The background of the slide is a faded architectural drawing, likely a floor plan or a section of a building, showing various lines, curves, and structural elements. The drawing is centered and serves as a subtle backdrop for the main text.

***The 5 Levels of***  
***Finishing Gypsum***  
***Wallboard***



***Beer?***



***Toothpaste?***

# ***Beer & Toothpaste***

- *What Do Beer  
and  
Toothpaste  
have to do with  
Gypsum?*

# ***Course Objectives***

- What is Gypsum?
- Fire Resistance of Gypsum
- Determining the Levels of Finish
- Who Determined the Levels of Finish?
- Terminology
- When to Specify Level 0, 1, 2, 3, 4 or 5
- Other References

# ***What is Gypsum?***

- **Gypsum is** a common mineral rock that is easily mined or quarried since it is generally found close to the surface of the earth. Gypsum deposits are found all over the world and experts feel that they are a result of seas which once covered the land. States with the largest quantity of gypsum deposits in the U.S. are NY, MI, IA, TX and CA.

# ***Synthetic Gypsum***

- Another type of gypsum is **Synthetic Gypsum** which is a by-product of cleaning the emissions of coal burning power plants.
- When the coal burns, Sulfur Dioxide (SO<sub>2</sub>) is captured in the coal stacks so it is not released into the environment.
- By chemically combining a slurry of limestone (calcium carbonate) and water with the SO<sub>2</sub>, high purity gypsum is formed

# ***Synthetic Gypsum***

- Synthetic gypsum is safe, environmentally friendly and 100% recycled





The background of the slide is a faint, light gray architectural drawing or blueprint. It features various lines, including straight lines, dashed lines, and curved lines, which represent structural elements or floor plans. The drawing is oriented diagonally across the frame.

# ***Gypsum Wallboard***

How is it manufactured?

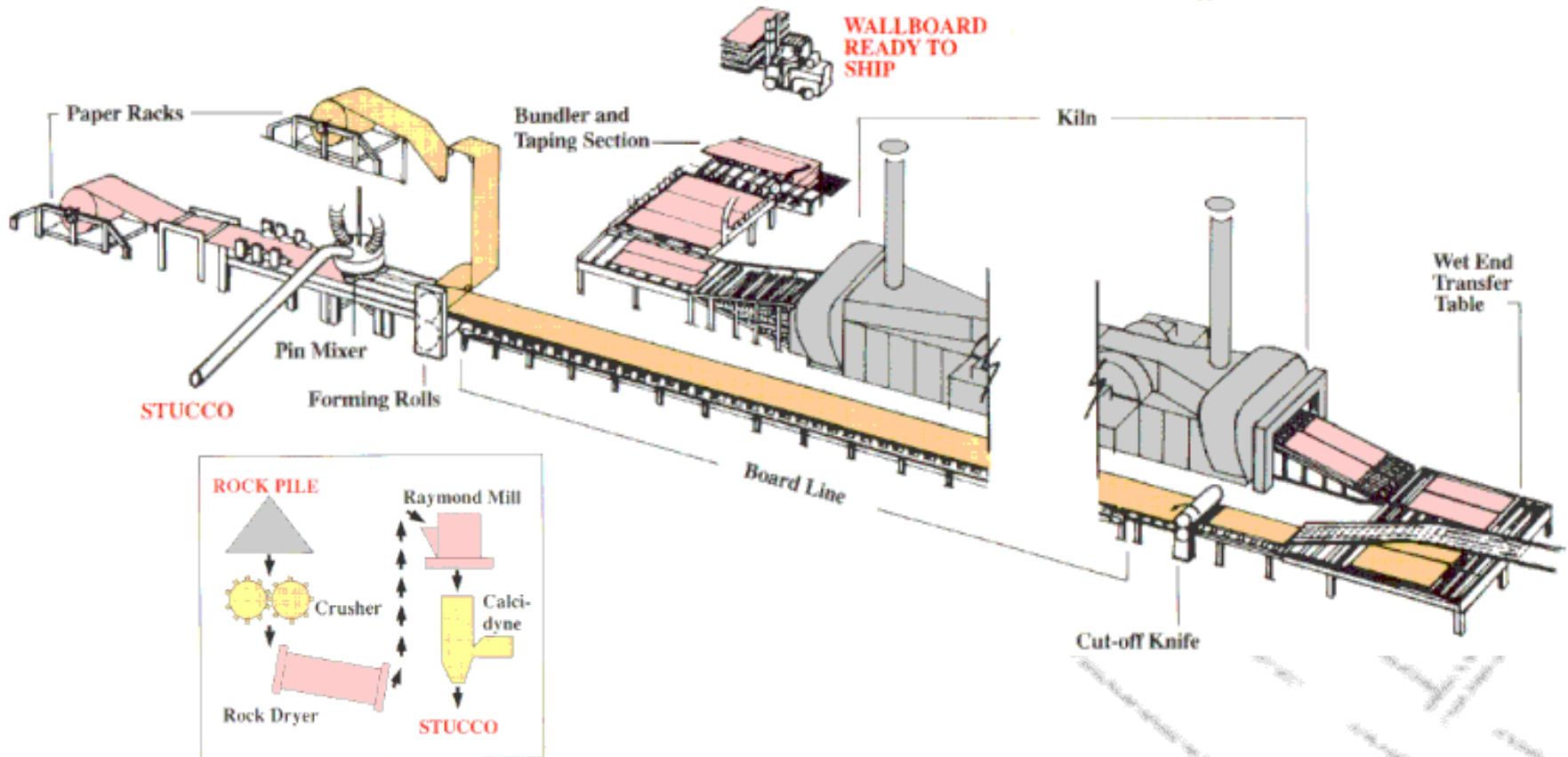
# ***Manufacturing GWB***

- Gypsum rock is mined , crushed, dried and ground to a fine powder
- The powder is ‘calcined’ to drive off the remaining Chemically combined water.  
(This produces a product commonly called ‘plaster of paris’ or ‘stucco’)
- The calcined gypsum is mixed with water and other ingredients to form a slurry which is fed between 2 continuous rolls of paper.

