# DIY Decals Artwork & Printing *(…including White! )*

PCR NMRA CLINIC

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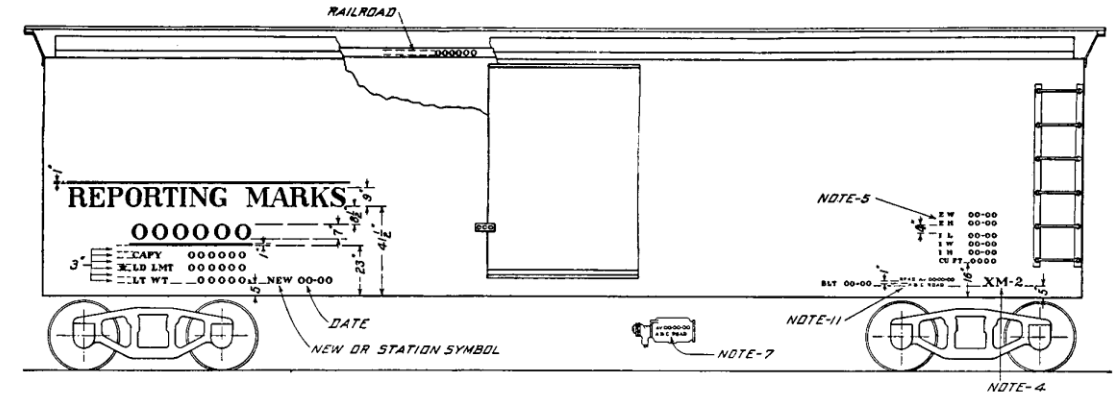
# The Process

- Identify desired result:
  Prototype, freelance, renumber, etc
- Prepare Artwork (larger than needed)
- Analyze colors… and potential print order
- Re-size to scale
- Print
- *(as needed)* Overcoat Decal

# Prototype Lettering




## ARA




NOTE-1: SIZES AND SPACING OF LETTERS AND FIGURES: 7" LETTERS MAY BE USED FOR REPORTING MARKS. ALL LETTERING AND SPACING 2" UNLESS OTHERWISE SPECIFIED.

NOTE-2: THE REPORTING MARKS ASSIGNED BY THE ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS SHOULD BE PLACED BETWEEN THE HORIZONTAL BARS. IF DESIRED THE NAME OR INITIALS OF OWNER MAY BE PLACED ABOVE THE BARS.

NOTE-3: ARRANGEMENT OF REPORTING MARKS, CAPACITY, LOAD LIMIT, LIGHT WEIGHT AND DATE SHOULD BE MAINTAINED AS SHOWN EXCEPT THAT THE ENTIRE ARRANGEMENT MAY BE MOVED SLIGHTLY IF NECESSARY TO SUIT CONSTRUCTION OF CAR.

NOTE-4: SYMBOL FOR CLASSIFICATION OF CAR IF USED SHALL BE APPLIED UNDER DIMENSION MARKING IN 4" LETTERS AND FIGURES AT RIGHT ON THE SIDE OF CAR ON A LINE WITH DATE BUILT.

NOTE-5: ON ALL BOX OR OTHER HOUSE CARS STANDING MORE THAN 12 FEET FROM TOP OF RAIL TO EAVES, THE HEIGHT AND WIDTH AT EAVES TO BE STENCILED AS SHOWN. WHERE LATITUDINAL RUNNING BOARD IS FLUSH WITH EAVES, THE HEIGHT SHOULD BE GIVEN TO TOP OF LATITUDINAL RUNNING BOARD.

NOTE-6: CAR NUMBER AND INITIALS TO BE STAMPED OR PAINTED ON INTERMEDIATE OR CENTER SILLS AT OPTION OF OWNER.

NOTE-7: STENCILING TO CONFORM TO INSTRUCTIONS SHOWN IN INTERCHANGE RULE NO. 60.

NOTE-8: IT IS RECOMMENDED THAT WHEN OWNER DESIRES INFORMATION REGARDING TRIPLE VALVE, COUPLERS, COUPLER ATTACHMENTS, BRAKE BEAMS, STEEL WHEELS, CENTRIFUGAL DIRT COLLECTOR, ETC., SHOWN ON CARS, SUCH INFORMATION BE STENCILED ON THE ENDS OF CARS IF POSSIBLE.

NOTE-9: FACING THE "B" END OF CAR THE LEFT HAND SIDE OF CAR TO BE LETTERED "L"; THE OPPOSITE SIDE TO BE LETTERED "R"; THE LETTERS TO BE APPLIED NEAR SEAL PINS.

