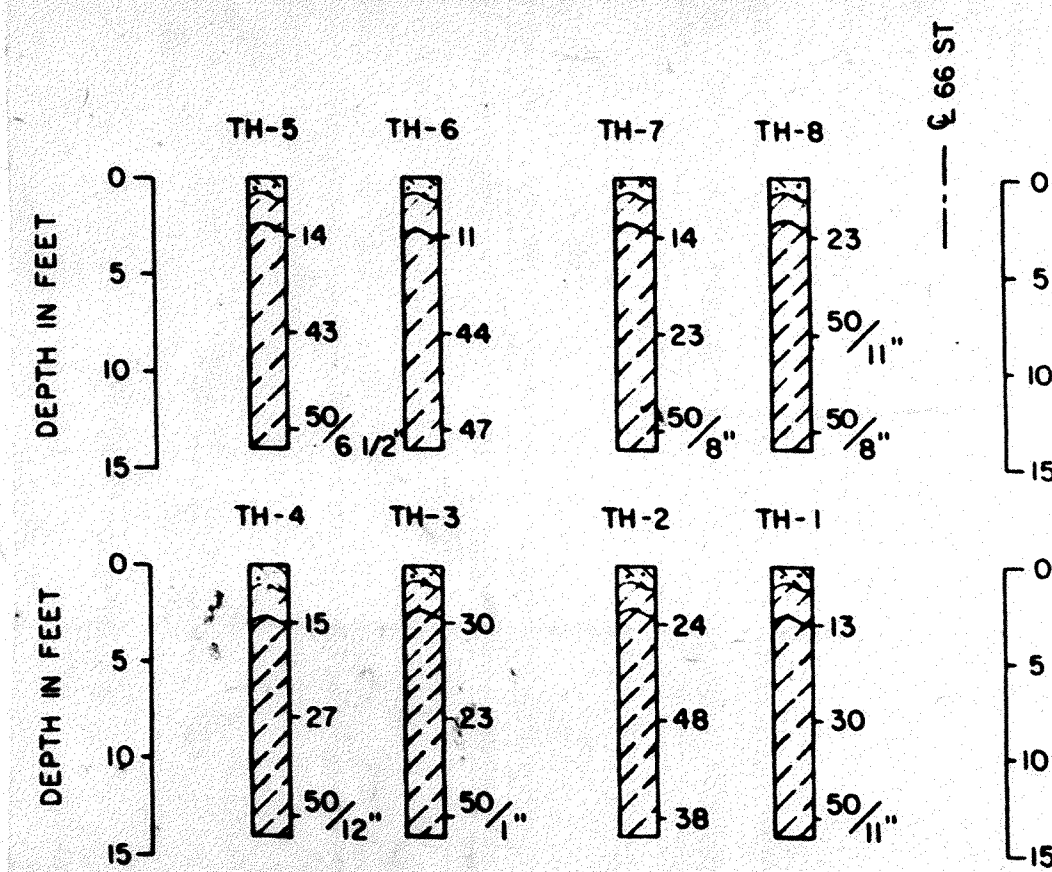


NO.	DESCRIPTION	DATE BY
1	AS-BUILT	12-08-87

CITY OF LOUISVILLE
2.0 M.G. HIGHZONE POTABLE WATER STORAGE TANK
OVERALL SITE PLAN

DATE	7-87
DESIGNED BY	MCK
DRAWN BY	GMR
CHECKED BY	MCK
JOB NO.	7-0058.022.00
SHEET	2 OF 13

FOUNDATION HOLES



LEGEND

- 5740 EXISTING CONTOURS
- 5740 PROPOSED CONTOURS

NOTES:

- THE BORINGS WERE DRILLED ON JUNE 15, 1987 WITH A 4" DIAMETER, CONTINUOUS SOLID STEM AUGER.
- (14) LOCATION OF STANDARD PENETRATION TEST, INDICATES THAT 14 BLOWS OF A 140 POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2 INCH DIAMETER SAMPLER 12 INCHES.
- (50/6.5") LOCATION OF STANDARD PENETRATION TEST, INDICATES THAT 50 BLOWS OF A 140 POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2 INCH DIAMETER SAMPLER 6.5 INCHES.

LEGEND

- TOPSOIL, GRAVELLY CLAY, VERY LOOSE, DRY, DARK BROWN (GC)
- CLAY, MEDIUM STIFF TO STIFF, SLIGHTLY SILTY TO SANDY, MOIST, GREY TO RUST (CH, CL)
- CLAYSTONE, MEDIUM HARD TO HARD, SLIGHTLY SILTY, MOIST, GREY TO RUST (CH, CL)
- GRAVEL, SANDY, MEDIUM DENSE TO DENSE, CLAYEY TO SLIGHTLY SILTY, DRY TO MOIST
- SAND, CLAYEY, LOOSE TO MEDIUM DENSE, MOIST TO WET (SC)
- STANDARD PENETRATION TEST BLOW COUNTS
- APPROXIMATE CONTACT BETWEEN SOIL INTERVALS

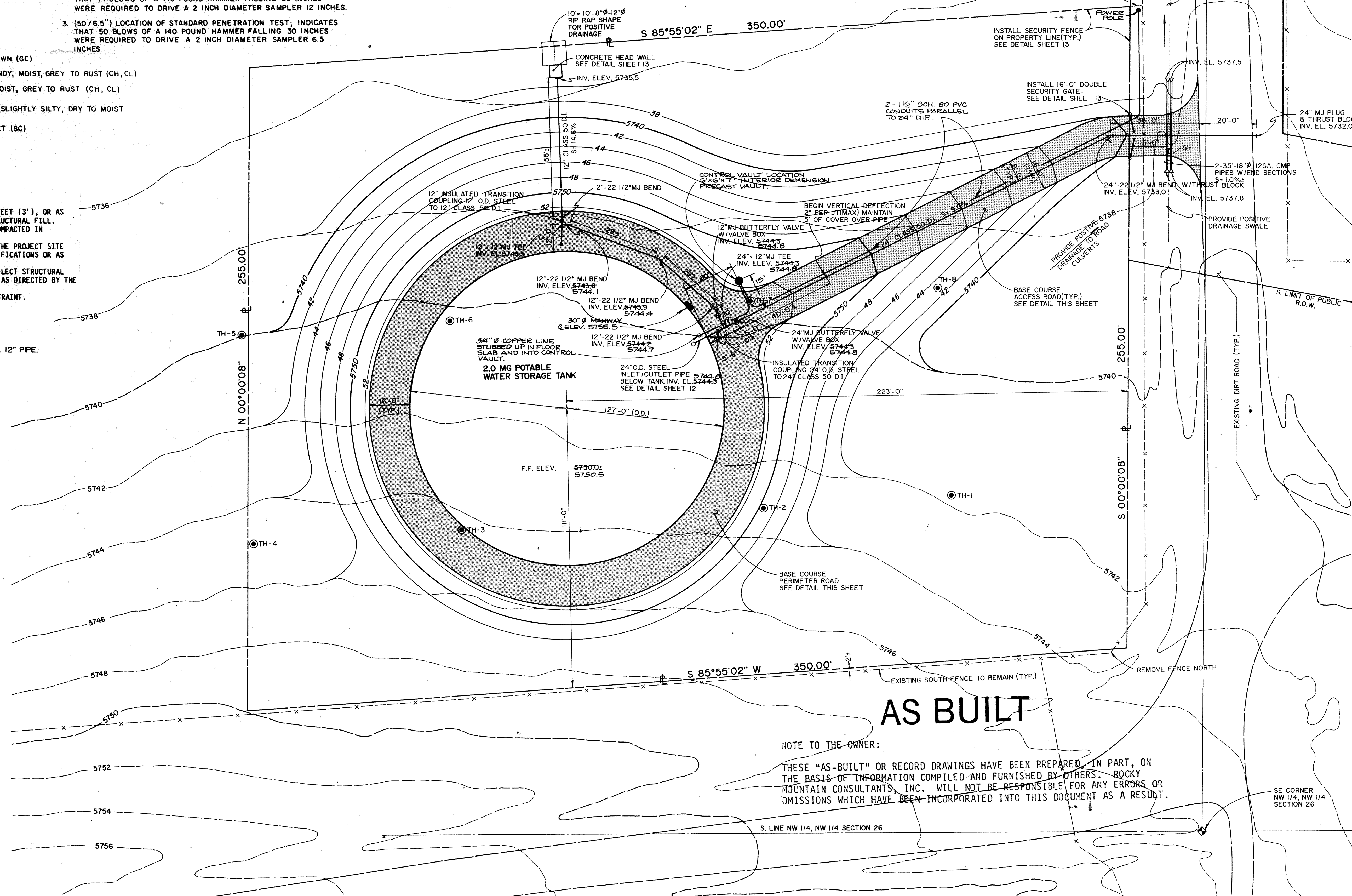
NOTES:

- ALL FILL AREAS SHALL BE OVEREXCAVATED A MINIMUM OF THREE FEET (3'), OR AS DIRECTED BY THE ENGINEER, PRIOR TO PLACEMENT OF SELECT STRUCTURAL FILL.
- FOLLOWING EXCAVATION TO SUBGRADE, THE SUBGRADE SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL SELECT STRUCTURAL FILL SHALL BE OBTAINED ADJACENT TO THE PROJECT SITE (WITHIN 1500 FEET) AND PLACED IN ACCORDANCE WITH THE SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.
- EXCESS CUT FROM THE PROJECT SITE SHALL BE PLACED IN THE SELECT STRUCTURAL FILL BORROW SITE IN ACCORDANCE WITH THE SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.
- ALL FITTINGS SHALL BE M.J. TYPE WITH "MEGA-LUG" JOINT RESTRAINT.
- ALL DISTURBED AREAS SHALL BE SEED AND MULCHED.
- EARTHWORK QUANTITIES
 - CUT: +5,480 CU. YDS.
 - SELECT STRUCTURAL FILL: +17,850 CU. YDS.
 - CLASS 6 BASE COURSE: +560 CU. YD³.
- PROVIDE THRUST RODS WITH "MEGA-LUG" RESTRAINT ON ALL 12" PIPE.

SCALE: 1" = 20'-0"

TANK PERMETER ACCESS ROAD DETAIL

ACCESS ROAD DETAIL



AS BUILT

NOTE TO THE OWNER:

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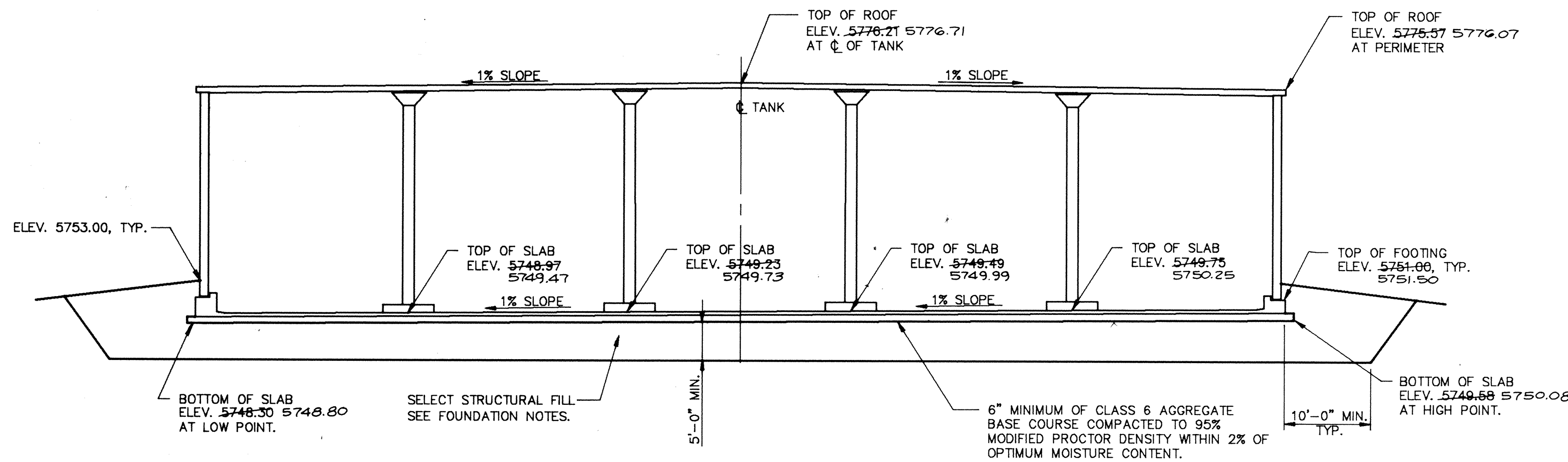
ROCKY MOUNTAIN CONSULTANTS
8301 EAST PRENTICE AVENUE, SUITE 101
ENGLEWOOD, COLORADO 80111
(303) 741-6000

NO.	DESCRIPTION	DATE	BY
1	AS-BUILT	7-8-87	DS

CITY OF LOUISVILLE
2.0 M.G. HIGHZONE POTABLE WATER STORAGE TANK
GRADING PLAN & PIPING

DATE: 7-87
DESIGNED BY: MCK
DRAWN BY: DS
CHECKED BY: MCK

JOB NO.
7-0058.022.00
SHEET
3 OF 13



TYPICAL TANK SECTION

CONCRETE MIX DESIGNS

IDENTIFICATION # 60-FA-08

LOCATION: COLUMNS, ROOF SLAB, WALLS, EXCEPT AS NOTED.

MIX PROPORTIONS:

MATERIALS	SPECIFIC GRAVITY	ABSOLUTE VOLUME (CU. FT.)	S.S.D. WEIGHTS (LBS.)
CEMENT-TYPE IIA (5.5 SACKS)	3.15	2.63	517
FLY ASH - CLASS C (PAWNEE #76)	2.70	0.89	150
SAND	2.64	7.45	1230
3/4" AGGREGATE (No. 67)	2.69	10.13	1700
WATER - 33 GALLONS	1.00	4.41	275
AIR - 5.5% +/- 1-1/2%	---	1.49	---
PROTEX AES (0.6 OZS. PER 100 LBS. CEMENT)	---	---	4.0 OZS.
POZZOLITH 322N (5.0 OZS. PER 100 LBS. CEMENT)	---	---	33.4 OZS.
TOTALS		27.00	3872

PHYSICAL PROPERTIES OF MIX

UNIT WEIGHT	= 143.4 LBS. PER CU. FT.
SLUMP	= 4.0 INCHES
AIR (ENTRAINED)	= 5.5% (4% TO 7%)
WATER/CEMENT RATIO	= 0.41

COMPRESSIVE STRENGTH = 5000 PSI AT 45 DAYS

NOTES:

1. CONCRETE MIXES DESIGNED BY WALT FLANAGAN & CO.
2. MIXES CONTAINING FLY ASH DO NOT SET NORMALLY AT LOW TEMPERATURES (BELOW 60°F). USE OF THIS MIX IS NOT RECOMMENDED BETWEEN OCT. 15 AND APRIL 1 (WINTER MONTHS) UNLESS ADEQUATE AUXILIARY HEAT IS PROVIDED.
3. THE FLY ASH CONTENT OF CONCRETE MIX DESIGNS IS BASED UPON A DRY RODDED WEIGHT OF STONE EQUAL TO 100 PCF AND A F.M. OF SAND EQUAL TO 2.8.
4. MIX NO. 60-FA-04 SHALL BE USED IN THE BOTTOM 2 FEET OF THE WALL.

IDENTIFICATION # 60-FA-04

LOCATION: BOTTOM 2 FEET OF THE WALL.

MIX PROPORTIONS:

MATERIALS	SPECIFIC GRAVITY	ABSOLUTE VOLUME (CU. FT.)	S.S.D. WEIGHTS (LBS.)
CEMENT-TYPE IIA (6.0 SACKS)	3.15	2.87	564
FLY ASH - CLASS C (PAWNEE #76)	2.70	0.92	155
SAND	2.64	8.19	1349
3/8" AGGREGATE	2.64	8.19	1349
WATER - 38 GALLONS	1.00	5.07	317
AIR - 6.5% +/- 1-1/2%	---	1.76	---
PROTEX AES (0.75 OZS. PER 100 LBS. CEMENT)	---	---	5.4 OZS.
POZZOLITH 322N (4.0 OZS. PER 100 LBS. CEMENT)	---	---	28.8 OZS.
TOTALS		27.00	3734

PHYSICAL PROPERTIES OF MIX

UNIT WEIGHT	= 138.3 LBS. PER CU. FT.
SLUMP	= 5.0 INCHES
AIR (ENTRAINED)	= 6.5% (5.0% TO 8.0%)
WATER/CEMENT RATIO	= 0.44

COMPRESSIVE STRENGTH = 5000 PSI AT 45 DAYS

IDENTIFICATION # 68-V-08

LOCATION: GRADE SLAB

MIX PROPORTIONS:

MATERIALS	SPECIFIC GRAVITY	ABSOLUTE VOLUME (CU. FT.)	S.S.D. WEIGHTS (LBS.)
CEMENT-TYPE IIA (6.75 SACKS)	3.15	3.23	635
SAND	2.64	7.11	1172
3/4" AGGREGATE	2.69	10.63	1785
WATER - 34.0 GALLONS	1.00	4.54	283
AIR - 5.5% (ENTRAINED)	---	1.49	---
POZZOLITH 322N (4.0 OZS. PER 100 LBS. CEMENT)	---	---	25.4 OZS.
TOTALS		27.00	3875

PHYSICAL PROPERTIES OF MIX

UNIT WEIGHT	= 143.5 LBS. PER CU. FT.
SLUMP	= 4.0 INCHES
AIR (ENTRAINED)	= 5.5%
WATER/CEMENT RATIO	= 0.45
COMPRESSIVE STRENGTH	= 5200 PSI AT 28 DAYS

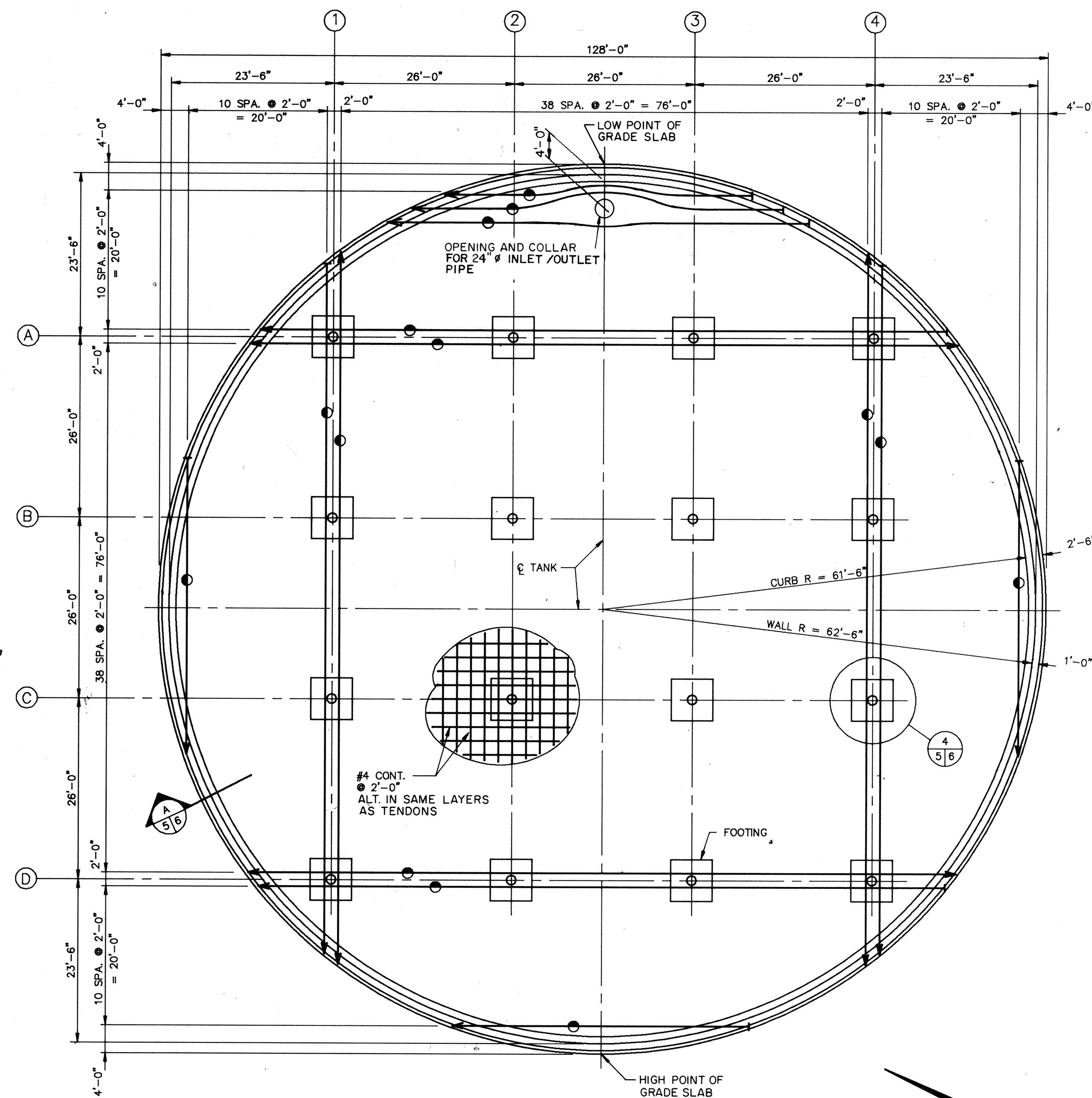
GENERAL NOTES:

1. DRAWINGS SHALL NOT BE SCALED.
2. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED TWO (2) INCHES CLEAR UNLESS OTHERWISE NOTED.
3. ALL BENT BAR DIMENSIONS ARE OUT TO OUT OF BAR.
4. ONLY FULLY PVC COATED REINFORCING CHAIRS ARE ACCEPTABLE FOR USE IN THE WALL AND ROOF, AND PVC "WHEEL" IN COLUMNS AND WALL.
5. ALL REINFORCING STEEL SHALL BE AS BELOW UNLESS OTHERWISE NOTED.
FY = 60,000 PSI
ASTM A615 GRADE 60
DESIGN CODES
ACI 318-83
ACI 344
ACI 350
6. CHAMFER ALL EXPOSED CONCRETE CORNERS 3/4 INCHES.
7. ALL CONSTRUCTION JOINTS AND CRACKS SHALL BE SEALED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
8. THE CONCRETE MIX DESIGN WITH REPRESENTATIVE COMPRESSIVE STRENGTHS SHALL BE SUBMITTED TO ENGINEER FOR ACCEPTANCE. SUBMITTAL SHALL INCLUDE ALL ASTM CONFORMANCE DATA.
9. CALCIUM CHLORIDE SHALL NOT BE USED IN CONCRETE.
10. SEE SPECIFICATIONS FOR CLEANING, DISINFECTION, AND HYDROSTATIC/LEAKAGE TESTING.
11. THE TANK SHALL NOT BE BACKFILLED UNTIL THE HYDROSTATIC/LEAKAGE TEST IS COMPLETED. DURING THE BACKFILLING OPERATION, THE TANK SHALL BE FULL OF WATER AND THE CONTRACTOR SHALL NOT USE EARTH MOVING EQUIPMENT IN ANY MANNER THAT COULD POSSIBLY CAUSE A LIVE LOAD SURCHARGE ON THE WALLS. IMPACT TYPE LOADING SHALL BE AVOIDED.
12. CURING COMPOUNDS MAY BE USED PROVIDING THAT THE MANUFACTURER OF THE COMPOUND DETAILS ALL COMPONENTS, AND GUARANTEES THAT IT WILL NOT AFFECT THE QUALITY OF THE WATERS TO BE STORED. IN ADDITION, IT SHALL BE A COMPOUND APPROVED BY THE EPA, FDA AND ALL APPLICABLE AGENCIES FOR APPLICATION TO POTABLE WATER SYSTEMS.
13. ALL WALLS SHALL HAVE ALL FORM FINS AND LOOSE SURFACE MATERIAL REMOVED. IF, AFTER STRIPPING FORMS, THE CONCRETE IS FOUND TO NOT BE FORMED AS SHOWN ON THE DRAWINGS, OR IS OUT OF ALIGNMENT OR LEVEL, OR SHOWS A DEFECTIVE SURFACE, IT SHALL BE CONSIDERED AS NOT CONFORMING WITH THE INTENT OF THESE SPECIFICATIONS, AND SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS EXPENSE UNLESS THE ENGINEER GRANTS PERMISSION TO PATCH THE DEFECTIVE AREA.
14. DEFECTS THAT REQUIRE REPLACEMENT OR REPAIR INCLUDE, BUT SHALL NOT BE LIMITED TO, "UNCONTROLLED" CRACKS, HONEYCOMB, PINHOLES, VOIDS, DAMAGE DUE TO STRIPPING OF FORMS, LOOSE PIECES OF CONCRETE, BOLTS HOLES, TIE-ROD HOLES, RIDGES AT FORM JOINTS AND BULGES DUE TO MOVEMENT OF FORMS.
15. BOTH INSIDE AND OUTSIDE FACE OF WALL SHALL RECEIVE A CLASS 2, RUBBED FINISH.
WELDING
WELDING OF STEELS SHALL CONFORM TO THE SPECIFICATIONS FOR WELDING IN STEEL STRUCTURES OF THE AMERICAN WELDING SOCIETY.
17. BELOW GRADE CONCRETE WALLS SHALL HAVE 2 COATS OF DAMPP-ROOFING-HYDROCIDO OR APPROVED EQUAL.

AS BUILT

NOTE TO THE OWNER:

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GRADE SLAB PLAN

1" = 10'-0"

STRESSING END ANCHORAGE
DEAD END
TWO STRANDS

GRADE SLAB NOTES:

1. THE C.G. OF THE TENDONS SHALL BE CENTERED IN THE SLAB.
2. THE TENDON SUPPLIER SHALL SHOW IN THE SHOP DRAWING SUBMITTAL FINAL MINIMUM ELONGATION REQUIRED FOR EACH TENDON TO PROVIDE SPECIFIED FORCES.
3. ALL JACKS USED TO STRESS TENDONS SHALL BE ACCOMPANIED BY CALIBRATION SHEETS CORRELATING JACKING PRESSURE TO TENDON FORCE.
4. TENDON SUPPORTS FOR THE STRANDS SHALL NOT BE SPACED MORE THAN 2'-0" MAXIMUM ON CENTER.
5. VERTICAL PLACEMENT TOLERANCE IN SLAB STRANDS SHALL BE $\pm 1/8$ INCH.
6. THE MINIMUM RADIUS OF CURVATURE TO ACHIEVE A VERTICAL TRANSITION IN STRAND ALIGNMENT SHALL BE 60 INCHES FOR 1/2 INCH STRANDS.
7. HORIZONTAL PLANE DEVIATIONS FOR SLAB OPENINGS SHALL HAVE A MINIMUM RADIUS OF 21 FEET. MINIMUM HORIZONTAL CLEARANCE SHALL BE 6 INCHES.
8. LOOPING OF TENDONS TO FORM DEAD END ANCHORAGES WILL NOT BE PERMITTED.
9. THE FLOOR SURFACE OF THE GRADE SLAB SHALL BE FLOAT FINISHED AND HARD TROWELED.
10. IN THE EVENT THAT SHRINKAGE CRACKS APPEAR PRIOR TO STRESSING TENDONS, ALL CRACKS ARE TO BE COVERED WITH DUCT TAPE TO PREVENT ENTRY OF FOREIGN MATERIALS.
11. ONLY FULLY PVC COATED GALVANIZED STEEL OR PVC CHAIRS WILL BE ACCEPTABLE FOR TENDON SUPPORT.
12. POCKET FORMERS SHALL BE USED AT ALL ANCHOR PLATES.
13. THE UNBONDED TENDON SYSTEM SHALL BE A TOTALLY ENCAPSULATED SYSTEM AND THE STRAND SHALL BE ENCASED IN A 40 MIL EXTRUDED PLASTIC JACKET.
14. TENDONS MORE THAN 100' IN LENGTH SHALL BE JACKED FROM BOTH ENDS. THE DESIGN IS BASED UPON $k = 0.0014$, $\mu = 0.08$, AN ANCHOR SET OF 1/4", AND LONG TERM LOSSES OF 30,000 PSI.

DESIGN STRESSES

CONCRETE

$f'_c = 4,750$ PSI
 $f'_{ci} = 3,000$ PSI

REINFORCEMENT

$f_y = 60,000$ PSI
ASTM A615 GRADE 60

POST TENSION STEEL

$f_{pu} = 270,000$ PSI ASTM A416
0.50" DIAMETER STRAND
FJACK = 0.80 $f_{pu} = 216$ KSI

DESIGN CRITERIA

MINIMUM RESIDUAL $P/A = 200$ PSI COMPRESSION

AS BUILT

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ROCKY MOUNTAIN CONSULTANTS
8301 EAST PRENTICE AVENUE, SUITE 101
ENGLEWOOD, COLORADO 80111
(303) 741-6000

RMC

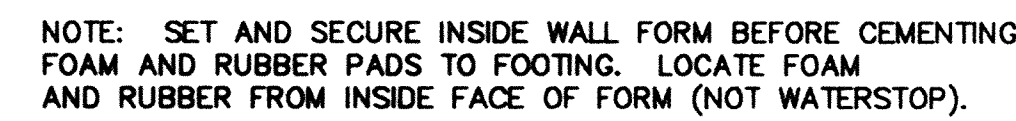
NO.	DESCRIPTION	DATE BY
1	AS-BUILT	7-28-87 DHF

CITY OF LOUISVILLE
2.0 M.G. HIGHZONE POTABLE WATER STORAGE TANK
GRADE SLAB PLAN

DATE: 7-87
DESIGNED BY: DH
DRAWN BY: DH
CHECKED BY: MCK

JOB NO.
7-0058.022.00

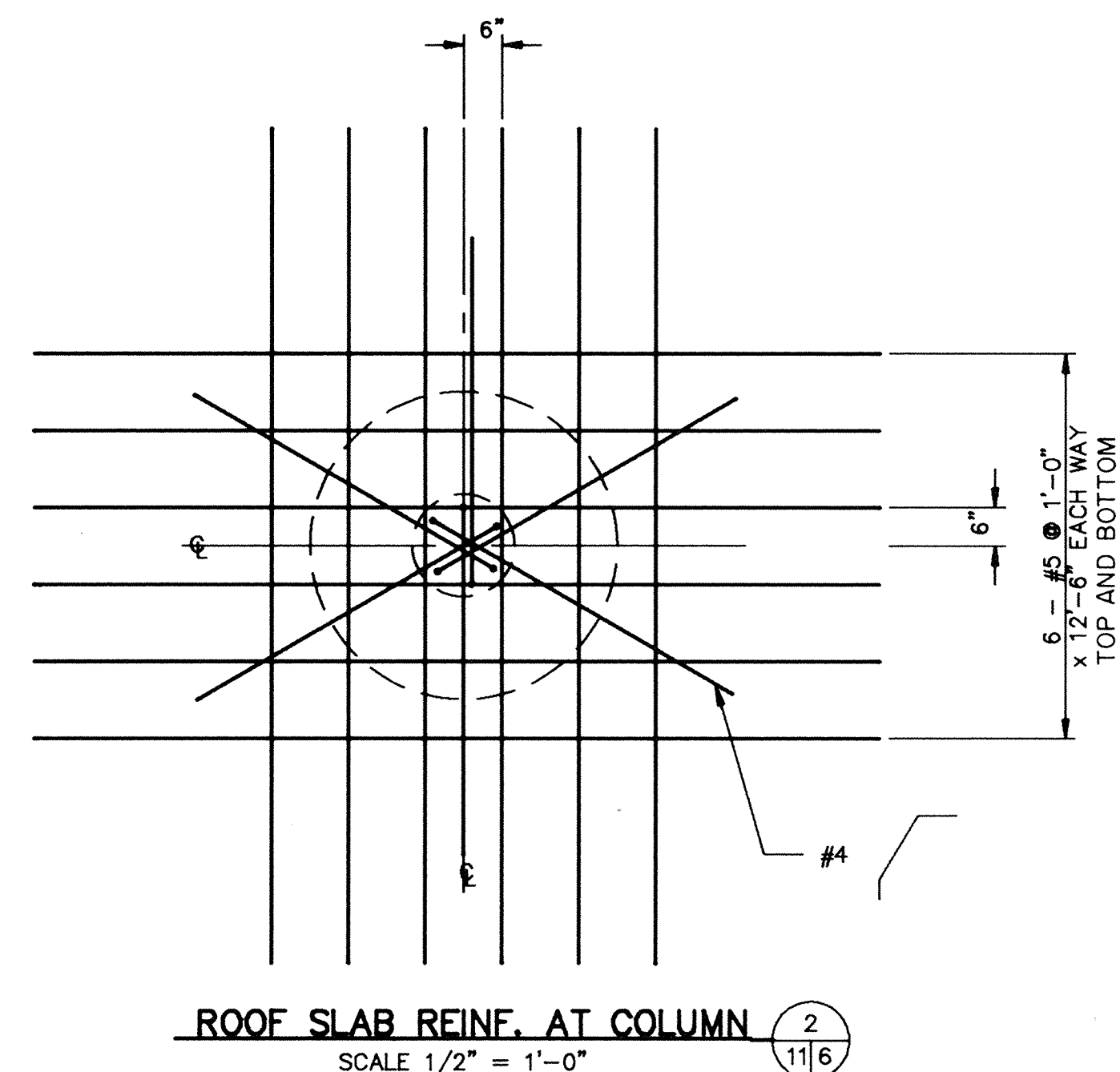
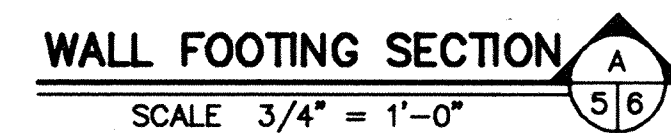
SHEET
5 OF 13



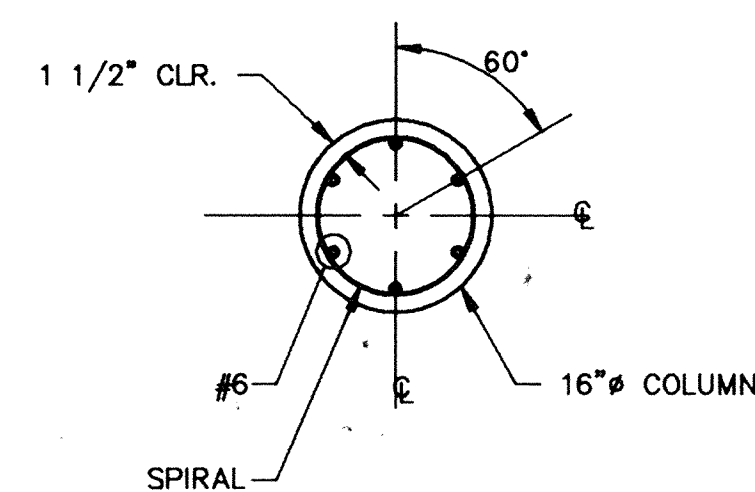
JOINT DETAIL

SCALE 3" = 1'-0"

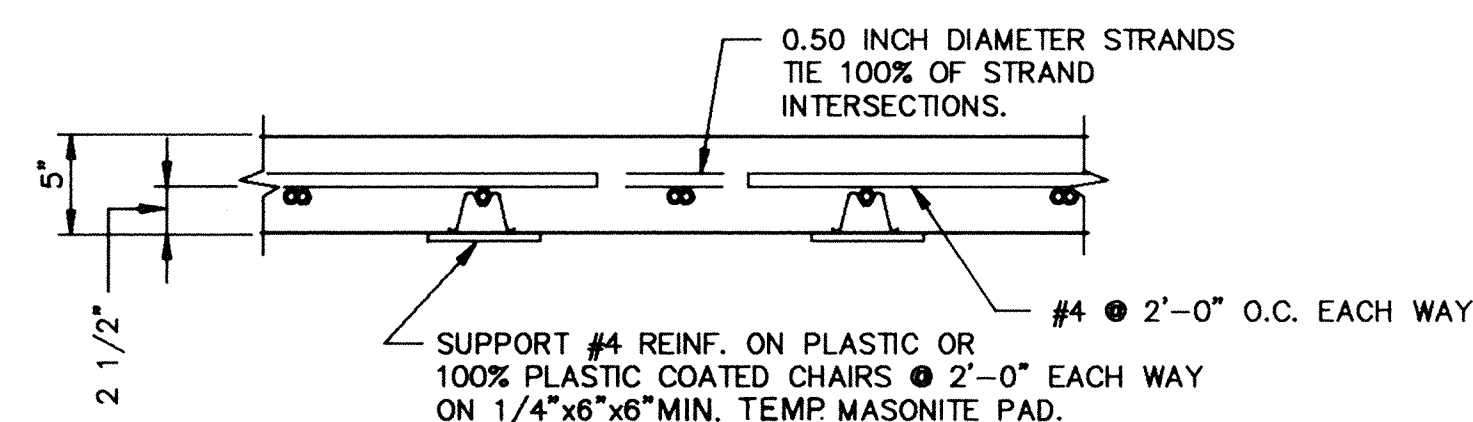
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ROOF SLAB REINF. AT COLUMN 2
11/6