# ***Manufacturing GWB***

- As the paper slurry sandwich moves down the conveyer line, the gypsum rehydrates and returns to its original rock state.
- The board is cut to the desired length and dried further before shipping.

# Manufacturing *GWB*



# ***Beer & Toothpaste***

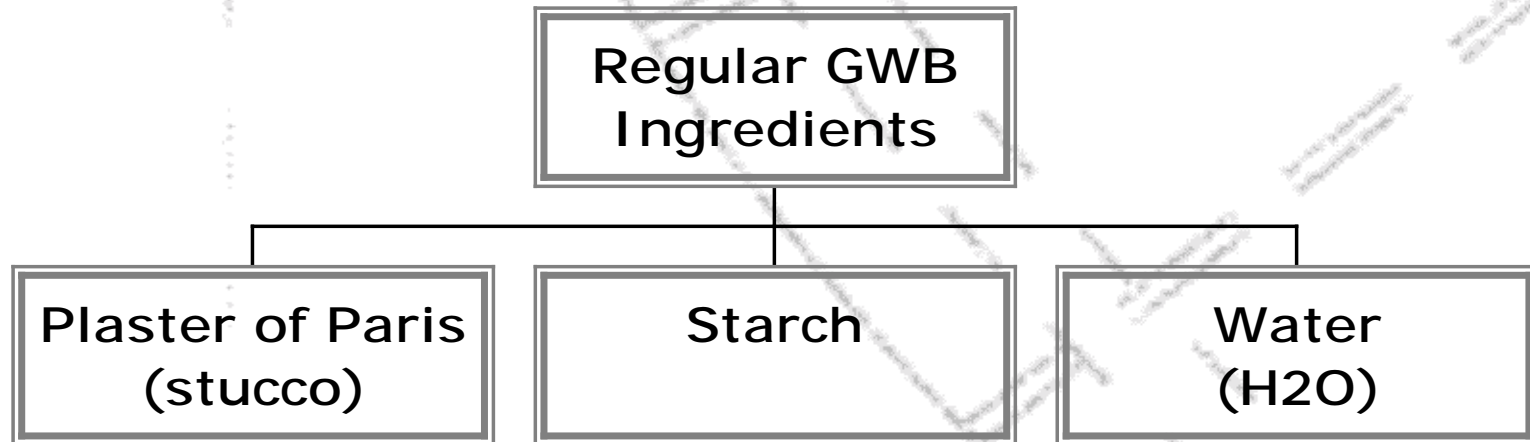
- *But ... What Do Beer  
and  
Toothpaste  
have to do with  
Gypsum?*



# ***Gypsum Wallboard***

What ingredients make  
gypsum wallboard?

# ***GWB Ingredients***



# **NEW ASTM Specification!**

- **ASTM C1396**

- Now one ASTM Specification number covers all gypsum board products
- ASTM C 1396 is a single 'umbrella' standard for gypsum wallboard (covers C 36- gypsum board; C 79- gypsum sheathing; C 630- water resistant backer board)
- ASTM C 1396 does not make any technical changes



# ***GWB – Fire Resistance***

- Can be described using 3 distinct terms:
- **Regular Core**
- **Type “X” Core**
- **Type “C” Core**
  - (otherwise known as improved Type X Core)

# ***GWB*** – ***Fire Resistance***

- **Regular Core**

- All gypsum board affords a degree of natural fire resistance in a noncombustible core composed mainly of gypsum.

# ***GWB – Fire Resistance***

- **Type “X” Core**
  - Extra fire resistance
  - The basic components added that give Type “X” its superior fire resistance core are:
    - Gypsum
    - Fiberglass
    - Vermiculite

# ***GWB*** – ***Fire Resistance***

- **Type “C” Core**

- Also known as *improved* Type “X” core
- Has superior fire resistance over Type “X” are:
- Type “C” ingredients are manufacturer specific

# ***Beer & Toothpaste***

- *Great, But ... What Do Beer and Toothpaste have to do with Gypsum?*

# ***GA-214: Recommended Levels Of Gypsum Board Finish***

- **How to specify and achieve the desired level of finishing and decorating of gypsum board surfaces.**



