Signs 101
Planning for Sign Code Success
Birmingham, Alabama
July 26, 2019

Bill Uline

Faces

MSSA
MID-SOUTH SIGN ASSOCIATION INC

SIGN RESEARCH FOUNDATION™

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My Background

- 2019 – 1970 = 49 years
- Faces 1995 – present
- Current Positions:
  - General Manger of Faces
  - Chairman of ISA's Electrical Subcommittee
  - Member of ISA's Steering Committee
  - Management Flow Coordinator

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What we'll discuss today

- Purpose of on-Premise Signage / Why signs matter
- Sign Types, Construction & Illumination
- Signage as Art
- Sign Regulations

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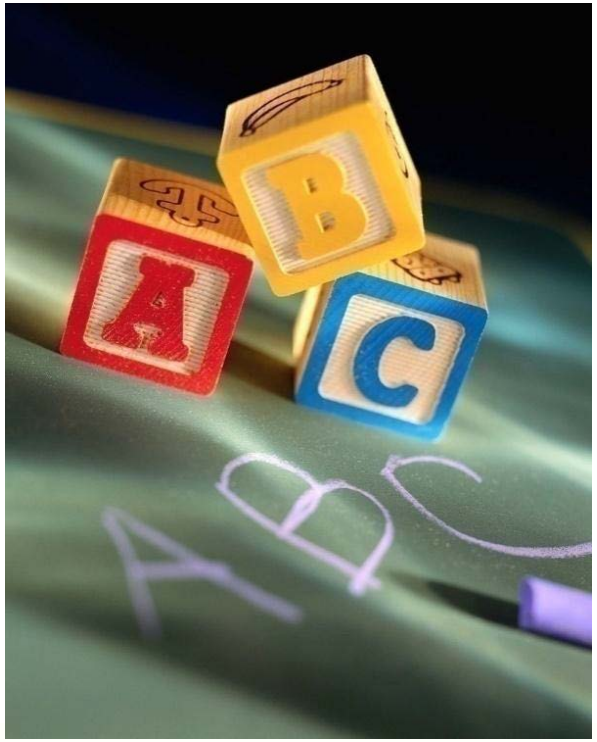
Purpose of On-Premise Signs

- **A**ttract new customers
- **B**rand the business
- **C**reate impulse sales



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Purpose of On-Premise Signage

Attract New Customers

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Purpose of On-Premise Signage

Brand the Business

Creating distinctive and durable perceptions in the minds of consumers.

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Purpose of On-Premise Signage

Create

Impulse

Sales

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Purpose of On-Premise Signage

E-commerce taking a bigger bite of the retail pie.

= 25%

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“Signs”

- Many different types of signs
  - Permanent – on premise
  - Off-premise (Billboards)
  - Temporary (Banners, posters)
  - Political
  - Vehicle graphics
  - Highway/Traffic Control
  - Wayfinding/Directional
- Each type of “sign” is important, but today I will mainly talk about “on-premise” signs

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Science of Signs

- Properly proportioned signs facing a roadway are based on the following scientific underpinnings:

- Width of the public right of way
- Posted speed limit (35mph = 51’/sec)

- Which equates to – see – read – comprehend the message – make safe lane changes – decelerate - enter the property safely.

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How Signs Are Regulated

- Permanent signs are installed with permits, subject to oversight and enforcement
- Some other types of signs (highway signs, billboards,

  super graphics) may be regulated by the state.
- Other signs (political, vehicle) may not be regulated or require any permits
- The professional sign industry needs to pull a permit for almost every sign we install. In order to stay in business, we operate within the rules.

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Regulatory Considerations

Sign Companies are limited by:

- What the customer wants
- What best suits the location
- National Branding Requirements
- Zoning/planning rules and regulations
- Sign codes

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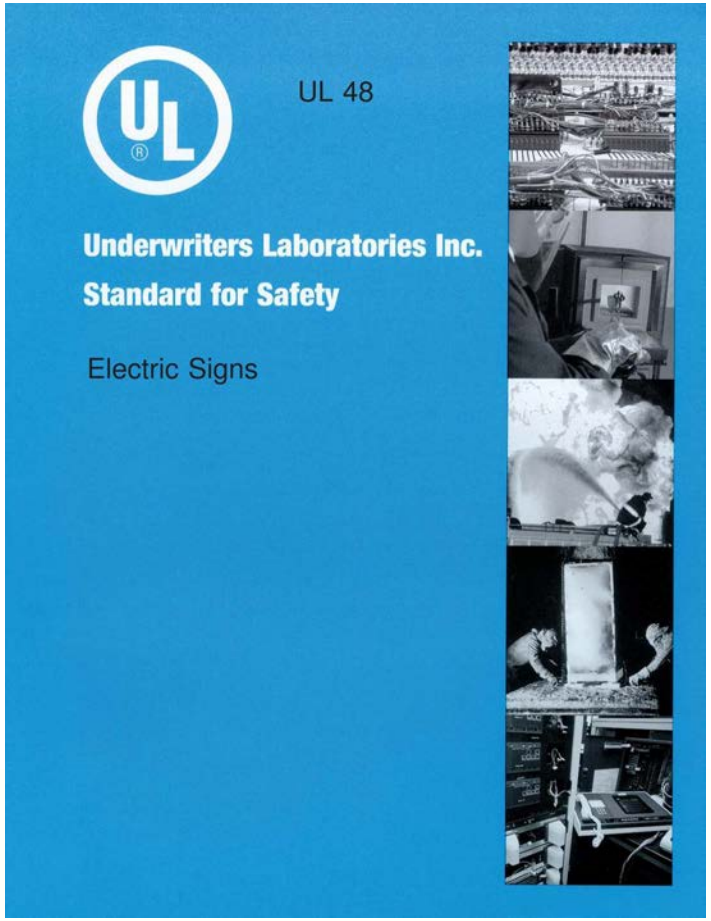
Underwriters Laboratories U.L.

