

DESIGN STANDARDS

Division 2 – Site Construction

to drain.

Protection and Curing. After the concrete has significantly hardened to allow foot traffic, spread a minimum of 2" of plaster sand evenly over all concrete flat surfaces. Contractor may increase the amount of sand in the bowls after curing to prevent skaters from using the facility prior to completion. Once the project is complete and ready to open (minimum 28 curing days), remove sand from site. Craze surface cracking shall be assumed to be evidence of improper curing. Improperly cured concrete shall be completely replaced at no additional cost to the City.

Sealer. In conformance with the manufacturer's recommendations, apply a UV rated, clear, penetrating sealer to all concrete surfaces. Specified sealer shall not degrade the grip of the skating surface. (Apparently acceptable but untested: Hunt "MD-7C", Sonneborn "Kure-n-seal", or Upco "Polyclear".)

Coping and Metal Edging. All metal coping and metal edging shall be hot dipped galvanized steel, galvanizing after fabrication, weld all connections, field fill out flush, grind and dress welded connections/joints/splices and field touch-up the galvanizing surface. Use nominal 2" diameter pipe coping. Provide weld-on anchors or lugs for embedded items.

Guardrails and handrails in the skate area are to be galvanized steel and may be painted unless the primary purpose of the rail is for grinding, in which case it is not to be painted. Grinding resin board, such as Durawood, is not to be used for grinding surfaces. The BMX bikes tear it up fast. Remove all traces of cement from metal coping and edging before it hardens.

Drains. Minimize the need for and quantity of internal drains in the basic design of the bowls, and locate them out of main traffic paths. Specify flush bronze or brass grate designs capable of being skated over.

Joints and Joint Sealers. Saw cut control joints throughout the park, including vertical transitions, in a regular pattern approved by the City Representative during the design phase and include a detailed jointing plan in the construction bid documents. Spacing of the joints in feet should be 2 to 3 times the slab thickness in inches maximum, generally 10 to 12 feet apart or 150 square feet of area.

Fill expansion joints, control joints and cold joints with a matching color material as appropriate to the type of joint. Expansion joints should be avoided in skate traffic areas. Control joints shall be saw cut and appropriately filled to prevent edge chipping and cracking. All joints in the skate park must be "skate-able".

Specify the following product for filling the saw cut control joints (substitute products will be considered but may be denied approval for any reason at the sole discretion of the City):

"Sikadur 51 NS/SL, Flexible epoxy control-joint sealer/adhesive", by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071, 800-933-7452, <http://www.sikausa.com/>.

Specify the following product for filling wider cracks and other flaws:

"ARDEX Poly-Top, ARDEX Engineered Cements, Inc., 1155 Stoops Ferry Road, Coraopolis, PA 15108, www.ardex.com.

Alternate patching materials must be pre-approved before use and then installed at the sole risk of the contractor.

One applicator of these sealant materials is: Chris Muschaweck, Streamline Sealants, 2107 Hawaiian Breeze Ave., N. Las Vegas, NV 89031, Phone 702-592-8408, NV License 52183.

Concrete Contractors. The skatepark construction must be performed by a skatepark contractor who has been pre-qualified by the City, and the general contractor must list the skatepark contractor's name on his bid documents. (The general contractor and skatepark contractor may be the same company if the general contractor is using his own forces for the skatepark construction.) Specify in the bid documents

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the following short list of pre-qualified local contractors:

Concrete Systems, 4470 E Cheyenne Ave, Las Vegas, NV 89115 702-643-5618
CG&B Enterprises Inc., 221 Sunpac Ave, Henderson, NV 702-565-6564

Additional contractors who want to be added to the qualified list must provide adequate evidence that they have successfully completed the construction of one (1) similar skatepark project, a minimum of 10 days prior to bid opening. The City shall be the sole judge of whether the previous experience is similar and was successfully completed. The contractor must be experienced and pre-qualified in both "poured-in-place concrete" and "shotcrete applications".

Manufactured Metal Ramps on Flat Post-Tension Slab.

Manufactured Ramps: The City has developed a generic performance specification based on an all steel frame ramp design with Skatelite Pro surface. Do not allow substitutions from this specification.

[Link to a sample specification.](#)

GameTime
P.O. Box 680121
Fort Payne, AL 35968-0121
Toll Free: 800-235-2440 fax: 256-845-9361
www.gametime.com
e-mail for Skate Park components representative (Doris Dellinger) DorisD@gametime.com

GameTime is the parent company of
Spohn Ranch, Inc. 15131 Clark Ave., Unit B
Industry, CA 91745
Phone: 626.330.5803 Fax: 626.330.5503
Local distributor for our area:
Rich Boyce Recreation, Inc.
PO Box 97
Wellsville, UT 84339
Toll Free: 800-453-2735
Fax: 435-245-5057
e-mail: boycerec@gametime.com

Other manufacturers with the minimum experience qualifications contained in the generic specification can also bid, but none have decided to do so to date.

Another possible supplier:

Huna Designs, Ltd
1000 Buffalo Road
Lewisburg, PA 71837-7407
Toll Free: 800-430-7407 Fax: 570-522-3030
www.hunadesigns.com

The exclusive manufacturer and distributor of Woodward Camp skatepark ramps, and affiliated with Playworld Systems, Inc., local distributor for our area:
Dave Bang Associates, Inc.
2681 Dow Avenue, Suite E
Tustin, CA 92780
Phone: 714-832-6670
Toll Free: 800-669-2585
Fax: 714-832-9974

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e-mail: bangca@pacbell.net
web site: www.davebang.com

Manufactured ramps are to be bolted to a flat post-tension slab. The use of a skatepark design specialist consultant is not mandatory when designing a park using manufactured ramps. Review by the City's "in-house" skatepark representative and the skater workshop are still required. This type of design is generally limited to "Beginner" level parks, 5,000 square feet maximum. The Concrete Bowl Type Construction requirements for finish and jointing also apply to this slab (even though the slab is post-tensioned, some shrinkage cracking will occur and the skateboard wheels will spall these cracks; therefore, do provide control joints, filled and ground the same as a poured in-place bowl described above so the filling and grinding lines are for the most part in a regular pattern); the contractor qualification and coping requirements do not apply to this type of design.

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02882 Recreational Facilities & Playground Equipment – Tot Lot Play Equipment

Standards. Comply with the latest versions of:

- The Proposed Accessibility Guidelines for Play Areas as published by the Architectural and Transportation Barriers Compliance Board.
- U.S. Consumer Product Safety Commission's Handbook for Public Playground Safety.
- ASTM F 1487 and ASTM F1292, latest editions.

Qualified Manufacturers. List the following manufacturers, Miracle Recreation Equipment Company, GameTime, Landscape Structures Inc., Playworld Systems, and BigToys, and provide a design that can reasonably be bid by these manufacturers from their standard equipment. In addition, a limited number of unique individual stand alone elements may be provided in the design that may not have an equal among these listed manufacturers or may be provided by other manufacturers such as Kompan Elements.

Equipment must meet the requirements of ISO 9001 (quality systems) and IPEMA Certification (third party testing for compliance with ASTM F1487 and ASTM F1292, latest editions. IPEMA is the International Play Equipment Manufacturers Association).

Do not specify wood products.

Age Groups. Do provide separate play areas for younger 2-5 and older 5-12 age children as recommended by the CPSC guidelines, with sufficient distance to not interfere with each other. Note that if only one area is provided, for liability reasons the manufacturers will likely insist it be for the age 2-5 equipment only.

Resilient Surfaces. Provide resilient surfaces as required by the above standards and best practice. Do not use sand in the play areas. Provide a compacted Type II pad under the resilient surface per resilient surface manufacturer's details. Consider fading when selecting colors for the resilient surfaces and the effect of irrigation over-spray.

Boulders. Place no boulders within 10 feet of playground equipment nor anywhere children may be running or playing and a fall may result in injury. Groups of boulders for climbing by children may be acceptable.

Traffic. Vehicle parking and circulation should be located at least 50 feet from the tot lot area. Fencing will be considered to separate vehicles when the 50-foot minimum cannot be achieved.

Pedestrian traffic paths (joggers, bikes, scooters, etc.) should not run through or immediately adjacent to the tot lot area.

Seating. Provide bench type seating for adults (not picnic tables) adjacent to the tot lot area. Provide shade for at least some of this seating.

Shade. Provide fabric shade structures over the playground equipment as programmed and within budget limitations, together with trees until they mature so that the fabric structure can be eliminated over time. See Section 2875 Site Shelters for additional information and requirements.

Rockers. Avoid specifying the coil spring type rockers in favor of the leaf spring types due to maintenance.

Due to high frequency of maintenance on any of the spring rockers, bringing the resilient play surface right up to the support necessitates cutting away the cushion surface and patching, making the repairs an extra difficulty. There is still an appetite to include these activities in play areas, but if you specify the 4-seaters,

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the whole center portion can be on sand to facilitate repairs, with the resilient surface around the perimeter. (See City standard drawing.)

Irrigation. No spray heads within potential over-spray distance of the resilient surface.

Drinking Fountain. Provide a drinking fountain (City standard free-standing design) within 50 feet of the tot lot area and within sight lines of the adjacent adult seating.

Lighting. Verify with the OAS project manager whether to light the Tot Lot Equipment. In general, provide lighting for evening use, utilizing the City standard user timer controls, IF other activities in the park are lighted for evening use such as ballfields, tennis courts, skateparks, etc.

Boundless or Sensory Play Designs. When included in the program for the park, design the play area as a "Boundless" or "Sensory" experience, which basically provides ramp access to most or all activities. See Washington Buffalo Park for an example, also this [email link](#), [graphic](#), and [web site](#).

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02900 Planting

Plant Selection. Select plant material for drought tolerance, adaptability and relationship to the local environment; color, form, pattern, soil retention, ability to provide shade and energy savings.

All plant prohibitions have been suspended indefinitely, as of 3/9/05. [Link to the CLV research for Allergic, Toxic, and Invasive plants.](#)

Landscape Plans. Plans shall include all plant material information, plant legend with key, botanical name, common name, specific plant requirements, quantity and size. Plant material shall have identification tags on 10% of the total quantity of each species. (Waterproof tag bearing legible designation of botanical and common name) Patented or trademark plants must all bear appropriate tags.

Quality Assurance. Provide trees, shrubs and ground cover of quantity, size, genus, species, and variety shown and scheduled for landscape work and complying with recommendations and requirements of ANSI Z60.1 American Standard for Nursery Stock and/or Arizona Nursery Standards. Provide healthy, vigorous stock, grown in recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae, and defects such as knots, sunscald, injuries, abrasions, or disfigurement. The Landscape Architect shall inspect trees and shrubs either at the place of growth or at the site prior to planting for compliance with requirements for genus, species, variety, size, and quality. The Landscape Architect reserves the right to further inspect trees and shrubs for size and condition of root ball and root system, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during the progress of the work. Remove rejected trees, shrubs or ground cover immediately from the project site.

All sizes and caliper shall comply with the American Standard for Nursery Stock and/or Arizona Nurseryman's Association.

Delivery, Storage and Handling. Contractor shall notify the City 24 hours prior to any plant material being delivered to the site. Protect plant material from deterioration during delivery and while stored at the site. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or destroy natural shape. Do not drop boxes during delivery. Do not prune prior to delivery unless otherwise approved by the Landscape Architect. Deliver plant material after preparations for planting have been completed and plant immediately. Do not install plant life when ambient temperatures may drop below 35 degrees F or above 100 degrees F. Do not install plants when wind velocity exceeds 20 mph.

Warranty. Warranty all plant material for a period of one year from the date of substantial completion. Warranty the plant material against defects including death and unsatisfactory growth, except for defects resulting from neglect, abuse or damage by others, or unusual incidents beyond the installer's control.

Remove and replace plant material found to be dead or in unhealthy condition during the warranty period. Replace plant material, which are in doubtful condition at the end of the warranty period, unless, in the opinion of the Landscape Architect, it is advisable to extend the warranty period for a full growing season.

Maintenance. Maintain plant material for 90 days beyond the date of substantial completion if the project contains any turf. Otherwise there will be no extended maintenance period.

Maintenance shall include, but not be limited to:

- Mow lawns one a week without cutting more than one-third of the leaf blade.
- Fertilize lawns on a monthly basis with the last application being a slow release fertilizer applied at the manufacturer suggested rate for the specific time of year.
- Irrigate sufficiently to saturate the root systems of all plant material and lawn areas.
- Cultivate and weeding of all planter areas and tree pits.
- Apply herbicides for weed control in accordance with manufacturer's instructions. Remedy

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damage resulting from use of herbicides.

- Prune, including removal of dead or broken branches and treatment of pruned areas or other wounds.
- Provide disease control.
- Maintain tree stakes and replace when required.

Plant Material. Provide plant material of size, genus, species, and variety shown and scheduled for landscape work, grown in climate conditions similar to those in locality of the work.

Container sizes listed are minimums. Minimum height, spread and caliper sizes shall be met. Measure height and spread to the average overall size of the plant, not the longest branch. Caliper shall be measured six inches above graft or six inches above the root ball. Conform to the requirements of ANSI Z60.1 for tree branching configuration and shrub cane quantities for the type and species of each plant specified. Plant spacing shall account for mature plant sizes. Do not over plant. Avoid the use of plant species and spacing that collect leaves and trash. Thick shrubs should be no taller than three feet high. Avoid tree canopy less than seven feet high in pathway areas.

All shrubs shall be 5-gallon minimum. All trees shall be 24" box minimum, with larger box sizes required along pathways and around tot-lot and picnic areas for shade. In hardscape areas, provide at least a four-foot square cut out area in the concrete for tree, irrigation and proper ventilation/airation. Trees planted in turf areas shall be spaced a minimum of six-feet apart to allow for mowing berth. Planting areas shall not exceed 3 to 1 slope. Any disturbed slopes shall be re-vegetated with erosion protective planting.

Olive Trees. Include the following requirements in the landscape specifications when specifying low pollen olive trees:

1. The requirement that Wilson and Swan Hill olive trees must be from nurseries on the Clark County Department of Air Quality & Environmental Management "exempt status" nurseries list, current at the time of planting.
2. The requirement to follow all Clark County Department of Air Quality and Environmental Management Regulations for the approval and planting of these trees. Consultant needs to go read the latest version for compliance factors to include in the specifications.
http://www.co.clark.nv.us/air_quality/Regs/SECT44%2007-01-04.pdf
3. The requirement for an early submittal to the Owner for evidence that the proposed nurseries are on the Air Quality exempt list. Failure to provide an early submittal and order for the trees shall not be justification to substitute specified varieties, such as Wilson for Swan Hill.
4. A requirement for the exempt nursery providing any Wilson trees to provide a DNA testing report or other evidence acceptable to the Owner to guarantee that the actual Wilson trees to be provided are the low pollen cultivar Wilson trees specified. It is known that the nursery industry has been innocently cloning and distributing misidentified Wilson trees. A tree tag or visual inspection is not adequate proof of a Wilson cultivar. This DNA requirement is not needed for Swan Hill trees.
4. A requirement that the Contractor must have written notice to proceed from the City Construction Representative that the delivered trees are acceptable to plant.
5. A requirement that the Contractor notify Clark County Department of Air Quality after contract award so that Air Quality has the opportunity to approve the project distribution, delivery, and planting plan for the olive trees, and to verify compliance by whatever documentation and inspection they require of the Contractor, Subcontractor, and Supplier.

Air Quality olive tree point of contact: Patricia Riggerberg, (702) 455-1646

6. A requirement to copy the City Environmental Officer, Cheng Shih, and City Construction

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Representative for each contact with Air Quality.

7. The requirement that the Contractor must provide the following documentation prior to payment:

- a) Approved Owner submittal for proposed nurseries, evidencing they are on the Air Quality exempt list.
- b) An approved DNA testing report for any Wilson trees being provided.
- c) Written notice to proceed to plant delivered trees from the Construction Representative.
- d) A copy of the shipping invoice showing each tree tag number.
- e) Adequate documentation tracing the route and ownership of each tree from nursery to project site.
- f) A photo of each planted tree with readable tag number attached; overall view of tree in project context showing tag and a close-up view of the tag.

8. Tags are to be left on the trees.

Planting Preparation. Layout plant material per plan for Landscape Architect's acceptance/approval prior to planting. Excavate pits with sloping rough sides. Planting holes shall be excavated to 3 to 5 times root ball width, and to the depth of the root ball. Fill all excavations with water and allow to percolate out prior to planting. Water shall drain out within a 24-hour period. If the water does not drain out within a 24-hour period, or if caliche is encountered, the contractor shall comply with the following: If impervious layer is less than 6" thick remove completely. If layer is 6"-18" thick, auger a hole through the layer and install a 4" diameter PVC pipe(chimney) filled with 3/8" pea gravel through the caliche layer at the bottom of the planting pit. If layer is greater than 18", notify the owner for potential plant relocation or owner's credit. Place plants for best appearance, vertical, and root ball flush with finish grade. Backfill with specified planting mix, place fertilizer tablets as required, and saturate the soil with water when the pit is half full of soil and again when full.

Sod-Turf. Do not plant any turf unless there is a specific request and need in the project program; this includes parks. Limit lawn areas in projects to a maximum of 50% of the site area outside of athletic fields, building footprints, parking lots, drives, and similar hardscape and activity areas.

Minimum width of turf areas shall be six feet wide. Turf edge geometry shall match standard irrigation sprinkler head patterns, and not rely on limited pattern edge pop-ups to prevent overspray. All turf areas shall be sodded (not seeded), unless otherwise directed. Turf areas shall not exceed 5 to 1 slopes.

Consider separating turf from sidewalks, parking lots and buildings with a minimum of a three (3) foot wide decomposed granite bed or similar divider to limit the turf irrigation overspray onto these surfaces. Provide mow curb between turf and other ground materials, concrete with rebar reinforcing, 12 inch wide, radiused edges, with control joints @ 10' and expansion joints @ 30'. Refer also to Section 03001 sidewalk topic for related requirements.

Specify bermuda (419 or Sports Tif), unless there is a specific request for fescue. Programmed athletic fields should be synthetic turf if funding allows. Discuss with the project manager whether Bermuda sod needs to be ordered overseeded for a winter project opening.

Contract with a sole source grower specializing in sod production and harvesting with a minimum of five years experience. Coordinate sod installation with soil preparation and the underground irrigation system. Loosen subgrade for sod areas to a minimum depth of 6 inches. Remove sticks, stones and all other extraneous matter. Fine grade areas smooth, even surface with loose, uniformly, and fine textures filling depressions. Verify final grades that all areas drain properly prior to placing sod. Moisten lawn areas, fertilize areas receiving sod, and lay sod with tightly fitted joints. Stagger sod to offset joints in adjacent courses. Lightly roll to ensure contact with subgrade and water thoroughly after placing to saturate the sodden areas to a depth of four inches.

Soils. Prior to delivery of topsoil, furnish the Landscape Architect with a written statement giving the location from which the topsoil is to be obtained and an agricultural analysis of the topsoil to be used.

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Provide an agricultural soils test for both import and native soils to be used. All soil used for plantings, whether on-site or import shall meet the following requirements:

- Sandy or loamy sands from well-drained sites
- Free from refuse, roots, heavy clay, stones larger than one inch in largest direction, gravel, sticks, brush litter and other deleterious substances
- Less than ten (10) percent clay content and more than seventy-five (75) percent sand content
- Salinity- Ece no greater than four mmhos/cm
- Water holding capacity between 40 percent and 55 percent
- Boron- less than one ppm
- pH- less than 8.5

Soil Amendments.

Fertilizer. FS O-F-241, Type I, Grade A; with fifty percent of the elements derived from organic source; of proportion necessary to eliminate any deficiencies of topsoil as indicated in the soil analysis.

Mulch. "Nutri-Mulch" organic composted manure, weed free, no particle size over one-half inch, pH level 7.5 or less, providing naturally one percent of available nitrogen, phosphorous and potassium.

Soil Sulfur. In quantities necessary to eliminate any deficiencies of topsoil as indicated in the soil analysis.

Conditioning Fertilizer. A Gro-Power Plus- humus with soil penetrates added, providing five-percent nitrogen, three percent phosphorous, and one percent potassium.

Iron Sulfate. In quantities necessary to eliminate any deficiencies in the topsoil as indicated in the soil analysis.

Water. Clean, fresh and free of substance or matter, which could inhibit vigorous growth of plants.

Herbicide. As needed.

Pesticide. As needed.

Decomposed Granite. Decomposed granite material, free of foreign substances, color as indicated on the drawings.

- In planting areas: 1/4" minus size with 40% fines and 60% aggregate, minimum depth 2".
- Within 3' of sidewalks, pathways, pedestrian traffic areas, and in parking lot planters: 3mm size, minimum depth 4".

Contractor to provide supplier verification of specification to the Owner prior to any construction.

Approved Suppliers:	Mineral Park Inc. 8275 N. Mineral Park Rd. Kingman, AZ 86413 (702) 275-1371	Kalamazoo Materials, Inc. 6975 N. Oracle Road Tucson, AZ 85704 (520) 575-9601
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Decomposed granite shall not be placed until the irrigation system; topsoil and planting operations have been completed within the area indicated to receive decomposed granite. Surface upon which the decomposed granite is to be placed shall be graded, compacted to the density as indicated on the drawings, and treated with a pre-emergent herbicide. Treat the top of the decomposed granite with one more application of pre-emergent herbicide.

Decomposed Granite Pathways. Reference "Section 02001 Site Construction, Soil Hardening Stabilizer – Walking Paths", for accessibility issues when utilizing decomposed granite as a pathway surface

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Boulders. Boulders shall be of granite composition and at least 3 cubic feet in size each. Place one quarter of the boulder mass below finish grade.

Rocks. Other than boulders and decomposed granite, the use of rocks in landscape plans is not allowed due to vandalism unless embedded in concrete. Loose landscape rocks are often used to break windows and light fixture lenses.

Accessories.

Tree Stakes. 2" minimum diameter by 10' minimum length, lodge-pole pine tree stakes, with bottom end pencil pointed. Install tree stakes and indicate on the drawings.

Tree Ties. Tree ties shall be "Twist-Brace" (TB-24) black in color for standard application, and "Wonder-Ties" for multi-applications. Install tree ties and indicate on the drawings.

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03001 Design Information

Advertising Marks. No advertising impression, stamp, or mark of any description will be permitted on surface of concrete or cement finish.

Sidewalks. Plain unreinforced concrete is an acceptable walking surface. (Reference "Section 02001 Site Construction, Soil Hardening Stabilizer – Walking Paths", for accessibility issues when utilizing decomposed granite as a pathway surface).

Don't use the word "Jogging" on the drawings; "Walking Path" is acceptable. ("Jogging Path" implies a resilient surface to the public.) For walking/jogging pathways, do not specify a resilient surface, asphalt, or decomposed granite unless so directed by the Owner.

Meandering walks shall not meander to a degree such that people will be tempted to leave the walking surface as a shortcut. Meandering walks may be used interior to the site but not as a substitute for the standard 5-foot sidewalk adjacent to the curb along all streets.

Walks must be a minimum of 5 foot wide with wider walks where justified for ease of heavy traffic. Narrower walks down to 3 foot in width are acceptable where minimal pedestrian traffic connectors are required by ADA.

Where maintenance or security vehicles will be utilizing the pathway, they shall be a minimum of 8 feet wide and 6 inches thick un-reinforced concrete pathway where concrete is used. Especially in parks but also possibly in larger facilities, one such 8 foot wide path needs to connect all of the major elements of the site for maintenance vehicles.

Provide concrete or decomposed granite, without any plantings or irrigation controls, in the inside corners of "T" or "X" walkway intersections where vehicular traffic is anticipated. See Section 02900 for Sod/Turf to sidewalk decomposed granite buffer requirements.

Avoid surfaces and patterns that require special finishing (such as pavers or exposed aggregate) and multiple concrete pours. Special pattern surfaces, patterned control joints, and colored concrete will be considered in limited areas when they do not substantially increase costs.

Control joints in large areas shall be saw cut or zip strip only, with tooled joints tightly controlled elsewhere to meet 1/4" maximum radius joint edges.

Mow Strips. Provide a 12" wide concrete mow strips with reinforcing bar(s): 1) under fences located in turf areas, with the fence centered on the strip and the concrete sloped away from the posts, 2) at the edge of turf areas, and 3) elsewhere are needed to separate surface materials.

Building Slab Vapor Barriers. State on the drawings that the vapor barrier under the slab must be continuous WITHOUT ANY PUNCTURES for any purpose including construction stakes and screed supports. This is critical under wood and vinyl floor finishes. (The only exception would be under utility or service spaces where the concrete does not receive a finish and allowing moisture to breath through the surface will not create a problem.)

Patios and Walks adjacent to Buildings. When exterior concrete is located adjacent to buildings, it shall be depressed below the top of building slab elevation to mitigate exterior water from entering the building (in addition to sloping away from the building). The depression shall be 1/2" minimum (1" preferred) at building walls and windows, and 1/4" at doorways (thus allowing for the maximum 1/2" beveled height change allowed by ADA using an offset saddle threshold).

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Shade Structure Footings. The drawings must show that shade structure column footings may not be monolithically poured with the adjacent flatwork concrete due to cracking of the flatwork at the footing edges.

Tennis and Basketball Courts. Specify unbonded post-tension concrete slabs.

Reference Section 02882 Recreation Facilities for additional Tennis and Basketball information.

Include or require the following in the bid documents:

- Contractor or subcontractor doing the work must provide references for five similar successfully executed post-tensioned tennis court projects.
- Post-tensioning contractor must be certified by the Post-Tensioning Institute.
- Design and construction must comply with "American Sports Builders Association" standards (formerly United States Tennis Court and Track Builders Association, USTC and TBA) and the contractor or subcontractor doing the work must be a member of ASBA.
- Isolate slab from surrounding fence posts by placing the fence line over a flush concrete mow strip outside of the court play area. Keep the fence mow strip and post footings structurally isolated from the court slab with expansion material. Provide tooled control joints in the mow strip at the posts and equally spaced between posts to not exceed 5 feet on center.
- Isolate basketball hoop standards, tennis net supports, shade cabanas posts, light pole standards and slab penetrations (where they cannot be located outside of the post-tensioned slab) from the post-tensioned slab with two inches of medium density foam so that the slab can shrink unrestrained.
- Minimum 5" thick slab, with thickened edge.
- Joints:
 - Single courts: provide a key-way construction joint or control joint at the net line.
 - Multiple courts: provide a key-way construction joint between courts and either a key-way construction joint or control joint at the net line. The joint between courts must be outside of the 60-foot clear playing area width.
 - Key-way construction joint to be a standard tongue and groove T-joint. The cabling system can be continued through the joint to allow for tension to be applied at the end of the total slab distance for multiple courts. If rebar dowels are used instead, de-bond one end of the dowel so the concrete slabs can pull away at the joint for shrinkage contraction.
 - The result of the above joint patterning separates the slab into half court size panels for shrinkage.
- Require but do not rely on shop drawings; show a completely detailed and engineered design in the contract documents.
- Slope not less than 1:120 or more than 1:100. Each court must slope in a true plane, preferably from side to side (but from end to end or from corner to corner also are acceptable). The court may NOT be sloped from the net line to the baseline, from the baseline to the netline, from the sides to the centerline or from the centerline to the sides.
- A concrete mix selection that requires the least amount of water proportion, avoids oversanding, uses the maximum practical size aggregate (but not exceeding 1-1/2"), and a water reducing additive but excludes fly ash and fibermesh additives.

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- Show a sand layer and poly sheeting under the slab to facilitate slab movement during shrinkage contraction. The sand is also there to facilitate bottom water bleed. The poly also prevents ground moisture from traveling to the slab surface and delaminating the court surfacing.
- Continuously moist curing for at least 7 days, with the cover then left in place until the cover and the concrete surface appear to be dry, a minimum of an additional 10 days (ACI Publication 224R-01 "Control of Cracking in Concrete Structures," Sections 8.3.2 and 8.6.7); use no curing compounds. Do not use clear or black poly to cover; white poly is acceptable.
- Require an early partial tensioning.
- Require the use of a laser screed and a floor flatness tolerance of F(F) 50 per ASTM E1155.
- Require de-bonded doweling of sidewalks that abut the slab.
- A Pre-Slab Conference, which stresses the importance of minimizing water content of the concrete, rigorous site inspection and responsibility assignments, a quality-control-assurance plan, and a clear understanding of the requirements, details, and performance by the contractor. Link to an article explaining items to cover.

Gymnasium and Other Wood Flooring Concrete Slabs. Specify a flatness tolerance F(F) of 45 and a levelness tolerance F(L) of 35 per ASTM E 1155. See Section 09642 Wood Athletic Flooring, when applicable to a project, for other important design considerations and restrictions for concrete work.

Concrete Skateparks. Reference Section 02882.

Concrete Lighting Pole Bases. Add the following information on the drawings:

"Entire base to be poured monolithically with top of base to have an 1-1/2" dome."

"Sonotube forms to be stripped while still green. Green concrete to be rubbed (stoned) to bring up the "fat" and then finished to a light broom finish. Base to be wet cured (7) days."

"All rebar, anchors, bolts, etc to be called out"

Concrete Pool Decks. Reference Section 13152.

Sealer-Hardener. When designing pool decks and bathhouse floors, park restroom floors, fire station vehicle bay slabs, warehouse and storage building slabs, and similar exposed concrete floor surfaces, specify a penetrating sealer hardener similar to Ashford Formula with a 20 year warranty. Note the limitations on the use of fly ash in the concrete intended for this type of sealer (Click here for technical bulletin explaining limitations). These sealers can also be utilized as the concrete curing agent; see each manufacturer's literature (Click here for a technical bulletin regarding wet curing concrete with ashford formula).

Fly Ash. Except as specifically restricted within these Design Standards (such as for post-tension slabs), the city has no objection to the use of fly ash if the consultant determines it is appropriate to the work.

Architectural Cast-In-Place Concrete. Gain written approval from the City Project Manager before proceeding with a design that utilizes architectural concrete. Follow the recommendations of ACI 303R-04 (guide to cast-in-place architectural concrete practice) when specifying architectural concrete.

DESIGN STANDARDS
Division 4 – Masonry

04001 Design Information – Masonry

Rebar. Specify rebar positioners ON THE DRAWINGS.

Grouted Cells. When grouted cells are required, clearly indicate if every cell is to be filled or only certain cells.

Expansion Joints. Locate all expansion joints on the architectural drawing elevations, and coordinate their locations with the structural drawings and specifications.

DESIGN STANDARDS
Division 5 – Metals

05001 Design Information

Metal Finishes. Exterior miscellaneous metal work shall be:

- Steel (ferrous): galvanized and painted.
- Aluminum (non-ferrous): anodized or powder-coated.

Bollards, Removable. Removable bollards may be any design acceptable to the city project manager meeting the following minimum requirements:

- Able to accept standard padlock (provided by Owner)
- Slope adjacent concrete surfaces away
- Provide drain hole and gravel sump area under
- All steel to be double coat galvanized

Roof Access Ladders: (roof access requirements)(see additional access requirements in section 07001 - Roof Hatches).

The information in this section has information specific to codes that may or may not change in the future. The information is current with such codes as of October / 2004. The information in this section serves only to provide a basic understanding and is not meant to be complete, but rather a summary of the most basic requirements.

Required by:

2000 UMC, Section 910.8, 2003 IBC, Section 1009.12 and 2000 Southern Nevada Mechanical Code (Supplement)

Per the 2000 Uniform Mechanical Code, Section 910.8: Furnaces located on the roof of a building shall be readily accessible. (The building department interprets this as all equipment that needs to be maintained.)

Note: There is no requirement for permanent access to a roof without mechanical equipment.

Exception 1: Permanent exterior ladders providing roof access need not extend closer than eight (8) feet (2438 mm) to the finish grade.

Exception 2 amended by the 2000 SNMC: A portable ladder may be used for access for furnaces on the single-story portion of a Group R, Division 3 and Division 4 occupancies and Group U, garages and carports.

Exception 3: Permanent ladders for equipment access need not be provided at parapets or walls less than thirty (30) inches (762mm) in height.

Exception 4: added amendment by the 2000 SNMC: Furnaces installed on a roof not exceeding sixteen (16) feet in height above grade may be accessed by a portable ladder.

Per the 2003 International Building Code, Section 1009.12 Stairway to roof. **In buildings four or more stories in height above grade, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope). In buildings without an occupied roof, access to the roof from the top story shall be permitted to be by an alternating tread device.**

Restrictions: Although it is not desired, there are no restrictions in the Zoning or Planning

DESIGN STANDARDS

Division 5 – Metals

ordinances/codes that restrict roof access ladders (whether visible or not from the public way). Beware, planners may interpret them similar to mechanical equipment and therefore try and impose the same restrictions. Renderings submitted for site development plan review shall accurately portray the appearance of everything as closely as possible to avoid objections coming up at a later date.

Construction Requirements: References: 2000 UMC, 2003 IBC, OSHA and ANSI Requirements

The following list of requirements is not meant to be complete, but rather a summary of the most basic requirements.

- Permanent ladders shall have side railings that extend at least thirty (30) inches above the roof edge or parapet wall; 2000 UMC, section 910.8.1.
- Have landings less than eighteen (18) feet apart measured from the finished grade; 2000 UMC, section 910.8.2.
- Be at least fourteen (14) inches in width; 2000 UMC, section 910.8.3.
- Have rungs not more than fourteen (14) inches on center; 2000 UMC, section 910.8.4.
- Have a minimum of six (6) inch toe space; 2000 UMC 910.8.5.

DESIGN STANDARDS
Division 5 – Metals

05001 Design Information

Metal Finishes. Exterior miscellaneous metal work shall be:

- Steel (ferrous): galvanized and painted.
- Aluminum (non-ferrous): anodized or powder-coated.

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- Able to accept standard padlock (provided by Owner)
- Slope adjacent concrete surfaces away
- Provide drain hole and gravel sump area under
- All steel to be double coat galvanized

Roof Access Ladders: (*roof access requirements*)(see additional access requirements in section 07001 - Roof Hatches).

The information in this section has information specific to codes that may or may not change in the future. The information is current with such codes as of October / 2004. The information in this section serves only to provide a basic understanding and is not meant to be complete, but rather a summary of the most basic requirements.

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DESIGN STANDARDS

Division 5 – Metals

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- Have rungs not more than fourteen (14) inches on center; 2000 UMC, section 910.8.4.
- Have a minimum of six (6) inch toe space; 2000 UMC 910.8.5.

DESIGN STANDARDS
Division 6 – Wood & Plastics

06001 Design Information – Wood & Plastics

Pressure Treated Wood. It has come to our attention that pressure treatment for wood that includes arsenic in the solution has gained favor by trial lawyers. Specify that pressure treatments shall not include arsenic. This composition will be banned sometime in 2003, but sick building syndrome type lawsuits have been filed related to arsenic solutions used in pressure treatments for foundation grade lumber.

Mold on Lumber. Include provisions that lumber delivered to the construction site that has mold on it is acceptable to use ONLY IF the mold is sanded off BEFORE it is incorporated into the construction or brought within the building area (outside the structure). All visible mold must be sanded off all surfaces of the contaminated lumber one foot beyond the visibly contaminated area.

DESIGN STANDARDS
Division 7 – Thermal & Moisture Protection

07001 Design Information

Flashing and Sheet Metal. Included in Section 07300 Roof Coverings.

Roof Hatches. (see additional access requirements in section 05001 - Roof Access Ladders).

The information in this section has information specific to codes that may or may not change in the future. The information is current with such codes as of October / 2004. The information in this section serves only to provide a basic understanding and is not meant to be complete, but rather a summary of the most basic requirements.

Required by:

2003 IBC

International Building Code, Section 1009.12., Roof Access, Exception: In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 square meters) in area and having a minimum dimension of 2 feet (610 mm).

Commentary 1: Ladder extensions and/or grab bars are not required at roof hatches with permanent access ladders. See commentary; OSHA

Commentary 2: Roof hatches left in the open position are hazardous. ANSI standard A1264.1 – 1995, Safety requirements for Workplace Floor and Wall openings, Stairs, and Railing Systems, requires guardrail protection for the exposed sides of ladder way openings in any working/walking surface. Therefore, unprotected openings in roofs could be cited under the general duty clause of the Occupational Safety and Health Act, which requires an employer to provide a workplace free from recognized hazards. See commentary; OSHA

Roof Hatch – Safety Railing.

Note: The safety railing is not required per any codes, but is a safety measure required by the city.

Manufacturer: Babcock-Davis, Standard Model No. RHSR-SS (minimum 42" high above roof elevation)

See manufacturers information for alternate railing designs where it may be necessary to step off ladder to one side or the other.

DESIGN STANDARDS
Division 7 – Thermal & Moisture Protection

07001 Design Information

Flashing and Sheet Metal. Included in Section 07300 Roof Coverings.

Roof Hatches. (see additional access requirements in section 05001 - Roof Access Ladders).

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DESIGN STANDARDS
Division 7 – Thermal & Moisture Protection

07210 Building Insulation

Provide more than the normal minimum of building insulation. The City is a long-term property owner so do consider the energy savings over the life of the building in determining payback.

Exterior Wall Assembly: Provide a minimum of R-19, for example:

- Studs. 6" Nominal stud minimum for the building envelope with R-19 fiberglass batts.
- CMU. Provide 2" interior and 2" exterior (or equal combination) rigid insulation providing a minimum R-20. When using Exterior Insulation Finish System (EIFS), do not use in high traffic areas where it will show pedestrian wear.

Roof / Ceiling Assembly: Provide a minimum of R-38.

Radiant Barriers: Consider their use, when a generous plenum or attic space is present. Place the barrier on the underside of the roof assembly facing the attic space.

Interior Wall Assembly: Specify a minimum of STC 45 wall assembly for all interior office, conference rooms, restrooms, and other occupied room partitions. Consider higher ratings, including double wall assemblies, between noiser spaces (larger conference rooms-meeting rooms-classrooms) and adjacent offices.

- Interior studs, gypsum board, and sound batts to be continuous to underside of slab, or alternately, if a partition just penetrates the suspended ceiling, lay continuous sound attenuation blanket 4'-0" on each side of partition over a suspended ceiling. Partitions that terminate at the ceiling are not permitted.
- Caulk the perimeter of the partition under the edge of each base layer of gypsum panel and around all penetrations including electrical boxes with a continuous bead of acoustical sealant.
- Flank the finished floor material into the partition. Do not place or float partition over flooring material.

DESIGN STANDARDS
Division 7 – Thermal & Moisture Protection

07300 Roof Coverings

Related Sections.

Reference Section 02001 Design Information – Site Construction for waterproofing systems on the backside of retaining walls.

General.

- The contractor shall provide flood testing and City acceptable report for all roofs, regardless of the roofing material or slope.
- Consultant must accurately calculate and locate the actual roof slopes, crickets, and valleys on the roof plan, no approximations or general design descriptions.
- Provide sheet metal copings on all parapets and similar roof edge caps.
- Note on the drawings or in the specifications that the roofing installer is to build to the greater quality/quantity of the detailing indicated in the contract documents or the manufacturer's recommendations.
- Always specify a "pre-sloped" manufacturer's curb for roof mounted equipment (NO site built curbs).
- No pitch pockets.
- No surface mounted conduits or piping allowed on the roofing surface.
- Do not allow roof drain flows onto sidewalks.

Code Requirements. The consultant shall research Sections 1504 & 1609 of the 2003 I.B.C. with regard to wind loading requirements of roof assemblies. Roof manufacturers will warranty their roof for a given number of years with a given maximum wind speed (for example, a roof will come with a 15 year warranty for wind speeds up to 72 mph). All roofing types (clay tile, metal roofs, single ply, asphalt shingle, etc) need to be evaluated for performance requirements for wind resistance. These performance requirements are calculated based on equations in Section 1609 of the 2003 I.B.C. The code requires that wind pressures be evaluated for each and every building based on a building's importance factor, category, and exposure, window opening sizes, etc. The consultant is responsible for computing the wind pressures for the roof of their particular building and evaluating the performance of their roofing system to determine that the roofing system will be able to handle the wind pressure as calculated by the code. A computer program for calculating wind pressures is available at www.digitalcanal.com. The consultant will also need a copy of ASCE 702 document to use in conjunction with the computer program. Factory Mutual and the American Society for Civil Engineers also publish tables which can be used to calculate wind pressures. Factory Mutual publishes a "Loss Prevention Data Sheet – Documents 1-28 & 1-29" and ASCE publishes the ASCE 7 tables for wind load pressures.

Consultants should keep in mind that some roofing manufacturers will publish that their roof will pass the Factory Mutual 1-90 roof test (which means that the roof was tested by Factory Mutual to withstand wind pressures of 45 psf.). However, the wind pressure will need to be calculated for the specific building and the specific site, so that the consultant can be assured that the wind pressures acting on your building are less than the wind pressures that Factory Mutual warrants their roof for.

Preferred System. Unless specifically directed otherwise, specify 60 mill thermoplastic polyolefin (TPO) membrane fully adhered roofing system. The roofing system option would require a fleece back TPO membrane, fully adhered to a composite fiberboard using type 3 or 4 hot-mopped asphalt. The composite fiberboard is mechanically fastened over rigid insulation (thickness of rigid insulation and composite fiberboard shall provide at least an R30 insulation value). The rigid insulation would typically be fastened over metal decking. The fleece backing on the TPO membrane is required so that the hot-mopped asphalt doesn't bleed through to the top of the TPO membrane and the composite fiberboard is required because it provides an acceptable substrate for the type 3 or 4 hot-mopped asphalt. Please consult the manufacturer's literature for all requirements for this fully-adhered single ply roofing system. ICC & ES Reports are available for fully adhered roofing systems and supply information regarding the wind

DESIGN STANDARDS
Division 7 – Thermal & Moisture Protection

pressures that this type of roofing system will withstand.

Alternate System (same as Preferred System except as noted). Specify 60 mill thermoplastic polyolefin (TPO) membrane fully adhered roofing system. The roofing system option would require a fleece back TPO membrane, fully adhered to a composite fiberboard using foam adhesive. The composite fiberboard is an optional component of the roofing system and the single ply roof may be directly adhered to the R30 rigid insulation if desired. The rigid insulation would typically be fastened over metal decking. The fleece backing on the TPO membrane is required so that the adhesive doesn't bleed through to the top of the TPO membrane. The composite fiberboard may be added to this roofing system in order to increase the roofing system's ability to withstand wind pressures. Please consult the manufacturer's literature for all requirements for this fully-adhered single ply roofing system. ICC & ES Reports are available for fully adhered roofing systems and supply information regarding the wind pressures that this type of roofing system will withstand.



0504-SWHM.pdf
(255 KB)

Manufacturer's. The following manufacturer's are not allowed on City Buildings:
Carlisle Syntec (Failure to respond to warranty work)

Installation (NOTE THIS IS A DEPARTURE FROM THE NORM). The installer of roof coverings shall be responsible for all flashing and counter flashing (including parapet copings) to insure a complete watertight roofing system installation. Provide this information in Section 07300 Roof Coverings and Section 07620 Sheet Metal Flashing & Trim.

Required Pre-Roofing Conference before roofing starts. Contractor is to coordinate this conference with the Roofing, Flashing, HVAC, Stucco, Membrane, and other moisture protection sub contractors. A Pre-Roofing checklist will be provided by the City.

Roof curbs and parapets. Membrane roofing is to continue up over the top and down for all roof curbs and parapets. Counter flashing must also be provided. See required details.

Warranty/Guarantee. Specify a minimum manufacturer's warranty of 15 years. Do not specify a bond.

In addition to the manufacturer's warranty, require in the specifications that the contractor guarantee the roofing and associated work remain absolutely watertight and free from all leaks, due to faulty or defective materials and workmanship for a period of five (5) years. Sample specification language:

The General Contractor does hereby guarantee the roofing and associated work including but not limited to all flashing and counter flashing both composition and metal, roof decking and/or sheathing; all materials used as a roof substrate or insulation over which roof is applied; promenade decks or any other work on the surface of the roof; metal work; gravel stops and roof expansion joints to be absolutely watertight and free from all leaks, due to faulty or defective materials and workmanship for a period of five (5) years, starting on the date of Substantial Completion of the Project.

The General Contractor also guarantees that during the Guarantee Period he will, at his own expense, make or cause to be made such repairs to, or replacements of said work, by a roofing contractor approved and certified by the manufacturer to install the accepted roofing system, in accordance with the roofing manufacturer's standards as are necessary to correct faulty and defective work and/or materials which may develop in the work including, but not limited to: blisters, delamination, exposed felts, ridges, wrinkles, splits, warped insulation and /or loose flashings, etc. in a manner pursuant to

DESIGN STANDARDS
Division 7 – Thermal & Moisture Protection

the total anticipated life of the roofing system and the best standards applicable to the particular roof type in value and in accordance with construction documents as are necessary to maintain said work in satisfactory condition, and further, to respond on or within three (3) calendar days upon proper notification of leaks or defects by the Owner or Architect.

This General Contractor guarantee is limited to the work performed by the general contractor and does not extend to: (1) alterations or additions to the roof performed by other contractors, (2) damage caused by lightning, windstorm, hailstorm and other unusual phenomena of the elements, or fire, (3) damage to the interior contents of the building such as furniture and files not attached to the building, and (4) damage or abuse of the work caused by others not associated with the General Contractor.

DESIGN STANDARDS
Division 8 – Doors & Windows

08001 Design Information – Doors & Windows

General – Doors and Frames.

Materials.

Interior wood doors, when specified, shall be paint grade, solid core. Hollow core may be considered for low usage closet doors only.

Interior door frames shall be metal (no wood, see below).

Exterior service doors shall be hollow metal in hollow metal frames.

Exterior entry doors may be any materials compatible with the building design.

Hollow Metal Doors and Frames.

Minimum Standard for manufacture: ANSI A250.8 (1998) [Formerly SDI-100 (1991)], within the following limitations specify level and model as appropriate to the usage.

Exterior

All exterior hollow metal doors and frames shall be galvanized at the factory.

All exterior hollow metal doors and frames shall be seamless (Model 2), factory welded and ground only (plastic filler or caulking is not acceptable).

Exterior doors shall be flush top.

Exterior door face shall be 16-gage minimum (therefore limited to Level 3 or 4).

Exterior door frames shall be 14-gage minimum, heavier gage for wider openings.

Exterior doors shall be appropriately steel stiffened for the usage and completely filled with batt mineral wool, fiberglass, or foam insulation; honeycomb core stiffening is not acceptable.

Interior

Interior door face shall be 18-gage minimum (therefore limited to Level 2, 3 or 4).

Do not specify seamless edge for interior doors (therefore no Model 2).

Interior door frames shall be hollow metal, either welded or knockdown. Knockdowns are preferred for remodels although City crews are reluctant to relocate/re-use them, welded is preferred for new construction.

When specifying welded interior door frames, they shall be 16-gage minimum, heavier gage for wider openings.

Glass Block. Due to vandalism problems, the use of glass block is prohibited on all projects. This includes plastic and vandal resistant versions of glass block.

DESIGN STANDARDS
Division 8 – Doors & Windows

General – Glazing.

Limits.

1. Limit manufacturers to those capable of timely replacement.
2. Specify dual pane.
3. There are no limits on color, reflectance, or transmission as long as the consultant can justify selection.

Consideration

1. Evaluate the orientations of glazing and the different glazing attributes available for the best efficiencies in daylighting, solar heating, shading, ventilation and aesthetic value.

Skylights. Consideration needs to be given to making any skylights burglar resistant. Bars on the outside are preferable over bars located on the inside to deter break-in attempts.

DESIGN STANDARDS
Division 8 – Doors & Windows

08710 Door Hardware

Reference "Section 13700 Security Access and Surveillance Access Control" for the City card entry system. Reference "Section 16001 Design Information – Electrical" for special door hardware requirements prescribed by the National Electrical Code.

Use this section as the basis for scheduling hardware unless matching existing hardware in a remodel or expansion. A normal amount of deviation from these standards is expected in new construction but must be approved by the City Project Manager.

The City's justification for only two sources for each item is the necessity for the City to stock these parts in order to keep its property secure and exiting safe at all times. No substitutes beyond the two listings.

Cylinders. Best I/C Core 7 pin housings with Best / Kaba Peaks Cores, depending on the location and the end user situation, to be determined by D&E Locksmiths. Contractors will supply construction cores. The City of Las Vegas Locksmiths will install City cores after C of O. Keyed cores will be ordered by the City of Las Vegas, D&E Locksmiths.

[Note: no core substitutions allowed. This sole source manufacturer is required to match the City of Las Vegas master key system.]

Exit Devices. Von Duprin 99EO (with Alarm Kit – 99EO ALK) or 33 Series devices, finish 26D Dull Chrome, unless matching existing hardware finish. For pairs of doors, when building codes permit, use rim devices with keyed removable mullions.

Electric Locks for Card Access. Electrified Von Duprin Exit devices with Von Duprin Electric Strikes or Hes equivalent.

[Note: no exit device substitutions allowed. The cost to stock additional manufacturers is too costly since the items can cost up to a \$1,000.00 per item]

Mortise Locks. Best 35H 14H (35H Series, 14H trim design) or Schlage L9000 Series equivalent.

Cylindrical Locks. Best 93K14D (93K Series, 14D trim design) or Schlage D Series equivalent.

Door Closers. LCN 4041 Series (4041 is the ADA compliant model of the 4040 Series) or Norton 7500 Series equivalent.

Cabinet Locks. All cabinets & drawers that need to be secured should accept Best Cores. Use original Best cabinet locks or Olympus with Best Cores.

For Special Applications Contact:

City of Las Vegas, Detention & Enforcement
Kirk Miley, Sr. Locksmith
3300 Stewart
Las Vegas, Nevada 89101
(702) 229-6617

Best Access Systems already has this address and contact as their shipping designation for the City of Las Vegas. [Click here to view the keying process.](#)

(continued)

DESIGN STANDARDS
Division 8 – Doors & Windows

Accessories – Exterior Doors.

Specify:

- Top rain drips (unless otherwise protected)
- Perimeter weather-stripping.
- Bottom sweeps (no felt or brush materials, no automatic door bottoms).
- Thresholds:
 - Set in full bed of mastic.
 - Use only a ½" ADA offset saddle threshold so exterior landing can be set ¼" below the building slab. Specify similar to Reese S514, S714, S239, or S245.
 - Do not specify a threshold ramp extending out from the doorway similar to Reese S411.
 - See Section 03001 Concrete for additional information.
- Latch protection plates on exterior hollow metal doors.
- Locking hardware for glass and aluminum exterior doors that is of a design where latch protection is not required.

DESIGN STANDARDS
Division 9 – Finishes

09001 Design Information - Finishes

Standard Finishes - City Hall Campus Facilities

The use of these City Hall Campus finishes are recommended for consideration in all city facilities for continuity and maintenance purposes.

Carpet. The City Hall Campus uses a standard carpet that can be purchased using the County's purchasing contact. [Click here to link to a generic specification for this carpet.](#)

Other facility locations may use this same carpet or any other carpet appropriate to usage. Carpet tiles are an acceptable alternative to rolls depending on usage.

Rubber Base. The City Hall Campus uses a standard 4-inch cove base by Burke, Savannah, 514 (use cove at all floor finishes).

Paint. The City Hall campus uses a standard paint color by Sinclair, Warm Oyster.

Modular Furniture. Reference Section 12500 – Furniture, for further information and finishes.

Finish Restrictions and Requirements - All City Facilities

The following finish standards and restrictions apply to all city facilities.

Tile Joints. Provide tile expansion joints (sealant and backup) over all concrete slab cold joints and saw-cut control joints. Dimension the locations of these joints on the foundation plans so that the concrete slab joints occur directly under the tile joints and where possible between full tiles (slab control joints should be laid out on the same module as the tile, i.e. 6", 8", 12" etc.).

Use of anti-fracture membranes may be utilized to minimize the number of control joints and should be considered to limit general movement cracking issues, but any such membrane must be rated by the manufacturer for the installation and must be detailed in strict compliance with the manufacturer's recommendations. Use of such membranes shall not relieve the design consultant of liability for related design defects.

Consider including in the specification a requirement for a shop drawing layout review prior to slab installation.

Ceilings. Ceiling materials other than a suspended accessible acoustical ceiling need to be pre-approved by the CLV Project Manager. Exposed mechanical systems are not uniformly appreciated by staff and management. Ceiling assemblies must provide for the future installation of concealed conduit systems.

Concrete Floor/Slab Coatings. The use of seamless floor/slab coatings are prohibited unless pre-approved in writing above the level of the CLV Project Manager. This applies to both interior and exterior applications.

This specifically includes all:

- Opaque painted floor coatings including epoxies and acrylics,
- Systems utilizing a clear protective topcoat,
- Systems with recommended annual maintenance in excess of that required for a VCT floor,
- or
- Surfaces that may be damaged by unprotected chair and table legs.

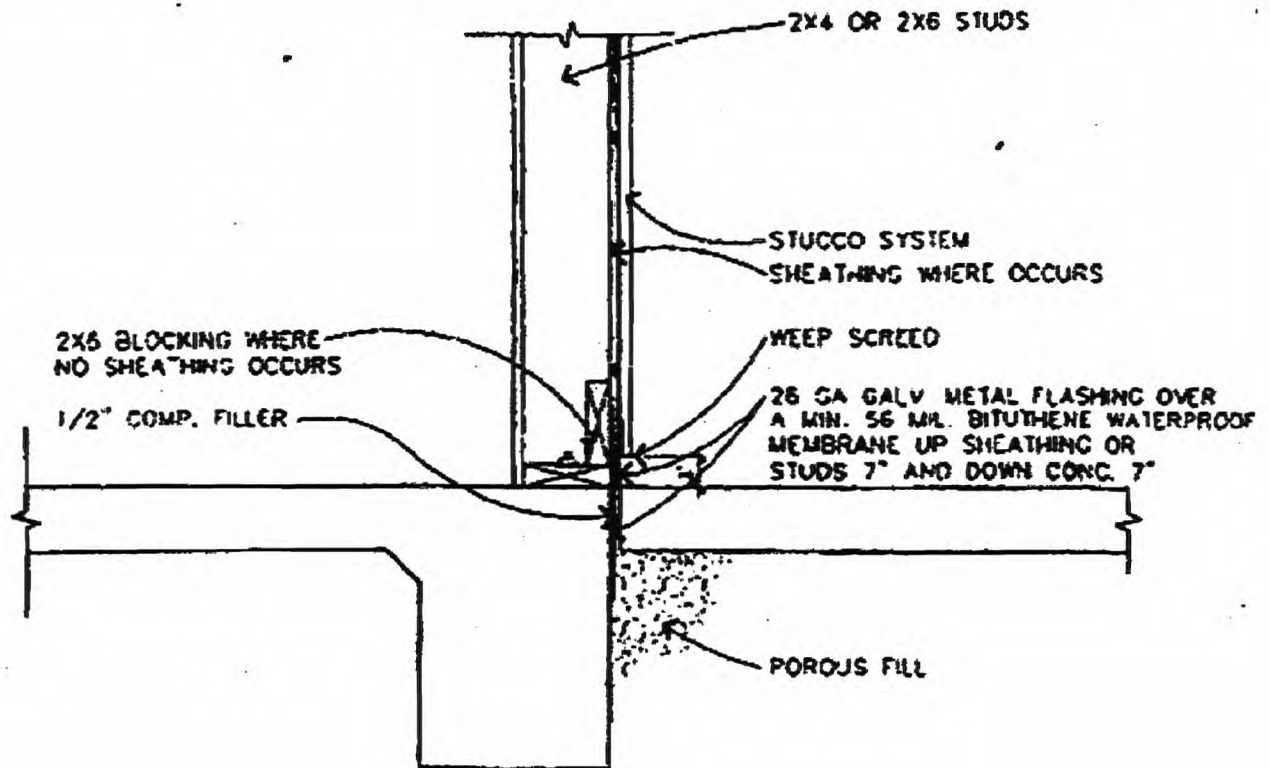
DESIGN STANDARDS

Division 9 – Finishes

Colored concrete and transparent penetrating concrete stains may be specified as appropriate (transparent means that a light colored sample of the product is not capable of concealing variations in concrete color).

Stucco. Always specify 2 layers of paper or felt backing regardless of the substrate material or minimum code requirements. Do not allow an air barrier or house wrap material to substitute for one of these required layers.

Note that concrete walks and exterior door landings are to be set below the elevation of building slabs where adjacent (See Section 3001 Concrete and Section 08710 Door Hardware threshold requirements for additional information), which will require the use of the following type of sheet metal flashing detail to meet building code and functional requirements at exterior door openings.



VCT. Require the contractor to apply two coats of high quality commercial floor polish as part of his work.

DESIGN STANDARDS
Division 9 – Finishes

09642 Wood Athletic Flooring (Highlighted text in progress)

Reference Section 03001 Concrete for the flatness and levelness tolerances to specify for the slab under wood flooring, or Section 03001 Concrete should reference Section 09642 Wood Athletic Flooring for specific requirements where wood athletic floors will be installed. See special restrictions on placing filler material such as sand between the slab and below-slab vapor barrier, noted below. Slag content is not allowed in concrete slabs beneath hardwood floors.

Due to the insistence of the Department of Field Operations, wood athletic floor systems shall be of the Floating Floor Maple Strip design, also known as a Floating Panel or Double Plywood Floor System. This type of flooring system utilizes a double layer of plywood set on cushions (resilient pads), topped by the finished hardwood floor.

Base.

2 1/2" Recessed Concrete Slab. confirm with system manufacturer for variations due to individual component thicknesses, such as resilient pads and plywood layers. Specify quality control of slab level to a tolerance of 1/8" max variation in a 10 foot radius and compliance with ACI 302 requirements for a Finish Class 9 random traffic slab on grade. Alternative to the 10 foot straight edge level tolerance, slabs under athletic floors may be specified as ACI 302 Composite Overall Multi-Directional F_F45/F_L35 slabs.

Provide poly moisture barrier under and at the perimeter of the slab and on top of the slab, directly below the cushions (resilient pads). The Maple Floor Manufacturers Association has issued a statement that the below-slab vapor retarder be placed directly below the slab, with no fill material (sand, etc.) placed between the slab and the vapor barrier. Such fill material will absorb moisture and release it over time, causing migration of moisture through the slab and into the wood floor system. Consult with flooring mills in determining proper sub slab vapor barrier location under hardwood floors.

Vapor Retarder. Polyethylene sheet 6 mils minimum thick, joints lapped and sealed.

Cushions (Resilient Pads). Manufacturer's standard or upgrade pads to achieve specified DIN scores. Note that within manufacturers' product lines, choices of cushions are available to achieve specific floor characteristics.

Subfloor. Two (2) layers of 15/32" five ply, APA rated sheathing, Exposure 1, unless system manufacturer specifically requires a variation to achieve the specified performance criteria.

Blocking. Where permanent or typically placed heavy loads are anticipated, such as under the stack area of folding bleachers, specify blocking to eliminate deflection of the wood floor. Be aware that such areas will exhibit different performance characteristics such as ball bounce and shock absorption and the design needs to consider the relative importance of designing for heavy objects to be placed in the normal field of play.

Wood Floor.

Floor. 1 1/2" x 25/32" mixed grain TGEM (tongue and groove end match) KD northern hard maple, MFMA or NOFMA graded, second quality or better. No yellow maple. Where wood athletic floors will be striped for a multitude of courts or types of activities such as in a multi-use gymnasium, specify First Grade in order that the wood grain markings do not visually distract from the variety and colors of the striping. No warped or curved cut lumber allowed. Mill must be a MFNA or NOFMA approved mill.

DESIGN STANDARDS

Division 9 – Finishes

Finish. Sand in four directions and three-coat finish in accordance with the standards set by the Maple Flooring Manufacturers Association (MFMA) or National Oak Flooring Manufacturers Association (NOFMA). Provide floor complete with painted lines, vented cove base, flush mounted floor plates and inserts for volley ball standards, electrical, timing covers etc. as instructed by the owner. Pre-finished systems are not acceptable.

Racking. Rack layout to avoid step joints. Less than 5% joints closer than 6" not permitted

Contractors. Installer and his crew must be approved by the mill providing the wood flooring and meet the following qualification criteria and be recognized by the City of Las Vegas as a qualified installer:

City of Las Vegas qualification criteria:

1. Provide written evidence that they have successfully completed the installation of three (3) similar projects during the 5 year period immediately prior to bid opening. The City shall be the sole judge of whether the previous experience was successful.
2. Provide current written evidence that the mill is a MFMA or NOFMA manufacturer approved mill.
3. Provide the name of the installing contractor and its State of Nevada contractor's license number.

DIN Standards. Wood athletic floor systems shall meet certain of the DIN Standard 18032-2 test results specific to the anticipated primary use of the floor (basketball, dance, etc.) See further DIN Standard requirements, below. DIN Certification is not a requirement, but may be considered on projects of elevated importance.

SEE NEXT PAGE FOR THE PERFORMANCE DATA MATRIX FOR FLOATING PANEL MAPLE FLOORING SYSTEMS AVAILABLE BY THE 5 MFMA MILLS. SYSTEMS CONSIDERED COMPARABLE TO EACH OTHER ARE IDENTIFIED BASED ON THE APPROPRIATE DIN CRITERIA FOR PRIME FLOOR USAGE. WRITE THE LEAST COMMON DENOMINATOR OF EACH COMPARABLE SYSTEM AS THE REQUIRED DIN PERFORMANCE CRITERIA INTO THE PROJECT SPECIFICATION AND LIST THE FLOOR SYSTEMS THAT MEET THE SPECIFIED CRITERIA IN THE SPEC AND TO DETERMINE EQUIVALENCY OF SUBMITTED PRODUCTS.

SOME PROJECTS WILL REQUIRE SEPARATE PERFORMANCE CRITERIA FOR DIFFERENT SPACES/USES, SUCH AS GYMNASIUMS AND DANCE/AEROBIC ROOMS. USE CAUTION WHEN DETERMINING THE APPROPRIATE PERFORMANCE CRITERIA FOR EACH IN ORDER THAT A SINGLE MANUFACTURER CAN MEET THE PERFORMANCE CRITERIA FOR EACH.

DESIGN STANDARDS
Division 9 – Finishes

SYSTEMS	DIN STATUS ¹	SHOCK ABSORPTION (53% MIN)	RESILIENCE/ DEFLECTION (2.3 MM MIN)	DEFLECTION CONTROL (15% MAX)	BALL REBOUND (90% MIN)	ROLLING LOAD ² (PASS/FAIL)
AACER FLOORING www.aacerflooring.com						
AacerCush II						
Aacerflex BP	CERTIFIED					
ACTION FLOOR SYSTEMS www.actionfloors.com						
ActionCush I	RATED	45%	1.2mm	18%	95%	PASS
ActionThrust I ³	COMPLIANT	58.2%	1.75mm	16.3%	95%	PASS
ProAction-Flex ⁴	CERTIFIED	57%	2.4mm	10.5%	95%	PASS
ProAction-Thrust	CERTIFIED	60%	2.6mm	13.7%	92%	PASS
CONNOR HARDWOOD COURTS www.connorfloor.com						
Duracushion I		49%	1.4mm	19.5%	93%	PASS
Rezillpanel (1/2" pad)		64%	1.8mm	21.3%	95%	PASS
Rezillpanel (3/4" pad)		62%	2.4mm	18.5%	94%	PASS
Neoshok (red pad)		61%	1.9mm	21.4%	97%	PASS
Neoshok (blue pad)		63%	2.5mm	24.2%	94%	PASS
Neoshok (black pad)		70%	3.1mm	23.8%	87%	PASS
Sportbond Plus	CERTIFIED	58%	2.3mm	14.9%	93%	PASS
HORNER FLOORING www.hornerflooring.com						
Thrust-A-Cushion						
Safe Panel System						
Balanced (BPS)	CERTIFIED					
ROBBINS SPORTS SURFACES www.robbsfloor.com						
Bio-Cushion Classic	TESTED					
Bio-Star ⁵	CERTIFIED					

FOOTNOTES: 1) Surface Friction Criteria for DIN is not included in this table, as it is a floor finish criteria achievable with any of these floors. 2) A durability, not performance criteria. 3) System installed at Mirabelli. 4) System installed at Centennial Hills 5) May not be available in 1st Grade.

DESIGN STANDARDS
Division 9 – Finishes

09900 Painting

Work Scope. Specify that all exterior pad mounted electrical cabinets and mechanical equipment (including HVAC units if visible to the public from ANY location) be painted to coordinate with the color scheme of the project. Factory finish gray is not an acceptable final finish.

Quality Standard. Specify high quality paint, since the City will be maintaining the facility indefinitely.

Solids. Specify a minimum of 32% solids by volume (not weight).

Vehicle.

Exterior. Specify only 100% Acrylic topcoats, no substitutes (not vinyl acrylic, co-polymer).

Interior. Specify as appropriate to usage.

Pigment Load. Specify Tio2 – Titanium Dioxide.

Sheen. Specify by percentage reflectance, not by label such as "semi-gloss".

Ferrous Metals. Specify an oil based (alkyd) primer on all ferrous metals with two coats of 100% Acrylic, interior and exterior.

Handrails. Specify a mastic epoxy primer with two coats of aliphatic polyurethane, interior and exterior, to all handrails and similar heavy wear painted surfaces.

Occupied Projects and VOC. For remodels where the occupants will be remaining during construction, only specify water-based products with low VOC. Otherwise, the City does not require low VOC materials, specify the best quality for the use.

Swimming Pools and Splash Pads. Aquatic facility paint specified must be NSF approved for use and application.

Spare Materials. Specify one (no more, no less) quart of each color of water base paint be provided for the owner's use; do not provide spare materials of any oil based paints used, since the owner has no way to properly store them.

Minimum Dry Film Thickness. Specify minimum DFT for each paint system and coat. The following are minimum required thicknesses and need to be increased in the consultant's paint specification to meet standard specification text and manufacturer's recommendation.

Exterior.

Concrete Block, Brick Masonry, Concrete, Plaster (Stucco) - 2 or 3 Coat System over Block Filler

Filler Coat, minimum 7.0 mil DFT

Second and Third Coat, 1.5 mils minimum each DFT

-OR-

Elastomeric Smooth Second and Third Coat: 12 mils minimum total DFT

Elastomeric Medium or textured Second and Third coat: 18 mils minimum total DFT

Wood, Hardboard, Siding - 3 Coat System

Primer Coat (Acrylic Epoxy Ester): 1.5 mils minimum each DFT

Second and Third Coat: 1.5 mils minimum each DFT

Ferrous and Nonferrous Metal - 3 Coat System - Alkyd Primer and Acrylic Finish Coats

Primer Coat: 1.5 mils minimum each DFT.

DESIGN STANDARDS

Division 9 – Finishes

Second and Third Coat: 1.5 mils minimum each DFT

Around swimming pools, pool equipment rooms, pool chemical storage areas, and similar harsh chemical environments, specify the epoxy systems shown below for "Interior - Wet Areas – Ferrous Metal and Non-Ferrous Metal".

Metal Doors - 3 Coat System (Shop Primed)

Spot Prime: 1.5 mils minimum each DFT, Exterior Alkyd Metal Primer

First Coat: 2-3 mils minimum each DFT, Universal Primer

Second Coat: 2-3 mils minimum each DFT, High Solids Polyurethane

Hand rails: 3 Coat System

Primer Coat: Mastic Epoxy Primer, 4-5 mils minimum DFT

Second and Third Coat: Aliphatic Polyurethane, 3-5 mils minimum each DFT

Gypsum Board: 3 Coat System

Acrylic System:

Primer Coat: 1.8 mils minimum each DFT

Second and Third Coat: 1.5 mils minimum each DFT

-OR-

Vinyl Acrylic System:

Primer Coat: 2.0 mils minimum each DFT, Exterior Acrylic Primer/Sealer/Stain Killer

Second and Third Coat: 1.6 mils minimum each DFT, Exterior Acrylic Copolymer Flat Finish

Interior.

Concrete, Cement Plaster, or Masonry - 3 Coat System

Primer Coat: 2.1 mils minimum each DFT

Second and Third Coat 1.5 mils minimum each DFT

-OR-

Low VOC / Low Odor

First Coat: 1.7 mils minimum each DFT

Second and Third Coat 1.2 mils minimum each DFT:

Gypsum Board - 3 Coat System

Primer Coat: 1 mils minimum each DFT

Second and Third Coat 1.3 mils minimum each DFT

-OR-

Low VOC / Low Odor

Primer Coat: 1.7 mils minimum each DFT

Second and Third Coat 1.2 mils minimum each DFT

Acoustical Ceilings - 1 coat system

First Coat: 1.7 mils minimum each DFT

Wood - 3 Coat System – Acrylic Primer and Acrylic Finish

Primer Coat: 1.5 mils minimum each DFT

Second and Third Coat 1.5 mils minimum each DFT

Ferrous and Nonferrous Metal - 3 Coat System

Same as Exterior Metal (Alkyd Primer)

Wet Areas –Concrete Block and Brick Masonry — Epoxy System

Filler Coat: 7.0 mils minimum each DFT, Acrylic Block Filler

Second and Third Coat: 4-5 mils minimum each DFT, Mastic Epoxy

DESIGN STANDARDS
Division 9 – Finishes

Wet Areas – Concrete, Stucco & Plaster— Epoxy System

Primer Coat: 2.0 mils minimum each DFT, Epoxy Acrylic Concrete Sealer
Second and Third Coat: 4-5 mils minimum each DFT, Mastic Epoxy

Wet Areas – Ferrous Metal — Epoxy System

Ferrous metal - above grade

Prep - Clean with Phosphoric Acid Metal Preparation
SP-3 Hand tool Clean to remove all scale, weld slag and foreign debris.

Primer Coat: 3-4 mils minimum each DFT, 70% minimum solids Zinc Epoxy Primer
Second and Third Coat: 4-5 mils minimum each DFT,
80% minimum solids Mastic Epoxy

Ferrous metal - below grade or through concrete

Prep - Sand blast new steel to SP-6 standard

Primer Coat: 4-6 mils minimum each DFT, 60% minimum solids Epoxy Primer
Second and Third Coat: 8-12 mils minimum each DFT, 100% solids Epoxy

Cure for 4 days before exposed to water environment.

Wet Areas – Non-Ferrous Metal — Epoxy System

Prep Coat, Metal Phosphorizer
Second and Third Coat: 4-5 mils minimum each DFT, Mastic Epoxy.

Concrete Floors

1 Coat clear polysiloxane concrete penetrating sealer.

DESIGN STANDARDS
Division 10 – Specialties

10160 Toilet Compartments

Unless matching existing materials, use:

- Floor supported with headrail mounting or
- Floor to ceiling mounting,

- Solid polymer (high-density polyethylene with homogenous color throughout), or
- Baked enamel painted steel partitions

as appropriate to usage and project budget. Park restrooms utilize the city's standard custom design.

Consider extra deep compartment stalls in senior facilities.

DESIGN STANDARDS
Division 10 – Specialties

10350 Flagpoles

Design consultants shall not suggest or recommend including flagpoles in any facility designs. The City Project Manager will inform the consultant if flagpoles are to be included.

When flagpoles are included in the design:

Specify aluminum, stainless steel aircraft cable internal halyard with flush access door and cylinder lock that permits locking of the flag in any position, winch operated, revolving truck assembly, with flash collar,

Equal to the features, materials, and warranty of the Deluxe IH Series, Internal Flagpole System with "M" type winch, all stainless steel cable available from Anchor Flag, Inc., 2044 Hwy 9 W. Longs, South Carolina 29568, 800-637-3002, www.anchorflagandflagpole.com.

Flags must be properly lighted since flags will not be lowered at night. Comply with "The Flag Code of The United States-Public Law 94-344 July 7, 1976", <http://www.bcpl.net/%7Eetowner/flagcode.html>.

If lights are ground mounted, they must be low temperature, vandal resistant and located outside of sidewalks, concrete flatwork, and pedestrian areas. Mounting lights on freestanding, parking lot, or general lighting poles is acceptable if glare and light spill into residential areas is limited.

The City does not have a standard pole height or flag size.

DESIGN STANDARDS
Division 10 – Specialties

10426 Signage & Graphics

General Information. This section includes information pertaining to Building and Site signage standards and code requirements. The consultant shall provide complete project documents necessary for the project to open with a full complement of signs including on/off site and building signage location plans, signage details, and specifications. The consultant shall review and utilize the standard sign details provided in the OAS design standards. The quantity and location to install each of the signs is described in the most specific section of the design standards and/or in this section.

If these standards do not contain a standard sign necessary for a project contact OAS to coordinate the design and the text for the sign. Signage for historic buildings will be determined on a case by case basis, with many if not all of these design standards being modified as appropriate and required.

Manufacturer and contractor logos or advertising plates are not allowed on any signs or construction features including chain-link fences, sidewalks, manufactured buildings, shade structures, etc.

Reference additional signage requirements in the following sections:

01030 Accessibility
01050 Park Design
02882 Recreational Facilities & Playground Equipment
02870 Site Furnishings
02875 Site Shelters
02882 Recreational Facilities & Playground Equipment, Dog Parks, Skate Parks
13300 Splash Pad Equipment
13910 Basic Fire Suppression Materials & Methods
16001 Design Information - Electrical
16520 Exterior Lighting

Dedication Plaque. All major buildings open to the public and all parks require a dedication plaque. Building plaques are generally located around the main entry, interior or exterior. Park plaques are monument mounted. Verify locations with the City and whether a plaque is required if in doubt.

See the corresponding drawing file showing the dedication plaque. The same plaque is used for interior and exterior use, and for buildings and park monuments.

\\EMPEROR\Intranet\PublicWorks\OAS Intranet\DesignStandardsManual\Drawings\10-Specialties\Dedication Plaque\ST10426-01.dwg Coordinate the names of the public officials, project name, and dedication date to be shown on the plaque with the City. The City is responsible to coordinate approvals and acquire the plaque. Variations from the standard need to be approved by the City Manager. Note on the drawings that the plaque will be furnished by the City and installed by contractor.

Plaque Monument. To be utilized when placing a plaque in a park or other open space project that does not contain a significant building. Reference the corresponding concrete monument drawing file, which shall be included in the construction documents. The concrete monument shall be located near the vehicular and/or pedestrian entrance to the site in a planting area (not grass). The concrete monument is to be furnished and installed by the contractor. Any revisions made to the design of the concrete monument requires prior approval from the City Manager's Office.

Ordering. The plaque will not be ordered until after the grand opening ceremony for the project. The fabrication and delivery of the plaque takes approximately 6 weeks from the time a P.O. number is issued to the manufacturer. The manufacturer is A.R.K. Ramos, contact person: David Wommer, phone (800) 725-7266, fax (405) 232-8516.

DESIGN STANDARDS

Division 10 – Specialties

Site Signage.

Park Monument Signs. Precast concrete, not lighted, furnished and installed by the City upon completion of the project. Indicate the signage location(s) on the drawings. Signs may be one or two sided, base size is 2'-0" x 10'-0". City contact: John Black at phone no. 229-6988 in the Department of Field Operations (Parks / Open Spaces Division). These signs may also be used to identify building projects as appropriate.

Off-Site and On-Site (Vehicular Signage). Aluminum signs with applied Silk-screen text and graphics. Signs should be post mounted; mounting on light poles is discouraged but allowed where additional posts would be impractical or hazardous such as in parking lots. Comply with the Manual on Uniform Traffic Control Devices and all codes/regulations.

Handicapped Parking Signage. Ref. ADAAG Standards and N.R.S. in regard to handicap parking and side-lift vehicle parking requirements. Reference Section 01030 Accessibility for further information.

On-Site Regulatory-Informational-Warning Signage (Non-vehicular Signage). Signs may be mounted on posts or fences, although mounting on light poles is discouraged but allowed where additional posts would be impractical or hazardous such as in soccer field light poles areas. Standard drawings of the signs and mounting instructions are located in this and other sections of the Design Standards.

Signage Standards (sign and post specifications / mounting requirements).

Colors (Signs).

- Regulatory and Park Activity Signs / Identification Signs: White background with Black text.
- Warning Signs: Red background with White text. (Pantone Red – 187C)
- Handicap Parking Signs: Blue background with White text. (Pantone Blue – 294C)

Note: Any exceptions to these colors will be shown in the section specific to the sign.

Sign Specifications.

On-Site Regulatory-Informational-Warning Signage (Non-vehicular Signage).

- Aluminum signs (thickness .080")
- Engineered White Sheeting Background
- Silk-screen applied color over background material. (Inks shall have a light fastness rating of 7-8 on the din 16525 (Wool Scale) or equivalent industry standard, and must be able to withstand 375 degrees Fahrenheit (190 degrees Celsius) without noticeable change of pigmentation. Inks shall be formulated using a computer colorimetry system and shall be matched with a tolerance of +/- 0.1 grammes.)
- Provide UV inhibitors in color.
- Provide 3M Scotchlite Protective Overlay Film Series 1150
- Reference sign drawings for hole locations.

Off-Site and On-Site (Vehicular Signage).

- Aluminum signs (thickness .080")
- High Intensity grade, or equal background (encapsulated lens retro-reflective sheeting) *(Class 4 sheeting shall meet the requirements of FP-96, Section 718, for Type III sheeting.)*
- Silk-screen applied color over background material. (Inks shall have a light fastness rating of 7-8 on the din 16525 (Wool Scale) or equivalent industry standard, and must be able to withstand 375 degrees Fahrenheit (190 degrees Celsius) without noticeable change of pigmentation. Inks shall be formulated using a computer colorimetry system and shall be matched with a tolerance of +/- 0.1 grammes.)
- Provide UV inhibitors in color.
- Provide 3M Scotchlite Protective Overlay Film Series 1150.

DESIGN STANDARDS

Division 10 – Specialties

- Reference sign drawings for hole locations.

Post / Sign Attachment Specifications.

- 2" Galvanized post (box member) w/ continuous perforated holes on all four sides.
- Attach anchor and sleeve together prior to driving into ground. Leave at least one hole, but no more than two, above ground or above sidewalk.
- For sidewalk installation, drill sidewalk with a 3" hole, the center to be 6" from the back of sidewalk.
- Attach post to anchoring system by using at least two 3/8" diameter. Drive rivets.
- Provide 4" minimum lap between post and the anchor/sleeve assembly.
- Attach signs with (2) - #10 x 3/4" self-tapping vandal proof screws (screws color to match sign color).

Note: Reference sign post installation detail drawing for further information pertaining to length of anchor and sleeve.

Sign Mounting Standards.

On-Site Regulatory-Informational-Warning Signage (Non-vehicular Signage).

- Mounting Height shall be between 40" min to bottom of sign and 70" maximum to top of sign. (unless noted otherwise).
- More than one sign is allowed on a single post.
- Signs shall be installed on the same face or on the opposite side of the post only. If signs are mounted on the opposite side of the post they shall be mounted at the same height.
- No signs shall be installed at a right angle (perpendicular) to another sign on the same post.
- Single post mounting is required unless noted otherwise.
- Post height shall not extend above the top of signs.
- Post mounted signs shall be located in landscaped areas (decomposed granite vs. turf) if possible.

Off-Site and On-Site (Vehicular Signs).

- For mounting Height and additional requirements reference the standards in the Manual on Uniform Traffic Control Devices (MUTCD).

Note: Reference Accessibility Section 01030 for further information pertaining to mounting standards for handicap parking.

Light Pole Attachment (only when necessary).

- Do not drill through or into light poles.
- Provide galvanized straps to secure signs to poles.

Building Signage – Exterior.

Park Restroom Building Men's and Women's Room Signs. A.R.K. Ramos, model no. E-94 at the women's room and F-94 at the men's rooms. The sign field texture to be pebble. Color to be selected per project by the consultant to coordinate with the project color scheme.

Building Name. The following types of buildings will be given name identification on the exterior of the building located in proximity to the main entrance; Community centers (i.e. senior centers, auditoriums/theatres, track break buildings, etc.), Recreation centers, Fire Stations, Government (Public) Buildings. Do not provide Building Name signage on park restrooms or similar accessory buildings. The official name of the building typically will not be known until the grand opening. Therefore, the design consultant shall provide a location only; on the building for a proposed future building name (architectural project manager to coordinate with city department official name). Appropriate lighting and mounting requirements will be included in the contract documents but the signage will typically be by an outside

DESIGN STANDARDS
Division 10 – Specialties

vendor after completion of the construction.

Individual Cast Metal Letters: A.R.K. Ramos, material: Bronze, Finish: Dark Bronze Anodized, Text Font: Helvetica Medium, Height: varies, Depth: varies (dependant on height), Edges: square.

Building Address. As required by local code including park restrooms if required.

Individual Cast Metal Numbers: A.R.K. Ramos, material: Bronze, Finish: Dark Bronze Anodized, Text Font: Helvetica Medium, Height: varies, Depth: varies (dependant on height), Edges: square.

The following code requirements are provided as a reference. Verify all requirements with the Department of Building and Safety.

Address display requirements (Commercial Building) Per. Ord. No. 3744 10/93:

- Address must be displayed on the freestanding sign, if there is one on the lot, and on at least one location on the building.
- Place address so it is visible from the street in both directions.
- Contrast the color of address and unit numbers with the color of the background.
- Illuminate the address and unit numbers directly or indirectly so it is visible at night.
- Place address clear of landscaping.
- Address must be displayed at each entrance.

Note: Reference Ordinance No. 3744 (figure 10) for additional information/clarification regarding size requirements and location requirements.

Address display requirements (Commercial Complex) Per. Ord. No. 3744 10/93:

- General address or address range must be displayed on the freestanding sign, if there is one on the lot, and on at least one location on each building.
- Place address so it is visible from the street in both directions.
- Contrast the color of address and unit numbers with the color of the background.
- Illuminate the address and unit numbers directly or indirectly so they are visible at night.
- Place address and unit numbers clear of landscaping.
- Unit address displays must be at each entrance.

Note: Reference Ordinance No. 3744 (figure 11) for additional information/clarification regarding size requirements and location requirements.

Building Signage – Interior.

Room and Informational Signage. The following is the information for city standard signage. The Architectural Project Manager for each project shall be responsible to decide the appropriate signage for those signs that are not required but may be desired.

Interface Sign Systems (module signs) are the standard for the following types of signage:

- Main Directories
- Directional Signs (raised letters w/ Braille)
- Room Signage
- Restroom Signage (raised letters w/ Braille), *Required*
- Operations rooms, i.e. janitors closet, mechanical rooms, etc. (raised letters w/ Braille), *Required*
- Stairways per ADA/ANSI and UBC, *Required*

Note: No equals are known and no substitutions will be allowed.

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Division 10 – Specialties

Note: Choice of module for each type of signs shall be selected in regard to the amount of text and size of sign required.

All required signage must comply with ADA/ANSI requirements.

Color. City Hall complex standard color is Innerface color 5. All other buildings can have the color selected to match the color scheme for the particular building.

Innerface Sign Systems, Inc., Contact person: Anita Chisolm, Phone no: (800) 445-4796 (ext. 115) voice mail extension 9215, Fax no: (770) 564-0362.
Local rep. is Janell Prazak (800) 445-4796 (Los Angeles).

End of Document

10553 Rapid Entry Key Boxes

Buildings containing fire suppression or fire alarm systems are required to be provided with a Rapid Entry Key Box (Knox Box). Exact locations and determinations must be coordinated with the City's Fire Department Prevention Office for each such project. Additionally, in circumstances where building electrical main disconnect gear is located within a building, the CLV Building Department requires the exterior door giving direct access to the disconnect gear to be provided with a rapid entry key box.

Rapid entry key boxes by the Knox Company, only, are to be installed (www.knoxbox.com) (800-552-5669) (fax: 623-687-2299). Substitutions or specifying other products are not allowed.

Typically, specify the 3200 Series product, RECESSED. Specify the 4400 Series Vault product only if a situation exists where more than eight keys will be necessary to be placed in the box to allow emergency access to the facility (rare cases), or when it is desired to have dual locks installed on the box (special circumstance only, that would be determined by the Marshal's Division and the facility's occupying department through the Architectural Project Manager).

Specify the manufacturer's reflective labels for installation on the exterior face of each building exterior door controlled by a key maintained in the Rapid Entry Key Box.

Specify recessed mounting kits where appropriate for the type of supporting construction.

Tamper switches are not typically required for the Rapid Entry Key Boxes. The Architectural Project Manager will advise the consultant if a particular project requires this optional security feature. If so instructed, specify the manufacturer's UL listed tamper switch and include power requirements per the manufacturer's printed instructions in the construction documents.

Finishes are at the consultant's discretion from the manufacturer's standard polyester powder coating (black, dark bronze or aluminum), or where extreme moisture or humid conditions will be encountered, the manufacturer's optional aluminization shall be specified.

Indicate location(s) as approved by the Fire Department and mounting heights on construction drawings. Mounting and access shall be in compliance with the Americans With Disabilities Act referenced guidelines to allow inspectors and other non-emergency personnel the ability to inspect and service the boxes and the installation shall be RECESSED unless specifically approved otherwise by both the Architectural Project Manager and the Fire Department.

Other Standards. This standard is a companion to other standards describing features of fire detection and suppression systems and electrical systems. This design standard is not intended to duplicate or replace adopted code requirements.

Related City of Las Vegas design standards include:

- 13851 – Fire Alarm
- 13910 – Basic Fire Suppression Materials and Methods
- 16001 – Design Information – Electrical
- 16510 – Interior Lighting (applies when key switches are used to control lighting)

Applicable codes and national standards to this City of Las Vegas design standard include, but are not limited to:

- Uniform Fire Code, NFPA 1 2003 Ed., Primarily Chapter 13. (effective date 5-19-04)
- City of Las Vegas Fire Code Amendments, 2003 Ed.

DESIGN STANDARDS
Division 10 – Specialties

10800 Toilet Accessories

Facilities Restrooms. (City employee buildings, leisure centers, fire stations, etc.)

Public facilities, which are less controlled such as leisure centers will have more of a need to have the recess mounted accessories for ease of use and maintenance reasons.

Employee buildings, fire stations, etc. we encourage the use of surface mounted accessories.

Approved Manufacturers. Bobrick, Bradley Corp., American Specialties Inc., or approved equal.

Note: All listed accessories manufactured by Bobrick are the Contura Series unless noted otherwise.

Paper Towel Dispenser and Waste Receptacle (surface mounted). Bobrick, Model No: B-3949 (mounting height may vary due to individual design constraints).

Paper Towel Dispenser and Waste Receptacle (recess mounted). Bobrick, Model No: B-43944 (mounting height may vary due to individual design constraints).

Paper Towel Dispenser (surface mounted). Bobrick, Model No: B-4262 (mounting height may vary due to individual design constraints).

Paper Towel Dispenser (recess mounted). Bobrick, Model No: B-4362 (mounting height may vary due to individual design constraints).

Waste Receptacle (surface mounted). Bobrick, Model No: B-277 (mounting height may vary due to individual design constraints).

Waste Receptacle (recess mounted). Bobrick Model No: B-43644 (mounting height may vary due to individual design constraints).

Wall Mounted Soap Dispenser (surface mounted). Bobrick, Model No: B-4112 (mounting height may vary due to individual design constraints).

In-counter Soap Dispenser. Bobrick, Model No: B-822 *(Public Facilities Only, e.g. Leisure Centers)*

Seat Cover Dispenser (surface mounted). Bobrick, Model No: B-4221 (mounting height may vary due to individual design constraints).

Toilet Tissue Dispenser (surface mounted). Bobrick, Model No: B-4288 (mounting height shall be 24" A.F.F. to centerline of unit per ADA requirements).

Toilet Tissue Dispenser (recess mounted). Bobrick, Model No: B-3013 (mounting height shall be 24" A.F.F. to centerline of unit per ADA requirements).

Sanitary Napkin Dispenser / Tampon Vendor (surface mounted). Bobrick, Model No: B-435009 (mounting height may vary due to individual design constraints).

Sanitary Napkin Disposal (surface mounted). Bobrick, Model No: B-270 (mounting height may vary due to individual design constraints).

Grab Bars. Bobrick, Model No: B-6206 (36" and 42" lengths)(mounting height shall be 33" A.F.F. to centerline of grab bar).

DESIGN STANDARDS
Division 10 – Specialties

Protective Drain Pipe Covers (flexible glove type cover w/ Velcro closure). Plumberex

Park Restrooms.

Grab Bars. Bobrick, Model No: B-6206 (36" and 42" lengths)(mounting height shall be 33" A.F.F. to centerline of grab bar).

Toilet Tissue Dispenser (surface mounted). Royce Rolls Ringer Company, Model No: TP-2 - 2 roll (mounting height shall be 24" A.F.F. to centerline of unit per ADA requirements).

~~Stainless Steel Mirror. Bobrick, Model No: B-0446 (mounting bottom of reflective surface @ 38" A.F.F. @ handicap accessible lavatory).~~ Do not install mirrors in park restrooms.

Hand Dryer. Fastaire, Model No: HD03 (mounting height may vary due to individual design constraints).

Concession Rooms.

Paper Towel Dispenser (surface mounted). Bobrick, Model No: B-4262 (mounting height may vary due to individual design constraints).

Wall Mounted Soap Dispenser (surface mounted). Bobrick, Model No: B-4112 (mounting height may vary due to individual design constraints).

DESIGN STANDARDS
Division 11 – Equipment

11001 Design Information – Equipment

See Section 01060 Architectural Design for kitchen equipment requirements.

Safes

Provide one safe in facilities that handle cash transactions on site.

Safe Location: Secure location out of public view, preferable within a staff office separate closet with door.

Safe Type: Above ground with a depository drawer (drop safe type); drop compartment can be either front loading or top loading with a rotary drop compartment; large enough to store cash trays.

Lock Type: Specify a digital or electronic lock to allow for multiple combination changes. Do not order a dial operated combination lock device.

Manufacturers:

- Brown Safe Mfg. Single door Depository Safe Model # C2214 RHF with Electronic Lock
or
- Adesco Safe Company Model# PD 2214 with digital lock.

Installation: Bolt down. Order safe with predrilled floor mounting plate.

Cash Drawers

Provide one or more built-in cash drawers at reception desks in facilities conducting cash transactions. Design casework openings to fit the drawer dimensions noted herein, normally one per workstation.

Manufacturer: Model SLD1751675, by Indiana Cash Drawer Company, 17.5" long x 16.75" wide x 4.125" high, <http://www.icdpos.com/electron.stm> or approved equal.

Alarm Switches: Each cash drawer requires a switch activated by the removal of the drawer and a distress alarm push button adjacent to the drawer, connected to the facility's security alarm system. The switches and wiring will normally be provided by the City's contracted alarm company; the construction contractor normally provides conduit for the wire, unless wireless. Consultant shall verify requirements with City for each facility.

If the facility is within the City Hall campus, the alarm switches connect to the local phone board for direct connection to the local Detention and Enforcement dispatch office. Reference Section 13700 Security Access and Surveillance for more information.

DESIGN STANDARDS
Division 12 – Furnishings

12500 Furniture

Also reference:

- Division 1, Section 01062 for the design of prototype workstations for various job classifications.
- "Modular Furniture Requests Procedure" posted on the City Intranet.

Systems furniture and private office furniture for each project are to be programmed and laid out schematically by the prime consultant. The City of Las Vegas, Architectural Services staff will review the design to assure that the spaces designed for each person will meet their needs.

Modular Furniture.

Manufacturer.

Haworth, Inc.
One Haworth Center
Holland, Michigan 49423-9576
Phone No: (800) 344-2600

Distributor / Installer.

Facilitec
7350 S. Industrial #301
Las Vegas, NV 89139
Phone No: (702) 795-8833 Fax No: (702) 795-8838

City Hall Campus Standard modular furniture colors.

The following are standard colors and finishes used in the City Hall Campus. The use of these standard colors should be used if possible in other city facilities for continuity, reuse and maintenance purposes.

Standard Panel Fabric Color: Mushroom, FE-A4.

Standard Panel Trim and shelving finish, Gray tone.

DESIGN STANDARDS
Division 13 – Special Construction

13152 Swimming Pools & Equipment

Designer. An experienced and licensed aquatic pool designer, acceptable to the City, working under the prime consultant, must complete the pool design and specifications. Performance specifications will not be used. Show a complete commercial design. Acceptable designers include, but are not limited to:

Randy Mendioroz
Aquatic Design Group
1950 Kellog Ave.
Carlsbad, CA 92008
rmendioroz@aquaticdesigngroup.com
(760) 438-8400 TEL
(760) 438-5251 FAX

(not utilized to date)
Counsilman Hunsaker
St. Louis 314-894-1245
Los Angeles 310-486-2081
www.chh2o.com

Contractors. A pool contractor who has been pre-qualified by the City must perform the pool construction, and the general contractor must list the pool contractor's name on his bid documents. All of the work in sections 13150 through 13159 is to be the responsibility of one experienced swimming pool contractor primarily engaged in the construction of commercial public-use pools deriving more than 50% of their annual revenue from public-use swimming pool construction.

Contractors who want to be on the qualified list must provide adequate evidence that they have successfully completed the construction of three (3) similar commercial pool projects, and listed in the specifications or a minimum of 10 day prior to bid opening. The City shall be the sole judge of whether the previous experience was successful.

Contractors who have been previously pre-qualified and should be listed in the specifications:

Baja Commercial Inc., Las Vegas, NV, (702) 732-0502
California Commercial Pools, Glendora, CA, (909) 394-1280
Casa Grande Pools, Las Vegas, NV, (702) 433-1066
Mission Pools, Escondido, CA, (760) 743-2605
Wescon, Inc., Albuquerque, NM, (505) 345-2511
Western Water Features, El Dorado Hills, CA

Codes and Regulations. Comply with all codes and regulations including:

Clark County Health District. Consultant must submit drawings to the Clark County Health District (CCHD) pool desk for plan check at their offices on Shadow Lane. CCHD approval is required before a building permit can be issued through Building and Safety.

Nevada Administrative Code (NAC) Chapter 444, Public Bathing Places, Public Spas.

Southern Nevada Pool Code as adopted by the City of Las Vegas.

National Sanitation Foundation (NSF) Standard 14. Box 1468, Ann Arbor, Michigan 48106.

American Disability Act and ANSI 117.1, reference "Section 01030 Accessibility" of these standards. Provide a removable lift in the deck accessible to 3'-6" deep water as the primary means. Although the program design may require a zero-grade sloped pool entry, this type of entry does not meet ADA access

DESIGN STANDARDS

Division 13 – Special Construction

requirements unless handrails are provided on both sides similar to a standard handicap ramp design, which is not the city preferred means for primary entry.

Parking Spaces. Reference "Section 01041 Parking Facilities Design" of these Standards for the required number of parking spaces. Note: Spaces are likely to be required in excess of the minimum code requirements.

Bathhouse Design and Fixtures.

Neighborhood Pools. Reference the prototype design first built at Baker Park Pool and refined at Freedom Park (by Westar Architectural Group.) Since these designs were completed, the Health District has relaxed their stance on mandatory entry through the locker rooms, so a combined entry to either the locker rooms or directly to the pool area is now preferred. These designs may not be air conditioned if funding doesn't allow (requires cash transactions if the admissions desk area is not air conditioned, instead of by computer) and do not require an administrative office. These facilities draw from 1 to 2 miles and are appropriate for neighborhoods where transportation to larger facilities is limited.

Regional Multi-pool Multi-purpose Water Parks. The bathhouses for these facilities will generally be air conditioned and contain a lobby and administrative office area. The locker rooms may or may not be air conditioned depending on budget. Reference the Centennial Hills Leisure Center design as an example. These facilities draw from several miles and should be located for ease of transportation (private and public).

Indoor Pools and Outdoor Pools with Locker Rooms included in Larger Recreation Buildings. These locker room and restroom facilities will generally be air conditioned, with the overall building. Reference Muni-Pool and Centennial Hills indoor pool as examples.

General. Size will vary depending on the fixture count requirement. Bathing and toilet facilities are required for the public in all pools facilities. Access to toilet facilities from outside of the pool area may or may not be required in the program; confirm with the OAS project manager.

The number of fixtures is determined based on Pool Capacity NAC.444.210, by the Clark County Health Department, and the occupancy load in IBC as enforced by Building and Safety. The calculation methods differ and the most restrictive applies.

Provide fixture type and manufacture the same as for Unsupervised Public Restrooms in the 15410 Plumbing Fixtures section of these Design Standards for freestanding open-air bathhouses. Alternately, for bathhouse facilities that are part of a conditioned air, supervised larger facility, the fixtures may be the same as those specified for Supervised Public Restrooms.

Gas Heaters – Regulator Design. Do not suggest the installation of heaters on swimming pools. They are relatively cheap to install but very expensive to run. The City will program which pools receive heaters in their project program. The designer will provide space and piping for future heaters in the equipment area even when heaters are not included in the original program.

Refer to "Section 02500 Utility Meters" of these standards, when specifying Lochinvar heaters, preferred by the City of Las Vegas. Specifying any other unit must be approved by the City of Las Vegas.

Condenser Heat Recovery System. Using recovered heat from bathhouse, and or pool building to heat the water should be used when feasible.

Solar Heaters. The use of solar heaters is required when the City requires heaters. Even when heaters are not required in the project program, provisions should be made in the structural calculations, roof area and pipe sleeving to allow for future retrofitting of a solar system and shown dotted as future on the working drawings. The payback on solar systems in gas savings is as little as 3 years.

DESIGN STANDARDS
Division 13 – Special Construction

Pool Deck. Pool decks shall be 5" minimum thick unreinforced concrete, unless the consultant can provide sufficient justification for specifying a different construction or for including reinforcing, due to soil or other special conditions. The City has experienced good results from such properly specified, compacted and constructed unreinforced pool decks.

Provide generous expansion and shrinkage control joints to eliminate initial shrinkage cracks, with joint intersections and panel corners at 90 degree or more, 16 square feet maximum per panel.

Avoid designs that require vehicular traffic on the pool deck area for deck lighting maintenance, chemical deliveries and emergency vehicles.

Specify a sealed medium broom finish concrete deck, natural color. Concrete coatings or topping shall not be used on the deck. Specify a penetrating sealer/hardener which may also serve as a curing agent. Other than the use of such a multipurpose penetrating sealer/hardener/curing agent, do not allow any curing agents to be used on the concrete regardless of what the manufacturer of the materials represents for compatibility between the curing agent and the penetrating sealer. The city has experienced compatibility problems on past projects. If the penetrating sealer is to be applied some time after the concrete has hardened, require the contractor to cure the slab by covering with white poly; see the concrete section of these standards for requirements.

Grates, deck drain covers, etc. on the deck are to be light in color to reduce heat and of a material that will not corrode in a chlorine environment.

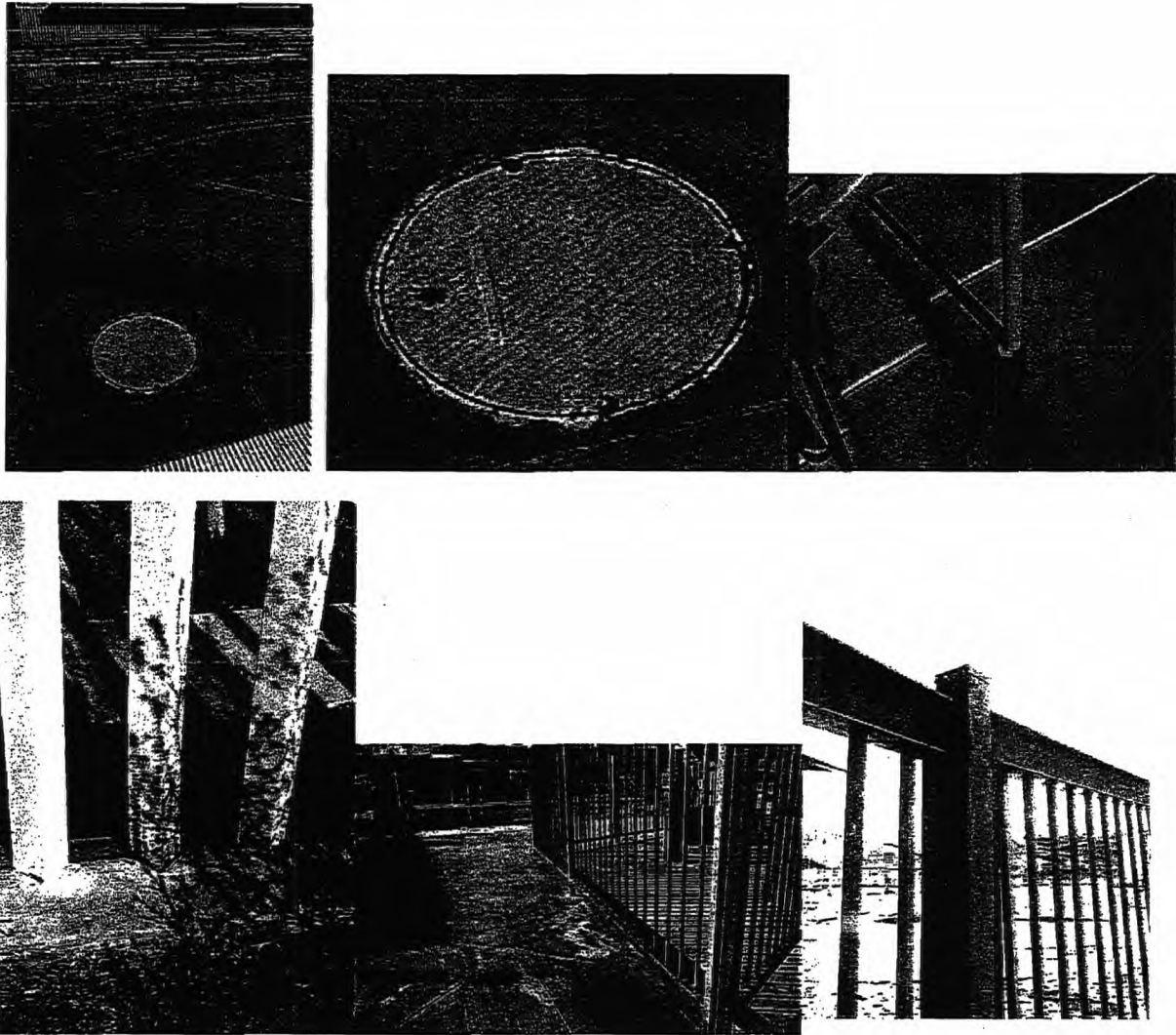
Deck Drains. Avoid deck designs that require internal drains since there is no convenient way to get rid of the water. Daylighting provides a concentrated nuisance wet area unacceptable to city maintenance, city sewer won't accept it (unfiltered rain water), storm water won't take it either (apparently because of the chlorine's affect on the Las Vegas Wash), a dry well may not be able to handle the amount of run off during cleaning and may clog over time. Sheet draining the deck area to the adjacent landscape area is acceptable.

Metals. Ferrous metals should not be used within 50 feet of the pool, pool equipment or chemical storage area. If they must be used within the pool area, they cannot be located on the deck, but must be placed on a concrete curb, in a landscape area or otherwise separated from the deck surface to slow the accelerated rusting process. This includes valve covers, gate posts, light posts, shade structure posts, no climb fence, door jambs, electrical conduits/boxes, handrail supports, etc.

For metal guard fencing required around slides or similar areas within pool facilities, specify all aluminum with stainless steel hardware and mount on a concrete curb.

Paint. Regardless of the metal used, around swimming pools, pool equipment rooms, pool chemical storage areas, and similar harsh chemical environments, specify the epoxy systems shown in Section 09900 Painting for "Interior - Wet Areas – Ferrous Metal and Non-Ferrous Metal", unless #316 stainless steel.

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Division 13 – Special Construction



Gutter Systems.

Rim flow* (deck level) style gutter design with a perimeter gutter and surge tank system. Water level is flush with top of deck edge

Deep gutter with cantilevered deck, with 12" +/- between top of deck edge and water surface.

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Deck edge.

Cast Coping Stones

Fast Lane Coping
4801 West End Rd
Arcata, CA 95221
(800) 835-1660

Kinematics, Ltd.
Port Jefferson Station, NY
(631) 928-8420

PVC Edge coping and gutter grating (no known equal) This product is in use at Municipal Pool.

Grate Technology
3550 Westview Drive, #101
Naples, FL 34104
<http://www.gratetech.com/>
Phone: 239.435.3700
Fax: 239.435.3708
ask@gratetech.com

Tile (no known equal)*

Dal Tile C701 bullnoze at pool edge

*Be careful with substitutions, we have experienced tile of similar shaped tiles that shattered when hit creating a cutting edge.

Competition Lanes. When the project program requires competition lanes, provide (seven) 7 ft wide, 25-yard lanes in small pools, and both 50 meter and 25 yard lanes in larger pools.

Starting block platforms are not to be used in less than 5'-6" of water depth.

Slides and Water Play Equipment. When approved by the City of Las Vegas, the consultant needs to take into account the additional water circulation requirement and increased filtration equipment to meet CCHD codes. Usually it requires a greater water exchange rate, a separate pump and additional filter capacity. Incorporate those costs into the initial design. Additional lifeguards are required and staff space required for slides (NAC. 444.250, 270 –276). Areas under water slides are to be fenced to prevent injuries due to headroom access.

The Health District codes generally require 2 staff to supervise; 1 at the top and another at the bottom. Additionally, the bottom of the slide should be clearly visible to the lifeguard at the top. This rule to apply to slides with running water. Codes also require a 4-hour turn over rate for facilities with these water features.

An ADA accessible route is not required to serve raised diving boards, platforms, or water slides but water play equipment must comply with the Access Board's Play Area Guidelines. Reference "Section 01030 Accessibility" of these standards.

Diving Boards. All diving wells will have a sufficient depth, width and headroom height to accommodate one meter and three meter diving boards per NAC.444.122.5. The number and height of boards will be on a project-by-project basis.

DESIGN STANDARDS

Division 13 – Special Construction

Preferred manufacturer Duraform Stands #70231400 with double guard rails on two sides and Duraflex Aluminum Springboards by Adolph Kiefer & Associates, 800-323-4071, Fax 800-6547946, are the only approved manufacturer, no known equal.

Diving wells are to be 12' (twelve feet) minimum depth required for EMS training. This ends up to be 13 feet at the pool main drain.

Required Clearance for Diving Boards. NAC.444.122.5 of the Nevada Administrative Code (Diving Area and Equipment) reads: "At least 16 feet (4.9 meters) of unobstructed clearance must be provided above diving boards and platforms." Consultant shall verify compliance with latest edition of codes and regulations.

Life Guard Chairs. Specify portable 6 ft. high life guard chairs, KDI Paragon, ID#20301, phone number 916-452-5500, Fax 914-452-5326. KDI is the only approved manufacturer, no known equal.

Pool Equipment.

Provide Stantrol control system to match existing in the City of Las Vegas aquatic facilities, current models and options as requested by the city aquatic staff. Automatic backwash filtration system.

Provide U.S. Filter 20 sq. ft. tanks to match existing. No exceptions for City of Las Vegas projects. For other projects using automatic backwash systems, EPD filters are a close second with Stark filters a distant 3rd. Pentair and Neptune-Benson can only be used on manual backwash systems, which the City of Las Vegas does not use.

Bulk double wall tanks for chlorine and barrel storage of acid with containment area large enough to hold 1 ½ times the amount used on site.

Lochinvar heaters are preferred when heating of pool is requested by the OAS project manager. Refer to Design Standards 02500 Utility Meters. Teledyne Lars heaters not approved.

Rule of thumb in specifying heaters: If the Boiler (heater) is less than 1 mmBTU/hr, 30 ppm NOx and 100 ppm CO boiler is OK. If the boiler is between 1 to 2 mmBTU/hr, the boiler can be still at 30 ppm NOx. If the boiler is 2.0 mmBTU/hr or above, the boiler needs to be 20 ppm NOx and 50 ppm CO in stack emission. The exemption from air quality permit requirement only applies to 1 mmBTU/hr or less boilers and the facility must aggregate to less than 10 mmBTU/hr all together on the boilers. Verify Current requirements with the CLV Environmental Officer.

Vertical pump system. Easy access vertical strainer with visual inspection top. Provide a method to hoist up equipment and load on a service truck, preferably from a dock area.

Chemicals are to be stored in a covered outdoor area with corrosive resistant building materials subject to chemical vapors. Emergency eyewash and deluge systems are required in chemical and equipment areas.

Use separate systems when constructing multiple pools.

Pool pump pits must have an automatic system shut down switch if water approaches the pump motor(s). Pits to also have ladder into pit.

Backwash pits must be of adequate size to handle the surge and not overflow the sewer system. In case of overflow provide an overflow system to divert water away from pumps and electrical equipment.

Stainless steel used in and around pools must be #316 to prevent corrosion.

Electrical panels, disconnects and switchgear shall be easy access without leaning over equipment or wet

DESIGN STANDARDS

Division 13 – Special Construction

areas.

Underground pipe. Clark County Health allows Schedule 40 pipe. It must be stamped PW NC NSF approved, NSF Standard 14 & 61. If it is not clearly stamped on the pipe, it will be rejected. Clark County Health District requires inspection before covering the installation.

Lighting. Deck and underwater lights must be designed to provide visual access in water to a 13 ft. minimum depth and meet all CCHD and NAC requirements. See Division 16 of these Design Standards for additional lighting level requirements.

Overhead Pool and Deck

For indoor pools, specify Sterner lighting with 3M light tube system over water [(800) 328-7480] or alternate lighting fixtures (not mounted over the pool). Pay attention to the ease of re-lamping these fixtures.

For exterior pools, provide adequate deck lighting for night events and compliance with Division 16 lighting level standards.

Maintenance Pathway. An adequate pathway must be provided for maintaining pool deck area lighting on poles. The City TEFO section prefers to use a standard boom truck. The pathway may be inside or outside of the fence. A turf or DG surface pathway is acceptable; it does not need to be a concrete surface. It is desired that the boom truck is able to back up to the base of the pole from the lamp side. The boom truck is a double axle 35-foot long vehicle, 11 feet high with the boom in the travel position. Avoid planting major trees in near vicinity to the lights in order to reduce boom access.

Underwater

Fixtures may be metal halide or incandescent.

Incandescent, specify Amerlite with stainless steel ring, 500 watt, 120 volt, or approved equal. Verify cord length with designer for model number. Niches for this incandescent specify Pentair Large Stainless Steel Niches #78210600, 1 in. rear hub. This fixture uses a R40 Pool Flood Lamp. An equal fixture is Swimquip #5086-0050, #5068-12.

Metal Halide Swimming Pool Fixture, specify Hydrel 4428 Wet Niche, or approved equal. This fixture uses a 175 W, E-17 medium base, M-57 type, metal halide lamp.

Fencing. Provide a no-climb 6' fence around the pool area, placed on a concrete curb to protect the metal base from chlorine. This fence is a Health Department requirement designed to keep children, non-swimmers from getting into the pool area unsupervised. The fence is not intended to be a security fence. If it is designed as a security fence, it still needs a 6' no climb feature.