# RECOMMENDED LEVELS OF GYPSUM BOARD FINISH

5

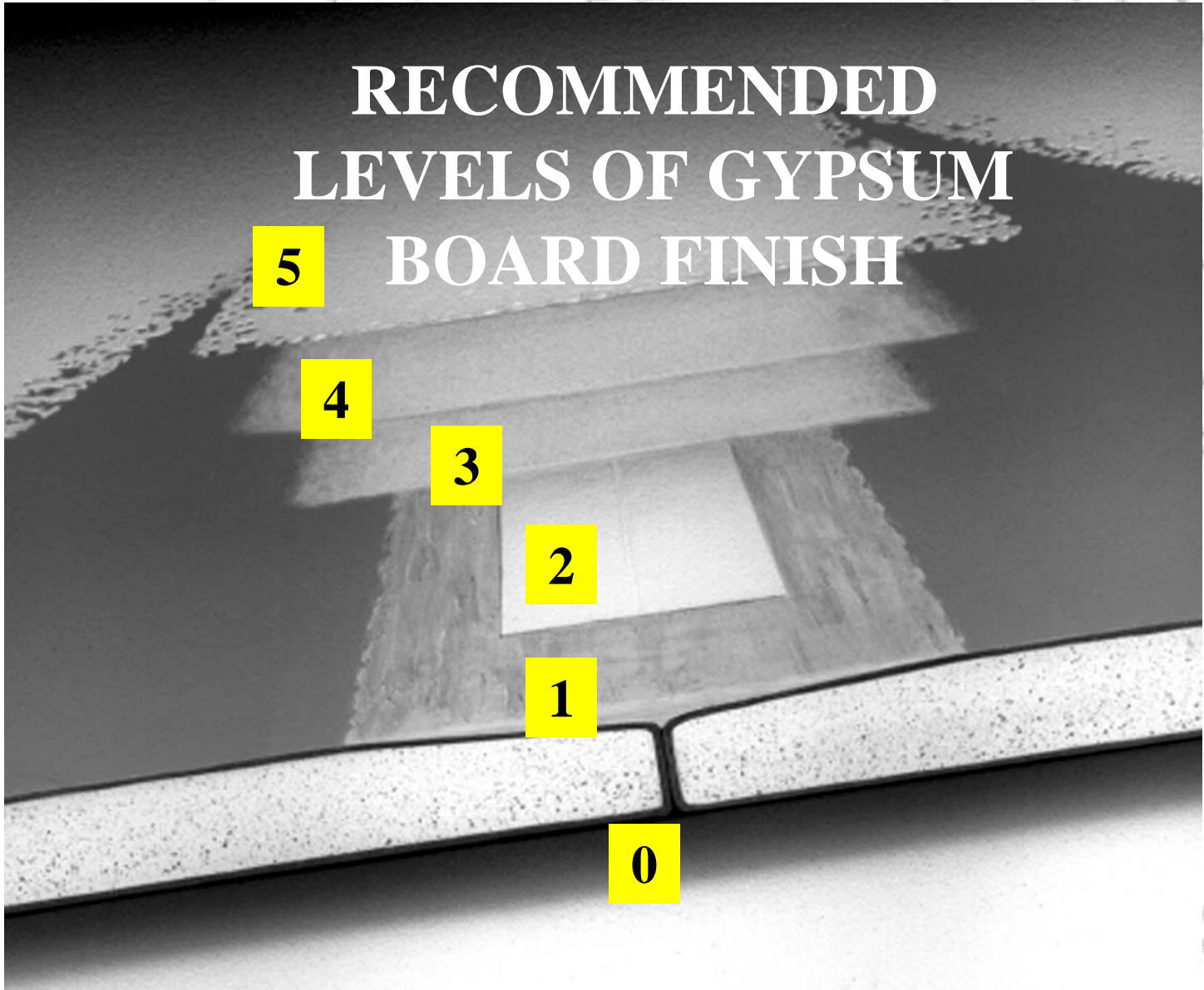
4

3

2

1

0





# ***Did you know...?***

- The document “RECOMMENDED LEVELS OF GYPSUM BOARD FINISH”  
is a consensus document produced by:
- Gypsum Association (GA)
- Association of the Wall & Ceiling Industries-International (AWCI)
- Ceilings & Interior Systems Construction Association (CISCA)
- Painting and Decorating Contractors of America (PDCA)



# ***Use Levels Of Finish***

## ***To:***

- **Precisely describe the finish of walls and ceilings, prior to application of other finishes.**
- **Encourage competitive bidding of suitably finished surfaces.**
- **Enhance the final decorative treatment of walls and ceilings.**
- **Bottom Line - Ensure a satisfied client.**

# ***Determining The Level Of Finish***

- **Some important factors:**
  - The location of the wall or ceiling?
  - The caliber of finish or final decorations desired?
  - Type of lighting: Artificial or natural?  
What is the intensity and at what angle does the light strike the surface?
  - Natural and angled artificial light tends to accentuate the view of the finish surface.

# ***Terminology***

## ***“Critical Lighting”***



- **Lighting conditions that have a major impact on the finished surface (i.e., areas near windows or skylights, long hallways or atriums with large surface areas with strong artificial or natural light).**
  - **Syn: severe lighting**

# ***More Terminology***

## ***“Drywall Primer”***

- **A paint material specifically formulated to fill the pores and equalize the suction difference between gypsum board surface paper and the compound used on finished joints, angles, fastener heads, and accessories and over “skim coating.”**

