

Table of Contents

View from a Height	660
➤ The Fine Print	660
Construction Zone	661
➤ An Industrial Action	661
Gross Domestic Product (GDP)	662
➤ Manholes	663
➤ Orange Cones.....	663
➤ Material Handling	664
➤ Combat Engineers	664
Endnotes.....	664

See Appendix CON – Writ & Construction Example

See Appendix PAT1 – Power Activations Tables 1 – Power Activation Costs

See Appendix PAT2 – Power Activations Tables 2 – Normal Sequence of Power Activations

See Appendix PAT3 – Power Activations Tables 3 – Scenes, Planets & Stars

“If you would see how interwoven it is in the warp and woof of civilization ... go at night-fall to the top of one of the down-town steel giants and you may see how in the image of material man, at once his glory and his menace, is this thing we call a city.” – Frank Lloyd Wright

View from a Height: The two basic ‘units’ of the game (or any science-fiction interstellar ‘4X’ game) are ships and colonies. Colonies contain the position’s population base (in most cases, just expressed as industry or output numbers), and ships protect, expand, explore, enforce, and keep it all connected. It is possible that players may add, through game play, additional basic units. In some instances, Technological Devices might also be considered ‘units.’

‘Units’ are the top hierarchy game items, the main items in the game setting on which everything else is based. Units exist and operate independently within the game and the game rules; they are the driving force of the game. Physical Item Technology Patents (PITs) allow players to build units. Since you cannot build a colony (and there are no units other than colonies and ships to start the game), Physical Item Technologies essentially mean the technology to build starships.

Continuous Operational Technology Patents (COTs) allow for small improvements in the performance of existing units and installations, while Enhancement Technology Patents (ETs) are the only means to add new abilities to existing physical items, colonies, and installations.

Installations are ‘enhancements’ to colonies (as they cannot exist independent of the colony) and anything built on (‘added to’) a colony must either be an Installation or an Enhancement. Populations cannot be ‘built,’ colonies and installations (and in most cases, even ships) cannot exist independent of population, so population is not considered an ‘installation.’

Technological Devices (TDs) are most likely to stand alone (as units, physical items), and could in many cases, be considered a ‘basic unit’ of the game, but in other cases, TDs may act as Installations or Enhancements to colonies or ships or other Installations.

- ✓ ‘4X’ is a common game hobby abbreviation for “eXplore, eXpand, eXploit, eXterminate” type space games. There are some ‘3X’ games, though they are rarely called by that name; my favorite is the boardgame *Ad Astra* (2009), which has no combat.
- **The Fine Print:** System Boats – ships without stardrives – are equivalent to ships, and thus are ‘game units’ and their Tender ships are obviously game units because they are ships. See *System Boats*, 3 Construction, p. 677, *infra*.
 - ✓ Ground Units, introduced in *GROPOS*, 4 Combat, p. 985, *infra*, are a special case. They are colony enhancements when at a sovereign colony, but they are game units when not on a sovereign colony or being transported on sovereign ships, and are game units in any location *for the purposes of Special Operations Lodging* rules (see *French Vanilla*, 2 Special Operations, p. 1292, *infra*).
 - ✓ Special Operations Missions are not units nor are they enhancements in game terms. Conversely, a Fighter Complement (see *How Big is Your Flight Stick*, 1 Carriers & Fighters, p. 1050, *infra*) is never a game unit as it cannot exist independently of either a Carrier or Colony, even though in other effects and senses, it is similar to a Ground Unit.

It’s weird but you can handle it, no unhandled exceptions allowed in GGDM!¹

- ✓ You can build colony ships and colony infrastructure, but the essential part of a colony – people, living biological beings of some intelligence – cannot be ‘built.’ But in science-fiction-dom this can get a bit fuzzy...clones, cyborgs. *For game purposes*, colonies cannot be built by activation of the Construction Power but Colony Ships which are Landed to create new colonies wherever a colony of that Native Population type does not exist currently (see The Landing, 4 Expansion, p. 920, *infra*), can.

“A city is made of bricks, Pharaoh. The strong make many, the starving make few, the dead make none.”

– Moses (Charlton Heston), *The Ten Commandments* (1956)

Construction Zone: The Construction Power must be activated for any kind of unit building or enhancement tasks in the game. Positions may only build at colonies that they own, and specifically, construction may only occur at colonies. Construction is a location-specific act; each activation of the Construction Power for any purpose requires one Act and one Scene, and the Scene must be on the *colonized Planet* where the Construction occurs, Scene snitching can occur. Construction at two colonized planets in the same starsystem on the same Regular Turn, requires two separate activations of the Construction Power for that purpose and a Scene on each planet.

The Construction Power may be activated for the following six purposes:

1. Colony Enhancement,
2. Colony Defense Era Upgrade,
3. Laying Keel,
4. Shipbuilding,
5. Ship Supply,
6. Scrapping.

Each activation of the Construction Power allows construction tasks to occur only for the specific purpose for which the Construction Power was activated. **With the exception of Scrapping**, the Construction Power may only be activated for *one purpose* per Regular Turn at each colony.