1st edition –1917
15th edition –9/2011



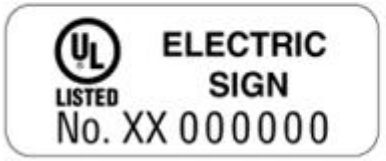
Underwriters Laboratories (UL)

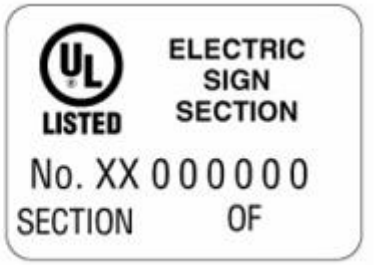
Global independent safety science company
Covers the sign industry and our products

-Safety

-Quality

Note: Federal law requires acceptance of any "Nationally Recognized Testing Laboratory"; UL is the best known, but there are others





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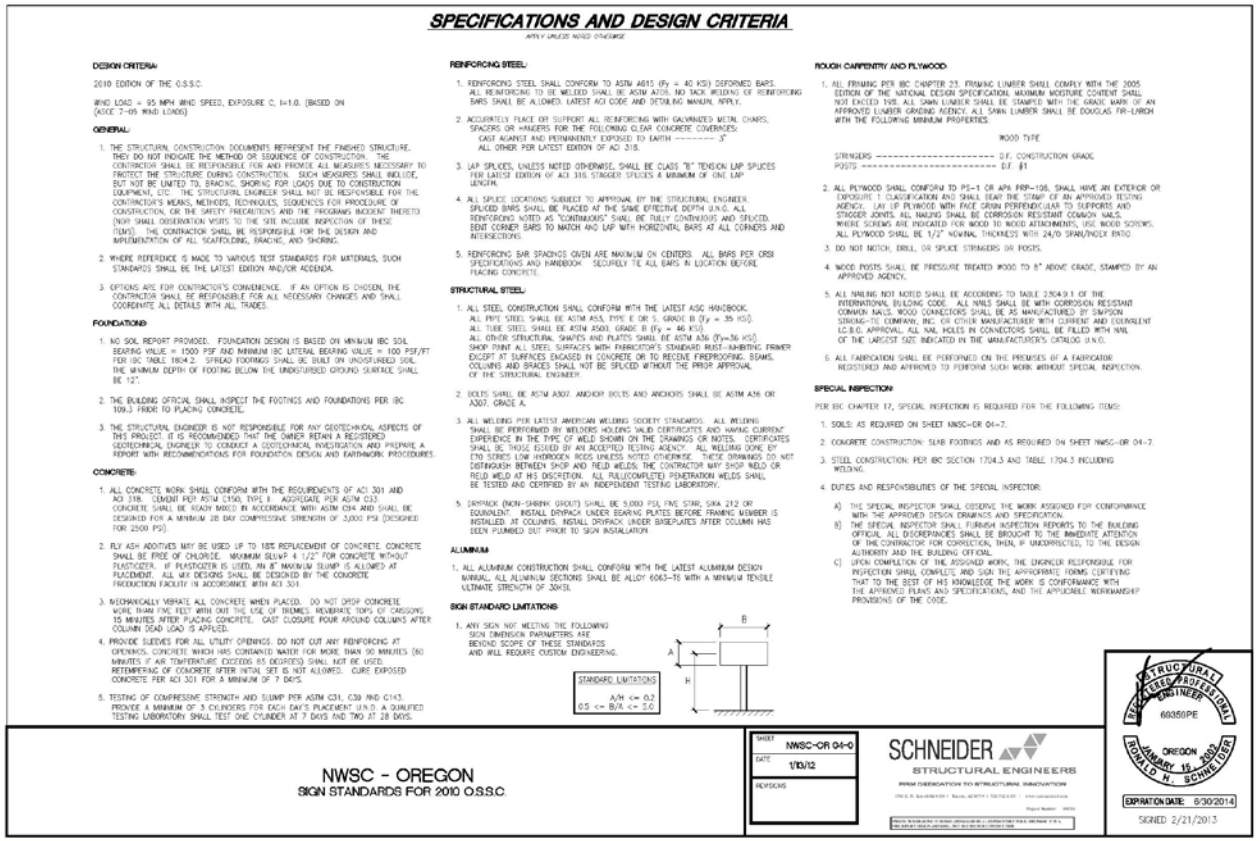
Standardized Engineering