TYPICAL COLUMN SECTION
SCALE NONE



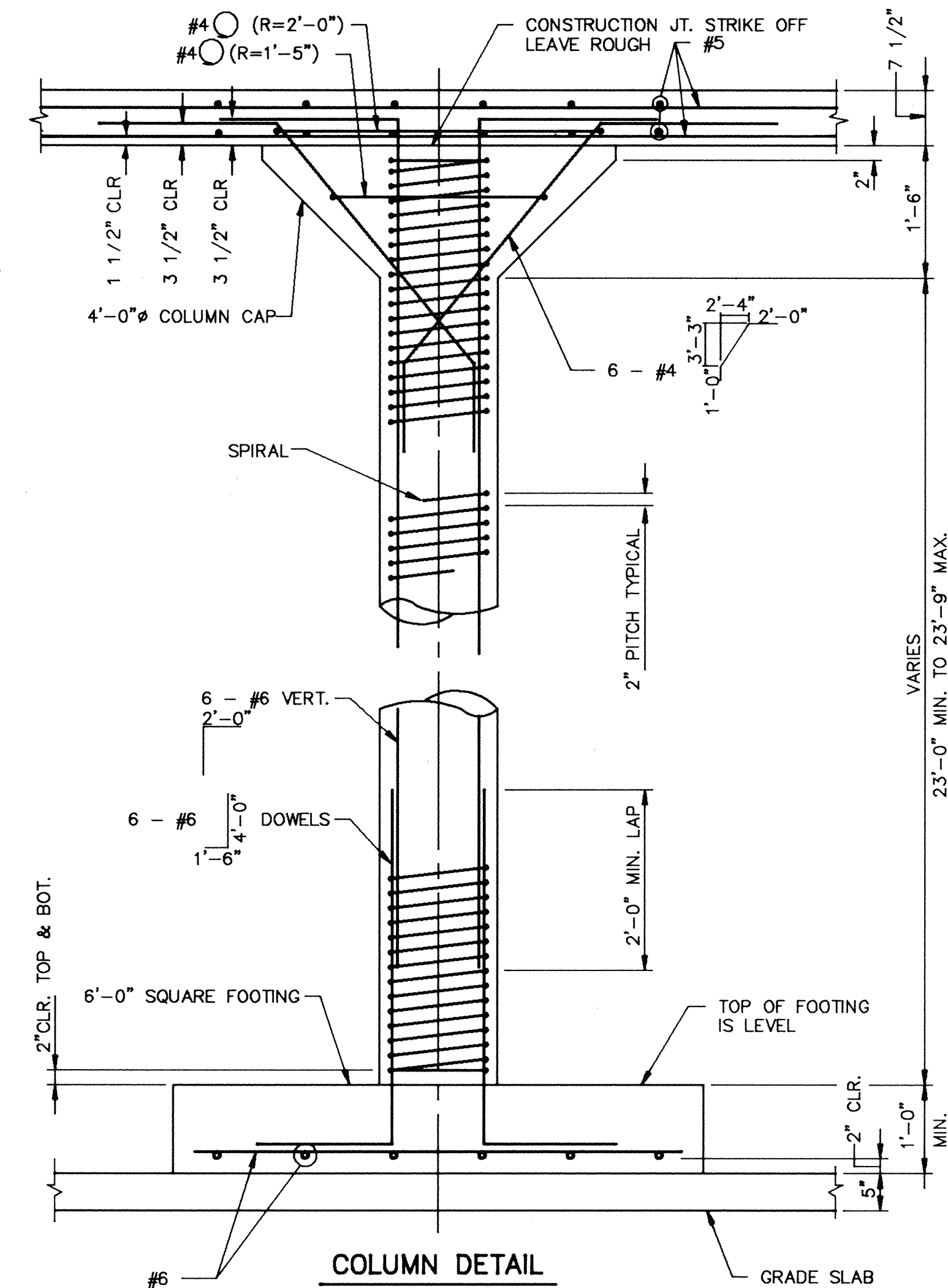
GRADE SLAB TENDON DETAIL

SCALE NONE

3
5 6

AS BUILT

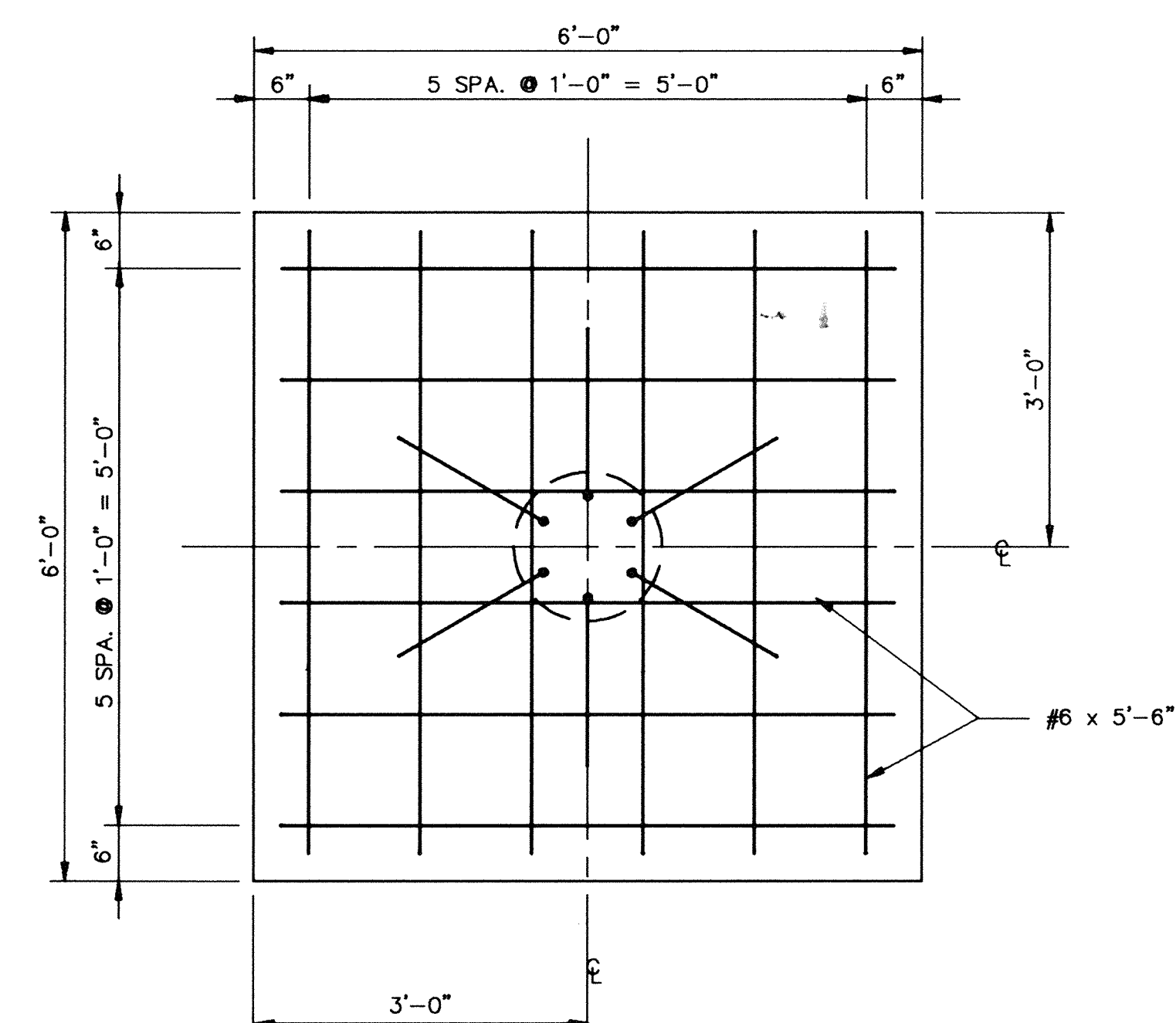
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COLUMN DETAIL

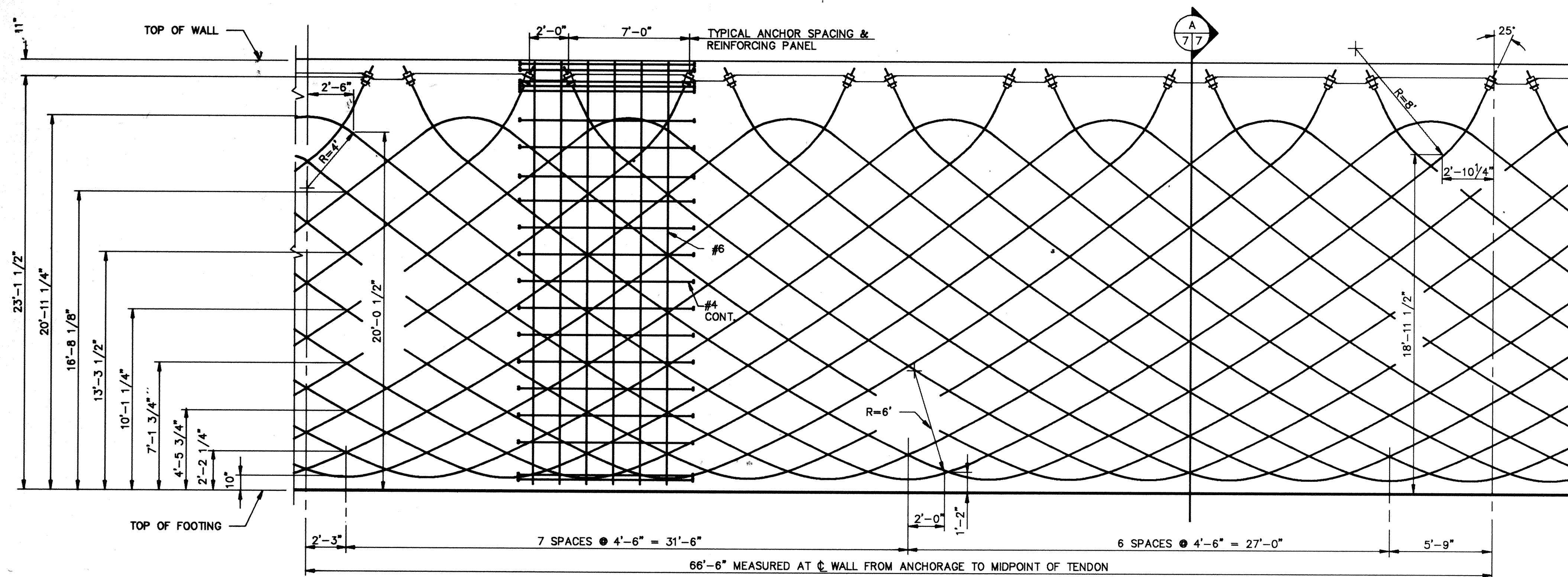
SCALE $3/4" = 1'-0"$

1. COLUMN SPIRALS SHALL BE EITHER 3/8" DIAMETER ASTM A82-72 STEEL WIRE OR #3 ASTM A615 GRADE 60 REINFORCEMENT. TWO SPACERS WITH A SEC. MOD. ≥ 0.008 IN. ARE REQUIRED. MINIMUM LAP 18"
2. 1 1/2" EXTRA TURNS ARE REQUIRED AT TOP & BOTTOM FOR DEVELOPMENT.
3. PLACE #5 x 12"-6" IN THE SAME PLANE AND DIRECTION AS TENDONS. IF A CONFLICT OCCURS, THE PLACEMENT OF THE TENDON SHALL CONTROL.



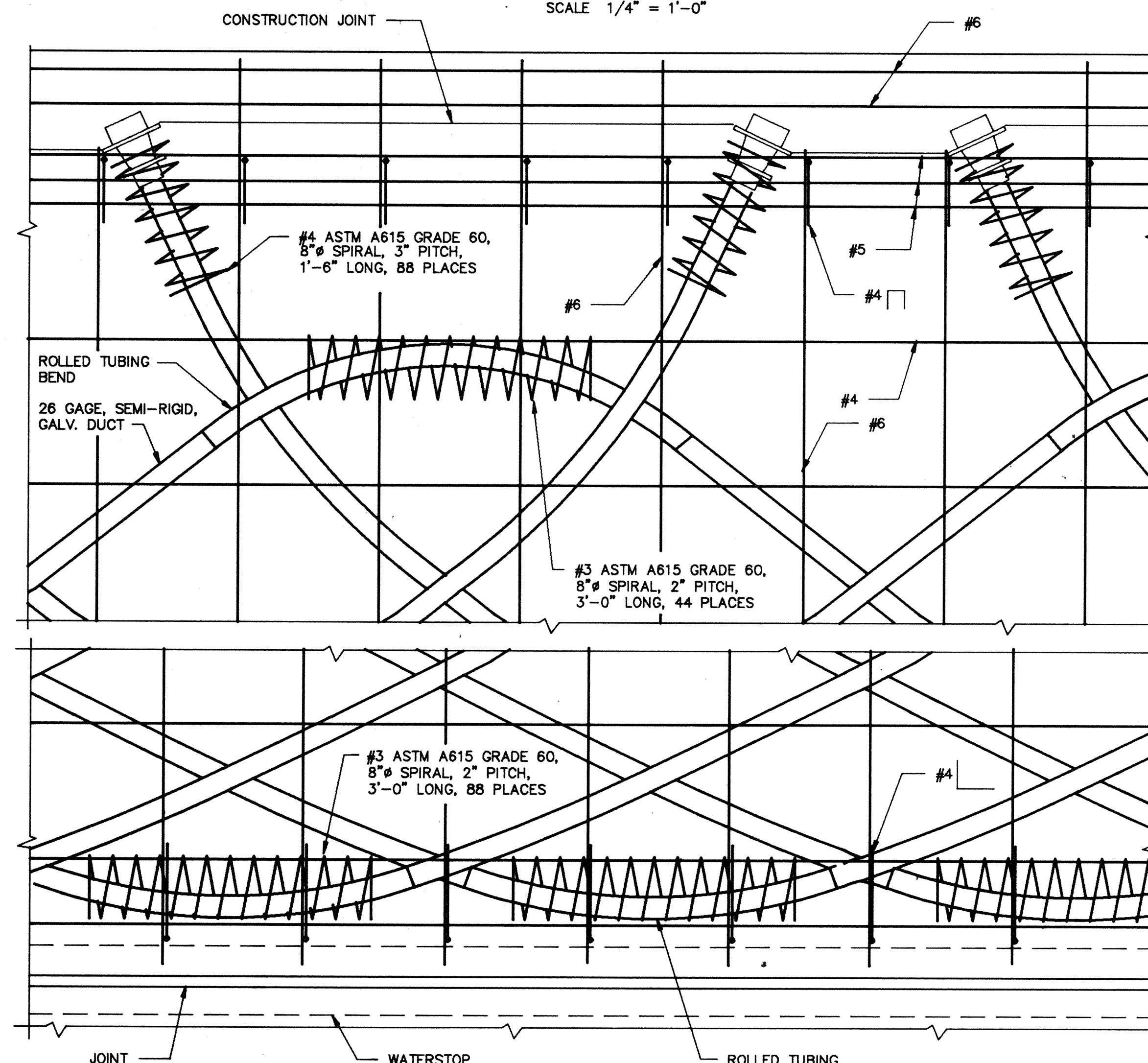
FOOTING DETAIL

SCALE $3/4" = 1'-0"$



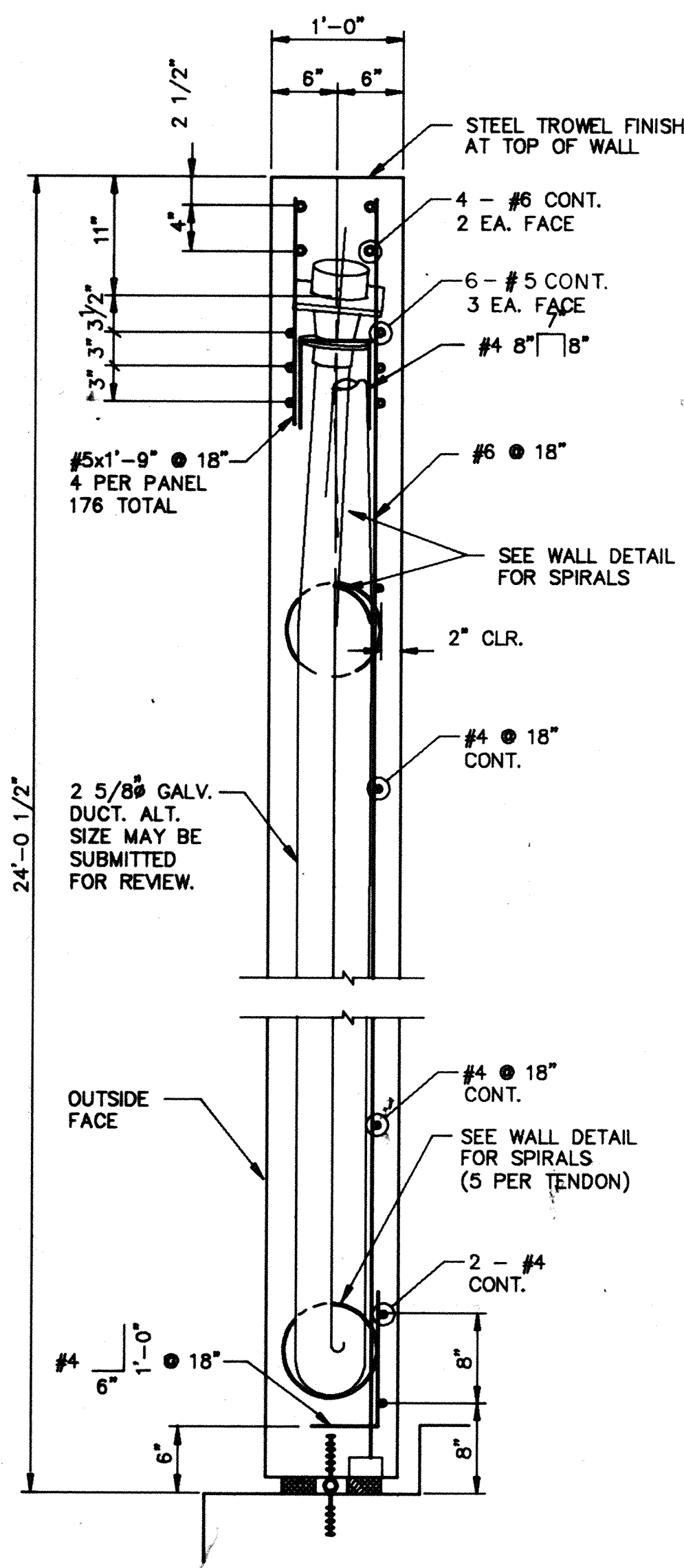
PARTIAL WALL ELEVATION - TENDON PATTERN

SCALE 1/4" = 1'-0"



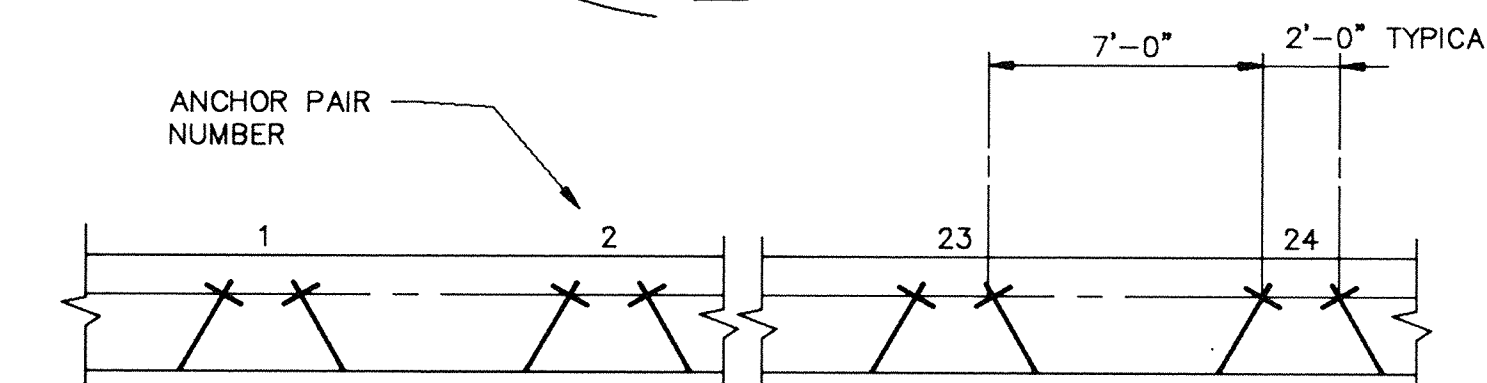
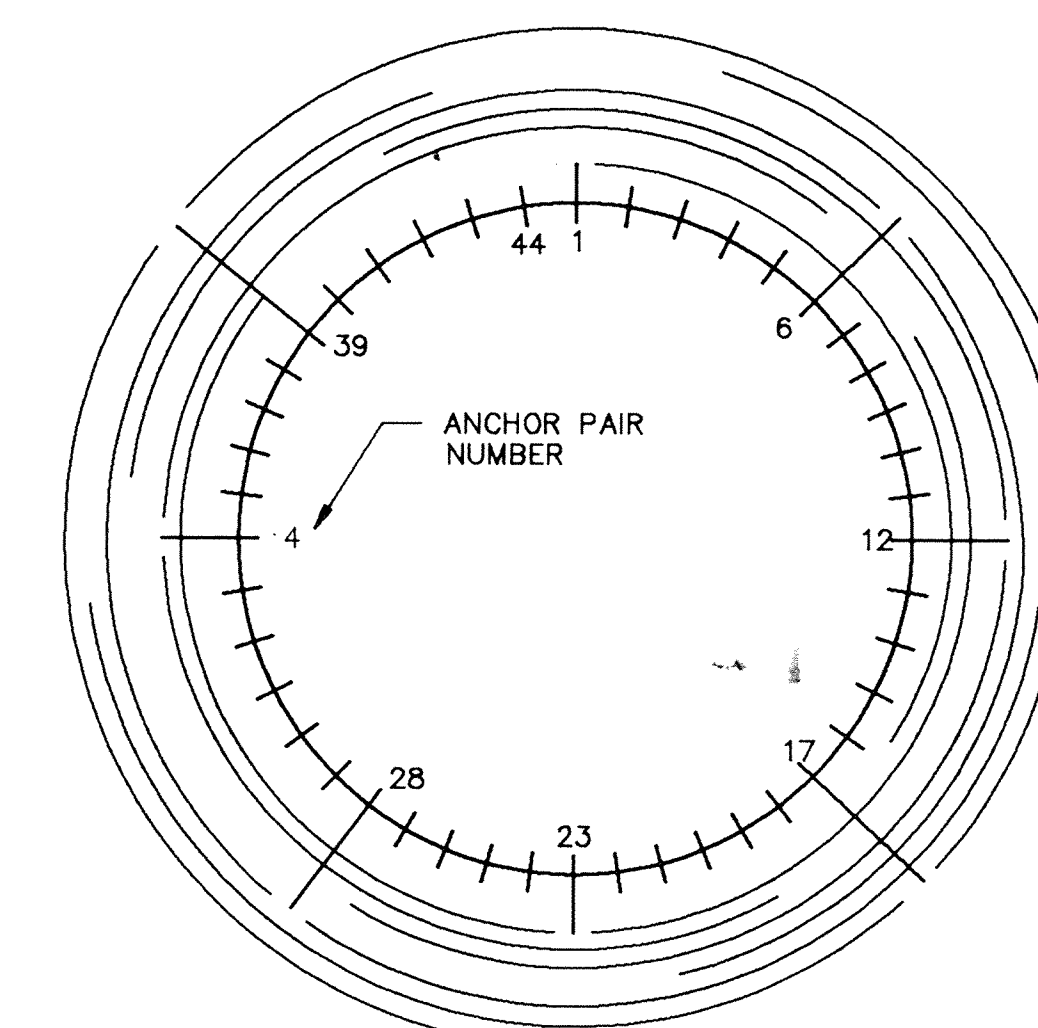
WALL DETAIL

SCALE: 1" = 1'-0"



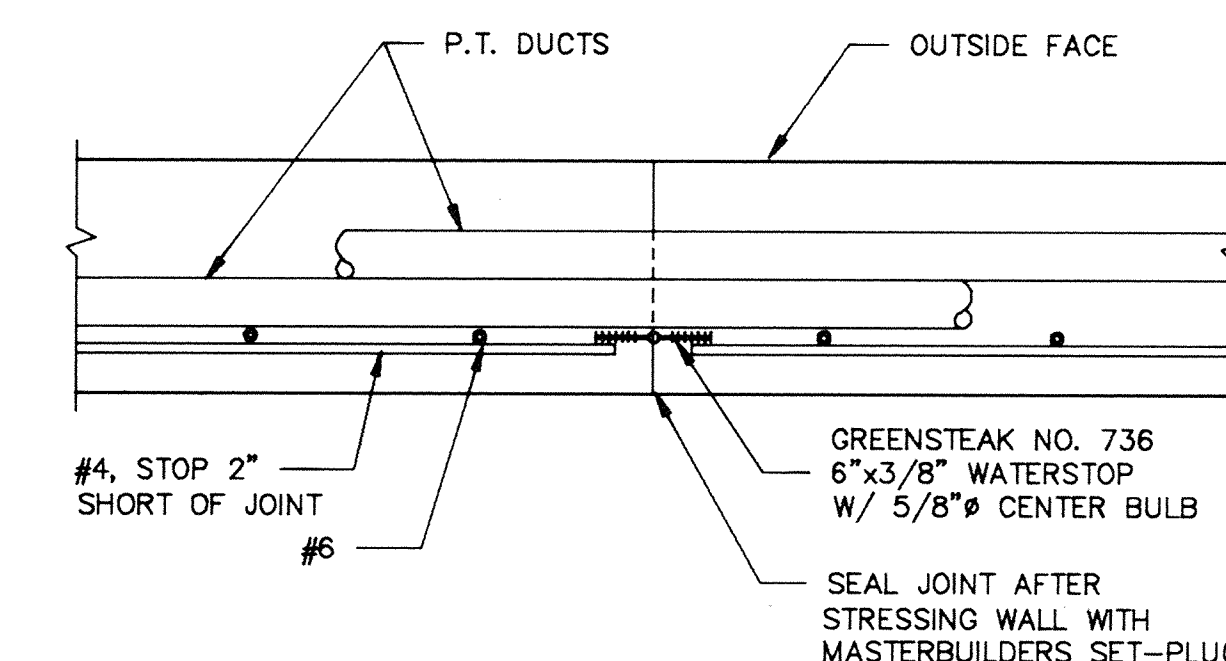
WALL SECTION

SCALE 1" = 1'-0"



STRESS BOTH ANCHORS OF A PAIR IN THE FOLLOWING SEQUENCE:
1, 23, 12, 34, 6, 28, 17, 39. THEN STRESS THE REMAINING PAIRS OF
ANCHORS AS FOLLOWS: 2, 24, 3, 25, 4, 26, 5, 27, 7, 29 AND SO ON UNTIL
BOTH ENDS OF EACH TENDON ARE STRESSED.

STRESSING SEQUENCE



WALL JOINT

SCALE 1" = 1'-0"

DESIGN STRESSES

CONCRETE

$f'_c = 4000$ PSI
 $f'_{ci} = 3500$ PSI

REINFORCEMENT

$f_y = 60,000$ PSI
ASTM A615 GRADE 60

SPIRALS

AS SHOWN

DUCT

2 5/8" ID SEMI-RIGID 26 GAGE GALV.
STEEL. SHORT RADIUS BENDS TO
BE FABRICATED FROM GAGE-METAL
ROUND TUBING WITH GROUT PORTS
ATTACHED AT SPRING LINE.

POST TENSIONING STEEL

0.5" DIAMETER STRANDS
 $f_{pu} = 270,000$ PSI
ASTM A416

TENDONS

$A_{ps} = 8 - 0.5\phi$ STRANDS = 1.224 SQ. IN.

ANCHORAGES

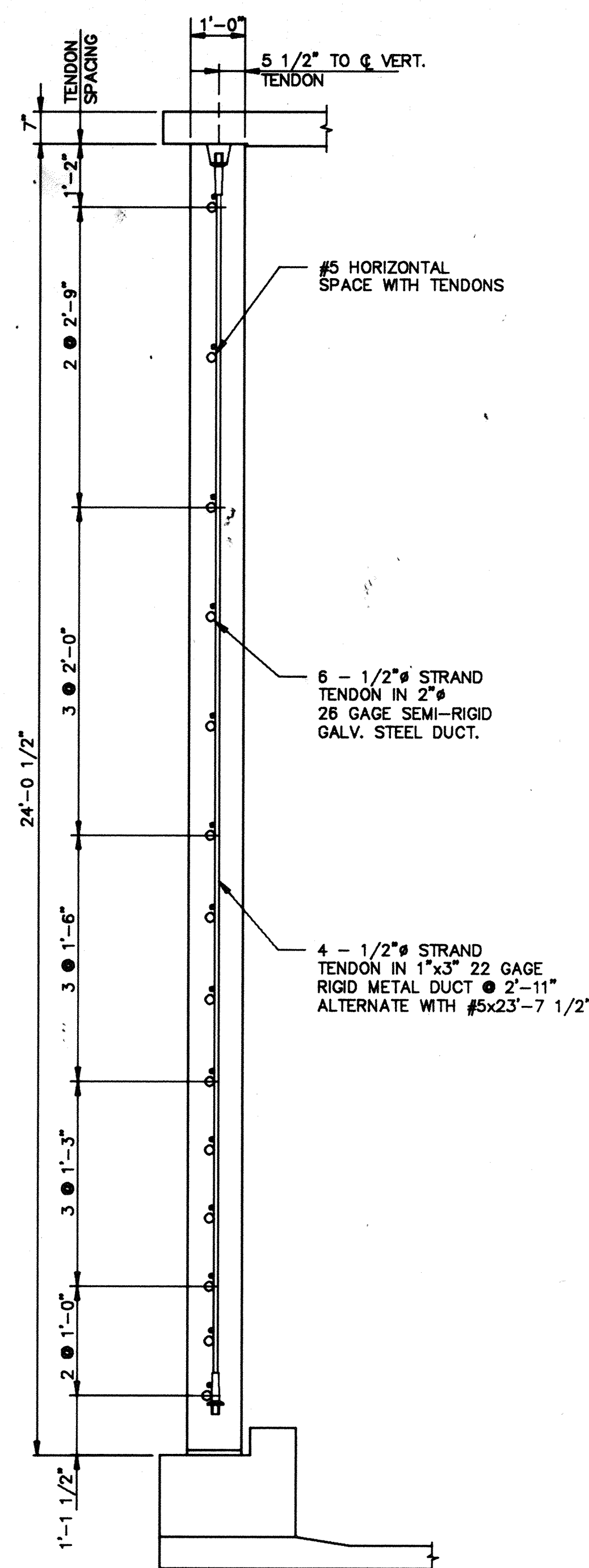
VSL EC5-12 OR EQUAL

THE DESIGN IS BASED ON A CURVATURE
COEFFICIENT, μ , EQUAL TO 0.25 AND
A WOBBLE COEFFICIENT, K , EQUAL TO
0.0002, AND ANCHOR SET OF 3/8"

AS BUILT

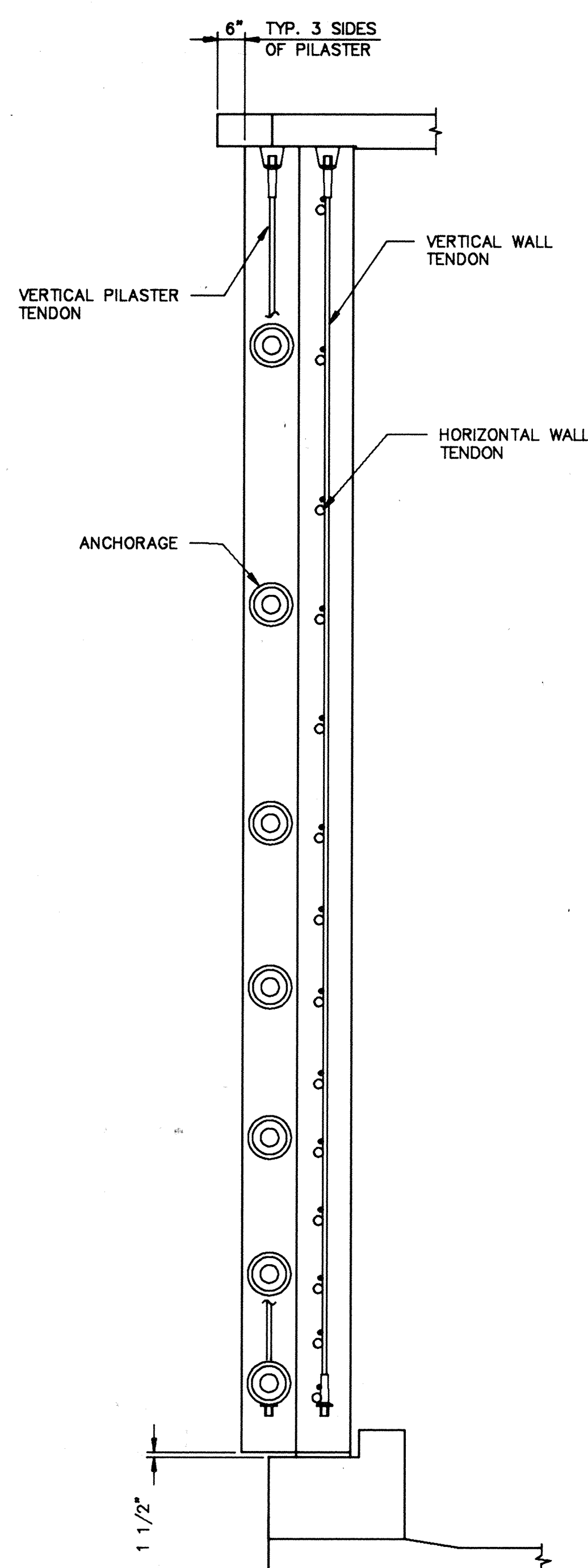
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TYP. WALL SECTION

SCALE 1/2" = 1'-0"



SECTION AT PILASTER ANCHORAGE

SCALE 1/2" = 1'-0"

WALL NOTES

1. CONE-TYPE BREAK BACK WATERSTOP PANEL TIES SHALL BE USED ON ALL WALL FORMS.
2. ONLY FULLY PVC COATED GALVANIZED STEEL OR PVC CHAIRS OR "WHEELS" SHALL BE USED FOR ALL WALL REINFORCING STEEL AND TENDONS.
3. NON-SHRINK, NON-METALLIC GROUT SHALL BE USED FOR ALL CONCRETE PATCHING
4. PREFABRICATED TENDONS WITH DUCTS PLACED AS AN ASSEMBLY BEFORE CONCRETE PLACEMENT SHALL BE SHOWN TO THE SATISFACTION OF THE ENGINEER TO BE FREE OF WATER, RUST AND DEBRIS IMMEDIATELY PRIOR TO STRESSING.
5. MAXIMUM LENGTH OF WALL CONCRETE PLACEMENT IS 50 FEET (WALL TO BE PLACED IN 8 SECTIONS). SEE CONSTRUCTION JOINT DETAIL.

ALTERNATE 2 DESIGN STRESSES

CONCRETE

$f'_c = 4000$ PSI
 $f'_{cl} = 3500$ PSI

REINFORCEMENT

$f_y = 60000$ PSI
ASTM A615 GRADE 60

SPIRALS

AS SHOWN

DUCT

HORIZONTAL 2" I.D. SEMI-RIGID
26 GAGE GALV. STEEL
OR
2" I.D. 60 MIL POLYETHYLENE

VERTICAL 1" x 3" FLAT RIGID 22 GAGE
GALV. METAL DUCT.

POST TENSIONING STEEL

0.5" DIAMETER STRANDS
 $f_{pu} = 270000$ PSI
ASTM A416

TENDONS

HORIZONTAL
 $A_{ps} = 6 - 0.5\phi$ STRANDS = .918 SQ. IN.

VERTICAL
 $A_{ps} = 4 - 0.5\phi$ STRANDS = .612 SQ. IN.

ANCHORAGES

HORIZONTAL VSL B5-6 OR EQUAL
VERTICAL VSL S05-4 OR EQUAL

THE DESIGN IS BASED ON A CURVATURE COEFFICIENT, μ , EQUAL TO 0.22 AND A WOBBLE COEFFICIENT, K , EQUAL TO 0.0002, AND ANCHOR SET OF 3/8"

ALTERNATE 1 TO BE CONSTRUCTED

STRESSING NOTES

1. A STRESSING SEQUENCE SHALL BE USED THAT WILL RESULT IN MINIMUM ADVERSE STRESS CONDITIONS TO THE STRUCTURE.
2. THE TENSIONING PROCESS SHALL BE SO CONDUCTED THAT THE TENSION BEING APPLIED AND THE ELONGATION PRODUCED THEREBY MAY BE READILY MEASURED. A RECORD SHALL BE KEPT AT ALL TIMES OF GAUGE PRESSURES AND ELONGATION, AND SUBMITTED FOR APPROVAL. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE DETAILS OF THE SYSTEM AND STRESSING SEQUENCE FOR ACCEPTANCE WITH SHOP DRAWING SUBMITTAL.
3. PROJECTING STRANDS SHALL NOT BE CUT OFF UNTIL THE ENTIRE STRUCTURE HAS BEEN STRESSED AND THE STRESSING OPERATION HAS BEEN ACCEPTED.

TENDON GROUT ADMIXTURES

CONBEX 209X ANTI-BLEED GROUT ADMIXTURE SHALL BE USED AS AN ADMIXTURE FOR GROUTING ALL WALL TENDONS.

IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION, THE CONTRACTOR SHALL PROPORTION THE GROUT AS FOLLOWS.

HORIZONTAL TENDONS

ADD 0.75 LBS. PER SACK OF CEMENT. THE MAXIMUM WATER/CEMENT RATIO SHALL BE 0.45.

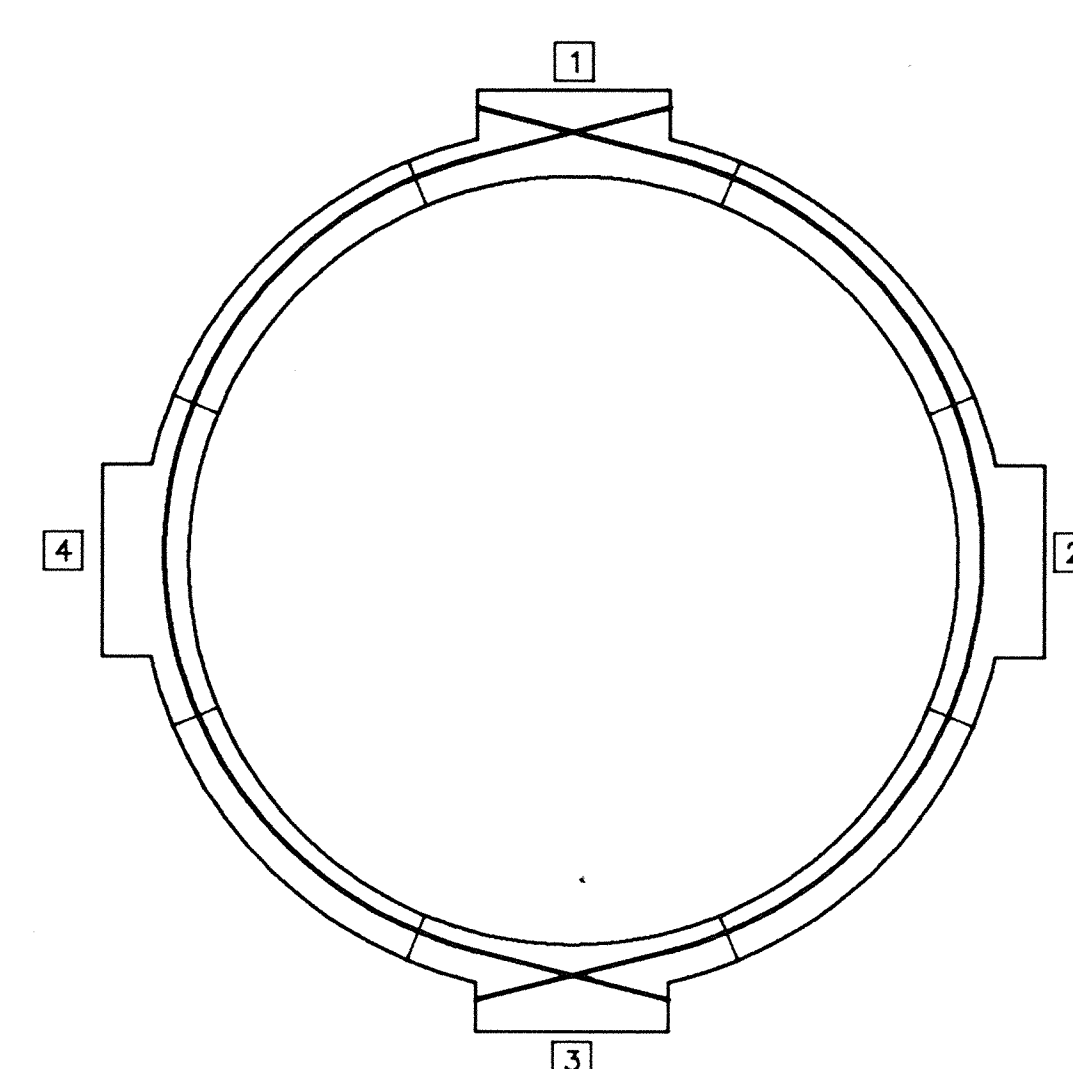
VERTICAL TENDONS

ADD 1.25 LBS. PER SACK OF CEMENT. THE MAXIMUM WATER/CEMENT RATIO SHALL BE 0.45.