- ✓ However, activation of the Construction Power for the purpose of *Scrapping* may be combined with any other activation of the Construction Power for any purpose and/or *activation of the Commerce Power for the purposes of Loading or Unloading Cargo Ships* in the same turn at the same colony, *using a single Scene to satisfy all of those Power activations at that colony.*

The Construction Power should not be confused with Constructural Elements introduced previously. There is no direct relationship between the vital Construction Power and Constructural Elements in GGDM, except perhaps, that inactive Constructural Elements may cause failure of activation of the Construction Power!

- **An Industrial Action:** *All activations* of the Construction Power, for any purpose, must specify a target colony (and ship in the case of Ship Supply) and thus can fail due to inactive Constructural Elements at the target colony. Activations of the Construction Power are vitally important and thus, are an area where inactive Constructural Elements can have the greatest adverse effect.

- ✓ An ‘industrial action’ is a British term for a ‘job action’ i.e. a workers’ strike in the U.S. See Merriam-Webster online dictionary. Your workers are on strike. Even the most totalitarian state will not kill more than a few workers (i.e. ringleaders) for being on strike, preferring terror and kangaroo courts, because if they kill many workers, who is going to do the work? Workers’ strikes are, historically, an event that militant, police state, autocratic governments have difficulty addressing effectively, if the workers are willing to die for the future. Nazi Germany had a plan for this contingency, called Operation Valkyrie, which the July 20 plotters attempted to subvert.

Lister: *We’re on a mining ship, 3 million years into deep space. Can someone explain to me where the smeg I got this traffic cone?*

Cat: *Hey, it’s not a good night unless you get a traffic cone! It’s the police-woman’s helmet and the suspenders that I don’t understand!*

– Red Dwarf

Gross Domestic Product (GDP): The cost of construction, *except for RPs unloaded from Cargo Ships*, is deducted from the current Treasury. However, a colony may not spend more in all *location-specific activities* in a Regular Turn than that colony would have produced if taxed at the beginning of that turn, plus the RP value of whatever was Unloaded from Cargo Ships to the colony on that turn (see Downloading, 2 Commerce, p. 1202, *infra*). This GDP limits the ability of a colony to both build things and Load resources to Cargo Ships in the same Regular Turn.

- ✓ For example, a colony that would produce 20 RPs if taxed at the beginning of the Regular Turn may not both spend 20 RPs by activation of the Construction Power and also Load 20 RPs to Cargo Ships by activation of the Commerce Power in the same Regular Turn.
- ✓ Besides building at the colony and Loading RPs, variable costs of Loading and Unloading Population at the colony in the same Regular Turn also counts against the GDP, planning is key. See Sardine Tins and ...Vienna Sausages, 3 Expansion, pp. 911, 915, respectively, *infra*.

There are only so many RPs available at any particular location, no matter how much is in the Treasury. The primary purpose of Cargo Ships is to deliver RPs from other locations, importing manufactured goods, machinery, skilled labor, alloys and refined metals, and raw materials that are not available at the destination; therefore, the RPs Unloaded from Cargo Ships in the same turn are added to the destination colony’s resource limit (GDP) for Construction *on the turn they are Unloaded* only. Any RPs Unloaded and not used that Regular Turn *are lost*, not returned to the Treasury (waste, corruption, administrative costs, or used for local political gain).

- ✓ For example, if 10 RPs were Unloaded from Cargo Ships to the colony in the previous example, on the turn of Construction, the colony could build 30 RPs worth of Construction on that turn.

For clarification, RPs *Loaded* to Cargo Ships are taken from the position’s Treasury but also count locally against the Colony’s GDP for the Regular Turn. Thus, RPs Loaded to Cargo Ships are theoretically the RPs received from the last Taxation of the colony. See Uploading, 2 Commerce, p. 1199, *infra*.

When spending RPs for colony activities, such as ship building, *RPs received from Unloading Cargo Ships will be spent first, and then any remaining cost will be taken from the Treasury.* Timing the movement of RPs by Cargo Ships and Construction activities at various colonies is one of the crucial elements of the game and one of the primary benefits received by colonies for participation in a centralized interstellar government and economic system.