SPECIFICATIONS AND DESIGN CRITERIA

APPLY UNLESS NOTED OTHERWISE

DESIGN CRITERIA:

2010 EDITION OF THE O.S.S.C.

WIND LOAD = 95 MPH WIND SPEED, EXPOSURE C, I=1.0. (BASED ON (ASCE 7-05 WIND LOADS)

GENERAL:

1. THE STRUCTURAL CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OR SEQUENCE OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. THE STRUCTURAL ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES FOR PROCEDURE OF CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND THE PROGRAMS INCIDENT THERETO (NOR SHALL OBSERVATION VISITS TO THE SITE INCLUDE INSPECTION OF THESE ITEMS). THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF ALL SCAFFOLDING, BRACING, AND SHORING.
2. WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDA.
3. OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF AN OPTION IS CHOSEN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES AND SHALL COORDINATE ALL DETAILS WITH ALL TRADES.

FOUNDATIONS:

1. NO SOIL REPORT PROVIDED. FOUNDATION DESIGN IS BASED ON MINIMUM IBC SOIL BEARING VALUE = 1500 PSF AND MINIMUM IBC LATERAL BEARING VALUE = 100 PSF/FT PER IBC TABLE 1804.2. SPREAD FOOTINGS SHALL BE BUILT ON UNDISTURBED SOIL. THE MINIMUM DEPTH OF FOOTING BELOW THE UNDISTURBED GROUND SURFACE SHALL BE 12".
2. THE BUILDING OFFICIAL SHALL INSPECT THE FOOTINGS AND FOUNDATIONS PER IBC 109.3 PRIOR TO PLACING CONCRETE.
3. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR ANY GEOTECHNICAL ASPECTS OF THIS PROJECT. IT IS RECOMMENDED THAT THE OWNER RETAIN A REGISTERED GEOTECHNICAL ENGINEER TO CONDUCT A GEOTECHNICAL INVESTIGATION AND PREPARE A REPORT WITH RECOMMENDATIONS FOR FOUNDATION DESIGN AND EARTHWORK PROCEDURES.

CONCRETE:

1. ALL CONCRETE WORK SHALL CONFORM WITH THE REQUIREMENTS OF ACI 301 AND ACI 318. CEMENT PER ASTM C150, TYPE II. AGGREGATE PER ASTM C33. CONCRETE SHALL BE READY MIXED IN ACCORDANCE WITH ASTM C94 AND SHALL BE DESIGNED FOR A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI (DESIGNED FOR 2500 PSI).
2. FLY ASH ADDITIVES MAY BE USED UP TO 15% REPLACEMENT OF CONCRETE. CONCRETE SHALL BE FREE OF CHLORIDE. MAXIMUM SLUMP 4 1/2" FOR CONCRETE WITHOUT PLASTICIZER. IF PLASTICIZER IS USED, AN 8" MAXIMUM SLUMP IS ALLOWED AT PLACEMENT. ALL MIX DESIGNS SHALL BE DESIGNED BY THE CONCRETE PRODUCTION FACILITY IN ACCORDANCE WITH ACI 301.
3. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED. DO NOT DROP CONCRETE MORE THAN FIVE FEET WITH OUT THE USE OF TREMIES. REVIBRATE TOPS OF CAISSONS 15 MINUTES AFTER PLACING CONCRETE. CAST CLOSURE POUR AROUND COLUMNS AFTER COLUMN DEAD LOAD IS APPLIED.
4. PROVIDE SLEEVES FOR ALL UTILITY OPENINGS. DO NOT CUT ANY REINFORCING AT OPENINGS. CONCRETE WHICH HAS CONTAINED WATER FOR MORE THAN 90 MINUTES (60 MINUTES IF AIR TEMPERATURE EXCEEDS 85 DEGREES) SHALL NOT BE USED. RETEMPERING OF CONCRETE AFTER INITIAL SET IS NOT ALLOWED. CURE EXPOSED CONCRETE PER ACI 301 FOR A MINIMUM OF 7 DAYS.
5. TESTING OF COMPRESSIVE STRENGTH AND SLUMP PER ASTM C31, C39 AND C143. PROVIDE A MINIMUM OF 5 CYLINDERS FOR EACH DAY'S PLACEMENT U.N.O. A QUALIFIED TESTING LABORATORY SHALL TEST ONE CYLINDER AT 7 DAYS AND TWO AT 28 DAYS.