# ***More Terminology***

## ***“Skim Coat”***

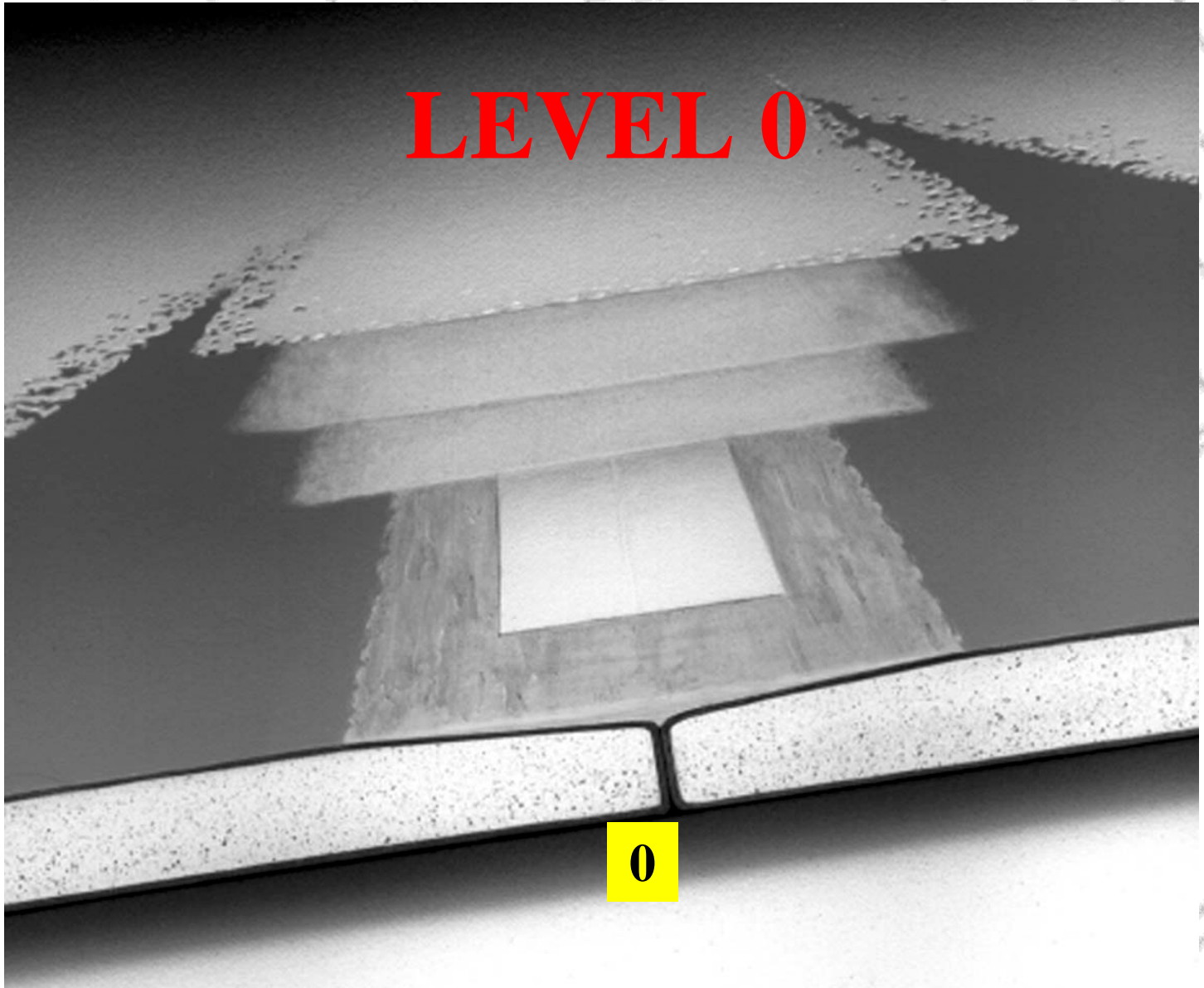
- **A thin coat of joint compound, or a material manufactured especially for this purpose, applied over the entire surface to fill imperfections in the joint work, smooth the paper texture, and provide a uniform surface for decorating. (Excess compound is immediately sheared off, leaving a film of skim coating compound completely covering the paper.)**

# ***Beer & Toothpaste***

- *But again... What Do Beer and Toothpaste have to do with Gypsum?*

**LEVEL 0**

**0**





# ***Level 0***

- **REMEMBER** - To ensure a properly finished surface, a level MUST be specified.
- 0 is an unfinished level
- No taping, finishing or accessories are required.