Fencing should not obscure the view of law enforcement.

When possible, provide direct wind protection to keep wind off of the water surface. In a large surface area pool the water is cooled by evaporation and the wind makes it very difficult to heat the water.

Pool Gate - Design Criteria. See the City standard for gate design and layout. Consultant and CLV Project Manager to determine if polycarbonate panel will be on pool side or public side, depending upon site conditions.

Locking. Provide panic hardware with key cylinder on public side to be used by city personnel only. Gate is to be used for public egress out from pool deck.

Signage. Provide lighted exterior exit sign w/ battery backup. All conduits to be concealed in frame.

Location. Locate a minimum of (1) gate per Southern Nevada Pool Code Requirements. Occupancy of pool and pool deck will determine number of gates required. Building and Safety has used 1/50 for pool area and 1/15 for deck area in the past, which creates a large number of required exits. Their exiting concern is not from fire but chemical spills.

Engineering. The CLV consultant's structural engineer shall be responsible to determine all steel member

DESIGN STANDARDS
Division 13 – Special Construction

sizing, footing sizing, etc. of the gate

Alarm: Gates shall activate an audible alarm when opened. All conduits to be concealed in frame.

Impellers. Specify an NSF tested and approved pump assembly containing an impeller made with whatever material was approved for the assembly.

In addition, provide one 316 stainless steel impeller as a spare for each pump assembly provided. Bronze is deteriorated by Las Vegas water and replacement of valves, impellers etc. is an ongoing process.

(Unfortunately, stainless steel impellers are not currently available in any NSF approved pump assemblies. The State of Nevada Health Department approves the stainless steel impellers on an NSF approved component basis, which many stainless steel impellers are. The LVVWD uses this State determination in using the stainless steel impellers in their pumps. Clark County Health District bases approval on the entire pump assembly being NSF approved, which to date, no pumps have been rated by NSF on an assembly basis with the stainless steel impellers.)

Timely Plastering of Swimming Pools. Pools that have been gunited or shotcreted can sit for many months (if not years) prior to plastering except that: 1) If the pool fills up with organics or other trash it needs to be properly cleaned prior to plastering (anything which prevents a proper bond between the plaster and the pool shell should be addressed); and 2) Large amounts of rain could saturate reinforcing steel within the gunite or shotcrete and cause it to bleed rust through the pool structure (more of an issue in an area like Seattle).

General requirements: Provide a dedicated phone line for remote chemical controller equipment.

Install adequate drain to grade hose bibs around pool deck to allow hosing down of deck.

Install four post or wall mounted standard GFI 110 volt outlets about the pool deck area.

No roof drains onto pool deck or pool area.

Fire exit plan should not lead into pool area from adjacent buildings. Pool entrances and exits should be isolated from other programming areas. Reference the pool gate section for issues.

Pump pits or any open pits must be fenced.

Pump lift systems are required, which can be attached to the building structure or free standing, see PoolPumpLift.JPG.

Provide shade structures separate from the main building.

Label all chemical lines and all other electrical and plumbing lines.

If a leak incurs in the pool and the contractor is responsible for the repair, the contractor shall hire a third party testing agency to verify the repair and investigate whether there is any remaining damage associated with the leak.

Note: These Design Standards are not intended to cover all legal requirements of the design. It is the consultant's responsibility to provide complete drawings and specifications to meet code requirements.

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Division 13 – Special Construction

13300 Spraypark / Splash Pad Equipment

General.

Provide shaded seating nearby, but not too close to the wet area, for adults.

All user accessible components shall be tamper-resistant, powder coated stainless steel or equal non-corrosive material (no aluminum or galvanized steel).

Specify 316 stainless steel impellers in pumps, if any and if available.

Provide a manufacturer's 10-year warranty. Contractor shall be responsible for installation of any manufacturer warranty related materials during the warranty period.

Limit water features to those with flow rates less than 60 gpm, and preferably less than 20 gpm.

Do not specify spray units with small outlet holes. They quickly clog with the local hard water unless a recirculating system with chemical balancing is a part of the design.

User controlled activators should provide for a spray sequence program lasting less than 5 minutes.

Provide backflow protection (no less than an RPPA) between the irrigation system and the splash pad water supply to prevent cross contamination.

What this generally means is an RPPA at the site entry point to protect the public system in the street from the park, then a "T" running to the splash pad and domestic water needs, before another RPPA leading to the irrigation system. This can all occur at the street if the tap point is in a visually obscure point in the park.

Provide a shut off valve for control of the splash pad features.

Write an open specification as to manufacturer, but the installer must be approved (factory certified) by the particular manufacturer actually installed.

Signage. Reference drawing in this section for the following sign (see section 10426 for additional mounting requirements and height):

No Dogs Signage. Mount one sign at each entrance to the splash pad area.

Drain to Sewer. Per agreement with the Building Department, all splash pad water features may drain direct to the storm sewer, no filters or sand trap, although do provide adequate cleanouts. These Splash Pad features may also be drained to the sanitary sewer if design permission is received from the owner (OAS) and Building Department, and a sand trap is installed. (Note that sand traps require a vent stack and sampling box per the Southern Nevada UPC Code Amendments.)

Codes and Regulations.

Health District: If these types of features do not provide for human submersion or recirculation of water, no permit is required from the Health District.

Building Department: The Building Department has decided that they do not fall under the Pool Code if it is a direct drain system. If there is a recirculating system on the splash pad, it then falls under the Pool Code and would need to drain to the sanitary sewer through a sand trap.

Otherwise, direct drain systems may go into the storm sewer, no filters or sand traps required. Field inspections by the Building Department falls under the requirements of the Plumbing Code, not the Pool Code.

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Sanitation District: The Sanitation District has provided conflicting statements. They look to UPC 714.2 to say that the rainwater collected by these drains cannot go into the sanitary sewer. They also feel that the water feature water must go into the sanitary. In any case, they rely on the Building Department for all plan check enforcement.

Southern Nevada Water Authority: The Drought Plan by the Southern Nevada Water Authority does not restrict the use of splash pads, on the assumption that the water is either recycled or drains to sanitary sewer for treatment and reuse, so drain to storm sewer may be a problem.

Recirculation System. If there are more than about 8 water features in the park, a recirculating system needs to be explored. Parks with only 2 or 3 features can direct drain to the sewer. If a recirculating system is not installed, the installation must provide site space for a future retrofit for such a system including filtration system, chemical treatment system, and holding tank. In addition the drain lines from the water feature drains must initially run in the area of the future holding tank so that the splash pad area is not disturbed during the retrofit. Also, the splash pad needs to be located on the site at an elevation and adjacency, such that a future drain line to the sanitary sewer can be installed from the recirculating system when retrofitted.

These recirculating systems are very much like a swimming pool's system and requires daily startup and chemical testing every two hours. Receive concurrence of adequate city's aquatics staffing prior to design.

Controller. If the park contains only 2 or 3 features, they may be mechanically controlled (simple timer, not a computerized sequential controller).

Controller must be easily programmable by on-site City staff. Water supply to features must be on a central valve tied to a secure variable timer so that even with tampered activation devices, the water supply will be cut off at night. The system needs to be able to be completely gravity drained each fall. Provide the owner with winter caps for all nozzles.

The resilient surface requirement has been eliminated due to its cost, short life, and sanitation concerns. Unless there are climbing elements in the Spraypark that require a resilient fall area, use a sealed medium broom finish concrete as the finish surface. Concrete coatings or topping shall not be used on the concrete. Specify a penetrating sealer/hardener which may also serve as a curing agent. Other than the use of such a multipurpose penetrating sealer/hardener/curing agent, do not allow any curing agents to be used on the concrete regardless of what the manufacturer of the materials represents for compatibility between the curing agent and the penetrating sealer. The city has experienced compatibility problems on past projects. If the penetrating sealer is to be applied some time after the concrete has hardened, require the contractor to cure the slab by covering with white poly; see the concrete section of these standards for requirements..

Resilient Surface. When providing a required resilient surface in the splash pad area, comply with the following:

Manufacturers. Water Play Feature surfacing approved by the Clark County Health District include:

BRG (TotTurf)	As distributed by:	Robertson Industries, Inc., (800) 858-0519
-OR-		
Saf-Dek	As distributed by:	No Fault Industries, Inc., (800)-232-7766

Wear Surface. Wear surface shall consist of ethylene propylene diene monomer (EPDM) particles adhered with a polyurethane binder formulated to produce an even, uniform surface ("EPDM Granules").

- EPDM particles shall meet requirement of ASTM D 412 for tensile strength and elongation.

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- ASTM D 2240 (Shore A) hardness of 50-70, not less than 25 percent rubber hydrocarbons.
- EPDM shall be peroxide cured with an EPDM content of 26% and shall include a processing aid to prevent hardness.
- Size of rubber particles shall be not less than 1.0 mm, nor greater than 3.0 mm, across.
- Binder shall be not less than 20 percent of total weight of rubber used in the wear surface, and shall provide 100 percent coating of the particles.
- Thickness of wear surface shall be minimum 12.5 mm (1/2 inch).
- The wear surface shall be porous.

Binder. #88-M-41: No substitutions.

- Binder: Binder for safety surfacing shall be 88-M-41, which is specifically designed for use with rubber granule material for outdoor installations.
- 88-M-41 is a single component polyurethane prepolymer formulated using a polymeric form of Diphenylmethane 4, 4' Diisocyanate (MDI).
- No toluene diisocyanate (TDI) shall be used.
- No filler materials shall be used in the urethane such as plasticizers and the catalyzing agent shall contain no heavy metals.
- Weight of polyurethane shall be no less than 1.02 Kg/1 (8.5 lbs/gal) and no more than 1.14 Kg/1 (9.5 lbs/gal).
- Proof of 88-M-41 as binder must be submitted from approved testing laboratory.

Extraction Test Submittal. Extraction test results performed by a qualified testing laboratory shall be submitted for use of products at Water Feature Areas. If Contractor submits an "or equal" for use at Water Feature Areas other than what is specified, an Extraction Test performed by a qualified testing laboratory is required for submission to the Clark County Health District for review and approval of results per NSF standards. Contractor shall submit Extraction test data to the Project Engineer.

[The above Extraction Test Submittal requirement is a must in every specification to insure the manufacturer considered performs the tests or submits the data. With "or equal" requirements, we can open the door to others but then someone must do the tests for submission to the Clark County Health District for approval. The costs for these tests are \$10,000 +.]

DESIGN STANDARDS
Division 13 – Special Construction

13700 Security Access and Surveillance

This Section contains the requirements for:

- (1) Security Alarm System,
- (2) Distress Alarms,
- (3) Access Control, and
- (4) Surveillance.

Related Sections:

Reference Section 08710 "Door Hardware" for referenced electrified door hardware.

Reference Section 16742 "Communication & Data Processing Equipment" for related requirements.

When preparing construction documents for these systems, the prime construction contractor's (Contractor) scope of work needs to be clearly separated from any work furnished by the Owner's Vendor(s). Do not use "by others" in the documents. Use specific language to distinguish each various vendor's work from the Contractor's work and from the other vendors.

1. Security Alarm System

Most facilities have a security alarm system installed and monitored by AlarmCo. Coordinate with Field Operations (Debi Fields x2499, or Marshall Hutchinson x6094 if a remodel) during design, construction and new service move-in.

2. Distress Alarms

Within the City Hall campus, the possible need for push button distress alarms at workstations having direct contact with the public should be discussed with Detention and Enforcement during the design. All cash drawers require drawer detection activated switches and adjacent push button distress alarms (Reference Section 11001 Design Information – Equipment).

Alarm switches at facilities within the City Hall campus connect to the local phone board for direct connection to the local Detention and Enforcement dispatch office.

Alarm switches outside of the City Hall campus connect to the facility's security alarm system, including cash drawer removal detection.

Consultant shall verify facility requirements during design.

3. Access Control

General. Access control is required for all new projects in the City of Las Vegas. Where possible existing buildings should be retrofitted with access control.

Detention and Enforcement Coordinator: Sarahetta Thompson x2462 or Kirk Miley #5292

The City's access system is contracted through Diebold, Inc. Detention and Enforcement administers and programs the system once hardware is installed. The D&E Coordinator needs to be involved during the design and will be the prime contact-coordinator for Diebold's involvement. Project drawings need to be reviewed and discussed with Detention/Diebold as early as practical and during the final drawing review for the project.

The following are the standard requirements to be provided within a project construction contract to

DESIGN STANDARDS

Division 13 – Special Construction

provide for the Owner's Access Control System installation.

Component Outline.

<u>Component</u>	<u>Provided by</u>
Electrical conduit and J-boxes	Contractor
Electrified Door Hardware	Contractor
Push-buttons, cables & connections for manual activation of hardware	Contractor
Electrified Door Hardware Power Supplies, connections & cables	Contractor
110V AC power at Telephone Back Board (TBB).....	Contractor
Incoming Phone Line to TBB (for modem)if LAN connection is unavailable	Contractor
Low voltage cables	Contractor
Connections of low voltage cables to door hardware components.....	Contractor
Main Control Boards (Smart 8's).....	Owner's Vendor
Door Control Boards (SR1's)	Owner's Vendor
Access System Power Supplies.....	Owner's Vendor
Modem, when required if LAN is unavailable.	Owner's Vendor
Readers, key pads, motion sensors.....	Owner's Vendor

Responsibilities may vary on remodel projects and additions of access control to existing facilities;
Consult Owner's Project Manager.

Component Requirements.

Electrical Conduits and Boxes

Conduits:

¾" minimum, 1" preferred, type as allowed by code for the location, flexible conduits limited to 6' maximum length at end of run only, MC and Armored cable prohibited. All conduits to have labeled cables between boxes and to all device locations.

Provide conduit for electrified door hardware from the 4"X4"J-box (Door Control Box) located in the ceiling above the controlled door on the secured side of the door, to the doorframe at the location appropriate for the hardware specified: Stub at strike for electric strikes, at hinge power transfer device for electric latch/exit device. Provide cable from device through opening in frame to Door Control Box and back to TBB in designated telephone room. Terminate connections on all door hardware and run back to TBB. See note under "Door Control Box" below.

Reader/Keypad J-boxes:

Wall mount locations - 4S J-box with single gang ring and blank cover mounted at 48" AFF.
Doorframe mount locations - Provide conduit from Door Control Box to door frame assembly, provide 3/4" hole in frame with a grommet, at reader location (coordinate with Owner, typically 48" AFF), provide cable through hole to Door Control Box.

Magnetic Locks:

When Magnetic Locks are used, provide conduit stub from Door Control Box into the doorframe at the head, on the latch side of the door. Provide 3/4" drill with grommet at magnetic lock location and cable through hole to Door Control Box.

Magnetic Hold-Open Devices:

When magnetic hold-open devices are used, provide a 4S J-box with single gang ring and blank cover on the wall the door opens against. Locate box behind the door when in the open position, 2" from the latch side and 2" from the top of the door. Typically not part of Access Control System. Need location for conduit terminate, typically Fire Control System.

DESIGN STANDARDS

Division 13 – Special Construction

Motion Look-Down Sensors:

When motion sensors are used, provide conduit from the Door Control Box to the doorframe, centered above door.

Door Control Box:

Provide 4" x 4" x 4" J-box with blank cover above ceiling (max. 10' height from floor) on the secure side of the doorway, at or near each door being controlled (provide access door in ceiling if lay-in panels are not being used). Label interior of box with door number. Connect conduits from all devices for the door. Provide conduit to Main Control Box on TBB. Each Door Control Box will have two separate cables (22 ga. 6 conductor) and (18 ga. 2 conductor) shielded stranded color coded cables provided to the Main Control Box on TBB.

Note: Door control box will be located on TBB for better serviceability if reader (and/or keypad) is located within 500 cable feet. Number of door control boxes dependent on space availability on TBB. In cases where there is no room on TBB for the Door Control Boxes or the distance is greater than 500 cable feet then the door control boxes will be mounted in the ceiling attached to the 4" x 4" x 4" J-box.

Main Control Box:

Provide 25"W x 18"H area on TBB for Main Control Box supplied by Diebold. Stub conduits in close proximity and provide for connection to telephone blocks, network connections and 110V AC power outlet. When more than 16 doors are controlled, additional Main Control Boxes may be required; consult Owner's Vendor.

Electrified Door Hardware

Electrified door hardware (strikes, latches, exit devices, magnetic locks, magnetic hold-open devices and power transfer devices) to be provided by Contractor. The contractor is to provide wiring instructions to Owner's Vendor for connection to control system. The contractor is to terminate all hardware connections at the door & bring back to TBB for connection to access control system.

Push Buttons, cables and connections for Manual Activation of Hardware

Provide push buttons at designated locations for manual override of the access control system including conduits & cables from the push-button through the Door Control Box and to the electrified door hardware. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor.

Electrified Door Hardware Power Supplies and connections

Provide power supplies for electrified strikes, latches and exit devices as recommended by hardware manufacturer. Locate hardware power supplies at TBB near access control power supplies. Provide cables and connections from power supplies through the appropriate Door Control box(es) and power transfer devices, if any, to the electrified device. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor. Provide cable and connection to Fire Control System if required.

110V AC power at Telephone Back Board

In addition to the power requirements for the phone and network systems, provide 110V AC power for the door hardware power supplies and the access control system power supplies at the TBB within 3' of Main Control Box.

Network Connection to TBB (or when not available)

Incoming Phone Line (for communication to Server)

When the TBB is located outside of the City Hall Campus, network or modem connection will be used to connect to the system server. Provide a dedicated phone line for the modem (RJ31 jack) or network connection (RJ45 jack) at the TBB. If used, the modem will be provided by the "Owner's Vendor."

Low voltage cables and connections to components

DESIGN STANDARDS

Division 13 – Special Construction

Low Voltage cables must be provided between all components i.e. Main Control Boxes, Door Control Boxes, and access control devices. Connection and operational testing of all low voltage components and hardware to the access control system. 22 ga. 6 conductor shielded stranded color coded, & 18 ga. 2 conductor shielded stranded color coded wire should be used for all connections to devices unless otherwise specified.

Main Control Boards

Smart Read 8 (S8) Main Control Boards control between 16 and 64 doors per board. Consult Owner's Vendor for number Main Control Boards when doors controlled at the site exceed 16. These boards connect to the system server via direct connection or modem. These boards receive and store access permission information downloaded from the system server and provide instruction to the Door Control Boards when access is requested. These boards are located in the Main Control Box

Door Control Boards

Smart Read 1 (SR1) Door Control Boards send and receive signals to and from the all system components at a particular door and request access permissions from the Main Control Boards. Upon verification of proper permission it sends a signal to operate the electrified door hardware. These boards are located on the TBB or when unavailable, in the ceiling above each door at the Door Control Box.

Access System Power Supplies

12V DC transformers supplying power to the access system components with the exception of electrified door hardware. Access System Power Supplies are to be located at the TBB near the Main Control Box they power and connect to the Contractor provided 110V AC at the TBB.

Readers, keypads, motion sensors, manual override/door open buttons

Readers, keypads, motion sensors, and door buttons connect to the Door Control Board for power and communication. These devices request electrified door hardware activation.

Extended Warranties

No specific requirements for extended warranties. Contractor to provide warranty information for any supplied components and/or systems that exceed the 1-year general warranty period in the closeout documentation for the project.

EXAMPLE OF TYPICAL INSTALLATION

(Requirements vary, coordinate with Detention & Enforcement)

Typical Access Point Requirements. The typical access point consists of 3 components, the locking device, the input device (card reader and/or keypad), and the control board, connected with conduit/cables and a home run to the telephone board for the building. There is also a Main Control Board at the telephone backboard that all access points connect to.

Door Locking Device: Refer to 08710 Door Hardware, Electronic Locks for Access System.
Provided by Contractor.

Input Device: HID Mini Prox Reader, on door Jamb or wall j-box, 44 inches above finished floor (for card user access only). A keypad will be added when Metro or other non-city personnel need access (max. 500 cable feet from SR-1).

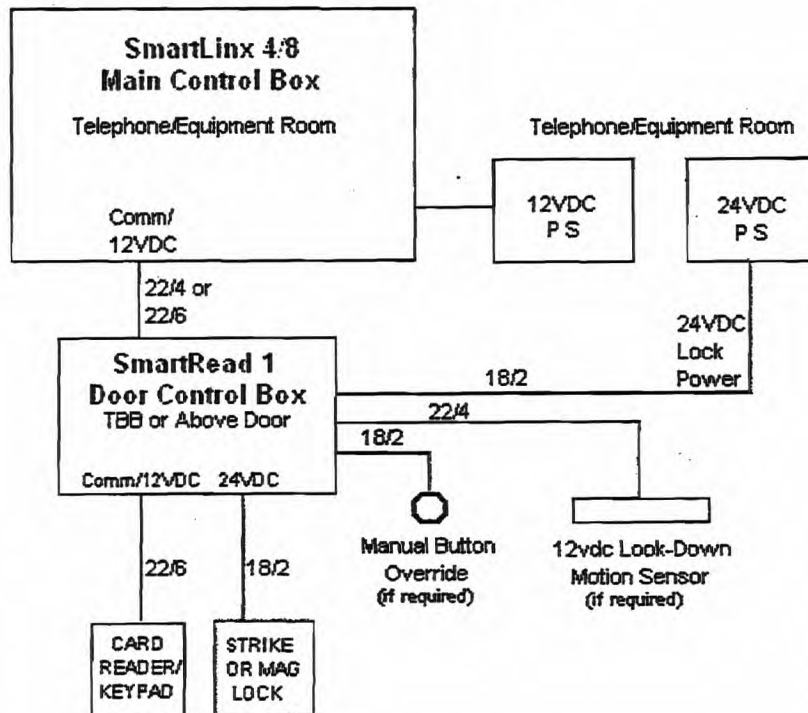
DESIGN STANDARDS
Division 13 – Special Construction

Control unit: SmartRead 1 (SR-1) in a hinged-lid j-box in plenum/attic above door or TBB (max height 10' from floor) (max. 1000 cable feet from main controller).

Main Controller: SmartLinx 8 located on building telephone backboard (TBB).

Wiring Requirements

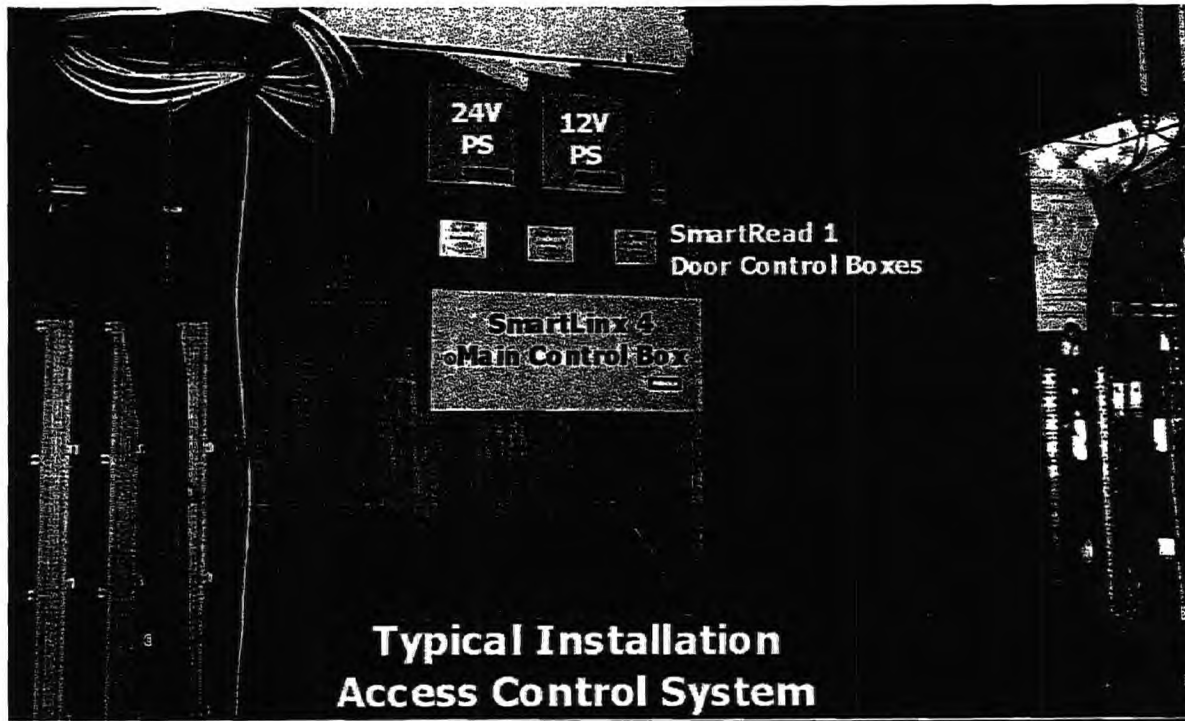
Diebold Wire Schematic



Typical Telephone Backboard Requirements, system with more than 16 doors. The Main Control Board(s) are located at the building Telephone Backboard (TBB). These Smart Linx 8 (S8) boards are housed in boxes with hinged lids, mounted to the TBB. The S8's dimensions are 23 1/4" width, 13 1/2" height, 5" deep, and a 28" door swing. The S8 needs a 120-volt outlet for power supply and the locking device power supply. The S8/S4 needs either a dial-tone phone line to communicate back to the host pc via modem, or a LAN connection to local network router or switch.

DESIGN STANDARDS
Division 13 – Special Construction

Typical Phone Back Board Installation



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Division 13 – Special Construction

4. Surveillance

General. The OAS Project Manager will confirm whether a surveillance system is required for your project. Generally, it will not be required, although empty conduits or conduit stub outs for future cameras should be considered where running them later will be difficult. System will usually be monitored and recorded within each facility since Detention and Enforcement currently does not have the staff to live monitor these systems.

When required, CCTV cameras should be installed in the following areas:

1. Building Entrance / Exit points:
2. Elevator Lobbies
3. Elevator Cabs
4. Covered Parking Structures
5. High traffic public service counters
6. Public side of cash transactions

Any building that will be located in the overall City Hall Campus should include a conduit pathway dedicated to low voltage with sufficient capacity to include a CCTV fiber optic link to the 2nd floor CCTV control center in the old City Hall jail.

Any new building design should specifically include sufficient backboard space, allocated in one of the telephone rooms (or closets), for installation of CCTV camera power, recording and transmission equipment.

CCTV cable requirements.

No CCTV coax cable runs in excess of 1,500 feet. No CCTV power cable runs in excess of 700 feet.

Installed CCTV video transmission cables to be installed and constructed as follows:

Cable distances of less than 750 feet will require coaxial cable of RG59/U designation that is constructed with a 20 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage. Belden cable # 543945 or equivalent.

Cable distances greater than 750 feet and less than 1,500 feet will require coaxial cable of RG6/U designation that is constructed with an 18 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage, Belden Cable # 533945 or equivalent.

CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent.

Each camera will have a dedicated power cable run to the camera power supply.

CCTV conduit requirements.

Minimum Conduit size of ¾ inch for CCTV conduit runs. Camera mounting points are generally a 4-S box with a single gang mud ring cover.

All National Electrical Code requirements will be observed during design and installation of CCTV conduit.

Conduit pull boxes should be encouraged in long cable runs to minimize problems and damage to cable during installation.

DESIGN STANDARDS
Division 13 – Special Construction

Elevator CCTV cable requirements.

The elevator contractor will be required to provide two free pairs (4 total conductors) of each elevator cab's travel cable for installation of a CCTV camera. One pair of conductors will carry the video signal and the other pair of conductors will carry the 24vac to power the camera. The travel cable conductors designated for CCTV system use should be clearly identified by the elevator contractor in both the elevator cab and the elevator control panel.

Video transmission cables from the CCTV head end to the elevator control panel will require a Category 5 compliant data cable to each elevator control panel.

Elevator CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent to each elevator control panel.

Elevator CCTV conduit requirements.

Conduit shall remain consistent with the established conduit sizing in the garage parking area CCTV conduit requirements.

Conduit installation to each elevator control panel cabinet must be coordinated with elevator contractor to determine acceptable entrance points for CCTV system conduit.

DESIGN STANDARDS
Division 13 – Special Construction

13700 Security Access and Surveillance

This Section contains the requirements for:

- (1) Security Alarm System,
- (2) Distress Alarms,
- (3) Access Control, and
- (4) Surveillance.

Related Sections:

Reference Section 08710 "Door Hardware" for referenced electrified door hardware.

Reference Section 16742 "Communication & Data Processing Equipment" for related requirements.

When preparing construction documents for these systems, the prime construction contractor's (Contractor) scope of work needs to be clearly separated from any work furnished by the Owner's Vendor(s). Do not use "by others" in the documents. Use specific language to distinguish each various vendor's work from the Contractor's work and from the other vendors.

1. Security Alarm System

Most facilities have a security alarm system installed and monitored by AlarmCo. Coordinate with Field Operations (Debi Fields x2499, or Marshall Hutchinson x6094 if a remodel) during design, construction and new service move-in.

2. Distress Alarms

Within the City Hall campus, the possible need for push button distress alarms at workstations having direct contact with the public should be discussed with Detention and Enforcement during the design. All cash drawers require drawer detection activated switches and adjacent push button distress alarms (Reference Section 11001 Design Information – Equipment).

Alarm switches at facilities within the City Hall campus connect to the local phone board for direct connection to the local Detention and Enforcement dispatch office.

Alarm switches outside of the City Hall campus connect to the facility's security alarm system, including cash drawer removal detection.

Consultant shall verify facility requirements during design.

3. Access Control

General. Access control is required for all new projects in the City of Las Vegas. Where possible existing buildings should be retrofitted with access control.

Detention and Enforcement Coordinator: Sarahetta Thompson x2462 or Kirk Miley #5292

The City's access system is contracted through Diebold, Inc. Detention and Enforcement administers and programs the system once hardware is installed. The D&E Coordinator needs to be involved during the design and will be the prime contact-coordinator for Diebold's involvement. Project drawings need to be reviewed and discussed with Detention/Diebold as early as practical and during the final drawing review for the project.

The following are the standard requirements to be provided within a project construction contract to

DESIGN STANDARDS
Division 13 – Special Construction

provide for the Owner's Access Control System installation.

Component Outline.

<u>Component</u>	<u>Provided by</u>
Electrical conduit and J-boxes	Contractor
Electrified Door Hardware	Contractor
Push-buttons, cables & connections for manual activation of hardware	Contractor
Electrified Door Hardware Power Supplies, connections & cables	Contractor
110V AC power at Telephone Back Board (TBB)	Contractor
Incoming Phone Line to TBB (for modem) if LAN connection is unavailable	Contractor
Low voltage cables	Contractor
Connections of low voltage cables to door hardware components	Contractor
Main Control Boards (Smart 8's)	Owner's Vendor
Door Control Boards (SR1's)	Owner's Vendor
Access System Power Supplies	Owner's Vendor
Modem, when required if LAN is unavailable.	Owner's Vendor
Readers, key pads, motion sensors	Owner's Vendor

Responsibilities may vary on remodel projects and additions of access control to existing facilities;
Consult Owner's Project Manager.

Component Requirements.

Electrical Conduits and Boxes

Conduits:

¾" minimum, 1" preferred, type as allowed by code for the location, flexible conduits limited to 6' maximum length at end of run only, MC and Armored cable prohibited. All conduits to have labeled cables between boxes and to all device locations.

Provide conduit for electrified door hardware from the 4"X4" J-box (Door Control Box) located in the ceiling above the controlled door on the secured side of the door, to the doorframe at the location appropriate for the hardware specified: Stub at strike for electric strikes, at hinge power transfer device for electric latch/exit device. Provide cable from device through opening in frame to Door Control Box and back to TBB in designated telephone room. Terminate connections on all door hardware and run back to TBB. See note under "Door Control Box" below.

Reader/Keypad J-boxes:

Wall mount locations - 4S J-box with single gang ring and blank cover mounted at 48" AFF.
Doorframe mount locations - Provide conduit from Door Control Box to door frame assembly, provide ¾" hole in frame with a grommet, at reader location (coordinate with Owner, typically 48" AFF), provide cable through hole to Door Control Box.

Magnetic Locks:

When Magnetic Locks are used, provide conduit stub from Door Control Box into the doorframe at the head, on the latch side of the door. Provide ¾" drill with grommet at magnetic lock location and cable through hole to Door Control Box.

Magnetic Hold-Open Devices:

When magnetic hold-open devices are used, provide a 4S J-box with single gang ring and blank cover on the wall the door opens against. Locate box behind the door when in the open position, 2" from the latch side and 2" from the top of the door. Typically not part of Access Control System. Need location for conduit terminate, typically Fire Control System.

DESIGN STANDARDS

Division 13 – Special Construction

Motion Look-Down Sensors:

When motion sensors are used, provide conduit from the Door Control Box to the doorframe, centered above door.

Door Control Box:

Provide 4" x 4" x 4" J-box with blank cover above ceiling (max. 10' height from floor) on the secure side of the doorway, at or near each door being controlled (provide access door in ceiling if lay-in panels are not being used). Label interior of box with door number. Connect conduits from all devices for the door. Provide conduit to Main Control Box on TBB. Each Door Control Box will have two separate cables (22 ga. 6 conductor) and (18 ga. 2 conductor) shielded stranded color coded cables provided to the Main Control Box on TBB.

Note: Door control box will be located on TBB for better serviceability if reader (and/or keypad) is located within 500 cable feet. Number of door control boxes dependent on space availability on TBB. In cases where there is no room on TBB for the Door Control Boxes or the distance is greater than 500 cable feet then the door control boxes will be mounted in the ceiling attached to the 4" x 4" x 4" J-box.

Main Control Box:

Provide 25"W x 18"H area on TBB for Main Control Box supplied by Diebold. Stub conduits in close proximity and provide for connection to telephone blocks, network connections and 110V AC power outlet. When more than 16 doors are controlled, additional Main Control Boxes may be required; consult Owner's Vendor.

Electrified Door Hardware

Electrified door hardware (strikes, latches, exit devices, magnetic locks, magnetic hold-open devices and power transfer devices) to be provided by Contractor. The contractor is to provide wiring instructions to Owner's Vendor for connection to control system. The contractor is to terminate all hardware connections at the door & bring back to TBB for connection to access control system.

Push Buttons, cables and connections for Manual Activation of Hardware

Provide push buttons at designated locations for manual override of the access control system including conduits & cables from the push-button through the Door Control Box and to the electrified door hardware. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor.

Electrified Door Hardware Power Supplies and connections

Provide power supplies for electrified strikes, latches and exit devices as recommended by hardware manufacturer. Locate hardware power supplies at TBB near access control power supplies. Provide cables and connections from power supplies through the appropriate Door Control box(es) and power transfer devices, if any, to the electrified device. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor. Provide cable and connection to Fire Control System if required.

110V AC power at Telephone Back Board

In addition to the power requirements for the phone and network systems, provide 110V AC power for the door hardware power supplies and the access control system power supplies at the TBB within 3' of Main Control Box.

Network Connection to TBB (or when not available)

Incoming Phone Line (for communication to Server)

When the TBB is located outside of the City Hall Campus, network or modem connection will be used to connect to the system server. Provide a dedicated phone line for the modem (RJ31 jack) or network connection (RJ45 jack) at the TBB. If used, the modem will be provided by the "Owner's Vendor."

Low voltage cables and connections to components

DESIGN STANDARDS

Division 13 – Special Construction

Low Voltage cables must be provided between all components i.e. Main Control Boxes, Door Control Boxes, and access control devices. Connection and operational testing of all low voltage components and hardware to the access control system. 22 ga. 6 conductor shielded stranded color coded, & 18 ga. 2 conductor shielded stranded color coded wire should be used for all connections to devices unless otherwise specified.

Main Control Boards

Smart Read 8 (S8) Main Control Boards control between 16 and 64 doors per board. Consult Owner's Vendor for number Main Control Boards when doors controlled at the site exceed 16. These boards connect to the system server via direct connection or modem. These boards receive and store access permission information downloaded from the system server and provide instruction to the Door Control Boards when access is requested. These boards are located in the Main Control Box

Door Control Boards

Smart Read 1 (SR1) Door Control Boards send and receive signals to and from the all system components at a particular door and request access permissions from the Main Control Boards. Upon verification of proper permission it sends a signal to operate the electrified door hardware. These boards are located on the TBB or when unavailable, in the ceiling above each door at the Door Control Box.

Access System Power Supplies

12V DC transformers supplying power to the access system components with the exception of electrified door hardware. Access System Power Supplies are to be located at the TBB near the Main Control Box they power and connect to the Contractor provided 110V AC at the TBB.

Readers, keypads, motion sensors, manual override/door open buttons

Readers, keypads, motion sensors, and door buttons connect to the Door Control Board for power and communication. These devices request electrified door hardware activation.

Extended Warranties

No specific requirements for extended warranties. Contractor to provide warranty information for any supplied components and/or systems that exceed the 1-year general warranty period in the closeout documentation for the project.

EXAMPLE OF TYPICAL INSTALLATION

(Requirements vary, coordinate with Detention & Enforcement)

Typical Access Point Requirements. The typical access point consists of 3 components, the locking device, the input device (card reader and/or keypad), and the control board, connected with conduit/cables and a home run to the telephone board for the building. There is also a Main Control Board at the telephone backboard that all access points connect to.

Door Locking Device: Refer to 08710 Door Hardware, Electronic Locks for Access System. Provided by Contractor.

Input Device: HID Mini Prox Reader, on door Jamb or wall j-box, 44 inches above finished floor (for card user access only). A keypad will be added when Metro or other non-city personnel need access (max. 500 cable feet from SR-1).

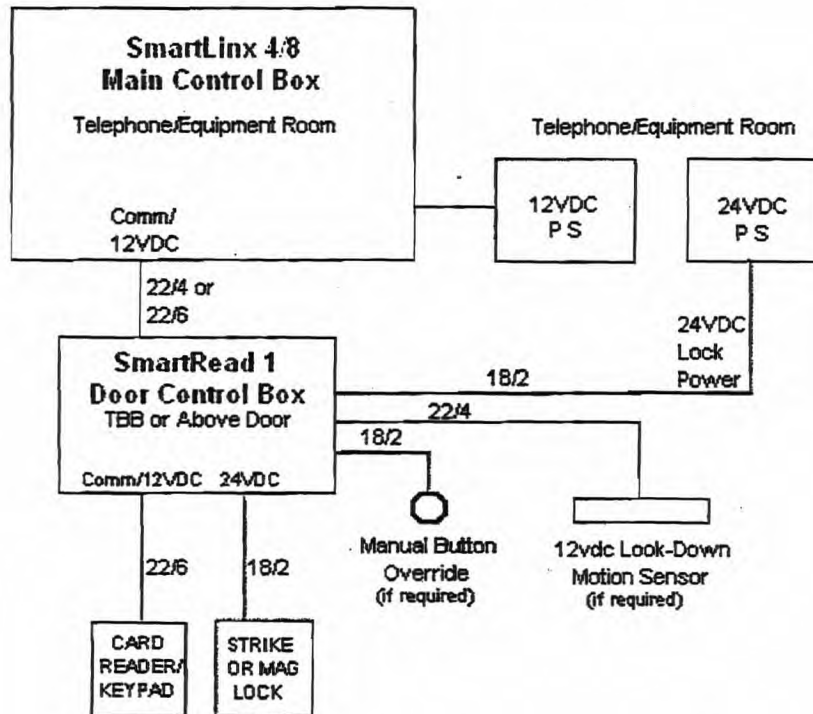
DESIGN STANDARDS
Division 13 – Special Construction

Control unit: SmartRead 1 (SR-1) in a hinged-lid j-box in plenum/attic above door or TBB (max height 10' from floor) (max. 1000 cable feet from main controller).

Main Controller: SmartLinx 8 located on building telephone backboard (TBB).

Wiring Requirements

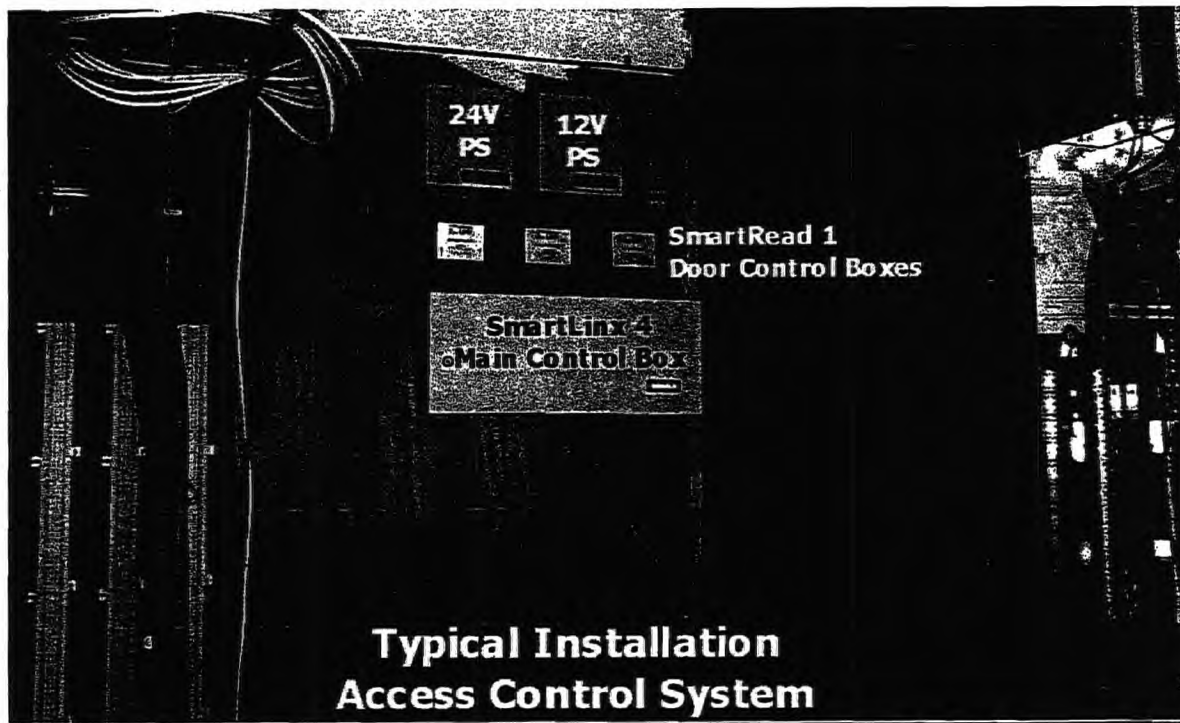
Diebold Wire Schematic



Typical Telephone Backboard Requirements, system with more than 16 doors. The Main Control Board(s) are located at the building Telephone Backboard (TBB). These Smart Linx 8 (S8) boards are housed in boxes with hinged lids, mounted to the TBB. The S8's dimensions are 23 ¼" width, 13 ½" height, 5" deep, and a 28" door swing. The S8 needs a 120-volt outlet for power supply and the locking device power supply. The S8/S4 needs either a dial-tone phone line to communicate back to the host pc via modem, or a LAN connection to local network router or switch.

DESIGN STANDARDS
Division 13 – Special Construction

Typical Phone Back Board Installation



DESIGN STANDARDS
Division 13 – Special Construction

4. Surveillance

General. The OAS Project Manager will confirm whether a surveillance system is required for your project. Generally, it will not be required, although empty conduits or conduit stub outs for future cameras should be considered where running them later will be difficult. System will usually be monitored and recorded within each facility since Detention and Enforcement currently does not have the staff to live monitor these systems.

When required, CCTV cameras should be installed in the following areas:

1. Building Entrance / Exit points.
2. Elevator Lobbies
3. Elevator Cabs
4. Covered Parking Structures
5. High traffic public service counters
6. Public side of cash transactions

Any building that will be located in the overall City Hall Campus should include a conduit pathway dedicated to low voltage with sufficient capacity to include a CCTV fiber optic link to the 2nd floor CCTV control center in the old City Hall jail.

Any new building design should specifically include sufficient backboard space, allocated in one of the telephone rooms (or closets), for installation of CCTV camera power, recording and transmission equipment.

CCTV cable requirements.

No CCTV coax cable runs in excess of 1,500 feet. No CCTV power cable runs in excess of 700 feet.

Installed CCTV video transmission cables to be installed and constructed as follows:

Cable distances of less than 750 feet will require coaxial cable of RG59/U designation that is constructed with a 20 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage. Belden cable # 543945 or equivalent.

Cable distances greater than 750 feet and less than 1,500 feet will require coaxial cable of RG6/U designation that is constructed with an 18 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage, Belden Cable # 533945 or equivalent.

CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent.

Each camera will have a dedicated power cable run to the camera power supply.

CCTV conduit requirements.

Minimum Conduit size of ¾ inch for CCTV conduit runs. Camera mounting points are generally a 4-S box with a single gang mud ring cover.

All National Electrical Code requirements will be observed during design and installation of CCTV conduit.

Conduit pull boxes should be encouraged in long cable runs to minimize problems and damage to cable during installation.

DESIGN STANDARDS
Division 13 – Special Construction

Elevator CCTV cable requirements.

The elevator contractor will be required to provide two free pairs (4 total conductors) of each elevator cab's travel cable for installation of a CCTV camera. One pair of conductors will carry the video signal and the other pair of conductors will carry the 24vac to power the camera. The travel cable conductors designated for CCTV system use should be clearly identified by the elevator contractor in both the elevator cab and the elevator control panel.

Video transmission cables from the CCTV head end to the elevator control panel will require a Category 5 compliant data cable to each elevator control panel.

Elevator CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent to each elevator control panel.

Elevator CCTV conduit requirements.

Conduit shall remain consistent with the established conduit sizing in the garage parking area CCTV conduit requirements.

Conduit installation to each elevator control panel cabinet must be coordinated with elevator contractor to determine acceptable entrance points for CCTV system conduit.

DESIGN STANDARDS
Division 13 – Special Construction

13851 Fire Alarm

Limited Models. The only systems that are acceptable in City facilities are:

Small systems. Models are limited to EST QS4, Siemens MXL-IQ, Simplex 4010, and Notifier AFP-200 (Notifier AFP-100 has been discontinued).

Large systems. Models are limited to EST EST-3, Siemens MXLV, Simplex 4100, and Notifier NFS-640.

Systems specified must meet the following requirements:

- 1) Only addressable systems are acceptable.
- 2) Systems and components must be UL Listed and FM Approved.
- 3) Systems **MUST** be easily and economically expandable.
- 4) Systems shall be designed with the ability to expand at least an additional 25% above current requirements.

Additional information is available at each manufacturers' web site.

EST Q4 <http://www.est.net/QuickStart/prod QS.cfm>

EST EST-3 <http://www.est.net/est3.cfm>

Siemens MXL both models <http://www.sbt.siemens.com/FIS/productdoc/catalogs/5000.pdf>

Simplex 4010 http://xtra.simplexnet.com/a_e/FA/4010-0001.PDF

Simplex 4100 http://xtra.simplexnet.com/a_e/FA/4100-0013.PDF

Notifier AFP-100 http://www.notifier.com/datasheets/DN_6629.pdf

Notifier NFS-640 http://www.notifier.com/datasheets/DN_6856.pdf

Fire alarm system. A system of initiation devices, notification appliances, circuits and related components arranged to detect the presence of smoke and/or fire and annunciate the status of such presence and to initiate an appropriate response. Monitoring of fire sprinkler systems and the code required interior and exterior alarms indicating sprinkler flow are not "alarm systems", but may be a part of an alarm system when such a system is installed in a building.

Fire alarm systems are only required in certain occupancies and special conditions. The Building Code only addresses a limited number of conditions when a fire alarm system is required. The Fire Code must also be researched for determination of requirements. The City of Las Vegas does not have a policy of requiring fire alarm systems when otherwise not required by codes, except that manual activated fire alarm systems are sometimes required by the City's Fire Prevention Division on a case by case basis. The design consultant must confer with the Fire Prevention Division for such determination. When acceptable to the Fire Prevention Division, double action type manual pull boxes should be specified. Typically, electrical engineering consultants specify (and determine) fire alarm requirements. The National Electrical Code does not provide the guidance the engineer needs in making determinations. The lead design consultant must participate in making determinations. **Do not allow misleading and uninformed statements in the documents such as "provide fire alarm system as required".**

Buildings containing fire suppression or fire alarm systems are required to be provided with a rapid entry key box (Knox Box). Exact locations and determinations must be coordinated with the City's Fire Department Prevention Office for each such project.

Circuit Types. Unless otherwise required by the City's Fire Prevention Division for a particular project, the following Class and Styles of Circuits shall be specified:

DESIGN STANDARDS

Division 13 – Special Construction

- Initiating Device Circuits – Class A, Style D or E
- Signaling Line Circuits – Class A, Style 5, 6 or 7
- Notification Appliance Circuits – Class A, Style Z

Monitoring. The use of a system in which the operations of circuits and devices at a building (that is protected by a fire sprinkler system and/or a fire alarm system) are signaled to and supervised by an off-premise qualified company that is responsible for notifying the proper emergency response authority and the designated Owner's representative.

Monitoring is required for any fire sprinkler and any fire alarm system installed in a City of Las Vegas owned building. Monitoring of a fire sprinkler system is not construed as a fire alarm system.

Duct Detectors (smoke). Specify that any required duct detectors to be supplied by the fire alarm system contractor and installed by the HVAC contractor, if a fire alarm system is being provided for the project. Each detector should be easily and separately identifiable from other detectors when activated.

Protection. Provide wire guards or equal protection of detectors and devices in gymnasiums and recreational activity areas. Protection must be mechanically attached so impacts will not release the protection.

Other Standards. This standard is a companion to other standards describing features of fire detection and suppression systems. This design standard is not intended to duplicate or replace adopted code requirements.

Related City of Las Vegas design standards include:

- 10553 – Rapid Entry Key Boxes
- 13910 – Basic Fire Suppression Materials and Methods

Applicable codes and national standards to this City of Las Vegas design standard include, but are not limited to:

- International Building Code, 2003 Ed., Primarily Chapter 9. (effective date 5-19-04)
- City of Las Vegas Building Code Amendments, 2003 Ed.
- Uniform Fire Code, NFPA 1 2003 Ed., Primarily Chapter 13. (effective date 5-19-04)
- City of Las Vegas Fire Code Amendments, 2003 Ed.
- NFPA 72, National Fire Alarm Code, 2002 Ed.
- Regulations adopted by the State Fire Marshal for public education facilities, health and care facilities, or child care facilities.

DESIGN STANDARDS
Division 13 – Special Construction

13910 Basic Fire Suppression Materials and Methods

Design Standard and Applicability. Unless specifically requested, always provide fire sprinkler systems on all new and major remodel building projects, complete with electronic monitoring of all valves and water flow switches, regardless of the number of sprinklers and regardless of whether the applicable codes require a sprinkler system and monitoring. Sprinkler systems will be monitored by the City's contracted monitoring company. Provide a phone line for monitoring and require that any other suppression system within the building such as grease hood suppression systems and any fire alarm system, if provided, be connected to the monitoring panel. Provide an audible/visual sprinkler flow alarm on the outside of the building at a location acceptable to the Fire Department and audible/visual sprinkler flow alarm(s) in the interior of the building located where acceptable to the Fire Department.

In general, this fire sprinkler system requirement is not required for the following building types unless otherwise required by code or regulations:

- Park restrooms, concession stands and swimming pool bath houses.
- Freestanding, unoccupied, utility buildings, unless desired or required to protect the contents.
- Minor interior remodels.
- Small building additions if sprinkling the new portion would require upgrading the entire building.
- Modular structures (Provide sprinklers if occupied by students on a regular basis, even if less than 50 occupants). State Fire Marshal Regulations also mandate fire sprinklers in modular buildings under certain circumstances, including when multiple modular buildings are grouped together.

Request direction from the City Project Manager as to the specific minimum requirements for sprinklers and alarms when working with building remodels, additions, and unusual project types.

Generally a performance specification together with the drawing call-outs of equipment, items and notes required by this Section will be sufficient documentation for bidding purposes, with the sprinkler subcontractor providing a design-build service for the system after award. Verify with the City Project Manager during design whether specific detailed fire suppression drawings need to be engineered and prepared by the Consultant.

The actual use and proposed contents of buildings must be determined during programming and design when hazardous materials or high pile storage is intended in a building. The use and nature of the contents of a building must be made apparent on the bid documents in order to avoid construction change claims related to the adequacy of system design for the "target hazard".

Buildings containing fire suppression or fire alarm systems are required to be provided with a rapid entry key box (Knox Box). Exact locations and determinations must be coordinated with the City's Fire Department Prevention Office for each such project.

Other Standards. This standard is a companion to other standards describing features of fire detection and suppression systems. This design standard is not intended to duplicate or replace adopted code requirements.

Related City of Las Vegas design standards include:

- 10553 – Rapid Entry Key Boxes
- 13851 – Fire Alarm

Applicable codes and national standards to this City of Las Vegas design standard include, but are not limited to:

- International Building Code, 2003 Ed., Primarily Chapter 9. (effective date 5-19-04)
- City of Las Vegas Building Code Amendments, 2003 Ed.

DESIGN STANDARDS
Division 13 – Special Construction

- Uniform Fire Code, NFPA 1 2003 Ed., Primarily Chapters 13 and 20. (effective date 5-19-04)
- City of Las Vegas Fire Code Amendments, 2003 Ed.
- NFPA 13, Installation Of Sprinkler Systems, 2002 Ed.
- NFPA 14, Standpipe, Private Hydrant And Hose Systems, 2003 Ed
- NFPA 24, Private Fire Service Mains
- Regulations adopted by the State Fire Marshal for public education facilities, health and care facilities, or child care facilities.

The consultant and applicable sub-consultants are responsible for specifying the characteristics of compliance with codes and standards. Use of generic "provide system, as required" statements are prohibited. Consideration must be given during the design for locating the FDC (Fire Department Connection) and system main drain, or the Contractor may design it for you and you may not like the result. Typically, placement of these items is flexible and you can avoid the tragedy of a system main drain next to the main entry of the building without paying the contractor a change order, if the specifications are tight enough.

Acceptable pipe material. Fire sprinkler system piping shall be specified as schedule 40 pipe. Schedule 10 and thinwall pipe will not be accepted for fire sprinkler system piping.

Signage. Reference drawing in this section for the following sign:

Fire Riser Sign. Mount one sign centered on the exterior door into the fire riser room.

Fire Sprinkler Head Protection. Protect sprinkler heads from accidental discharge caused by thrown balls and other objects striking them in athletic and recreational areas. Protection must be mechanically attached so impacts will not release the protection. Provide protection or concealed heads over all wood flooring, regardless of activity.

DESIGN STANDARDS
Division 14 – Conveying Systems

14001 Design Information – Conveying Systems

Elevators. Reference Section 13700 Security Access and Surveillance for CCTV requirements and Section 16742 Communication & Data Processing Equipment for telephone requirements.

DESIGN STANDARDS
Division 15 – Mechanical

15001 Design Information – Mechanical

Water Pressure. The on-site water pressure measurement to use for the project design needs to be taken during the heaviest water usage for the area, probably during the morning residential irrigation time period. A re-occurring problem for City projects, particularly in park restrooms, is insufficient water pressure during this heavy usage time period to properly operate the toilet flush valves, since the designer used a design water pressure measured during a less busy time period. A booster pump is then required after construction completion so the flush valves operate during this heavy usage time period. If a booster pump is needed to cure this issue, it needs to be included in the original design and construction.

Underground Utility Tracing. Provide trace wire or detectable underground warning tape with identification for all underground utilities installed in non-conductive pipe. SpecText provides for tracer wire in the following sections;

- 02538 Sanitary Sewer
- 02551 Natural Gas Distribution
- 15140 Domestic Water Piping
- 15150 Sanitary Waste and Vent Piping
- 15160 Storm Drainage Piping
- 15175 Swimming Pool Piping and Equipment
- 15195 Gas Piping

Piping in CMU Walls. The current interpretation by Building and Safety of Section 313.2 of the 2000 Uniform Plumbing Code, "No piping shall be directly embedded in concrete or masonry," follows.

Plumbing supply lines should be run inside accessible plumbing chases or in furred out stud walls where possible, but may be run vertically inside CMU walls if they are run in non-grouted open cells and access panels are provided on the wall to access the plumbing joints. The consultant is advised that these access panels must be sized and shown on the drawings; general notes to cover this work are not acceptable. Vents and drains do not have the access panel requirement. All sleeving through continuous bond beams must be detailed by the structural engineer.

DESIGN STANDARDS
Division 15 – Mechanical

15410 Plumbing Fixtures

Reference Section 15001 Design Information – Mechanical for additional requirements.

General. Design and specify to meet building code, ADA, ANSI and NRS requirements for fixtures, locations and quantities. Additionally, do not specify to limit bidding to one manufacturer, see "Section 01010 Overview" of these standards and NRS 338.140.

Supervised Public Restrooms (office buildings, recreation centers).

Water Closets. American Standard, Kohler, or Gerber china fixtures. Specify wall hung fixtures where space for a serviceable plumbing chase (3' to 5' width) can be provided. Rim heights per code/ADA requirements without the use of special seats. Specify Sloan or Zurn flush valves. Avoid flush systems that require pressure tanks. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Urinals: American Standard, Kohler or Gerber china fixtures, wall hung, Sloan or Zurn flush valves. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Lavatories: American Standard or Kohler china fixtures, wall hung, top set, or undercounter mount type - Chicago, Delta, or Moen faucets with mixing valves and automatic shut-off. There are instances where wall hung should **only** be considered, i.e.: exterior restrooms attached to main buildings, safe key trailers and childrens' community centers. The extra cost of undercounter mount installations vs. top set should be analyzed for budget vs. aesthetics (typically, high end installations such as may apply in the City Hall tower will be undercounter mount installations).

Supervised Non-Public Restrooms. Same as supervised public restrooms except without requirement for automatic shut-off faucets.

Unsupervised Public Restrooms (Park restrooms and other areas without full-time personnel in close proximity).

Water Closets: Acorn Dura-Ware 2100 series, heavy gage type 304 stainless steel construction, no known equal. Wall hung blow-out jet type with hinged seat. Provide serviceable plumbing chase (5' min. width). Rim heights per code/ADA requirements without the use of special seats. Specify Sloan model 952-1.6 flush valve and HY-100-A Actuator, or equal.

Urinals: Acorn Penal-Ware, heavy gage type 304 stainless steel construction, no known equal. Wall hung straddle type. Sloan or Zurn flush valves. Provide serviceable plumbing chase (5' min. width). Specify Sloan model 990 (1.0 GPF) flush valve and HY-100-A Actuator, or equal.

Lavatories: Acorn Dura-Ware 1953-ADA fixture. Heavy gage 304 stainless steel construction, front access. Wall hung with bolts going through full depth of wall. Air control single temperature push button valve, Moen 8884 (single) or Moen 8886 (double) self-closing faucets (ADA approved). P-Trap in plumbing chase.

Instant water heaters: Instant water heaters are not to be specified in City of Las Vegas facilities.

NRS Requirements for Plumbing Fixtures. Comply with NRS 338.193 Standards for plumbing fixtures, and verify latest edition matches the following:

1. Each public building sponsored or financed by a public body must meet the standards made applicable for the building pursuant to this section.

DESIGN STANDARDS
Division 15 – Mechanical

2. Except as otherwise provided in subsections 3 and 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1992, and each existing public building which is expanded or renovated on or after March 1, 1992, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 3.5 gallons of water per flush.

(b) A shower apparatus which uses more than 3 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 3 gallons of water or less per minute.

(c) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 3 gallons per minute.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically irrespective of demand must not be installed.

3. Except as otherwise provided in subsection 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1993, and each existing public building which is expanded or renovated on or after March 1, 1993, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 1.6 gallons of water per flush.

(b) A shower apparatus which uses more than 2.5 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 2.5 gallons of water or less per minute.

(c) A urinal which uses water must not be installed unless its consumption of water does not exceed 1 gallon of water per flush.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically, irrespective of demand, must not be installed.

(e) A urinal which continually flows or flushes water must not be installed.

(f) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 2.5 gallons per minute.

(g) Each faucet installed in a public restroom must contain a mechanism which closes the faucet automatically after a predetermined amount of water has flowed through the faucet. Multiple faucets that are activated from a single point must not be installed.

4. The requirements of this section for the installation of certain plumbing fixtures do not apply to any portion of an existing public building which is not being expanded or renovated.

(Added to NRS by 1991, 1168)

DESIGN STANDARDS
Division 15 – Mechanical

15410 Plumbing Fixtures

Reference Section 15001 Design Information – Mechanical for additional requirements.

General. Design and specify to meet building code, ADA, ANSI and NRS requirements for fixtures, locations and quantities. Additionally, do not specify to limit bidding to one manufacturer, see "Section 01010 Overview" of these standards and NRS 338.140.

Supervised Public Restrooms (office buildings, recreation centers).

Water Closets. American Standard, Kohler, or Gerber china fixtures. Specify wall hung fixtures where space for a serviceable plumbing chase (3' to 5' width) can be provided. Rim heights per code/ADA requirements without the use of special seats. Specify Sloan or Zurn flush valves. Avoid flush systems that require pressure tanks. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Urinals: American Standard, Kohler or Gerber china fixtures, wall hung, Sloan or Zurn flush valves. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Lavatories: American Standard or Kohler china fixtures, wall hung, top set, or undercounter mount type - Chicago, Delta, or Moen faucets with mixing valves and automatic shut-off. There are instances where wall hung should **only** be considered, i.e.: exterior restrooms attached to main buildings, safe key trailers and childrens' community centers. The extra cost of undercounter mount installations vs. top set should be analyzed for budget vs. aesthetics (typically, high end installations such as may apply in the City Hall tower will be undercounter mount installations).

Supervised Non-Public Restrooms. Same as supervised public restrooms except without requirement for automatic shut-off faucets.

Unsupervised Public Restrooms (Park restrooms and other areas without full-time personnel in close proximity).

Water Closets: Acorn Dura-Ware 2100 series, heavy gage type 304 stainless steel construction, no known equal. Wall hung blow-out jet type with hinged seat. Provide serviceable plumbing chase (5' min. width). Rim heights per code/ADA requirements without the use of special seats. Specify Sloan model 952-1.6 flush valve and HY-100-A Actuator, or equal.

Urinals: Acorn Penal-Ware, heavy gage type 304 stainless steel construction, no known equal. Wall hung straddle type. Sloan or Zurn flush valves. Provide serviceable plumbing chase (5' min. width). Specify Sloan model 990 (1.0 GPF) flush valve and HY-100-A Actuator, or equal.

Lavatories: Acorn Dura-Ware 1953-ADA fixture. Heavy gage 304 stainless steel construction, front access. Wall hung with bolts going through full depth of wall. Air control single temperature push button valve, Moen 8884 (single) or Moen 8886 (double) self-closing faucets (ADA approved). P-Trap in plumbing chase.

Instant water heaters: Instant water heaters are not to be specified in City of Las Vegas facilities.

NRS Requirements for Plumbing Fixtures. Comply with NRS 338.193 Standards for plumbing fixtures, and verify latest edition matches the following:

1. Each public building sponsored or financed by a public body must meet the standards made applicable for the building pursuant to this section.

DESIGN STANDARDS
Division 15 – Mechanical

2. Except as otherwise provided in subsections 3 and 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1992, and each existing public building which is expanded or renovated on or after March 1, 1992, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 3.5 gallons of water per flush.

(b) A shower apparatus which uses more than 3 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 3 gallons of water or less per minute.

(c) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 3 gallons per minute.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically irrespective of demand must not be installed.

3. Except as otherwise provided in subsection 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1993, and each existing public building which is expanded or renovated on or after March 1, 1993, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 1.6 gallons of water per flush.

(b) A shower apparatus which uses more than 2.5 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 2.5 gallons of water or less per minute.

(c) A urinal which uses water must not be installed unless its consumption of water does not exceed 1 gallon of water per flush.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically, irrespective of demand, must not be installed.

(e) A urinal which continually flows or flushes water must not be installed.

(f) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 2.5 gallons per minute.

(g) Each faucet installed in a public restroom must contain a mechanism which closes the faucet automatically after a predetermined amount of water has flowed through the faucet. Multiple faucets that are activated from a single point must not be installed.

4. The requirements of this section for the installation of certain plumbing fixtures do not apply to any portion of an existing public building which is not being expanded or renovated.

(Added to NRS by 1991, 1168)

DESIGN STANDARDS
Division 15 – Mechanical

15412 Water Coolers & Drinking Fountains

Exterior. Finish to coordinate with project. Modified for added dog water at dog runs. No substitutions allowed. See City standard details. Use the detail connected to the sanitary sewer only where directed by the CLV project manager.

Stand Alone. Model #440DBSS, hi-lo bowl, stainless steel w/ standard powder-coated finish (color to be selected by architect), as manufactured by Most Dependable Fountains, meeting the accessibility guidelines in Division 1.

Wall Mount. Model #475 WMSS, stainless steel w/ standard powder-coated finish (color to be selected by architect), as manufactured by Most Dependable Fountains, meeting the accessibility guidelines in Division 1.

Interior. Finish to coordinate with project, typically dull chrome. Surface mount designs are preferred for cost but the consultant may also specify concealed designs. Both high and low bowl heights are required when a drinking fountain is provided. A Hi-Lo combination unit is preferred over two separate units mounted at different heights. Refrigerated models should be used in conditioned buildings and should be considered for non-conditioned buildings on a case-by-case basis.

Manufacturers. Elkay or Haws.

DESIGN STANDARDS
Division 15 – Mechanical

15700 Heating, Ventilating & Air-Conditioning Equipment

HVAC Systems.

- Include an energy management control system and temperature setup/setback control system.
- Specify a minimum SEER (Seasonal Energy Efficiency Ratio) rating of 12 for residential units 5 tons or less.
- Specify a minimum EER (Energy Efficient Ratio) rating of 11 for commercial units 5 tons or larger.
- Avoid foreign brands. They are difficult to get parts and for our crews to maintain.
- Roof mounted gas pack units are NOT allowed (due to the increased unit maintenance, difficulty in securing and reroofing around roof mounted gas lines, and the marginal benefit for our short heating season).
- No more than 3 offices on one thermostat.
- All compressors shall have a minimum of a ten-year warranty.
- Engineers should consider a central chiller boiler plant for large projects.
- The designer should investigate the use of enthalpy economizers.

Evaporative Coolers.

- Specify at least a two-speed blower motor if available for the designed installation.
- Specify a low voltage thermostat.
- A sump dump system is preferred over a bleed-off system.
- Consider ground-mounted units instead of roof top mounting.
- Provide water shutoff and drain inside the building for winterizing and a convenient electrical disconnect that is not accessible to the public. Shut off should be accessible at standing height, without a ladder.
- The unit may need to be utilized in the winter, without water, if it is the only ventilation for the space.

Duct Detectors (smoke). Specify that any required duct detectors to be supplied by the fire alarm system contractor and installed by the HVAC contractor, if any such system is being provided for the project. Each detector should be easily and separately identifiable from other detectors when activated.

Equipment Rooms. Adequate ventilation/cooling must be provided for data, security, and electrical equipment heat loads.

Protection. Provide wire guards or equal protection of thermostats and other devices in gymnasiums and recreational activity areas.

DESIGN STANDARDS
Division 16 – Electrical

16001 Design Information - Electrical

General. This section includes general electrical information not specific to any one Division 16 section. See other Division 16 sections for additional electrical requirements. Refer to this Building Dept Clarification for discussion synopsis with the Building Department related to interpretations and discussions of typical items found to be deficient in building design related to the Electrical Code.

Low Voltage Conduit. All wiring including low voltage must be in conduit, except for direct burial irrigation controller wiring as allowed by Section 02810 Irrigation Systems.

Copper vs. Aluminum conductors.

Aluminum conductors may only be used for Nevada Power's incoming line feed to the meter. All other wiring must be copper.

Irrigation Controls. Provide isolated panel circuits for the irrigation controls.

Lighting Controls. Provide user timers with shutoff warning lights for all activity lighting such as tennis courts, skateboard areas, etc. Ball field and all general site lighting shall be controllable by City phone controlled system. Reference Section 16520 Exterior Lighting for requirements.

Lighting Levels. Interior and exterior lighting must meet minimum recognized illumination level standards for horizontal, vertical, and uniformity. Reference Section 16510 Interior Lighting and Section 16520 Exterior Lighting for the required lighting levels.

Receptacles. Do not provide convenience outlets for use by the public in restrooms or other areas except one 20 amp receptacle at maximum ADA reach height in group reservable ramadas (25 occupant minimum, which is also the minimum for lighted ramadas). This circuit needs to be controlled from a secure remote on-site location such as the restroom plumbing chase. Reference Section 02875 Site Shelters.

Conduit and Pull Boxes. Use concealed conduit in the occupied structures, restrooms, bath-houses, and park ramadas. Reference Section 02875 Site Shelters.

MC and Armored Cable is not acceptable anywhere. Flex conduit allowed only per NEC, which is only in certain locations and not more than six feet in length. Site lighting conduits may be run at a shallow depth under sidewalks as allowed by code.

Exterior. The minimum requirements for conduit and pull boxes referenced in Section 16520 Exterior Lighting of these Design Standards shall apply to all site electrical work, not just the exterior lighting, and shall be so specifically indicated on the drawings.

Interior. Specify 1" minimum conduit size for all interior homeruns, ¾" minimum size elsewhere.

Transformers and Switchgear. No electrical transformers inside buildings. Use of freestanding site pad mounted transformers and equipment is generally acceptable, and preferred over a walled enclosure that only houses the electrical equipment. Avoid placing cabinets against the outside of building walls. Placement inside block wall screen enclosures otherwise required for irrigation pumps is acceptable, possibly in combination with the dumpster enclosure.

Shunt Trips. Locate shunt trips inside steel enclosures, 16-gauge minimum, galvanized, hinged cover, padlockable, designed for exterior use, Milbank HC3R or equal. Conceal conduit, minimize the size of the box and paint the exterior to match the adjacent surface. Label the cover "SHUNT TRIP" with 1" high black letters on a yellow background. <http://www.milbankmfg.com/>. Shunt Trips are no longer allowed under CLV's adoption of the 2002 National Electric Code. See main disconnect below.

DESIGN STANDARDS
Division 16 – Electrical

Main Disconnect. An accessible main disconnect is required for all buildings and should be placed in a non-conspicuous location on the exterior of buildings or in a 1 hour rated room with outside access.

Exterior – See photo for typical example of a 400 amp fused disconnect. Whenever possible, specify a side hinged breaker type disconnect when placed on the exterior of buildings.

Interior - An exterior door to the space is required, a Knox Box must be installed adjacent to the door, the room must be 1 hour fire rated, the door must have panic hardware and be labeled on the outside, and if the panel size is 1200 amps or larger, it must have 2 exit doors (NEC Article II, 102.6).

Security for Controls and Systems.

Provide access to controls/systems for the following groups, and restrict access to all others:

Detention & Enforcement (D&E) has access to all listed.

	General Public	City Employees (Facility Occupants)	Field Operations (Facilities Management and Parks)	Information Technologies (IT, see Section 16742)	Locks Provided by	DO NOT BLOCK ACCESS Sign Required IF storage in front of controls is possible
Electrical Panels	No	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	Contractor, for panels in a public area (or equipment room door)	X
Time Clocks (exterior lighting)	No	<u>Yes</u>	<u>Yes</u>	No Restriction	Contractor (equipment room door)	X
Phone Board	No	No	No	<u>Yes</u>	Contractor if in a separate room, None required if in an IT wall cabinet	X
Computer Network - Patch Panel (on board separate from the phones) and Switch/Router (shelf or rack mounted)	No	No	No	<u>Yes</u>	Contractor if in a separate room, None required if in an IT wall cabinet	X
Video Security Camera System - Switch/Router and Phone Line or Transmitter	No	No	No	<u>Yes</u>	Contractor if in a separate room, None required if in an IT wall cabinet	X
Security System (general building intruder security - Alarmco)	No	No	<u>Yes</u>	No	Cam-locks provided and master keyed by D&E	X
Fire Alarm Panels	No	No	<u>Yes</u>	No	Provided by Contractor, master keyed by D&E	X
Access Control Panel/System/Power Supplies (for card readers & video camera / intercom systems)	No	No	No	No	Provided by vendor or D&E, master keyed by D&E	X

Note that the location of these controls may be combined in rooms by restricting access with wall-mounted cabinets (ventilated as needed and room equipment heat loads removed).

DESIGN STANDARDS

Division 16 – Electrical

See 16742 Communication & Data Processing Equipment for wall cabinet information.
See 08710 Door Hardware for master keying of cabinets.

Protection. Provide wire guards or equal protection of lights, exit signs, detectors, speakers, assistive listening devices and other fixtures in gymnasiums and recreational activity areas. Protection must be mechanically attached so impacts will not release the protection.

Signage – Aluminum.

General. Signs shall meet the specification requirements (aluminum gauge, background sheeting, silk screening, UV coating and protective coating) as outlined in Section 10426 Signage and Graphics – Sign Specifications for On-site Regulatory – Informational – Warning Signage - Non-vehicular Signage. It is anticipated that these signs will be provided by the same supplier as the other aluminum on-site signs being provided for the project.

Electrical Meter Address Sign(s). Install identifying sign(s) adjacent to each electrical meter. CLV Project Manager shall provide actual address to be used upon application for electrical service.

- Black letters on white background.
- Text size 1" height, Arial font.
- Uniform sign size to coordinate with maximum amount of text.
- Provide attachment with double-sided stick tape over a minimum of 50 percent of the backside of the sign (3M 200MP or equal). Do not drill into or penetrate in any way the meter panel.

Main Disconnect Sign. Mount one sign adjacent to the main electrical disconnect for each structure. If the disconnect is located inside the building, provide an additional sign adjacent to the exterior door leading to the disconnect. Reference the standard drawing in this section for the sign design.

Signage – Engraved Plastic.

General. Signs shall be engraved on three-layer plastic, colors as specified, attached with double-sided stick tape (3M 200MP or equal). It is anticipated that these signs will be provided by the electrical contractor, regardless of who provides the device/box to be identified.

Electrical Equipment overall UL listed labels. NEC requires that all packaged equipment be UL rated and labeled as such for the overall unit. Providing UL listed components is not adequate. There existing different UL listing numbers for overall UL rating for different type of equipment. An example is for air compressors it is UL 1450 standards. NEC Article 110.3 (B) requires that all equipment shall be listed or labeled. Other equipment such as HVAC units etc. have specific UL numbers for overall ratings and must be specified for each piece of equipment on City of Las Vegas projects.

Electrical Identification Nameplates. Provide signs identifying all equipment, devices, switchgear, controls, equipment enclosures, communication cabinets, disconnects, main panels, sub panels, and similar electrical system components.

- White letters on black background.
- Use 1/4" letter height, except inside breaker panels use 1/8" letters for identifying individual breaker number, function, equipment and loads.
- Uniform sign size to coordinate with maximum amount of text.
- Text: Label text with common name of each piece and additionally with the unique identifier lettering shown on the as-built electrical drawings.
- Mount on or adjacent to each device for interior items. Mount on the inside of access panels for exterior located items.

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Do Not Block Access Signs. Mount one sign on or adjacent to each control/system indicated in the proceeding table "Security for Controls and Systems", IF the equipment is located in a closet or storage room capable of being blocked:

- White text on red background.
- Text size 1" height, Arial font.
- Text: DO NOT BLOCK ACCESS.

Special Door Hardware Requirements.

Under certain circumstances identified in the 2002 edition of the National Electrical Code, as adopted, special door hardware requirements are prescribed for doors serving electrical equipment rooms or spaces. Such requirements are not included in the Building Code, and may not be widely known by design consultants relying strictly on the Building Code for door hardware minimum requirements. Nor will the applicability of these special requirements be apparent unless specifically identified by the electrical engineering consultant. Normally, electrical engineering consultants do not specify door hardware, so there is great potential for code non-compliance that may not be known until late in the construction when identified by governing authority code inspection unless this item is carefully coordinated by the design team. Specific reference is made to NEC 110.26(C)2 and generally applies when electrical equipment rated 1200 amperes or more is provided in a space. Familiarity with other provisions of NEC 110 related to locating electrical gear is necessary to avoid potential change orders or otherwise unacceptable design solutions.

NETA Testing. Provide the following testing requirements in all projects utilizing new electrical gear. Verify the specific project requirements with the City Project Manager. This partial specification is provided as a convenient reference to the City's intent, with the consultant's standard specification in substantially this form also being acceptable to use. Also reference additional testing requirements in Section 16520 Exterior Lighting.

DIVISION 16 - ELECTRICAL INSPECTION AND TESTING

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 RELATED REQUIREMENTS
- 1.3 SUBMITTALS
- 1.4 QUALITY ASSURANCE
 - 1.4.1 Qualifications
 - 1.4.2 Acceptance Tests and Inspections Reports
 - 1.4.3 Acceptance Test and Inspections Procedure

PART 2 PRODUCTS

PART 3 EXECUTION

- 3.1 ACCEPTANCE TESTS AND INSPECTIONS
- 3.2 SYSTEM ACCEPTANCE
- 3.3 PLACING EQUIPMENT IN SERVICE

NOTE: This specification covers electrical inspection and testing and shall be used on project specifications where NETA testing is required. This section shall also be used for specification sections containing low-voltage or medium voltage generator control switchboards or switchgear, pad-mounted air switches, and medium voltage circuit breakers. Provide the section numbers and titles in this section, and add NETA testing requirements to the applicable section. Coordinate the sections in your contract documents with paragraph entitled "Acceptance Tests and Inspection" in PART 3 of this specification.

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

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INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

NETA ATS (2003) Acceptance Testing Specifications

1.2 RELATED REQUIREMENTS

1.3 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Test Reports

Acceptance tests and inspections;

Certificates

Qualifications of organization, and lead engineering technician;

Acceptance test and inspections procedure;

1.4 QUALITY ASSURANCE

1.4.1 Qualifications

Contractor shall engage the services of a qualified testing organization to provide inspection, testing, calibration, and adjustment of the electrical distribution system and generation equipment listed in paragraph entitled "Acceptance Tests and Inspections" herein. Organization shall be independent of the supplier, manufacturer, and installer of the equipment. The organization shall be a first tier subcontractor. No work required by this section of the specification shall be performed by a second tier subcontractor.

a. Submit name and qualifications of organization. Organization shall have been regularly engaged in the testing of electrical materials, devices, installations, and systems for a minimum of 5 years. The organization shall have a calibration program, and test instruments used shall be calibrated in accordance with NETA ATS.

b. Submit name and qualifications of the lead engineering technician performing the required testing services. Include a list of three comparable jobs performed by the technician with specific names and telephone numbers for reference. Testing, inspection, calibration, and adjustments shall be performed by an engineering technician, certified by NETA or the National Institute for Certification in Engineering Technologies (NICET) with a minimum of 5 years' experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.

1.4.2 Acceptance Tests and Inspections Reports

Submit certified copies of inspection reports and test reports. Reports shall include certification of compliance with specified requirements, identify deficiencies, and recommend corrective action when appropriate. Type and neatly bind test reports to form a part of the final record. Submit test reports documenting the results of each test not more than 10 days after test is completed.

1.4.3 Acceptance Test and Inspections Procedure

Submit test procedure reports for each item of equipment to be field tested at least 45 days prior to planned testing date. Do not perform testing until after test procedure has been approved.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 ACCEPTANCE TESTS AND INSPECTIONS

Testing organization shall perform acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated in accordance with NETA ATS, the manufacturer's recommendations, and paragraph entitled "Field Quality Control" of each applicable specification section. Tests identified as optional in NETA ATS are not required unless otherwise specified. Equipment shall be placed in service only after completion of required tests and evaluation of the test results have been completed.

Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any

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final testing. City Representative shall be notified at least 14 days in advance of when tests will be conducted by the testing organization. Perform acceptance tests and inspections on applicable equipment and systems specified in the following sections:

NOTE: Select applicable sections for each project. Ensure each equipment section includes the following information.

1. NETA ATS listed in the references.
2. The words "and Section 16..., "Electrical Inspection and Testing" apply" added to paragraph entitled "Related Requirements."
3. Submittals with "Acceptance checks and tests" added in PART 1.
4. Appropriate paragraphs from the NETA manual added under "Field Quality Control" in PART 3.
5. Add any job section numbers and titles containing low-voltage or medium voltage generator control switchgear or switchboards, pad-mounted air switches, or medium voltage circuit breakers. Provide the NETA tests required in the applicable section.

[Section 16... SINGLE-OPERATION GENERATOR SETS. Functional engine shutdown tests, vibration base-line test, and load bank test shall not be performed by the testing organization. These tests shall be performed by the start-up engineer.]

- [b. Section 16... THREE-PHASE PAD-MOUNTED TRANSFORMERS]
- [c. Section 16... SINGLE-PHASE PAD-MOUNTED TRANSFORMERS]
- [d. Section 16... OVERHEAD TRANSMISSION AND DISTRIBUTION]
- [e. Section 16... UNDERGROUND TRANSMISSION AND DISTRIBUTION]
- [f. Section 16... PAD-MOUNTED SF6 INSULATED INTERRUPTER SWITCHES]
- [g. Section 16... SECONDARY UNIT SUBSTATIONS]
- [h. Section 16... PRIMARY UNIT SUBSTATIONS]
- [i. Section 16... AUTOMATIC TRANSFER SWITCHES]
- [j. Section 16... SWITCHBOARDS AND SWITCHGEAR]

3.2 SYSTEM ACCEPTANCE

Final acceptance of the system is contingent upon satisfactory completion of acceptance tests and inspections.

3.3 PLACING EQUIPMENT IN SERVICE

A representative of the approved testing organization shall be present when equipment tested by the organization is initially energized and placed in service.

-- End of Section --

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16510 Interior Lighting

Lighting Motion-Sensing Controllers. All building rooms should be considered for motion-sensing light controllers as an energy saving feature. Consider how often and how the room is utilized in determining if such a controller is worth the expense for the energy savings; always install in offices. Consider using zoned motion sensors to control the lighting in common areas.

Manufacturer. Specify Hubbell-UNENCO sensors only, no substitutions allowed (Facilities stocks the most common ones for immediate replacement), wall or ceiling mount, consider daylight override, dimming and dual switching. <http://www.hubbell-automation.com/>

Locking Wall Switches. Provide locking wall switches for all light switches located in areas where inappropriate switching by the public is possible and where lighting control by authorized personal only is required.

Manufacturer. Specify Leviton Single-Pole Locking, Double-Pole Locking, model series 1201-2L, 1221-2L, 3031-2L, 1202-2L, 1222-2L, 3032-2L as appropriate to the condition, no substitutions allowed (Facilities stocks 1221-2L 20 Amp Single-Pole Locking switches, which should be specified whenever possible).

Provide 10 Locking Switch Keys, Leviton 55500-PRT, per building to the Owner. Place one key in each Fire Department Knox Box. (Leisure Services and Facilities prefer all wall switches keyed the same throughout City facilities, and the City locksmith does not require these to be master keyed to the City key system.)

Public Restrooms. For public restrooms located in buildings, either install locking switches or motion sensors. If using locking switches, verify with the building operators that someone will be responsible for turning the switch on and off each day. When using motion sensors, wire some light fixtures to remain on at all times the building is occupied so people do not have to enter a dark room to activate the motion sensor.

Light Fixtures. The City stocks T8 lamps for ceiling fixtures, although other lamps may be specified if justified. The City does not have a standard lay-in ceiling fixture although Lithonia SP is common. Specify electronic ballasts (20% THD).

Gym Lighting. Specify lamp protection from balls, mechanically fastened (no spring clip designs), with safety straps. Unless otherwise directed, gymnasiums require dual lighting levels to accommodate various uses.

Exit Signs. Specify LED type, green unless matching existing color.

Lighting Levels. Provide the following maintained horizontal foot-candles of light in the activity areas (measured without daylight; maintained after 100 hours).

	<u>Where Measured</u>	<u>Average</u>	<u>Allowable Range</u>	<u>Standard Derived From:</u>
Arts & Crafts:	table level	75 Fc	50-100 Fc	Site Measurements
Art Gallery:	bench height	35	17-52	Site Measurements
Classroom:	desk level	60	40-80	Site Measurements
Computer Room:	desk level	60	30-90	Site Measurements
Conference Rooms:	desk level	60	30-90	Site Measurements
Dance Rooms:	floor level	60	30-90	Site Measurements
Game Rooms:	table level	60	30-90	Site Measurements
	Extra lighting required over pool tables, foosball tables, air hockey, card tables, etc.			
Green Rooms:	counter height	35	17-52	Site Measurements

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Gymnasiums:	floor level	50	25-75	IESNA Lighting Handbook Class III (Basketball)
Gymnastics:	floor level	50	25-75	IESNA Lighting Handbook Class III
Halls:	floor level	15	5-25	Site Measurements
Kitchen:	counter level	75	50-100	Site Measurements
Lobby:	counter height	35	17-52	Site Measurements
Martial Arts Rooms:	floor level	45	22-67	Site Measurements
Pool	deck level	30	20-40	IESNA Lighting Handbook Class III (See NAC 444.142)
	pool surface	15 candelas per sq meter	3:1	IESNA Lighting Handbook Class III /public_bathing.pdf
Restrooms:	counter height	35	17-52	Site Measurements
Weight Rooms:	equipment level	60	30-90	Site Measurements

For other uses not indicated above, design to values recommended in the IESNA Lighting Handbook-2000 and best practice.

Seniors: Provide additional lighting levels beyond the above standards for activity areas used by seniors.

Facility lighting survey from February 2004: [LightingSurvey.xls](#)

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16520 Exterior Lighting

Light Fixture Type.

Provide Metal Halide (MH) fixtures in any outdoor activity area requiring accurate color including swimming pools, performance stages, flag lighting, group picnic shelters and also, when they are scheduled to be lighted, sports fields, tennis courts, skateparks, bocce courts, athletic activity areas, tot lots, splash pads and similar areas.

Provide Metal Halide (MH) or High Pressure Sodium (HPS) fixtures for pedestrian pathways, parking lots and other general site lighting. Note that HPS light levels are required to be twice that of MH.

Building flood/wash, landscape up lighting and exterior exitway fixtures attached to the building may be either MH or HPS to coordinate with the over all lighting design.

The site lighting within larger complexes, such as the city service yards, needs to continue specifying high pressure sodium to match the existing lighting.

Monument Signs. Do not provide lighting for the city's standard precast park name monument signage. Building or facility monument signs will likely require lighting; verify requirements with city project manager.

Flagpole Lighting. Reference Section 10350 Flagpoles for requirements.

Landscape and Building Up/Flood/Wash Lighting. Do not place fixtures in sidewalks, concrete flatwork, or pedestrian areas. Fixtures must be low temperature and vandal resistant, which specifically includes the lens material, fixture housing, fixture support and providing lens stone guards if available.

Exterior Emergency Power Egress Illumination. The city does not normally provide emergency powered illumination for the exit discharge pathway to the right-of-way. Verify requirement with the city project manager for your project. Note that the building department has taken the interpretation that the required exterior emergency powered illumination in the area of the exit must continue until one is no longer under a rooftop, covered patio, overhang or similar building projection.

Site Lighting & Electrical. (Pedestrian pathways, parking lots, etc.)

Note: The City of Las Vegas, Department of Building & Safety "Bolted Light Pole Base Detail" sometimes issued with its plan review comments does not meet the following design standards. The consultant must provide adequate detail and structural calculations for light pole foundations meeting the below standards.

Note: The City of Las Vegas, Planning & Development Department standard conditions for the Site Development Review limit lighting poles to 20 feet high. There may be situations where a variance to this standard will be requested. Consultant needs to verify such situations with the City project manager.

Foundations (see Section 03001 for additional requirements).

- In parking areas, extend 30 inches above finish grade, with rebar cage.
- For pathway and area lights, extend 12 inches above finish grade.
- Pour entire base in one pour to base plate (no grout capping and shaping later).
- Bare #4 cu wire to ground pole and all anchor bolts.
- Extend anchor bolts 1 inch of thread above nut.
- Provide matching metal crash cap.
- Use 3000-psi minimum concrete.
- Add the following note to the drawings: "Pour entire base in one pour to base plate and slope top away from pole. Strip Sonotube forms off while concrete is still green (approximately four hours after pour) and stone rub to provide a smooth, seamless

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surface appearance, and then a light broom finish. Wet cure base for seven days. Attempts to fill and shape poured bases will not be allowed; improperly poured bases must be demolished and repoured."

- BUILDING AND SAFETY will only accept twenty feet of copper wire for grounding.

Poles.

- Provide manufactured poles of a minimum size that allows for and specifies a manufactured minimum access hand hole of 4 inches by 6-1/2 inches. The access hand hole may have radius corners such that the hand hole is oval in shape. Access hand hole reinforcement shall provide a bending strength equal to that of the pole without an opening. Field cutting, welding, or other adjustments of the access hole will not be allowed. This minimum hand hole size shall be provided regardless of the required pole height or usage. (This often requires specifying a larger diameter pole than may otherwise be required for loads.)
- Provide a minimum of 15 feet high, 6-inch minimum diameter.
- Install pole plumb using leveling nuts, no shims.
- Extend wires 18 inches out of hand hole.
- Specify steel poles, no aluminum.
- Hand hole cover shall be stainless steel tamper proof bolted.

Light Fixtures.

- High Pressure Sodium lamps (or Metal Halide see above).
- Use #10 UF with ground wire to each fixture.
- Provide a fuse holder for each fixture in base of pole, Buss with a 10A fuse.
- Use a single fuse holder for 120v or 277v.
- Use a double fuse holder for 208v, 240v or 480v.
- Fuse holders shall have #10 cu stranded THW wire on line side. Connection to feed wires shall be with a split bolt. No wire nuts.
- Level all fixtures.

Time Clock and Photocells.

- All lighting set for dusk to dawn will be controlled by photocell facing north.
- Photocell to be mounted on nearest pole to service.
- Provide a photocell by-pass switch at the service.
- Specify photocell Tork 2007, no substitutions.
- All lighting set for dusk to park/facility closing will be controlled by a photocell on and a time clock off.
- Specify time clock Intermatic ET70115C, no substitutions.

Service Pedestals.

- 200A service to be fed by three #3/0 cu THW wires minimum.
- 125A service to be fed by three #1/0 cu THW wires minimum.
- Bare cu ground wire shall be continuous to neutral buss.
- A photo eye by-pass switch shall be mounted in the service and marked on/off.
- All splices on by-pass shall be crimp type and taped. No wire nuts.
- One wire per breaker.

Pull Boxes. (Also applies to all site electrical.)

- All pull boxes in grass, dirt or asphalt shall have an 8-inch minimum concrete collar with #4 rebar.
- All boxes 2' by 3' and larger shall have torsion assisted lids.
- Covers shall be factory imprinted "Lighting" or "Electric".
- Conduits shall be 3 inches above the bottom of the box.

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- Splices shall be waterproof with split bolt, rubber tape, vinyl electrical tape and 3M Scotchkote Electrical Coating or approved equal.
- Secure lids with brass tie downs.
- Lids shall be an approved non-metallic Polymer type material (no concrete, no metal, no Fiberlite, no other materials – no substitutions, including traffic areas).
- Wires shall extend 24 inches outside of box.

Conduit. (Also applies to all site electrical.)

- Shall be 1-1/4 inches or larger in size, PVC Schedule 40.
- Specify all exterior conduit at least one standard size larger than that required by code. The City project manager may waive this requirement during the design if this larger size conduit requires a larger or nonstandard light pole or other terminating device/fixture for a proper termination.
- Extend conduits continuous through and above pole bases to within 3 inches below bottom of pole hand hole.
- Conduits shall be placed to a depth of not less than 24 inches below finished grade.
- Vinyl warning markers shall be placed above conduits at 12" below the ground surface.
- Conduit runs shall have no more than 270 degree bends (two 90 and two 45).
- Conduit runs shall not exceed 300 feet between pull boxes.
- A polyester pull tape having a continuous durable footage markings, with a min, 1,200 lbs of pull strength, shall be installed in each completed conduit run.
- Conduits shall be proven free and clear of dirt and debris by use of an appropriately sized mandrel no less than 1/4" smaller than the inside diameter of the conduit.
- Natural backfill shall be free of stones, caliche, or lumps of material exceeding 3" and free from sod, frozen earth and organic materials.

Additional spare conduit for future camera surveillance (verify when required).

- Provide a 2" conduit with pull string running from the electrical room to a light pole on the street side of the building. Verify with the City of Las Vegas the location of the pole. Cap and identify as future surveillance.
- Provide a 2" conduit with pull string running from the electrical room to a light pole on the back side of the building. Verify with the City of Las Vegas the location of the pole. Cap and identify as future surveillance.

Additional spare conduit for other future uses.

- Provide 2-1" conduits with pull strings running from the electrical/phone room to 5 feet outside the building. Cap and identify as spares.

Wire and Splices.

- Use THW cu wire only.
- No wire smaller than #10 cu.
- Wire size #6 and smaller shall be continuous in color. No phase tape.
- All connections shall be with a split bolt, no wire nuts.
- Fuse holders shall have two crimps and rubber boots.
- Wire will be sized to prevent a voltage drop exceeding 3 percent at the farthest lighting load.

The City's TEFO Section, 229-6331, has provided the above standards in this Site Lighting & Electrical section.

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User Controlled Activity Lighting in Parks (Skateparks, tennis courts, basketball courts, bocce ball courts, etc.)

Provide for lighting of park activities for night use only when specifically requested by the City. User controlled lighting systems are to be provided on dedicated electrical circuits and in no way share circuits with the irrigation controller system.

Electronic Time Switch. ET70115C by Intermatic Incorporated, no substitutions. Used to coordinate the lighting available times with the hours of darkness and park hours. One timer may control multiple user-controlled activities. Must be mounted in a remote secure location such as a park restroom plumbing chase, locked switchgear cabinet, or locked booster pump enclosure. A locked pedestal cabinet is NOT acceptable. A remote location is critical since any equipment in the area of the lighting will be thoroughly investigated by the users trying to keep the lighting on beyond park closing.

<http://www.intermatic.com/comind/et70000c.htm>

General Purpose Timer. 9050 JCK70 V20 by Square D (Schneider Electric), no substitutions. Used to program and control the user controls. Same secure remote location mounting requirements as the Electronic Time Switch.

[http://www.squared.com/us/products/relays.nsf/07a0210021262d45862564b5006e4f84/f04a58b2c4495d0c85256650005fb668/\\$FILE/9050CT9601_R8-00.pdf](http://www.squared.com/us/products/relays.nsf/07a0210021262d45862564b5006e4f84/f04a58b2c4495d0c85256650005fb668/$FILE/9050CT9601_R8-00.pdf)

Push Button. MPB.02-ADA by McCain Traffic Supply, no substitutions (ADA 2" pushbutton with 9"x12" integral sign above, custom text, adjustable diameter back mounting). Used by the user to turn on the lights for the activity. Mount button at 40 inches above the finished surface, weather tight, on the side of the light pole specified below.

<http://www.mccaintraffic.com/products/signal14.html>

Warning Light. JB10G with Red Polycarbonate Globe VPG-1RE by Appleton Electric Company, no substitutions. Locate on top of the light pole specified below, weather tight.

<http://www.appletonelec.com/>

Pushbutton/Warning Light Pole. Valmont CA 1A or equal, freestanding pole per Regional Transportation Commission of Clark County (RTC), Uniform Standard Drawing Volume 2, Section 404 Traffic Signals, Drawing 404.402, 10'-0" high pole, 3" x 6" hand hole, adjacent pull boxes NOT allowed. Pole to be provided primed and finish painted to coordinate with the park colors. (Note: Disregard note 3 on drawing 404.402 and use the button height and reach dimensions shown here or in the proposed Federal Access Board Right-Of-Way requirements, whichever are more restrictive.) <http://www.valmont.com/asp/poles/poles2.shtml>

Location. Pole must be located along and accessible from the on-site ADA accessible path to the activity. Push button shall be located adjacent to a clear level landing, and provide for an 18 inch maximum SIDE reach only (no front reach). Pushbutton location must provide for the continuing usage by all users of the activity being lighted, without interrupting the other users. Warning light must be visible by all users. Pole location must not interrupt the normal play of the activity nor be a potential hazard, including the signage edges. The pole location may be integrated into the face of a fence line (such as a tennis court enclosure) as long as the other design criteria are maintained.

Lighting Instructions Signage Reference drawings in this section for the following signs (see section 10426 for additional mounting requirements):

- **User Controlled Lighting.** Locate one sign at each user controlled lighting push button.

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Division 16 – Electrical

Sports Field Lighting.

General. Use an open performance specification, although the performance required by these standards and the project parameters may limit the number of known manufacturers. Specify that the manufacturer and contractor warranty lamps for 2 years and entire field lighting system (except lamps) for 10 years. All steel components shall be hot-dipped galvanized inside and out, with proper separation to other materials to prevent galvanic action. Specify two spares of each type and wattage of lamp and ballast installed.

Energy Efficient Fixtures. Include provisions in the specifications for energy efficient fixtures per the attached criteria, [click here to view](#).

Fields Near Residential. Following the criteria for how to handle fields near residential property lines where traditional sport floodlights may have a problem meeting the requirements for spill, glare, etc., [click here to view](#).

Manufacturer. Lighting system manufacturer shall submit in writing a minimum of five similar lighting projects in the State of Nevada where the specifications outlined have been met (project name, contact person and telephone number), and evidence that they are a company specializing in manufacturing such lighting systems for at least the last three years. The Owner may entertain reviewing this pre-qualification process during the bidding period, up to 10 days prior to bid opening, in order to clarify for bidders the acceptable manufacturers to utilize in their bids. Verify with the City Project Manager for each project whether to include pre-qualification in the specifications (currently the City Purchasing & Contracts Section is opposed to pre-qualifications in general). The standard 10-day substitution period required by NRS and stated in the General Conditions would still apply.

Poles. All poles shall be steel bolt down design, sealed top, weather-tight. Mount ballasts on light pole 15 feet above grade, and provide for truck access to poles. Dimension the horizontal location of each pole on the drawings. Provide lightning protection meeting NFPA 780. Do not specify poles taller than 80 feet without consulting with the City's TEFO Division.

The City maintains its Sports Field Lighting with the use of an 85-foot boom truck. The 85 feet is measured from the ground to the bottom of the platform when fully extended. It is desired that the boom truck is able to back up to the base of the pole from the lamp side (field side), both sides of the pole for double masted arrangements. The boom truck is a double axle 35-foot long vehicle, 11 feet high with the boom in the travel position. Access to the fields must be able to accommodate this vehicle. Avoid planting major trees in near vicinity to the Sports Field Lights in order to reduce boom access. **The weight of the boom truck is 50,000 lbs. Design hardscape features such as sidewalks that provide a boom truck path to sports lighting to support such a load.**

Pole Foundations (ballfield lights only).

- In parking areas, extend 30 inches above finish grade.
- In pedestrian sidewalk areas between or adjacent to fields, extend 30 inches above finish grade.
- In landscape areas, extend 12 inches above finish grade.

Fixtures. Metal Halide lamps. Consider using controlled optic sports lights instead of traditional round symmetrical floodlights with louvers particularly where light spill is an issue.

Light Trespass. The lighting design shall meet the following minimum light trespass restrictions. Ambient light levels may be subtracted from each test station in meeting the respective foot-candle spill readings.

Spill Light. Maximum allowed spill light along all residential property lines:

.15 Fc Horizontal Maintained

.3 Fc Vertical Maintained (meter aimed toward light bank at five feet above grade)

Glare Analysis. Designer will review candlepower curves and determine the appropriate luminaire

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mounting height and optical system so that no greater than 12,000 candlepower from any given luminaire is visible from residential property lines. All luminaire aiming points, pole locations, and number of fixtures on each pole, fixture types and NEMA beam patterns shall be shown on the drawings.

Sky Glow. The lighting level above the light fixture shall not exceed five percent of the maintained, calculated average lighting level on the field surface to reduce sky glow.

Egress Illumination. When designing field lighting, also provide a secondary lighting system to allow a safe and ADA legal pathway(s) from the playing fields and spectator areas to the parking areas with power supplied by the premises' electrical supply, to provide for player and spectator exiting should the field lighting system fail during an event.

Controller. Sports field lighting is controlled via the City's standard MUSCO Lighting "Control-Link" Wireless Control System, no substitutions or exceptions.

MUSCO Local Representative: Shane White, 801-446-8391, Cell 801-201-2536.

MUSCO Sports Lighting, Inc.

Corporate Office: 100 1st Avenue West, P.O. Box 808, Oskaloosa, Iowa 52577,
800-825-6030

West Regional Office: 800-659-0117, Fax 714-540-9344

www.musco.com

Provide connection to the on-site controller through a phone modem via a dedicated phone line connection. Design the system so that each field can be lighted separately. The City Project Manager will make the service application for this dedicated phone line connection, and the monthly service charge paid by the City. (MUSCO has discontinued the option of a cell phone connection at the site modem currently in use at many facilities. Any continued use of the existing cell phone connections must be digital.)

The City does not utilize the following available options: wireless satellite control (satellite dish), on-site schedule override cabinet (user control for early turn-off), or remote manual switch cabinet (switches located other than at the switchgear cabinet location).

MUSCO equipment cabinets shall be mounted inside lockable electrical switchgear cabinets adjacent to the incoming electrical switchgear.

The City will utilize its current PC hardware and software setup for controlling via the PC/Internet access method.

Click here for links to a MUSCO standard specification, modified for City options, and literature on the system.

The following crossed-out specification is listed here for reference only. This was the City's previous field lighting controller standard, which may be encountered on renovation projects.

~~Sports field lighting is controlled via a dedicated phone line to the City's standard Theta Labs LC 2 controller system with one zone for each field, no substitutions allowed (Theta Labs, Inc., 10040 Monroe Dr., Dallas, TX 75220, available locally through Custom Controls of Nevada, 4535 W. Russell Road, #2, Las Vegas, NV 89118, 702-362-1350, Fax 702-362-1337, www.ccnlv.com). A controller cabinet needs to be located in a secure accessible location such as the plumbing chase of a park restroom. Specify a weather proof cabinet if exterior mounted. The City is not currently utilizing the warning horn feature of the controller.~~

~~Click here for a technical description of the LC 2. (Note that this technical description contains~~

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~~sample language for usage on tennis courts. Typically the City utilizes a different system for controlling tennis court lighting, NOT the LC-2 controller, see below. Comply with the specific lighting instructions and requirements for your particular project.)~~

Testing. (Applies to all Site Lighting including User Controlled Activity Lighting and Sports Field Lighting)

Prior to completion of the work, the Contractor shall cause the following tests to be made on all lighting circuits, in the presence of the Owner's design Consultant:

- (a) Test for continuity of each circuit.
- (b) Test for grounds in each circuit with a 500-volt megohmmeter with a minimum acceptable reading of 200 megohms.
- (c) A functional test in which it is demonstrated that each and every part of the system functions as specified or intended herein.

Following construction, the Owner's design Consultant shall provide the following testing and report:

- (d) The Consultant shall measure and record all illumination levels (including spill light restrictions) in accordance with IESNA LM-5 at nighttime without moon. Measurements need to be taken after 100 hours of operation to determine maintained levels. If the measurements do not meet the specified standards, the Consultant will determine which adjustments need to be made and re-measure the levels after the adjustments are made. A 1:30 or larger drawing of the field being illuminated with 10 foot spaced grid points shall be delivered to the Owner. Spill light will be measured at 20-foot intervals, 5-foot above grade and shown on the drawing. The initial and maintained lighting level at each grid point shall be shown on an accompanying chart. The chart will also summarize the average and range of the lighting levels. The Consultant shall provide these documents and a letter of compliance to the Owner.

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Lighting Levels. Provide the following maintained horizontal foot-candles of light in the activity areas (measured at night without moon; maintained after 100 hours). Lighting levels may be upgraded to Class III levels for projects designed for tournament play.

The light spill requirements along residential property lines shown above for Field Lighting applies to all projects, regardless of whether there are field lights.

	Average Horz. Footcandle	Max. to Min. Allowable Range	Standard Derived From
Baseball Infields	30 fc	48 to 12 fc	IESNA Lighting Handbook, Class IV
Baseball Outfields	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Basketball Court	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Bocce Ball Court	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Dog Run Walks	2 if HPS 1 if MH	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Football Fields	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Hockey, Roller	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Horseshoe Pits	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Walking (Jogging) Paths	2 if HPS 1 if MH	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Parking Lots	2 if HPS 1 if MH	15:1 ratio 5:1 avg. to min. ratio 15:1 ratio 5:1 avg. to min. ratio	2 fc is from a lawsuit at Sam's Town IESNA Lighting Handbook, Figure 11-21 footnotes 2 and 3
Tot-lot/Splash Pad	20	32 to 8 fc	Site measurements
Pool Deck	30	48 to 12 fc	IESNA Lighting Handbook, Class IV
Pool Surface	15 candelas per sq meter	4:1 ratio	IESNA Lighting Handbook, Class IV
Ramada	10	15 to 5 fc	Site measurements
Restroom, Inside	20	30 to 10 fc	Site Measurements
Restroom, Outside	5	10 to 2 fc	Architectural Graphic Standards (Building entrances)
Sidewalk	2 if HPS 1 if MH	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Skate Park	20	32 to 8 fc	IESNA Lighting Handbook, Class IV (Similar to Roller Hockey)
Soccer Fields	50	4:1 ratio	IESNA Lighting Handbook, Class IV
Tennis	50	80 to 20 fc	IESNA Lighting Handbook, Class IV
Trail	2 if HPS 1 if MH [.5 if away from streets & other light sources, IESNA DG-5-1994, Table 2]	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Trail in Tunnel	5	4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Volleyball	20	32 to 8 fc	IESNA Lighting Handbook, Class IV (Similar to Bocce and Horseshoes)

For other uses not indicated above, design to values recommended in the IESNA Lighting Handbook-2000 and best practice.

February 2004 Facility Survey Data [SURVEY DATA site.xls](#)

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16742 Communication & Data Processing Equipment

Reference Section 13700 "Security Access and Surveillance" for telephone backboard, modem and other related requirements.

Communication & Data Standards

Project documents are to include a complete system including all wire pulls and jacks, except as specifically stated herein.

[Modular Building Exception: The only exception is when constructing modular factory built buildings, in which case the conduit runs are to be provided by the modular manufacturer, with the City Department of Information Technologies contracting to provide all wire pulls and jacks. This is due to the nature of the modular being pieced together on-site, making factory wire pulls and splicing difficult. The project budget must provide for funding this separate wiring contract, generally estimated at \$4,000 per modular.]

The following information is provided by the City Department of Information Technologies:

1. Work Station (drop).

- A. 2 Phone Jacks & 2 Data Jacks per Workstation
- B. Phone Wire - Cat. 3, 4/24 UTP (AT&T) *
- C. Data Wire - Cat. 6, 4/24 UTP (Commscope Ultramedia 75N4 Blue)**
- D. Phone Jack - Hubbell HXJUGY*
- E. Data Jack - Hubbell HXJ6B (T568B)**
- F. Wall Plate - Hubbell IMF1W frame w/ (2) IM2KA15W modules or Hubbell AFP14W
- G. Conduit - 3/4" min. drop size
 - a. 1" H.R.- max. 3 drops
 - b. 1 1/4" H.R.- max. 5 drops
- H. Outlet Boxes – Outlet boxes installed in existing walls (cut-in boxes) for the purpose of terminating Cat. 6 cables, shall be DOUBLE GANG, to provide adequate minimum bend radius.

* Phone Jack Wiring Color Codes

<u>Cable Colors</u>	<u>Jack#1</u>		<u>Jack#2</u>
a. White/Blue-----	White/Blue		
b. Blue/White-----	Blue/White		
c. White/Orange-----	White/Orange		
d. Orange/White-----	Orange/White		
e. White/Green-----		White/Blue	
f. Green/White-----		Blue/White	
g. White/Brown-----		White/Orange	
h. Brown/White-----		Orange/White	

** Some installations will require that new wiring be installed to match existing. In such cases, Cat. 5E Commscope 55N4R (NOT BLUE) UTP cable & Black Hubbell HXJ5EBK data jacks will be used and tested to Cat. 5E standards.

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2. General.

- A. The work covered by this section includes, but is not limited to, furnishing and installing a telephone and data wiring system as specified herein.
- B. The installation shall include UTP cable (unshielded twisted pair copper), connectors (copper), jumpers (twisted pair copper), wiring blocks, telecommunications outlets and any other equipment necessary for a complete system. Contractor shall provide labor and any incidental material required for installation. All copper station cables shall be terminated on patch panels (MDF end) and data communications outlets (work station end). All copper backbone cables shall be terminated on wiring blocks at each end. Upon completion of installation, Contractor shall test all copper pathways and record the test results, as specified in the following.
- C. The work performed under this specification shall be of good quality and be performed in a workmanlike manner. In this context, "good quality" means the work shall meet industry technical standards and have a quality appearance. The City of Las Vegas reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds.
- D. All new or newly renovated facilities shall accommodate Telephone & CATV entrance concerns with a minimum of two (2) two inch (2") conduits w/ large radius bends and pull strings, to the Main Telephone Board (TTB) location. In addition, a three quarter inch (3/4") fire retardant plywood backboard (unpainted so Building & Safety can inspect the material), size commensurate to the site's telephone, data, CATV, fire and intrusion alarm requirements, will be installed; along with a #6 ground wire long enough to reach anywhere on the backboard (TTB).

3. Applicable Standards.

- A. EIA/TIA-569A-"Commercial Building Standards for Telecommunications Pathways and Spaces".
- B. EIA/TIA-568A-"Commercial Building Telecommunications Cabling Standard".
- C. EIA/TIA-TSB-36-"Technical Systems Bulletin, Additional Cable Specifications for Unshielded Twisted-Pair Cables".
- D. EIA/TIA-TSB-67-"Transmission Performance Specifications for Field Testing of UTP cabling systems".
- E. EIA/TIA-607-"Commercial Building Grounding and Binding Requirements for Telecommunications".
- F. EIA/TIA-606-"Administration Standards for Telecommunications Infrastructure of Commercial Buildings".
- G. All cabling systems, either conforming to this standard or deviating from this standard, must be proposed in writing and be approved by the City of Las Vegas.
- H. NEC-National Electric Code, Chapter 8.
- I. Local and National Building and Electrical codes.

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4. Contractor Qualifications.

- A. In order to qualify for installation of the data communications system, Contractor must possess the required license classification, a performance history and a minimum of two (2) years experience in the installation and termination of Category 6 UTP and Fiber Optic Systems. Certifications of training shall be presented with the submittals.

5. Definitions.

- A. Main Distribution Facility (MDF): The MDF is the location(s), within a building, where the entire telecommunications system originates. It may include: the physical location, enclosure, wire and cable management hardware, termination hardware, distribution hardware and equipment racks. The MDF shall be located with the telephone utility demarcation point.
- B. Backboard: Backboard generally refers to the plywood sheeting lining the walls of telecommunications facilities. Backboard may also refer to the entire wall-mounted assembly, including wire management, wiring blocks and equipment racks.