NOTE-10: A STAR MUST BE MAINTAINED CLOSE TO LEFT END OF LOAD LIMIT MARKING ON ALL CARS THAT ARE NOT CAPABLE OF CARRYING THE MAXIMUM LOAD LIMIT PERMITTED BY INTERCHANGE RULE NO. 86. THE STAR INDICATES THAT LOAD LIMIT SO MARKED MUST NOT BE CHANGED EXCEPT BY OWNER

NOTE-11: STENCILING TO CONFORM TO INSTRUCTIONS SHOWN IN INTERCHANGE RULE NO. 66.

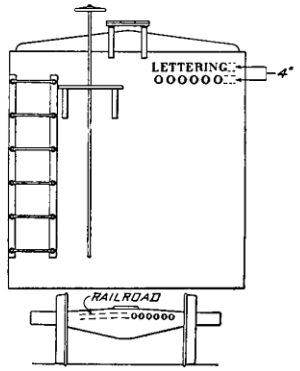
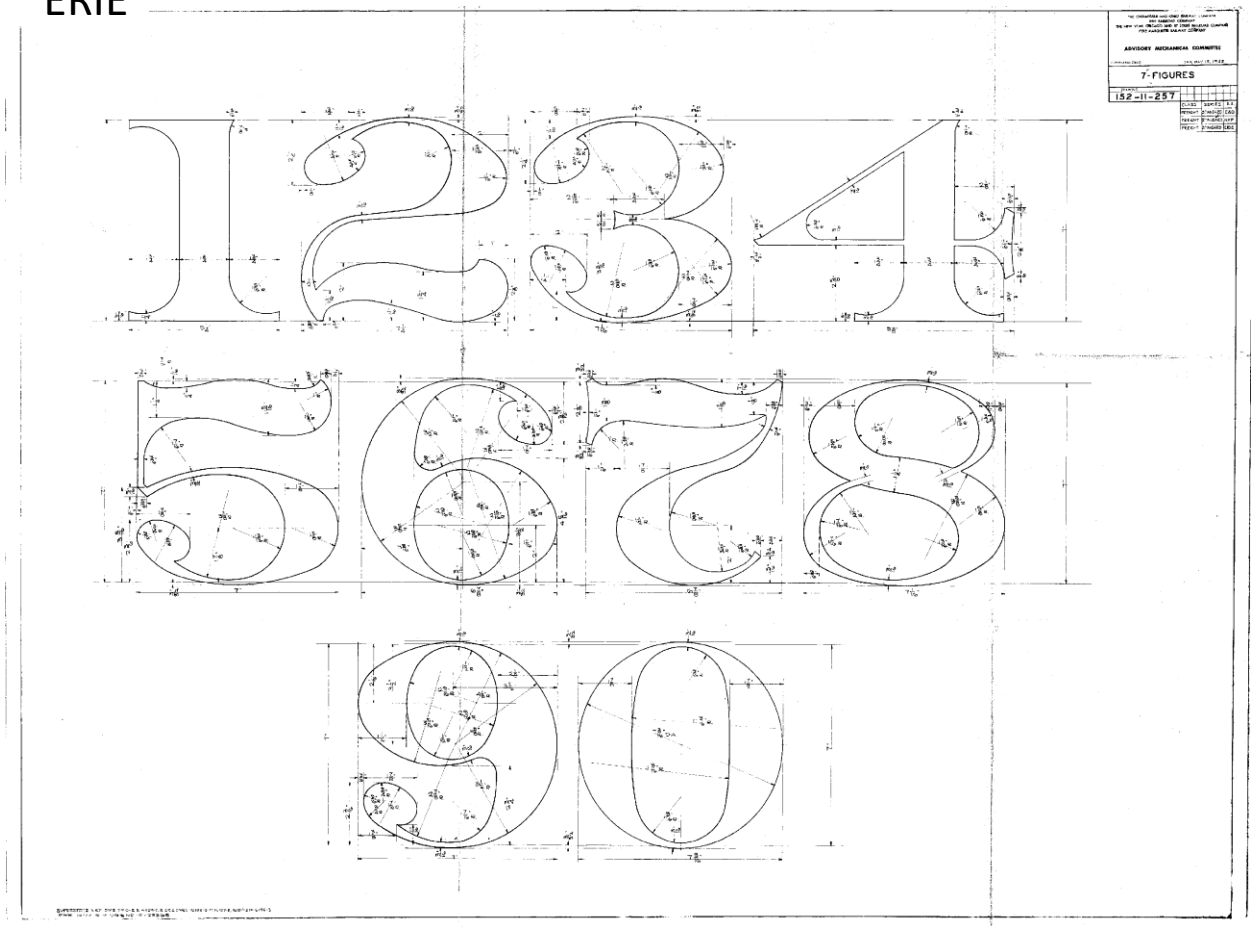