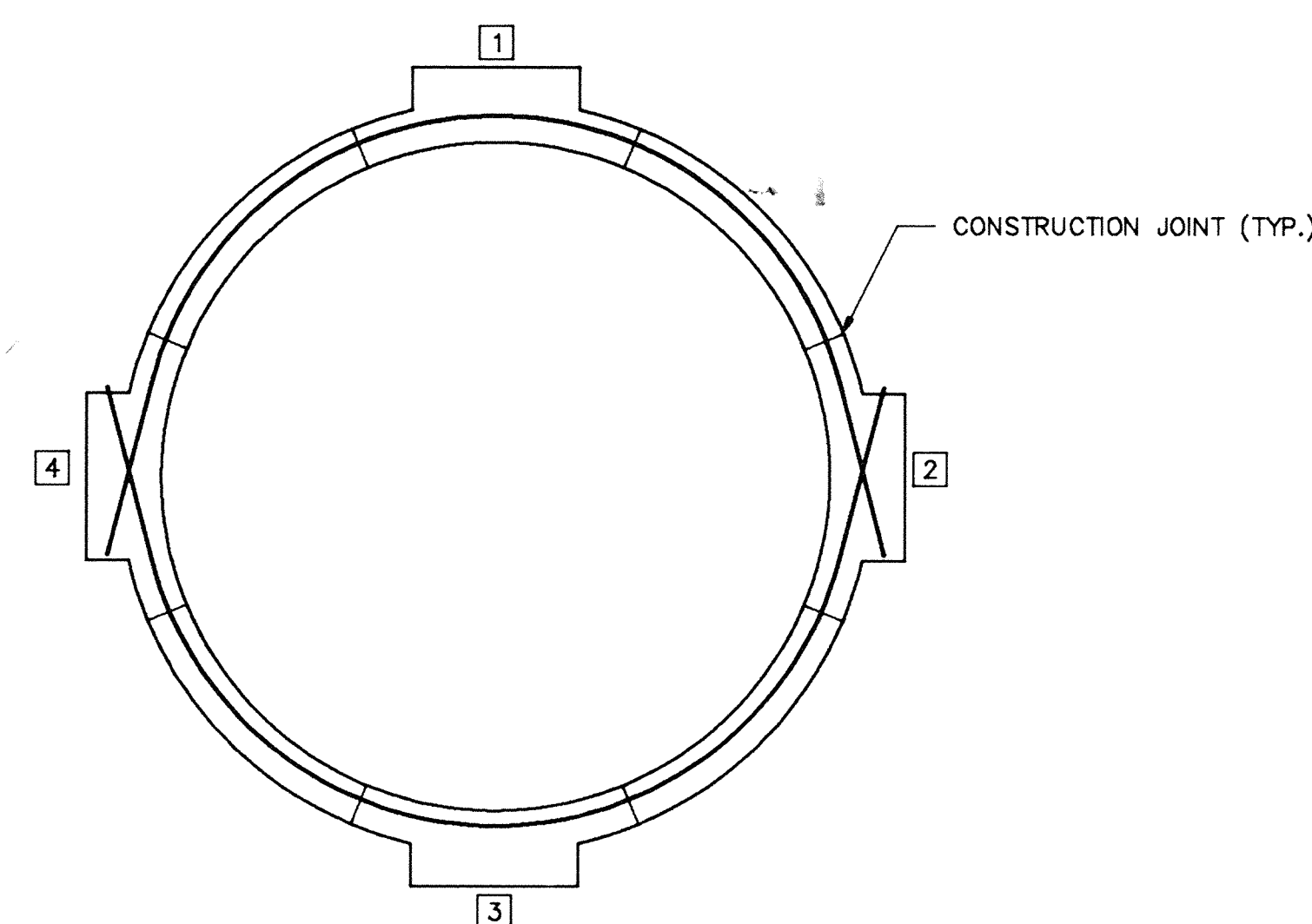
THE ADMIXTURE SHALL BE MIXED AND THE GROUT PUMPED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

NOTES

ALTERNATES 1, 2 & 3



TENDONS ANCHORED AT ODD NO. PILASTERS



TENDONS ANCHORED AT EVEN NO. PILASTERS

PILASTER ANCHORAGE PLAN

□ PILASTER NUMBER

PRESTRESSED STEEL PROTECTION NOTES

1. ALL PRESTRESSING STEEL MUST BE PROTECTED AGAINST PHYSICAL DAMAGE AND RUST OR OTHER RESULTS OF CORROSION AT ALL TIMES FROM MANUFACTURE TO GROUTING OR ENCASEMENT IN CONCRETE. PRESTRESSING STEEL THAT HAS SUSTAINED PHYSICAL DAMAGE AT ANY TIME SHALL BE REJECTED.
2. PRESTRESSING STEEL SHALL BE PACKAGED IN CONTAINERS OR SHIPPING FORMS FOR PROTECTION OF THE STEEL AGAINST PHYSICAL DAMAGE AND CORROSION DURING SHIPPING AND STORAGE. A CORROSION INHIBITOR WHICH PREVENTS RUST OR OTHER RESULTS OF CORROSION SHALL BE PLACED IN THE PACKAGE OR FORM, OR SHALL BE INCORPORATED IN A CORROSION INHIBITOR CARRIER TYPE PACKAGING MATERIAL, OR WHEN PERMITTED BY THE ENGINEER, MAY BE APPLIED DIRECTLY TO THE STEEL. THE CORROSION INHIBITOR SHALL NOT HAVE DELETERIOUS EFFECT ON THE STEEL OR CONCRETE OR BOND STRENGTH OF STEEL TO CONCRETE OR GROUT. PACKAGING OR FORMS DAMAGED FROM ANY CAUSE SHALL BE IMMEDIATELY REPLACED OR RESTORED TO ORIGINAL CONDITION.
3. PRESTRESSING STEEL FOR POST-TENSIONING, WHICH IS INSTALLED IN MEMBERS PRIOR TO PLACING AND CURING THE CONCRETE, SHALL BE CONTINUOUSLY PROTECTED AGAINST RUST OR OTHER CORROSION, UNTIL GROUTED, BY MEANS OF A CORROSION INHIBITOR PLACED IN THE DUCTS OR APPLIED TO THE STEEL IN THE DUCT.
4. WHEN ACCEPTABLE PRESTRESSING STEEL FOR POST-TENSIONING IS INSTALLED IN THE DUCTS AFTER COMPLETION OF CONCRETE CURING, AND IF STRESSING AND GROUTING ARE COMPLETED WITHIN TEN CALENDAR DAYS AFTER THE INSTALLATION OF THE PRESTRESSING STEEL, RUST WHICH MAY FORM DURING SAID TEN DAYS WILL NOT BE CAUSE FOR REJECTION OF THE STEEL. PRESTRESSING STEEL INSTALLED, TENSIONED AND GROUTED IN THIS MANNER, ALL WITHIN TEN CALENDAR DAYS, WILL NOT REQUIRE THE USE OF CORROSION INHIBITOR IN THE DUCT FOLLOWING INSTALLATION OF THE PRESTRESSING STEEL. PRESTRESSING INSTALLED AS ABOVE, BUT NOT GROUTED WITHIN TEN CALENDAR DAYS SHALL BE SUBJECT TO THE REQUIREMENT IN THIS SECTION PERTAINING TO CORROSION PROTECTION AND REJECTION BECAUSE OF RUST.
5. SHELL VPI 260, AS MANUFACTURED BY THE SHELL OIL COMPANY, SHALL BE USED AS THE CORROSION INHIBITOR. TWO GRAMS PER CUBIC FEET OF ENCLOSED SPACE SHALL BE UTILIZED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION, DURING STORAGE, AND AFTER TENSION PLACEMENT IN THE WALL PRIOR TO STRESSING AND GROUTING.

AS BUILT

NOTE TO THE OWNER:

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ROCKY MOUNTAIN CONSULTANTS
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ENGLEWOOD, COLORADO 80111
(303) 741-6000

RMC

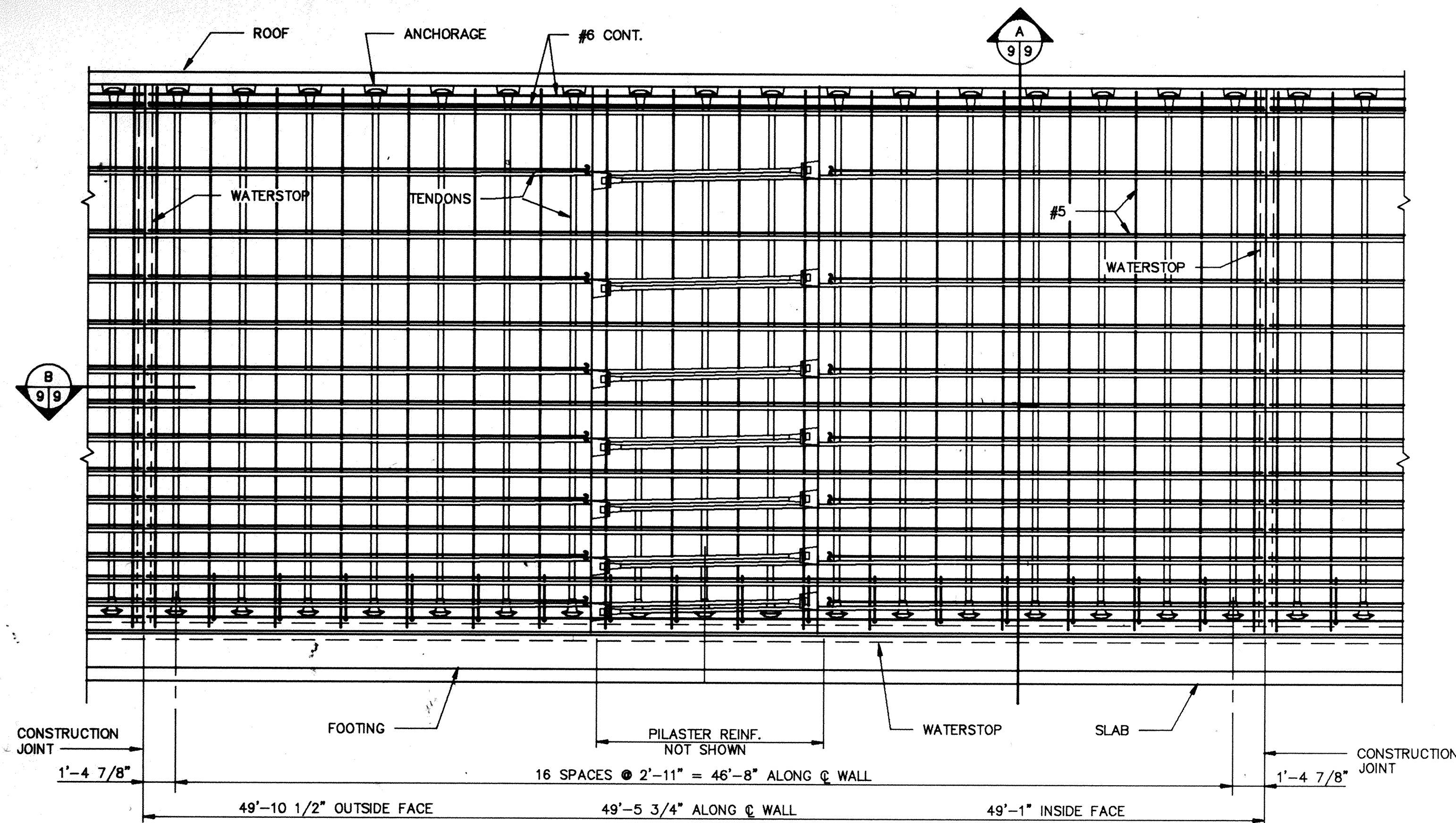
NO.	REVISIONS	DESCRIPTION	DATE BY
1		45-BUILT	12-20-88 PAF

CITY OF LOUISVILLE
2.0 M.G. HIGHZONE POTABLE WATER STORAGE TANK
WALL DETAILS - ALTERNATE 2

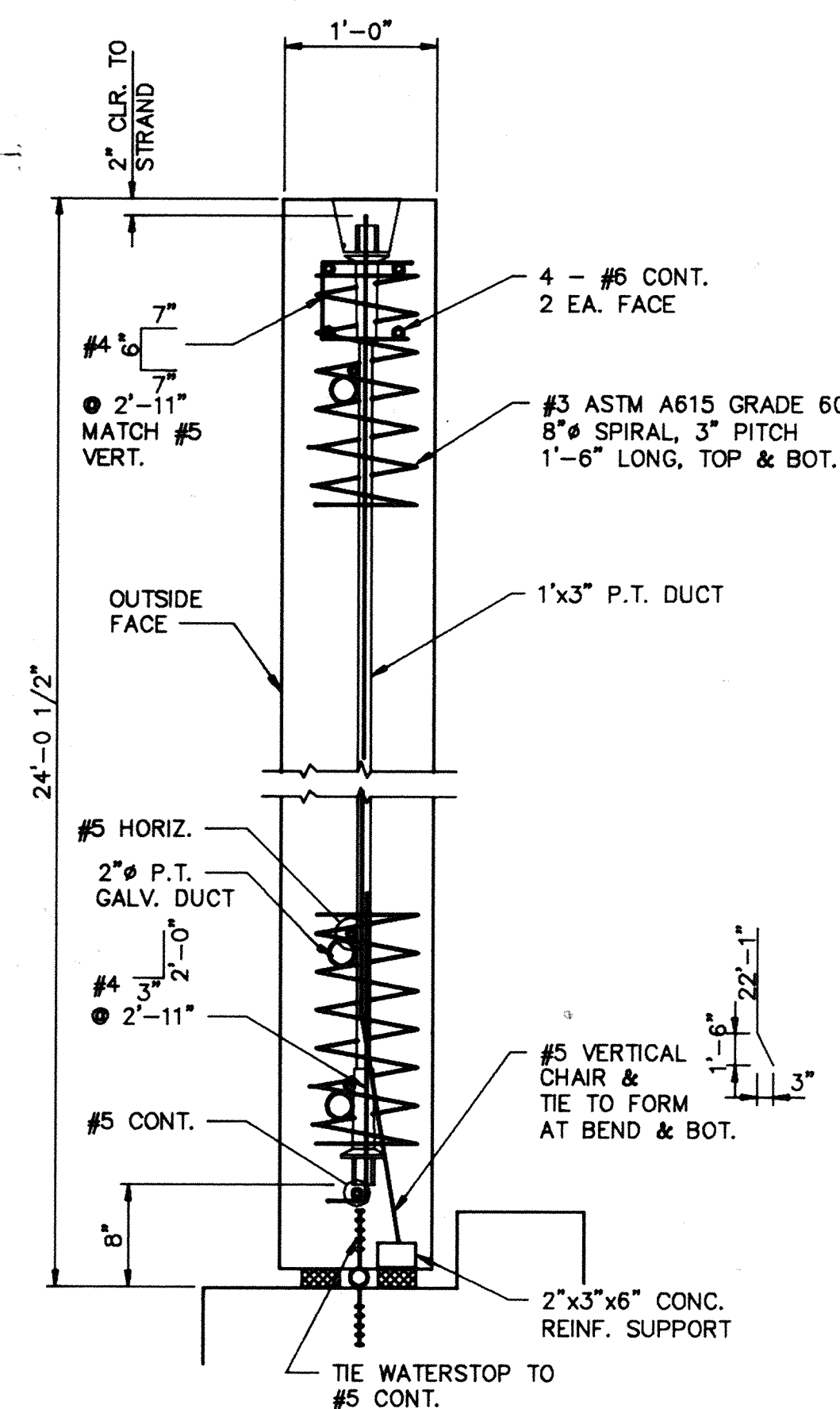
DATE: 7-87
DESIGNED BY: DH
DRAWN BY: DH
CHECKED BY: MCK

JOB NO.
7-0058.022.00

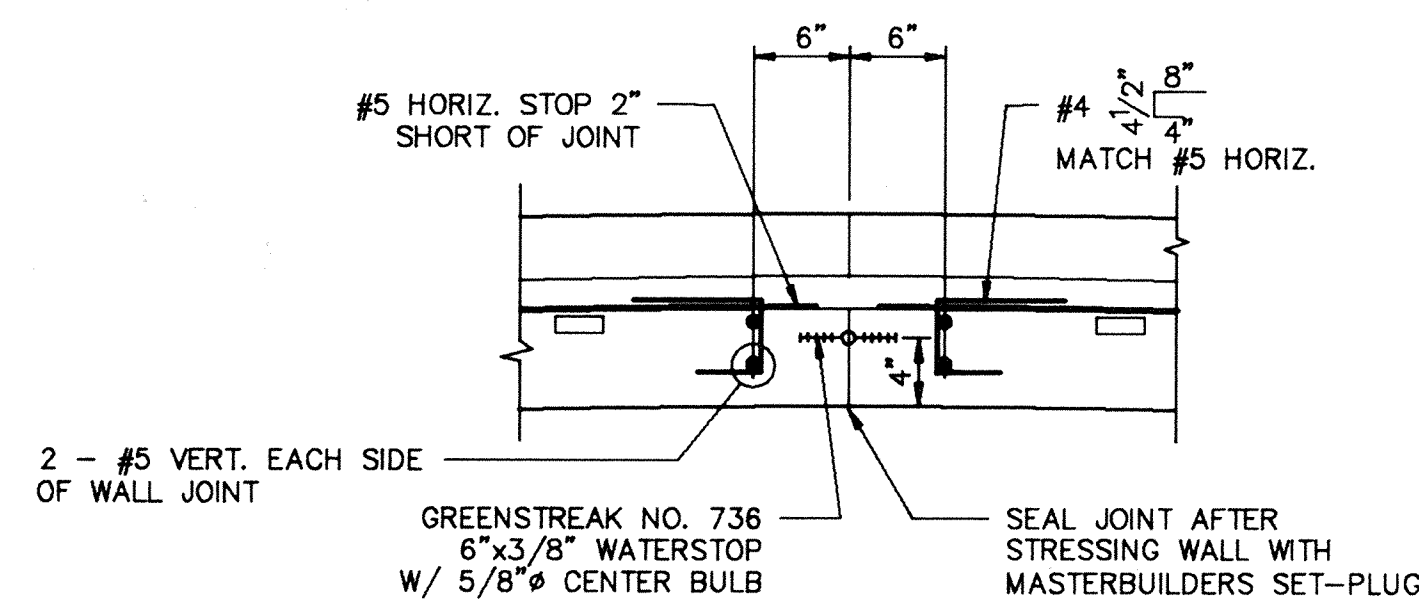
SHEET
8 OF 13



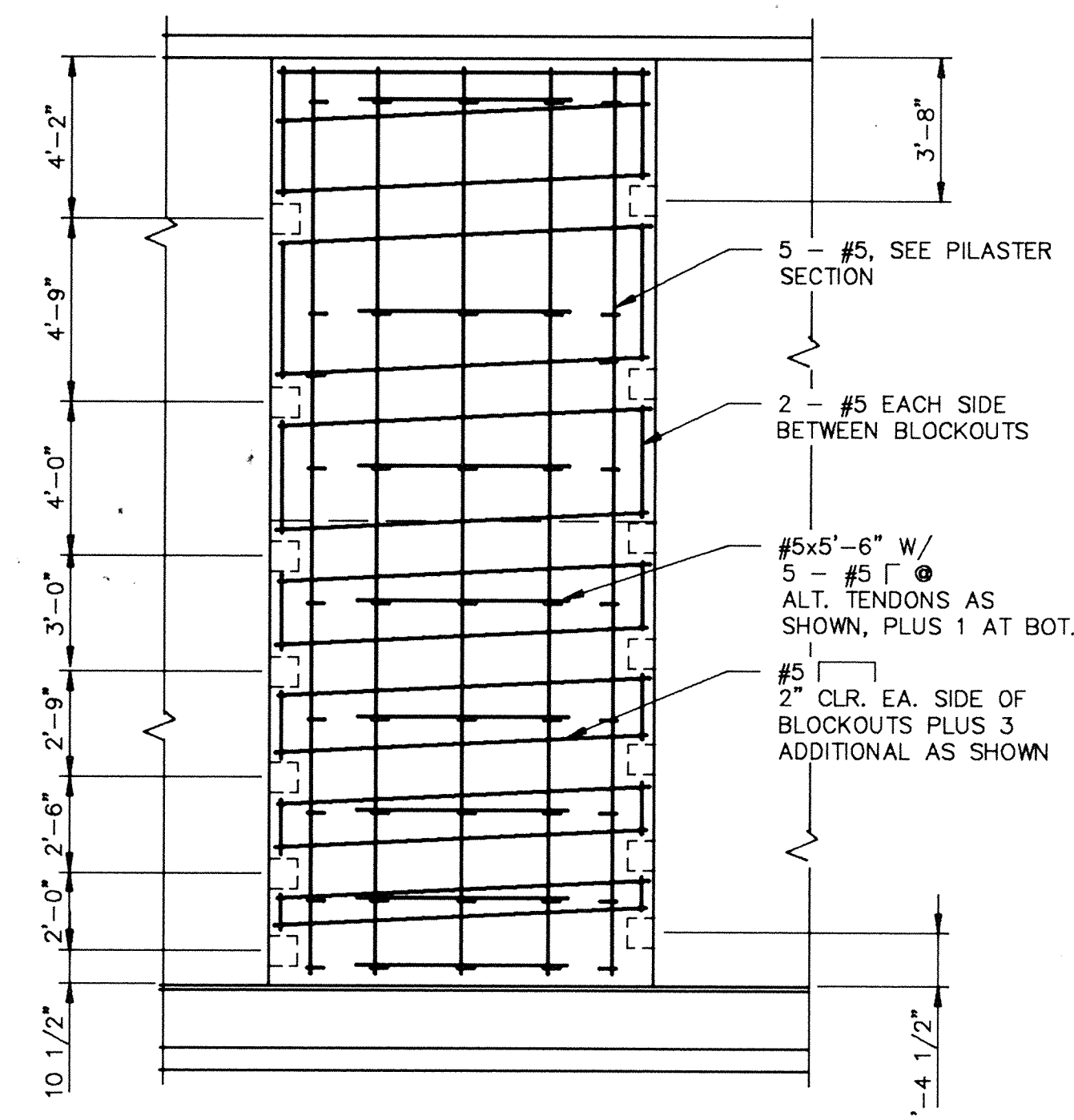
1/8 WALL SECTION
SCALE 1/4" = 1'-0"



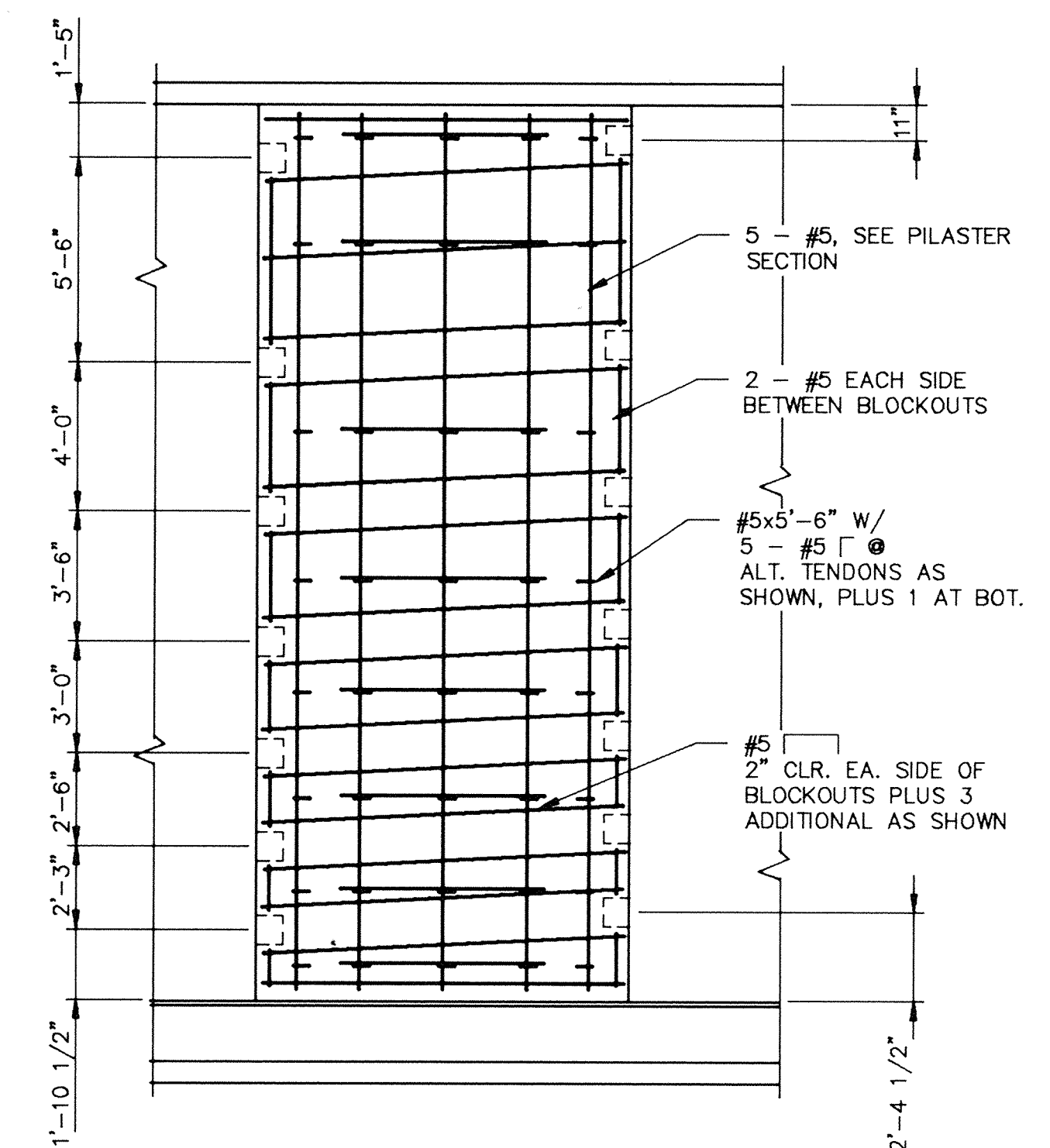
WALL SECTION
SCALE 1" = 1'-0"



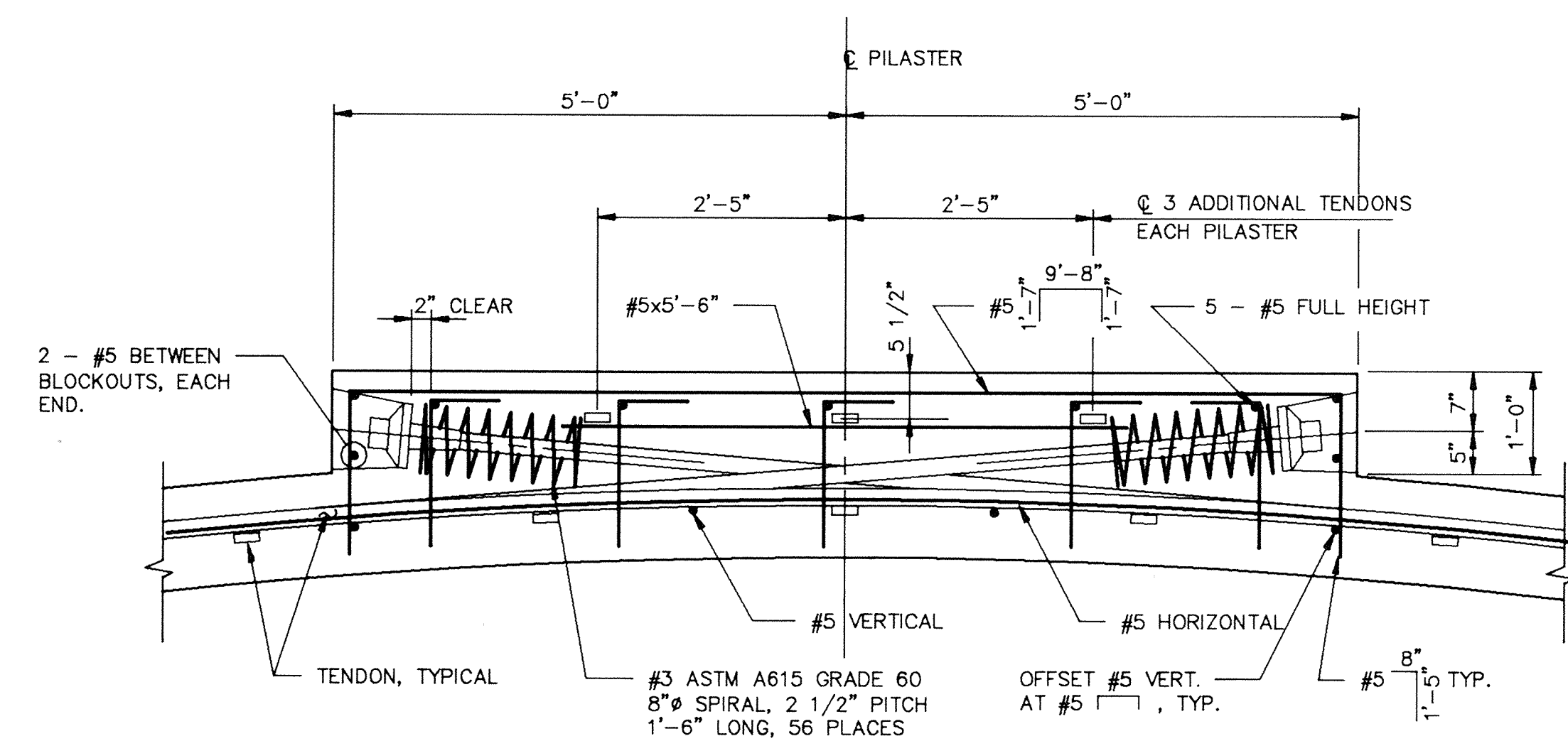
WALL JOINT
SCALE 1" = 1'-0"



REINF. AT EVEN PILASTER
SCALE 1/4" = 1'-0"



REINF. AT ODD PILASTER
SCALE 1/4" = 1'-0"



PILASTER SECTION
SCALE 3/4" = 1'-0"

AS BUILT

**ALTERNATE 1 TO BE
CONSTRUCTED**

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RMC

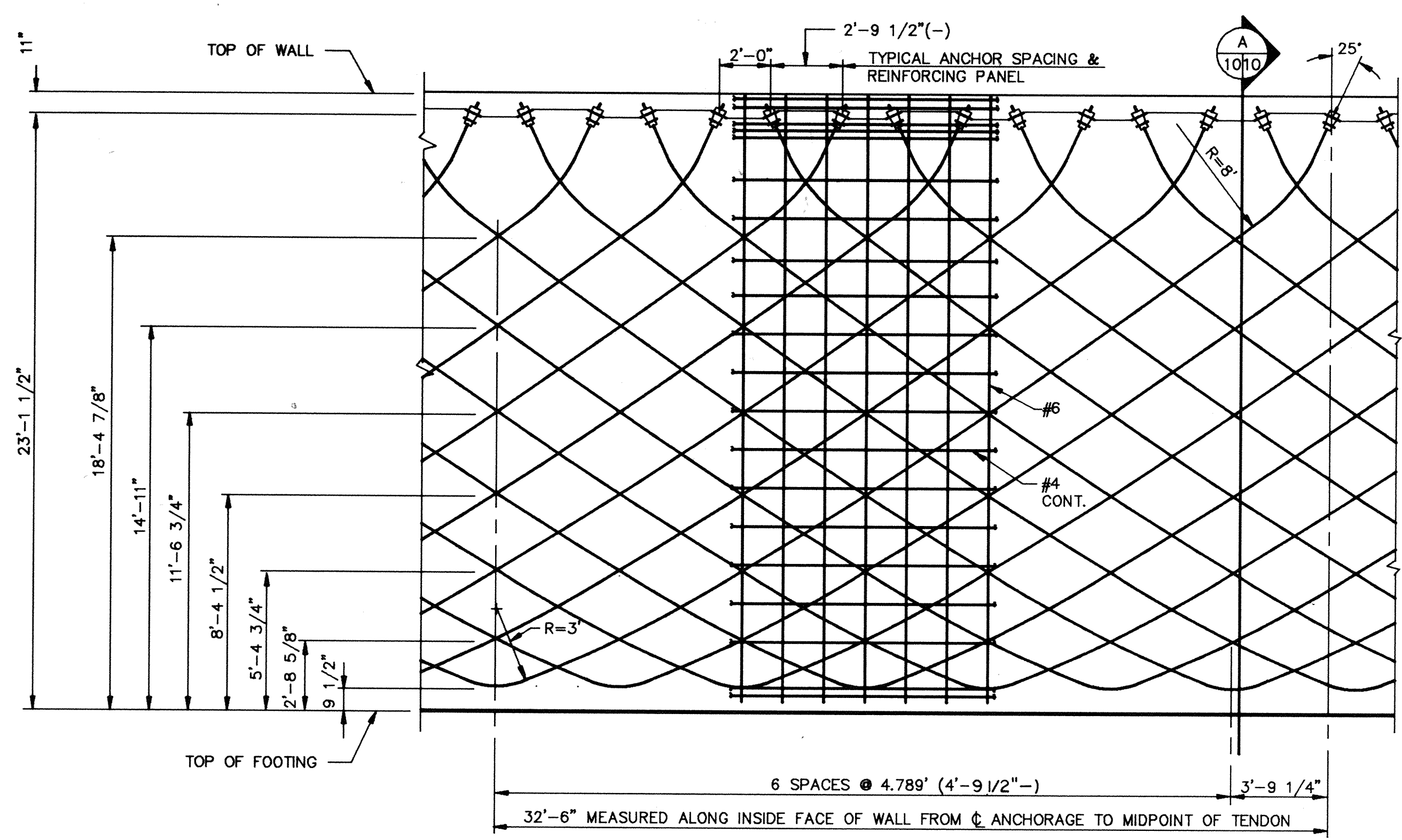
NO.	DESCRIPTION	DATE BY
1	AS-BUILT	2-20-88 BAF

CITY OF LOUISVILLE
2.0 M.G. HIGHZONE POTABLE WATER STORAGE TANK
WALL DETAILS - ALTERNATE 2

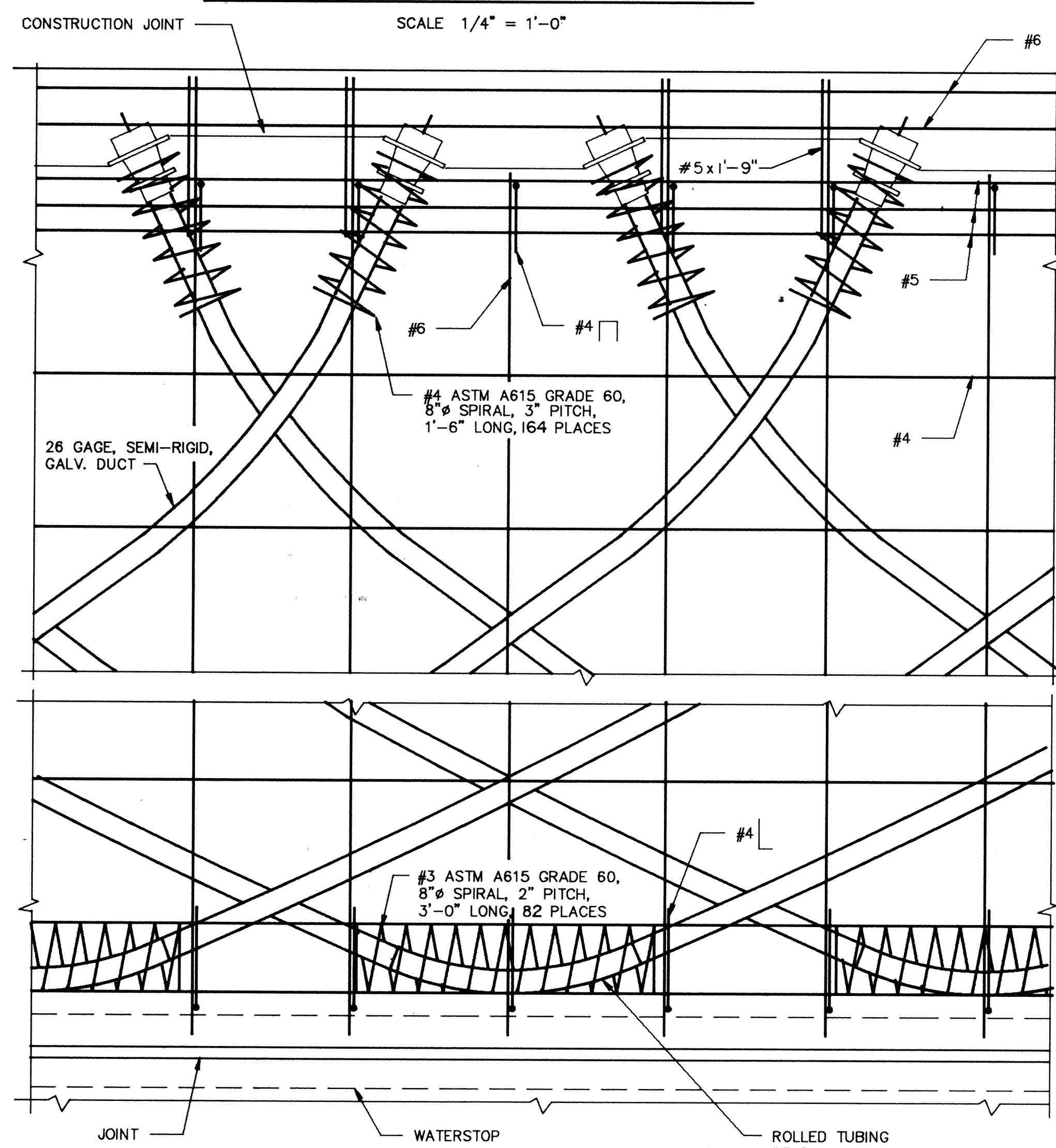
DATE: 7-87
DESIGNED BY: DH
DRAWN BY: DH
CHECKED BY: MCK

JOB NO.
7-0058.022.00
SHEET
9 OF 13

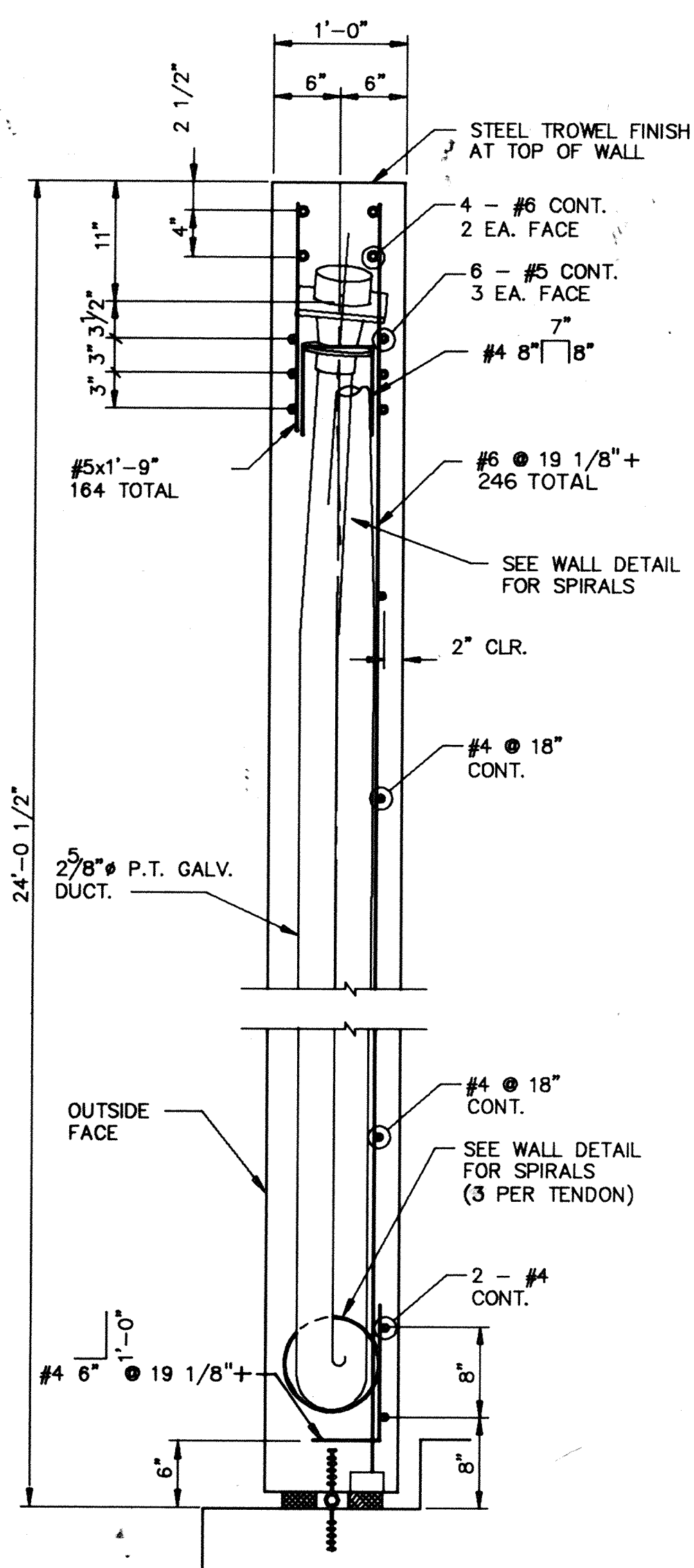
NO.	DESCRIPTION	DATE BY
1	AS-BUILT	R-3-87/PAF