6. Submittals.

- A. Provide 1/8" scale drawings indicating point-to-point wiring requirements, elevations of racks and equipment.

7. Products.

- A. Throughout this specification, Hubbell and other manufacturers are cited, along with specific part numbers. These citations are for the purpose of establishing quality and performance criteria.
- B. Unless specified otherwise, in the following, the equipment furnished shall fall into six (6) classes, and with the exception of class four, all of the material within a single class shall be the standard product of one (1) manufacturer. The six (6) classes are as follows:
 - a. Class One: Copper cable, copper jumpers, interconnection devices, connectors (copper), and wiring blocks. All material covered in Class One shall be equal in quality and performance to that manufactured by AT&T/Lucent.
 - b. Class Two: Nineteen by eighty four inch (19"x 84") Equipment racks. All material covered in Class Two shall be equal in quality and performance to that manufactured by Hubbell, as required.
 - c. Class Three: Communications Cabinets, Patch Panels, Wire Management Panels and Communications Outlets (jacks). All material covered in Class Three shall be manufactured by Hubbell.
 - d. Class Four: Wire ties, labels, "D" rings, nuts, bolts, screws and other miscellaneous hardware.
 - e. Class Five: Category 3 UTP shall be 4 pair cable, 24 AWG, solid copper, unshielded twisted pair, manufactured by AT&T/Lucent.

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- f. Class Six: Category 6 UTP shall be 4 pair round cable, 24 AWG, solid copper, unshielded twisted pair, Blue Ultramedia 75N4, manufactured by Commscope.

8. Equipment Racks.

- A. Floor standing racks are preferred for data equipment, but when space considerations do not allow for the use of a rack, provide a backboard and Hubbell RE4X wall cabinet, no substitutions allowed. It comes with a NSQ tool that is used to turn recessed bolts in the door and does not require a keyed lock for security.

<http://www.hubbell-premise.com/Pdf/Catalog/CABINETS/REBOX.PDF>

- B. Reference Section "16001 Design Information - Electrical", "Security for Controls and Systems" of these Design Standards for security information on controls, racks, wall cabinets, and their location/security relationship to other facility controls.
- C. Equipment racks shall be assembled in accordance with the manufacturer's instructions and recommendations.

9. Wire Management Components.

- A. Where required, patch panels and wire management components shall be mounted to the equipment racks or the plywood backboard. Each device shall be mounted such that its horizontal dimension is level. In cases where more than one device is mounted, they shall be aligned vertically. A minimum of four (4) of the mounting holes provided shall be utilized for fastening. Screws shall be tightened to the extent that they hold the device snug to the rack or backboard, but not so tight as to damage the device. Patch panels shall be terminated in accordance with the manufacturer's recommendations. Installation of accessories shall be conducted in accordance with the manufacturer's instructions and recommendations.

10. Copper Cable.

- A. Where copper cable enters MDF, it shall be affixed to the rack or backboard via "D" rings and cable ties. All cable runs, within the MDF, shall be horizontal or vertical while maintaining the minimum cable bend radius.

11. Labeling.

- A. All labels shall be machine printed on clear or white tape, stenciled onto adhesive labels or typewritten onto adhesive labels. The font shall be at least one-eighth inch (1/8") in height, block characters and legible. The text shall be of a color contrasting with the label such that it may be easily read. If labeling tape is utilized, the font color shall contrast with the background. Patch panels shall exhibit workstation jack numbers, in sequential order, for all workstations served by the MDF. A numbering scheme will be approved by the City of Las Vegas, prior to labeling.

12. Combination Voice/Data Outlets.

- A. Provide two (2) RJ-11 jacks for voice and two (2) RJ-45 jacks for data at each combination voice/data outlet. The RJ-11 voice jacks shall be wired according to the USOC standard and the RJ-45 data jacks shall be wired to the EIA/TIA T568B standard. All installation/termination of cabling shall comply with code as specified by the EIA/TIA Standards Documents pertaining to the category of cable being installed. Faceplates shall be Hubbell, white, with a minimum of four (4) jacks. Identification of the jacks shall be Gray for voice and Blue for data.

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13. Workstation Cable.

- A. Description: From the MDF, provide two (2) 4 pair, 24 AWG, Category 6 UTP cables and (1) 4 pair, 24 AWG, Category 3 UTP cable to each workstation/office served by the MDF.
- B. Installation: Installation shall be conducted in accordance with guidelines established by the product manufacturer and industry standards. Wall plates shall be mounted such that their vertical dimension is plumb. Each wall plate shall be labeled with appropriate Voice & Data jack numbers.
- C. Patch Cables: Two (2) Blue Hubbell Category 6 patch cables shall be provided for each workstation served, one (1) 6' and one (1) 12'.

14. Building Interconnect Wiring/Fiber.

- A. Provide a minimum of six (6) pairs of fiber optic cable to be pulled between buildings and to each phone closet and left terminated to patch panels in equipment racks and labeled according to EIA/TIA 606 standards as closet interconnects.
- B. Depending on the requirements of the location in question, any combination of the following types of fiber optic cable & connectors may be specified:
 - a. Singlemode Fiber w/ ST or Yellow SC connectors
 - b. 50/125 Multimode Fiber w/ Orange SC connectors
 - c. 62.5/125 Multimode Fiber w/ ST or Blue SC connectors
- C. Fiber connectors shall be affixed using Epoxy & Polish or Fusion Splicing Only.
(NO CRIMP-ONS)

15. Wiring Closets.

- A. In the wiring closet, all Category 3 UTP cabling will be terminated on 66 blocks.
- B. Category 6 UTP data cabling will terminate in the wiring closet on Category 6 compliant patch panels utilizing the 110-termination system (T568B). The patch panels will be mounted in 19" equipment racks.

16. Specialty Communications Outlets.

- A. Wall mount phones shall comply with ADA requirements and may be whatever faceplate is convenient to the telco contractor.

17. Category 3 & 6 Testing.

- A. Contractor shall test each pair of each twisted pair cable. The City of Las Vegas reserves the right to have a representative present during all or a portion of the testing process. If the City elects to be present during testing, test results will only be acceptable when conducted in the presence of the City.
- B. All data cables will be tested with approved Category 6 test equipment meeting EIA/TIA-TSB 67 requirements from the faceplate to the termination point in the wiring closets and comply with the EIA/TIA 568B and Category 6 Standards. Fiber optic cable will be tested with an

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approved Fiber tester or an Optical Time Domain Refractometer (OTDR) with attenuation not to exceed 3db/Km and meet FDDI specifications. Each cable will be tested, documented and labeled in accordance with the EIA/TIA 606 standard and provided to the City of Las Vegas.

- C. Workstation Cable: Each workstation cable shall be tested from the Jack Panel to the data outlet jack.
 - a. Test Equipment: Wirescope 350 or equivalent.
 - b. Tests: Attenuation, Noise, Near End Cross-talk, Far End Cross-talk, Length, Power Sum Next, Power Sum ACR, DC loop back resistance, and pair-by-pair continuity.
 - c. Test Criteria: The system shall be tested to Category 6 specifications. The test path shall include workstation jacks, station cables, jack panels and patch cables.
 - d. All voice cables shall be tested to Category 3 specifications and documented.

18. Documentation.

- A. Contractor shall provide documentation in electronic format, including test results and as-built drawings within fourteen (14) days of job completion.
- B. Test Results: The results of the workstation cable and fiber optic, if applicable, tests shall be in the form of pinouts from the test equipment, in a comma delimited format.
- C. As-Built Drawings: Contractor will be provided with clean copies of the Electrical Drawings depicting data outlet location. The Contractor shall update the drawings depicting network drop locations and numbers as they were installed and return a copy to the City, in AutoCADLT format.

19. Acceptance.

- A. Acceptance of the Datacommunications System, by the City of Las Vegas, shall be based on the test results, functionality and the receipt of documentation. With regard to Category 6 functionality, Contractor must demonstrate to the City that gigabit data signals can be successfully transmitted, bi-directionally, from the MDF to and from all individual data outlets. With regard to Fiber cabling, Contractor must demonstrate to the City that it was installed according to standards and passed specific tests. With regard to documentation, all required documentation shall be submitted to the City of Las Vegas.

20. Warranty.

- A. A complete cabling system warranty of no less than 15 years shall be provided to cover applications and components, as well as labor associated with the change out of any non-performing product. Warranty shall cover all installed components from entrance point to workstation outlets. Contractor will correct any problems resulting from their workmanship or the provided material failure, providing that there have been no alterations or changes to the installation by personnel other than the Contractor. Contractor will respond to warranty repair calls within 48 hours.

21. Cable Termination.

- A. Maximum distance for any single Category 6 data run shall not exceed 90 meters.
- B. Category 6 data cables shall be terminated in accordance with standards and practices governing the installation of such cable. This includes proper termination techniques to ensure

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minimum near end cross talk (NEXT). Contractor may be asked to verify that the installed cable meets Category 6 requirements and is capable of GIGABIT data transmission speeds.

- C. Category 6 data cables shall be terminated on RJ-45 jacks that are wired to the T568-B standard. Jacks shall be rated and clearly designated Category 6 compliant (Cat.6). All pairs shall be terminated on each jack.
- D. Category 3 voice cables shall be terminated on RJ-11 jacks that are wired to the USOC standard. Two (2) pairs shall be terminated on each jack.
- E. In locations where voice and data jacks are required, such jacks shall be combined into a double gang outlet box with single gang mounting plate. Each jack must be labeled VOICE or DATA.
- F. All cables, jacks, patch panels and wiring blocks shall be clearly marked with a unique number designation identifying the cable termination at the jack location and the corresponding termination in the wiring closet.

22. Raceways.

- A. All voice and data cable must be installed in conduit or approved raceway systems. Cable trays and conduit systems shall comply with a minimum bend radius and separation from power cabling and fluorescent lighting requirements as specified in the EIA/TIA 568A and 569A standards. Where conduit is installed, the bend radius shall be a minimum of 10X the diameter of the conduit.
- B. Minimum conduit size for systems installed under this section shall be 3/4".

Telecommunications Standards for Parks and Open Spaces

Parks and Open Spaces Categories:

- Parks without buildings or walled enclosures.
- Parks with irrigation pump or other walled enclosures (but no buildings).
- Parks with rest room facilities and sports field lighting.
- Parks with multiple buildings, sports field and other sports facilities lighting.
- Single or multiple buildings with irrigation controllers and/or sports field lighting controls separate from the building TTB.

23. Basic Sprint Service Requirements

- A. These design standards do not attempt to list all Sprint requirements. Reference the Sprint standards and Sprint design engineer for standards and required variations from the following standards.
- B. Provide two 2" buried conduits originating from the nearest Sprint designated telephone cable facilities to the park's designated point of termination, aka - telephone board (TTB), per Sprint Engineer's specifications.
 - a. Provide one pull string per conduit end to end.
 - b. All bends shall consist of not less than 24" sweeps.
 - c. No buried elbows of any degree shall be used.

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- C. Provide one 30" pull box for every 400' of buried conduit length and/or for each 270 degrees of bends.
- D. Provide one unpainted 3/4" fire-retardant plywood backboard of not less than 24" X 24" mounted 40" above grade (unpainted so Building & Safety can inspect the material).
- E. Provide one #6 ground located at the backboard.
- F. The TTB shall be placed to allow easy access by Sprint Technicians.

24. Parks without buildings or walled enclosures.

- A. Provide one 24" X 24" X 6" locking outdoor cabinet as the TTB.
- B. This cabinet shall be mounted on a free-standing pedestal. This pedestal may be a portion of a CMU wall or other solid structure. Do not mount to steel posts. Locate and paint out the cabinet so it is not generally noticable by the public. Sprint must have direct and exclusive access to the cabinet; other equipment may not be included within the same cabinet, such as lighting timers, irrigation controls, etc.
- C. This cabinet shall be mounted 40" above grade.
- D. Provide full size 3/4" plywood backboard within the cabinet.
- E. Provide #6 ground within the cabinet.
- F. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from this cabinet to the Irrigation CPU (Central Processing Unit).

25. Parks with irrigation pump or other walled enclosures (but no buildings).

- A. Provide one 24" X 24" X 6" locking outdoor cabinet as the TTB.
- B. This cabinet shall be mounted to the outside wall of pump enclosure wall. Locate and paint out the cabinet so it is not generally noticeable by the public. Sprint must have direct and exclusive access to the cabinet; other equipment may not be included within the same cabinet, such as lighting timers, irrigation controls, etc.
- C. This cabinet shall be mounted 40" above grade.
- D. Provide full size 3/4" plywood backboard within the cabinet.
- E. Provide #6 ground within the cabinet.
- F. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from this cabinet to the Irrigation CPU (Central Processing Unit).

26. Parks with rest room facilities and sports field lighting.

- A. Provide one 24" X 24" X 3/4" (minimum) plywood backboard as the TTB (or this minimum dedicated area of a larger backboard as detailed on the city restroom drawings).
- B. This backboard shall be mounted within the rest room plumbing chase whenever possible.

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- C. This backboard should be mounted 40" from the floor.
- D. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Irrigation CPU (Central Processing Unit).
- E. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Lighting Control Cabinet.

27. Parks with multiple buildings, sports field and other sports facilities lighting.

- A. Provide one 48" X 48" X ¾" plywood backboard for the TTB.
- B. This backboard should be mounted within a building's utility room whenever possible.
- C. This backboard should be mounted 24" from the floor.
- D. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Irrigation CPU (Central Processing Unit).
- E. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Lighting Control Cabinet.
- F. Provide one 2" conduit using 24" sweeps for all bends, with a pull string end to end, from the TTB to the utility room of each building to be occupied.
- G. Any building that requires telephone or data equipment to be installed shall comply with City of Las Vegas Design Standards for the installation of conduit and communication jacks.

28. Single or multiple buildings with irrigation controllers and/or sports field lighting controls separate from the building TTB.

- A. Provide one 2" conduit using 24" sweeps for all bends, with a pull string end to end, from the TTB to the Irrigation CPU (Central Processing Unit).
- B. Provide one 2" conduit using 24" sweeps for all bends, with a pull string end to end, from the TTB to the Lighting Control Cabinet.
- C. Provide one 30" pull box for every 400' of buried conduit length and/or for each 270 degrees of bends.

Telecommunications Standards for Elevator Emergency Telephones

29. Types of Communications.

- A. Analog voice via programmable automatic-dial telephones.
- B. Analog voice via Telco provided automatic ring-down service.

30. Elevator Categories.

- A. New buildings with single or multiple elevators.
- B. Existing buildings with existing single or multiple elevators.
- C. Existing buildings being upgraded by adding elevators.

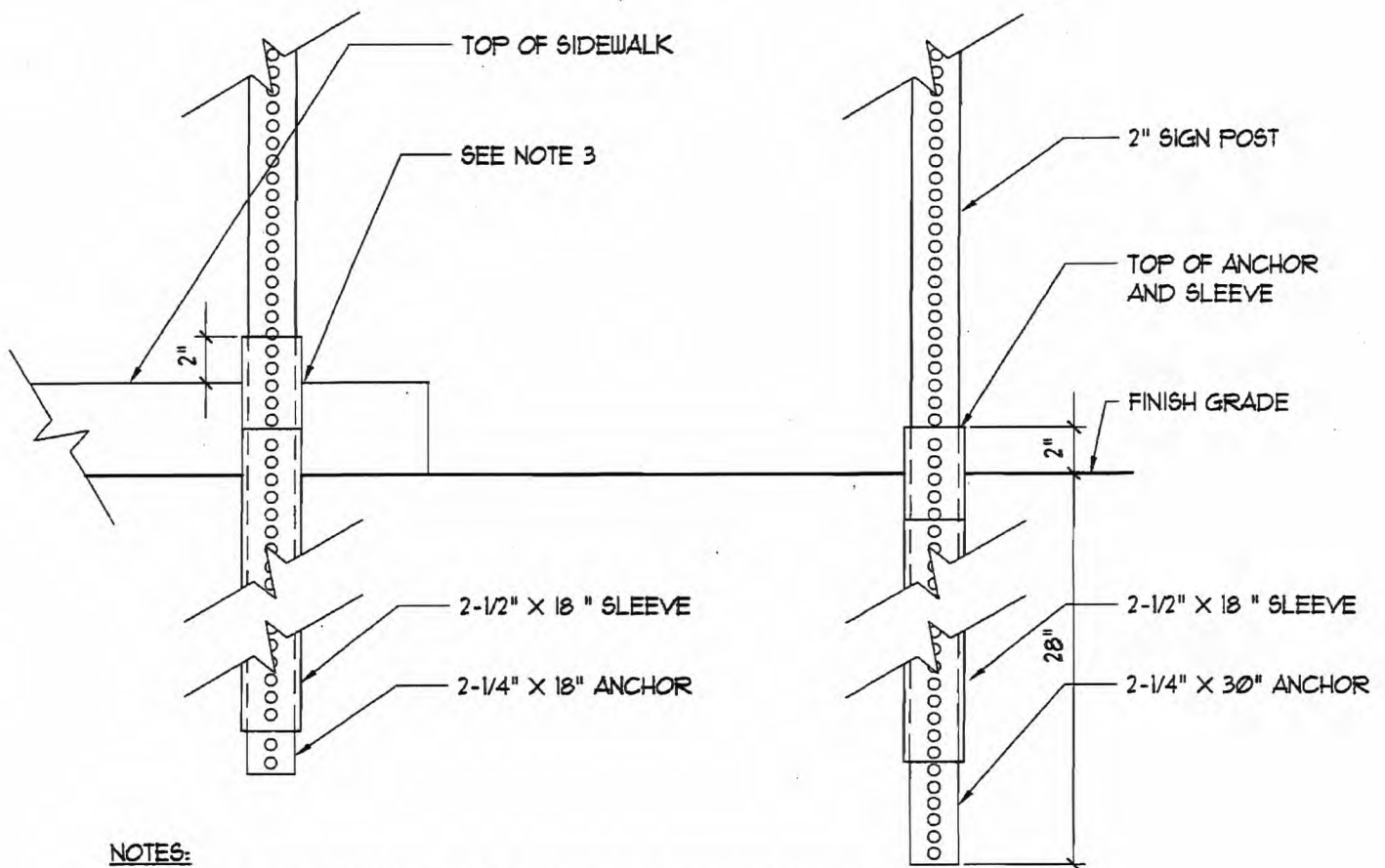
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31. Basic Elevator Requirements.

- A. Each elevator car shall be pre-wired with a voice grade wire/cable to the nearest telephone facilities.
- B. One dedicated telephone line per each elevator car.
- C. Provide one analog voice two-way emergency telephone per car.
- D. Emergency Elevator Telephone Types:
 - a. Programmable Touchtone Automatic Dialing telephones.
 - b. Standard no-dial telephones connected to a Telco provided Automatic Ring-Down Service.
- E. All emergency telephones will automatically dial Fire Control at 382-3000 when the receiver is taken off-hook.
- F. All emergency telephones shall be capable of receiving incoming calls from emergency services personnel.
- G. All elevator emergency telephones shall be accessible from a prone position from the floor of the car.

32. Contacts.

- A. If you have any questions or concerns, please feel free to contact Datacom Doug @ (702) 229-6097 or Dick Reithel at (702) 229-6636.



NOTES:

1. ALL COMPONENTS SHALL BE SQUARE POST, PERFORATED ON ALL FOUR SIDES.
2. ATTACH ANCHOR AND SLEEVE TOGETHER PRIOR TO DRIVING INTO GROUND. LEAVE AT LEAST ONE HOLE, BUT NO MORE THAN TWO, ABOVE GROUND OR ABOVE SIDEWALK.
3. FOR SIDEWALK INSTALLATION, DRILL SIDEWALK WITH A 3" HOLE, THE CENTER TO BE 6" FROM BACK OF SIDEWALK.
4. ATTACH POST TO ANCHORING SYSTEM BY USING AT LEAST TWO 3/8" DIA DRIVE RIVETS.
5. PROVIDE 4" MINIMUM LAP BETWEEN POST AND THE ANCHOR/SLEEVE ASSEMBLY.

Sign Post Installation

Scale: 1-1/2" = 1'-0"

REVISED 8/27/03 ST10426-04

PADDLE:

The animal's nose naturally brushes against the paddle, triggering the supply valve to open...filling the water bowl

WATER BOWL:

The water bowl fills with water and then automatically drains. No stagnant water to freeze or grow algae.

VALVE:

The valve is below frostline to prevent freezing.

WATER SUPPLY:

The flexible supply hose allows entire assembly to be lifted out of the ground, while well casing remains stationary.

BLACK DRINKER TOP:

Made from tough cross-link polyethylene material that is UV safe.

SUPPLY PIPE:

Fills the water bowl and then drains the excess water back into the drain field.

CROSS-LINK WELL CASING:

Tough cross-link well reaches below the frost line to house water supply, valve, and insulator.

INSULATOR:

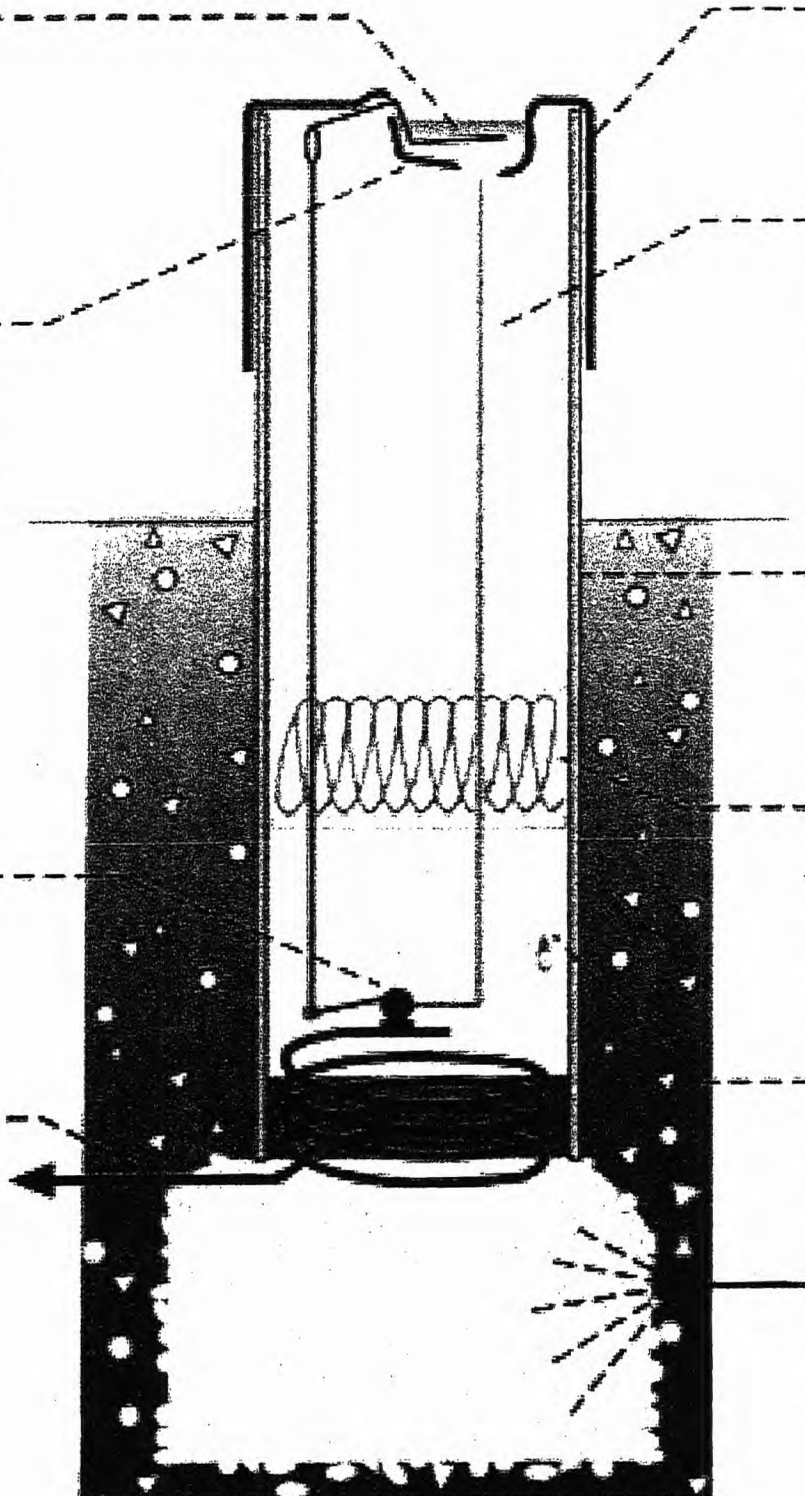
For severe climates the drinker comes with an insulator which keeps freezing air from reaching the supply line and valve.

DRAIN VALVE:

Drain Valve drains water from bowl and line after each drink.

DRAIN FIELD:

Gravel drain field required. (Gravel not included with drinker)



U.S. Design Patent #383,571

1/4" THICK CLEAR POLYCARBONATE PANEL

1/8" STEEL STOP PLATE WELDED TO GATE TRIM POLYCARBONATE PANEL AROUND PLATE

3/16" BENT PLATE FRAME HEADER - SEE DETAIL INDICATED

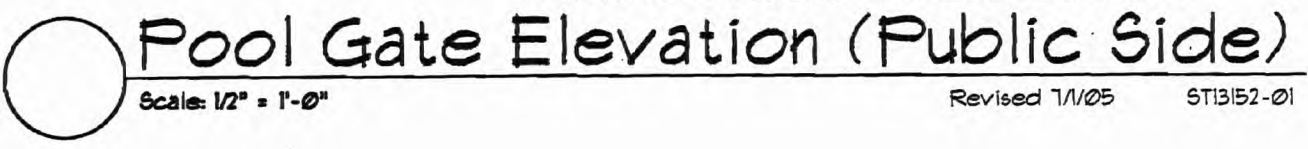
BATTERY BACKUP EXTERIOR EXIT SIGN

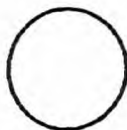
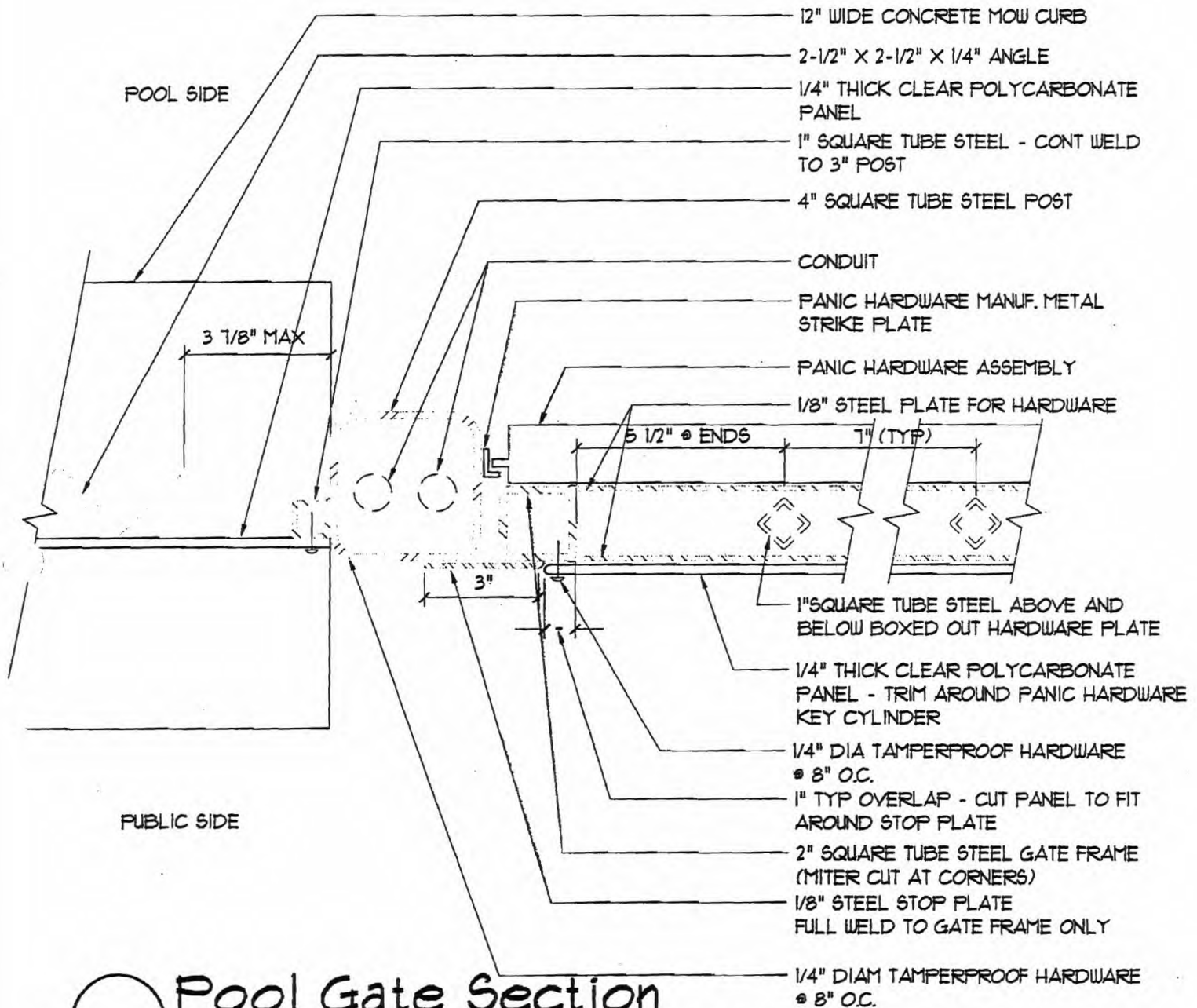
BOX OUT AREA AS SHOWN W/ 1/8" STEEL FOR HARDWARE

PANIC HARDWARE - "VON DUPRIN" #99 NLOP - TRIM POLYCARBONATE PANEL AROUND KEY CYLINDER

SELF CLOSING SPRING PIVOTS PROVIDE (2) PER GATE

3'-2 1/2"



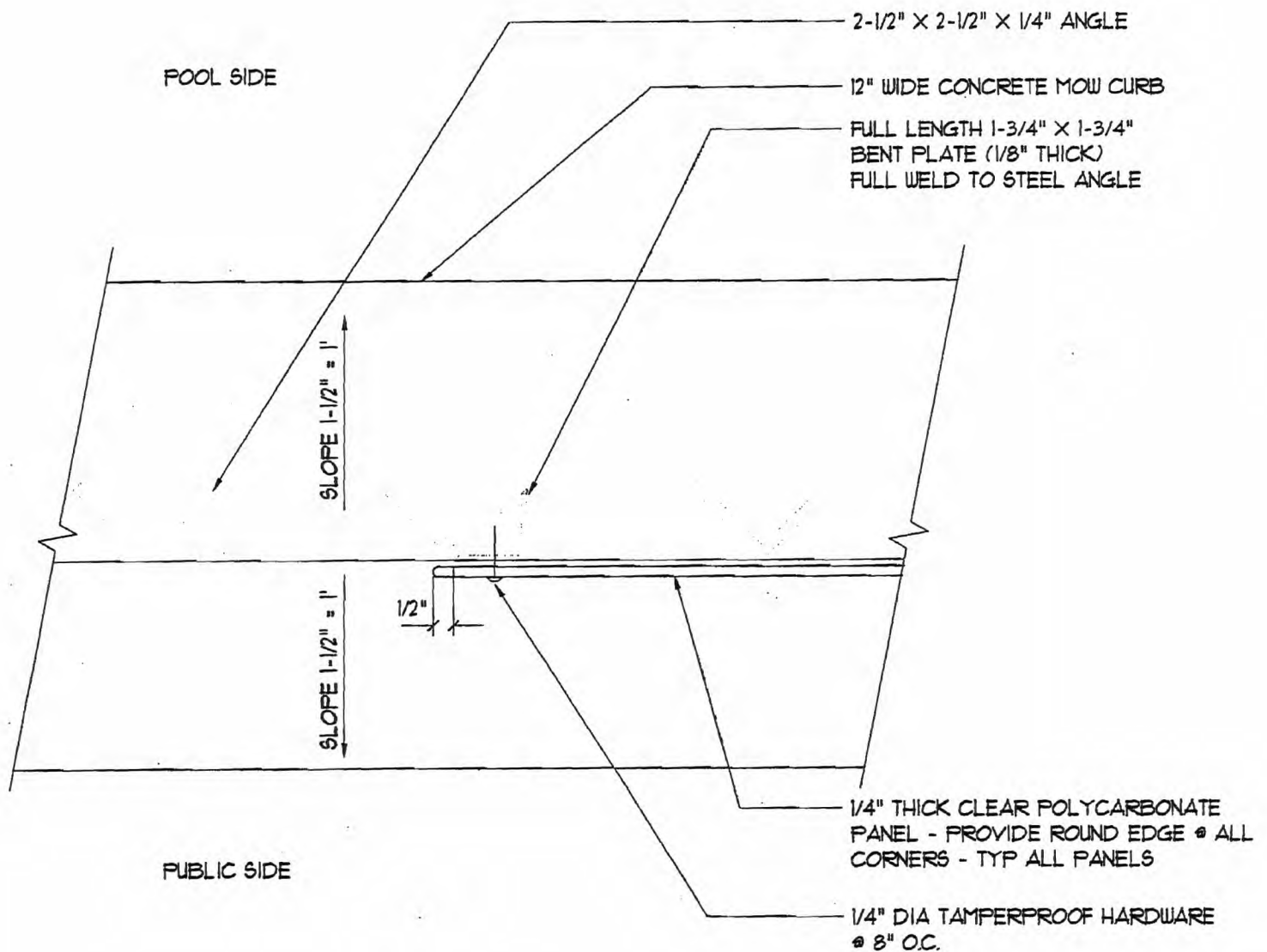


Pool Gate Section

Scale: 3" = 1'-0"

Revised 12/10/04

ST13152-02

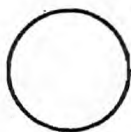
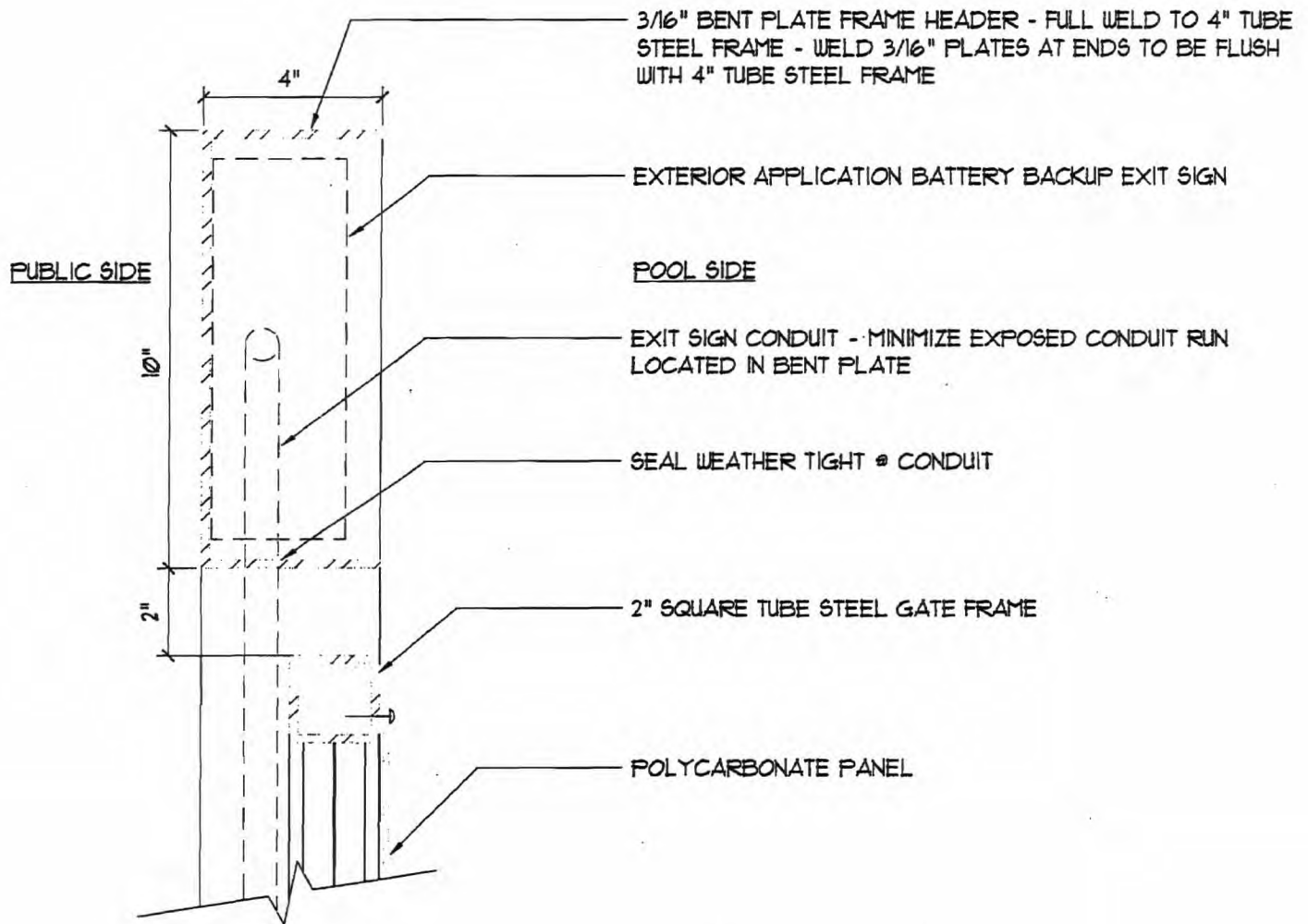


Pool Gate Section

Scale: 3" = 1'-0"

Revised 12/10/04

ST13152-03

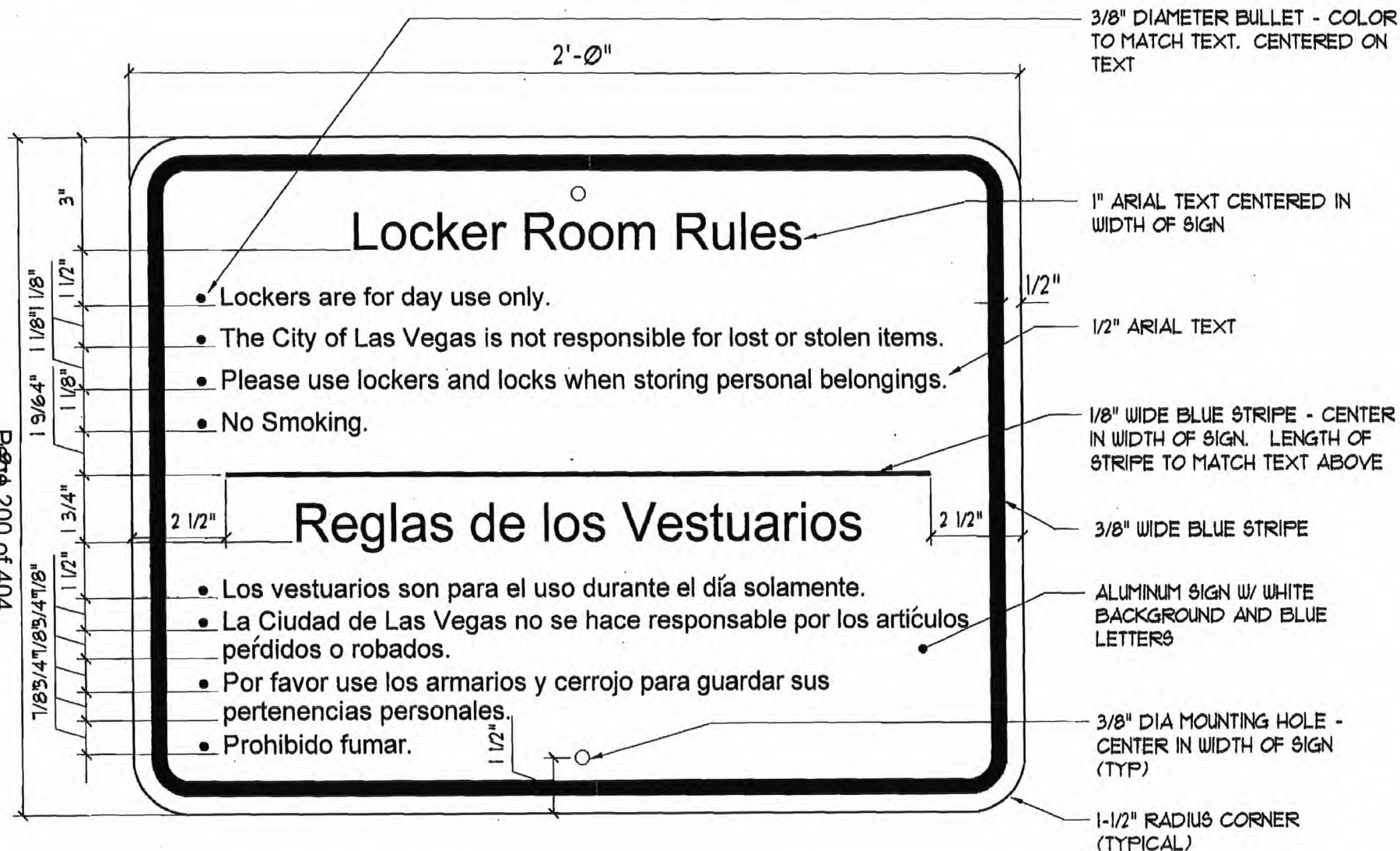


Pool Gate Section

Scale: 3" = 1'-0"

Revised 5/20/04

ST13152-04

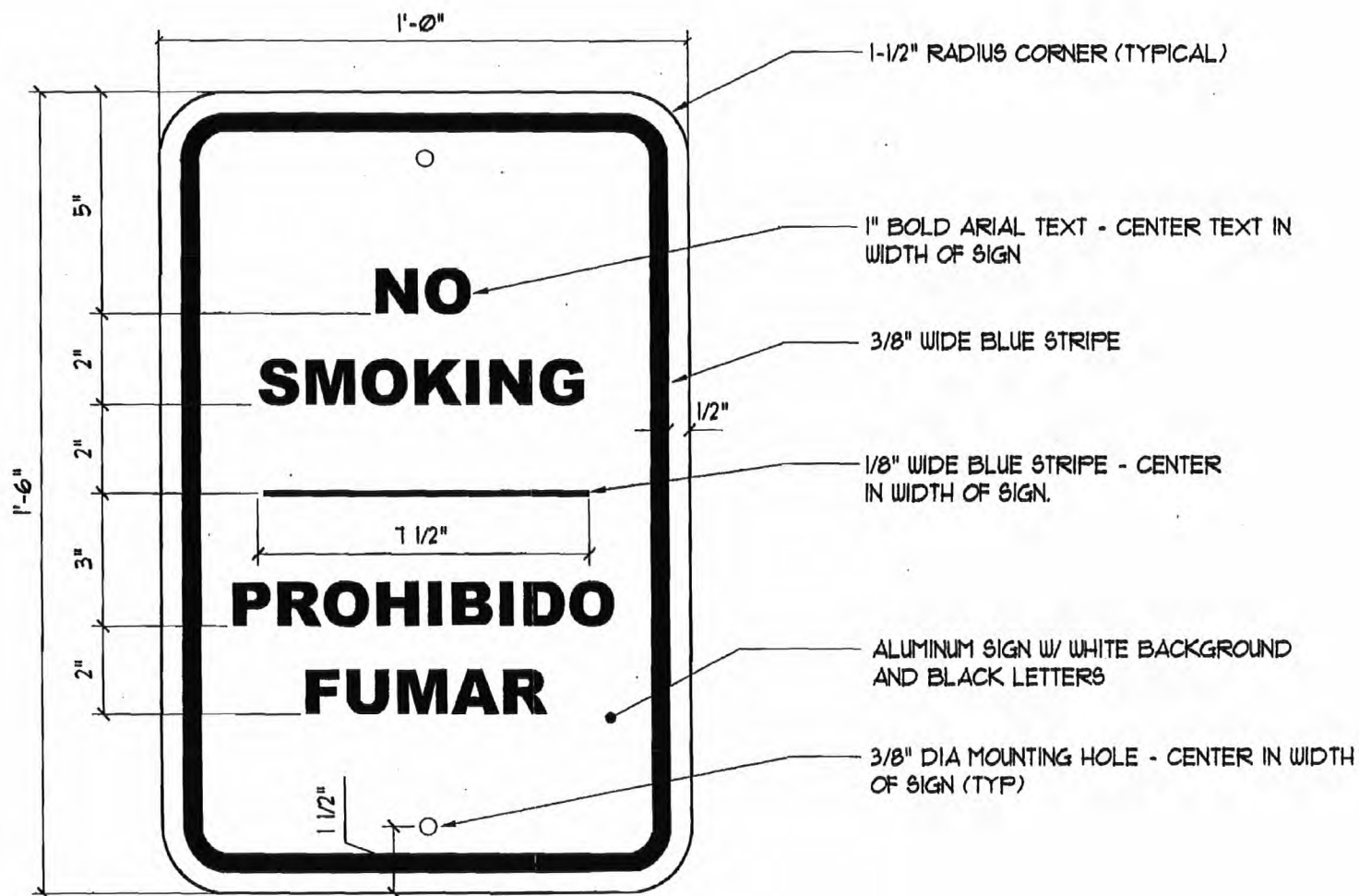


 Locker Room Rules Sign
Scale: 3" = 1'-0"

Scale: 3" = 1'-0"

REVISÉD 4/13/05

ST13152-05

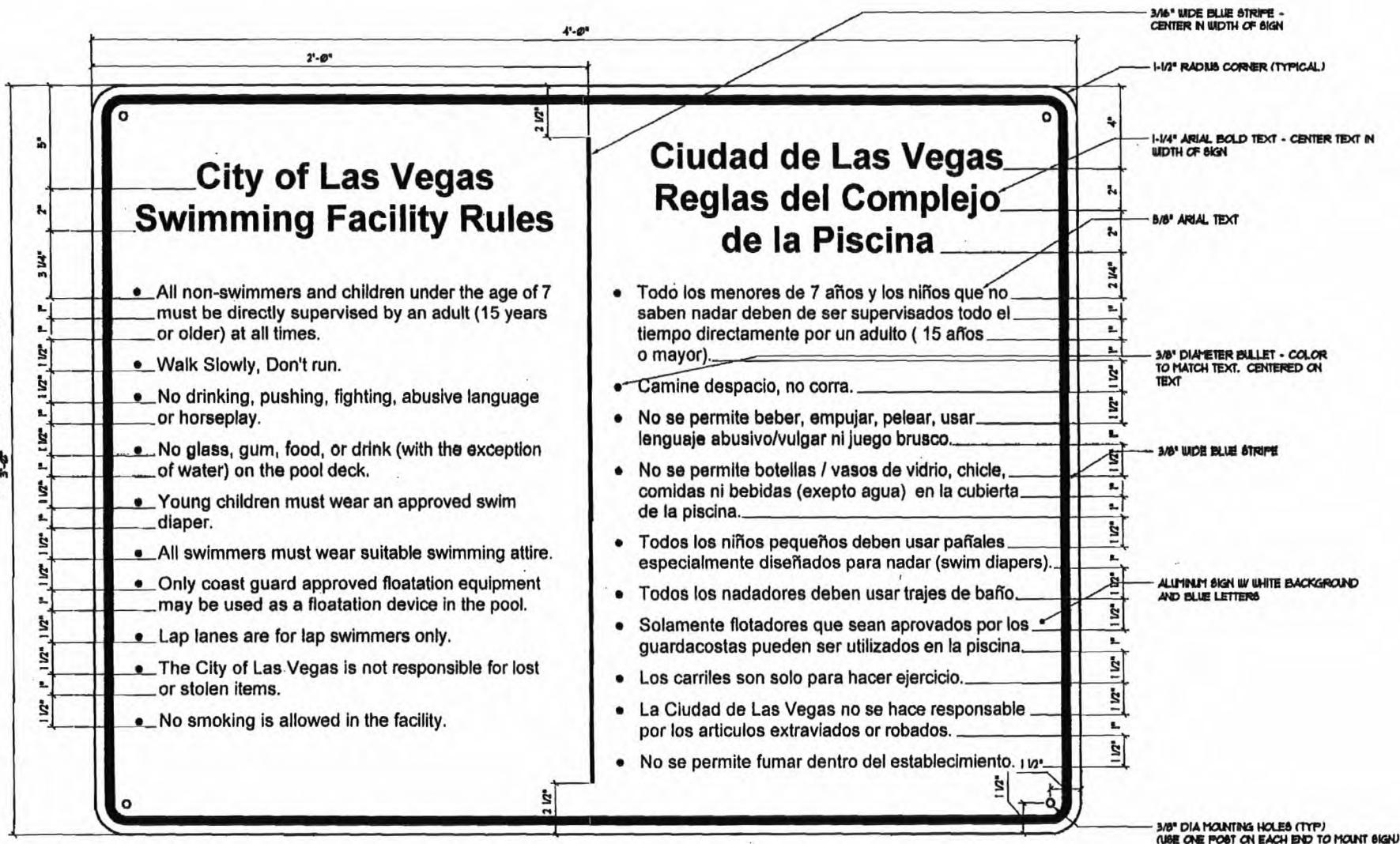


No Smoking Sign

Scale: 3" = 1'-0"

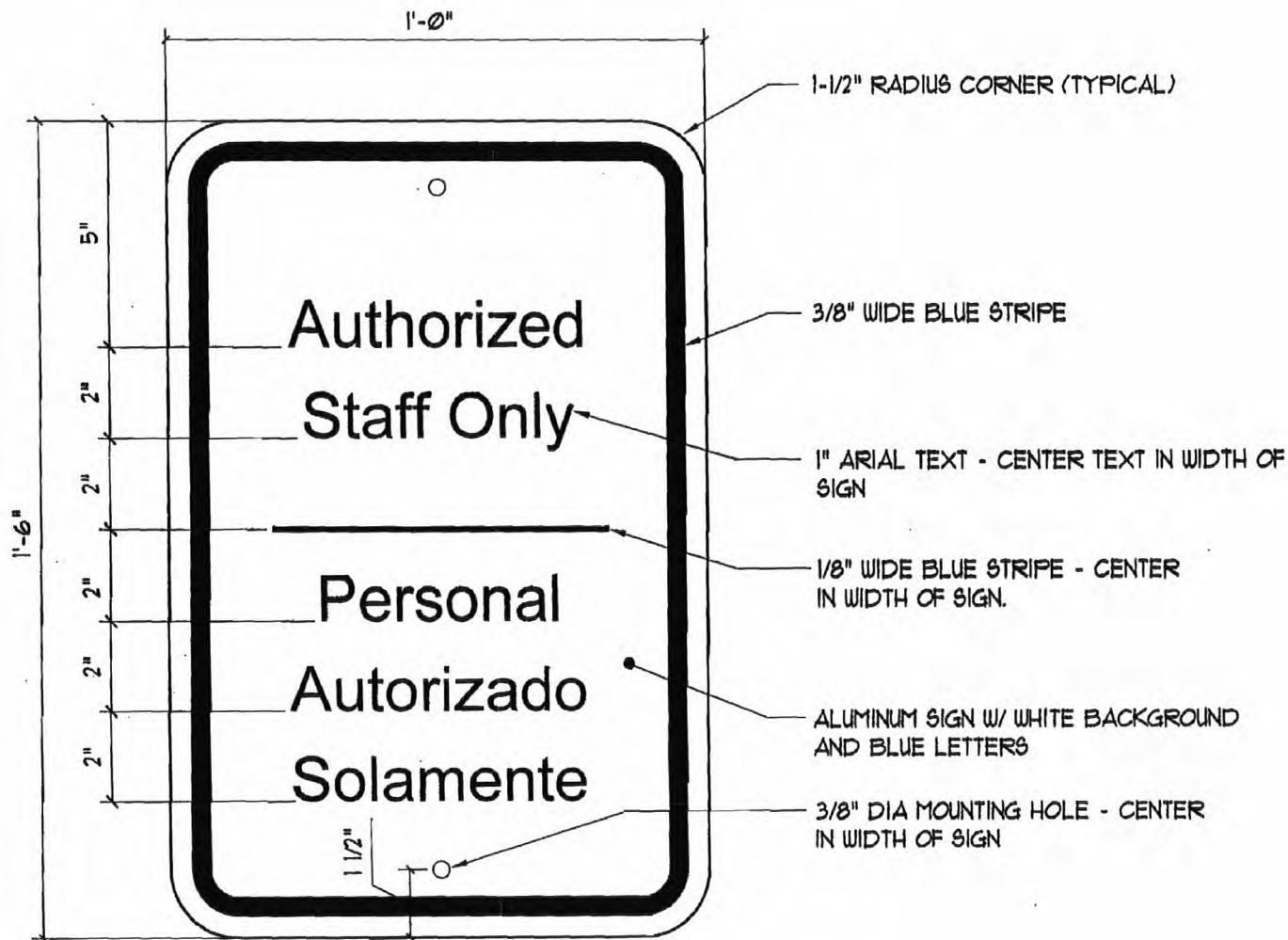
REVISED 4/13/05

ST13152-06



Scale: 3" = 1'-0"

ST13152-08

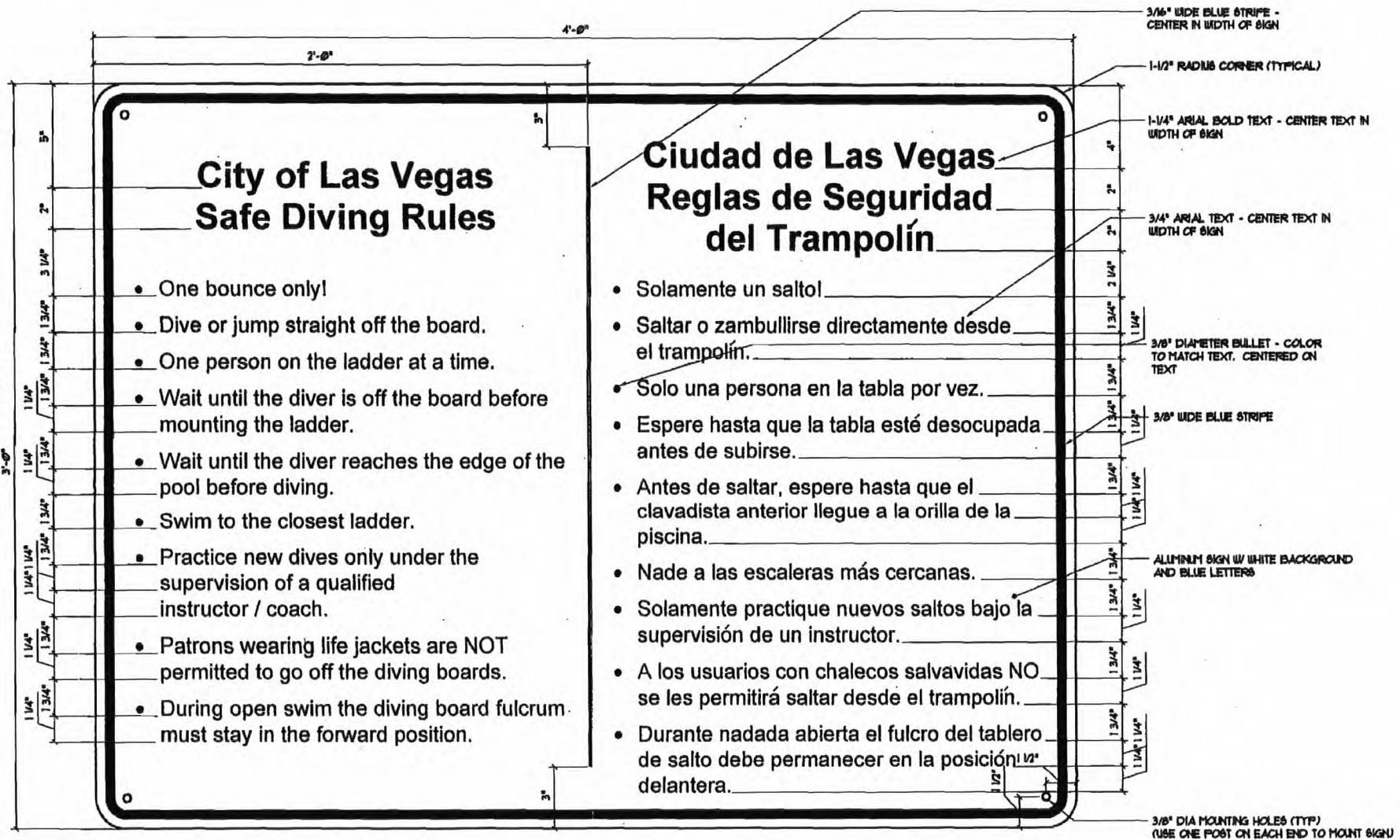


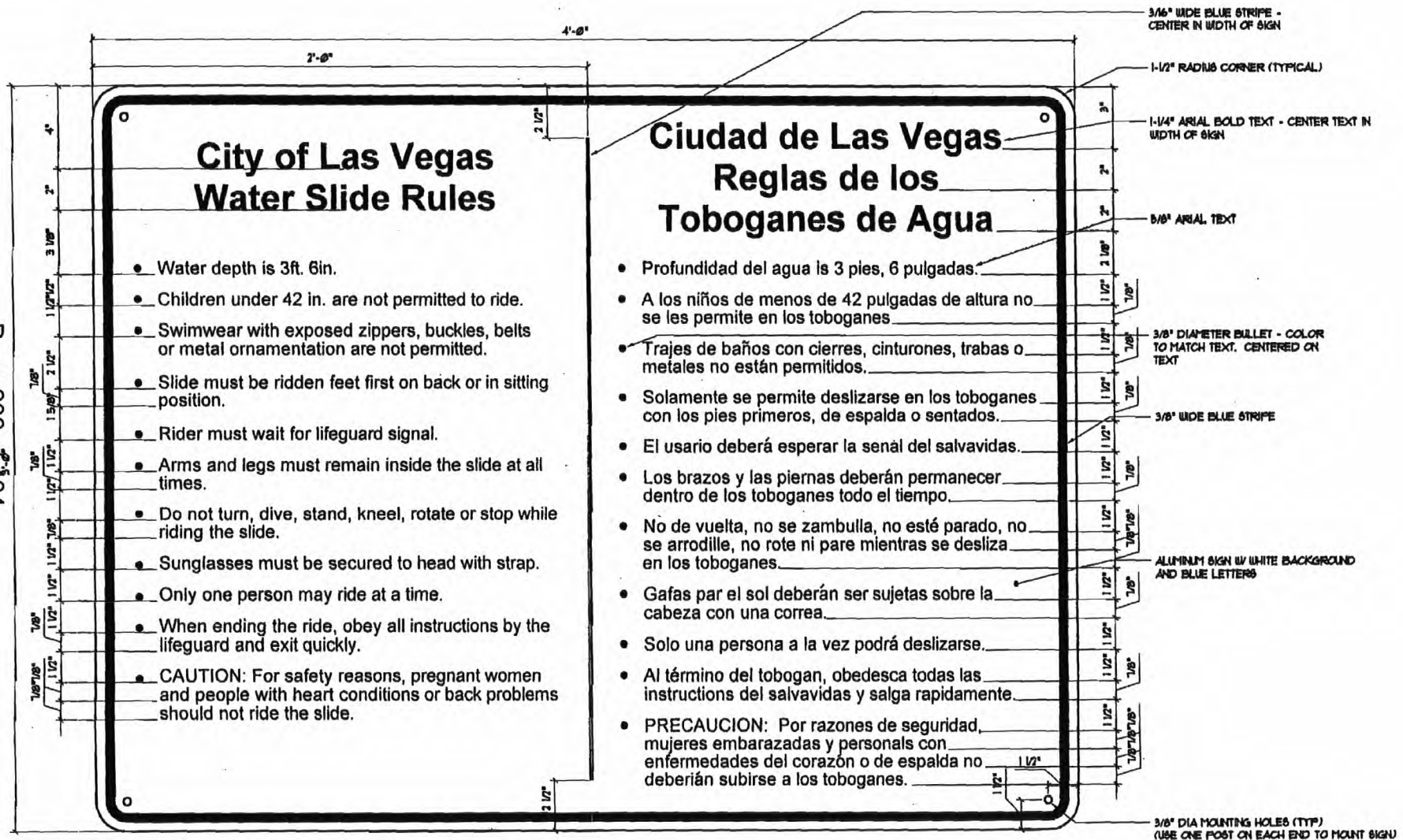
Authorized Staff Only Sign

Scale: 3" = 1'-0"

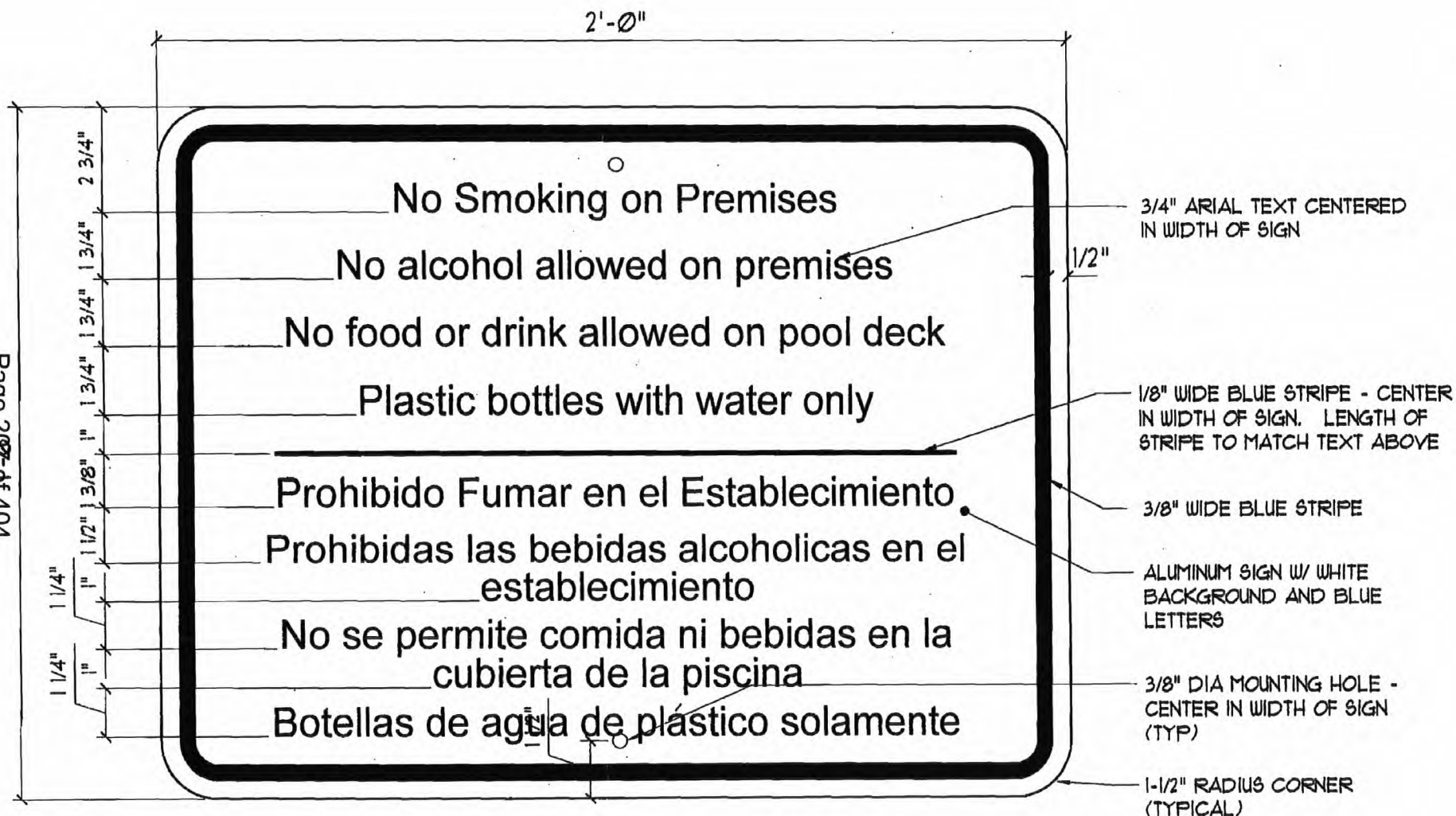
REVISED 4/13/05

ST13152-09





Water Slide Rules Sign
Scale: 3" = 1'-0"

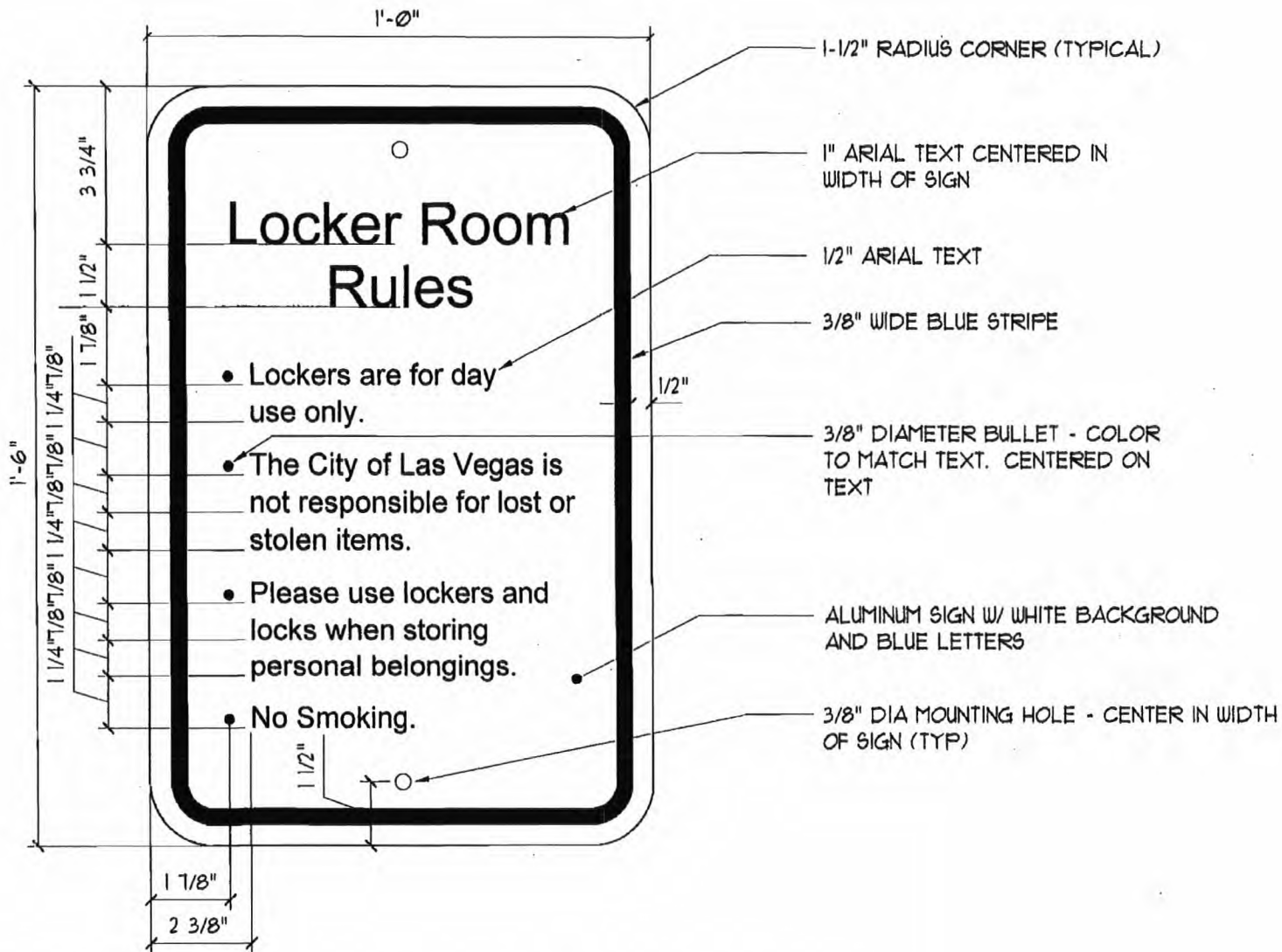


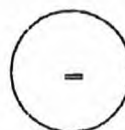
No Smoking on Premises Sign

Scale: 3" = 1'-0"

REVISED 4/14/05

ST13152-12

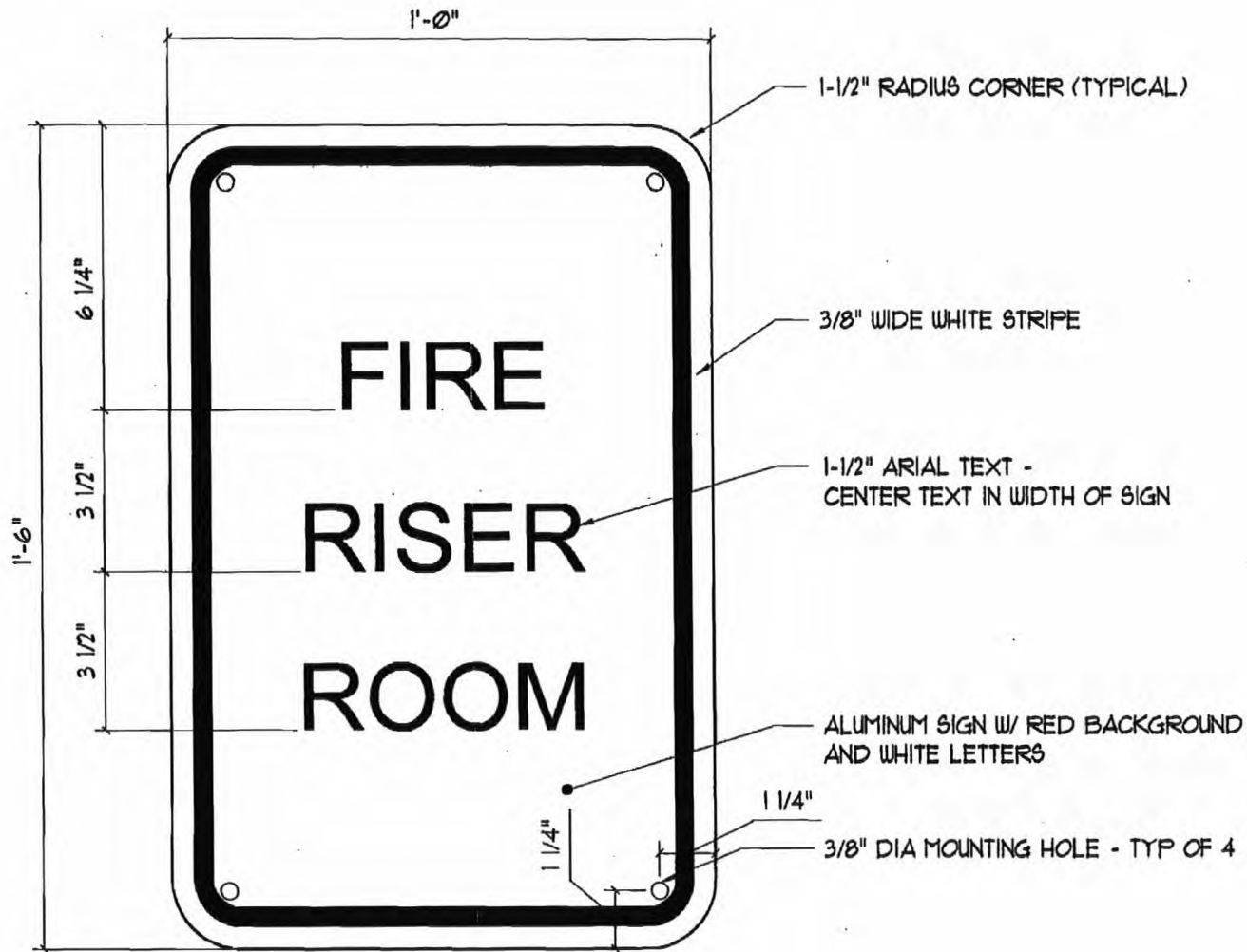


 Locker Room Rules Sign

Scale: 3" = 1'-0"

REVISED 4/26/05

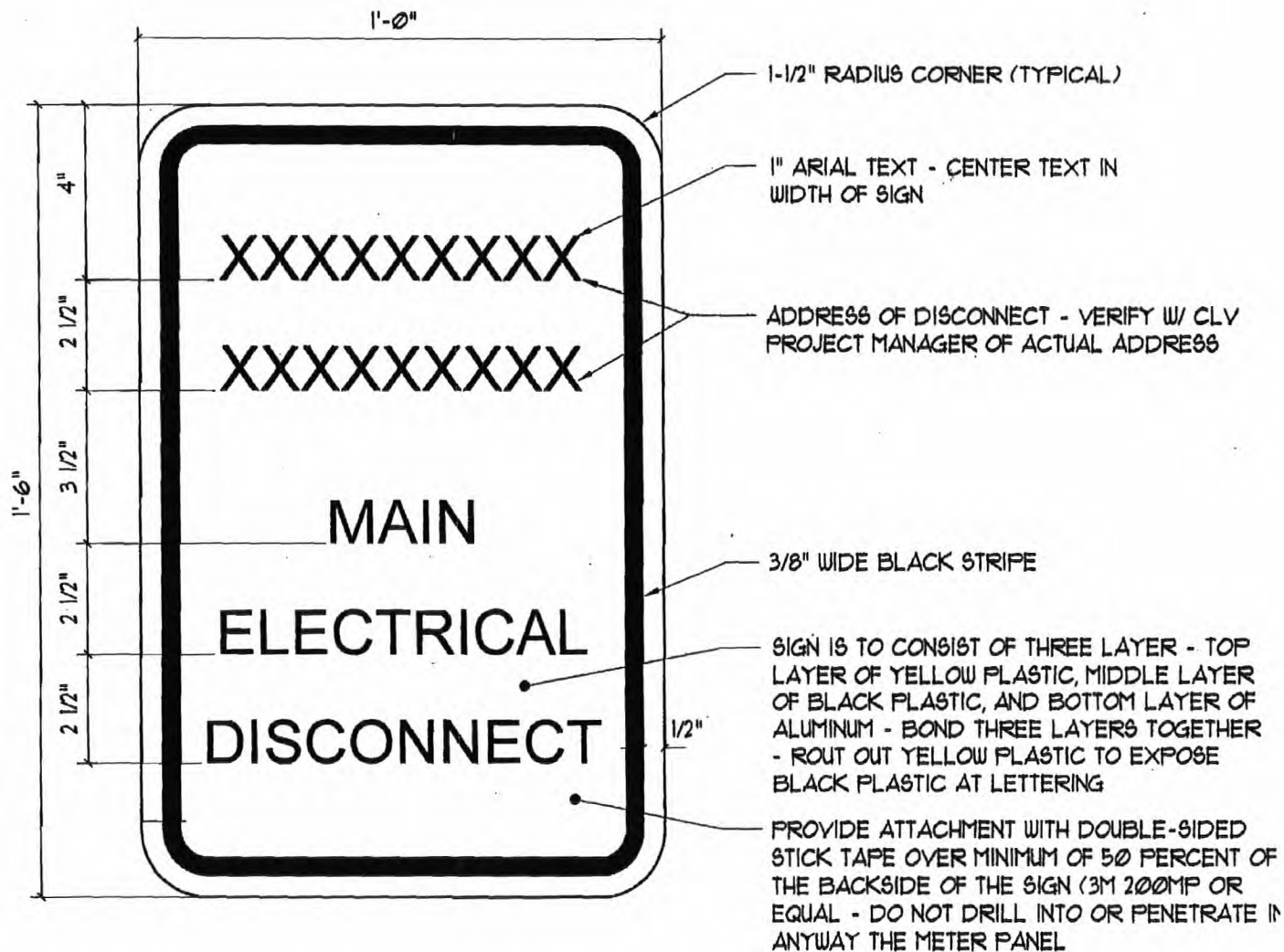
ST13152-13



Riser Room Sign
Scale: 3" = 1'-0"

REVISED 7/9/04

ST13910-01

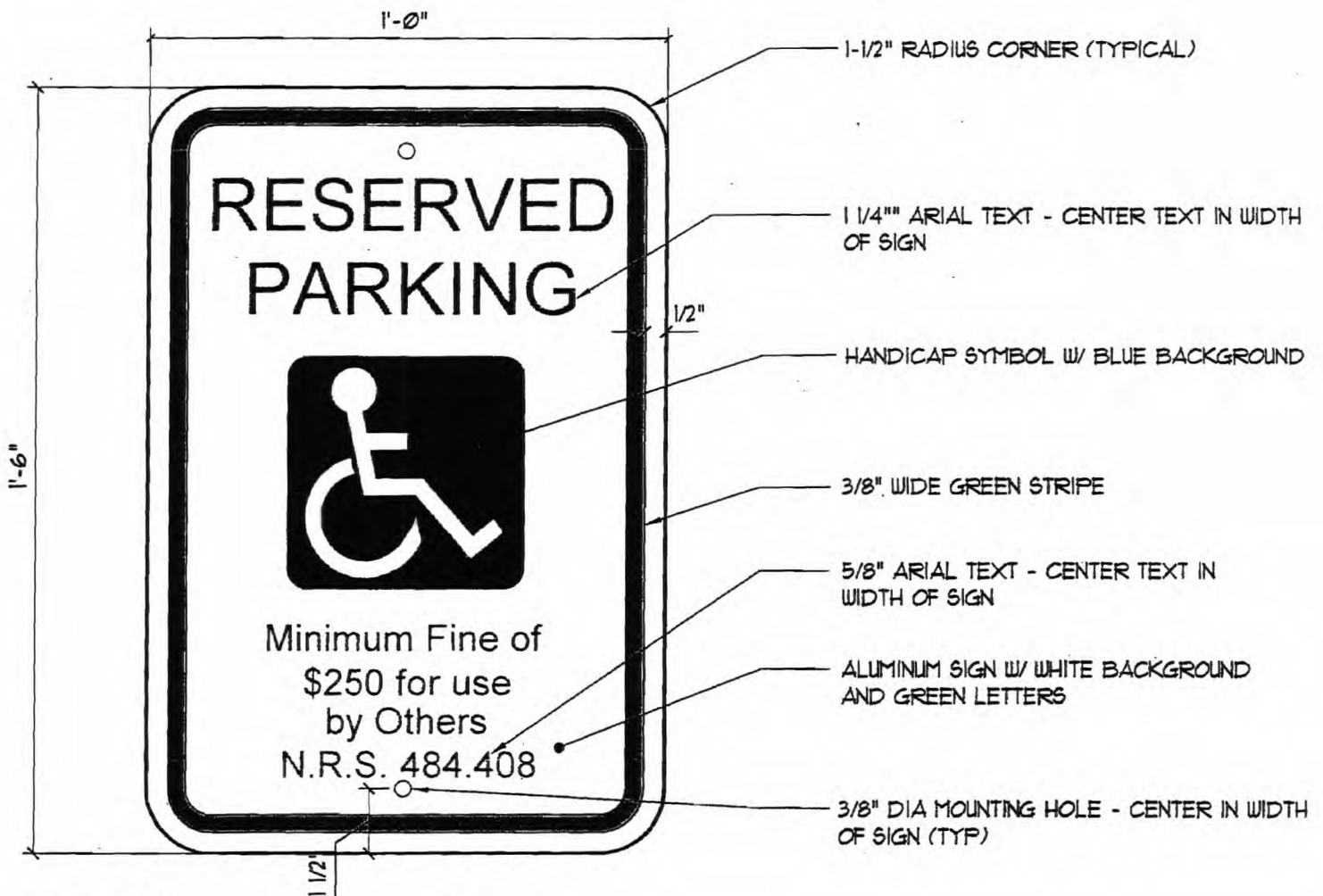


Main Disconnect Sign

Scale: 3" = 1'-0"

REVISED 3/21/05

ST02882-38

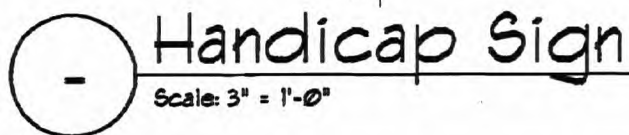


Handicap Sign

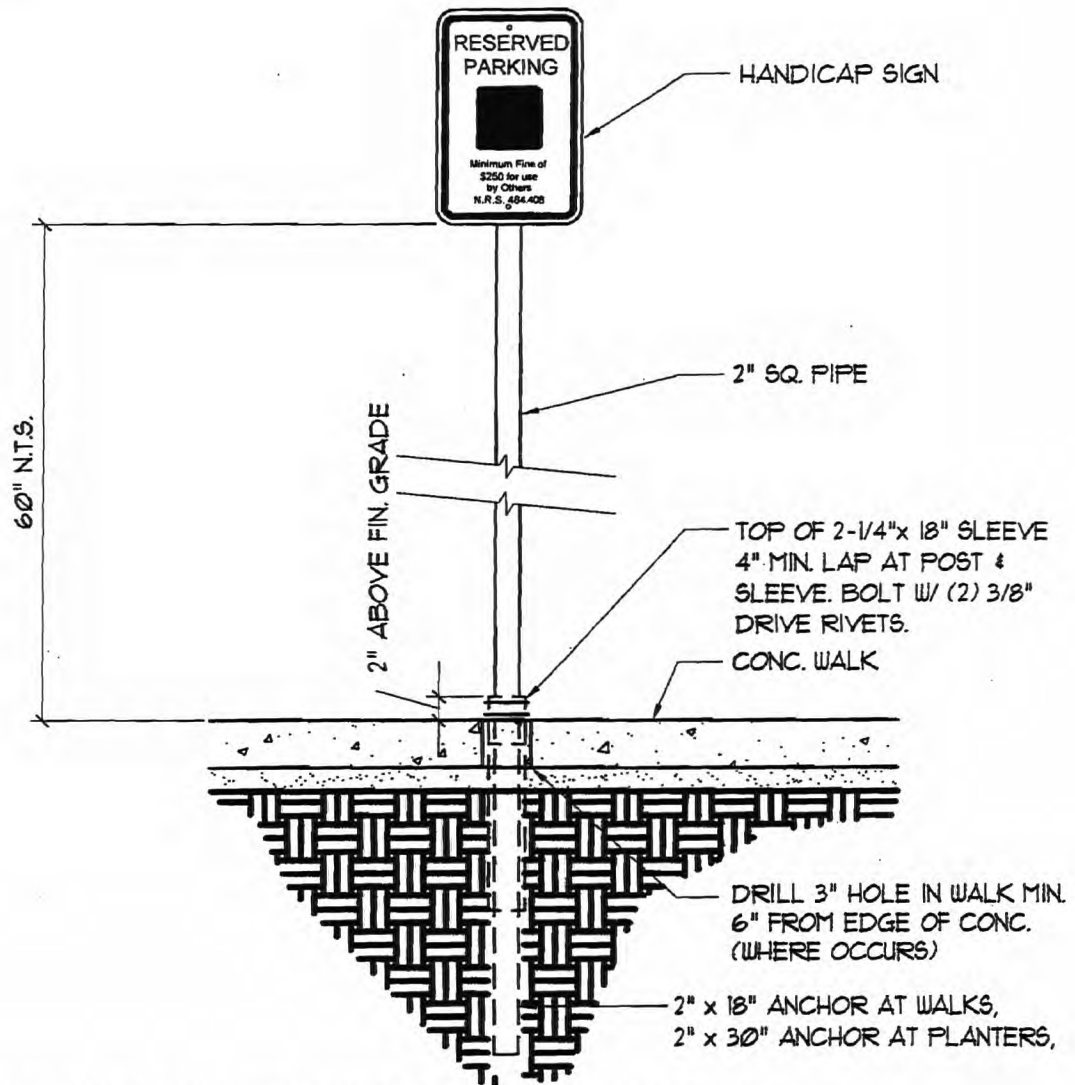
Scale: 3" = 1'-0"

REVISED 8205

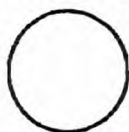
ST01030-5



STØ1030-1



ALL COMPONENTS TO BE GALVANIZED SQUARE POST. ATTACH ANCHOR TO SLEEVE PRIOR TO DRIVING INTO GROUND.

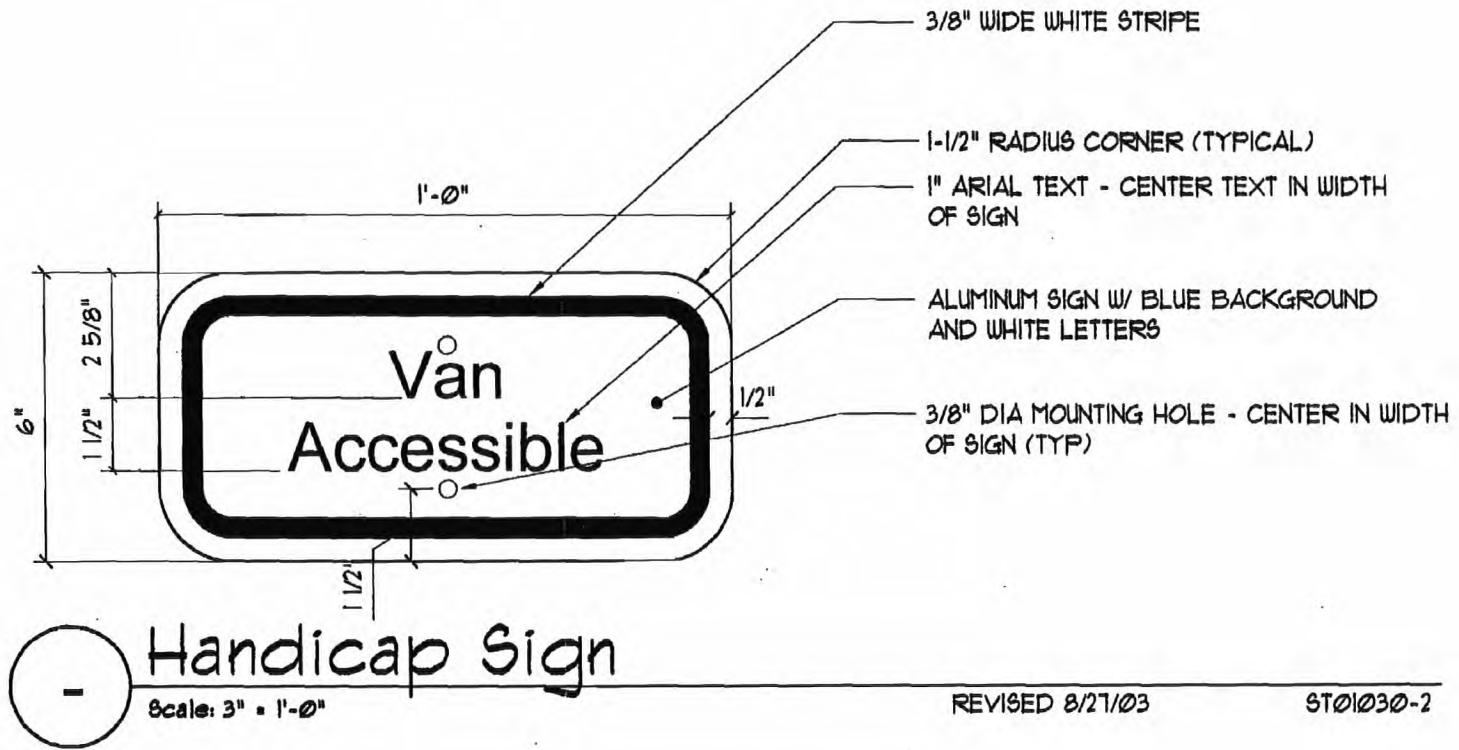


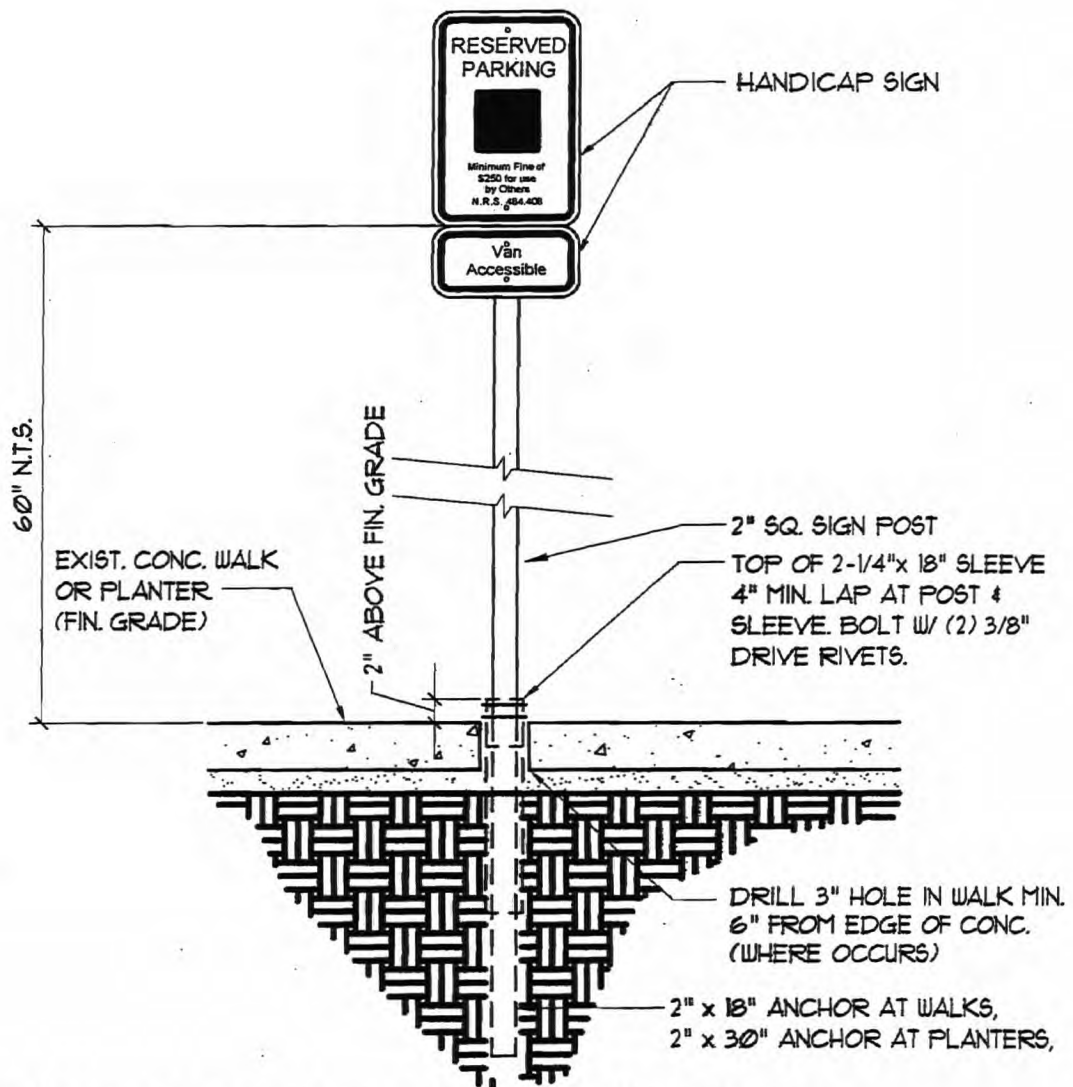
Handicap Parking Signage

Scale: 3/4"=1'-0"

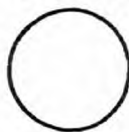
REVISED 8/2/05

ST01030-1a





ALL COMPONENTS TO BE GALVANIZED SQUARE POST. ATTACH ANCHOR TO SLEEVE PRIOR TO DRIVING INTO GROUND.

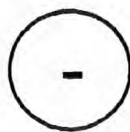
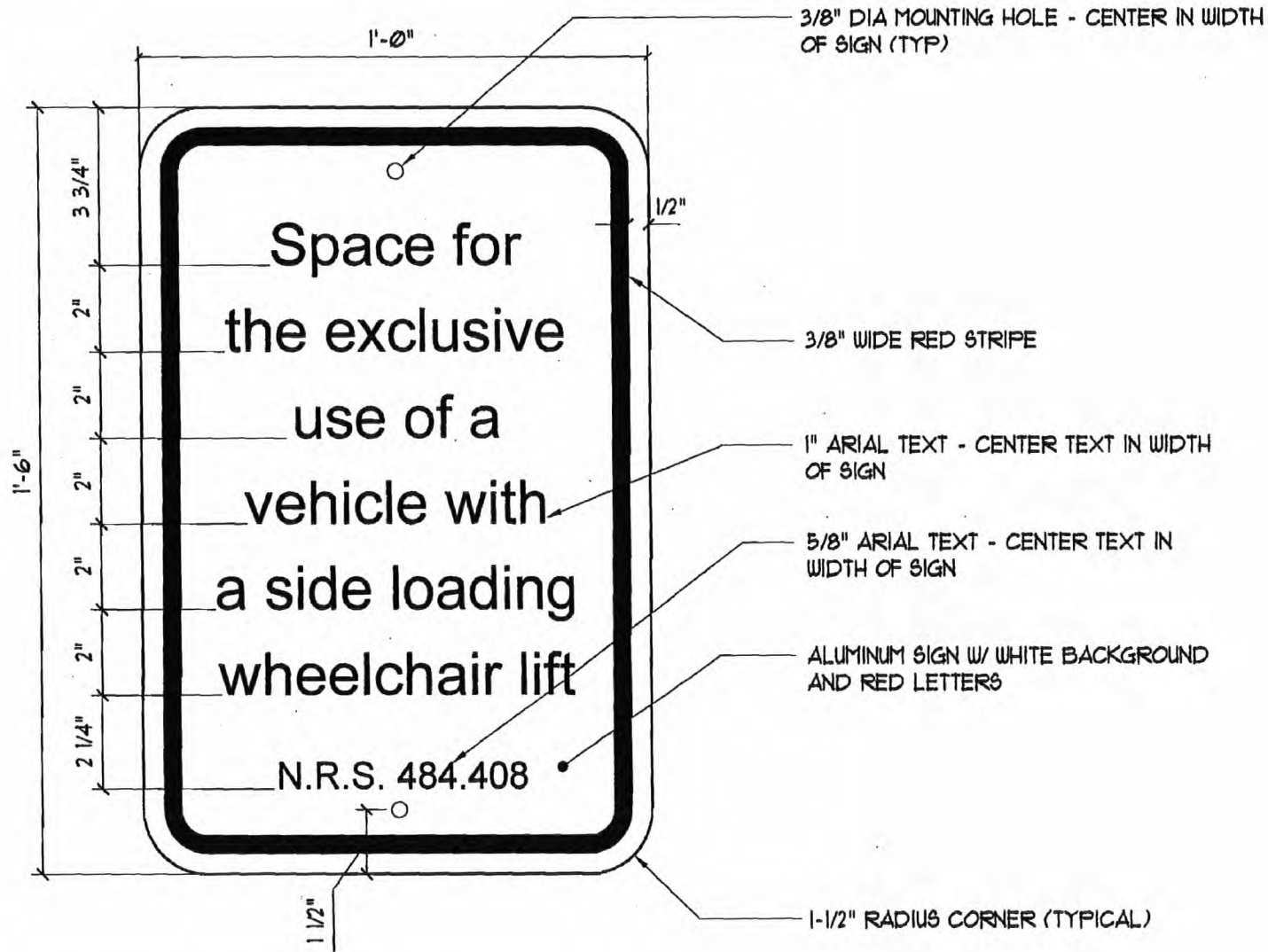


Handicap Parking Signage

Scale: 3/4"=1'-0"

REVISED 8/2/05

ST01030-2a

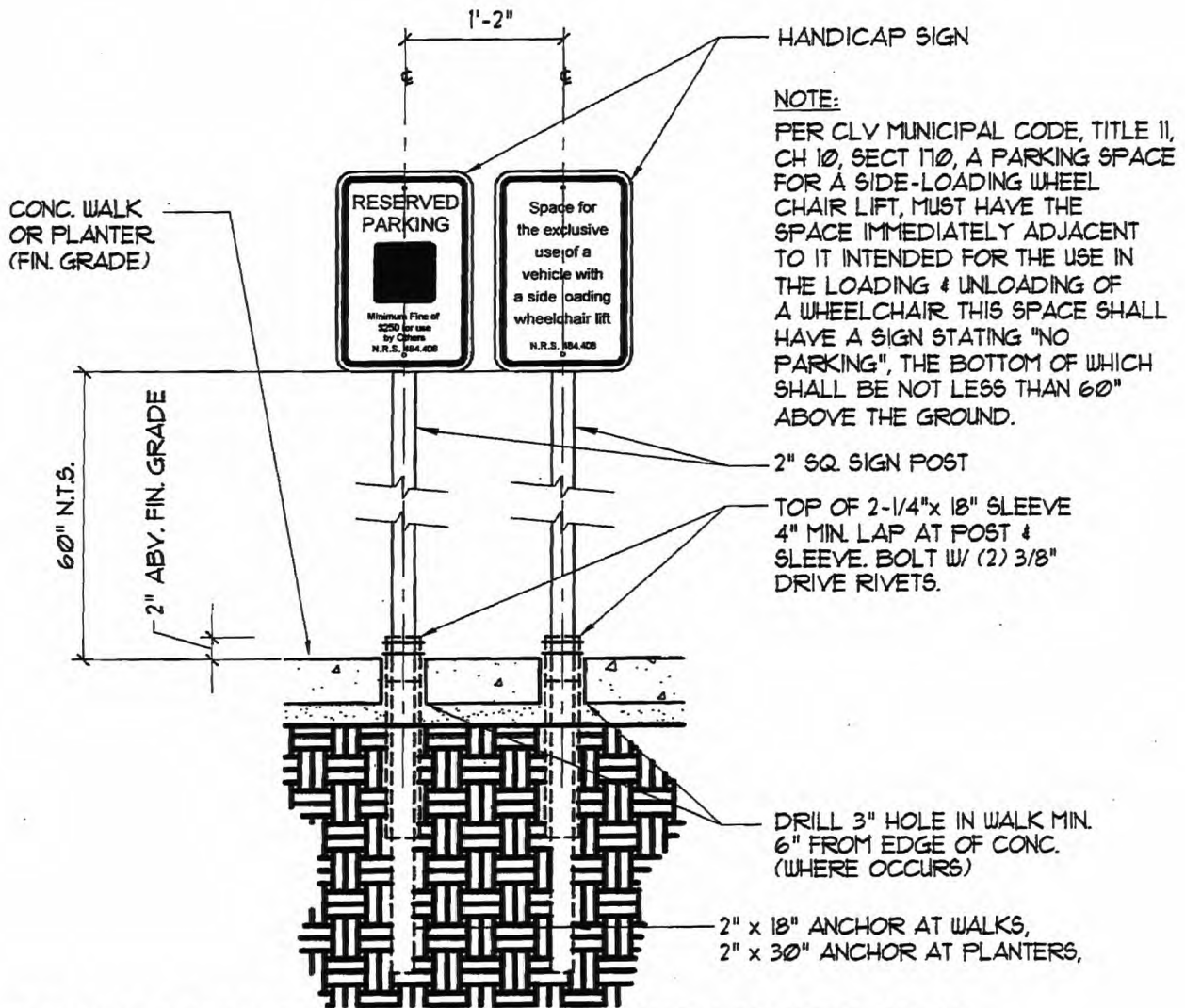


Handicap Sign

Scale: 3" = 1'-0"

REVISED 8/27/03

ST01030-3



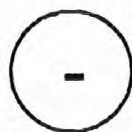
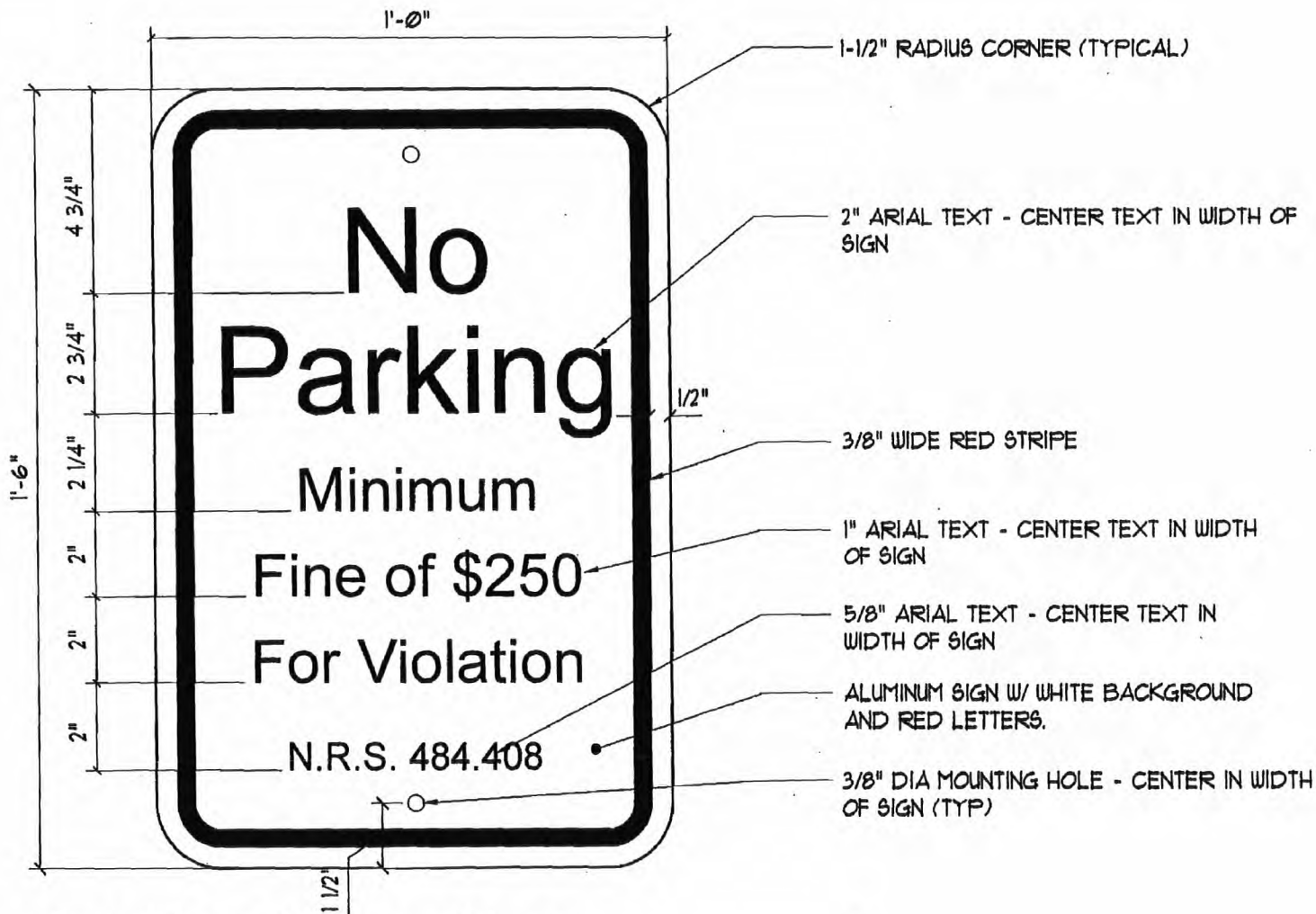
ALL COMPONENTS TO BE GALVANIZED SQUARE POST. ATTACH ANCHOR TO SLEEVE PRIOR TO DRIVING INTO GROUND.