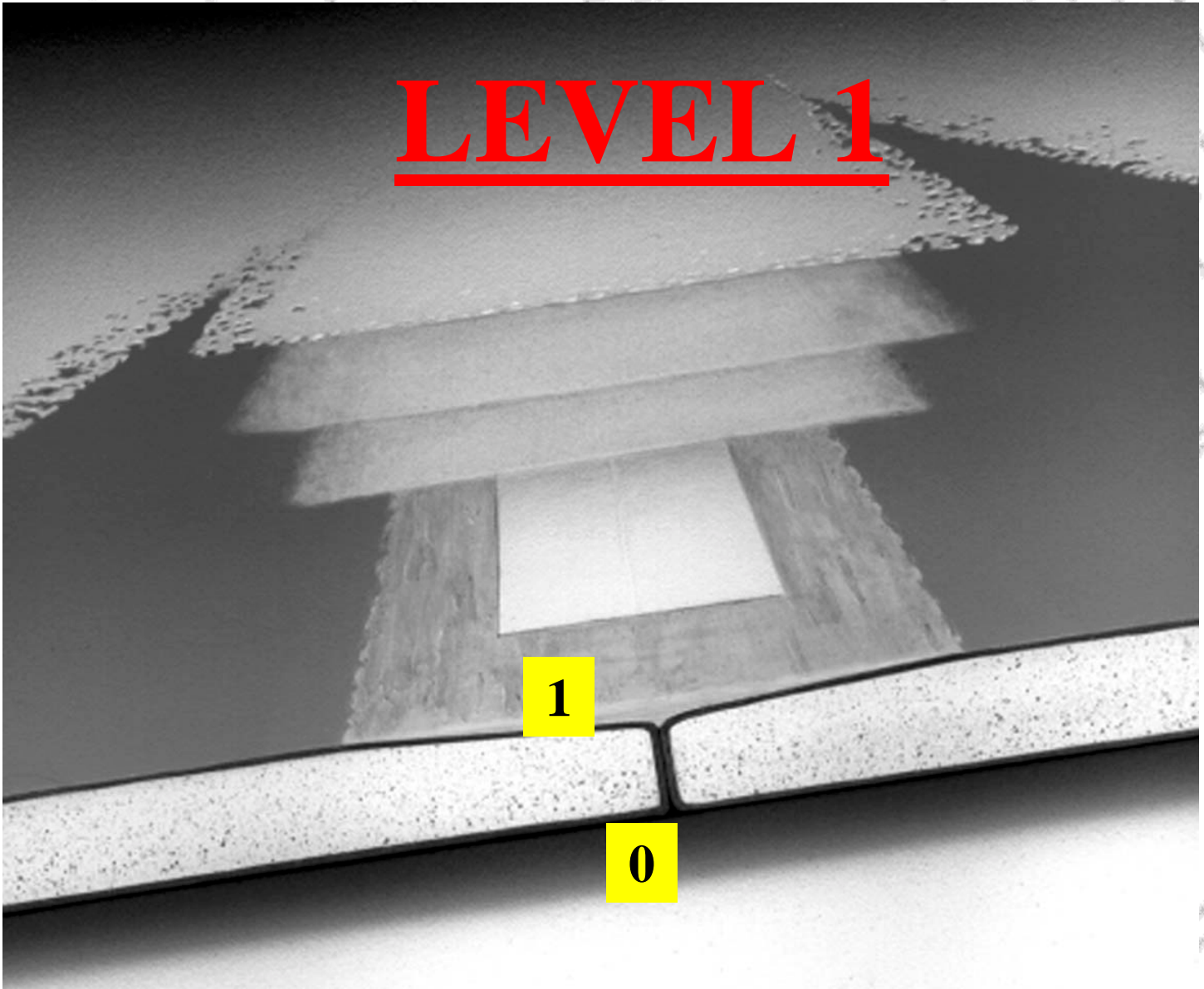


# ***When To Specify Level 0?***

- **In temporary construction.**
- **Whenever the final decoration has not been determined.**



# LEVEL 1



# ***Level 1***

- **All joints and interior angles shall have tape set in joint compound.**
- **Surface shall be free of excess joint compound.**
- **Tool marks and ridges are acceptable.**
  - This level is sometimes referred to as “**Fire Taping**”

# ***When To Specify Level 1?***

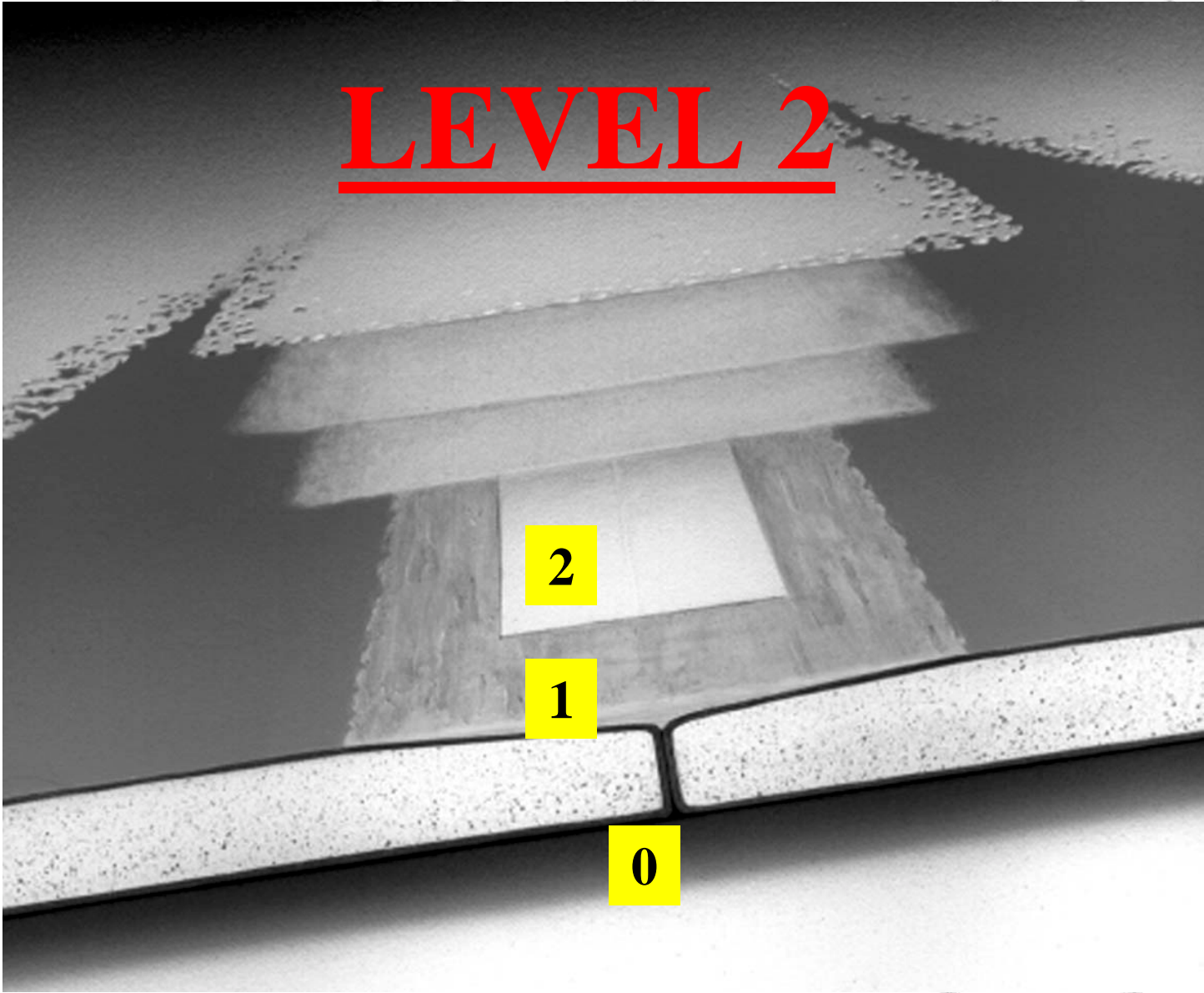
- **When sealing the joints in plenum areas above ceilings, in attics (**Fire Taping**)**
- **In areas where the assembly would generally be concealed**
- **In building service corridors, and other areas not normally open to public view.**