REINFORCING STEEL:

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (Fy = 40 KSI) DEFORMED BARS. ALL REINFORCING TO BE WELDED SHALL BE ASTM A706. NO TACK WELDING OF REINFORCING BARS SHALL BE ALLOWED. LATEST ACI CODE AND DETAILING MANUAL APPLY.
2. ACCURATELY PLACE OR SUPPORT ALL REINFORCING WITH GALVANIZED METAL CHAIRS, SPACERS OR HANGERS FOR THE FOLLOWING CLEAR CONCRETE COVERAGES:
   CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH --------- 3"
   ALL OTHER PER LATEST EDITION OF ACI 318.
3. LAP SPLICES, UNLESS NOTED OTHERWISE, SHALL BE CLASS "B" TENSION LAP SPLICES PER LATEST EDITION OF ACI 318. STAGGER SPLICES A MINIMUM OF ONE LAP LENGTH.
4. ALL SPLICE LOCATIONS SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER. SPLICED BARS SHALL BE PLACED AT THE SAME EFFECTIVE DEPTH U.N.O. ALL REINFORCING NOTED AS "CONTINUOUS" SHALL BE FULLY CONTINUOUS AND SPLICED. BEND CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT ALL CORNERS AND INTERSECTIONS.
5. REINFORCING BAR SPACINGS GIVEN ARE MAXIMUM ON CENTERS. ALL BARS PER CRSI SPECIFICATIONS AND HANDBOOK. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE.

STRUCTURAL STEEL:

1. ALL STEEL CONSTRUCTION SHALL CONFORM WITH THE LATEST AISC HANDBOOK.
   ALL PIPE STEEL SHALL BE ASTM A53, TYPE E OR S, GRADE B (Fy = 35 KSI).
   ALL TUBE STEEL SHALL BE ASTM A500, GRADE B (Fy = 46 KSI).
   ALL OTHER STRUCTURAL SHAPES AND PLATES SHALL BE ASTM A36 (Fy=36 KSI).
   SHOP PRIME ALL STEEL SURFACES WITH FABRICATOR'S STANDARD RUST-INHIBITING PRIMER EXCEPT AT SURFACES ENCASED IN CONCRETE OR TO RECEIVE FIREPROOFING. BEAMS, COLUMNS AND BRACES SHALL NOT BE SPLICED WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.
2. BOLTS SHALL BE ASTM A307. ANCHOR BOLTS AND ANCHORS SHALL BE ASTM A36 OR A307, GRADE A.
3. ALL WELDING PER LATEST AMERICAN WELDING SOCIETY STANDARDS. ALL WELDING SHALL BE PERFORMED BY WELDERS HOLDING VALID CERTIFICATES AND HAVING CURRENT EXPERIENCE IN THE TYPE OF WELD SHOWN ON THE DRAWINGS OR NOTES. CERTIFICATES SHALL BE THOSE ISSUED BY AN ACCEPTED TESTING AGENCY. ALL WELDING DONE BY E70 SERIES LOW HYDROGEN RODS UNLESS NOTED OTHERWISE. THESE DRAWINGS DO NOT DISTINGUISH BETWEEN SHOP AND FIELD WELDS; THE CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION. ALL FULL(COMPLETE) PENETRATION WELDS SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.
5. DRYPACK (NON-SHRINK GROUT) SHALL BE 5,000 PSI, FIVE STAR, SIKA 212 OR EQUIVALENT. INSTALL DRYPACK UNDER BEARING PLATES BEFORE FRAMING MEMBER IS INSTALLED. AT COLUMNS, INSTALL DRYPACK UNDER BASEPLATES AFTER COLUMN HAS BEEN PLUMBED BUT PRIOR TO SIGN INSTALLATION.

ALUMINUM:

1. ALL ALUMINUM CONSTRUCTION SHALL CONFORM WITH THE LATEST ALUMINUM DESIGN MANUAL. ALL ALUMINUM SECTIONS SHALL BE ALLOY 6063-T6 WITH A MINIMUM TENSILE ULTIMATE STRENGTH OF 30KSI.

SIGN STANDARD LIMITATIONS:

1. ANY SIGN NOT MEETING THE FOLLOWING SIGN DIMENSION PARAMETERS ARE BEYOND SCOPE OF THESE STANDARDS AND WILL REQUIRE CUSTOM ENGINEERING.

STANDARD LIMITATIONS
A/H <= 0.2
0.5 <= B/A <= 3.0

ROUGH CARPENTRY AND PLYWOOD:

1. ALL FRAMING PER IBC CHAPTER 23. FRAMING LUMBER SHALL COMPLY WITH THE 2005 EDITION OF THE NATIONAL DESIGN SPECIFICATION. MAXIMUM MOISTURE CONTENT SHALL NOT EXCEED 19%. ALL SAWN LUMBER SHALL BE STAMPED WITH THE GRADE MARK OF AN APPROVED LUMBER GRADING AGENCY. ALL SAWN LUMBER SHALL BE DOUGLAS FIR-LARCH WITH THE FOLLOWING MINIMUM PROPERTIES:

WOOD TYPE	
STRINGERS	D.F. CONSTRUCTION GRADE
POSTS	D.F. #1

2. ALL PLYWOOD SHALL CONFORM TO PS-1 OR APA PRP-108, SHALL HAVE AN EXTERIOR OR EXPOSURE 1 CLASSIFICATION AND SHALL BEAR THE STAMP OF AN APPROVED TESTING AGENCY. LAY UP PLYWOOD WITH FACE GRAIN PERPENDICULAR TO SUPPORTS AND STAGGER JOINTS. ALL NAILING SHALL BE CORROSION RESISTANT COMMON NAILS. WHERE SCREWS ARE INDICATED FOR WOOD TO WOOD ATTACHMENTS, USE WOOD SCREWS. ALL PLYWOOD SHALL BE 1/2" NOMINAL THICKNESS WITH 24/0 SPAN/INDEX RATIO.
3. DO NOT NOTCH, DRILL, OR SPLICE STRINGERS OR POSTS.
4. WOOD POSTS SHALL BE PRESSURE TREATED #WOOD TO 8" ABOVE GRADE, STAMPED BY AN APPROVED AGENCY.
5. ALL NAILING NOT NOTED SHALL BE ACCORDING TO TABLE 2304.9.1 OF THE INTERNATIONAL BUILDING CODE. ALL NAILS SHALL BE WITH CORROSION RESISTANT COMMON NAILS. WOOD CONNECTORS SHALL BE AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC. OR OTHER MANUFACTURER WITH CURRENT AND EQUIVALENT LC.B.O. APPROVAL. ALL NAIL HOLES IN CONNECTORS SHALL BE FILLED WITH NAIL OF THE LARGEST SIZE INDICATED IN THE MANUFACTURER'S CATALOG U.N.O.
6. ALL FABRICATION SHALL BE PERFORMED ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION.

SPECIAL INSPECTION:

PER IBC CHAPTER 17, SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING ITEMS:

1. SOILS: AS REQUIRED ON SHEET NWSC-OR 04-7.
2. CONCRETE CONSTRUCTION: SLAB FOOTINGS AND AS REQUIRED ON SHEET NWSC-OR 04-7.
3. STEEL CONSTRUCTION: PER IBC SECTION 1704.3 AND TABLE 1704.3 INCLUDING WELDING.
4. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR:
   A) THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPROVED DESIGN DRAWINGS AND SPECIFICATION.
   B) THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF UNCORRECTED, TO THE DESIGN AUTHORITY AND THE BUILDING OFFICIAL.
   C) UPON COMPLETION OF THE ASSIGNED WORK, THE ENGINEER RESPONSIBLE FOR INSPECTION SHALL COMPLETE AND SIGN THE APPROPRIATE FORMS CERTIFYING THAT TO THE BEST OF HIS KNOWLEDGE THE WORK IS CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE CODE.

NWSC - OREGON
SIGN STANDARDS FOR 2010 O.S.S.C.

SHEET NWSC-OR 04-0
DATE 1/13/12
REVISIONS

SCHNEIDER
STRUCTURAL ENGINEERS
FIRM DEDICATION TO STRUCTURAL INNOVATION

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER
69350PE
OREGON
JANUARY 15, 2002
RONALD H. SCHNEIDER
EXPIRATION DATE: 6/30/2014
SIGNED 2/21/2013

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Sign Types

Ground Signs-

Also known as pylon, monument, pole, freestanding, directional, etc

Building Signs –

Also called wall or fascia, projecting, roof, plaques, awnings, painted, etc.

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Sign Types

Ground Signs

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Building Wraps

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Locations Often Have Several Sign Forms and Needs

Pole Sign

Roof/Wall Sign

Manual Changeable Copy Sign

Directional Sign

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Support Structure

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Support Structure

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Monument Signs

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Pylon Signs

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Signs as Landmarks - Brand Districts

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Directional Signs

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Building Signage

- Also called wall or fascia, projecting, etc.
- Roof signs
- Letters can be metal, plastic, or wood
- Flat cut out
- Panels can be aluminum, plastic, etc.
- Box (dimensional)
- Channel letters (neon, LED)