Handicap Parking Signage

Scale: 3/4"=1'-0"

REVISED 8/2/05

ST01030-3a

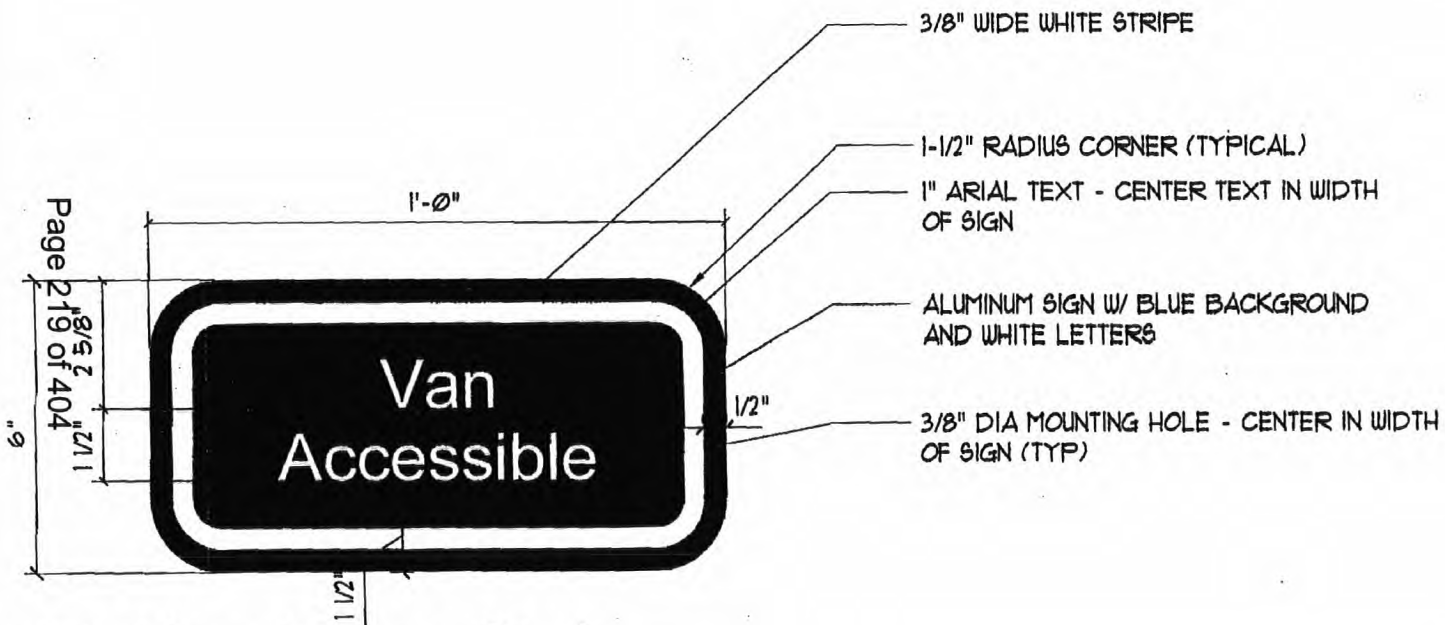


Handicap Sign

Scale: 3" = 1'-0"

REVISED 8.2.05

ST01030-4

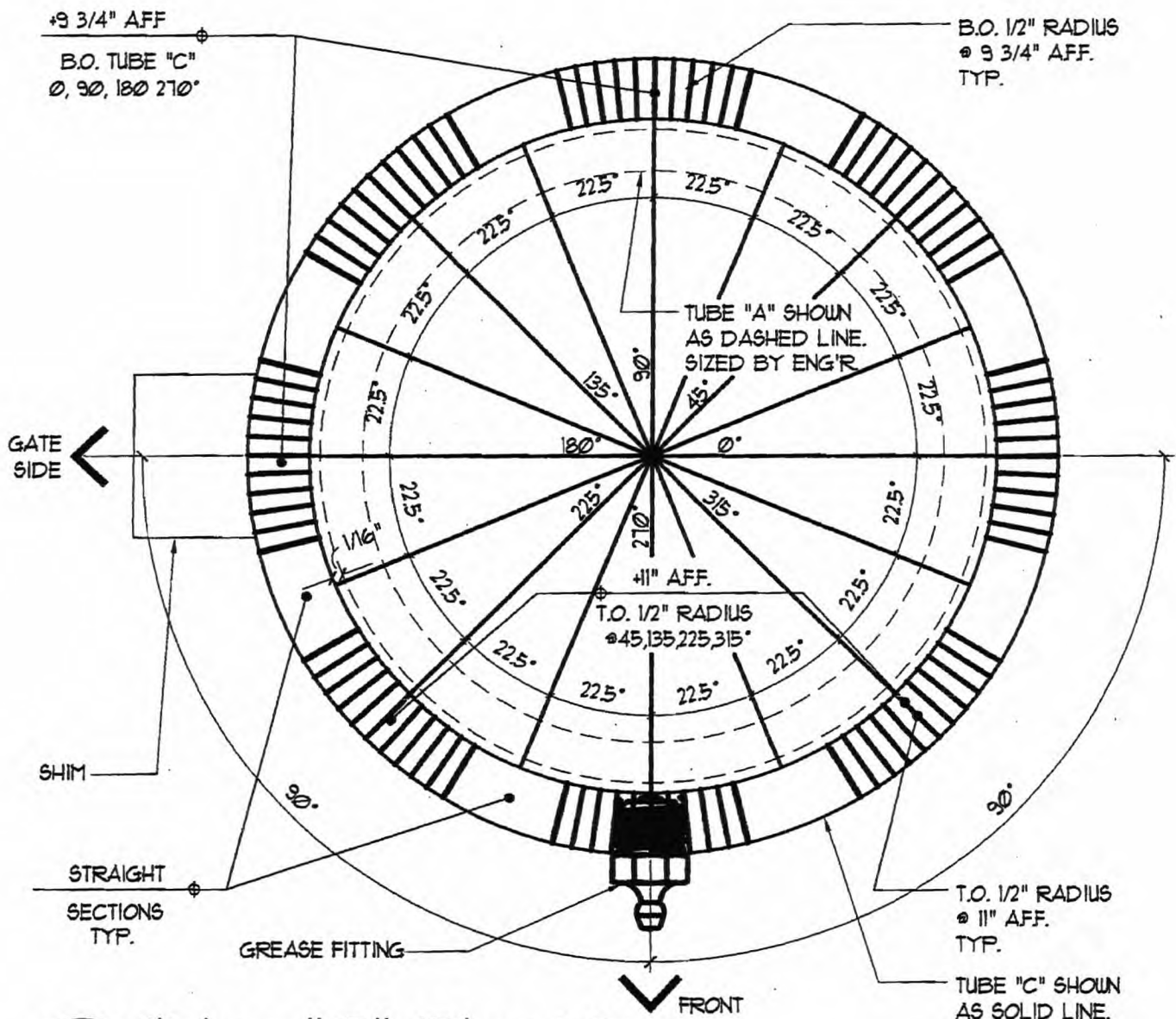


1 Handicap Sign

Scale: 3" = 1'-0"

REVISED 8/27/03

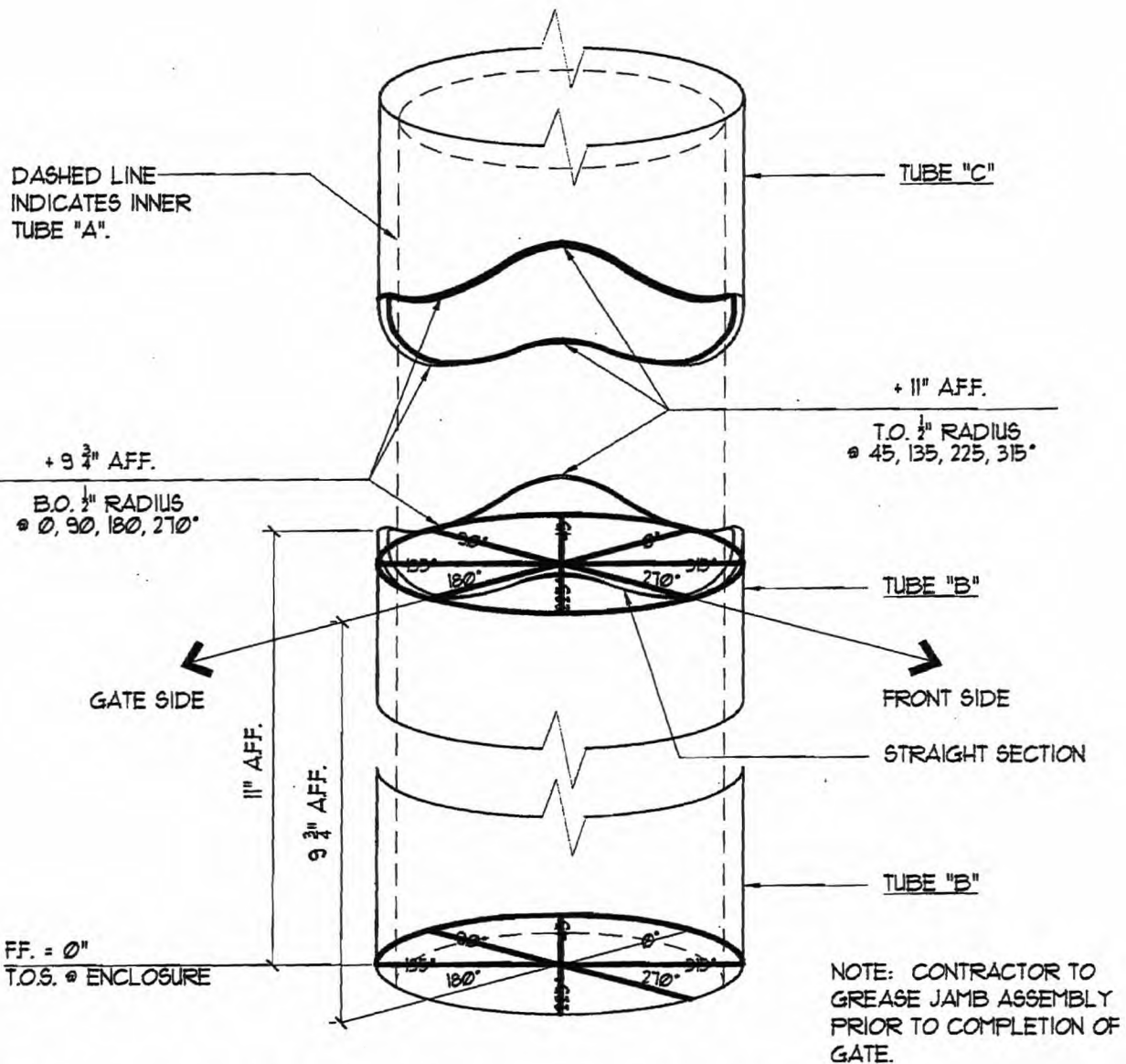
ST01030-2Color



2 Tube "C" Plan View

Scale: Full

REVISED 7/5/05 ST01040-TG2

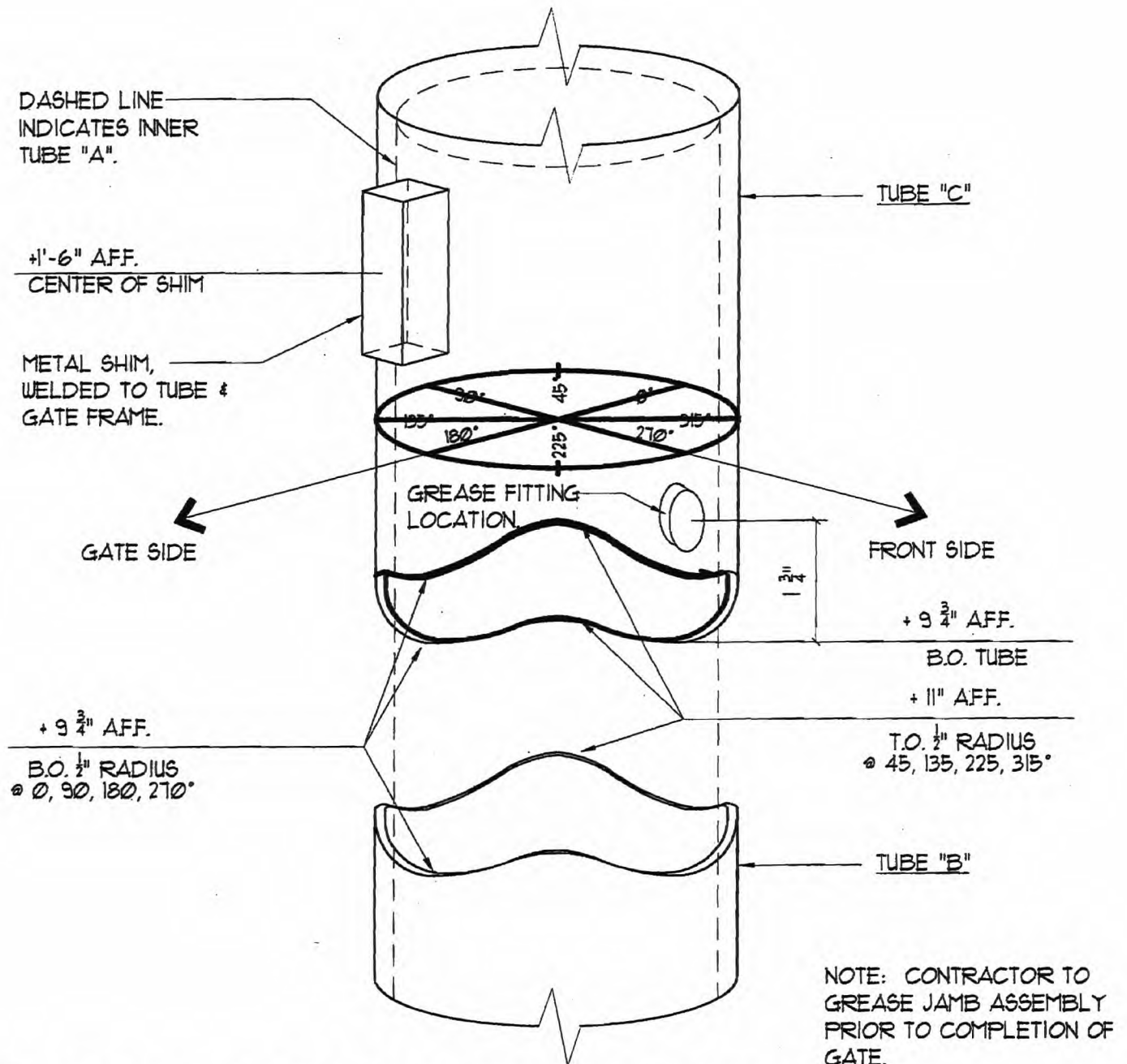


3 Tube "B" (Axonometric)

Scale: Full

REVISED 7/5/05

ST01040-TG3

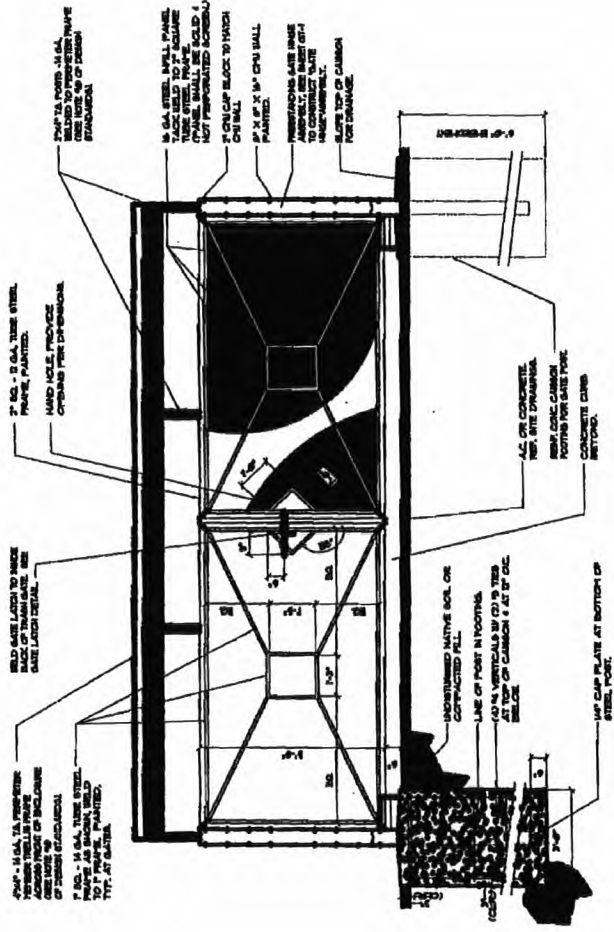


4 Tube "C" (Axonometric)

Scale: NTS

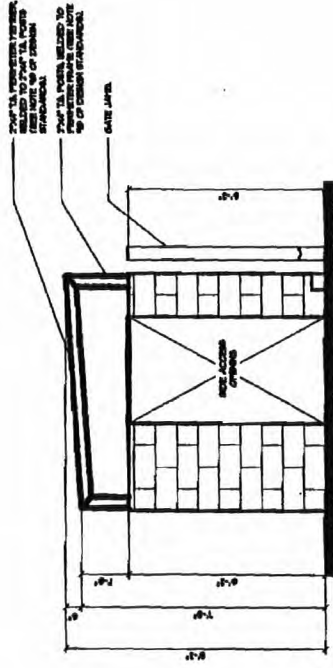
REVISED 7/5/04

ST01040-TG4



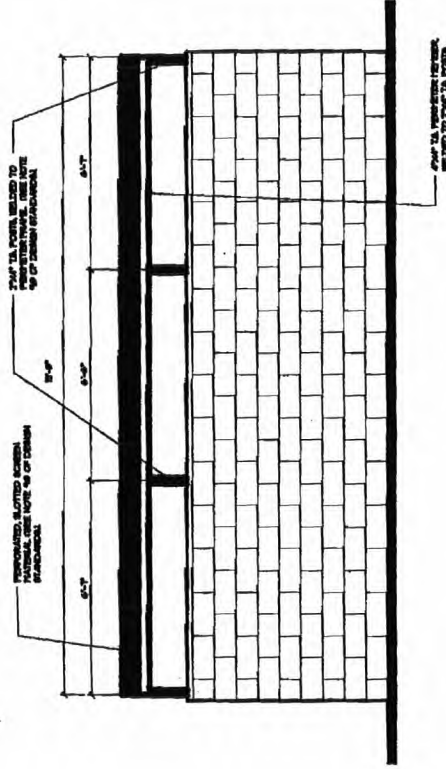
Trash Enclosure - Front Elevation

LAST REVISED 2008



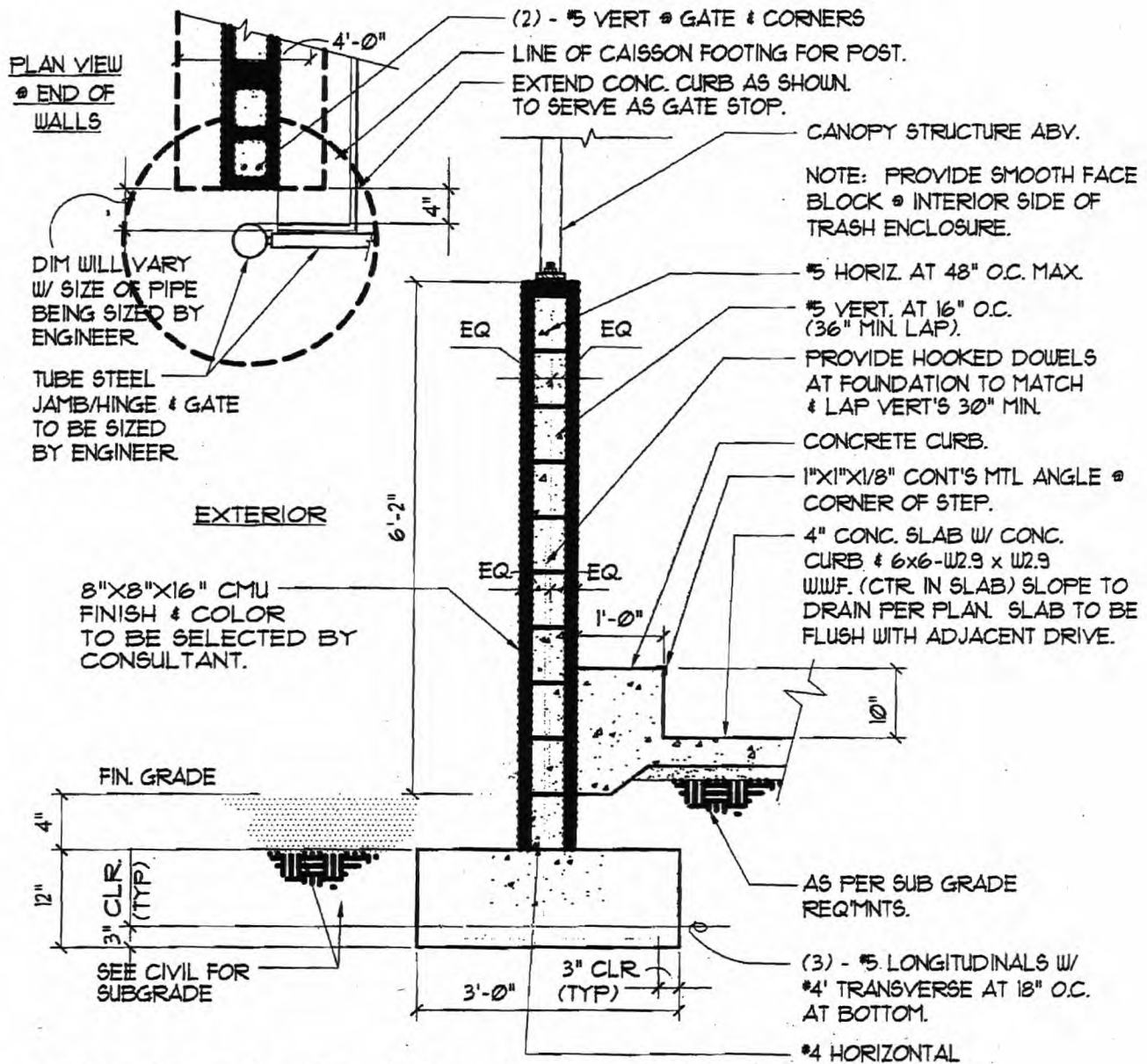
Trash Enclosure - Side Elevation

LAST REVISED 2008



Trash Enclosure - Rear Elevation

LAST REVISED 2008

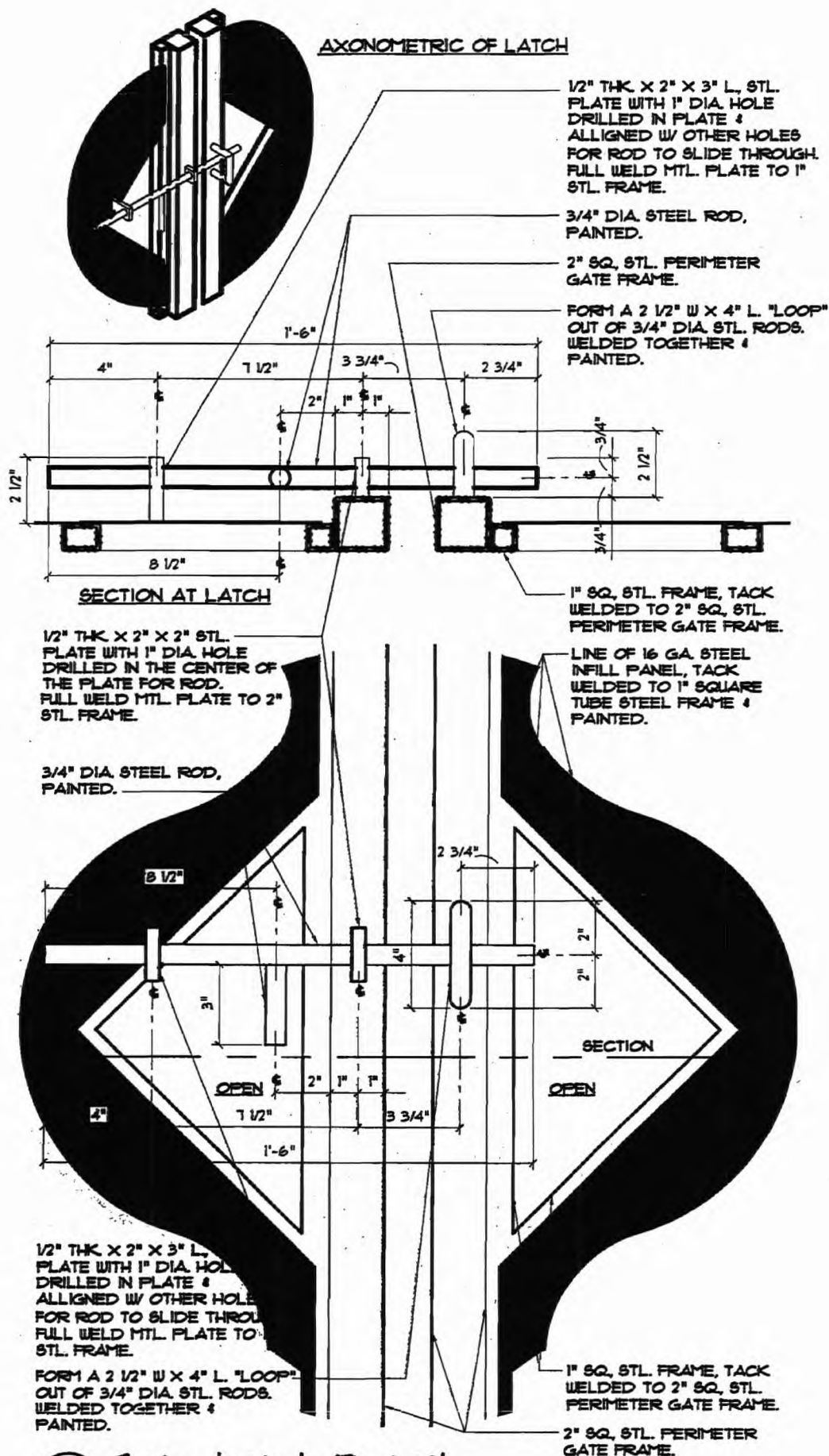


B Trash Enclosure Wall

Scale: 1/2"=1'-0"

02830-05

AS2-07R

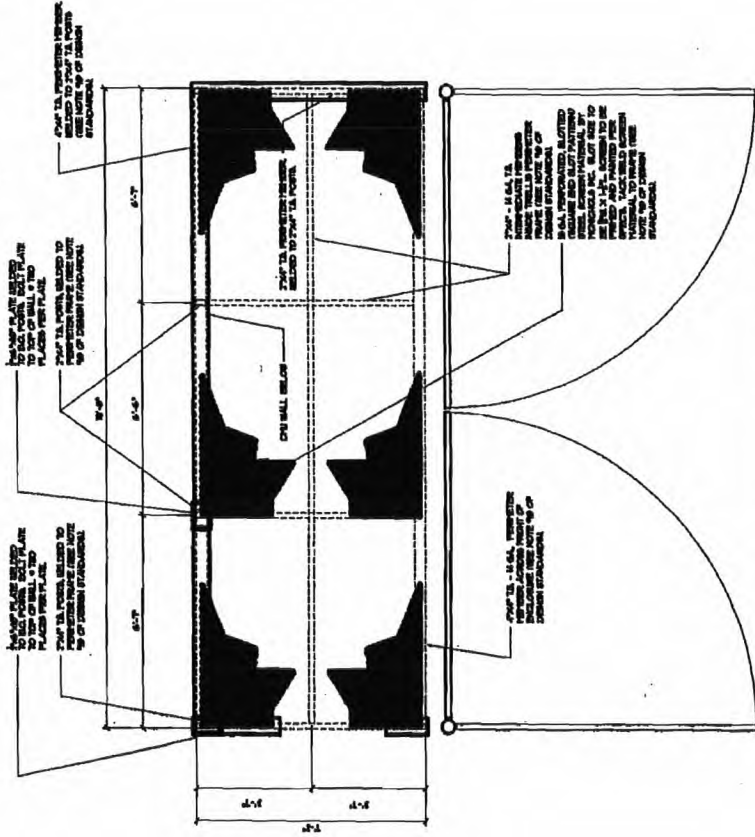


8 Gate Latch Detail

Scale: 3"=1'-0"

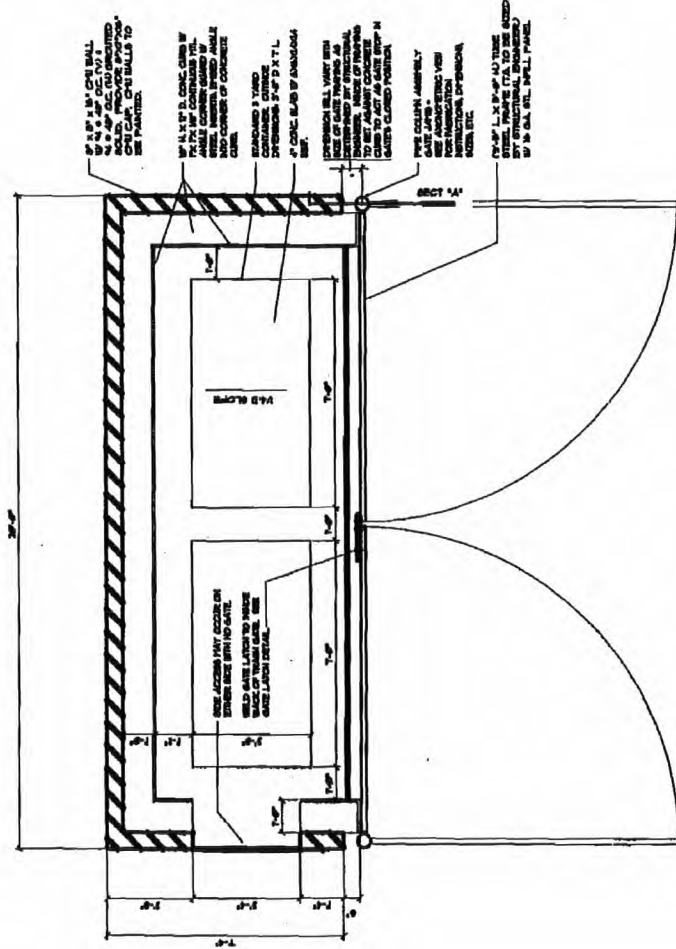
GENERAL STANDARDS/CONSTRUCTION NOTES

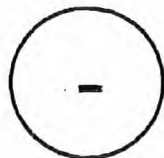
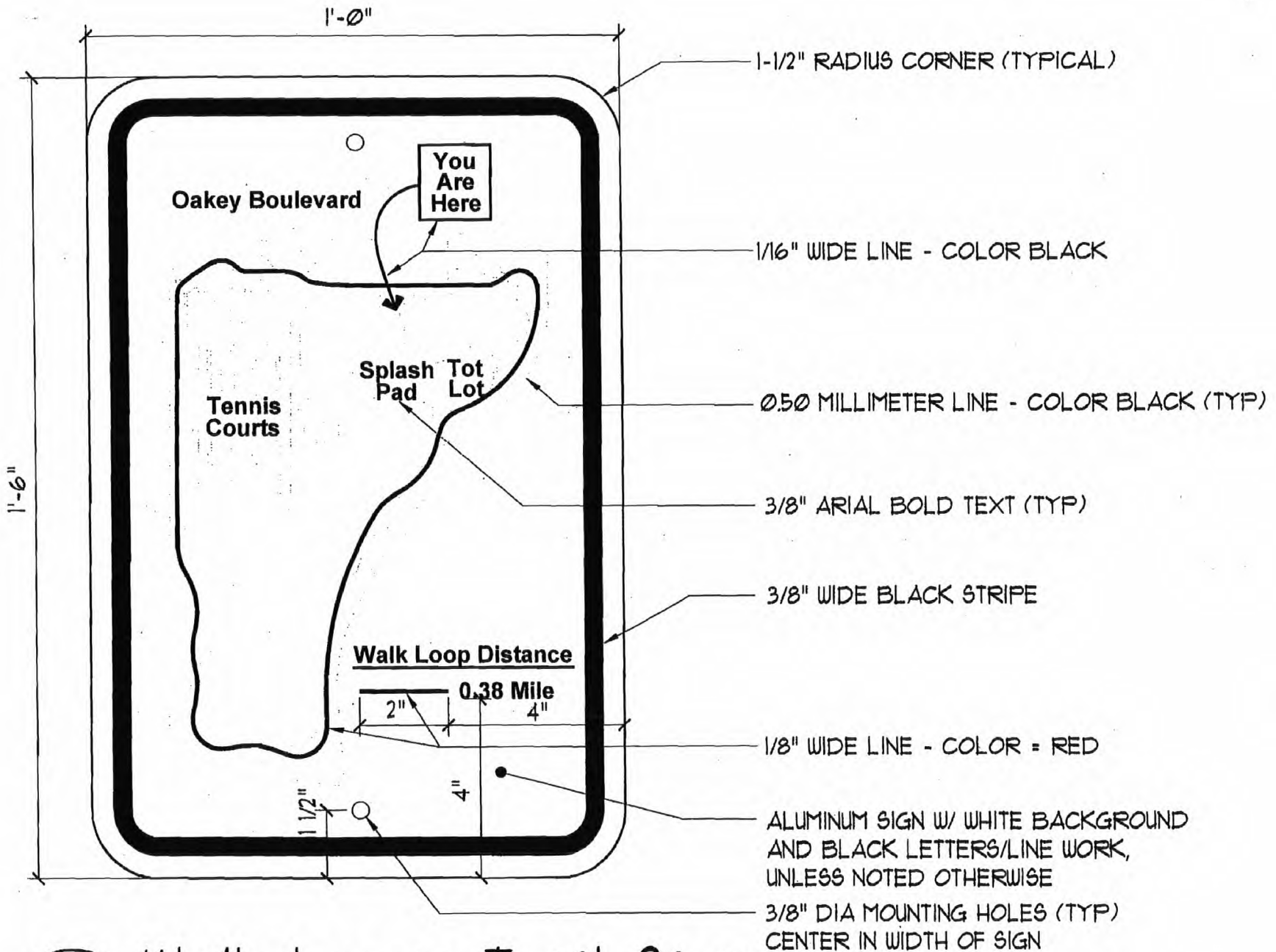
1. THE DESIGN OF THE GATE FACE MAY BE ALTERED BY THE CONSULTANT TO SUIT THE DESIGN OF THE PROJECT. HOWEVER, THE OVERALL GATE AND TRASH ENCLOSURE DIMENSIONS (HEIGHT, WIDTH, CLEARANCES) SHALL REMAIN AS SHOWN TO ACHIEVE THE CLAY CLAY OFFICE OF ARCHITECTURAL SERVICES DESIGN REQUIREMENTS.
2. CONSULTANT MUST COMPLY WITH REQUIREMENTS FOR CONTAMINATING MATERIALS FOR BLACK WALLS AS PER PLANNING REQUIREMENTS.
3. THE EXISTENTIAL GROUND SURFACE IS INDICATED BY THE DOTTED LINE. ALL MATERIALS TO BE INSTALLED SHALL BE COMPATIBLE WITH THE EXISTING GROUND SURFACE. THE EXISTENTIAL GROUND SURFACE IS INDICATED BY THE DOTTED LINE. ALL MATERIALS TO BE INSTALLED SHALL BE COMPATIBLE WITH THE EXISTING GROUND SURFACE.
4. ANY VARIANCE TO THE DESIGN OF THE GATE FACE MUST INCORPORATE A HANDICAP WITH DIMENSIONS EQUAL TO THOSE SHOWN.
5. EACH ENCLOSURE SHALL INCORPORATE A HEAVY DUTY GATE LATCH WITH DIMENSIONS EQUAL TO THOSE SHOWN.
6. THE USE OF "GATE ENCL" IS PROHIBITED IN THE CLAY DAB STANDARD TRASH GATE DESIGN.
7. THE GATE SCHEMATIC SHALL BE PROVIDED IN THE NOTES BELOW. PROHIBITED SCHEMATIC IS PROHIBITED AT TRASH GATE.
8. THE SCHEMATIC OF THE GATE "HANDICAP" MAY BE REVISED BY THE CONSULTANT, PROVIDED THAT IT IS 8' X 8' OPENING SIZE IS COMPLETED WITH A GATE ENCL.
9. PLEASE SEE NOTES ON SHEET WITH REGARD TO GATE FINGER SIZES BEING REQUIRED BY GAA AND CONSULTANT'S RESPONSIBILITY TO PROVIDE LIGHTER GATE FINGER SIZES.
10. DO NOT PROVIDE A GATE IF A TRASH ENCLOSURE IS LOCATED IN A PARK BECAUSE IT IS NOT REQUIRED.
11. ALL EXISTING METAL AT TRASH ENCLOSURE SHALL BE PRIMED AND PAINTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
12. THE TRASH OVER THE TRASH ENCLOSURE SHALL ONLY BE PROVIDED BASED CLAY PLANNING DEPT. INSURED THE TRASH AS PART OF THE "CONDITIONS OF APPROVAL" FOR YOUR PROJECT. THE CONSULTANT MAY APPLY FOR A TRAILER TO THE REQUIREMENT FOR A TRAILER OVER THE TRASH ENCLOSURE. THE TRAILER SHOULD BE APPLIED FOR ON A PROJECT BY PROJECT BASIS.



Trash Enclosure - Trelis Plan

LAST REVISED 2008



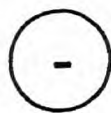
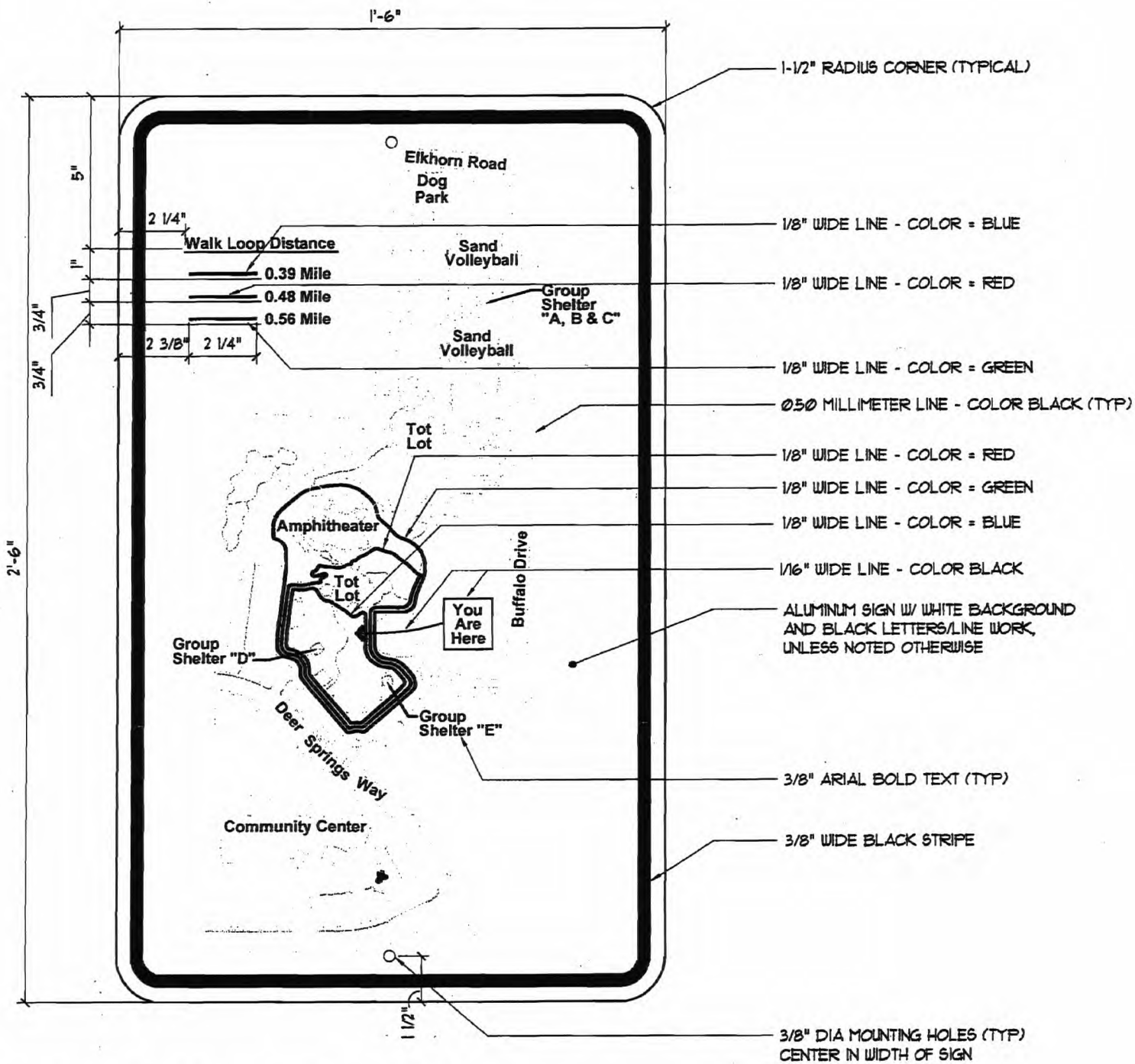


Walk Loop Trail Sign

Scale: 3" = 1'-0"

REVISED 11/6/06

Baskin



Walk Loop Trail Sign

Scale: 3" = 1'-0"

REVISED 11/6/06

Centennial Hills



City of Las Vegas Prototype Concession Building Standards

Prepared by City of Las Vegas Architectural Services

FOOD

EQUIPMENT

REQUIREMENTS

CONCESSIONAIRE OPTION

1

Allowed as Designed	Included in Construction Documents	It is the concessionaire's responsibility to:
- sealed beverages (canned soda, bottled water, bottled juices, etc.) - prepackaged foods (pretzels, potato chips, candy, etc.) - merchandise (T-shirts, hats, etc.)	- 3 compartment sink - wire shelving - hand sink - janitors sink - stainless steel countertop - janitors sink - hot water heater - floor sink - fire extinguisher & cabinet	- apply and pay for a health district¹ permit and grade card. (Architectural Services² will provide drawings to the concessionaire) (Note: the facility has been pre-reviewed for this option through the Health District.) - apply and pay for a City of Las Vegas business license.³

low
cost

CONCESSIONAIRE OPTION

2

Requires Added Equipment by Concessionaire	Included in Construction Documents	It is the concessionaire's responsibility to:
- hot dogs - cotton candy - pop corn - fountain sodas (discouraged by Health District) - prepackaged microwave food - prepackaged ice cream products - nachos - prepackaged condiments	- see option (1)	- apply and pay for a Health District permit and grade card. (It will be the concessionaire's responsibility to provide drawings) - purchase and install extra equipment. - apply and pay for a building permit through the Las Vegas Department of Building and Safety,⁴ if required. (Note: it is the concessionaire's responsibility to determine with Building and Safety if the plan needs to be reviewed.) - apply and pay for a City of Las Vegas business license.
	Provided by Concessionaire - hot dog warmer - pop corn machine - cotton candy machine - fountain soda equipment - microwave - ice machine - refrigerator - freezer - warmer (holding cabinets) - cheese dispenser (all food service equipment shall meet design, material, and construction standards of the National Sanitation Foundation International NSF1 All equipment shall be approved by the Health District)	

CONCESSIONAIRE OPTION

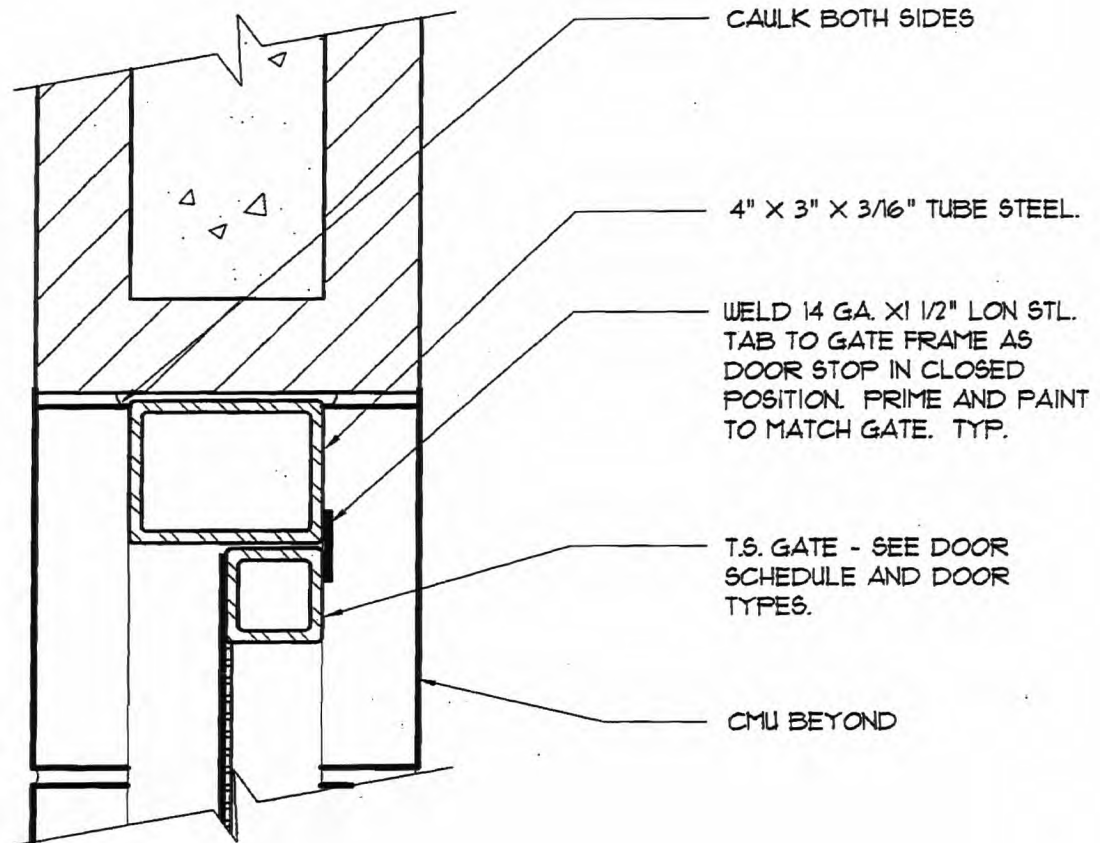
3

Requires Additional Permits & Construction	Included in Construction Documents	It is the concessionaire's responsibility to:
- grilled food (hamburgers, chicken, etc.) - breakfast items (pancakes, eggs, bacon) - any type of fried foods (french fries, onion rings, etc.) - pizza (oven type)	- see option (1)	- apply and pay for a Health District permit and grade card. (it will be the concessionaire's responsibility to provide drawings) - gain approval of design with Public Works. - pay all costs associated w/ additional equipment including, but not limited to: design fees, review fee's, permit's, inspection fee's, and maintenance. - apply and pay for a building permit through the Las Vegas Department of Building and Safety. - apply and pay for a City of Las Vegas business license.
	Provided by Concessionaire (building not designed to accommodate) - grease interceptor - exhaust vent hood - grill/griddle - any type of fryer - dishwasher - hot plate - cooker, crock pot - range - stove - oven (all food service equipment shall meet design, material, and construction standards of the National Sanitation Foundation International NSF1 All equipment shall be approved by the Health District)	

high
cost

¹ Southern Nevada Health District - 625 Shadow Lane (383-1258)
² Architectural Services - 420 N. 4th St (229-6535)
³ Business Services Division - 400 Stewart Avenue - 3rd floor (229-6281)
⁴ Department of Building and Safety - 731 South 4th Street (229-6251)

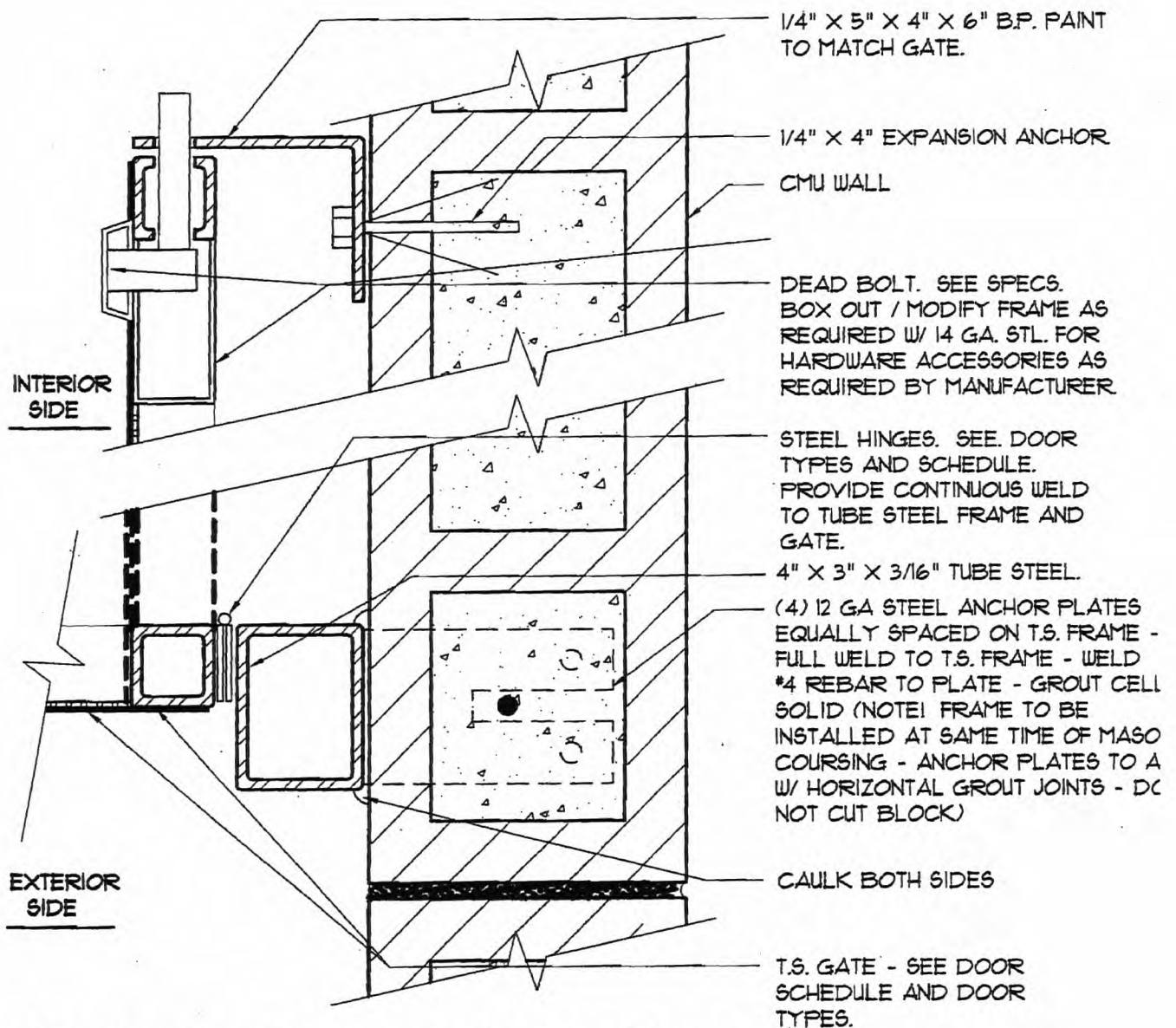
Revision 9/15/06



1 Head @ T.S. Gate

Scale: 3"=1'-0"

REVISED 8/27/03 ST01050-RRGI



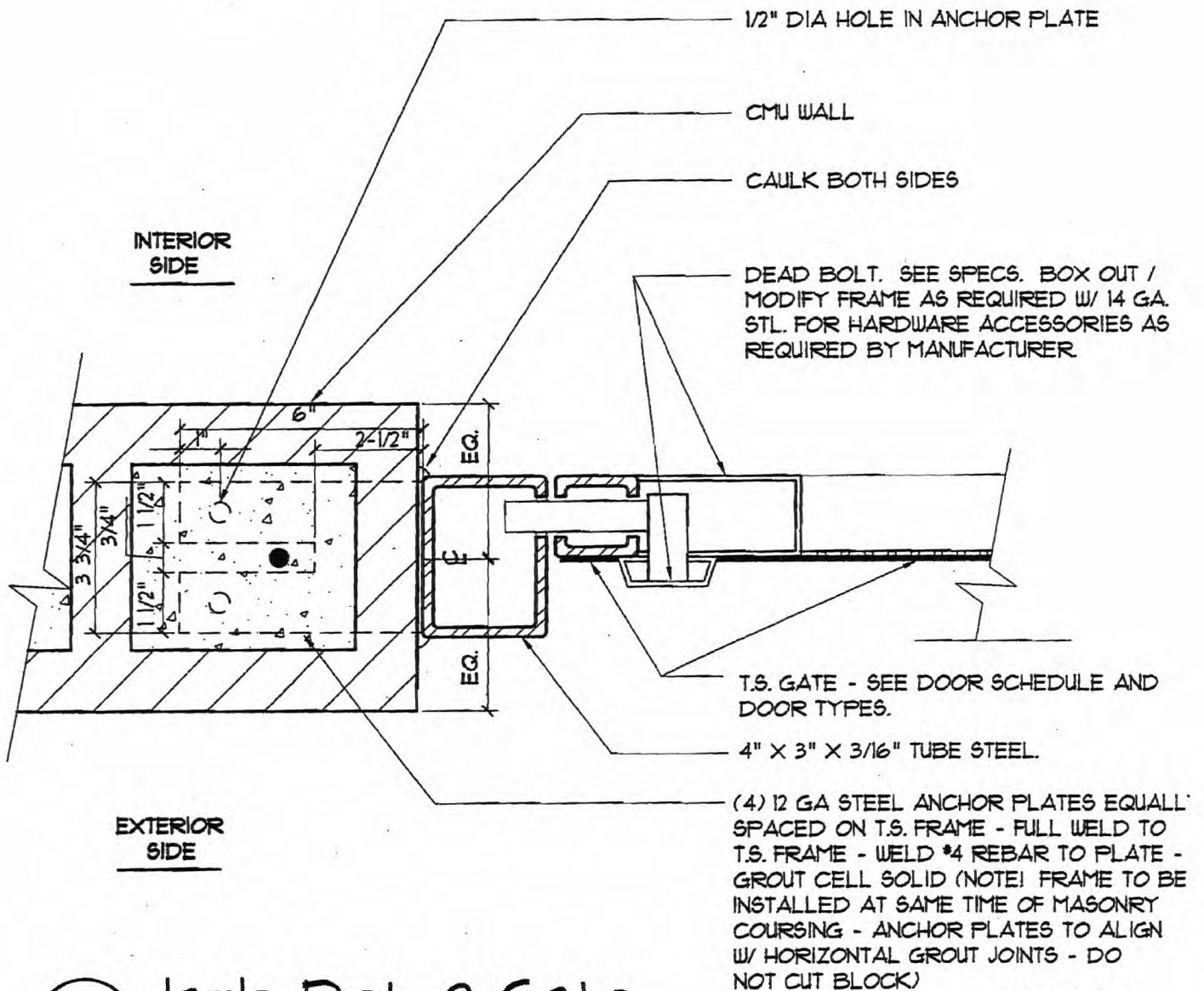
2 Jamb Det. @ Gate Hinge

Scale: 3"=1'-0"

HINGE SIDE

REVISED 4/27/04

ST01050-RRG2



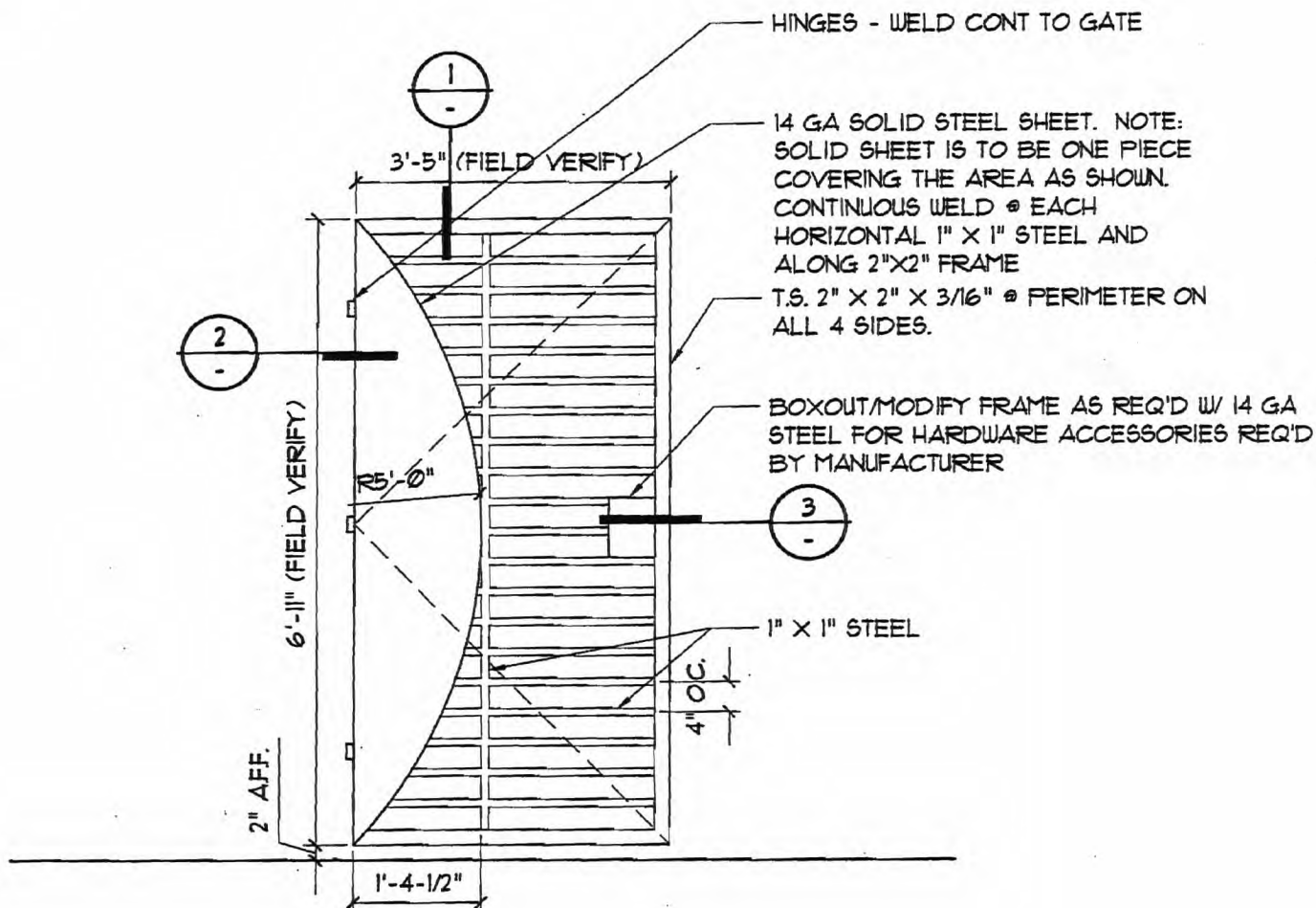
3 Jamb Det. @ Gate

Scale: 3"=1'-0"

LATCH SIDE

REVISED 4/27/04

ST01050-RRG3



NOTE: CORNERS OF 2" X 2" T.S. ARE TO BE MITERED JOINTS AND TO HAVE FULL WELDS. GROUND ALL WELDS SMOOTH. PRIME AND PAINT. PROVIDE FULLY DIMENSIONED AND DETAILED SHOP DRAWINGS PRIOR TO FABRICATION.

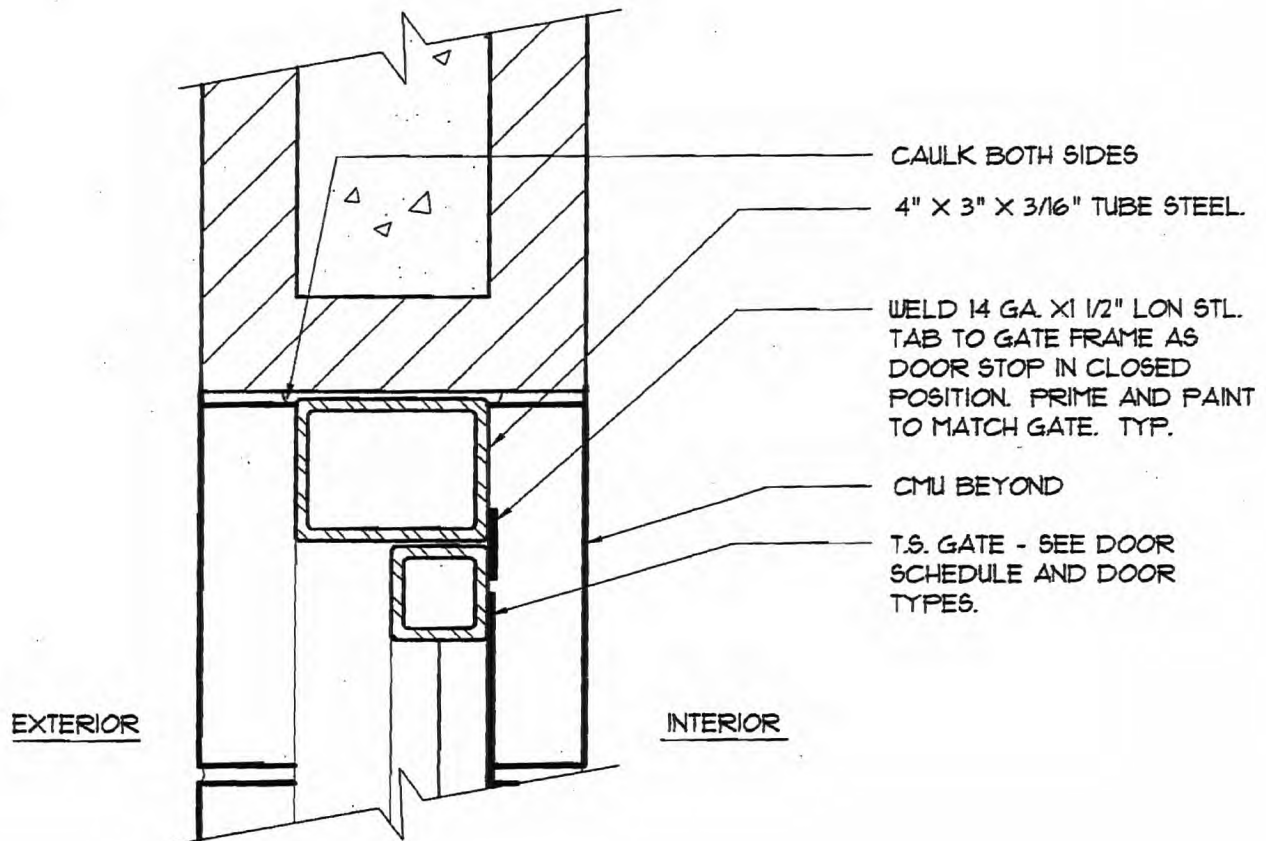
NOTE: REFERENCE ELEVATIONS FOR LEFT OR RIGHT HAND PATTERN. GATES ARE MIRROR IMAGE OF EA. OTHER

4 Gate - Enlarged Elevation

Scale: 1/2"=1'-0"

REVISED 4/27/04

ST01050-RRG4

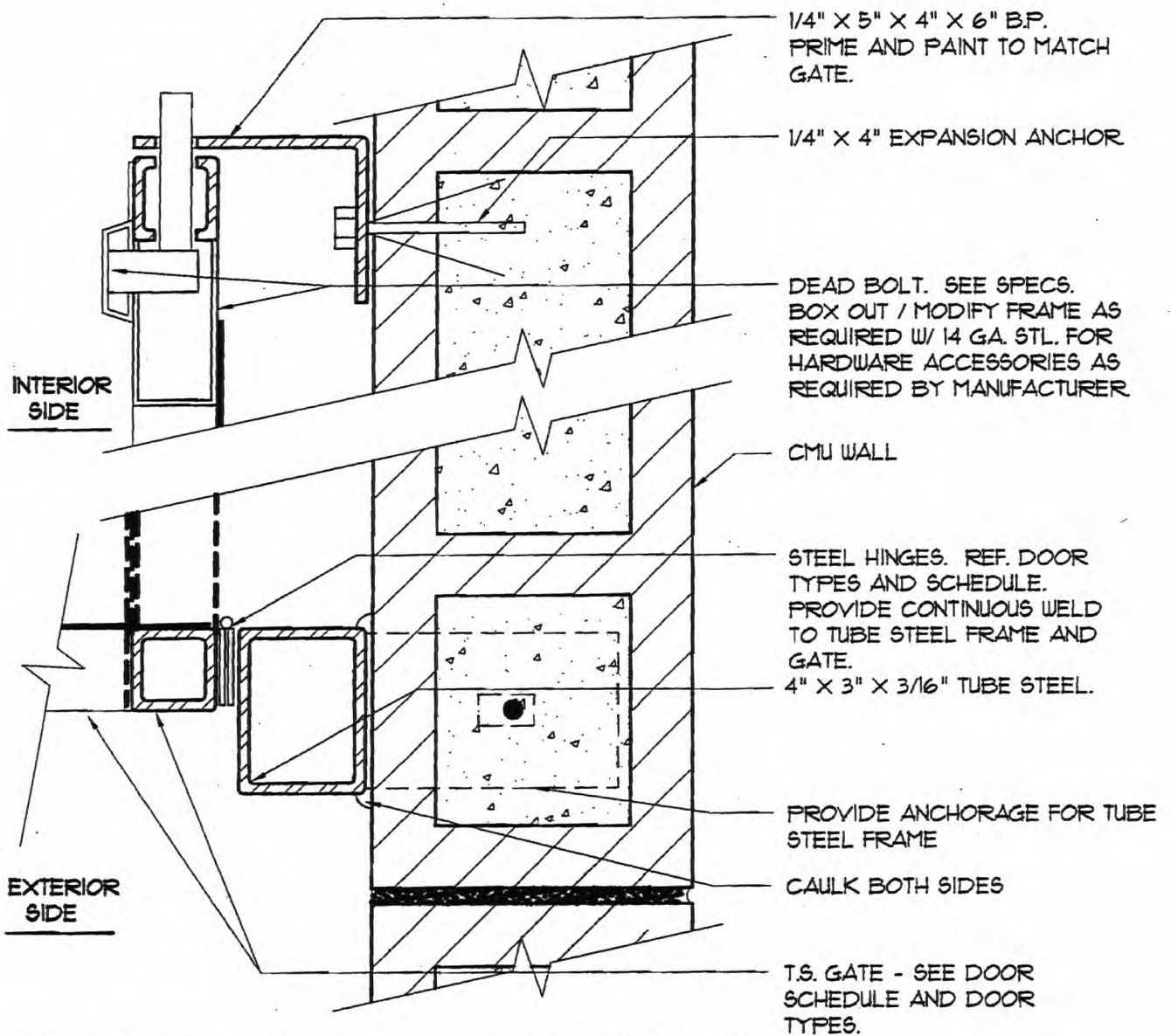


1 Head @ T.S. Gate

Scale: 3"=1'-0"

REVISED 8/27/03

ST01050-UG1

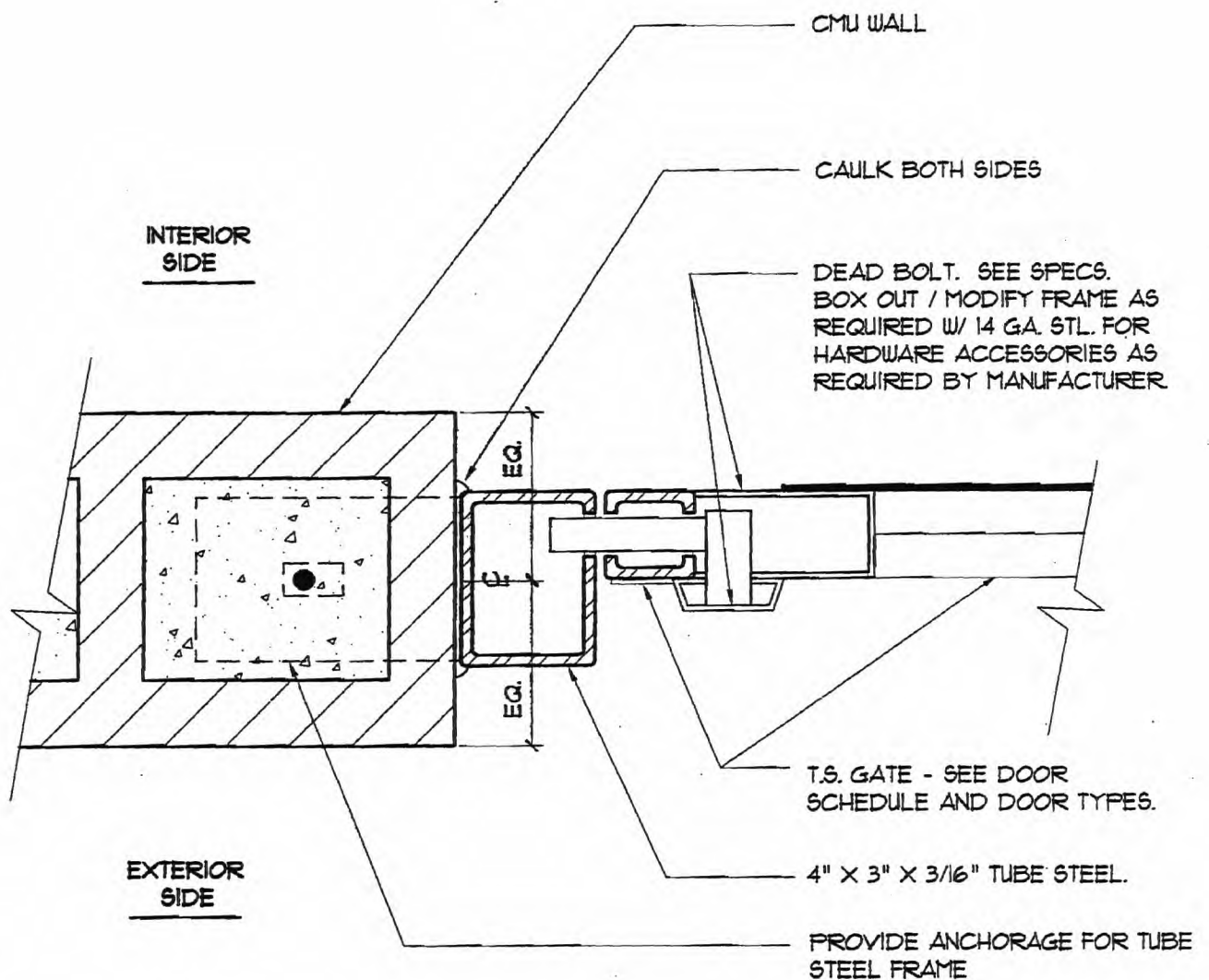


2 Jamb Det. @ Gate Hinge

Scale: 3"=1'-0"

HINGE SIDE

REVISED 8/27/03 ST01050-UG2

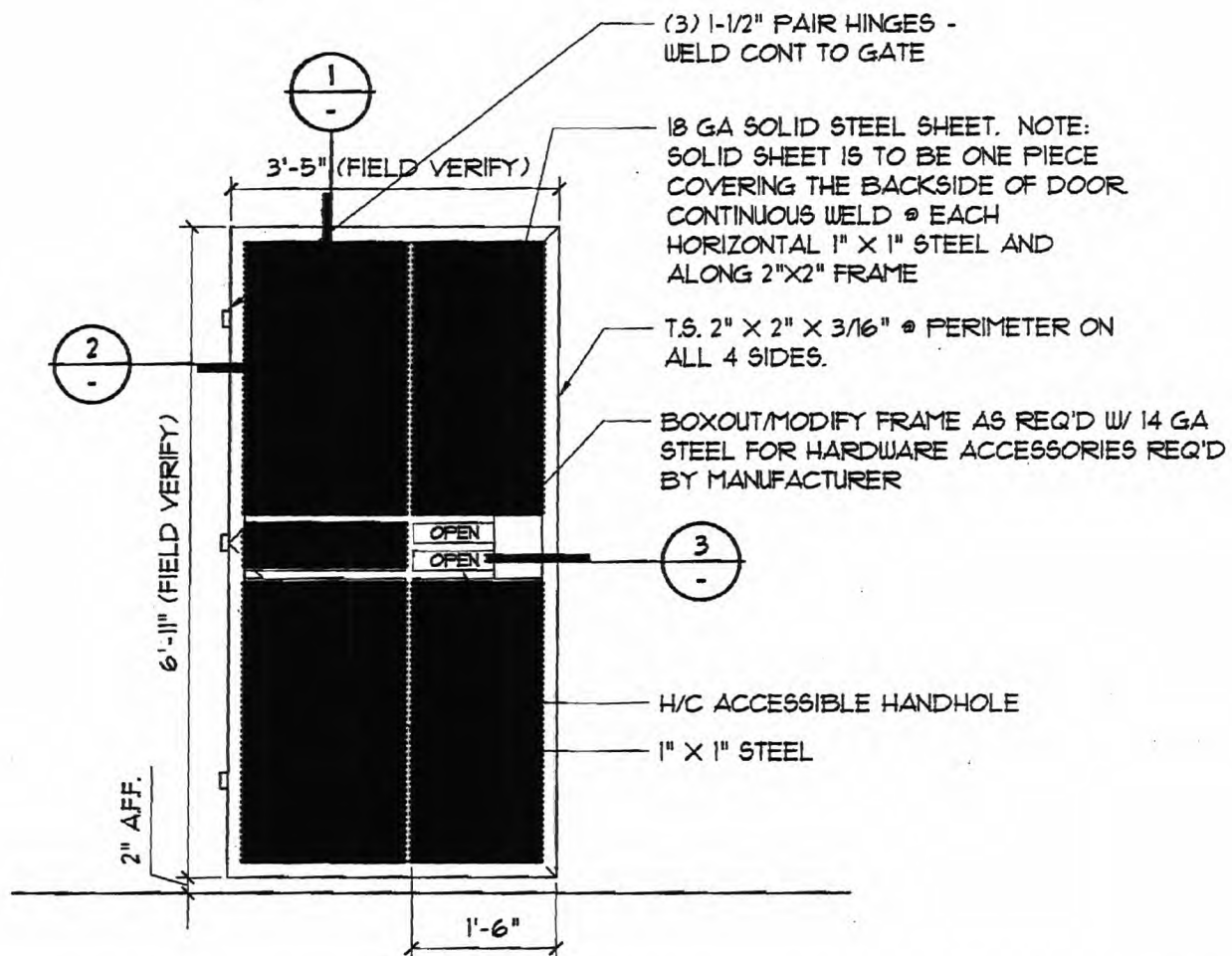


3 Jamb Det. @ Gate

Scale: 3"=1'-0"

LATCH SIDE

REVISED 8/27/03 ST01050-UG3

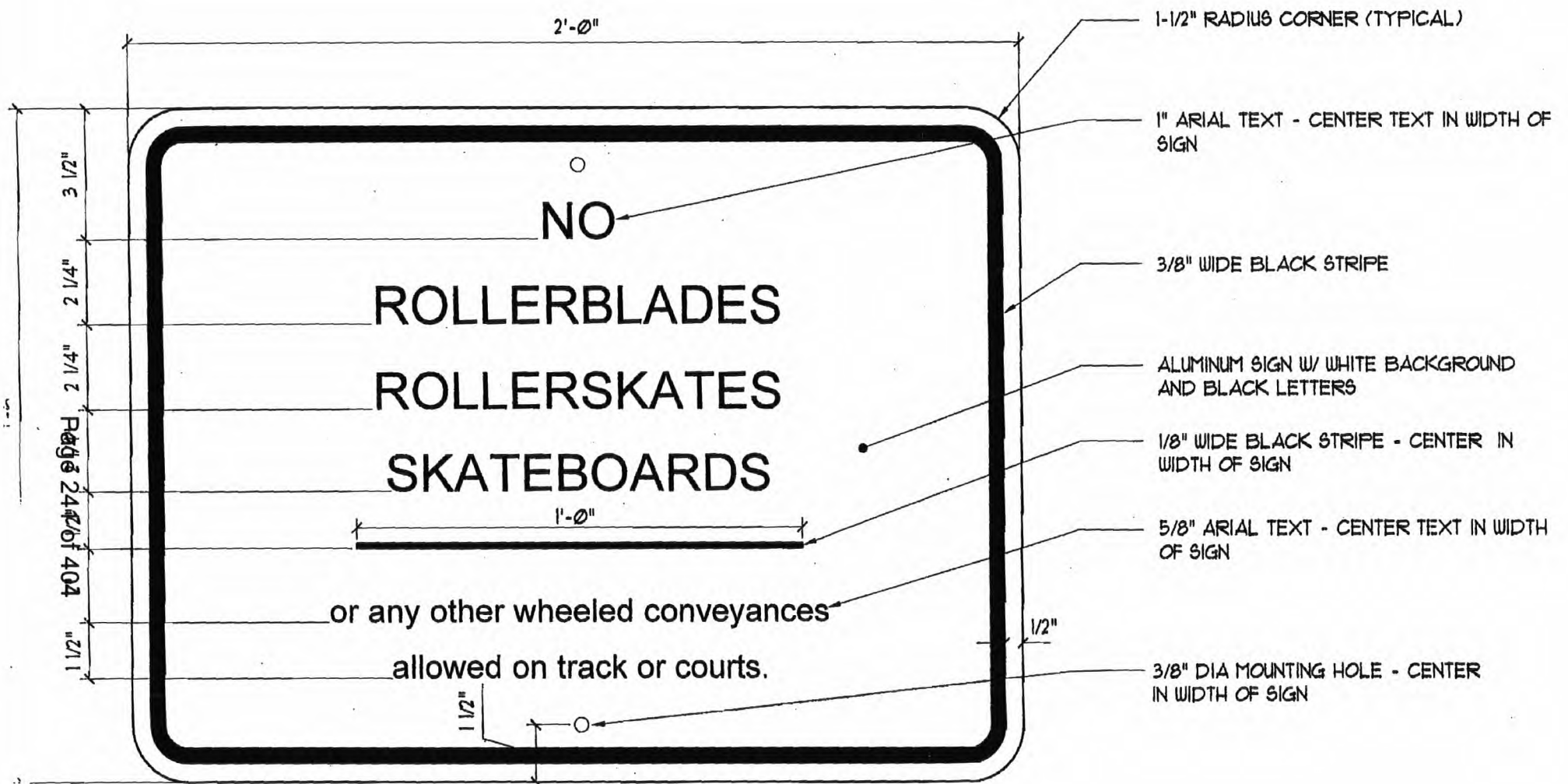


NOTE: CORNERS OF 2" X 2" T.S. ARE TO BE MITERED JOINTS AND TO HAVE FULL WELDS. GROUND ALL WELDS SMOOTH. PRIME AND PAINT. PROVIDE FULLY DIMENSIONED AND DETAILED SHOP DRAWINGS PRIOR TO FABRICATION.

Gate - Enlarged Elevation

Scale: 1/2"=1'-0"

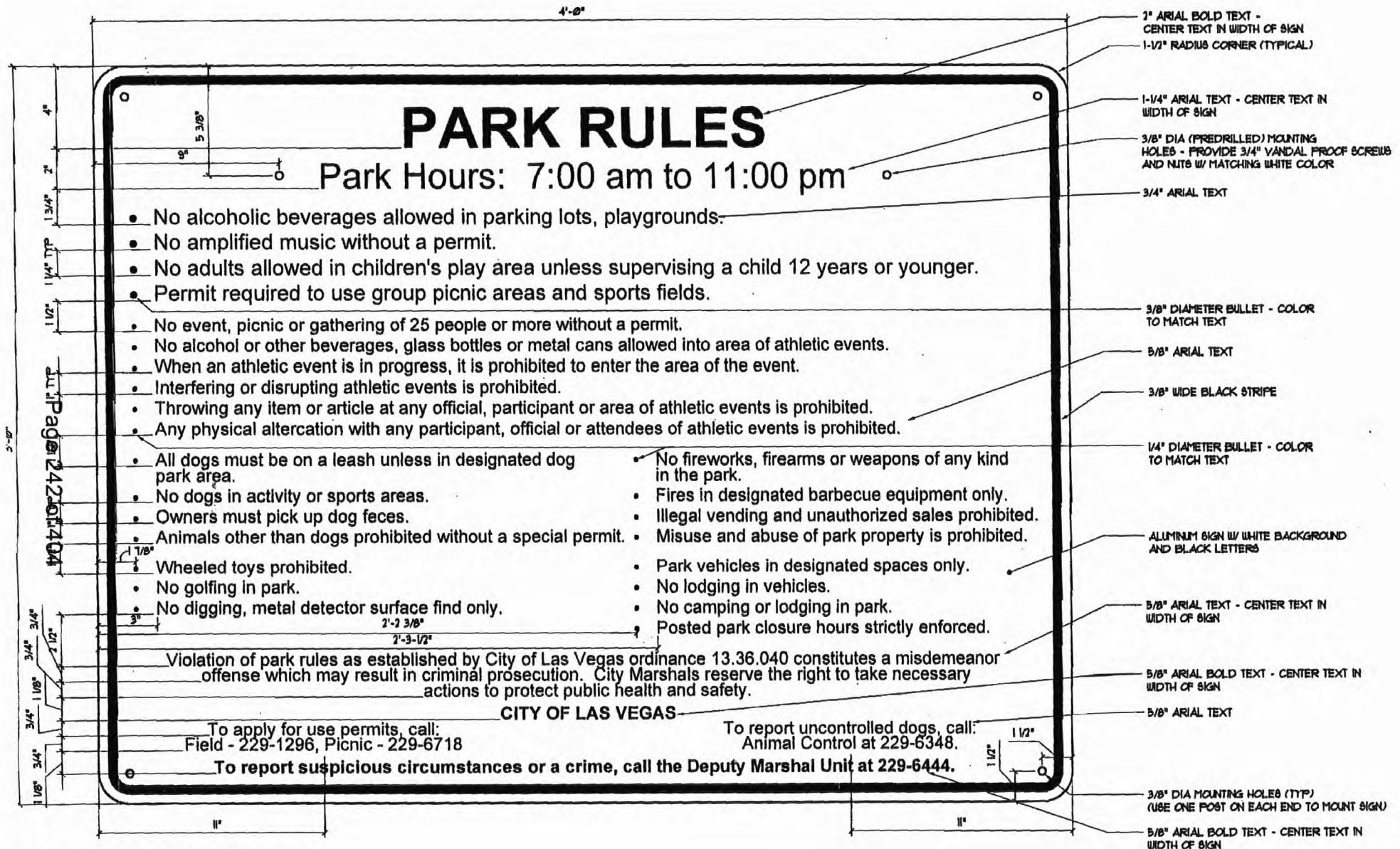
REVISED 8/27/03 ST01050-UG4



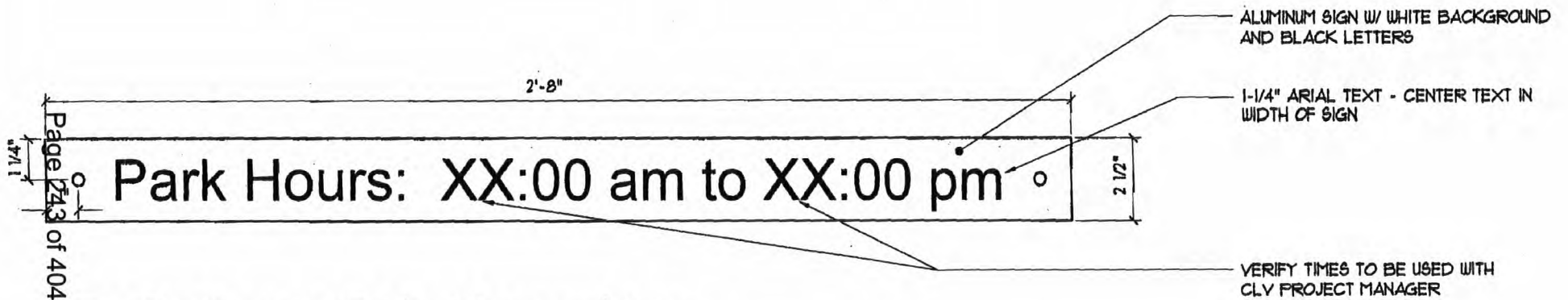
 **Track/Court Sign**
Scale: 3" = 1'-0"

REVISED 8/21/03

STO2882-17



Park Rules Sign
Scale: 3" = 1'-0"

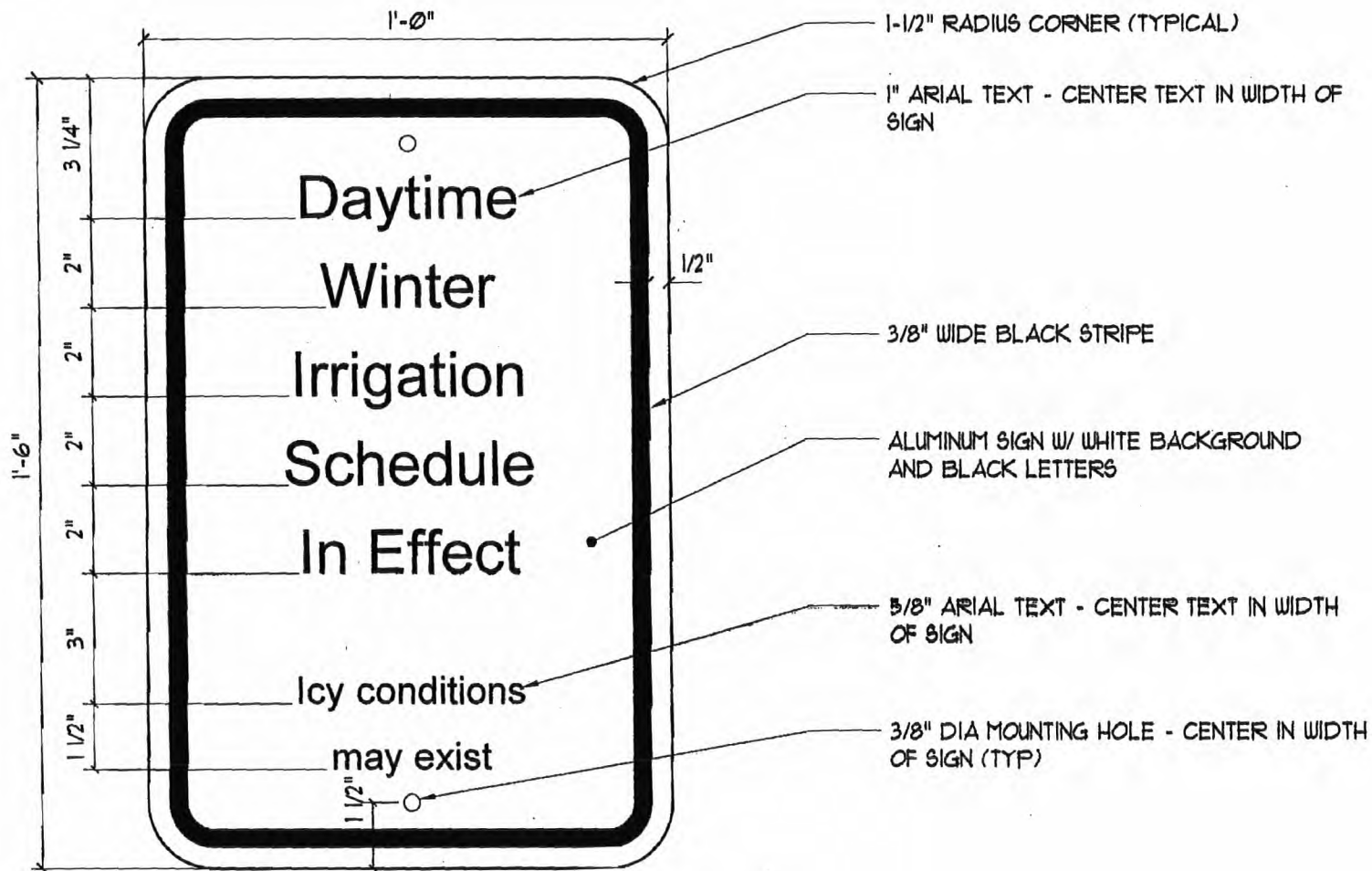


 Optional Park Hours Sign

Scale: 3" = 1'-0"

REVISED 4/12/04

STO2882-20a



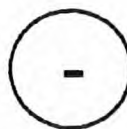
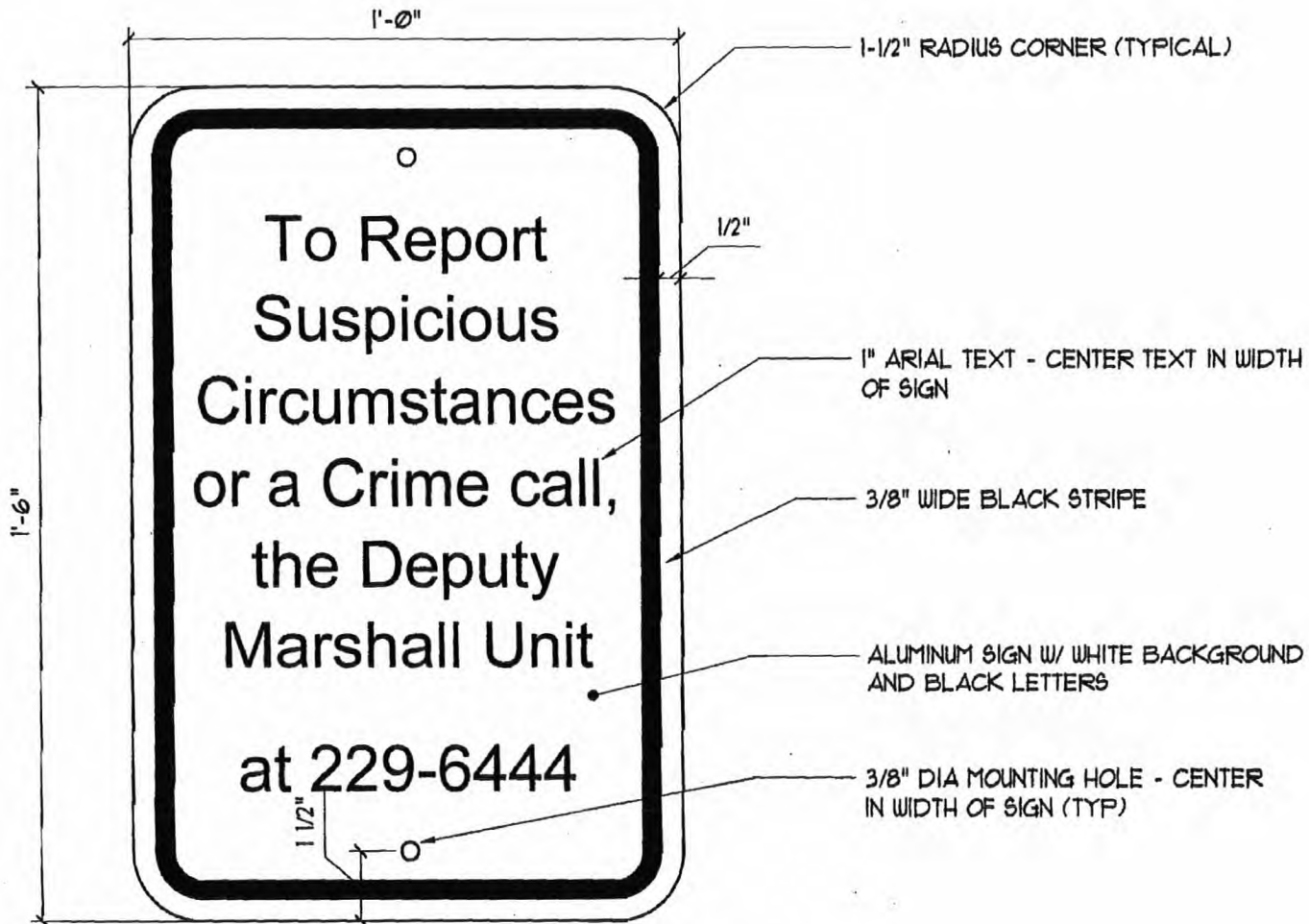
 Winter Irrigation Sign

Scale: 3" = 1'-0"

REVISED 1/9/04

STO2882-24



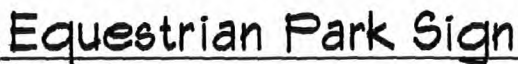


Report Vandalism Sign

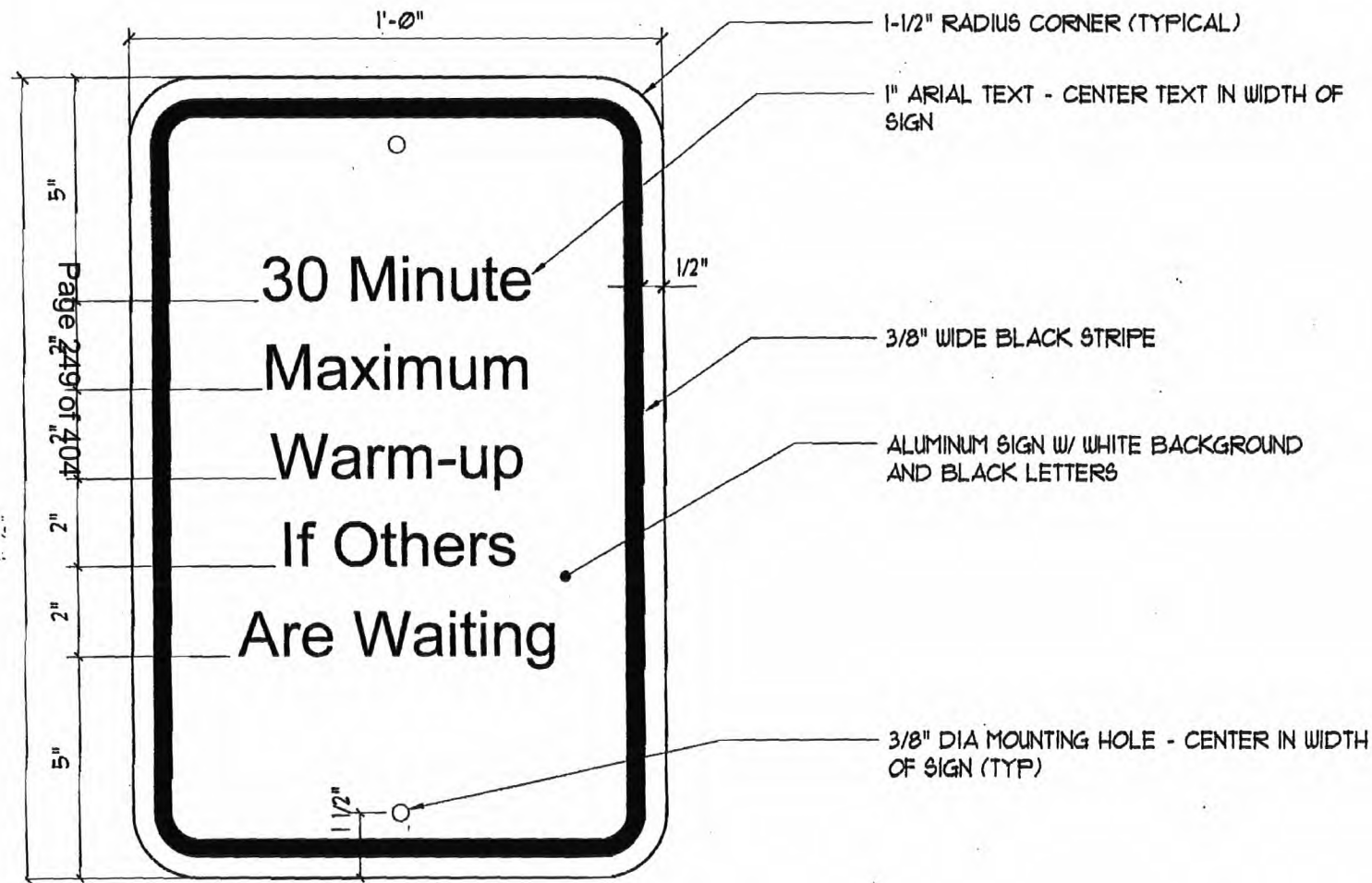
Scale: 3" = 1'-0"

REVISED 4/14/04

STO2882-52



REVISED 6/28/05 ST01052-01

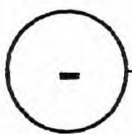
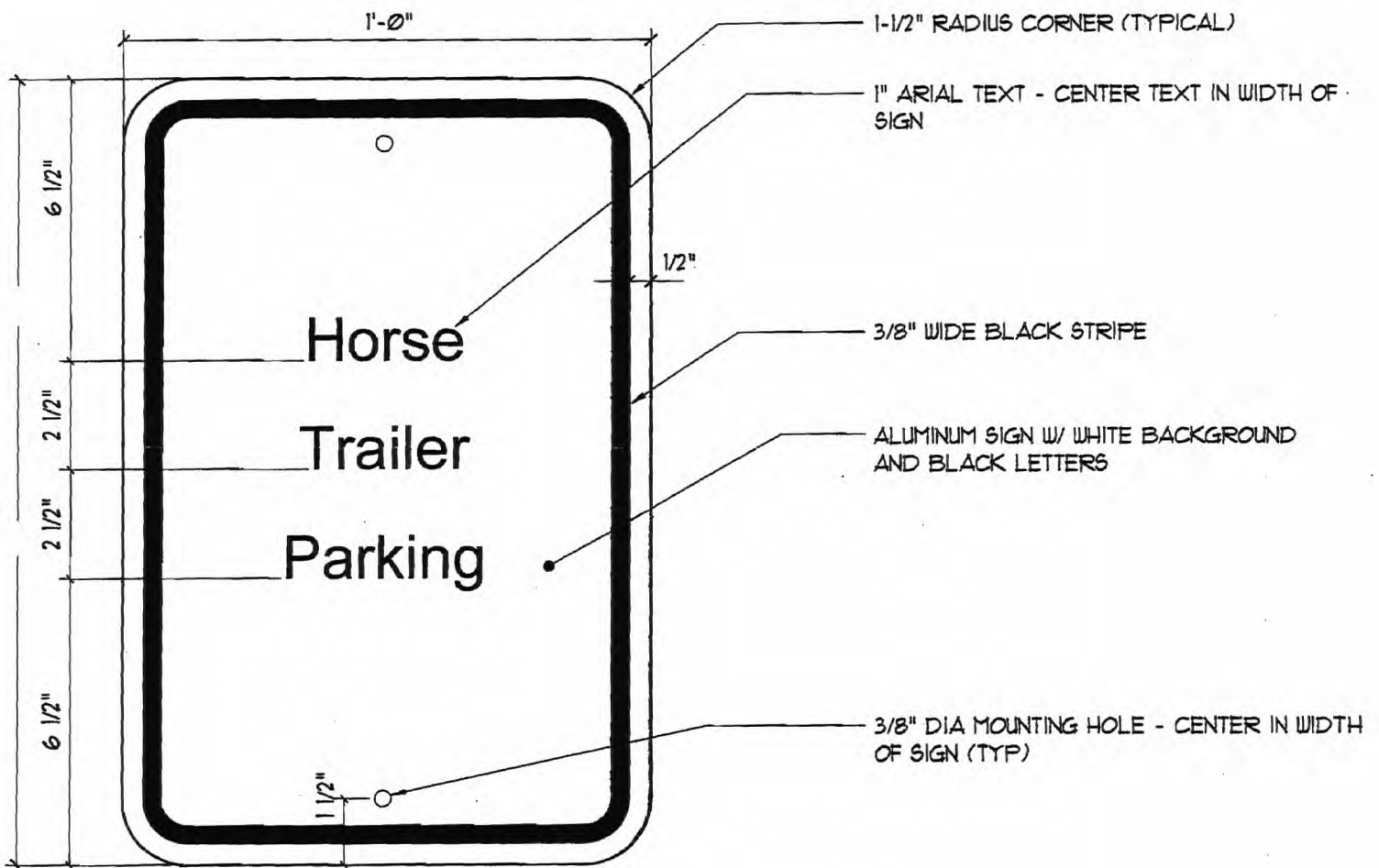


Equestrian Warm-up Sign

Scale: 3" = 1'-0"

REVISED 7/9/04

ST01052-02



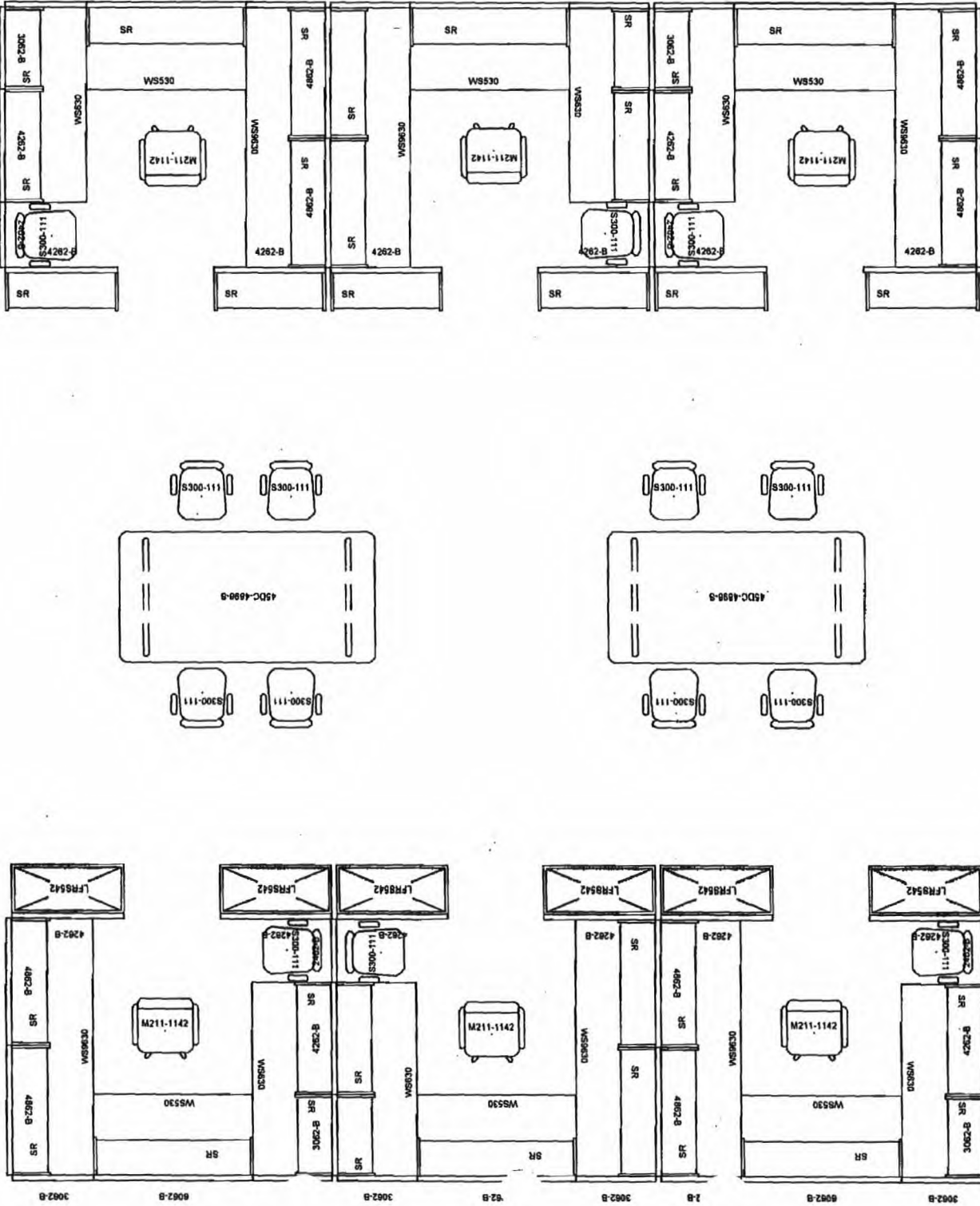
Equestrian Parking Sign

Scale: 3" = 1'-0"

REVISED 6/28/05

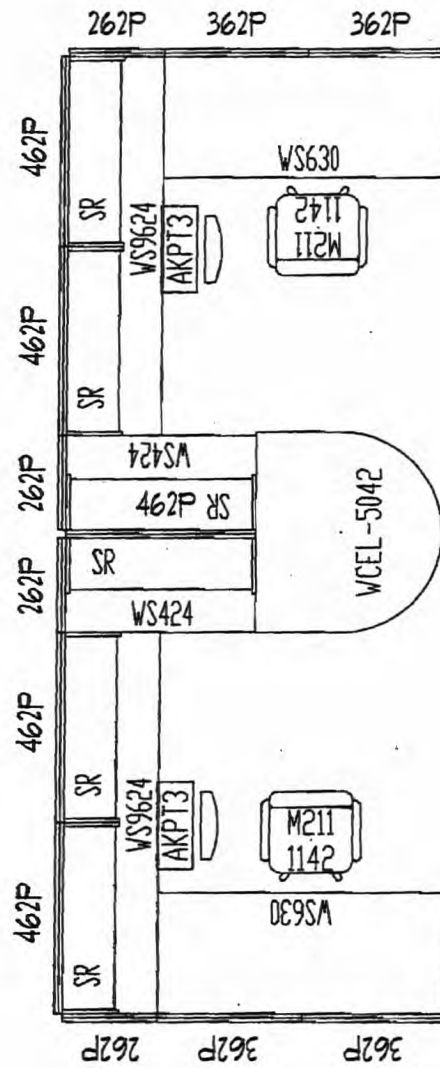
ST01052-03

8' x 10' CLUSTER & WORK AREA

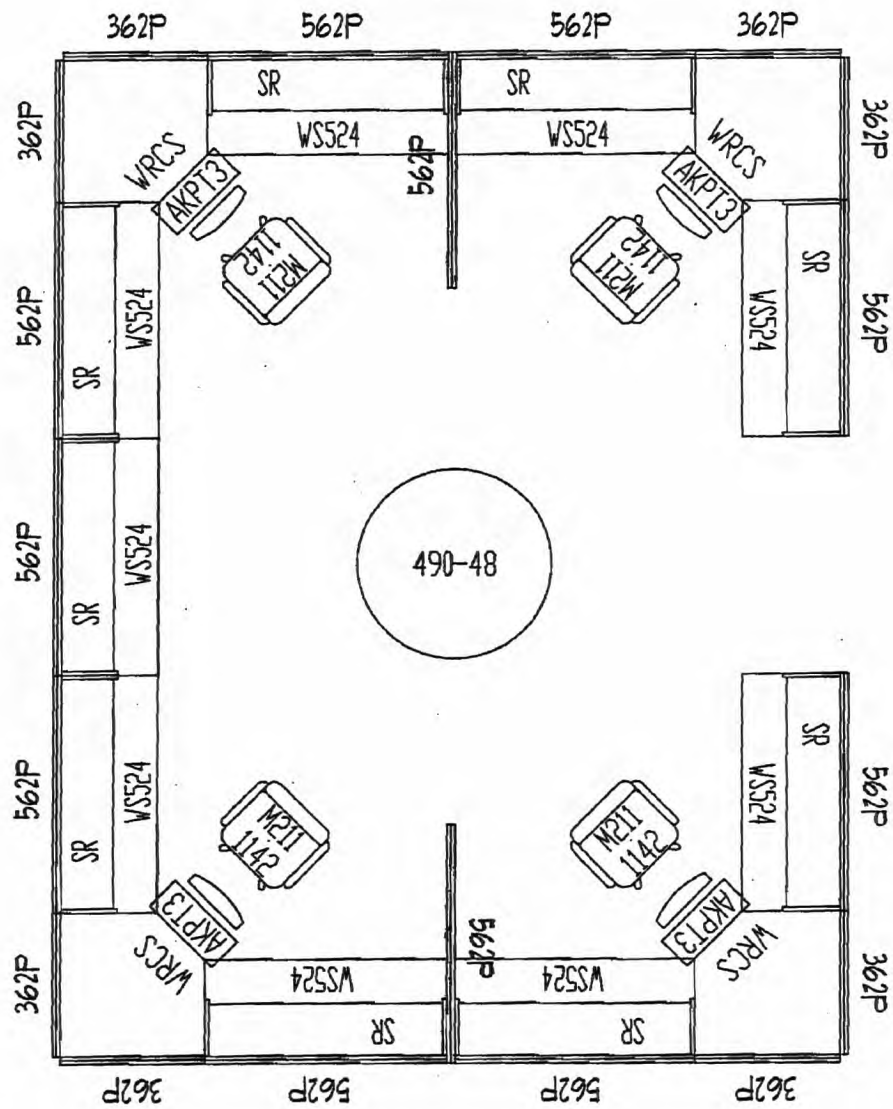


8' x 10' CLUSTER & WORK AREA

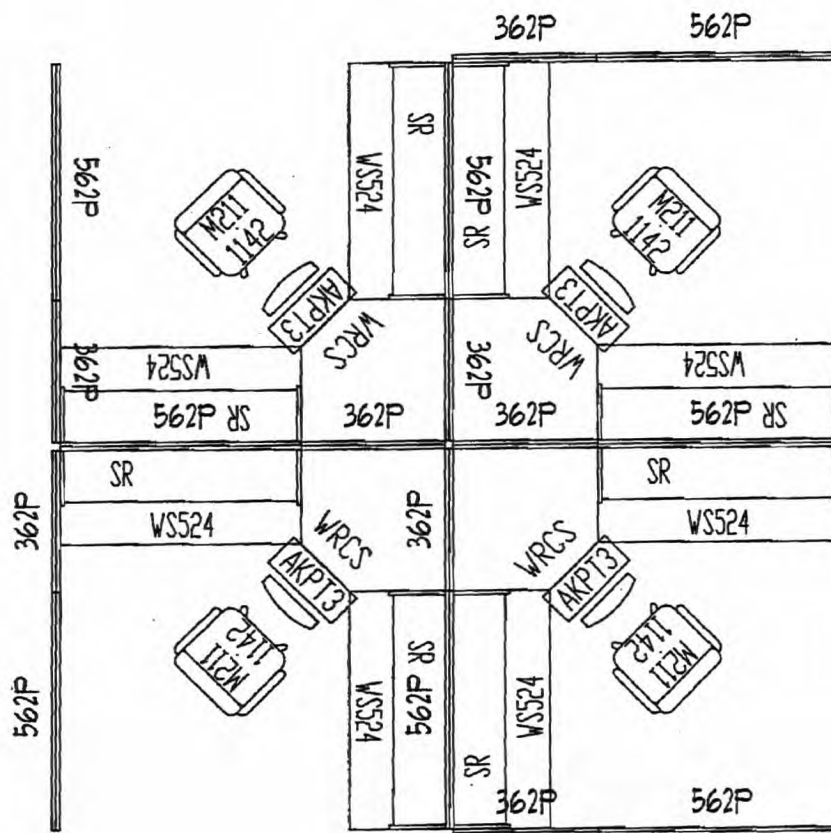
8' x 10' CLUSTER



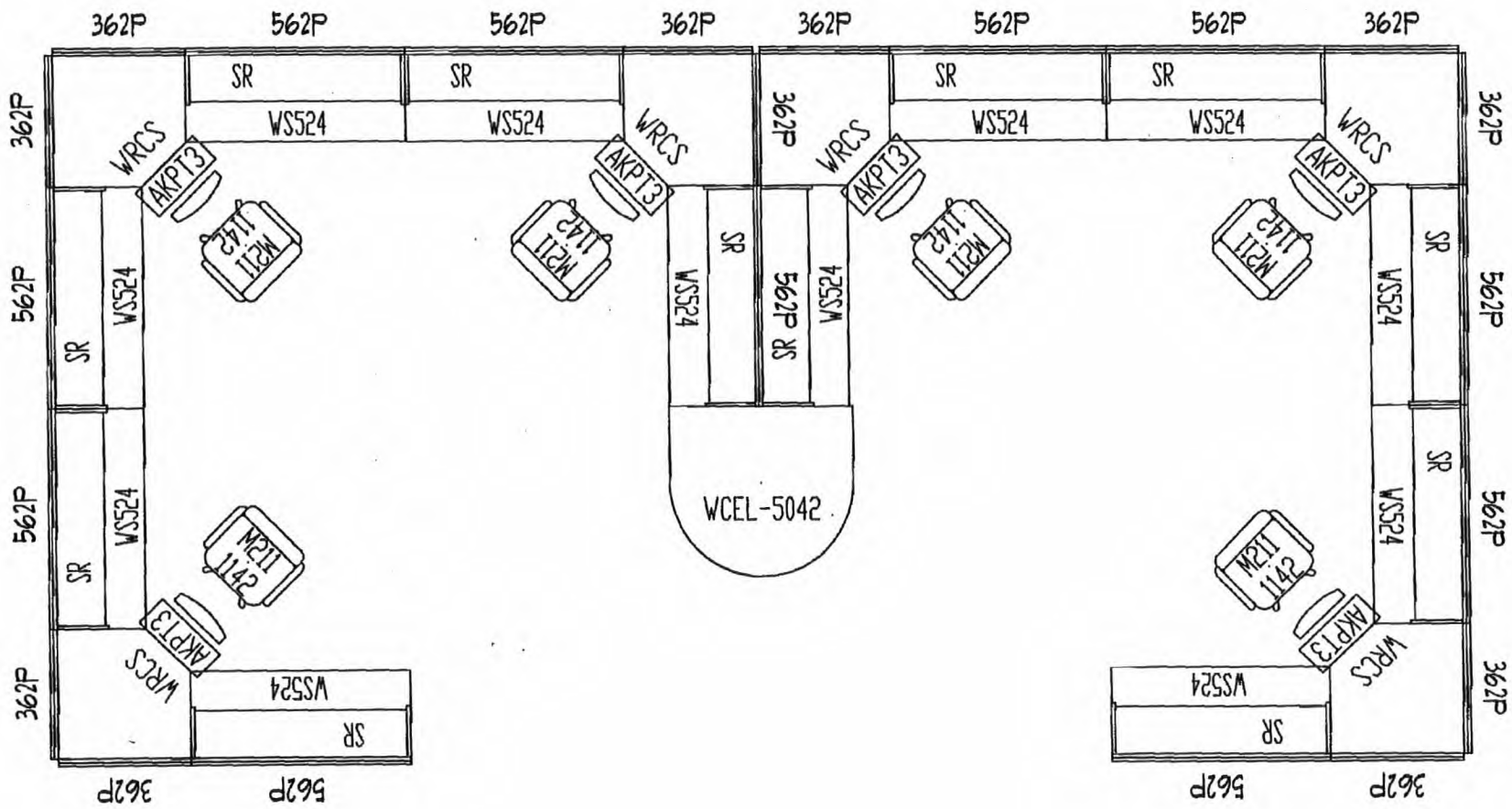
8' x 8' CLUSTER #2



8' x 8' CLUSTER #2



8' x 8' CLUSTER WITH FILE BANK



CHANGES IN BILLING

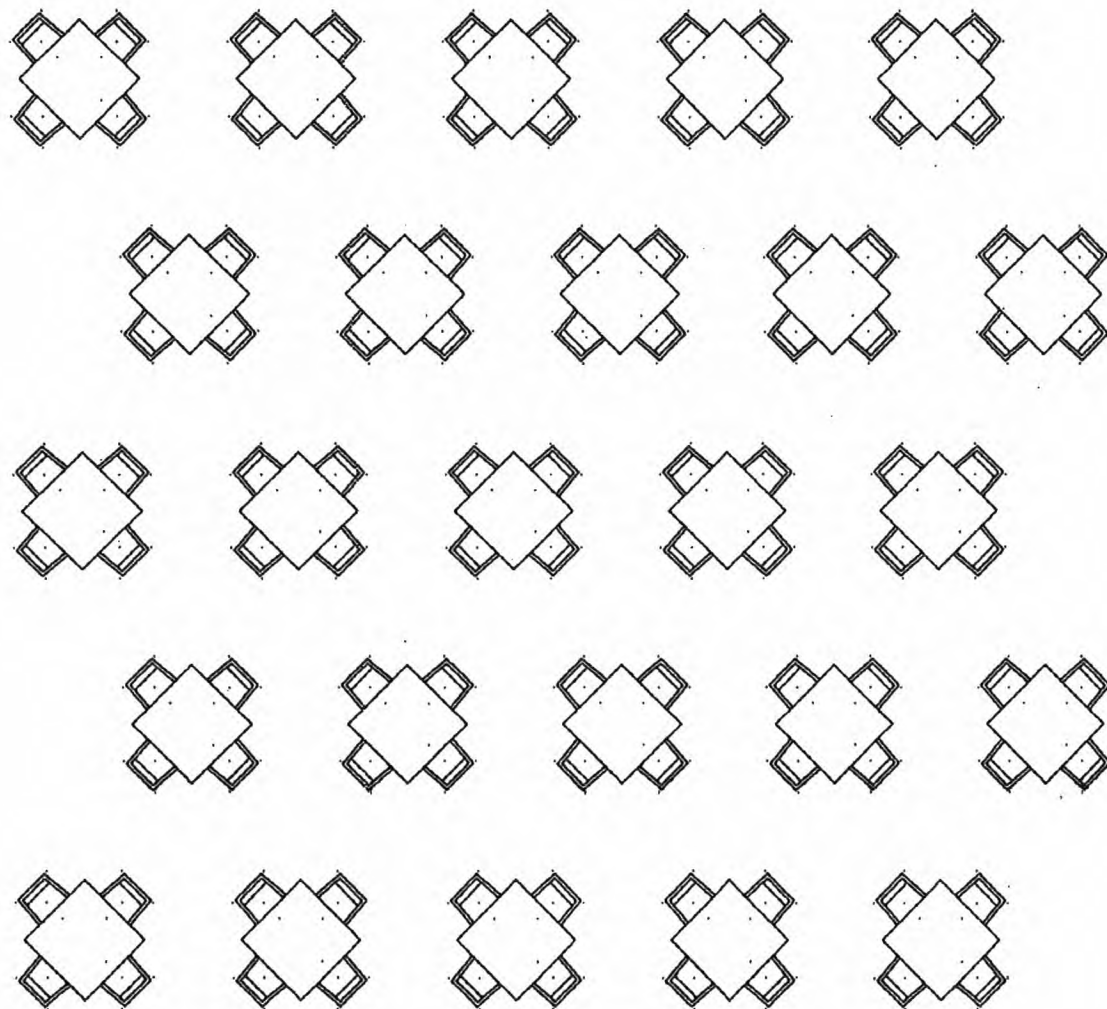
As of February 28, 2007, the following changes have been made in the monthly billing process:

1. Time will be now be invoiced through the last day of each month, or February 28, 2007 instead of the last Friday of the month which would have been February 23rd.
2. The CCIL2 reports will be "live" - the labor incurred, consultant, expenses, billed and received will be current, reflecting all activity current to the day on which the report is run.
3. All write-offs \$2,500 or greater (over contract by phase) must be approved and signed by the PM's organizational Principal.
4. PM's will need to mark the total percent to invoice on the draft. A statement of bill what is incurred will result in no increase in the % and all time will remain on hold.
5. PM's must acknowledge and write the dollar amount you want to be written off.
Example:

- a notation to bill to 100% and to write-off the remainder is no longer acceptable
- a notation to bill to 100% and to write-off \$562.00 - is acceptable. This documents that the amount of the write-off is recognized and authorized. However, you do not have to mark each line item "W".