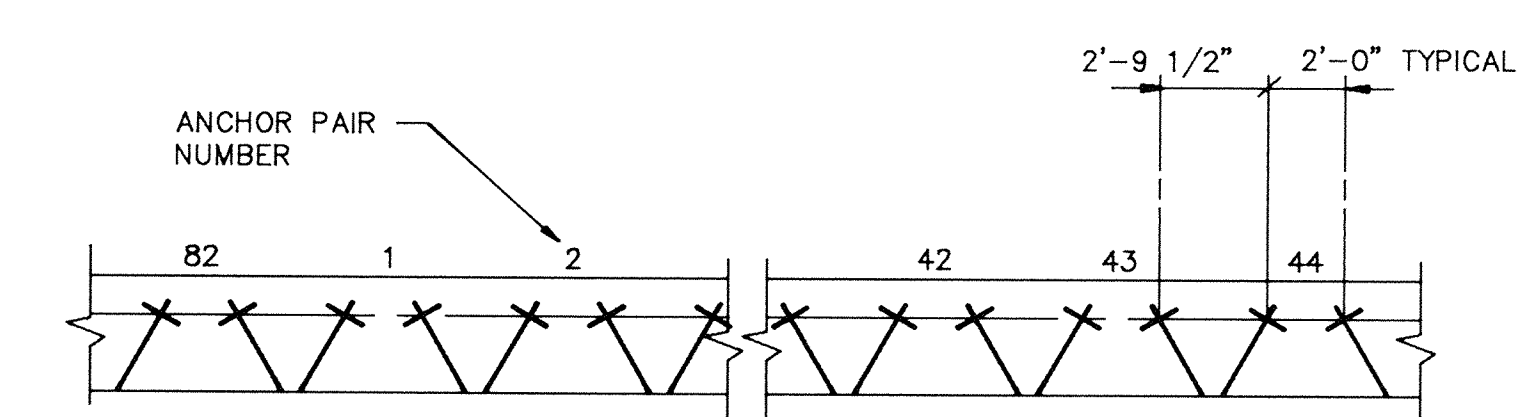
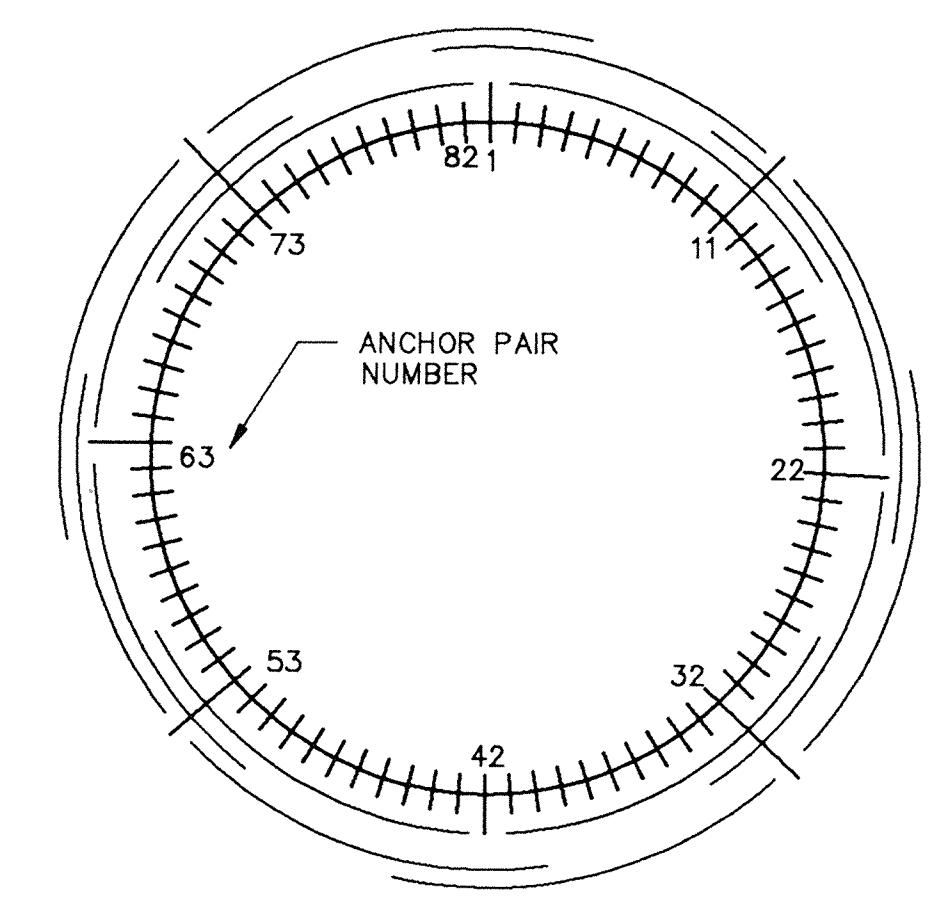
PARTIAL WALL ELEVATION - TENDON PATTERN
SCALE 1/4" = 1'-0"



WALL DETAIL
SCALE: 1" = 1'-0"

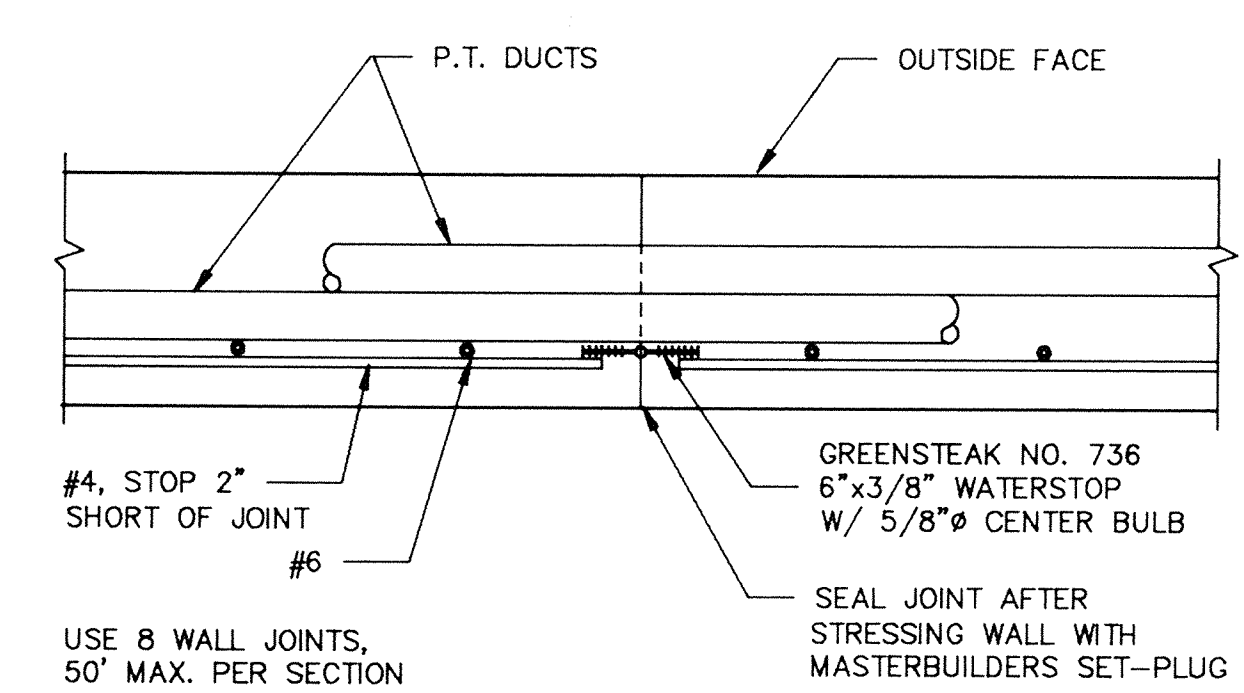


WALL SECTION
SCALE 1" = 1'-0"



STRESS BOTH ANCHORS OF A PAIR IN THE FOLLOWING SEQUENCE:
1, 42, 22, 63, 11, 53, 32, 73, 6, 47, 27, 68, 16, 58, 37, 78. THEN
STRESS THE REMAINING PAIRS OF ANCHORS AS FOLLOW: 2, 43, 3, 44.,
4, 45, 5, 46, 6, 47 AND SO ON UNTIL BOTH ENDS OF EACH TENDON
ARE STRESSED.

STRESSING SEQUENCE



WALL JOINT
SCALE 1" = 1'-0"

DESIGN STRESSES

CONCRETE

$f'_c = 4000$ PSI
 $f'_{ci} = 3500$ PSI

REINFORCEMENT

$f_y = 60000$ PSI
ASTM A615 GRADE 60

SPIRALS

AS SHOWN
DUCT:
2 5/8" ID SEMI-RIGID 26 GAGE GALV.
STEEL. SHORT RADIUS BENDS TO
BE FABRICATED FROM GAGE-METAL
ROUND TUBING WITH GROUT PORTS
ATTACHED AT SPRING LINE.

POST TENSIONING STEEL

0.5" DIAMETER STRANDS
 $f_{pu} = 270000$ PSI
ASTM A416

TENDONS

$A_{ps} = 8 - 0.5\phi$ STRANDS = 1.224 SQ. IN.

ANCHORAGES

VSL EC5-12 OR EQUAL

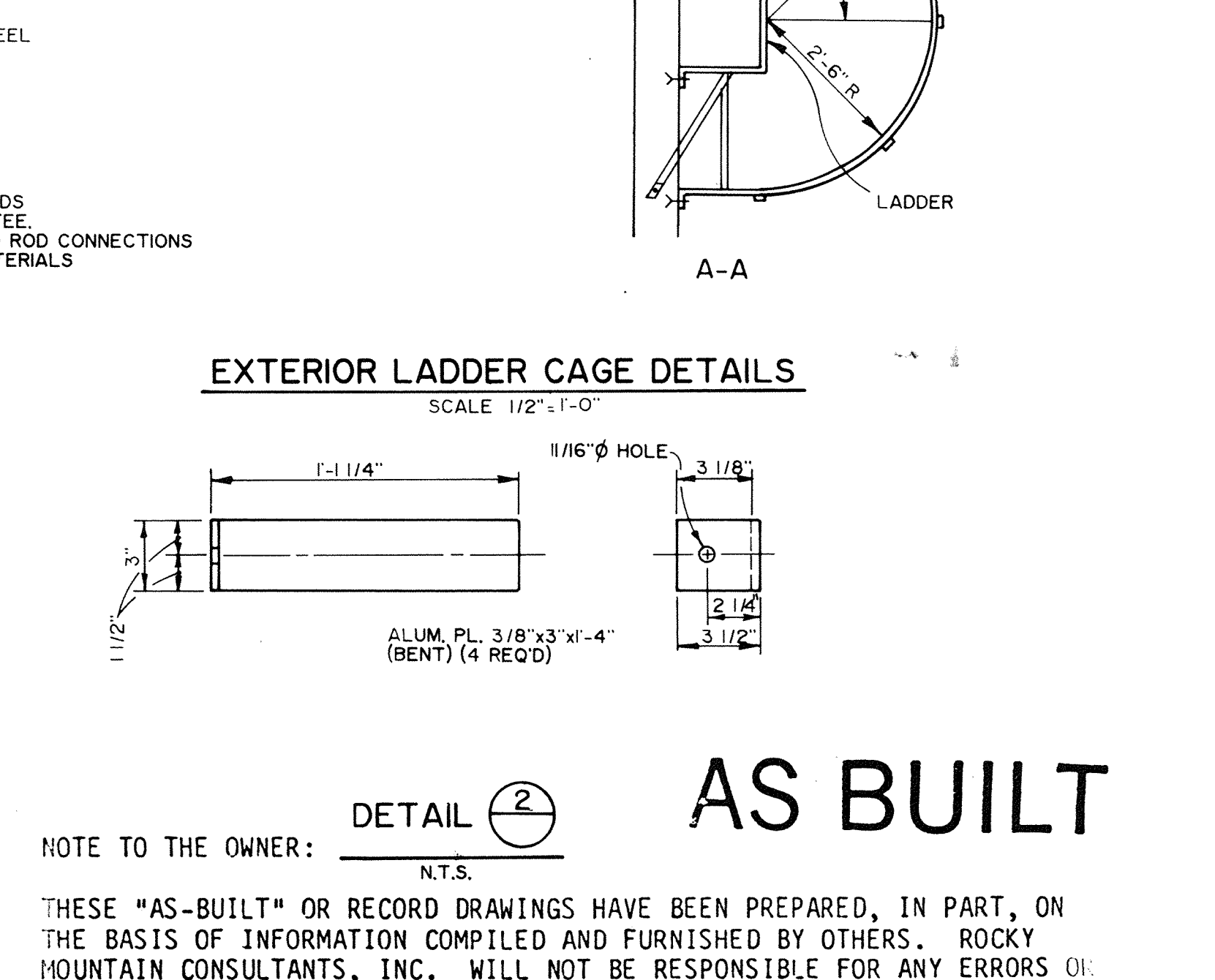
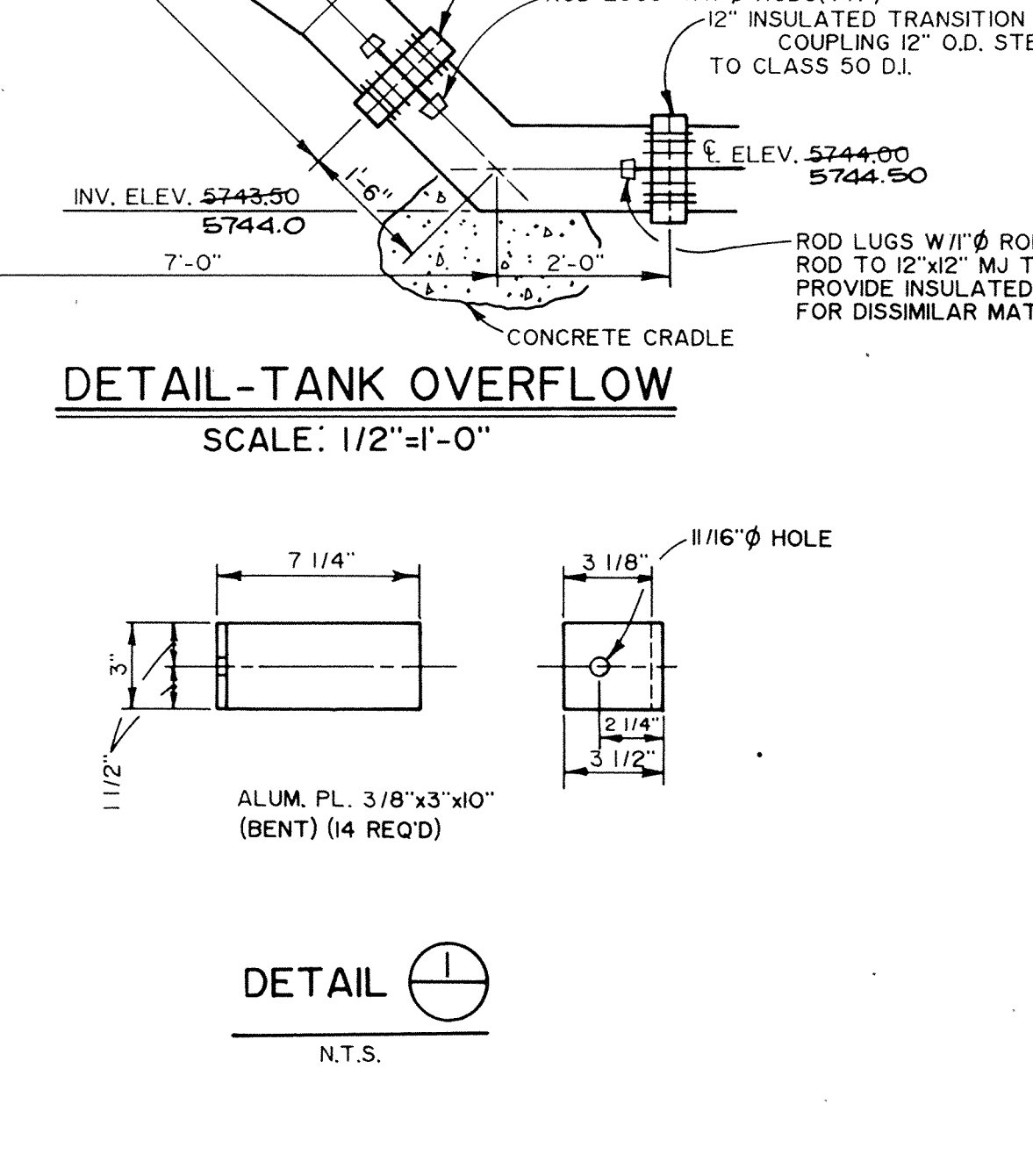
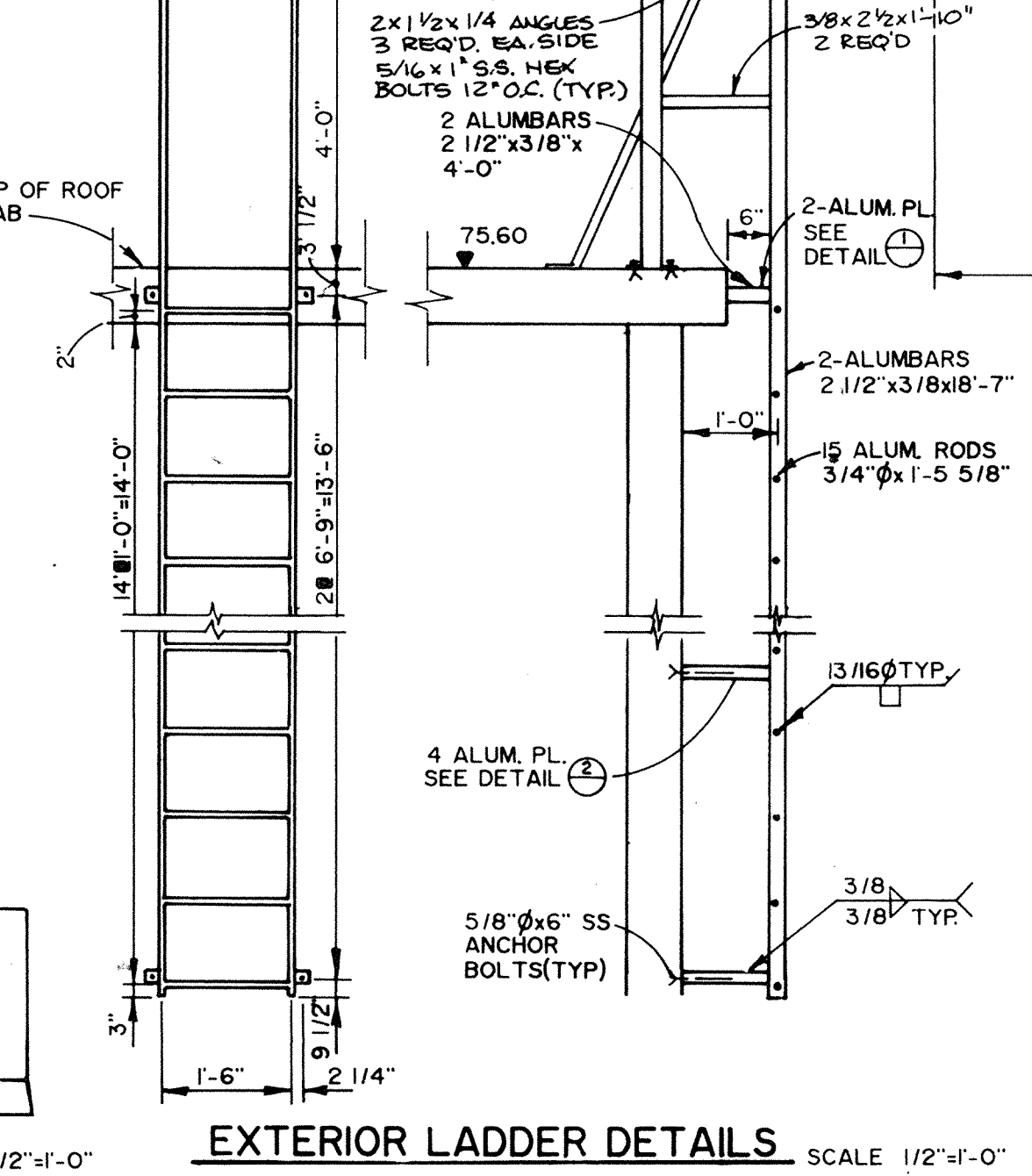
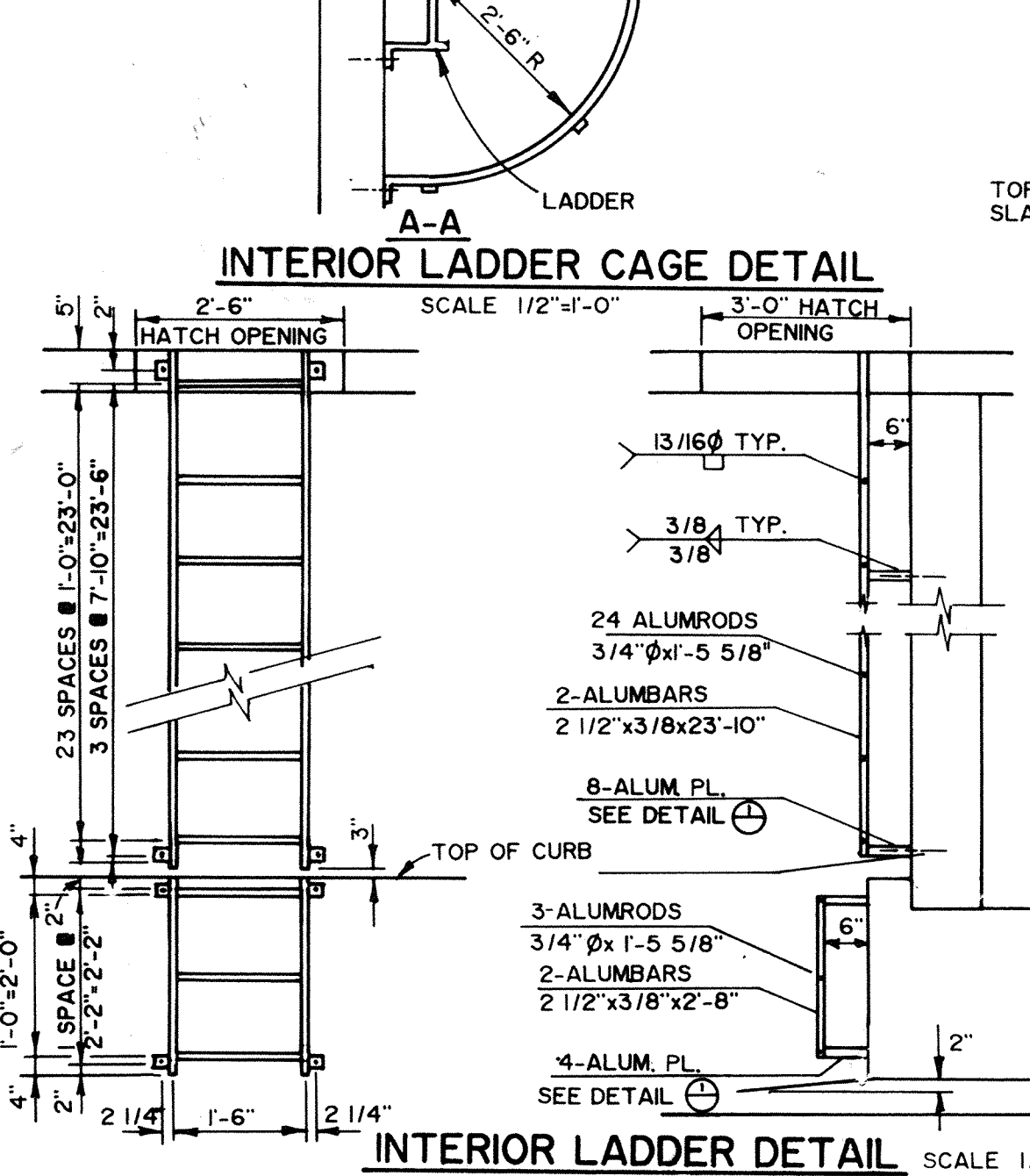
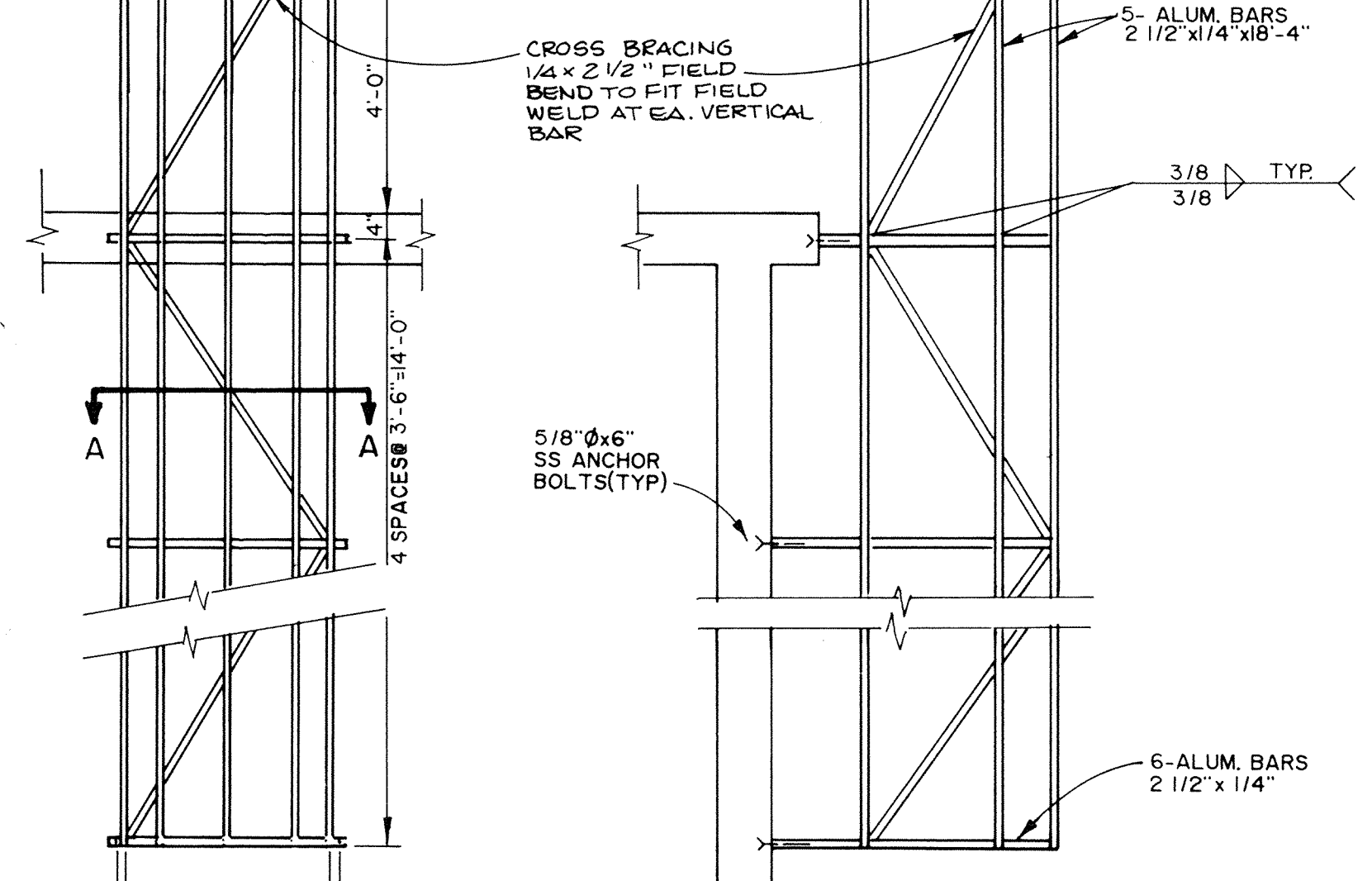
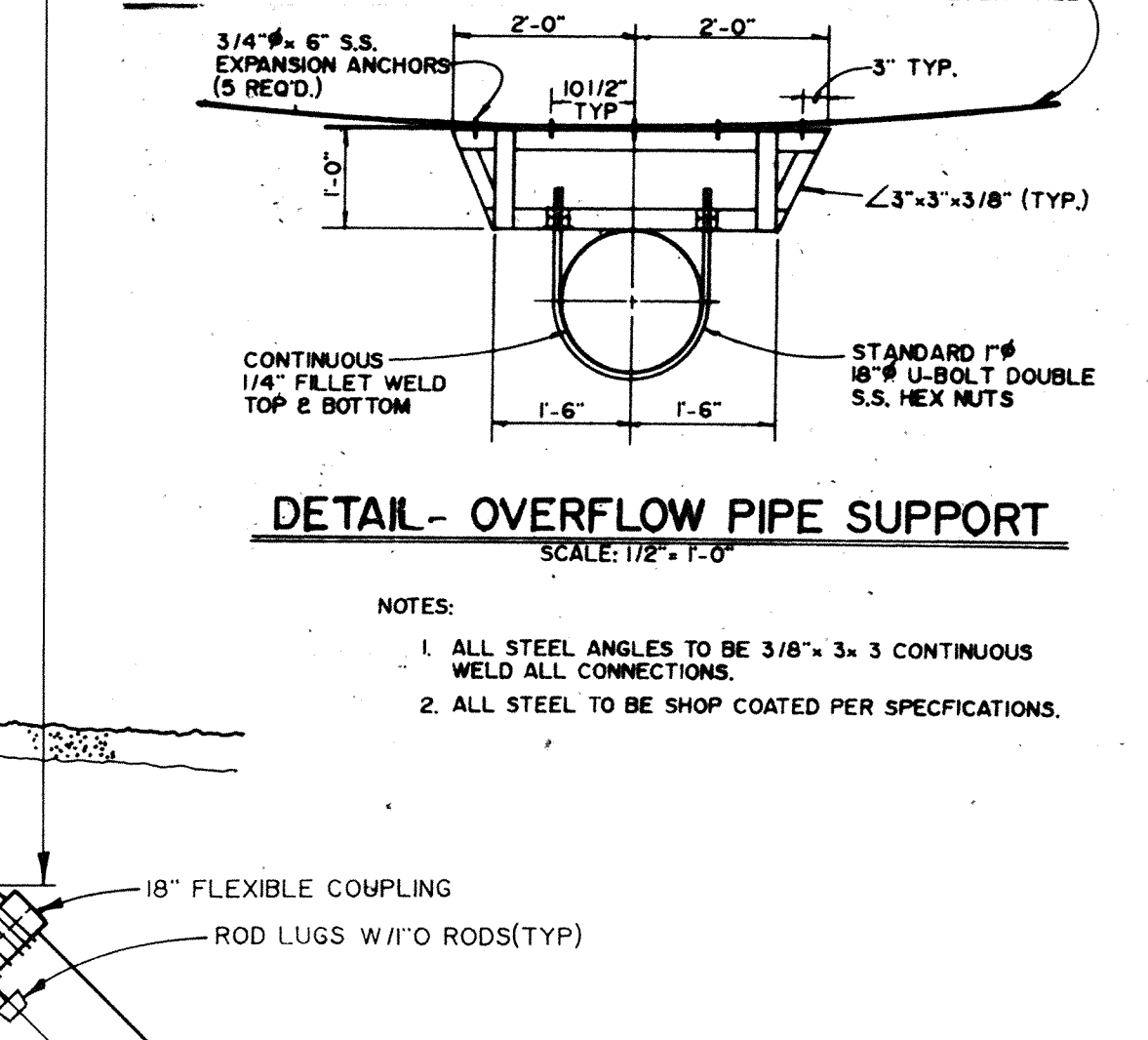
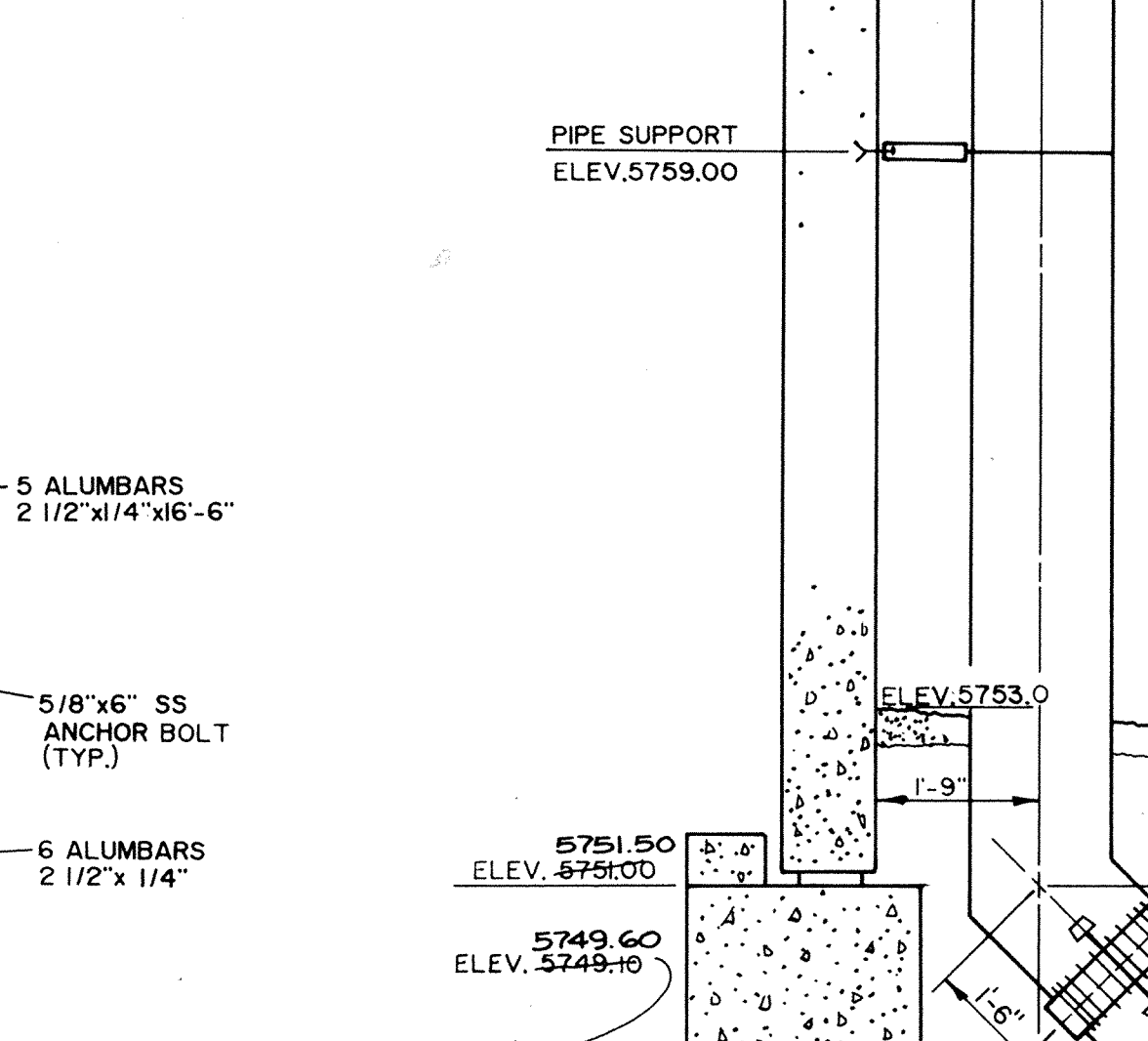
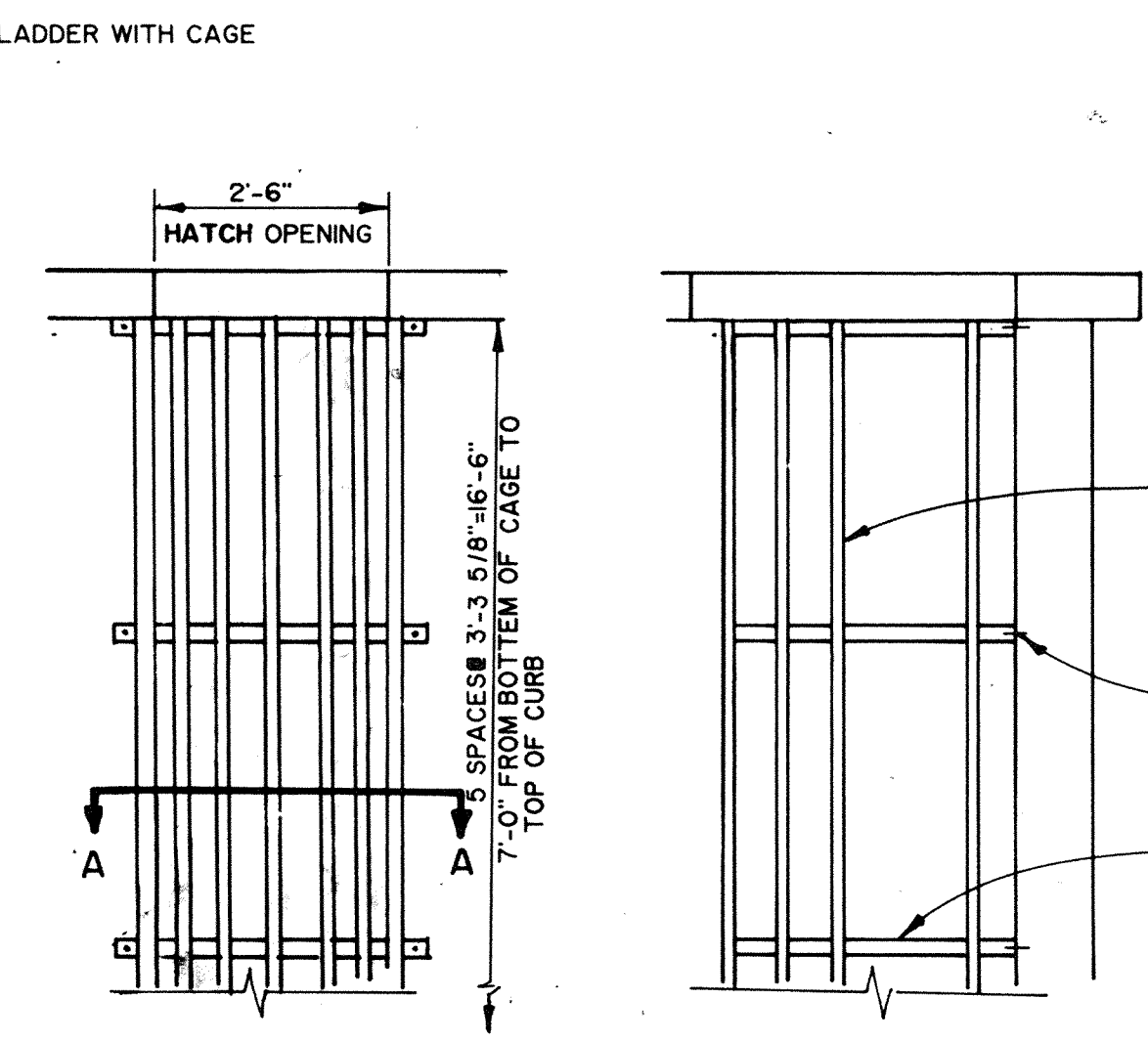
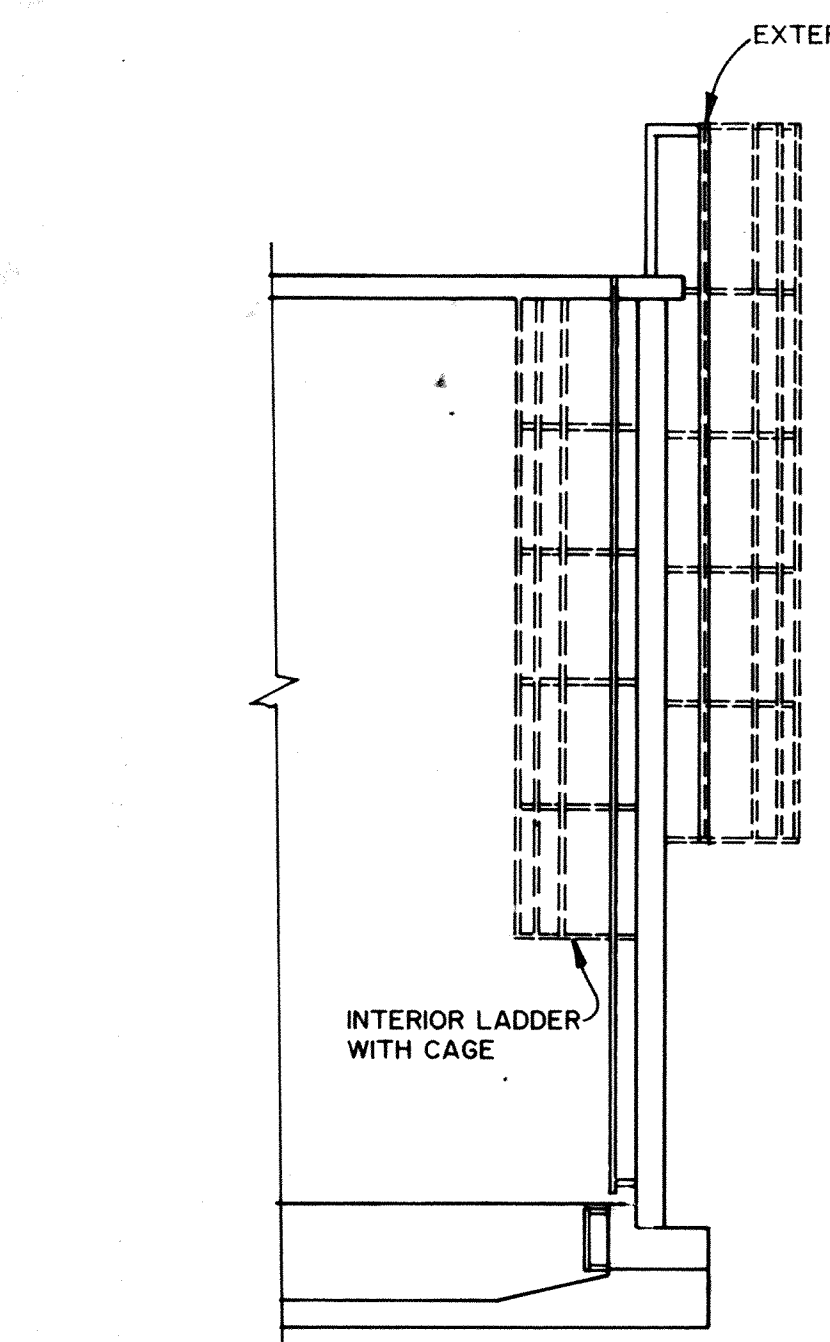
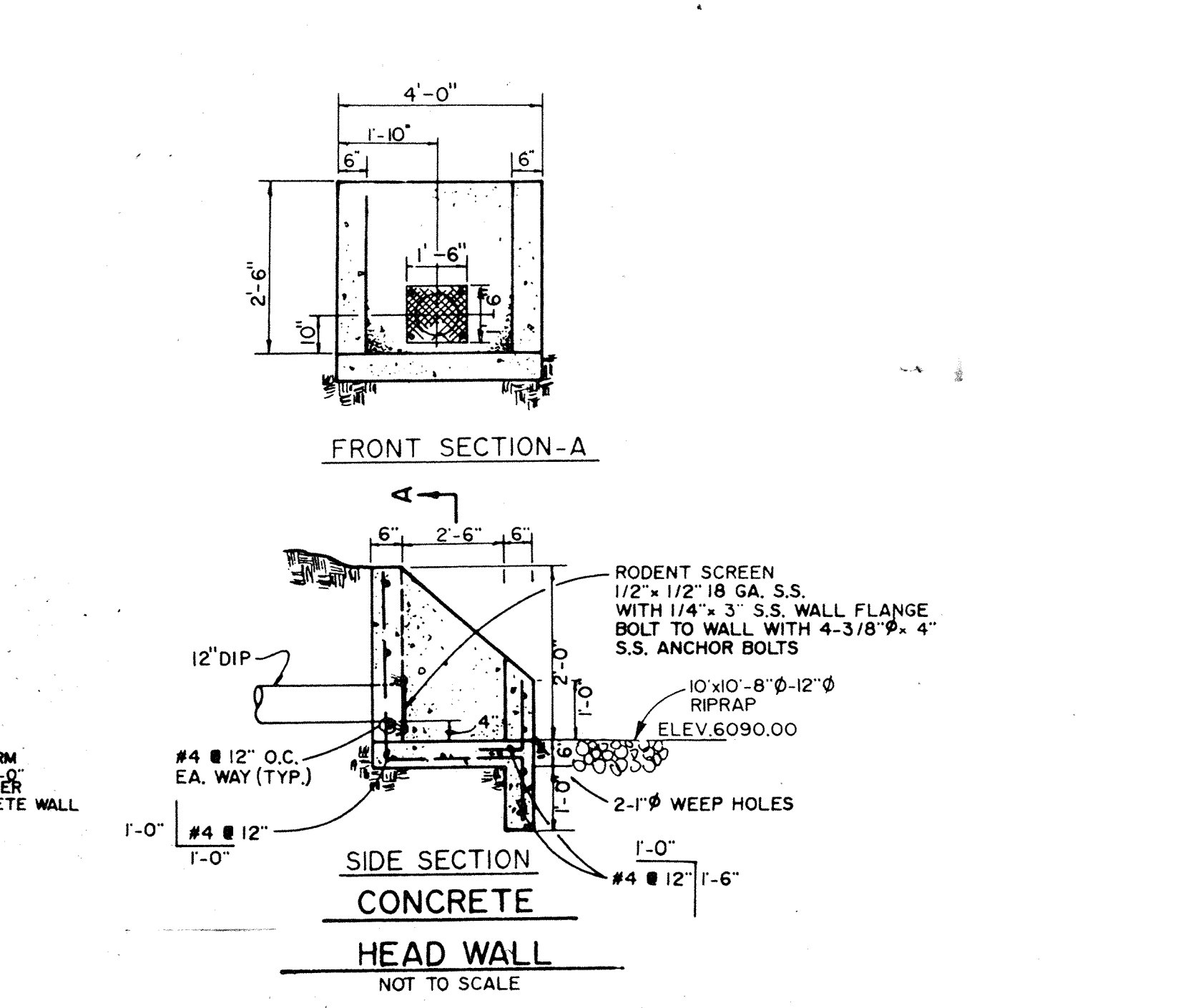
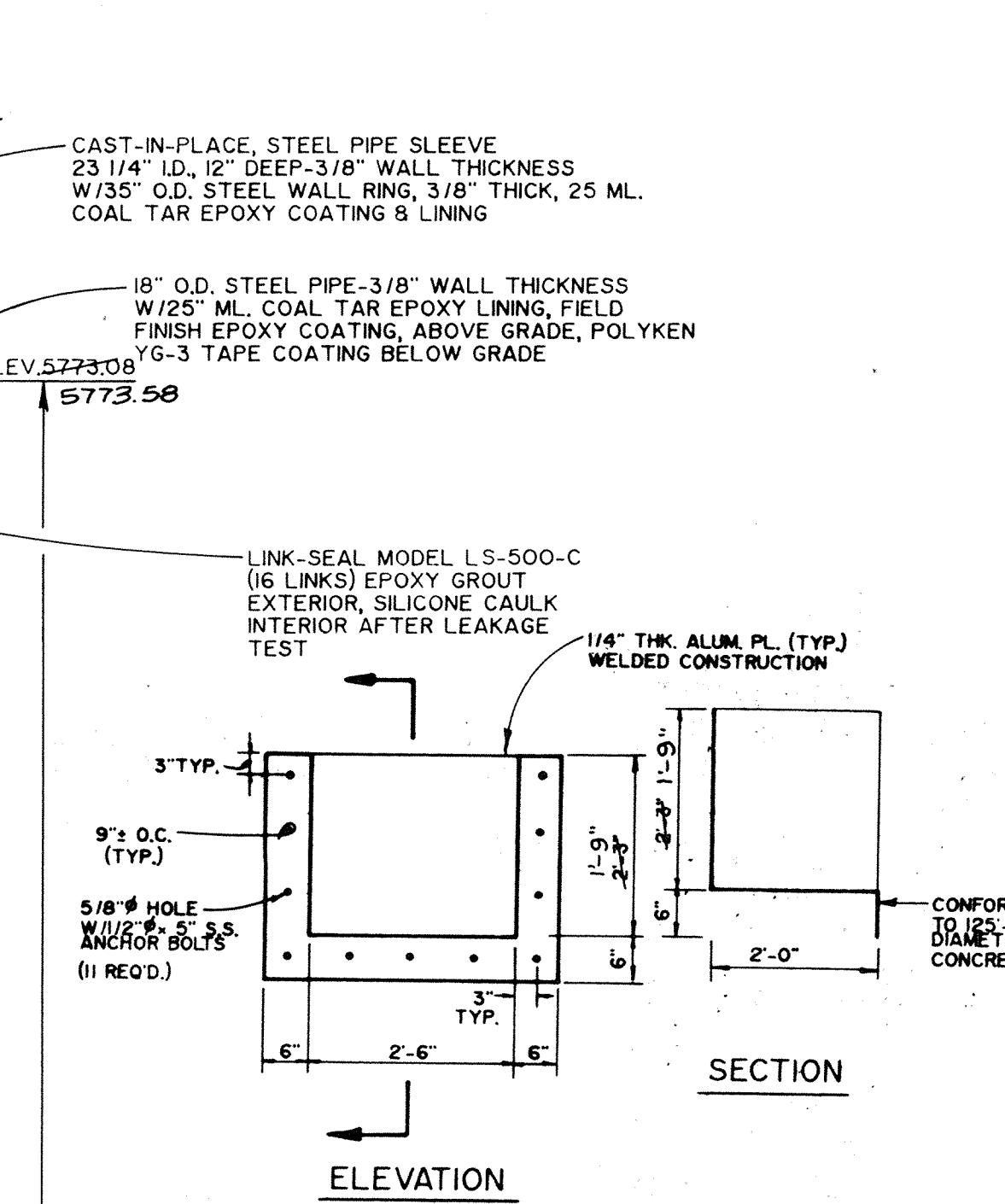
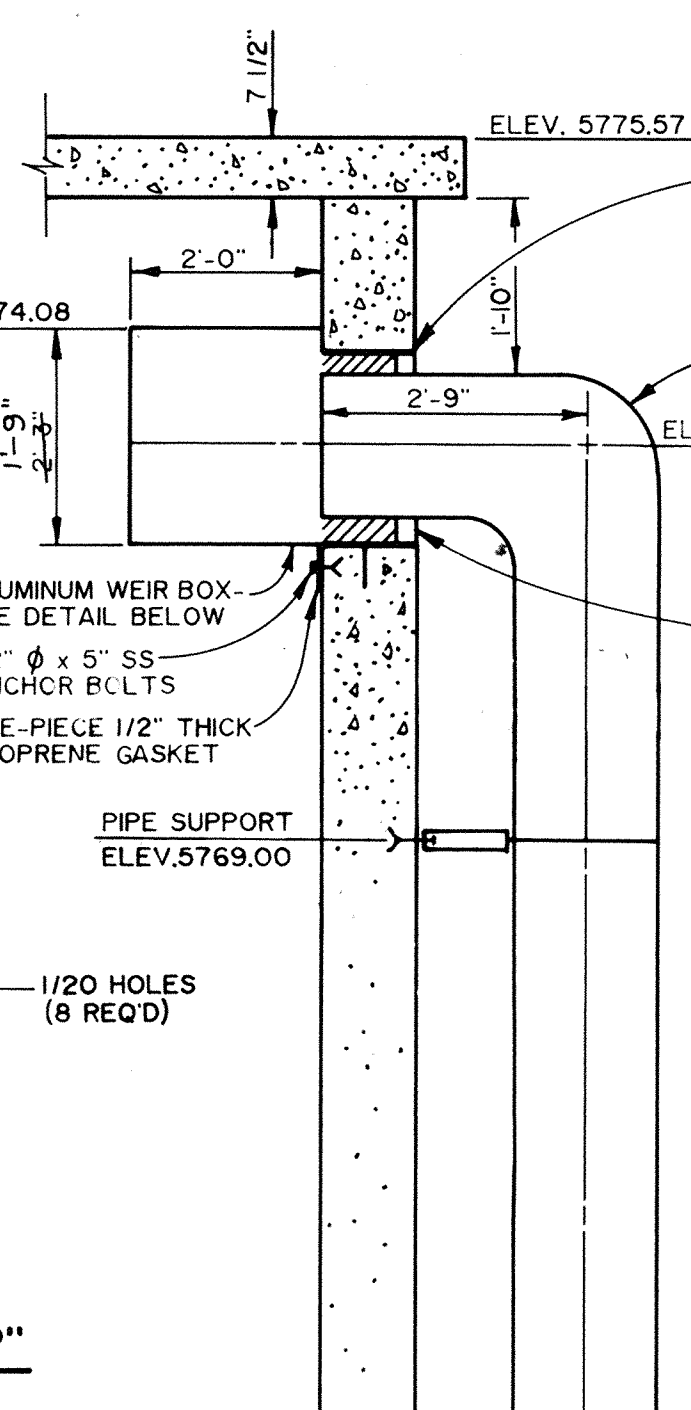
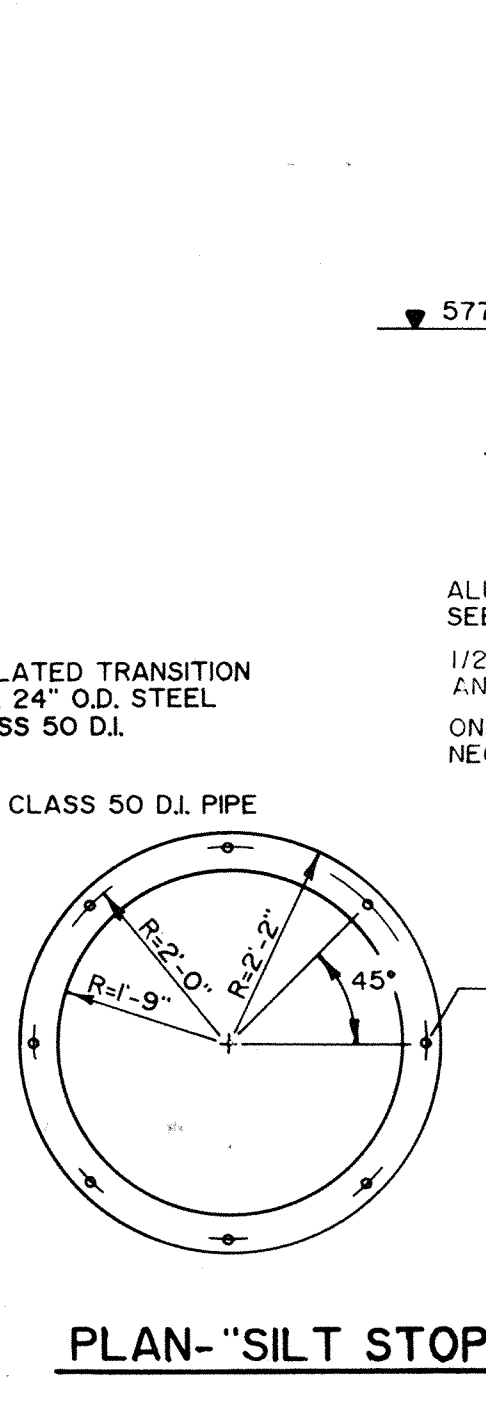
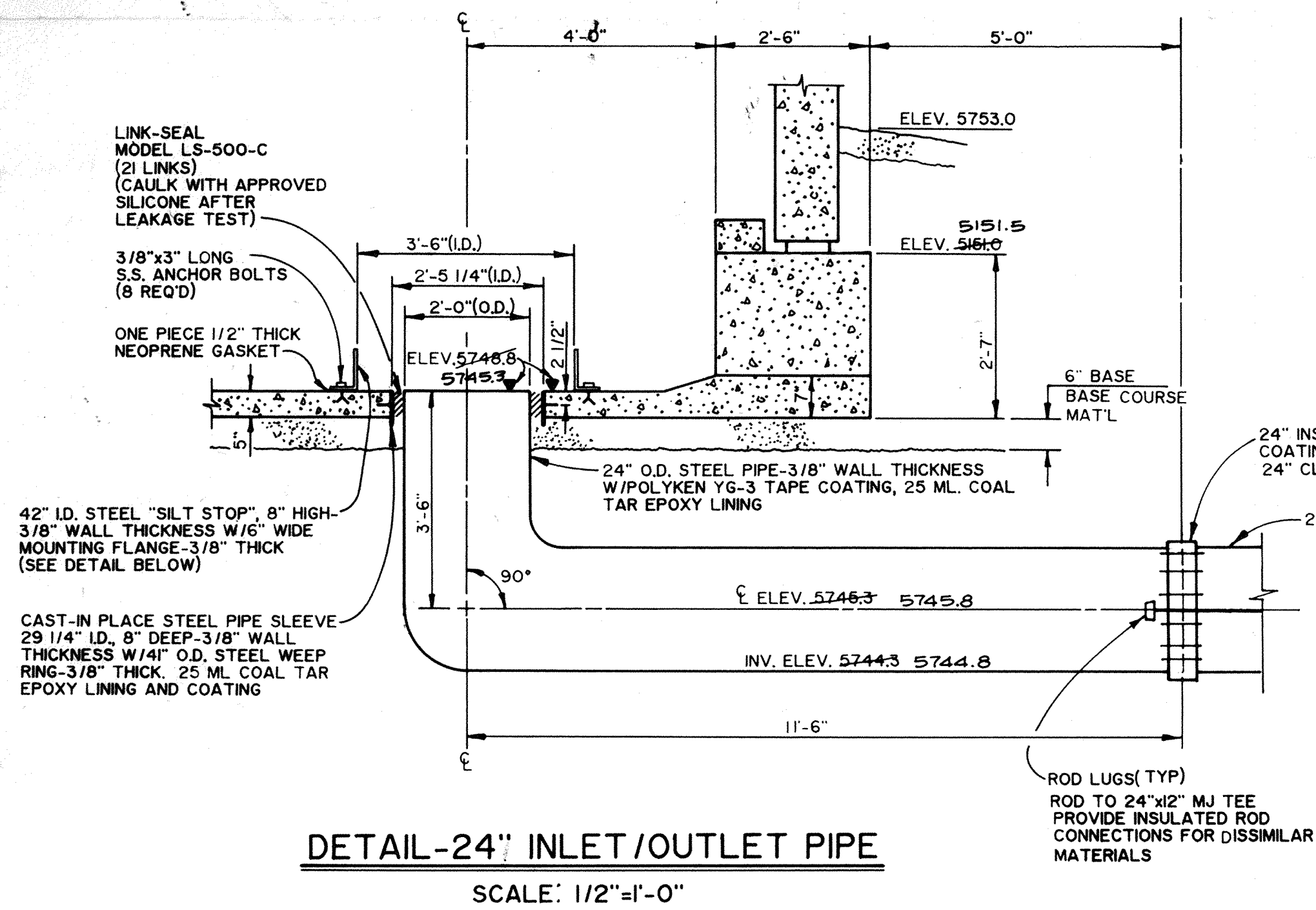
THE DESIGN IS BASED ON A CURVATURE
COEFFICIENT, μ , EQUAL TO 0.22 AND
A WOBBLE COEFFICIENT, K, EQUAL TO
0.0002, AND ANCHOR SET OF 3/8"