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Building Sign Example

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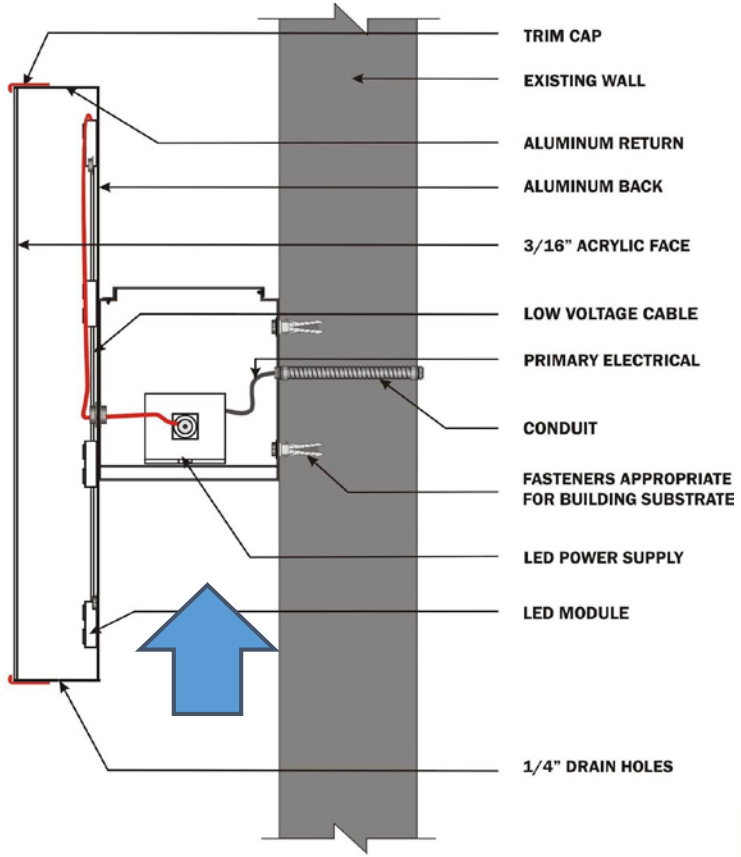
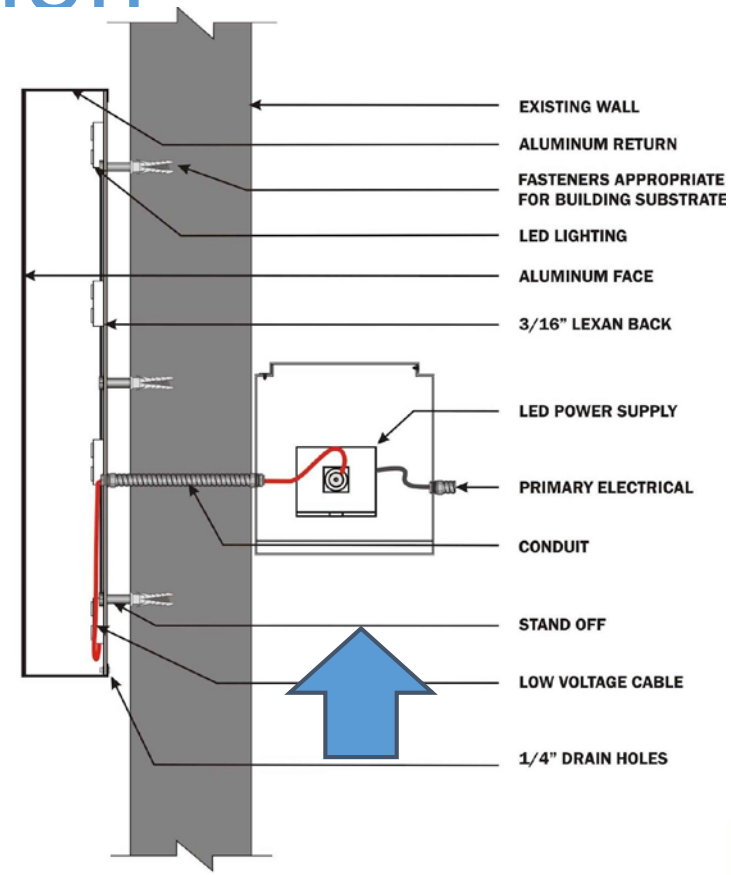
Sign Types – Channel Letter Construction

Raceway



Flush -



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Acronyms For Sign Types

- FCO – Flat Cut Out
- RPC – Reverse Pan Channel
- PC – Pan Channel

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Sign Types - Illumination Options

Neon

LED

Incandescent

H.I.D.

Fluorescent

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Options in Sign Lighting

Internal Illumination –the light source emitting from the sign

- Fluorescent
- LED
- Metal halide
- Neon

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Options in Sign Lighting

External Illumination –the light source comes from outside the sign Gooseneck or spotlight, up or down

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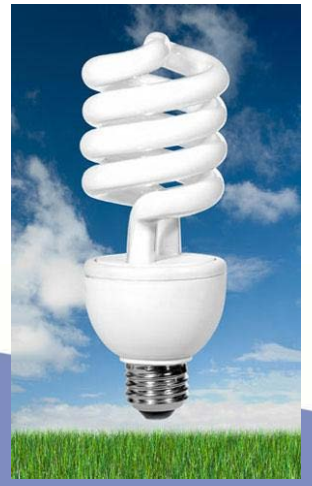
Sign Types - Illumination Options

Fluorescent

-In a sealed glass tube, under low pressure, electricity excites mercury vapor and phosphor for illumination.

-Requires proper environmental disposal due to mercury. *Even CFLs!*

-Efficient use of electricity compared to incandescent lighting.