As always, your billing coordinator is available to answer questions and to assist you with these changes.

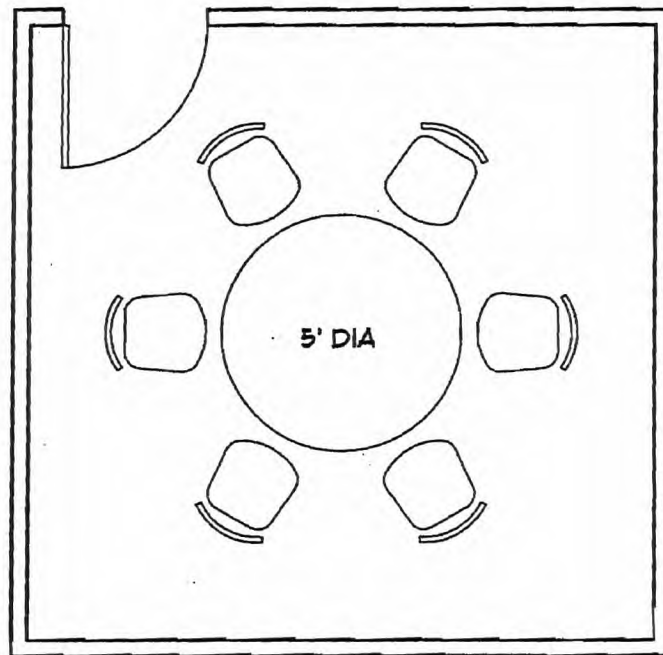
[illegible]



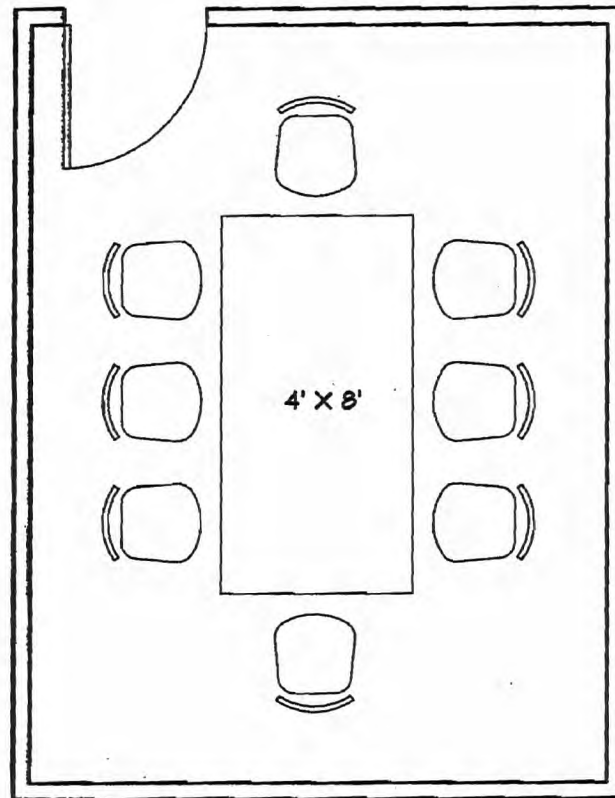
Cafeteria (53' x 63') w/ Vending Room (16' x 32')

Scale: 1/4" = 1'-0"

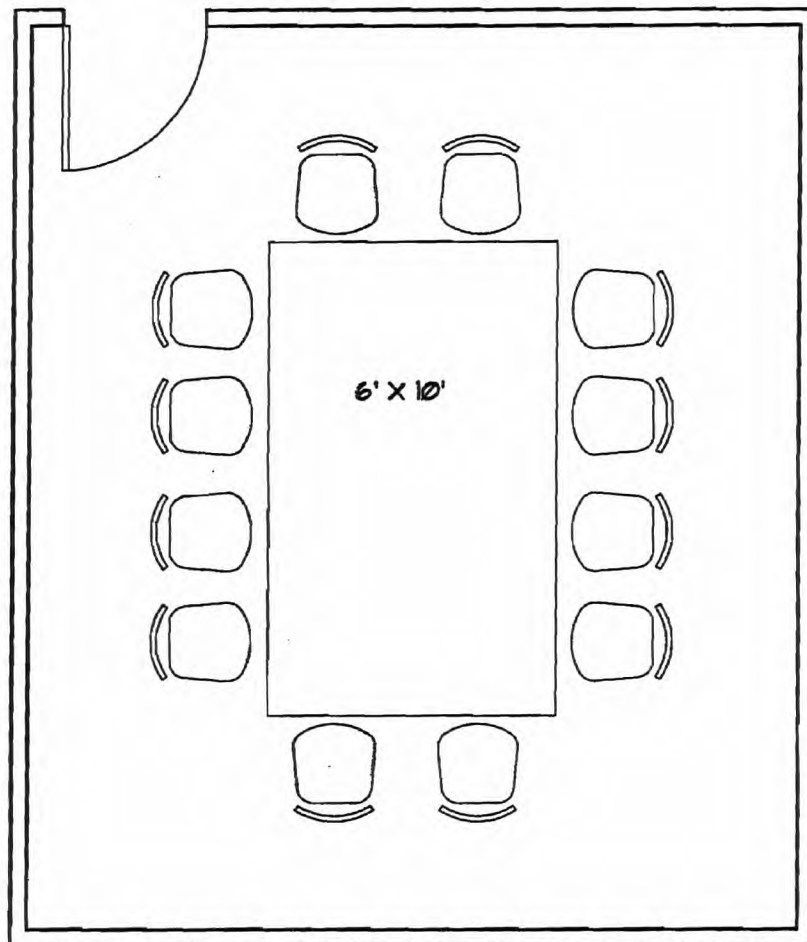
CONFERENCE ROOM #1 (13' X 13')



CONFERENCE ROOM #2 (12' X 16')

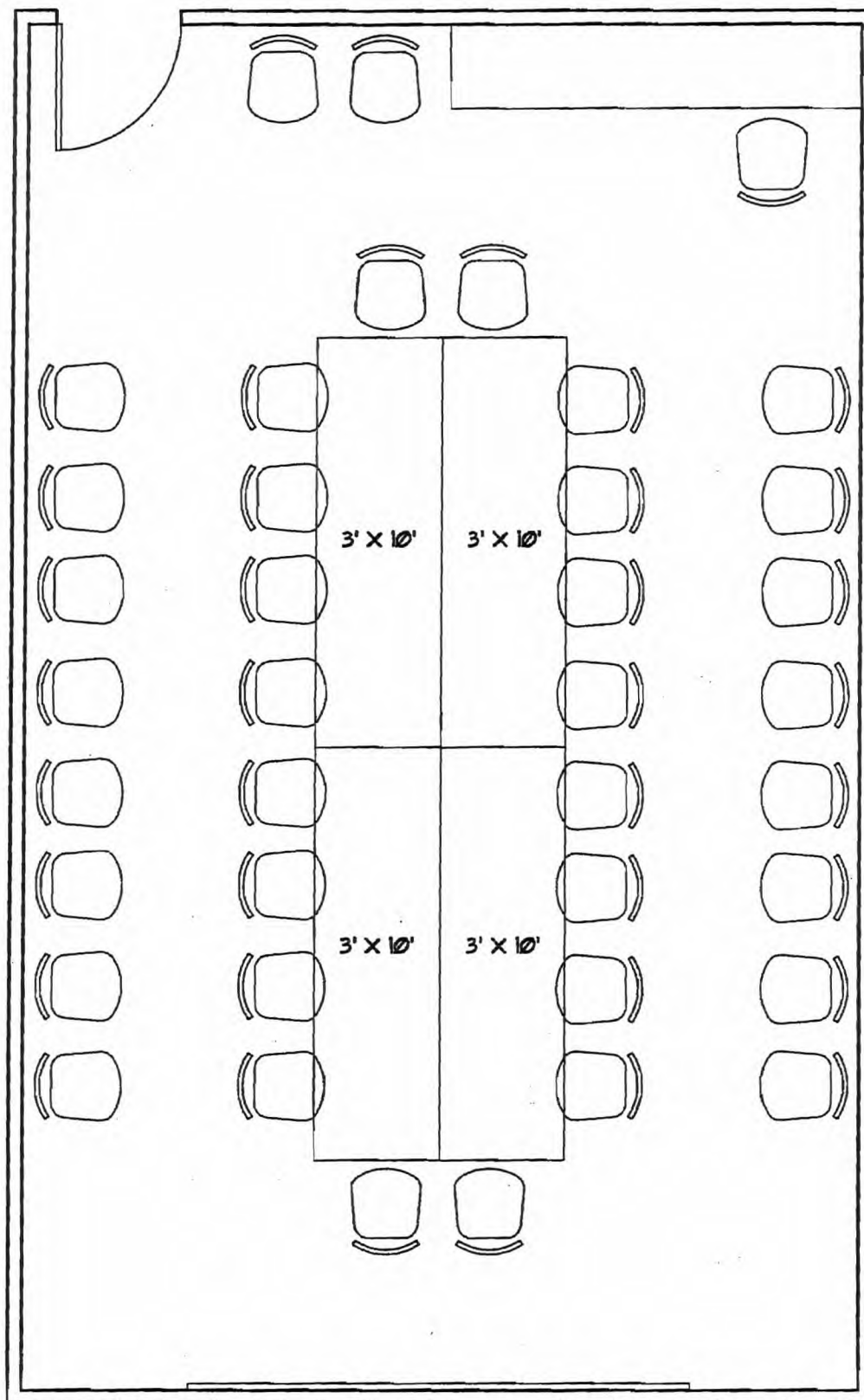


CONFERENCE ROOM #3 (16' X 19')



CONFERENCE ROOM #3

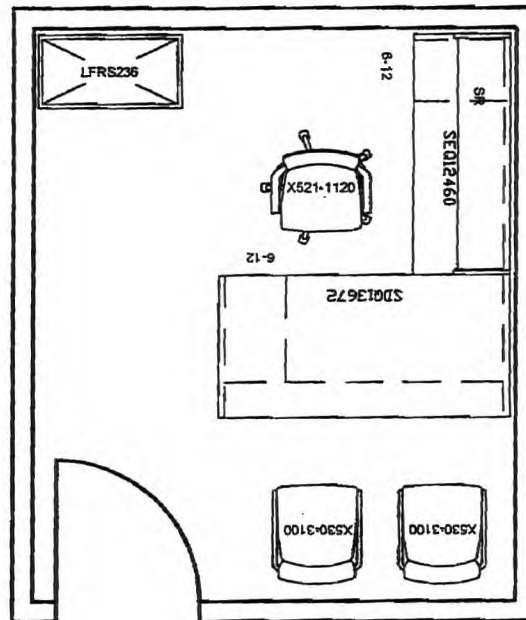
CONFERENCE ROOM #4 (20' X 33')



CONFERENCE ROOM #4

Page 262 of 404

OFFICE #1 (10' X 12')

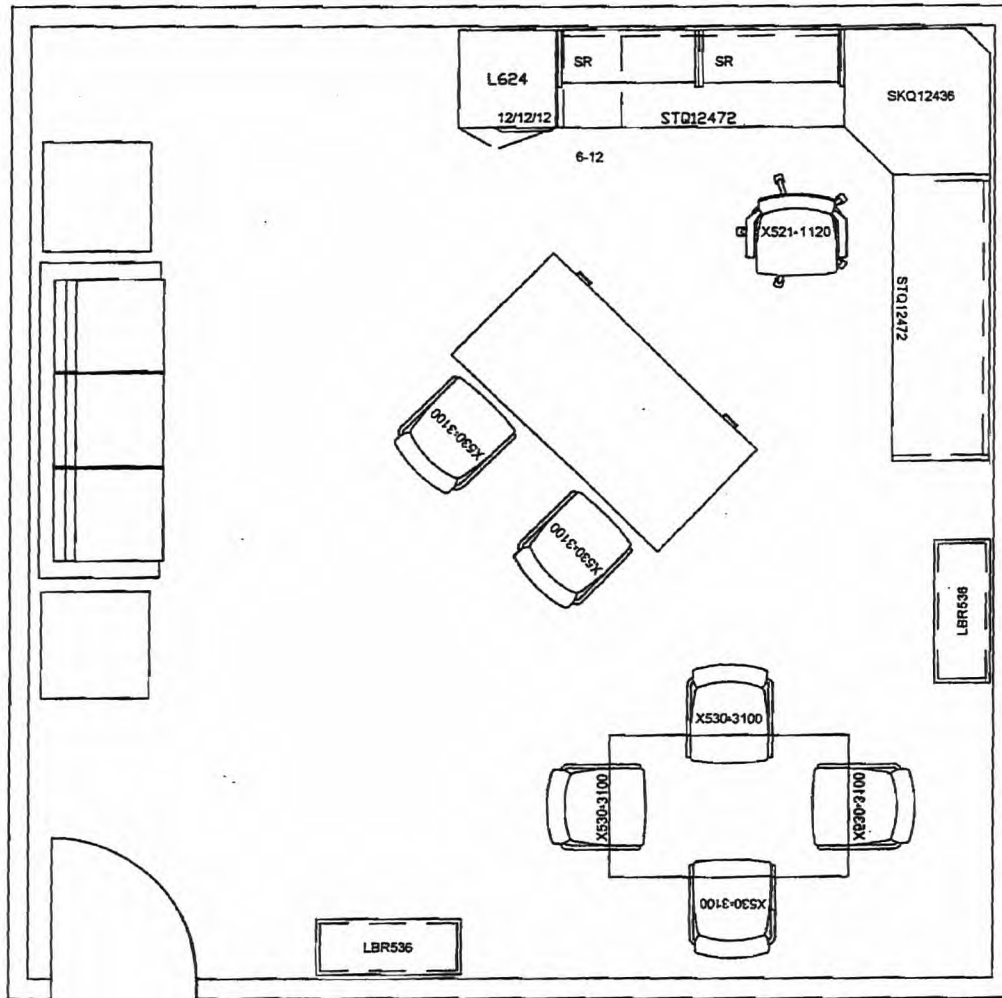


JOB CLASSIFICATIONS

Administrative Secretary
Administrative Project Specialist
Assistant Deputy City Clerk
Classification/Compensation Assistant
Council Liaison I
Council Liaison II
Crisis Intervention Administrator
Deputy City Marshal Sergeant
Development Project Analyst
Employee Benefits Specialist
Enterprise Project Manager
Field Supervisor
Financial Analyst I
Financial Analyst II
Internal Auditor I
Internal Auditor II
Legal Assistant
Management Analyst I
Management Analyst II
Nurse Case Manager

Personnel Analyst I/II
Personnel Services Administrator
Producer/Writer
Public Information Officer
Records Administrator
Safety Liability Specialist
Safety Officer
Senior Financial Analyst
Senior Housing Rehab Specialist
Senior Internal Auditor
Senior Management Analyst
Senior Personnel Analyst
Senior Production Specialist
Senior Public Information Officer
Video Production Engineer
Video Production Specialist
Workers Comp Assistant
Workers Comp Specialist

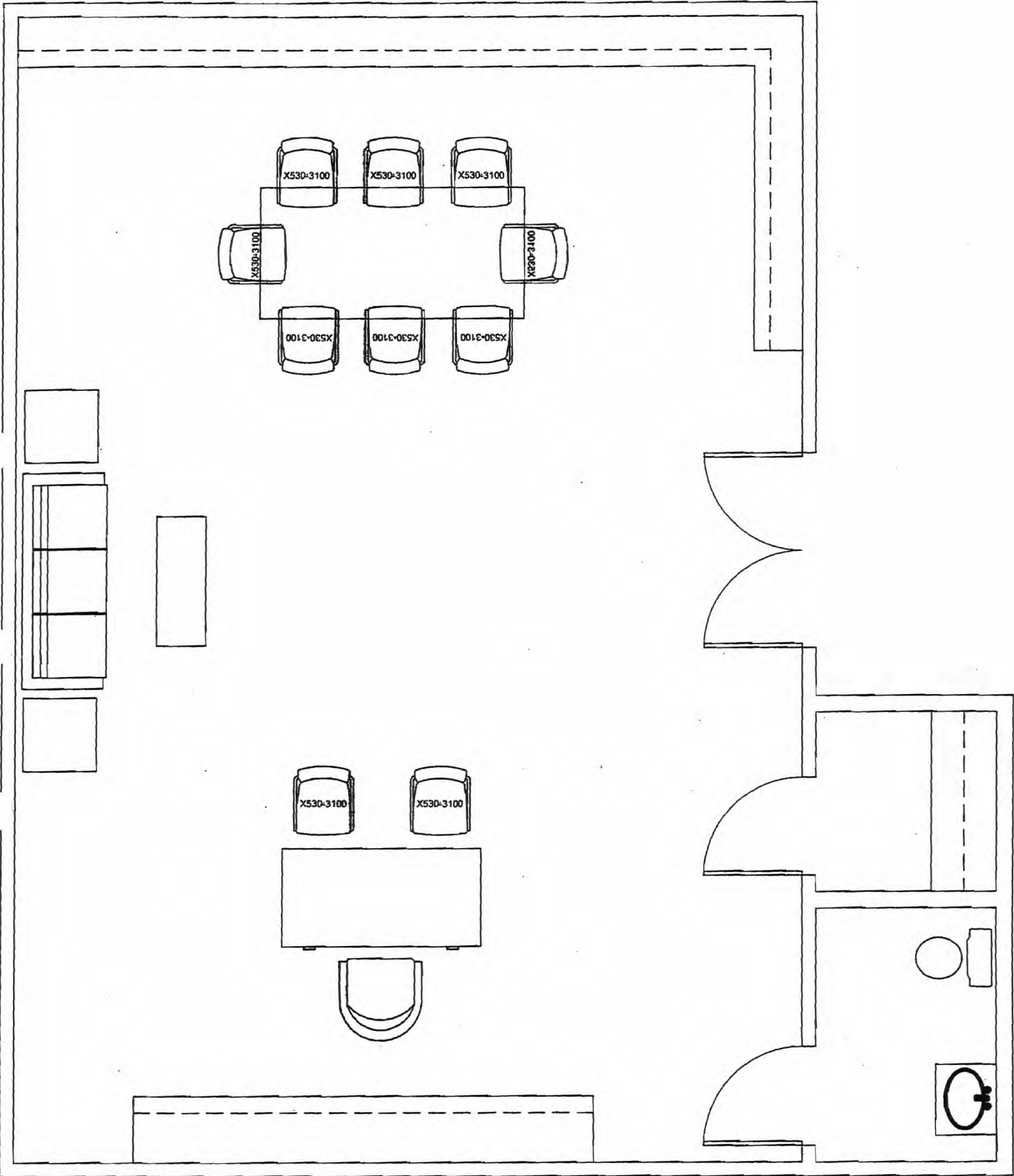
OFFICE #10 (20' X 20')



JOB CLASSIFICATIONS

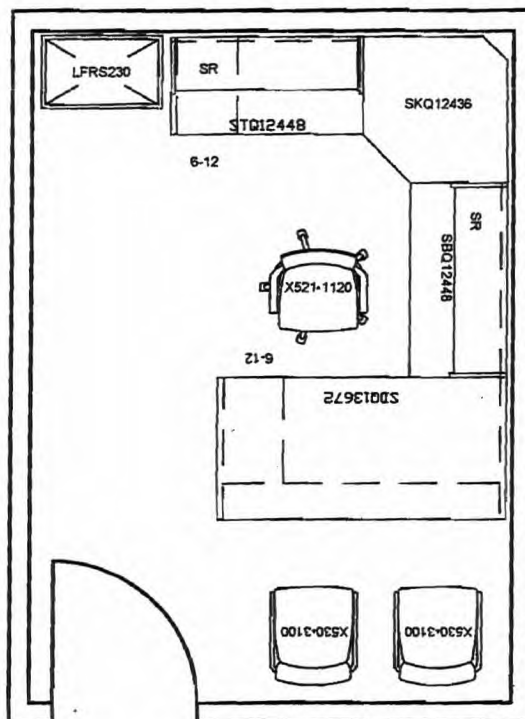
City Councilman

OFFICE #11 (900 Sq. Ft.)



JOB CLASSIFICATIONS

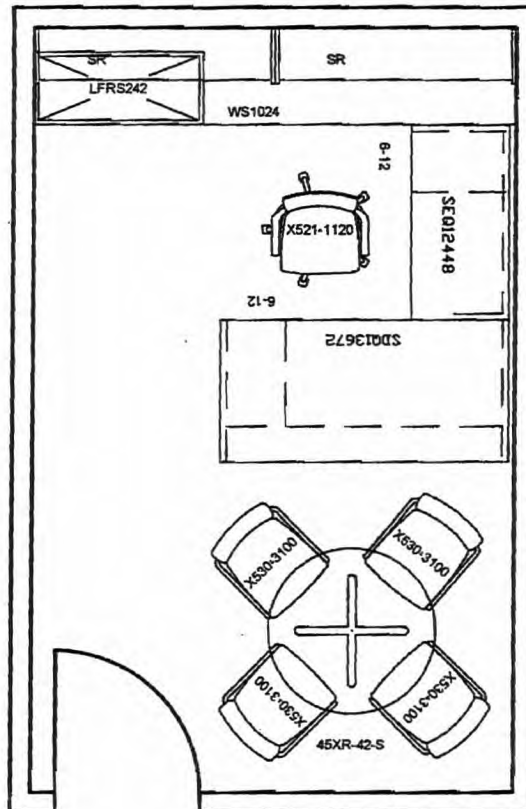
OFFICE #2 (10' X 14')



JOB CLASSIFICATIONS

Administrative Officer	Land Development Coordinator
Architectural Project Manager	Landscape Architect
Battalion Chief	Leisure Activities Supervisor
Budget Analyst	Microcomputer Support Supervisor
Business Services Supervisor	Minority Business Officer
Cable Station Administrator	Neighborhood Development Supervisor
Central Stores Supervisor	Neighborhood Planning Supervisor
Chief Deputy City Clerk	Permits Supervisor
Classification & Compensation Administrator	Planning Supervisor
Code Enforcement Supervisor	Plans Examination Supervisor
Computer Systems Supervisor	Principal Designer
Database Administrator	Principal Engineer
Database Architect	Public Fire Education Officer
Deputy Fire Marshal	Public Information Officer - Fire
Detention Lieutenant	Publicity Supervisor
Emergency Management Officer	Purchasing Initiatives Officer
Employee Benefits Administrator	Quality Assurance Administrator
EMS Coordinator	R/W & Real Property Supervisor
Engineering Project Manager	Redevelopment Officer
Executive Assistant	Safety/Loss Control Officer
Fire Inspections Supervisor	Senior Information Technology Auditor
Franchise Officer	Sewer Services Supervisor
Grants Specialist	SID Supervisor
Graphic Operations Supervisor	Software Architect
I.T. Development Supervisor	Supervisor
Information Security & Contingency Administrator	Workers Comp Administrator

OFFICE #3 (10' X 16')

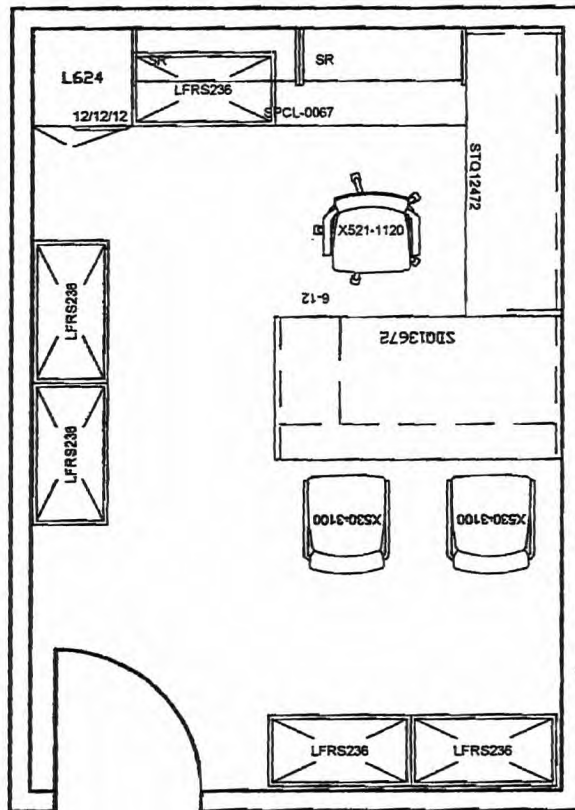


JOB CLASSIFICATIONS

Accounting Manager
Adaptive Manager
Administrative Manager
Architectural Superintendent
Assistant City Traffic Engineer
Assistant Fire Chief
Budget & Finance Manager
Business Services Manager
City Treasurer
Cultural Manager
Deputy City Attorney
Economic Development Manager
Employee Relations Manager
Engineering Program Manager
Fire Protection Engineer
Human Resources Manager

I.T. Manager
Insurance Services Manager
Land Development Superintendent
Neighborhood Development Manager
Neighborhood Initiaves Manager
Neighborhood Response Manager
Organizational Development & Training Manage
Personnel Services Manager
Planning Manager
Purchasing & Contracts Manager
Real Estate Superintendent
Recreation Manager
Redevelopment Manager
Senior Citizens Manager

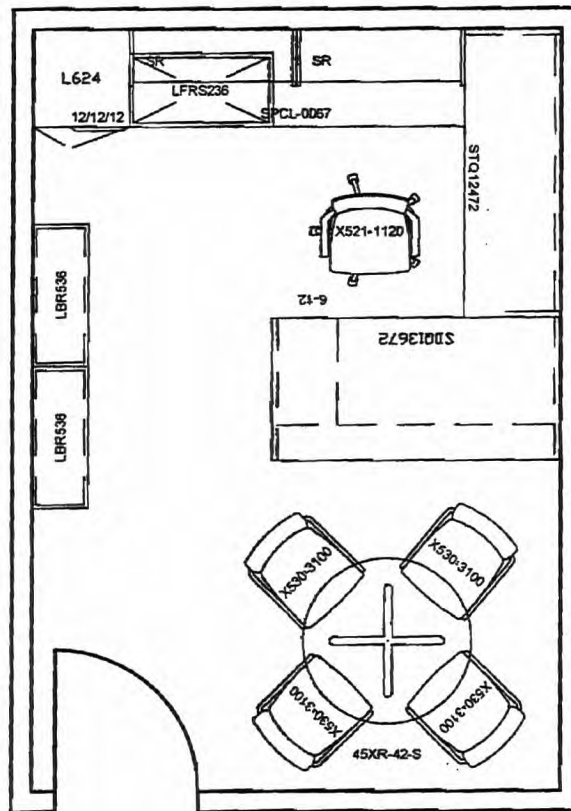
OFFICE #4 (11' X 16')



JOB CLASSIFICATIONS

Senior Executive Assistant

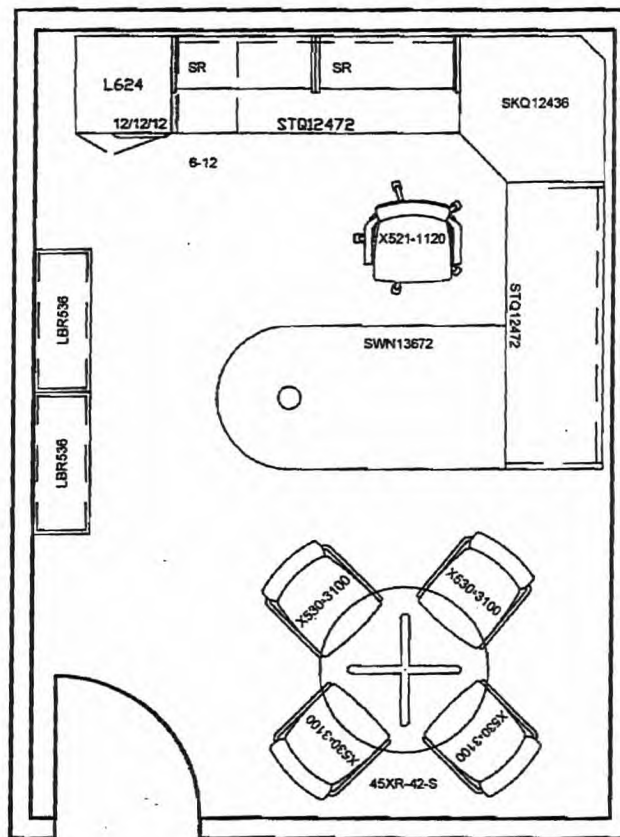
OFFICE #5 (11' X 16')



JOB CLASSIFICATIONS

Assistant City Engineer
City Traffic Engineer

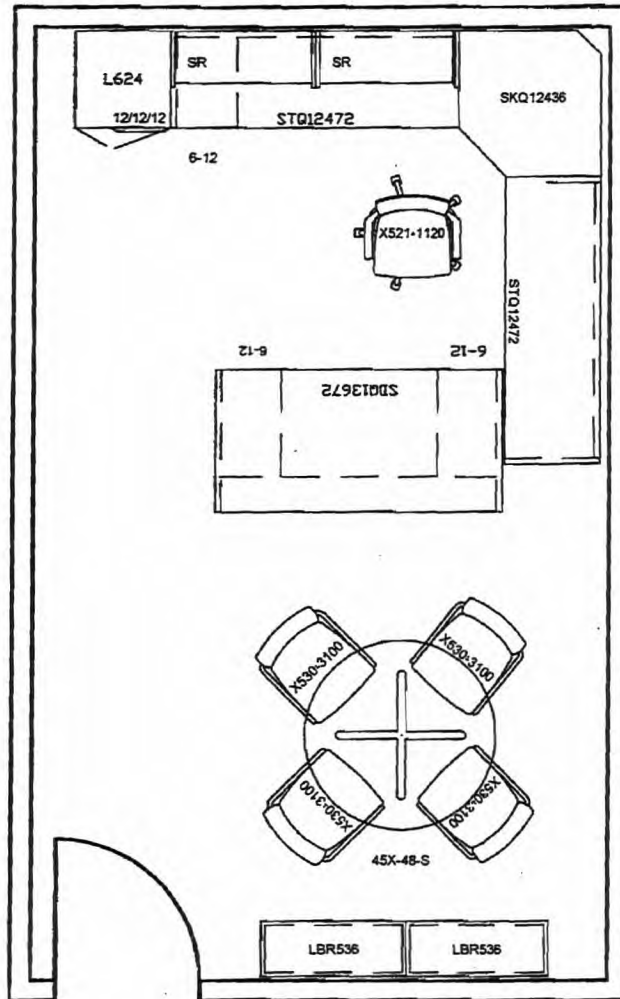
OFFICE #6 (12' X 16'-6")



JOB CLASSIFICATIONS

Assistant City Attorney
Deputy Director
Deputy Fire Chief

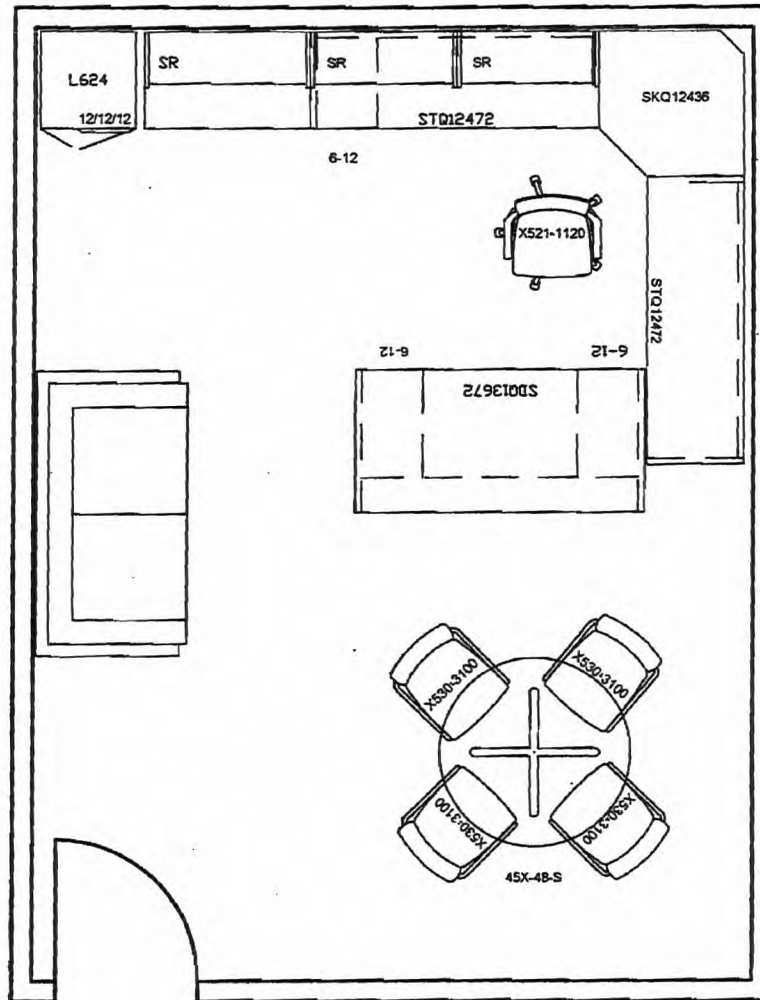
OFFICE #7 (12' X 20')



JOB CLASSIFICATIONS

City Auditor
City Clerk
Director
Fire Chief

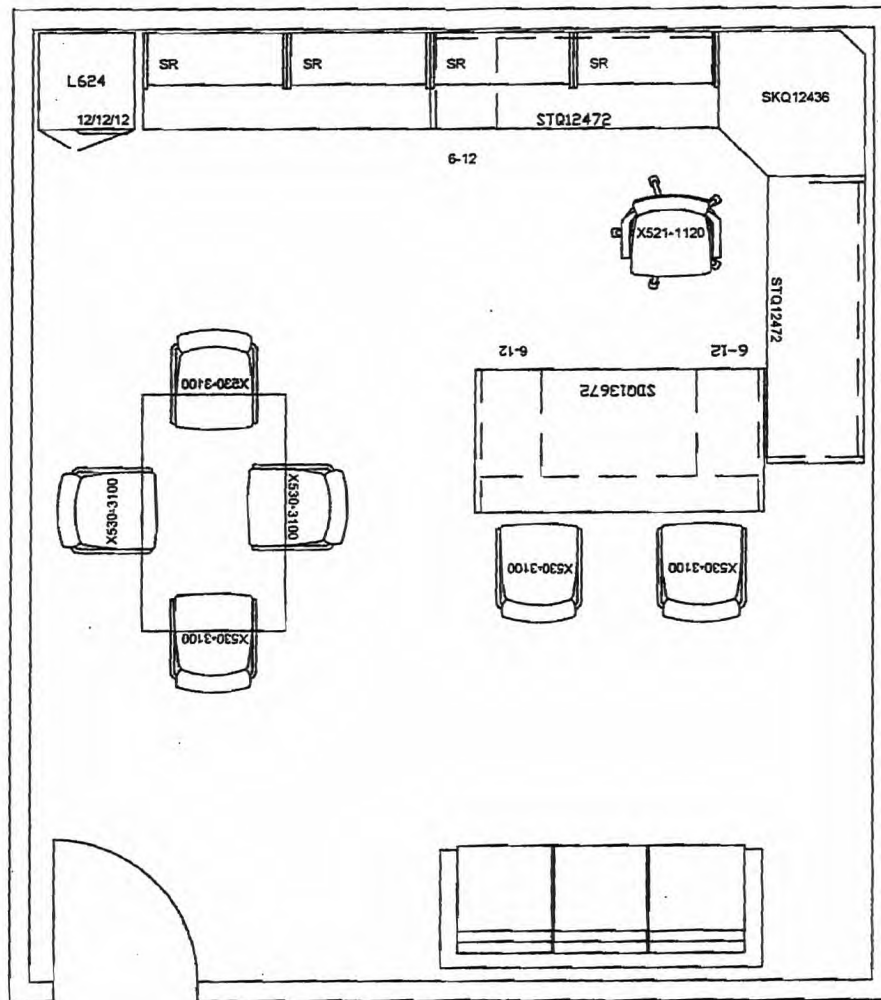
OFFICE #8 (15' X 20')



JOB CLASSIFICATIONS

Deputy City Manager

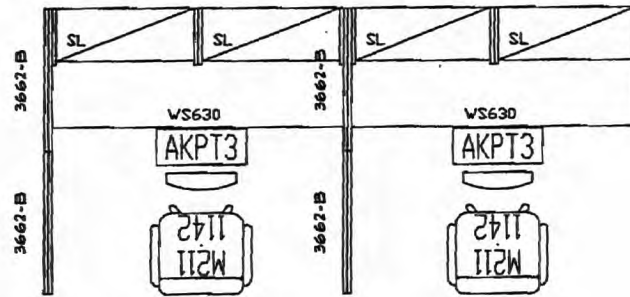
OFFICE #9 (17'-6" X 20')



JOB CLASSIFICATIONS

City Manager
City Attorney

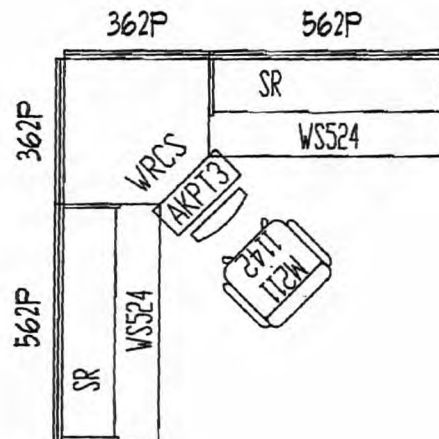
WORK STATION #1 (6' X 6')



JOB CLASSIFICATIONS

Audio Visual Production Specialist
Video Programming Technician
Videographer

WORK STATION #2 (8' X 8')

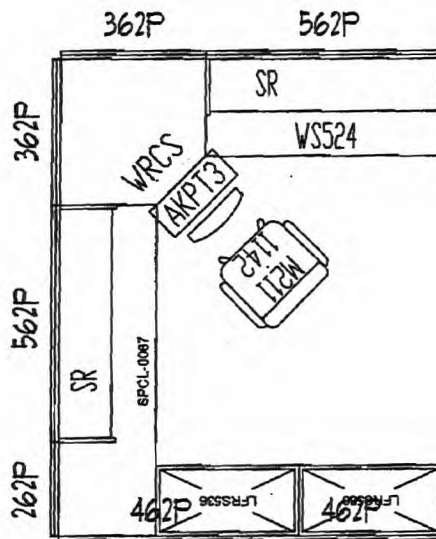


JOB CLASSIFICATIONS

Account Clerk
Code Enforcement Inspector
Code Enforcement Officer I/II
Computer Systems Technician
Customer Services Rep
Graphic Arts Clerk
Graphic Services Technician
Inventory Control Clerk
Mail Courier
Micro Computer Specialist I
Micro Computer Specialist II
Office Specialist I

Office Specialist II
Programmer II
Records Courier
Senior Intern/Intern
Senior Technician
Senior Tradesman
Support Desk Technician
Technical Document Writer
Technician/Specialist
Volunteer Coordinator
Workers' Comp Assistant

WORK STATION #3 (8' X 10')

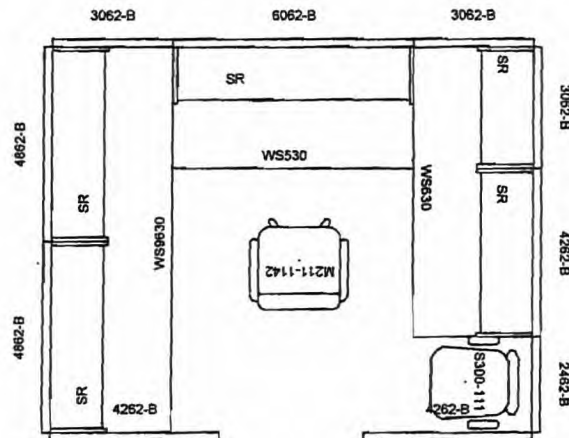


JOB CLASSIFICATIONS

Accounting Technician I
 Accounting Technician II
 Agenda Technician II
 Collection Officer
 Contract Safety Officer
 Cultural Center Coordinator
 Cultural Leader I
 Cultural Leader II
 Electronic Records Specialist
 Graphic Artist I
 Housing Rehab Technician
 Internet Developer/Analyst
 Inventory Control Clerk
 License Technician I
 License Technician II
 Neighborhood Technician
 Payroll Assistant I
 Payroll Assistant II
 Payroll Specialist
 Personnel Technician
 Planning Technician
 Public Information Specialist

Publicity Specialist
 Publicity Specialist II
 Purchasing Technician
 Records Technician
 Recreation Leader II
 Sanitation Billing Inspector
 Sanitation Billing Technician
 Secretary
 Senior Communications Technician
 Senior Microcomputer Specialist
 Sr. Adaptive Recreation Leader
 Sr. Cultural Activities Specialist
 Sr. Office Specialist
 Sr. Personnel Technician
 Sr. Publicity Specialist
 Systems Analyst I
 Systems Analyst II
 Technical Systems Analyst

WORK STATION #4 (8' X 10')

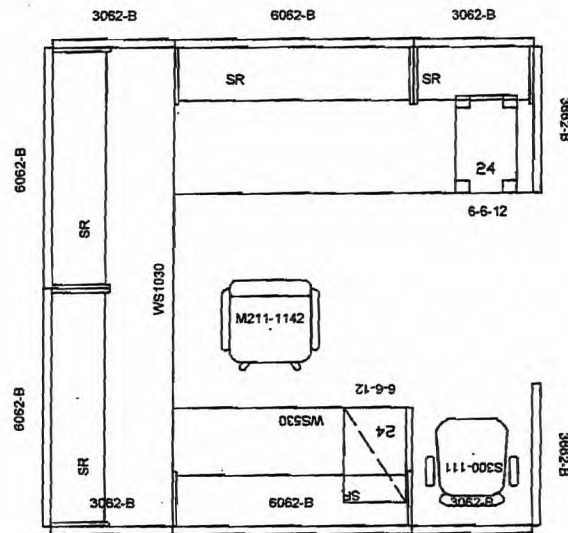


JOB CLASSIFICATIONS

Accreditation Coordinator
Architectural Technician I/II
Auditor
Buyer I
Buyer II
Construction Control Specialist
Construction Project Assistant
Construction Project Representative
Corrections Officer
Deputy City Clerk II
Deputy City Marshal
Designer
Engineering Associate I/II
Engineering Technician II
Fire Inspector
GIS Analyst I/II
GIS Programmer/Analyst
GIS Technician
Graphic Artist II
Graphic Illustrator
Human Resources Specialist
Legal Secretary

License Officer I
License Officer II
Neighborhood Planner
Neighborhood Programs Officer
Neighborhood Services Specialist
Planner I/II
Real Property Appraiser
Right of Way Agent I/II
Senior Auditor
Senior Buyer
Senior Code Enforcement Officer
Senior Designer
Senior Development Officer
Senior Electrical Construction Inspector
Senior Engineering Associate
Senior Engineering Technician
Senior Graphic Artist
Senior Graphic Illustrator
Senior License Officer
Senior Neighborhood Programs Officer
Statistical Analyst I
Traffic Barricade Inspector/II/I

WORK STATION #5 (10' X 10')



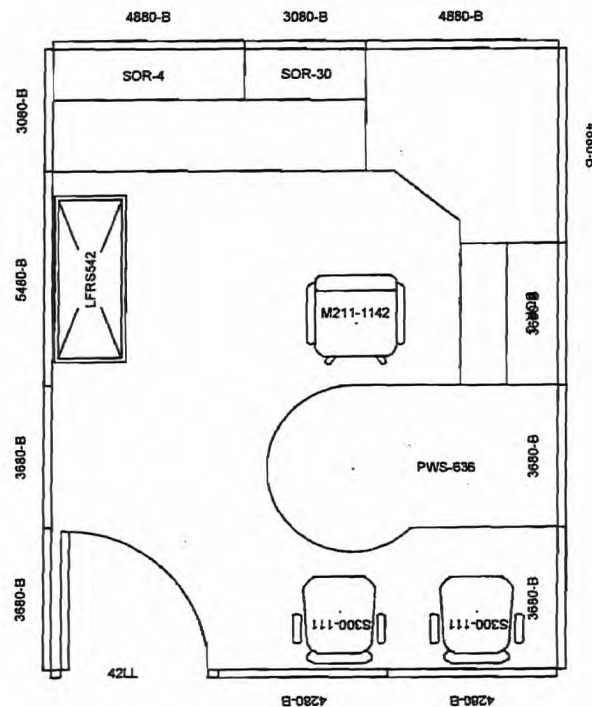
JOB CLASSIFICATIONS

Assistant Fire Protection Engineer
Civil Engineer
Construction Management Coordinator
Environmental Officer
Grant Research Coordinator
Information Systems Coordinator
Information Technologies Project Coordinator
Plans Examiner
Senior GIS Analyst
Senior Planner
Senior Systems Analyst
Structural Plans Examiner
Systems Administration Specialist

The floor plan shows the second floor of the FBI Laboratory building. The layout includes several rooms and corridors, with various pieces of equipment and furniture labeled. The rooms are identified by their numbers: 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. The rooms are arranged in a grid-like fashion, with corridors connecting them. The plan also shows the location of various pieces of equipment, including desks, chairs, and storage units. The overall layout is designed to facilitate the efficient use of space and resources.

Administrative Assistant
Business Specialist I
Business Specialist II
Collection Supervisor
Office Supervisor

WORK STATION #7 (10'-6" X 13')

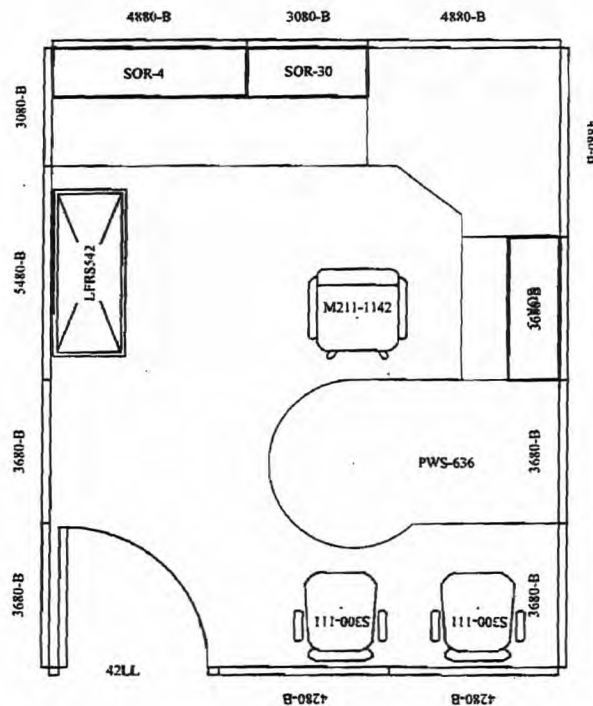


JOB CLASSIFICATIONS

Construction Project Administrator
Contract Specialist
Project Engineer
Senior Neighborhood Services Specialist
Senior Statistical Analyst
Urban Design Coordinator

JOB CLASSIFICATIONS:

Urban Design Coordinator
Project Engineer
Senior Statistical Analyst



10'-6" x 13' WORK STATION

JOB CLASSIFICATIONS:

Structural Plans Examiner

Plans Examiner

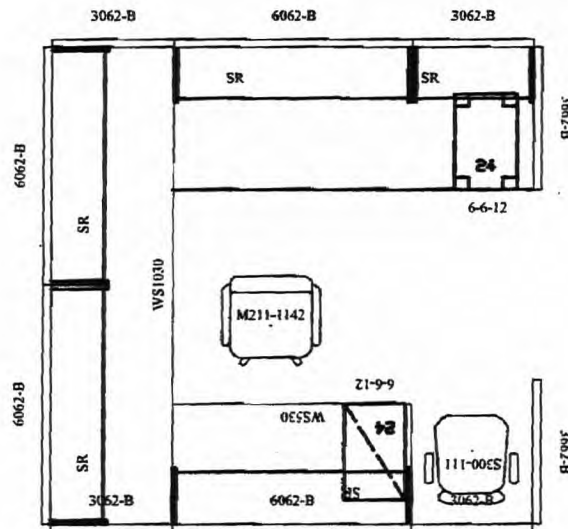
Civil Engineer

Construction Management Coordinator

Environmental Officer

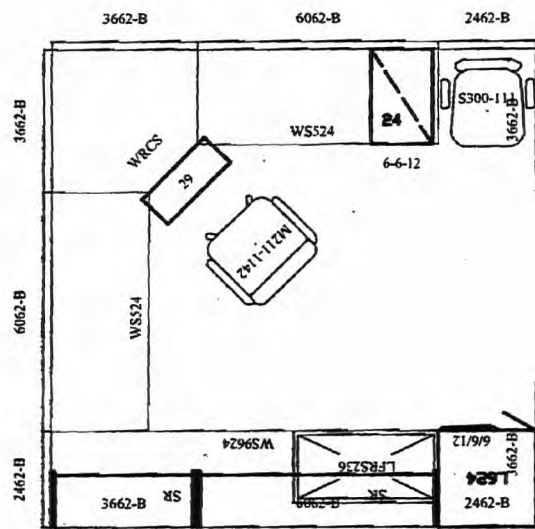
Senior Planner

Assistant Fire Protection Engineer



10' x 10' WORK STATION

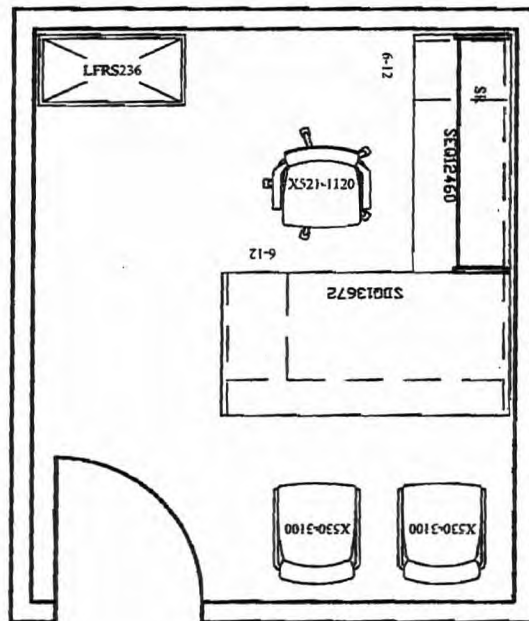
Office Supervisor
Administrative Assistant
Contract Specialist



10' x 10' WORK STATION B

JOB CLASSIFICATIONS:

Senior Management Analyst
Management Analyst II
Management Analyst I
Public Information Officer
Field Supervisor
Administrative Secretary

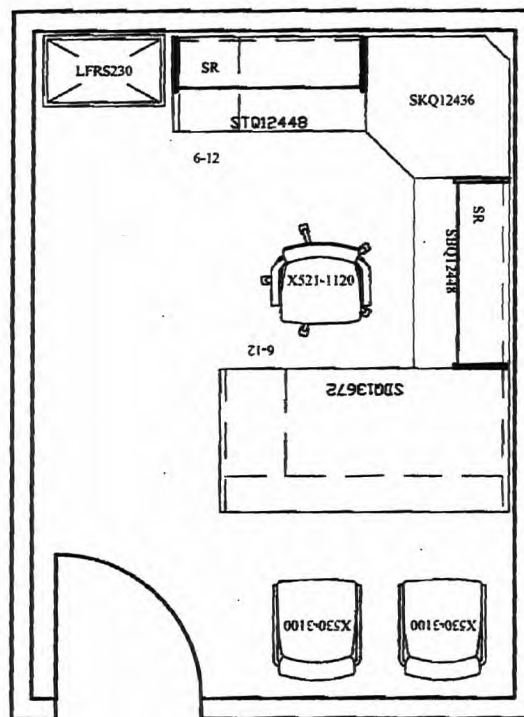


10' x 12' PRIVATE OFFICE

JOB CLASSIFICATIONS:

Planning Supervisor
Plans Examination Supervisor
Permits Supervisor
Administrative Officer
R/W & Real Property Supervisor
SID Supervisor
Publicity Supervisor
Supervisor
Quality Assurance Administrator
Minority Business Officer

Purchasing Administrator
Sewer Services Supervisor
Franchise Officer
Engineering Project Manager
Architectural Project Manager
Landscape Architect
Principal Designer
Principal Engineer
Land Development Coordinator

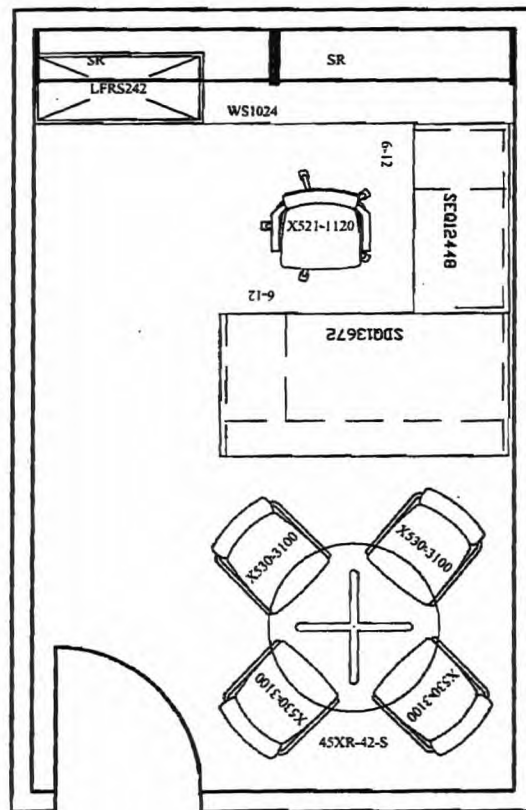


10' x 14' PRIVATE OFFICE

JOB CLASSIFICATIONS:

Planning Manager
Land Development Superintendent
Real Estate Manager
Assistant City Traffic Engineer
Administrative Manager
Recreation Manager
Cultural Manager
Adaptive Manager

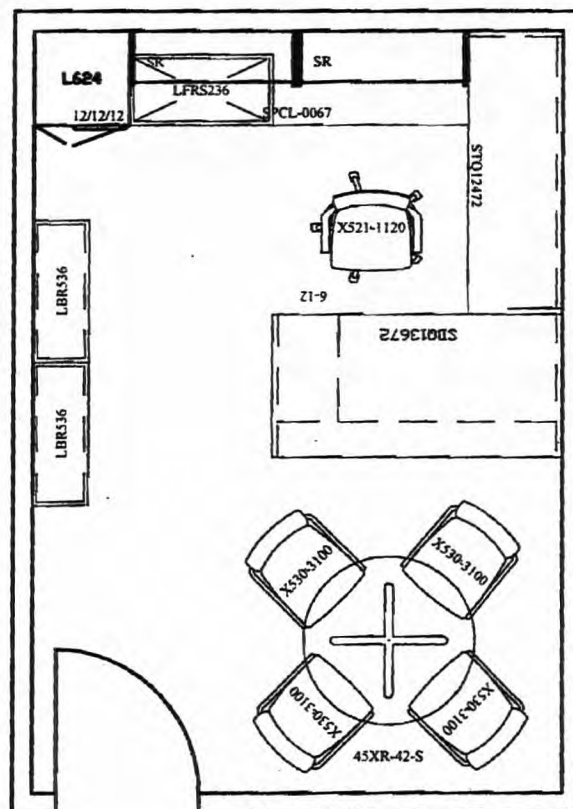
Senior Citizen Manager
Fire Protection Engineer
Engineering Program Manager
Purchasing & Contracts Manager
Architectural Superintendent
Business Services Manager



10' x 16' PRIVATE OFFICE

JOB CLASSIFICATIONS:

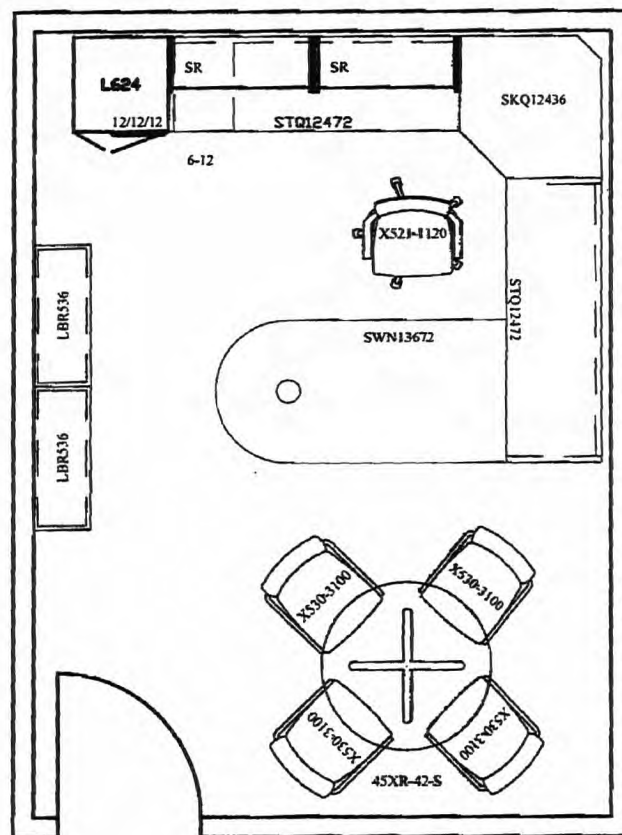
City Traffic Engineer
Assistant City Engineer



11' x 16' PRIVATE OFFICE

JOB CLASSIFICATIONS:

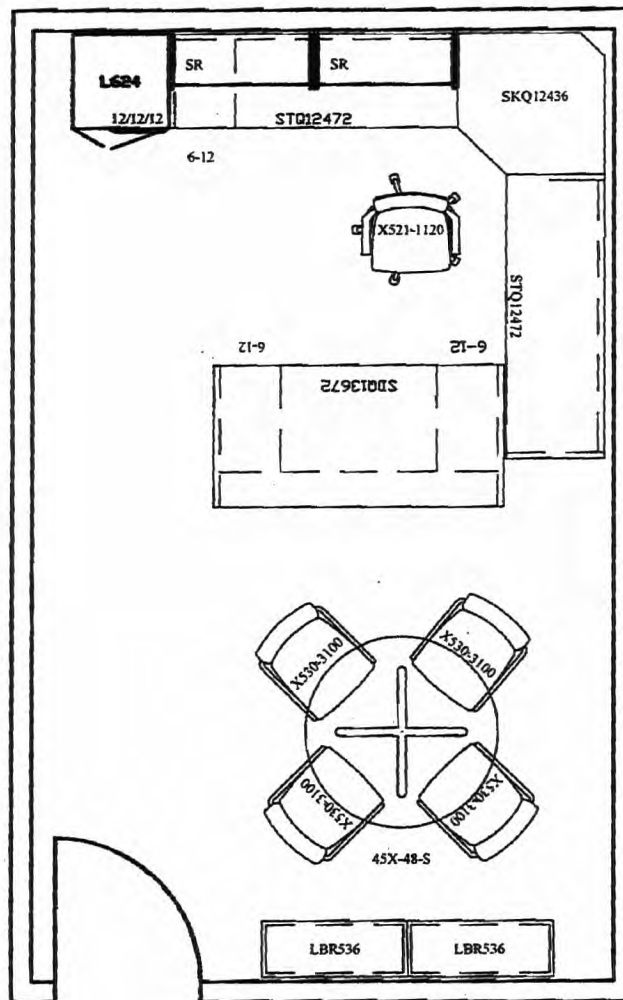
Deputy Director



12' x 16'-6" PRIVATE OFFICE

JOB CLASSIFICATIONS:

Director

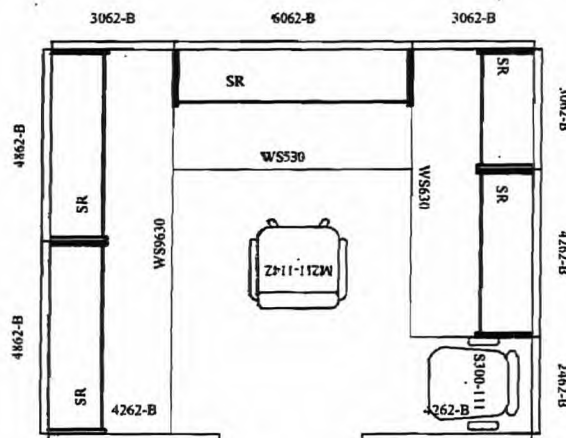


12' x 20' PRIVATE OFFICE

JOB CLASSIFICATIONS:

Designer
 Senior Designer
 Engineering Associate I / II
 Right of Way Agent I / II
 Senior Engineering Associate
 Engineering Technician II
 Senior Engineering Technician
 Architectural Technician II/I
 Traffic Barricade Inspector II/I
 Construction Project Representative
 Senior Electrical Construction Inspector
 Planner I / II
 GIS Analyst I / II

Statistical Analyst I
 Graphic Artist II
 GIS Technician
 Construction Control Specialist
 Real Property Appraiser
 Sr. Graphic Illustrator
 Graphic Illustrator
 Buyer II
 Senior Buyer
 License Officer II
 Auditor
 Senior License Officer
 Senior Auditor

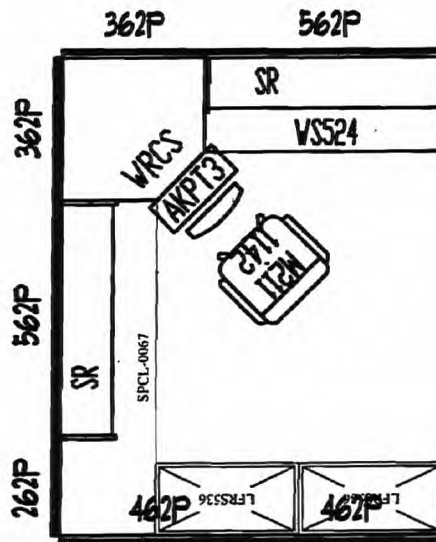


8' x 10' WORK STATION

JOB CLASSIFICATIONS:

Secretary
 Publicity Specialist II
 Sr. Office Specialist
 Sr. Publicity Specialist
 Sr. Cultural Activities Specialist
 Coordinator
 Sr. Adaptive Recreation Leader
 Publicity Specialist
 Accountant Technician I

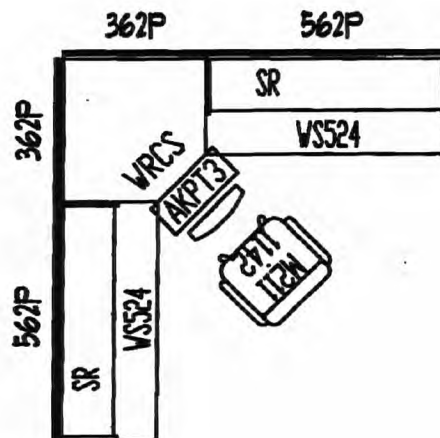
Recreation Leader II
 Graphic Artist I
 Cultural Leader I
 Agenda Technician II
 Planning Technician
 Technical Systems Analyst
 Sanitation Billing Technician
 License Technician
 Sanitation Billing Inspector



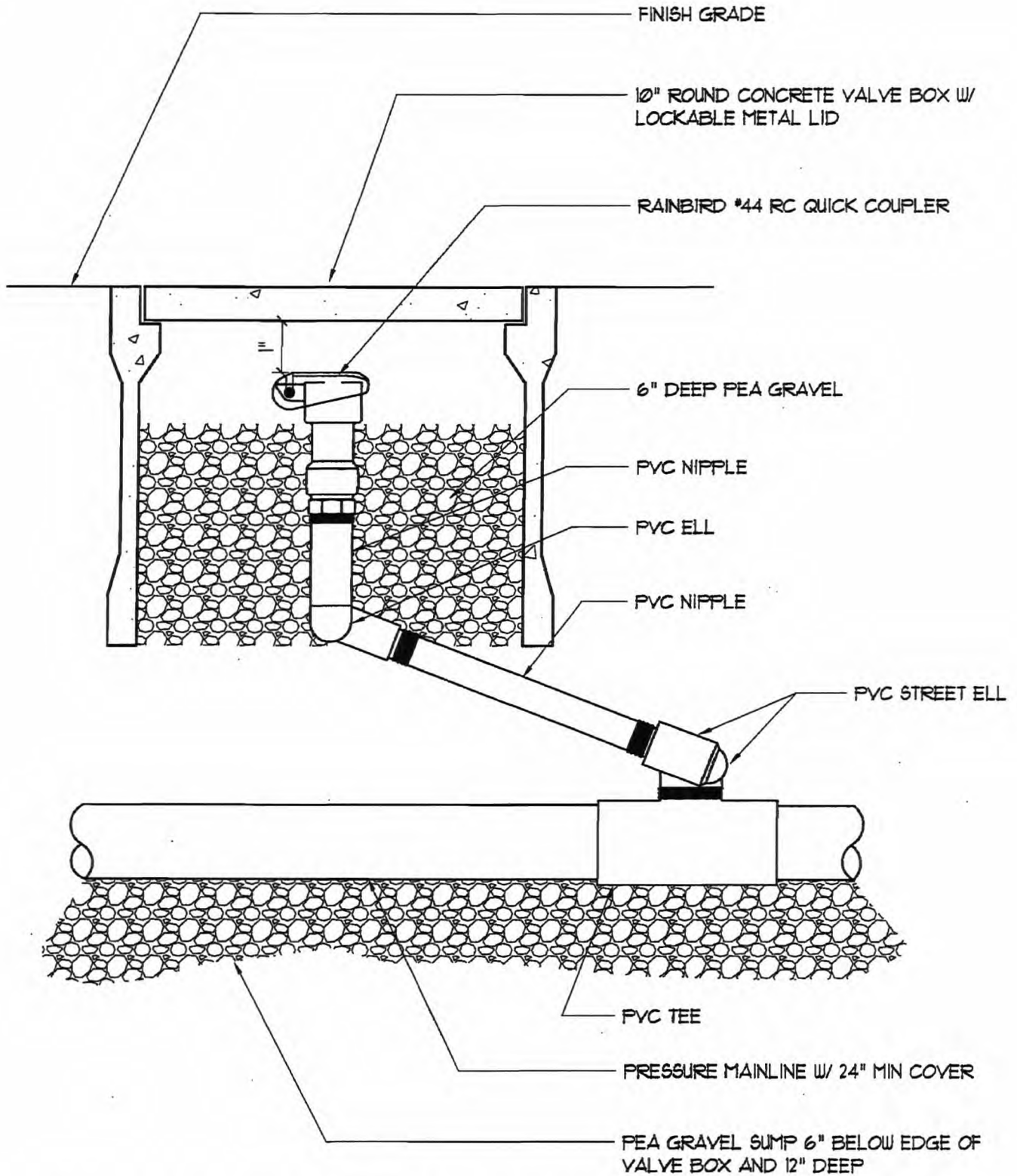
8' x 10' WORK STATION

JOB CLASSIFICATIONS:

Office Specialist I
Office Specialist II
Technician / Specialist
Mail Courier
Senior Technician
Senior Tradesman
Senior Intern/Intern
Customer Service Rep
Volunteer Coordinator



8' x 8' WORK STATION



Quick Coupler Valve

Scale: N.T.S.

Revised 12/13/04 ST02810-01

NOTE:
CONSULTANT TO PROVIDE ALL REQUIRED
STRUCTURAL CALCULATIONS FOR FENCE
AND GATES, FOOTINGS, ETC.

NOTE:
ALL FRAMING FOR FENCE
AND GATES SHALL BE PAINTED
AS PER CLVOS STANDARDS.

INTERMEDIATE/TOP RAIL
SEE CLV STANDARDS FOR
SIZE & VERIFY SIZE W/
CONSULTANT ENGINEER
1" W X 1/4" STABILIZER BAR
WELD TO BACK OF EACH PICKET

FENCE PICKETS,
SEE CLV STANDARDS FOR
SIZE & VERIFY SIZE W/
CONSULTANT ENGINEER

T.S. FENCE & GATE.
SEE PLAN VIEW.

T.S. FENCE WELDED TO
GATE FRAME. CONSULTANT TO
ENGINEER ALL WELDS,
FRAMING MEMBER SIZES, ETC.

CONCRETE PEDESTAL &
COLLAR AROUND POST,
CONSULTANT TO DESIGN.

CONCRETE FOOTING,
CONSULTANT TO DESIGN.

POSTS @ 10'-0" O.C.

1/4 OF T.S. POST

SQUARE T.S. COLUMN,
SEE CLV STANDARDS FOR
SIZE & VERIFY SIZE W/
CONSULTANT ENGINEER.

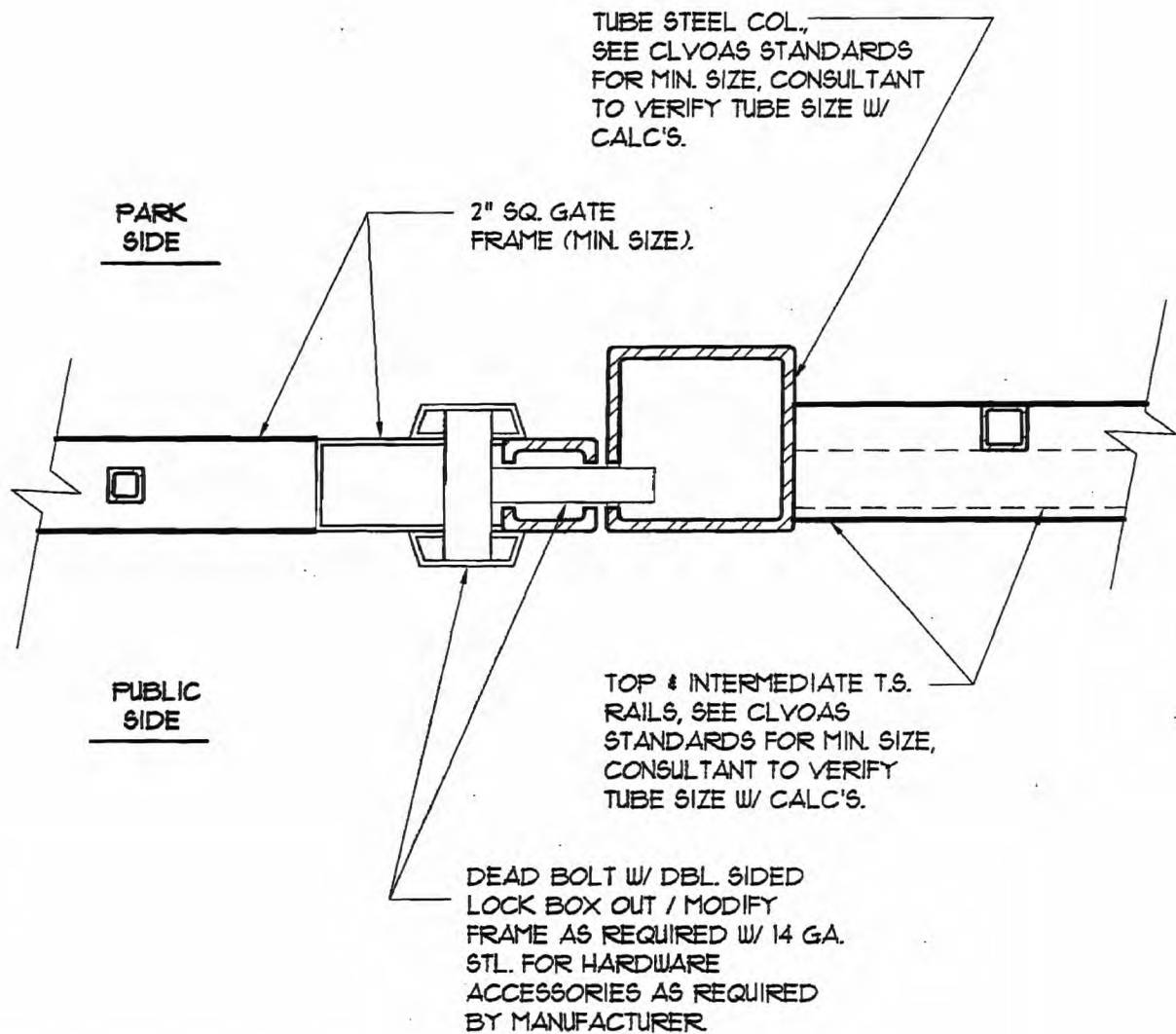
EARTH

1 Fence Elevation/Section

Scale: 1/2" = 1'-0"

REVISED 12/11/03

ST02825-01



6 Jamb Det. @ Gate

Scale: 3"=1'-0"

LATCH SIDE

REVISED 8/27/03 ST02825-02

PARK

PICKETS WELDED TO BOTTOM RAIL -
MAINTAIN 4" CLEAR BETWEEN PICKETS

BOTTOM RAIL TO BE SIZED BY ENGINEER
MAINTAIN 1/4" OFFSET FROM POST
FACE AS SHOWN

PUBLIC

LINE OF POST BEYOND

CONCRETE COLLAR - SLOPE AS SHOWN

BURY COLLAR AS SHOWN
SEE DETAIL 1

FINISH GRADE

Page 297 of 404

6 12

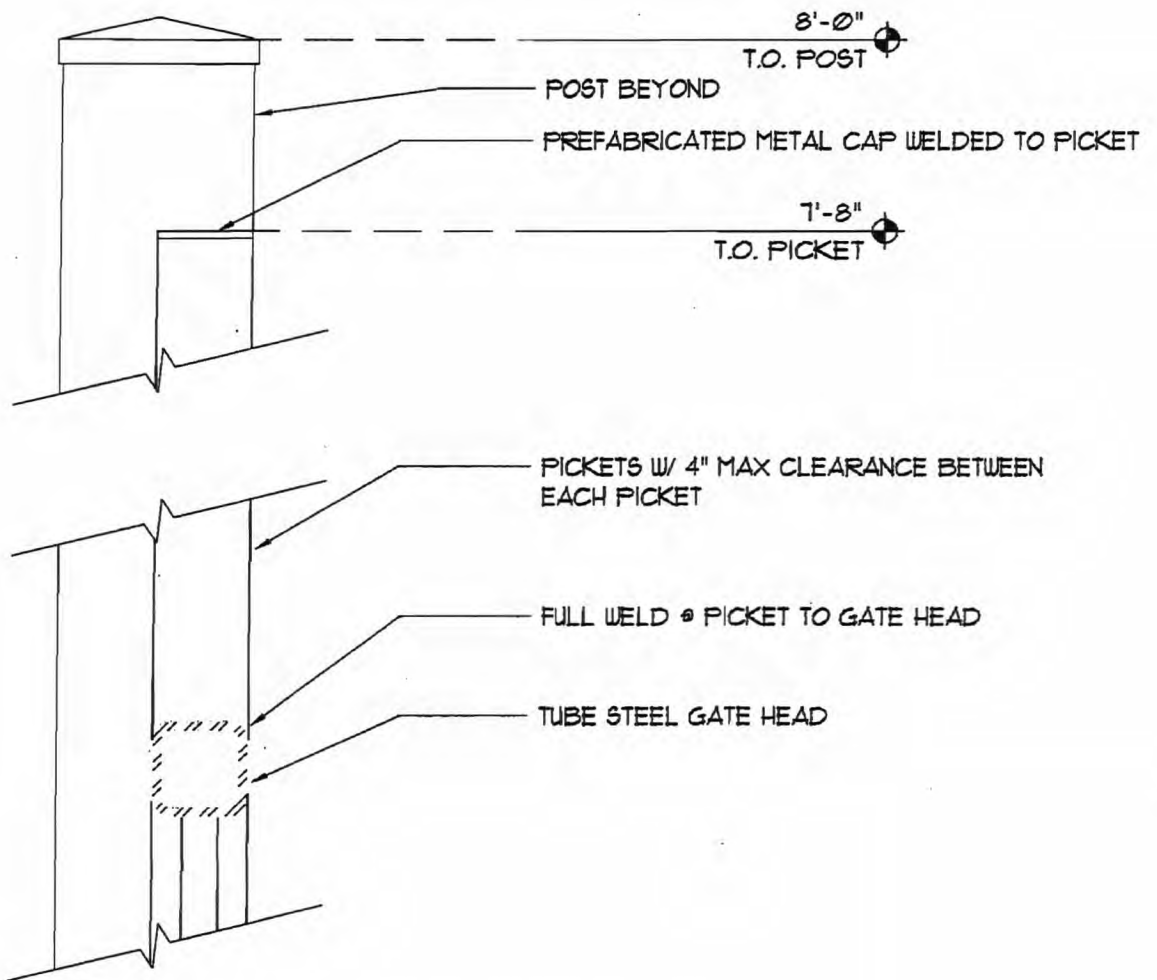
1/4"

3

Bottom Rail Detail

Scale: Full

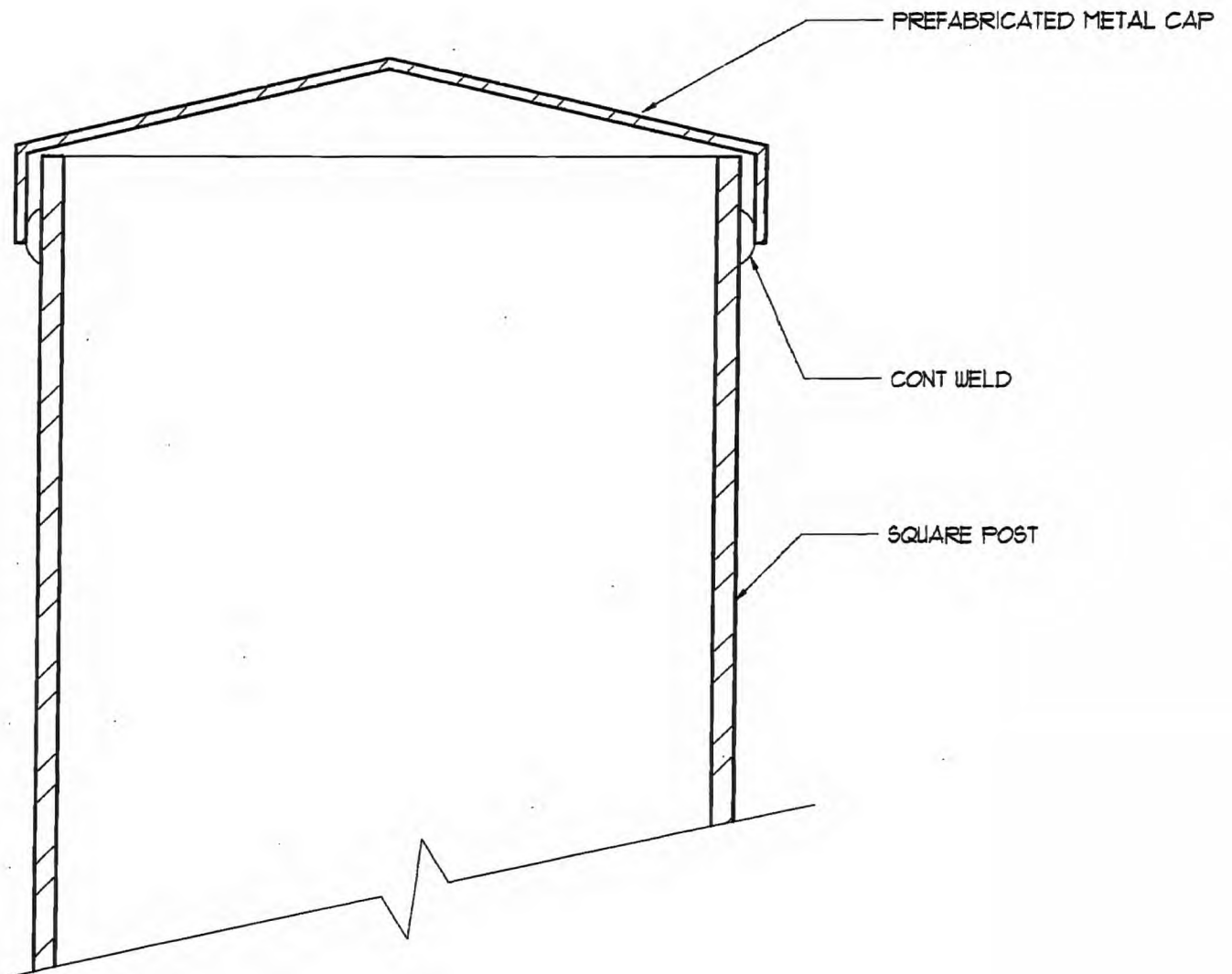
REVISED 8/27/03 ST02825-03



4 Gate Head Dtl @ Fence

Scale: 3" = 1'-0"

REVISED 8/27/03 ST02825-04

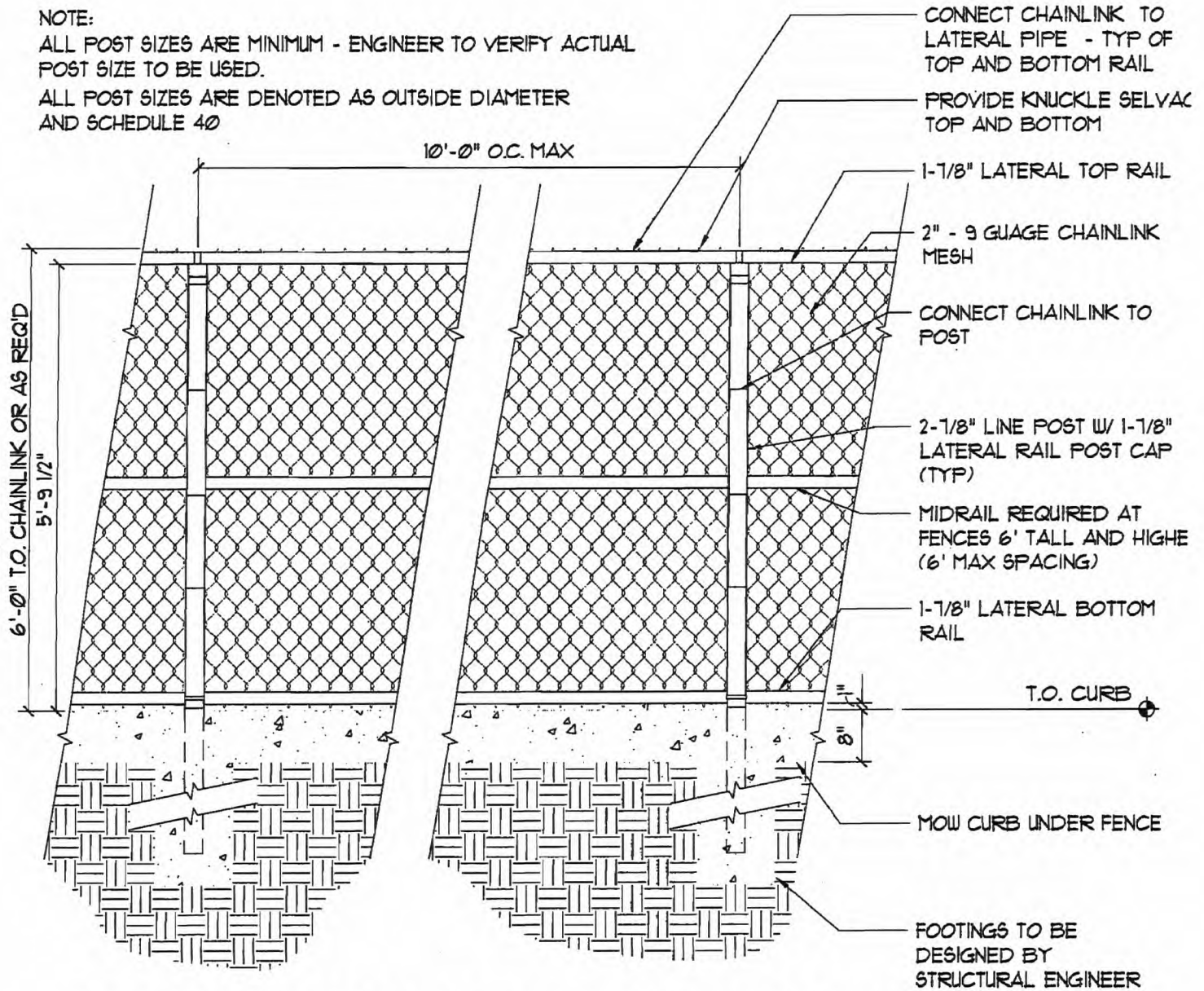


5 Post Cap Detail

Scale: Full

REVISED 8/27/03 ST02825-05

NOTE:
 ALL POST SIZES ARE MINIMUM - ENGINEER TO VERIFY ACTUAL
 POST SIZE TO BE USED.
 ALL POST SIZES ARE DENOTED AS OUTSIDE DIAMETER
 AND SCHEDULE 40



Chain Link Fence Elevation

Scale: 1/2" = 1'-0"

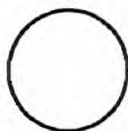
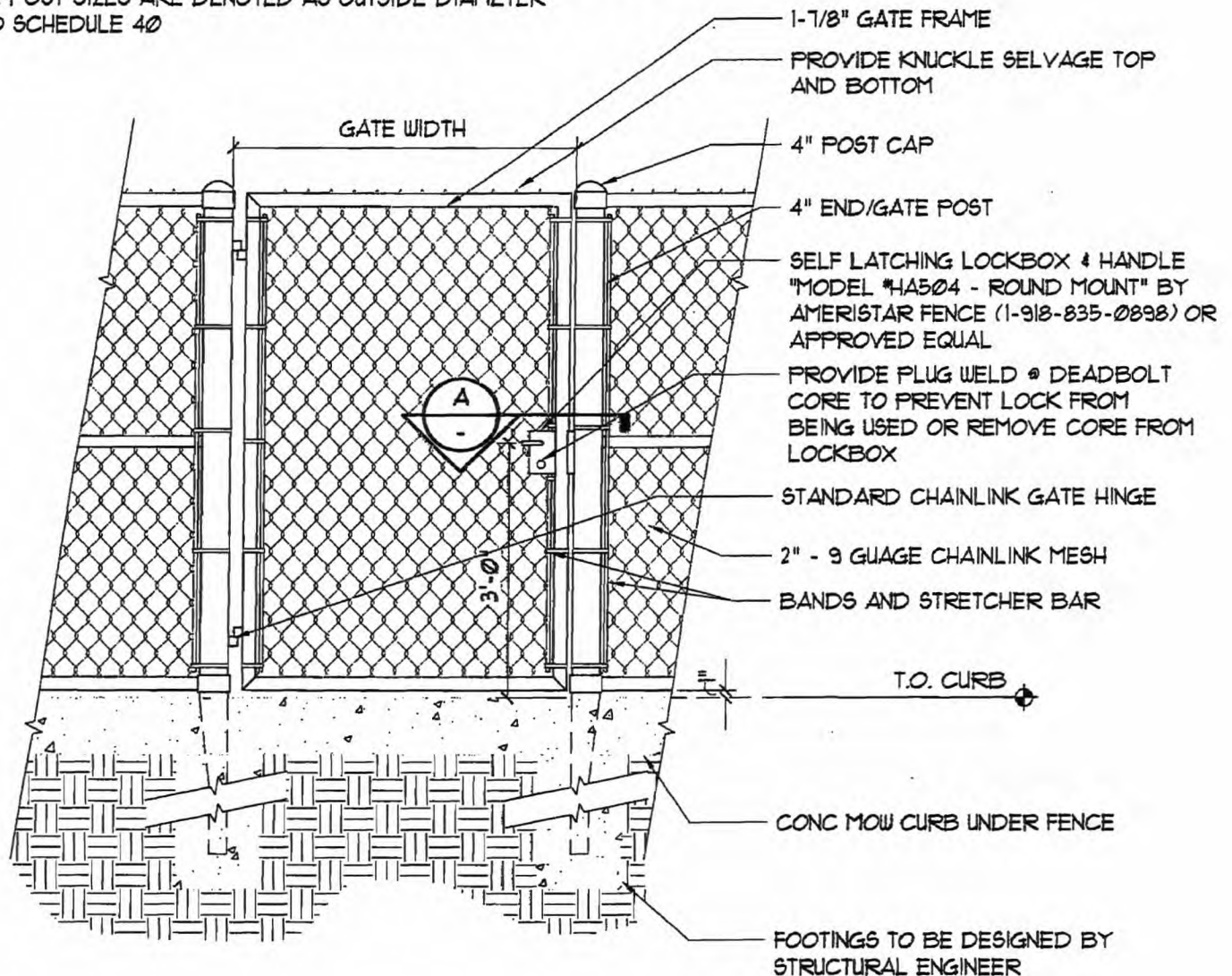
REVISED 12/11/03

ST02825-06

NOTE:

ALL POST SIZES ARE MINIMUM - ENGINEER TO VERIFY ACTUAL POST SIZE TO BE USED.

ALL POST SIZES ARE DENOTED AS OUTSIDE DIAMETER
AND SCHEDULE 40



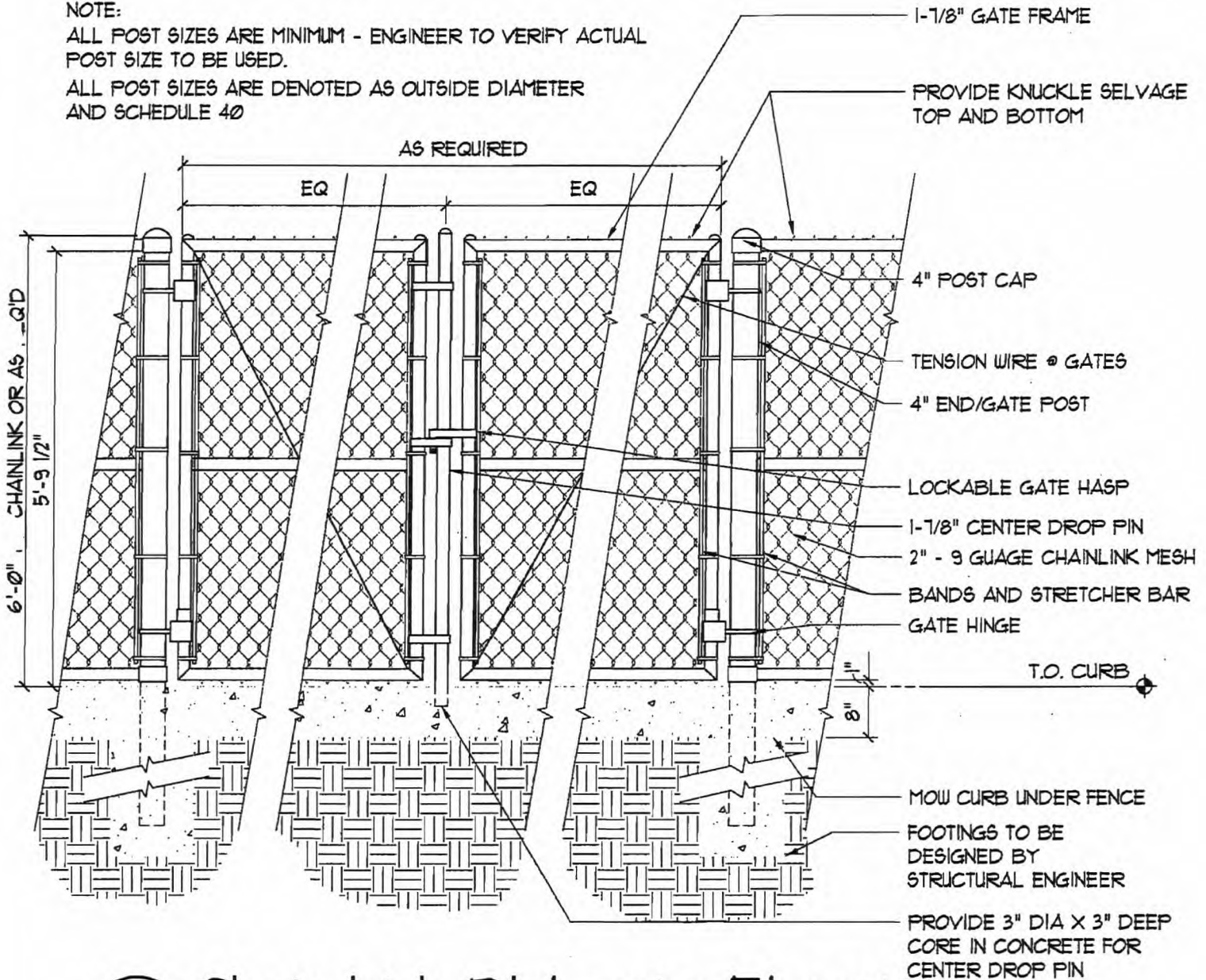
Chain Link Fence Gate Elevation

Scale: 1/2" = 1'-0"

REVISED 12/11/03

ST02825-07

NOTE:
 ALL POST SIZES ARE MINIMUM - ENGINEER TO VERIFY ACTUAL
 POST SIZE TO BE USED.
 ALL POST SIZES ARE DENOTED AS OUTSIDE DIAMETER
 AND SCHEDULE 40

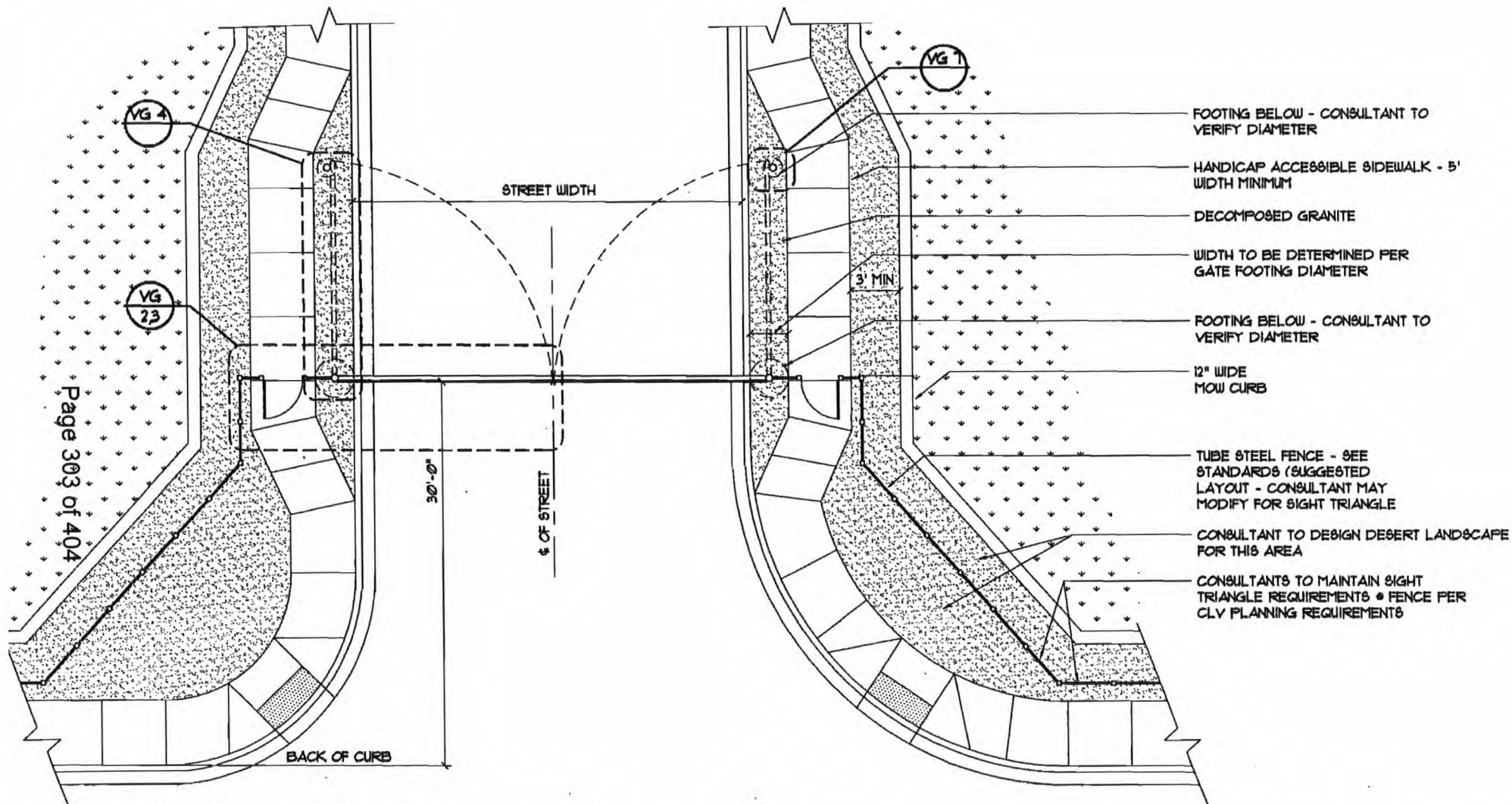


Chain Link Dbl gate Elevation

Scale: 1/2" = 1'-0"

REVISED 12/11/03

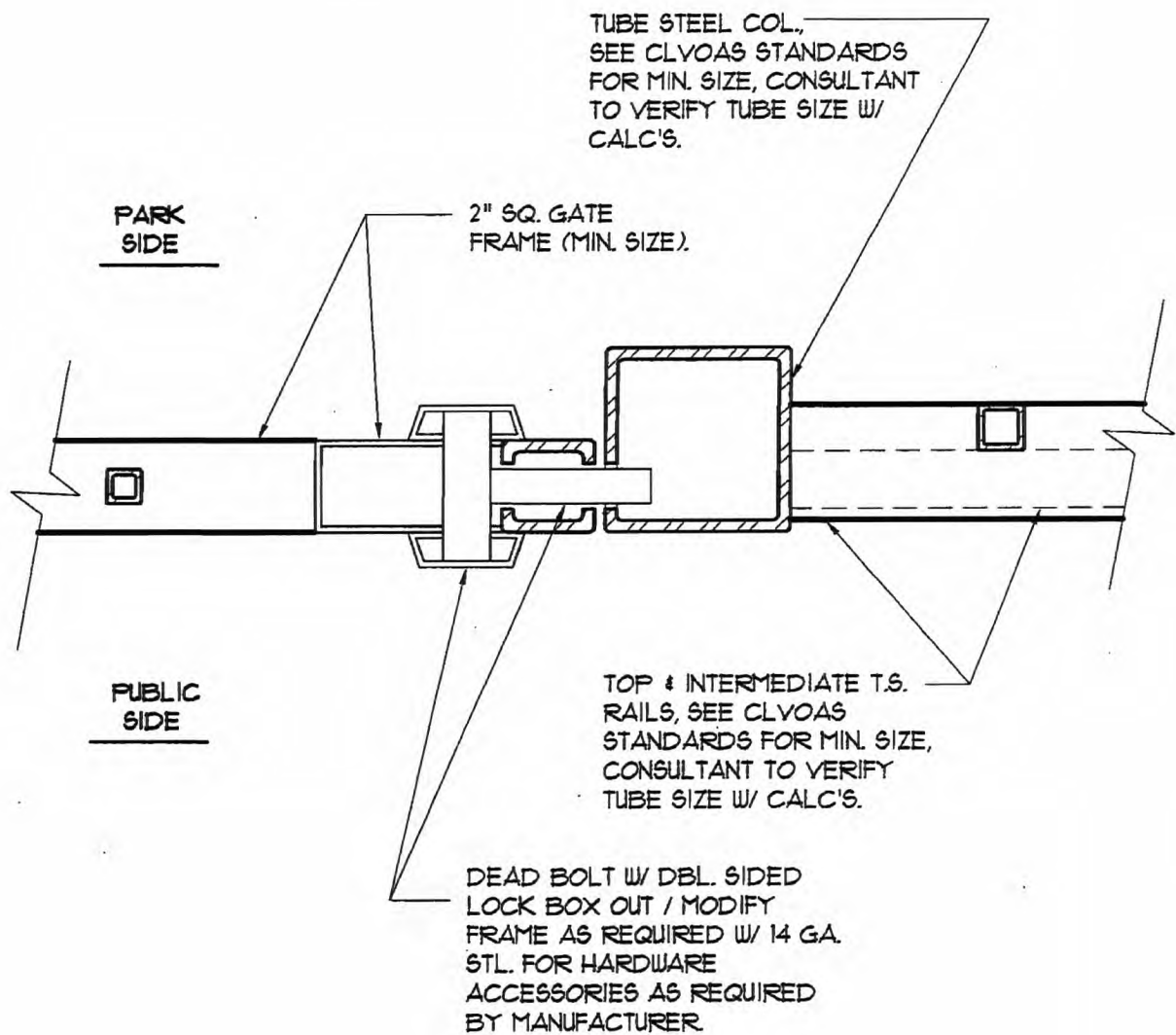
ST02825-06



1 Vehicle Gate Entrance Plan
Scale: 1/8" = 1'-0"

REVISED 12/4/03

ST02025-VG1



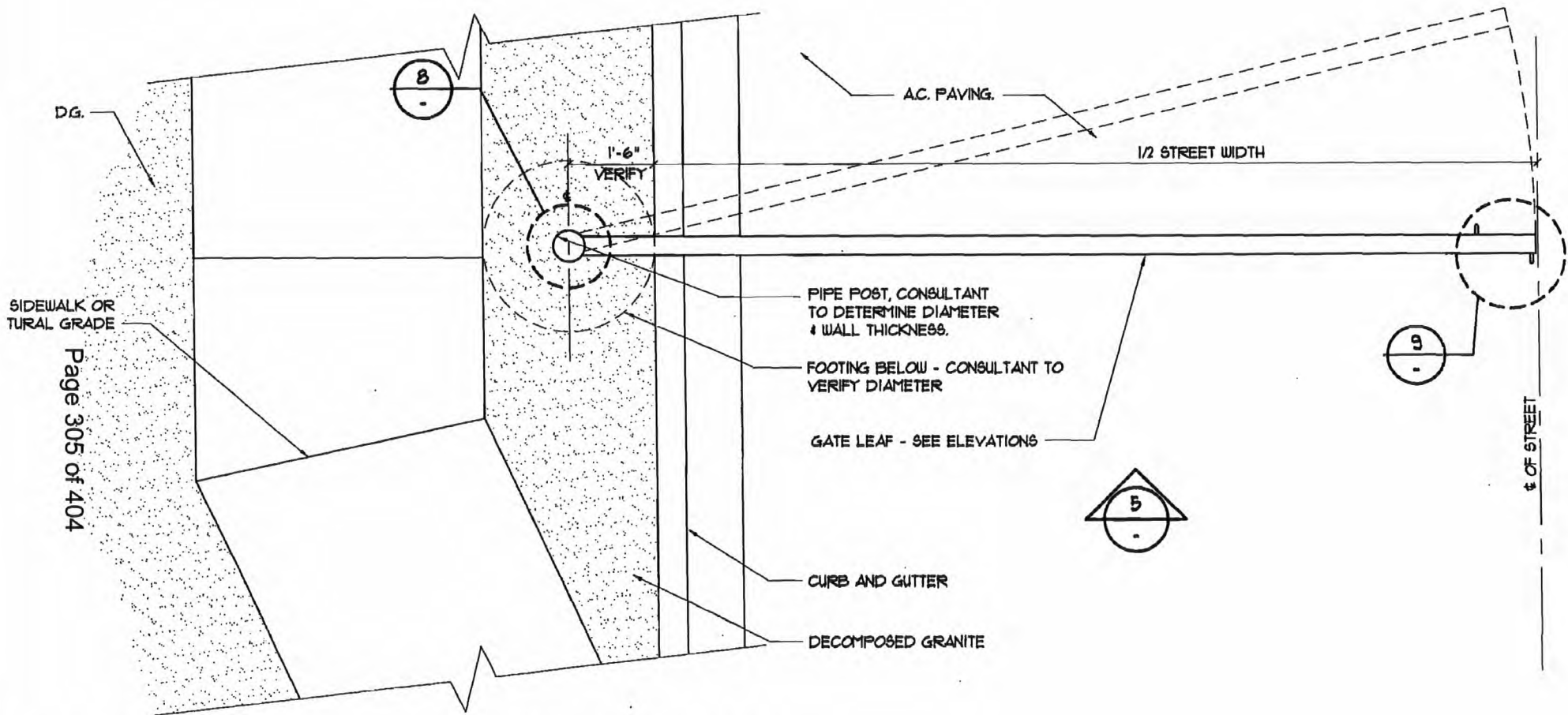
Jamb Det. @ Man Gate

Scale: 3"=1'-0"

LATCH SIDE

REVISED 12/4/03

ST02825-10



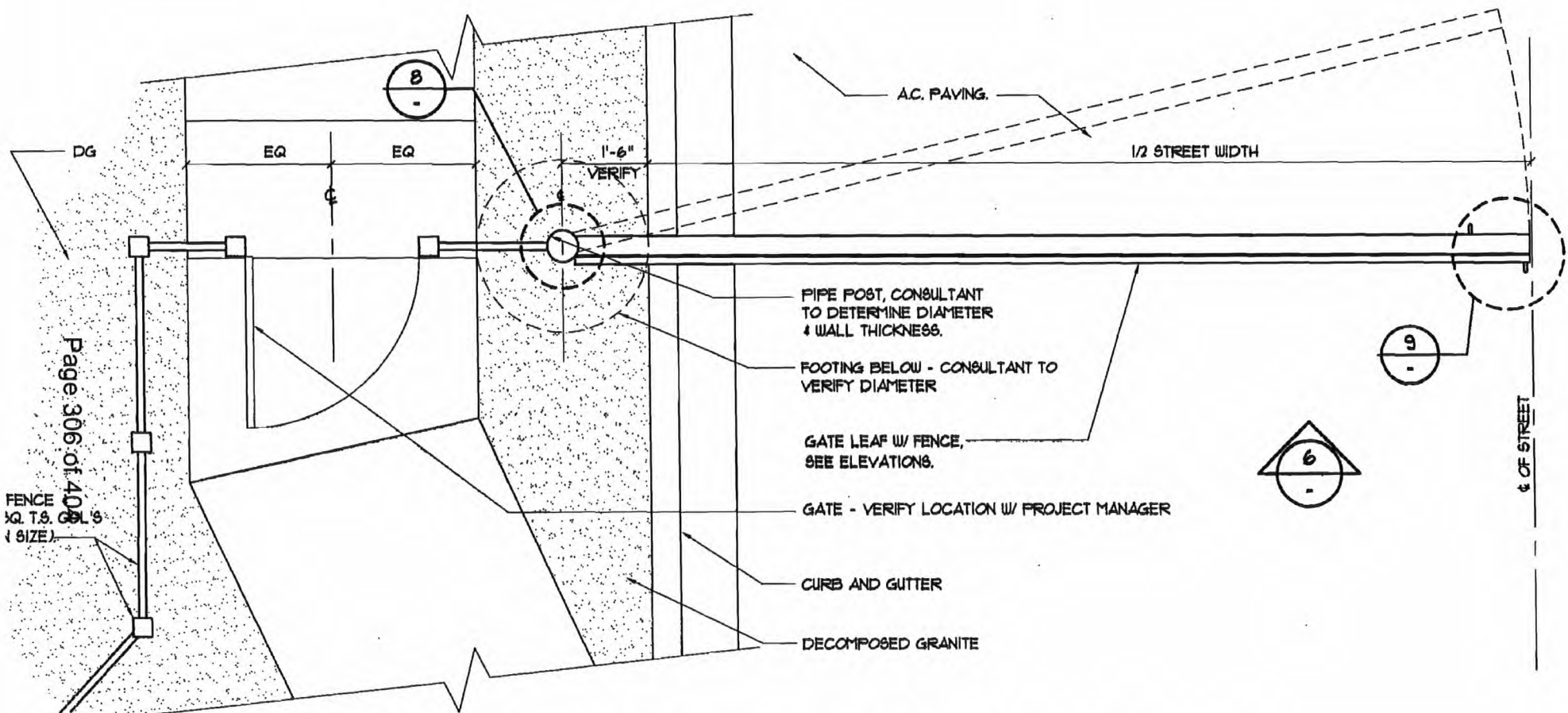
2

Vehicle Gate Plan - Closed Position

Scale: 1/2"=1'-0"

REVISED 12/4/03

ST02825-VG2

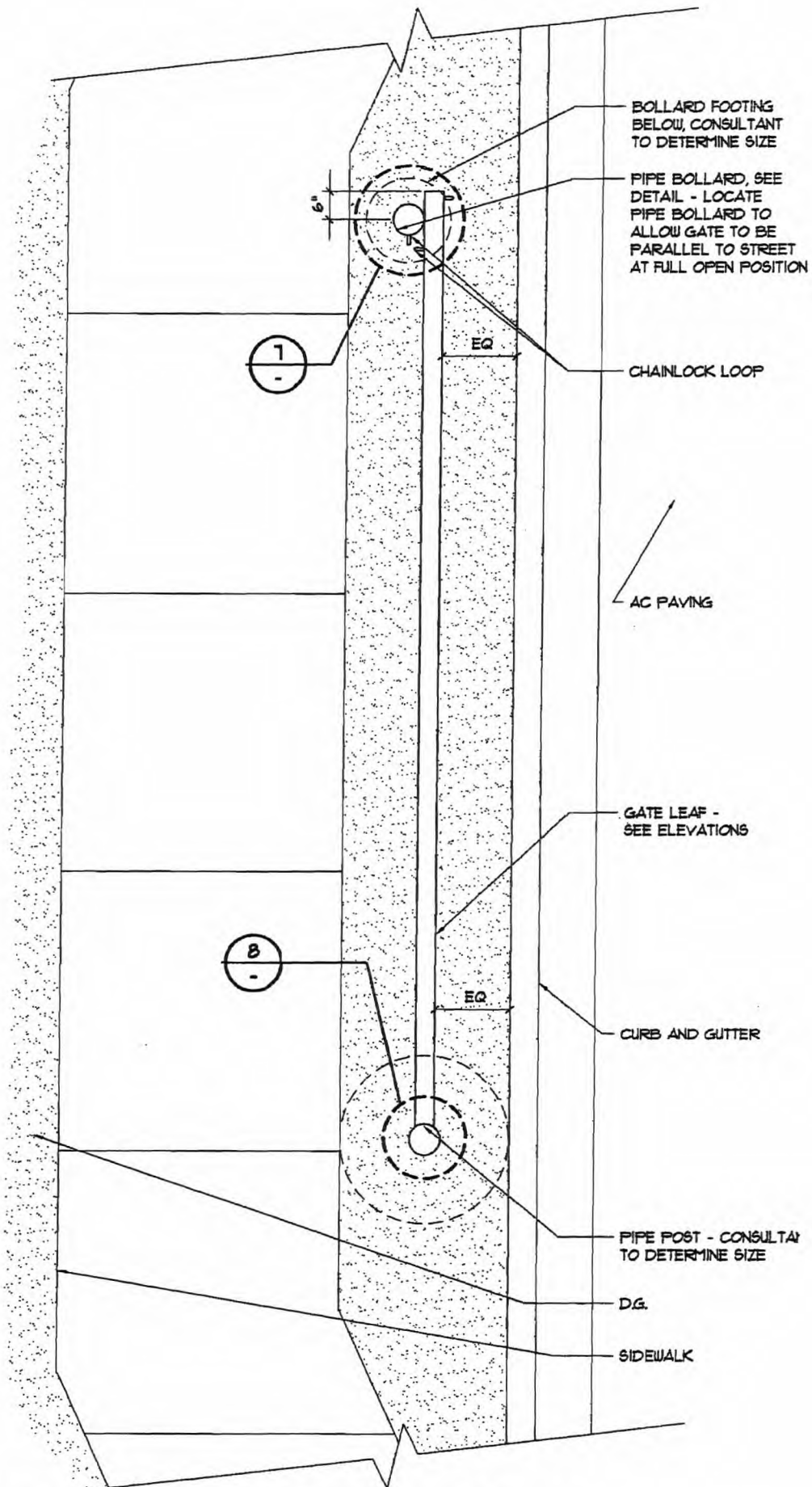


3 Vehicle Gate Plan - Closed Position (w/ Man Gate & Fence)

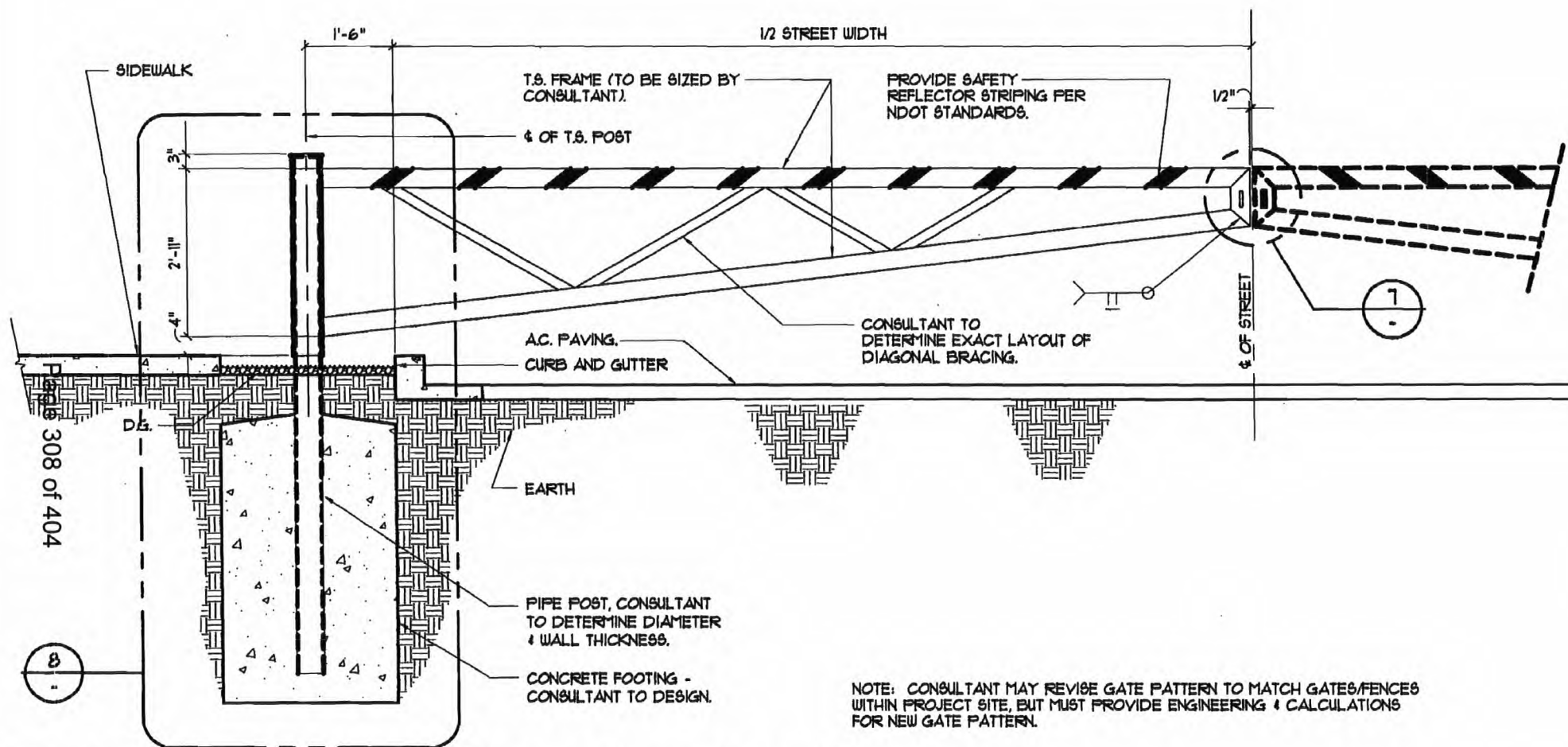
Scale: 1/2" = 1'-0"

REVISED 12/4/03

ST02025-VG3



NOTE: SEE DETAIL 4/- TO SEE VEHICLE GATE LAYOUT WHERE PROPERTY REQUIRES FENCE & MANGATES.