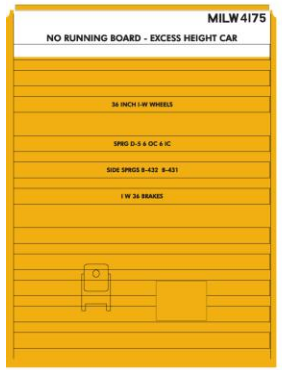

**Fig. 489**—Diagram Showing American Railway Association Standard Lettering and Marking of Box Cars.

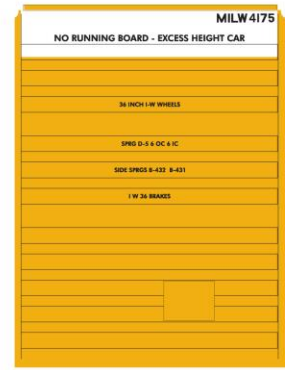
## ERIE



# Photographs!!!

XP-60ft-DPD Waffle-9
200% TT-scale



# Typeface vs Stencil vs Font

**Typeface:** A set of letters, numbers and symbols that share common design features

**Railroad Stencils:** Letters, numbers and symbols prepared by a draftsman in the Chief Engineer's office; and sent as paper blueprints to each railroad shop (…*where the foreman handed the drawings to an apprentice… and showed him where the tin snips were???)*

**Font:** A size, weight and style of a typeface.
**POST-1984** (computer desktop publishing): A (*usually*) scalable, weight and style of a typeface, conveyed in a digital file.

N.B. **Franklin Gothic** - 1902, Times New Roman - 1931, Helvetica - 1957, **Arial** - 1982

# “…but it’s Railroad Roman!!!”

**Railroad Roman & 0123456789 MQW**

Railroad Roman & 0123456789 MQW

Railroad Roman & 0123456789 MQW

Railroad Roman & 0123456789 MQW

Railroad Roman & 012345

**Cooper (Railroad) Roman & 0123456789 MQW**

Times New (Railroad) Roman & 0123456789 MQW

# Sources

- Railfonts
  Benn Coifmann [www.railfonts.com](http://www.railfonts.com)
- Historical Societies
- TrainSim Sites
- Google many commercial sources…
  beware of spammy ‘Free Font’ sites
  & ‘junk’ downloads…

*Consider Computer Fonts a ‘starting point…’*

# Terminology:

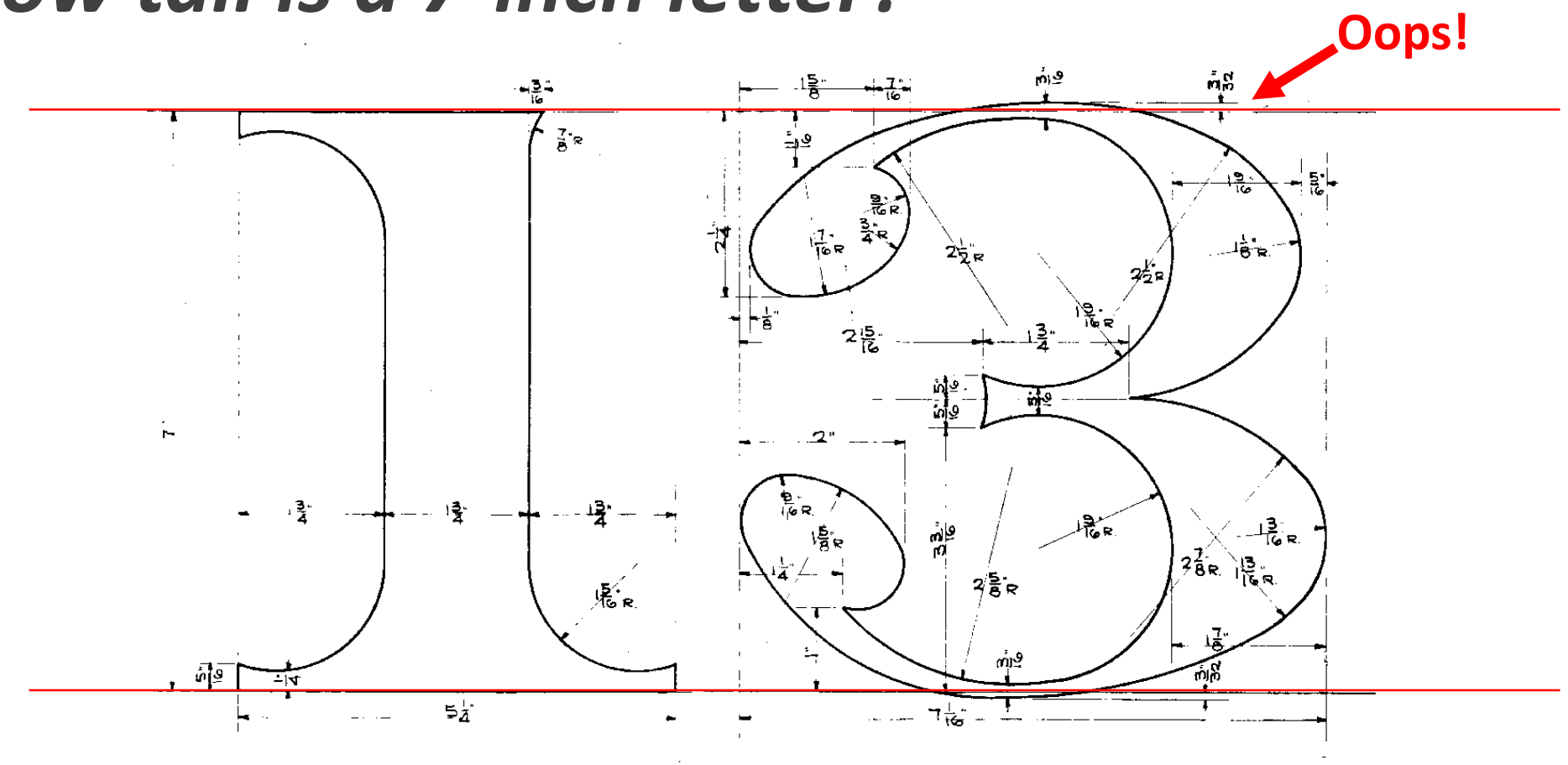
- Serif
- sans-Serif (Gothic)
- Slab Serif
- Stencil

