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Tezel, Algan, Koskela, Lauri, Tzortzopoulos, Patricia, Formoso, Carlos and Alves, Thais

Visual Management in Brazilian Construction Companies: Taxonomy and Guidelines for Implementation

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| 1            | Site layout organization - Using chain-link fences | - Marked pathways  
- Color coded helmets, material & workstations  
- ID cards & name tags  
- Material grouping  
- Site stock area IDs  
- Site maps  
- Area responsible personnel photos/contact | SS exist s | Visual control in cement bags and bricks | - Company policies visually presented | Visual work instructions | On-site construction on quality control and assurance | - Productivity metrics  
- Quality metrics  
- Safety metrics | Visual information on the project environment for the workforce | - Color coded worker group and project performance boards | Visual information on the project environment for the workforce | Simple mistake proofing device for pipe fitting | - Electrical fixtures fitted on bricks before bricklaying |
| 2            | Site layout organization - Using chain-link fences | - Marked pathways  
- Color coded helmets, material & workstations  
- ID cards & name tags  
- Material grouping  
- Site stock area IDs  
- Location IDs  
- Site maps | SS exist s | Visual control in cement bags and bricks | Prototypes of certain piping systems | - Slogans  
- Warnings  
- Visual ID of safety equipment on site | - Process charts  
- Color coded work aids  
- Visual work instructions | On-site construction on quality control and assurance | - Color coded worker group and project performance boards | Visual information on the project environment for the workforce | Simple mistake proofing device for pipe fitting | - Electrical fixtures fitted on bricks before bricklaying |
| 3            | Site layout organization - Using chain-link fences | - Marked pathways  
- Color coded helmets, material & workstations  
- ID cards & name tags  
- Material grouping  
- Site stock area IDs  
- Location IDs  
- Site maps  
- Area responsible personnel photos/contact | Card based (kanban) production control system for brick, cement, & electrical fixtures  
- A simple material tag based steel control system | Preparations for an andon system | - Safety signs  
- Company policies  
- Slogans  
- Best practices | - Process charts  
- Color coded work aids  
- Visual work instructions  
- Color coded project drawings – Various visual aids | On-site construction on quality control and assurance | - Supplier performance boards  
- Overall construction progress boards  
- Quality metrics  
- Safety metrics | - Electrical fixtures fitted on bricks before bricklaying |
| 4            | Site layout organization - Using chain-link fences | - Marked pathways  
- Color coded helmets, material, tools & workstation  
- ID cards & name tags  
- Material grouping  
- Site stock area IDs  
- Location IDs  
- Site maps  
- Area responsible personnel photos/contact | Concrete production leveling by using simple, colored beads | Prototypes of certain piping systems | - Safety information  
- Desired practices reminders by using the company mascot  
- Process charts  
- Visual work instructions  
- Color coded magnetic board summarizing the important dates of the project planning | On-site construction on quality control and assurance | - Productivity metrics  
- Safety metrics  
- Financial metrics | Calendar summarizing important project events in the near future |

**Table 4 – Adoption of VM taxonomy elements by different companies**
| 6 | - Site layout organization | - Using chain-link fences | - Using glass where appropriate | SS exists | - Marked pathways | - Color coded helmets, materials, tools & workstation | - ID cards & name tags | - Material grouping | - Site stock area IDs | - Location IDs | - Site maps | - Area responsible personnel photos/contact | - Hand tools control boards | - Card based (kanban) production control system for various materials | A heijunka board for on-site concrete production | Andon board system | - Sampling for safety gears, personnel & material location matching | - Prototypes of certain piping systems | Safety signs, worker emotions’ boards, slogans, best practices, information on the production system | - Process charts | - Visual work instructions | - Color coded magnetic project drawings | - Various visual aids | On-site construction quality control and assurance | - Productivity metrics | - Safety metrics | - Quality metrics | - Financial metrics | - Visual workers’ mood board | Visual information on the project environment for the workforce | - Electrical fixtures are fitted on bricks before bricklaying | - Electrical and mechanical (piping, fixtures) prefabrication with visual information |
| 7 | - Site layout organization | - Using chain-link fences | - Using glass where appropriate | SS exists | - Marked pathways | - Color coded helmets, material, tools & workstation | - ID cards & name tags | - Material grouping | - Site stock area IDs | - Location IDs | - Site maps | - Area responsible personnel photos/contact | - Hand tools control boards | - Scaffolding control | - Card based (kanban) production control system for various materials | A heijunka board for on-site concrete production | Andon board system | - Sampling for safety gears, personnel & material location matching | - Prototypes of certain piping systems | Safety information, slogans, desired practices, reminders by using the company mascot | - Process charts | - Visual work instructions | - Color coded magnetic project drawings | - Various visual aids | On-site construction quality control and assurance | - Productivity metrics | - Safety metrics | - Quality metrics | - Financial metrics | - Visual workers’ mood board | Visual information on the project environment for the workforce | Simple mistake proofing for the installation of sinks | - Electrical fixtures are fitted on bricks before bricklaying | - Electrical and mechanical (piping, fixtures) prefabrication with visual information |
| 8 | - Site layout organization | - Using chain-link fences | - Using glass where appropriate | SS exists | - Marked pathways | - Color coded helmets, material, tools & workstation | - ID cards & name tags | - Material grouping | - Site stock area IDs | - Location IDs | - Site maps | - Area responsible personnel photos/contact | - Hand tools control boards | - Card based (kanban) production control system for various materials | A heijunka board for on-site concrete production | Andon board system | - Sampling for safety gears, personnel & material location matching | - Prototypes of certain piping systems | Safety information, slogans, desired practices, reminders. | - Process charts | - Visual work instructions | - Color coded magnetic project drawings | - Various visual aids | On-site construction quality control and assurance | - Productivity metrics | - Safety metrics | - Quality metrics | - Financial metrics | - Visual workers’ mood board | Visual information on the project environment for the workforce | - Electrical fixtures are fitted on bricks before bricklaying | - Electrical and mechanical (piping, fixtures) prefabrication with visual information |
| 9 | - Site layout organization | - Using chain-link fences | - Using glass | A simple station quality system by using colored cards | - Safety information | - Slogans | - Desired practices | - Reminders | - Visual work instructions | - Color coded magnetic project drawings | - Various visual aids | On-site construction quality control and assurance | - Productivity metrics | - Safety metrics | - Quality metrics | - Financial metrics | - Visual workers’ mood board | Visual information on the project environment for the workforce | - Electrical fixtures are fitted on bricks before bricklaying | - Electrical and mechanical (piping, fixtures) prefabrication with visual information |