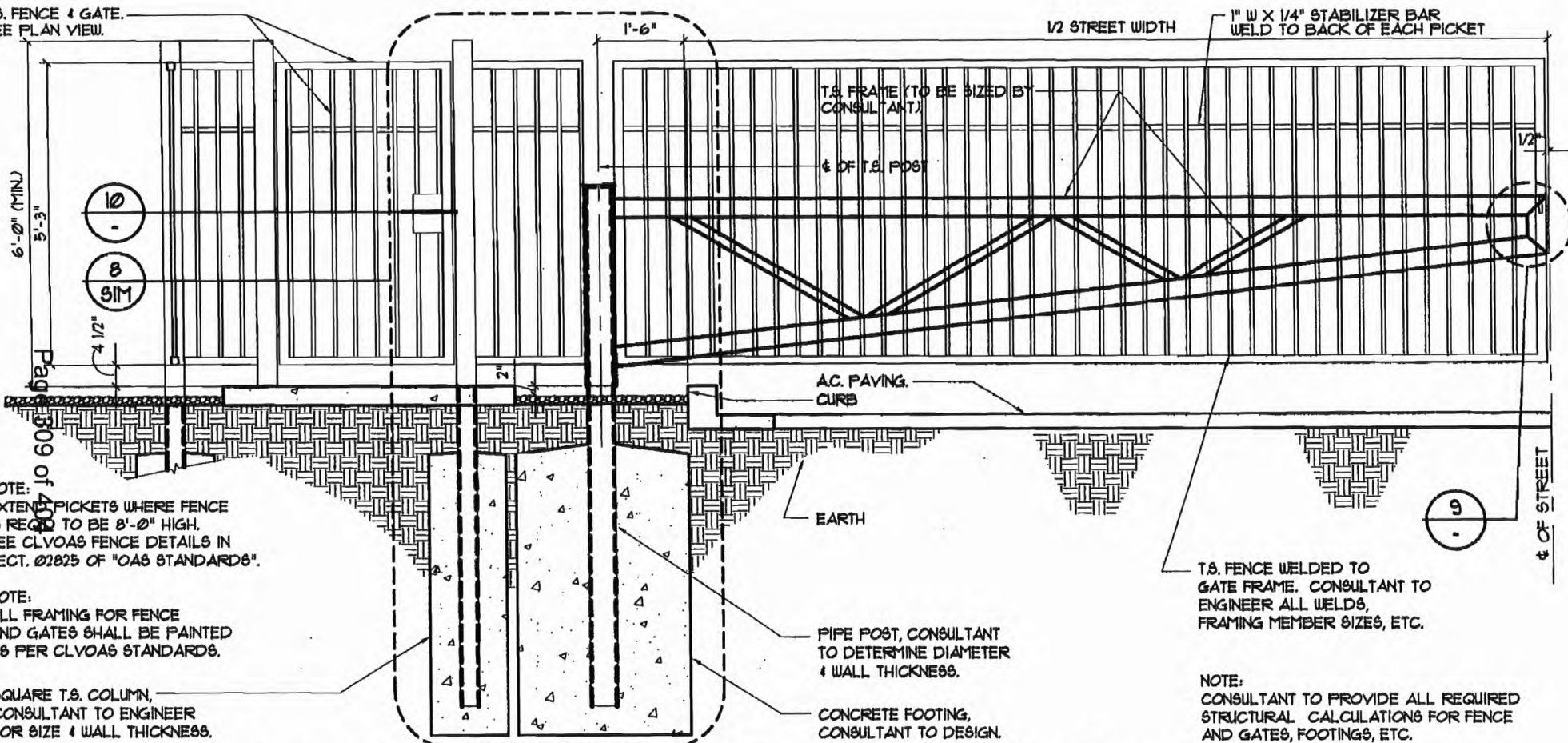
5 Vehicle Gate Elevation - Closed Position

Scale: 1/2"=1'-0"

REVISED 12/4/03

ST02B25-VG5

T.S. FENCE & GATE.
SEE PLAN VIEW.

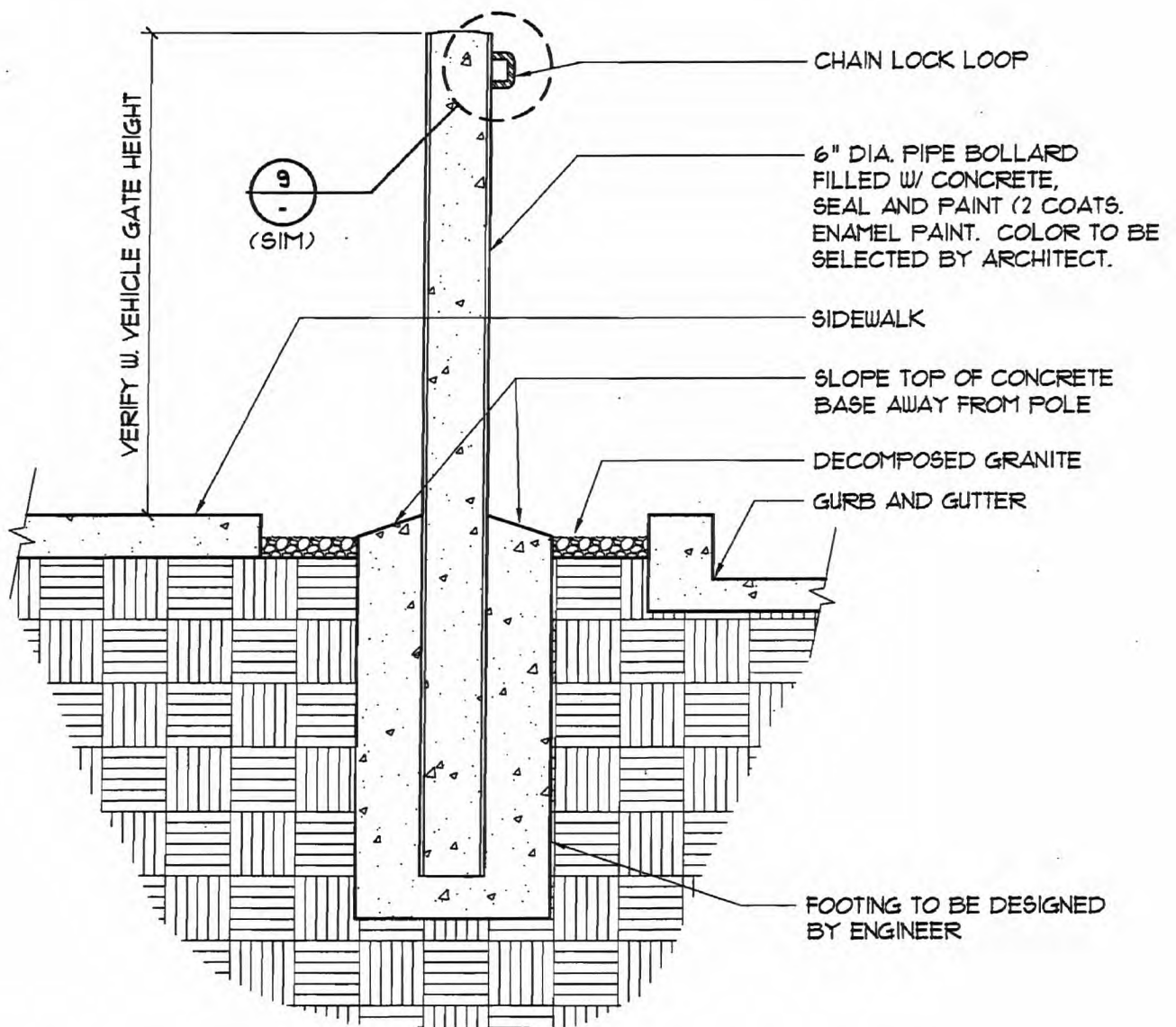


6 Vehicle Gate Elevation - Closed Position (w/ Man Door & Fence)

Scale: 1/2" = 1'-0"

REVISED 12/11/03

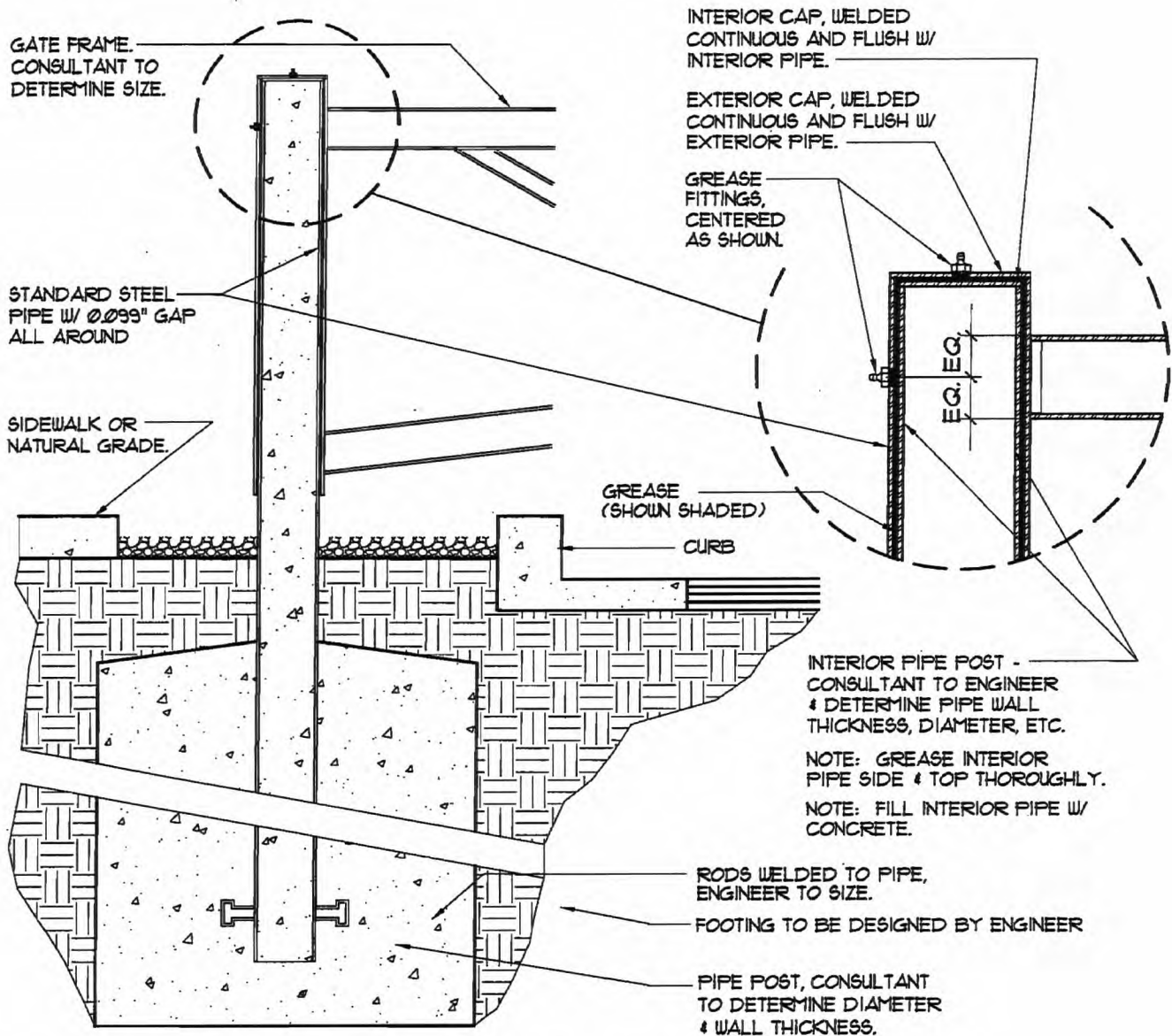
ST02825-VG6



7 Vehicle Gate Steel Pipe Bollard

Scale: 3/4"=1'-0"

REVISED 12/30/03 ST02825-VG7



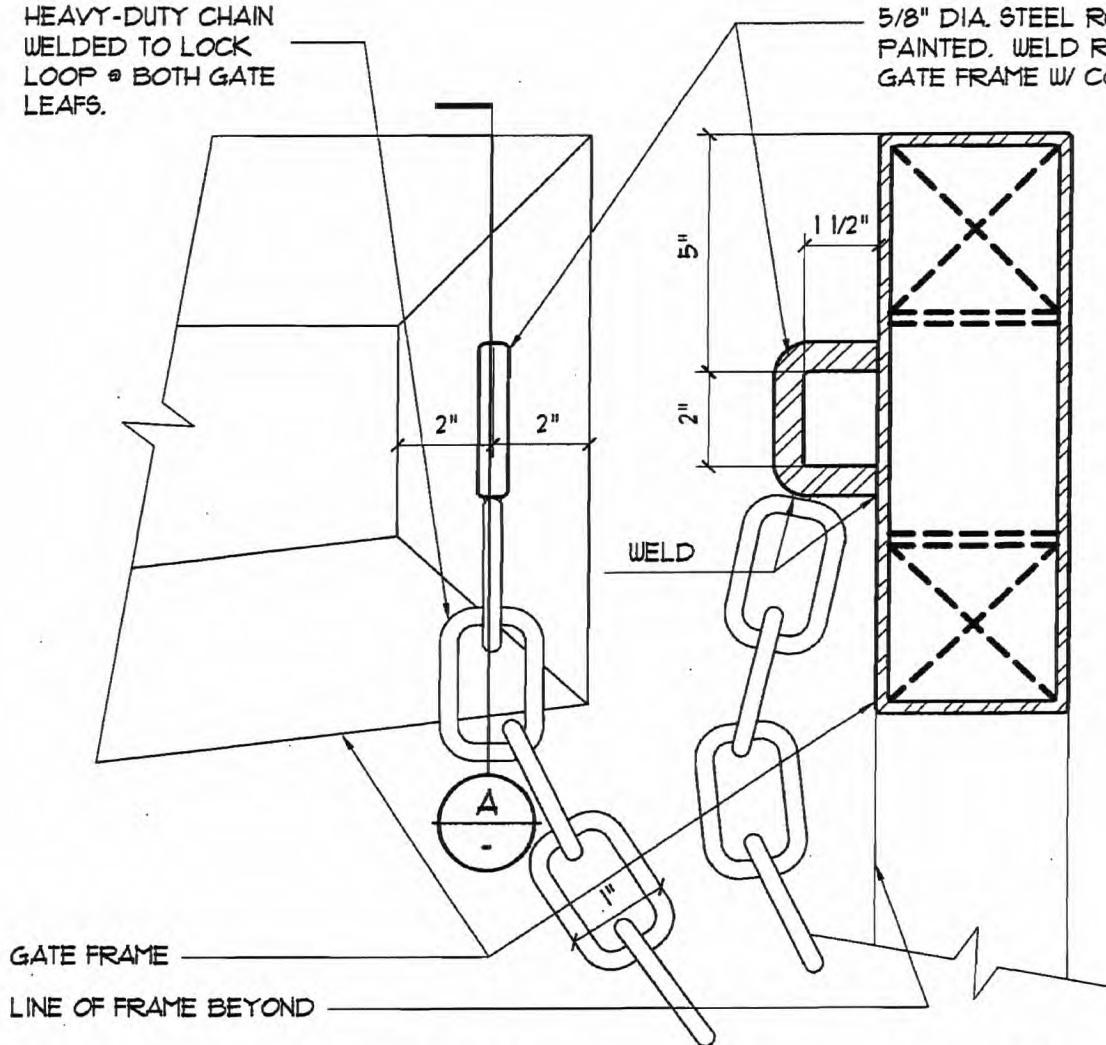
8 Hinge Detail @ Vehicle Gate

Scale: 3/4"=1'-0"

REVISED 3/22/05 ST02825-VG8

HEAVY-DUTY CHAIN
WELDED TO LOCK
LOOP @ BOTH GATE
LEAFs.

5/8" DIA. STEEL ROD,
PAINTED. WELD ROD TO
GATE FRAME W/ CONT'S WELD.



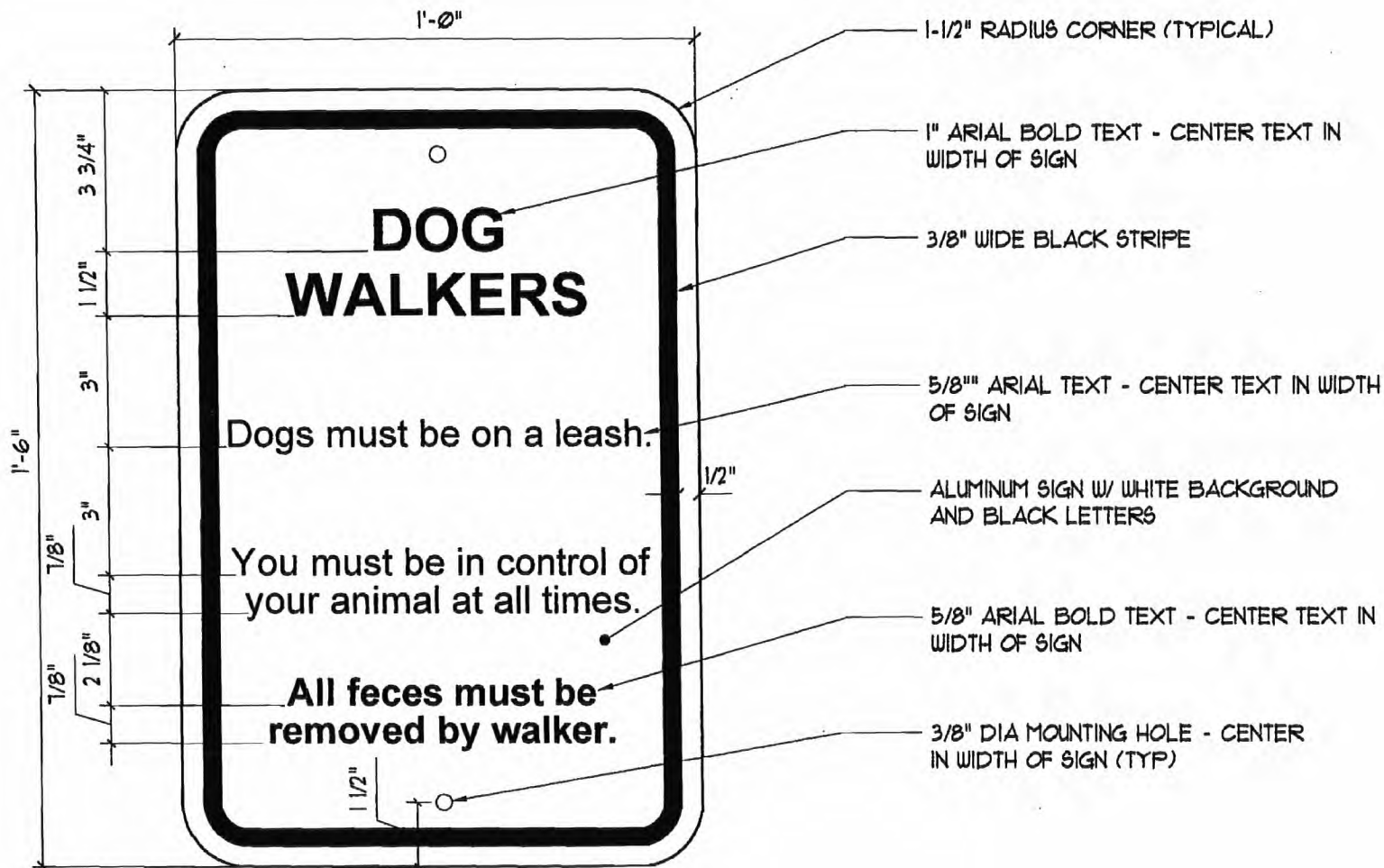
PARTIAL ELEVATION AT END OF GATE

SECTION "A"

9 Vehicle Gate Chain Lock Loop

Scale: 3"=1'-0"

REVISED 12/4/03 ST02825-VG3

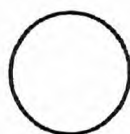
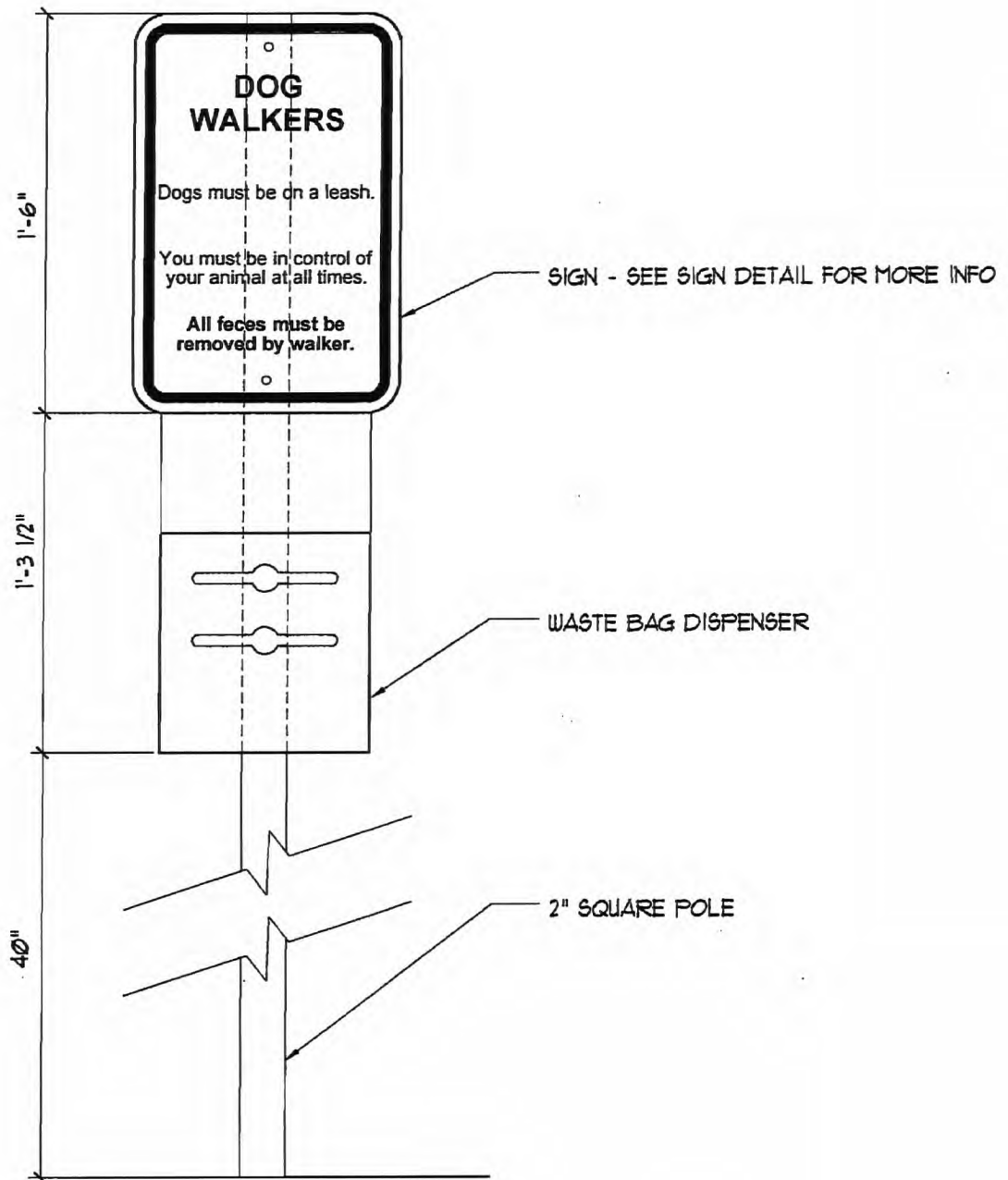


Dog Sign

Scale: 3" = 1'-0"

REVISED 8/27/03

STO2882-10

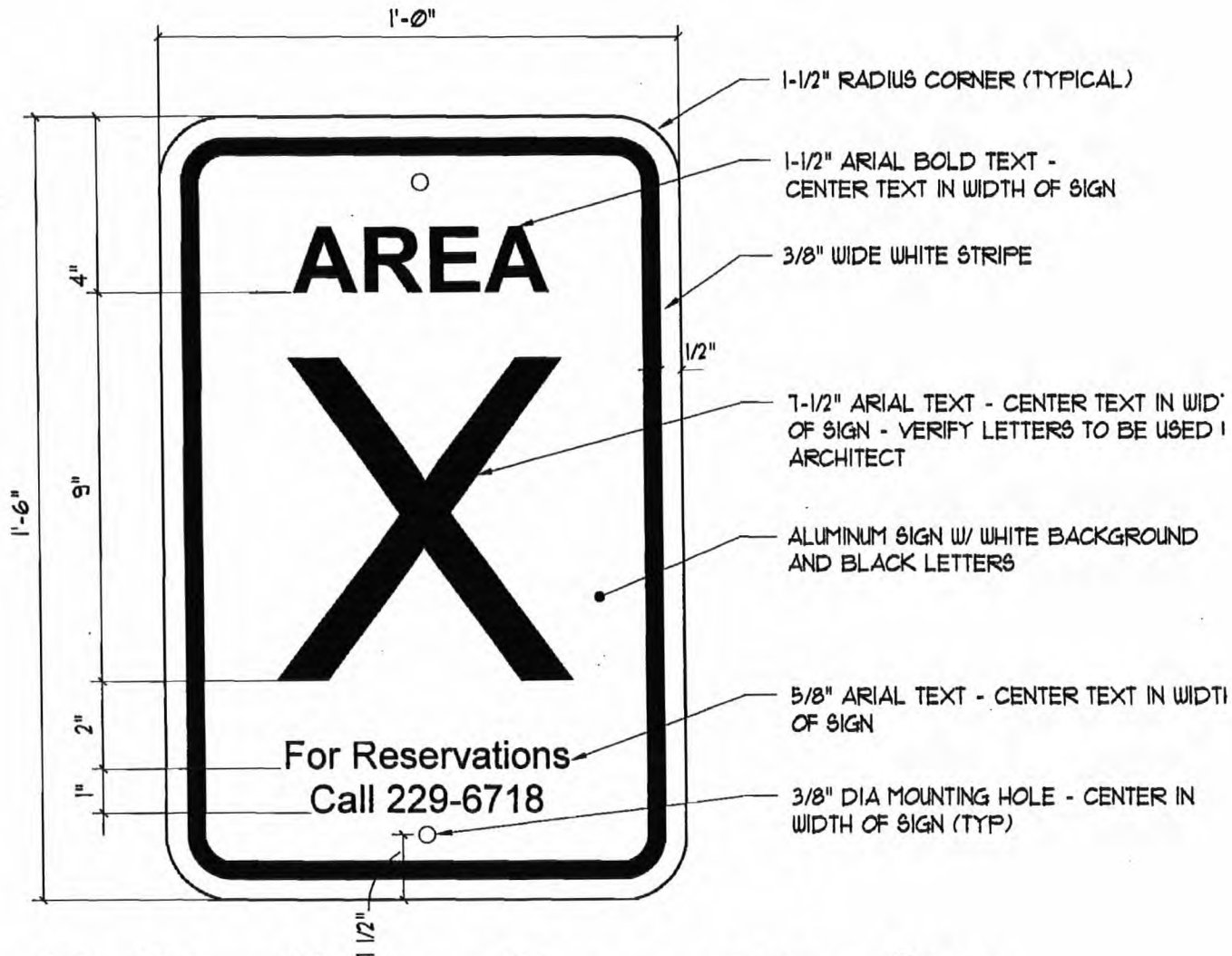


Sign W/ Waste Bag Disp Mounting

Scale: 1-1/2" = 1'-0"

REVISED 7/9/04

STO2882-10a

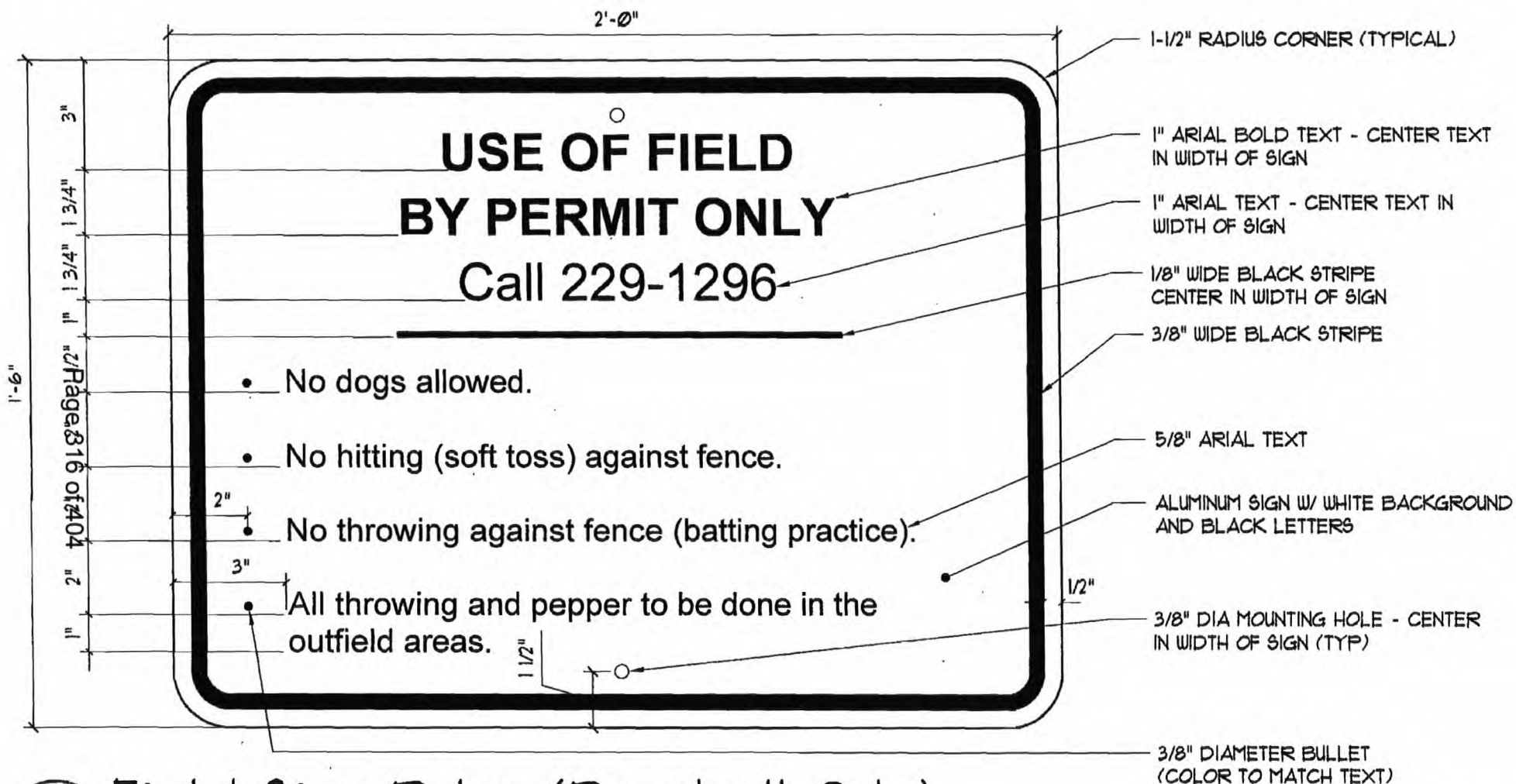


Site Shelter Reservation Sign

Scale: 3" = 1'-0"

REVISED 8/21/03

STO2882-39

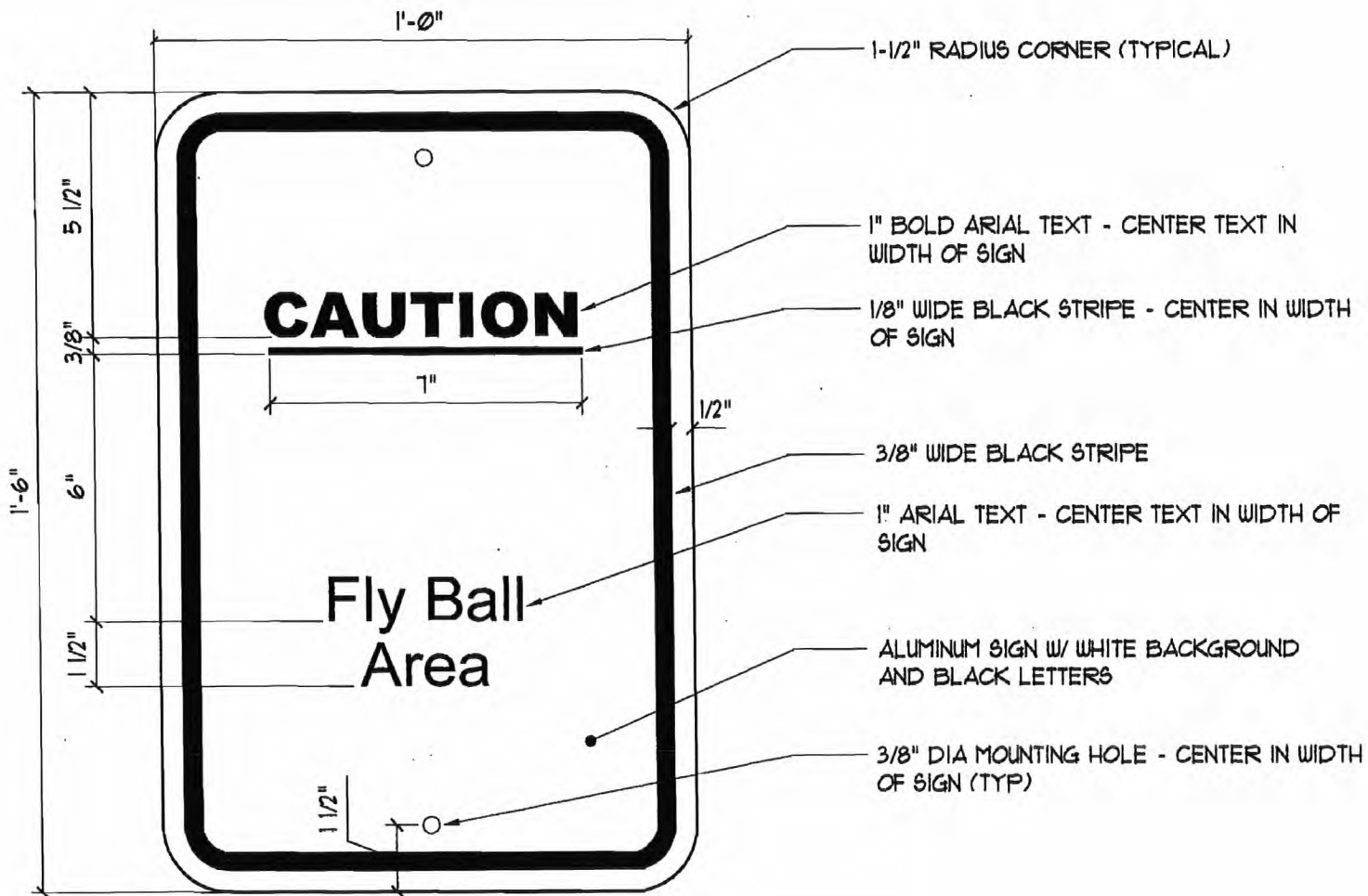


Field Sign Rules (Baseball Only)

Scale: 3" = 1'-0"

REVISED 4/14/04

STO2882-01

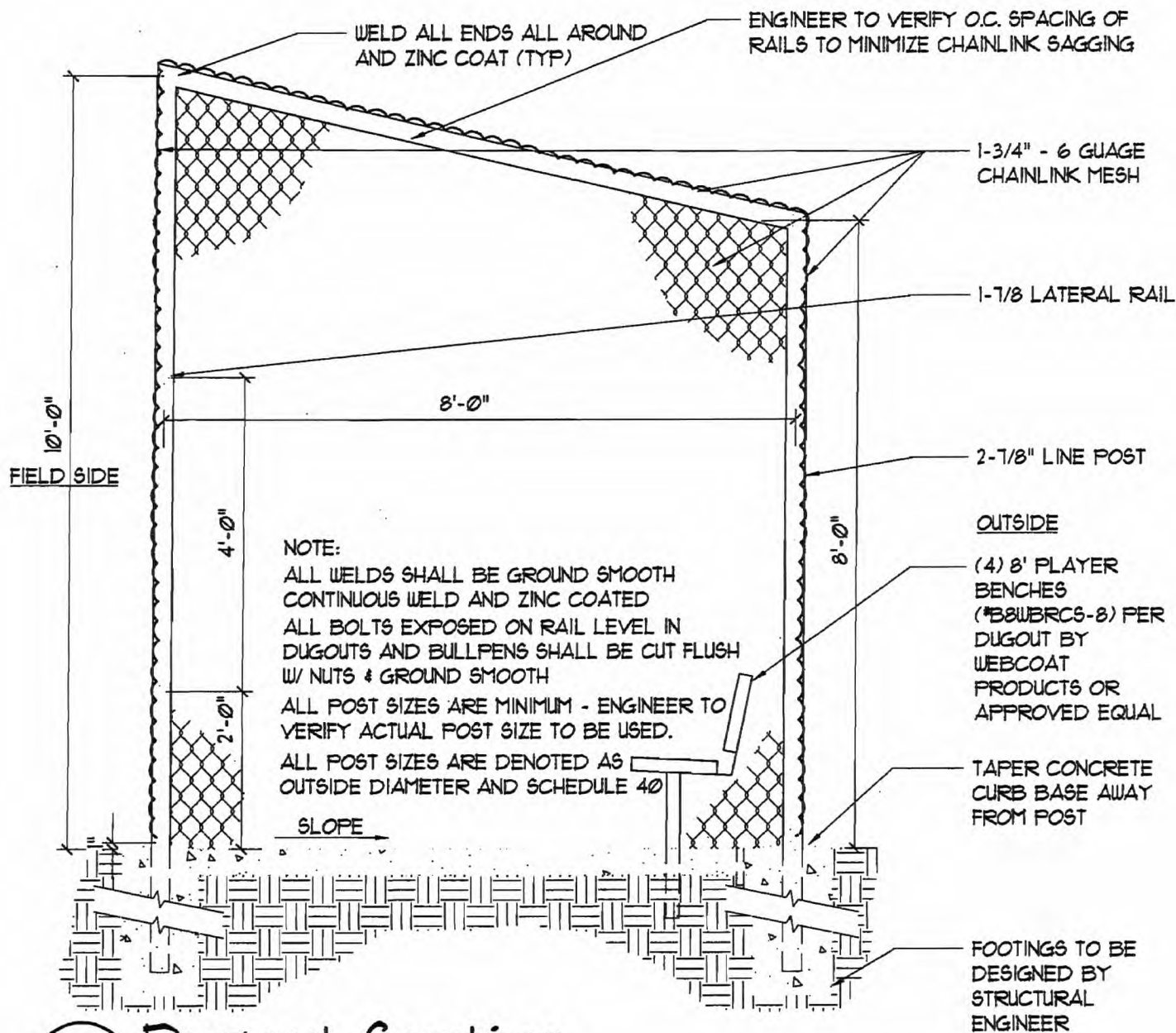


Baseball Sign

Scale: 3" = 1'-0"

REVISED 8/27/03

STO2882-26

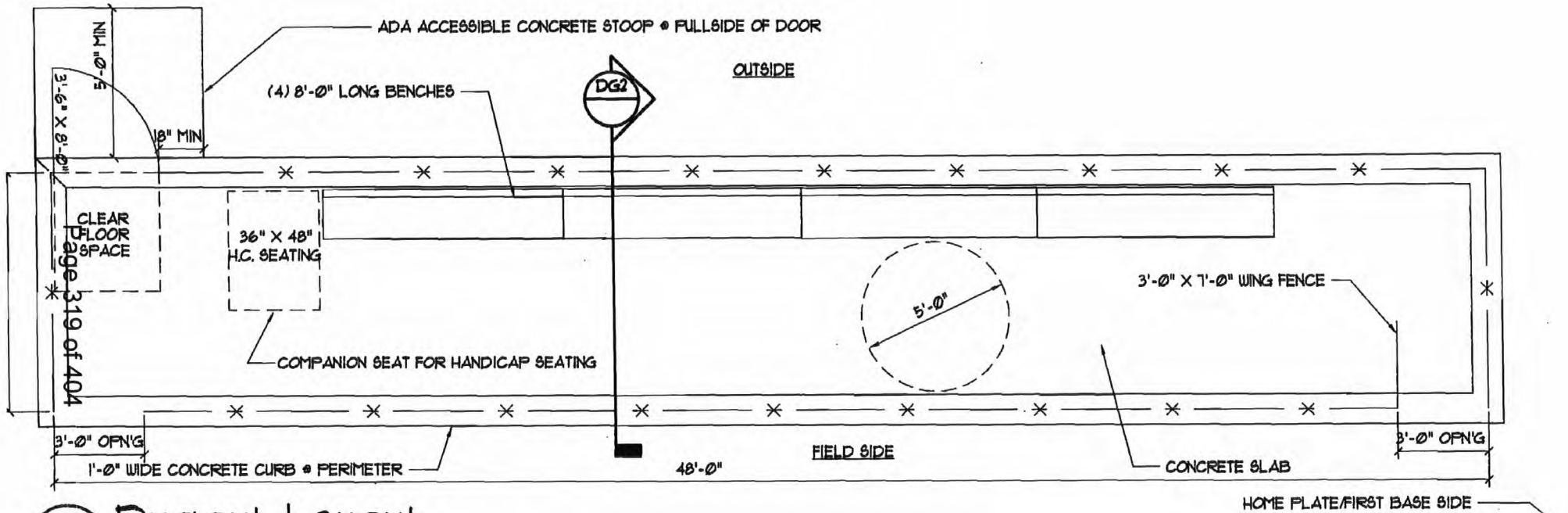


DG2 Dugout Section

Scale: 1/2" = 1'-0"

REVISED 12/16/04

ST02882-44



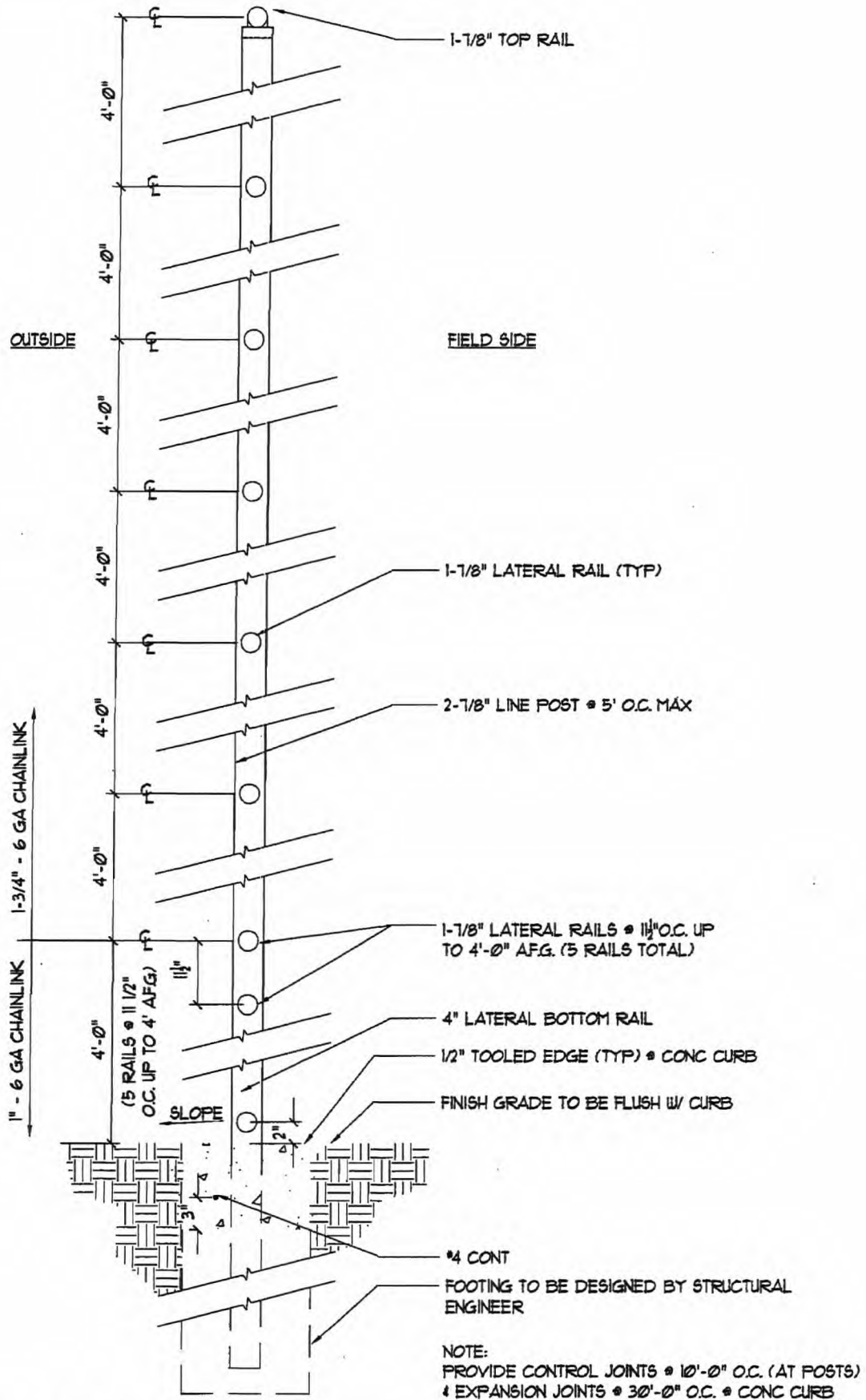
DG1 Dugout Layout

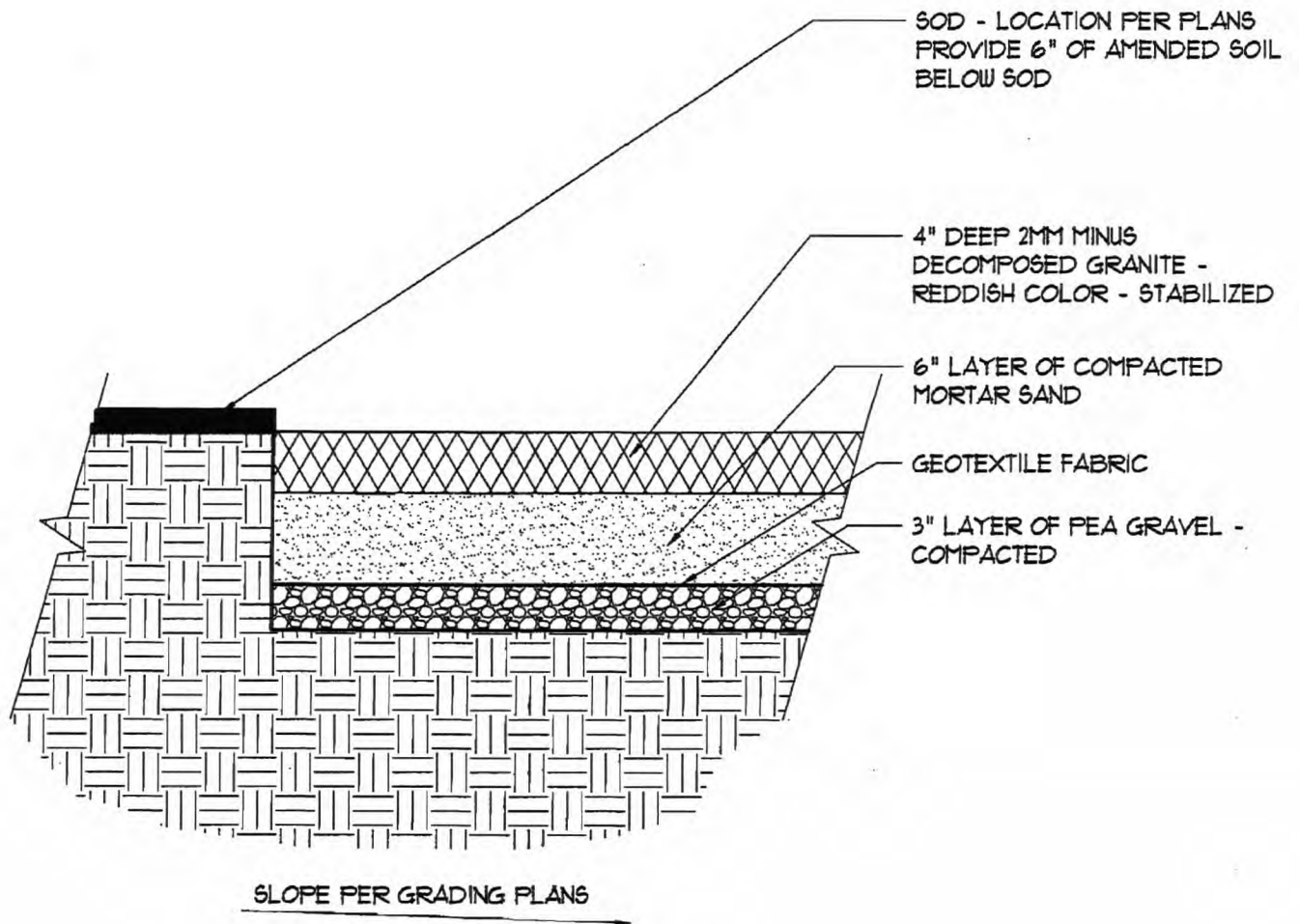
Scale: 1/4" = 1'-0"

REVISED 12/11/03

ST02882-45

NOTE:
ALL POST SIZES ARE MINIMUM - ENGINEER TO VERIFY ACTUAL POST SIZE TO BE USED.
ALL POST SIZES ARE DENOTED AS OUTSIDE DIAMETER AND SCHEDULE 40



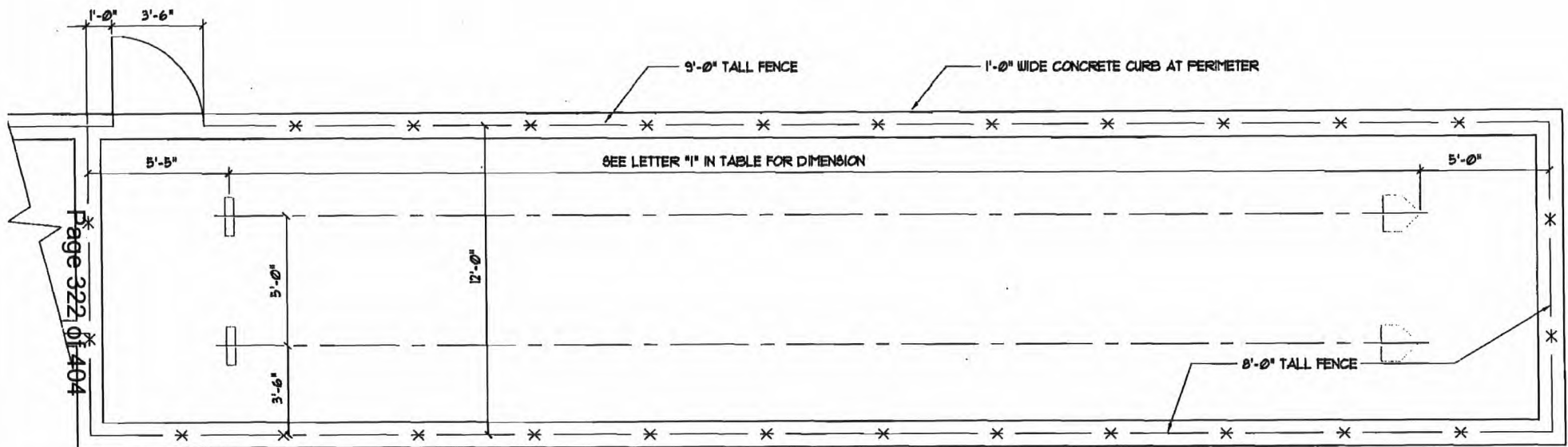


Baseball Infield Surface Section

Scale: 1" = 1'-0"

REVISED 12/11/03

ST02882-48



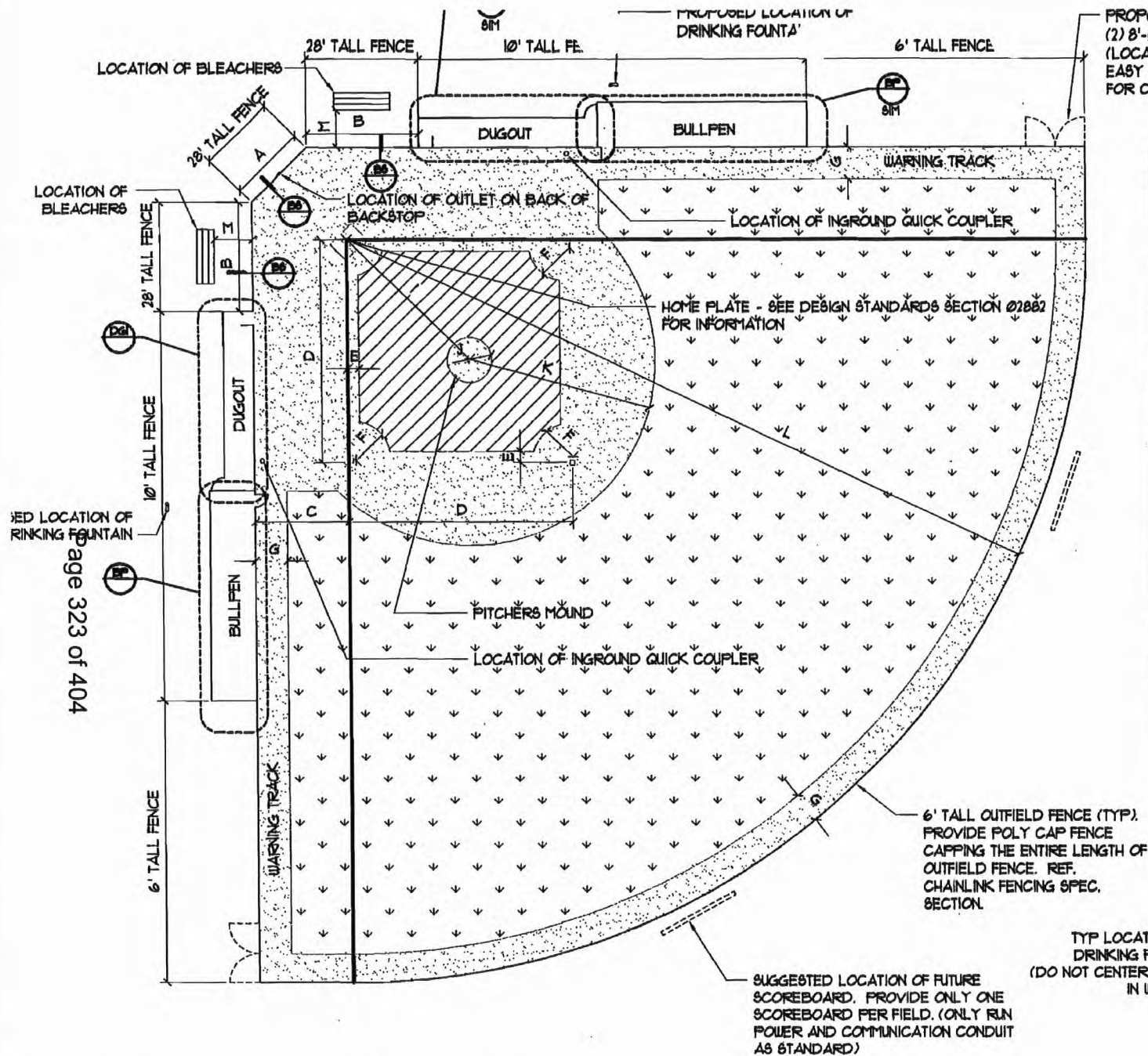
Page 322 of 404

Bullpen Layout

Scale: 1/4" = 1'-0"

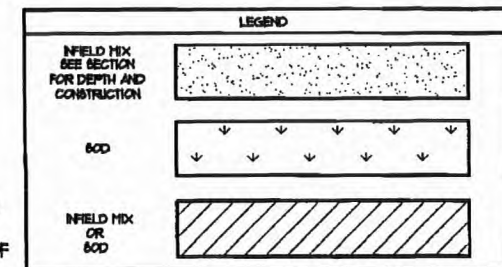
REVISED 12/11/03

ST02882-49



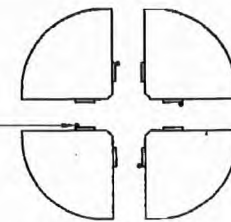
MARK	DESCRIPTION	LITTLE LEAGUE	SOFTBALL	BASEBALL
A	BACKSTOP	20'-0"	20'-0"	30'-0"
B	BACKSTOP WING	30'-0"	30'-0"	40'-0"
C	MIN DIM TO BACKSTOP	25'-0"	25'-0"	35'-0"
D	BASE PATH	6'-0"	6'-0"	9'-0"
E	INFIELD TURF DIM	3'-0"	3'-0"	3'-0"
F	INFIELD TURF BASE RADIUS	N/A	N/A	14'-0"
G	WIDTH OF WARNING TRACK	8'-0"	10'-0"	12'-0"
H	HOME PLATE RADIUS	N/A	N/A	N/A
I	PITCHING LENGTH	46'-0"	46'-0"	60'-6"
J	PITCHERS MOUND RADIUS	6'-0"	9'-0"	9'-0"
K	OUTFIELD RADIUS	50'-0"	65'-0"	150'-0"
L	CENTERFIELD FENCE RADIUS	200'-0"	250'-0" to 300'	VARIES
M	BLEACHER SETBACK	5'-0"	5'-0"	5'-0"
N/A	INFIELD SURFACE	SKINNED	SKINNED	GRASS

NOTE: SIZES TO VARY PER SITE CONSTRAINTS



REVISED 10/23/03

TYP LOCATIONS FOR DRINKING FOUNTAINS (DO NOT CENTER FOUNTAIN IN WALKWAY)



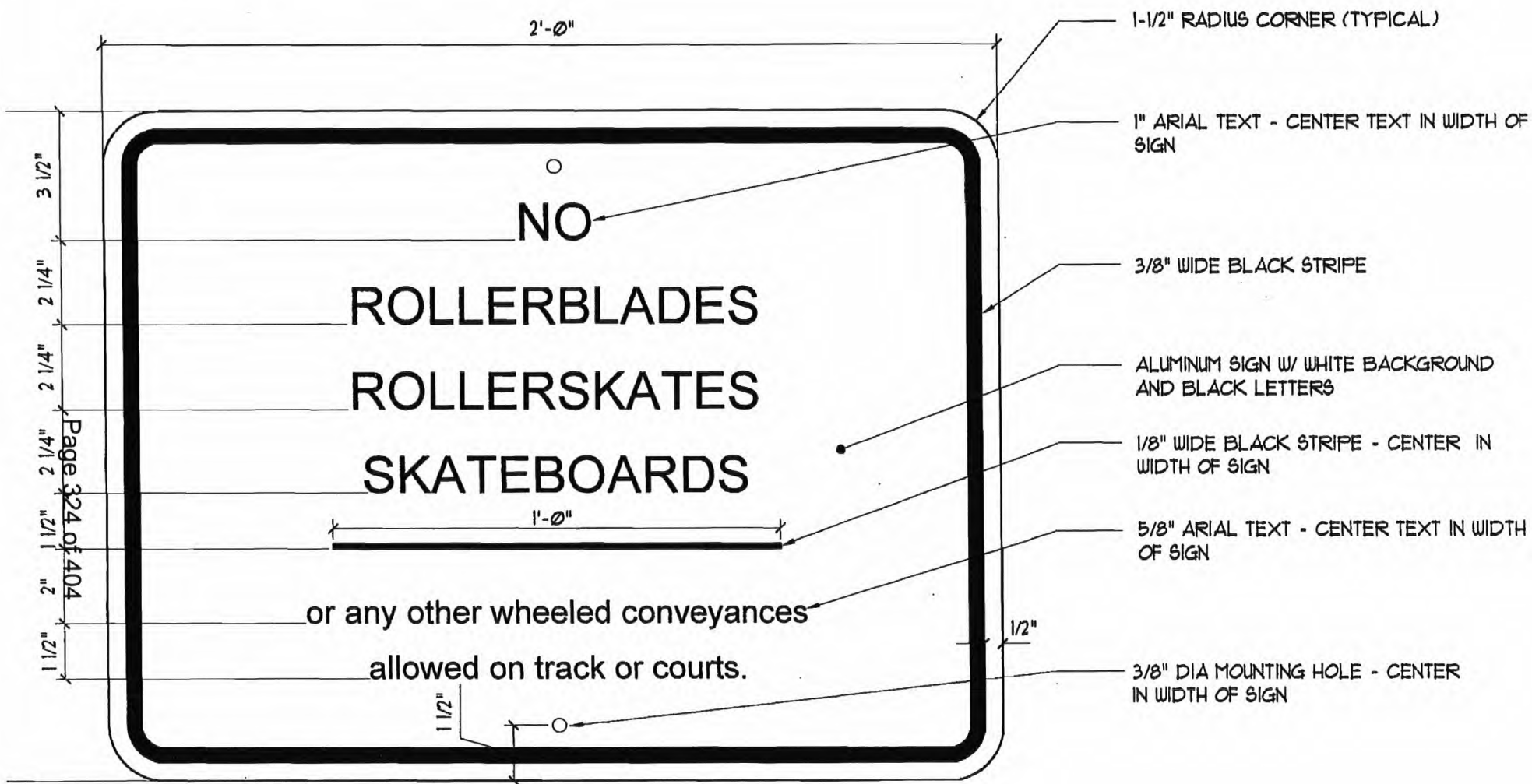
TYPICAL QUAD FIELD LAYOUT

Baseball Field Layout

Scale: N.T.S.

REVISED 12/3/04

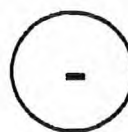
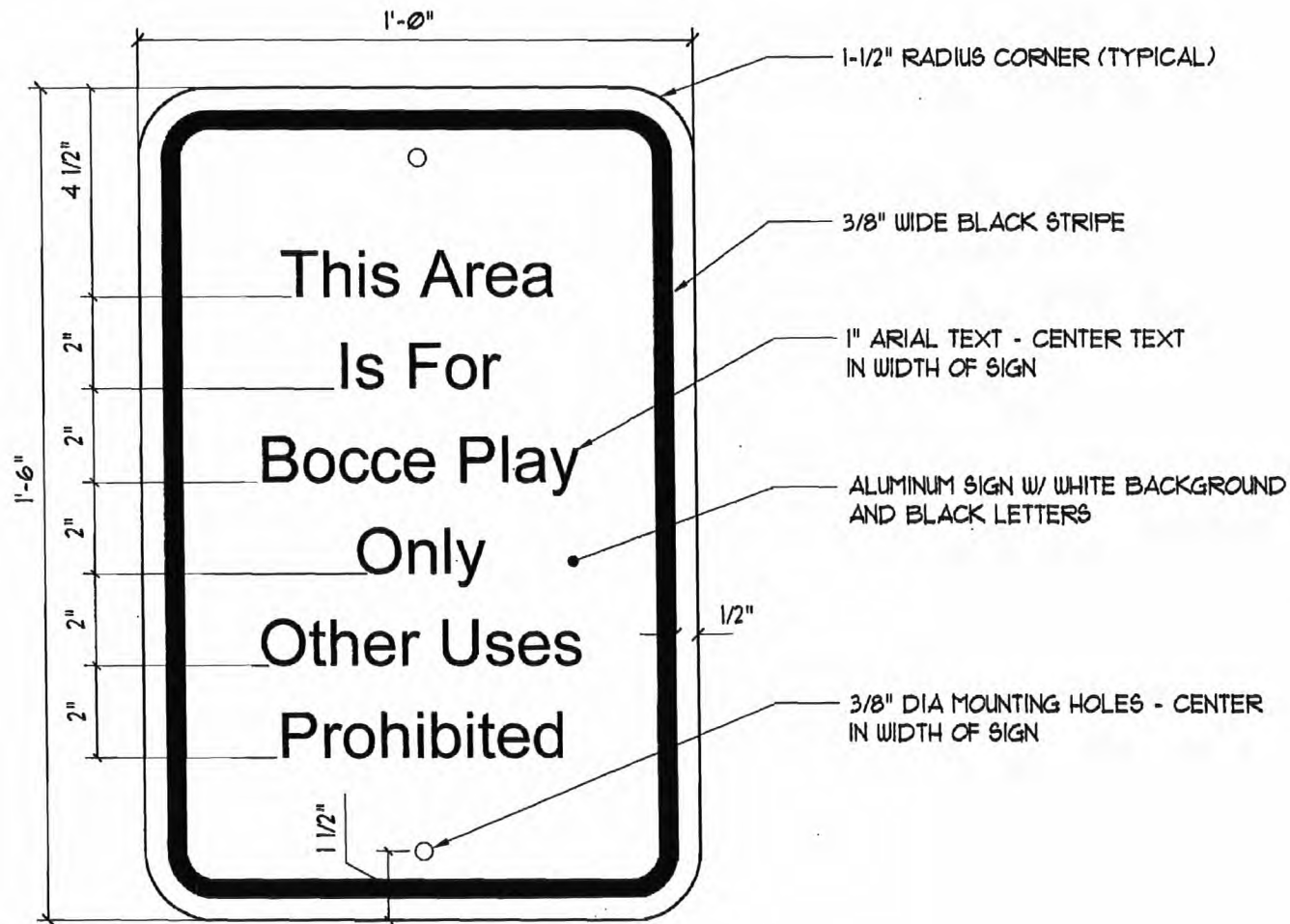
6702862-51



 Track/Court Sign
 Scale: 3" = 1'-0"

REVISED 8/27/03

STO2882-17

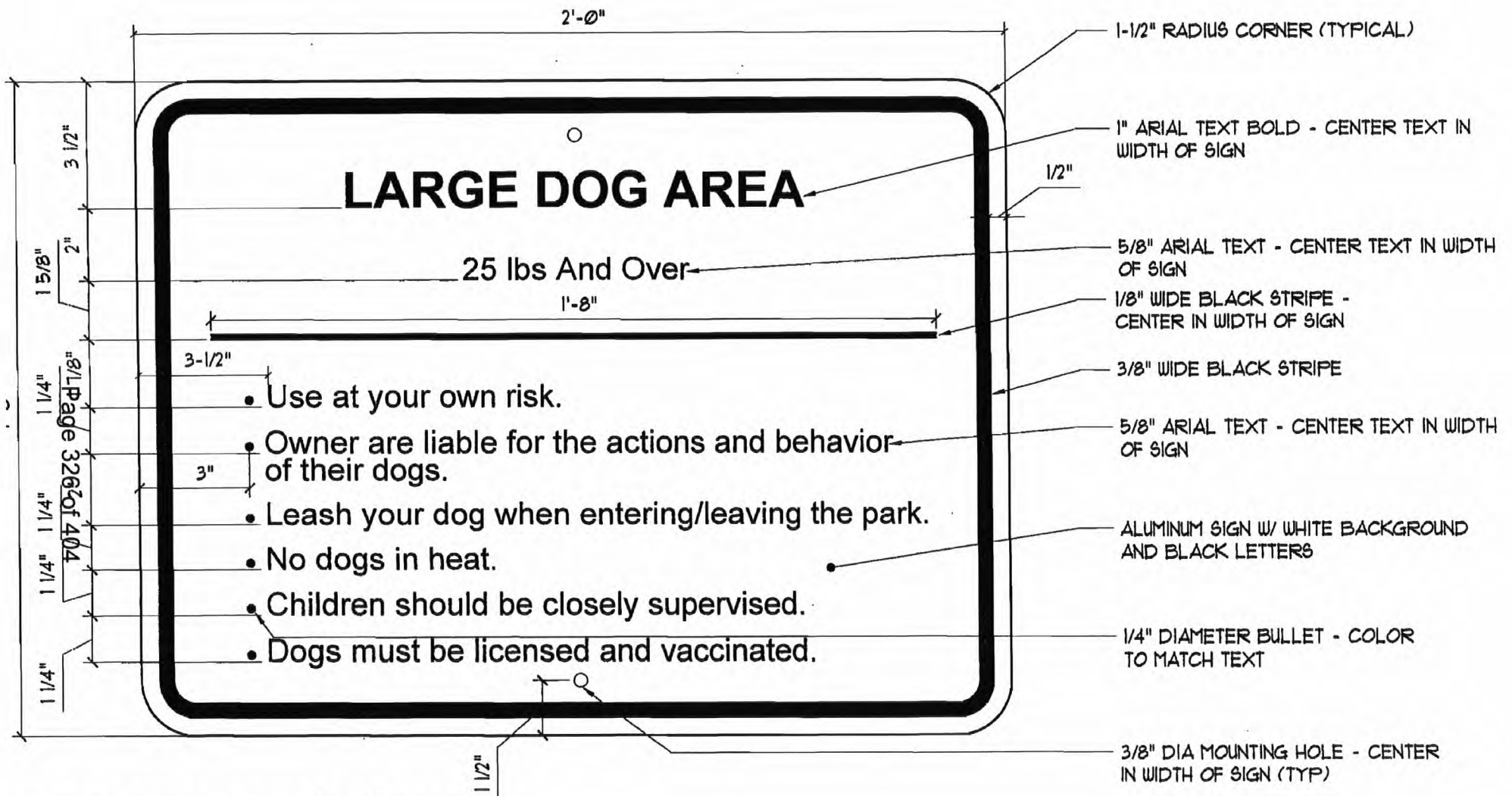


Bocce Sign

Scale: 3" = 1'-0"

REVISED 8/27/03

STO2882-06

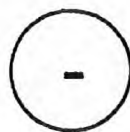


Dog Park Sign

Scale: 3" = 1'-0"

REVISED 4/12/04

STO2882-II



Scale: 3" = 1'-0"

STO2882-19

DOG PARK GUIDELINES

Handlers Responsibilities

- Use at your own risk.
- Handlers are encouraged to inquire about any dogs that are unfamiliar to them, prior to entering.
- Handlers must have effective voice control over their dogs.
- Handlers will have visible leashes available to restrain their dogs while in this area.
- Handlers may bring up to 3 dogs into this area.
- Handlers must immediately clean feces and repair any damage done by their dog(s).
- Handlers will keep nuisance barking to a minimum - respect the neighbors.
- Handlers must be fifteen years or older.
- Handlers are discouraged from bringing food into this area.
- Dogs must be leashed immediately at the first sign of aggression and removed if necessary.
- Dogs that have been declared dangerous are prohibited from entering this area.
- Dog owners living in the City of Las Vegas must have their dogs licensed with the City of Las Vegas. Contact the Lied Animal Shelter for licensing requirements (384-3333).
- All dogs must have current rabies vaccinations.
- Dogs should be parasite and disease free, vaccinated according to the recommendations of their veterinarians.
- Please do not bring dogs less than four months of age.

1-1/2" RADIUS CORNER (TYPIC)

2" ARIAL BOLD TEXT - CENTER TEXT IN WIDTH OF SIGN

1" ARIAL TEXT - CENTER TEXT IN WIDTH OF SIGN

5/8" ARIAL TEXT

ALUMINUM SIGN W/ WHITE BACKGROUND AND BLACK LETTERS

1/4" DIAMETER BULLET - COLOR TO MATCH TEXT

3/8" WIDE BLACK STRIPE

3/8" DIA MOUNTING HOLE - CENTER IN WIDTH OF SIGN

3 3/4"
2 3/4"
2"
1 1/2"

2 1/8"

1 1/2"

1 1/2"
1 1/4"

1/2"

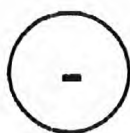
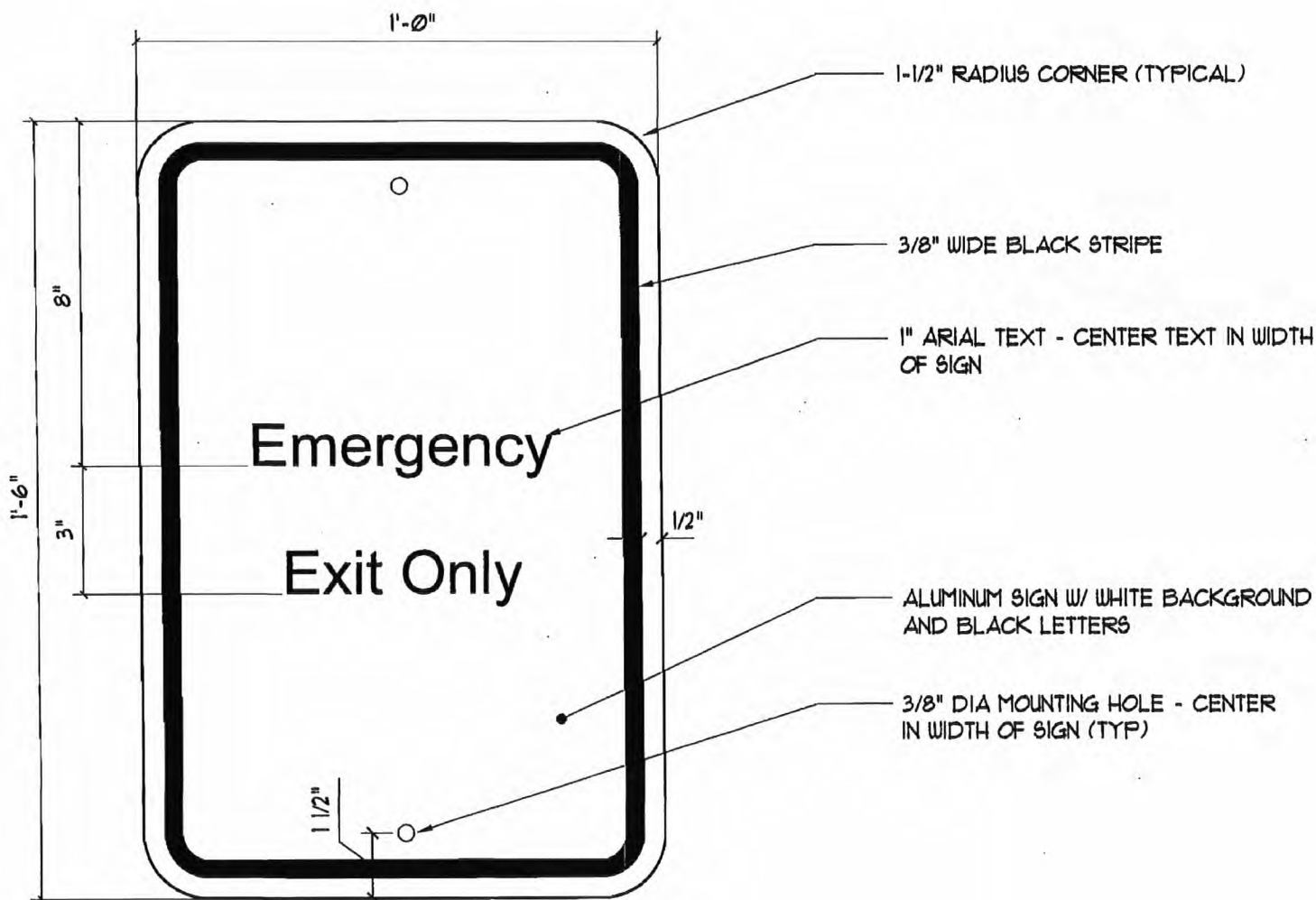
1 1/2"

Dog Park Sign

Scale: 3" = 1'-0"

REVISED 1/3/04

ST02882-21

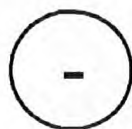
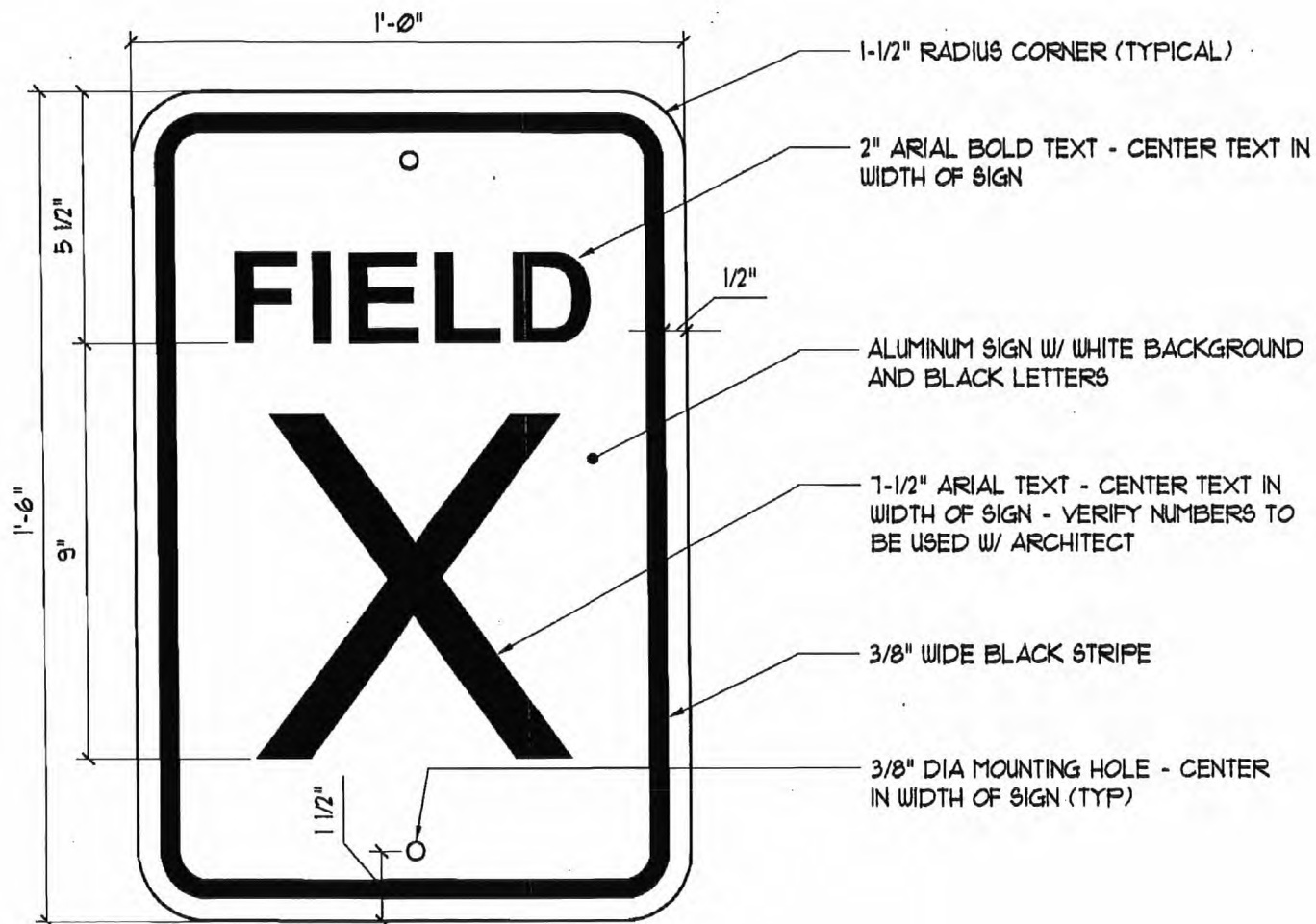


Dog Park Sign

Scale: 3" = 1'-0"

REVISED 8/27/03

STO2882-23

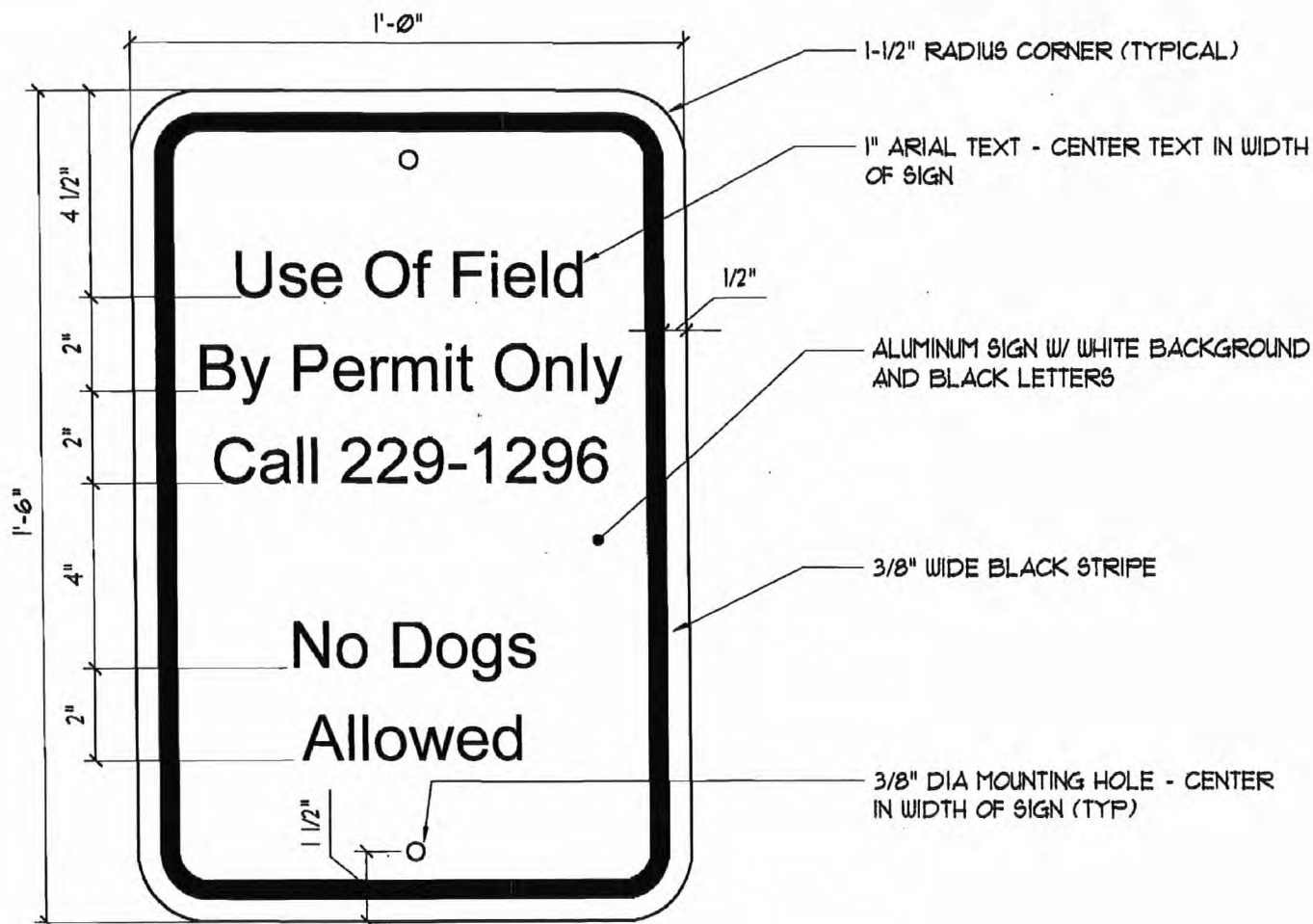


Field I.D. Sign

Scale: 3" = 1'-0"

REVISED 4/14/04

STO2882-08

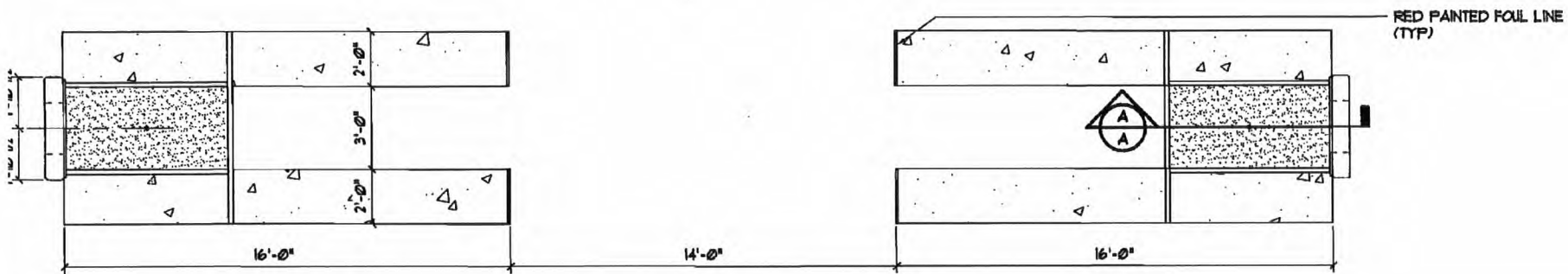


Field Rules Sign

Scale: 3" = 1'-0"

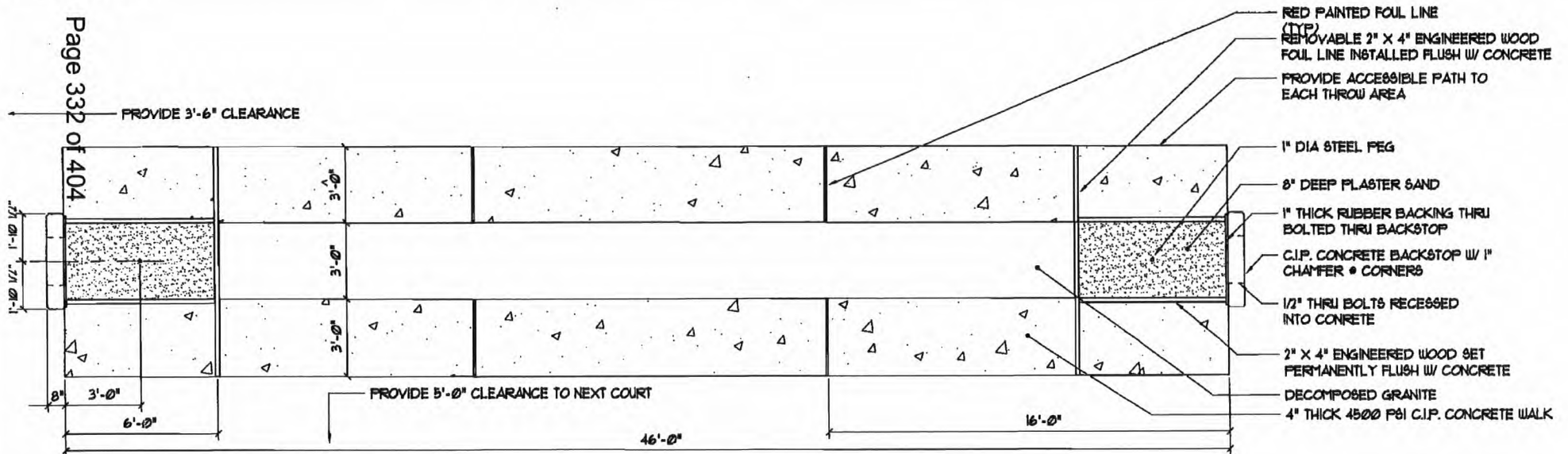
REVISED 4/14/04

STO2882-52



Standard Horseshoe Court Layout (See Below For Additional Information)

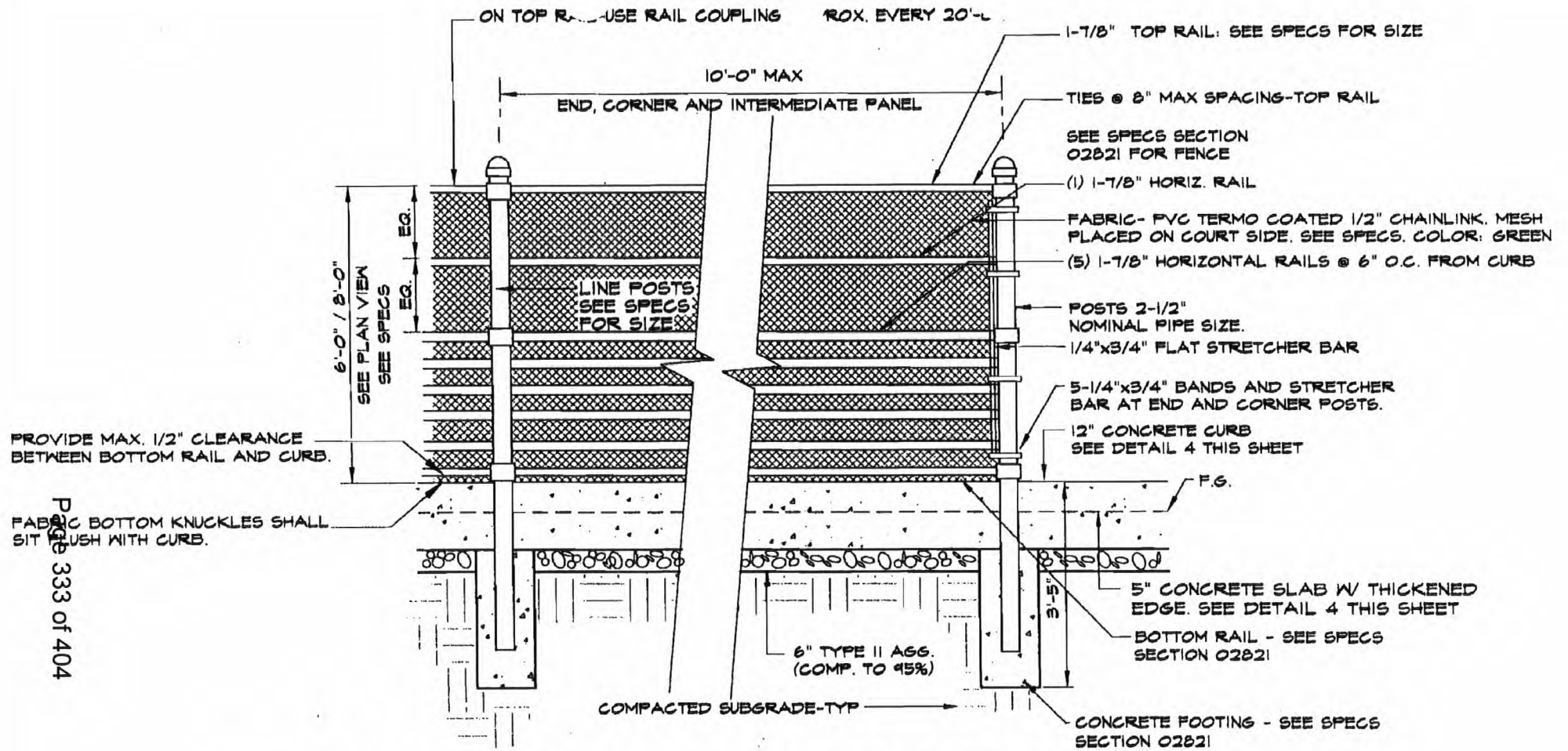
Scale: 1/4" = 1'-0"



Handicapped Horseshoe Court Layout

Scale: 1/4" = 1'-0"

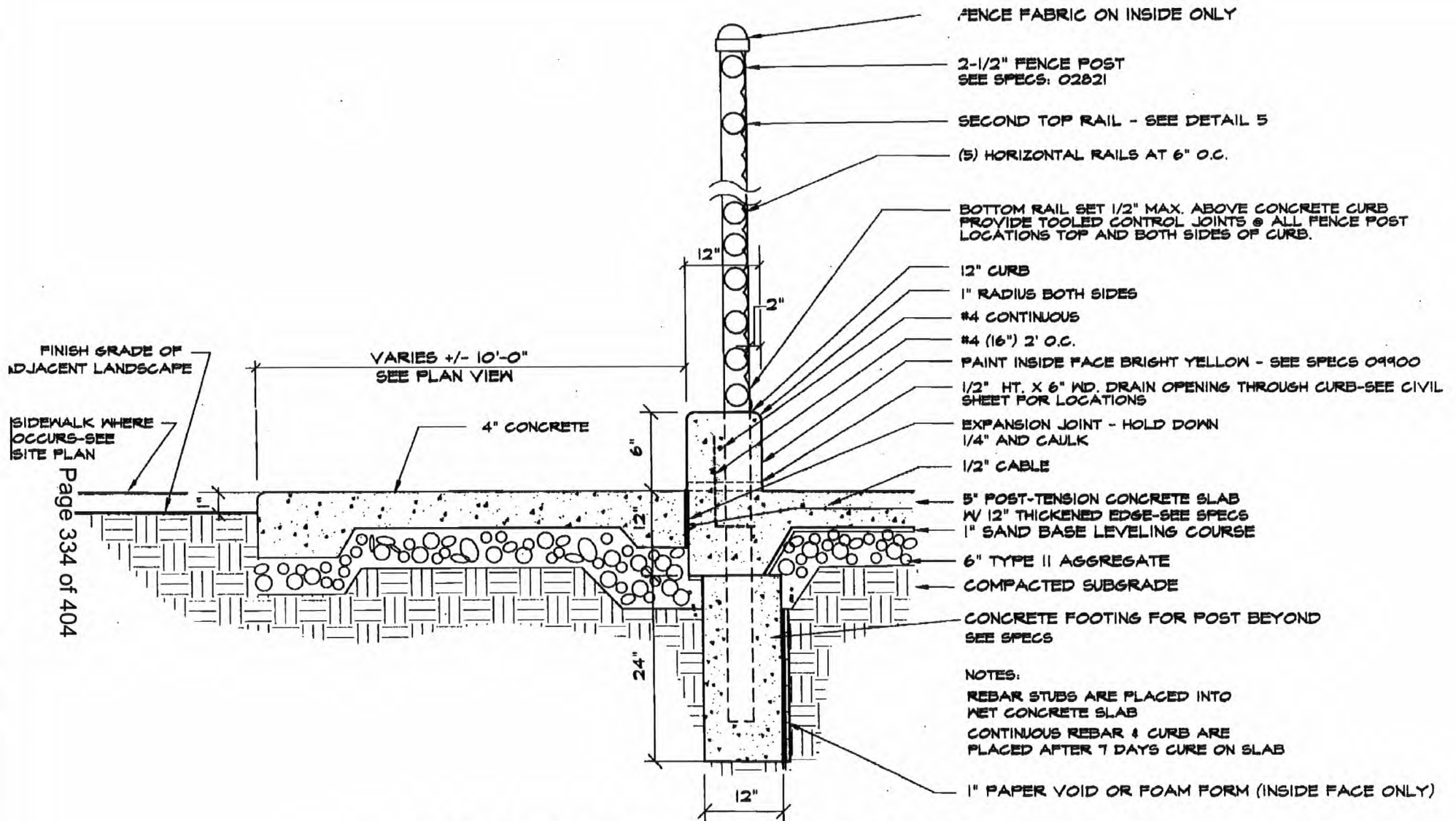
REVISED 8/21/03



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3 6' & 8' HT CHAIN LINK FENCE W/ HEADER AT ROLLER HOCKEY

NTS



4 6' & 8' HT CHAINLINK FENCE W/ HEADER AT ROLLER HOCKEY - SECTION

NTS

truction\02882\RollerHockey\RollerHockeyFenceSection.jpg"

Scale: 3" = 1'-0"

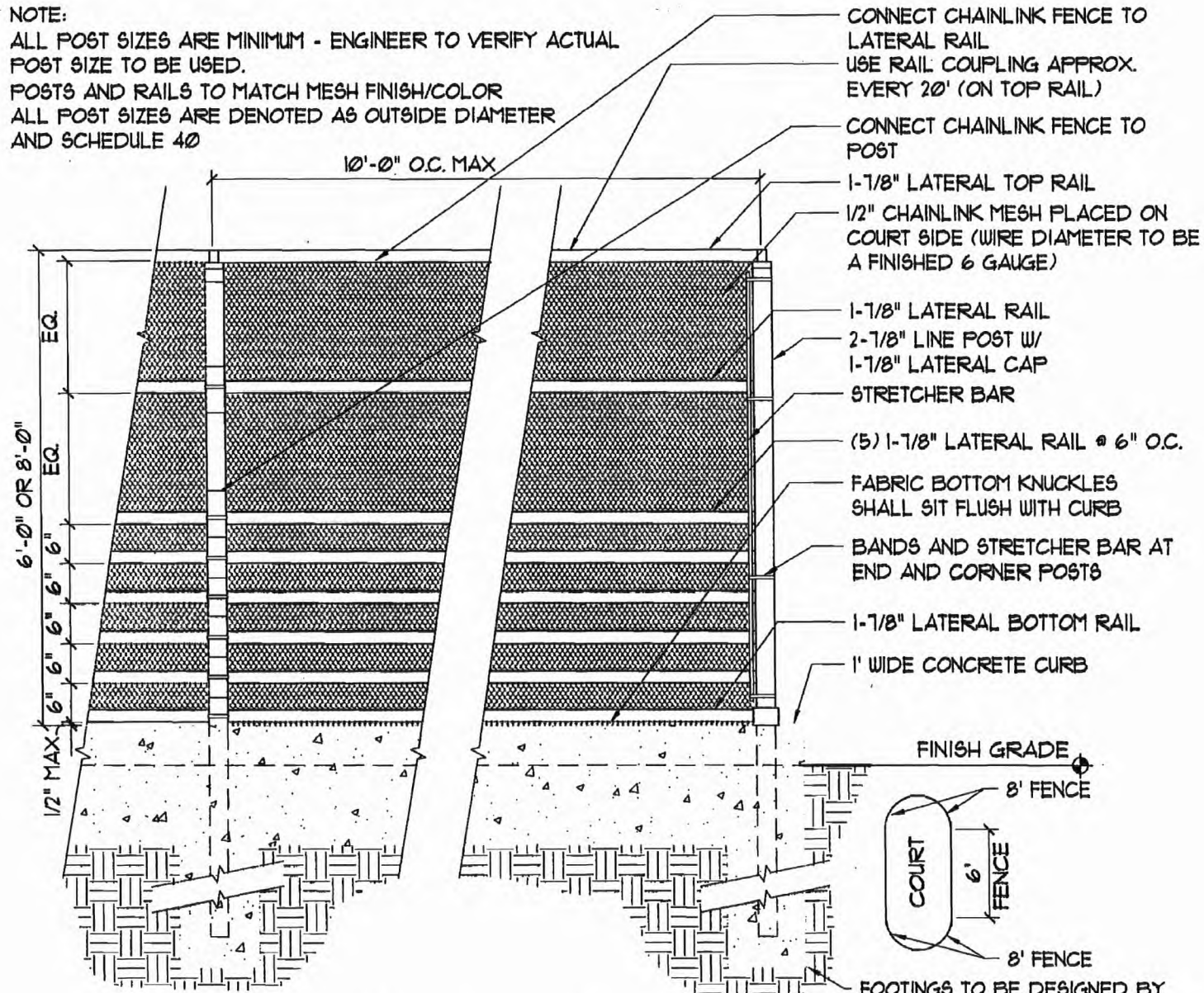
STO2882-13

NOTE:

ALL POST SIZES ARE MINIMUM - ENGINEER TO VERIFY ACTUAL POST SIZE TO BE USED.

POSTS AND RAILS TO MATCH MESH FINISH/COLOR

ALL POST SIZES ARE DENOTED AS OUTSIDE DIAMETER AND SCHEDULE 40



CONNECT CHAINLINK FENCE TO LATERAL RAIL

USE RAIL COUPLING APPROX. EVERY 20' (ON TOP RAIL)

CONNECT CHAINLINK FENCE TO POST

1-7/8" LATERAL TOP RAIL

1/2" CHAINLINK MESH PLACED ON COURT SIDE (WIRE DIAMETER TO BE A FINISHED 6 GAUGE)

1-7/8" LATERAL RAIL

2-7/8" LINE POST W/ 1-7/8" LATERAL CAP

STRETCHER BAR

(5) 1-7/8" LATERAL RAIL @ 6" O.C.

FABRIC BOTTOM KNUCKLES SHALL SIT FLUSH WITH CURB

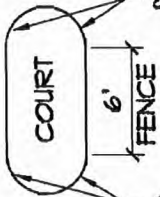
BANDS AND STRETCHER BAR AT END AND CORNER POSTS

1-7/8" LATERAL BOTTOM RAIL

1" WIDE CONCRETE CURB

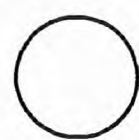
FINISH GRADE

8' FENCE



8' FENCE

FOOTINGS TO BE DESIGNED BY STRUCTURAL ENGINEER



Roller Hockey Chain Link Fence Elev.

Scale: 1/2" = 1'-0"

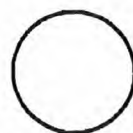
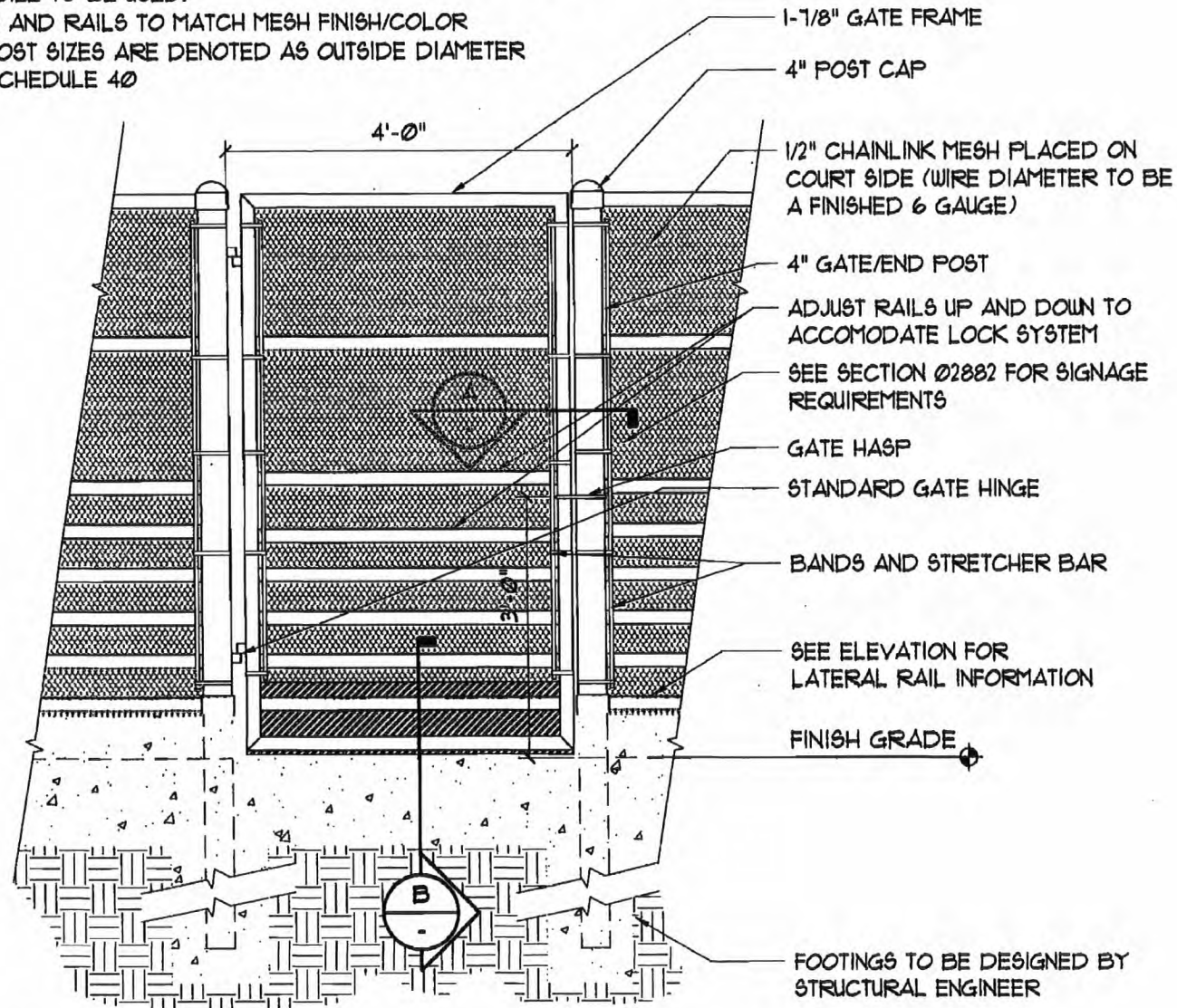
REVISED 12/11/03 ST02882-37

NOTE:

ALL POST SIZES ARE MINIMUM - ENGINEER TO VERIFY ACTUAL POST SIZE TO BE USED.