- Weights:

| | | | | |
|---|---|---|---|---|
| Light | **Medium** | **Bold** | **demi-Bold** | **HEAVY** |
| Narrow | **Condensed** | Regular | Extended | **BLACK** |

# Quiz #1:

***"How tall is a 7-inch letter?"***



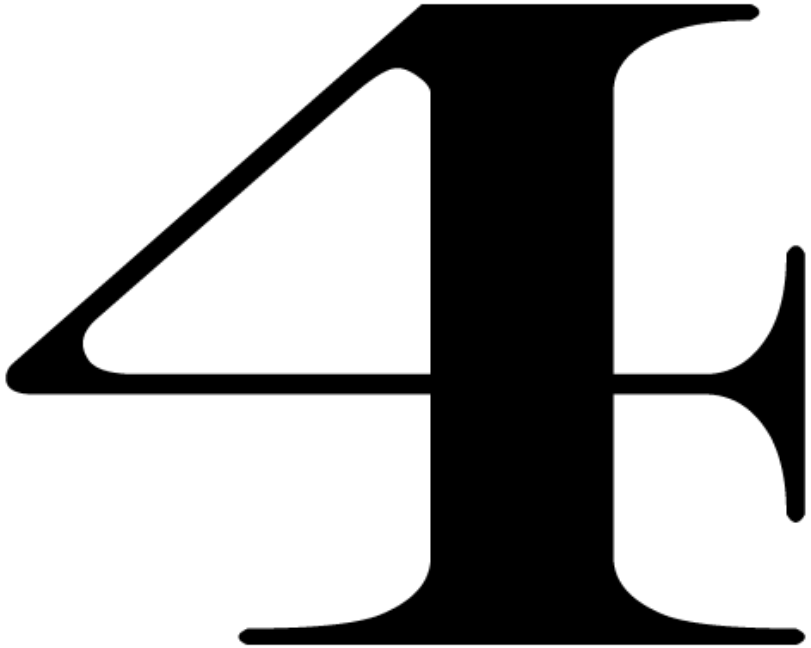
# Raster vs Vector

**Pixel by Pixel (Raster)**

**Printer: Approximates raster artwork at new pixel size (e.g, 600dpi)**

***"The Jaggies…"***

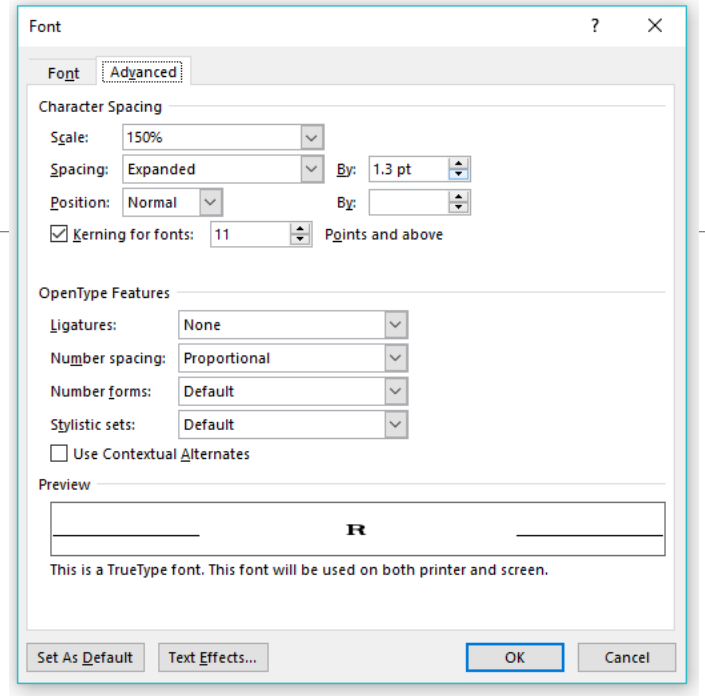
**Mathematically Defined Curves (Vectors)**



**Printer: Converts to Raster in Printing (e.g, 600dpi):**

***Cleanest edges***

# Manipulating Fonts

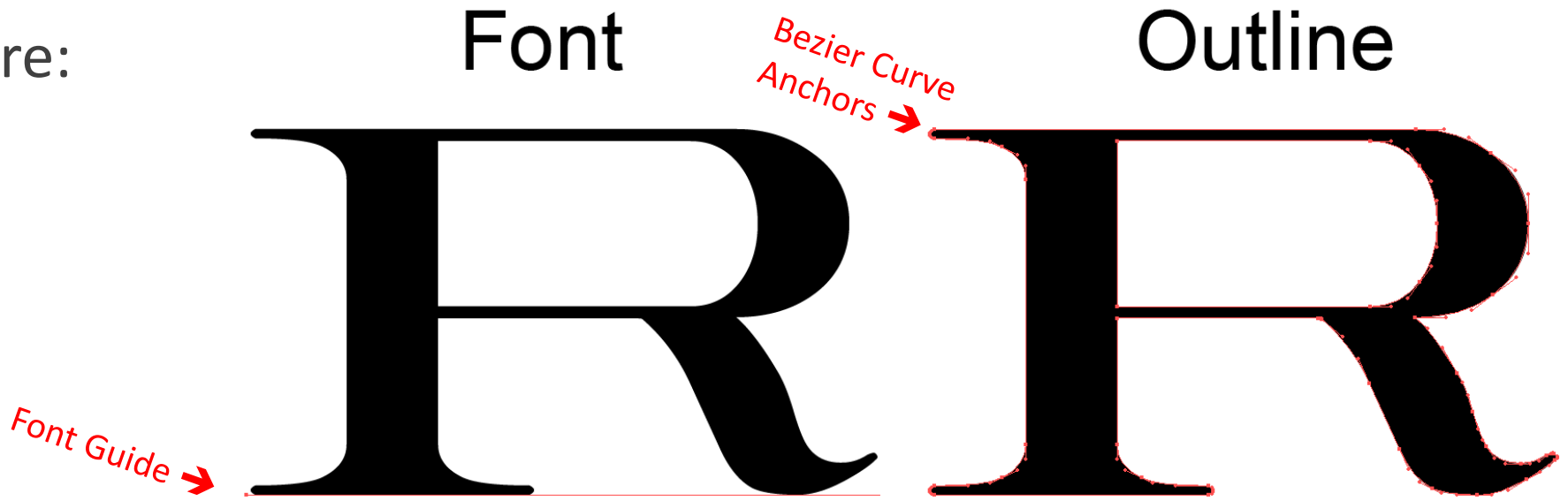



Office Apps:
Use the 'Font' tools in Office

i.e. Word, PowerPoint…

Vector Art Software:

- Convert to outline
- Edit as needed



# pre-Millennium? ACI labels

1) Compute Check Digit

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | 11 | | |
| 4 | 13 | Check | 3 | | 5646 | 513.273 | 5643 | 3 |
| 5 | 12 | Stop | | | | | | |
| 6 | 11 | | 8 | 512 | 4096 | | | |
| 7 | 10 | | 5 | 256 | 1280 | | | |
| 8 | 9 | ar Nbr | 1 | 128 | 128 | | | |
| 9 | 8 | | 0 | 64 | 0 | | | |

