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| Appendix. Traditional Workers Survey. |  |  |  |  |  |
| **Worker** | **1** | **2** | **3** | **4** | **5** |
| *Position/Role* |  |  |  |  |  |
| Drywall/Carpenter | X | X | X |  | X |
| Electrical |  |  |  | X |  |
| Experience (Years) | 30 | 35 | NA | NA | NA |
|  |  |  |  |  |  |
| **1) Assessment of the workload from 0 to 10 (based on NASA Task Load Index)** |  |  |  |  |  |
| Mental Demand: How mentally demanding was the task?  0 = very low; 10 = very high | 8.5 | 6 | 5 | 5 | 5 |
| Physical Demand: How physically demanding was the task?  0 = very low; 10 = very high | 8.5 | 7 | 5 | 6 | 5 |
| Performance: How successful were you in accomplishing what you were asked to do? 0 = perfect; 10 = failure | 2 | 2 | 2.5 | 2.5 | 3 |
| Effort: How hard did you have to work to accomplish your level of performance? 0 = very low; 10 = very high | 8.5 | 8.5 | 5.5 | 6.5 | 5 |
| Frustration: How insecure, discouraged, irritated, stressed, and annoyed were you? 0 = very low; 10 = very high | 9 | 4.5 | 4.5 | 2 | 4 |
| Average | 7.3 | 5.6 | 4.5 | 4.4 | 4.4 |
|  |  |  |  |  |  |
| **2) Assign values 1 to 5** (1=fully disagree, 2= somewhat disagree, 3= neither agree nor disagree, 4= somewhat agree, 5= fully agree) | | | | | |
| Installing drywall is a typical part of my job | 3 | 3 | 5 | NA | 5 |
| I’m concerned that lifting heavy weight will cause injuries over time | 5 | 5 | 3 | NA | 5 |
| Material layout is always efficient | 3 | 3 | 4 | NA | 3 |
| Materials are always available when I need them | 3 | 3 | 3 | NA | 3 |
| Tools are always available when I need them | 3 | 3 | 5 | NA | 3 |
| I usually have rework in my daily job | 2 | 2 | 3 | NA | 2 |
| A drywall-placing robot is helpful for my job | 1 | 1 | 1 | NA | 1 |
| Having an accurate drywall BIM with stud positions helps my job | 1 | 1 | 4 | NA | 5 |
| I would like to try a construction robot on my next project | 1 | 1 | 3 | NA | 1 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **3) Open-ended questions** | **1** | **2** | **3** | **4** | **5** |
| What are the factors that affect productivity in your daily job?  E.g., Weather, material shortages, design changes, ineffective communications, inadequate planning and scheduling, lack of training/supervision, slow approvals, and QC… | Material shortages | Material shortages | NA | Design changes  Response time  Communication  issues | NA |
| What are the most common rework causes in traditional drywall? How many *hrs* you estimate are lost per week due to rework? | Changes in electrical  4 *h* | Changes in wall back-up 2 *h* | NA | NA | 1*h* |
| How many hours do you estimate are lost per week due to planning issues? | 0 *h* | 1 *h* | NA | 1 *h* | Reasonable, good enough |
| How could you improve the current drywall installation process? Is there a way to achieve higher productivity? | Modify the distance between the bathroom studs | Be part of the planning process | Connecting walls should be straighter | NA | Better connections between materials & installations |
| How is your usual work environment? E.g., Clean, dirty, with obstacles, noisy. | Noisy | Dirty, Noisy | Clean | Dirty, Obstacles, Noisy | Ok |
| Do you observe material waste at any point in the drywall process? | Yes | Yes | 5-10% | NA | No |
| What percentage of your daily work is carrying heavy boards? | 100% | 100% | 8 *h* | NA | 8 *h* |
| What percentage of your daily work is drilling boards to studs? | 100% | 100% | 8 *h* | NA | 7 *h* |
| How much time is spent waiting for other trades? How much in material handling? | Not much, don´t know | Not much | Ok | Not much | Ok |
| Would you prefer to do the whole task yourself (without robot aid)? Why? | Yes. What should I do otherwise | Yes | The robot takes my job! | I don´t see how a robot would help | The robot takes our jobs! |
| What could be the best thing about using a robot on site? | Don´t know | I don´t see any benefits | NA | Don´t know | For insulation stud placing |