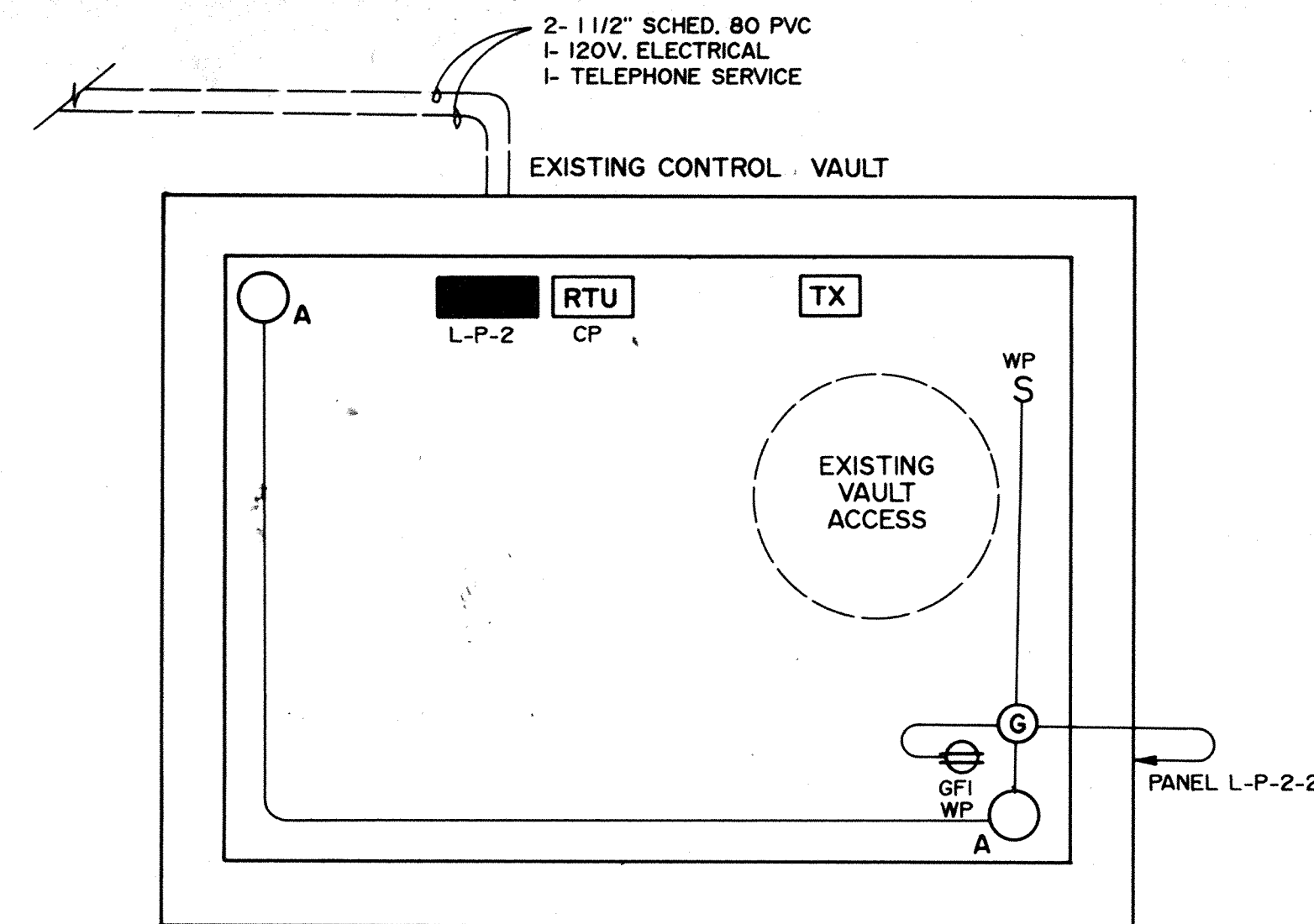
AS BUILT

**ALTERNATE I TO BE
CONSTRUCTED**

NOTE TO THE OWNER:

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ALL CONDUIT GALVANIZED STEEL RIGID. ALL WIRE TYPE THW CU. EXCEPT AS NOTED.

Vault Wiring
N.T.S.

ELECTRICAL LEGEND

SWP HUBBELL #1781 HYPALON WEATHERPROOF PRESS SWITCH IN DEEP FD BOX AT VAULT ACCESS.

G CAST GAUX JUNCTION BOX.

H HUBBELL GFI RECEPTACLE WITH CORROSION RESISTANT LIFT LID PERFECT LINE GASKETED COVER LOCKING TYPE, FEED THRU WIRING.

A #VU-100/VXH75A APPLETON INCANDESCENT VAPOR TIGHT FIXTURE - 100-150 WATT SIZE WITH 150 WATT EXTENDED LIFE 130 VOLT LAMPS INTEGRAL CAST OUTLET BOX GASKETED GLASS GLOBE.

8 8"x8"x6" NEMA III R JUNCTION BOX FOR TELEPHONE SYSTEM. CONNECT TO PHONE SYSTEM 1 1/2" CONDUIT. ROUTE 3/4" PVC SCHEDULE 80 TO RTU CONTROL BOX "CP". ENTER BOX VIA SEAL RING AND SEALING LOCKNUT ON PVC MALE ADAPTER. INSTALL PULL WIRE FOR PHONE CABLE.

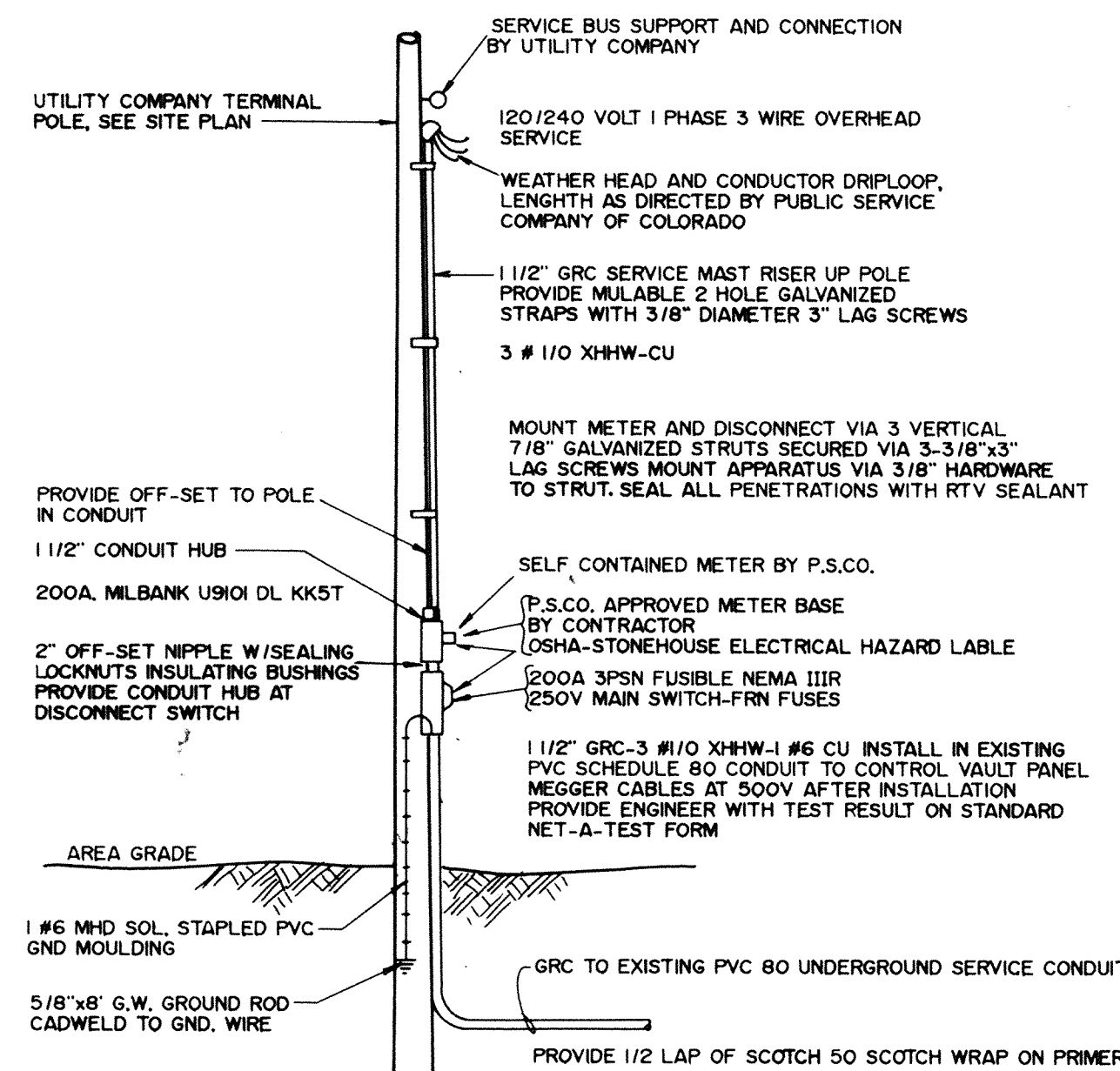
TX SIGNAL TRANSMITTER BY OWNER OBTAIN AND MOUNT WITH 8"x8"x6" NEMA III R JUNCTION BOX. PROVIDE 3 #16 SHIELDED TWISTED PAIR TO RTU VIA 3/4" TEE FITTING AT RTU CABINET. TELEPHONE AND SIGNAL TRANSMITTER CABLE ENTER THE SAME CONDUIT PENETRATION AT RTU GALVANIZED STEEL CONDUIT.

RTU CP RTU UNIT OBTAIN AND MOUNT FROM 7/8" GALVANIZED STRUT WITH 3/8" HARDWARE CONNECT AS DIRECTED BY EQUIPMENT MANUFACTURER.

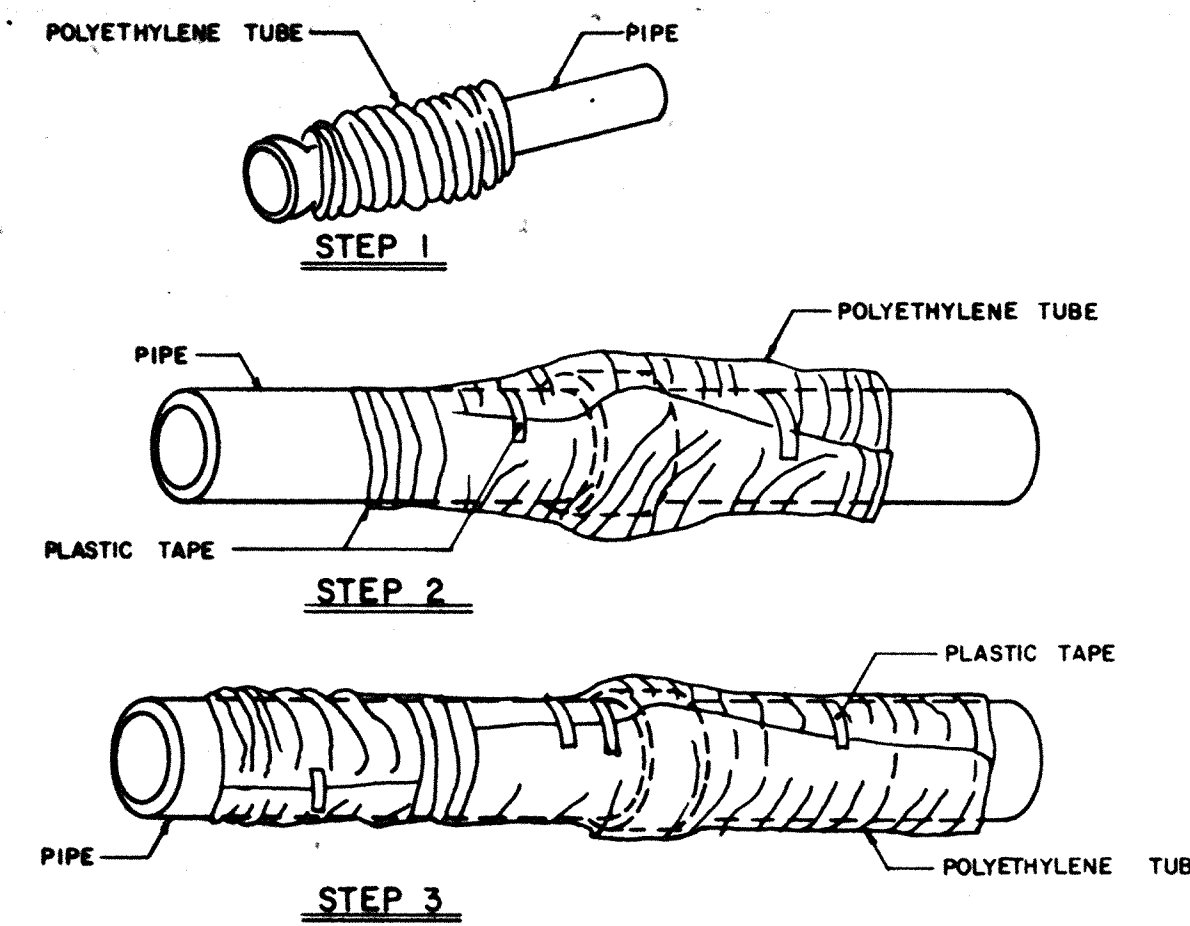
LP-2 120/240V NEMA III R LOAD CENTER 12 POLES WITH 40/3 MAIN CIRCUIT BREAKER, GROUND BUS, 100A BUS 3 - 20/1 BREAKERS CIR. #1 LIGHTING CIR. #3 RECEPTACLE CIR. #5 RTU CIR. 7, 9, 11 SPACE CIR. 2, 4, 6, 8, 10, 12 SPACE LOAD: 1200 WATTS (10 AMPS)

MOUNT VIA 7/8" STRUT WITH 3/8" HARDWARE.

COORDINATE INSTALLATION WITH PUBLIC SERVICE COMPANY OF COLORADO



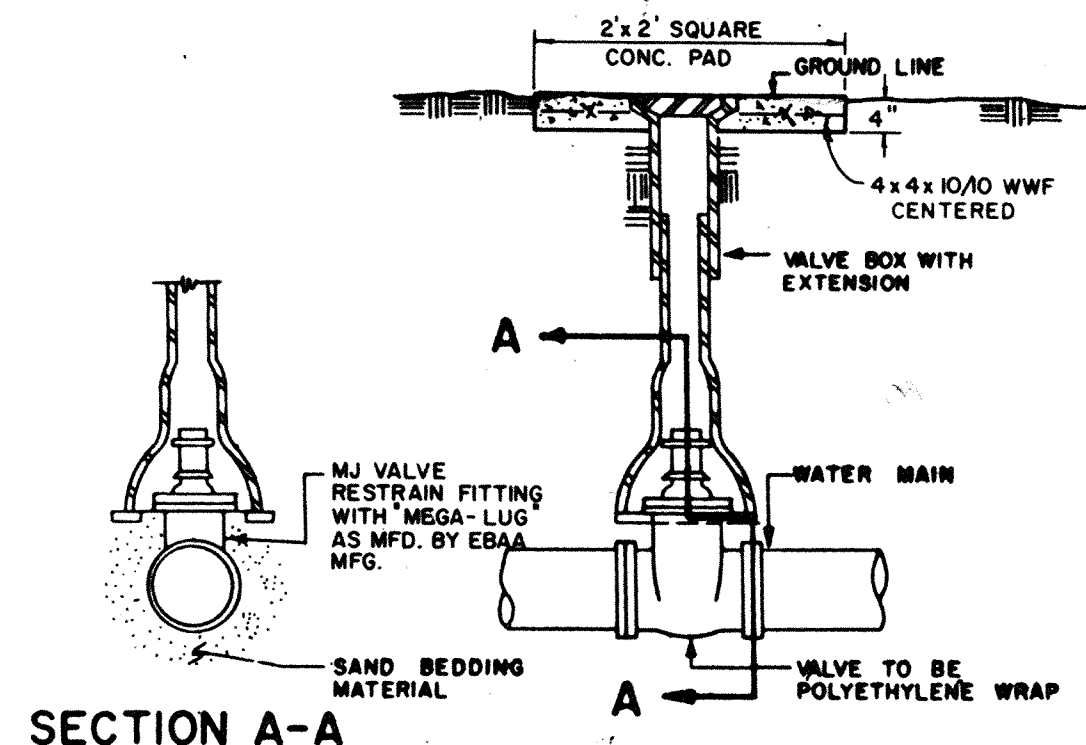
SERVICE ENTRANCE POLE ELEVATION
N.T.S.



FIELD INSTALLATION-POLYETHYLENE WRAP

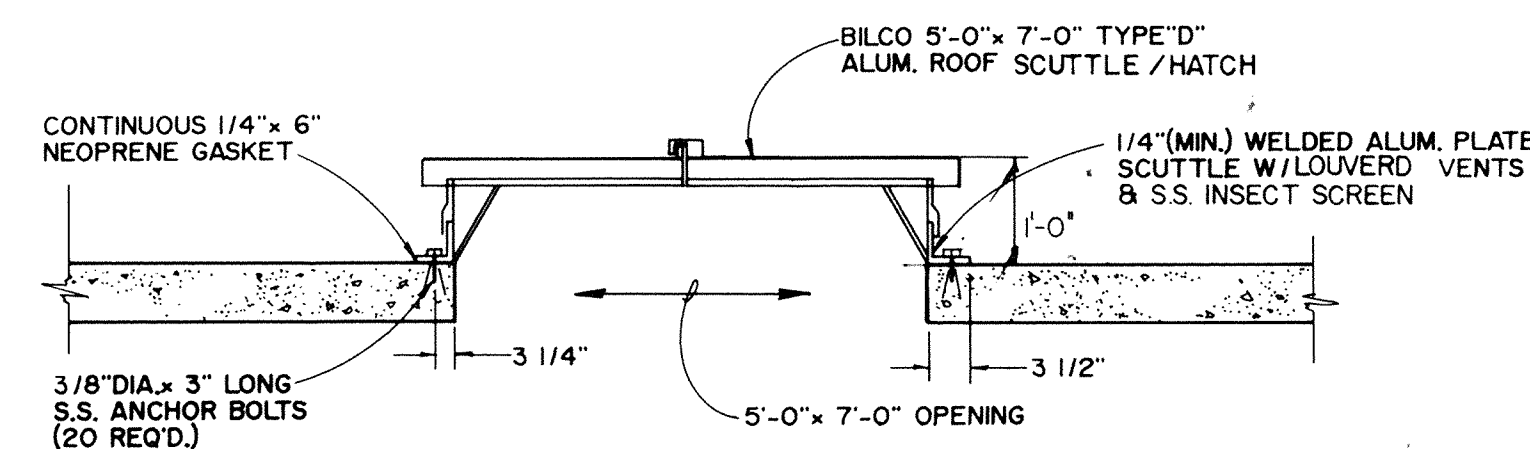
- STEP 1 - PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO TRENCH.
- STEP 2 - PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.
- STEP 3 - OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF PIPE AND TAPED IN PLACE.