2) Build ACR Bars

# Print Technologies

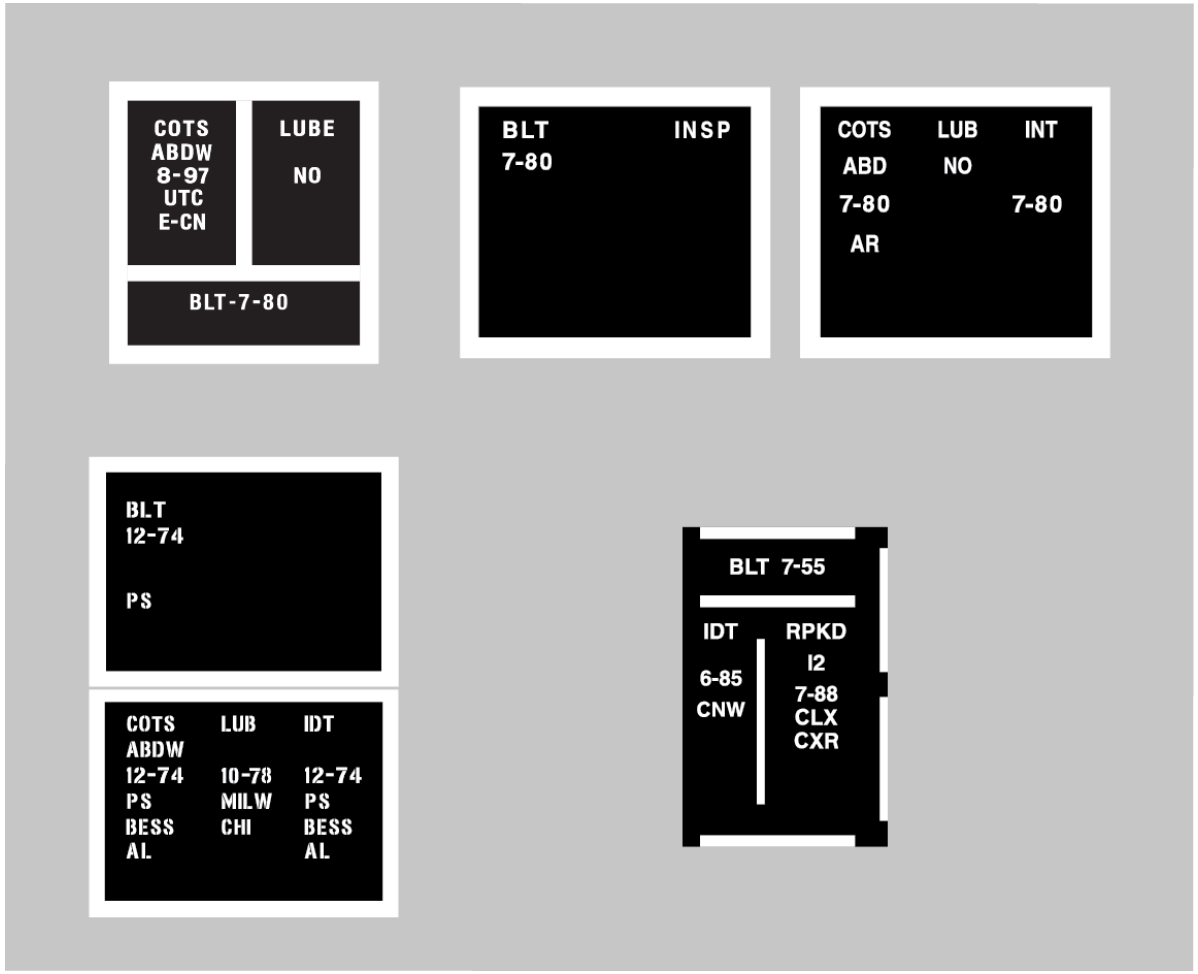
- **Laser / InkJet** — ***You own it… but no white***
- **ALPS** — ***used…*** **$100 - $900**
- **White Laser** — ***Europe…*** **- White Toner: < $200**
- **UV-LED** — ***If you have to ask…***

# COTS

*No white toner?*

Print **BLACK**…
On White Decal Paper

…trim around white
COTS margins



# Decal Paper

I use:

- TangoPapa
  Paul Prestia - www.tangopapadecals.com

Others…

- Micro-Mark - https://www.micromark.com/hobby-supplies/decaling
- Testors - www.testors.com
- BEL - www.DecalPaper.com