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Options in Sign Lighting

Light Emitting Diode (LED)

- Energy turns into Light
- Uses lower energy consumption, longer lifetime, smaller size
- Increasingly popular type of lighting for outdoor signs

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Options in Sign Lighting

Metal halide (MH)–Gas discharge lamp

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Options in Sign Lighting

Neon/Cold cathode

- Proven to be sturdy and weather resistant
- Comparatively long operational lifetimes
- Traditional -popular use for outdoor signs
- Sign industry works to properly dispose and recycle neon lamps

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Options in Sign Lighting

Exposed Neon

Exposed Neon with Incandescent Lamps

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Options in Sign Lighting

Face channel letters with neon illumination

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Options in Sign Lighting

Reverse channel letters
w/ LED illumination

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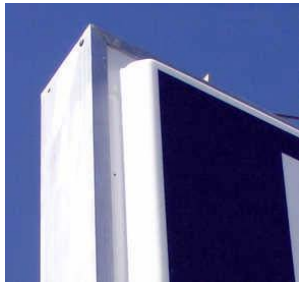
Sign Types - Face Material

-Flat or Panned

-Flex Face

-Embossed

-Routed/Push Thru -HDU
(High Density Urethane)



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Sign Types - Face Material

Panned Faces

Panned faces are formed with depth to provide strength durability.

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Sign Types - Face Material

Flex Faces

Flex faces are stretched on retainer systems in cabinets too big for rigid faces.

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Sign Types - Face Material

Routed / Push Thru

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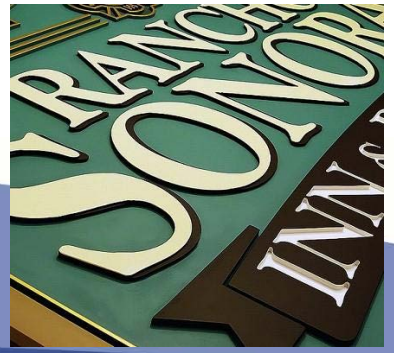
Sign Types - Face Material

HDU - High Density Urethane

HDU routed faces give the look of wood with the weight & durability of plastic.



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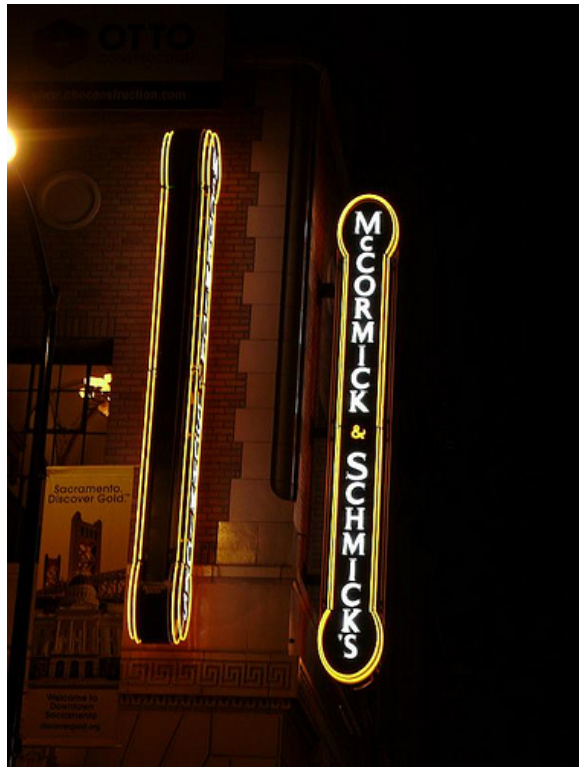
Manufacturing of a Sign

Signage as Art - Vintage & Retro Signs



Efforts have been made in recent years to save or mimic vintage signs.

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Signage as Art - Vintage (Antique) Signs

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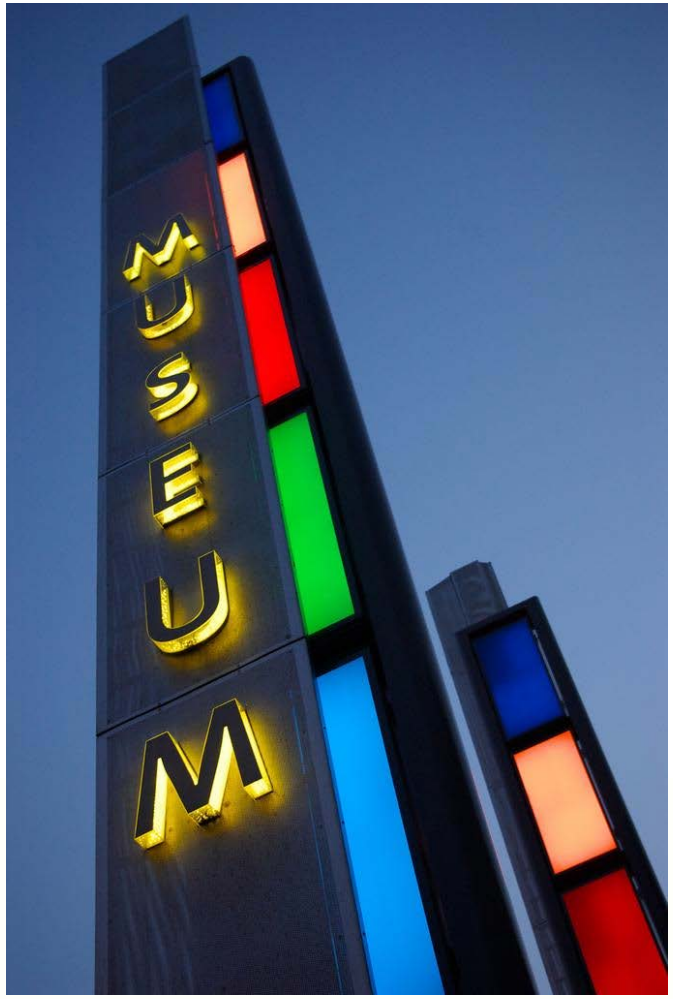
Signage as Art - New Signs