DETAIL-POLYETHYLENE WRAP FOR D.I. PIPE



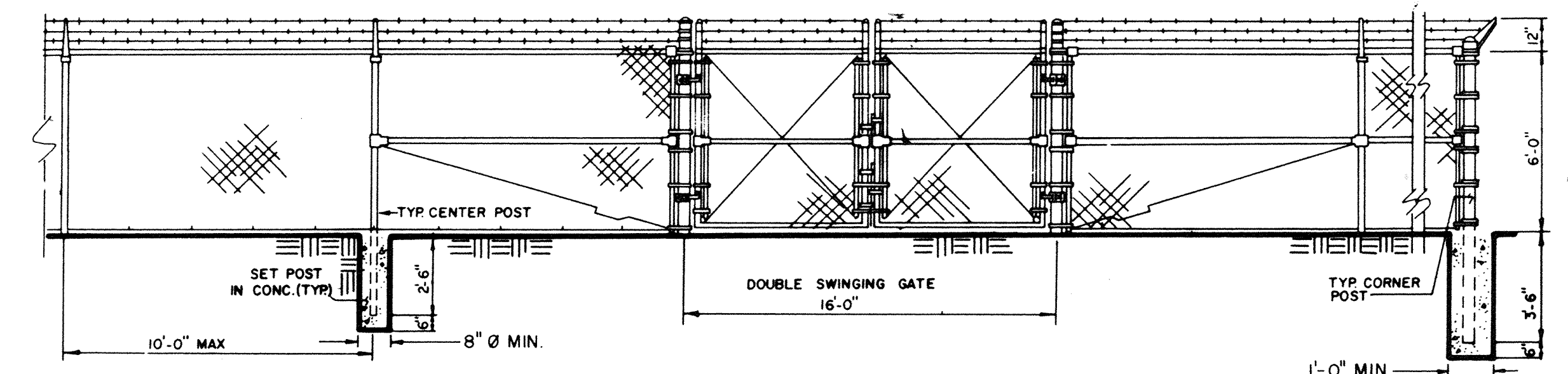
SECTION A-A

DETAIL- BURIED VALVE AND BOX
N.T.S.

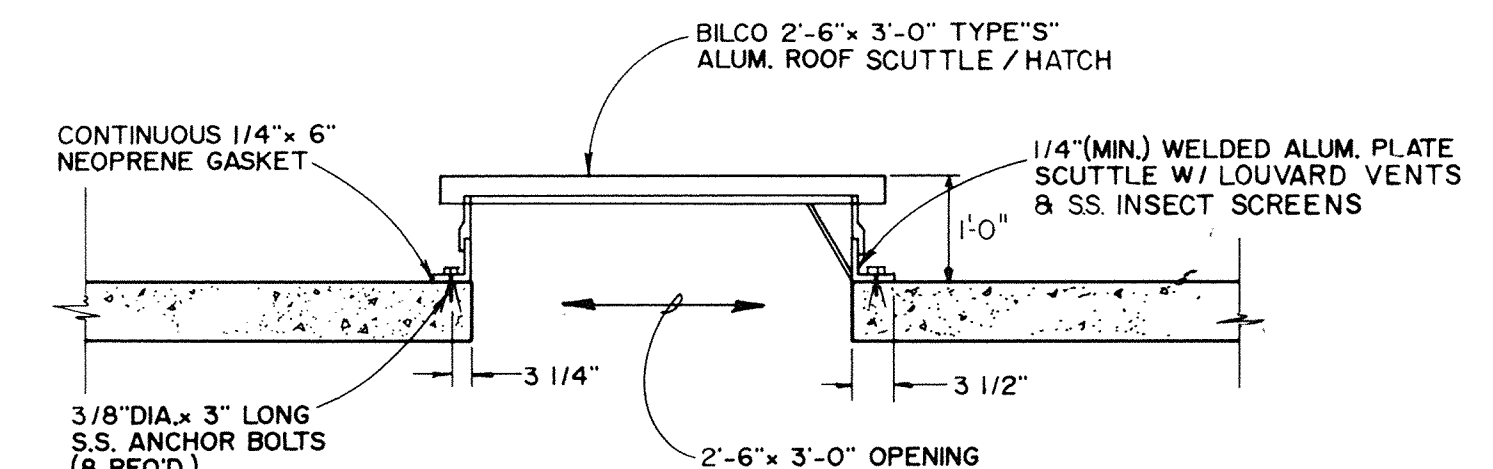


ROOF MOUNT EQUIPMENT ACCESS HATCH DETAIL
N.T.S.

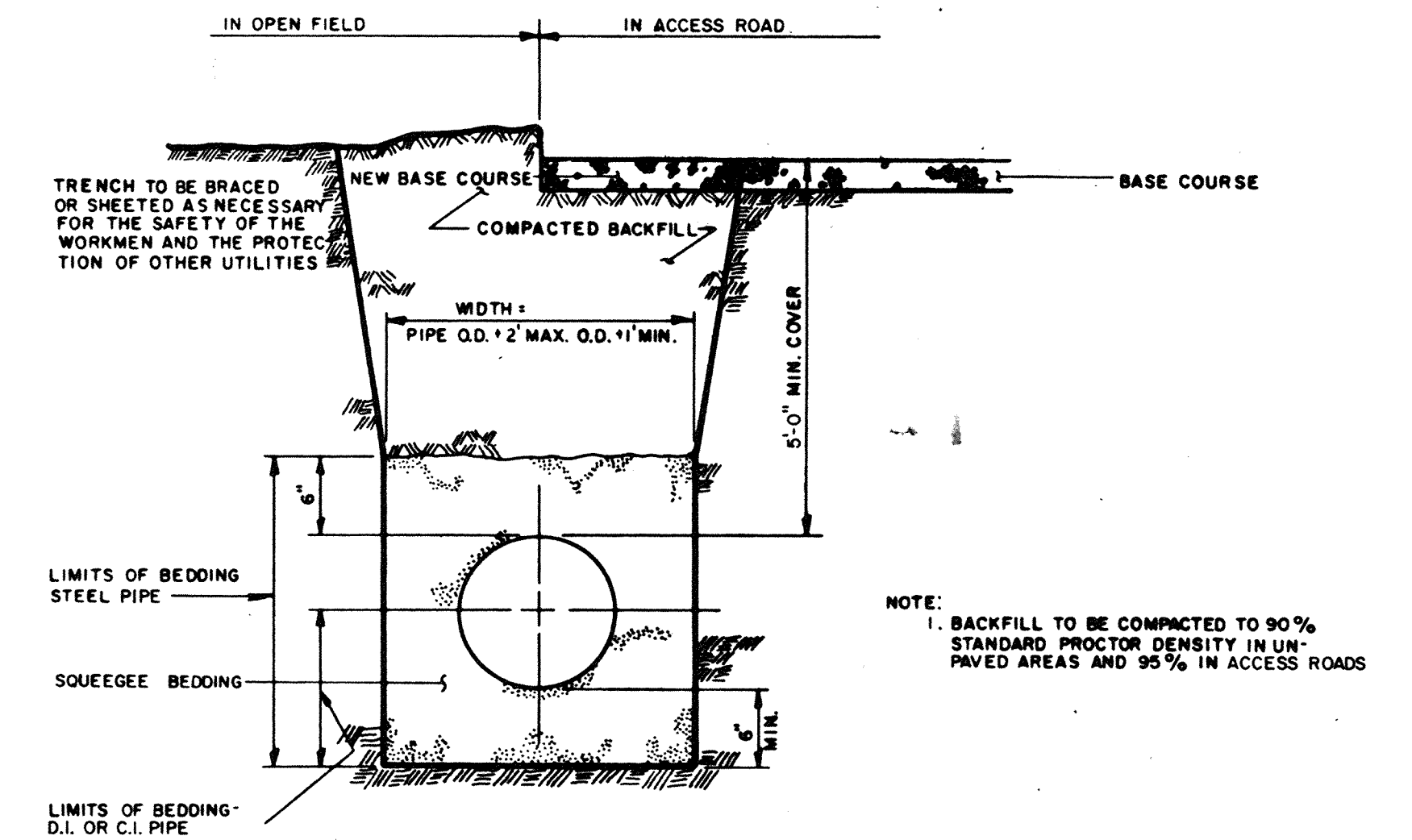
- NOTES:
1. CAULK PERIMETER OF ROOF SCUTTLE / HATCH WITH APPROVED SILICONE CAULK
 2. PROVIDE SECURITY TYPE (COVERED) PAD LOCK HASP.



FENCE DETAIL
SCALE: 1/4" = 1'



ROOF MOUNT ACCESS HATCH DETAIL
N.T.S.



TYPICAL TRENCH SECTION
N.T.S.

AS BUILT

NOTE TO THE OWNER:

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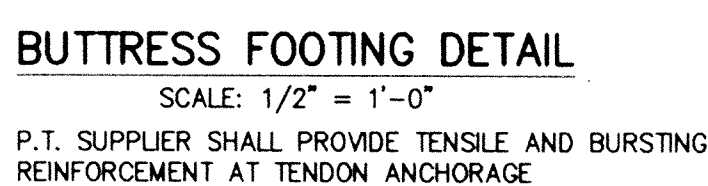
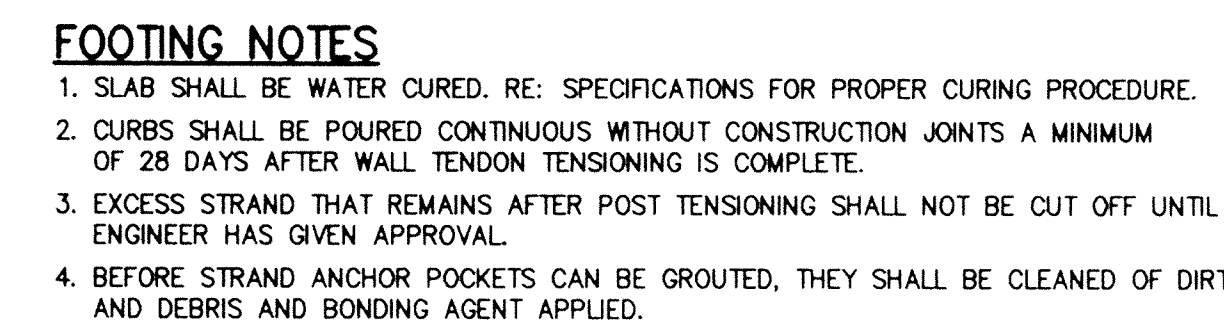
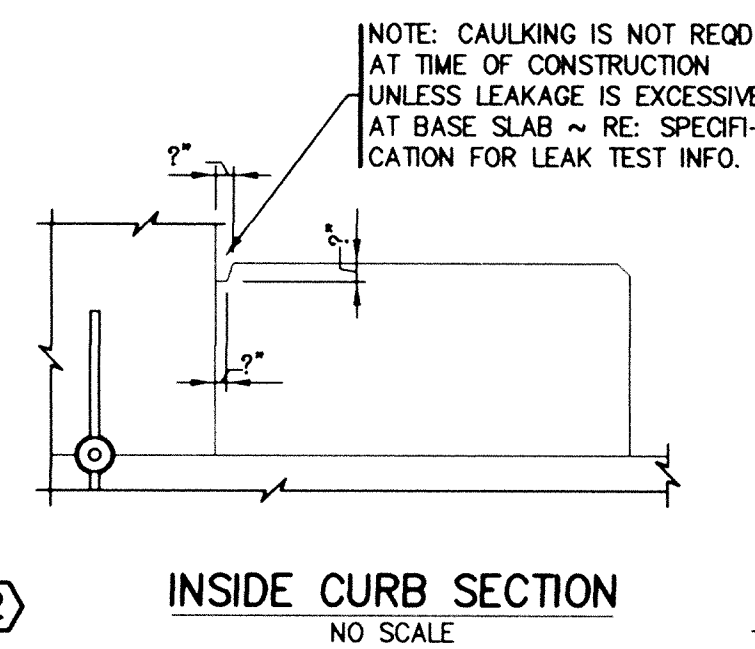
Rocky Mountain Consultants
8301 EAST PRENTICE AVENUE, SUITE 101
ENGLEWOOD, COLORADO 80111
(303) 741-6000

RMC

NO.	DESCRIPTION	DATE BY
1	AS-BUILT	12-22-98 MCK

CITY OF LOUISVILLE
2.0 M.G. HIGHZONE POTABLE WATER STORAGE TANK
MISCELLANEOUS DETAILS

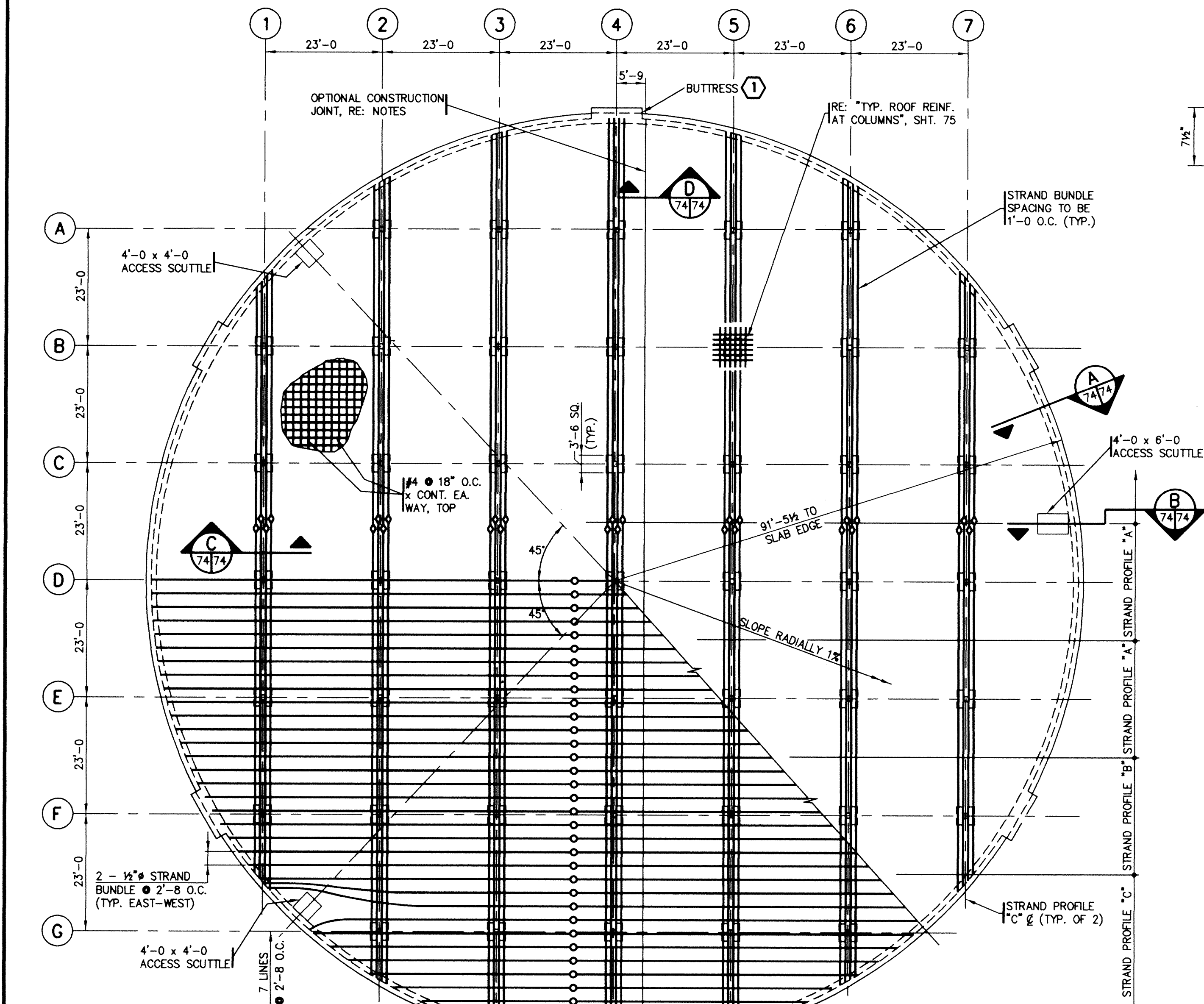
DATE: 8-87
DESIGNED BY: MCK
DRAWN BY: MCK
CHECKED BY: MCK
JOB NO. 7-0058.022.00
SHEET 13 OF 13



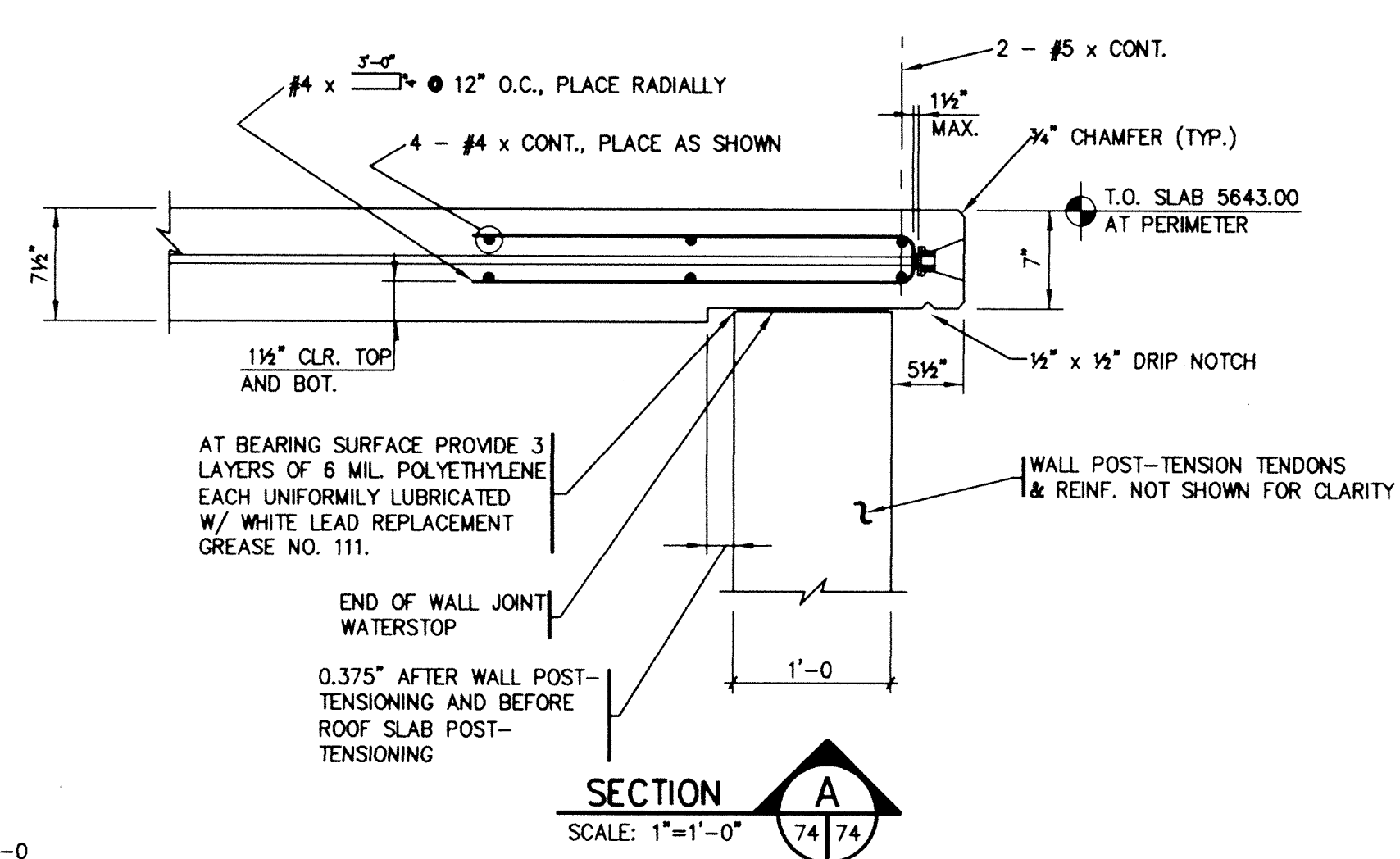
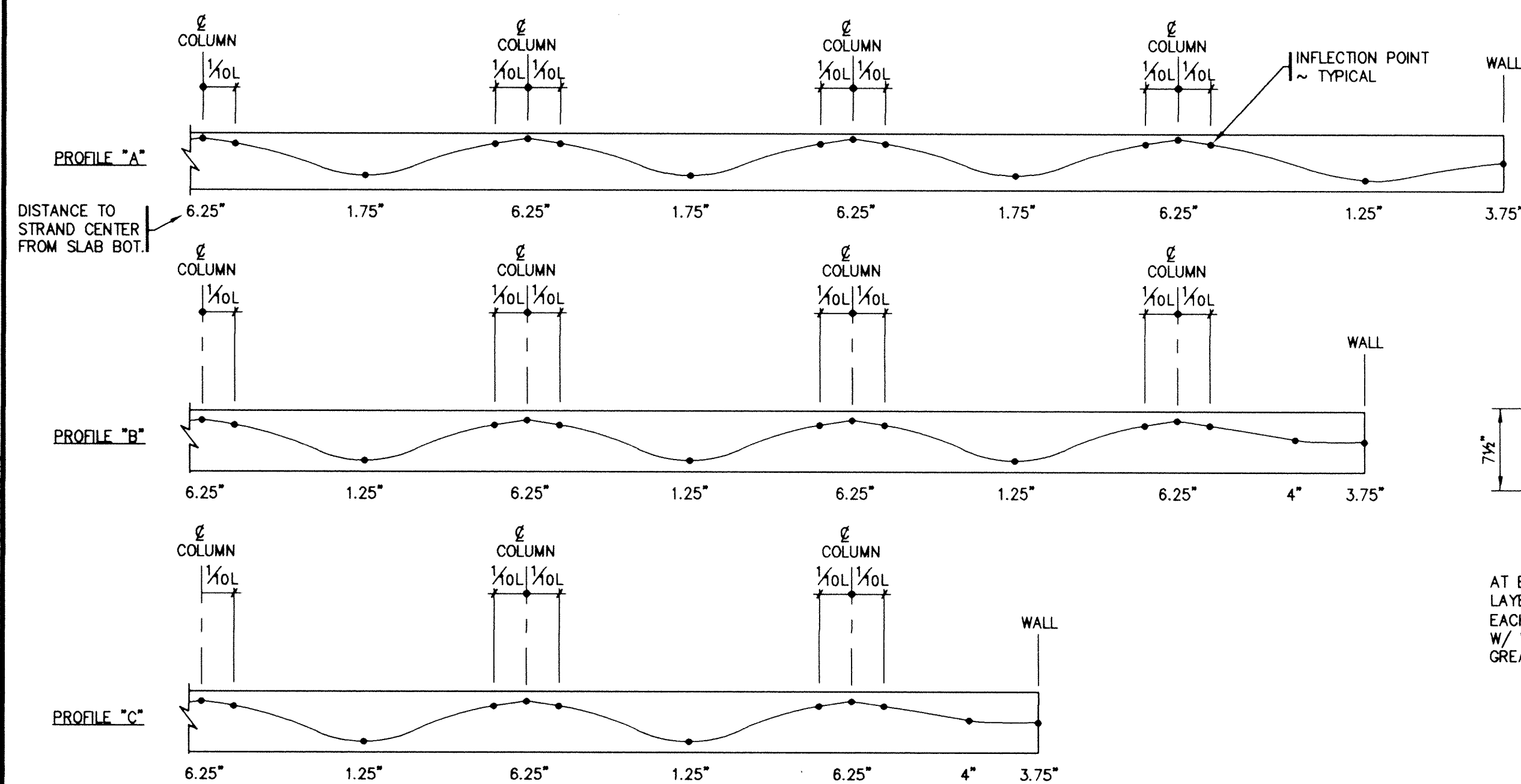
GRADE SLAB NOTES

1. TANK BASE SLAB SHALL BE KEPT WET THROUGHOUT THE CONSTRUCTION OF THE TANK UNTIL PLACED INTO PERMANENT SERVICE. REFER TO THE SPECS. FOR DETAILS.
2. TANK BASE SLAB SHALL BE POST-TENSIONED TO 50% OF FINAL PRESTRESSING WHEN FIELD CURED TEST CYLINDERS SHOW THE CONCRETE STRENGTH TO BE AT LEAST 1500 psi.
3. TANK BASE SLAB SHALL BE POST-TENSIONED TO 100% OF FINAL PRESTRESSING WHEN FIELD CURED TEST CYLINDERS SHOW THE CONCRETE STRENGTH TO BE AT LEAST 3000 psi.
4. WALL FORMWORK, FOOTINGS, AND OTHER CONSTRUCTION-RELATED LOADS SHALL NOT BE PLACED ON THE TANK BASE SLAB UNTIL THE FINAL 100% STRESSING OPERATION IS COMPLETE.
5. MEMBRANE CURING COMPOUND USED ON ALL SURFACES IN CONTACT WITH WATER SHALL BE APPROVED FOR POTABLE WATER USE. USE EUCLID CHEMICAL COMPANY PLOCURE OR APPROVED EQUIVALENT.
6. SUBGRADE SHALL BE MOIST BEFORE AND DURING CONCRETE SLAB PLACEMENT.
7. ALL GRADE SLAB REINF. TO BE PLACED WITHIN MIDDLE 1" OF SLAB THICKNESS.
8. ALL FLOOR SLAB TENDONS SHALL BE PULLED FROM BOTH ENDS.
9. CRACKS OBSERVED BEFORE POST-TENSIONING SHALL BE COMPLETELY COVERED WITH DUCT TAPE TO PREVENT THE INTRUSION OF ANY MATERIAL.
10. SLAB DESIGN IS BASED ON $k = 0.0014$, $U = 0.05$, AN ANCHOR SET OF "?" AND LONG TERM LOSSES OF 25,000 PSI.
11. TANK BASE SHALL BE ONE CONTINUOUS POUR WITHOUT CONSTRUCTION JOINTS. POUR SHALL TAKE PLACE BETWEEN THE HOURS OF 5:00 P.M. AND 10:00 A.M.
12. FLOOR SLAB SHALL BE STRESSED FIRST; THE FOOTING SECOND.
13. POST TENSION SUPPLIER SHALL SUBMIT ON SHOP DRAWINGS SPECIFIED FORCES AND ELONGATIONS.
14. POST TENSION SUPPLIER SHALL SUBMIT STRESSING RECORDS FOR REVIEW BY ENGINEER.
15. MINIMUM HORIZONTAL CLEARANCE FOR P.T. STRANDS AT OPENINGS SHALL BE 6".
16. THE 100% OF THE TENDON/TENDON AND TENDON/REINFORCEMENT INTERSECTIONS.
17. UNBONDED TENDON SYSTEM SHALL BE A TOTALLY ENCAPSULATED SYSTEM. STRAND SHALL BE ENCASED IN 40 MIL EXTRUDED PLASTIC JACKET, VSL CP+ OR APPROVED EQUIVALENT.
18. DESIGN BASED ON $f_c = 4000$ PSI, $f_{pu} = 270,000$ PSI
ASTM A416 0.5" ϕ LOW RELAXATION STRANDS.

DATE: 04-08-92 CURRENT DRAWING: 1100SH72.DWG

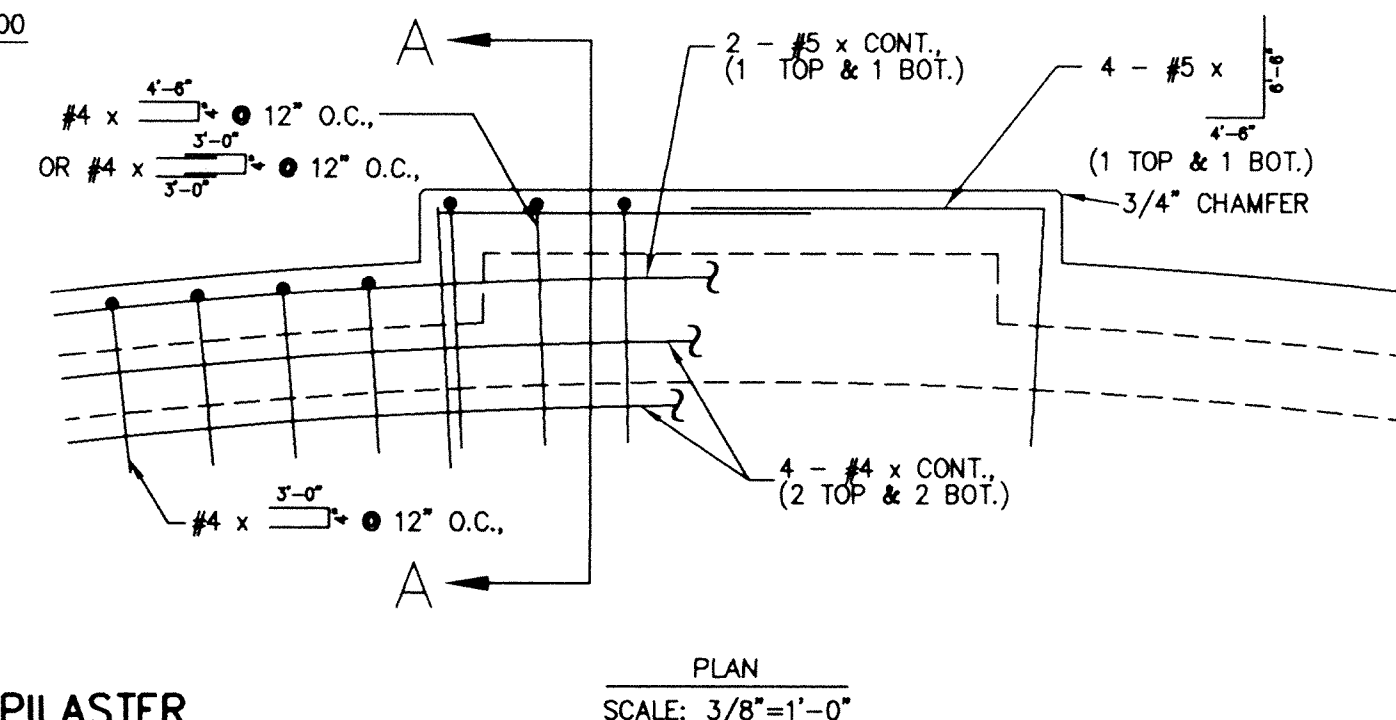
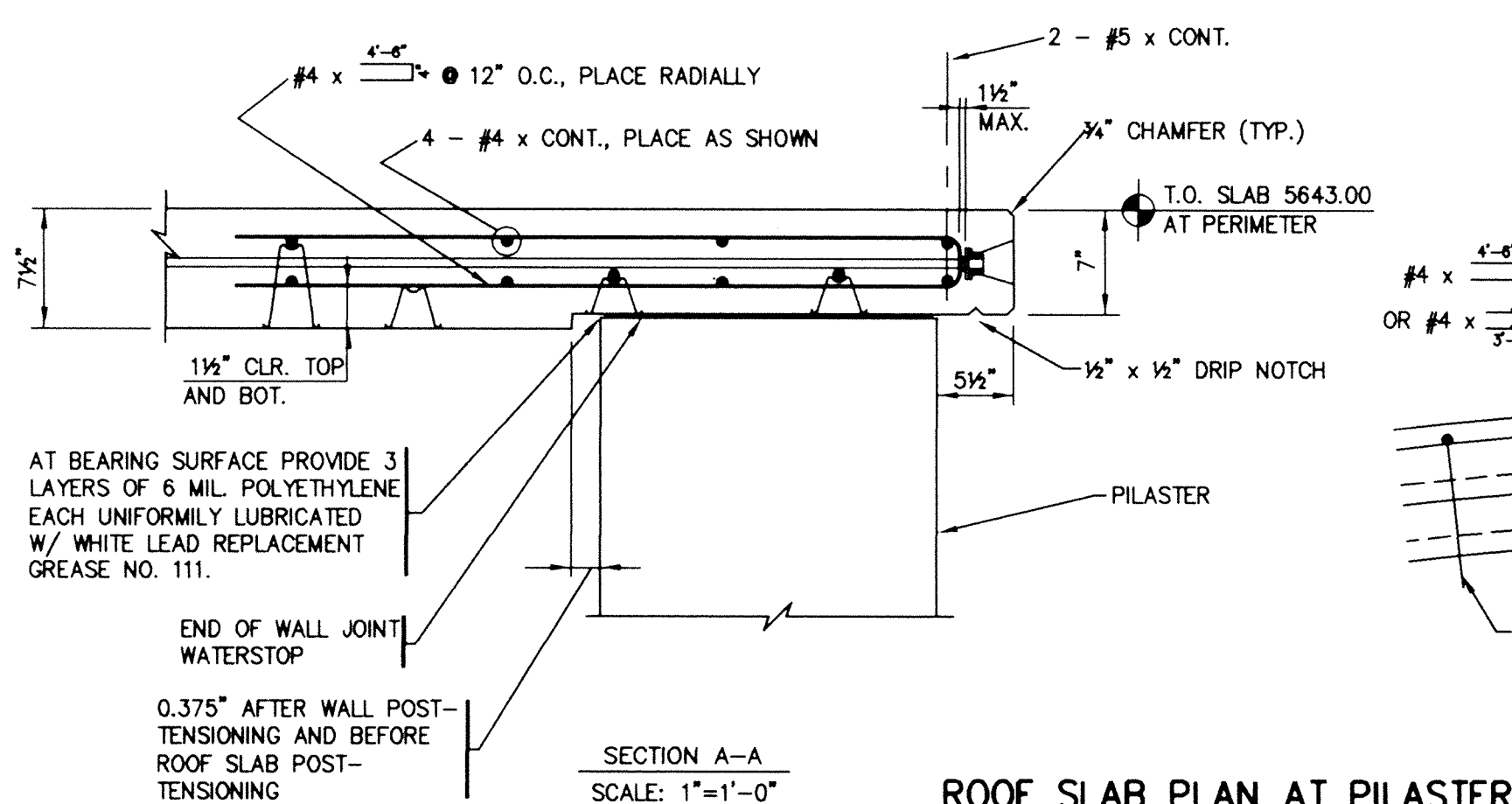
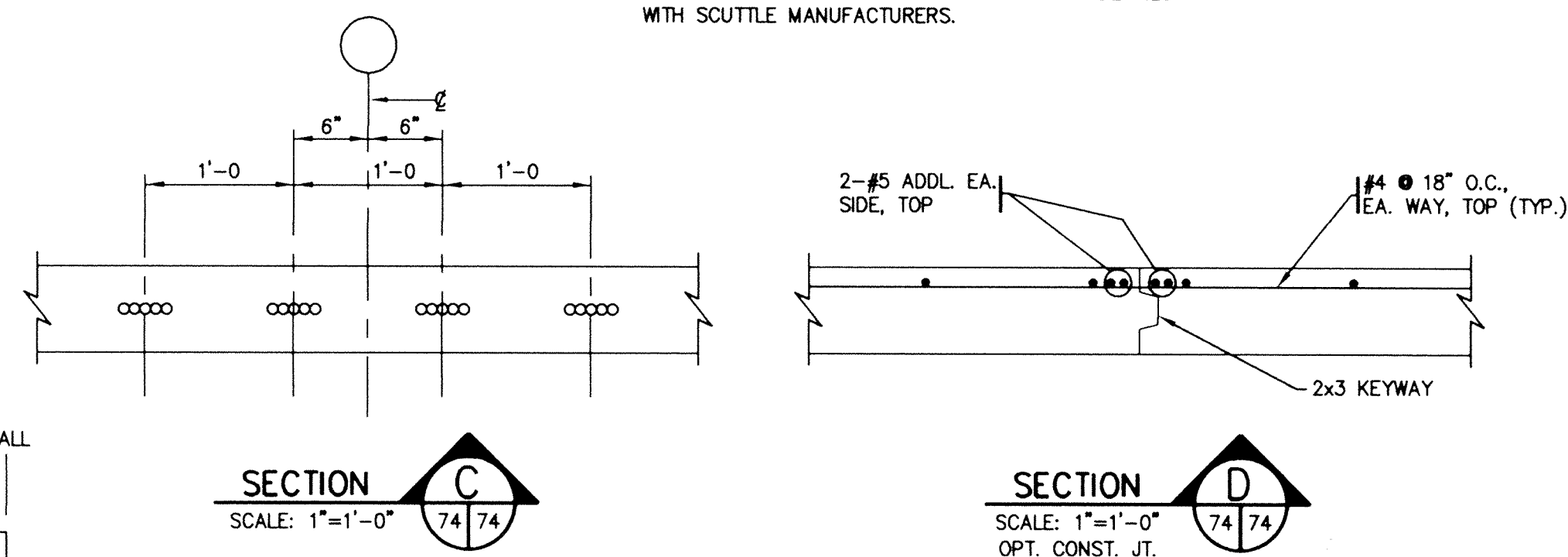
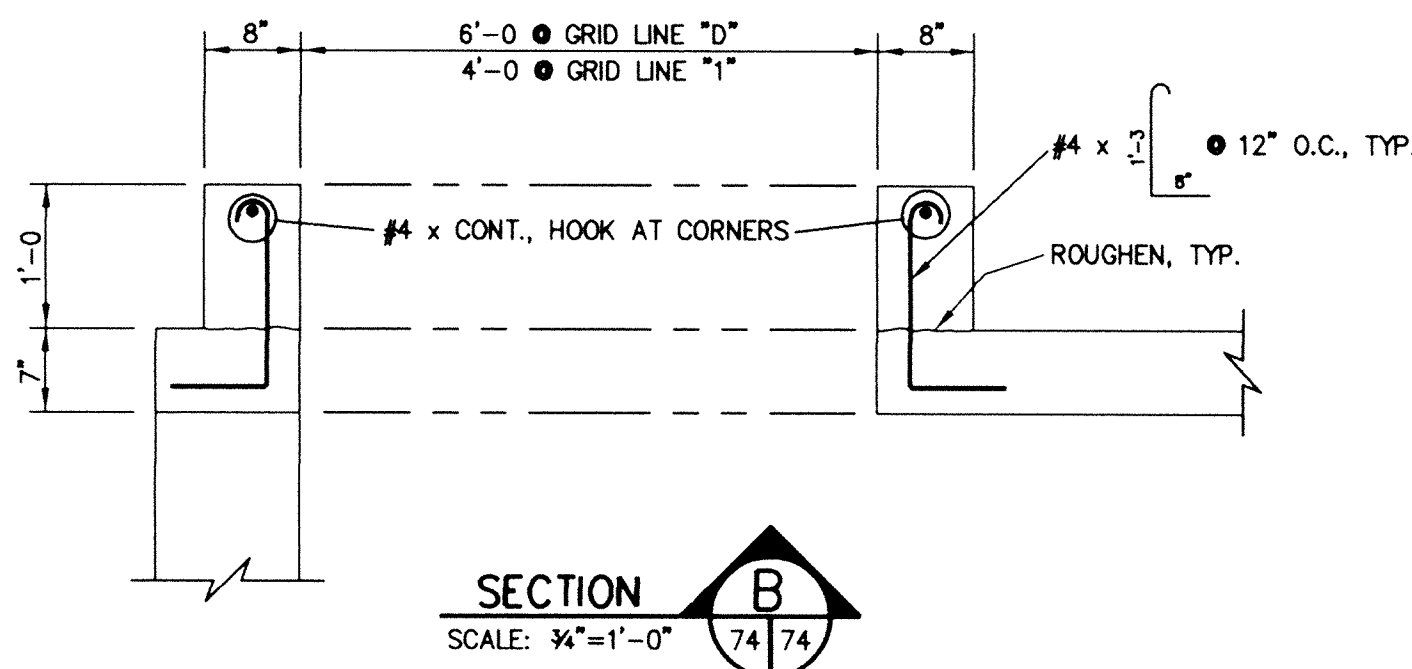


- LEGEND**
- STRESSING END ANCHORAGE
 - DEAD END ANCHORAGE
 - SINGLE STRAND
 - 2 STRAND BUNDLE
 - 4 STRAND BUNDLE
 - 5 STRAND BUNDLE



ROOF SLAB NOTES

1. ROOF SLAB DESIGN BASED ON 60 PSF LIVE LOAD.
2. POST-TENSION DESIGN BASED ON $K = 0.0014$, $U = 0.05$, ANCHOR SET OF 1/4", AND LONG TERM LOSSES OF 25,000 PSI.
3. POST TENSION SUPPLIER SHALL SUBMIT ON SHOP DRAWINGS SPECIFIED FORCES AND ELONGATIONS.
4. POST TENSION SUPPLIER SHALL SUBMIT STRESSING RECORDS FOR REVIEW BY ENGINEER.
5. MINIMUM HORIZONTAL CLEARANCE FOR P.T. STRANDS AT OPENINGS SHALL BE 6".
6. TIE 100% OF THE TENDON AND TENDON/REINFORCEMENT INTERSECTIONS.
7. UNBONDED TENDON SYSTEM SHALL BE A TOTALLY ENCAPSULATED SYSTEM AND STRAND SHALL BE ENCASED IN 40 MIL EXTRUDED PLASTIC JACKET, VSL CP+ OR APPROVED EQUAL.
8. DESIGN BASED ON $f'_c = 4000$ PSI, $f'_ci = 3500$ PSI, $f_{pu} = 270,000$ PSI, ASTM A416 0.5% LOW RELAXATION STRANDS.