**NOTE:** *Use correct paper for your printer: InkJet or Laser !!!*

# Inkjet / Laser

## Inkjet:

"Spits" tiny drops of CMYK ink at the paper…
Must use specially coated (semi-absorbant) media - 'Inkjet paper'
Desktop printer typically 300dpi… sometimes 600dpi.
To prevent smearing… overcoat with **Krylon** spray or '**Future**'
No white - Colors assume white background

## Laser:

Thermally bonds static-charged CMYK powder to media…
Technology shared with many copy machines: 'Laser/Copy Paper'
Typically 300~600dpi… commercial printers higher
Some can also print on thin styrene
Usually no white - Colors assume white background

# ALPS

**ALPS Micro-Dry**

Thermally transfers colors from ribbons to media
Capable of printing CMYK *plus* White, Metallic, etc…
Unique ability to retract paper and print multiple layers while maintaining alignment

Late 1990's technology… Win XP *(no native Win 10 drivers)*
PC requires Parallel port or bi-directional Parallel-USB
MAC requires SCSI
Manufacture and support discontinued by ALPS
Ribbon cartridges becoming scarce and expensive…

# White Laser

**Ghost-White Laser**

Long-awaited white laser cartridges for some HP and other standard laser printers;  Replaces BlacK (K) cartridge

www.ghost-white-toner.com

Single layer printing… less opaque than double layers
Typical Cost:  $150 (+ EU shipping) for <1500 sheets

Black artwork prints as White…

# UV-LED

**UV-LED**

*Think of a 3D color printer… working in 2d!*

*UV-LED is an InkJet technology…*
*but uses instant UV light curing of resin ink*
*Can print and cure white… then overprint a 2nd color.*
*Commercial Quality… prints on plastic, metal, glass*

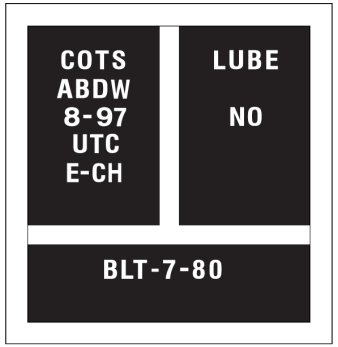
***Limitations:***

- 8ft by 10ft print size - 2in thick
- 16 ink colors
- 1200dpi

# Color Sequence

Is the White on top of the Black…?

Or is the Black on top of the White…?




- ALPS can do multiple color passes and maintain registration…
- UV-LED can do 2nd color over White…

# Color Models

- **RGB – Additive:** Used for electronic displays
  Red – Green – Blue (white = all, black = none)
- **CMYK – Subtractive:** Used for print
  Cyan-Magenta-Yellow- BlacK (white usually = none)

- **Pantone** – Color Matching System
- **RAL** – EU colour matching system
- Munsell – hue, value (lightness), and chroma (color purity)
- Federal Standard 595C– now Aerospace Material Specification Standard 595

# Quiz #2:

## *CMYK "What Color is **Black**?"*

| | Cyan | Magenta | Yellow | blacK |
|---|---|---|---|---|
| **Black:** | **C=0** | **M=0** | **Y=0** | **K=100** |

*uses toner from Black cartridge **ONLY**…*

| | | | | |
|---|---|---|---|---|
| **Rich Black*:** | **C=100** | **M=100** | **Y=100** | **K=100** |

*uses maximum toner from all 4 cartridges*

**use with caution - RTFN…*

# Overspray

## Overspray needed

- on InkJet decals to prevent smearing
- on ALPS decals to prevent scratching

- ❑ Clear Acrylic
  - ❑ Formerly ‘Future’ (Floor Finish)

- ❑ Krylon
  - ❑ Crystal Clear Gloss

# DIY or Printing Service

"Buy or Lease…"

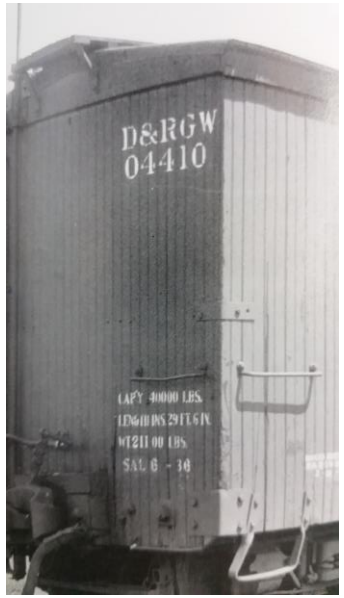
- Doing non-white decals is (relatively) easy and inexpensive…
  *(remember… you can use white decal paper…)*