# LEVEL 2

2

1

0



# *Level 2*

- **Joints and interior angles:** Tape embedded in joint compound and wiped with a joint knife, leaving a thin coat of compound over tape.
- **Fastener heads and accessories:** Shall be covered with a (separate) coat of joint compound.
- **Surface shall be free of excess joint compound.**



# ***Level 2 (cont.)***

- **Tool marks and ridges are acceptable**
  - Joint compound applied over the body of tape at the time of tape embedment (i.e., Level 1) shall be considered a separate coat of joint compound and shall satisfy the conditions of Level 2.



# ***When To Specify Level 2?***

- **Where water-resistant gypsum board is used as substrate for tile.**
- **Garages, warehouse storage, or other similar areas where surface appearance is not of primary concern.**



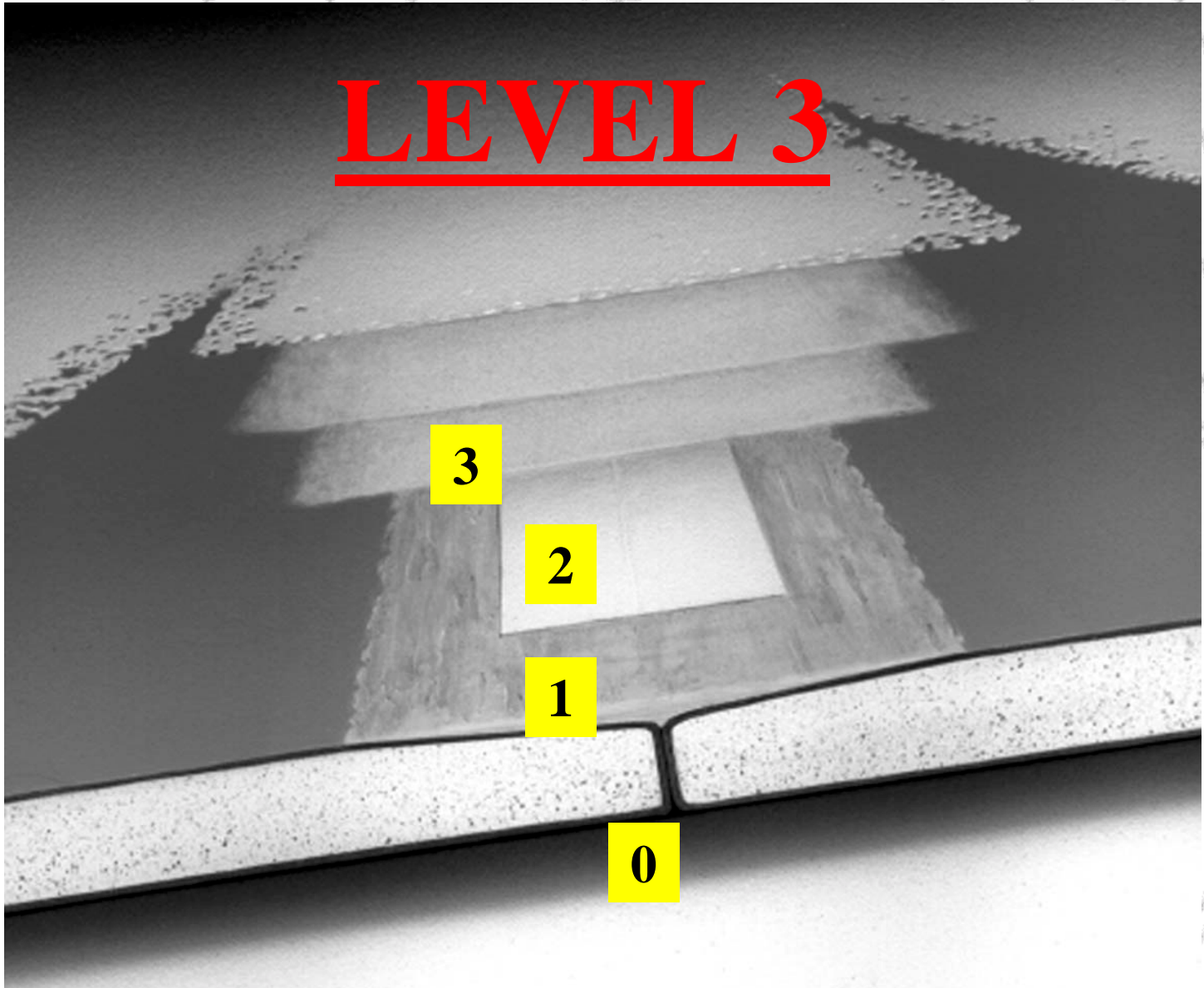
# LEVEL 3

3

2

1

0



# Level 3

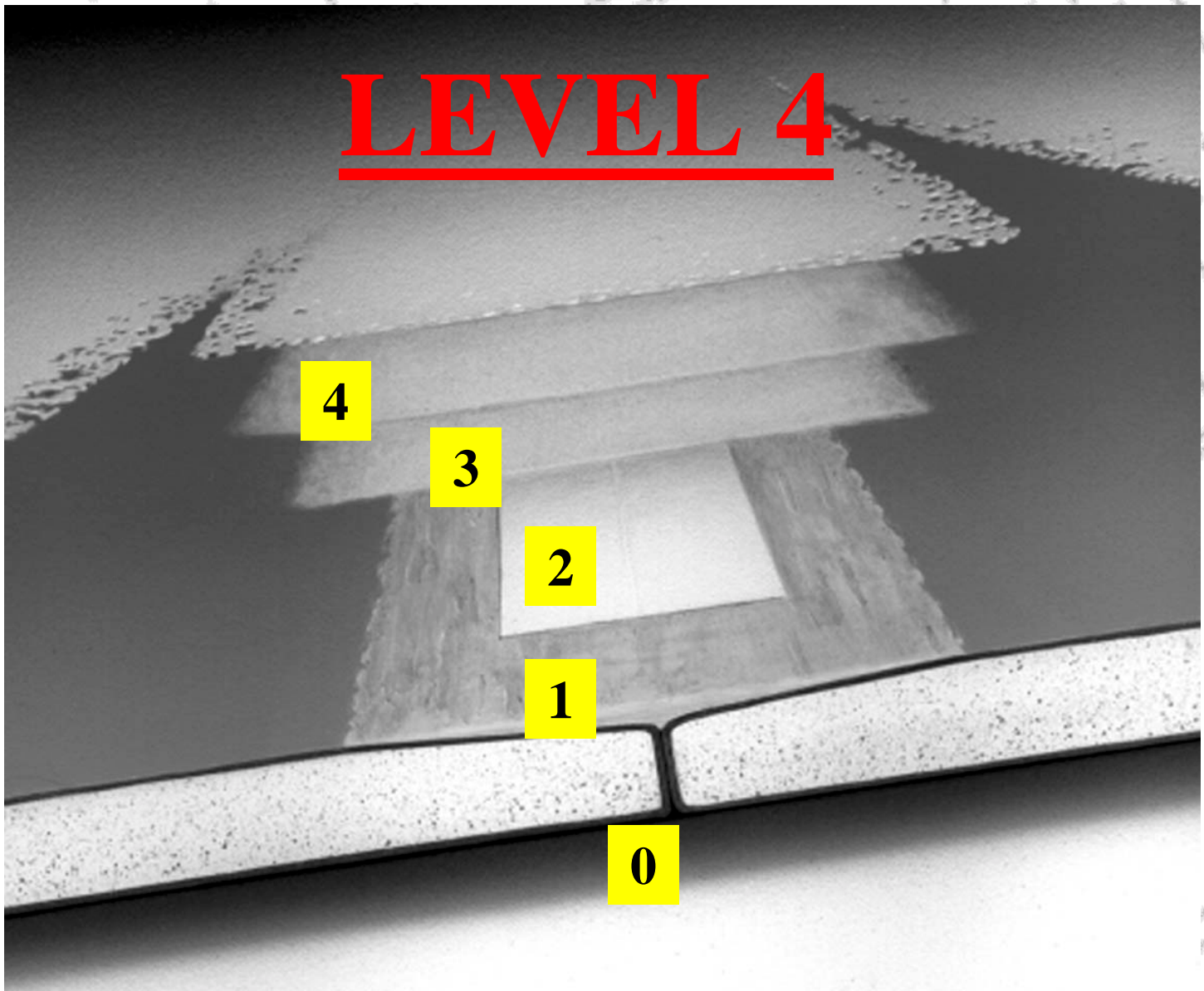
- **Joints and interior angles:** Taped as in Level 2, then covered with one (separate/additional) coat of joint compound.
- **Fastener heads and accessories:** Shall be covered by two separate coats of joint compound.
- **Joint compound shall be smooth and free of tool marks and ridges.**
  - One coat of drywall primer is recommended prior to application of final finish.

# ***When To Specify***

## ***Level 3?***

- Typically in appearance areas which are to receive heavy- or medium- texture (spray or hand applied) finishes before final painting.
- Where heavy-grade wallcoverings are to be applied as the final decoration.
  - This level of finish is not recommended where smooth painted surfaces or light to medium wallcoverings are specified.

# LEVEL 4



# Level 4

- **Joints and interior angles:** Taped as in Level 2, then two separate coats of joint compound applied over all flat joints and one separate coat applied over interior angles.
- **Fastener heads and accessories:** Shall be covered by three (separate/additional) coats of joint compound.
- Joint compound shall be free of tool marks and ridges.
  - *One coat of drywall primer is recommended prior to application of final finish.*



# ***When To Specify*** ***Level 4?***

- **Where flat paints, light textures, or wallcoverings are to be applied.**
  - The weight, texture, and sheen level of wallcoverings applied over this level of finish should be carefully evaluated.
  - Gloss, semi-gloss, and enamel paints are not recommended over this level of finish. Unbacked vinyl wallcoverings are not recommended over this level of finish.