POSTS AND RAILS TO MATCH MESH FINISH/COLOR

ALL POST SIZES ARE DENOTED AS OUTSIDE DIAMETER AND SCHEDULE 40

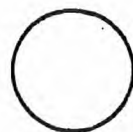
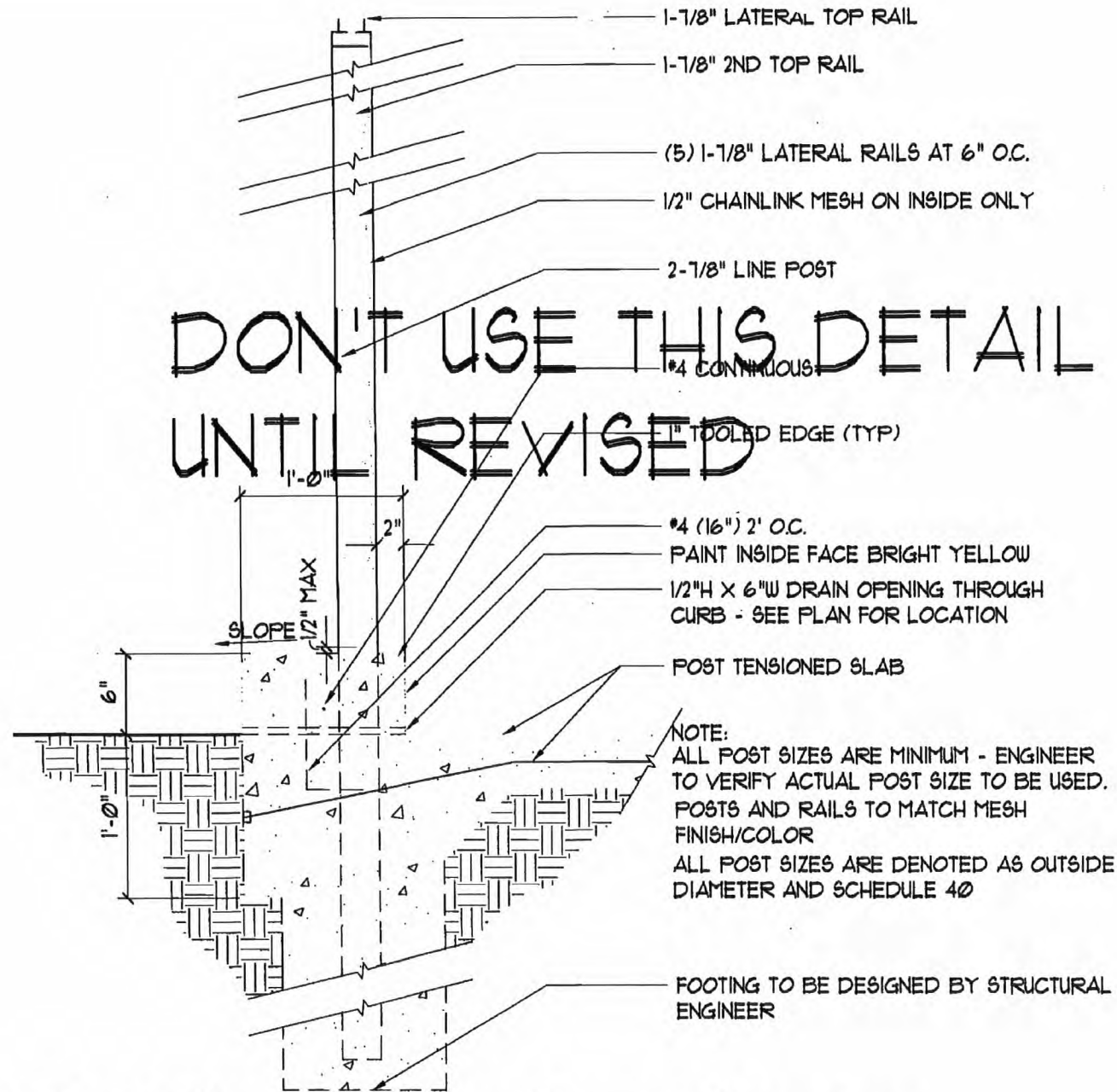


Roller Hockey Fence Gate Elevation

Scale: 1/2" = 1'-0"

REVISED 12/11/03

ST02882-38

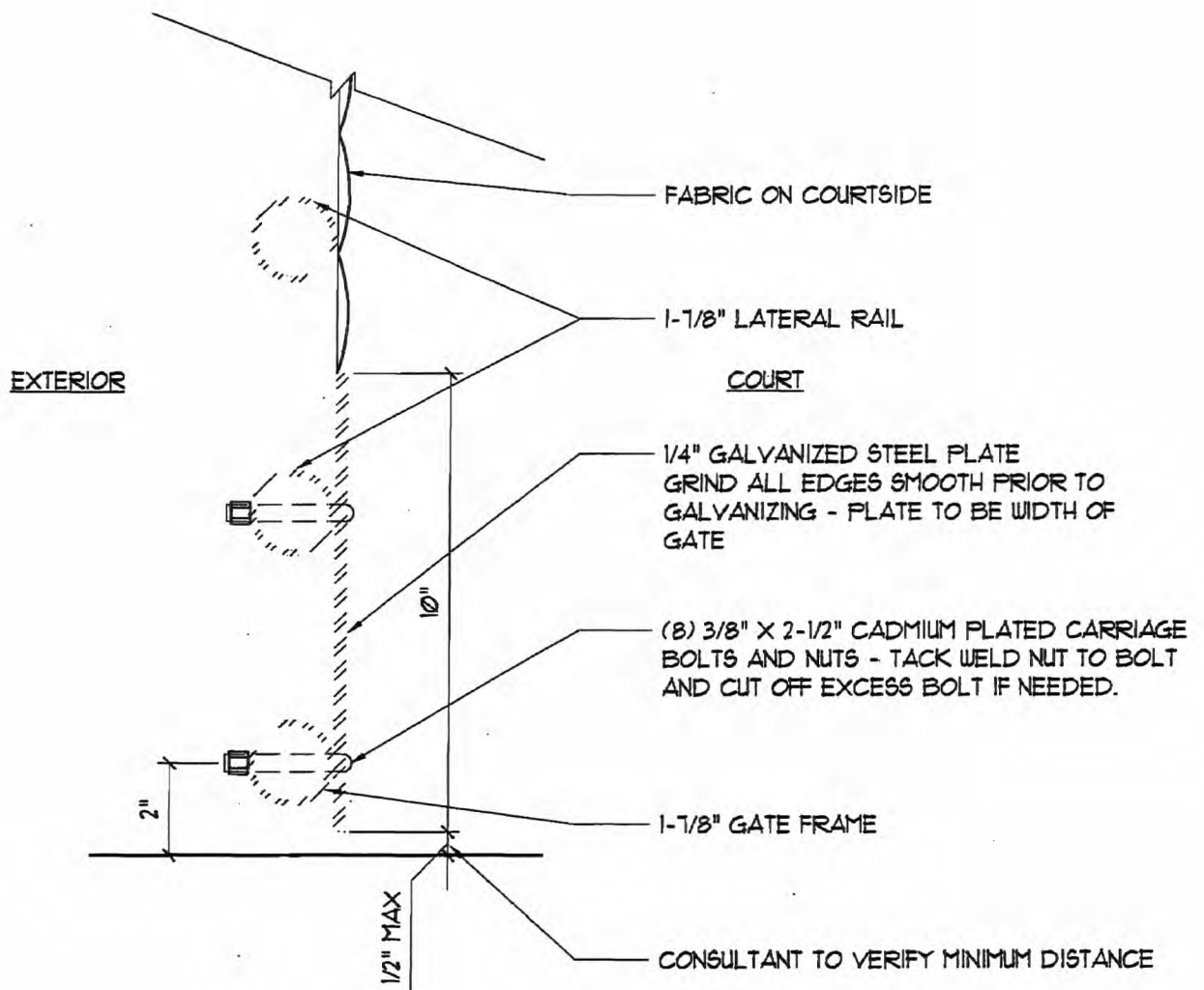


Roller Hockey Fence Section

Scale: 1" = 1'-0"

REVISED 12/11/03

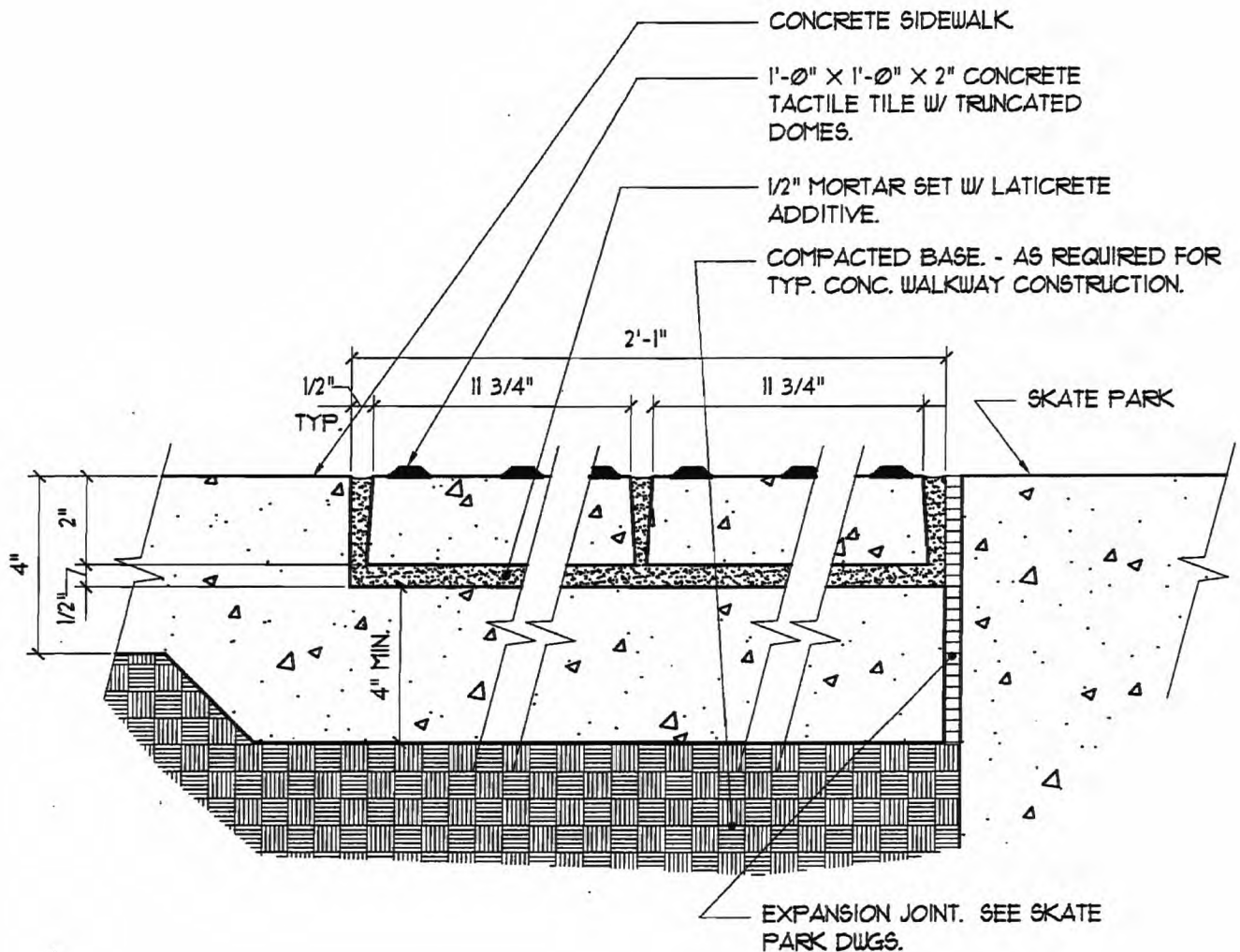
ST02882-39



Roller Hockey Gate Section

Scale: 3" = 1'-0"

REVISED 9/2/03 ST02882-40

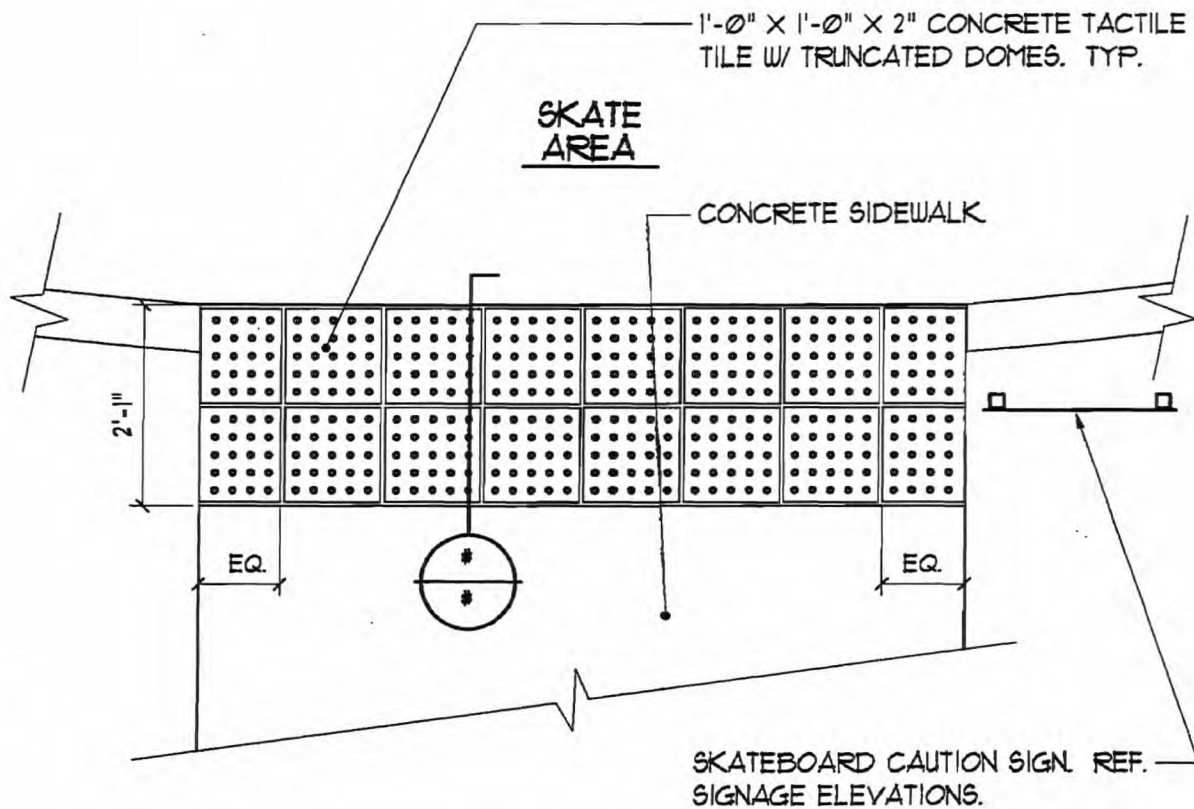


○ Detectable Warning @ Skate Park

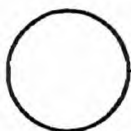
Scale: 3" = 1'-0"

REVISED 6/7/01

ST02882-01



NOTE: LAYOUT TILES CENTERED ON WALK WITH NO EDGE TILES LESS THAN HALF THE WIDTH OF A TILE.

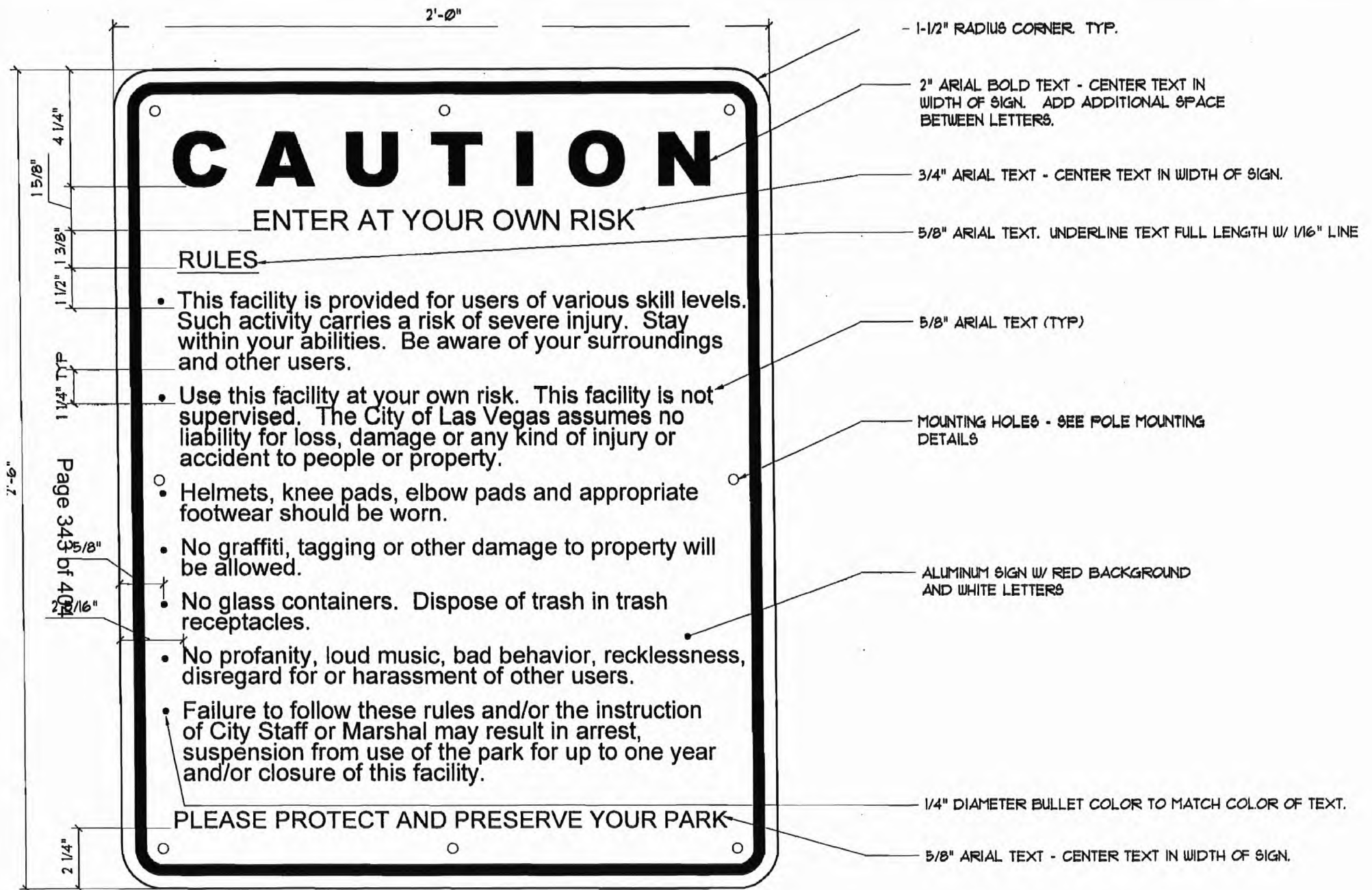


SkatePark Entry Paver View

Scale: 1/2" = 1'-0"

REVISED 6/1/03

ST02882-02

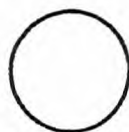
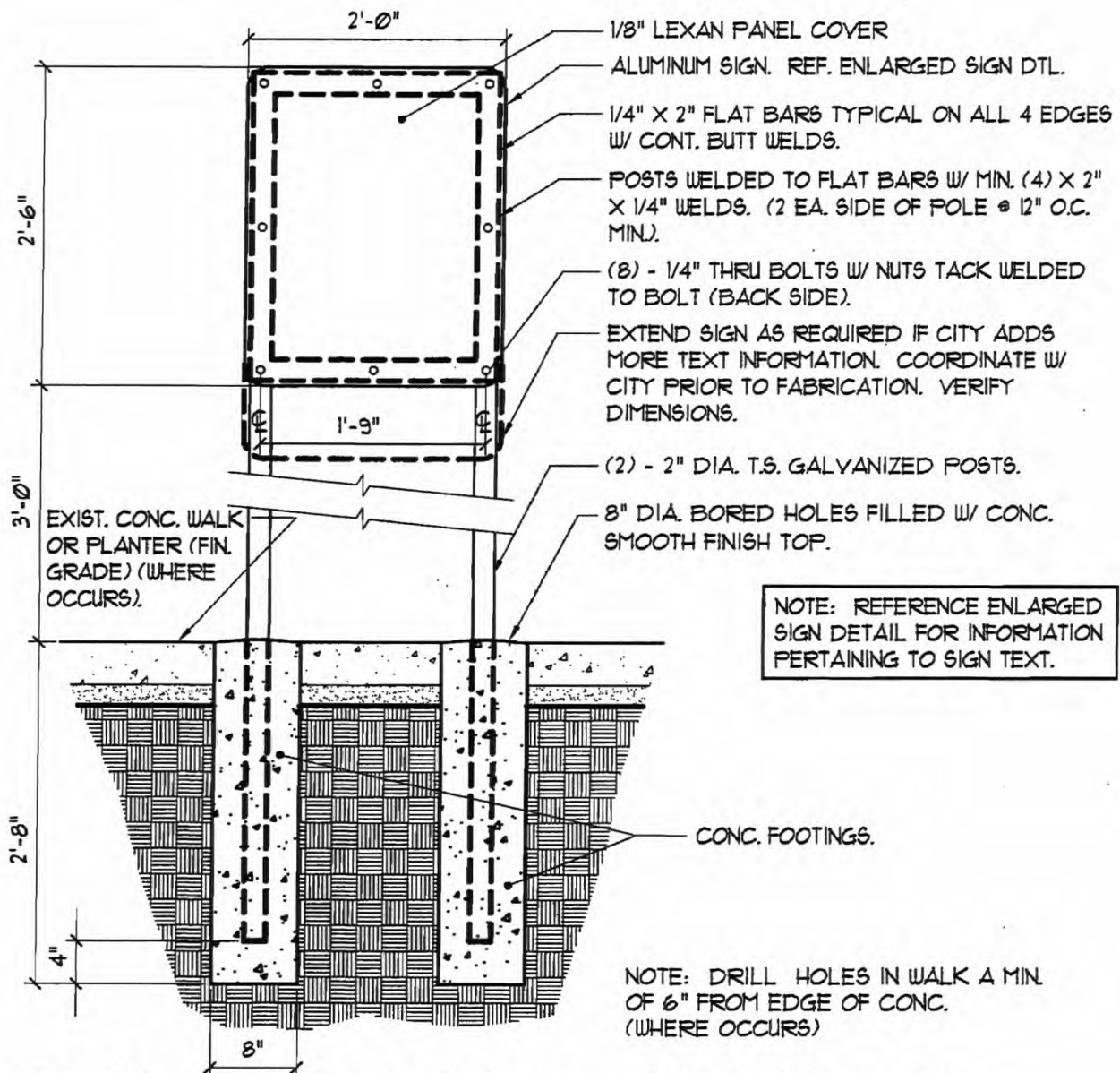


Skate Park Rules/Caution Sign

Scale: 3" = 1'-0"

REVISED 4/12/04

ST02882-03



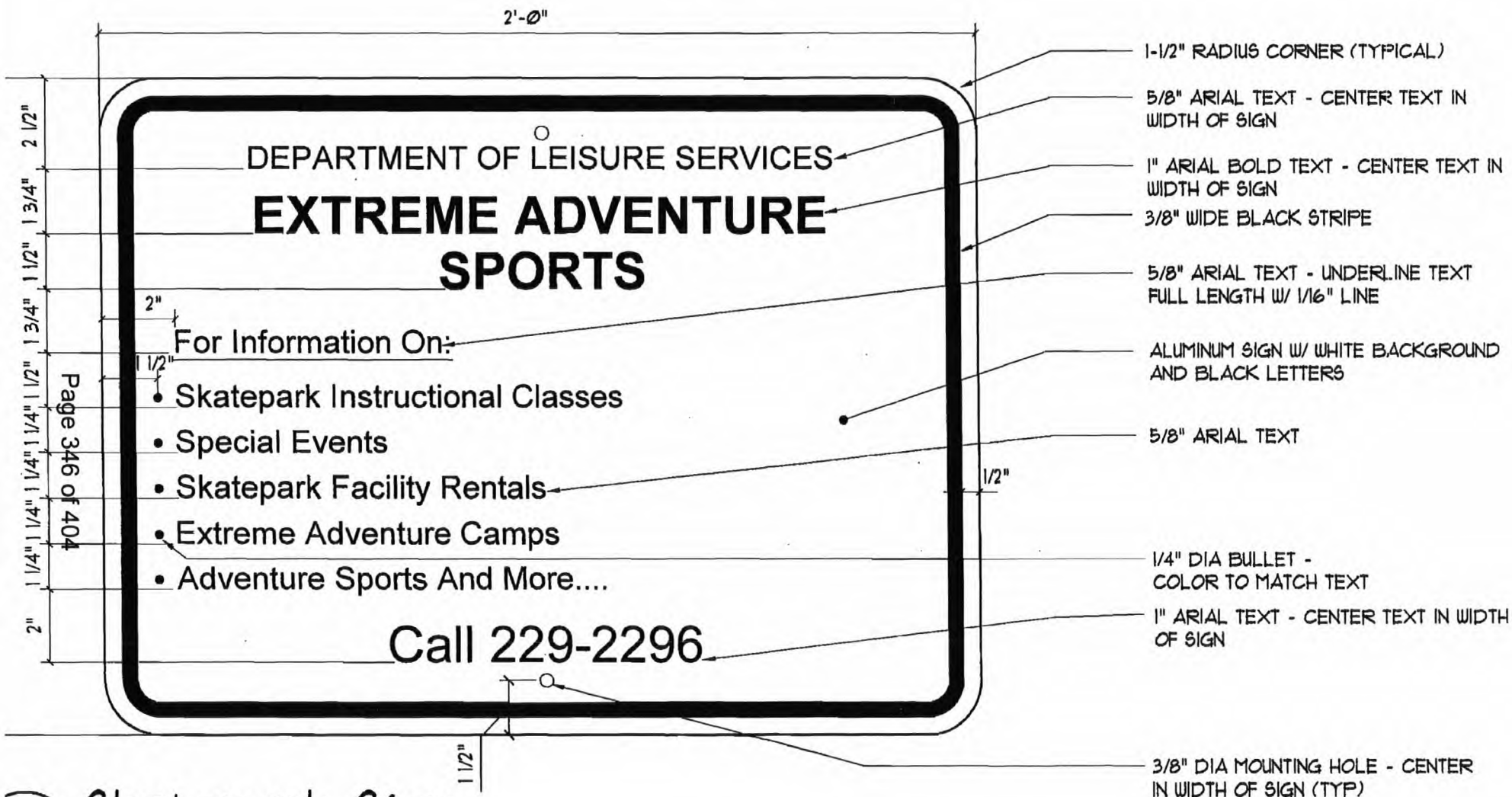
Skate Park Pole Mt'd. Detail

Scale: 3/4" = 1'-0"

REVISED 5/1/04 ST02882-04



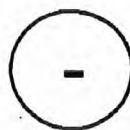
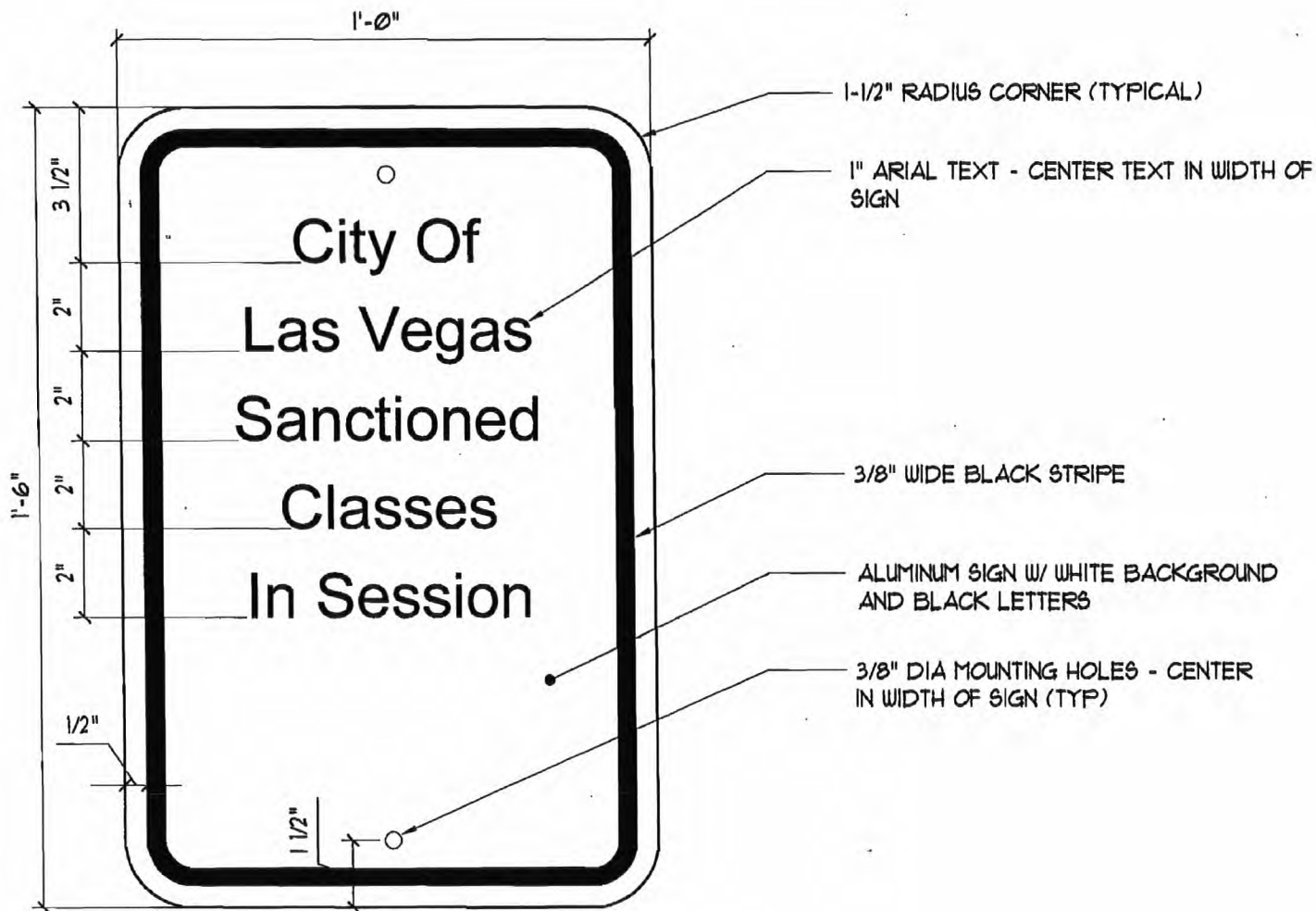
REVISÉD 5/7/04 ST02882-05



Skatepark Sign

Scale: 3" = 1'-0"

REVISED 8/21/03 STO2882-12

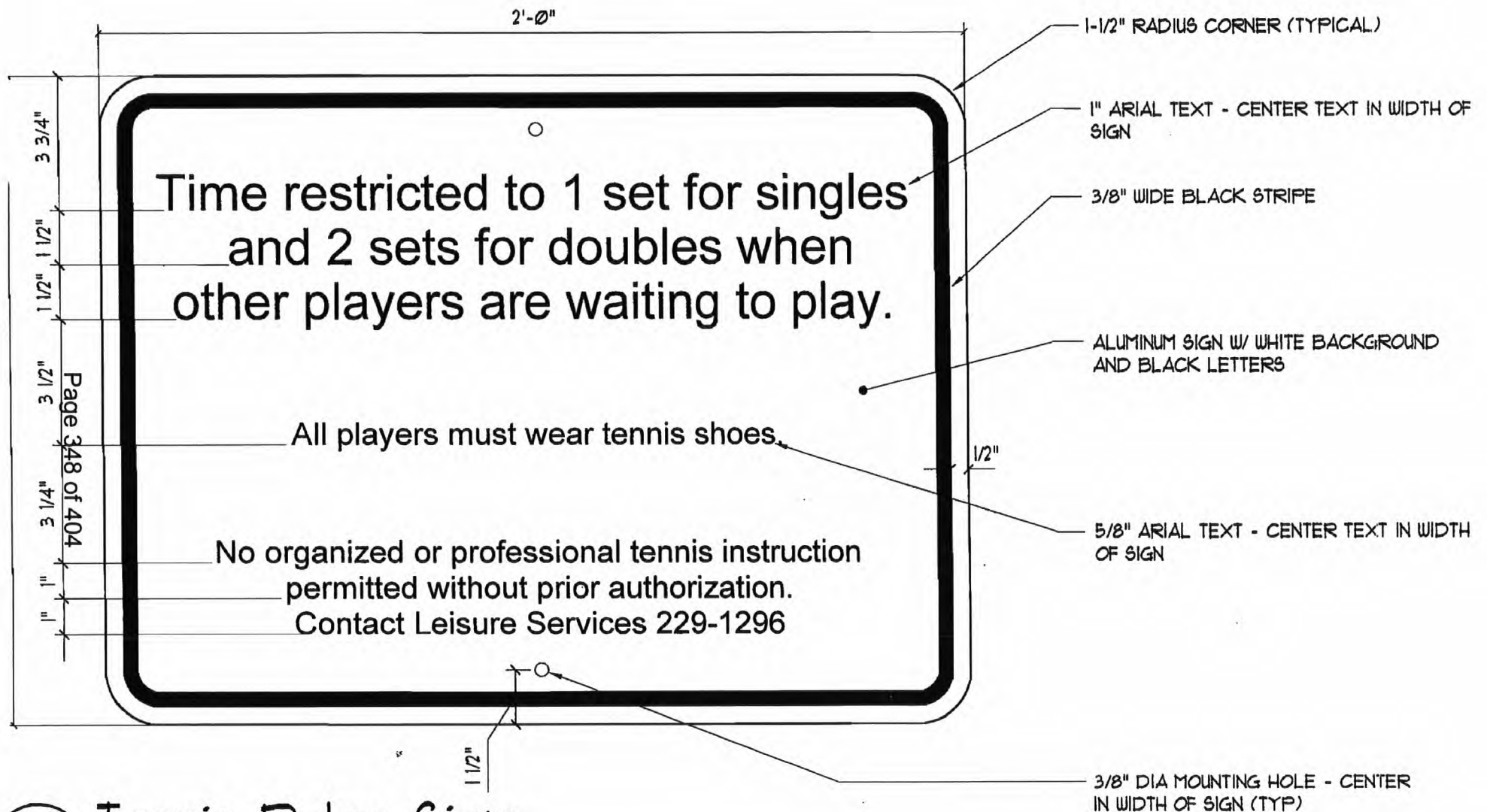


Tennis Class Sign

Scale: 3" = 1'-0"

REVISED 8/27/03

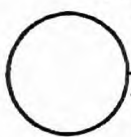
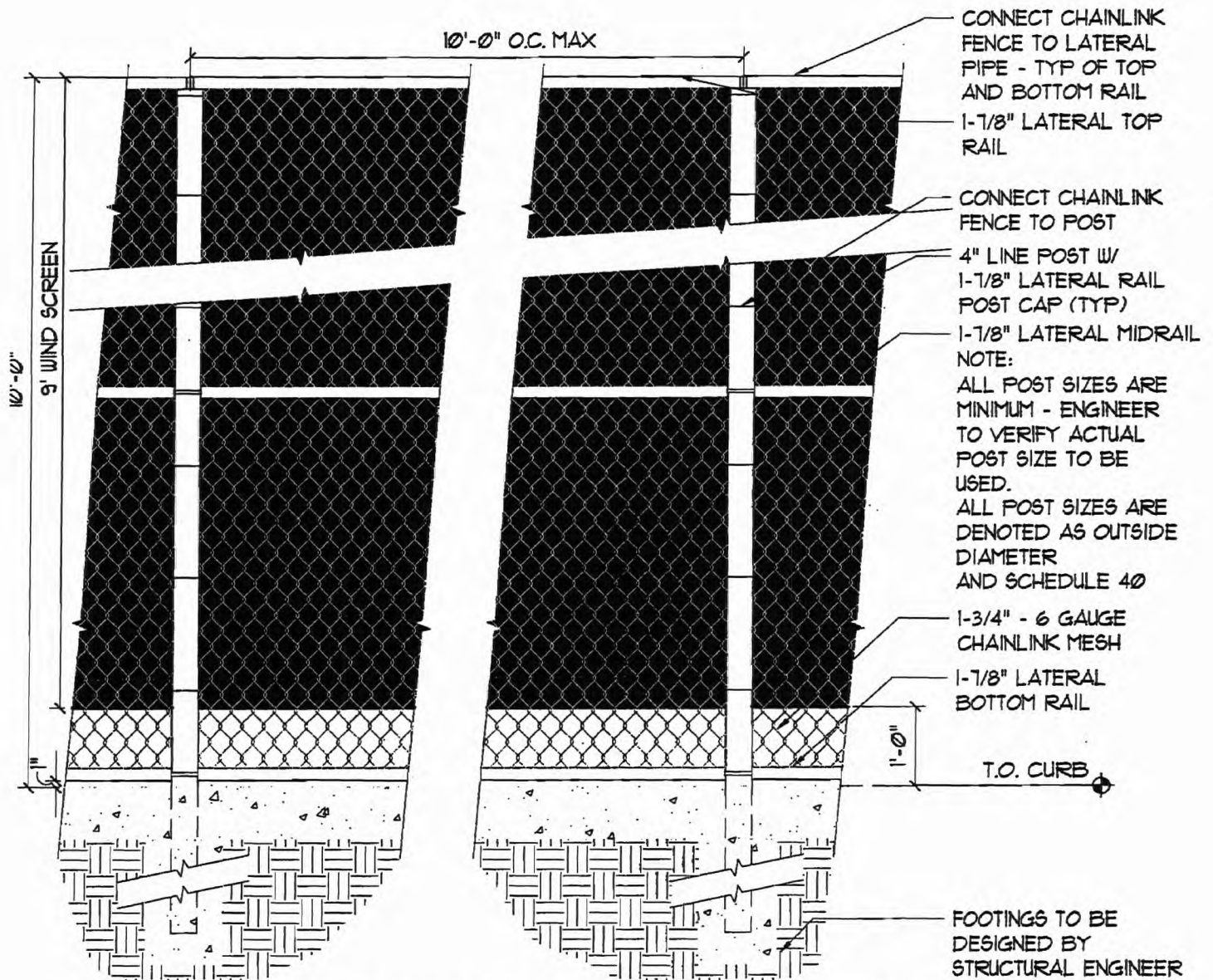
ST02882-15



Tennis Rules Sign
 Scale: 3" = 1'-0"

REVISED 4/1/04

STO2882-16

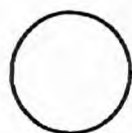
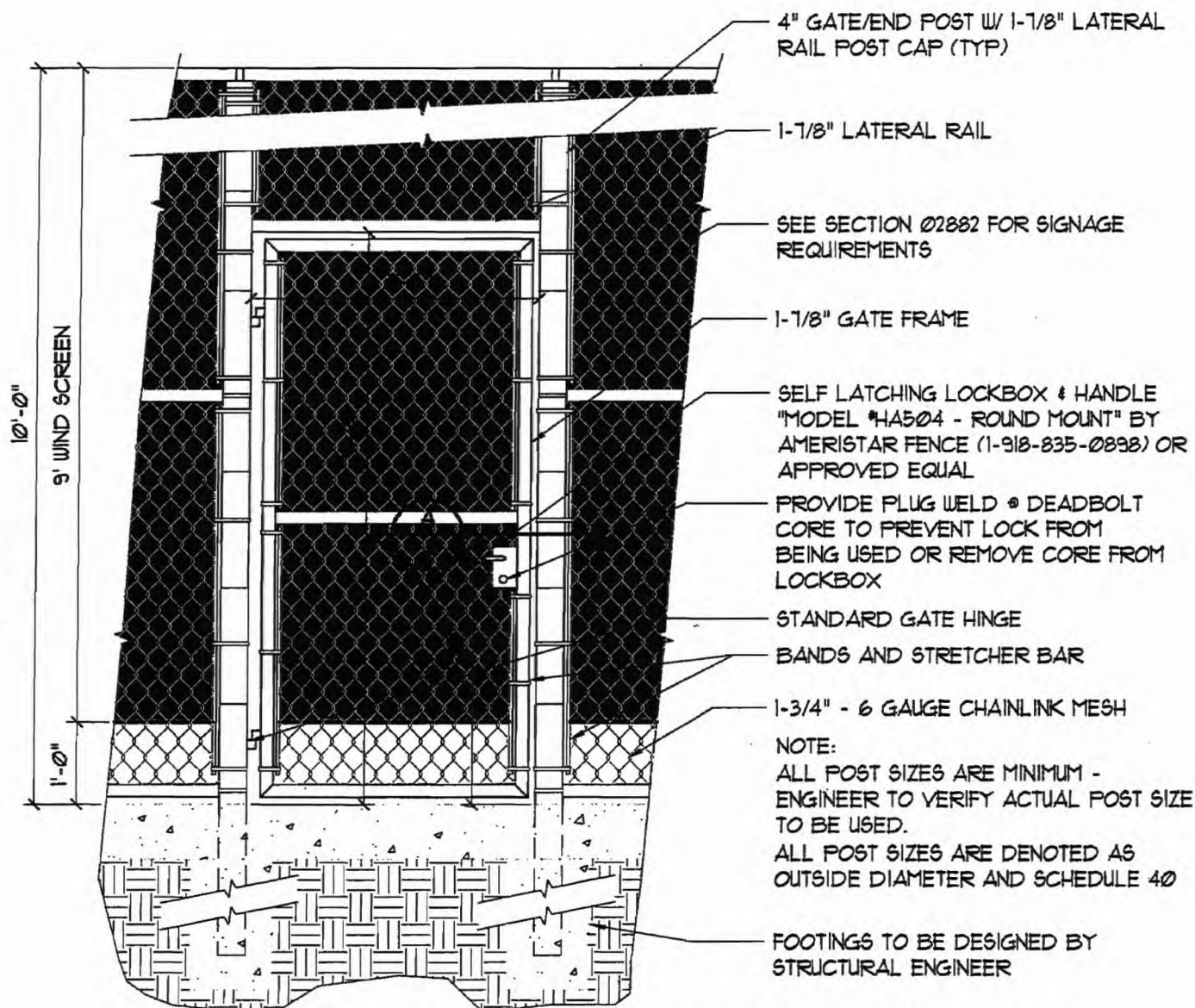


Tennis Court Fence Elevation

Scale: 1/2" = 1'-0"

REVISED 2/12/04

ST02882-41

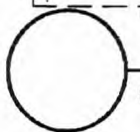
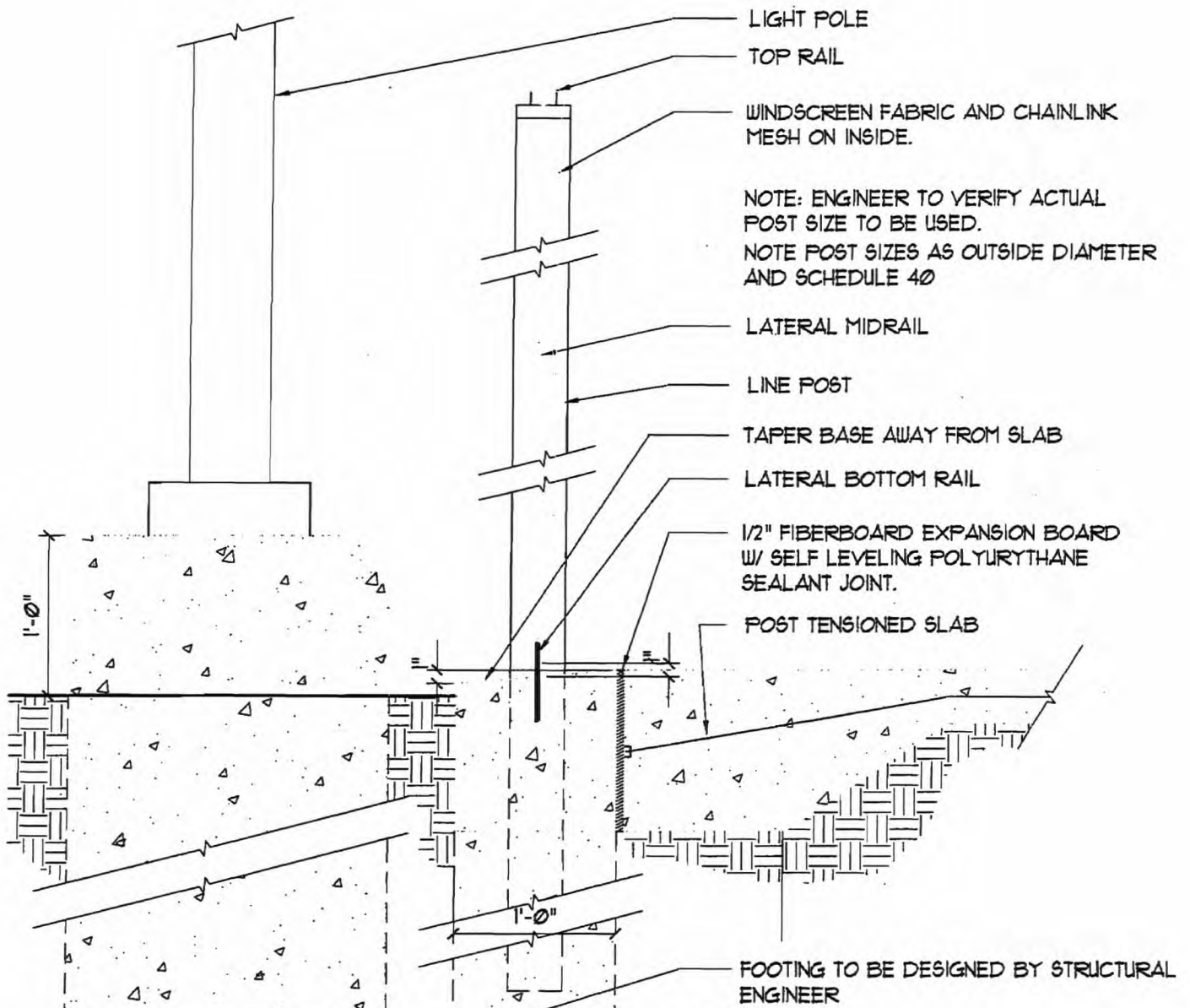


Tennis Court Fence Gate Elevation

Scale: 1/2" = 1'-0"

REVISED 4/12/04

ST02882-42



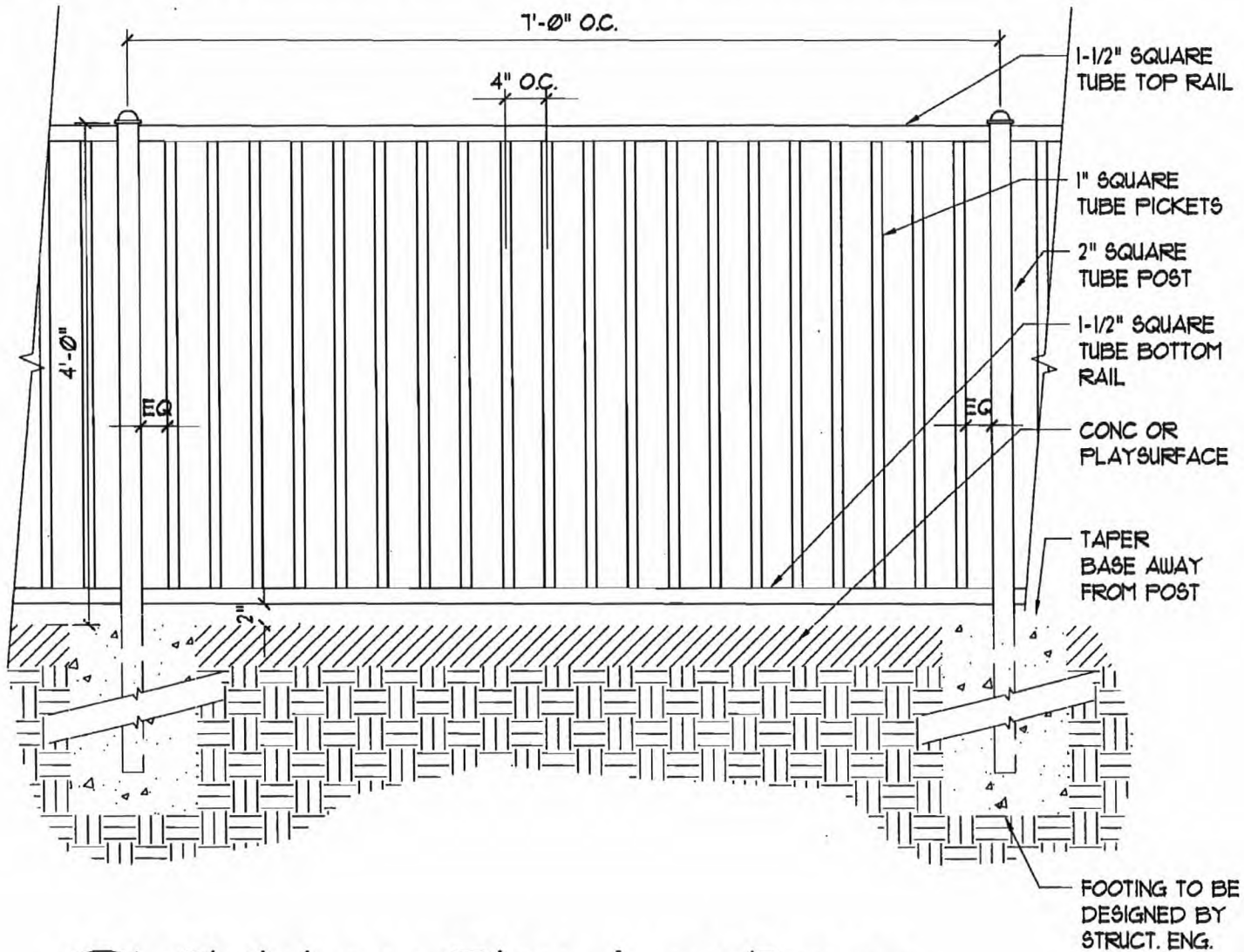
Tennis Court Fence Section

Scale: 1" = 1'-0"

REVISED 02/13/07 ST02882-43

NOTE:

1. PROVIDE WHEN INSTRUCTED, NOT ALWAYS REQUIRED.
2. CONSULTANT CAN SUGGEST ALTERNATE PICKET DESIGN TO MATCH ADJACENT PARK
3. STEEL TUBE SIZES ARE MINIMUMS, ENGINEER TO VERIFY SIZE AND TUBE THICKNESS

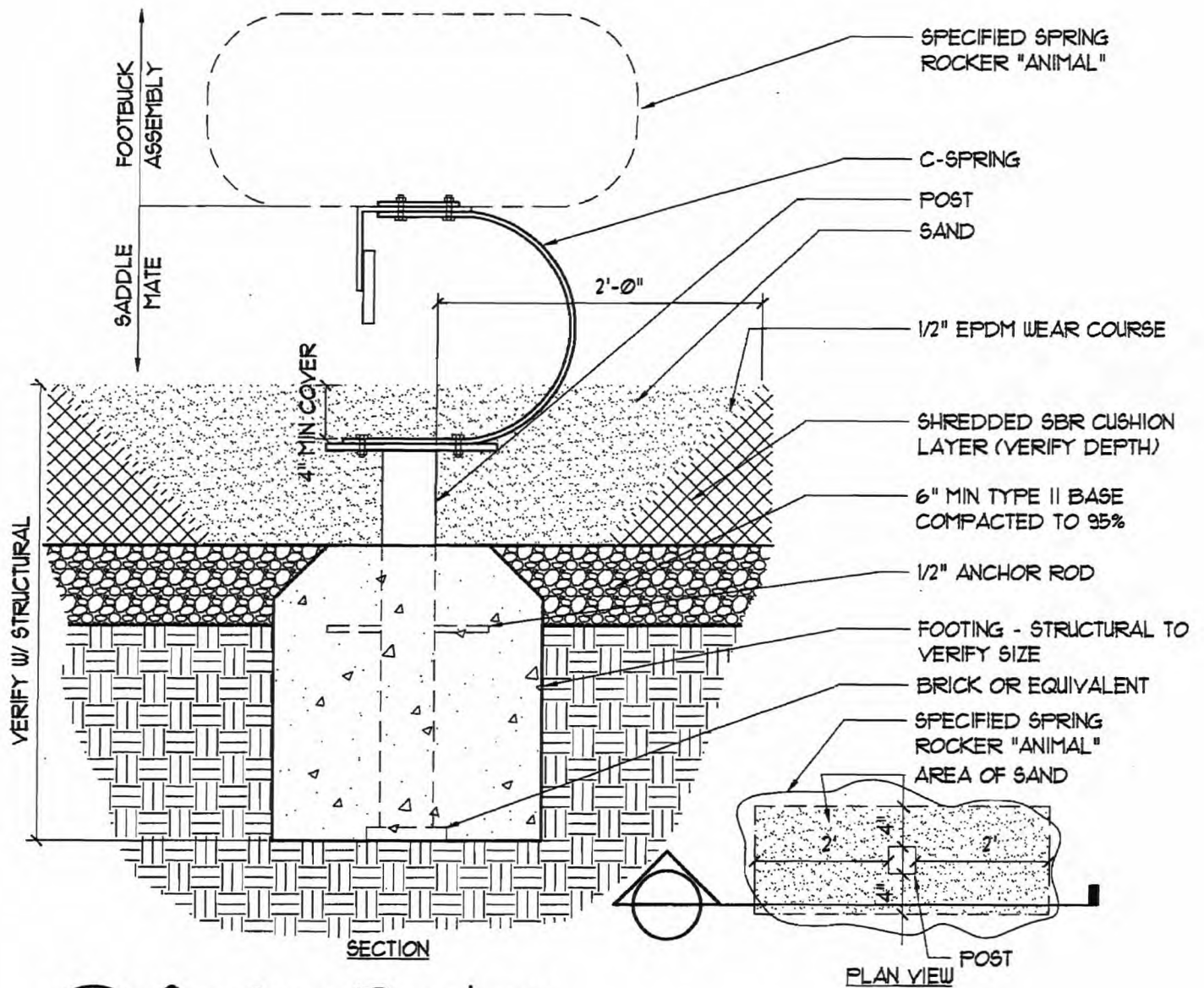


Childrens Play Area Fence

Scale: 3/4" = 1'-0"

REVISED 9/2/03

ST02882-36

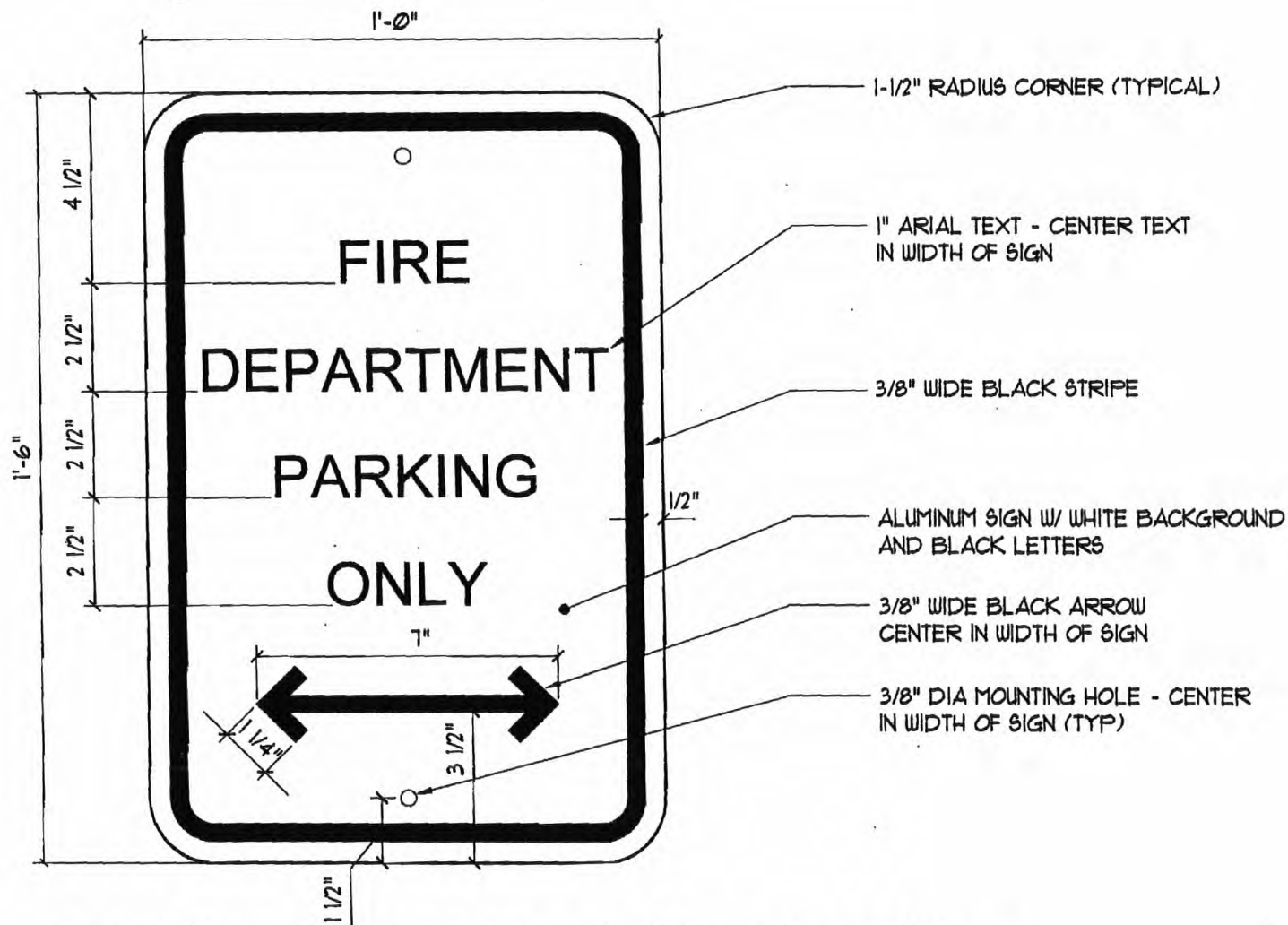


Spring Rocker

Scale: 1" = 1'-0"

REVISED 9/26/03

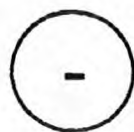
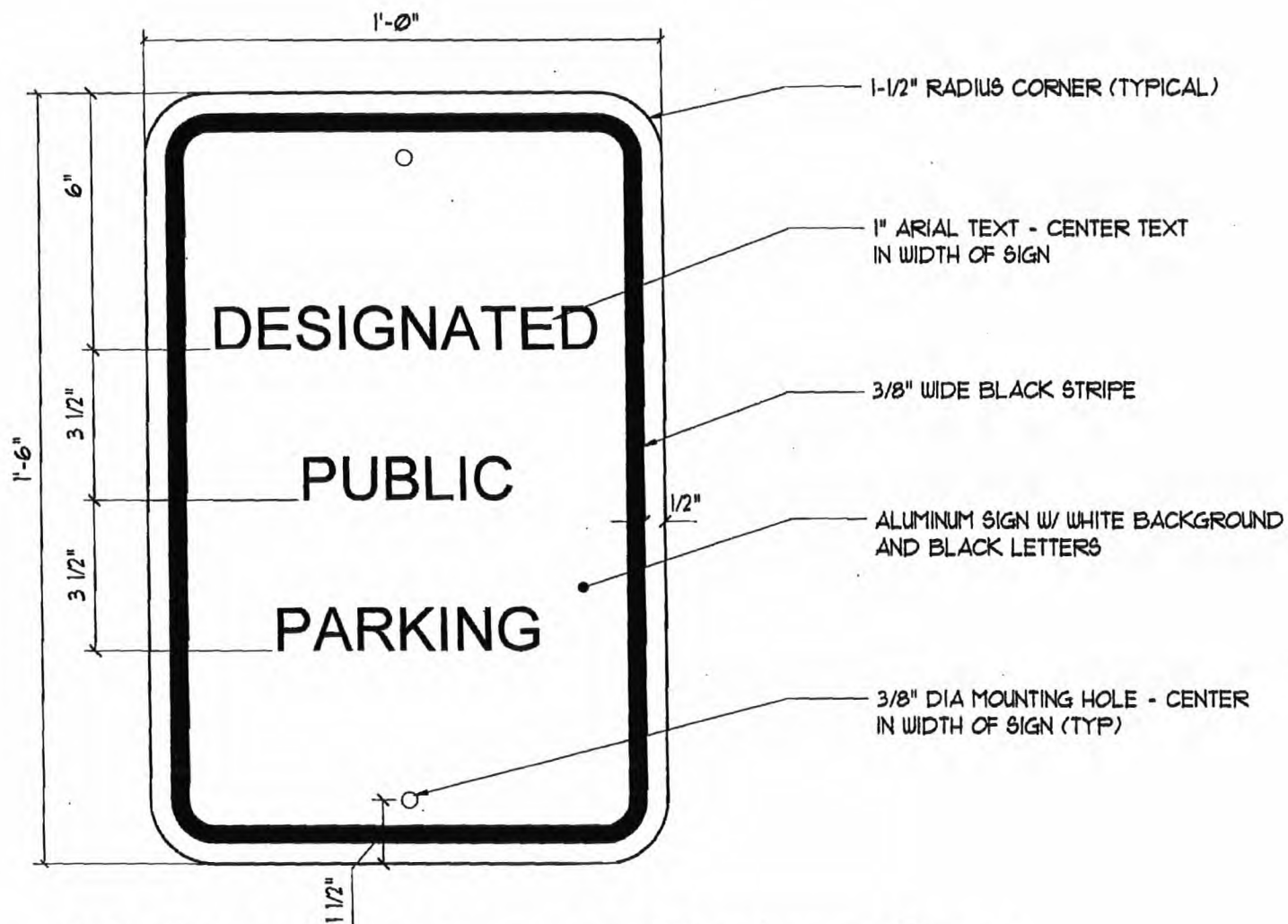
STO2882-37



Fire Department Parking Sign

Scale: 3" = 1'-0"

FDSIGN-1



Fire Department Parking Sign

Scale: 3" = 1'-0"

FD SIGN-2

FIRE DEPARTMENT
PARKING ONLY

Public Parking Along
Smoke Ranch Road

1-1/2" RADIUS CORNER (TYPICAL)

1" ARIAL TEXT - CENTER TEXT
IN WIDTH OF SIGN

1/8" WIDE BLACK STRIPE
CENTER IN WIDTH OF SIGN

3/8" WIDE BLACK STRIPE

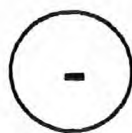
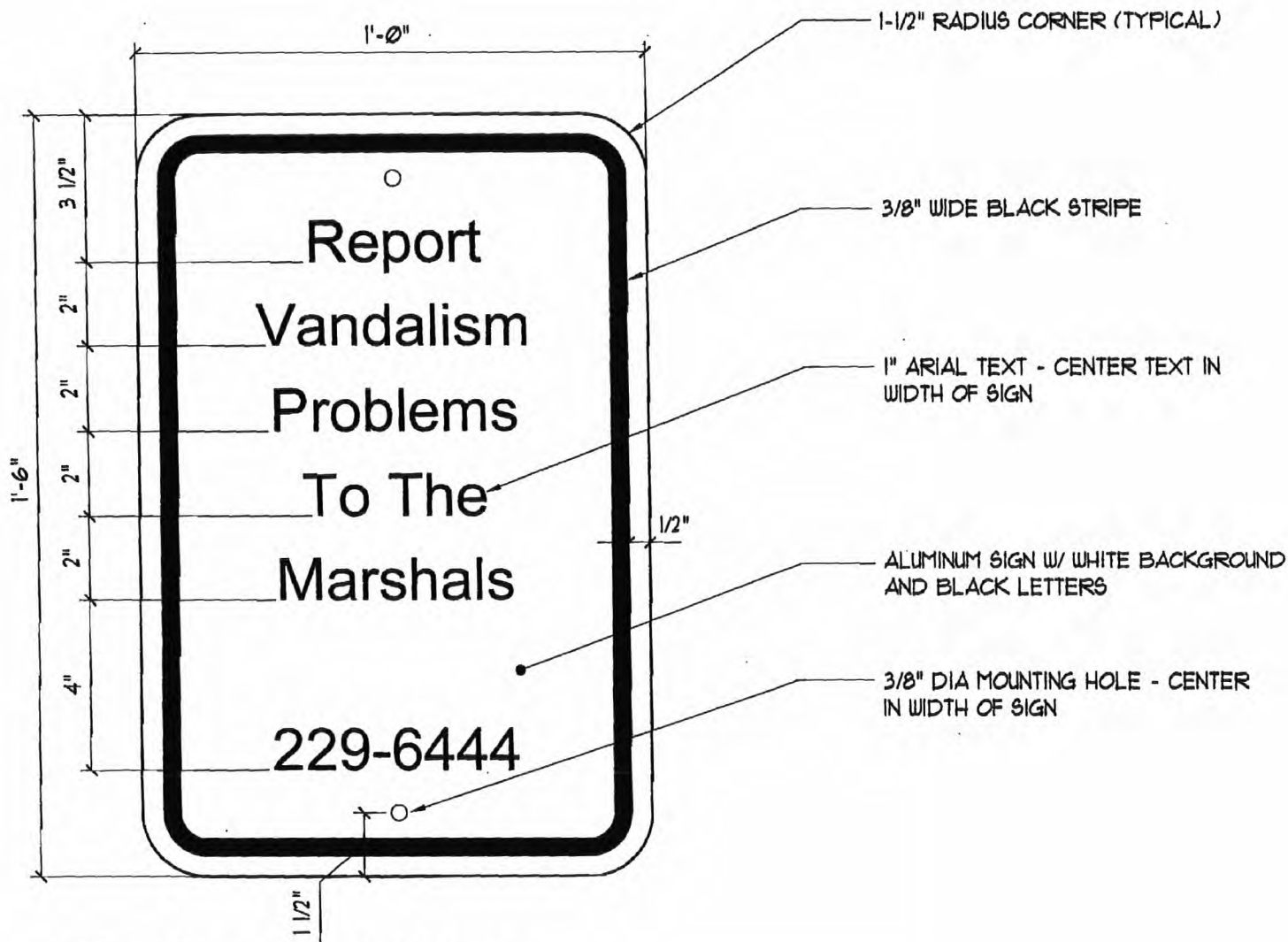
1/2"
ALUMINUM SIGN W/ WHITE BACKGROUND
AND BLACK LETTERS

3/8" DIA MOUNTING HOLE - CENTER
IN WIDTH OF SIGN (TYP)

Fire Department Parking Sign

Scale: 3" = 1'-0"

FD SIGN-3

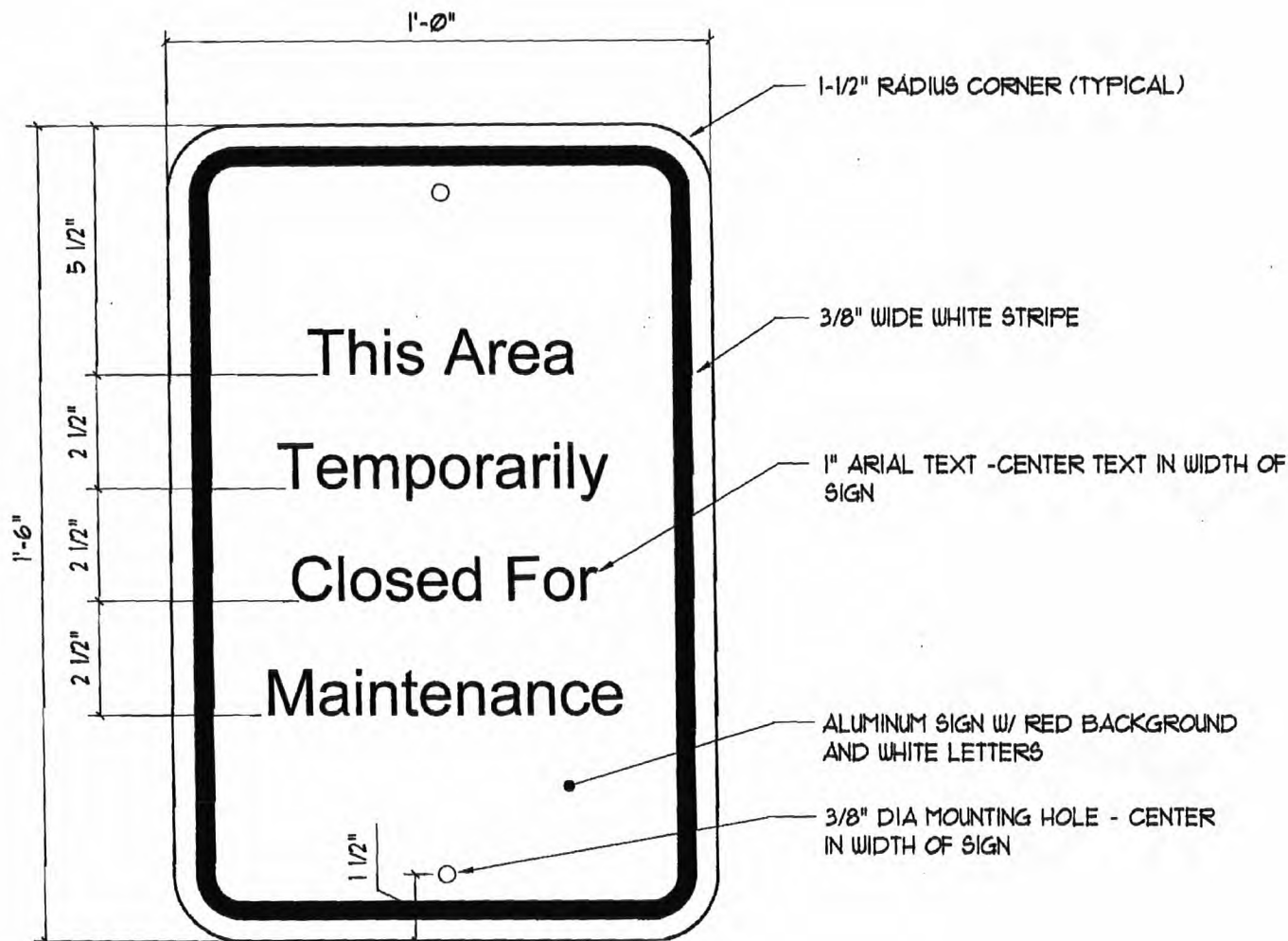


General Sign

Scale: 3" = 1'-0"

REVISED 7/21/04

STO2882-31

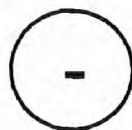
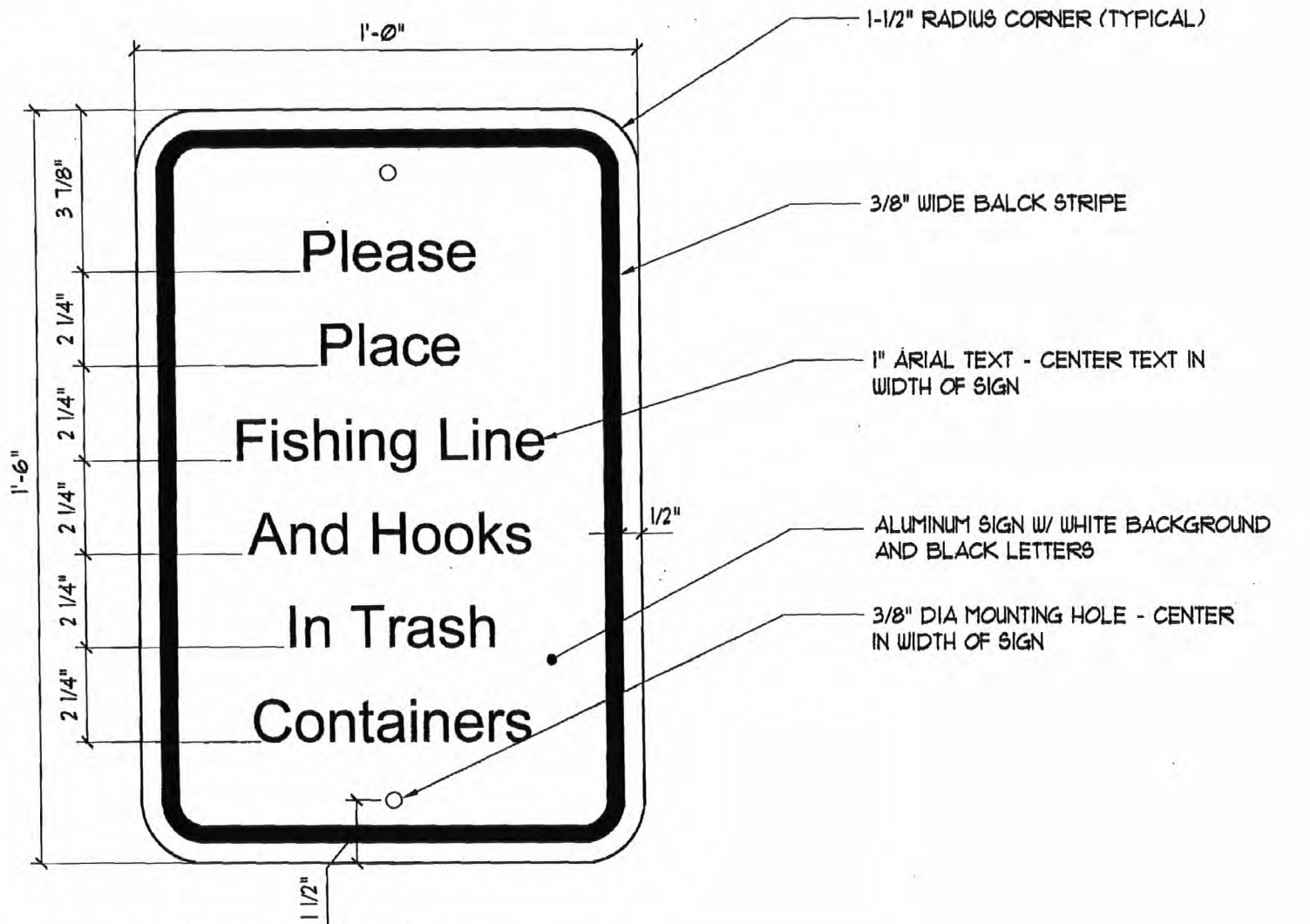


Area Closed Sign

Scale: 3" = 1'-0"

REVISED 7/21/04

ST02882-40

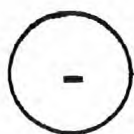
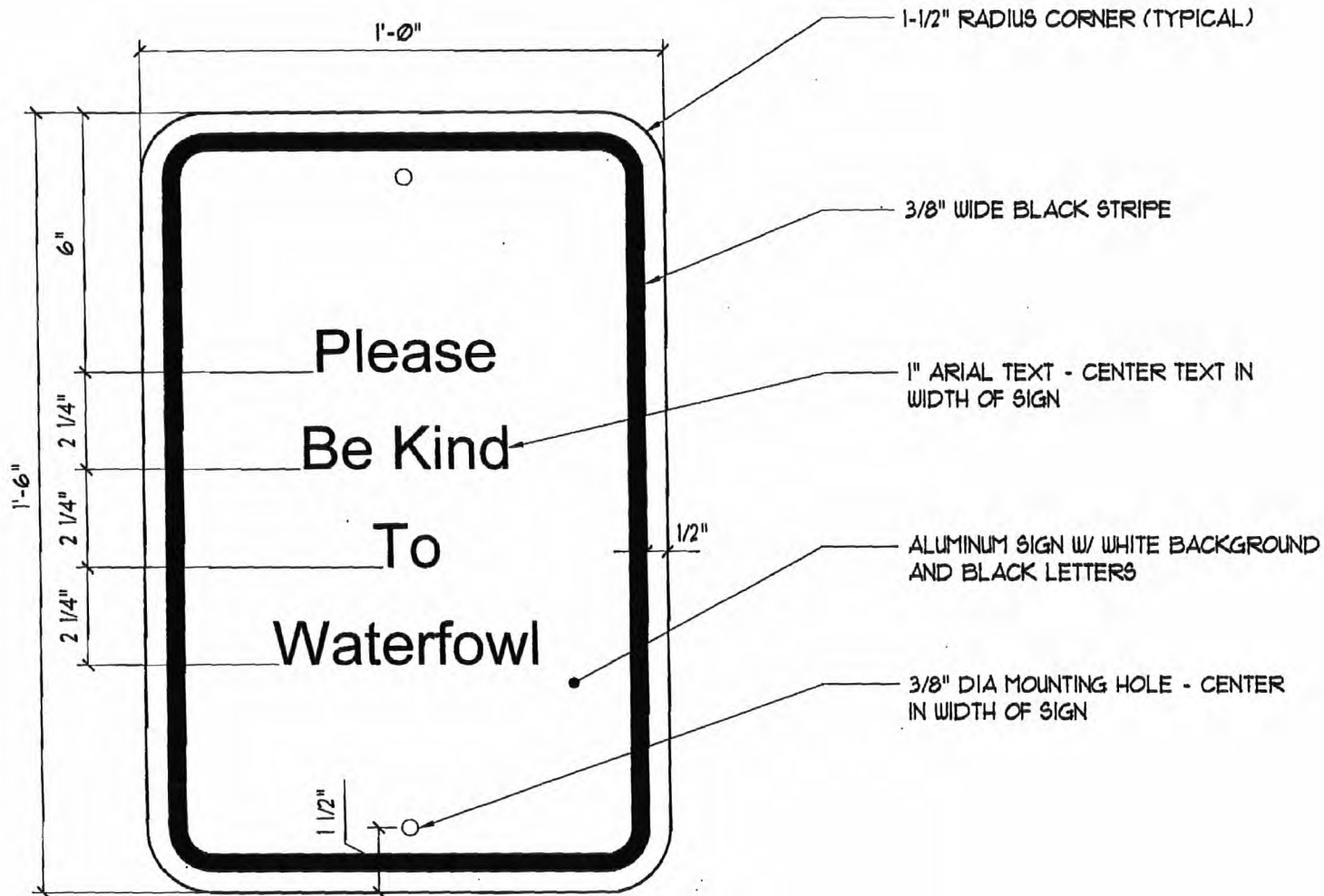


General Sign

Scale: 3" = 1'-0"

REVISED 7/21/04

STO2882-32

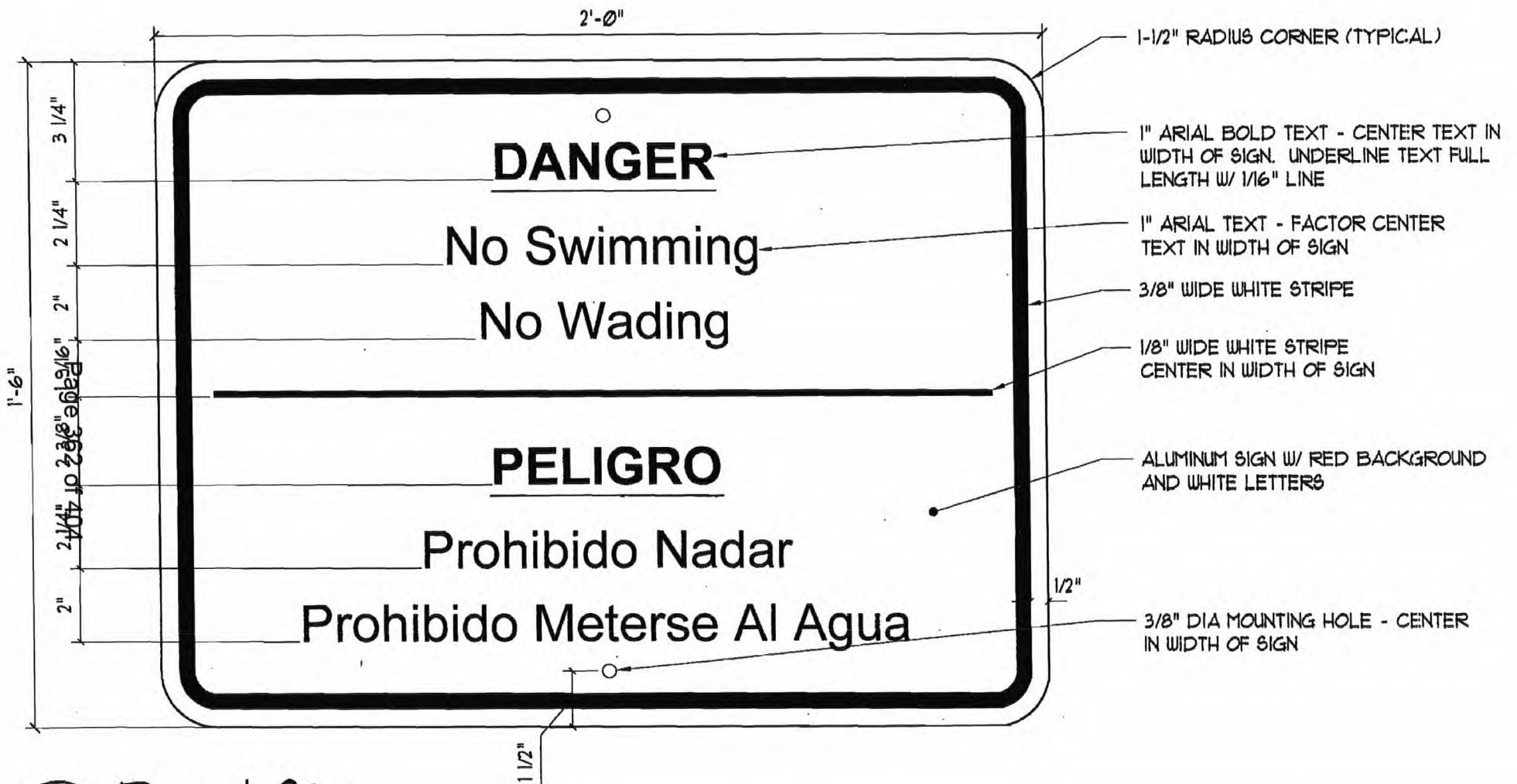


General Sign

Scale: 3" = 1'-0"

REVISED 7/21/04

STO2882-33



Pond Sign
Scale: 3" = 1'-0"

REVISED 7/21/04

STO2882-36



STO2882-37

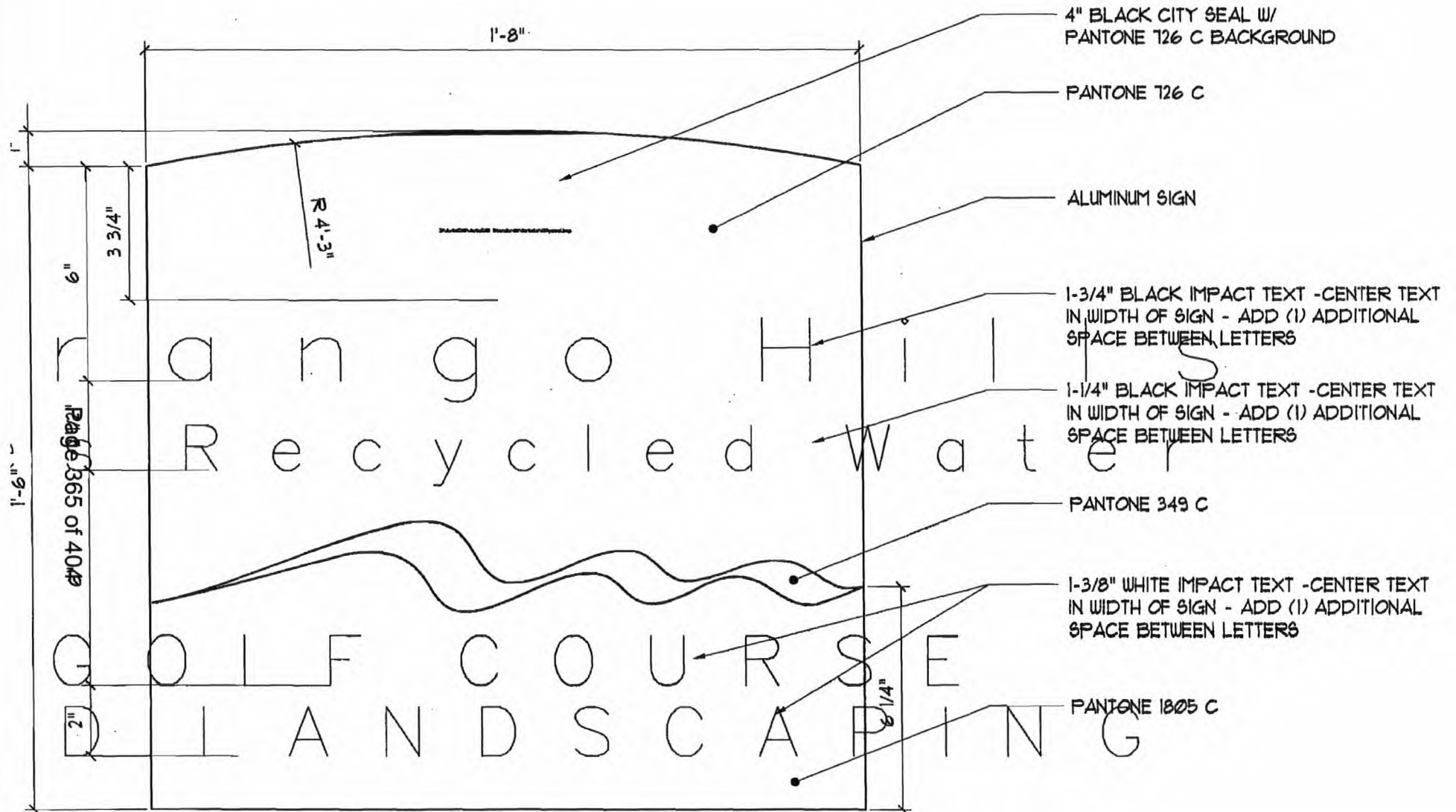


Pond Sign

Scale: 3" = 1'-0"

REVISED 7/21/04

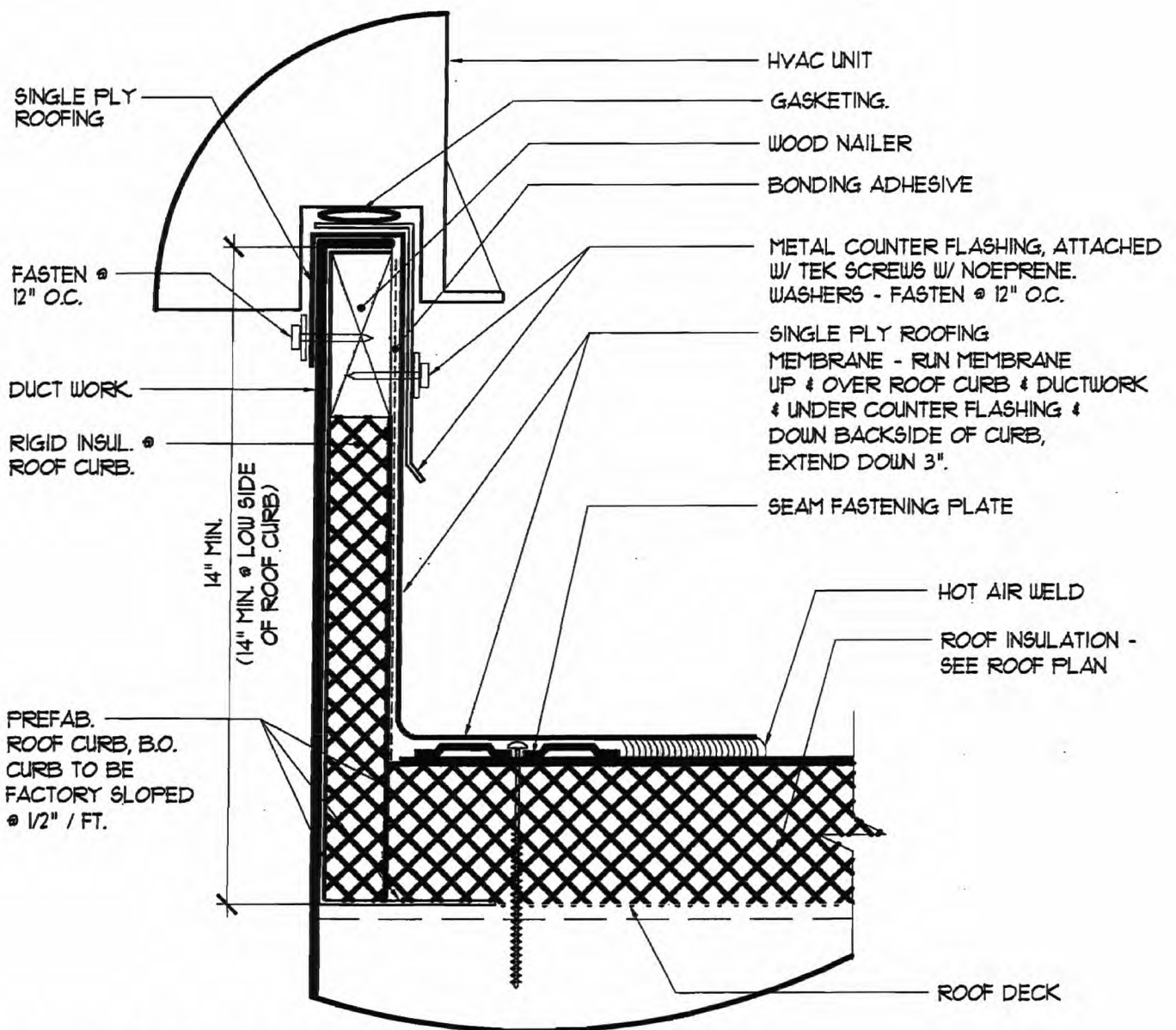
STO2882-41



Recycled Water Sign

Scale: 3" = 1'-0"

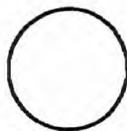
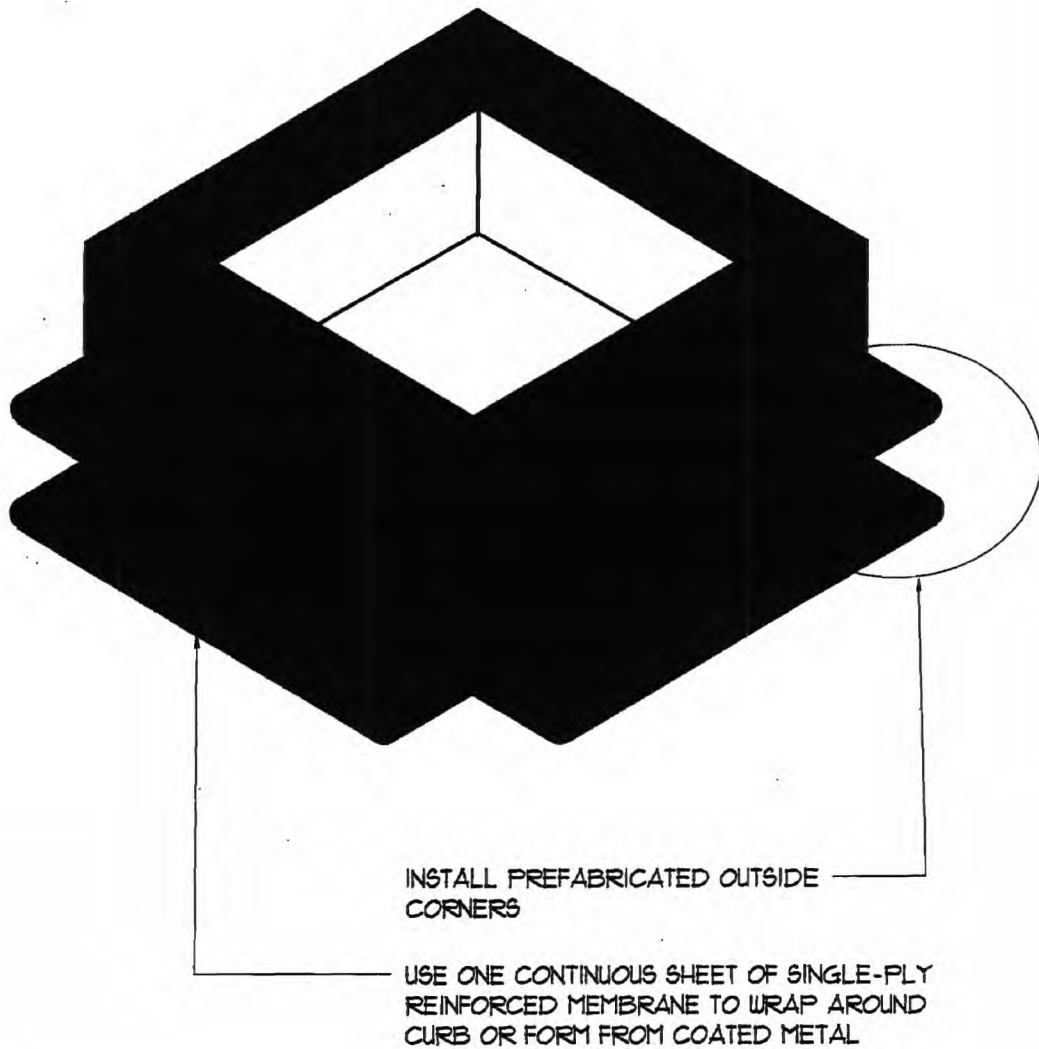
STO2882-41



Roof Curb Detail

Scale: 6"=1'-0"

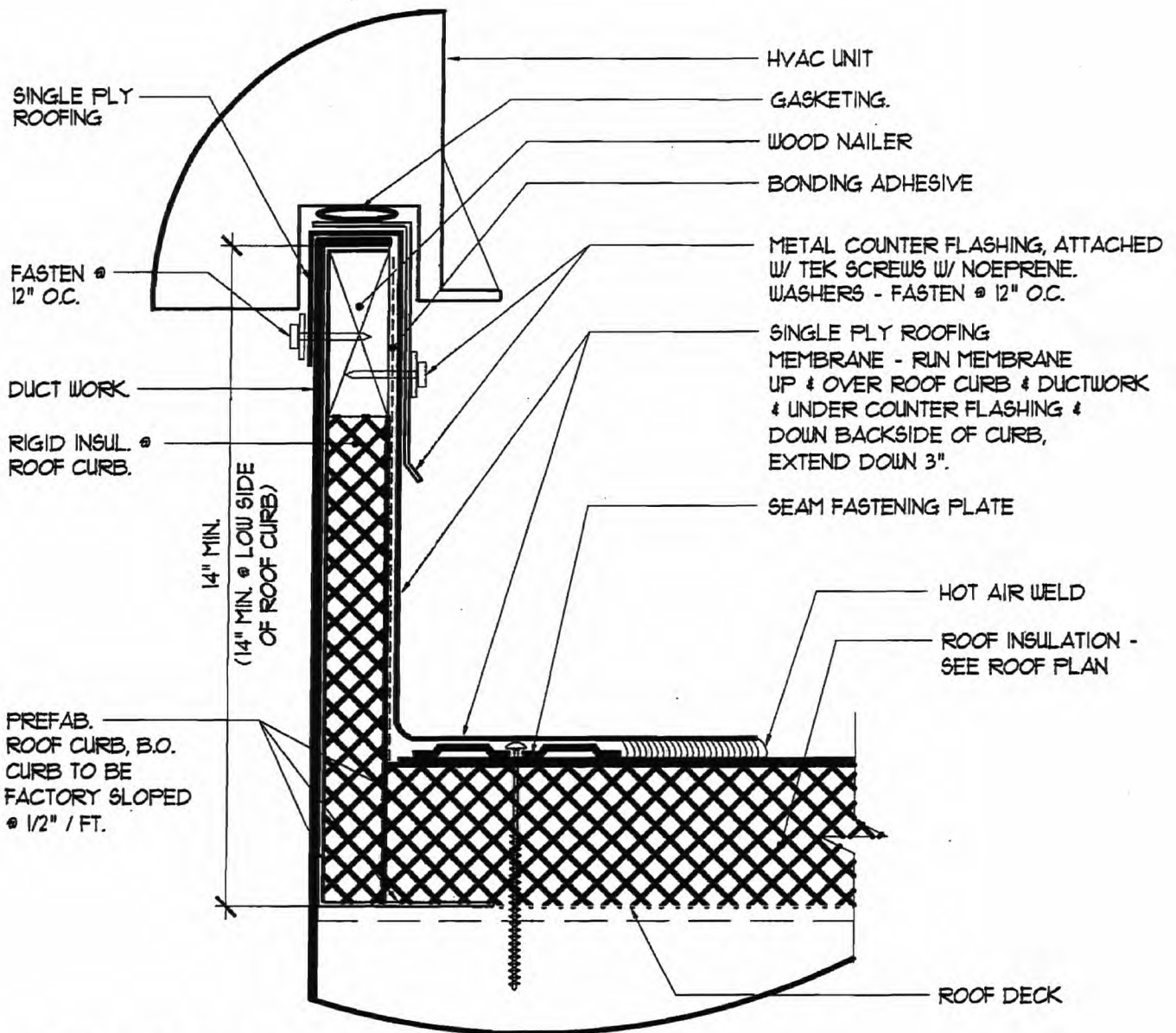
ST07300-01



Roof Curb Axonometric

Scale: 6"=1'-0"

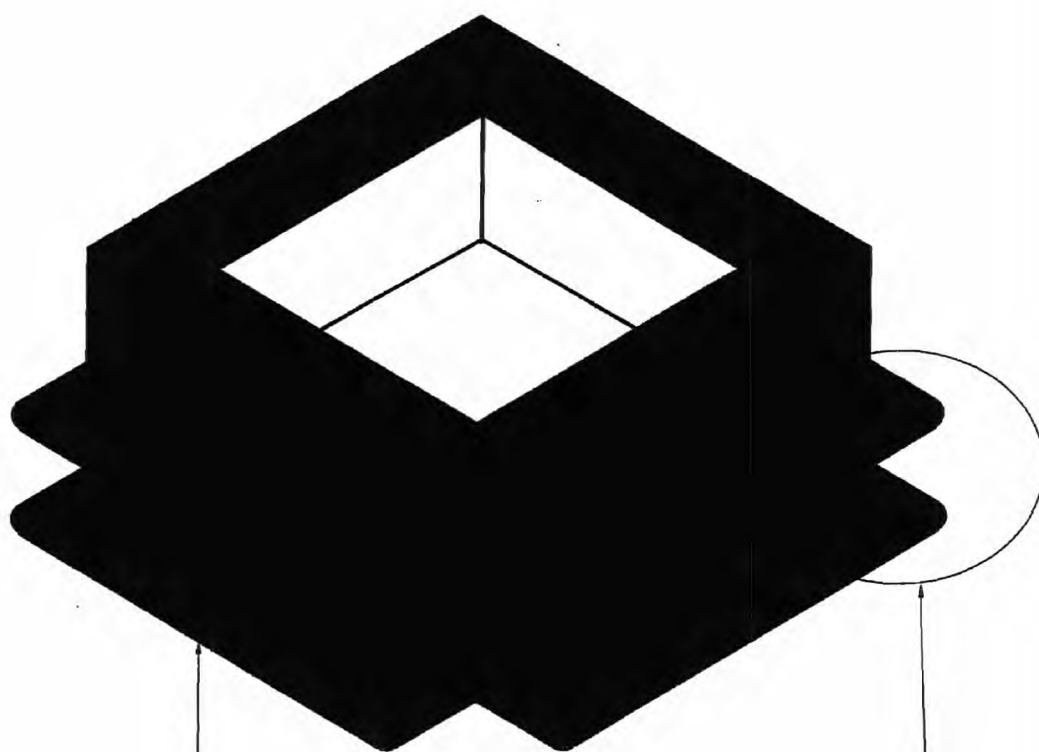
ST07300-02



Roof Curb Detail

Scale: 6"=1'-0"

ST01300-01



INSTALL PREFABRICATED OUTSIDE
CORNERS

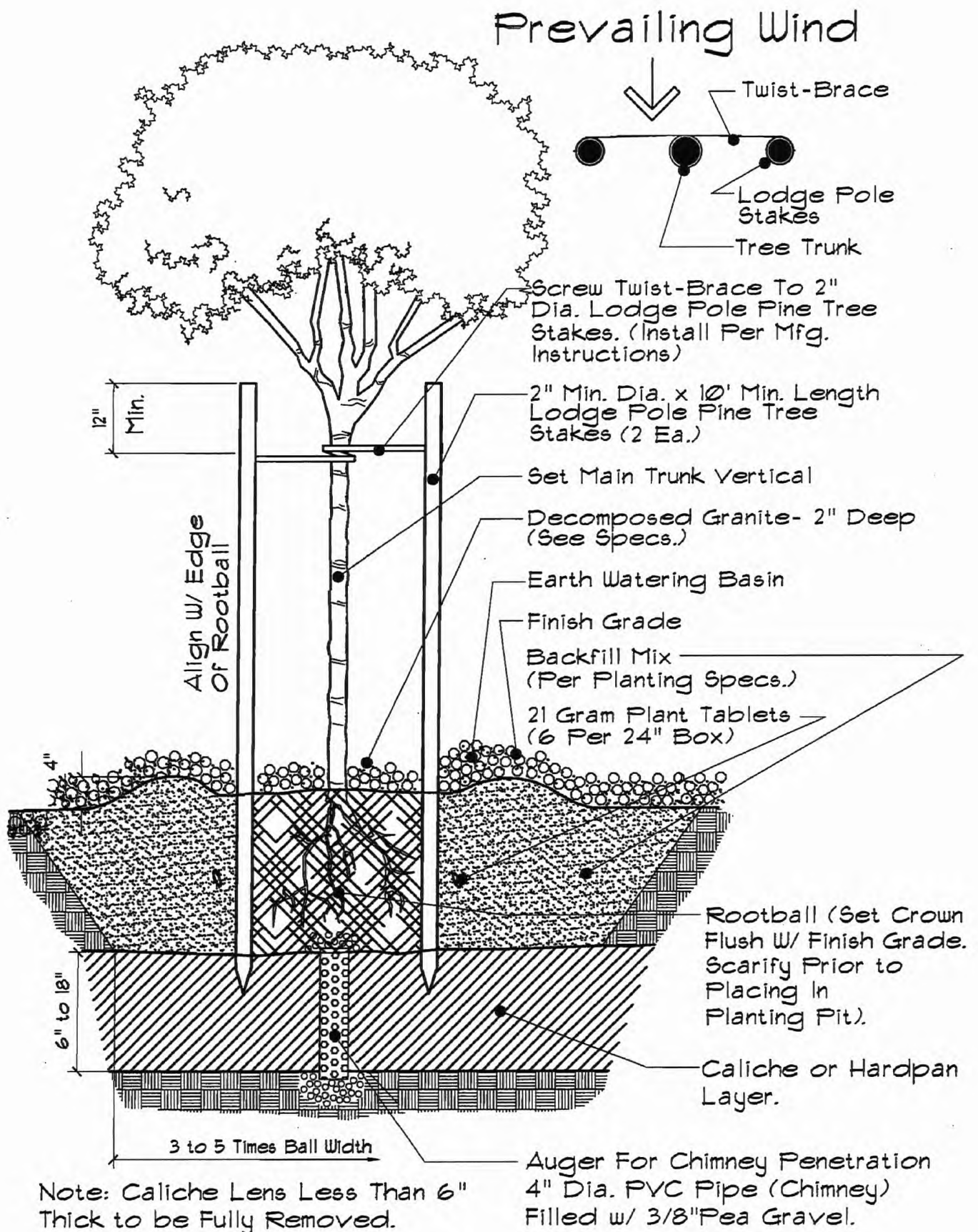
USE ONE CONTINUOUS SHEET OF SINGLE-PLY
REINFORCED MEMBRANE TO WRAP AROUND
CURB OR FORM FROM COATED METAL



Roof Curb Axonometric

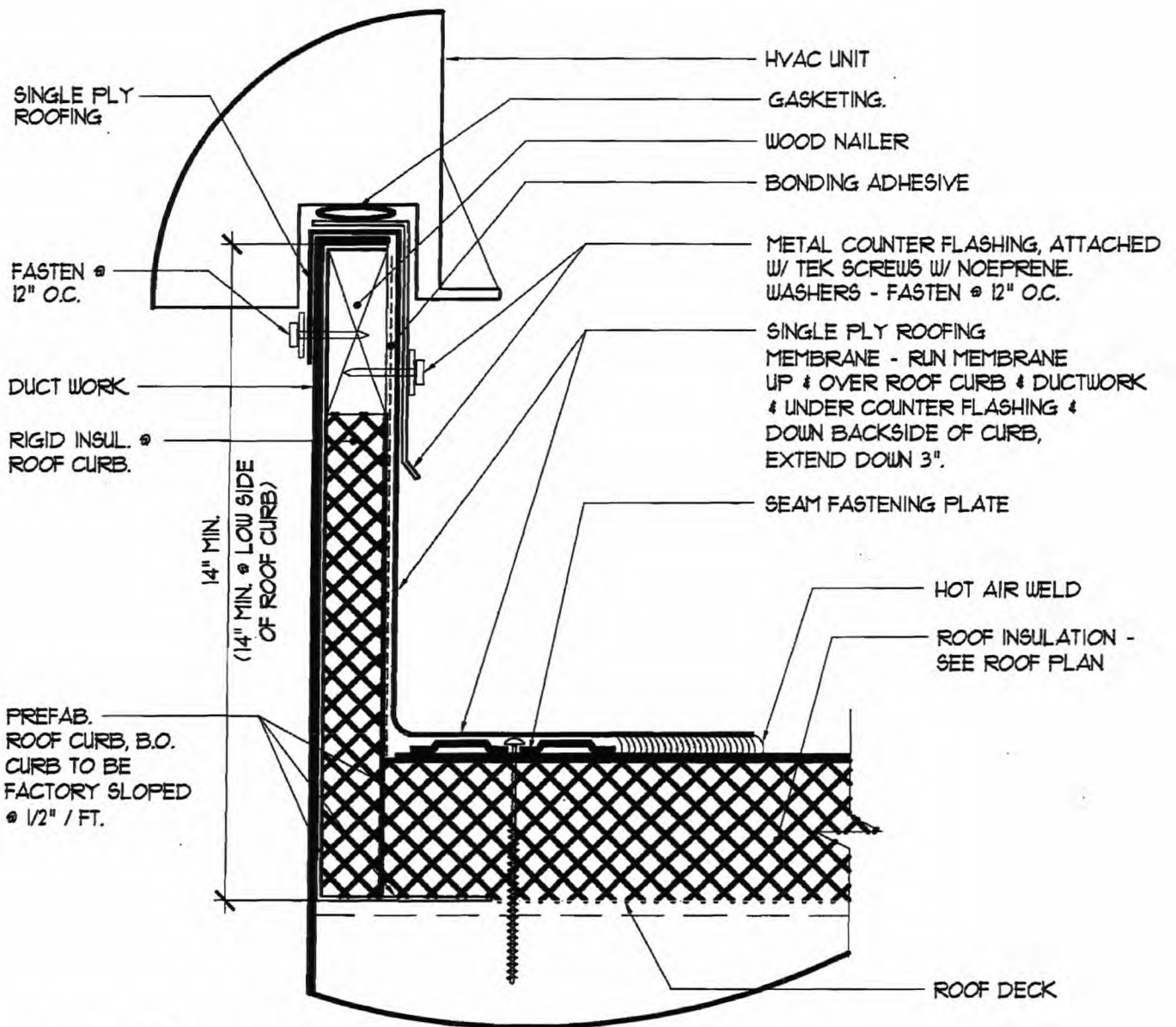
Scale: 6"=1'-0"

ST07300-02



Tree Planting (In Caliche)

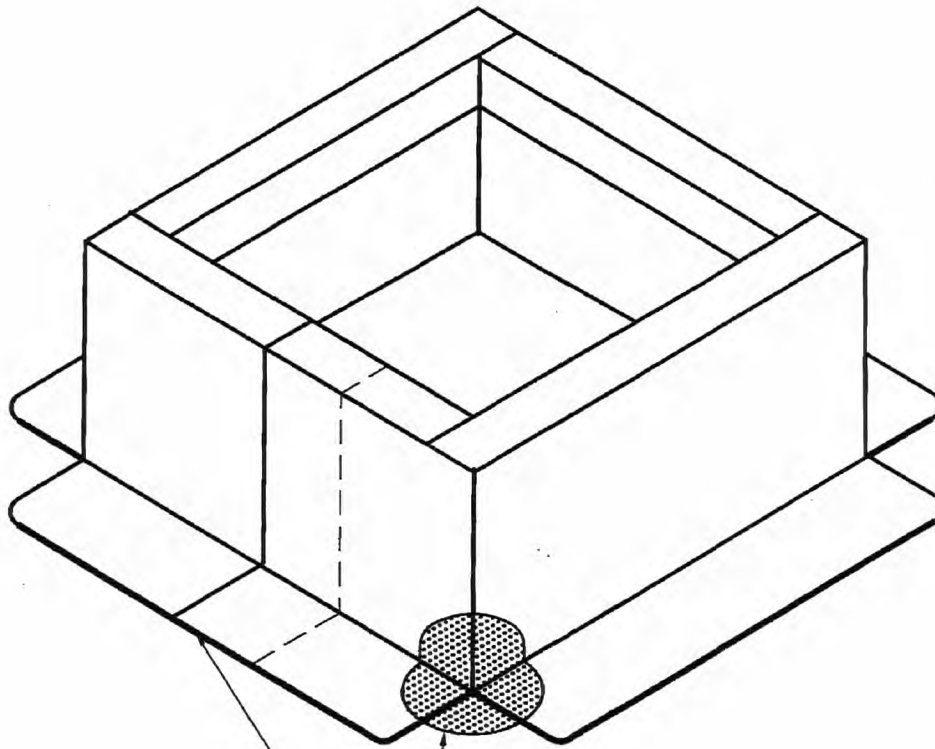
Scale: N.T.S.