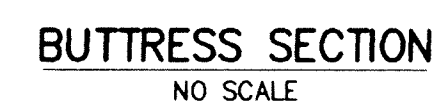
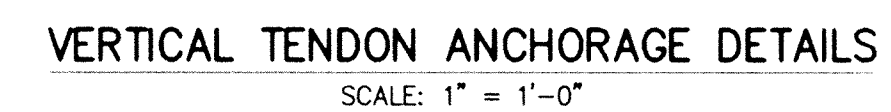
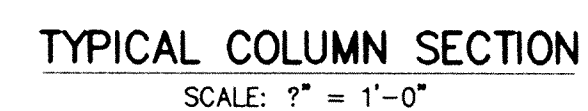
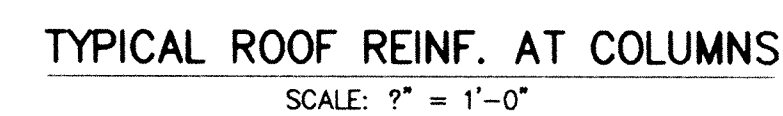


GENERAL NOTES

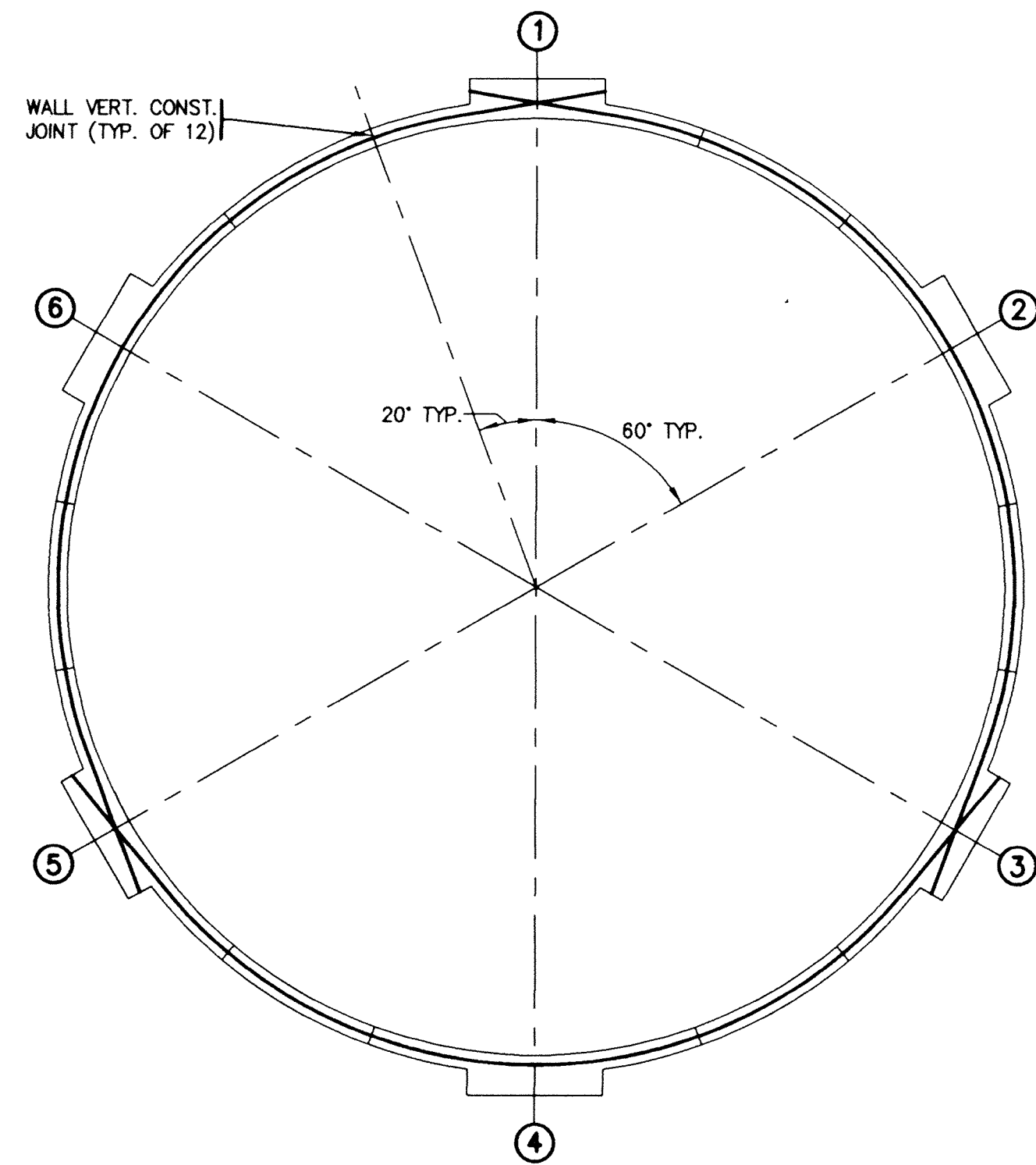
CITY OF LOUISVILLE, COLORADO
SOUTH WATER TREATMENT FACILITY
TREATED WATER STORAGE TANK STRUCTURAL ROOF PLAN

ROCKY MOUNTAIN CONSULTANTS
8301 EAST PRENTICE AVENUE, SUITE 101
ENGLEWOOD, COLORADO 80111
(303) 741-6000

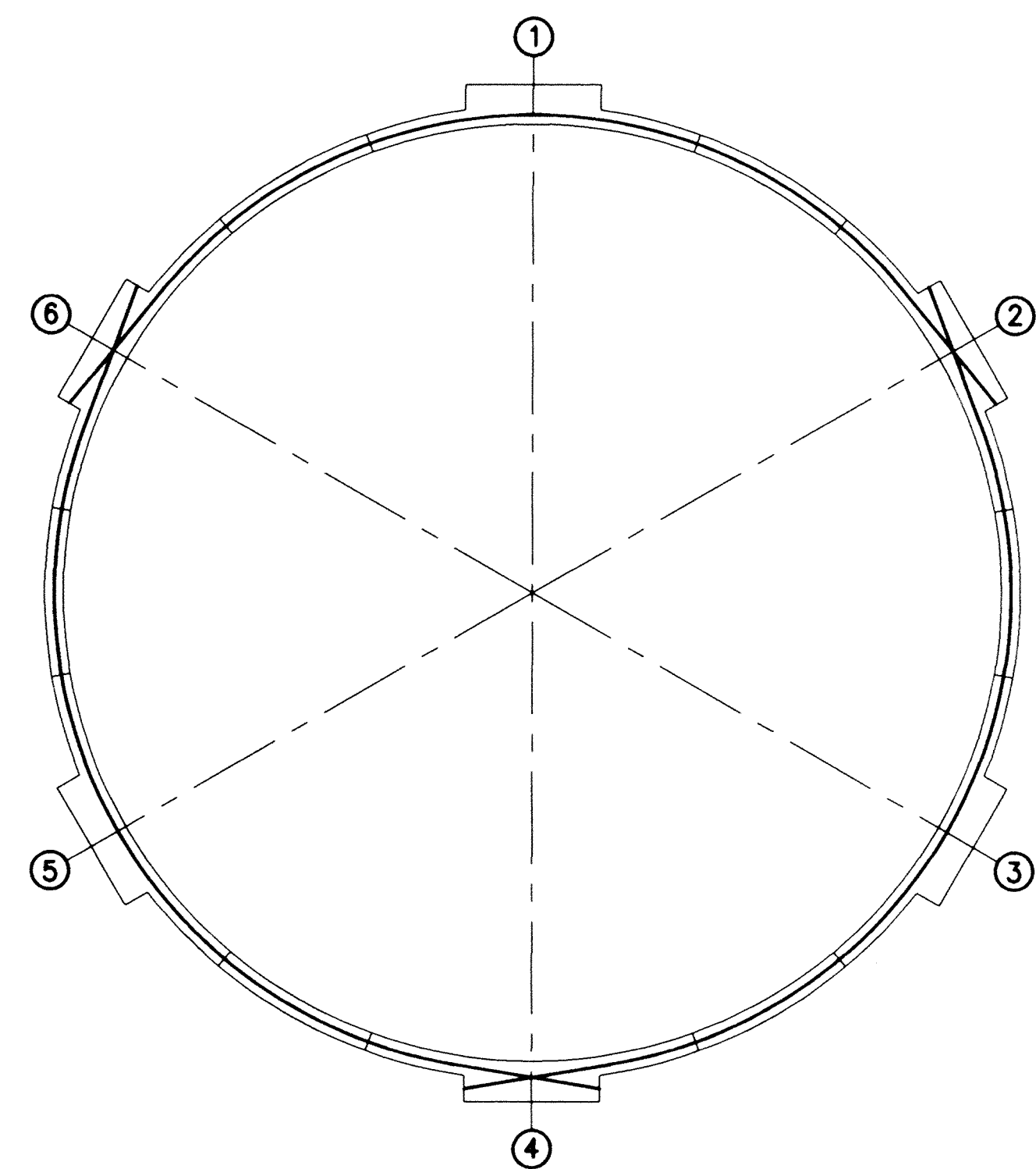
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DESIGNED BY: SWH
DRAWN BY: JSP
CHECKED BY: MLW
JOB NO.
0058.051.05
SHEET
74 OF 103



DATE: 11-23-93 CURRENT DRAWING: L15H248.DWG

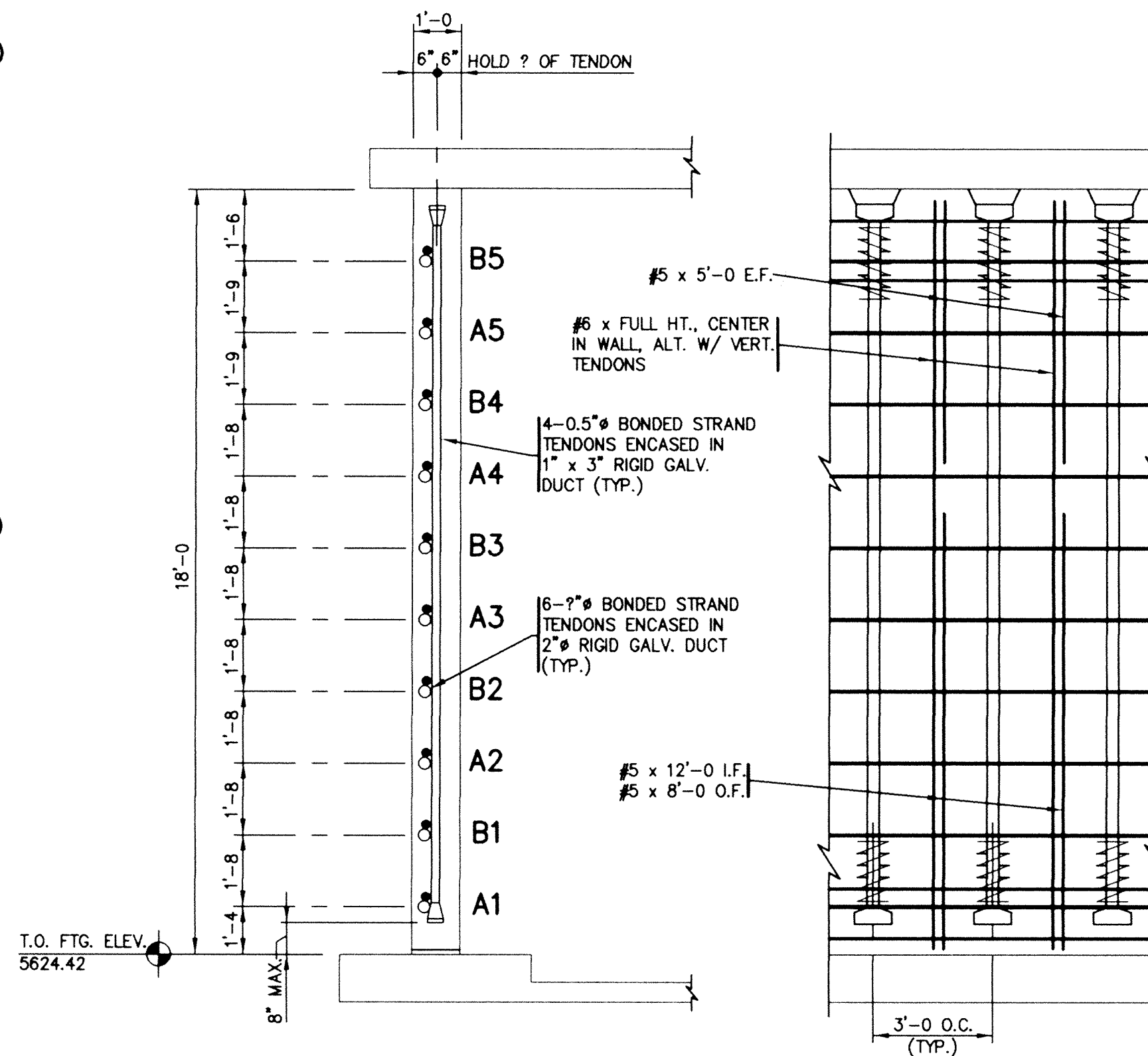


TENDON ANCHORAGE AT ODD NUMBERED BUTTRESSES



TENDON ANCHORAGE AT EVEN NUMBERED BUTTRESSES

BUTTRESS ANCHORAGE PLAN
SCHEMATIC



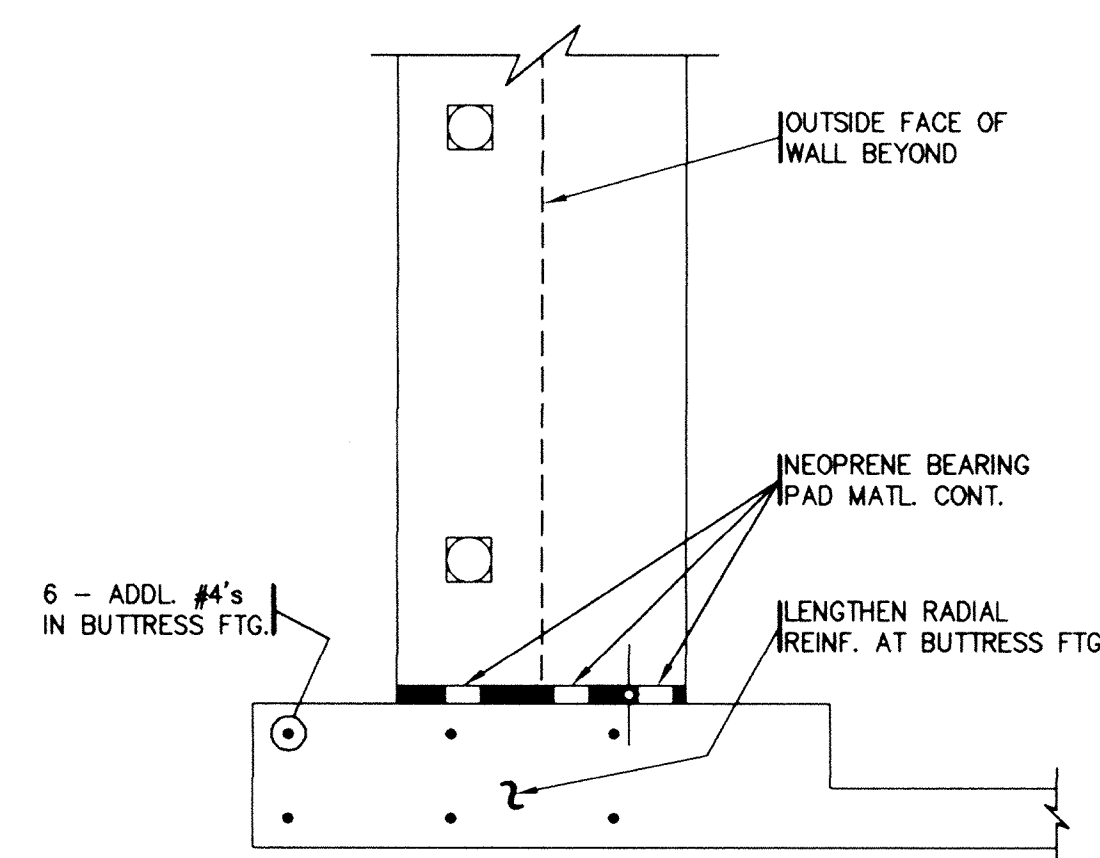
TENDON REINFORCEMENT

WALL ELEVATION

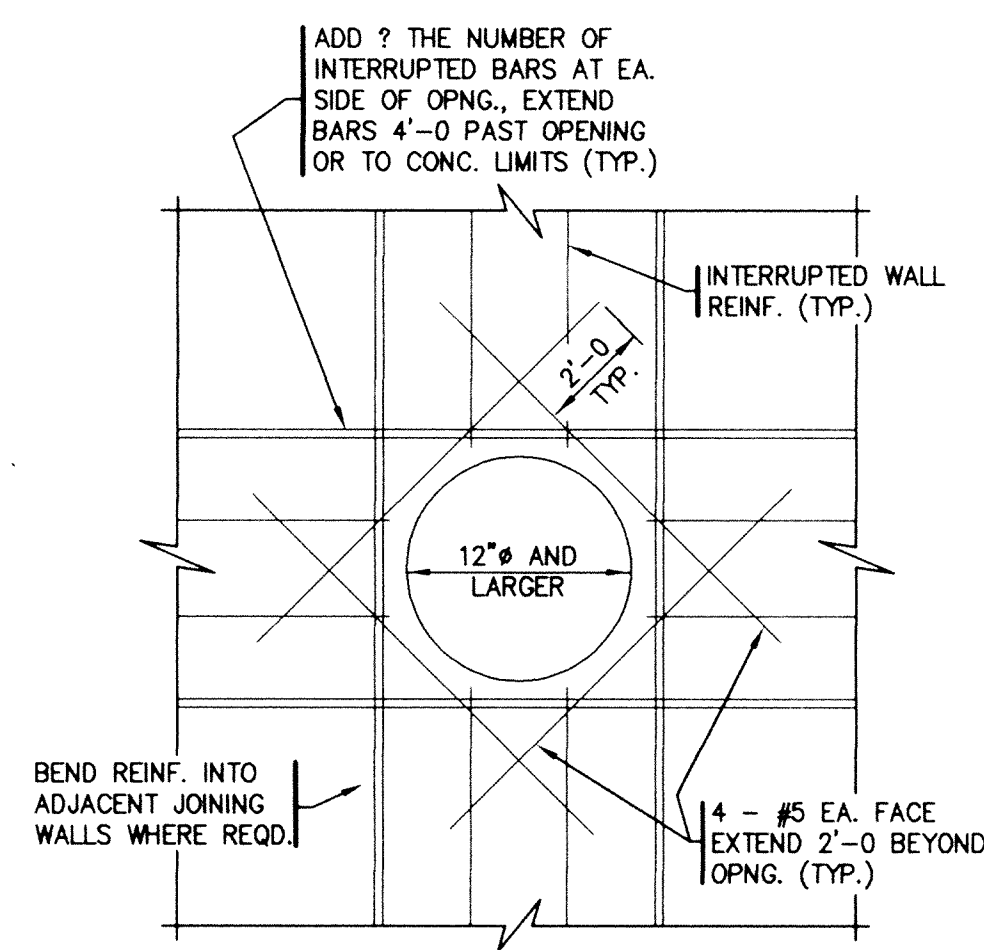
TYPICAL WALL DETAILS
NO SCALE

WALL NOTES

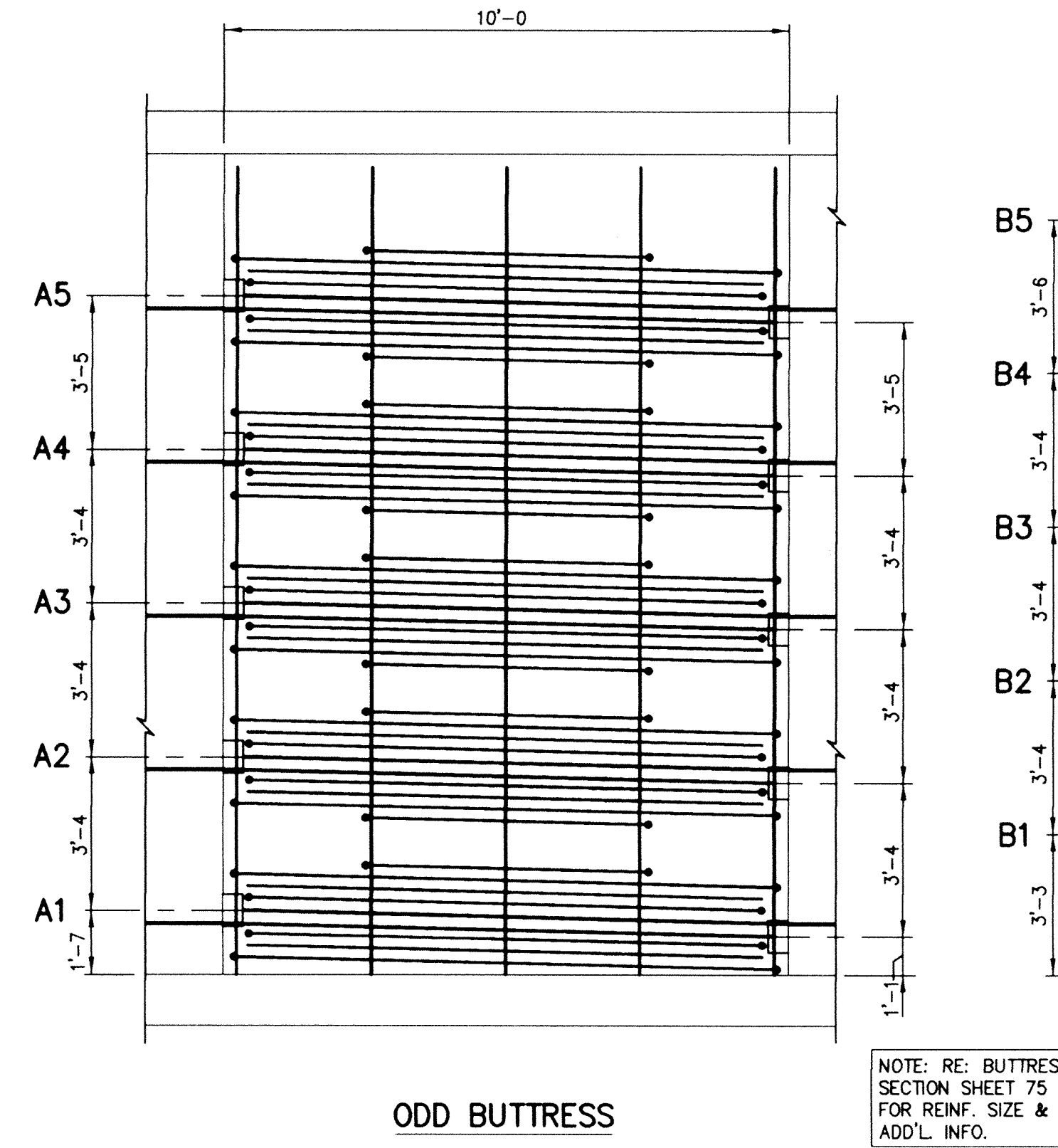
1. HORIZONTAL WALL TENDONS SHALL BE STRESSED FROM BOTH ENDS.
2. POST-TENSION SUPPLIER SHALL SUBMIT STRESSING SEQUENCE FOR APPROVAL BY THE ENGINEER.
3. VERTICAL TENDONS SHALL BE FULLY STRESSED BEFORE STRESSING HORIZONTAL TENDONS.
4. BROKEN HORIZONTAL STRANDS SHALL BE REPLACED.
5. STRESSING SHALL NOT TAKE PLACE BEFORE CONCRETE STRENGTH HAS REACHED 3500 PSI.
6. BONDED TENDON DESIGN BASED ON $K = 0.0002$, $U = 0.25$, ANCHOR SET OF 2" AND LONG TERM LOSSES OF 25,000 PSI.
7. POST TENSION SUPPLIER SHALL SUBMIT ON SHOP DRAWINGS SPECIFIED FORCES AND ELONGATIONS.
8. POST TENSION SUPPLIER SHALL SUBMIT STRESSING RECORDS FOR REVIEW BY ENGINEER.
9. MINIMUM HORIZONTAL CLEARANCE AT OPENINGS FOR P.T. TENDONS SHALL BE 6".
10. DESIGN BASED ON $f'_c = 4000$ PSI, $f_{ci} = 3500$ PSI, $f_{pu} = 270,000$ PSI
ASTM A416: 0.5" LOW RELAXATION STRANDS - HORIZ. & VERT.
11. REBAR SUPPLIER SHALL PROVIDE ALL REBAR.
12. P.T. SUPPLIER SHALL PROVIDE ALL CHAIRS.
13. P.T. SUPPLIER TO INSTALL ALL P.T.



WALL SECTION AT BUTTRESS
SCALE: 3/4" = 1'-0"

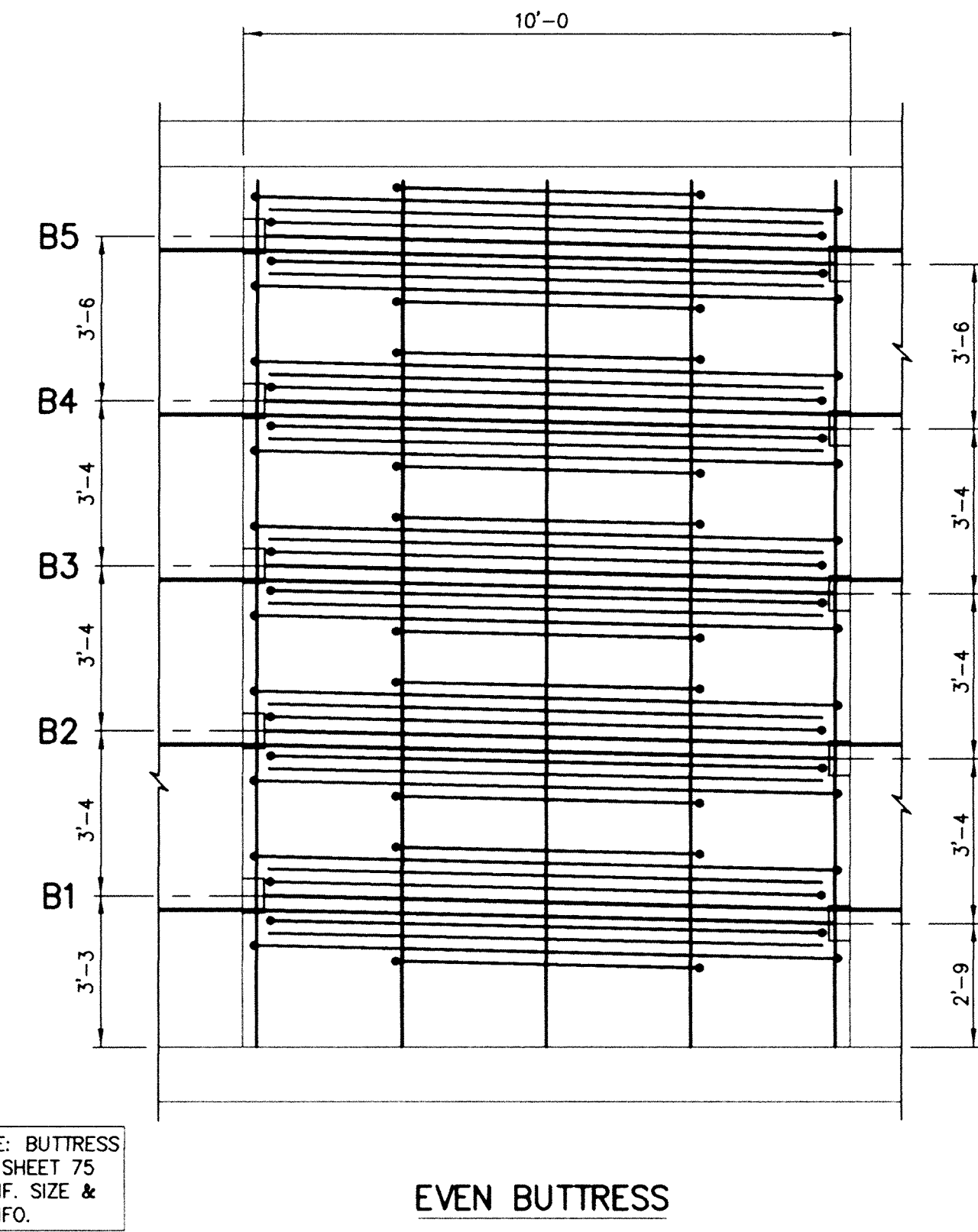


TYPICAL PIPE PENETRATION DETAIL
SCALE: 3/4" = 1'-0"

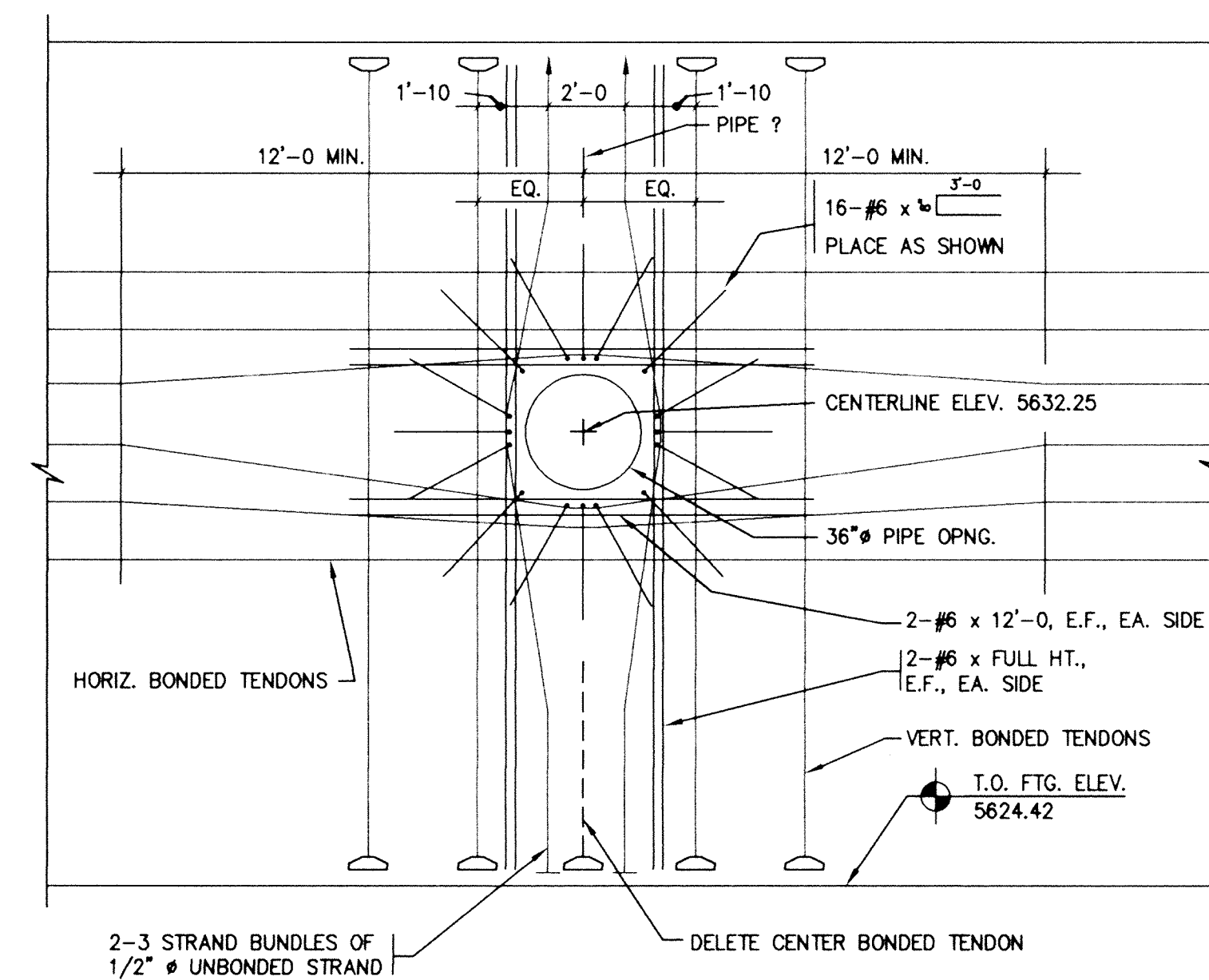


ODD BUTTRESS

BUTTRESS REINFORCEMENT ELEVATIONS
NO SCALE



EVEN BUTTRESS



INLET PIPE PENETRATION DETAIL
SCALE: 3/4" = 1'-0"

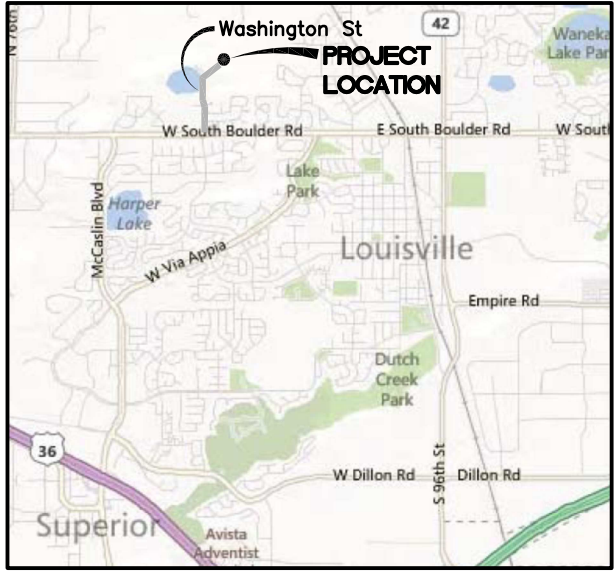
CITY OF LOUISVILLE, COLORADO
SOUTH WATER TREATMENT FACILITY
TREATED WATER STORAGE TANK STRUCTURAL DETAILS

ROCKY MOUNTAIN CONSULTANTS
8301 EAST PRENTICE AVENUE, SUITE 101
ENGLEWOOD, COLORADO 80111
(303) 741-6000

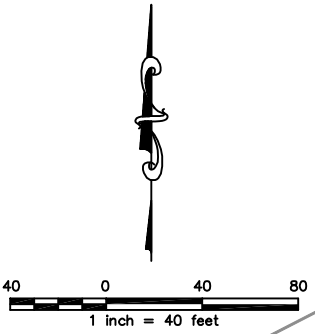
REVISIONS		DATE	BY
NO.	1	RAISE FLOOR ELEVATION	6/6/92 SH

DATE: 4-6-92
DESIGNED BY: SWH
DRAWN BY: JSP
CHECKED BY: MLW
JOB NO.
0058.051.05
SHEET
76 OF 103

3.0 MG POTABLE STORAGE TANK IMPROVEMENTS
FOR THE
CITY OF LOUISVILLE, COLORADO
SEPTEMBER, 2013

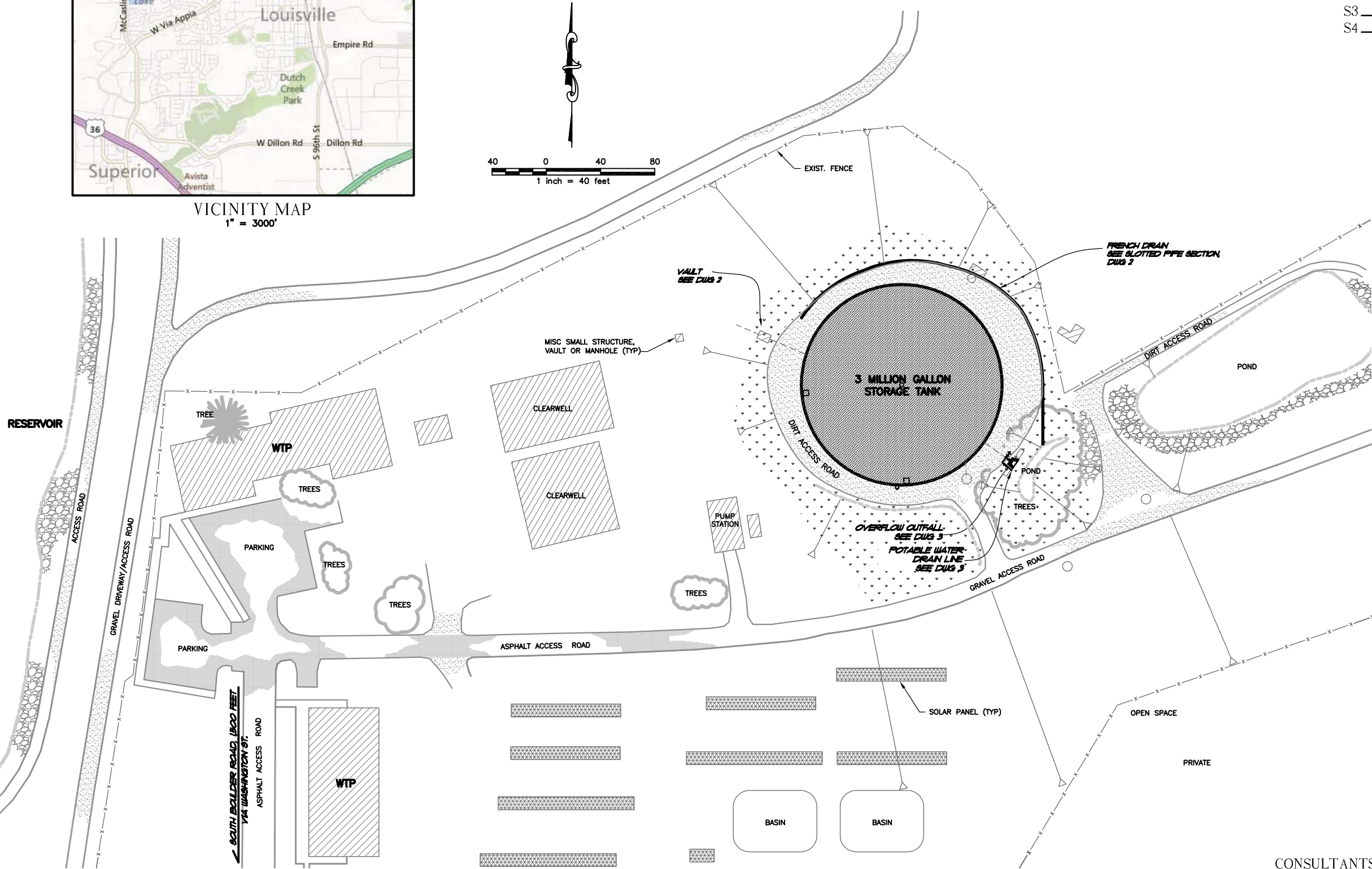


VICINITY MAP
1" = 3000'