# LEVEL 5

5

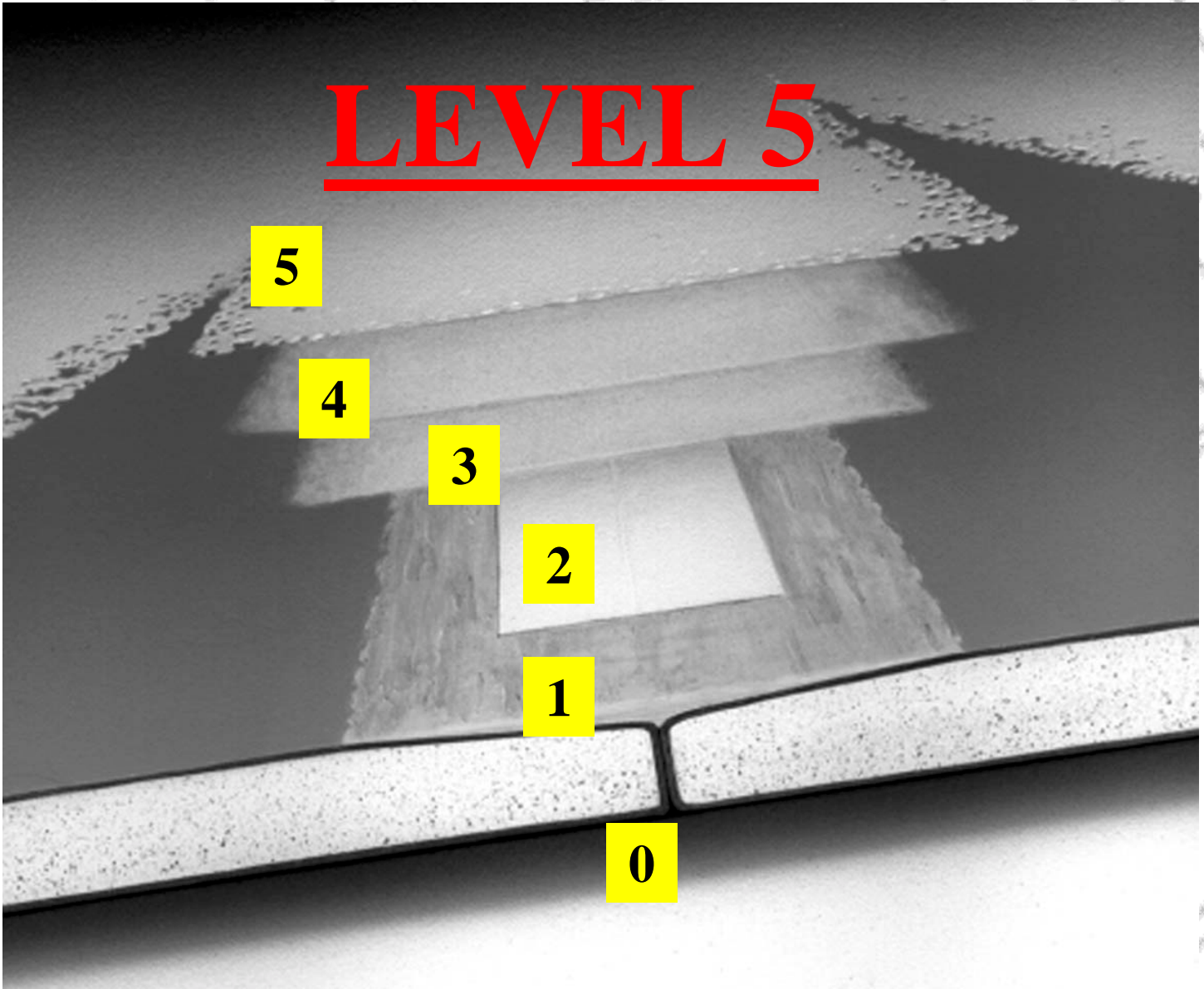
4

3

2

1

0



# Level 5

- **Joints and interior angles:** Taped as in Level 2, then two separate coats of joint compound applied over all flat joints and one separate coat applied over interior
- **Fastener heads and accessories:** Shall be covered by three separate coats of joint compound.
- A thin skim coat of joint compound or material manufactured for this purpose, shall be applied to the entire surface.
- Surface shall be smooth and free of tool marks and ridges.
  - *One coat of drywall primer is recommended prior to finish painting.*



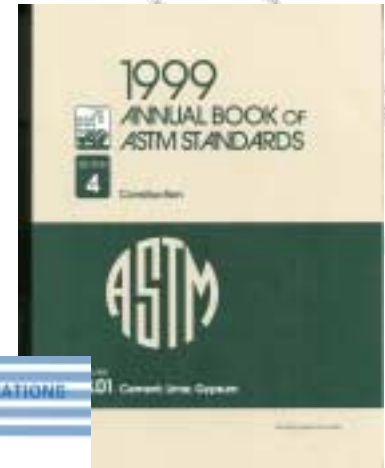
# *When To Specify* *Level 5?*

- Where gloss, semi-gloss, enamel or nontextured flat paints are specified or
- Where severe lighting conditions occur.
  - A Level 5 Finish “Minimizes” the effects of critical lighting and gloss paints.



# ***Other References to Levels of Finish...***

- **ASTM C-840, Standard Specification for Application and Finishing of Gypsum Board.**
- **GA-216-2000, *Application and Finishing of Gypsum Board.***



# ***General Gypsum References***

- **The Gypsum Association**  
– **[www.gypsum.org](http://www.gypsum.org)**
- **Local gypsum manufacturer's representative**
- **Manufacturers' literature**
- **Gypsum manufacturers' technical service departments**
- **Internet web pages of manufacturers**

# ***Technical Assistance (cont.)***

- **The Association of the Wall & Ceiling Industries-International (AWCI)**
- **CMD Group's *Architects' First Source***
- **Local gypsum specialty supply dealers and their technical sales personnel**
- **Local gypsum contractors**

# ***Beer & Toothpaste***

- *But... Do Beer and Toothpaste really have anything to do with Gypsum?*

# ***The Answer!***

- ***Beer*** - Gypsum is used in the manufacturing of beer to create a smoother taste and longer shelf life.
- ***Toothpaste*** - Gypsum is a filler for toothpaste

# ***The Sequel!***

- *Many other uses for Gypsum include:*
  - Used as a packaging medium for pharmaceutical pills - good source of calcium
  - Soil amendment for farming
  - Used as an agent to improve flow-ability in enriched flour and baking soda



# ***It's Test Time***

- Close the course window.
- Return to the course header and click the “Take Test” button.

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