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Sign Regulations

Consider how the sign regulations may limit the ability to create artistic or retro look signs

Linda has addressed this previously

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Sign Regulations

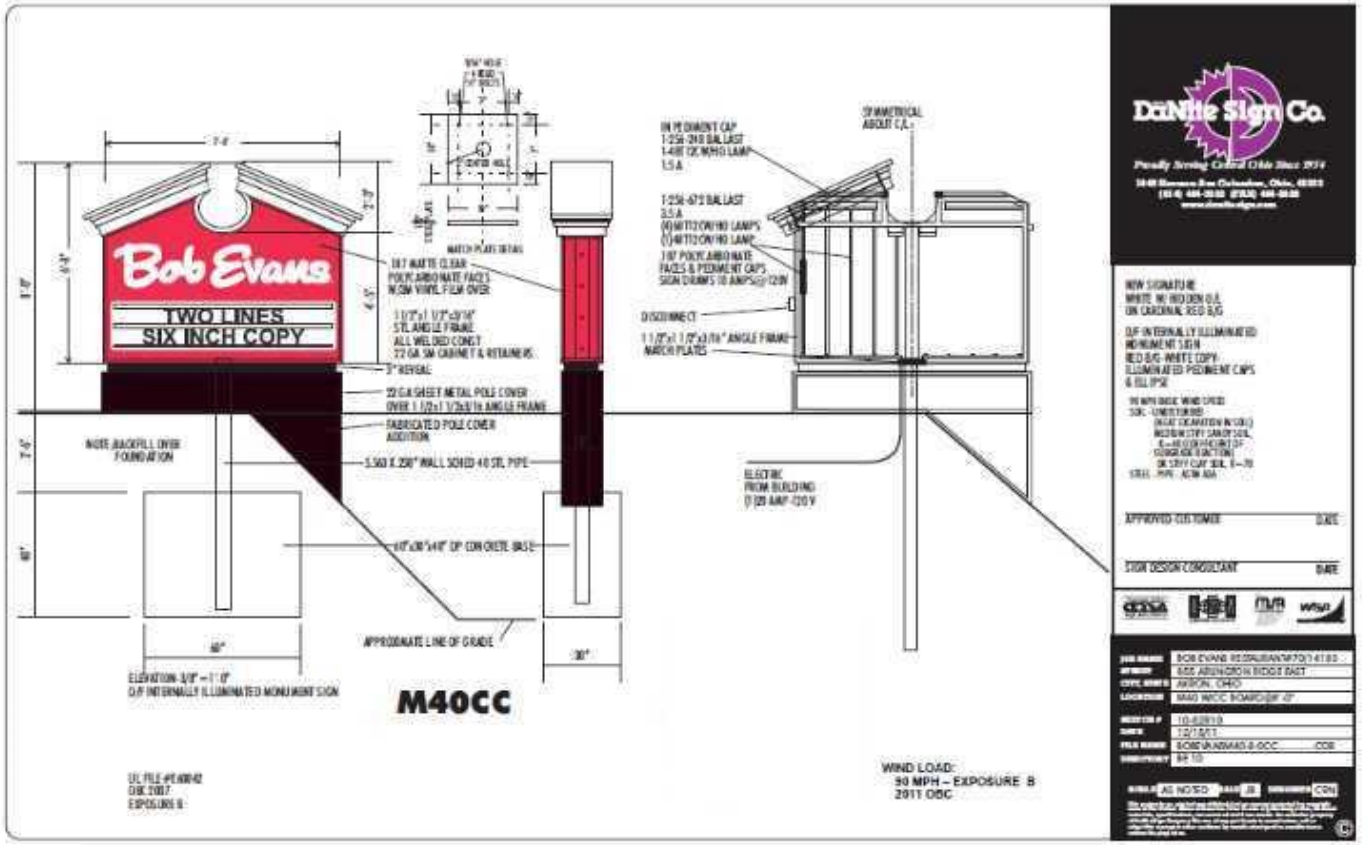
SIGNS are regulated by:

-Nat'l Electric Code

-Building Code

-Municipal Ordinances

-Area Guidlines



Engineer Sealed Drawing – locally required for building permit

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Sign Regulations

Signage regulation keeps *chaos* from happening...

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Sign Regulations

Business Branding vs Local Code can be a real Balancing Act!

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Any Questions?

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Thank You

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