DRAWING INDEX

1	COVER & SITE PLAN
2	PLAN, SECTION AND DETAILS
3	SECTIONS AND DETAILS
S1	DEMOLITION PLAN AND DETAILS
S2	DEMOLITION SECTIONS AND DETAILS
S3	ROOF PLAN AND DETAILS
S4	ROOF DETAILS

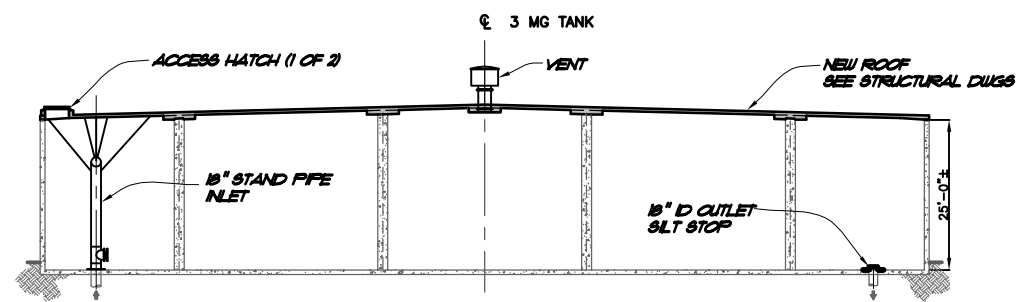


SITE PLAN

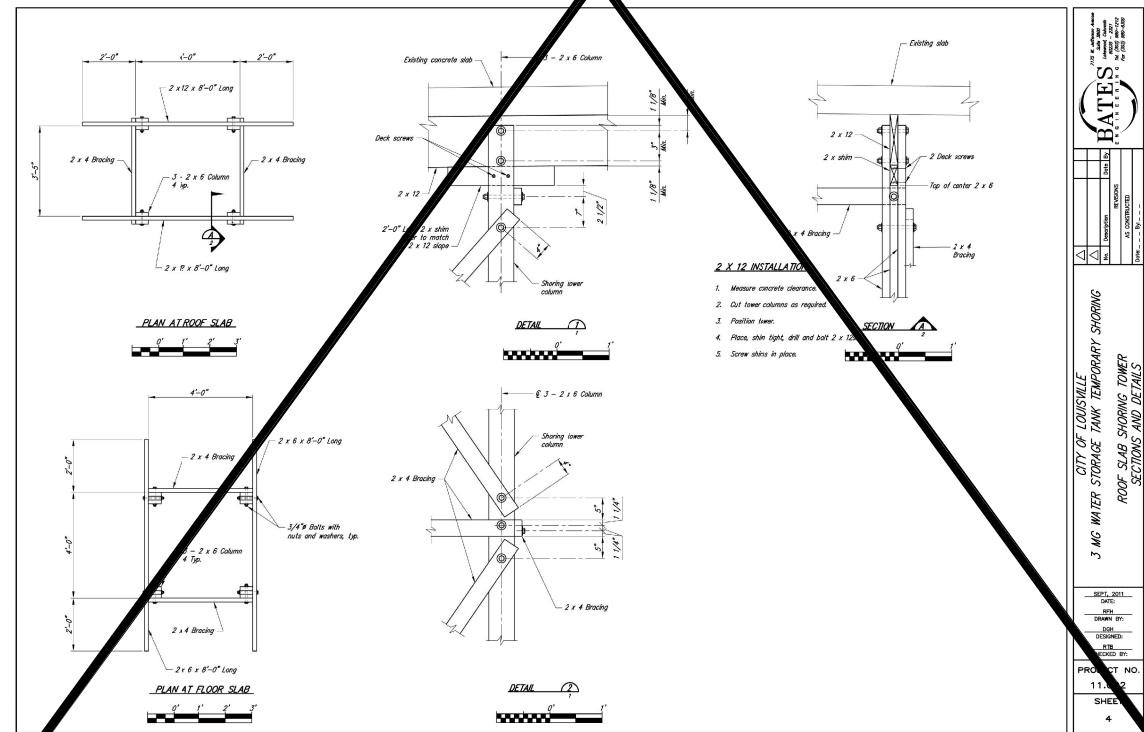
AS RECORDED

CONSULTANTS
STRUCTURAL JORGENSEN & CLOSE ASSOCIATES, LLC

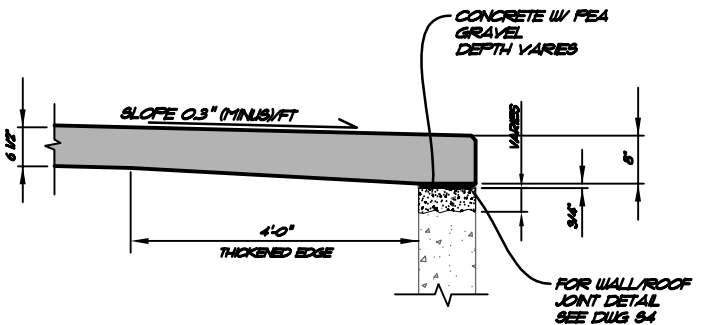
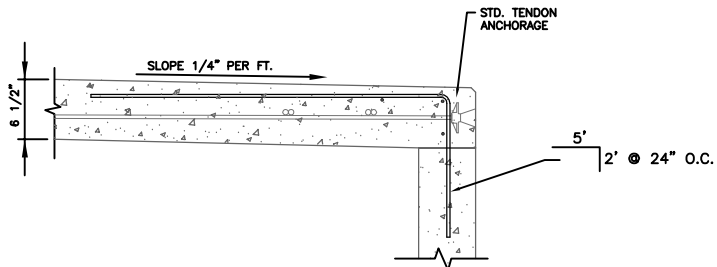
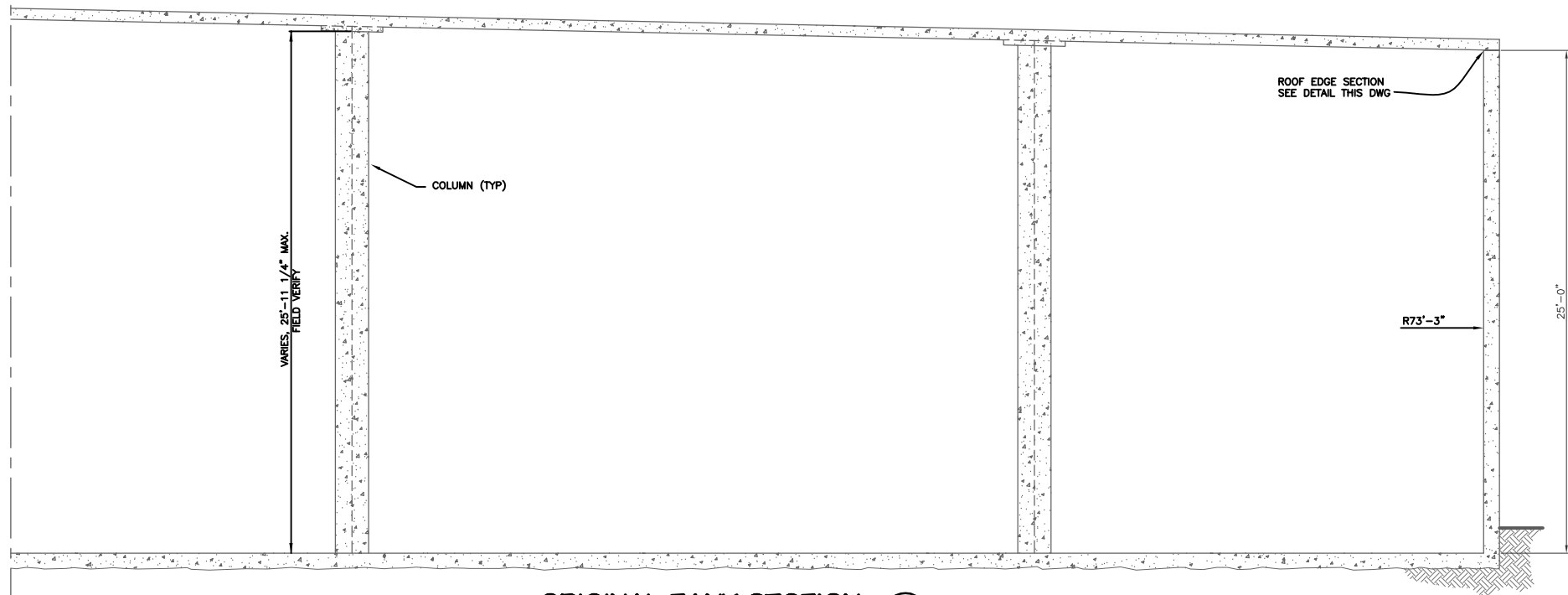
MERRICK & COMPANY
McLaughlin Water Engineers
A DIVISION OF MERRICK & COMPANY
2400 Airport Blvd.
Denver, Colorado 80211
T 303.944.3333
F 303.944.3333



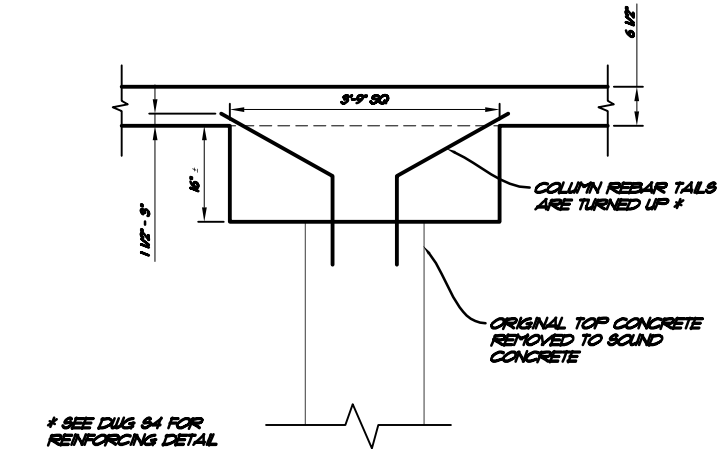
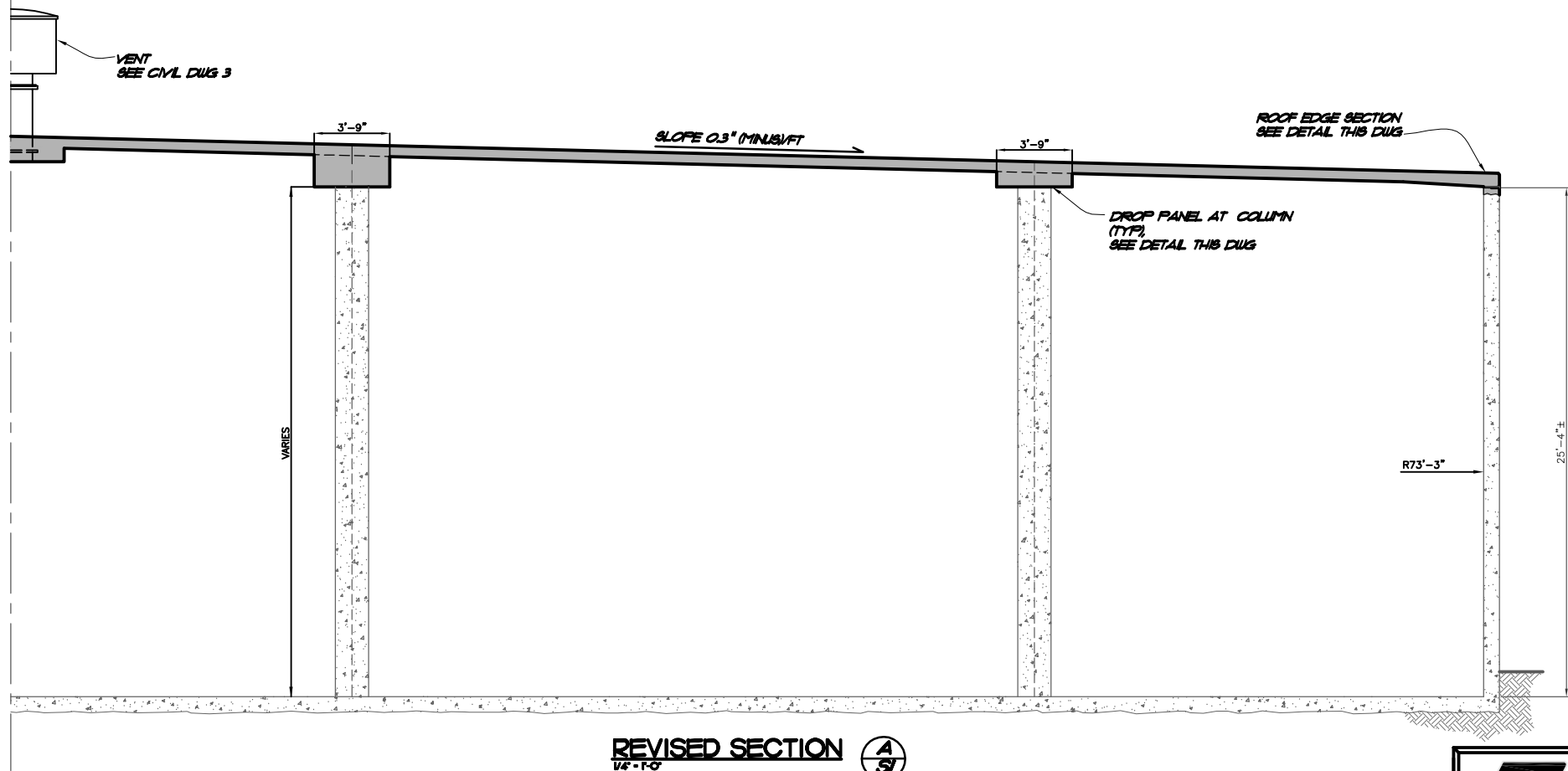
SHORING DETAILS (REMOVED)
NTB



3 MG TANK



3 MG TANK



CLOSE ASSOCIATES, LLC
14405 W. COLFAX AVENUE, STE. 275
LAKEWOOD, COLORADO 80401
PHONE: 303-989-9000
WWW.CLOSEASSOCIATES.NET

CA JOB NUMBER
13-1

Number	Revision Description	By	Date
1	AS RECORDED		JAN 2014

AS RECORDED

CITY OF LOUISVILLE
3 MILLION GALLON
POTABLE STORAGE TANK IMPROVEMENTS
DEMOLITION SECTIONS
AND DETAILS

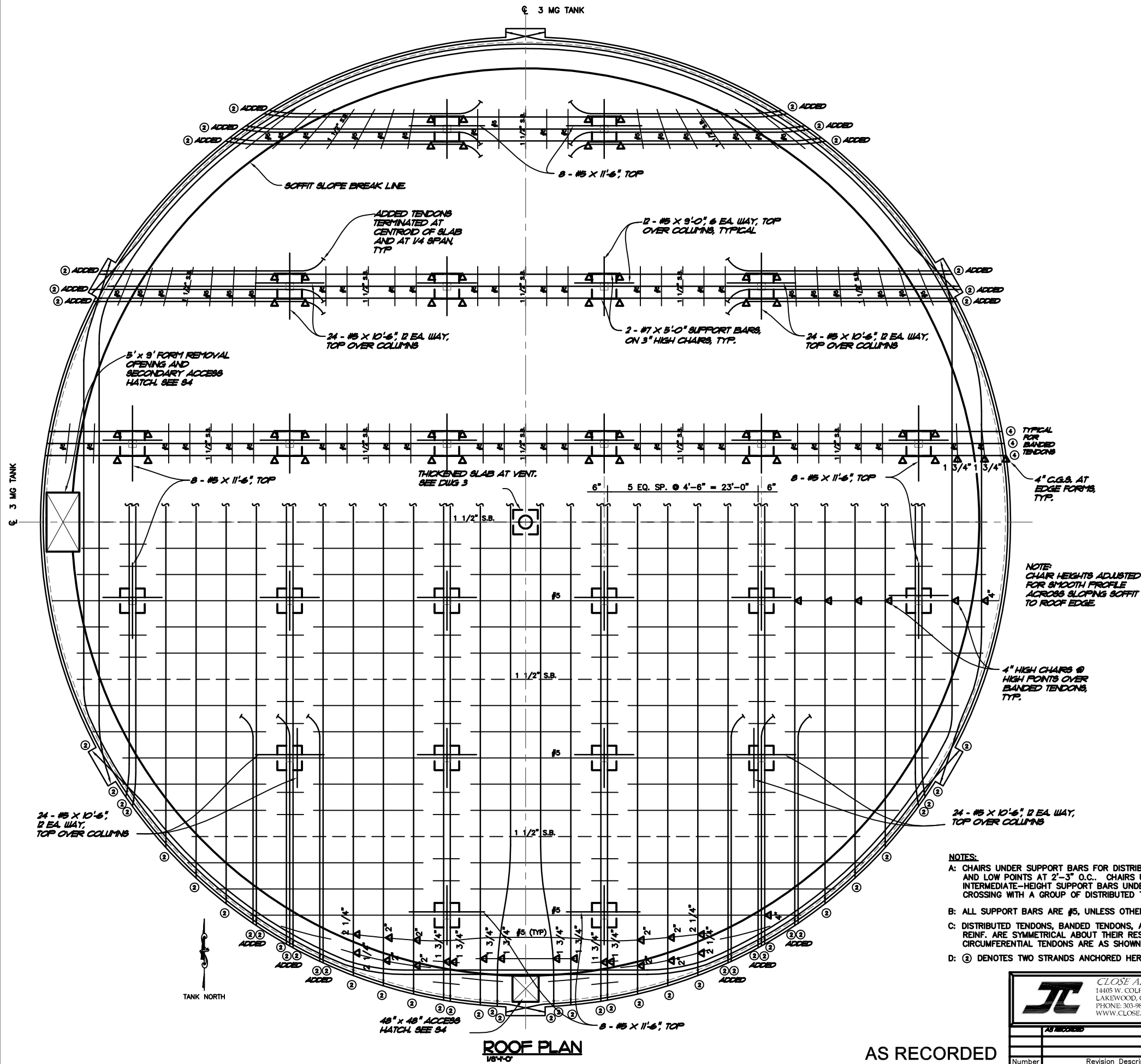
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CHECK: CL
DATE: SEPTEMBER, 2013

MERRICK & COMPANY
McLaughlin Water Engineers
2420 Alcott St.
Denver, CO 80211
T303.964.3333
F303.964.3333

PROJECT NO
65417998

Drawing Number:
S2

T:\PROJECTS\LOUISVILLE\65417998_3 MG TANK\DRAWINGS\AS BUILT\3 MG TANK-ROOFPLAN REV. 22JUN2015.DWG Last Saved: 1/26/2015 5:44 PM



GENERAL STRUCTURAL NOTES:

DESIGN CRITERIA:
ROOF SNOW LOAD = 30 PSF
CONCRETE COMPRESSIVE STRENGTH = 4500 PSI MIN.

CONCRETE:
DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI CODES AND SPECS 350 AND 301.
ALL CONCRETE SHALL DEVELOP 4500 PSI COMPRESSIVE STRENGTH WITHIN 28 DAYS, UNLESS OTHERWISE NOTED. ALL CONCRETE SHALL MEET THE MINIMUM CEMENT AND FLY ASH QUANTITIES, MAXIMUM WATER CEMENTITIOUS MATERIALS RATIO OF 0.42 AND OTHER CRITERIA CALLED FOR IN THE SPECIFICATIONS. ALL CONCRETE SHALL CONTAIN CLASS F FLY ASH, SEE SPECIFICATIONS.

ROOF CONCRETE SHALL BE PLACED IN ONE CONTINUOUS OPERATION WITHOUT COLD JOINTS OR CONSTRUCTION JOINTS, UNLESS SPECIFICALLY SHOWN BY THE STRUCTURAL ENGINEER.
SEE DRAWINGS BY OTHERS FOR SIZES AND LOCATIONS OF HOLES, SLEEVES, REGLETS, BOLTS, NOTCHES, DRIPS, EMBEDDED ITEMS, ETC.
ALL CONCRETE CORNERS EXPOSED TO VIEW SHALL HAVE 3/4" CHAMFER.

REINFORCEMENT:
DETAILING, FABRICATION, AND PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 350 AND 315, UNLESS OTHERWISE NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.
STEEL REINFORCEMENT SHALL BE NEW, DEFORMED BILLET STEEL, MEETING ASTM STANDARD A615. #4 BARS AND LARGER SHALL BE GRADE 60 STEEL; #3 BARS AND DESIGNATED REINFORCEMENT SHALL BE GRADE 40; SHOP DRAWINGS SHALL BE MARKED ACCORDINGLY. GRADE 60 DOWELS SHALL NOT BE BENT IN THE FIELD AFTER PLACING.

REINFORCEMENT IN ALL WALLS AND SLABS SHALL BE CONTINUOUS AROUND CORNERS OR CORNER BARS PROVIDED BOTH VERTICAL AND HORIZONTAL OR AS DETAILED ON THE DRAWINGS.
LAP ALL TENSION SPLICES ACCORDING TO ACI 350-06, CLASS B, AND ALL COMPRESSION SPLICES 30 BAR DIAMETERS, EXCEPT AS NOTED OR SHOWN ON THE DRAWINGS. SEE DRAWINGS FOR TRIM BARS ON ALL SIDES OF OPENINGS AND PIPES.
PROVIDE CONCRETE COVER FOR REINFORCEMENT AS FOLLOWS: 1 3/8" TOP AND 1 1/2" BOTTOM, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

ALL CONCRETE REQUIRES REINFORCEMENT. WHERE REINFORCEMENT IS NOT SHOWN ON DRAWINGS, THE "BUILDING CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" (ACI 350-06), SHALL BE REFERRED TO FOR PROPER REINFORCEMENT.
PROVIDE CORROSION PROTECTED ACCESSORIES FOR ALL CONCRETE SURFACES. TACK WELDING OF REINFORCING BARS IS NOT PERMITTED, UNLESS OTHERWISE CALLED FOR OR REVIEWED BY THE ENGINEER.

POST-TENSIONING:
ALL PRESTRESSING DESIGN, MATERIALS, AND CONSTRUCTION SHALL CONFORM TO ACI 350, 301, AND AWWA D115. POST-TENSIONING TENDONS SHALL BE 0.5 INCH DIAMETER 7-WIRE, LOW-RELAXATION STRAND, ASTM A416. JACKING STRESS SHALL BE 0.8 FPU (33 KIPS PER STRAND).
UNBONDED TENDONS IN THE ROOF SHALL BE FULLY ENCAPSULATED IN SLIPPAGE SHEATHING WHICH SHALL CONSIST OF A DURABLE, WATERPROOF POLYETHYLENE PLASTIC TUBING 50 MILS THICK AND CAPABLE OF PREVENTING THE PENETRATION OF CEMENT PASTE AND WHICH WILL CONTAIN A RUST-INHIBITING GREASE COATING. PUNCTURED SHEATHING SHALL BE REPAIRED IN A WATERPROOF MANNER ACCEPTABLE TO THE ENGINEER, OR REPLACED, IF IN THE ENGINEER'S JUDGMENT ADEQUATE REPAIRS CANNOT BE MADE.

ROOF TENDON LAYOUT WAS BASED ON AN EFFECTIVE STRESS OF 170 KSI. LESSER VALUES RECOMMENDED BY THE MANUFACTURER SHALL BE REVIEWED BY THE ENGINEER. ADDITIONAL ROOF TENDON NOTES: DEAD END ANCHORAGES TO BE SEATED AT A FORCE OF 33 KIPS. LEAVE A 2' STRESSING TAIL AT EACH LIVE END. AFTER CONCRETE HAS REACHED 1500PSI F'CI, JACK EACH STRAND TO 16 KIPS AT ONE END, THEN AFTER CONCRETE HAS REACHED 3000PSI JACK EACH STRAND TO 33 KIPS AND SEAT WEDGES WITH A 1/4" MAXIMUM ANCHOR SET. TRIM STRAND AT APPROXIMATELY 1" FROM JAW, TAKING CARE NOT TO HEAT JAW AS STRAND IS CUT. THEORETICAL ELONGATIONS ARE: 0.088 INCHES PER LINEAR FOOT OF STRAND FOR FLOOR AND ROOF TENDONS.

CARE SHALL BE TAKEN THAT TENDONS ARE LOCATED AND HELD IN THEIR DESIGNATED POSITIONS. TOLERANCES FOR LOCATION OF PRESTRESSING STEEL IN THE FLOOR, WALL, OR ROOF THICKNESS SHALL NOT BE MORE THAN 1/8 INCH, EXCEPT AS NOTED OR REVIEWED BY THE STRUCTURAL ENGINEER. TOLERANCES IN CIRCUMFERENTIAL OR PLAN DIMENSIONS, PER NORMAL ACI STANDARDS. TENSIONING SHALL NOT START UNTIL TESTS INDICATE THE CONCRETE IN PLACE HAS REACHED THE SPECIFIED INITIAL COMPRESSIVE STRENGTH. TENSIONING SHALL BE DONE BY JACKING UNDER IMMEDIATE CONTROL OF A PERSON EXPERIENCED IN THIS TYPE OF WORK. RECORDS SHALL BE KEPT BY THE CONTRACTOR OF ELONGATION AND TENSION OF THE STRAND AND REVIEWED BY THE ENGINEER PRIOR TO REMOVING STRESSING TAILS. THE OBSERVED ELONGATION SHALL BE WITHIN 7% OF THAT PREDICTED. ALL TENDON ANCHORAGES SHALL BE RECESSED AS SHOWN ON THE DRAWINGS. STRESSING BLOCKOUTS SHALL HAVE A EPOXY BONDING AGENT AND SHALL BE FILLED WITH NONSHRINK GROUT AFTER PRESTRESSING.

- NOTES:
- A: CHAIRS UNDER SUPPORT BARS FOR DISTRIBUTED TENDONS AT HIGH AND LOW POINTS AT 2'-3" O.C.. CHAIRS UNDER INTERMEDIATE-HEIGHT SUPPORT BARS UNDER EACH CROSSING WITH A GROUP OF DISTRIBUTED TENDONS.
 - B: ALL SUPPORT BARS ARE #5, UNLESS OTHERWISE NOTED.
 - C: DISTRIBUTED TENDONS, BANDED TENDONS, AND CONVENTIONAL REINF. ARE SYMMETRICAL ABOUT THEIR RESPECTIVE CENTERLINES. CIRCUMFERENTIAL TENDONS ARE AS SHOWN.
 - D: ② DENOTES TWO STRANDS ANCHORED HERE.

Close Associates, LLC 14405 W. COLFAX AVENUE, STE. 275 LAKEWOOD, COLORADO 80401 PHONE: 303-989-9000 WWW.CLOSEASSOCIATES.NET		CAD JOB NUMBER 13-1
Number	Revision Description	By Date

CITY OF LOUISVILLE	
3 MILLION GALLON POTABLE STORAGE TANK IMPROVEMENTS	
ROOF PLAN AND DETAILS	

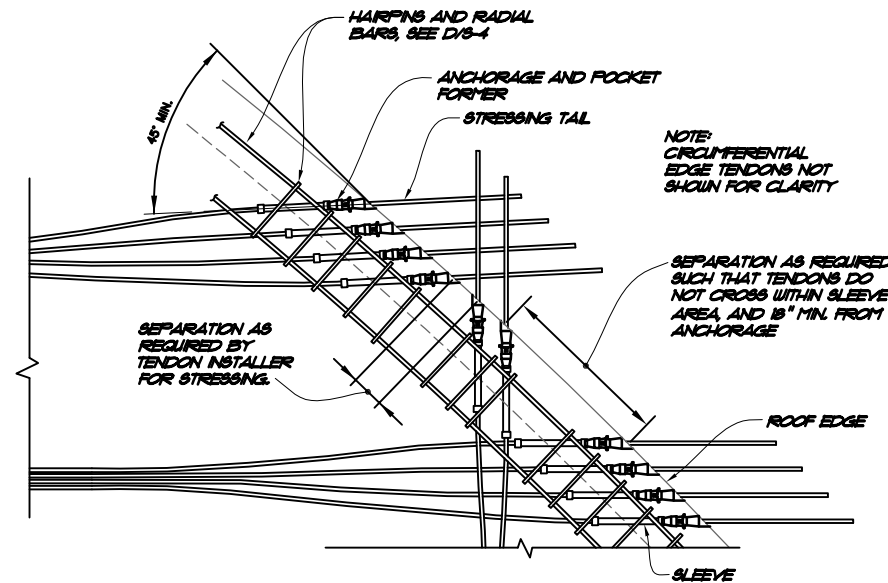
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DETAIL: AVJ
CHECK: CL
DATE: SEPTEMBER, 2013

MERRICK & COMPANY
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Denver, CO 80211
7303.964.3333
F303.964.3355

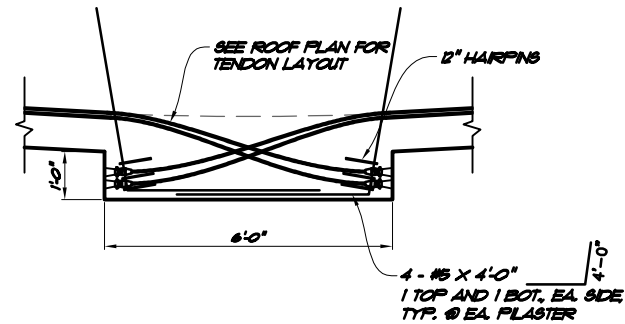
PROJECT NO
65417998
Drawing Number:

S3

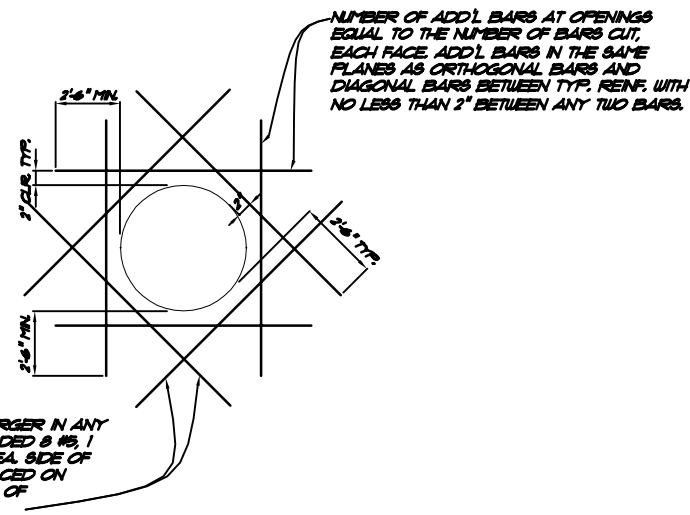
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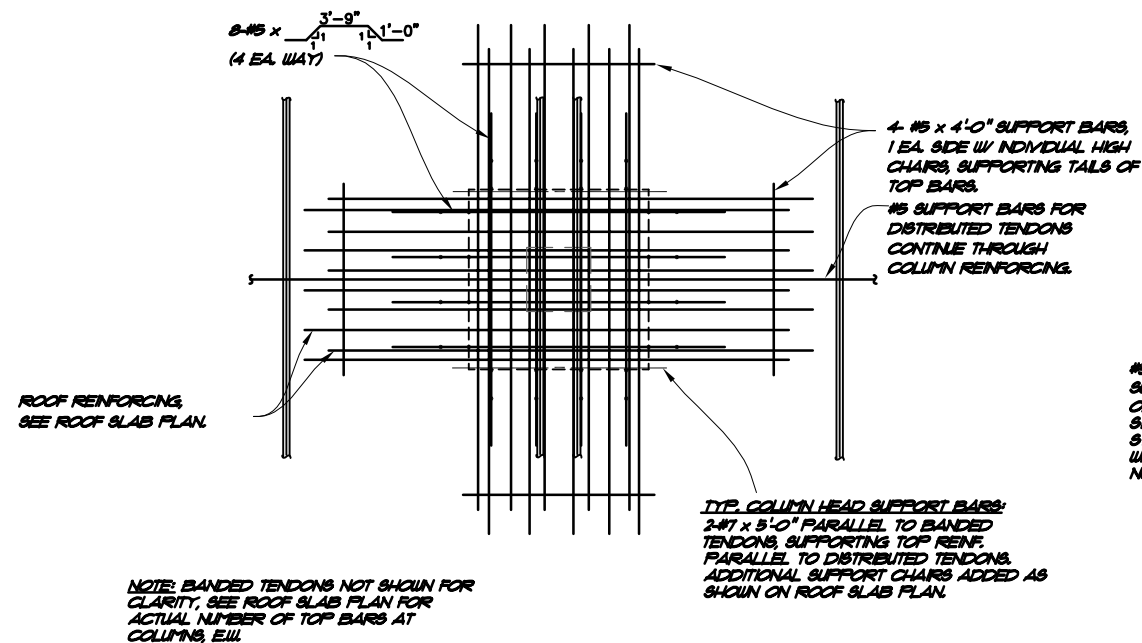
TYP. TENDON CROSSING DETAIL
3/4" = 1'-0"



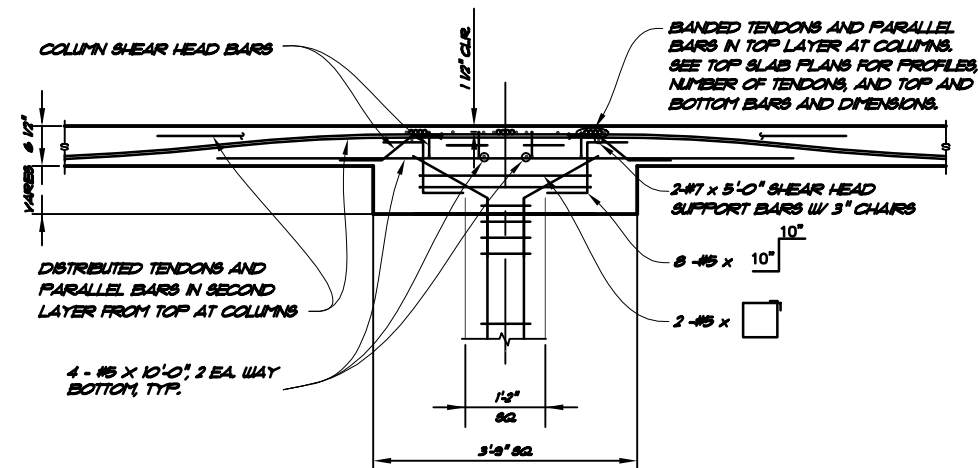
TYP. ROOF PILASTER
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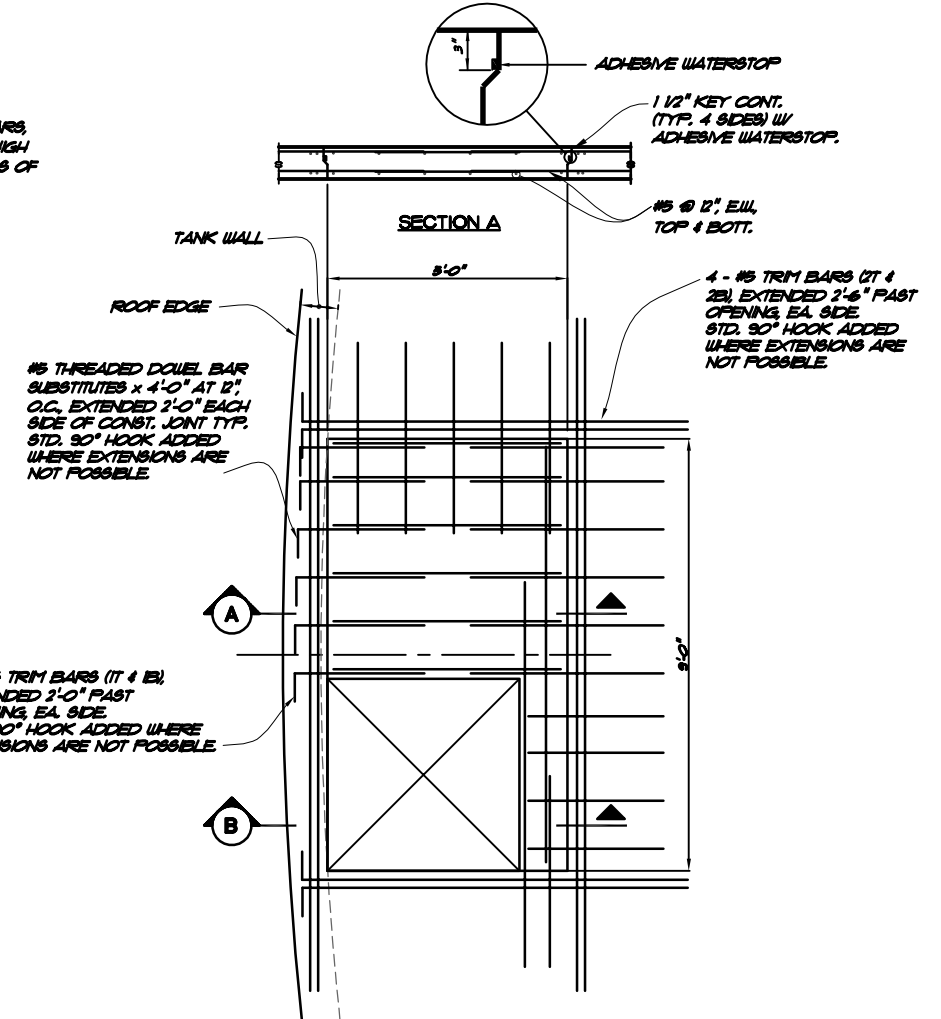
TYP. PENETRATION OR OPENING
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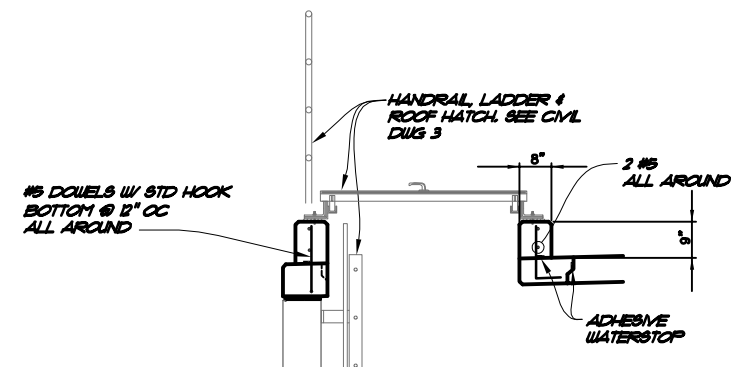
COLUMN TOP REINFORCING PLAN
NTS



COLUMN TOP REINFORCING SECTION
NTS



2 - #5 TRIM BARS (IT & BT), EXTENDED 2'-0" FAST OPENING, EA. SIDE. STD. 90° HOOK ADDED WHERE EXTENSIONS ARE NOT POSSIBLE.



TEMPORARY BLOCKOUT AT HATCH
NTS

AS RECORDED

CLOSE ASSOCIATES, LLC		CA JOB NUMBER
14405 W. COLFAX AVENUE, STE. 275 LAKEWOOD, COLORADO 80401 PHONE: 303-989-9000 WWW.CLOSEASSOCIATES.NET		13-1
AS RECORDED		JAN 2014
Number	Revision Description	By Date

CITY OF LOUISVILLE	
3 MILLION GALLON POTABLE STORAGE TANK IMPROVEMENTS	
ROOF DETAILS	

DESIGN: SRC
DETAIL: AVJ
CHECK: CL
DATE: SEPTEMBER, 2013

MERRICK & COMPANY
McLaughlin Water Engineers
A DIVISION OF MERRICK & COMPANY

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PROJECT NO
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Drawing Number:

S4