- ✓ “The only good thing about the collapse of Carillion then is to lay bare the reality of what is really happening to public services. As a nation we either cannot afford the services we demand, including the shiny new hospitals and prisons and the wondrous new rail lines, or we are not willing to pay more taxes to fund these collective ambitions. No doubt, as with Railtrack before it and other lower profile failures of private sector involvement in public services, there may be special factors of debt and mismanagement at work. In the end, though, we have learned an important lesson – that there is no substitute for properly funded public services and projects no matter who is running them. The collapse of Carillion merely reminds us that there is no such thing as a free lunch, a magic way of creating public services without money, no matter how much taxpayers, politicians, managers, civil servants and shareholders would like to believe in it.” – Sean O’Grady, “The collapse of Carillion lays bare the reality of what is really happening to public services,” *The Independent*, January 15, 2018.
- Manholes: There is a ‘hole’ in this system, in that a colony could activate the Construction Power several times between taxations and thus take more than its share of resources from the Treasury, i.e. more than it produced during the last taxation, or would produce if taxed (partially negating the need for Cargo Ships). I have chosen not to close that loophole in the rules. Rather, I think other factors balance, for example, the GDP per turn limit on building will create a need for more Construction Power activations than normal, and limit building potential per activation; Construction in GGDM is most efficient when only one activation is required or with the minimum possible costs in Acts and Scenes and Power Activations used. Alternatively, the Concierge could, if necessary, apply Intervention Potentials to colonies that have excessive Construction Power Activations between taxations on the theory that such activity dips into the domestic subsistence and comfort level of the population (like rationing in WWII) that will cause extra costs, failures, problems and will need to be replaced later.
- Orange Cones: All construction projects must be completed by the same colony that began them, regardless of how long it ultimately takes to complete. Colonies may not directly share in any construction even if they are in the same system; however, colonies in the same or different systems may indirectly share in construction costs by moving resources to the construction colony/site by use of Cargo Ships (or Cargo System Boats) or Trucking Transactions (see 4 Commerce, p. 1225, *supra*). This is one of the primary economic benefits of participating in a centralized interstellar nation-state or empire, or trading with aliens.
 - ✓ Trucking activations of the Commerce Power may assist co-located allied **alien colonies** in shipbuilding. Conversely, if the owner of **alien colonies** and Cargo Ships are concerned with benefiting other position’s ship and defense building, then perhaps they should not engage in trade? See Trucking, 4 Commerce, p. 1225, *infra*.

Starships exist in system space (are placed on the star on the Public Space) and are not placed at any specific planet in the system (whether or not colonized), but while they are being constructed, they are located at and belong to the colony constructing them. See Shipbuilding, 3

Construction, p. 675, *infra*. Thus two colonies in the same system cannot jointly, in a direct sense, construct a ship as unfinished ships are not located in system space.

- Material Handling: When the Construction Power is activated for any purpose, other than Scrapping, on the same turn that the Commerce Power is activated at the same colony for the purpose of *Unloading* Cargo Ships, one Scene may be used to satisfy *both* Power Activations at that colony. Further, when this occurs, the Unload RPs is processed *before* the Construction Power, an exception to Clockwork Universe, 3 The Streams of Time, p. 90, *supra*.

It might seem intuitive to place a limit on the amount of resources that can be unloaded from Cargo Ships in a turn at a colony – arguments might be offered as to the time it takes to offload the cargo, inflation effects, ‘manpower,’ etc. – however as mentioned in previous sections, there are so many undefined variables, such as what is a population factor and the length of time represented by each Regular Turn, not to mention future technologies beyond our current understanding, that there simply is no limit in the game to the amount of cargo that can be Unloaded at a colony in a Regular Turn.

- ✓ Note that, per the preceding section, if the Construction Power is activated for the purpose of Scrapping, the Commerce Power may share the same Scene if activated on the same turn at that colony for the purpose of *Unloading or Loading* Cargo Ships, in short, a position could scrap and then load those RPs to a Cargo Ship in the same Regular Turn. Activation of the Construction Power for Scrapping would require a separate activation from the activation of the Construction Power on the colony in the same turn for any other purpose. But all activations would share the same Scene on the colony if done in the same Regular Turn.
- Combat Engineers: Conquered Colonies do not produce resources during Taxation (see, Resources from Population, 2 Taxation, p. 306), thus, do not have a GDP for Construction. The Construction Power may be activated at a Conquered Colony, however,  is limited to RPs which are Unloaded from Cargo Ships to the Conquered Colony (the opposite of Looting, 3 Commerce, p. 1210, *infra*) *on the same Regular Turn* as the Construction Power is activated at the Conquered Colony. Although positions normally would not engage in Construction at a Conquered Colony, there may be some strategic or tactical situations where it is necessary, e.g., to rapidly rebuild defenses so warships don’t need to defend it or to build Institutes.

“The physician can bury his mistakes, but the architect can only advise his clients to plant vines.”

– Frank Lloyd Wright, *New York Times Magazine*, October 4, 1953

“The undertaker said to the doctor, thank you for your patients.” – anonymous

Endnotes.

¹ Citation: “An exception is a known type of error. An unhandled exception occurs when the application code does not properly handle exceptions. ... *An unhandled exception occurs when a developer does not anticipate and handle a potential exception.*” – Matt Watson, “What is an Unhandled Exception and How to Find Them,” Stackify (stackify.com), April 14, 2017 (emphasis in original).