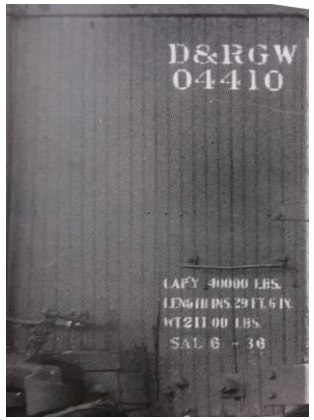
- Printing White requires investment;
  How many will you print? *(over the life of your current printer)*
  - Substantial number of <u>different</u> decals (a few of each) : Consider **DIY**
  - Large number of a single road-name or style: Consider **Print Service** (ALPS or Screen)
  - Newer commercial choice is UV-LED

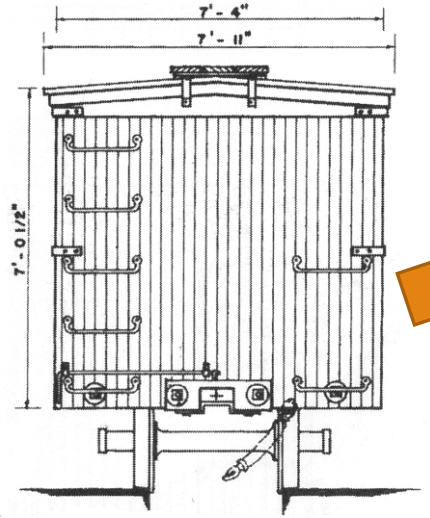
# Production…

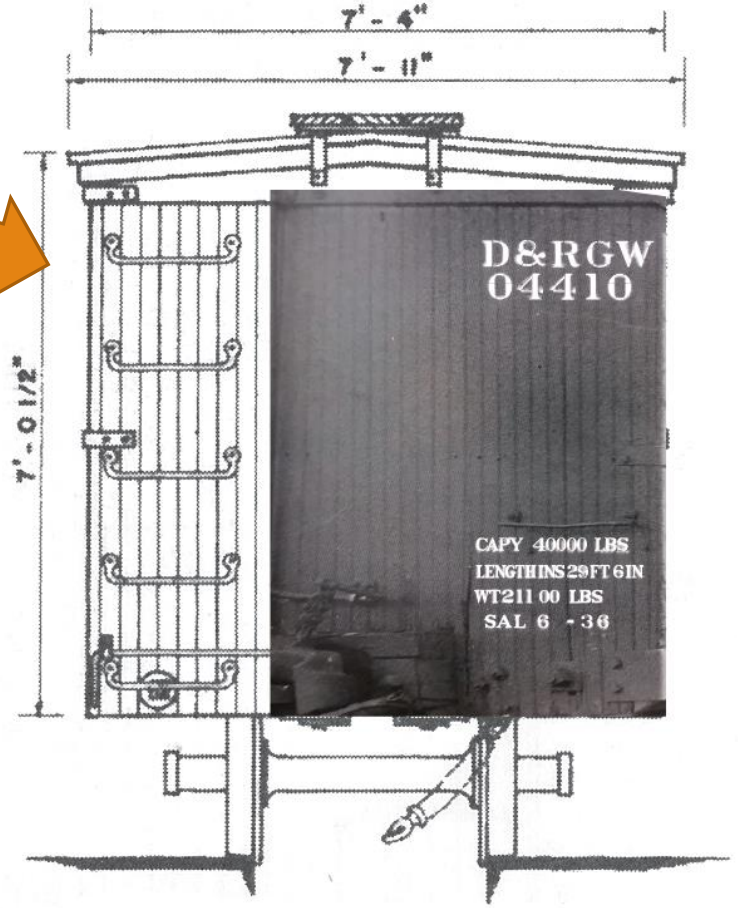
- Un-skew (straighten) prototype photo
- Resize horizontal and vertical proportions
- Type over with ‘similar’ font lettering
- Convert lettering to ‘outlines’
- Adjust EACH letter is needed…
- Check final artwork against know diagram or measurements
- Create print  file in the format you need (colors / layers)
- PRINT!!!!

# D&RGW MoW


D&RGW
04410
CAPY 40000 LBS
LENGTH INS 29 FT 6 IN
WT 211 00 LBS
SAL 6 - 36


D&RGW
04410
CAPY 40000 LBS
LENGTH INS 29 FT 6 IN
WT 211 00 LBS
SAL 6 - 36


7' - 4"
7' - 11"
7' - 0 1/2"


7' - 4"
7' - 11"
7' - 0 1/2"
D&RGW
04410
CAPY 40000 LBS
LENGTH INS 29 FT 6 IN
WT 211 00 LBS
SAL 6 - 36

# Questions?

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