Roof Curb Detail

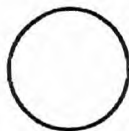
Scale: 6"=1'-0"

ST01300-01SP



INSTALL PREFABRICATED INSIDE/OUTSIDE CORNERS

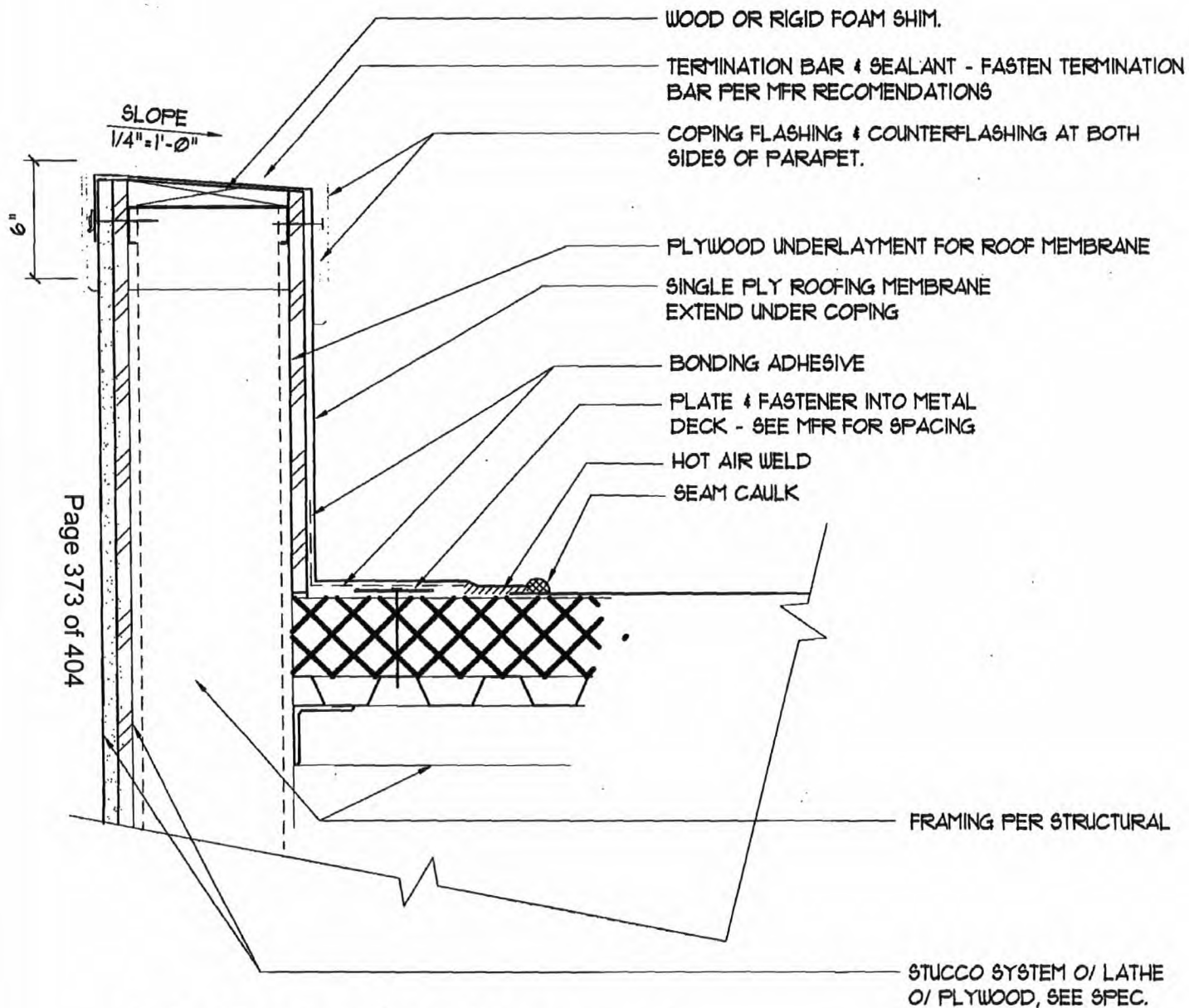
USE ONE CONTINUOUS SHEET OF SINGLE-PLY REINFORCED MEMBRANE TO WRAP AROUND CURB OR FORM FROM COATED METAL



Roof Curb Axonometric

Scale: 6"=1'-0"

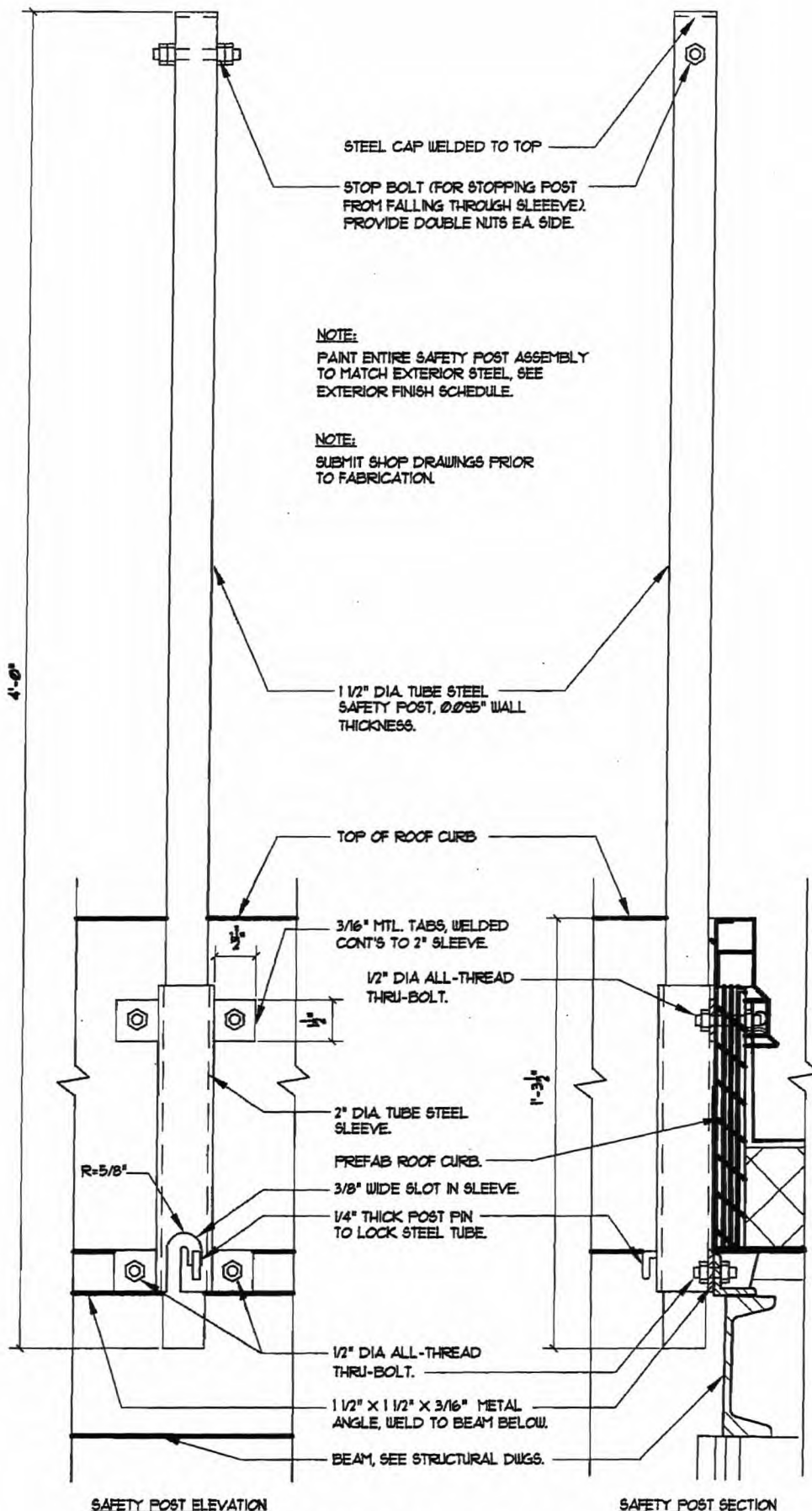
ST07300-02



Detail @ Parapet

Scale: 1-1/2" = 1'-0"

ST01300-035P



SAFETY POST ELEVATION

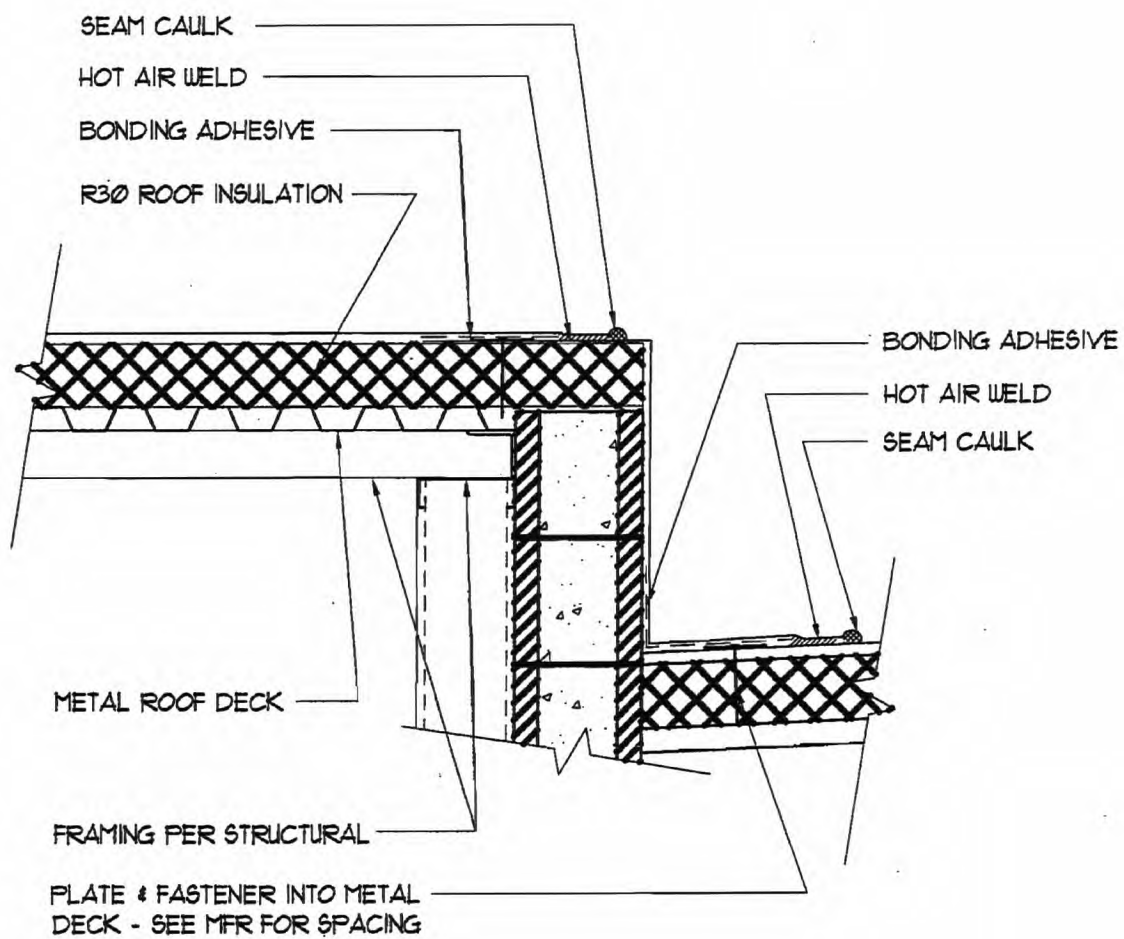
SAFETY POST SECTION



Telescoping Safety Post Detail

Scale: 3"=1'-0"

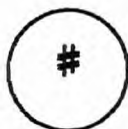
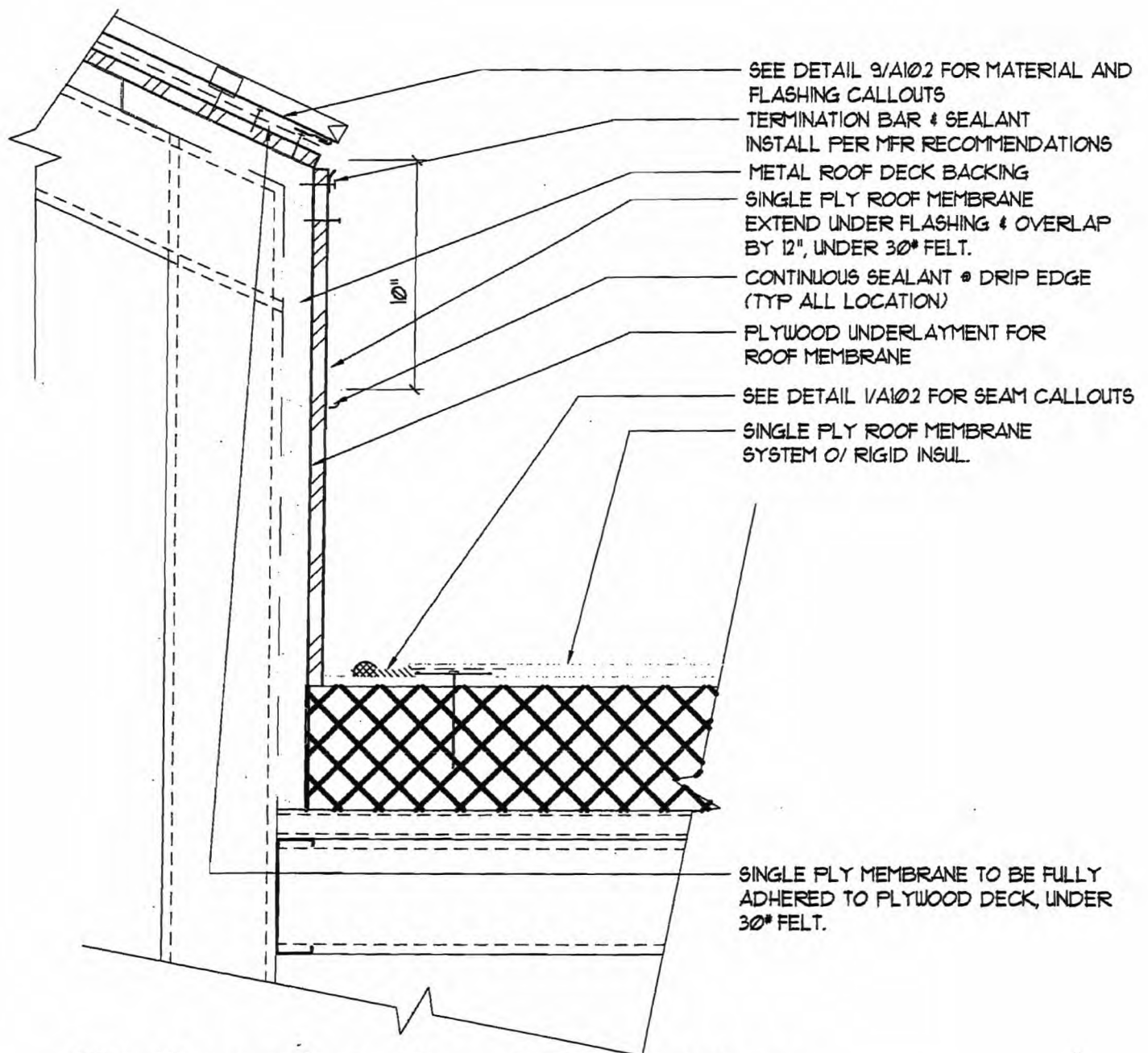
ST07300-045P



Detail @ Roof Step

Scale: 1"=1'-0"

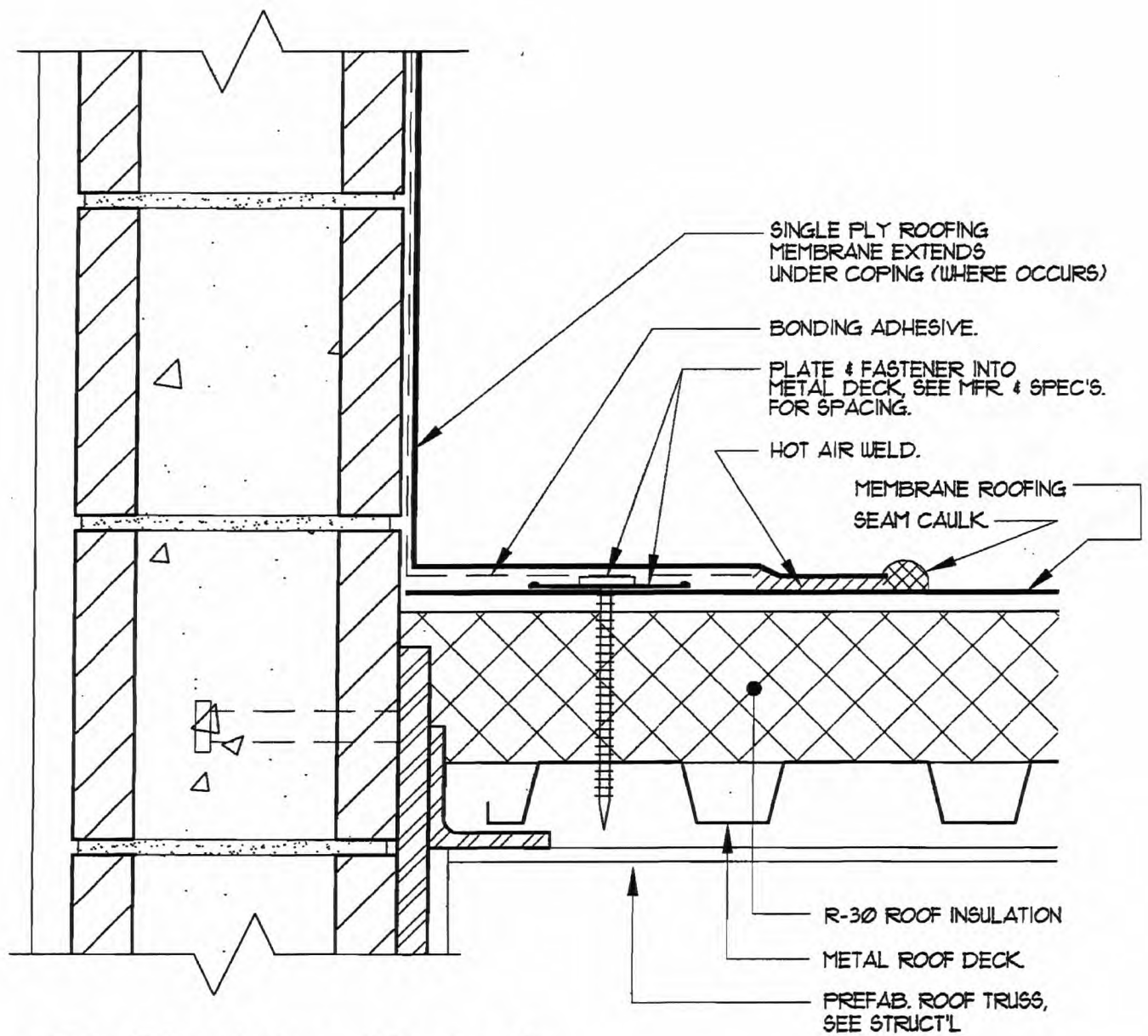
ST01300-055P



Detail @ Roof Transition

Scale: 1-1/2" = 1'-0"

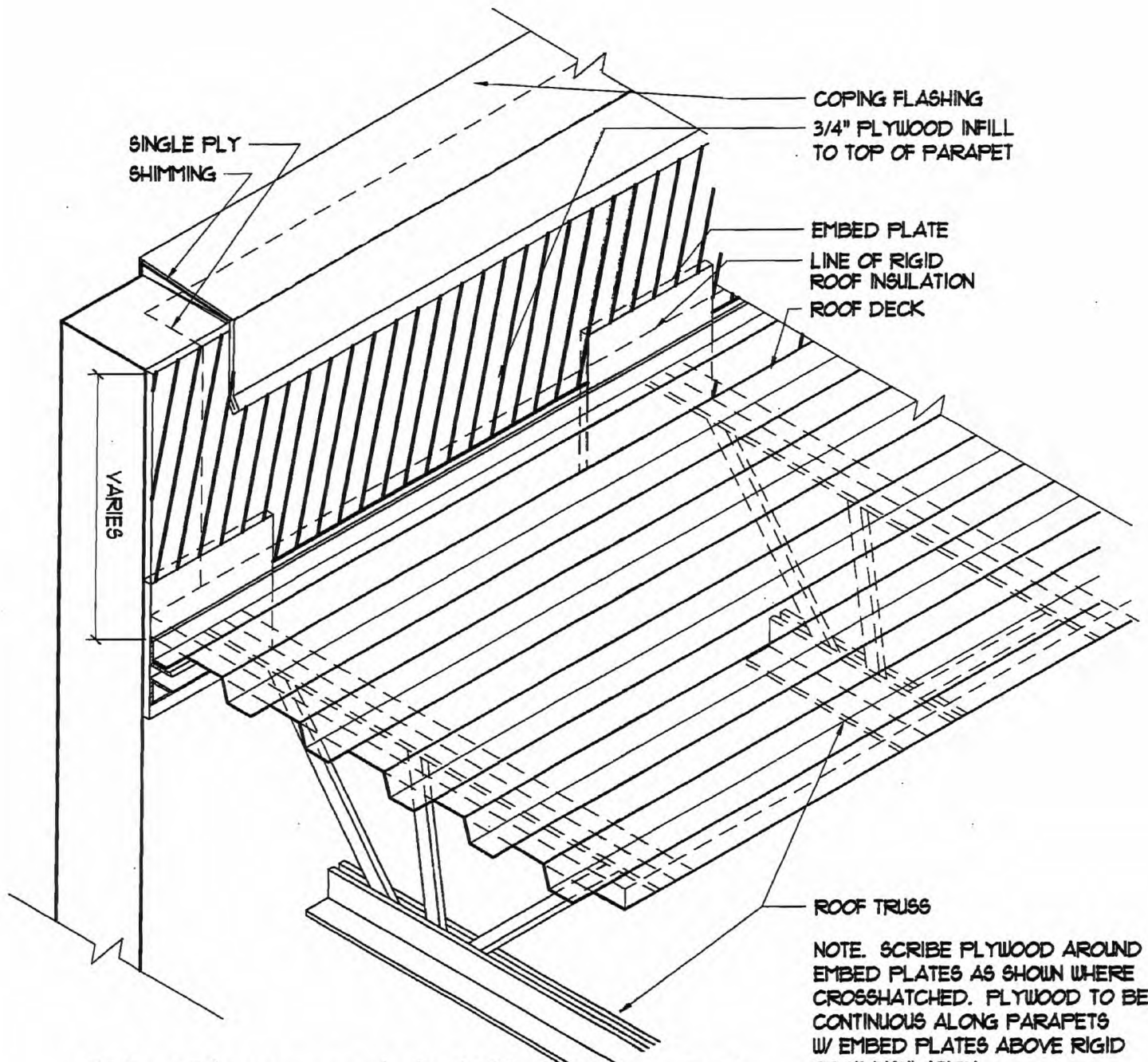
ST07300-06SF



Flashing Detail

Scale: 3"=1'-0"

ST07300-079P



COPING FLASHING
3/4" PLYWOOD INFILL
TO TOP OF PARAPET

EMBED PLATE
LINE OF RIGID
ROOF INSULATION
ROOF DECK

SINGLE PLY
SHIMMING

VARIES

ROOF TRUSS

NOTE. SCRIBE PLYWOOD AROUND
EMBED PLATES AS SHOWN WHERE
CROSSHATCHED. PLYWOOD TO BE
CONTINUOUS ALONG PARAPETS
W/ EMBED PLATES ABOVE RIGID
ROOF INSULATION

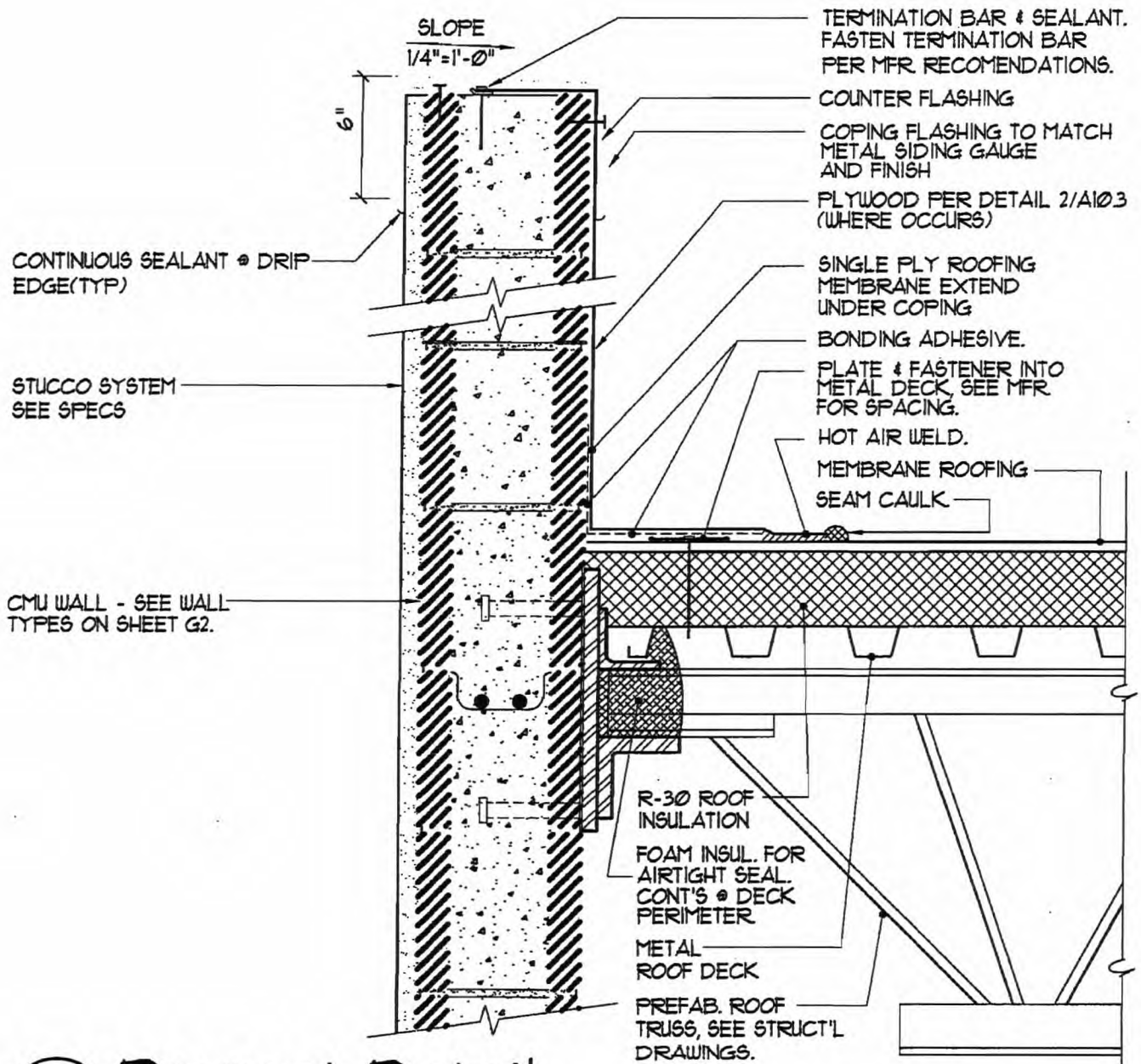


Plywood Infill Isometric

Scale: Isometric

ST07300-08SP

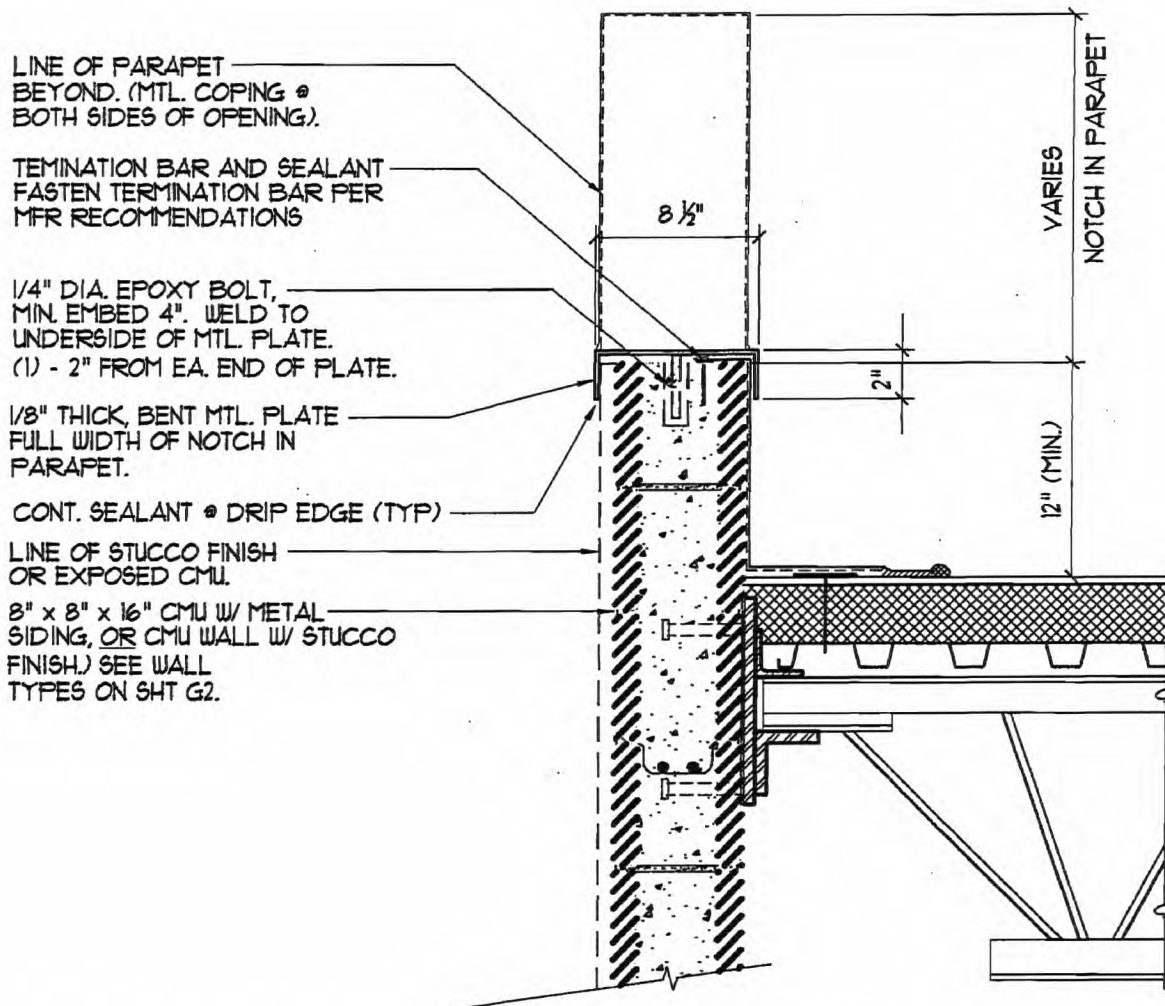
LAST REVISED 1-13-07



Parapet Detail

Scale: 1-1/2"=1'-0"

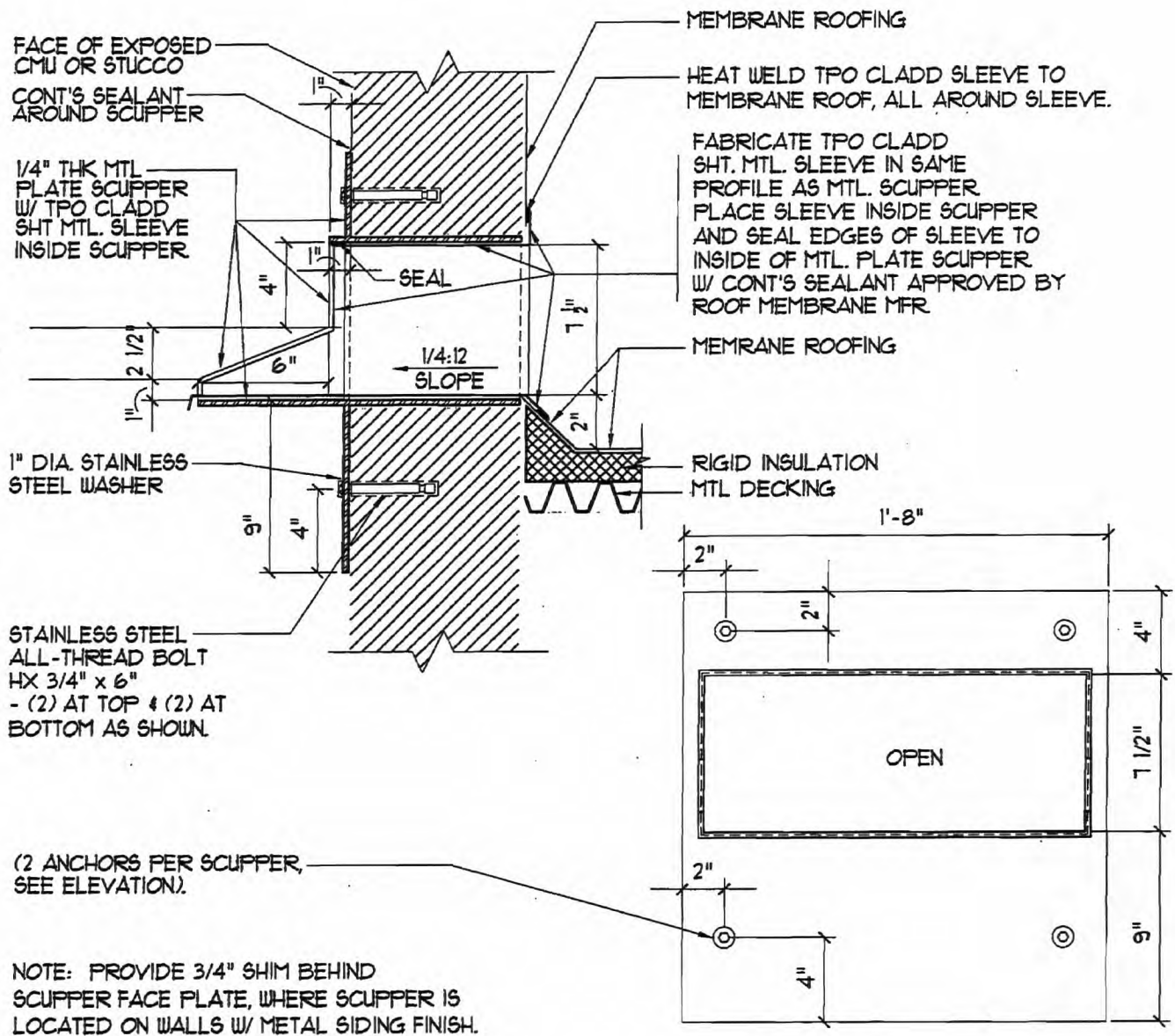
ST01300-095P



Parapet Notch Detail

Scale: 1"=1'-0"

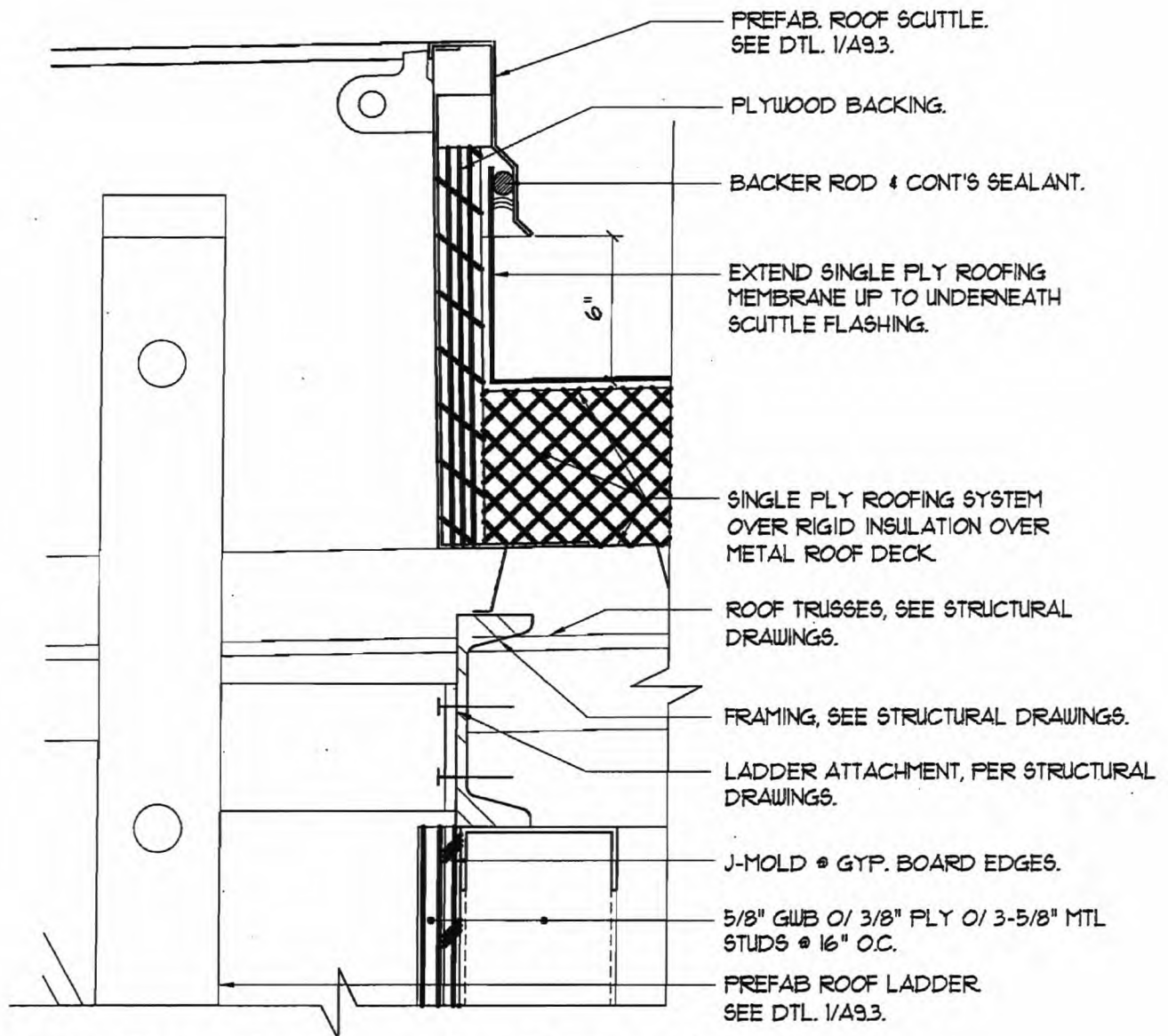
ST071300-106P



Overflow Scupper Detail

Scale: 1-1/2"=1'-0"

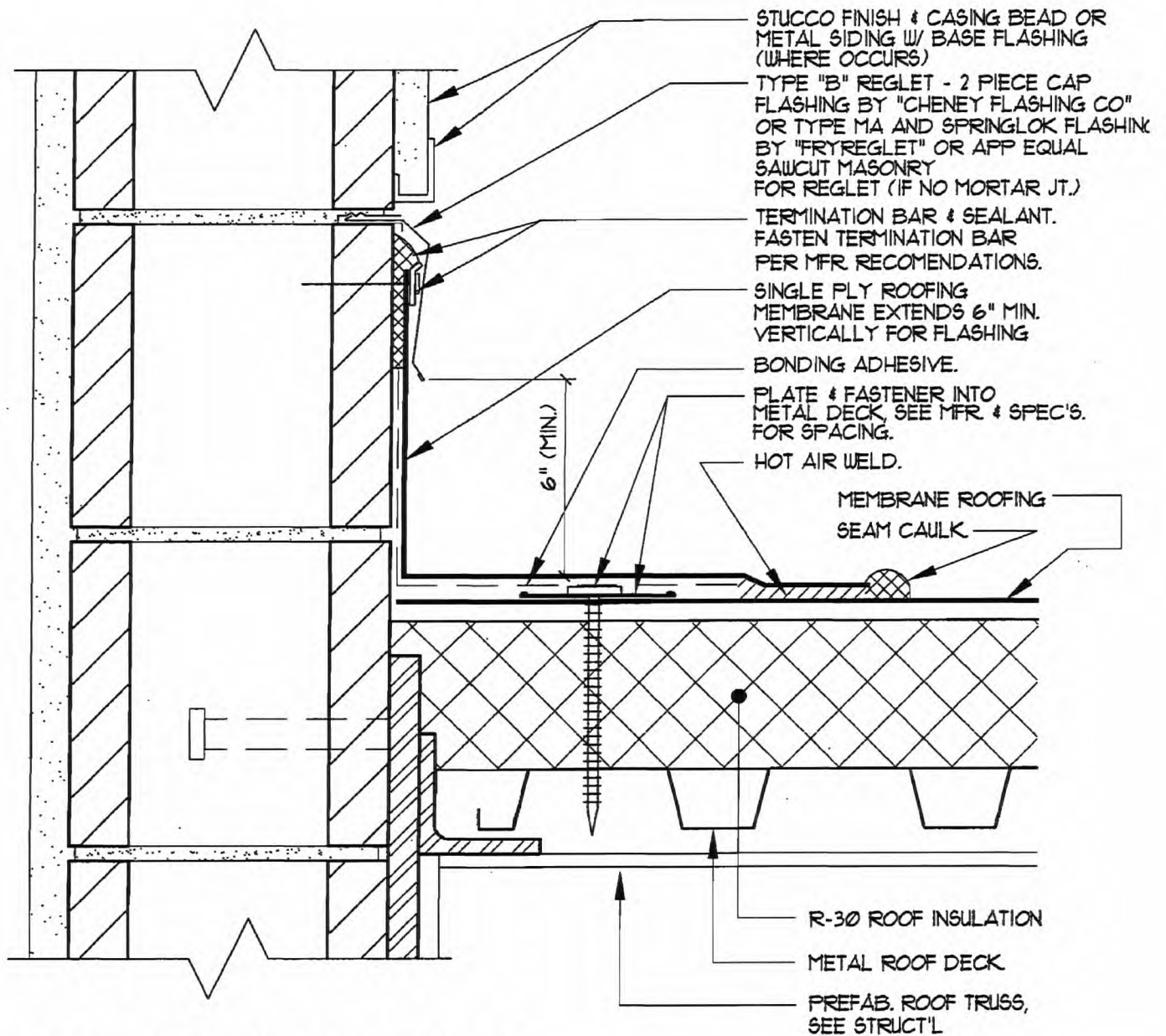
ST07300-115P



Roof Scuttle Detail

Scale: 3"=1'-0"

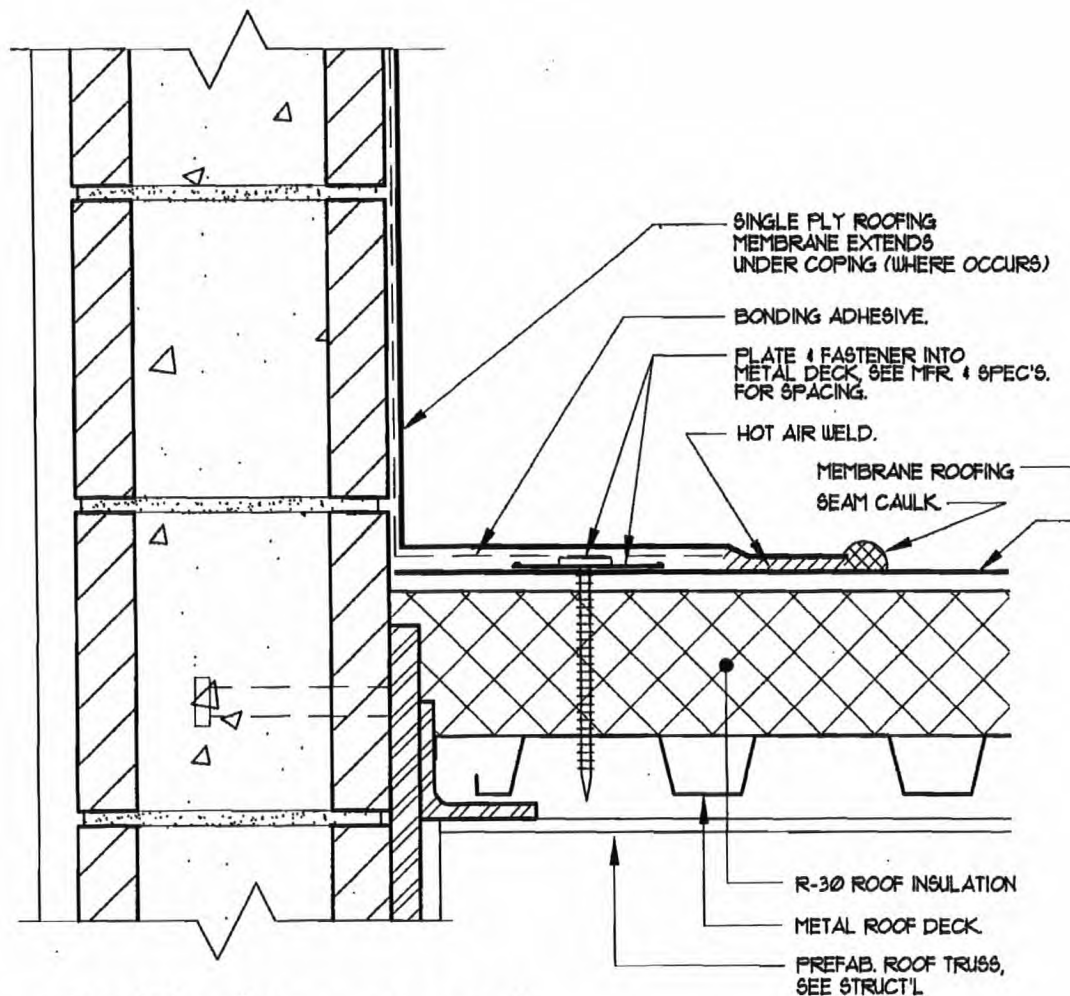
ST01300-125P



Flashing Detail

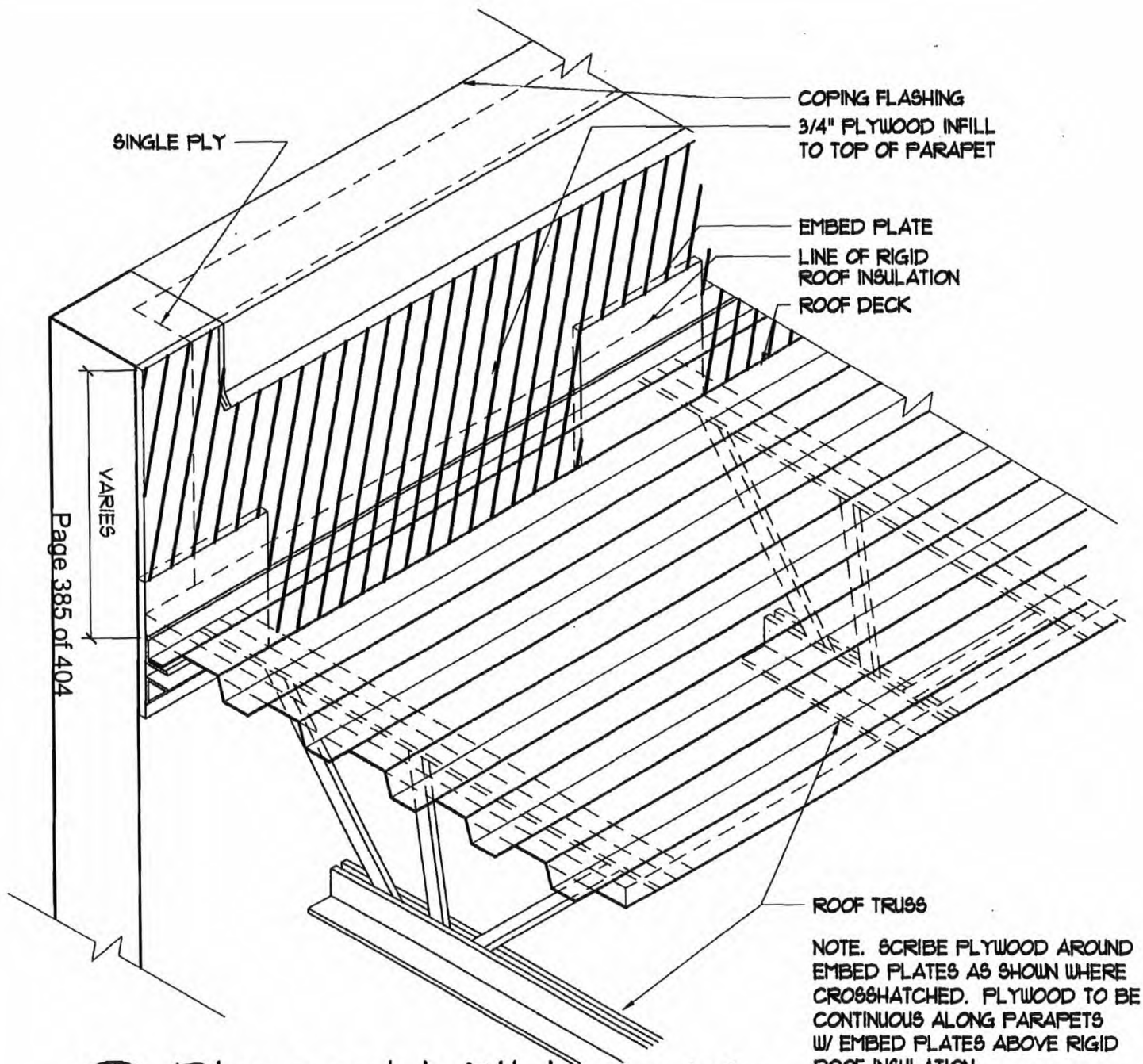
Scale: 3"=1'-0"

ST07300-135P



1 Flashing Detail
Scale: 3"=1'-0"

A10-2-1



COPING FLASHING
3/4" PLYWOOD INFILL
TO TOP OF PARAPET

EMBED PLATE
LINE OF RIGID
ROOF INSULATION
ROOF DECK

ROOF TRUSS

NOTE. SCRIBE PLYWOOD AROUND
EMBED PLATES AS SHOWN WHERE
CROSSHATCHED. PLYWOOD TO BE
CONTINUOUS ALONG PARAPETS
W/ EMBED PLATES ABOVE RIGID
ROOF INSULATION

SINGLE PLY

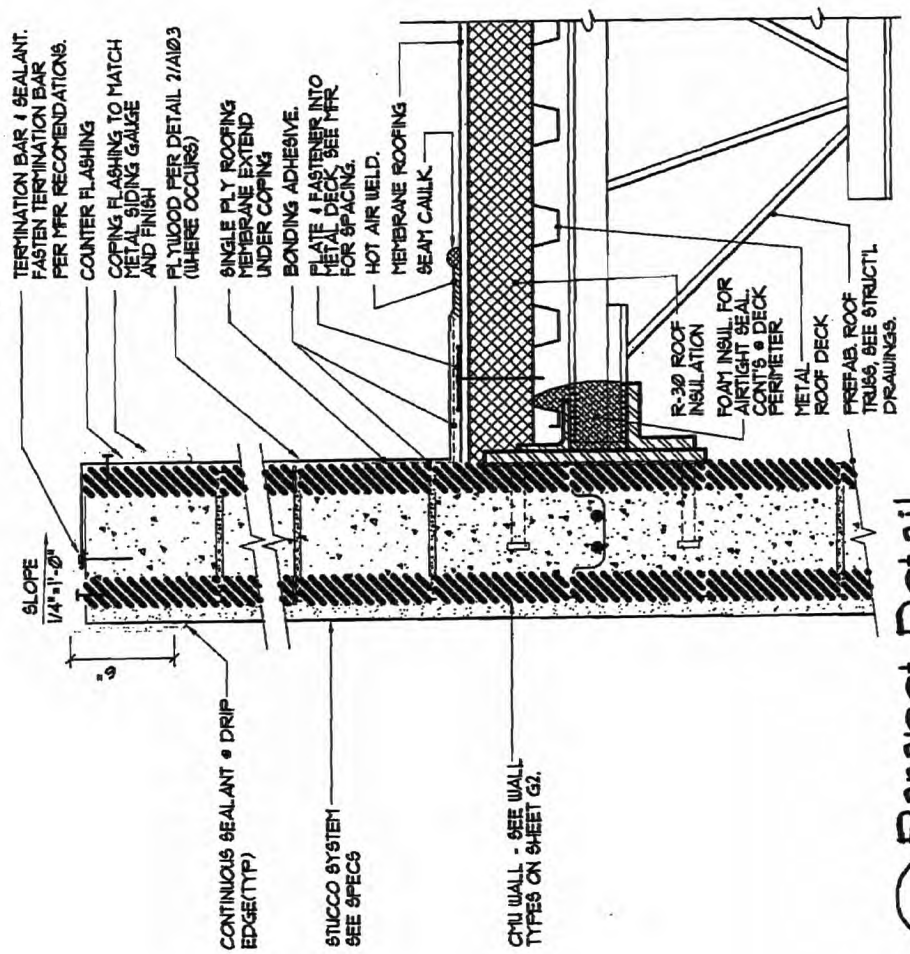
VARIES

Page 385 of 404

2 Plywood Infill Isometric

Scale: Isometric

A10-3-2r



9 Parapet Detail

Scale: 1/2"=1'-0"

A10-3-9

LINE OF PARAPET
BEYOND. (MTL. COPING @
BOTH SIDES OF OPENING).

TERMINATION BAR AND SEALANT
FASTEN TERMINATION BAR PER
MFR RECOMMENDATIONS

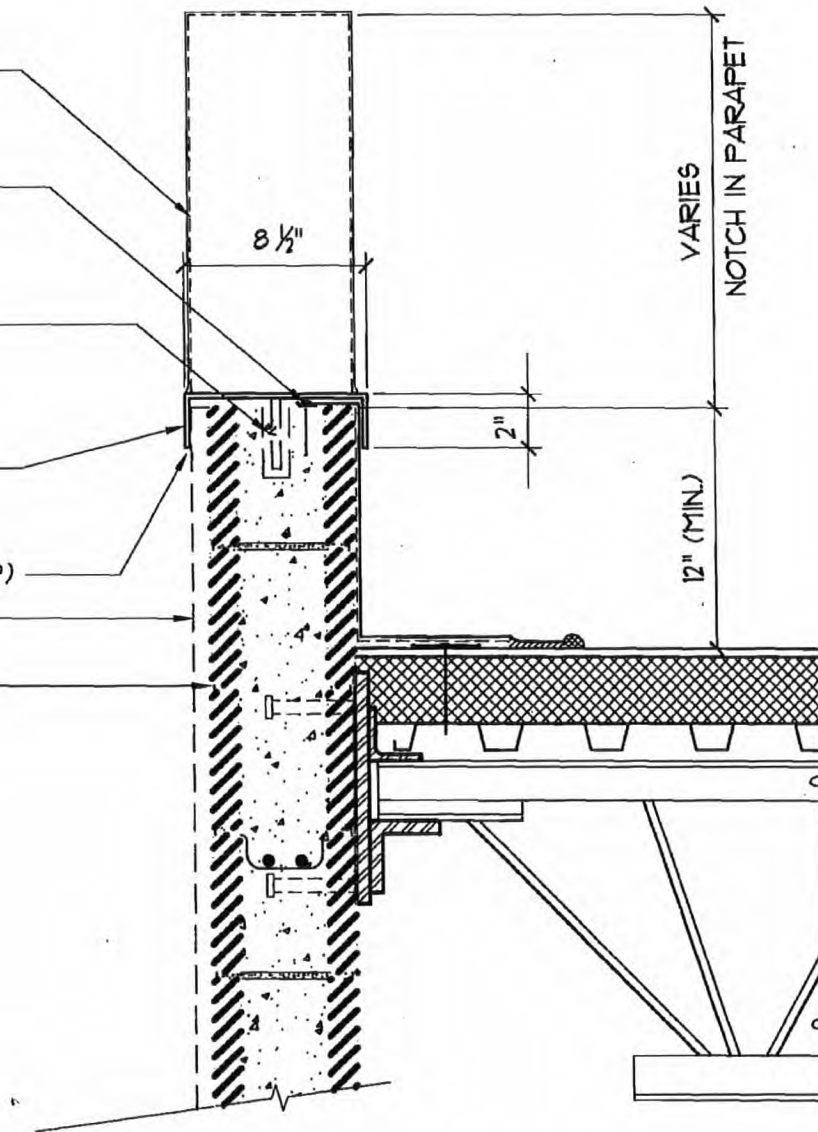
1/4" DIA. EPOXY BOLT,
MIN. EMBED 4". WELD TO
UNDERSIDE OF MTL. PLATE.
(1) - 2" FROM EA. END OF PLATE.

1/8" THICK, BENT MTL. PLATE
FULL WIDTH OF NOTCH IN
PARAPET.

CONT. SEALANT @ DRIP EDGE (TYP)

LINE OF STUCCO FINISH
OR EXPOSED CMU.

8" x 8" x 16" CMU W/ METAL
SIDING, OR CMU WALL W/ STUCCO
FINISH. SEE WALL
TYPES ON SHT G2.

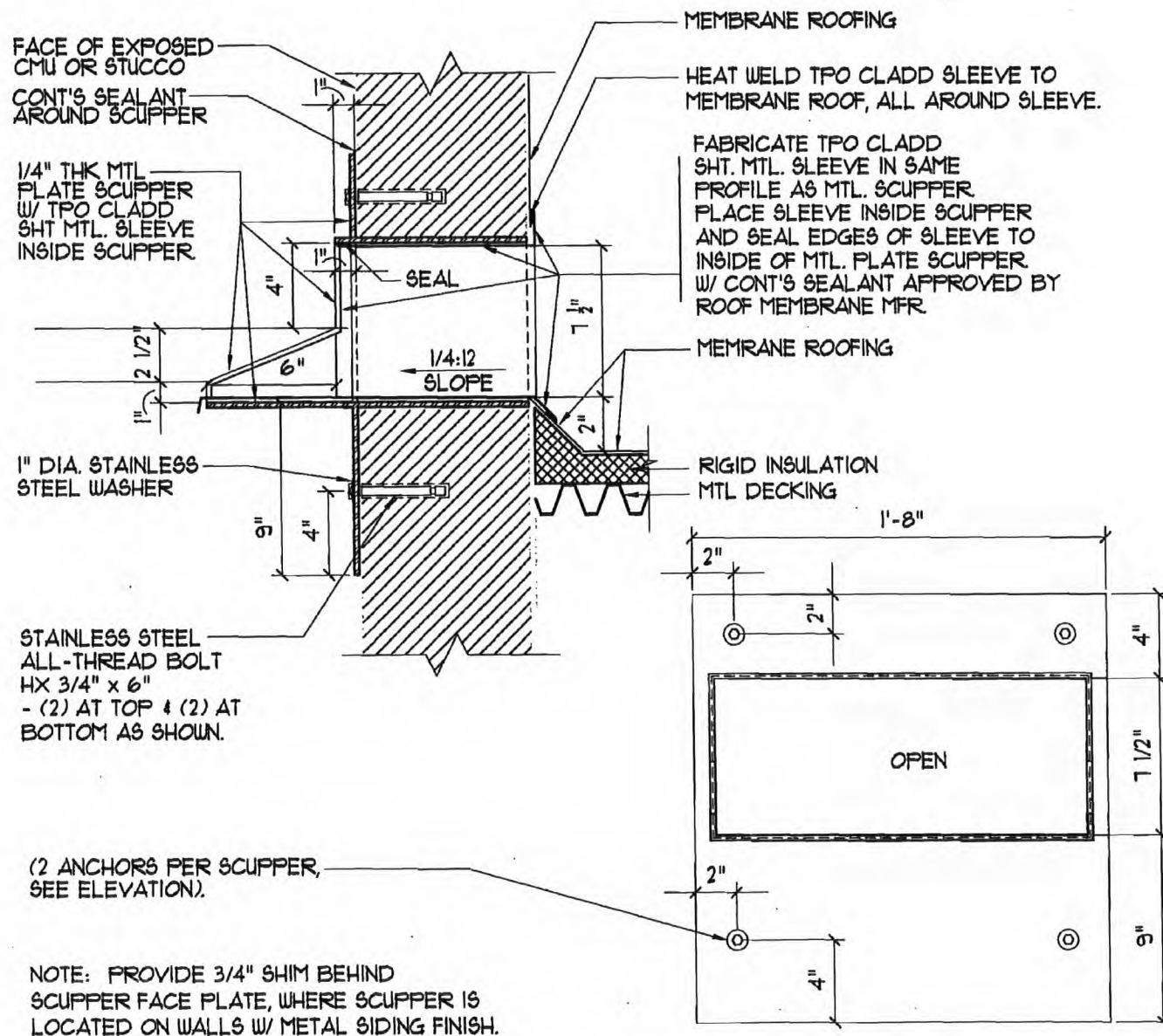


11

Parapet Notch Detail

Scale: 1"=1'-0"

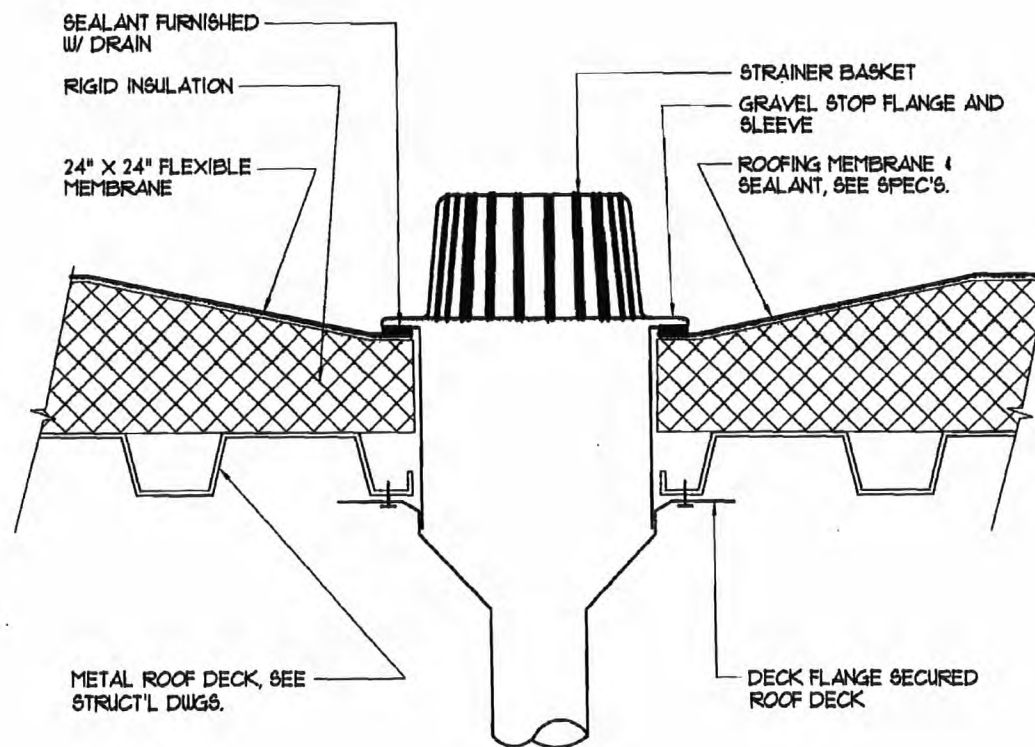
A10-3-11



4 Overflow Scupper Dtl.

Scale: 1-1/2" = 1'-0"

A10-5-4newest

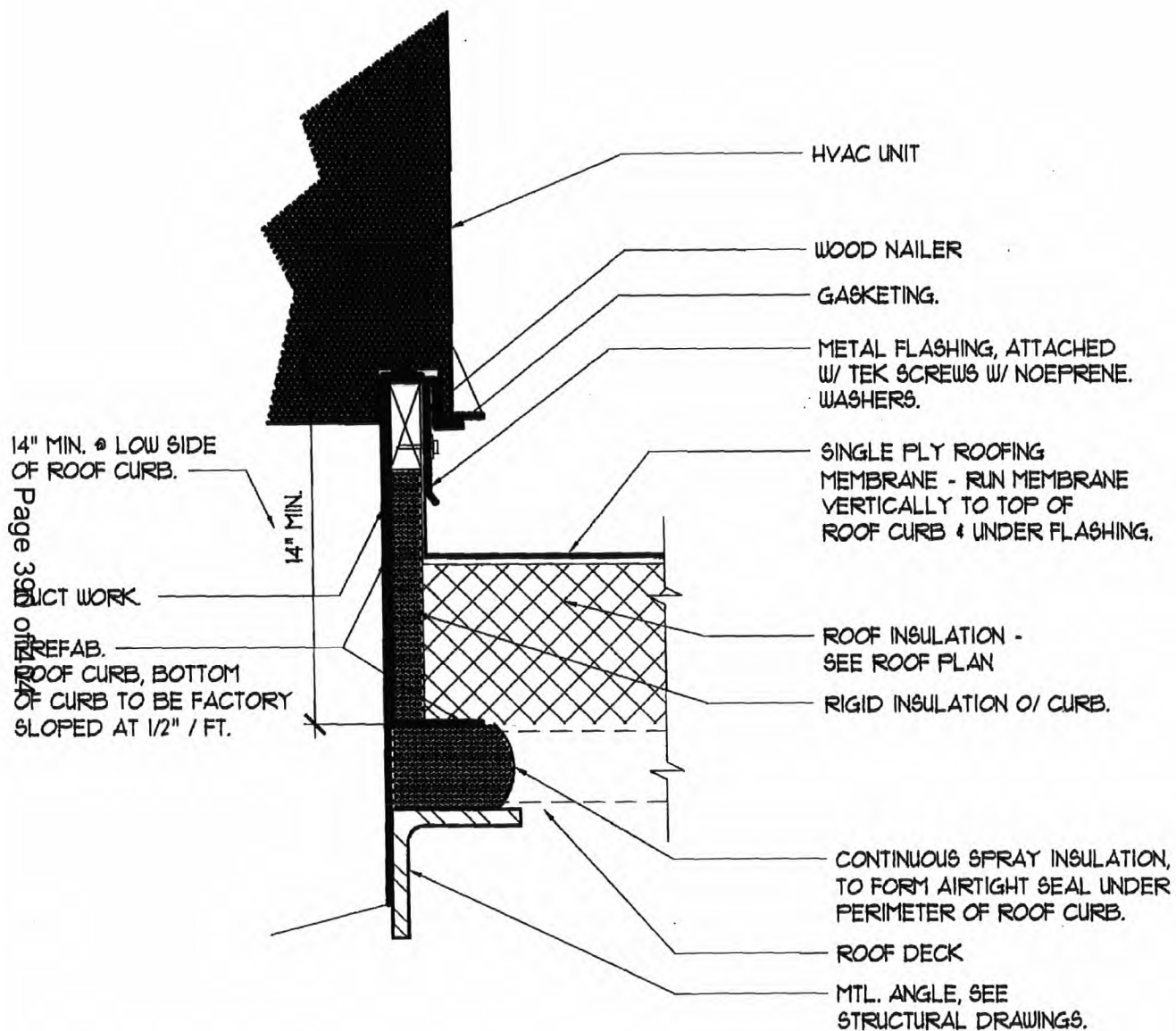


NOTE:
SEE DTL. 4/A105 FOR OVERFLOW SCUPPER.

10 Roof Drain
Scale: 3"=1'-0"

07710-04

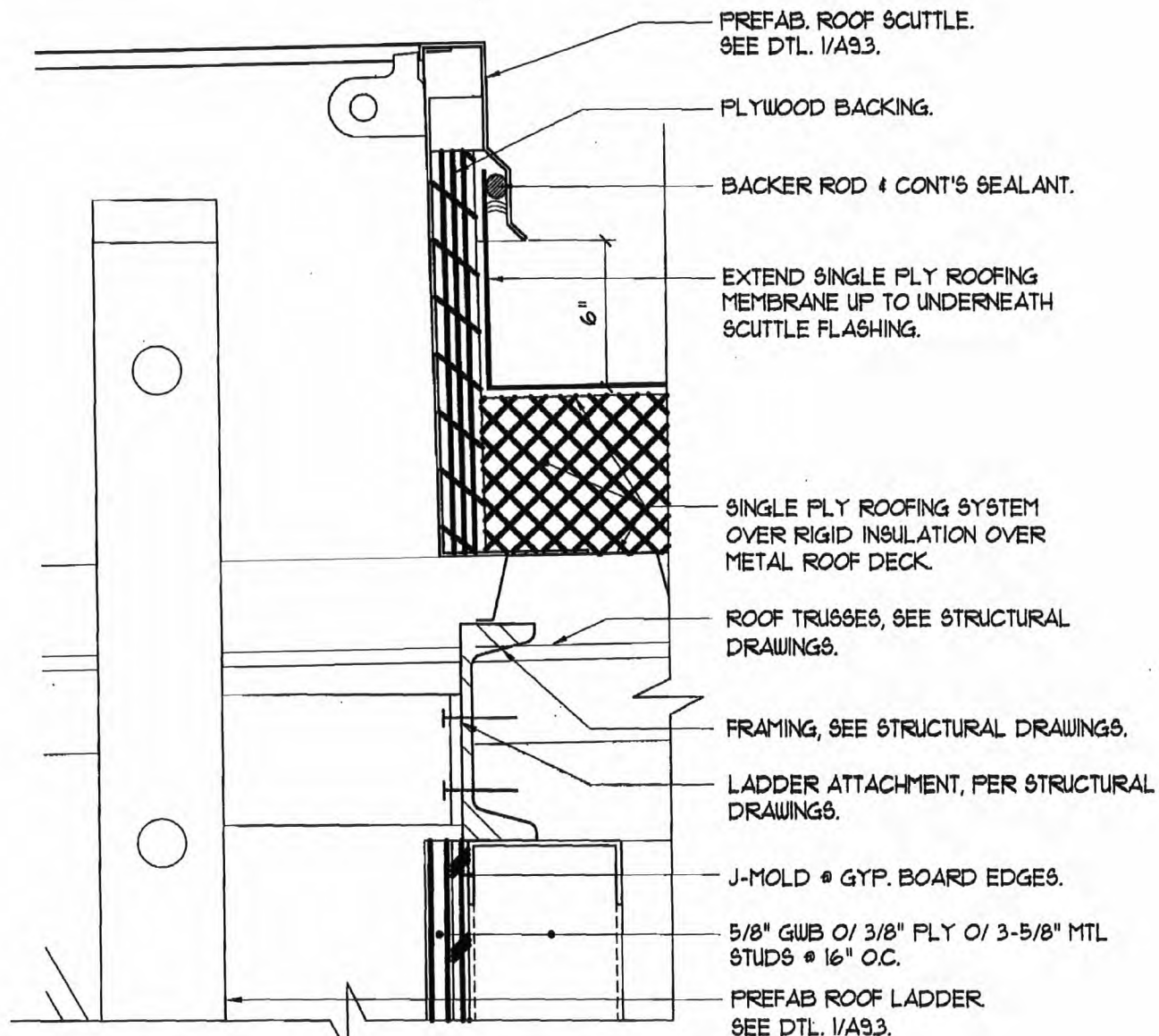
A10-5-10



Mechanical Roof Curb Detail

Scale: 3"=1'-0"

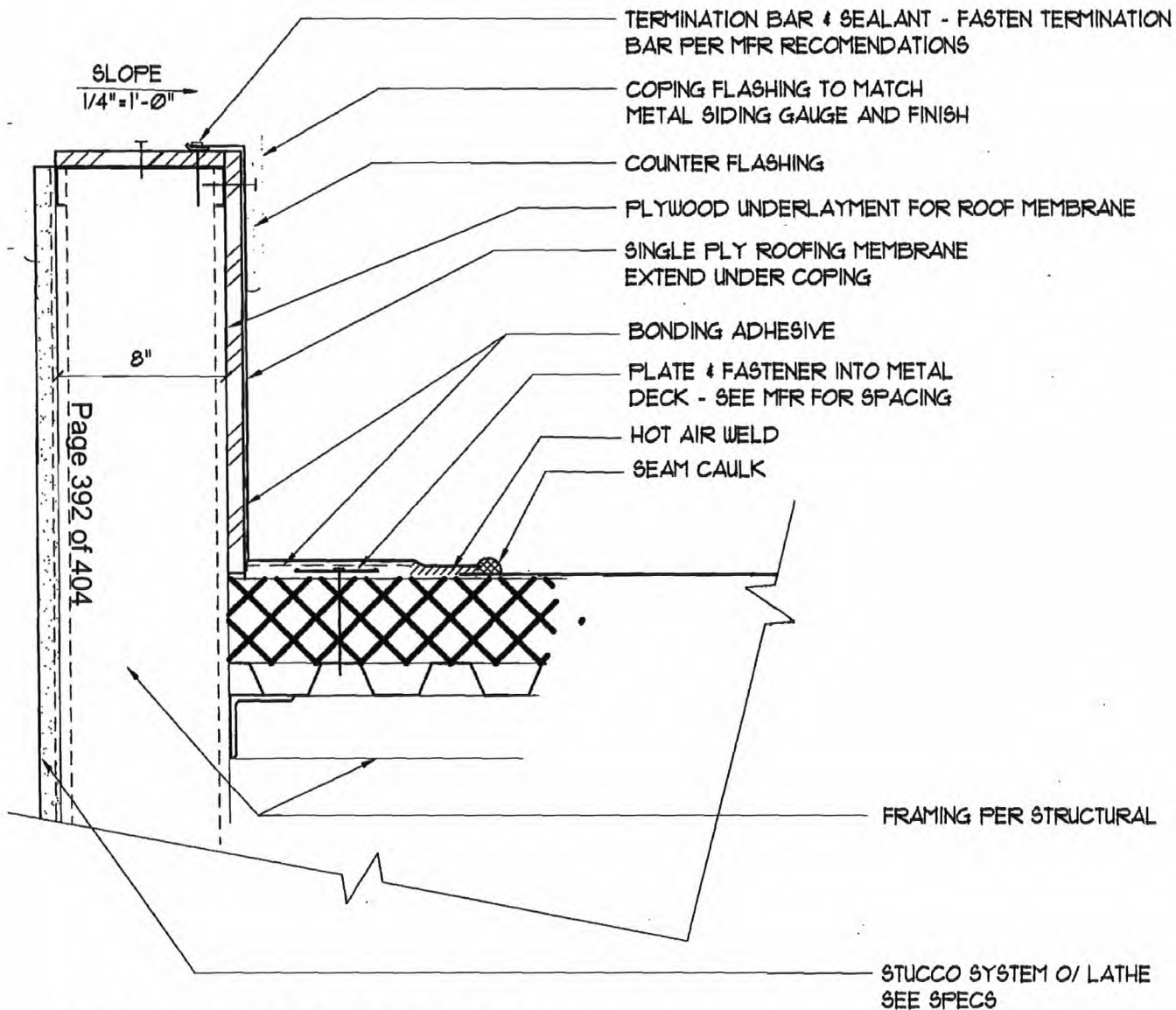
A10-1-10newest



11 Roof Scuttle Detail

Scale: 3"=1'-0"

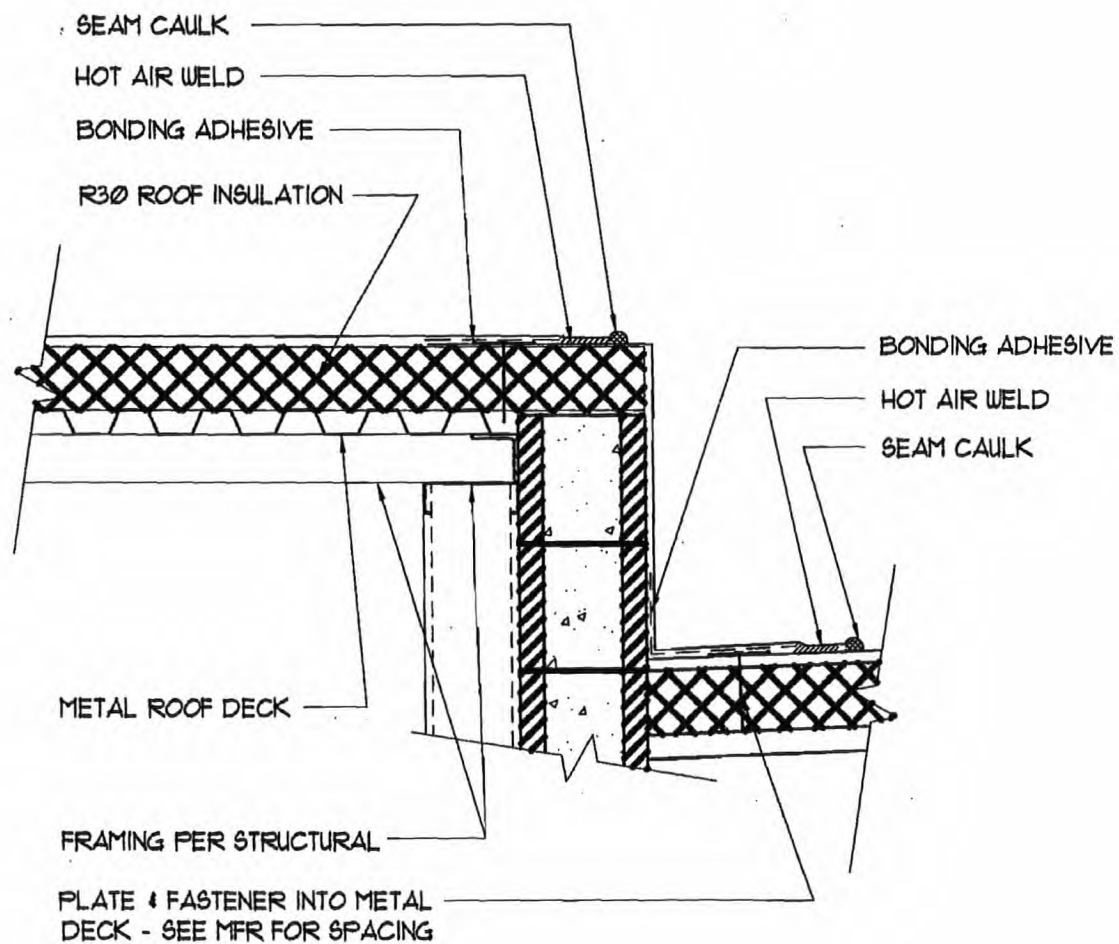
A10-1-11



1 Detail @ Parapet

Scale: 1-1/2" = 1'-0"

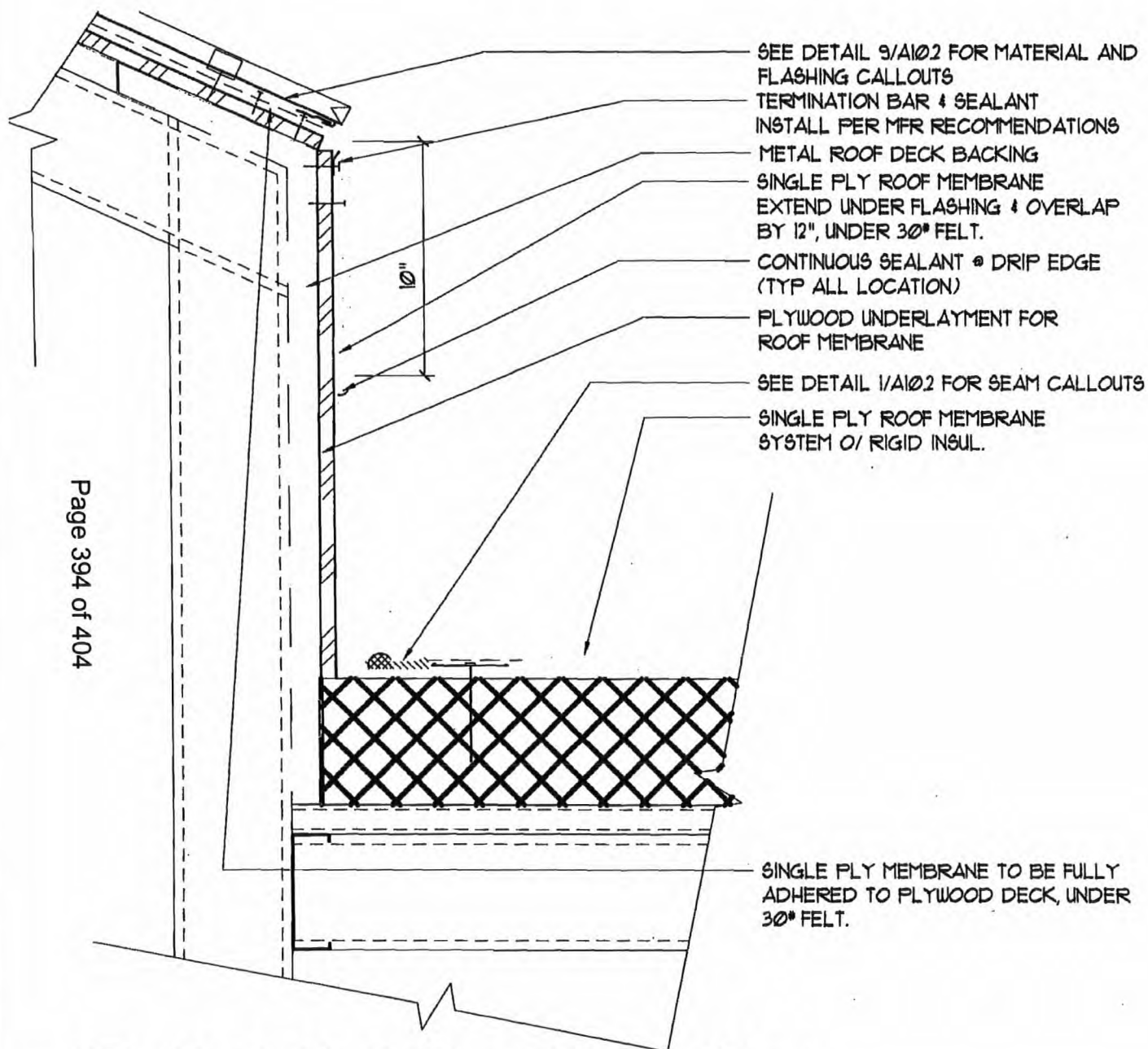
A10-10-1



2 Detail @ Roof Step

Scale: 1" = 1'-0"

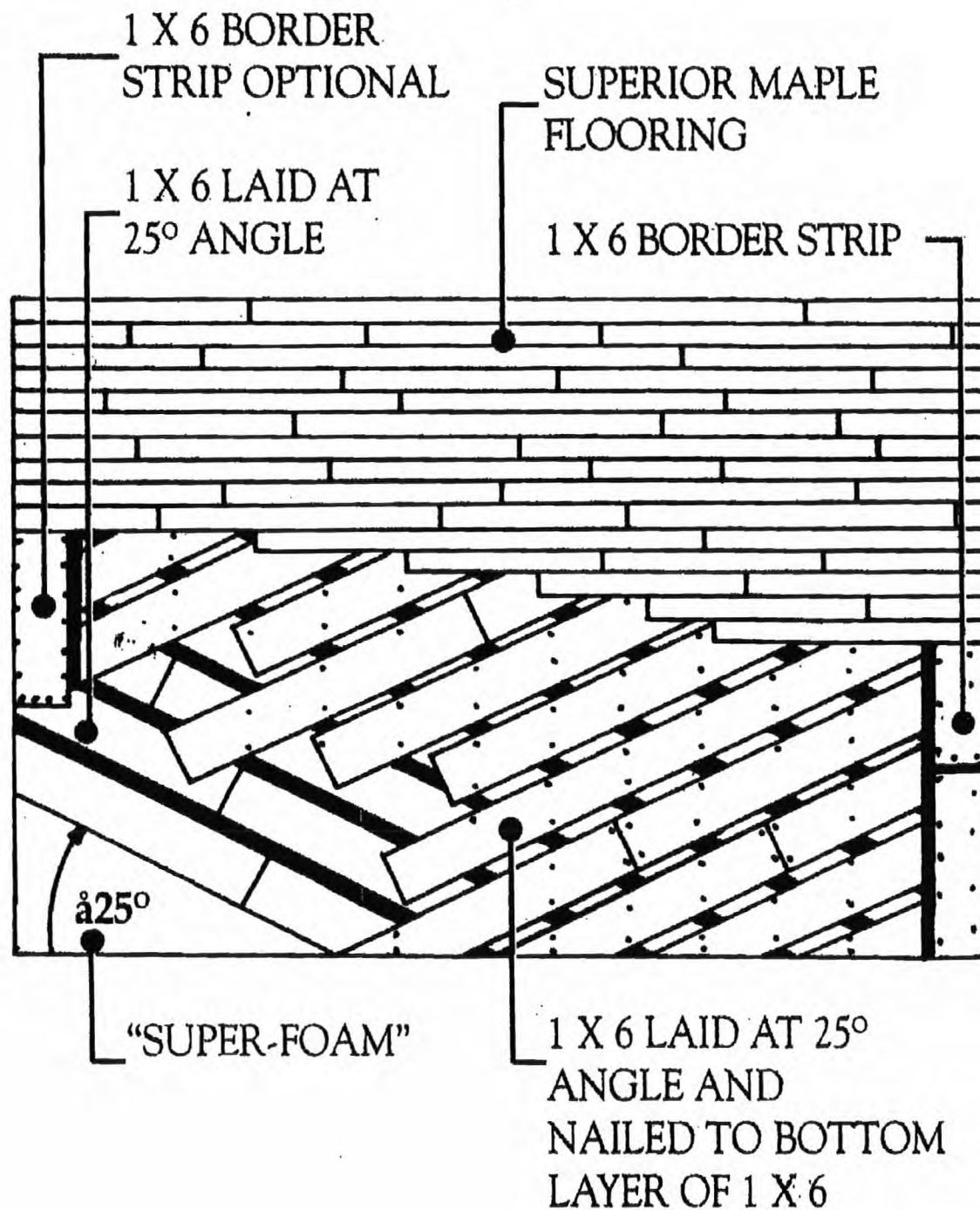
A10-10-2

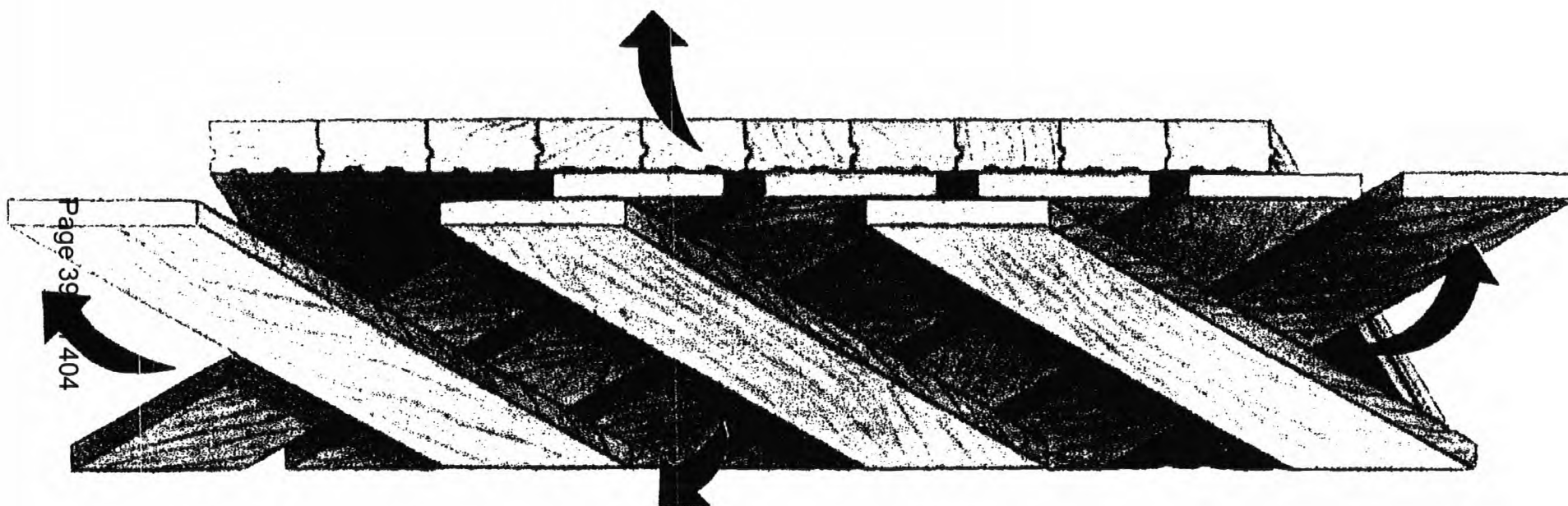


3 Detail @ Roof Transition

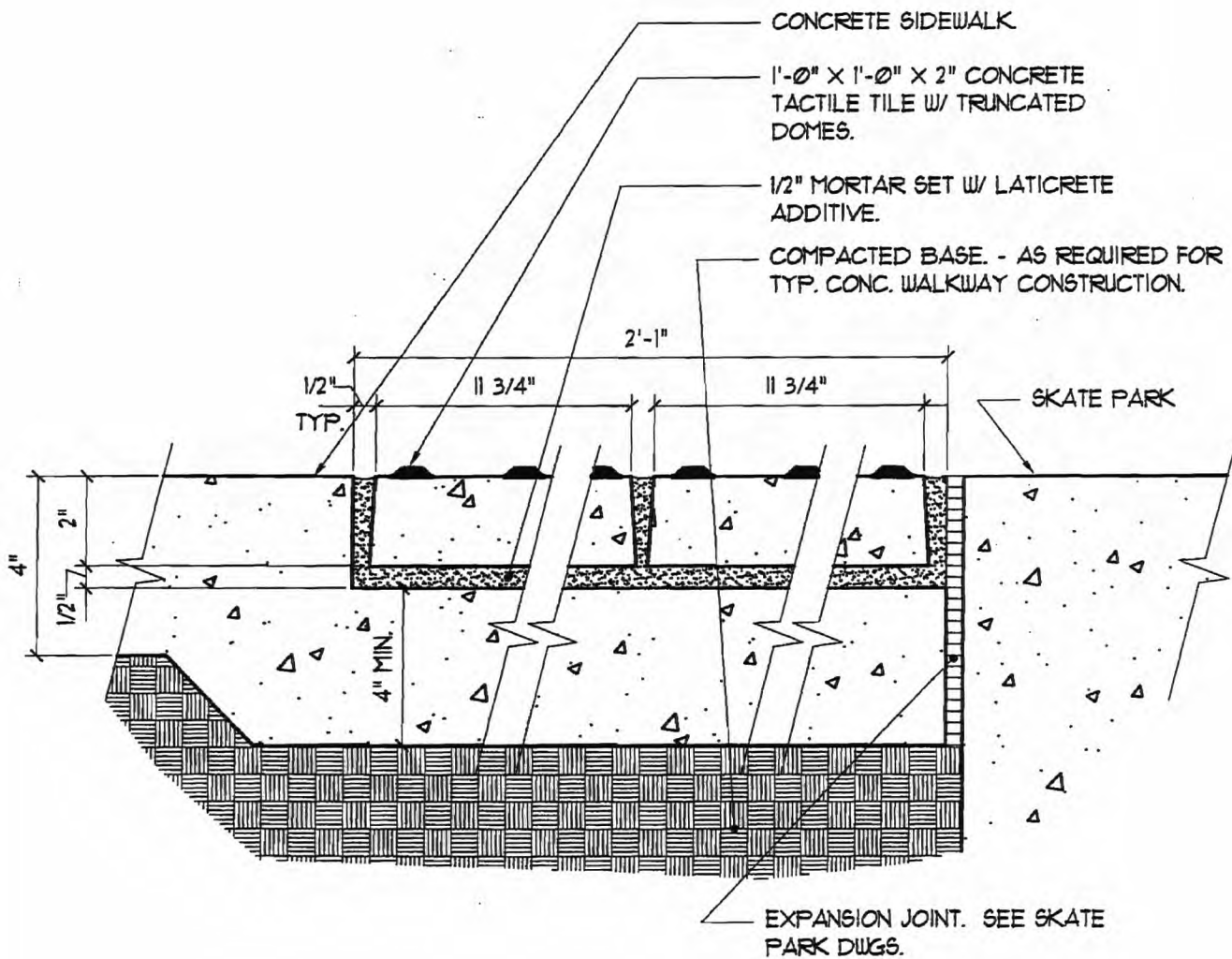
Scale: 1-1/2" = 1'-0"

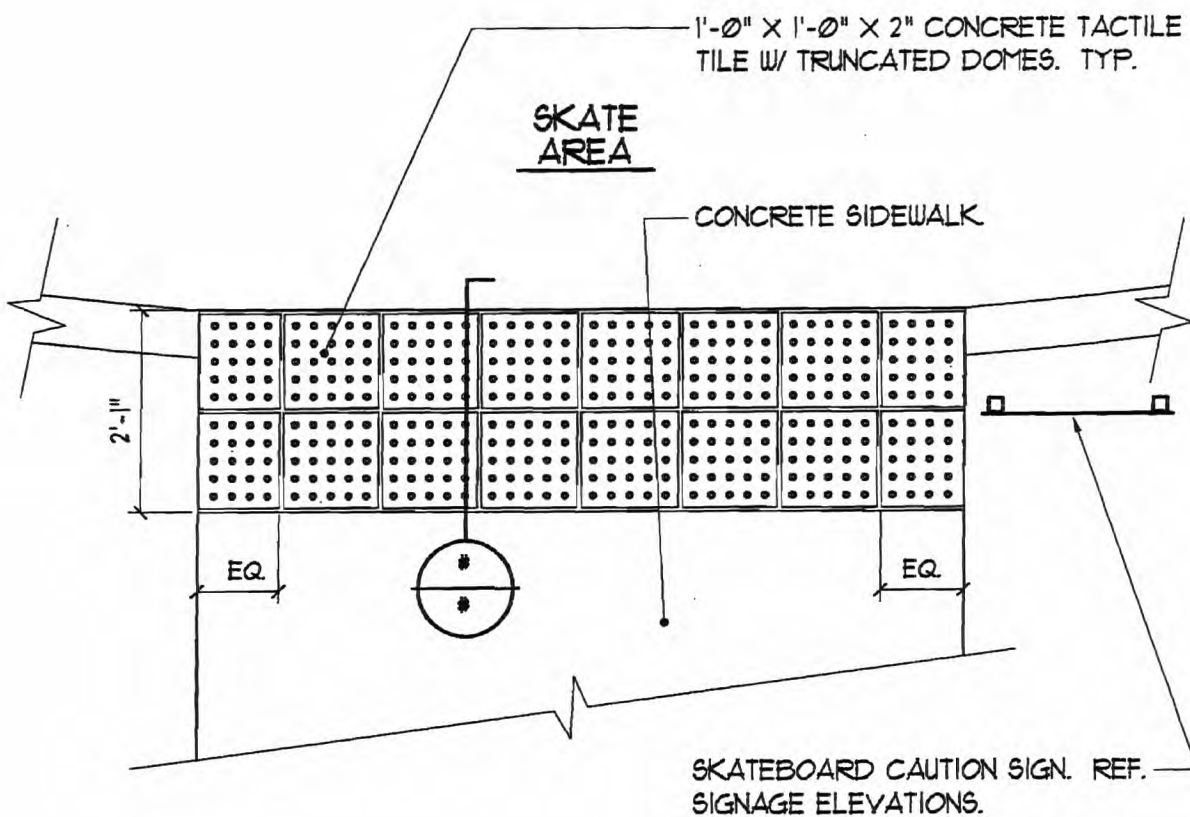
A10-10-3



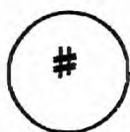


Self-Ventilating/ Self-Drying





NOTE: LAYOUT TILES CENTERED ON WALK WITH NO EDGE TILES LESS THAN HALF THE WIDTH OF A TILE.



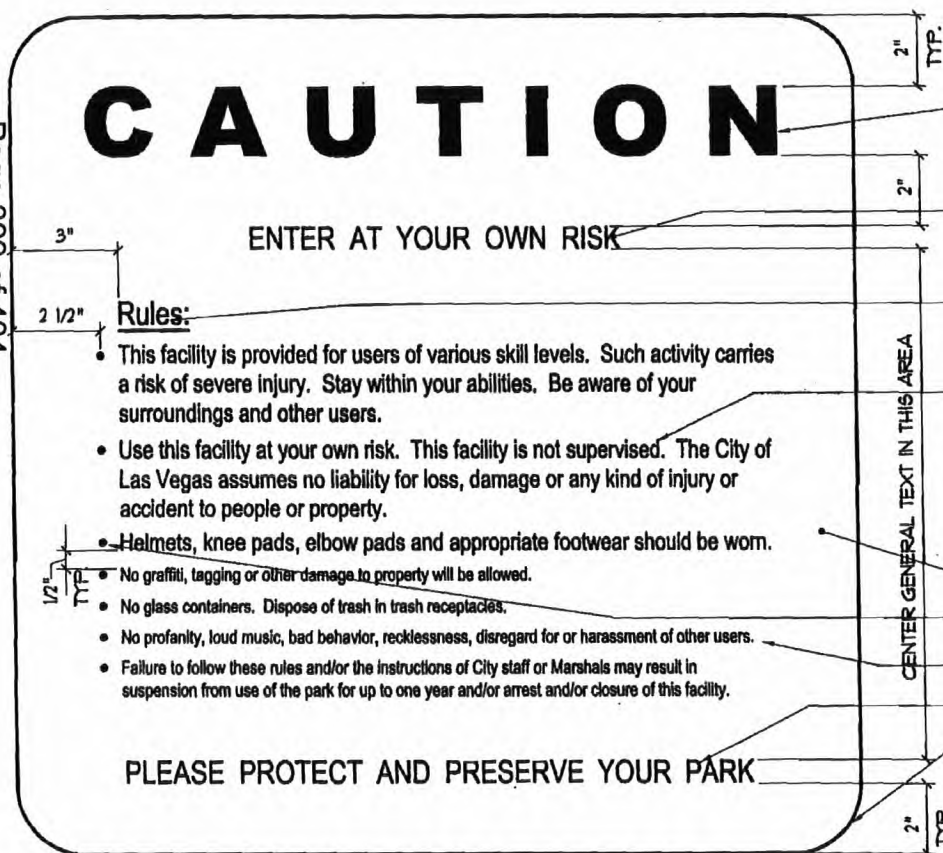
SkatePark Entry Paver View

Scale: 1/2" = 1'-0"

DATE: 6/1/01

ST02882-02

##_##



2" ARIAL BLACK TEXT W/ FULL WIDTH FACTOR CENTERED IN WIDTH OF SIGN. ADD ADDITIONAL SPACE BETWEEN LETTERS.

NOTE: "CAUTION" - TEXT COLOR TO BE PRIMARY RED

5/8" ARIAL TEXT W/ 80 WIDTH FACTOR CENTERED IN WIDTH OF SIGN.

5/8" ARIAL TEXT W/ 80 WIDTH FACTOR

1/2" ARIAL TEXT W/ 80 WIDTH FACTOR UNDERLINE TEXT - FULL LENGTH - 1/16" THICK LINE.

WHITE BACKGROUND COLOR

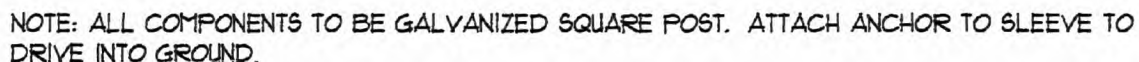
1/4" DIAMETER BULLET COLOR TO MATCH COLOR OF TEXT.

3/8" ARIAL TEXT W/ 80 WIDTH FACTOR

5/8" ARIAL TEXT W/ 80 WIDTH FACTOR CENTERED IN WIDTH OF SIGN.

2" RADIUS CORNER TYP.

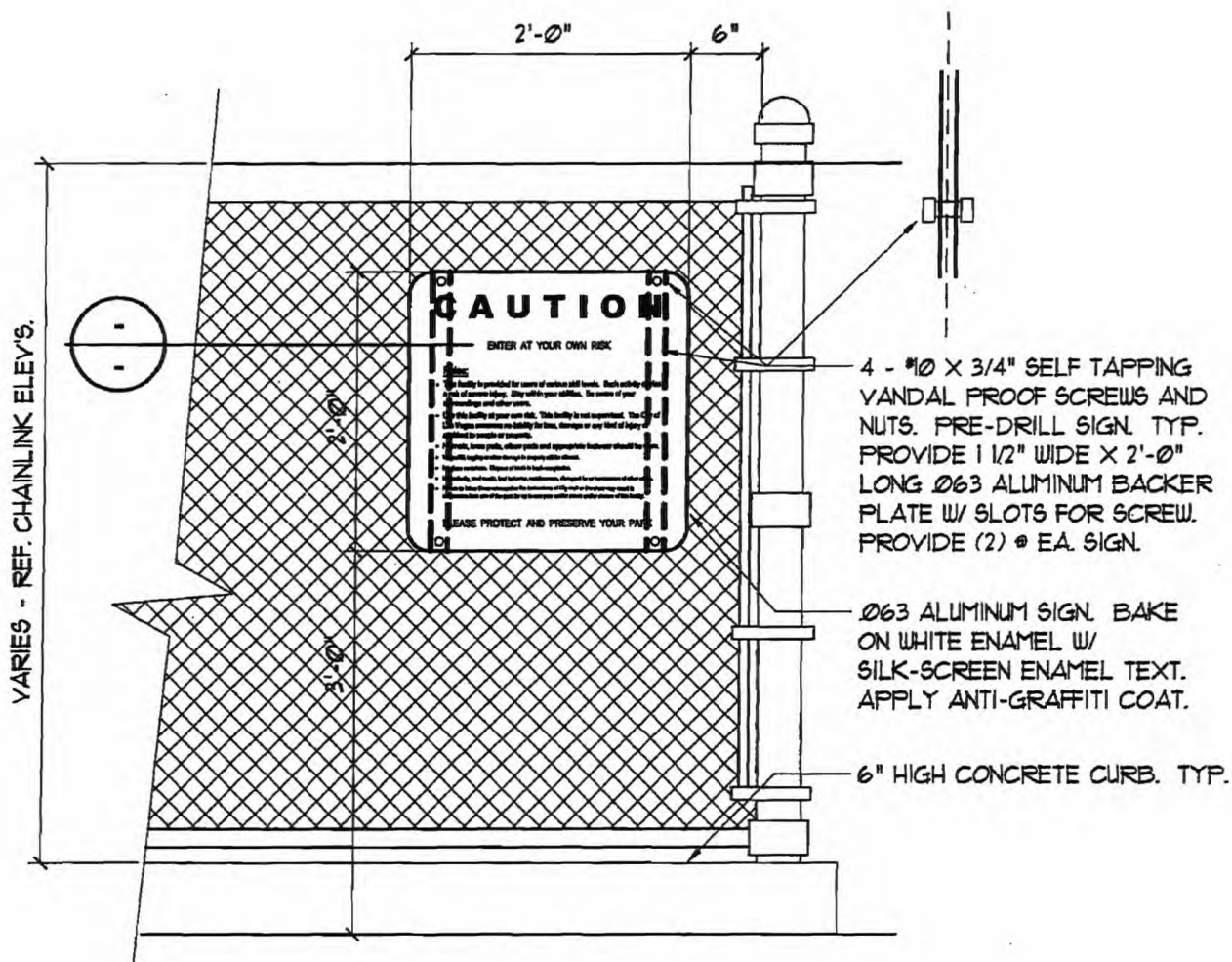
NOTE: 263 ALUMINUM SIGN. BAKED ON WHITE ENAMEL W/ SILK-SCREEN ENAMEL TEXT. ALL TEXT TO BE BLACK TYPICAL UNLESS NOTED OTHERWISE.



Scale: 3/4"=1'-0"

ST02882-04

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NOTE: REFERENCE ENLARGED SIGN DETAIL FOR INFORMATION PERTAINING TO SIGN TEXT.

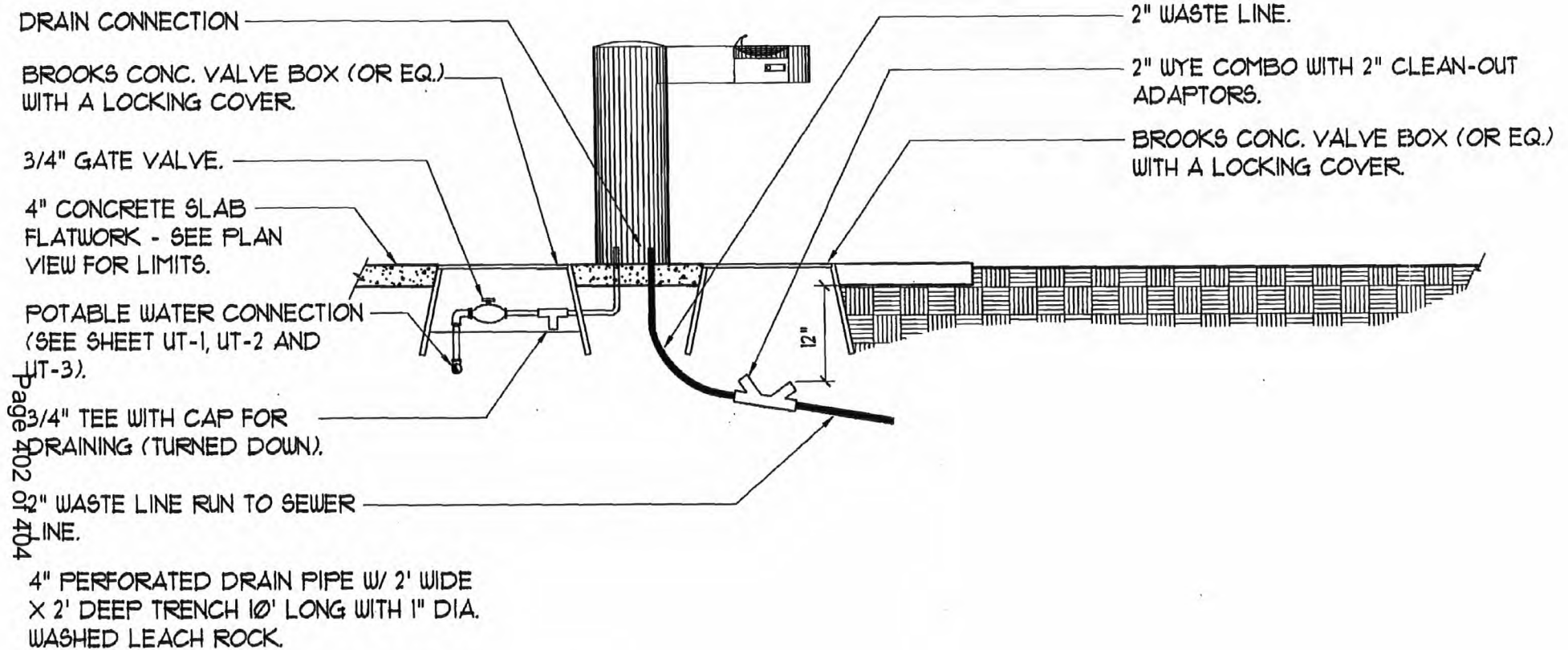
Skate Park Fence Mt'd. Detail

Scale: 3/4" = 1'-0"

DATE: 6/1/01

ST02882-05

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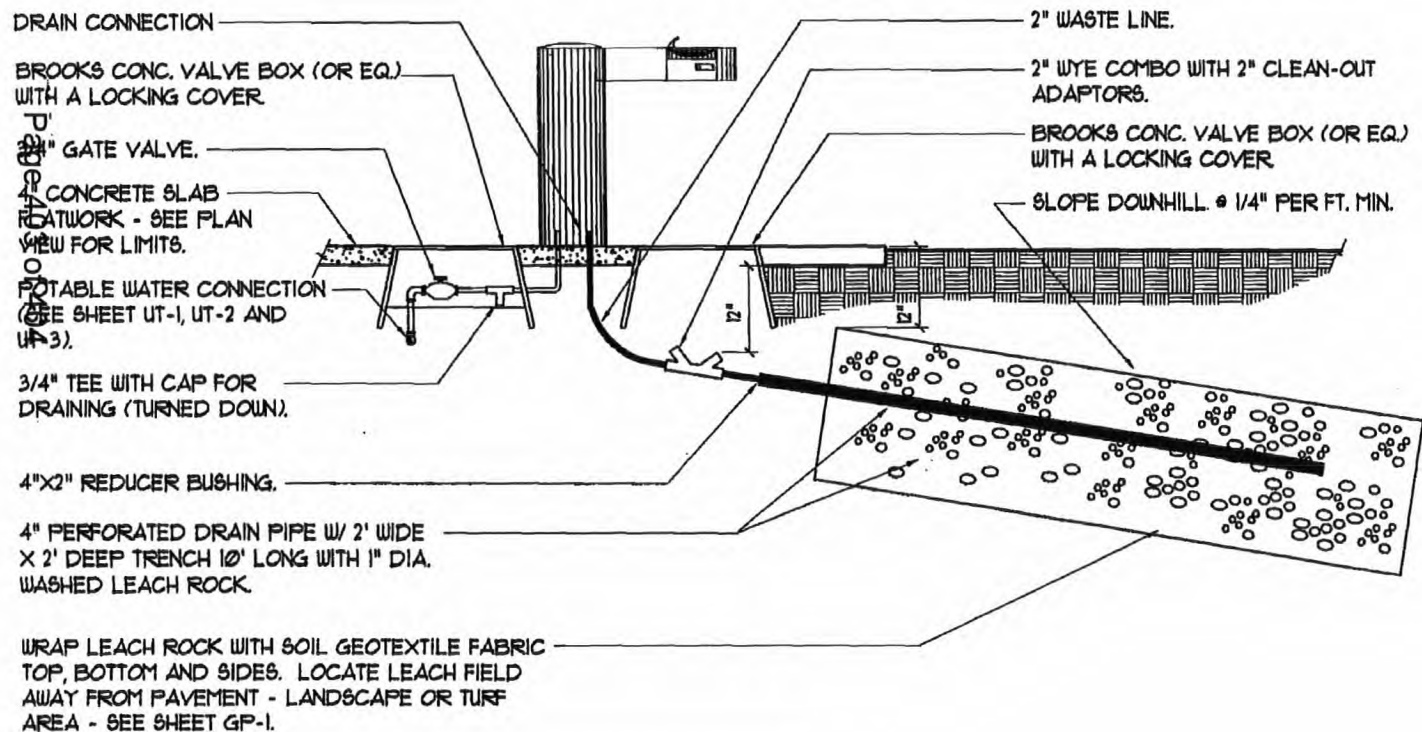
WRAP LEACH ROCK WITH SOIL GEOTEXTILE FABRIC TOP, BOTTOM AND SIDES. LOCATE LEACH FIELD AWAY FROM PAVEMENT - LANDSCAPE OR TURF AREA - SEE SHEET GP-1.

DRINKING FOUNTAIN: MOST DEPENDABLE FOUNTAINS #440DB, COLOR: SELECTED BY OWNER (800) 552-6331 - SEE SPEC. SECTION 028710

#

Drinking Fountain - Drainage Detail

Scale: Not To Scale



DRINKING FOUNTAIN: MOST DEPENDABLE FOUNTAINS #440DB, COLOR SELECTED BY OWNER (800) 552-6331 - SEE SPEC. SECTION 02810

#

Drinking Fountain - Drainage Detail

Scale: Not To Scale

at15412-02

00.00

